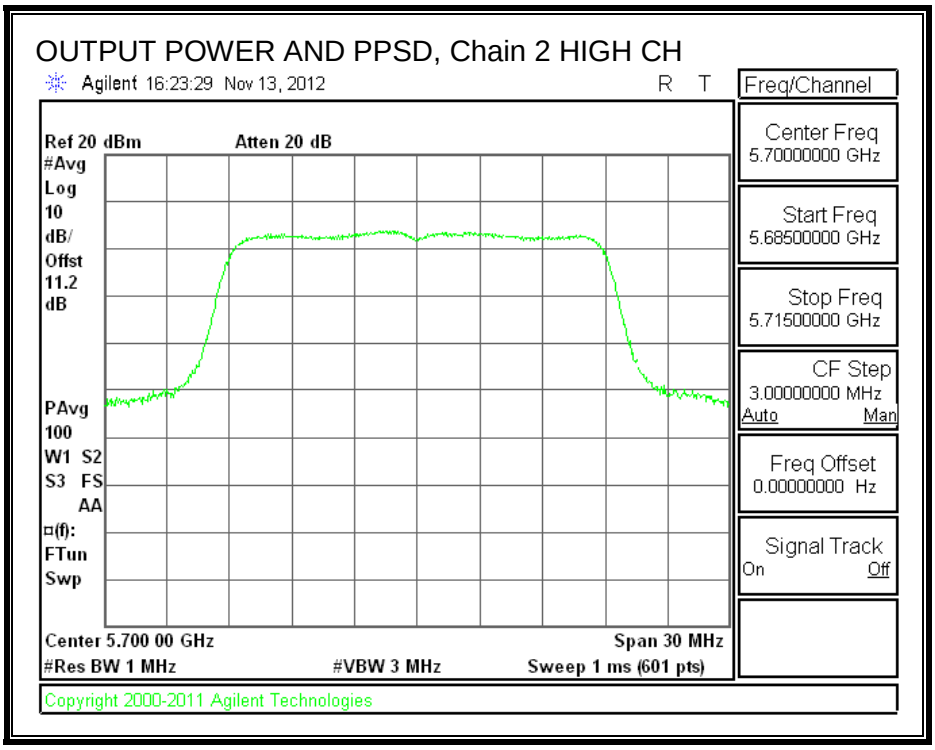


# 8.20. 802.11n HT20 CDD CH 144 3TX MODE, 5.6 GHz BAND

## 8.20.1.26 dB BANDWIDTH- UNII

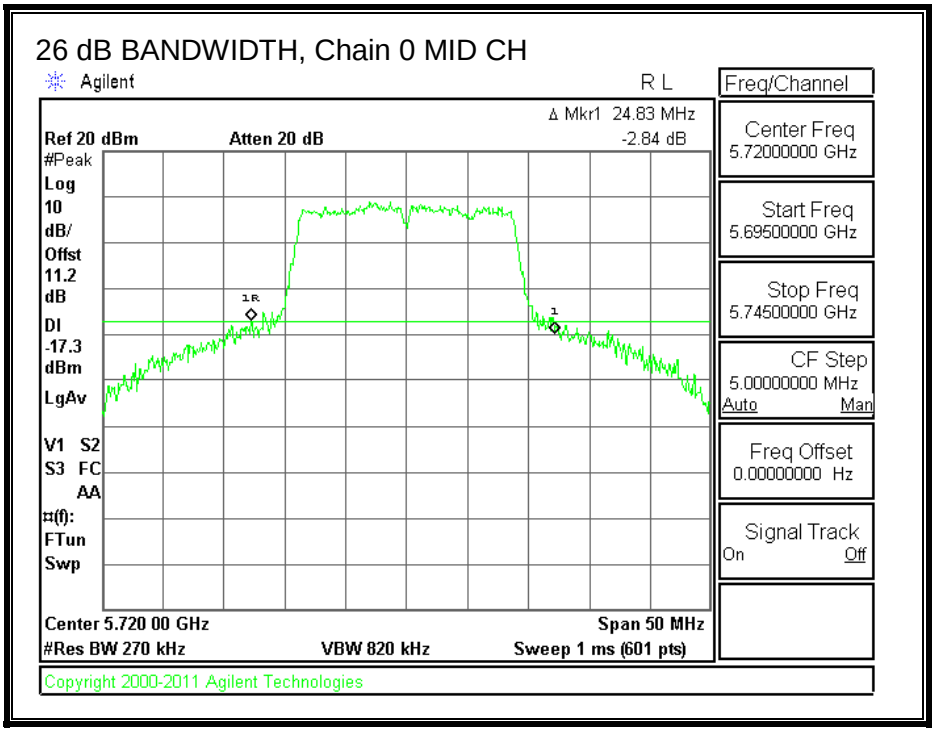
**LIMITS**

None; for reporting purposes only.

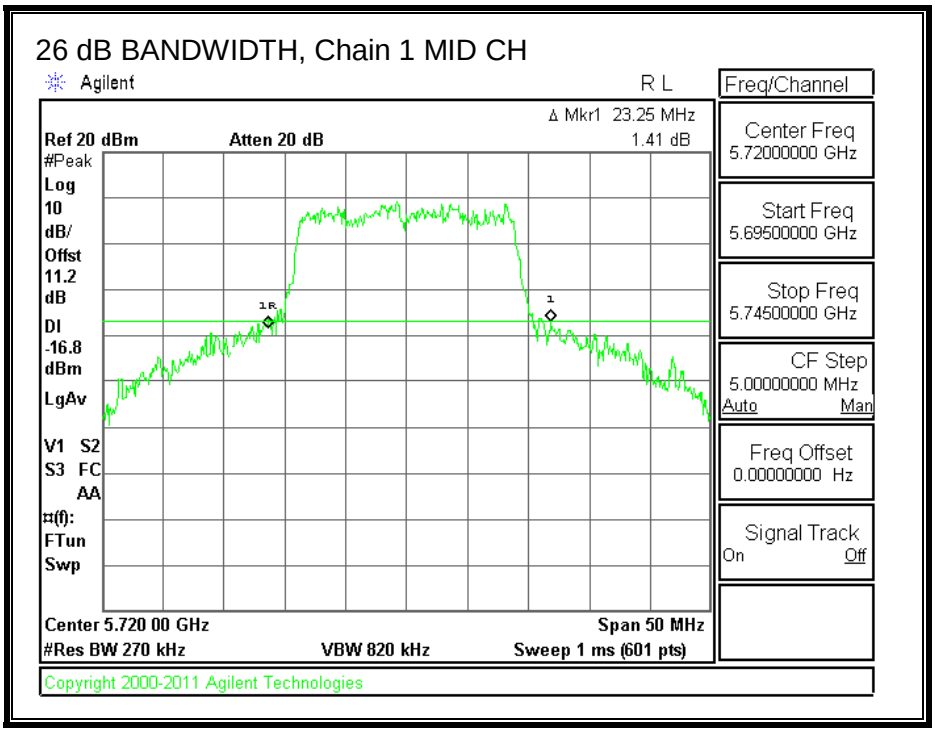
**RESULTS**

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) | 26 dB BW Chain 2 (MHz) |
|---|---|---|---|---|
| Mid | 5720 | 24.83 | 23.25 | 26.83 |

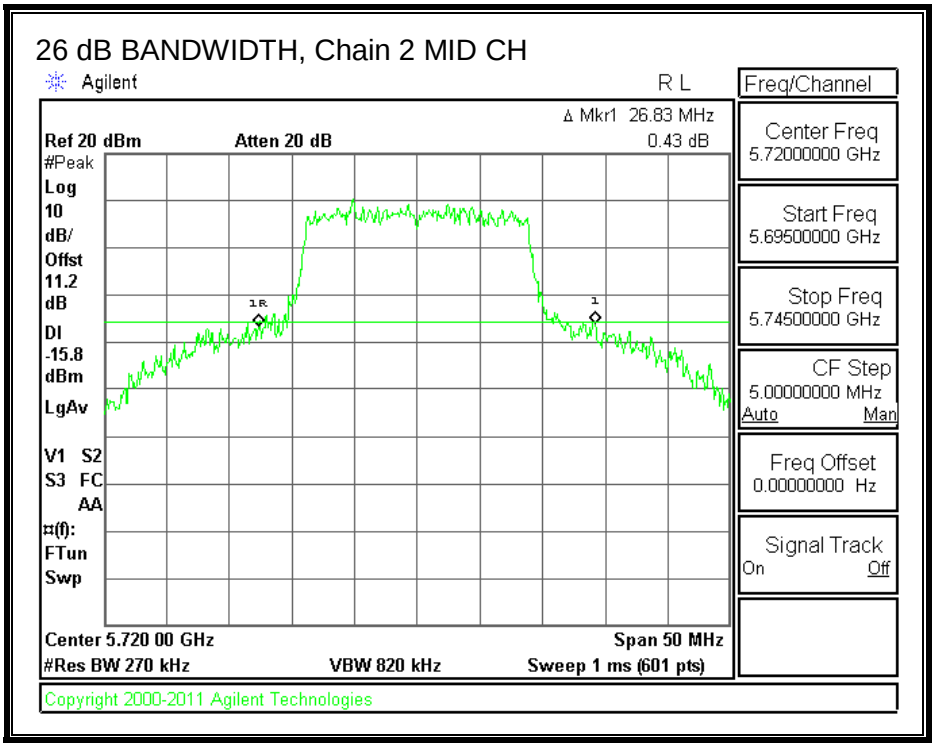
**26 dB BANDWIDTH, Chain 0**




**26 dB BANDWIDTH, Chain 1**



**26 dB BANDWIDTH, Chain 2**



## 8.20.2.99% BANDWIDTH

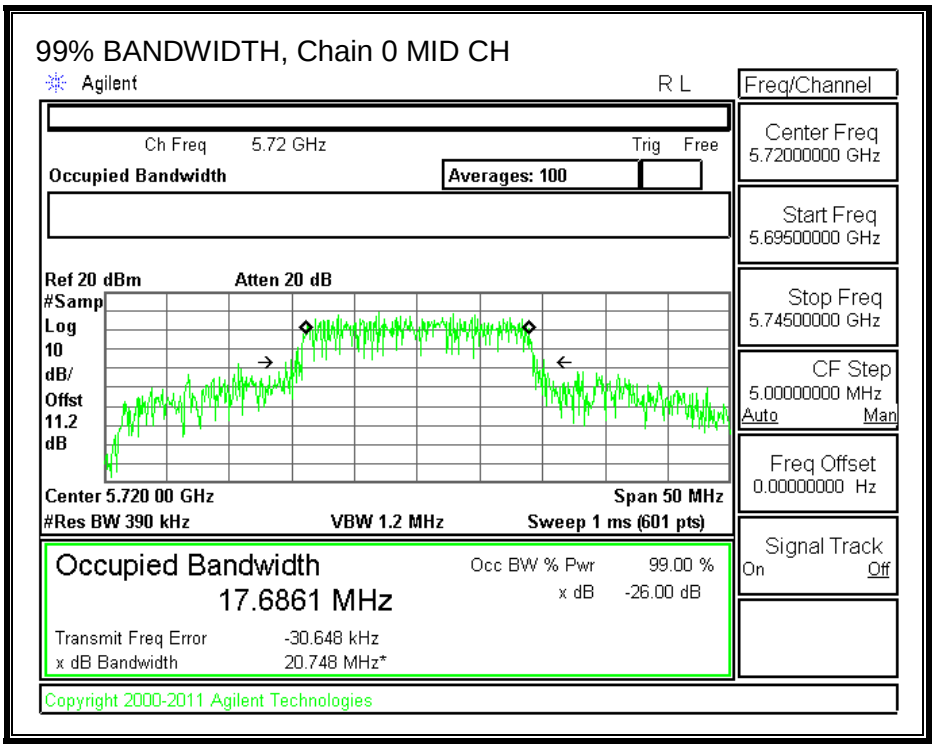
**LIMITS**

None; for reporting purposes only.

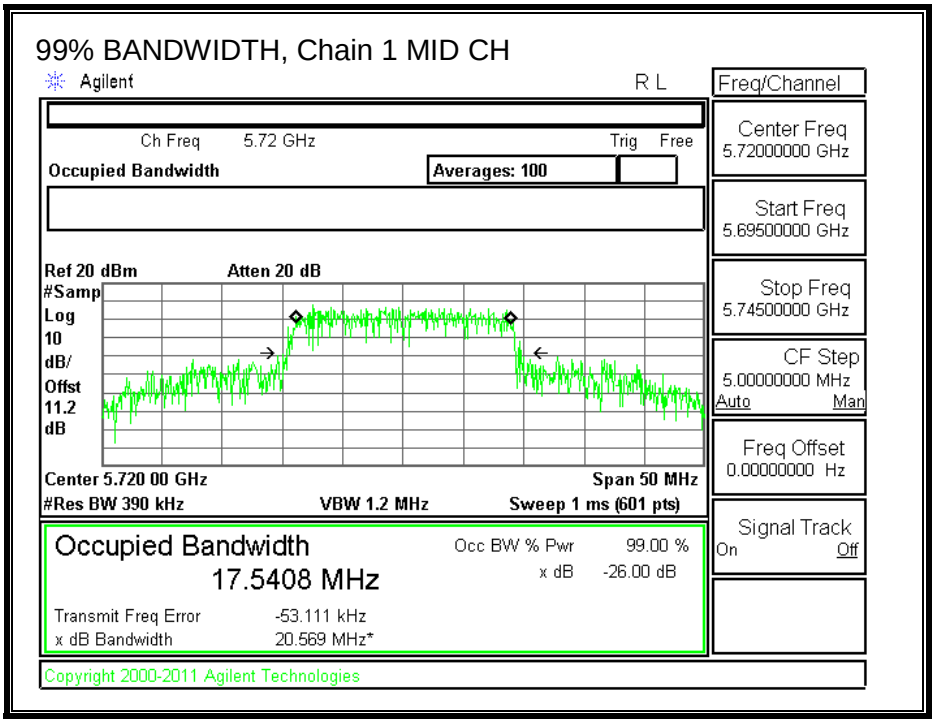
**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) | 99% BW Chain 2 (MHz) |
|---|---|---|---|---|
| Mid | 5720 | 17.6861 | 17.5408 | 17.7453 |

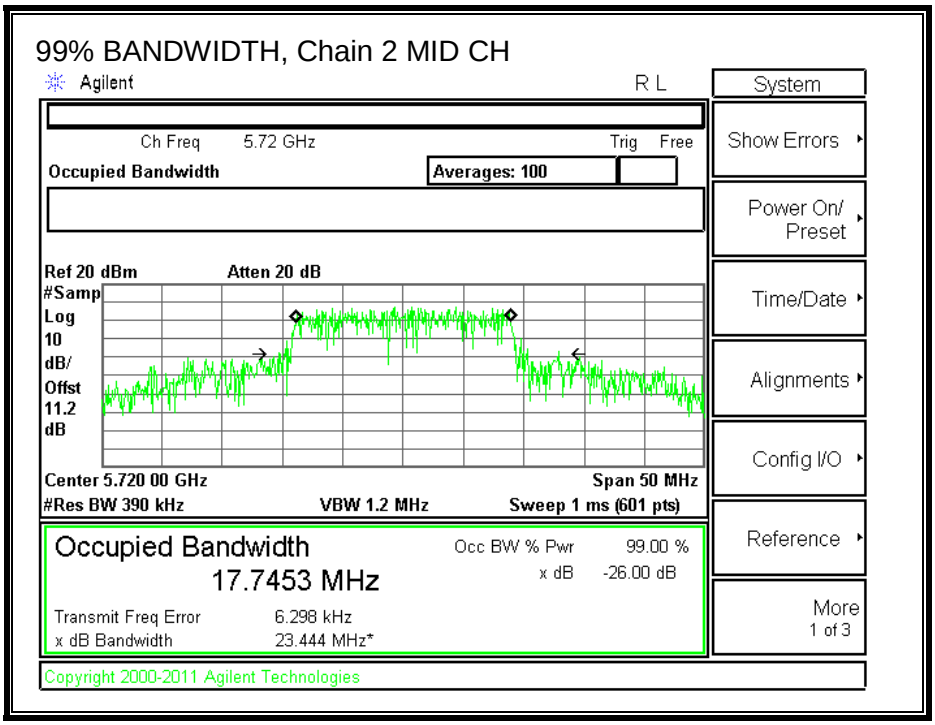
**99% BANDWIDTH, Chain 0**



**99% BANDWIDTH, Chain 1**




**99% BANDWIDTH, Chain 2**



## 8.20.3. OUTPUT POWER AND PSD

**LIMITS**

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**DIRECTIONAL ANTENNA GAIN**

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 4.72 | 2.09 | 2.85 | 3.36 |

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 4.72 | 2.09 | 2.85 | 8.06 |

**RESULTS**

## Limits (FCC), portion in UNII 2 ext band

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Correlated Gain (dBi) | Uncorrelated Gain (dBi) |
|---|---|---|---|---|---|
| Mid | 5720 | 16.63 | 13.7704 | 8.06 | 3.36 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5720 | 23.21 | 22.39 | 28.39 | 22.39 | 8.94 | 11.00 | 8.94 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of PPSD |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5720 | 13.94 | 13.53 | 13.75 | 18.51 | 22.39 | -3.88 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5720 | 3.96 | 3.94 | 3.98 | 8.73 | 8.94 | -0.21 |

## Limits (FCC), portion in 5.8 GHz UNII 3 band

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Correlated Gain (dBi) | Uncorrelated Gain (dBi) |
|---|---|---|---|---|---|
| Mid | 5720 | 7.4 | 3.8431 | 8.06 | 3.36 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5720 | 19.70 | 16.85 | 22.85 | 16.85 | 8.94 | 11.00 | 8.94 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of PPSD |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5720 | 7.38 | 7.40 | 7.38 | 12.16 | 16.85 | -4.69 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5720 | 2.870 | 2.820 | 2.860 | 7.62 | 8.94 | -1.32 |

**OUTPUT POWER and PSD, Chain 0**

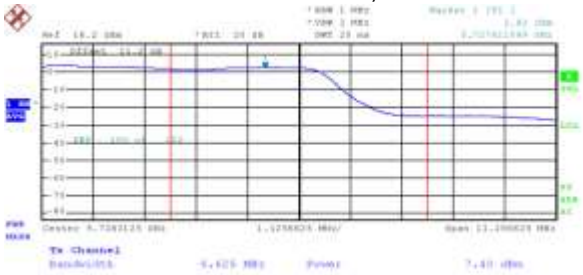
OUTPUT POWER and PSD, Chain 0 MID CH - UNII

OUTPUT POWER and PSD, Chain 0 MID CH – UNII 3

**OUTPUT POWER and PSD, Chain 1**

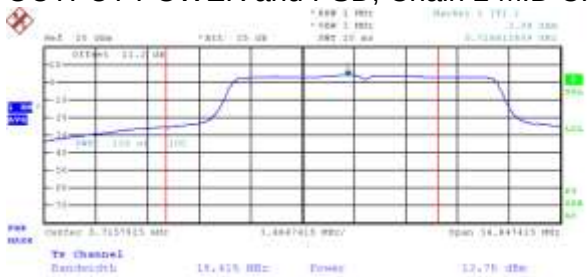
OUTPUT POWER and PSD, Chain 1 MID CH - UNII

OUTPUT POWER and PSD, Chain 1 MID CH – UNII 3



**OUTPUT POWER and PSD, Chain 2**

OUTPUT POWER and PSD, Chain 2 MID CH - UNII



OUTPUT POWER and PSD, Chain 2 MID CH – UNII 3

## 8.21. 802.11n HT20 STBC CH 144 3TX MODE, 5.6 GHz BAND

### 8.21.1.26 dB BANDWIDTH- UNII

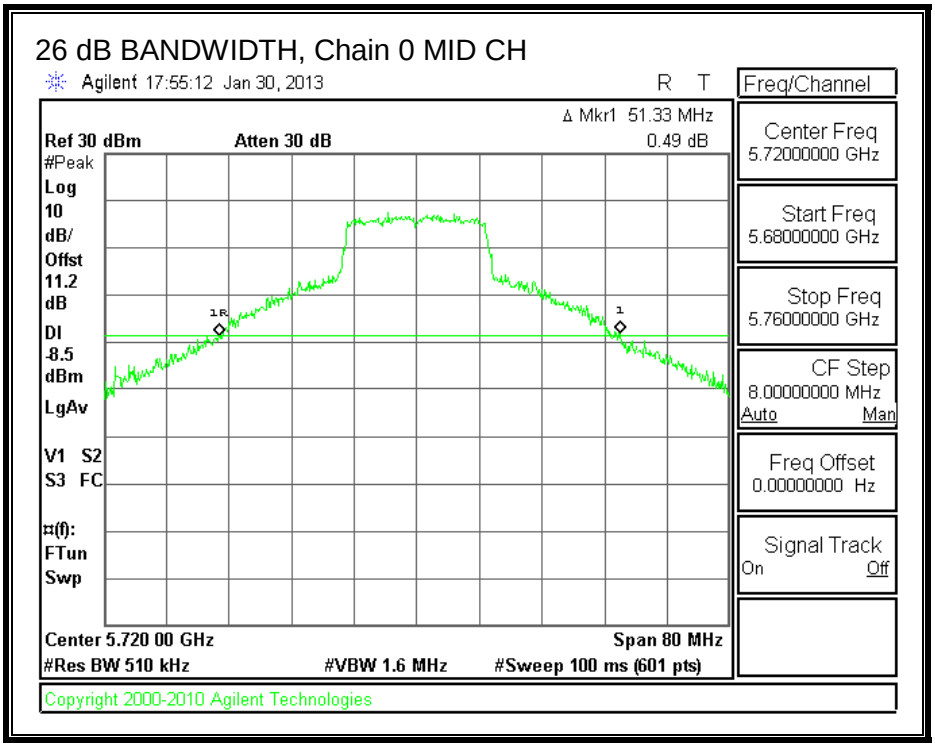
**LIMITS**

None; for reporting purposes only.

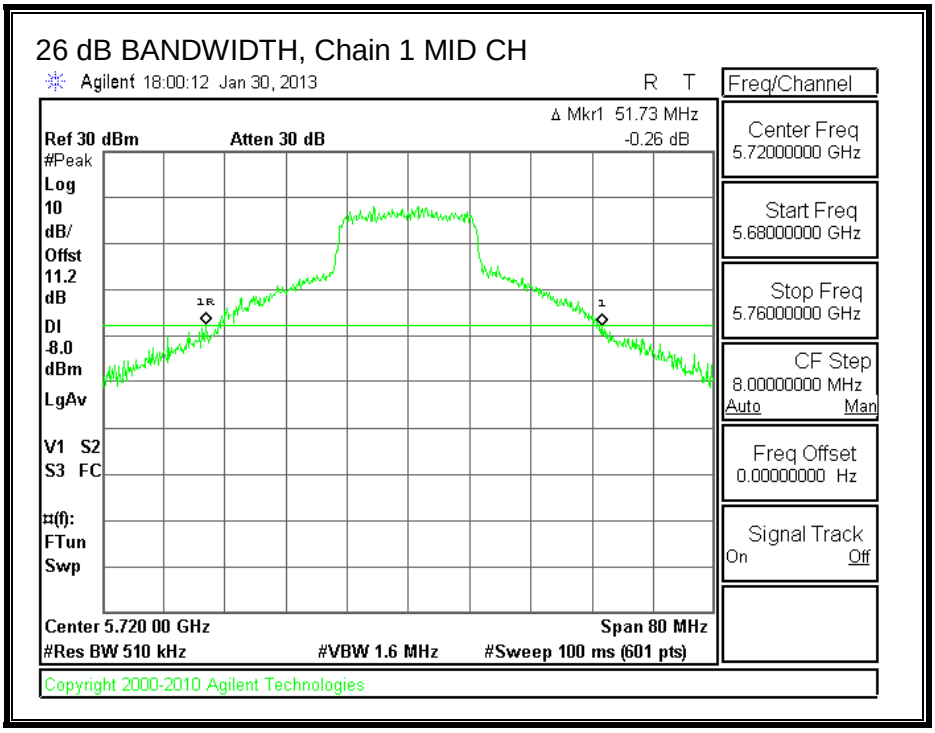
**RESULTS**

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) | 26 dB BW Chain 2 (MHz) |
|---|---|---|---|---|
| Mid | 5720 | 51.33 | 51.73 | 53.07 |

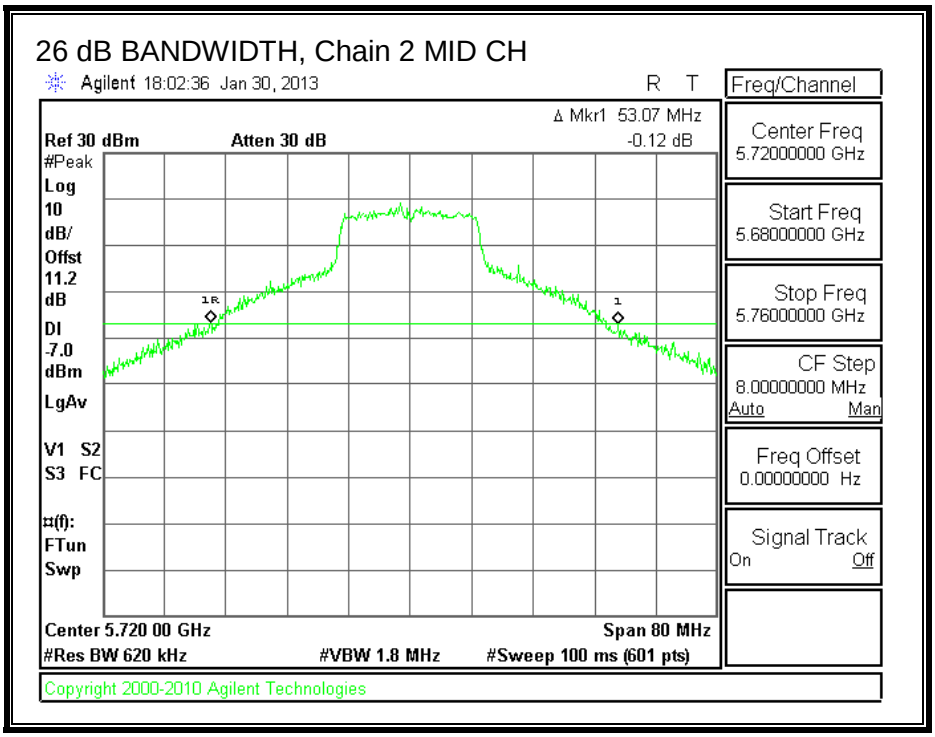
**26 dB BANDWIDTH, Chain 0**



**26 dB BANDWIDTH, Chain 1**




**26 dB BANDWIDTH, Chain 2**



## 8.21.2. 99% BANDWIDTH

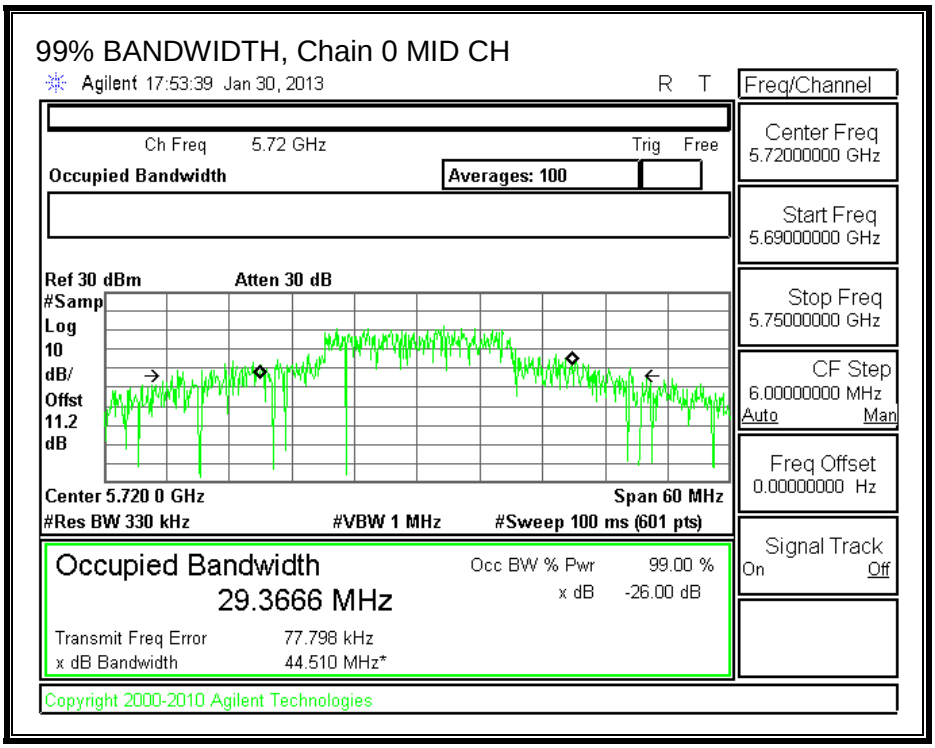
**LIMITS**

None; for reporting purposes only.

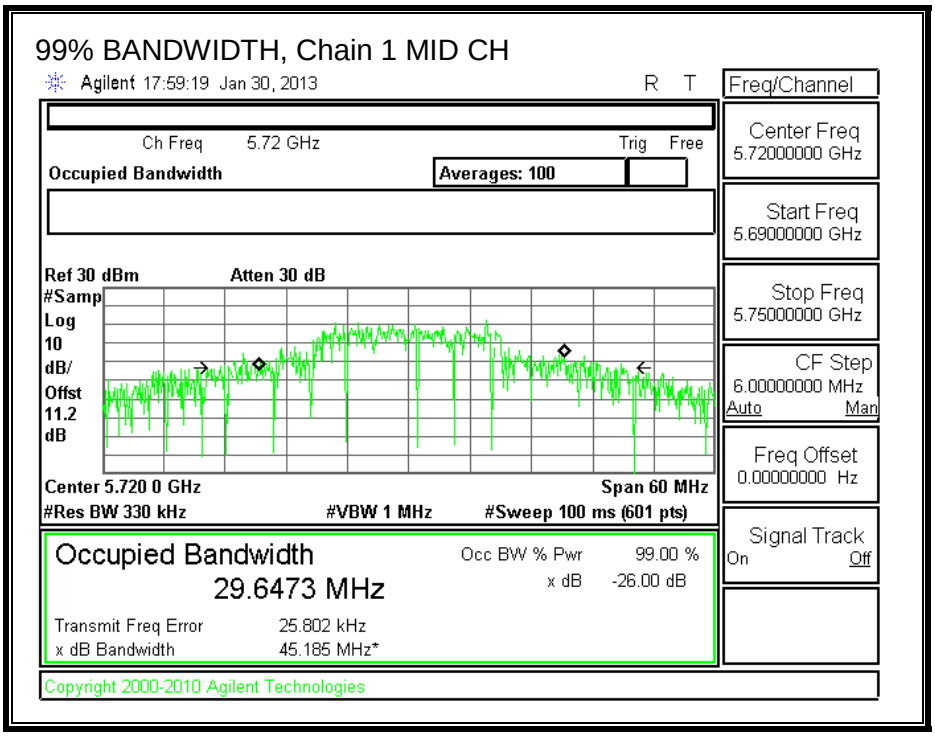
**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) | 99% BW Chain 2 (MHz) |
|---|---|---|---|---|
| Mid | 5720 | 29.3666 | 29.6473 | 31.2352 |

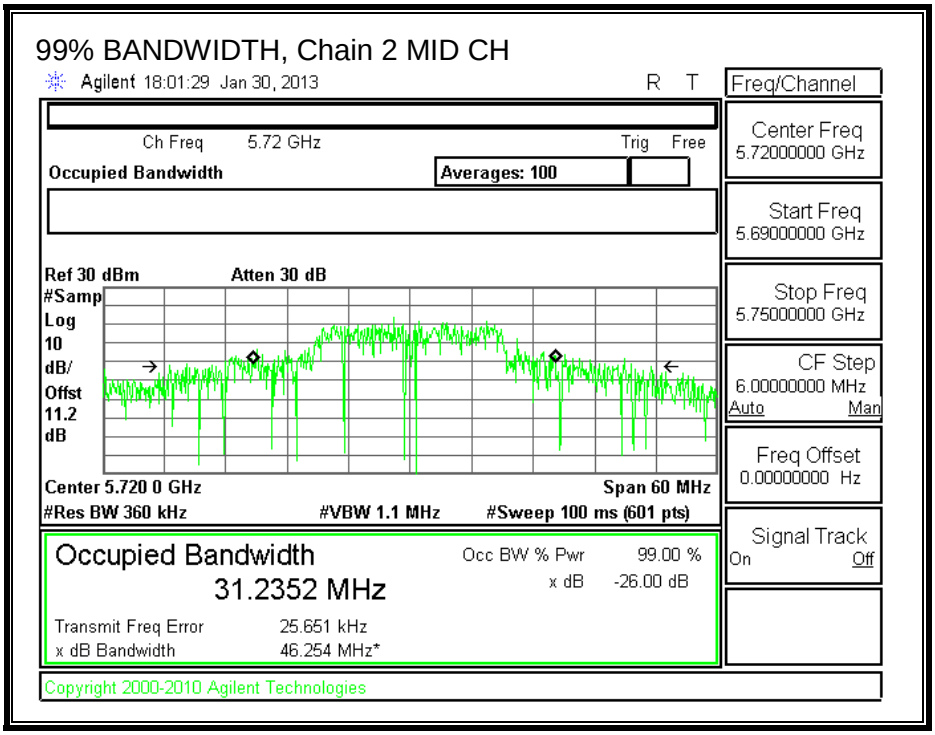
**99% BANDWIDTH, Chain 0**



**99% BANDWIDTH, Chain 1**




**99% BANDWIDTH, Chain 2**



## 8.21.3. OUTPUT POWER AND PSD

**LIMITS**

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**DIRECTIONAL ANTENNA GAIN**

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 4.72 | 2.09 | 2.85 | 3.36 |

**RESULTS**

## Limits (FCC), portion in UNII 2 ext band

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | | Uncorrelated Gain (dBi) |
|---|---|---|---|---|---|
| High | 5720 | 30.7 | 20.6650 | | 3.36 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| High | 5720 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of PPSD |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| High | 5720 | 16.07 | 15.66 | 15.89 | 20.65 | 24.00 | -3.35 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| High | 5720 | 5.96 | 5.65 | 6.06 | 10.66 | 11.00 | -0.34 |

## Limits (FCC), portion in 5.8 GHz UNII 3 band

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | | Uncorrelated Gain (dBi) |
|---|---|---|---|---|---|
| High | 5720 | 20.7 | 9.6833 | | 3.36 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| High | 5720 | 24.00 | 20.86 | 26.86 | 20.86 | 11.00 | 11.00 | 11.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of PPSD |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| High | 5720 | 10.02 | 9.65 | 10.19 | 14.73 | 20.86 | -6.13 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| High | 5720 | 5.04 | 4.54 | 5.20 | 9.71 | 11.00 | -1.29 |

**OUTPUT POWER and PSD, Chain 0**

OUTPUT POWER and PSD, Chain 0 MID CH - UNII


Date: 30.JAN.2013 18:26:12

OUTPUT POWER and PSD, Chain 0 MID CH – UNII 3

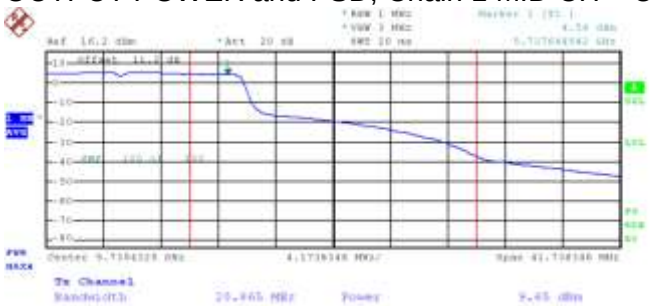

Date: 30.JAN.2013 18:28:03

**OUTPUT POWER and PSD, Chain 1**

OUTPUT POWER and PSD, Chain 1 MID CH - UNII


Date: 30.JAN.2013 18:20:08

OUTPUT POWER and PSD, Chain 1 MID CH – UNII 3




Date: 30.JAN.2013 18:22:57

**OUTPUT POWER and PSD, Chain 2**

OUTPUT POWER and PSD, Chain 2 MID CH - UNII


OUTPUT POWER and PSD, Chain 2 MID CH – UNII 3

## 8.22. 802.11n HT20 STBC 3TX MODE, 5.6 GHz BAND

### 8.22.1. 26 dB BANDWIDTH

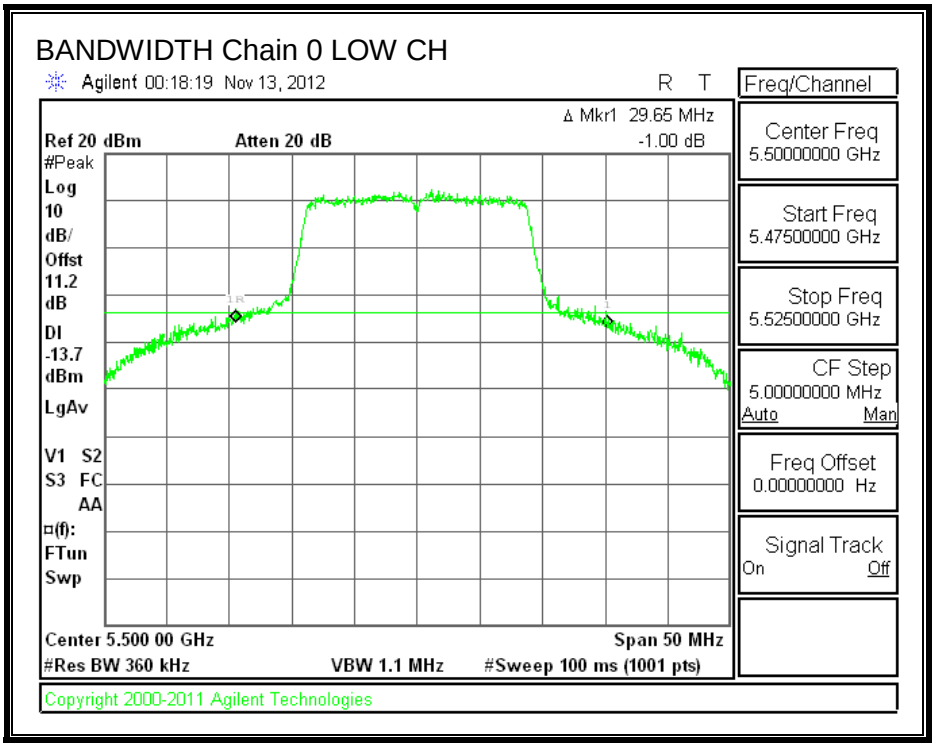
**LIMITS**

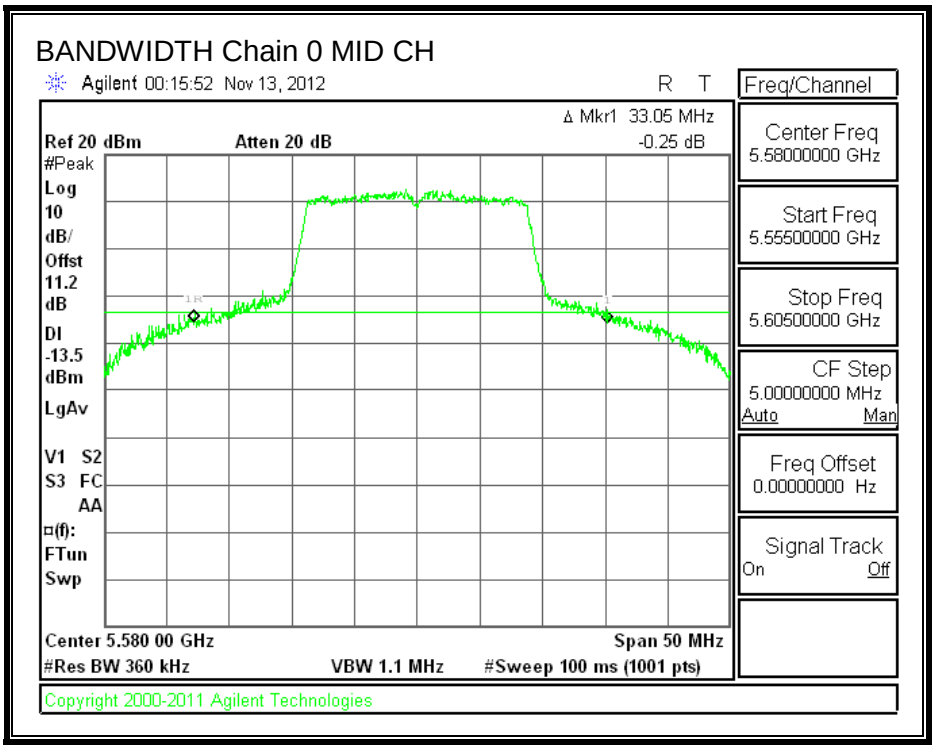
None; for reporting purposes only.

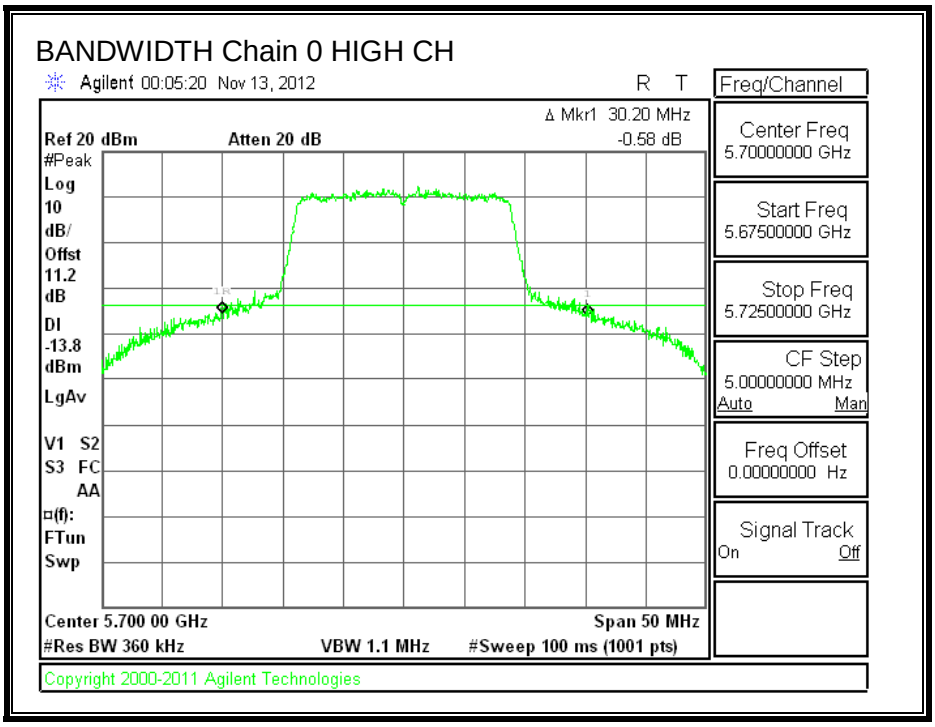
**RESULTS**

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) | 26 dB BW Chain 2 (MHz) |
|---|---|---|---|---|
| Low | 5500 | 29.65 | 30.40 | 30.70 |
| Mid | 5580 | 33.05 | 29.50 | 34.00 |
| High | 5700 | 30.20 | 30.65 | 32.95 |

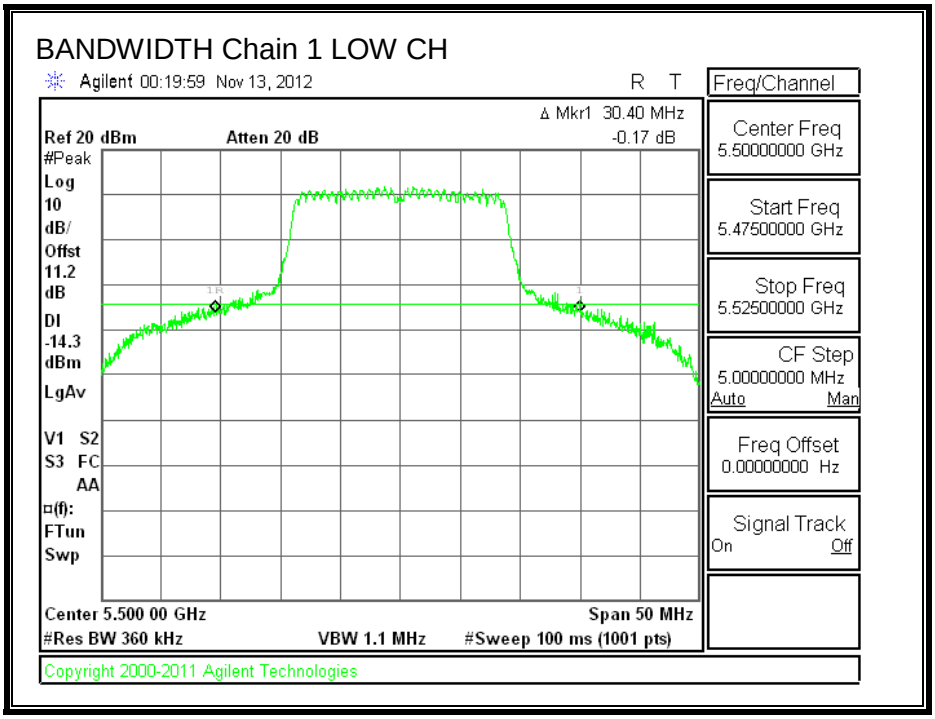
**26 dB BANDWIDTH, Chain 0**



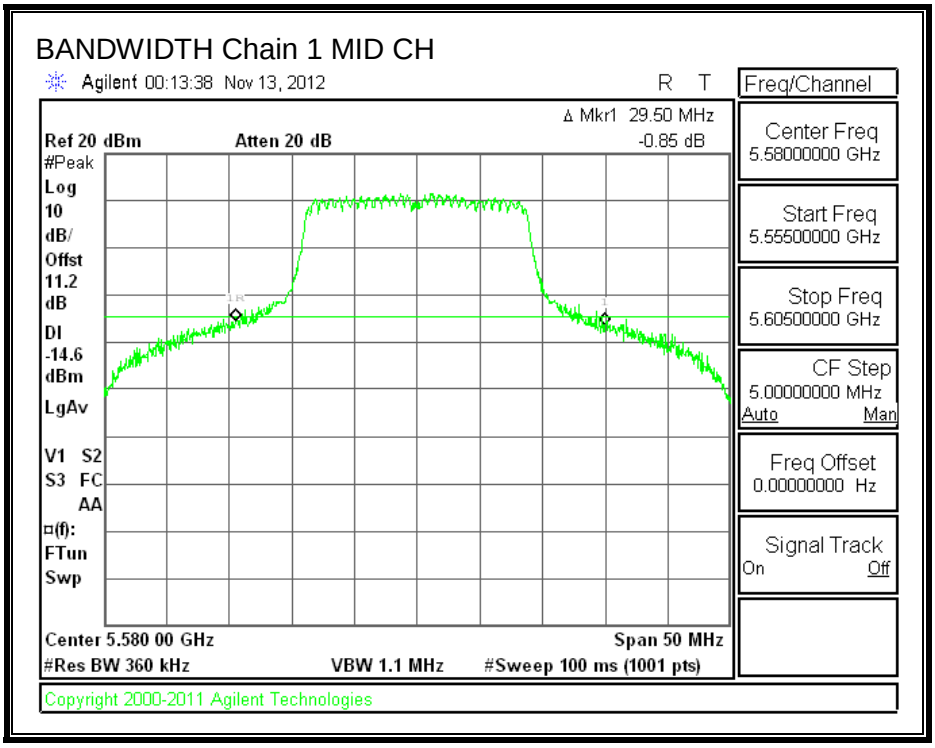





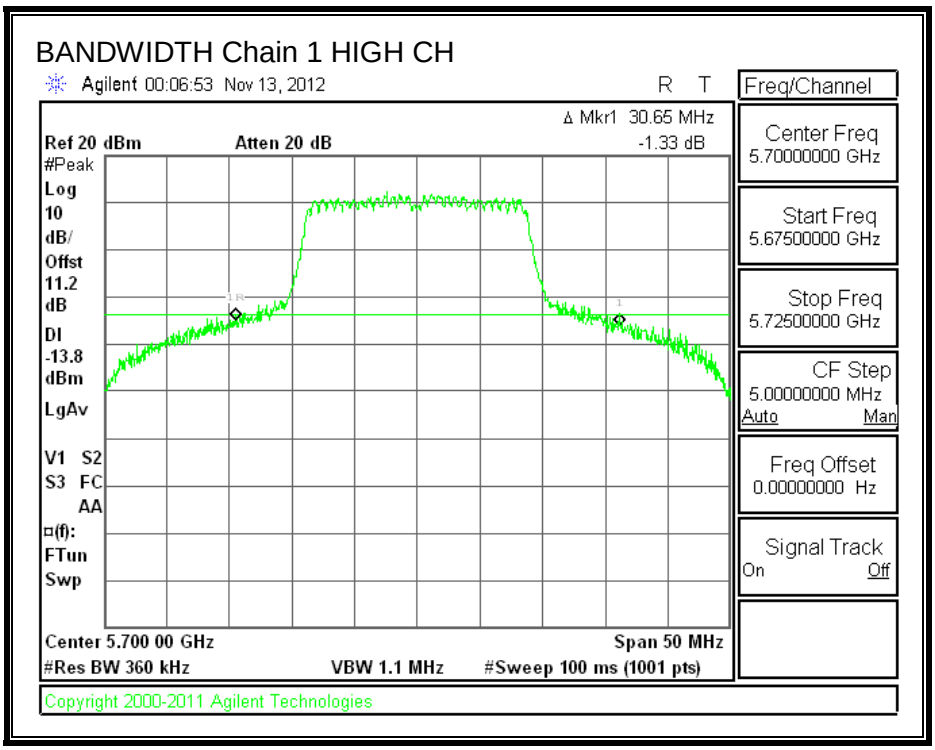

**26 dB BANDWIDTH, Chain 1**



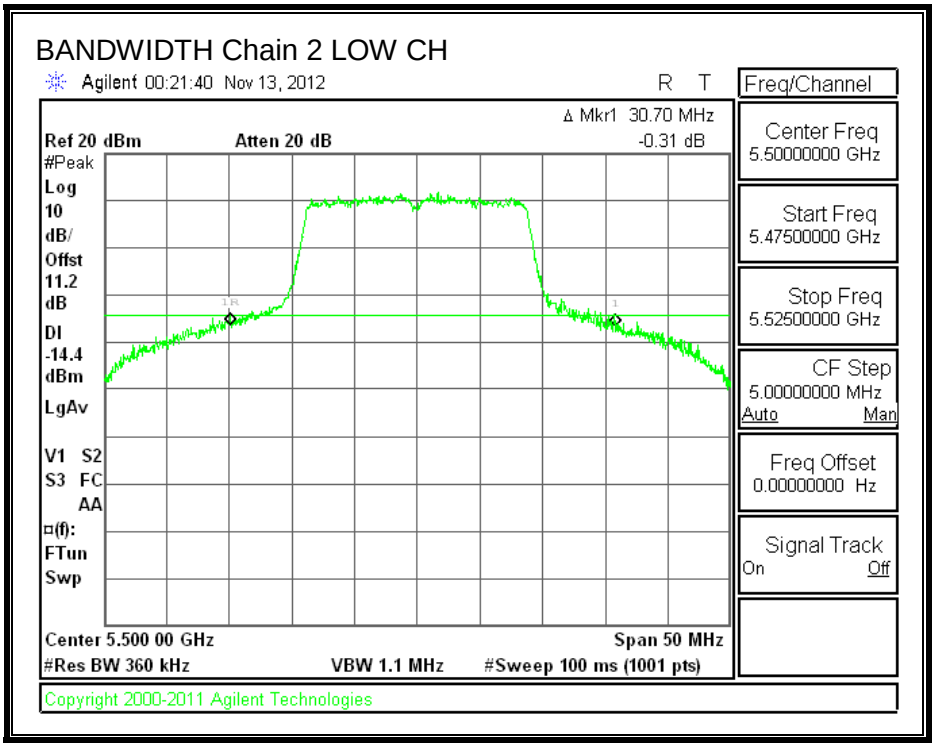
BANDWIDTH Chain 1 MID CH

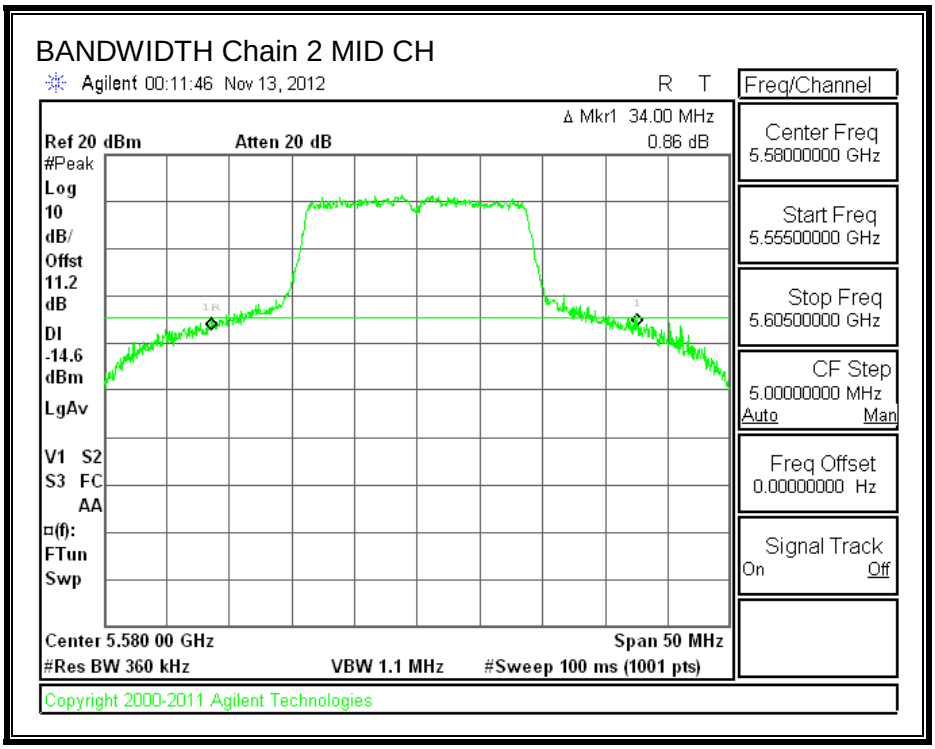



BANDWIDTH Chain 1 HIGH CH

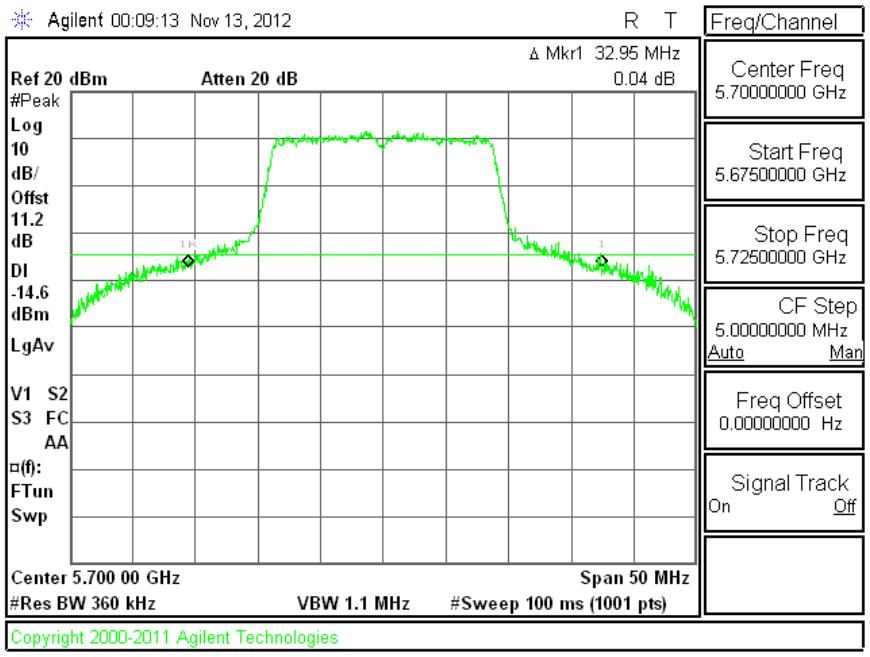


**26 dB BANDWIDTH, Chain 2**



BANDWIDTH Chain 2 HIGH CH



### 8.22.2. 99% BANDWIDTH

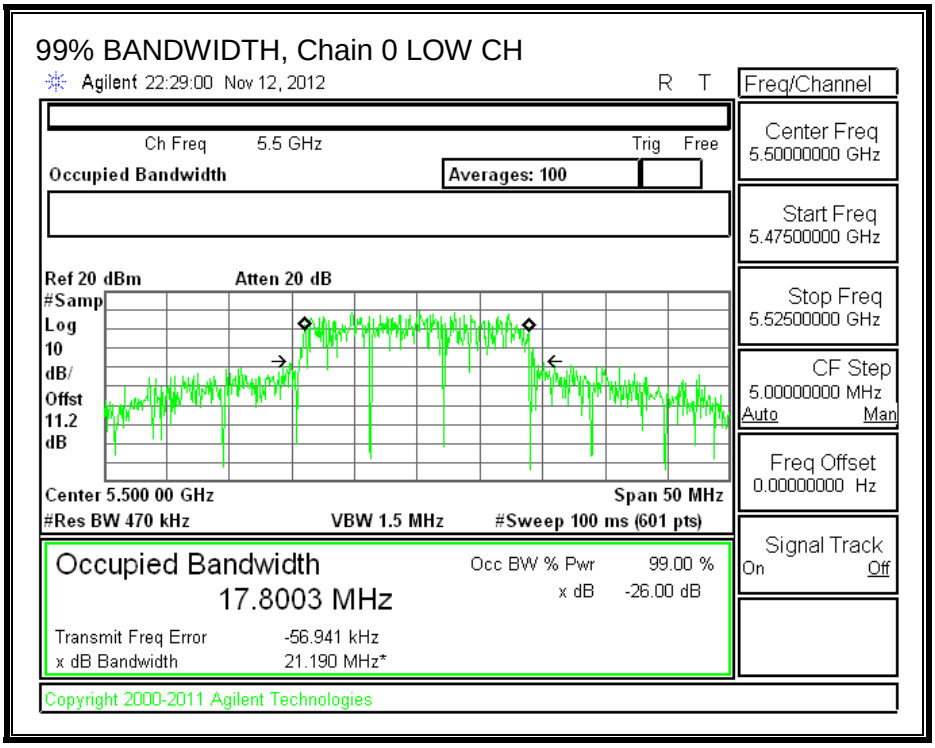
**LIMITS**

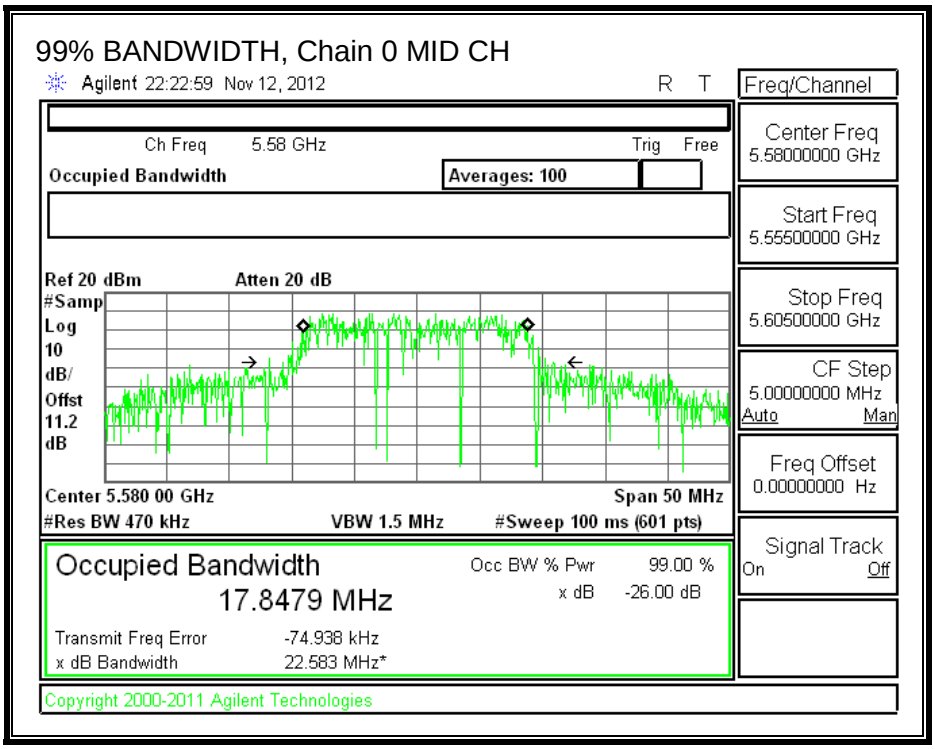
None; for reporting purposes only.

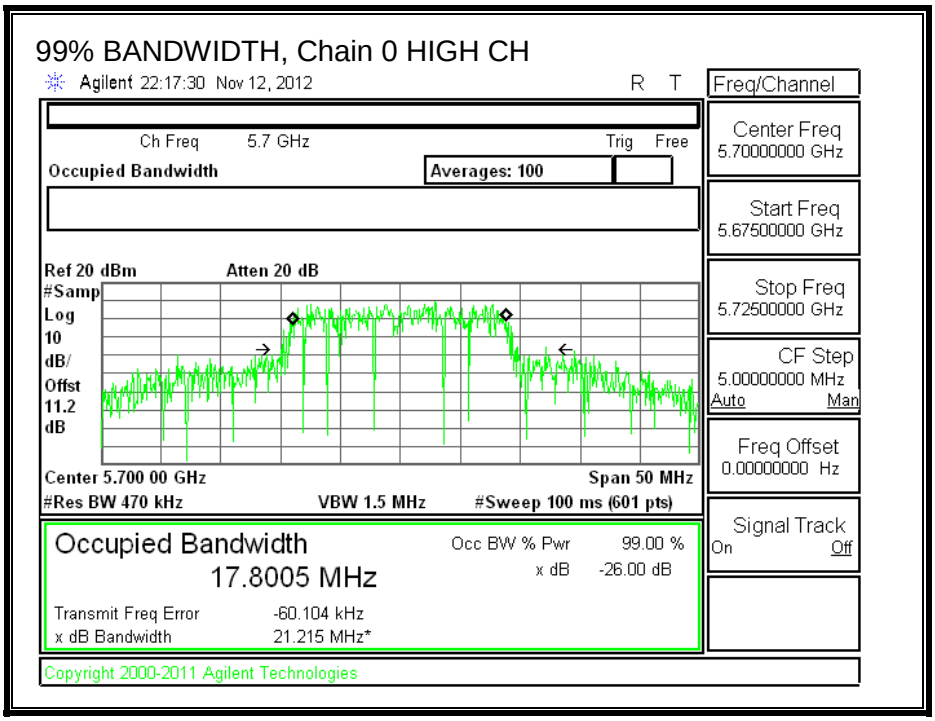
**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) | 99% BW Chain 2 (MHz) |
|---|---|---|---|---|
| Low | 5500 | 17.8003 | 17.7921 | 17.7959 |
| Mid | 5580 | 17.8479 | 17.8045 | 17.8294 |
| High | 5700 | 17.8005 | 17.8038 | 17.7957 |

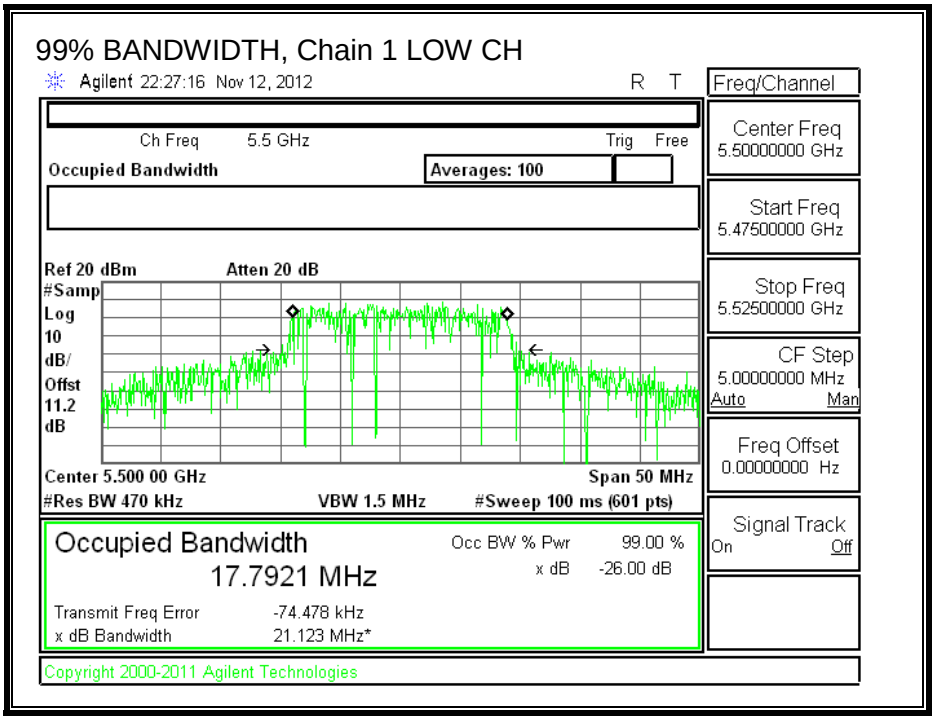
**99% BANDWIDTH, Chain 0**



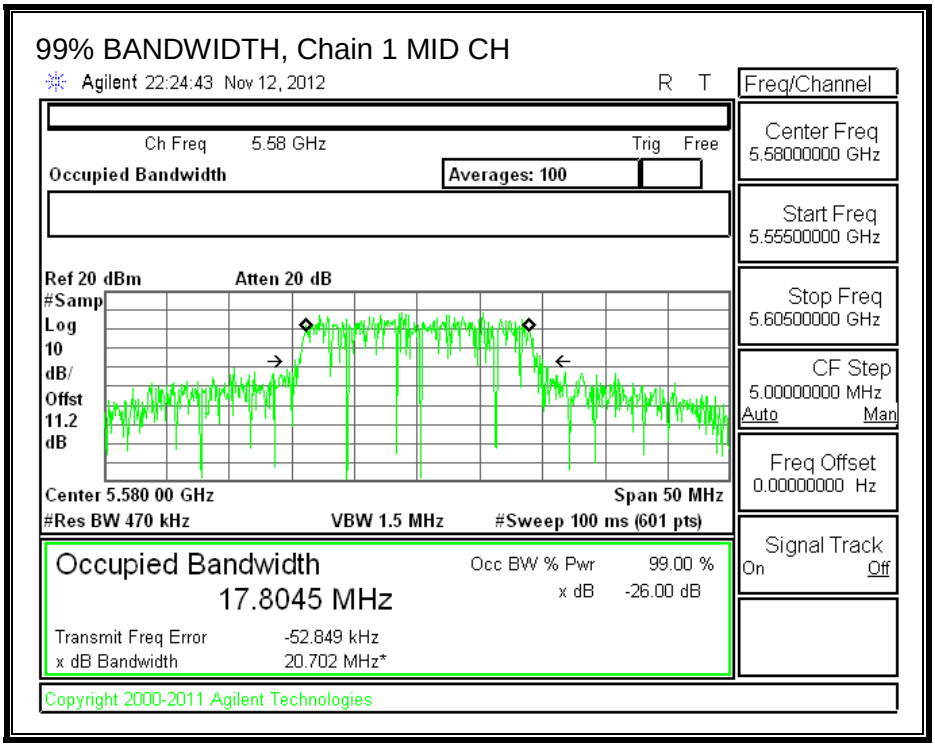





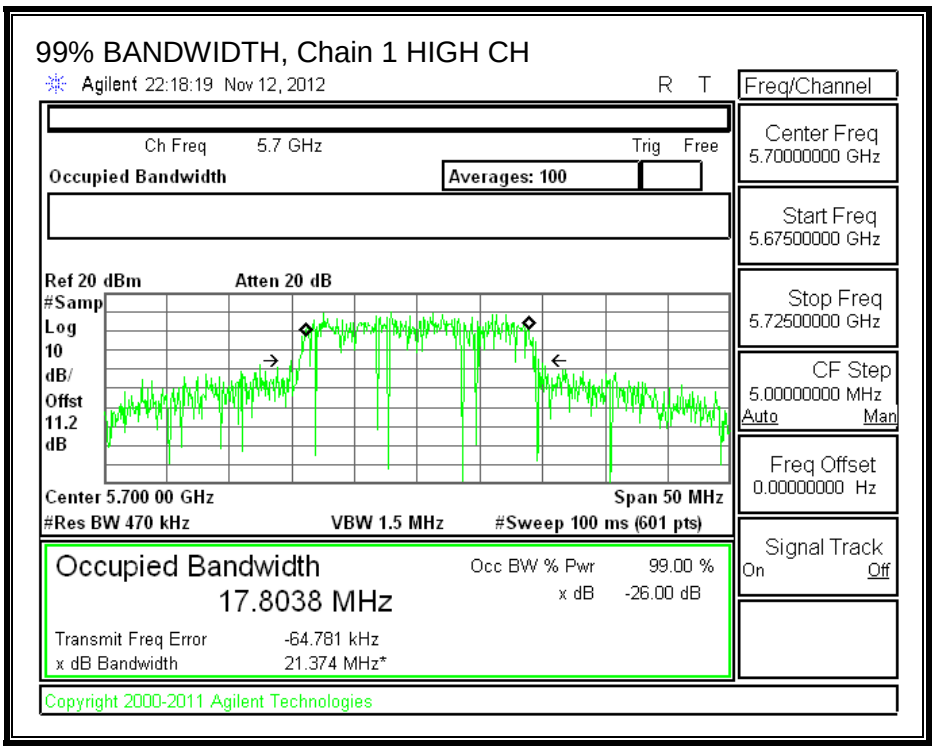

**99% BANDWIDTH, Chain 1**



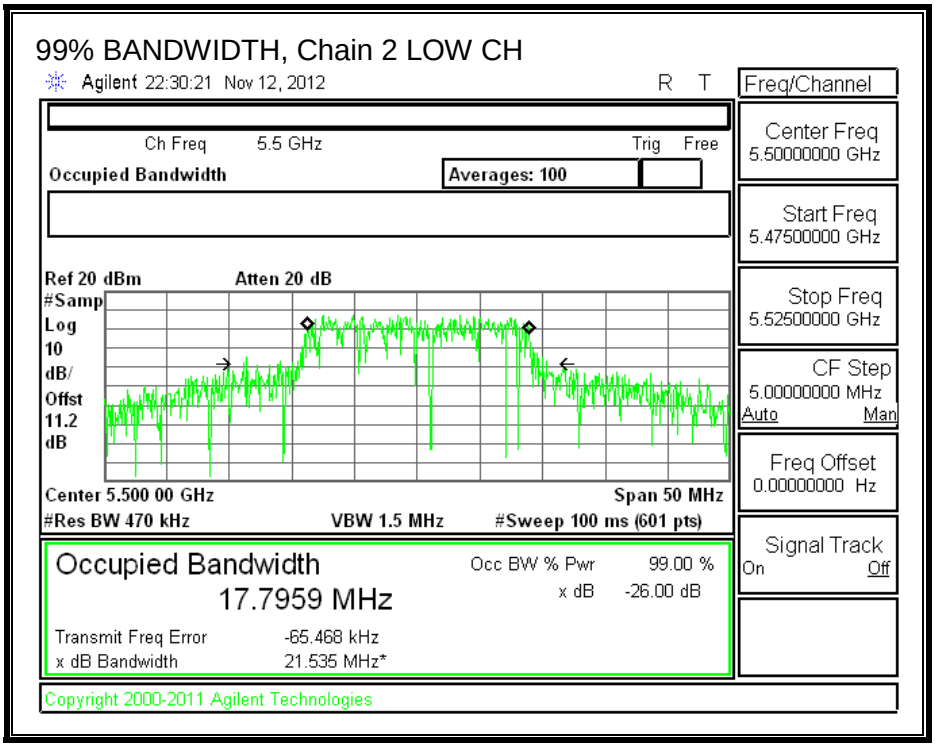
99% BANDWIDTH, Chain 1 MID CH

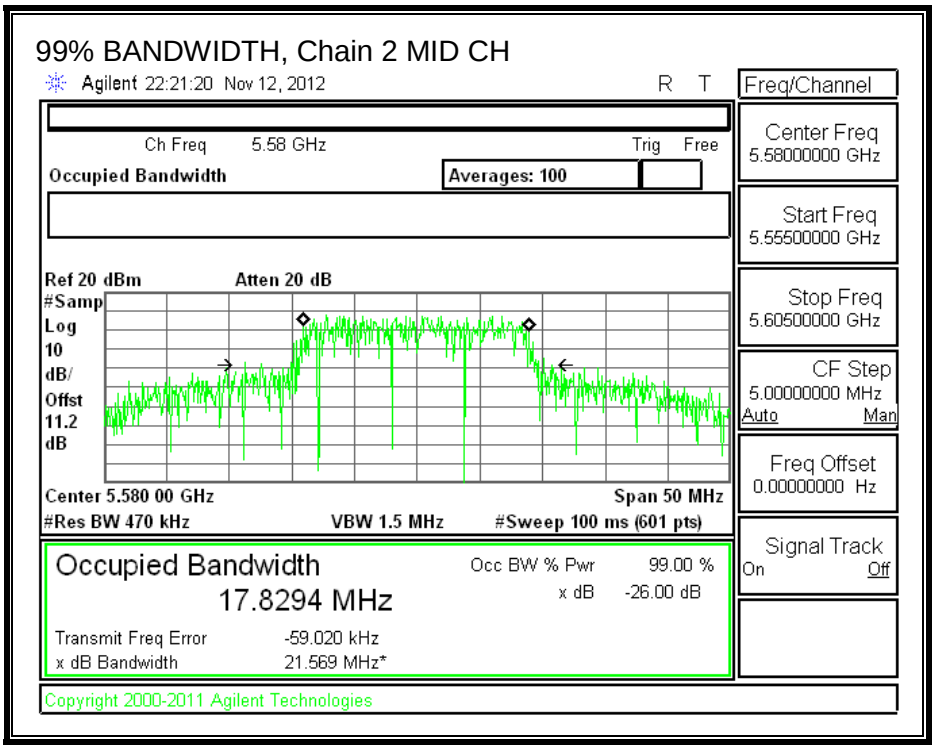


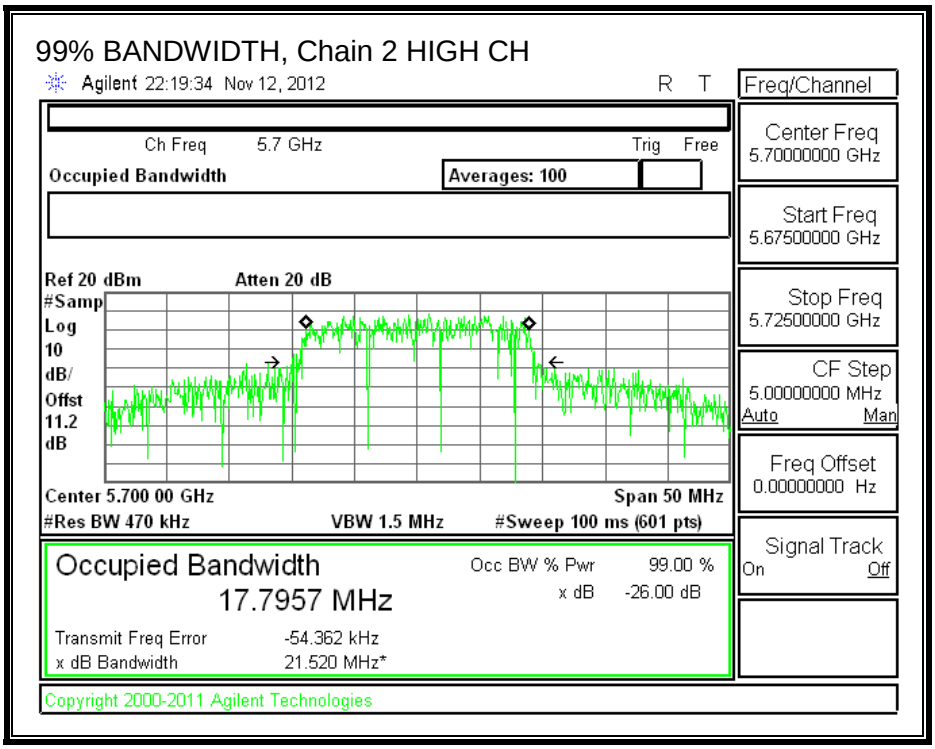

99% BANDWIDTH, Chain 1 HIGH CH



**99% BANDWIDTH, Chain 2**





## 8.22.3. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

**DIRECTIONAL ANTENNA GAIN**

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 4.72 | 2.09 | 2.85 | 3.36 |

## RESULTS

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5500 | 30.80 | 17.7921 | 3.36 |
| Mid | 5580 | 28.95 | 17.8045 | 3.36 |
| High | 5700 | 31.10 | 17.7957 | 3.36 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5500 | 24.00 | 23.50 | 29.50 | 23.50 | 11.00 | 11.00 | 11.00 |
| Mid | 5580 | 24.00 | 23.51 | 29.51 | 23.51 | 11.00 | 11.00 | 11.00 |
| High | 5700 | 24.00 | 23.50 | 29.50 | 23.50 | 11.00 | 11.00 | 11.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power & PPSD |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5500 | 18.68 | 18.63 | 18.30 | 23.31 | 23.50 | -0.19 |
| Mid | 5580 | 18.78 | 18.59 | 18.58 | 23.42 | 23.51 | -0.08 |
| High | 5700 | 17.51 | 17.50 | 17.40 | 22.24 | 23.50 | -1.26 |

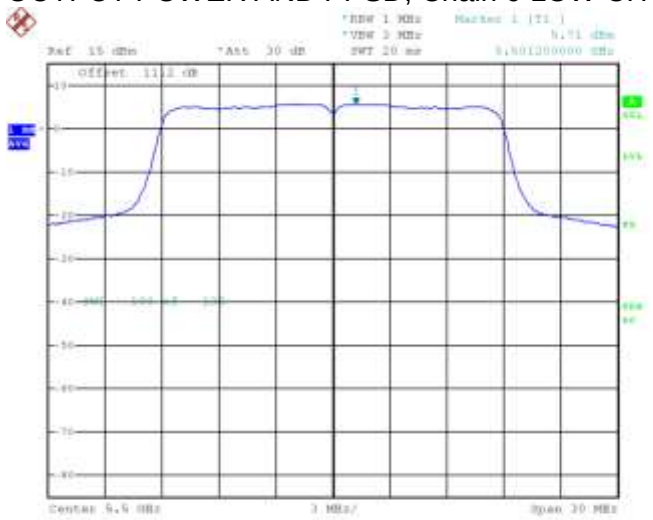
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5500 | 5.71 | 5.59 | 5.42 | 10.35 | 11.00 | -0.65 |
| Mid | 5580 | 5.76 | 5.77 | 5.77 | 10.54 | 11.00 | -0.46 |
| High | 5700 | 5.89 | 6.18 | 6.23 | 10.87 | 11.00 | -0.13 |

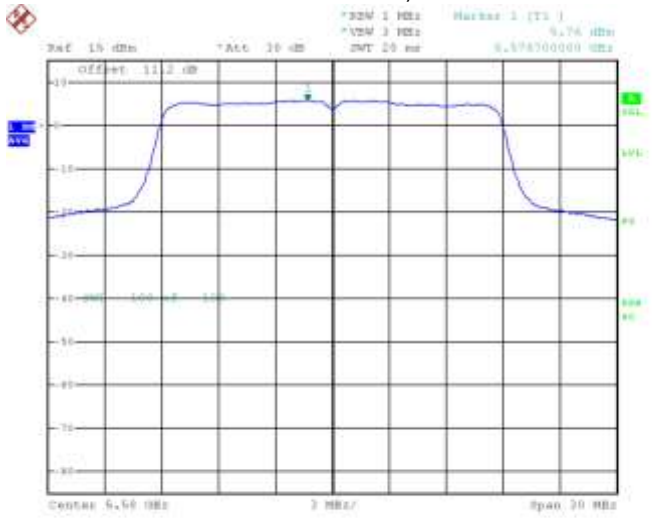
**Note:** method (1) “Measure and sum the spectra across the outputs” as specified in KDB 662911 D01 v01r02 was used for Low and Middle channels for this PSD measurements.

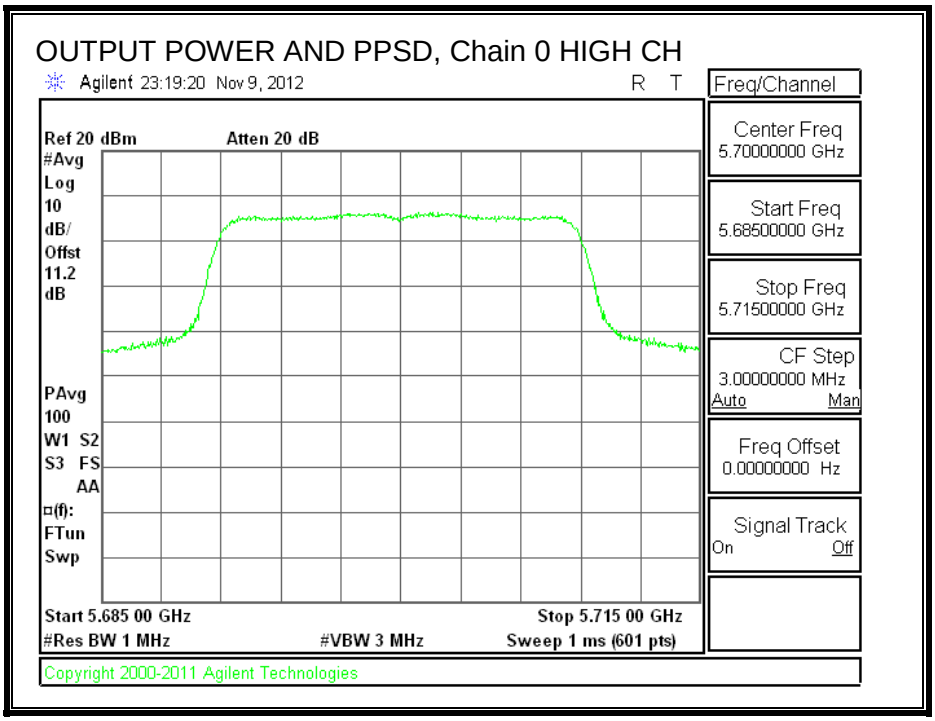
**OUTPUT POWER AND PPSD, Chain 0**

OUTPUT POWER AND PPSD, Chain 0 LOW CH

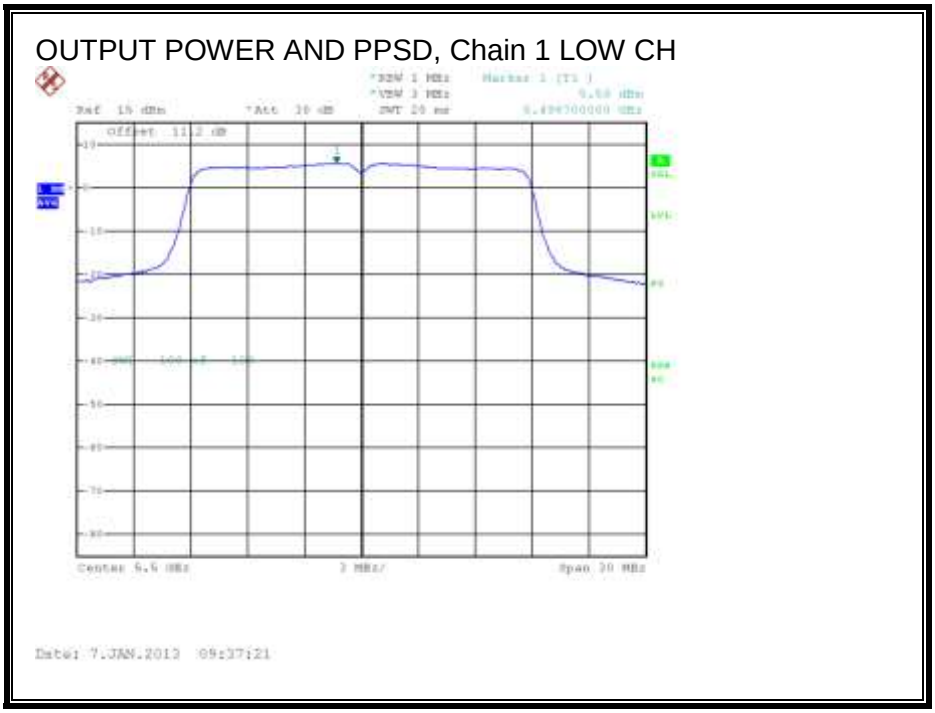


OUTPUT POWER AND PPSD, Chain 0 MID CH

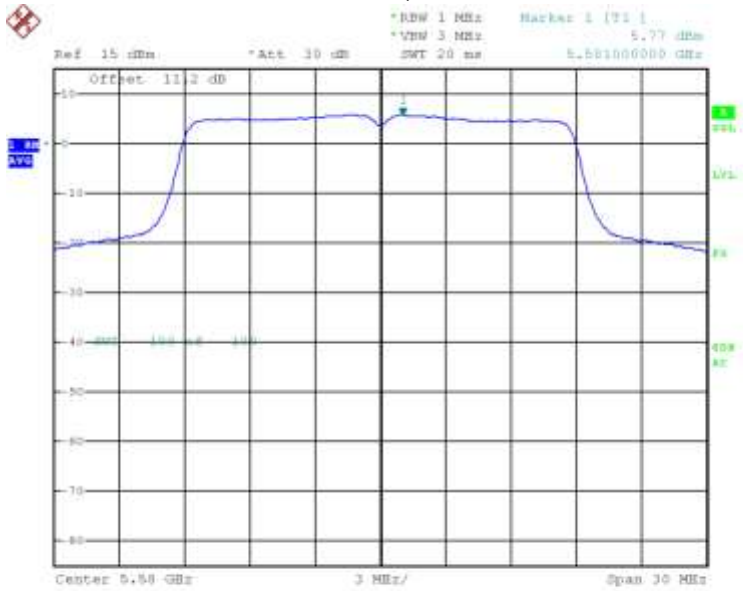





**OUTPUT POWER AND PPSD, Chain 1**

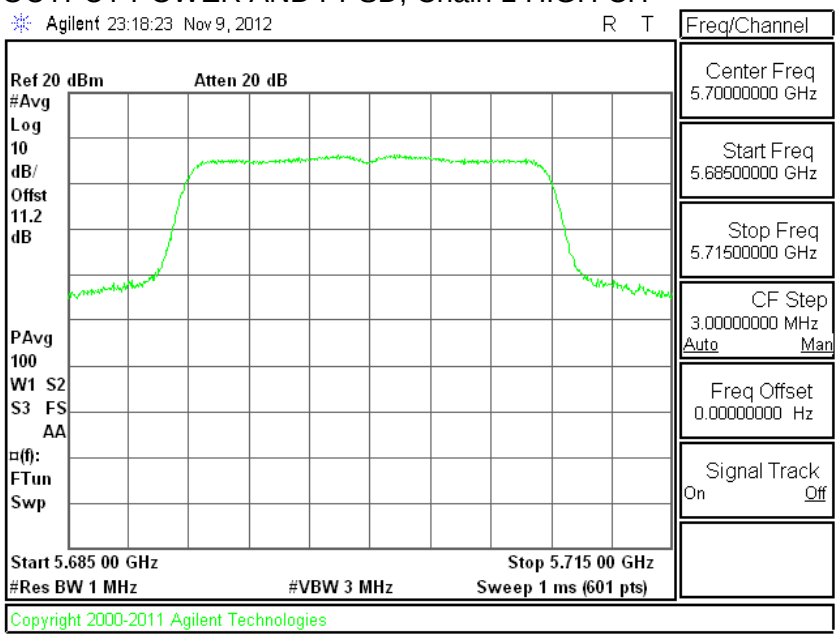


OUTPUT POWER AND PPSD, Chain 1 MID CH



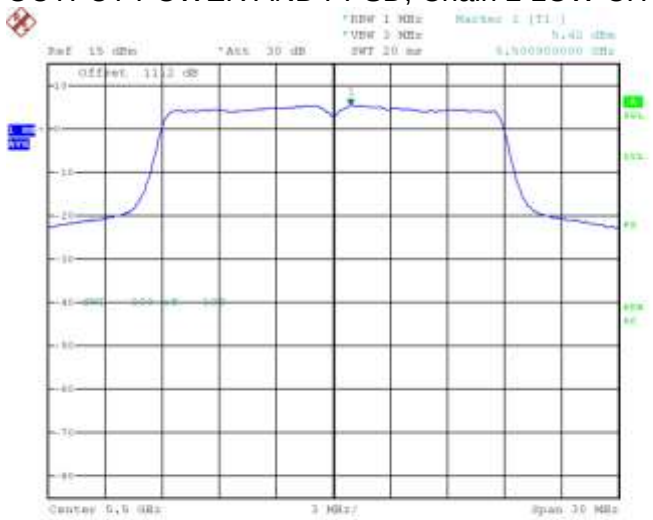

Date: 7.JAN.2013 10:06:45

OUTPUT POWER AND PPSD, Chain 1 HIGH CH

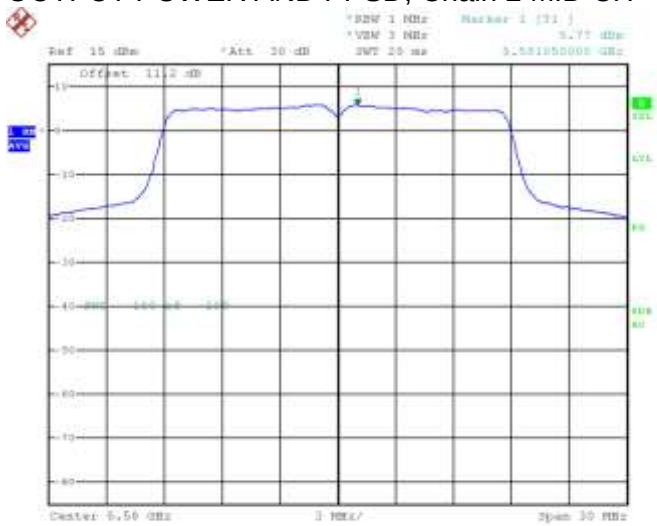


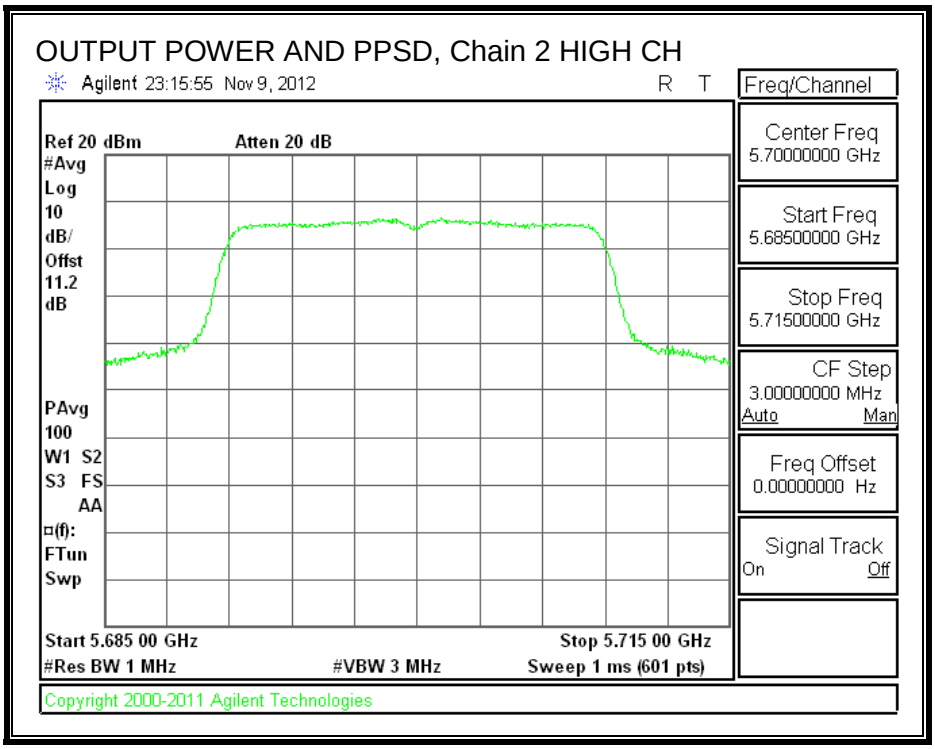
**OUTPUT POWER AND PPSD, Chain 2**

OUTPUT POWER AND PPSD, Chain 2 LOW CH




OUTPUT POWER AND PPSD, Chain 2 MID CH





## 8.23. 802.11n HT40 1TX MODE, 5.6 GHz BAND

### 8.23.1. 26 dB BANDWIDTH

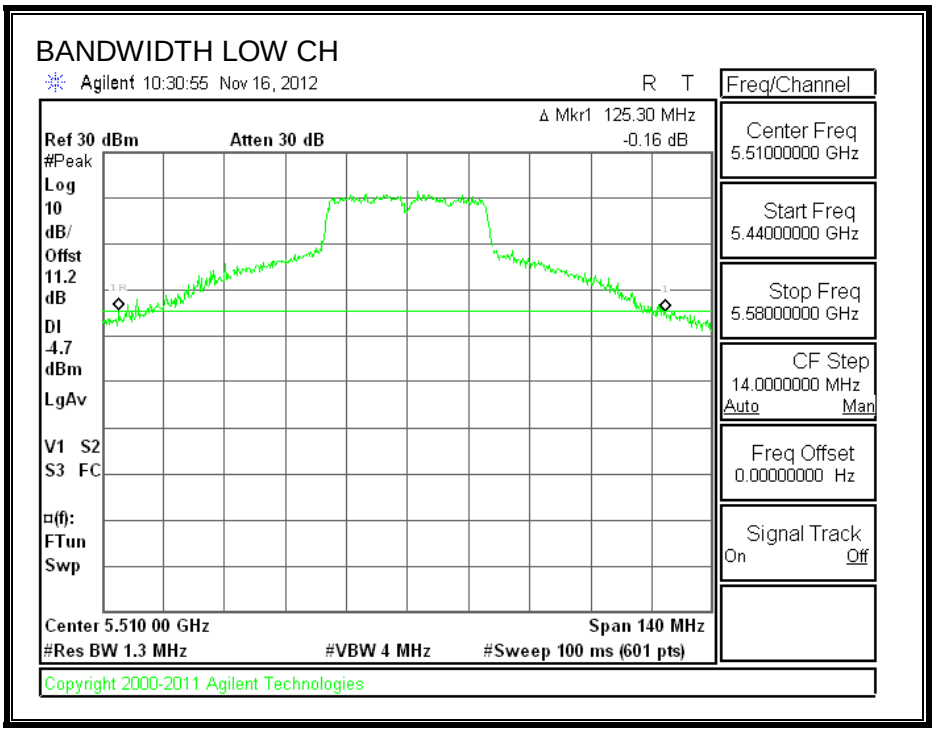
**LIMITS**

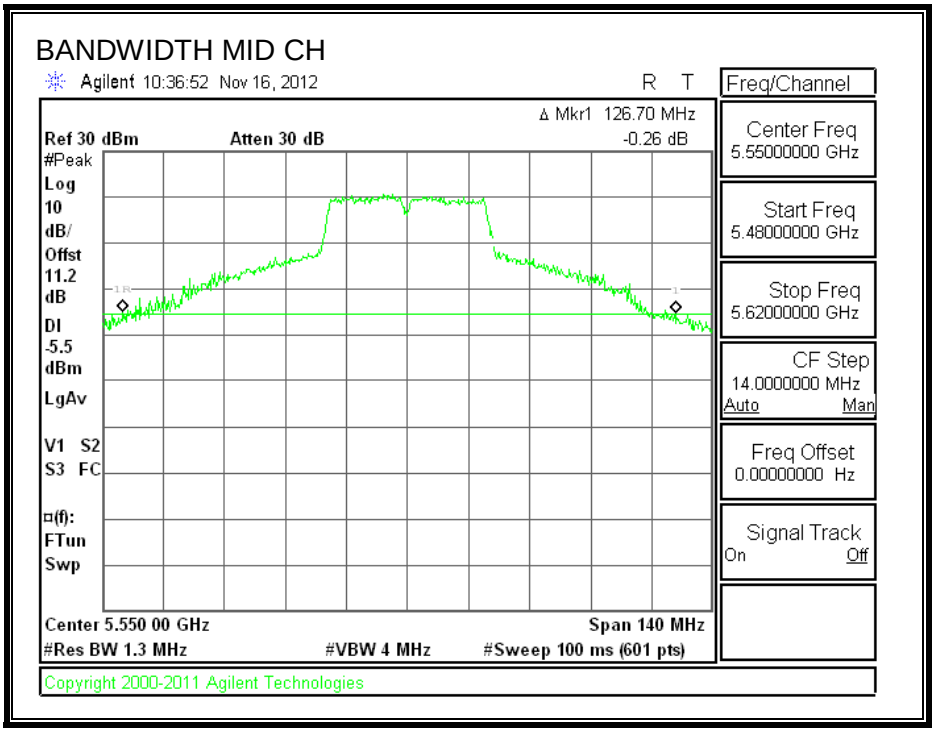
None; for reporting purposes only.

**RESULTS**

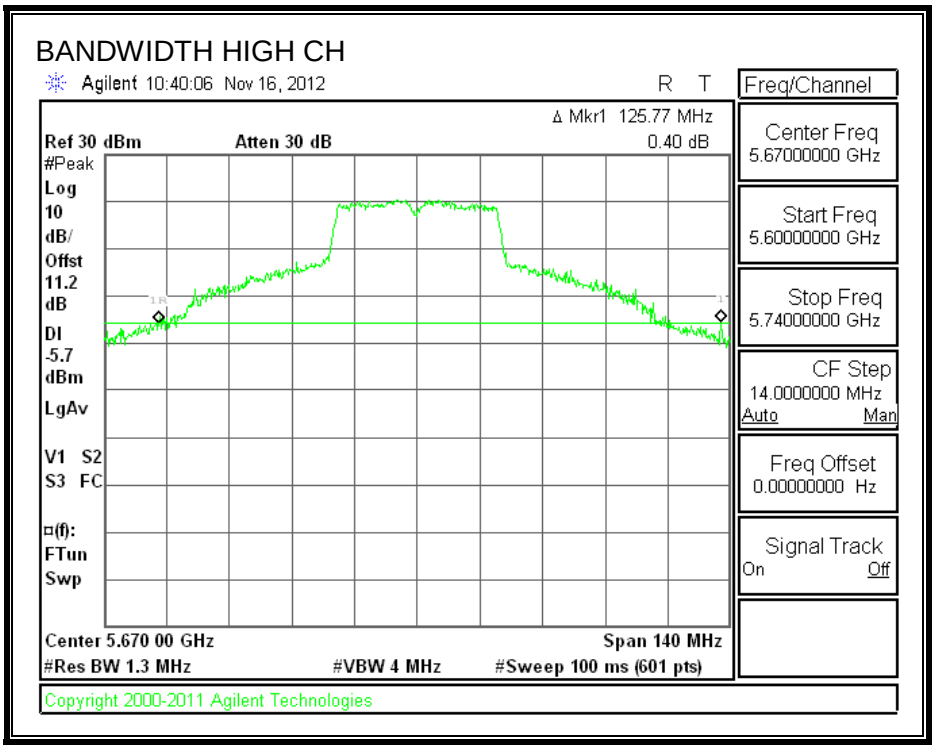
| Channel | Frequency (MHz) | 26 dB Bandwidth (MHz) |
|---|---|---|
| Low | 5510 | 125.30 |
| Mid | 5550 | 126.70 |
| High | 5670 | 125.77 |

**26 dB BANDWIDTH**



BANDWIDTH HIGH CH



### 8.23.2. 99% BANDWIDTH

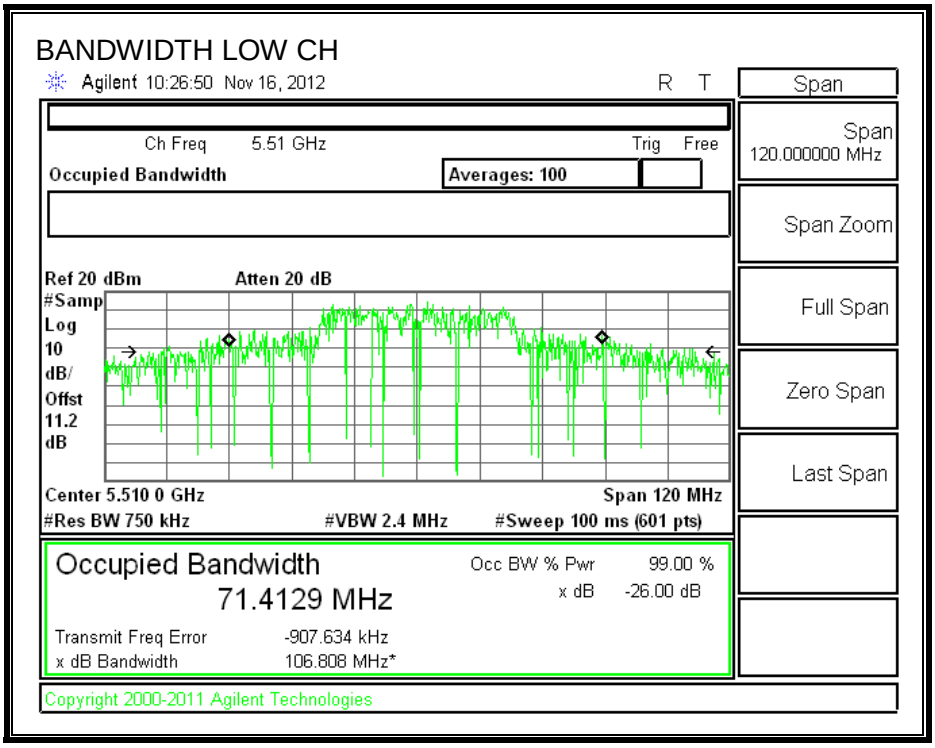
**LIMITS**

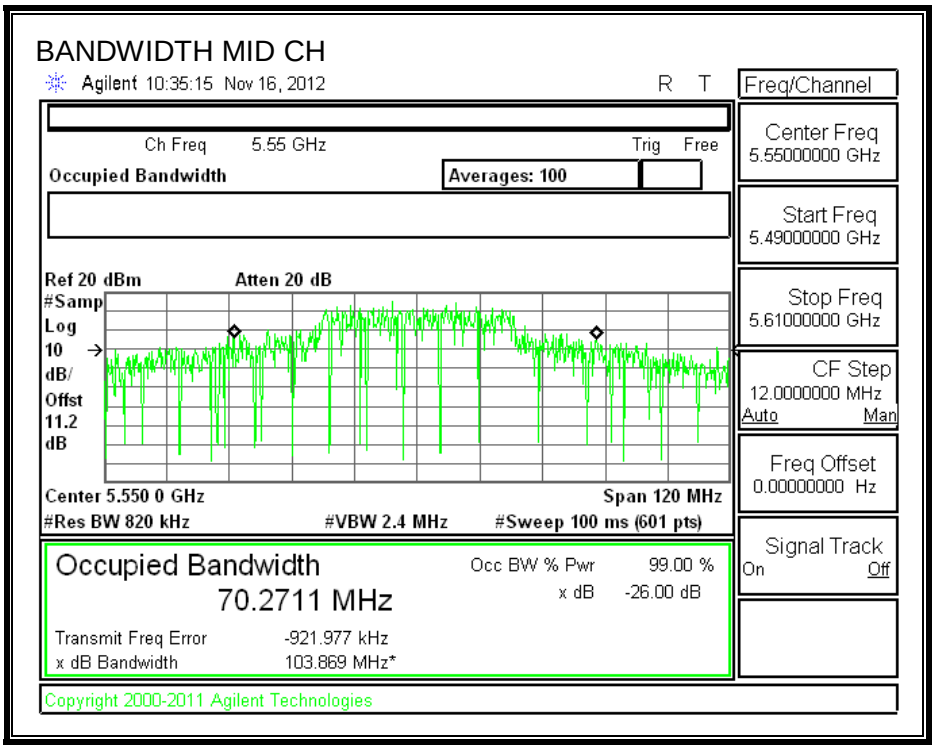
None; for reporting purposes only.

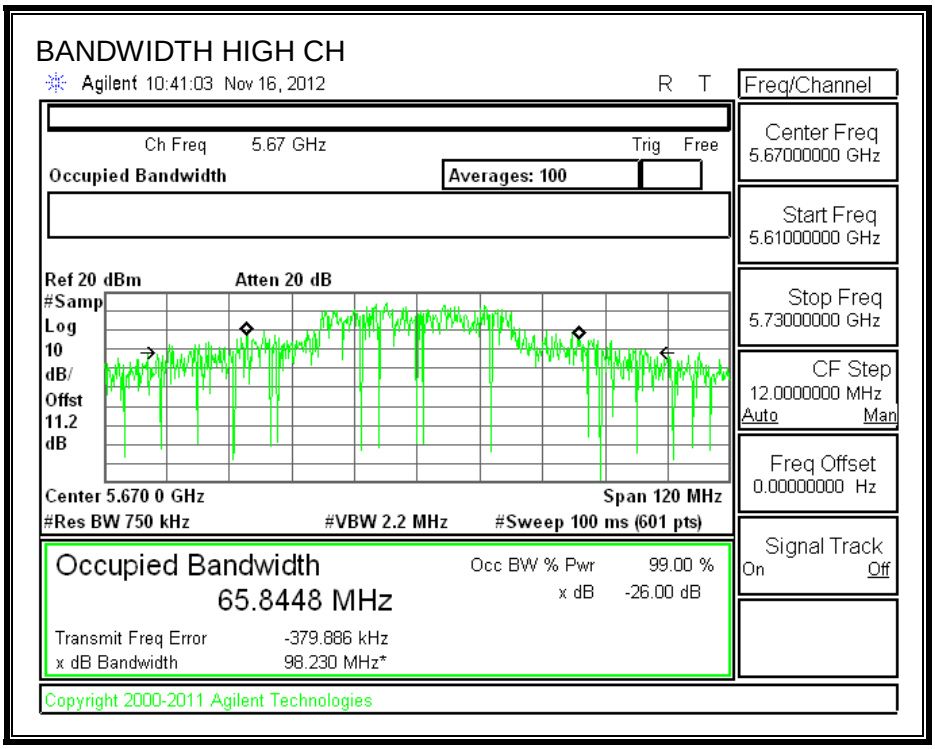
**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 5510 | 71.4129 |
| Mid | 5550 | 70.2711 |
| High | 5670 | 65.8448 |

**99% BANDWIDTH**





## 8.23.3. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

**DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

## RESULTS

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5510 | 125.30 | 71.4129 | 4.72 |
| Mid | 5550 | 126.70 | 70.2711 | 4.72 |
| High | 5670 | 125.77 | 65.8448 | 4.72 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5510 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |
| Mid | 5550 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |
| High | 5670 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |

| Duty Cycle CF (dB) | 0.23 | Included in Calculations of Corr'd PPSD |
|---|---|---|

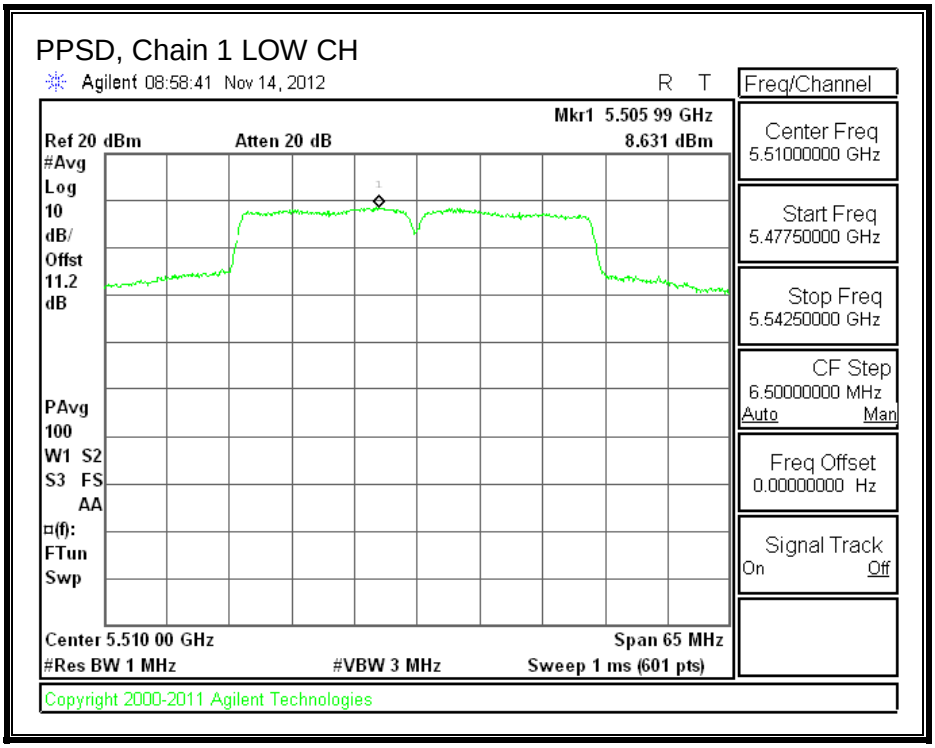
**Output Power Results**

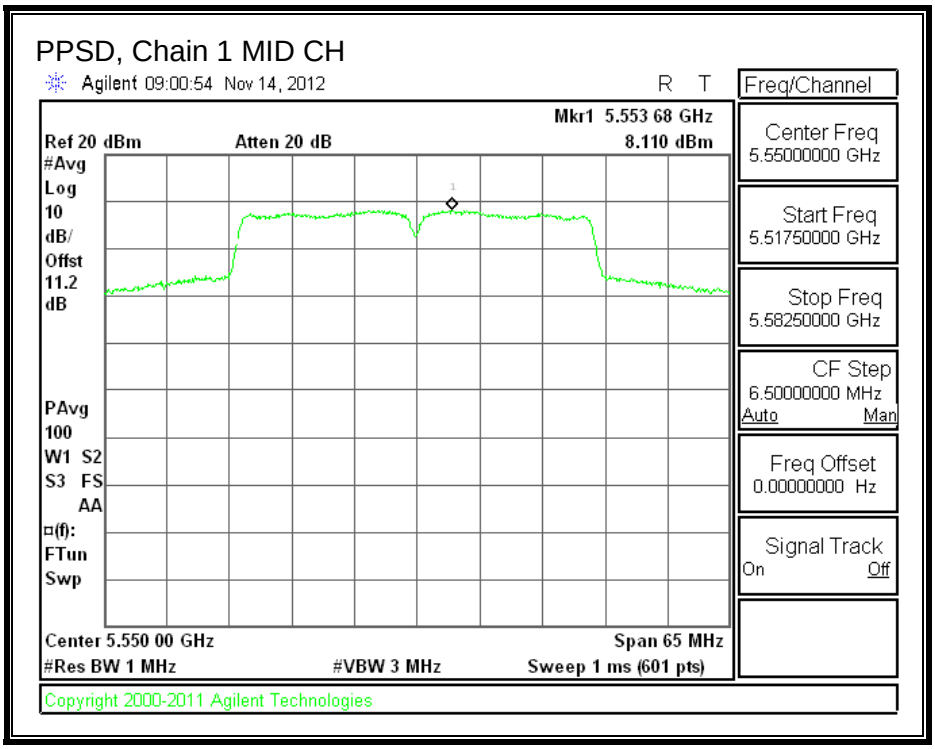
| Channel | Frequency (MHz) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| Low | 5510 | 16.57 | 16.57 | 24.00 | -7.43 |
| Mid | 5550 | 23.05 | 23.05 | 24.00 | -0.95 |
| High | 5670 | 18.71 | 18.71 | 24.00 | -5.29 |

**PPSD Results**

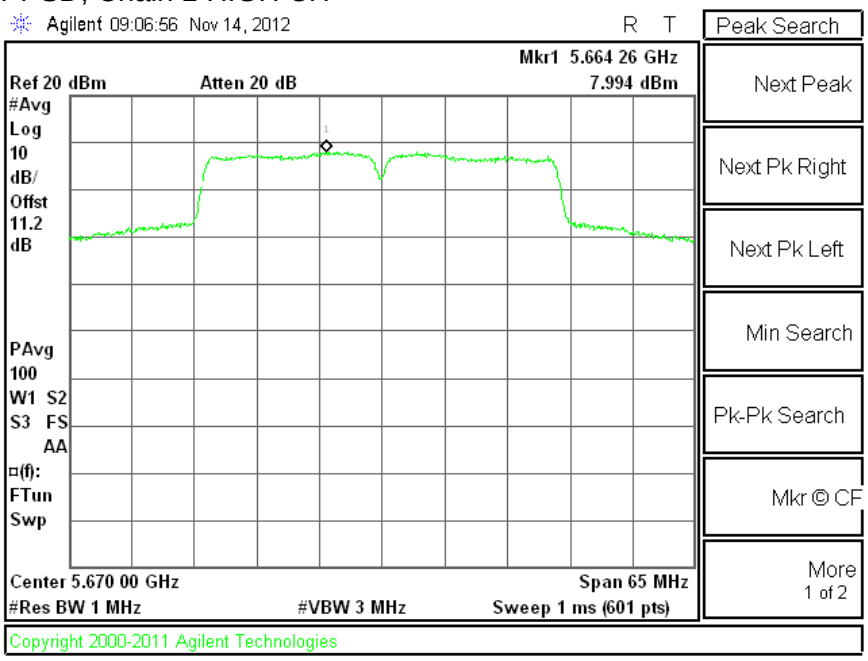
| Channel | Frequency (MHz) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| Low | 5510 | 8.631 | 8.861 | 11.00 | -2.139 |
| Mid | 5550 | 8.110 | 8.340 | 11.00 | -2.660 |
| High | 5670 | 7.994 | 8.224 | 11.00 | -2.776 |

**PPSD, Chain 1**



PPSD, Chain 1 HIGH CH



## 8.24. 802.11n HT40 CDD 3TX MODE, 5.6 GHz BAND

### 8.24.1. 26 dB BANDWIDTH

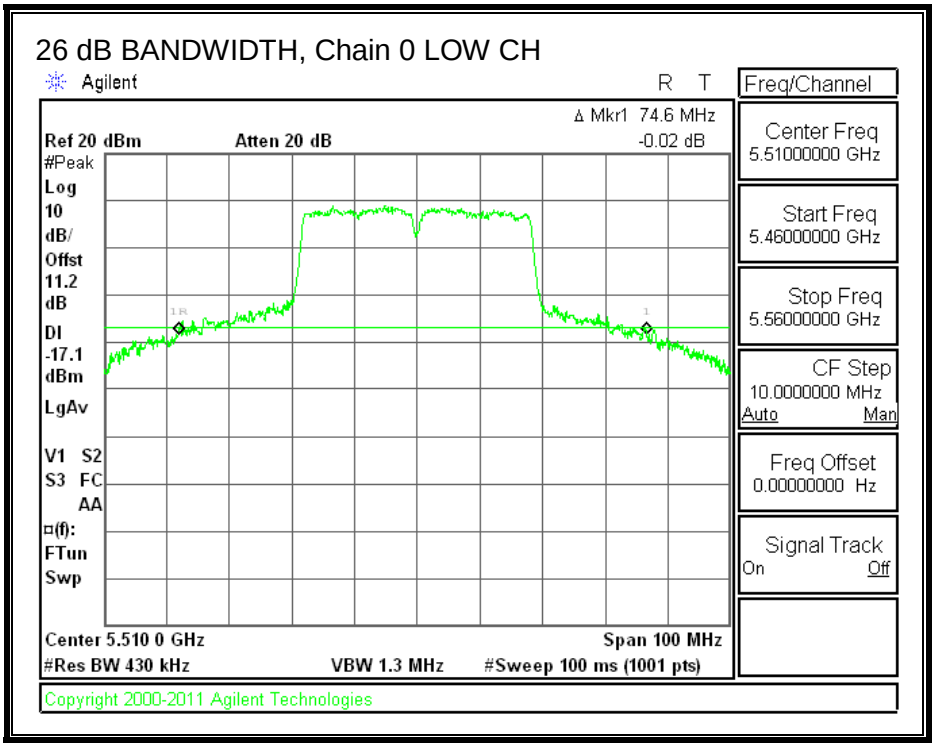
**LIMITS**

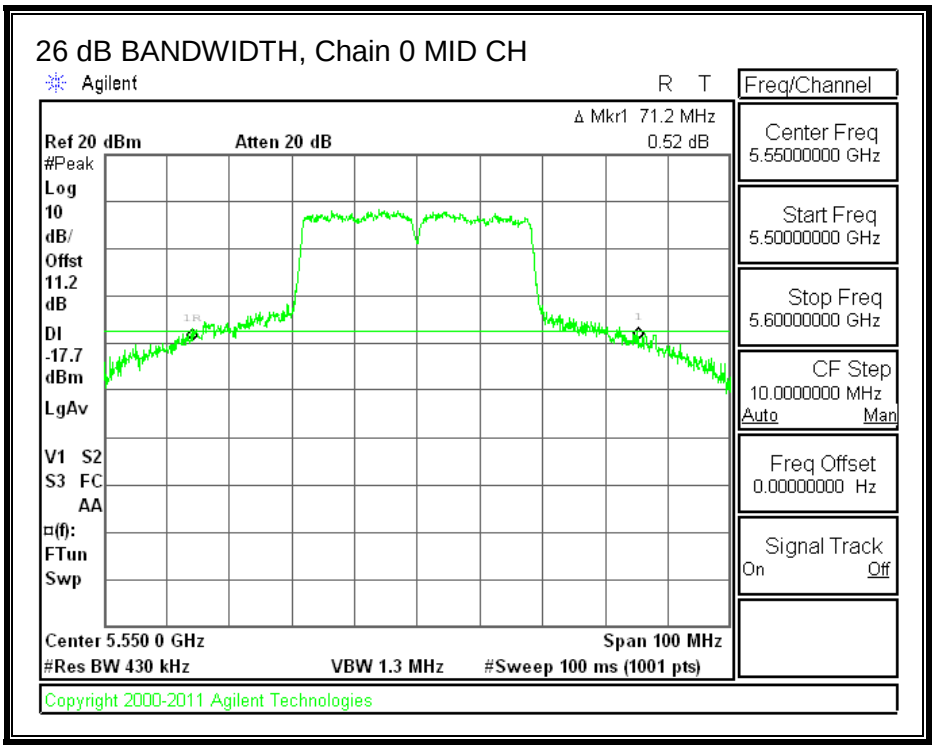
None; for reporting purposes only.

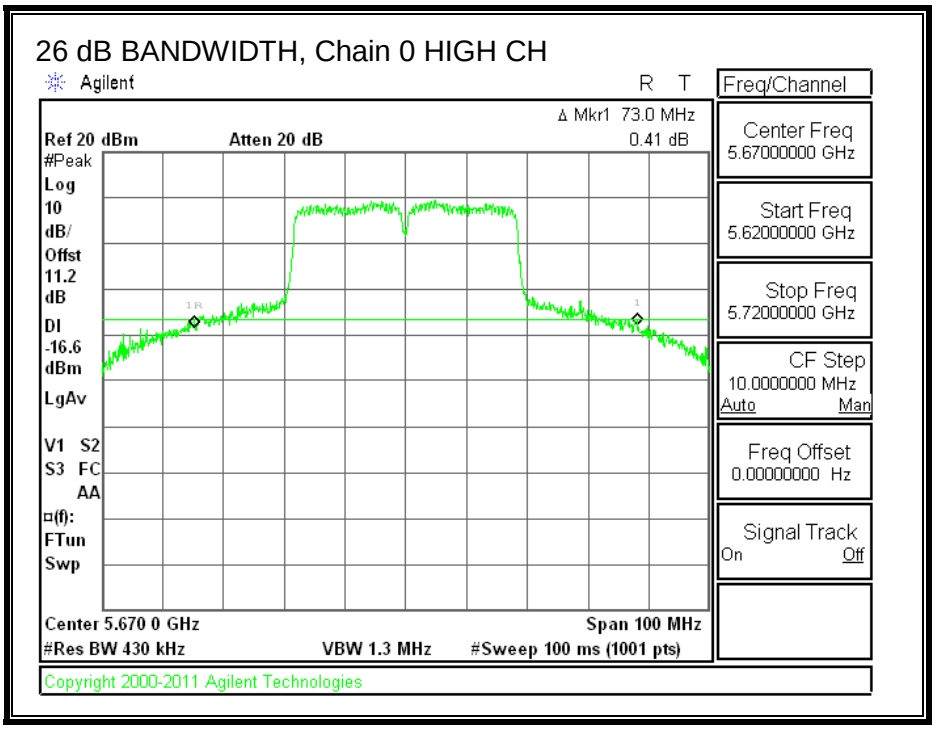
**RESULTS**

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) | 26 dB BW Chain 2 (MHz) |
|---|---|---|---|---|
| Low | 5510 | 74.6 | 65.2 | 72.1 |
| Mid | 5550 | 71.2 | 63.8 | 72.1 |
| High | 5670 | 73.0 | 58.3 | 74.1 |

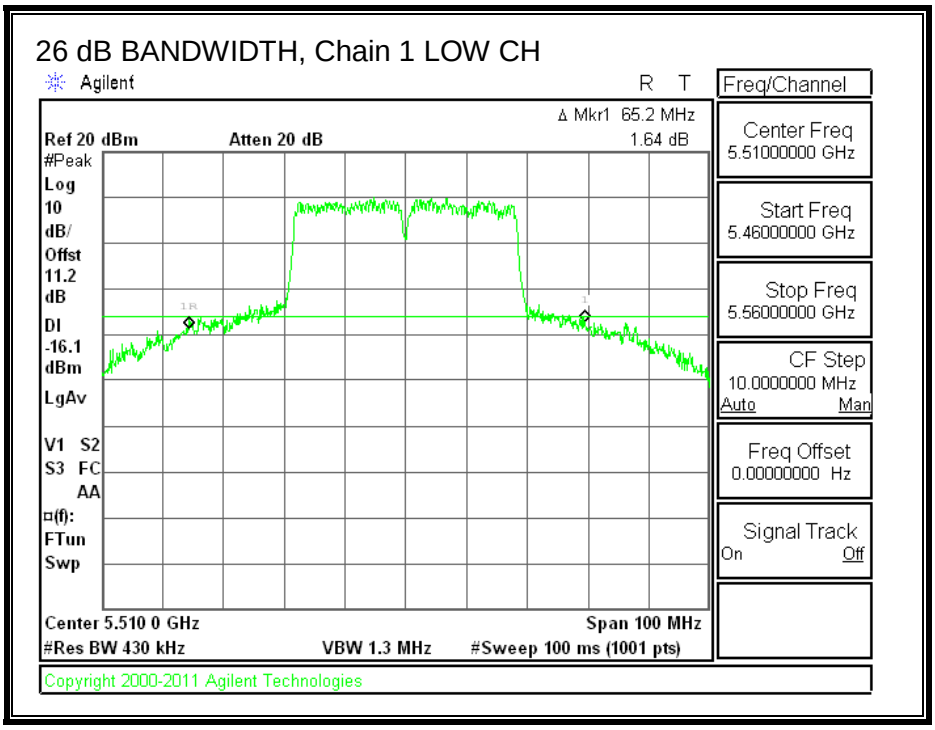
**26 dB BANDWIDTH, Chain 0**



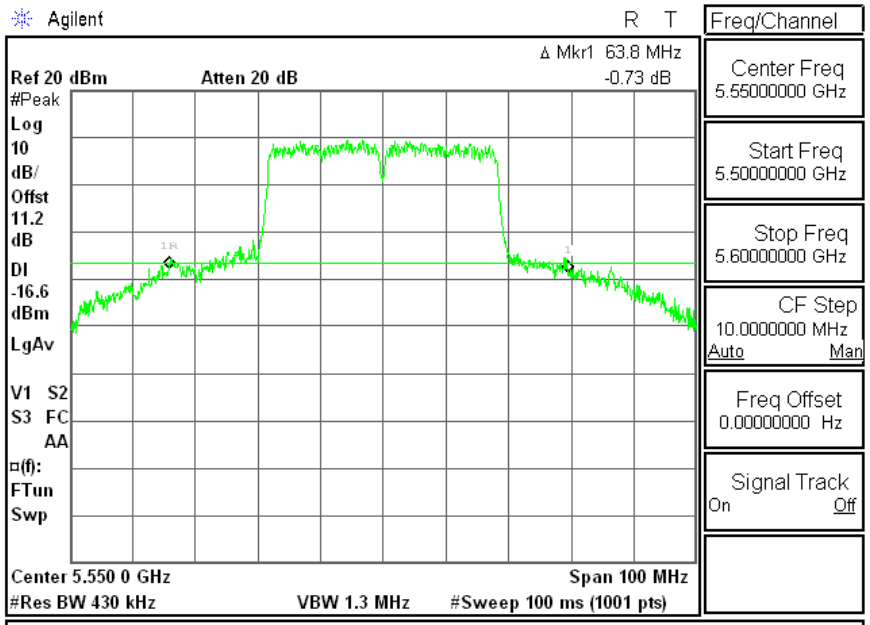





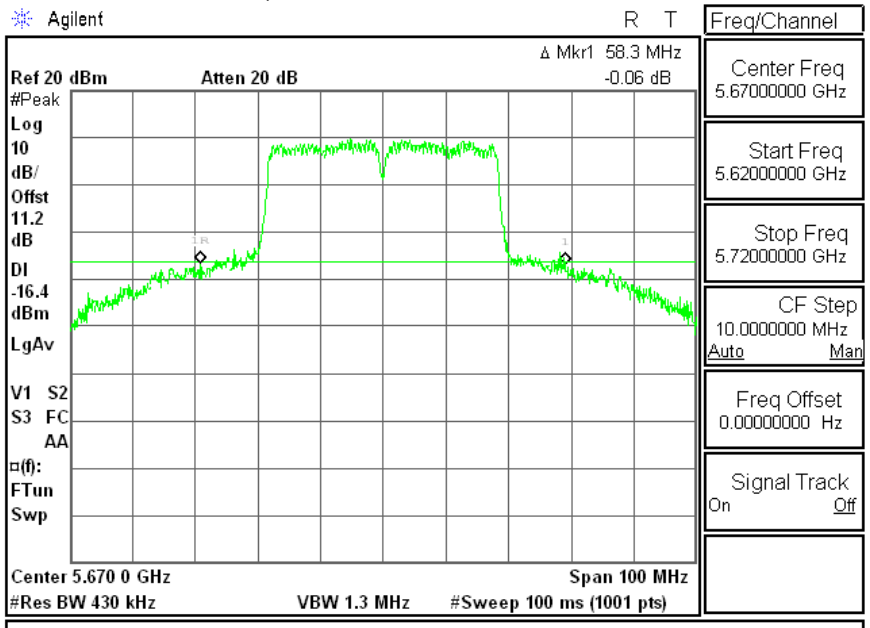

**26 dB BANDWIDTH, Chain 1**



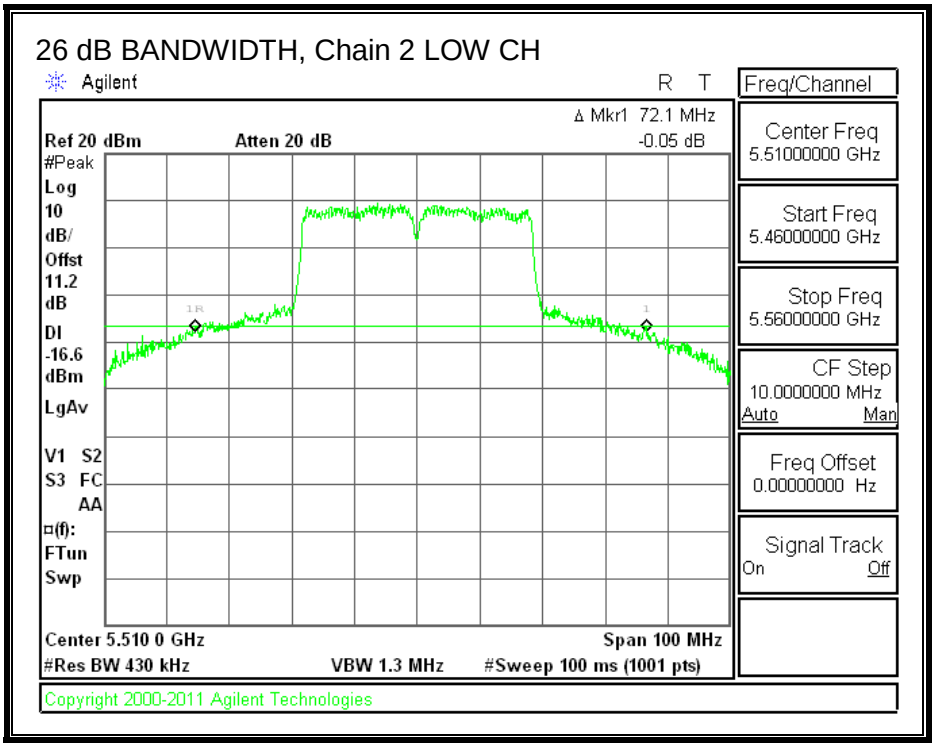
26 dB BANDWIDTH, Chain 1 MID CH

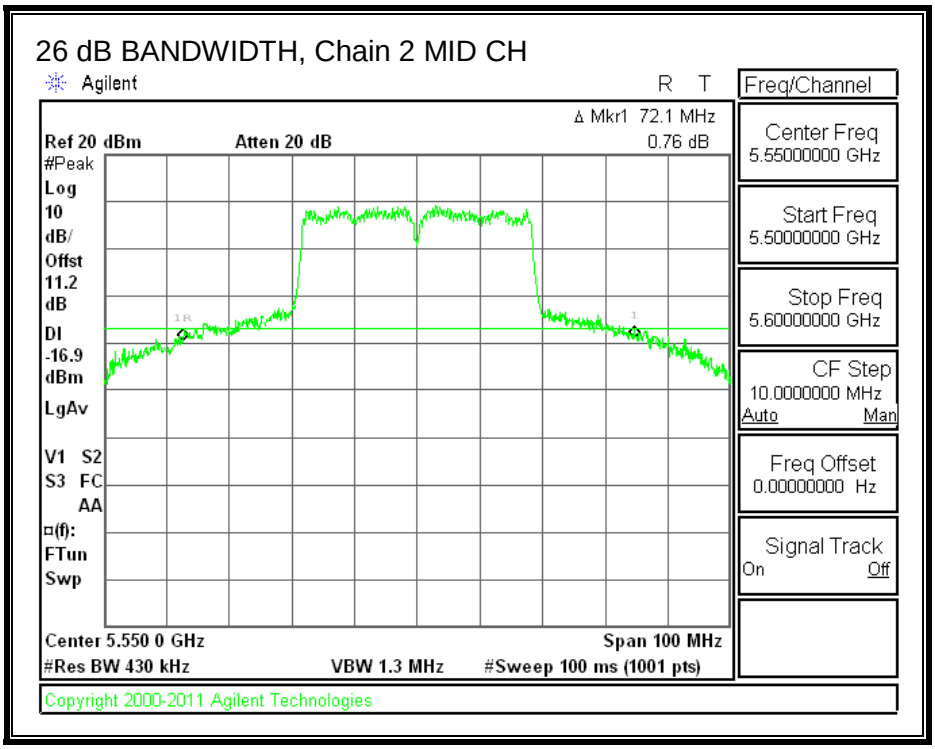


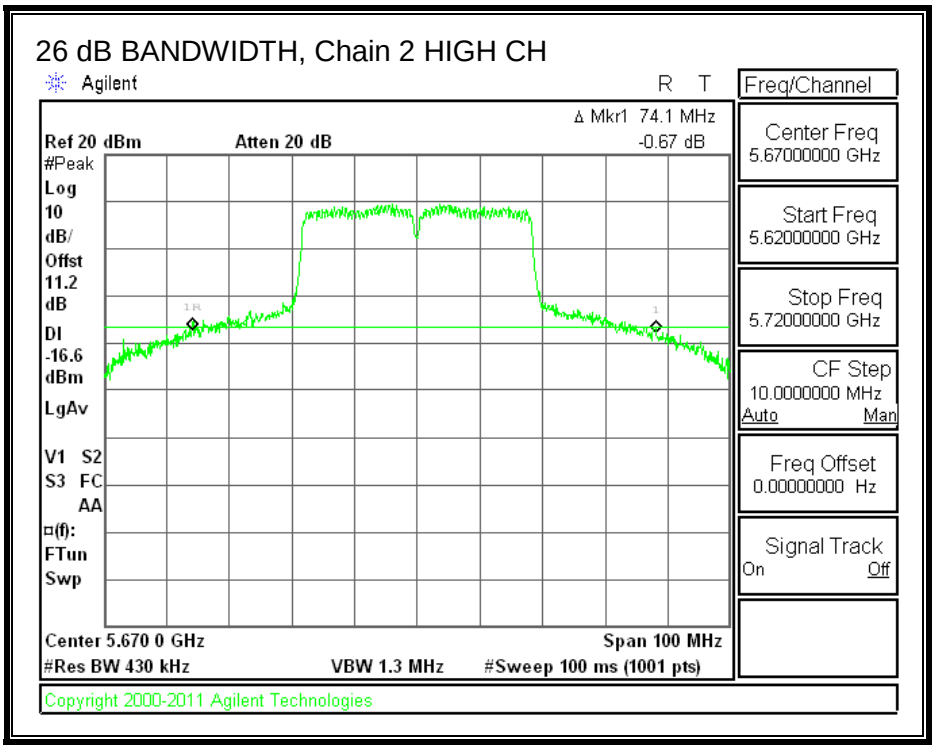

26 dB BANDWIDTH, Chain 1 HIGH CH



**26 dB BANDWIDTH, Chain 2**





### 8.24.2. 99% BANDWIDTH

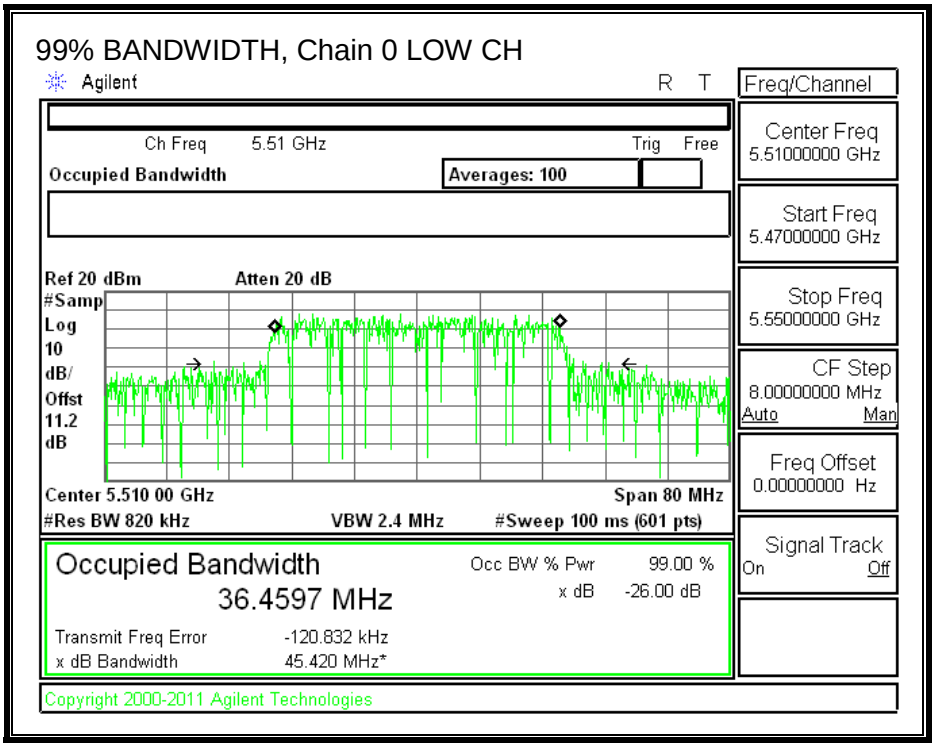
**LIMITS**

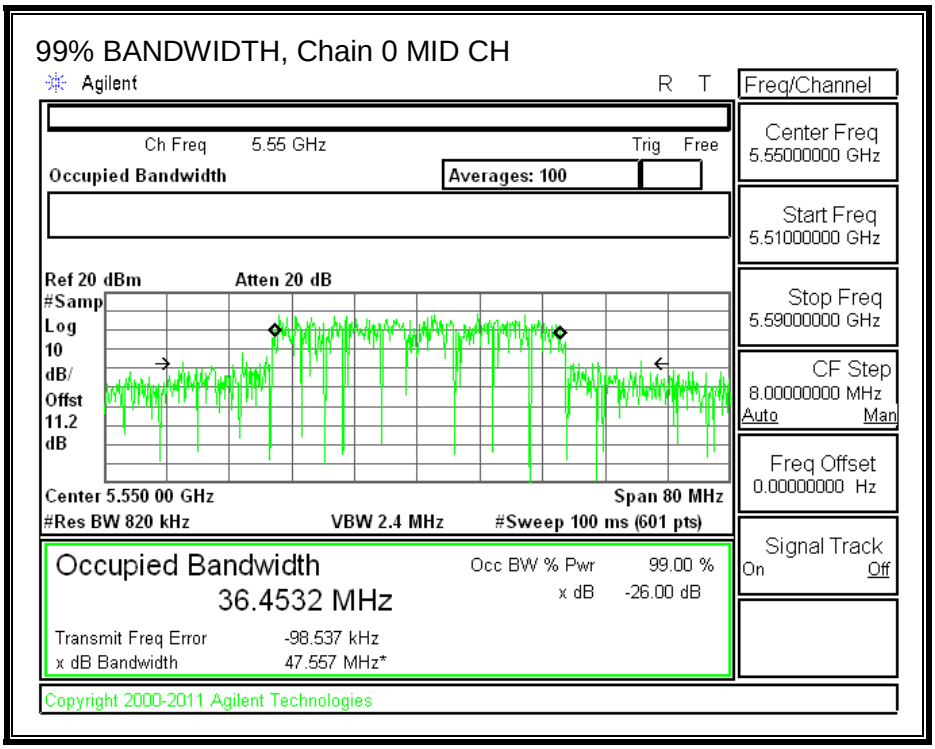
None; for reporting purposes only.

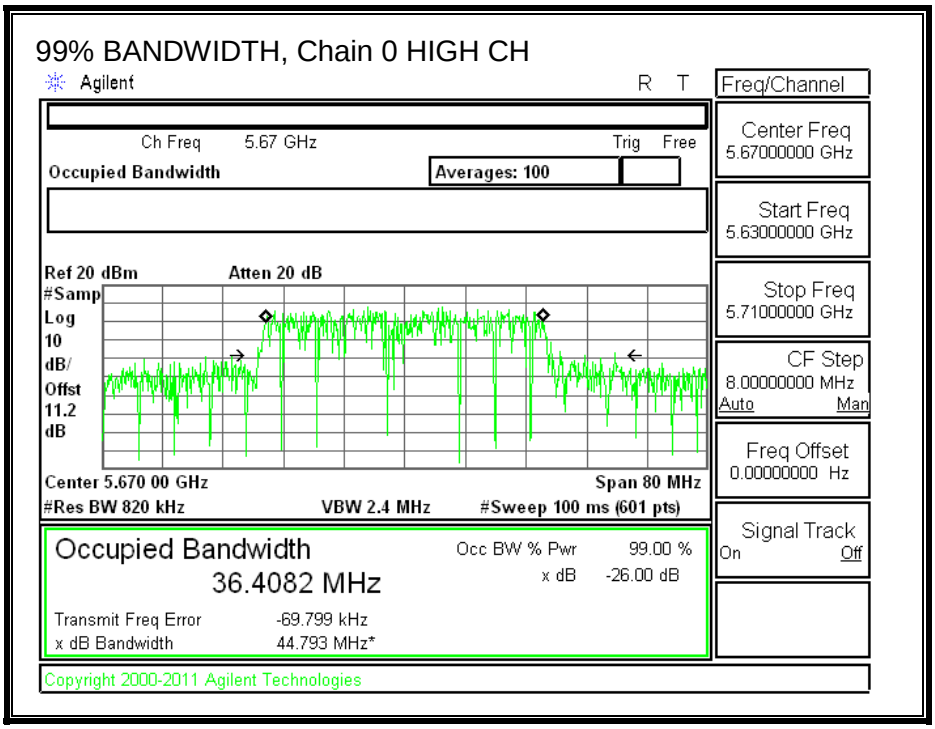
**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) | 99% BW Chain 2 (MHz) |
|---|---|---|---|---|
| Low | 5510 | 36.4597 | 36.3766 | 36.4974 |
| Mid | 5550 | 36.4532 | 36.3626 | 36.4896 |
| High | 5670 | 36.4082 | 36.3671 | 36.3928 |

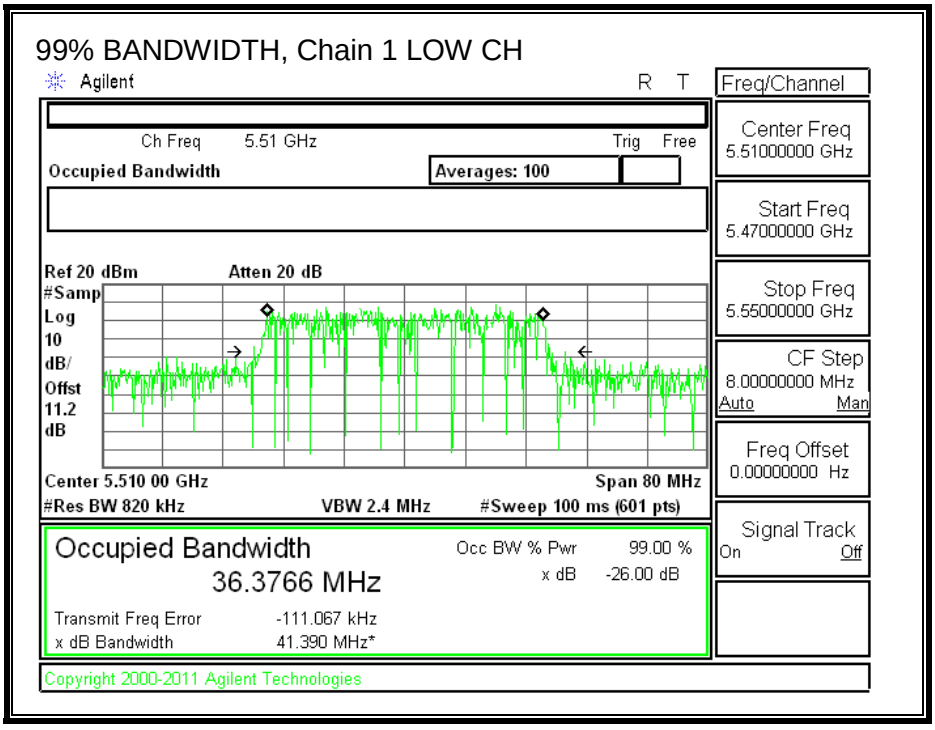
**99% BANDWIDTH, Chain 0**



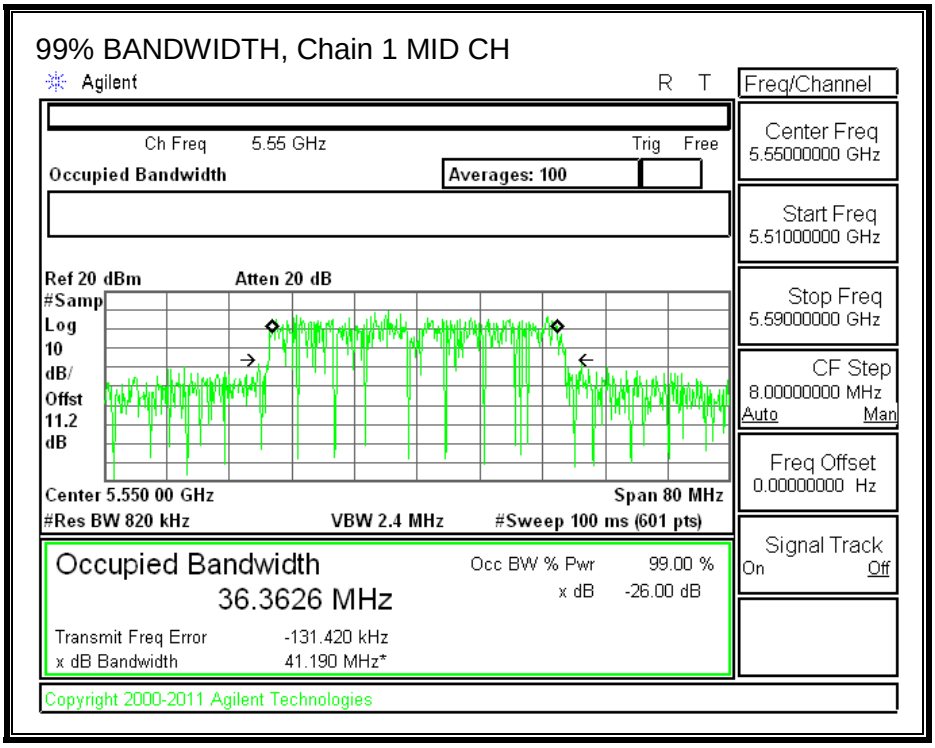





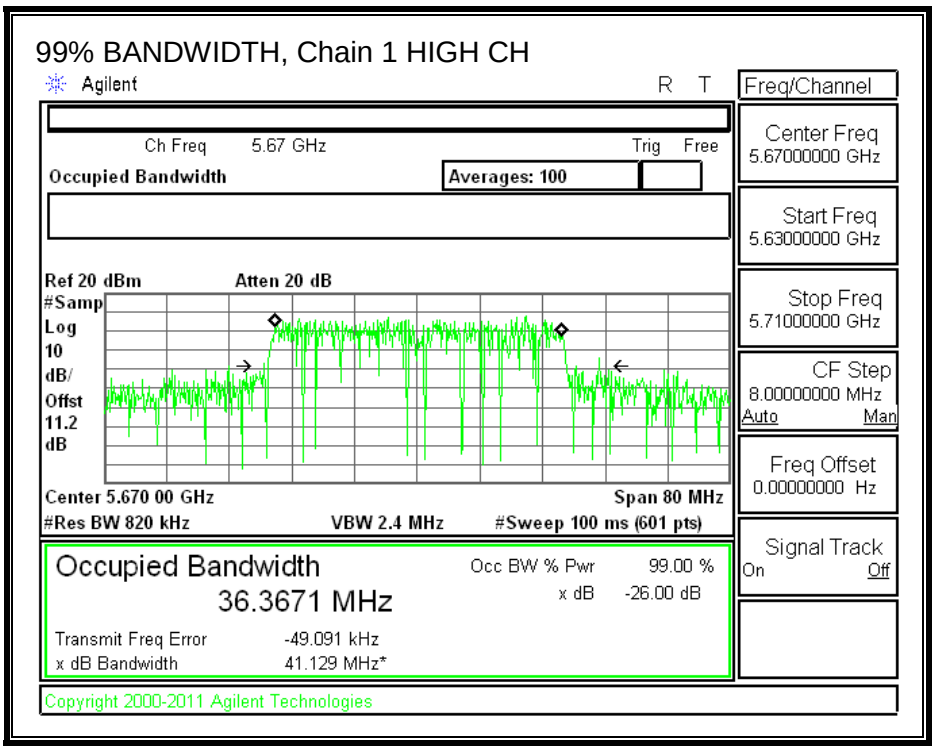

**99% BANDWIDTH, Chain 1**



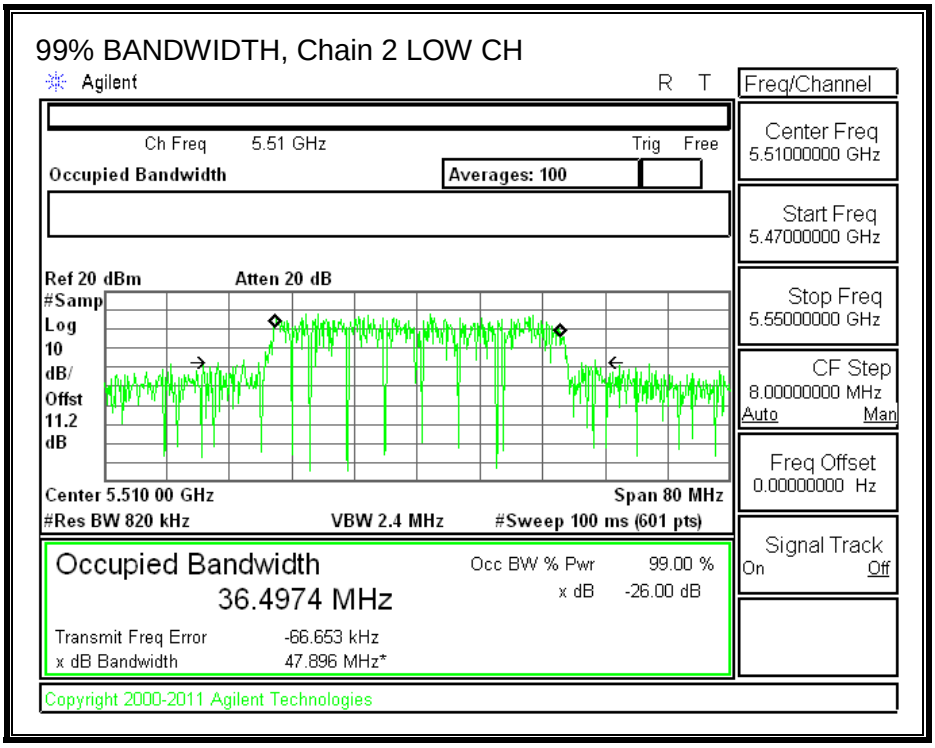
99% BANDWIDTH, Chain 1 MID CH

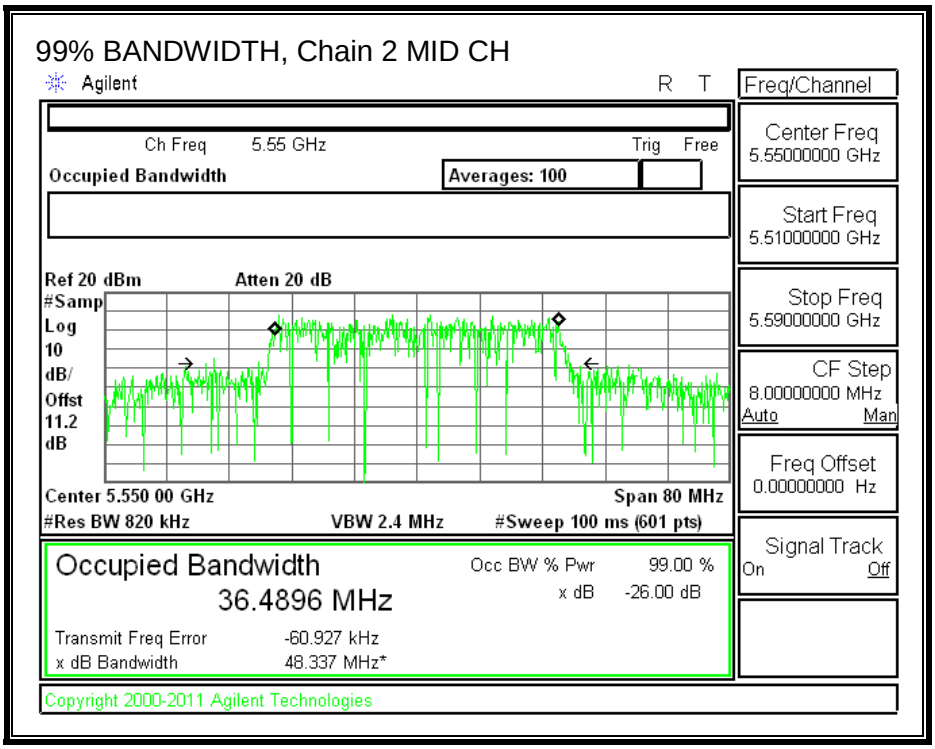


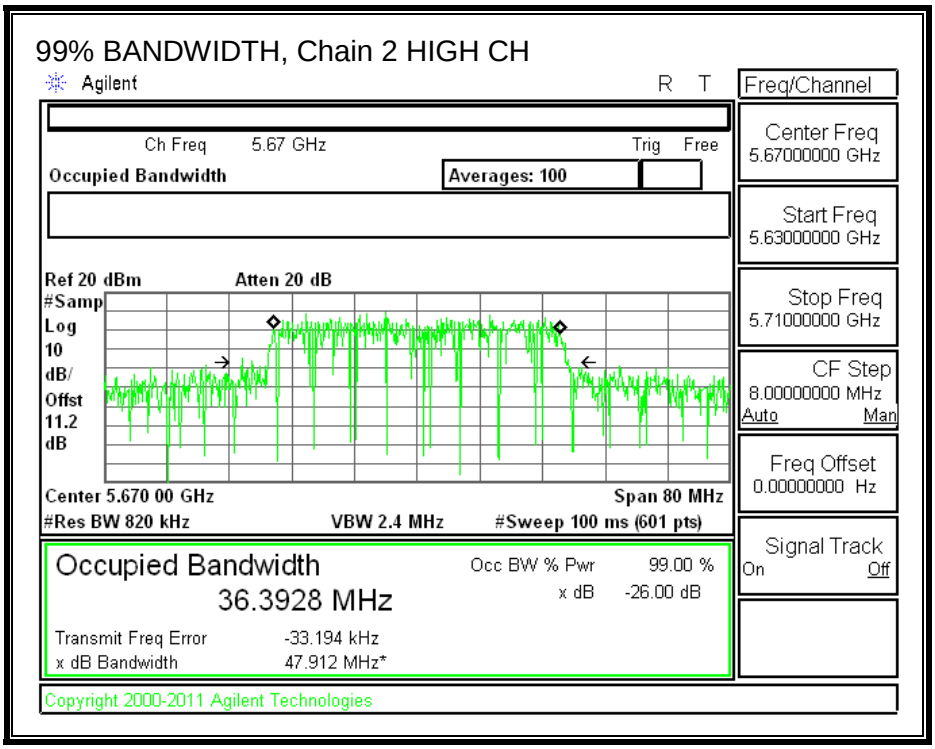

99% BANDWIDTH, Chain 1 HIGH CH



**99% BANDWIDTH, Chain 2**





## 8.24.3. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

**DIRECTIONAL ANTENNA GAIN**

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 4.72 | 2.09 | 2.85 | 3.36 |

The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 4.72 | 2.09 | 2.85 | 8.06 |

## RESULTS

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5510 | 65.20 | 36.3766 | 3.36 |
| Mid | 5550 | 63.80 | 36.3626 | 3.36 |
| High | 5670 | 58.30 | 36.3671 | 3.36 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5510 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |
| Mid | 5550 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |
| High | 5670 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5510 | 13.23 | 12.96 | 12.50 | 17.68 | 24.00 | -6.32 |
| Mid | 5550 | 17.54 | 17.17 | 16.85 | 21.97 | 24.00 | -2.03 |
| High | 5670 | 17.57 | 17.01 | 17.25 | 22.05 | 24.00 | -1.95 |

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5510 | 65.20 | 36.3766 | 8.06 |
| Mid | 5550 | 63.80 | 36.3626 | 8.06 |
| High | 5670 | 58.30 | 36.3671 | 8.06 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5510 | 21.94 | 24.00 | 30.00 | 21.94 | 8.94 | 11.00 | 8.94 |
| Mid | 5550 | 21.94 | 24.00 | 30.00 | 21.94 | 8.94 | 11.00 | 8.94 |
| High | 5670 | 21.94 | 24.00 | 30.00 | 21.94 | 8.94 | 11.00 | 8.94 |

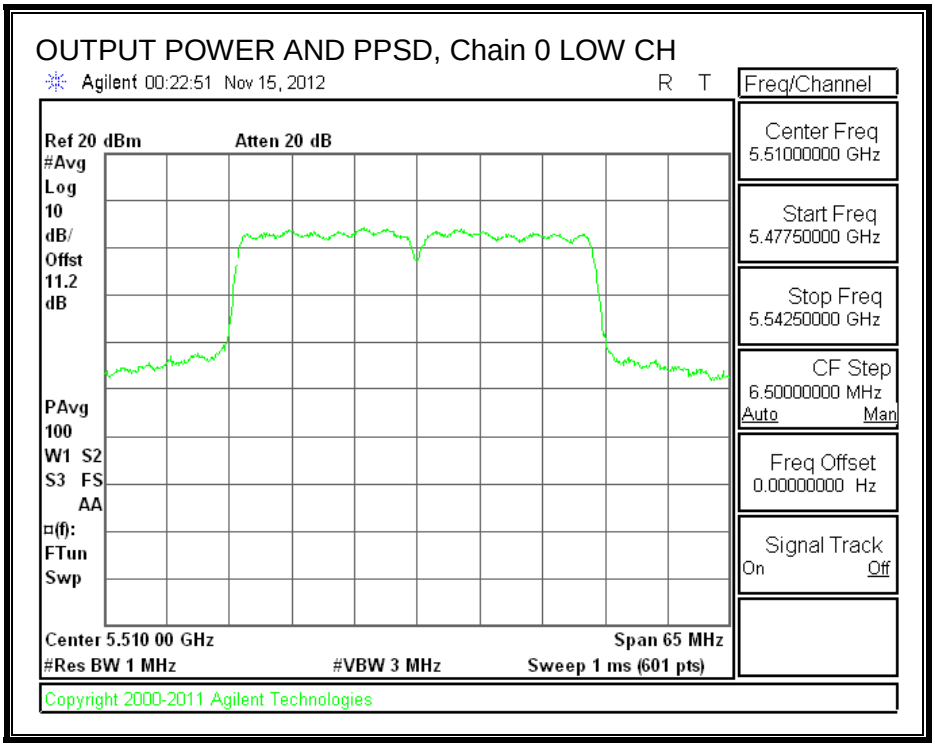
| Duty Cycle CF (dB) | 0.22 | Included in Calculations of Corr'd Power & PPSD |
|---|---|---|

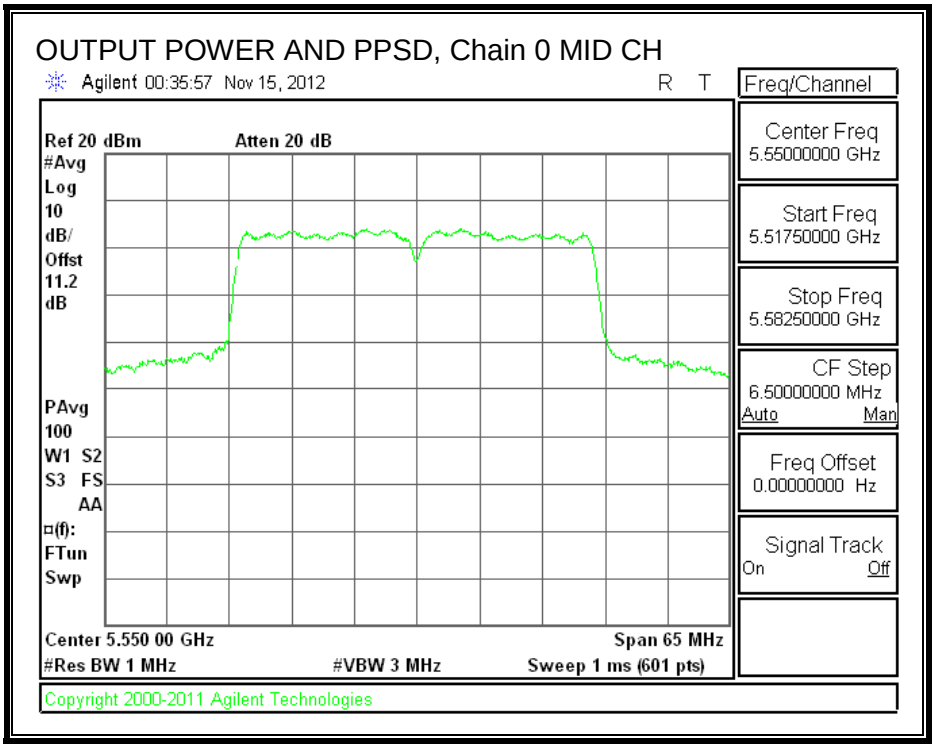
**PPSD Results**

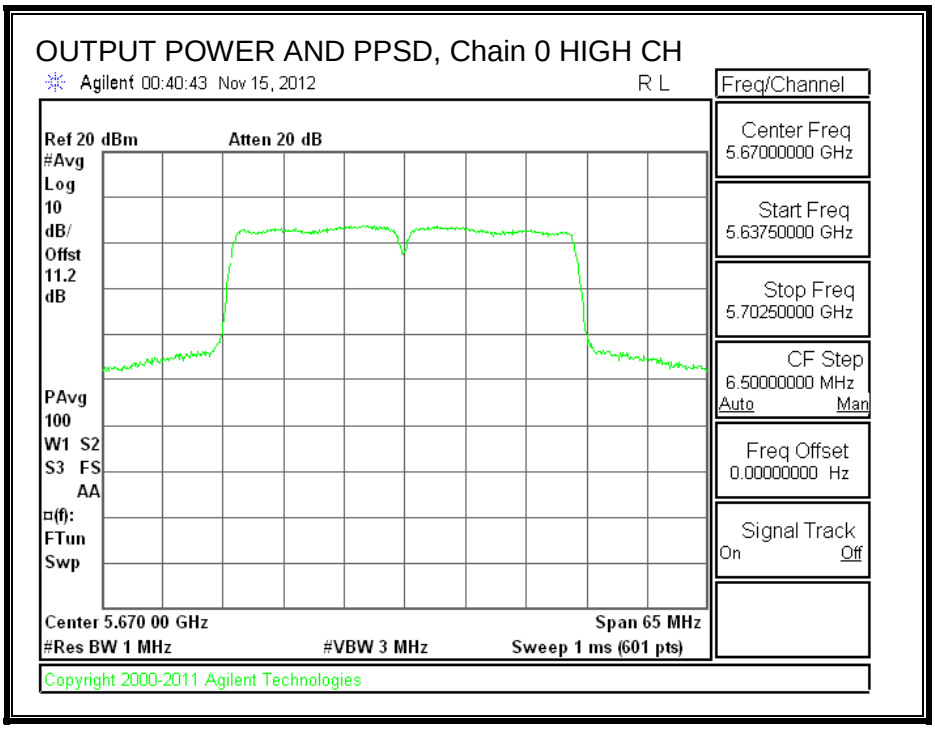
| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5510 | 3.95 | 3.77 | 3.28 | 8.67 | 8.94 | -0.27 |
| Mid | 5550 | 3.43 | 3.90 | 3.40 | 8.58 | 8.94 | -0.36 |
| High | 5670 | 3.60 | 3.53 | 3.62 | 8.58 | 8.94 | -0.36 |

**Note:** method (1) “Measure and sum the spectra across the outputs” as specified in KDB 662911 D01 v01r02 was used for this PSD measurements.

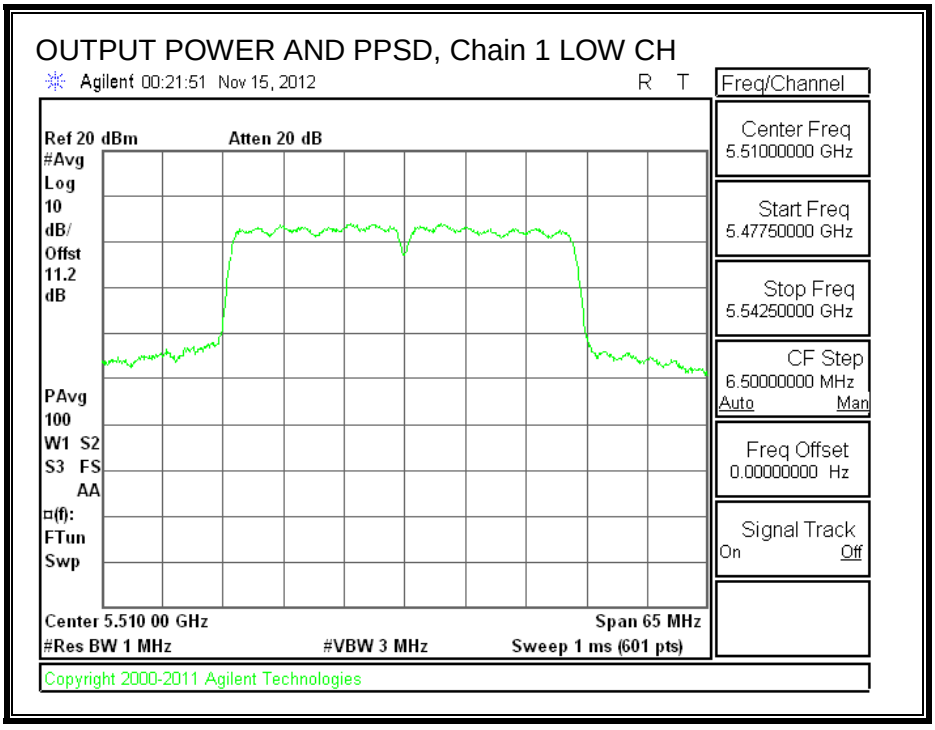
**OUTPUT POWER AND PPSD, Chain 0**



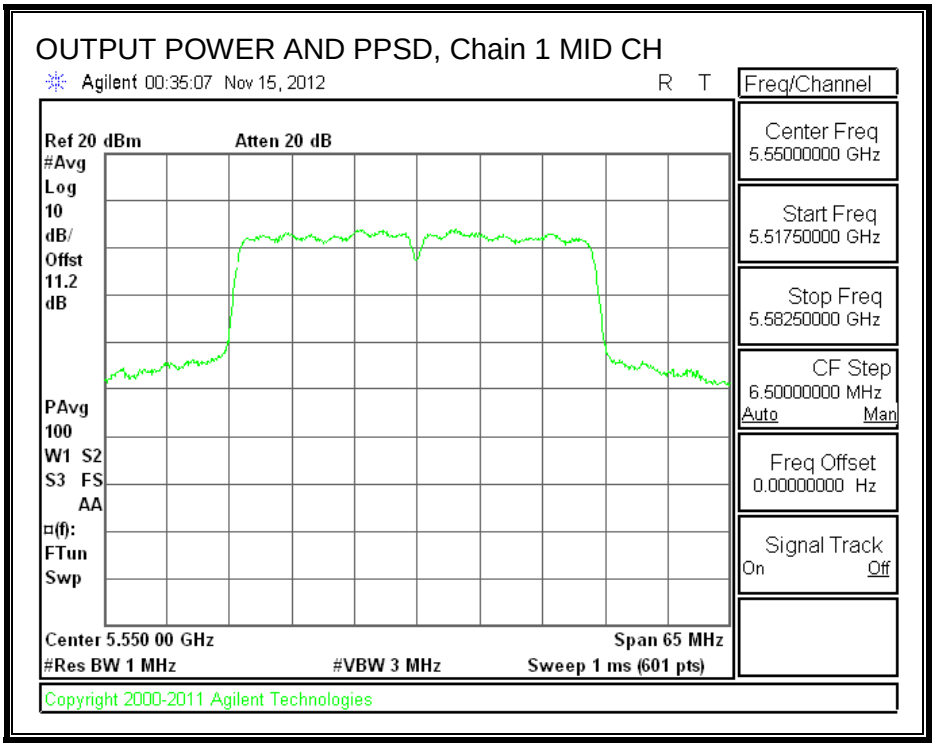





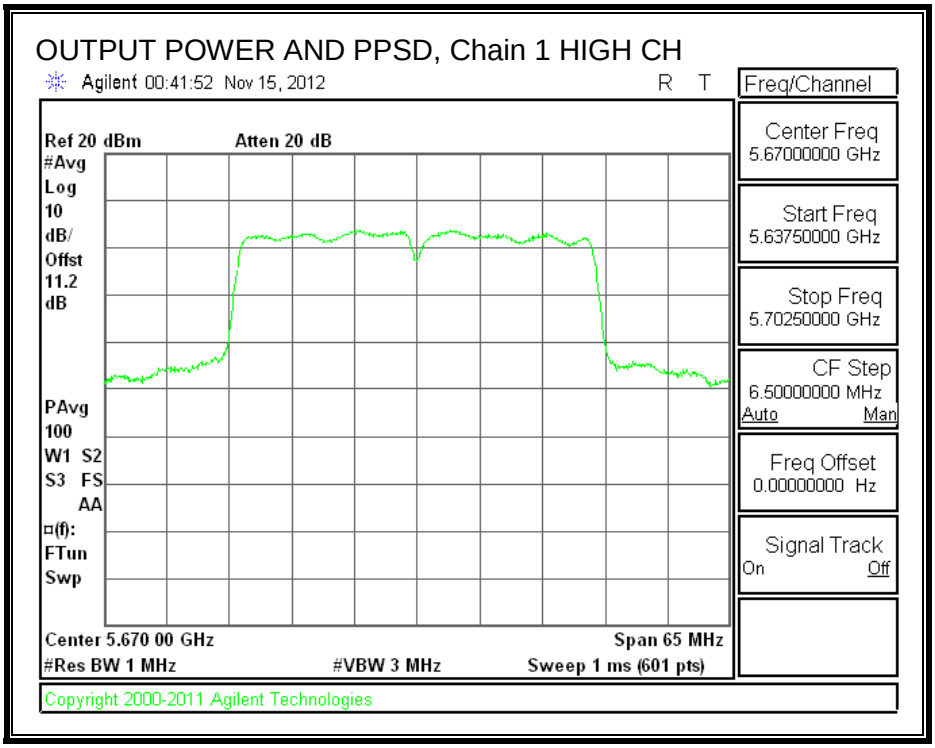

**OUTPUT POWER AND PPSD, Chain 1**



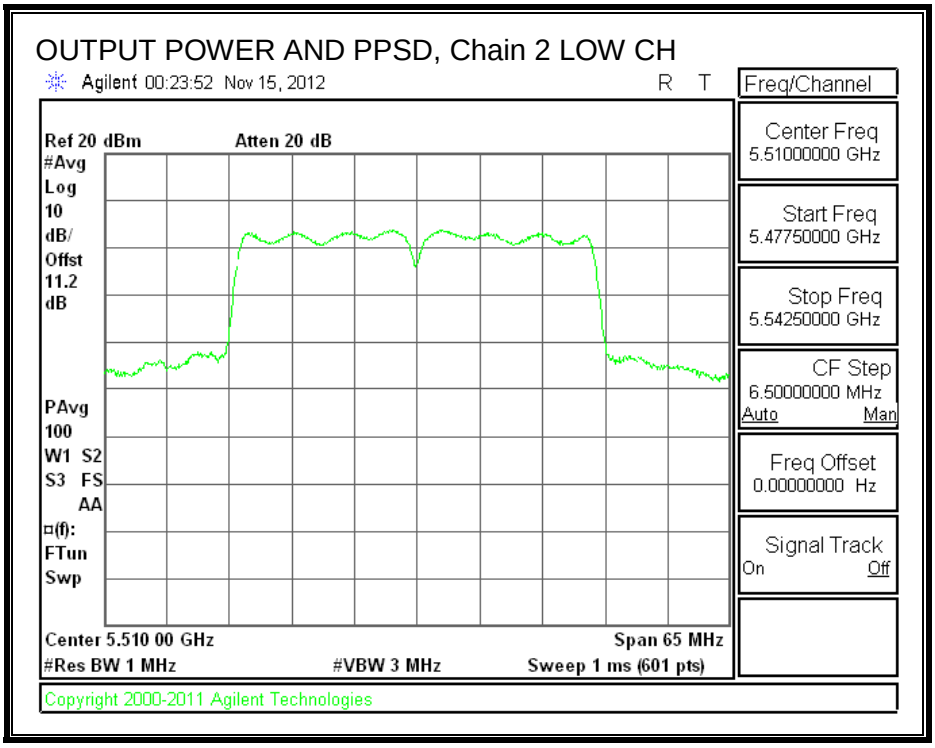
OUTPUT POWER AND PPSD, Chain 1 MID CH

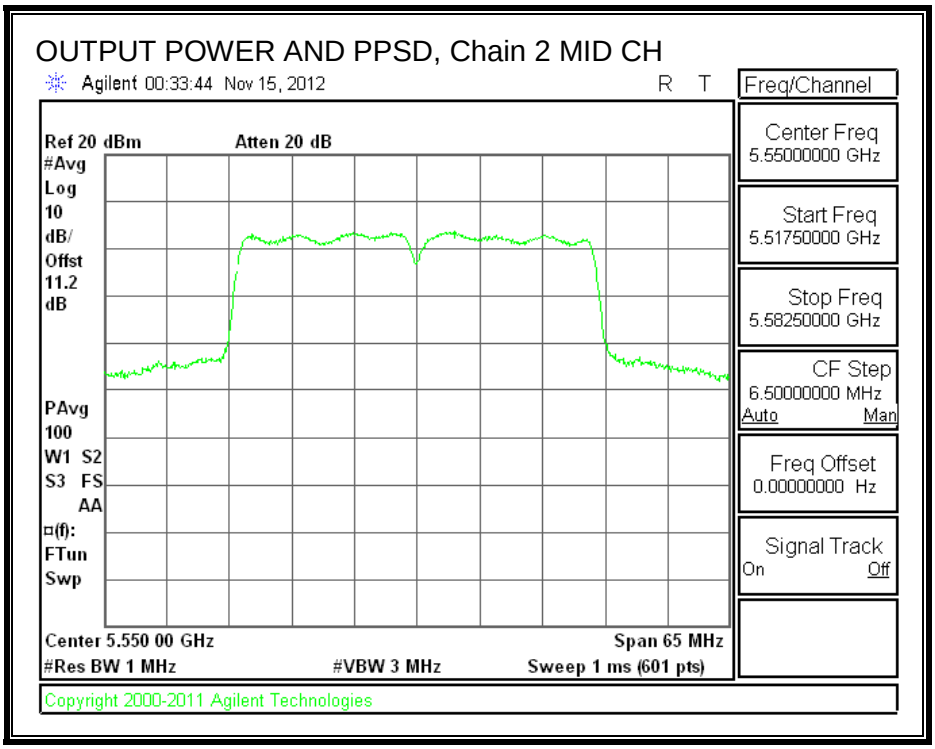


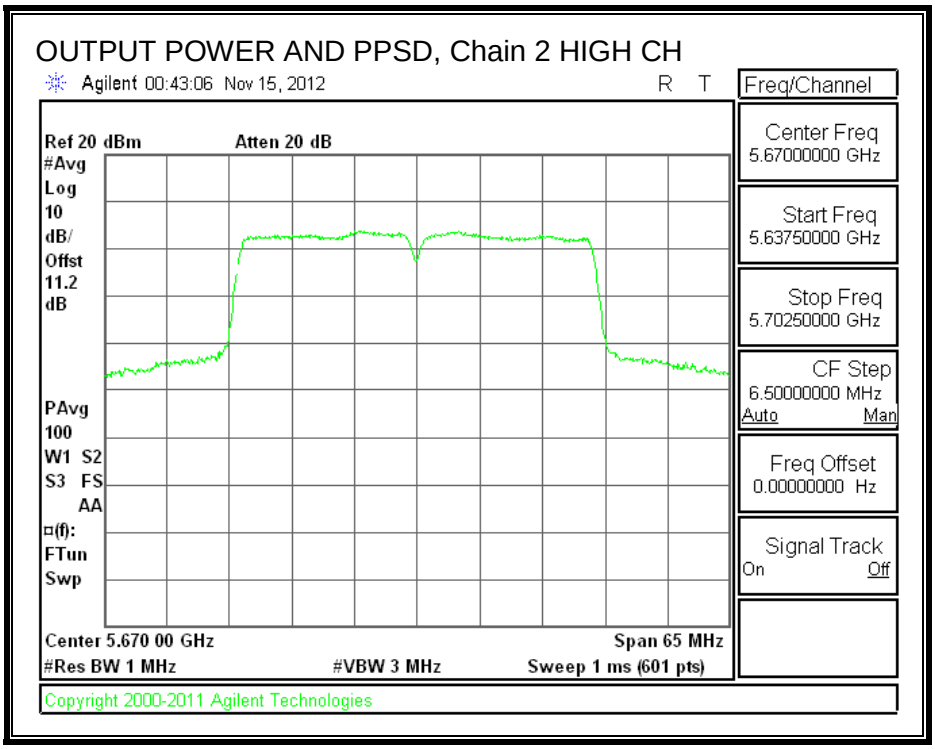

OUTPUT POWER AND PPSD, Chain 1 HIGH CH



**OUTPUT POWER AND PPSD, Chain 2**





## 8.25. 802.11n HT40 CDD CH 142 3TX MODE, 5.6 GHz BAND

### 8.25.1.26 dB BANDWIDTH- UNII

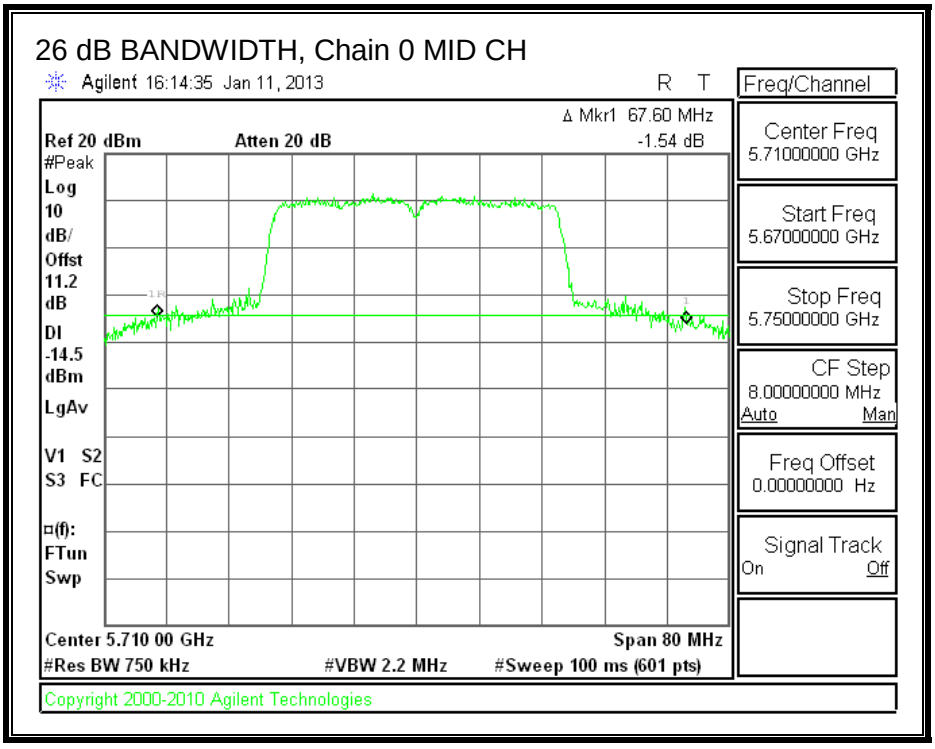
**LIMITS**

None; for reporting purposes only.

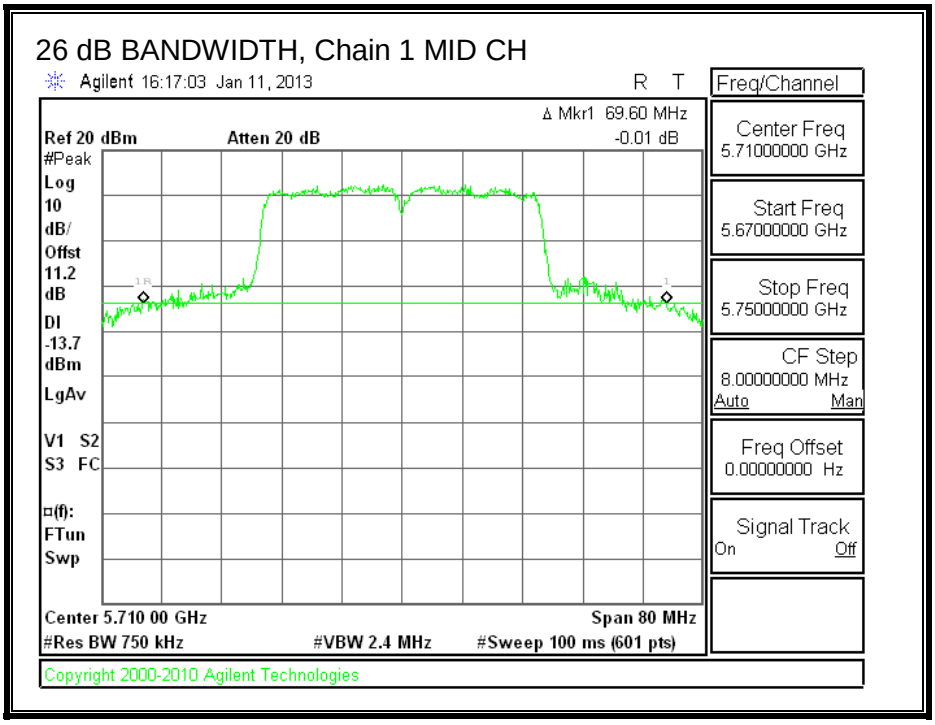
**RESULTS**

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) | 26 dB BW Chain 2 (MHz) |
|---|---|---|---|---|
| Mid | 5710 | 67.60 | 69.60 | 72.80 |

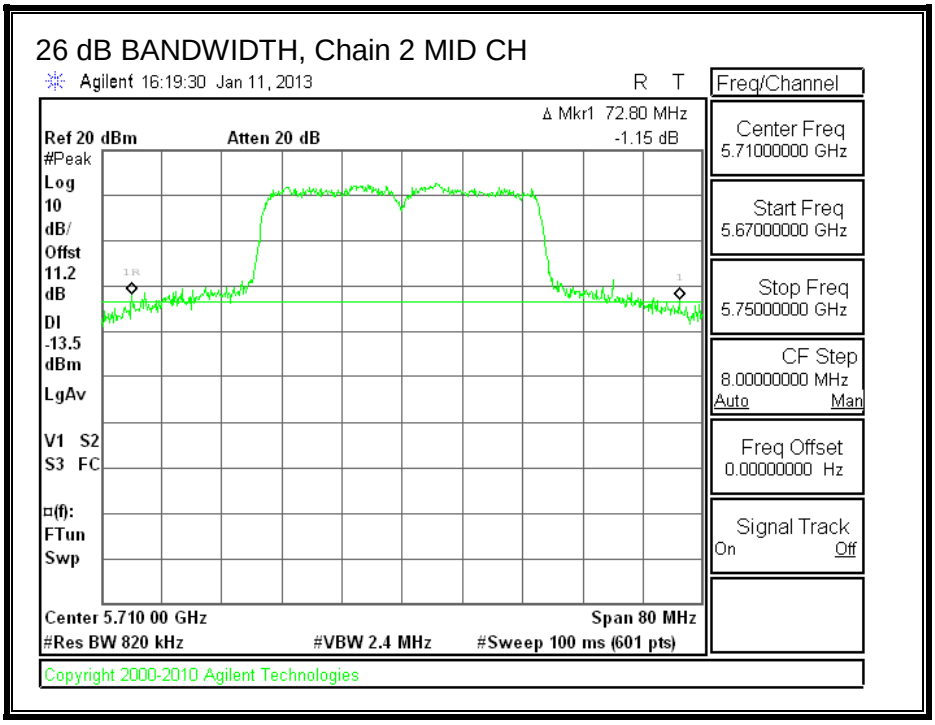
**26 dB BANDWIDTH, Chain 0**



**26 dB BANDWIDTH, Chain 1**




**26 dB BANDWIDTH, Chain 2**



## 8.25.2. 99% BANDWIDTH

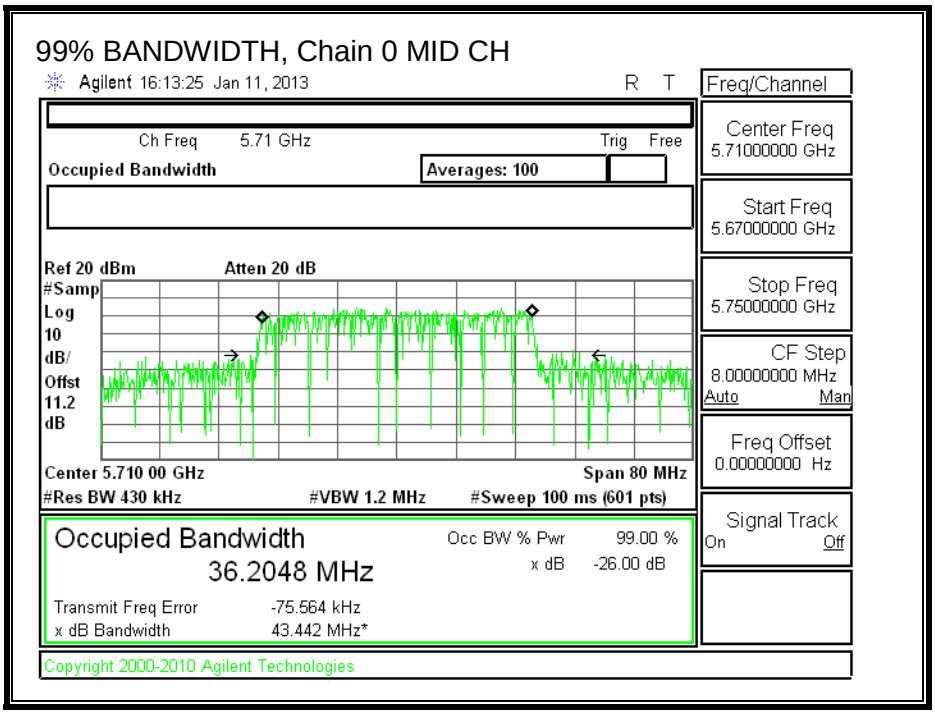
**LIMITS**

None; for reporting purposes only.

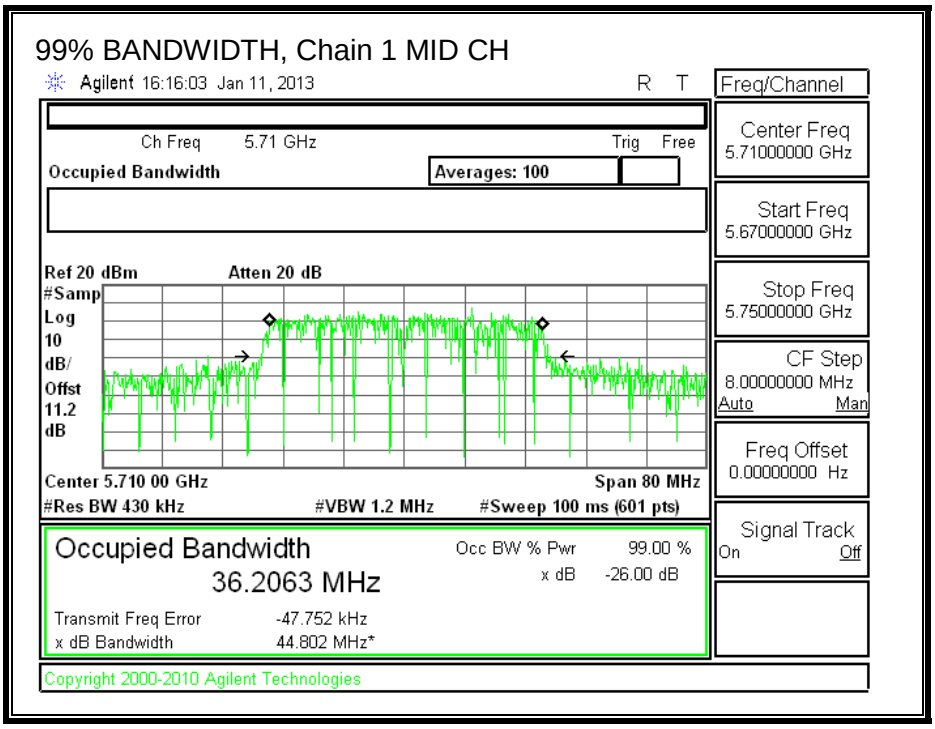
**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) | 99% BW Chain 2 (MHz) |
|---|---|---|---|---|
| Mid | 5710 | 36.2048 | 36.2063 | 36.2220 |

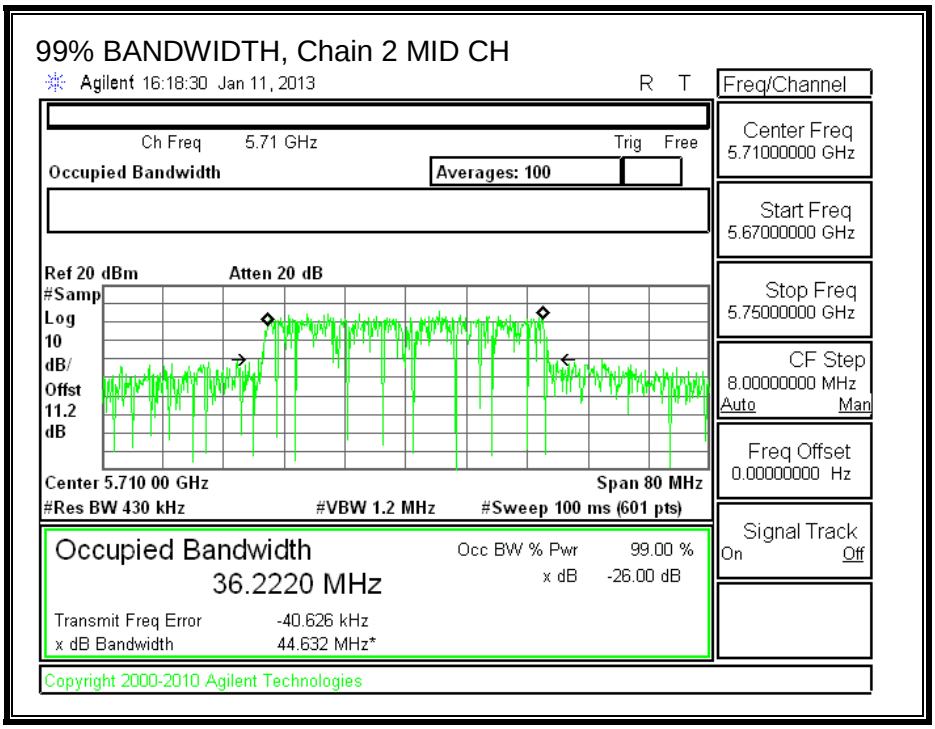
**99% BANDWIDTH, Chain 0**



**99% BANDWIDTH, Chain 1**




**99% BANDWIDTH, Chain 2**



## 8.25.3. OUTPUT POWER AND PSD

**LIMITS**

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**DIRECTIONAL ANTENNA GAIN**

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 4.72 | 2.09 | 2.85 | 3.36 |

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 4.72 | 2.09 | 2.85 | 8.06 |

**RESULTS**

## Limits (FCC), portion in UNII 2 ext band

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Correlated Gain (dBi) | Uncorrelated Gain (dBi) |
|---|---|---|---|---|---|
| Mid | 5710 | 38.8 | 23.1024 | 8.06 | 3.36 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5710 | 24.00 | 24.00 | 30.00 | 24.00 | 8.94 | 11.00 | 8.94 |

| Duty Cycle CF (dB) | 0.22 | Included in Calculations of PPSD |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5710 | 17.40 | 16.71 | 17.36 | 22.16 | 24.00 | -1.84 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5710 | 3.79 | 3.30 | 3.85 | 8.64 | 8.94 | -0.30 |

## Limits (FCC), portion in 5.8 GHz UNII 3 band

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Correlated Gain (dBi) | Uncorrelated Gain (dBi) |
|---|---|---|---|---|---|
| Mid | 5710 | 28.8 | 13.1024 | 8.06 | 3.36 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5710 | 24.00 | 22.17 | 28.17 | 22.17 | 8.94 | 11.00 | 8.94 |

| Duty Cycle CF (dB) | 0.22 | Included in Calculations of PPSD |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5710 | 6.86 | 6.12 | 6.89 | 11.63 | 22.17 | -10.54 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5710 | 2.67 | 2.08 | 2.63 | 7.46 | 8.94 | -1.48 |

**OUTPUT POWER and PSD, Chain 0**

OUTPUT POWER and PSD, Chain 0 MID CH - UNII


OUTPUT POWER and PSD, Chain 0 MID CH – UNII 3

**OUTPUT POWER and PSD, Chain 1**

OUTPUT POWER and PSD, Chain 1 MID CH - UNII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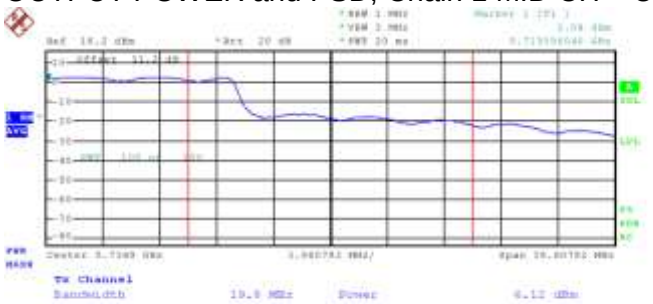
OUTPUT POWER and PSD, Chain 1 MID CH – UNII 3

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**OUTPUT POWER and PSD, Chain 2**

OUTPUT POWER and PSD, Chain 2 MID CH - UNII


OUTPUT POWER and PSD, Chain 2 MID CH – UNII 3

## 8.26. 802.11n HT40 STBC CH 142 3TX MODE, 5.6 GHz BAND

### 8.26.1.26 dB BANDWIDTH- UNII

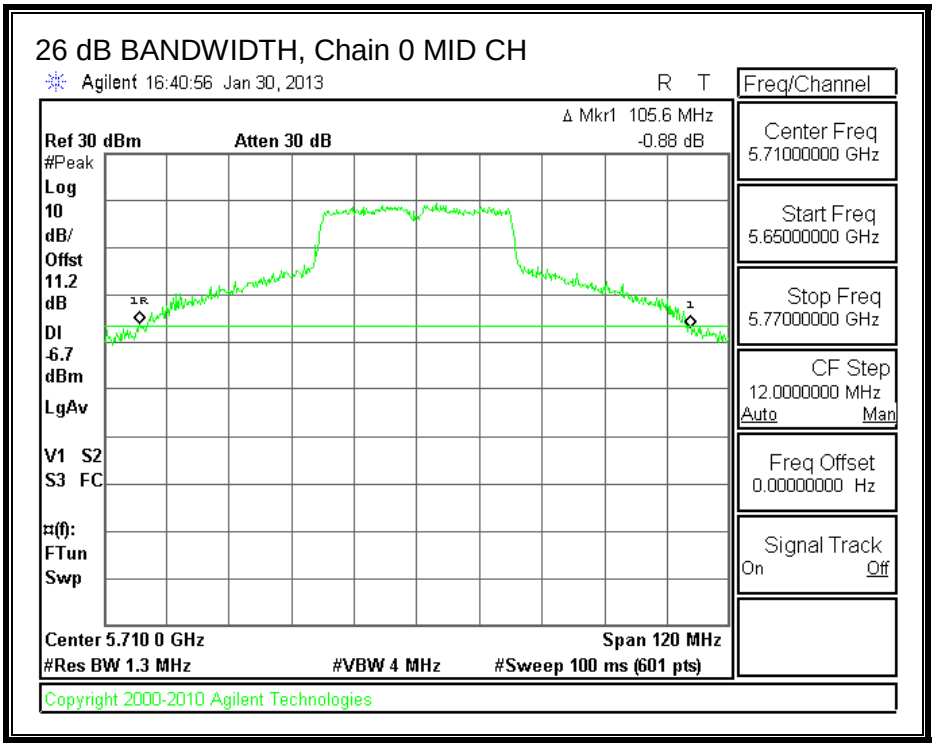
**LIMITS**

None; for reporting purposes only.

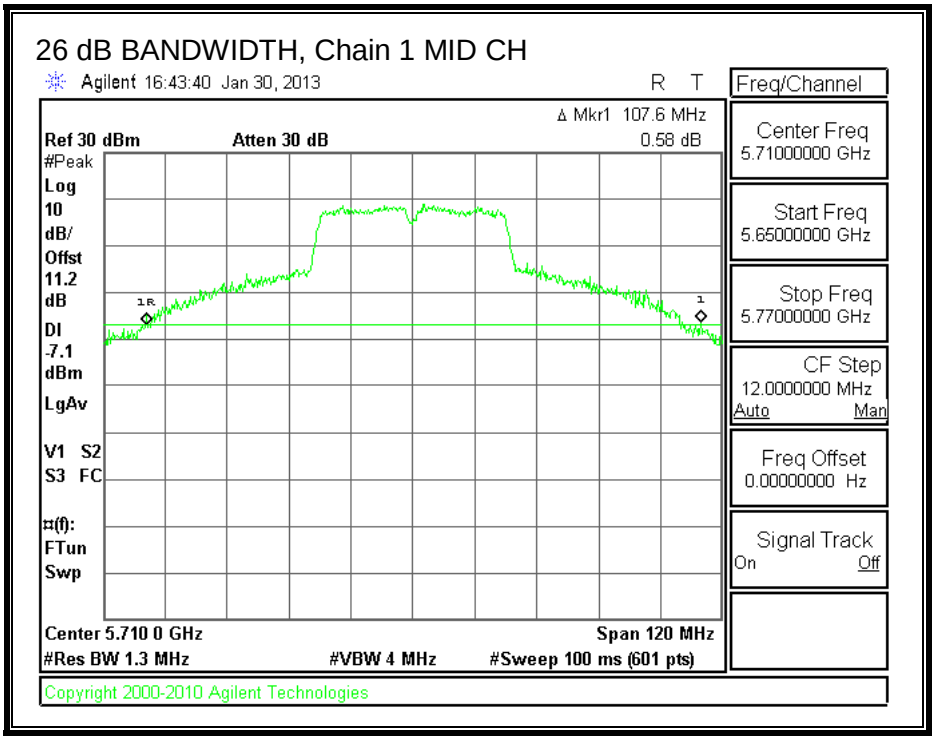
**RESULTS**

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) | 26 dB BW Chain 2 (MHz) |
|---|---|---|---|---|
| Mid | 5710 | 105.60 | 107.60 | 111.00 |

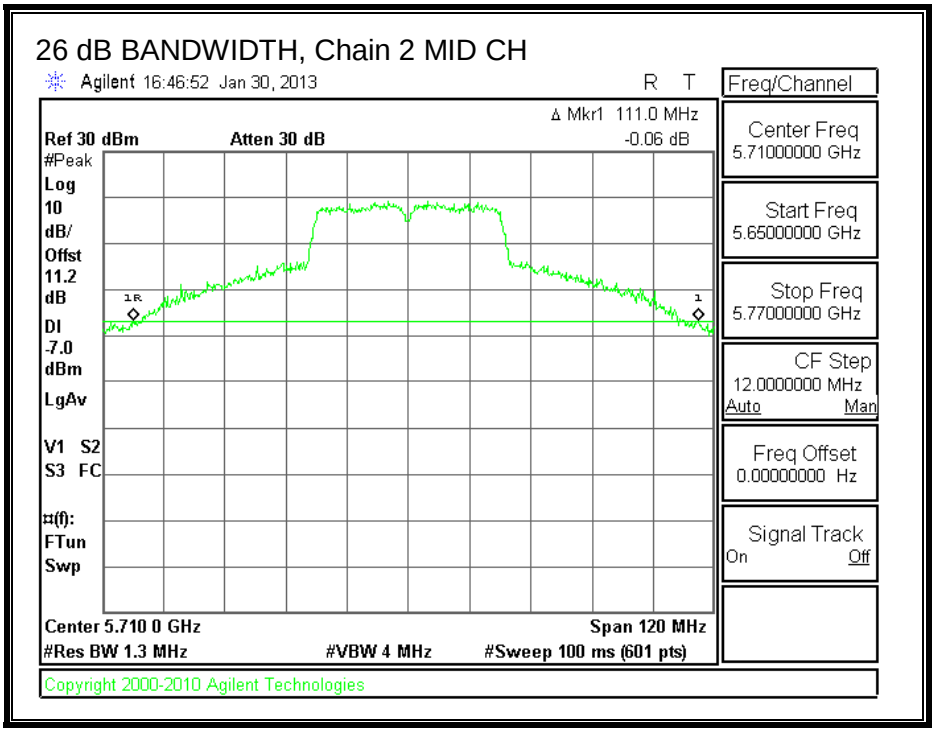
**26 dB BANDWIDTH, Chain 0**



**26 dB BANDWIDTH, Chain 1**




**26 dB BANDWIDTH, Chain 2**



## 8.26.2. 99% BANDWIDTH

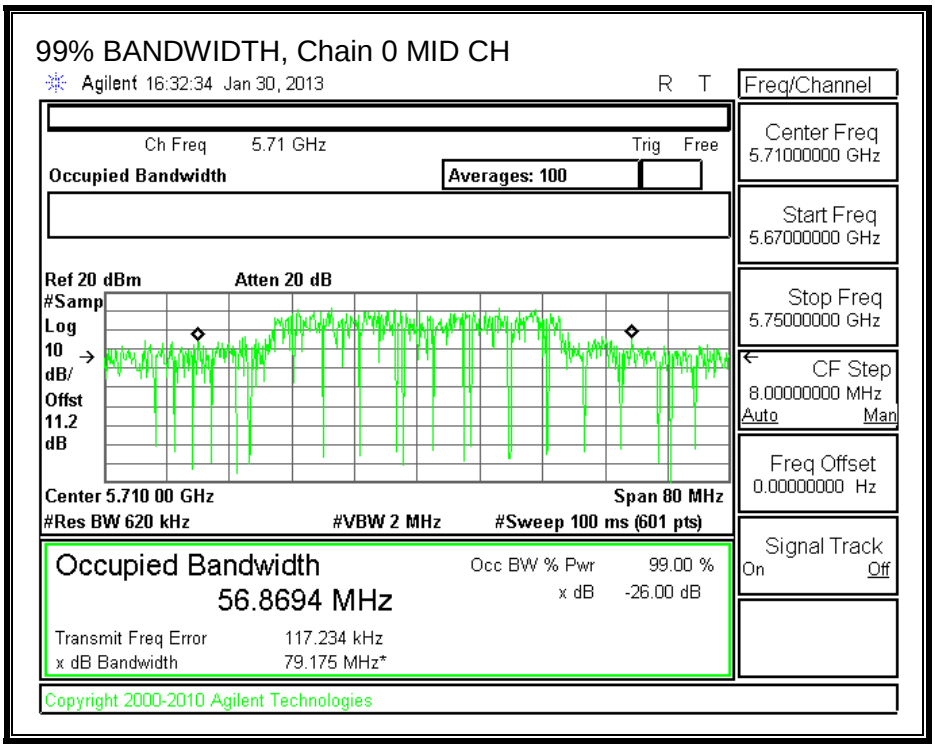
**LIMITS**

None; for reporting purposes only.

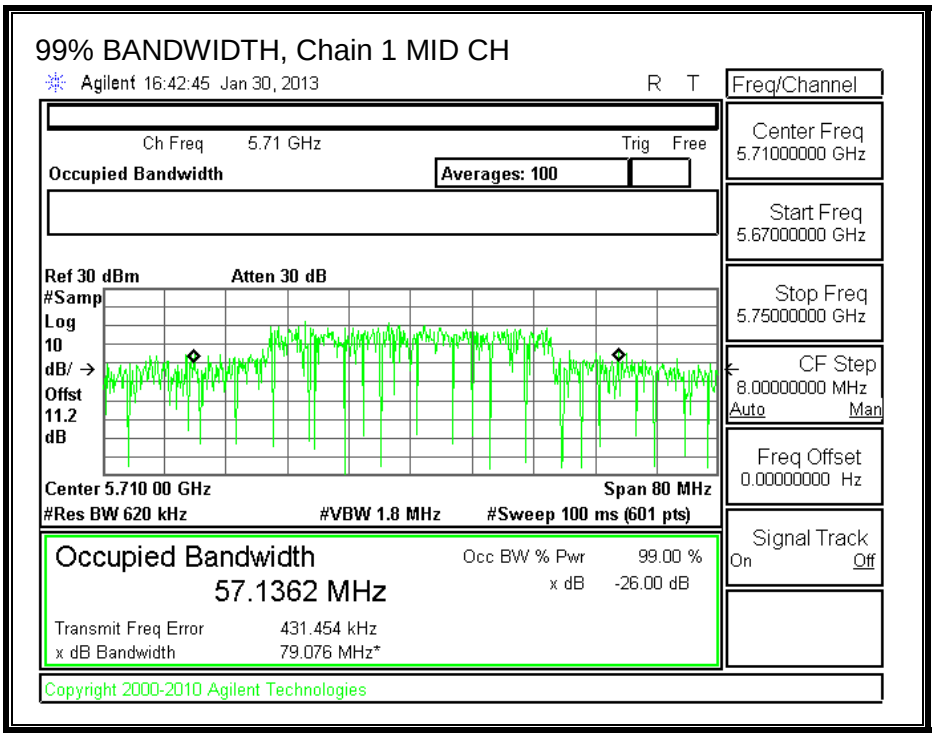
**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) | 99% BW Chain 2 (MHz) |
|---|---|---|---|---|
| Mid | 5710 | 56.8694 | 57.1362 | 58.7496 |

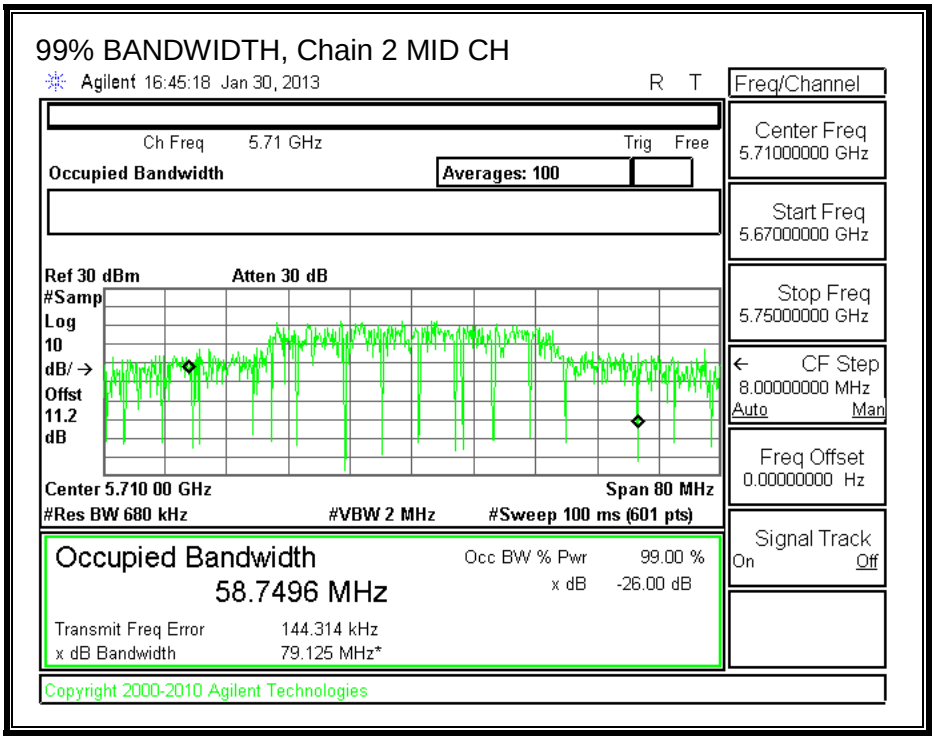
**99% BANDWIDTH, Chain 0**



**99% BANDWIDTH, Chain 1**




**99% BANDWIDTH, Chain 2**



## 8.26.3. OUTPUT POWER AND PSD

**LIMITS**

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**DIRECTIONAL ANTENNA GAIN**

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 4.72 | 2.09 | 2.85 | 3.36 |

**RESULTS**

## Limits (FCC), portion in UNII 2 ext band

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | | Uncorrelated Gain (dBi) |
|---|---|---|---|---|---|
| Mid | 5710 | 57.8 | 33.4347 | | 3.36 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5710 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |

| Duty Cycle CF (dB) | 0.23 | Included in Calculations of PPSD |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5710 | 19.10 | 18.65 | 18.97 | 23.91 | 24.00 | -0.09 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5710 | 5.51 | 4.98 | 5.26 | 10.26 | 11.00 | -0.74 |

## Limits (FCC), portion in 5.8 GHz UNII 3 band

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | | Uncorrelated Gain (dBi) |
|---|---|---|---|---|---|
| Mid | 5710 | 47.8 | 23.4347 | | 3.36 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5710 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |

| Duty Cycle CF (dB) | 0.23 | Included in Calculations of PPSD |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5710 | 9.38 | 8.91 | 9.34 | 14.22 | 24.00 | -9.78 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5710 | 4.71 | 4.11 | 4.35 | 9.40 | 11.00 | -1.60 |

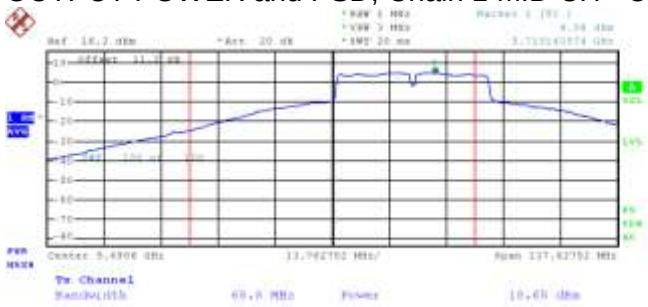
**OUTPUT POWER and PSD, Chain 0**

OUTPUT POWER and PSD, Chain 0 MID CH - UNII


OUTPUT POWER and PSD, Chain 0 MID CH – UNII 3

**OUTPUT POWER and PSD, Chain 1**

OUTPUT POWER and PSD, Chain 1 MID CH - UNII

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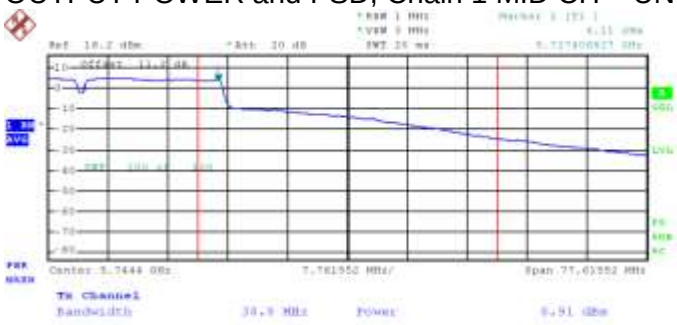
OUTPUT POWER and PSD, Chain 1 MID CH – UNII 3

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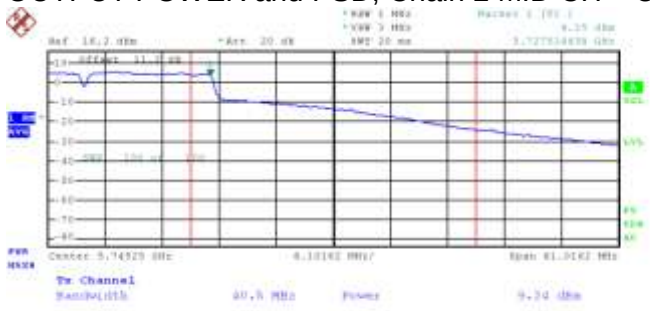
**OUTPUT POWER and PSD, Chain 2**

OUTPUT POWER and PSD, Chain 2 MID CH - UNII


Date: 30.JAN.2013 17:14:16

OUTPUT POWER and PSD, Chain 2 MID CH – UNII 3

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## 8.27. 802.11n HT40 STBC 3TX MODE, 5.6 GHz BAND

### 8.27.1. 26 dB BANDWIDTH

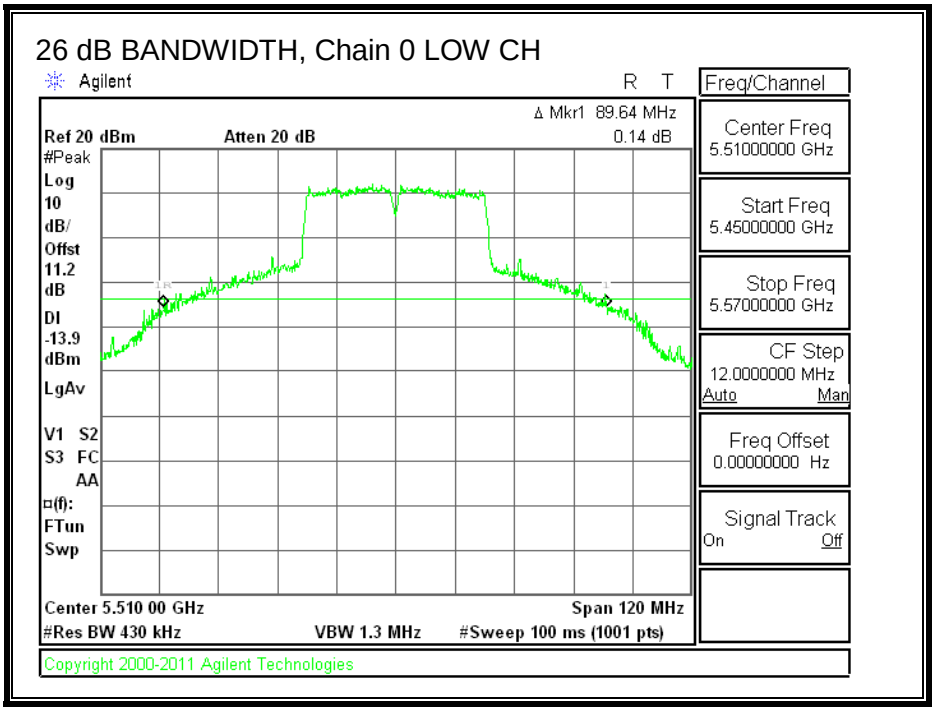
**LIMITS**

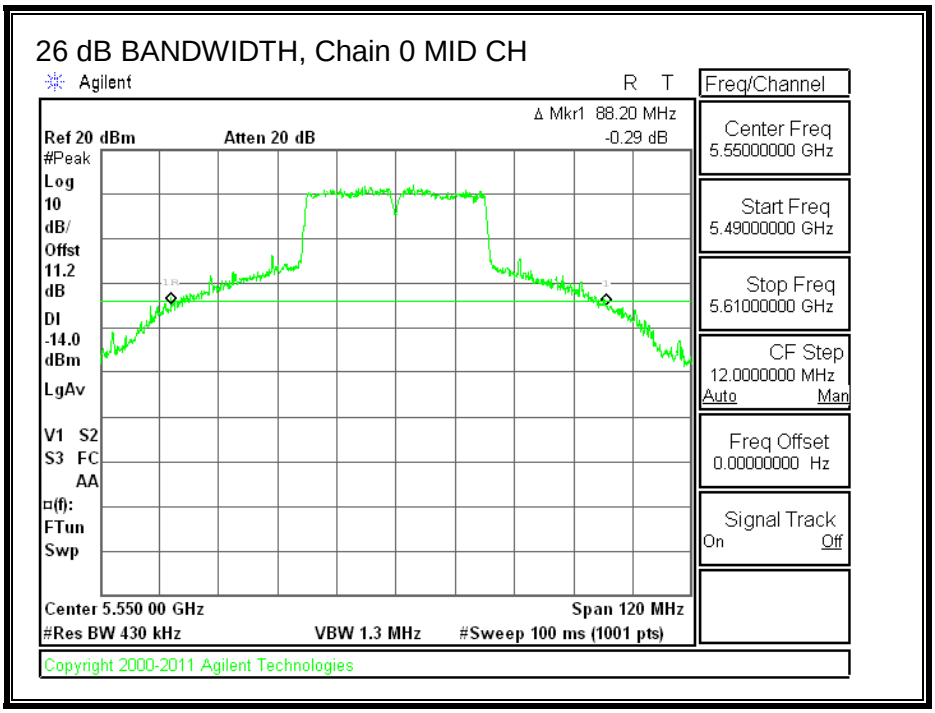
None; for reporting purposes only.

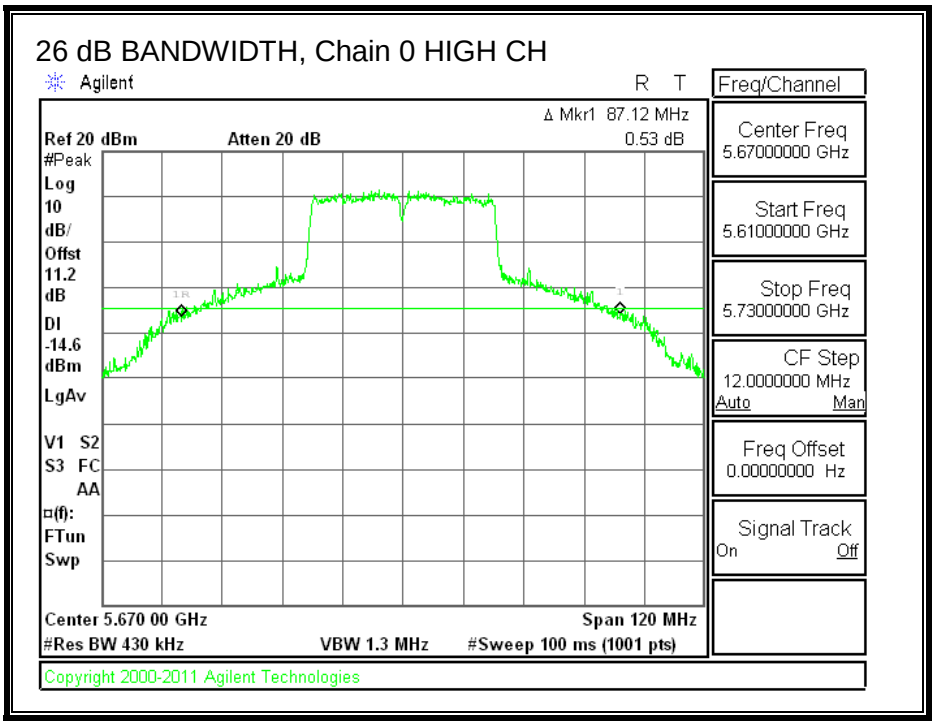
**RESULTS**

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) | 26 dB BW Chain 2 (MHz) |
|---|---|---|---|---|
| Low | 5510 | 89.64 | 85.44 | 92.40 |
| Mid | 5550 | 88.20 | 84.00 | 89.88 |
| High | 5670 | 87.12 | 85.80 | 91.68 |

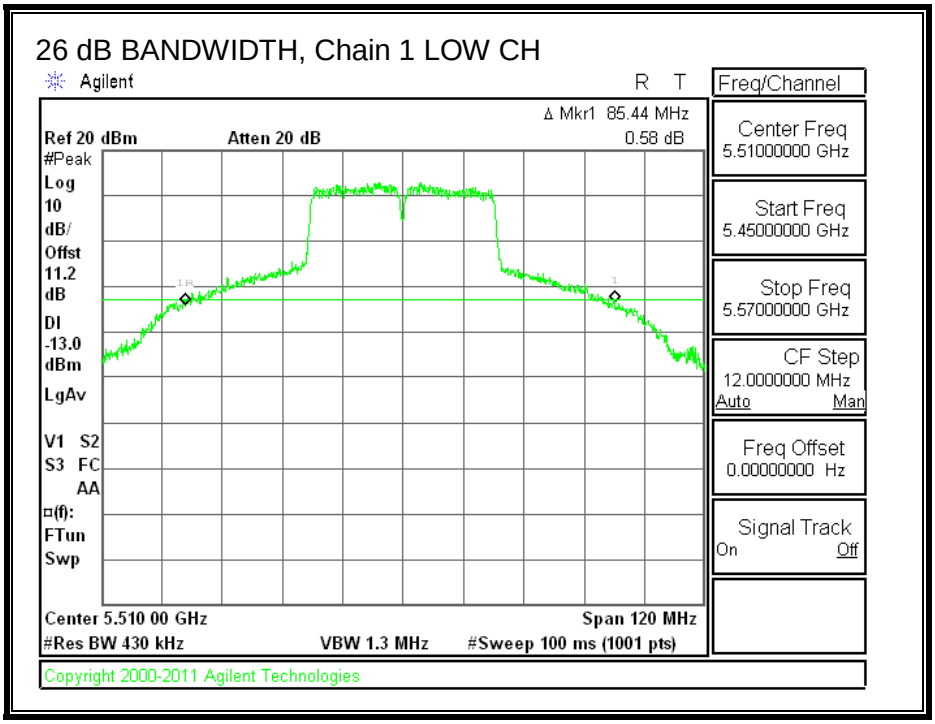
**26 dB BANDWIDTH, Chain 0**



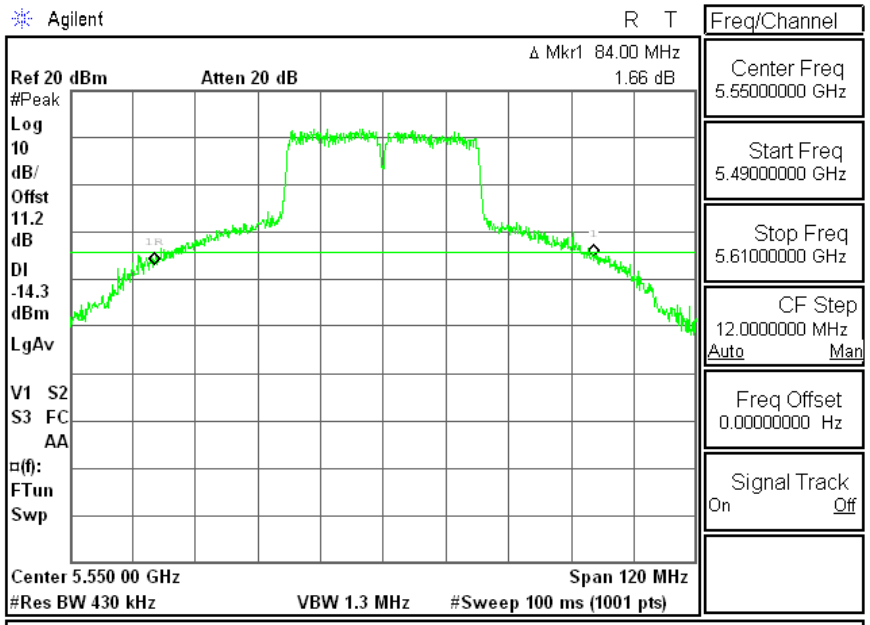





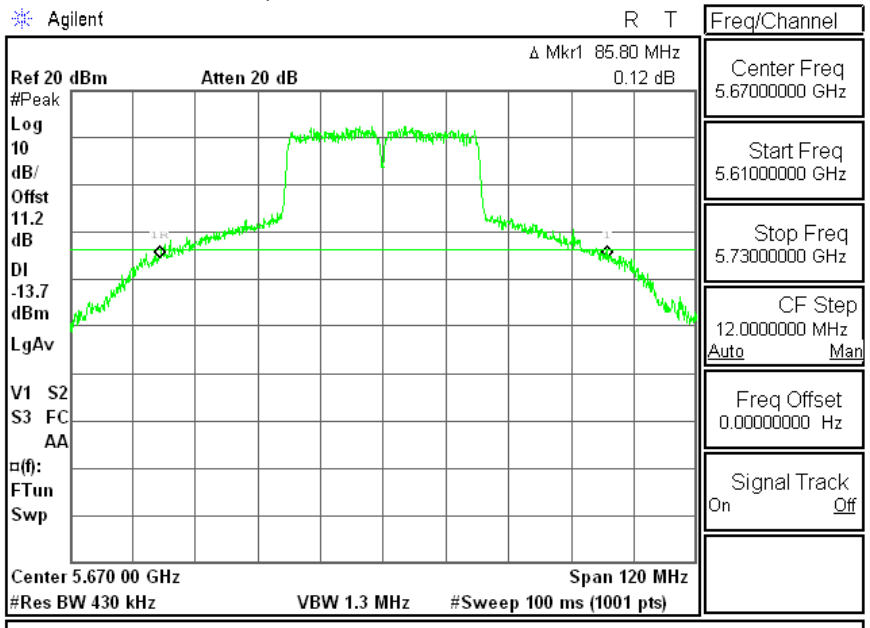

**26 dB BANDWIDTH, Chain 1**



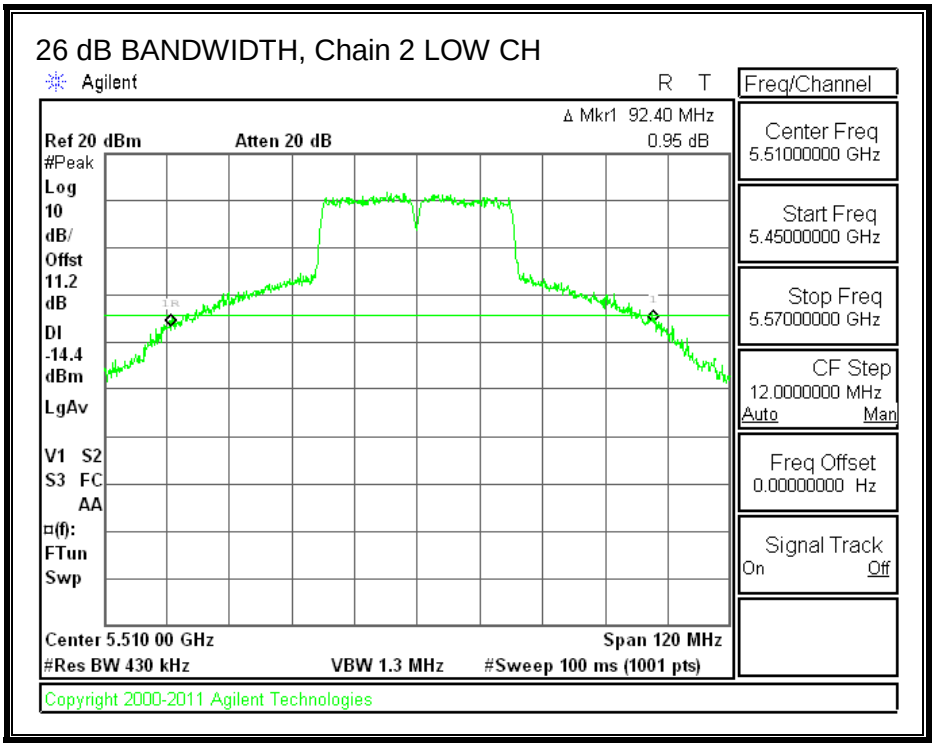
26 dB BANDWIDTH, Chain 1 MID CH

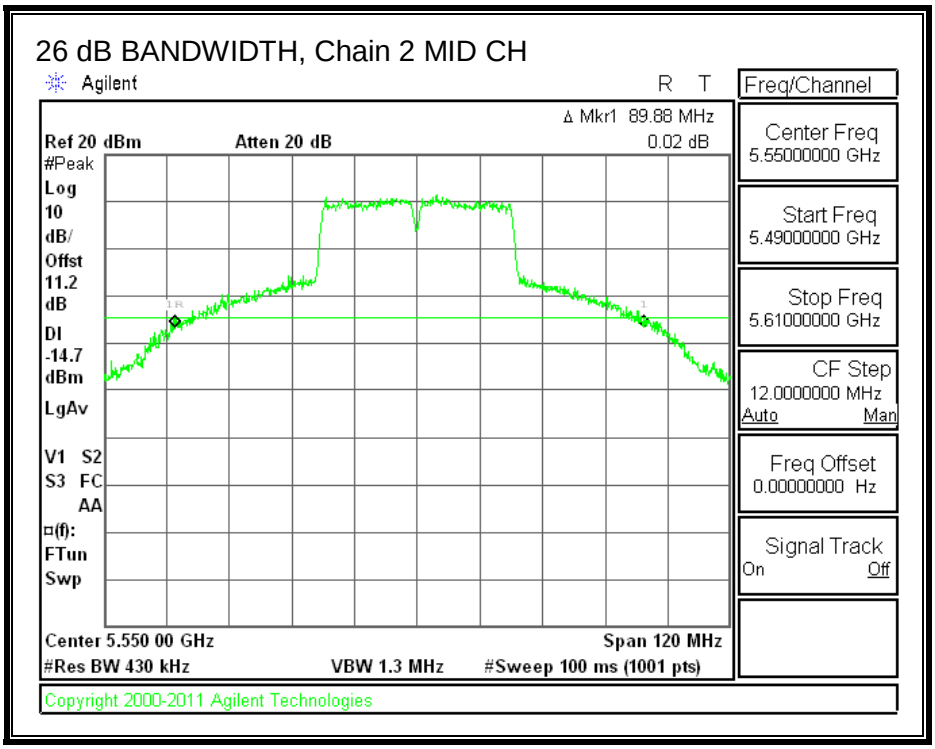



26 dB BANDWIDTH, Chain 1 HIGH CH

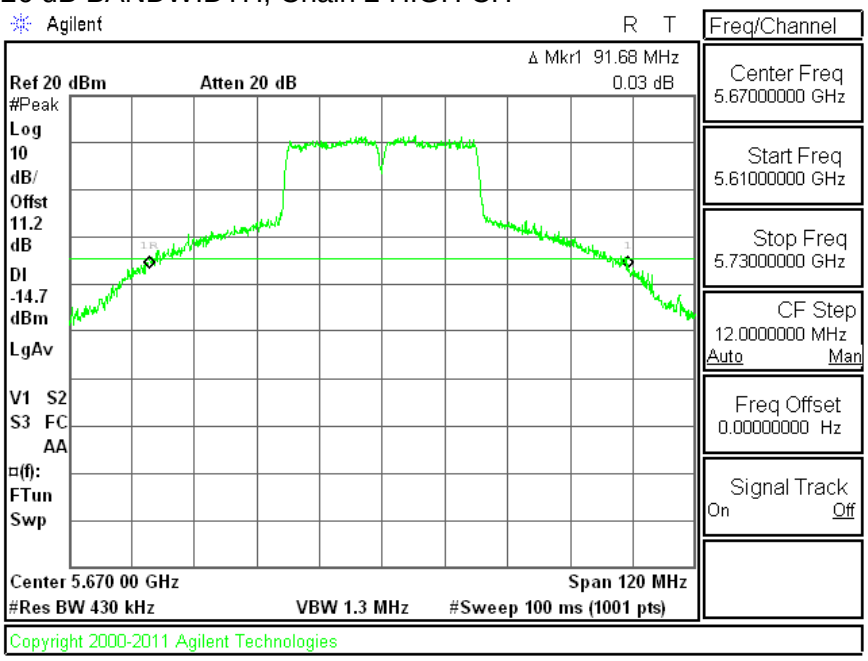


**26 dB BANDWIDTH, Chain 2**



26 dB BANDWIDTH, Chain 2 HIGH CH



### 8.27.2. 99% BANDWIDTH

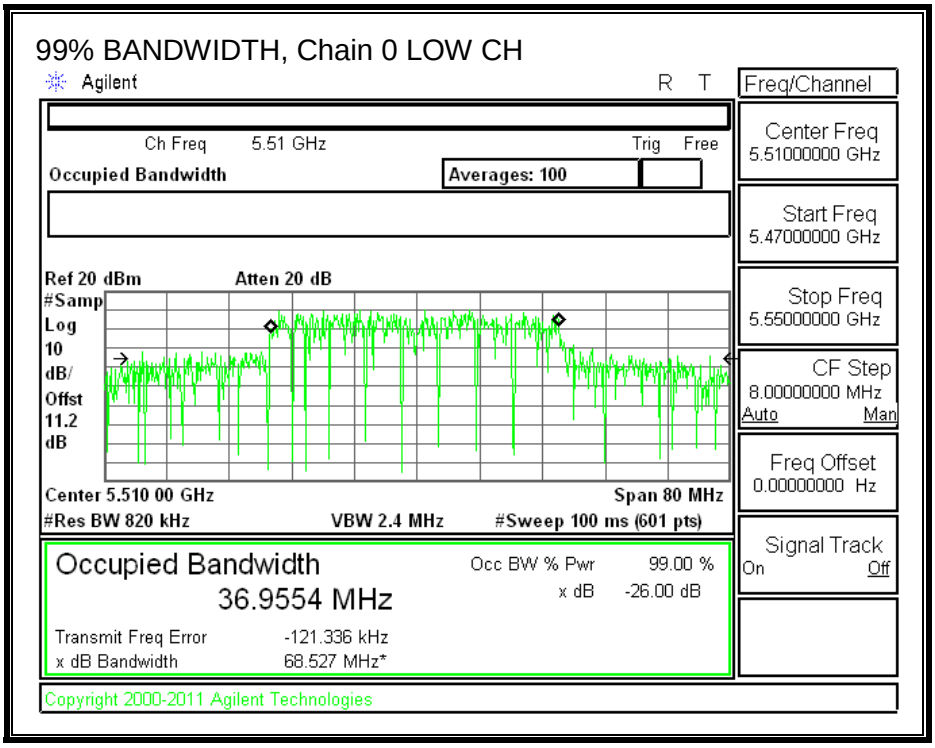
**LIMITS**

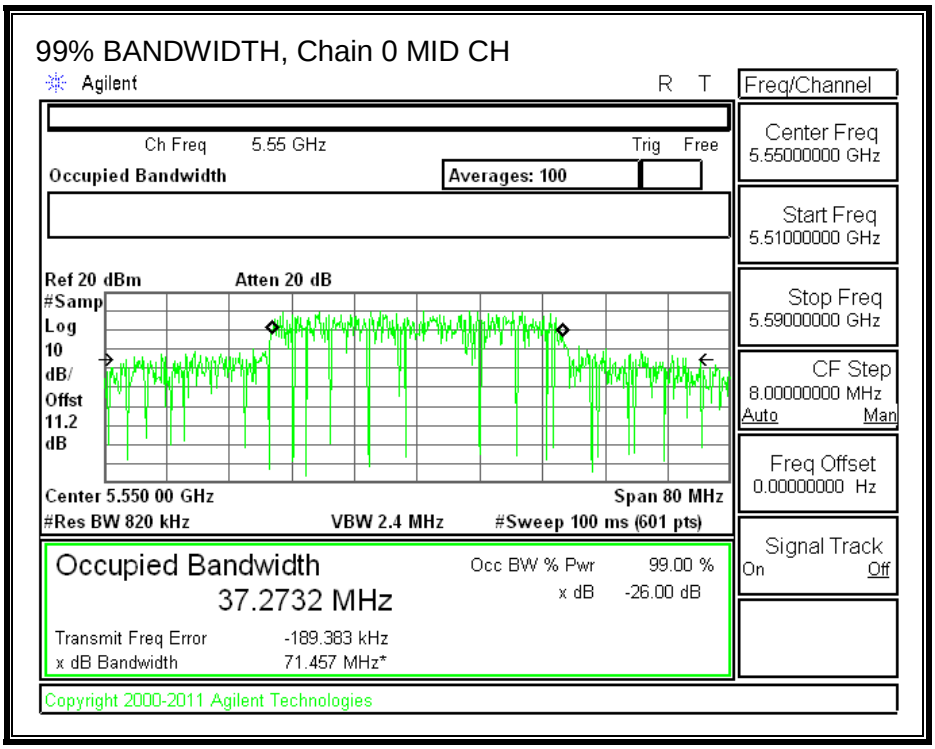
None; for reporting purposes only.

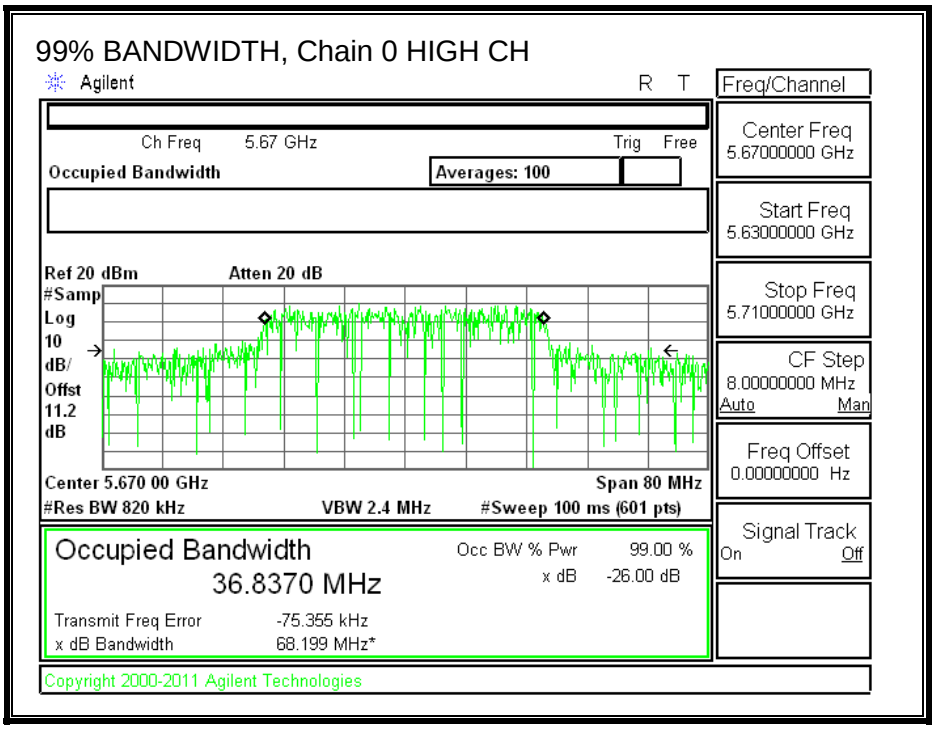
**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) | 99% BW Chain 2 (MHz) |
|---|---|---|---|---|
| Low | 5510 | 36.9554 | 36.9069 | 37.3429 |
| Mid | 5550 | 37.2732 | 36.7588 | 37.4053 |
| High | 5670 | 36.8370 | 36.7167 | 37.2254 |

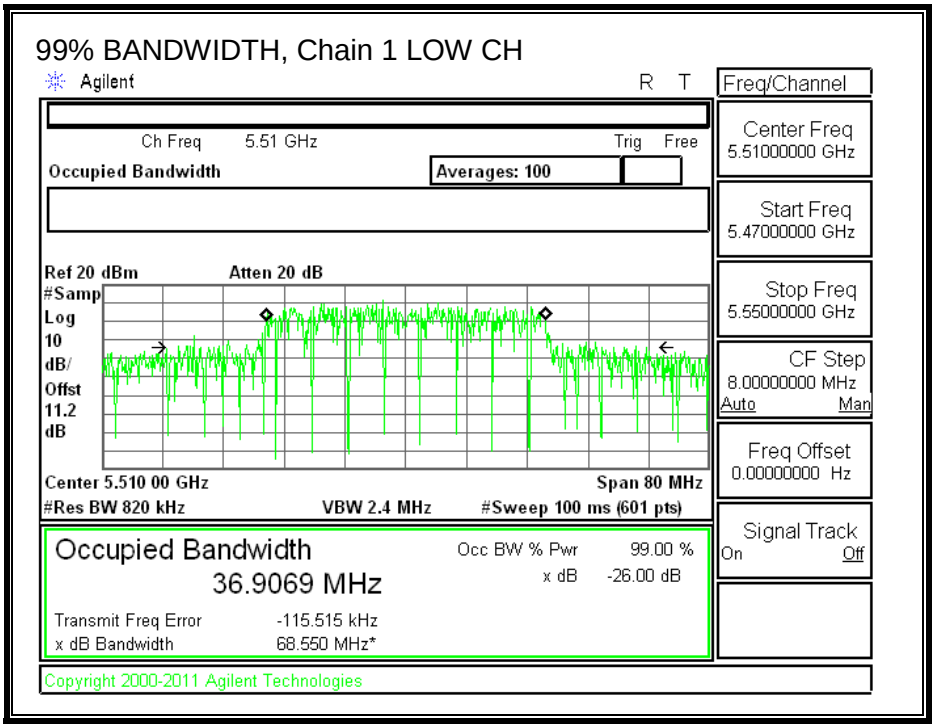
**99% BANDWIDTH, Chain 0**



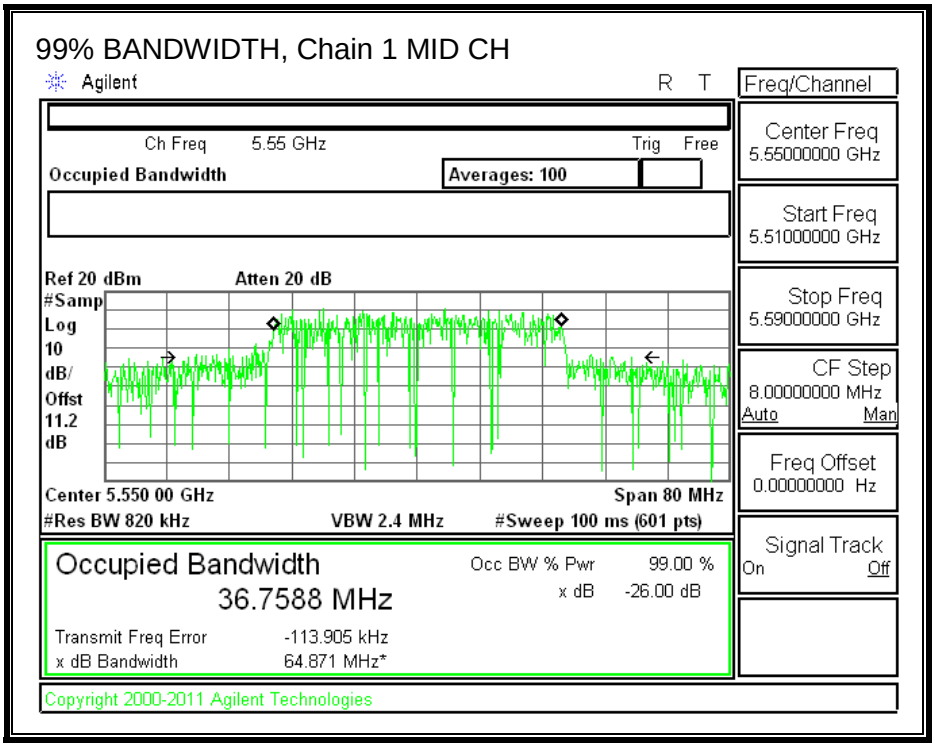





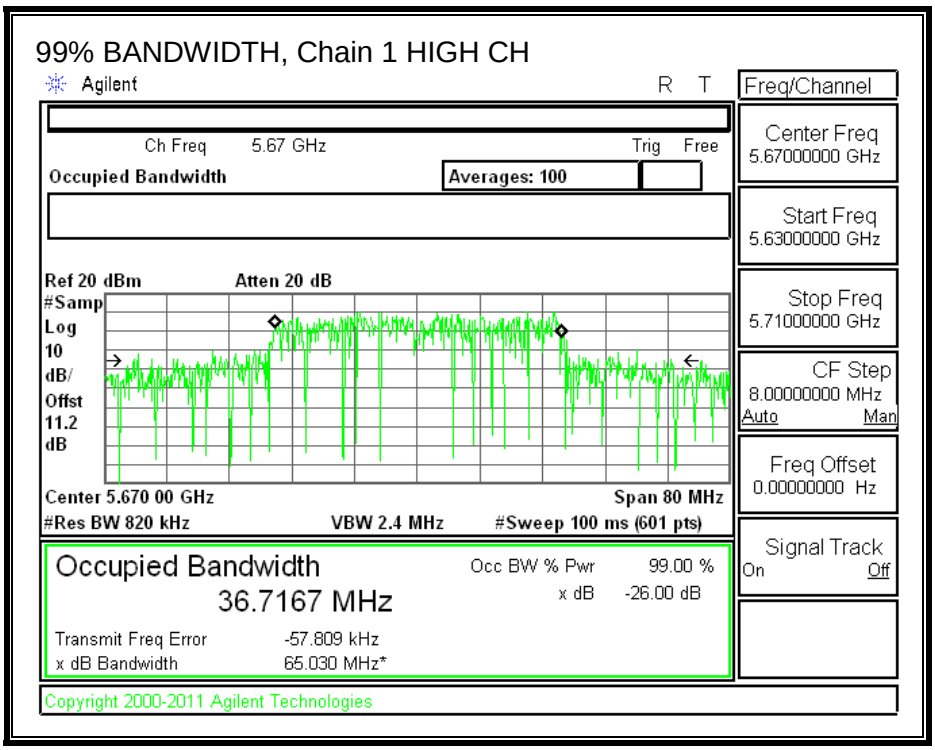

**99% BANDWIDTH, Chain 1**



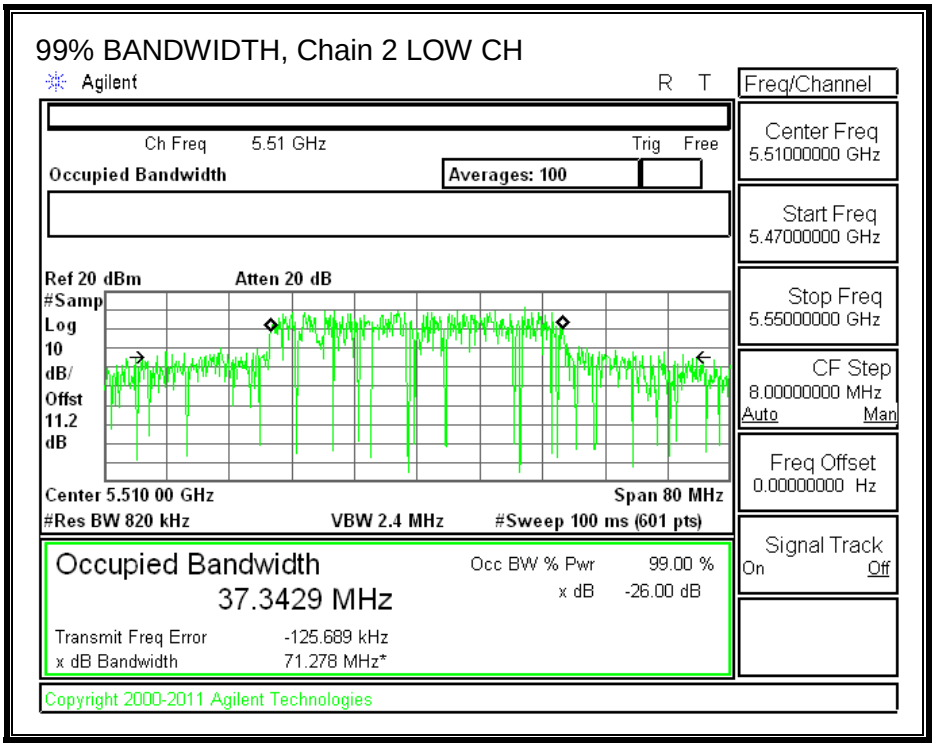
99% BANDWIDTH, Chain 1 MID CH

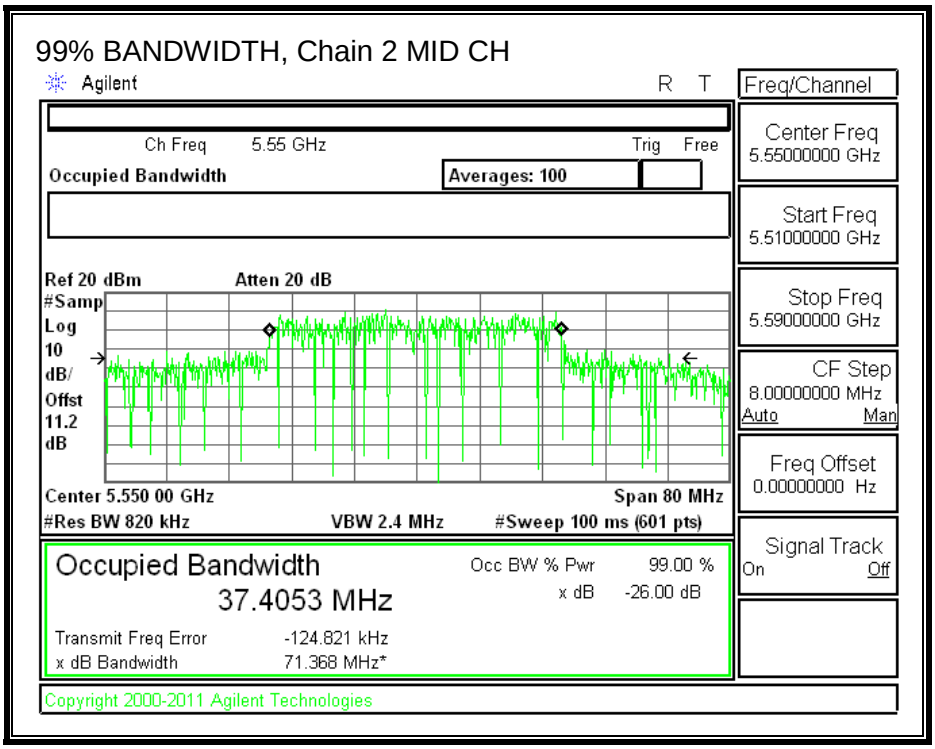


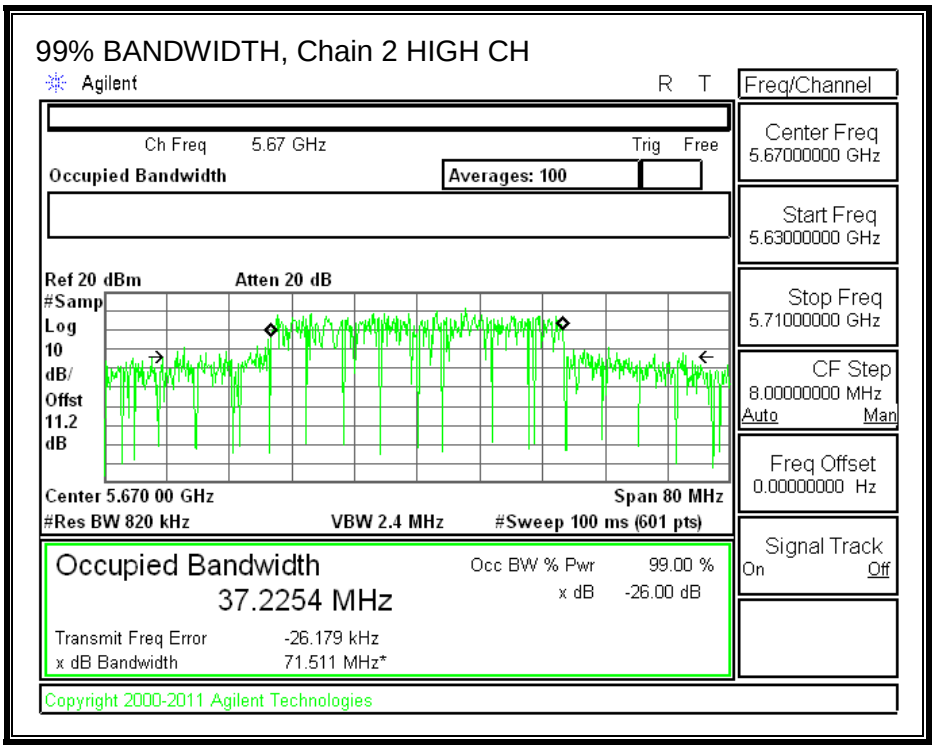

99% BANDWIDTH, Chain 1 HIGH CH



**99% BANDWIDTH, Chain 2**





## 8.27.3. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

**DIRECTIONAL ANTENNA GAIN**

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 4.72 | 2.09 | 2.85 | 3.36 |

## RESULTS

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5510 | 85.44 | 36.9069 | 3.36 |
| Mid | 5550 | 84.00 | 36.7588 | 3.36 |
| High | 5670 | 85.80 | 36.7167 | 3.36 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5510 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |
| Mid | 5550 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |
| High | 5670 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |

| Duty Cycle CF (dB) | 0.23 | Included in Calculations of Corr'd PPSD |
|---|---|---|

**Output Power Results**

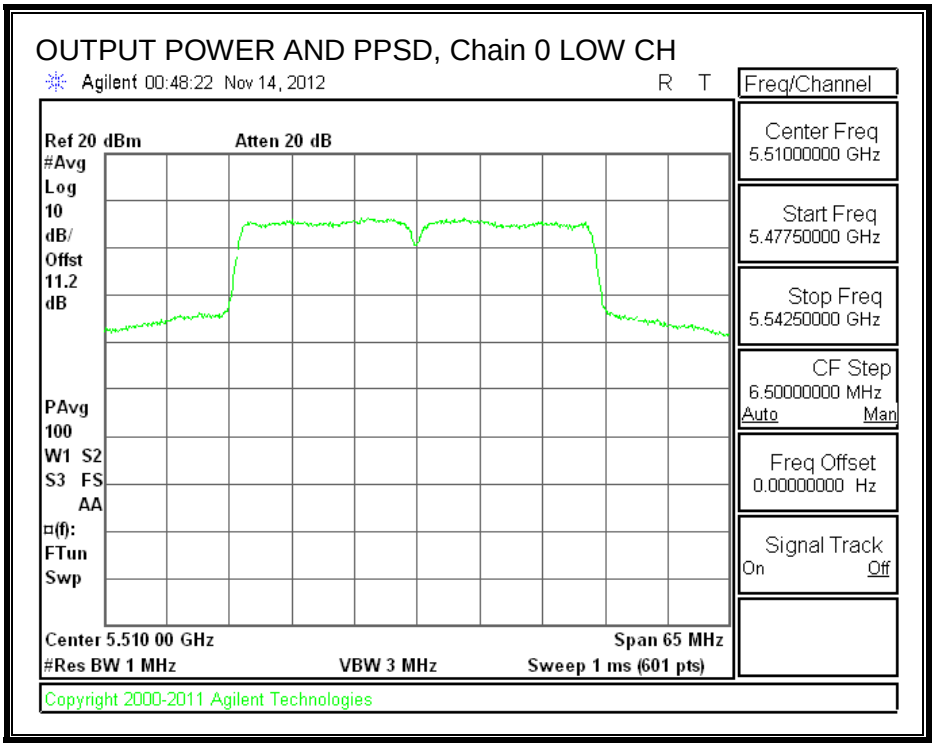
| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5510 | 13.23 | 12.96 | 12.50 | 17.68 | 24.00 | -6.32 |
| Mid | 5550 | 18.95 | 18.65 | 18.45 | 23.46 | 24.00 | -0.54 |
| High | 5670 | 18.99 | 18.69 | 18.68 | 23.56 | 24.00 | -0.44 |

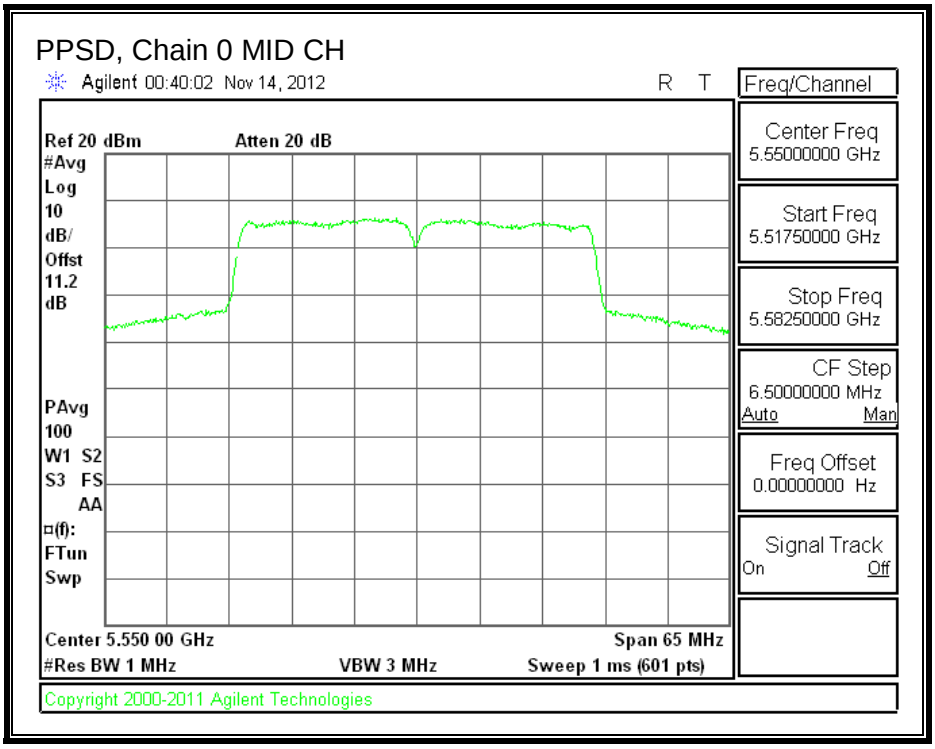
**PPSD Results**

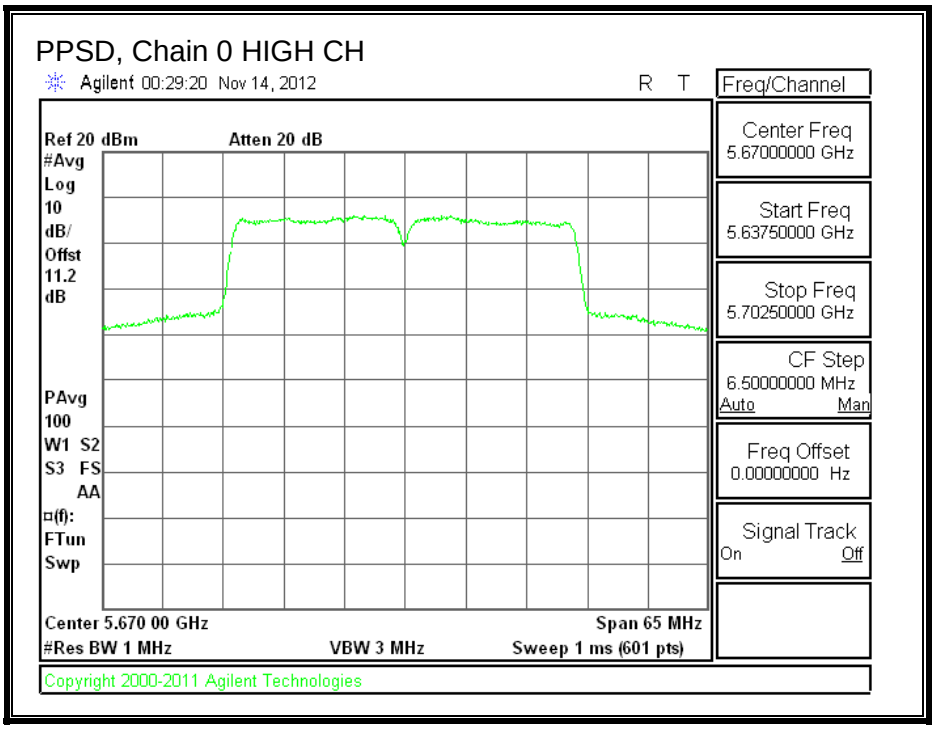
| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5510 | 5.99 | 5.99 | 5.41 | 10.81 | 11.00 | -0.19 |
| Mid | 5550 | 6.06 | 6.00 | 5.02 | 10.72 | 11.00 | -0.28 |
| High | 5670 | 5.53 | 5.94 | 5.71 | 10.73 | 11.00 | -0.27 |

**Note:** method (1) “Measure and sum the spectra across the outputs” as specified in KDB 662911 D01 v01r02 was used for this PSD measurements.

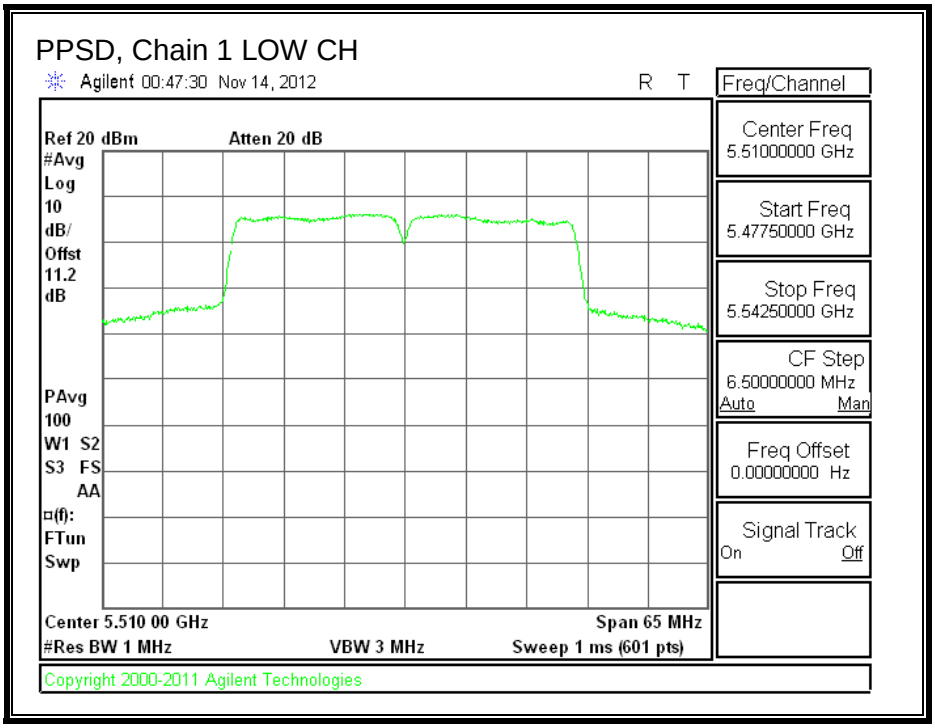
**PPSD, Chain 0**



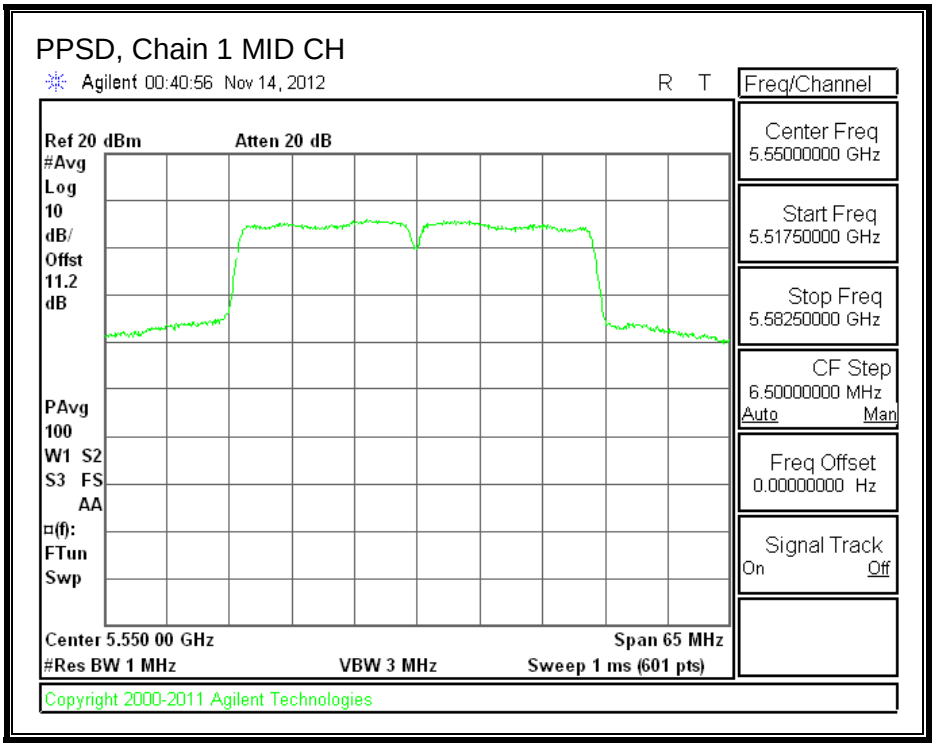





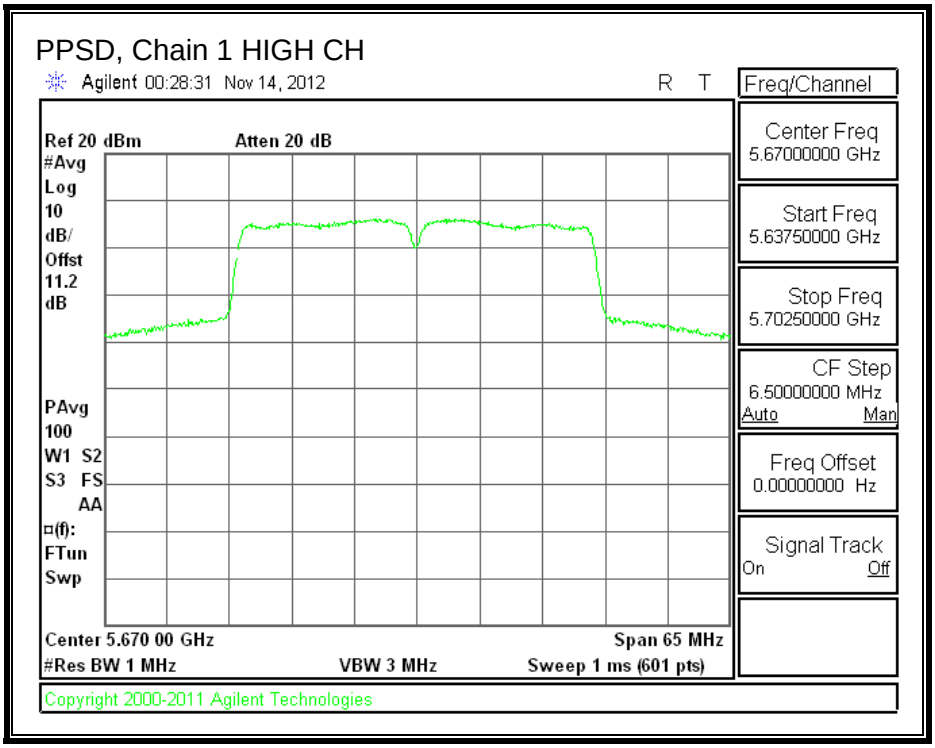

**PPSD, Chain 1**



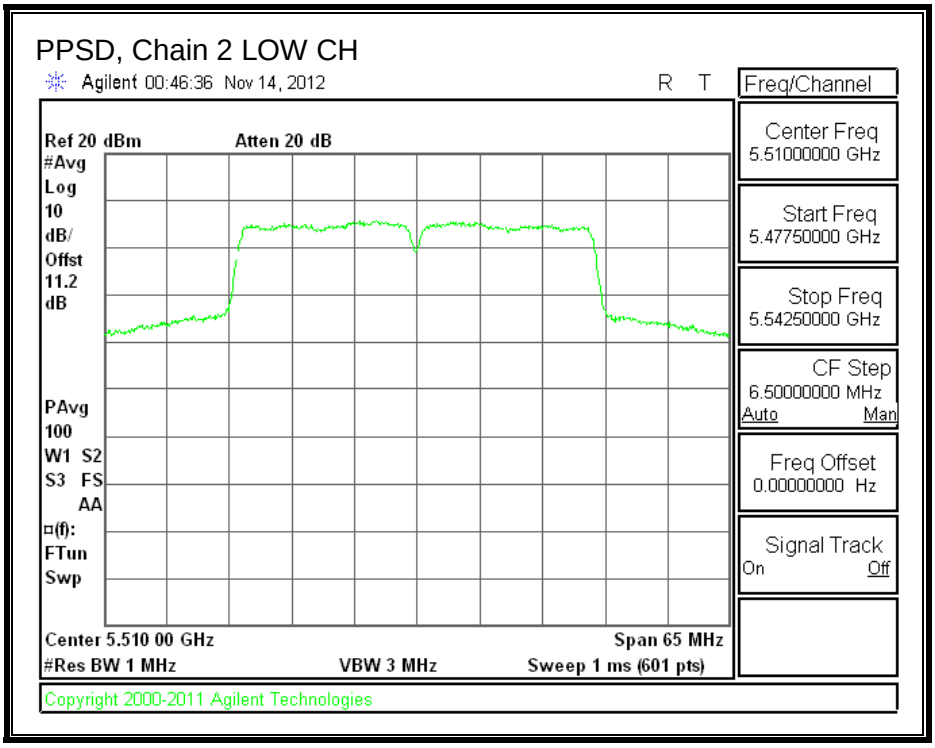
PPSD, Chain 1 MID CH

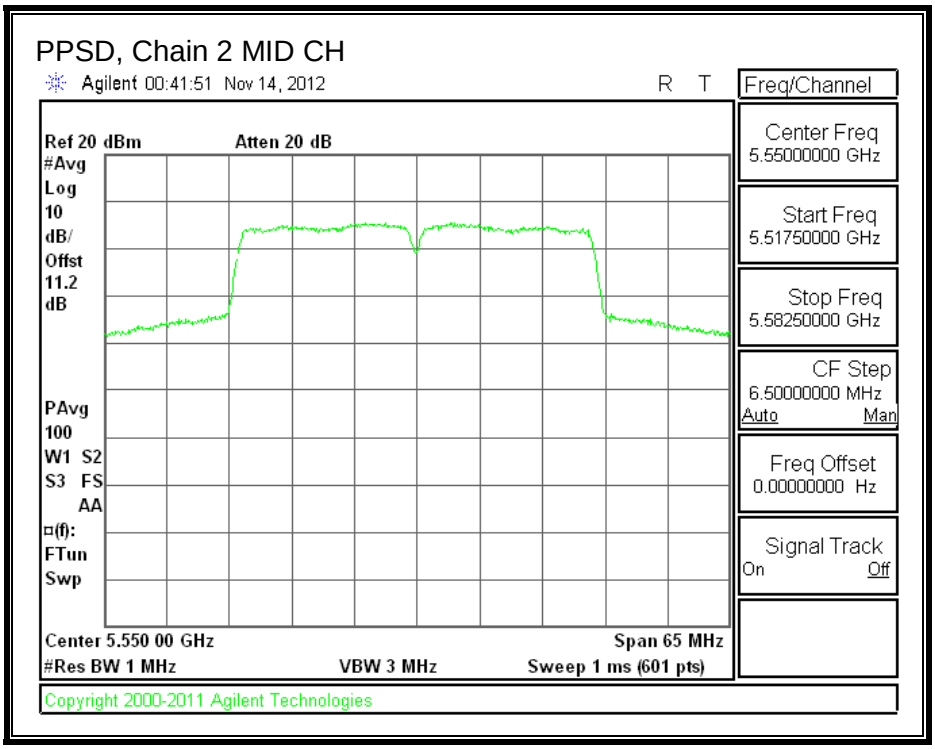


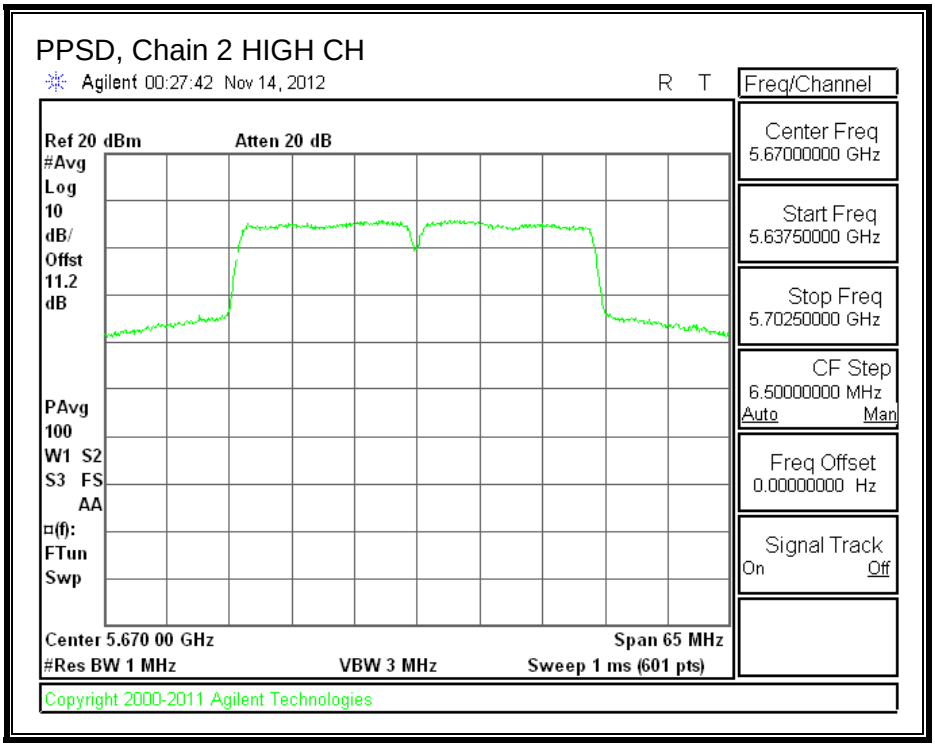

PPSD, Chain 1 HIGH CH



**PPSD, Chain 2**





## 8.28. 802.11n AC80 1TX MODE, 5.6 GHz BAND

### 8.28.1. 26 dB BANDWIDTH

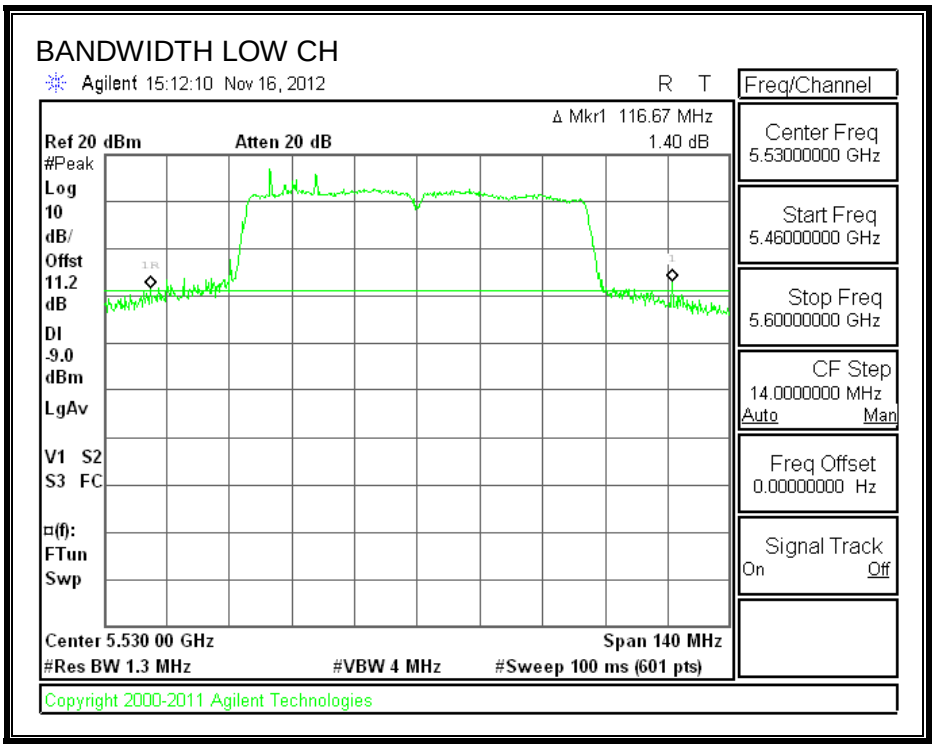
**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 26 dB Bandwidth (MHz) |
|---|---|---|
| Low | 5530 | 116.67 |

**26 dB BANDWIDTH**



### 8.28.2. 99% BANDWIDTH

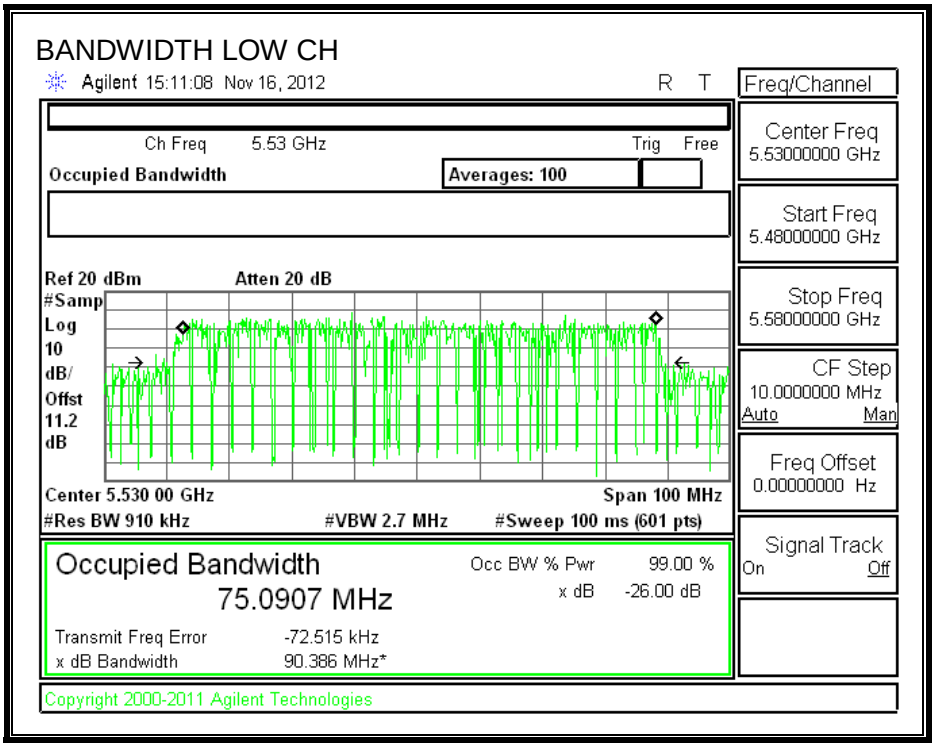
**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 5530 | 75.0907 |

**99% BANDWIDTH**



## 8.28.3. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

**DIRECTIONAL ANTENNA GAIN**

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

## RESULTS

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5530 | 116.67 | 75.0907 | 5.53 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5530 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |

| Duty Cycle CF (dB) | 0.46 | Included in Calculations of Corr'd PPSD |
|---|---|---|

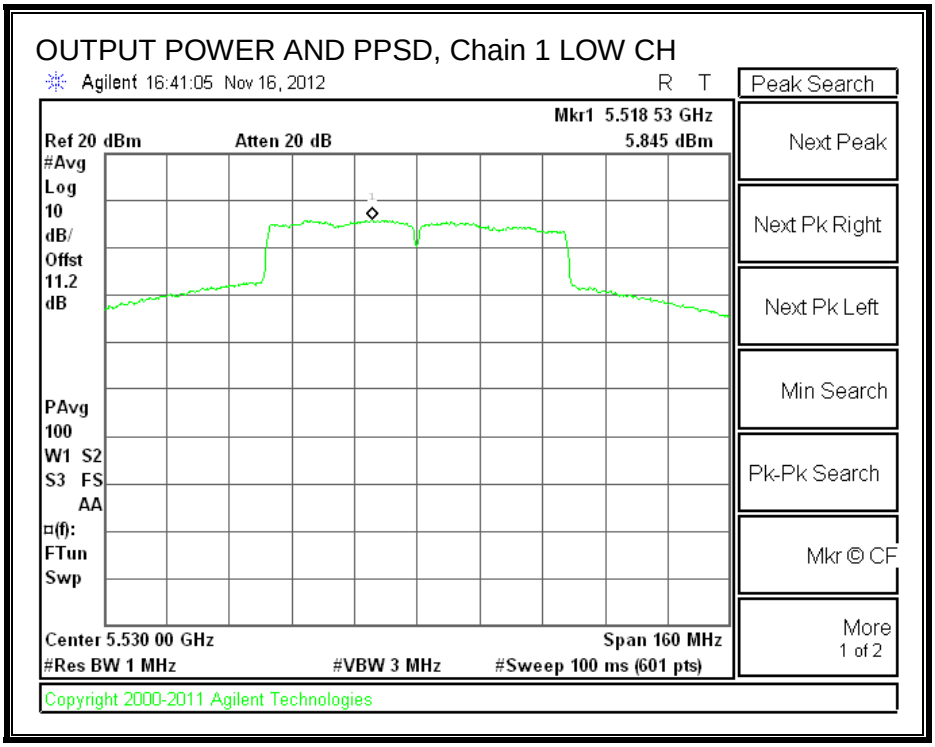
**Output Power Results**

| Channel | Frequency (MHz) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| Low | 5530 | 12.84 | 12.84 | 24.00 | -11.16 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| Low | 5530 | 5.845 | 6.305 | 11.00 | -4.695 |

**OUTPUT POWER AND PPSD, Chain 1**



## 8.29. 802.11n AC80 CDD 3TX MODE, 5.6 GHz BAND

### 8.29.1. 26 dB BANDWIDTH

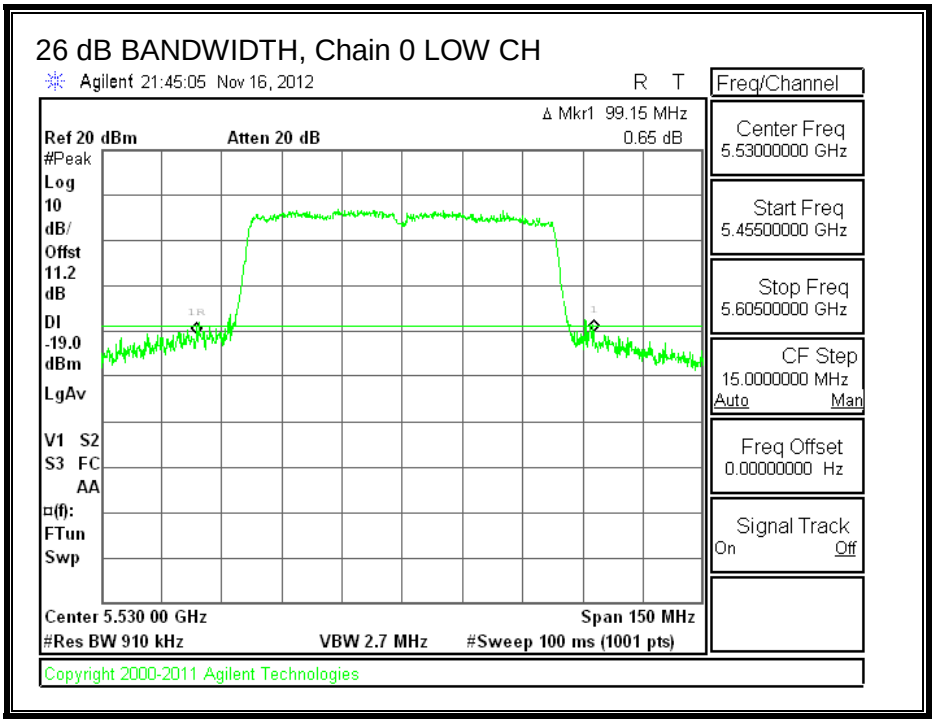
**LIMITS**

None; for reporting purposes only.

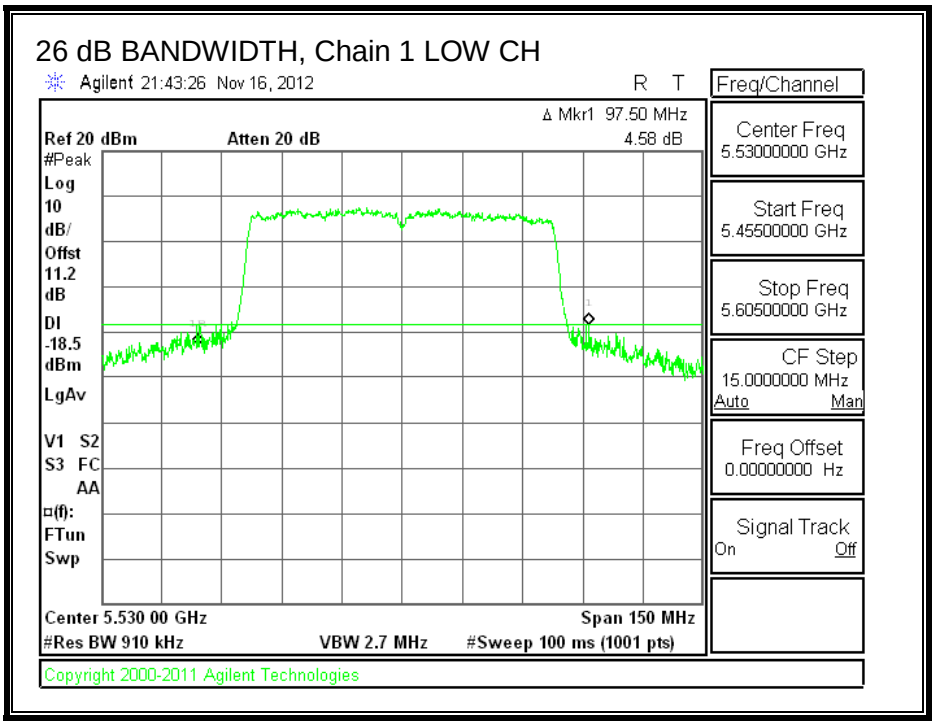
**RESULTS**

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) | 26 dB BW Chain 2 (MHz) |
|---|---|---|---|---|
| Low | 5530 | 99.15 | 97.50 | 92.70 |

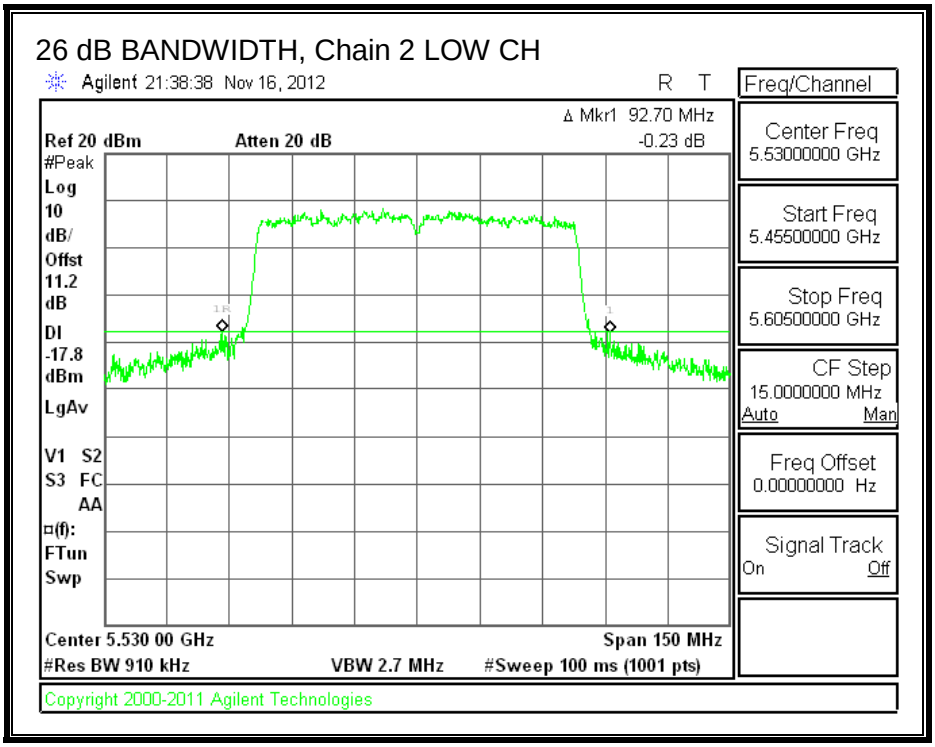
**26 dB BANDWIDTH, Chain 0**




**26 dB BANDWIDTH, Chain 1**



**26 dB BANDWIDTH, Chain 2**



### 8.29.2. 99% BANDWIDTH

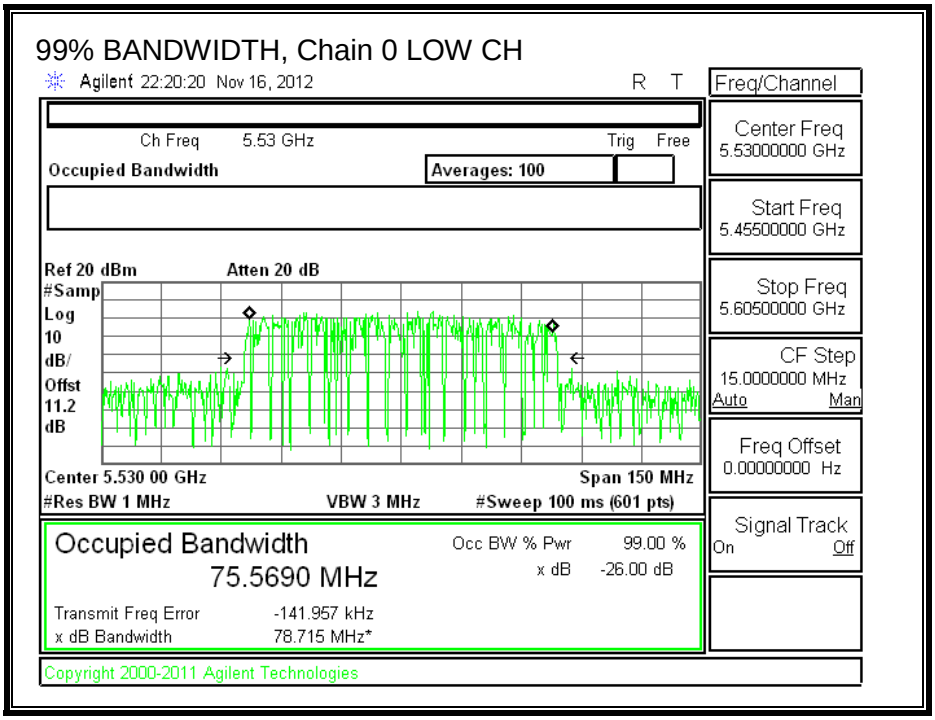
**LIMITS**

None; for reporting purposes only.

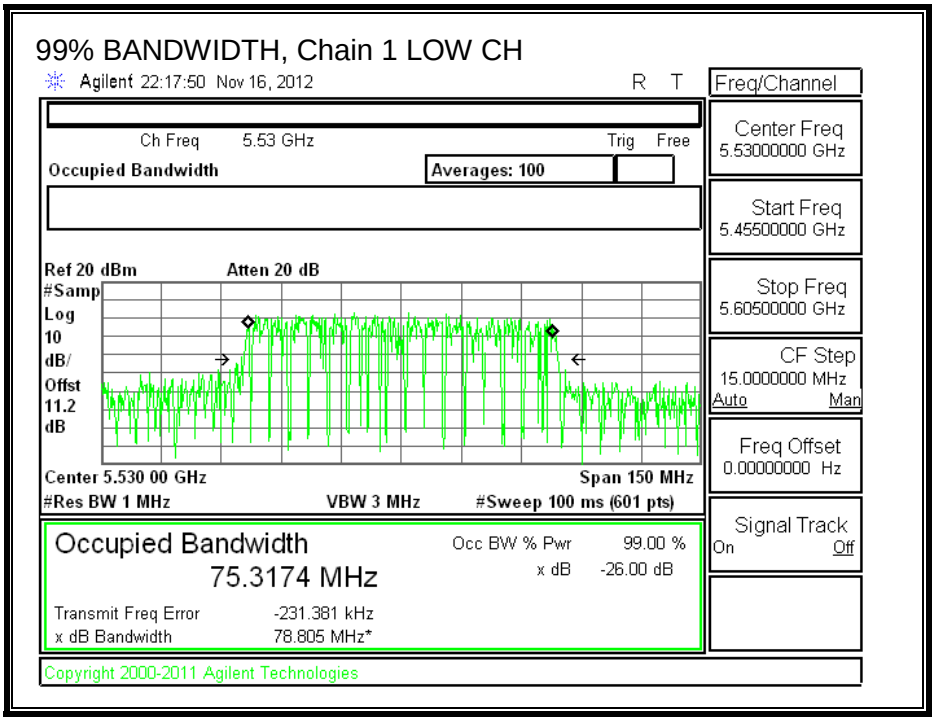
**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) | 99% BW Chain 2 (MHz) |
|---|---|---|---|---|
| Low | 5530 | 75.5690 | 75.3174 | 75.5696 |

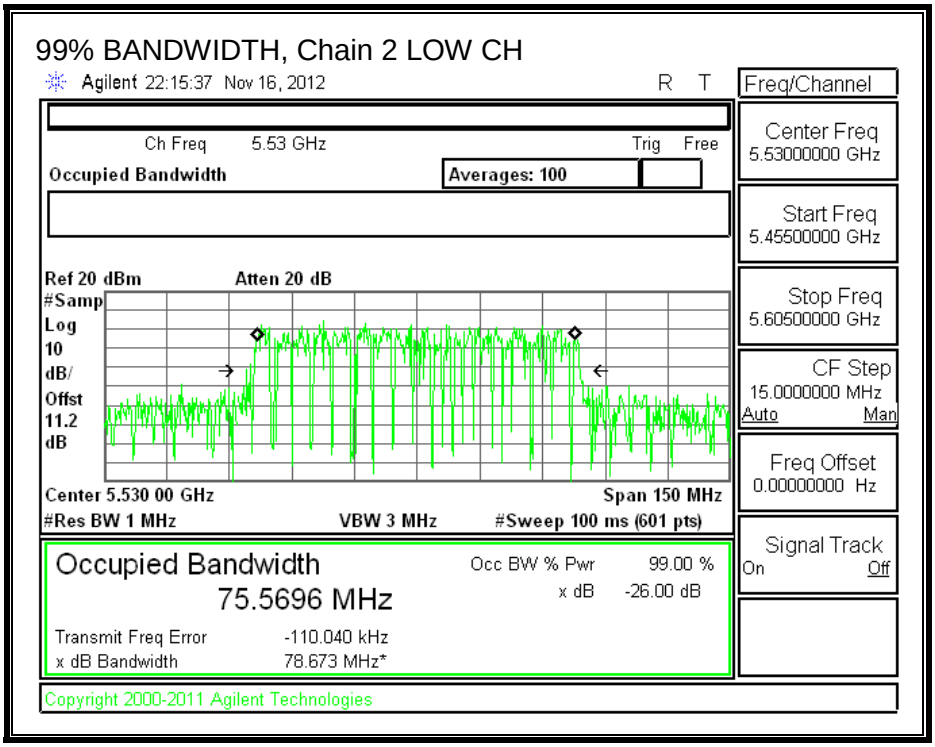
**99% BANDWIDTH, Chain 0**




**99% BANDWIDTH, Chain 1**



**99% BANDWIDTH, Chain 2**



## 8.29.3. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

**DIRECTIONAL ANTENNA GAIN**

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 5.53 | 2.68 | 1.26 | 3.53 |

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 5.53 | 2.68 | 1.26 | 8.11 |

## RESULTS

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5530 | 92.70 | 75.3174 | 3.53 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) |
|---|---|---|---|---|---|---|
| Low | 5530 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 |

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power |
|---|---|---|

**Gated Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5530 | 12.80 | 12.44 | 12.20 | 17.26 | 24.00 | -6.74 |

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5530 | 92.70 | 75.3174 | 8.11 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5530 | 21.89 | 24.00 | 30.00 | 21.89 | 8.89 | 11.00 | 8.89 |

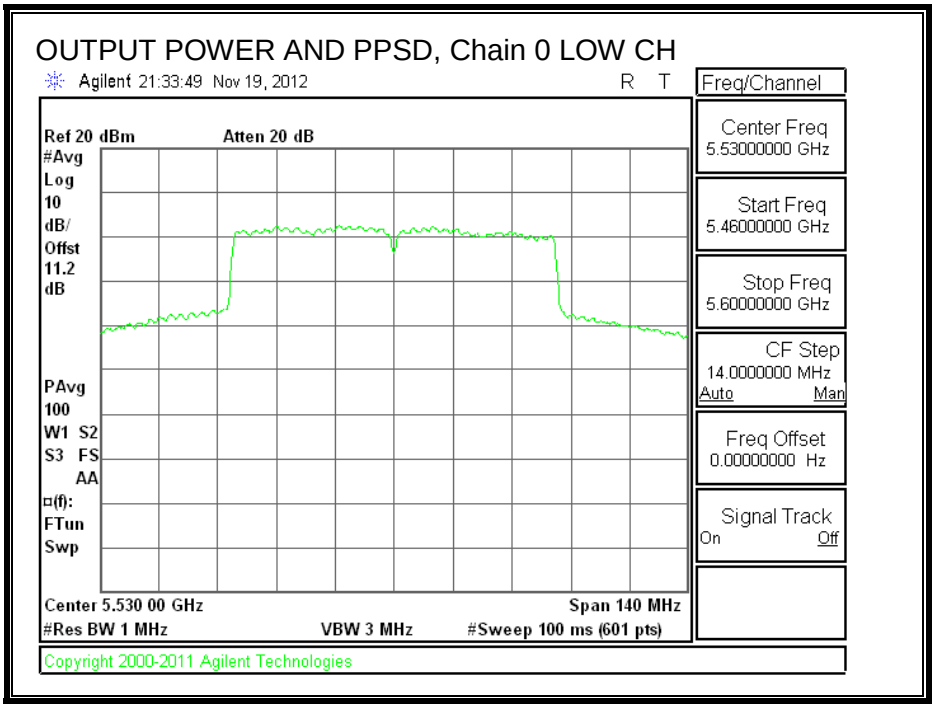
| Duty Cycle CF (dB) | 0.46 | Included in Calculations of Corr'd PPSD |
|---|---|---|

**PPSD Results**

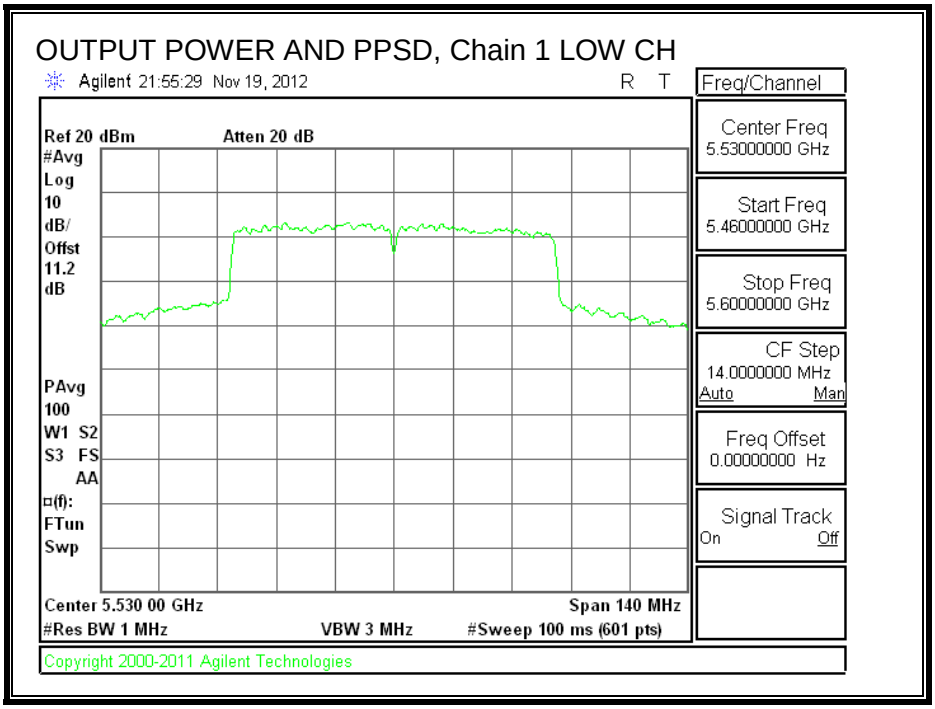
| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5530 | 1.98 | 3.06 | 3.78 | 8.23 | 8.89 | -0.66 |

**Note:** method (1) “Measure and sum the spectra across the outputs” as specified in KDB 662911 D01 v01r02 was used for this PSD measurements.

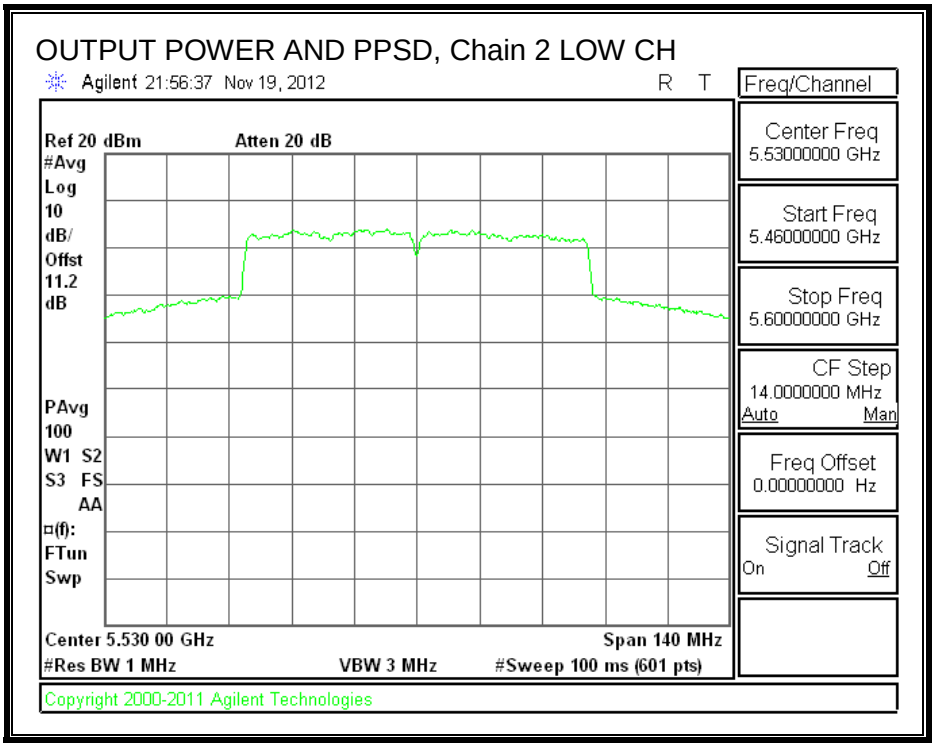
**OUTPUT POWER AND PPSD, Chain 0**




**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**



## 8.30. 802.11n AC80 BF 3TX MODE, 5.6 GHz BAND

### 8.30.1. 26 dB BANDWIDTH

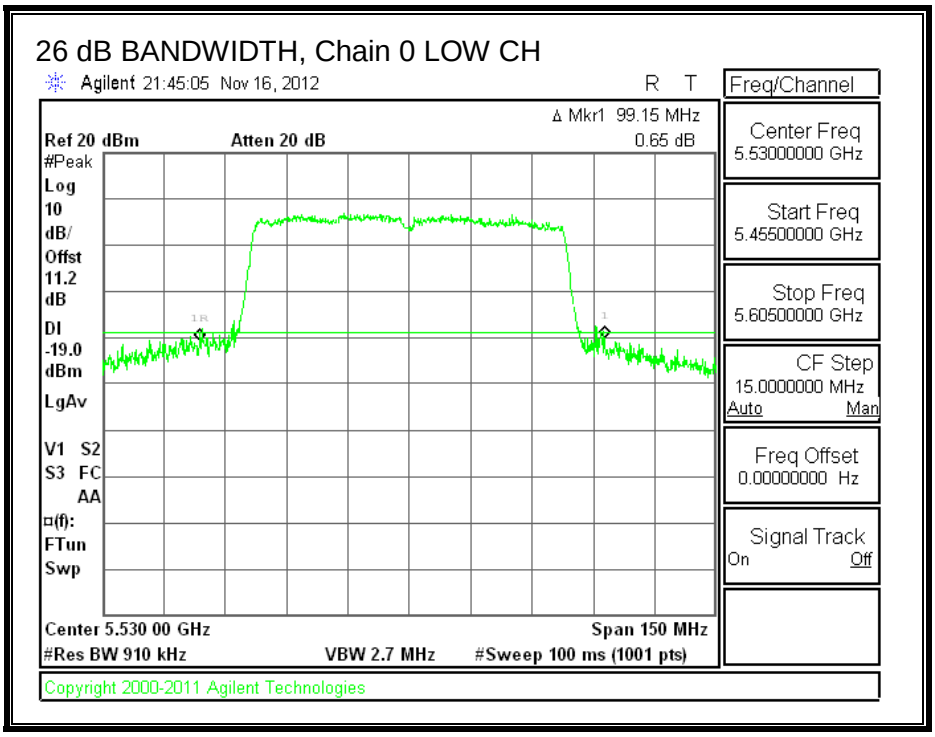
**LIMITS**

None; for reporting purposes only.

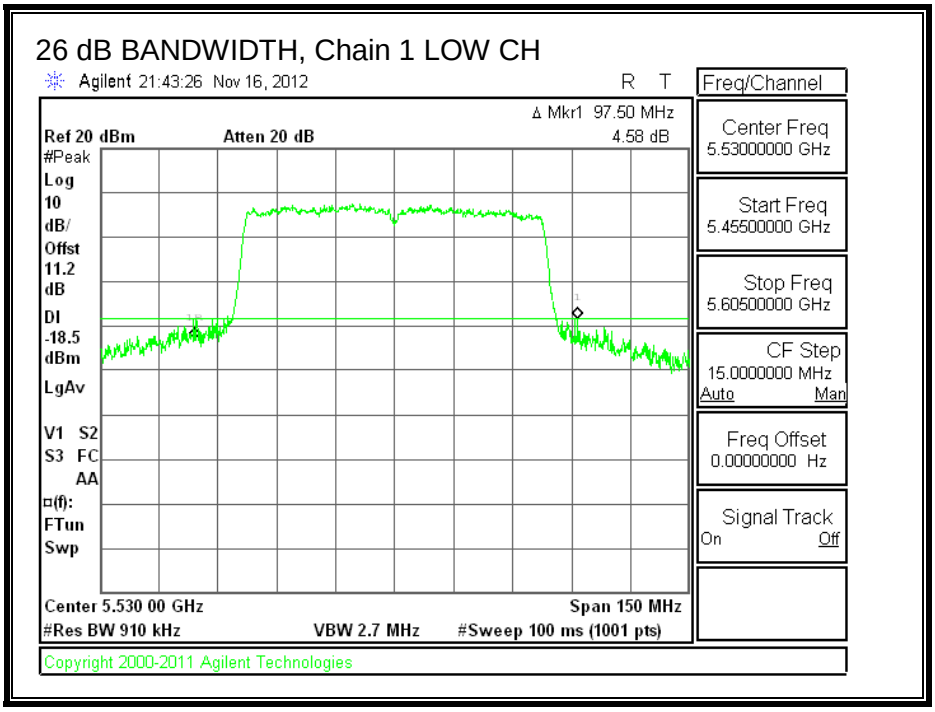
**RESULTS**

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) | 26 dB BW Chain 2 (MHz) |
|---|---|---|---|---|
| Low | 5530 | 99.15 | 97.50 | 92.70 |

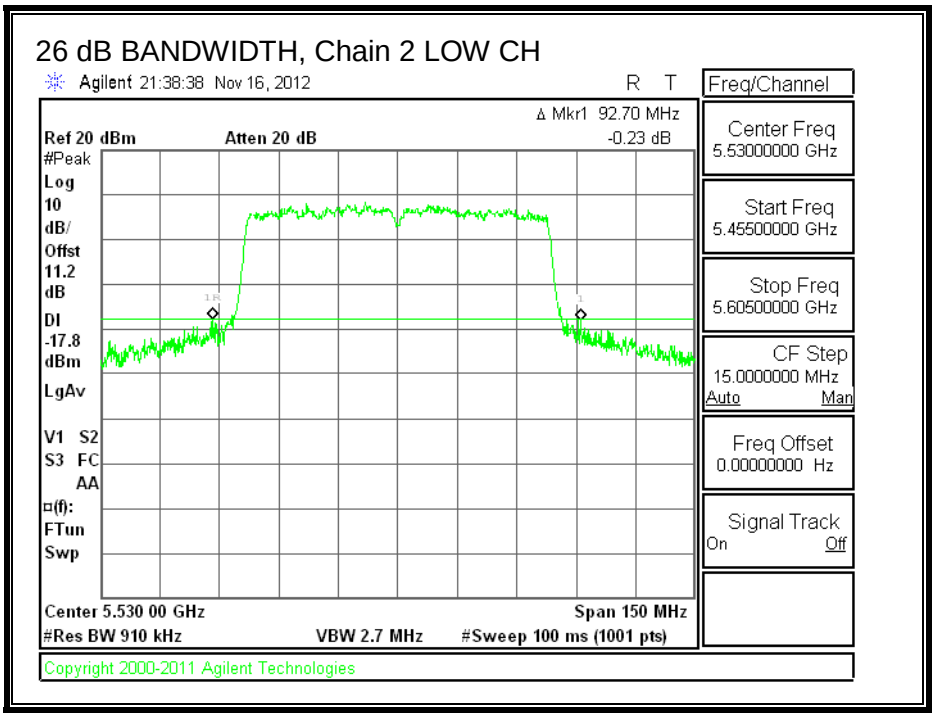
**26 dB BANDWIDTH, Chain 0**



**26 dB BANDWIDTH, Chain 1**




**26 dB BANDWIDTH, Chain 2**



## 8.30.2. 99% BANDWIDTH

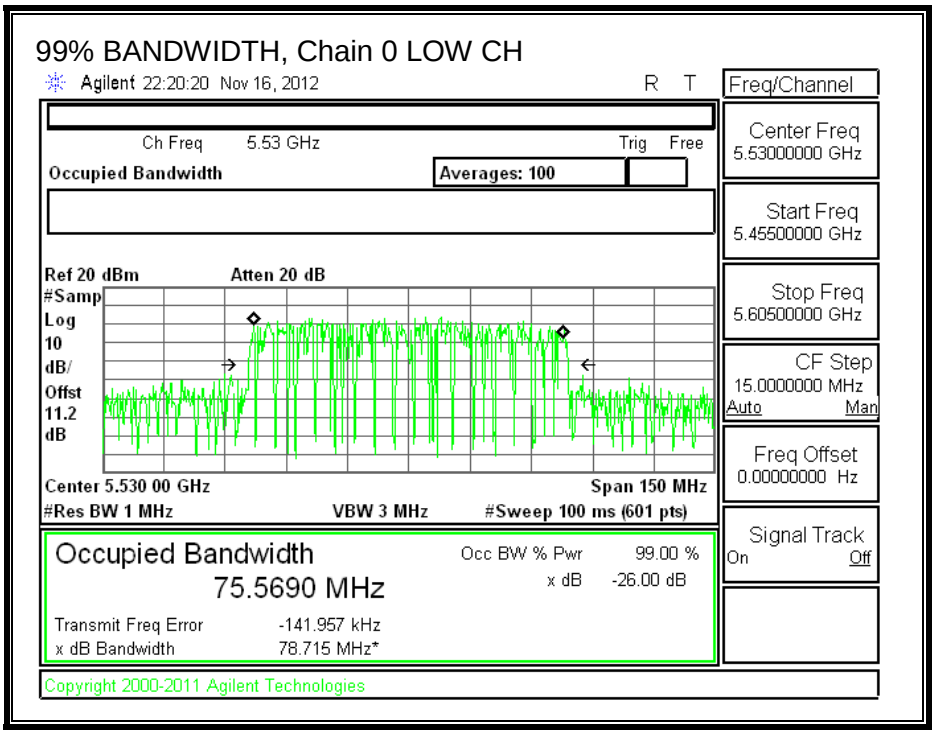
**LIMITS**

None; for reporting purposes only.

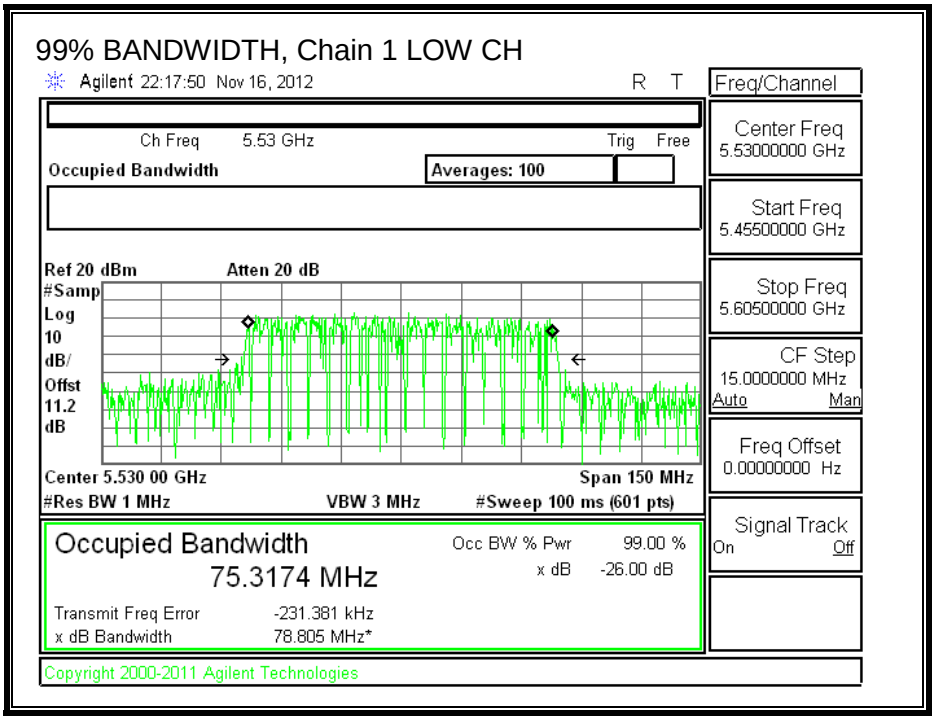
**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) | 99% BW Chain 2 (MHz) |
|---|---|---|---|---|
| Low | 5530 | 75.5690 | 75.3174 | 75.5696 |

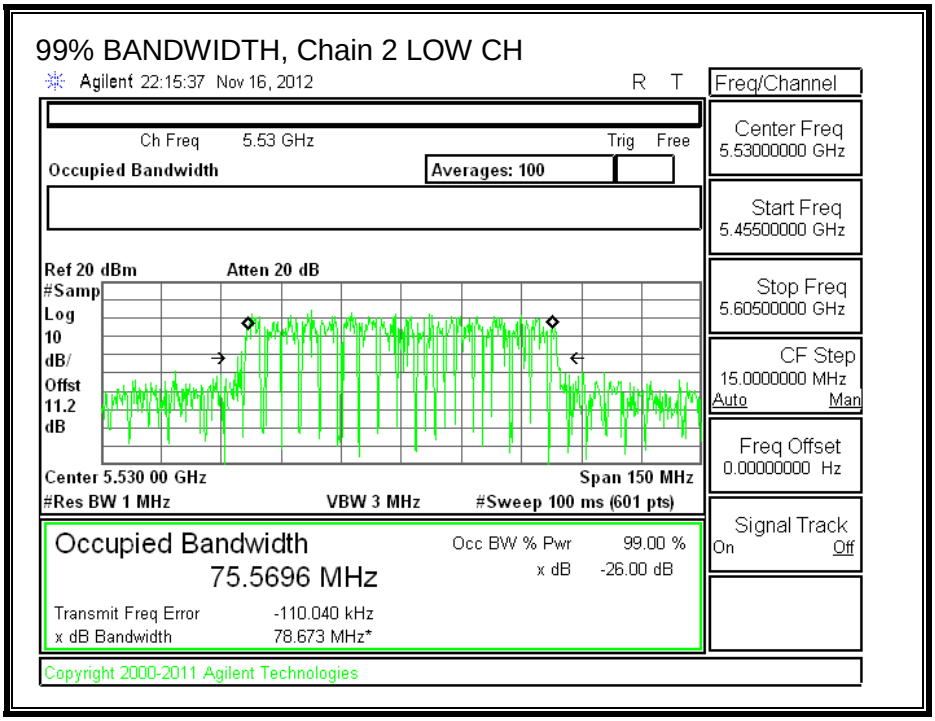
**99% BANDWIDTH, Chain 0**



**99% BANDWIDTH, Chain 1**




**99% BANDWIDTH, Chain 2**



## 8.30.3. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

**DIRECTIONAL ANTENNA GAIN**

The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 5.53 | 2.68 | 1.26 | 8.11 |

## RESULTS

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5530 | 92.70 | 75.3174 | 8.11 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5530 | 21.89 | 24.00 | 30.00 | 21.89 | 8.89 | 11.00 | 8.89 |

| Duty Cycle CF (dB) | 0.46 | Included in Calculations of Corr'd PPSD |
|---|---|---|

**Output Power Results**

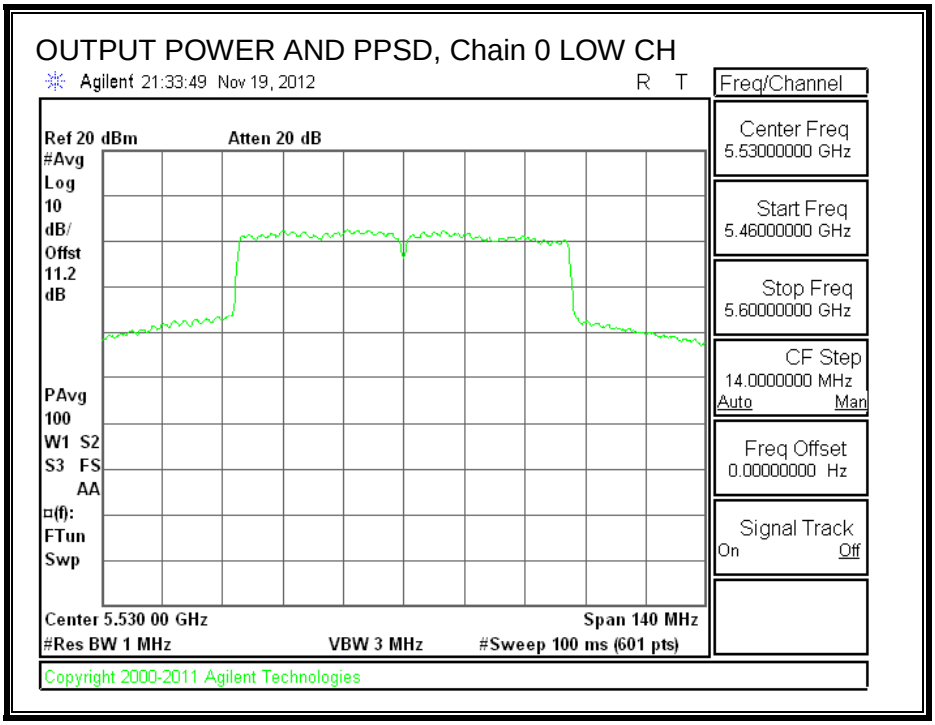
| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5530 | 11.34 | 11.14 | 11.09 | 15.96 | 21.89 | -5.93 |

**PPSD Results**

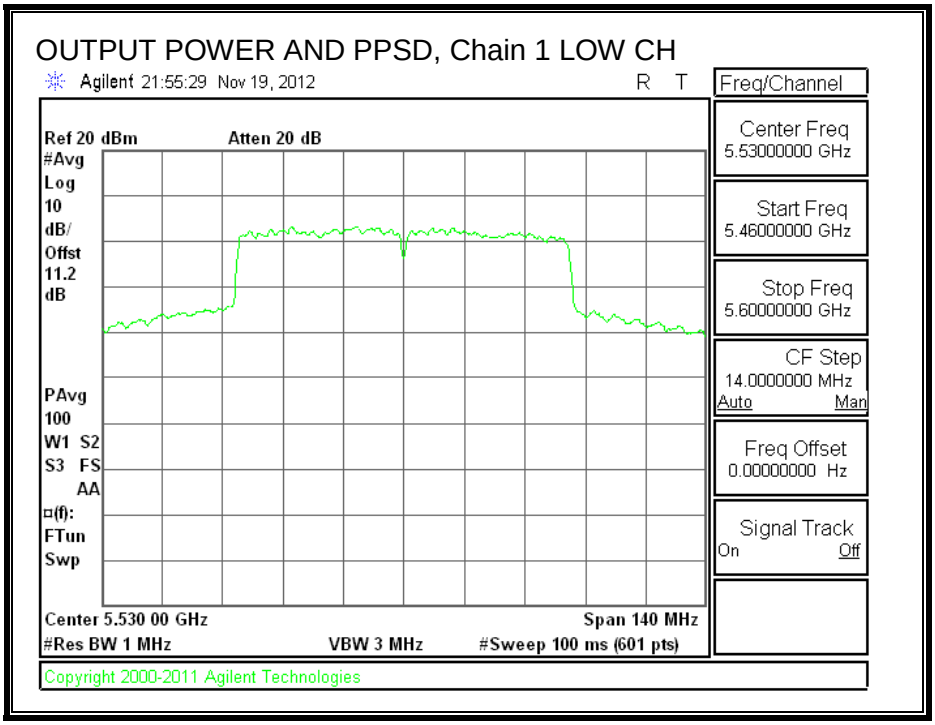
| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5530 | 1.98 | 3.06 | 3.78 | 8.23 | 8.89 | -0.66 |

**Note:** method (1) “Measure and sum the spectra across the outputs” as specified in KDB 662911 D01 v01r02 was used for this PSD measurements.

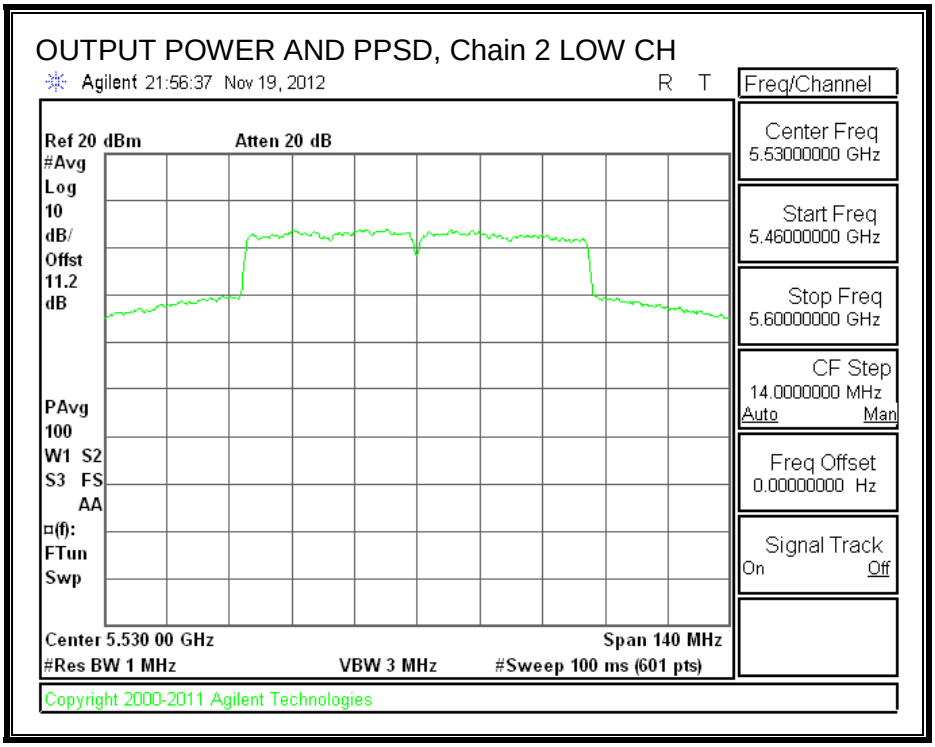
**OUTPUT POWER AND PPSD, Chain 0**




**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**



# 8.31. 802.11n AC80 CDD CH 138 3TX MODE, 5.6 GHz BAND

## 8.31.1. 26 dB BANDWIDTH- UNII

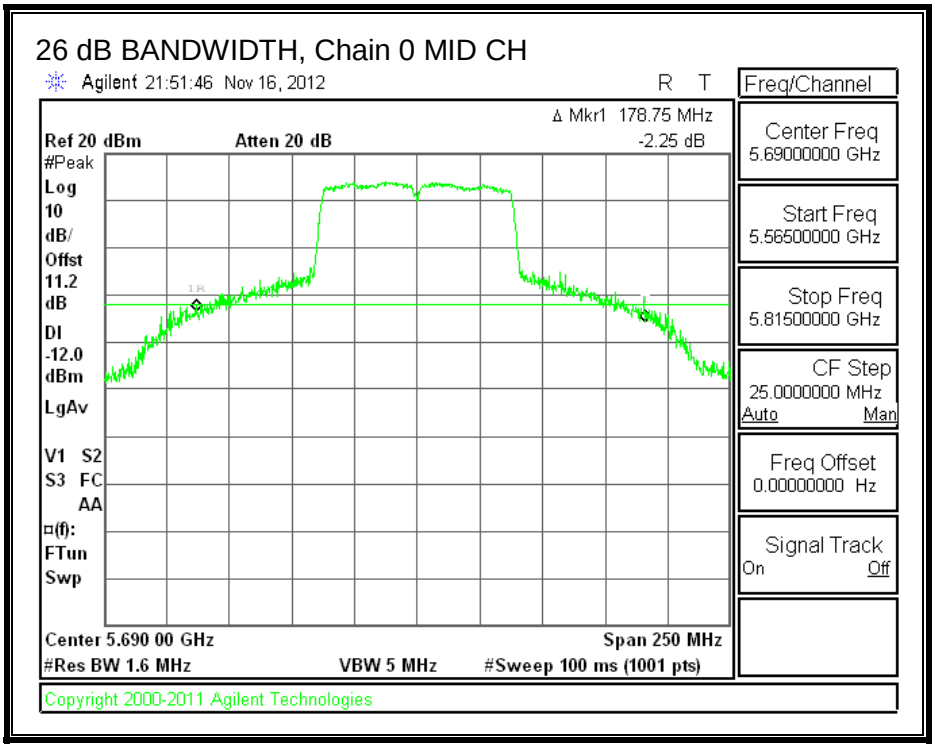
**LIMITS**

None; for reporting purposes only.

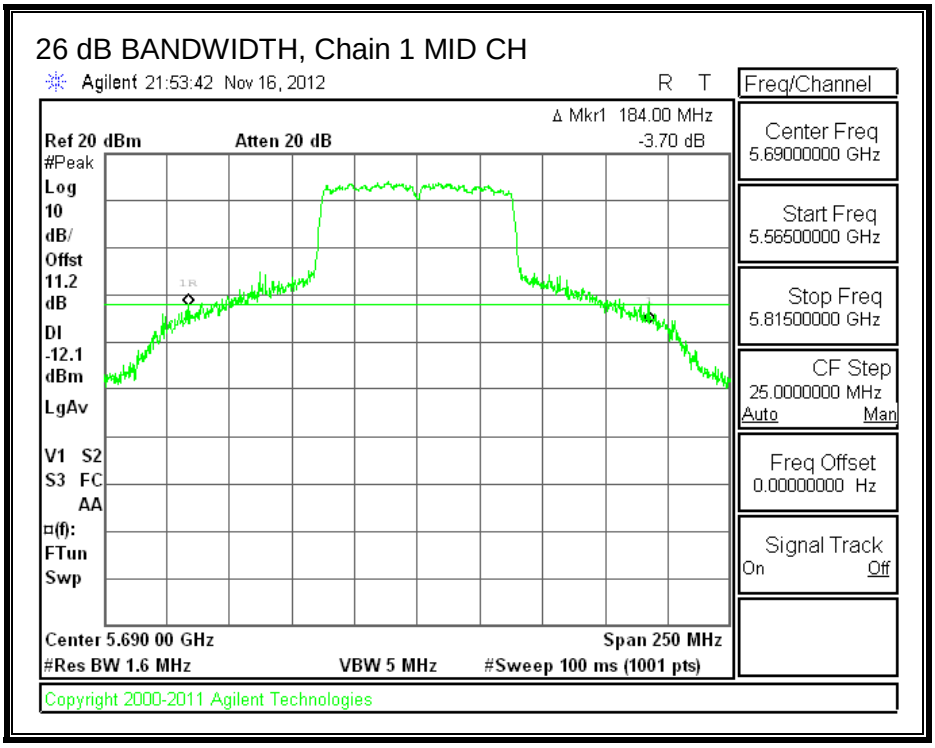
**RESULTS**

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) | 26 dB BW Chain 2 (MHz) |
|---|---|---|---|---|
| Mid | 5690 | 178.75 | 184.00 | 172.00 |

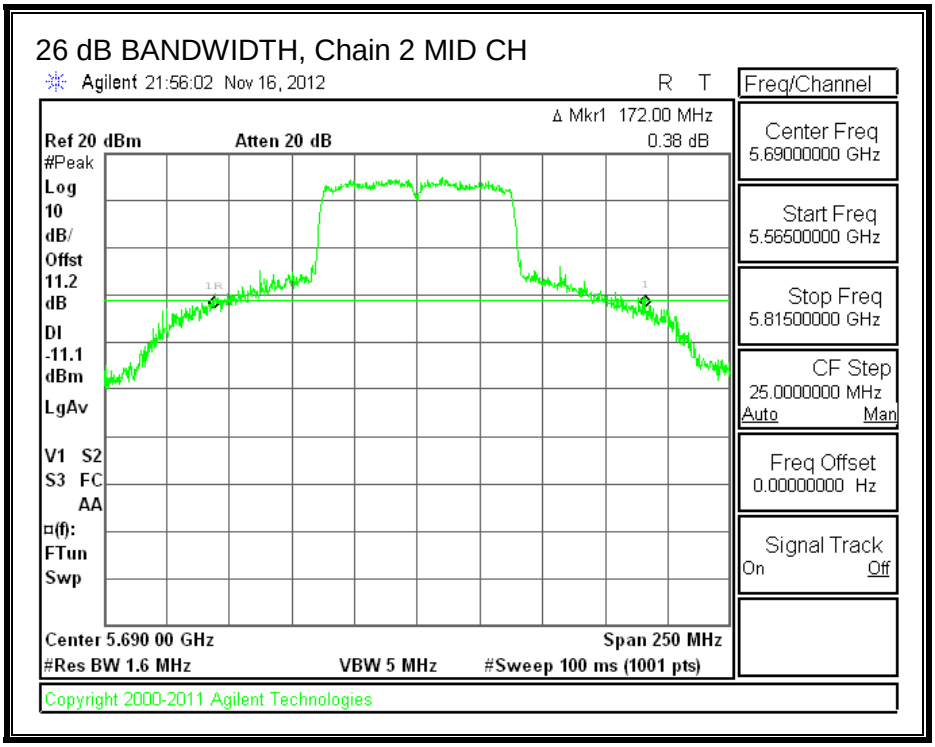
**26 dB BANDWIDTH, Chain 0**




**26 dB BANDWIDTH, Chain 1**



**26 dB BANDWIDTH, Chain 2**



## 8.31.2. 99% BANDWIDTH

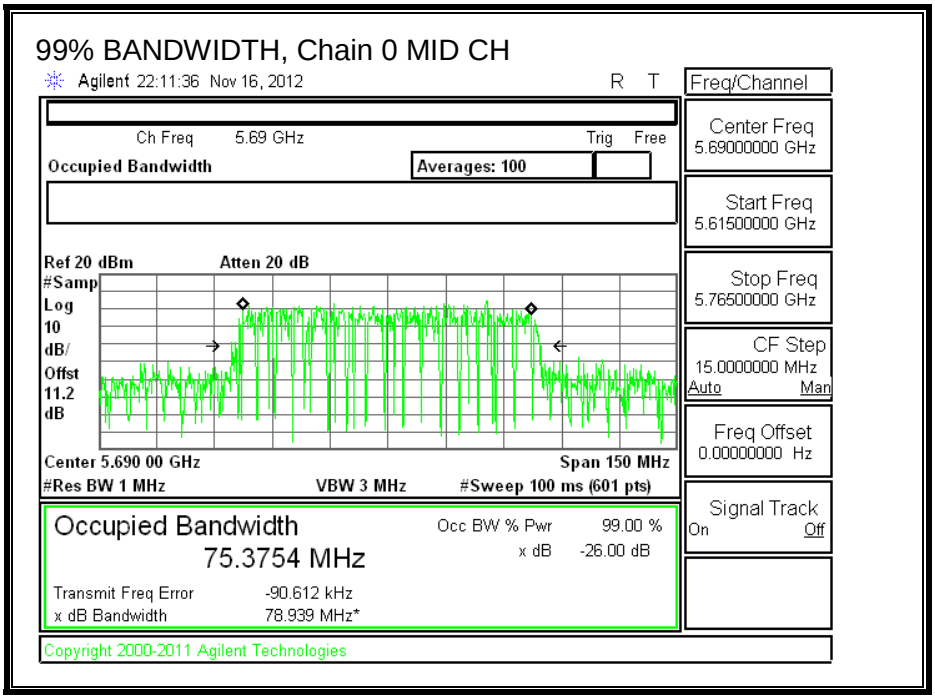
**LIMITS**

None; for reporting purposes only.

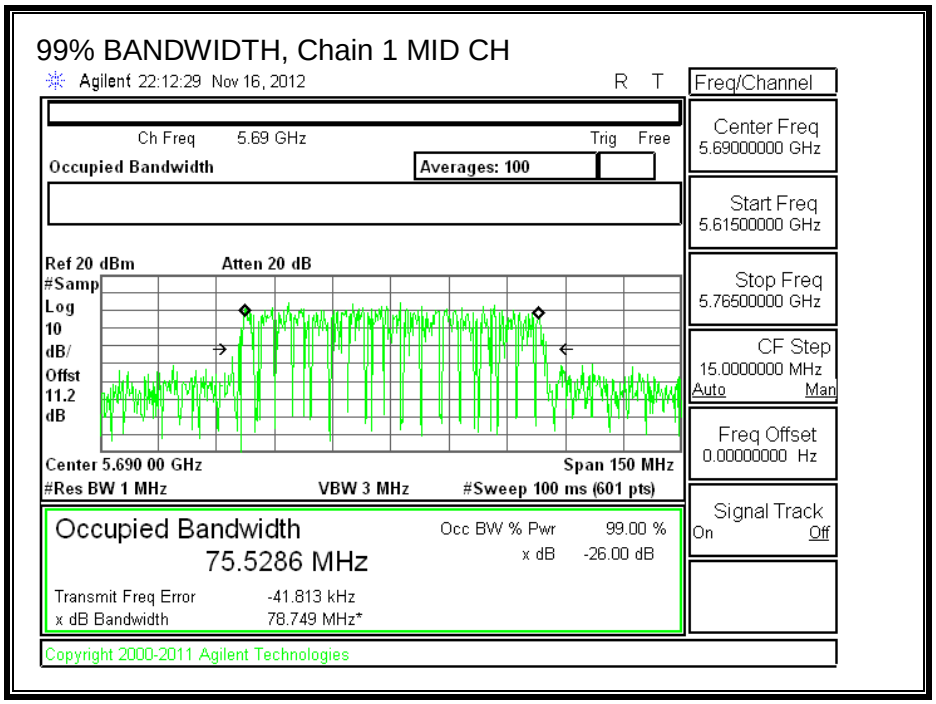
**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) | 99% BW Chain 2 (MHz) |
|---|---|---|---|---|
| Mid | 5690 | 75.3754 | 75.5286 | 75.4394 |

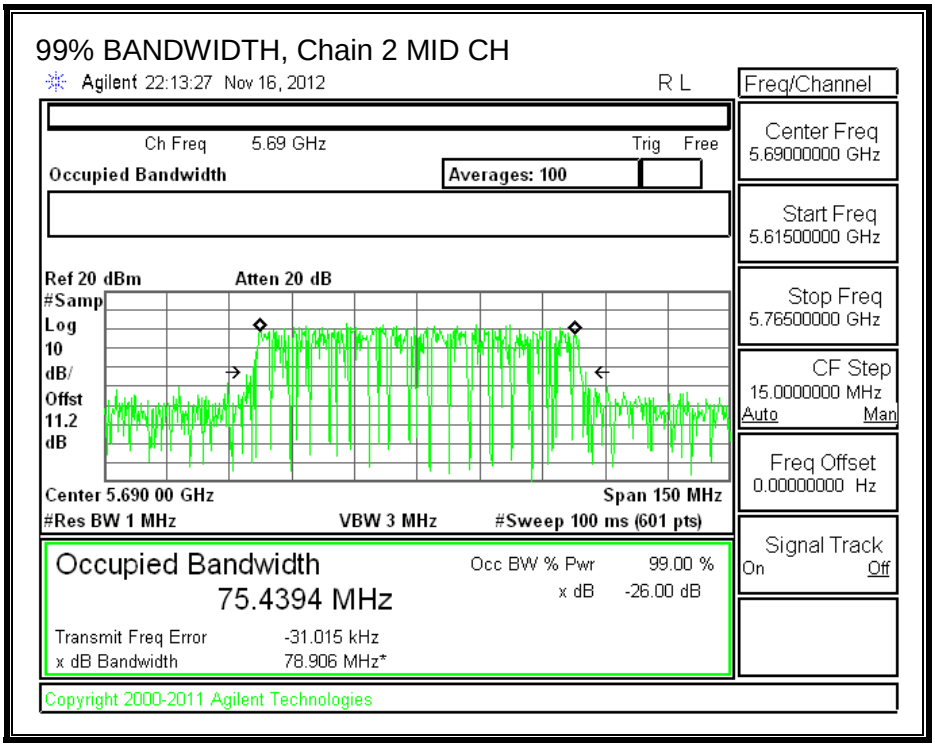
**99% BANDWIDTH, Chain 0**




**99% BANDWIDTH, Chain 1**



**99% BANDWIDTH, Chain 2**



## 8.31.3. OUTPUT POWER AND PSD

**LIMITS**

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**DIRECTIONAL ANTENNA GAIN**

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 5.53 | 2.68 | 1.26 | 3.53 |

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 5.53 | 2.68 | 1.26 | 8.11 |

**RESULTS**

## Limits (FCC), portion in UNII 2 ext band

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Correlated Gain (dBi) | Uncorrelated Gain (dBi) |
|---|---|---|---|---|---|
| Mid | 5690 | 121.00 | 72.6877 | 8.11 | 3.53 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5690 | 24.00 | 24.00 | 30.00 | 24.00 | 8.89 | 11.00 | 8.89 |

| Duty Cycle CF (dB) | 0.46 | Included in Calculations of PPSD |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | 18.59 | 18.48 | 18.86 | 23.88 | 24.00 | -0.12 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | 0.605 | 0.740 | 1.016 | 6.02 | 8.89 | -2.87 |

## Limits (FCC), portion in 5.8 GHz UNII 3 band

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Correlated Gain (dBi) | Uncorrelated Gain (dBi) |
|---|---|---|---|---|---|
| Mid | 5690 | 51.00 | 2.6877 | 8.11 | 3.53 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5690 | 24.00 | 15.29 | 21.29 | 15.29 | 8.89 | 11.00 | 8.89 |

| Duty Cycle CF (dB) | 0.46 | Included in Calculations of PPSD |
|---|---|---|

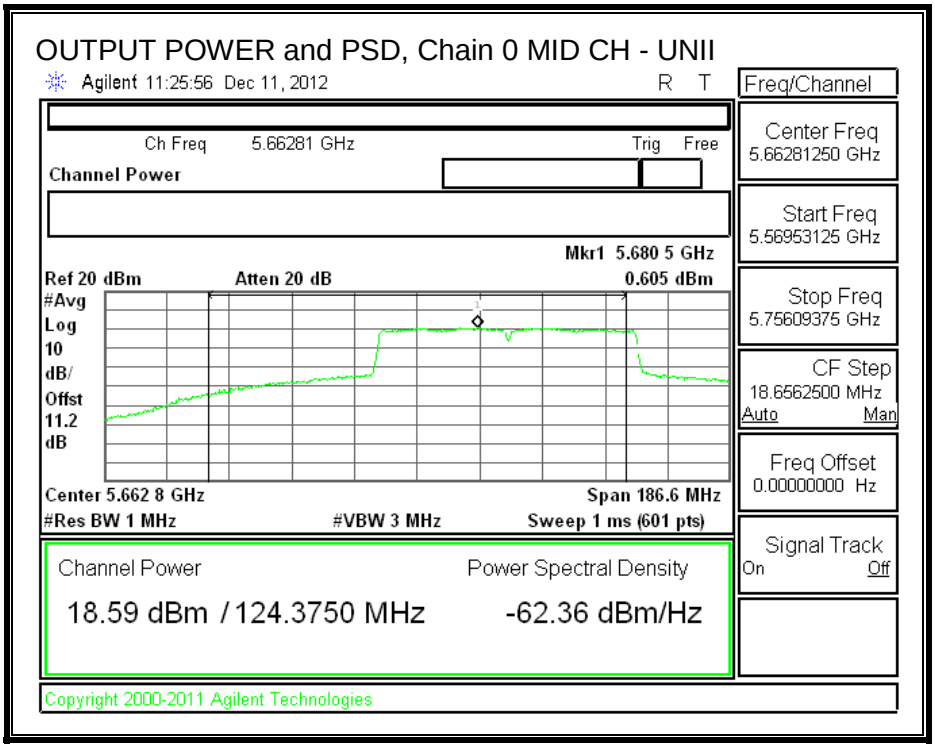
**Output Power Results**

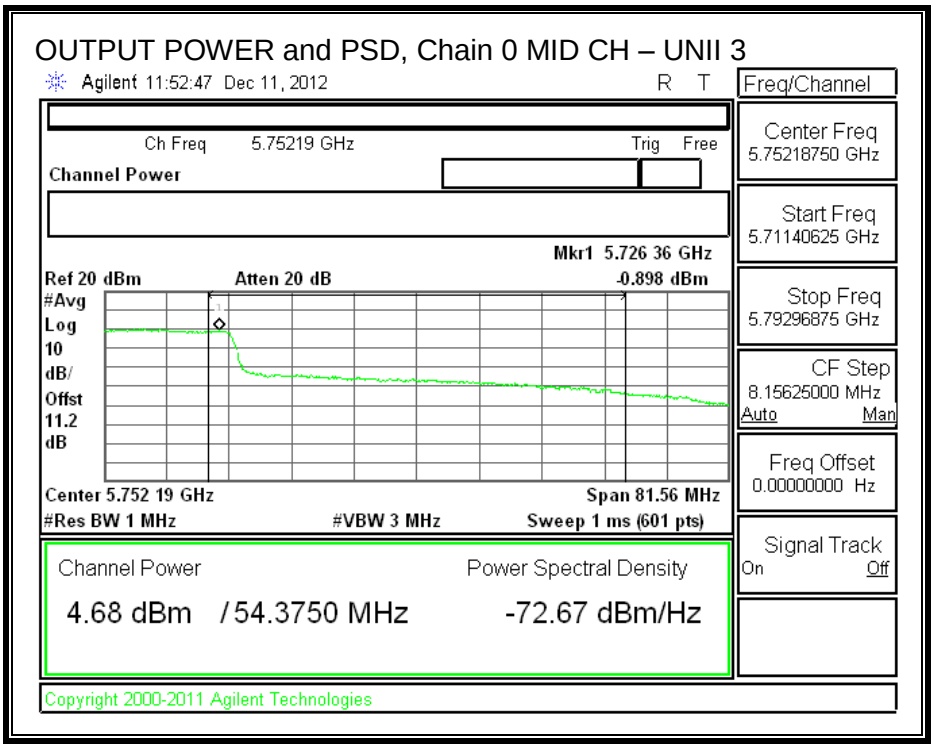
| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | 4.68 | 4.41 | 4.27 | 9.69 | 15.29 | -5.61 |

**PPSD Results**

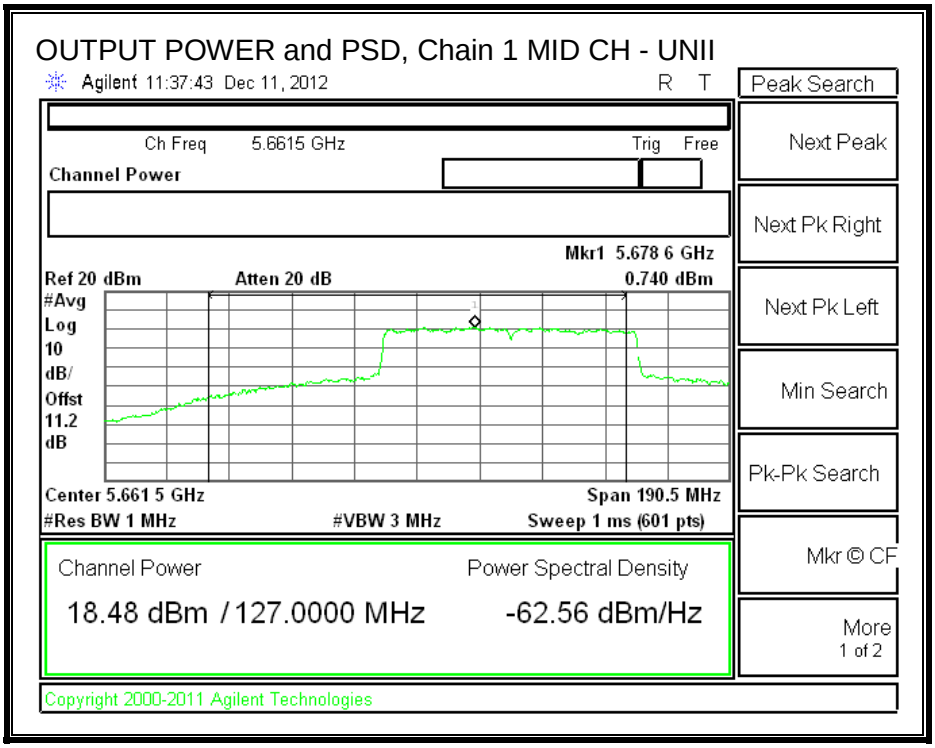
| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | -0.898 | -1.042 | -0.835 | 4.31 | 8.890 | -4.583 |

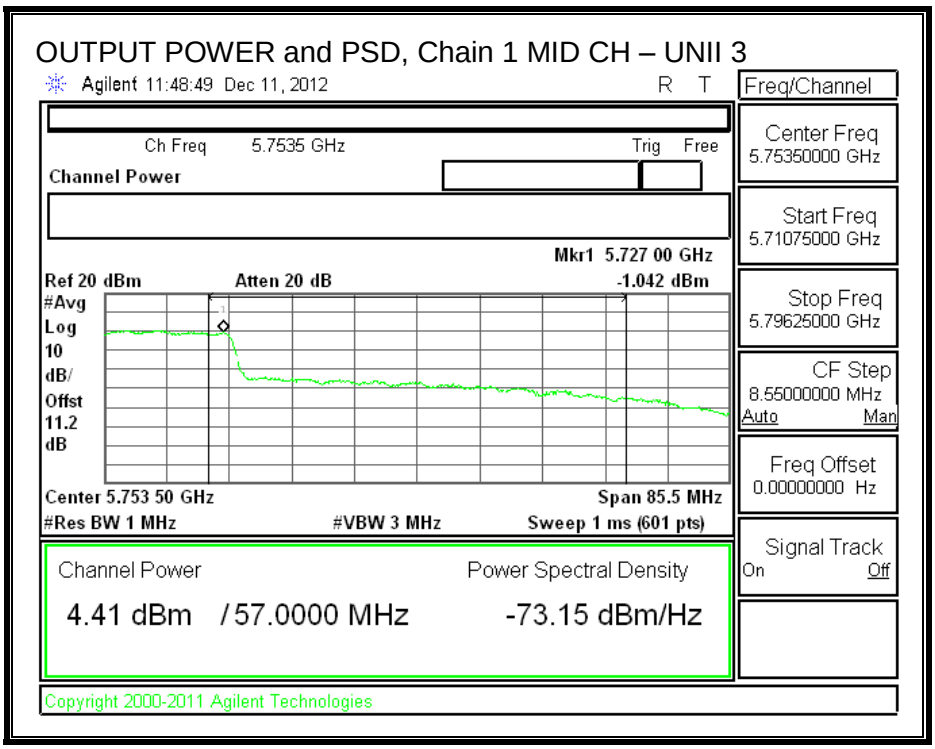
**OUTPUT POWER and PSD, Cain 0**



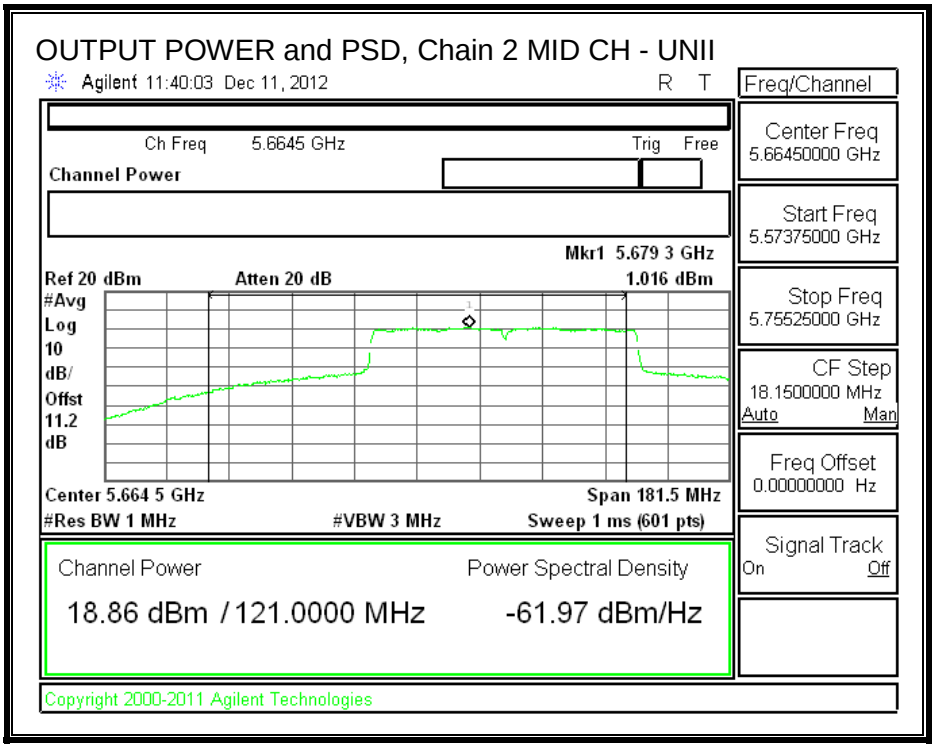



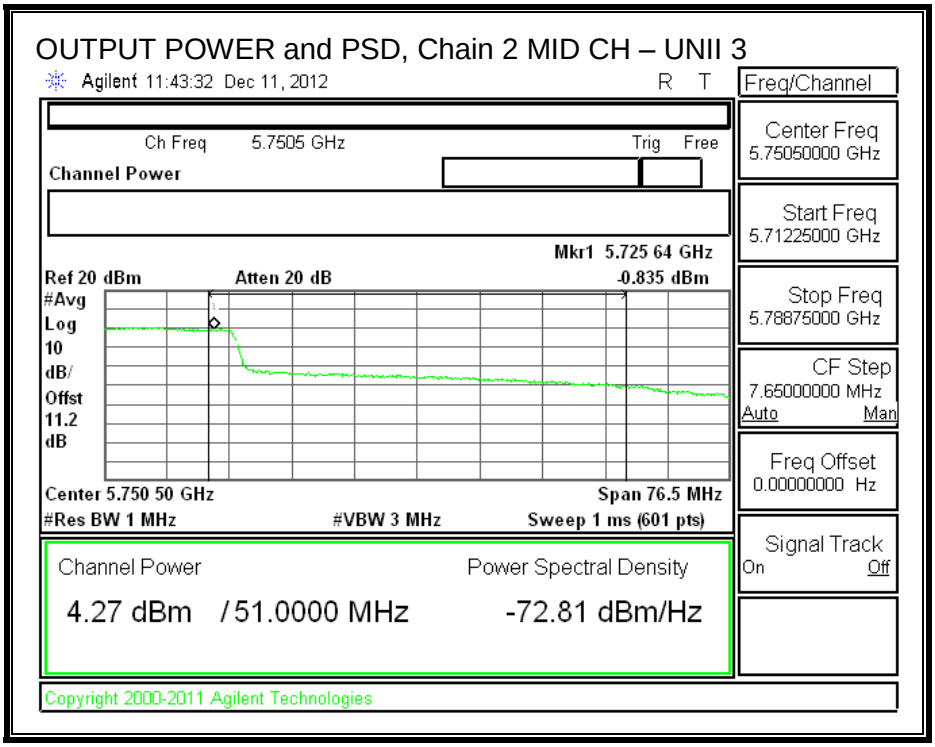
**OUTPUT POWER and PSD, Chain 1**



**OUTPUT POWER and PSD, Chain 2**



# 8.32. 802.11n AC80 BF CH 138 3TX MODE IN THE 5.6 GHz BAND

## 8.32.1. 26 dB BANDWIDTH- UNII

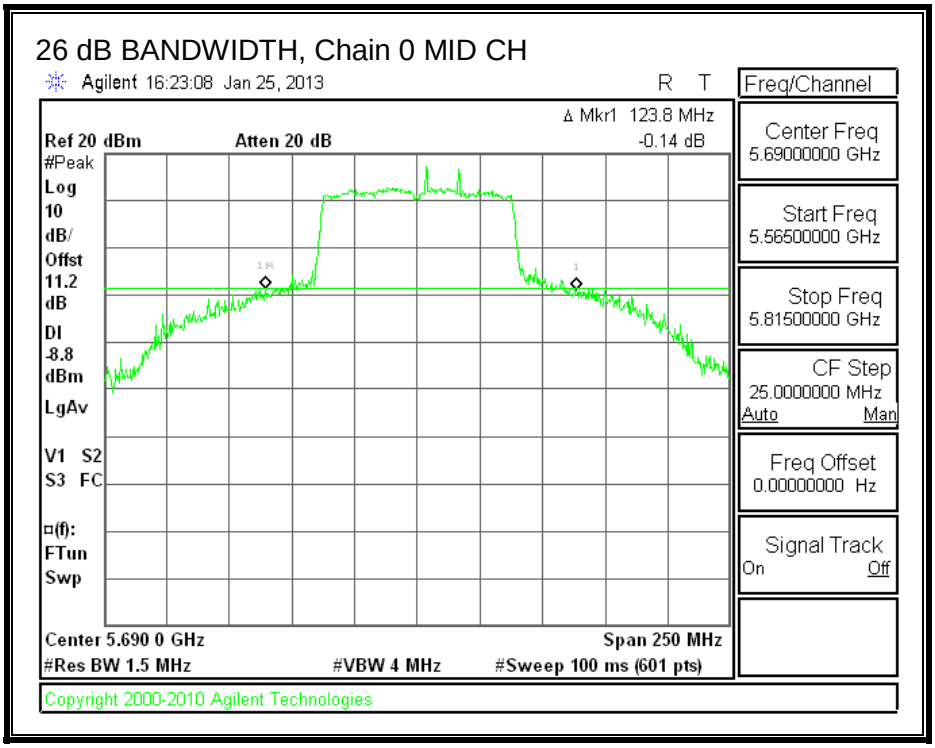
**LIMITS**

None; for reporting purposes only.

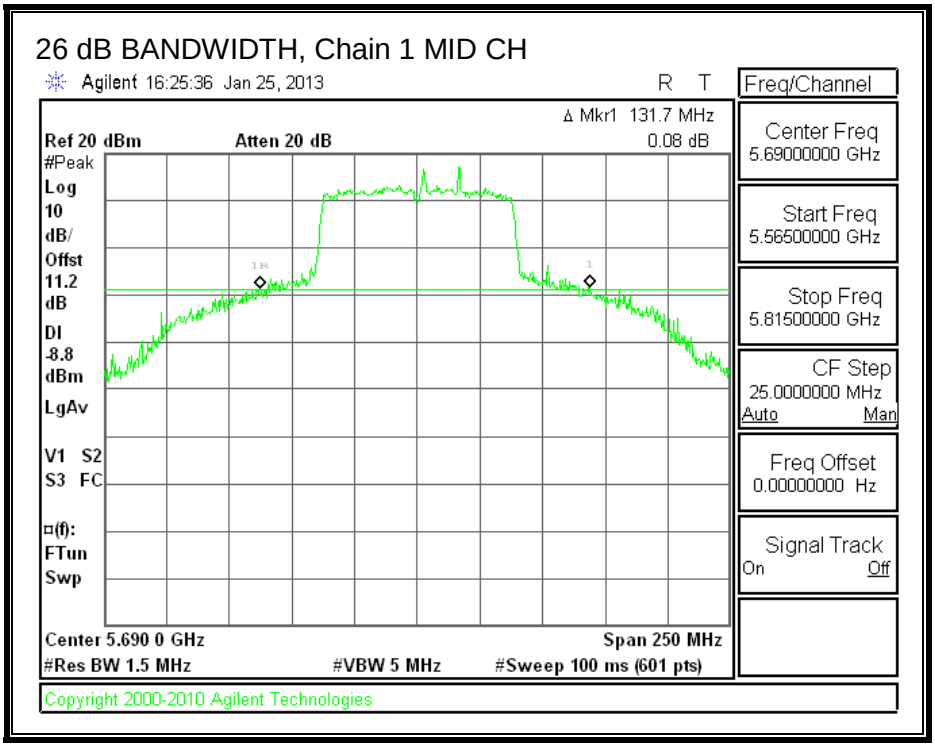
**RESULTS**

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) | 26 dB BW Chain 2 (MHz) |
|---|---|---|---|---|
| Mid | 5690 | 123.80 | 131.70 | 120.80 |

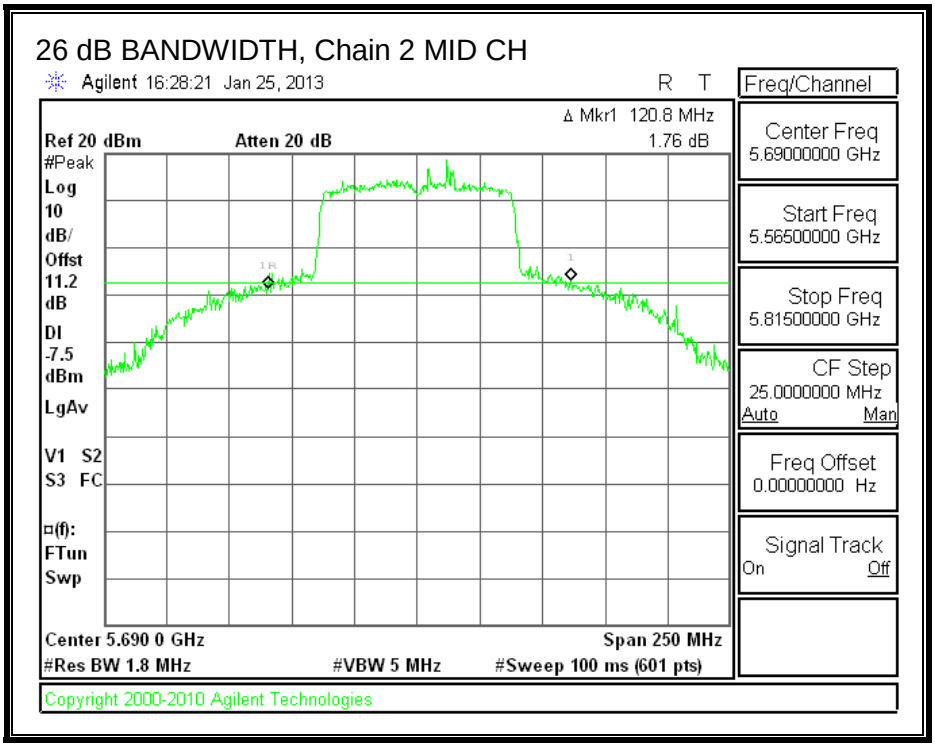
**26 dB BANDWIDTH, Chain 0**




**26 dB BANDWIDTH, Chain 1**



**26 dB BANDWIDTH, Chain 2**



## 8.32.2. 99% BANDWIDTH

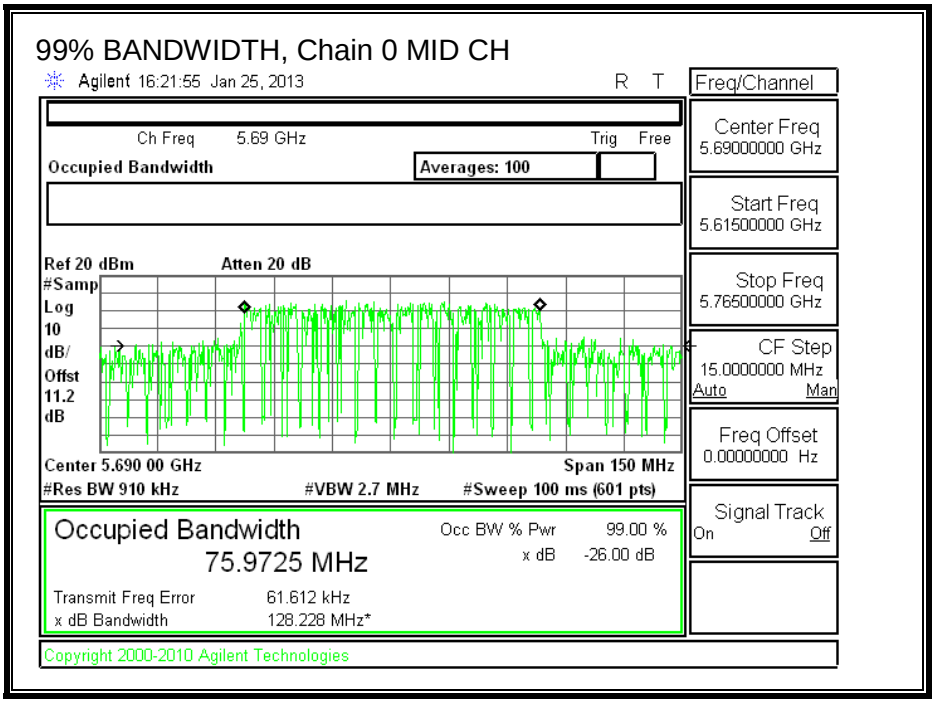
**LIMITS**

None; for reporting purposes only.

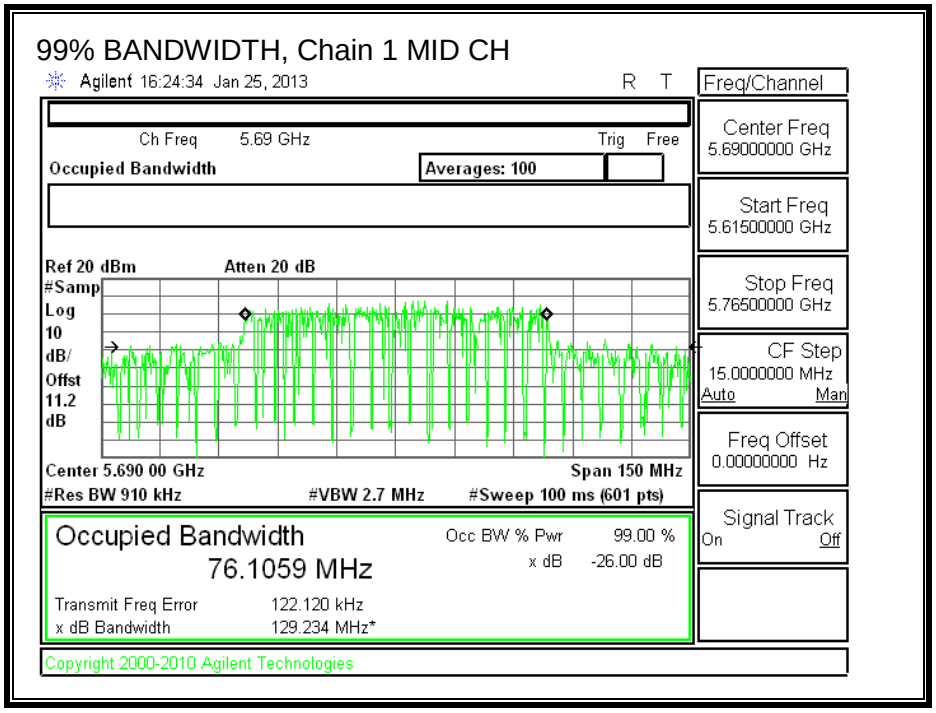
**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) | 99% BW Chain 2 (MHz) |
|---|---|---|---|---|
| Mid | 5690 | 75.9725 | 76.1059 | 75.4394 |

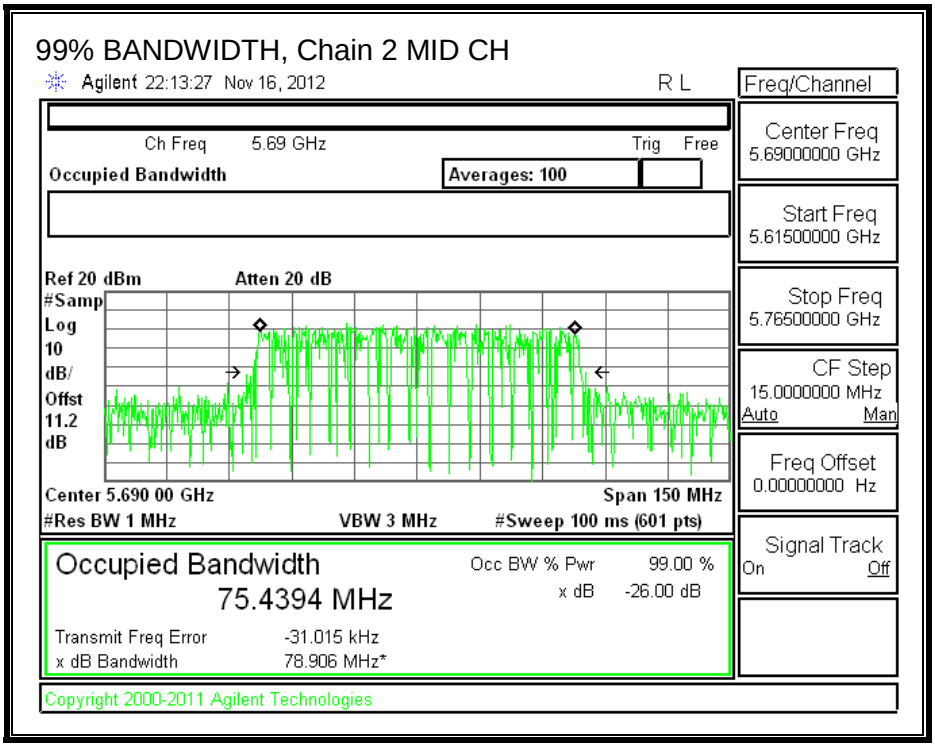
**99% BANDWIDTH, Chain 0**




**99% BANDWIDTH, Chain 1**



**99% BANDWIDTH, Chain 2**



## 8.32.3. OUTPUT POWER AND PSD

**LIMITS**

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**DIRECTIONAL ANTENNA GAIN**

The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 5.53 | 2.68 | 1.26 | 8.11 |

**RESULTS**

## Limits (FCC), portion in UNII 2 ext band

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Correlated Gain (dBi) | |
|---|---|---|---|---|---|
| Mid | 5690 | 65.4 | 42.9863 | 8.11 | |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5690 | 24.00 | 24.00 | 30.00 | 21.89 | 8.89 | 11.00 | 8.89 |

| Duty Cycle CF (dB) | 0.46 | Included in Calculations of PPSD |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | 16.49 | 16.69 | 16.57 | 21.82 | 21.89 | -0.07 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | -1.441 | -0.893 | -0.903 | 4.160 | 8.89 | -4.730 |

## Limits (FCC), portion in 5.8 GHz UNII 3 band

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Correlated Gain (dBi) | |
|---|---|---|---|---|---|
| Mid | 5690 | 55.4 | 32.9863 | 8.11 | |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5690 | 24.00 | 24.00 | 30.00 | 21.89 | 8.89 | 11.00 | 8.89 |

| Duty Cycle CF (dB) | 0.46 | Included in Calculations of PPSD |
|---|---|---|

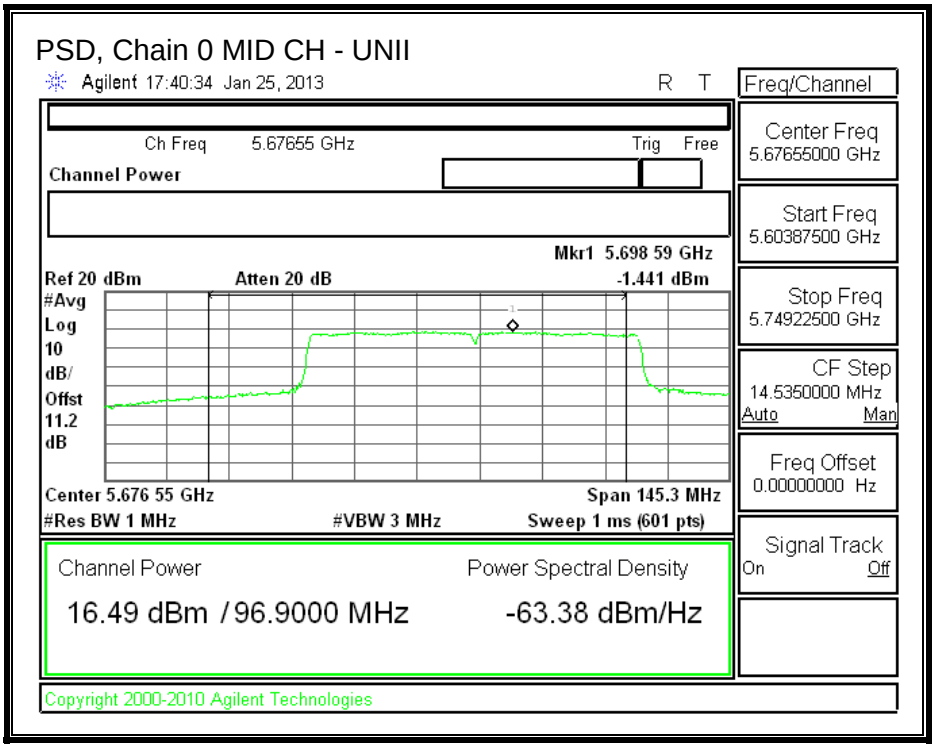
**Output Power Results**

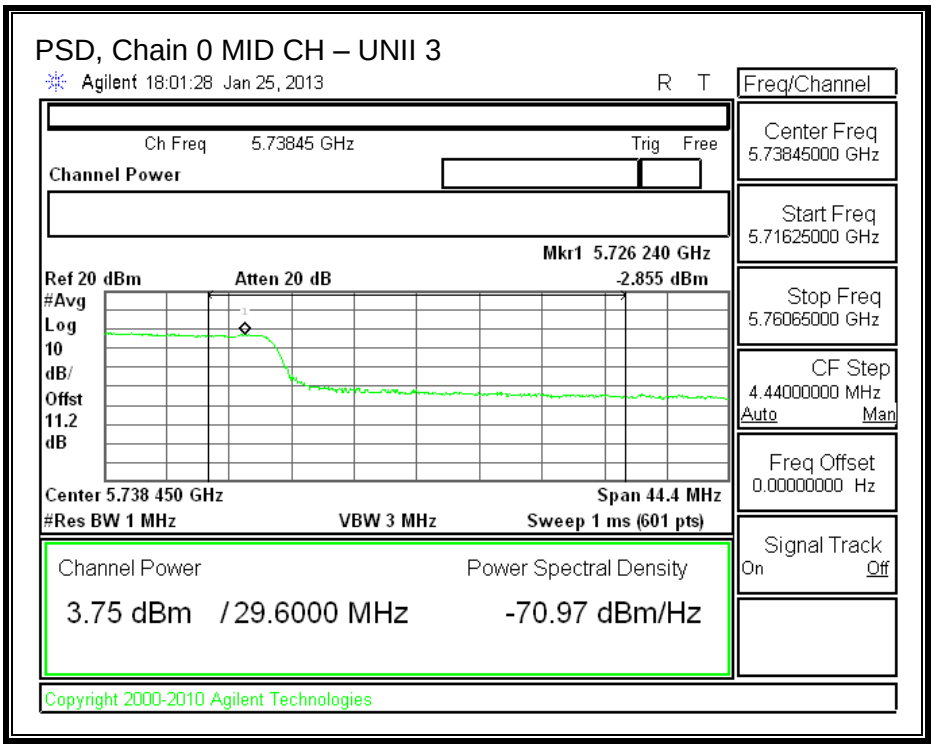
| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | 3.75 | 3.29 | 2.93 | 8.57 | 21.89 | -13.32 |

**PPSD Results**

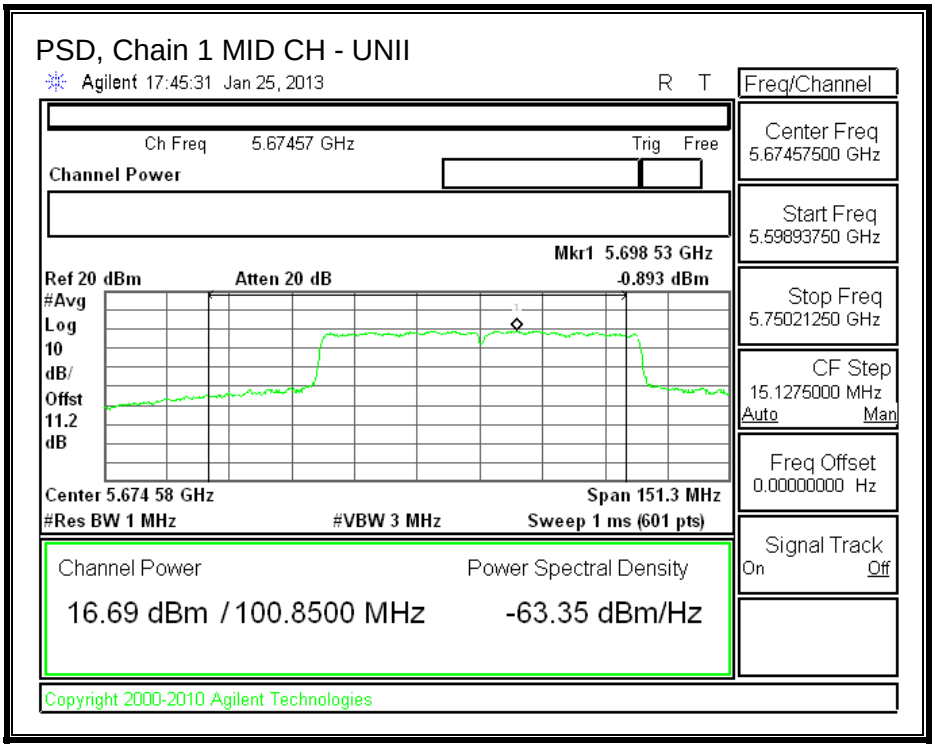
| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | -2.855 | -2.173 | -2.548 | 2.71 | 8.89 | -6.18 |

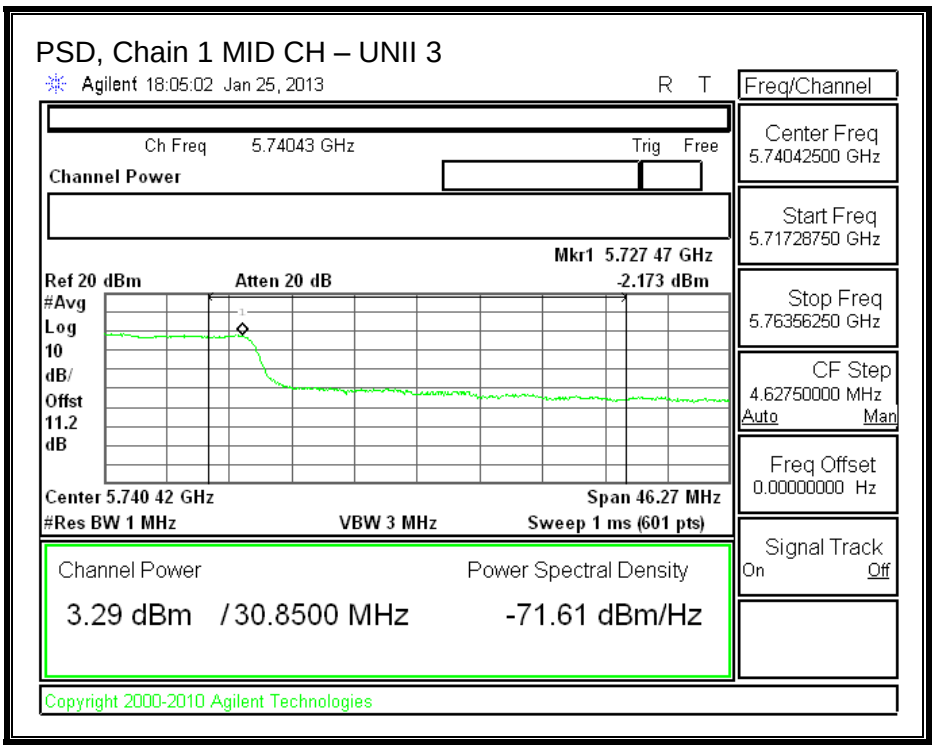
**PSD, Cain 0**



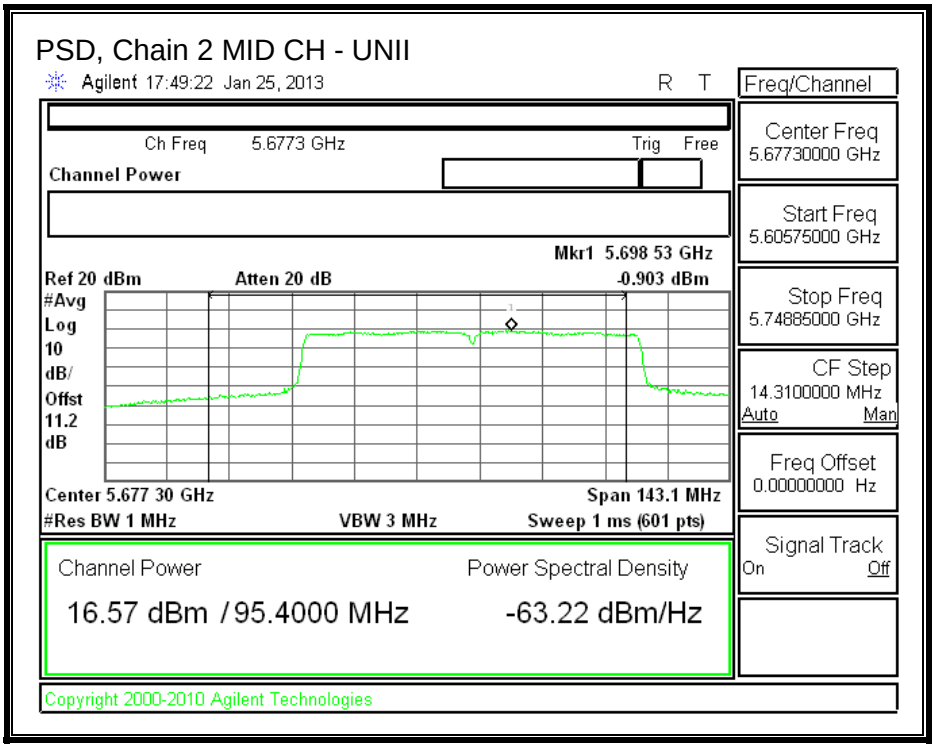



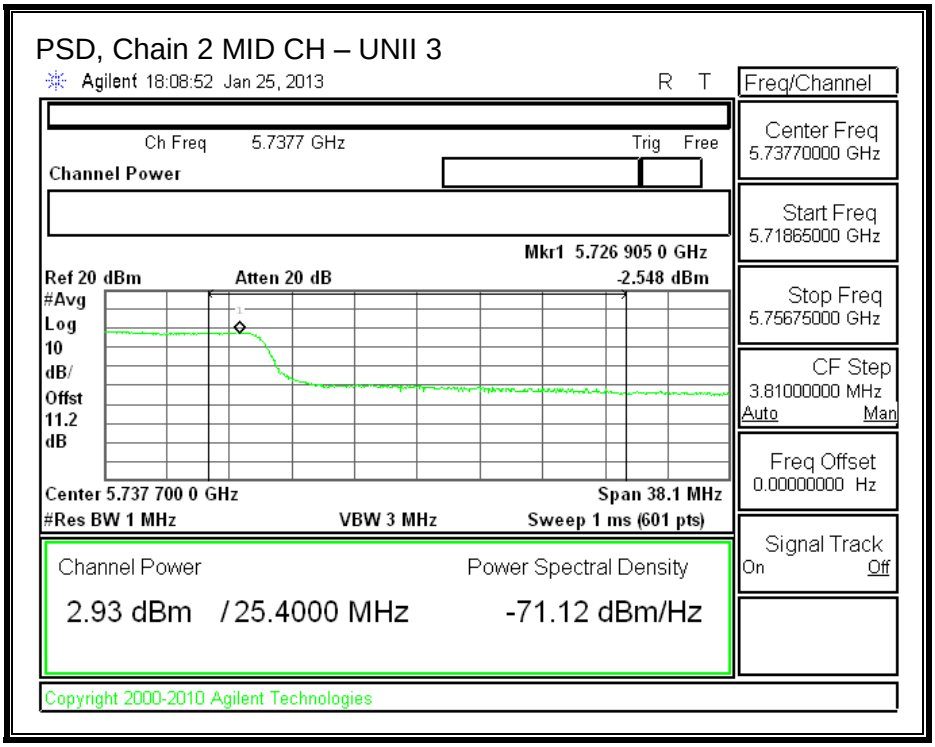
**PSD, Chain 1**



**PSD, Chain 2**



# 9. RADIATED TEST RESULTS

## 9.1. LIMITS AND PROCEDURE

**LIMITS**

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

| Frequency Range (MHz) | Field Strength Limit (uV/m) at 3 m | Field Strength Limit (dBuV/m) at 3 m |
|---|---|---|
| 30 - 88 | 100 | 40 |
| 88 - 216 | 150 | 43.5 |
| 216 - 960 | 200 | 46 |
| Above 960 | 500 | 54 |

**TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 1 MHz for peak measurements and as applicable for average measurements.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

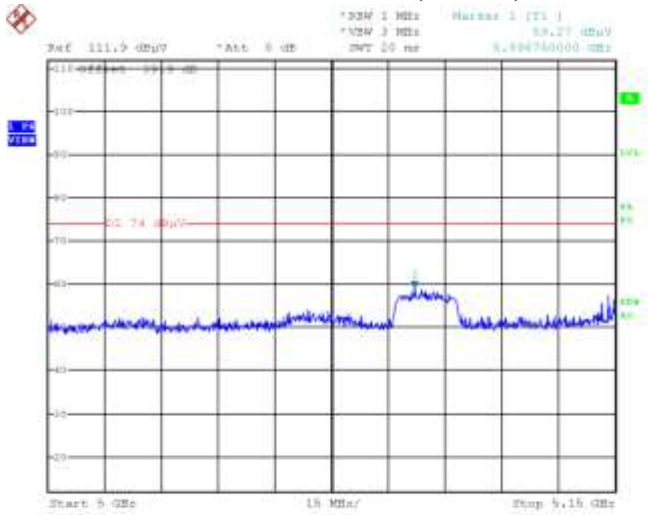
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

## 9.2. TRANSMITTER ABOVE 1 GHz

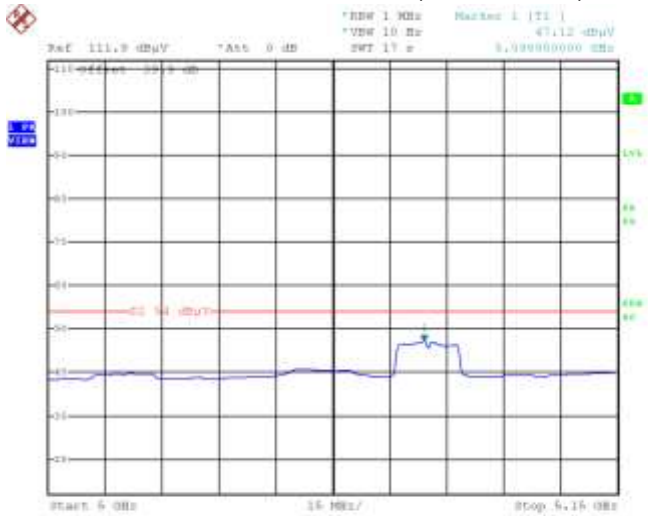
### 9.2.1. TX ABOVE 1 GHz 802.11a Legacy 1TX MODE, 5.2 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

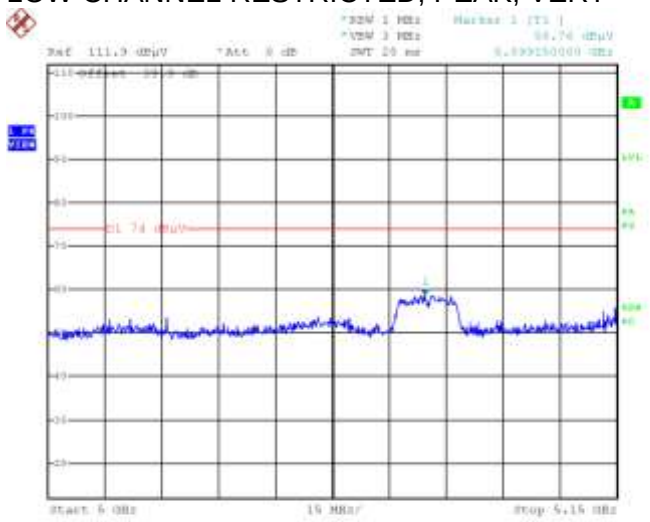
LOW CHANNEL RESTRICTED, PEAK, HORIZ



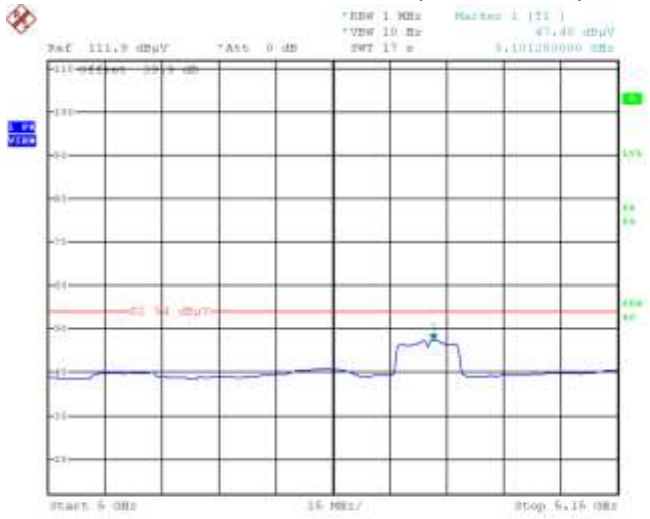

LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



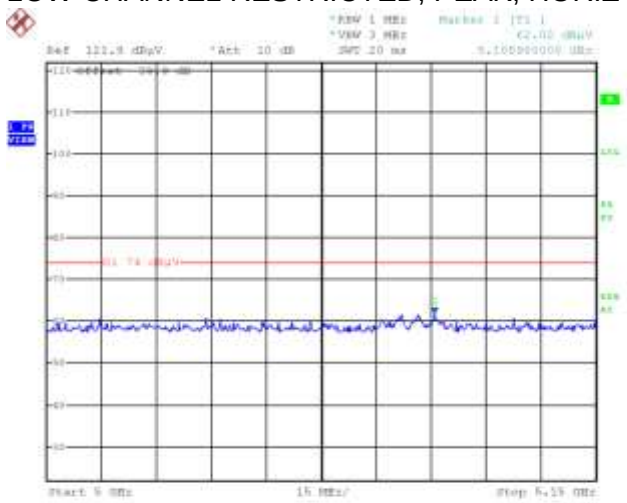
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by testing HT20 CDD MCS0 3TX, total power across all three chains is higher than the power level the device will operate at.

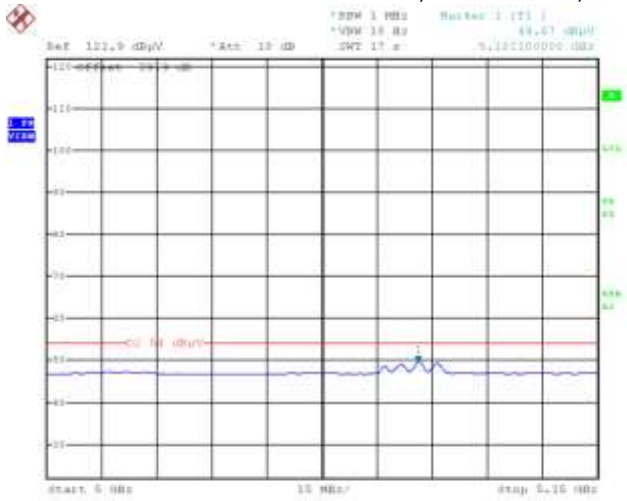
## 9.2.2. TX ABOVE 1 GHz 802.11n HT20 CDD 3TX MODE, 5.2 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

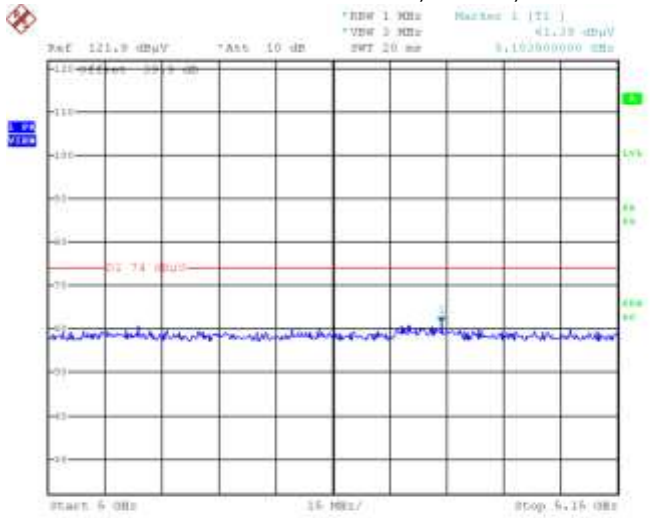
LOW CHANNEL RESTRICTED, PEAK, HORIZ



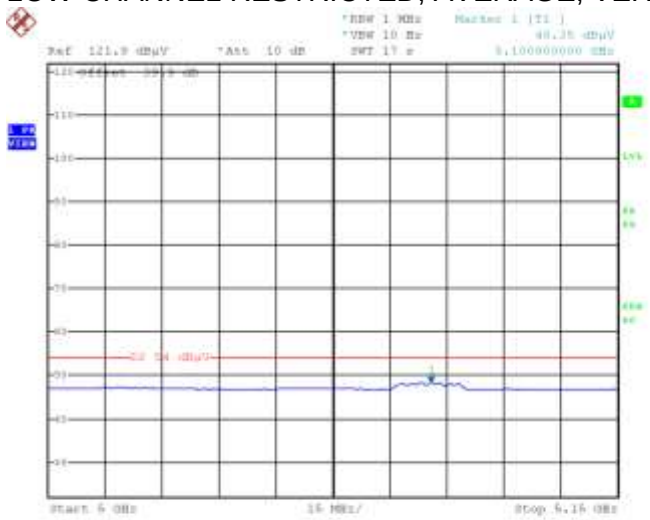
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED, PEAK, VERT



LOW CHANNEL RESTRICTED, AVERAGE, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 3m Chamber**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/5/2012 |
| **Test Engineer:** | M. Mekuria/Danny Vu |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT20 3TX mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T60; S/N: 2238 @3m | T34 HP 8449B | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | | R_001 |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5180 MHz) | | | | | | | | | | | | | | | |
| 15.540 | 3.0 | 44.5 | 33.9 | 39.1 | 13.0 | -31.9 | 0.0 | 0.0 | 64.6 | 53.9 | 74 | 54 | -9.4 | -0.1 | H, q80 |
| 15.540 | 3.0 | 43.3 | 32.6 | 39.1 | 13.0 | -31.9 | 0.0 | 0.0 | 63.4 | 52.7 | 74 | 54 | -10.6 | -1.3 | V, q80 |
| Mid Channel (5200 MHz) | | | | | | | | | | | | | | | |
| 15.600 | 3.0 | 43.5 | 33.3 | 38.8 | 13.0 | -31.9 | 0.0 | 0.0 | 63.4 | 53.3 | 74 | 54 | -10.6 | -0.7 | H, q85 |
| 15.600 | 3.0 | | 33.9 | 38.8 | 13.0 | -31.9 | 0.0 | 0.0 | 19.9 | 53.8 | 74 | 54 | -54.1 | -0.2 | V, q86 |
| High Channel (5240 MHz) | | | | | | | | | | | | | | | |
| 15.720 | 3.0 | 37.2 | 25.8 | 38.4 | 13.1 | -31.9 | 0.0 | 0.0 | 56.8 | 45.4 | 74 | 54 | -17.2 | -8.6 | H, q88 |
| 15.720 | 3.0 | 37.9 | 26.5 | 38.4 | 13.1 | -31.9 | 0.0 | 0.0 | 57.5 | 46.1 | 74 | 54 | -16.5 | -7.9 | V, q88 |

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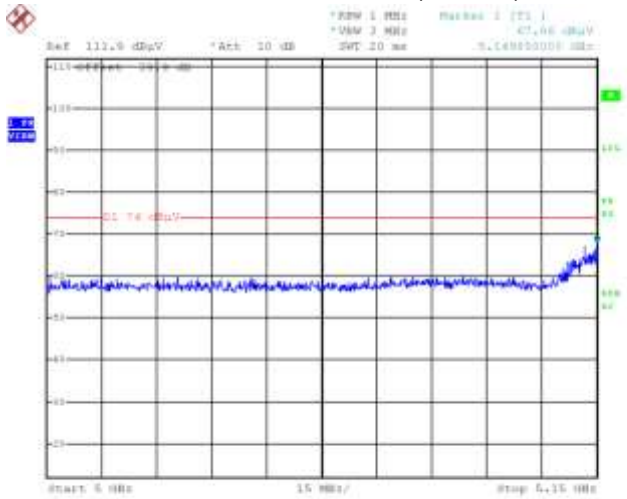
| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

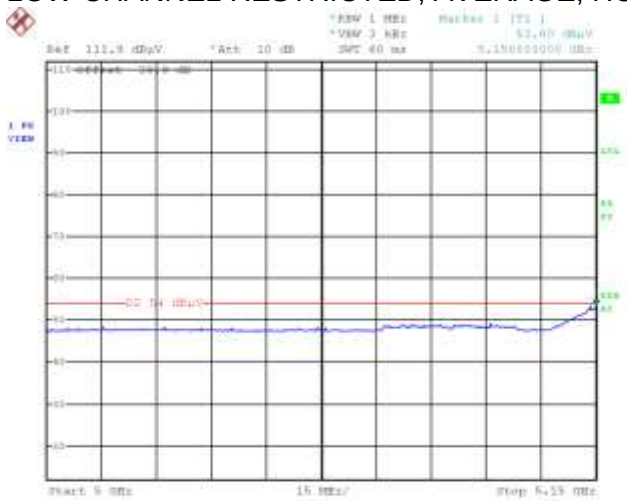
## 9.2.3. TX ABOVE 1 GHz 802.11n HT40 1TX MODE, 5.2 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

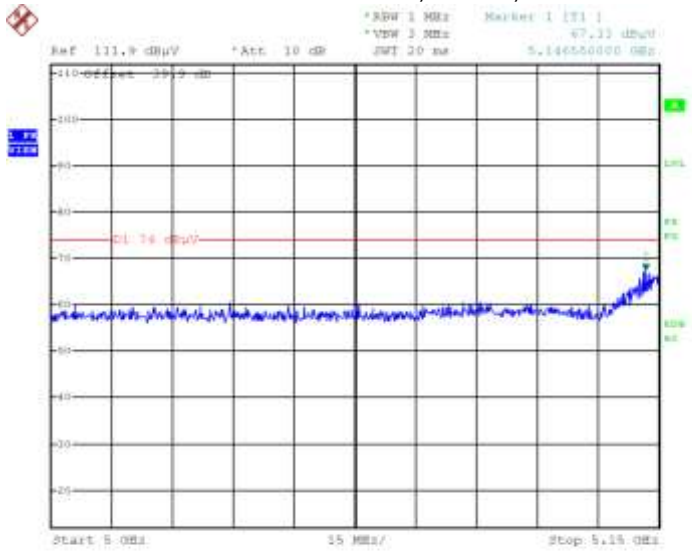
LOW CHANNEL RESTRICTED, PEAK, HORIZ



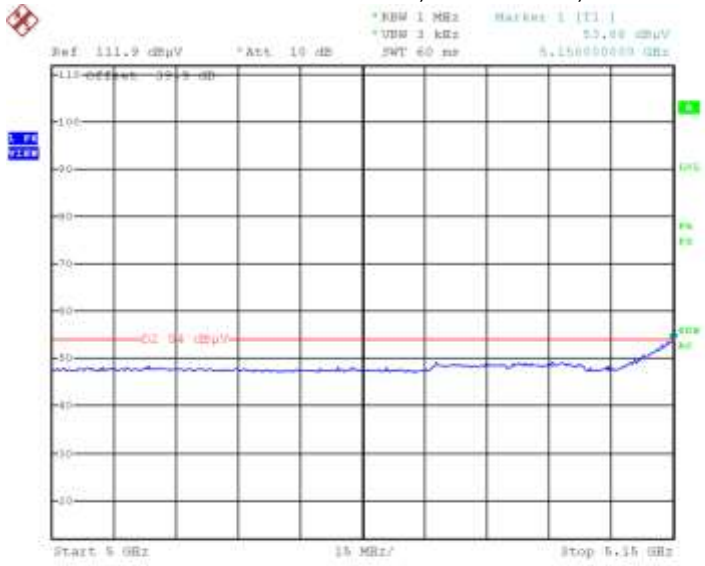
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED, PEAK, VERT




LOW CHANNEL RESTRICTED, AVERAGE, VERT



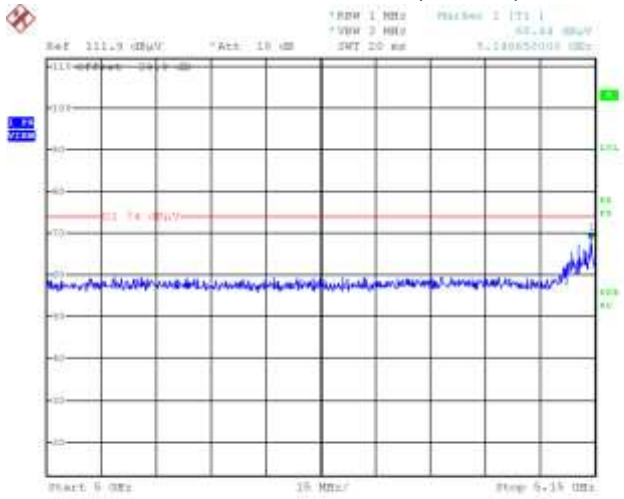
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by testing 11n HT40 CCD MCS0 3TX, total power across all three chains is higher than the power level the device will operate at.

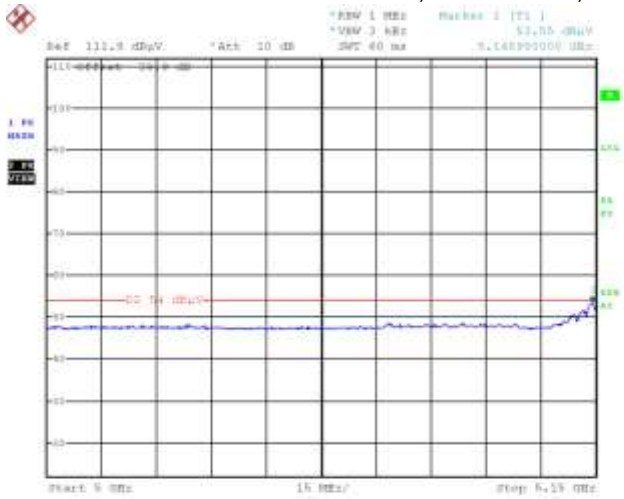
## 9.2.4. TX ABOVE 1 GHz 802.11n HT40 CDD 3TX MODE, 5.2 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

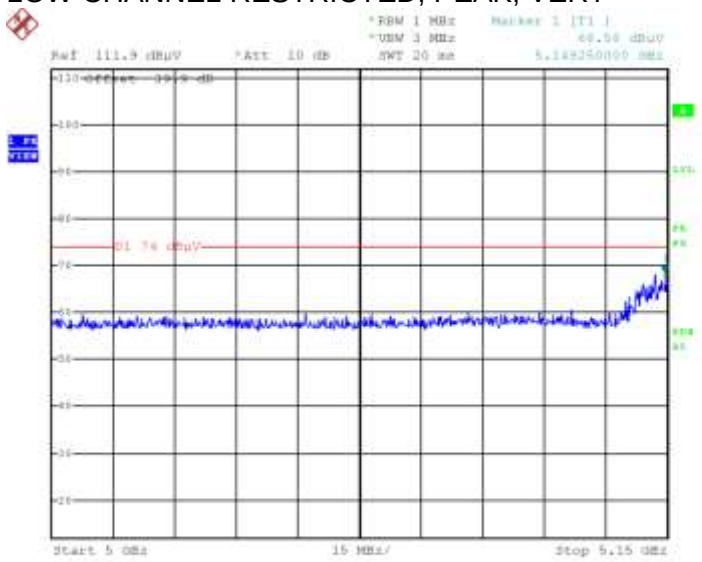
LOW CHANNEL RESTRICTED, PEAK, HORIZ



LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED, PEAK, VERT

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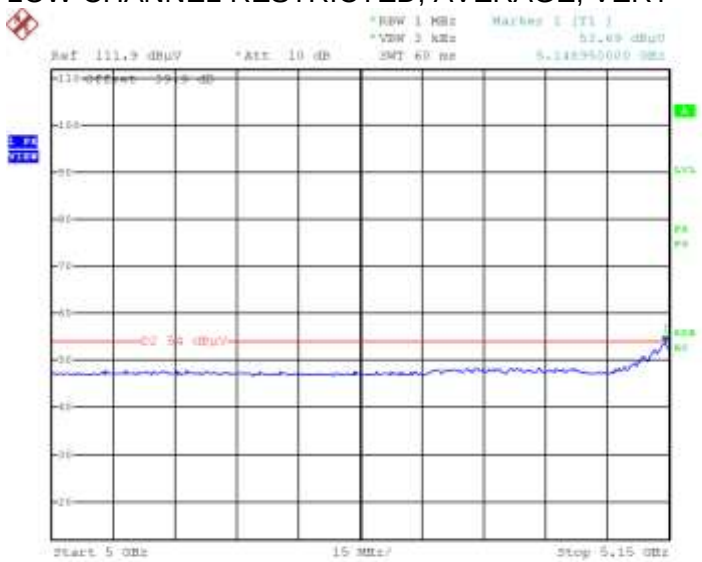
LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 12.NOV.2012 14:14:17

## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 5m Chamber-A**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/7/2012 |
| **Test Engineer:** | D. Garcia/Danny Vu |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT40 3TX mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF_7.6GHz | |

**Peak Measurements**
RBW1MHz, BW=3MHz
**Average Measurements**
RBW=1MHz ; VBW=1.1kHz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5190.0 MHz) | | | | | | | | | | | | | | | |
| 15.570 | 3.0 | 48.1 | 36.0 | 38.9 | 12.2 | -34.0 | 0.0 | 0.7 | 65.9 | 53.9 | 74 | 54 | -8.1 | -0.1 | H, q81 |
| 15.570 | 3.0 | 46.5 | 34.3 | 38.9 | 12.2 | -34.0 | 0.0 | 0.7 | 64.4 | 52.2 | 74 | 54 | -9.6 | -1.8 | V, q81 |
| High Channel (5230 MHz) | | | | | | | | | | | | | | | |
| 15.690 | 3.0 | 49.4 | 35.6 | 38.5 | 12.3 | -34.0 | 0.0 | 0.7 | 66.9 | 53.2 | 74 | 54 | -7.1 | -0.8 | H, q83 |
| 15.690 | 3.0 | 47.4 | 33.5 | 38.5 | 12.3 | -34.0 | 0.0 | 0.7 | 65.0 | 51.1 | 74 | 54 | -9.0 | -2.9 | V, q83 |

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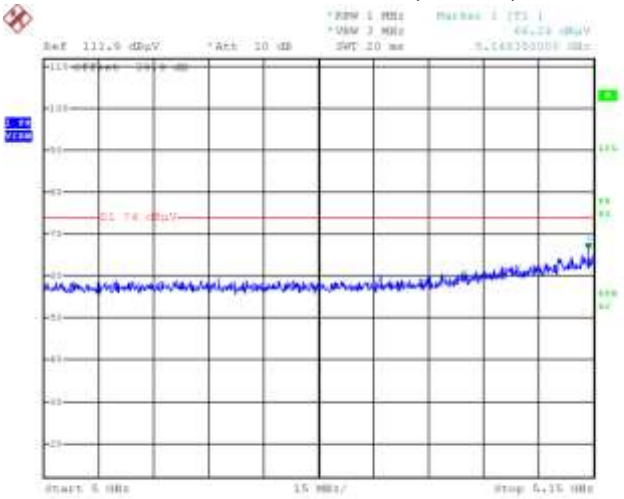
| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

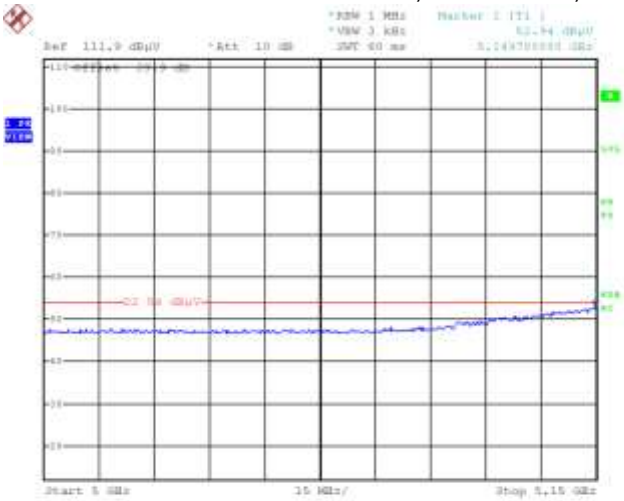
## 9.2.5. TX ABOVE 1 GHz 802.11n AC80 1TX MODE, 5.2 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

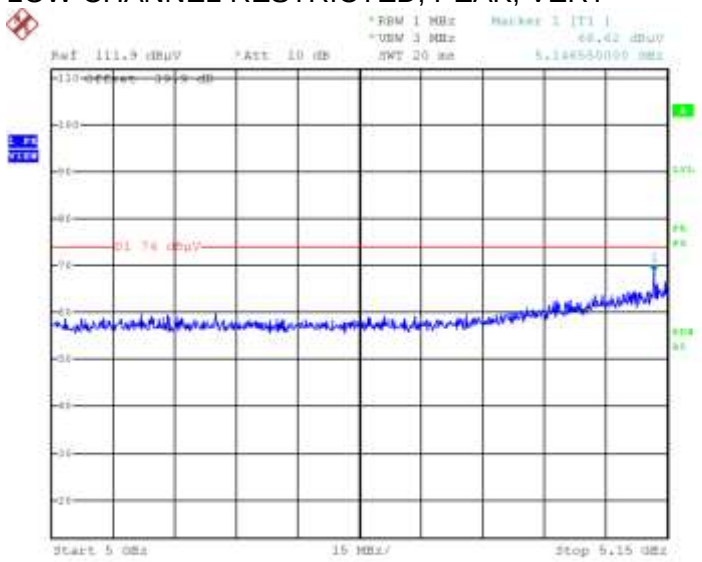
LOW CHANNEL RESTRICTED, PEAK, HORIZ



LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED, PEAK, VERT

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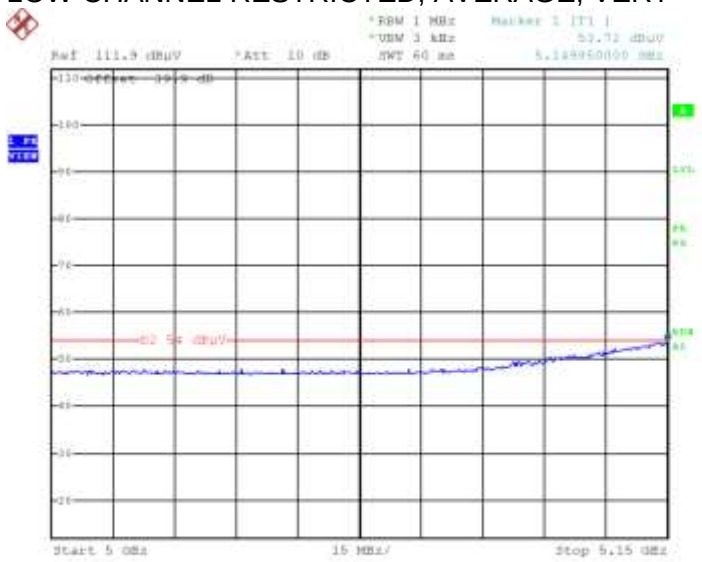
LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 12.NOV.2012 14:52:05

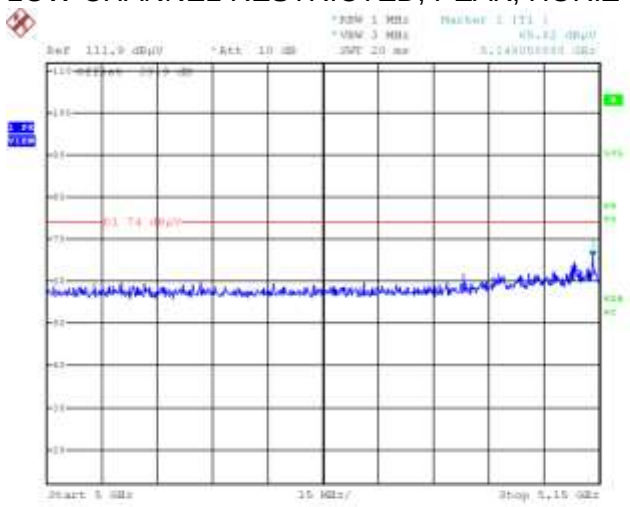
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by testing 11n AC80 CCD MCS0 3TX, total power across all three chains is higher than the power level the device will operate at.

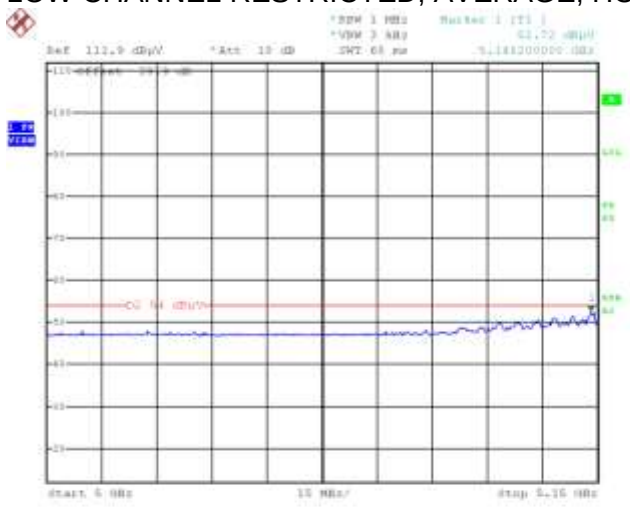
## 9.2.6. TX ABOVE 1 GHz 802.11n AC80 CDD 3Tx MODE, 5.2 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

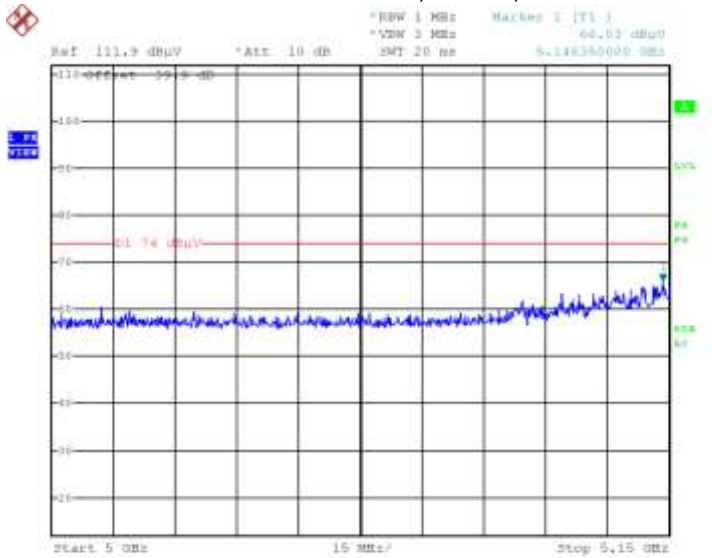
LOW CHANNEL RESTRICTED, PEAK, HORIZ



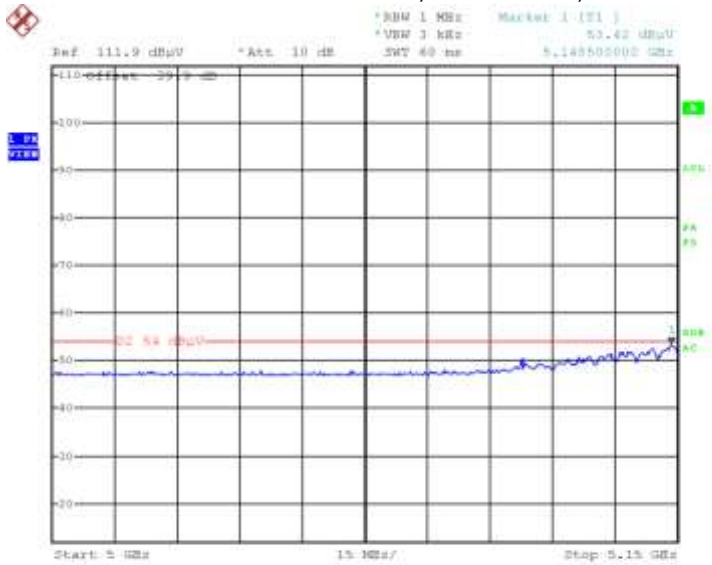
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED, PEAK, VERT




LOW CHANNEL RESTRICTED, AVERAGE, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 5m Chamber-A**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/9/2012 |
| **Test Engineer:** | M. Mekuria |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT80 3TX mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF_7.6GHz | |

**Peak Measurements**
RBW1MHz, BW=3MHz
**Average Measurements**
RBW=1MHz ; VBW=1.1kHz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5210.0 MHz) | | | | | | | | | | | | | | | |
| 15.630 | 3.0 | 47.3 | 36.0 | 38.7 | 12.2 | -34.0 | 0.0 | 0.7 | 65.0 | 53.7 | 74 | 54 | -9.0 | -0.3 | H, q85 |
| 15.630 | 3.0 | 43.7 | 31.9 | 38.7 | 12.2 | -34.0 | 0.0 | 0.7 | 61.3 | 49.6 | 74 | 54 | -12.7 | -4.4 | V, q85 |

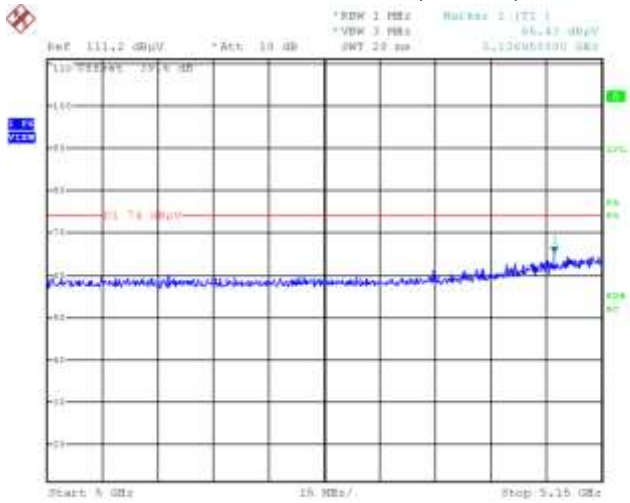
Rev. 11.10.11

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

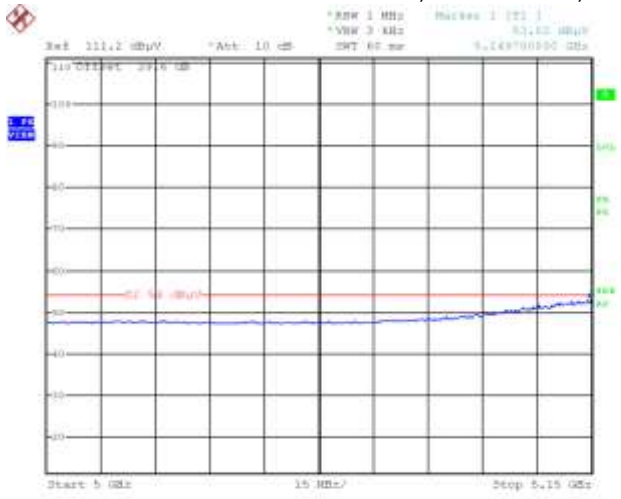
## 9.2.7. TX ABOVE 1 GHz 802.11n AC80 BF 3Tx MODE, 5.2 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

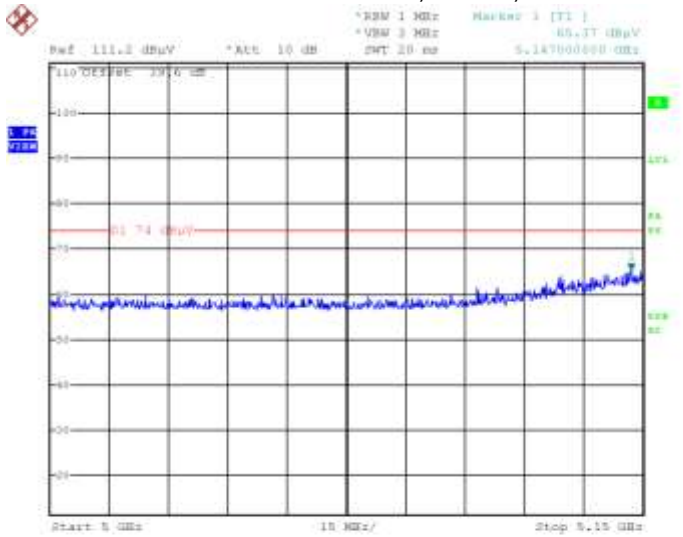
LOW CHANNEL RESTRICTED, PEAK, HORIZ



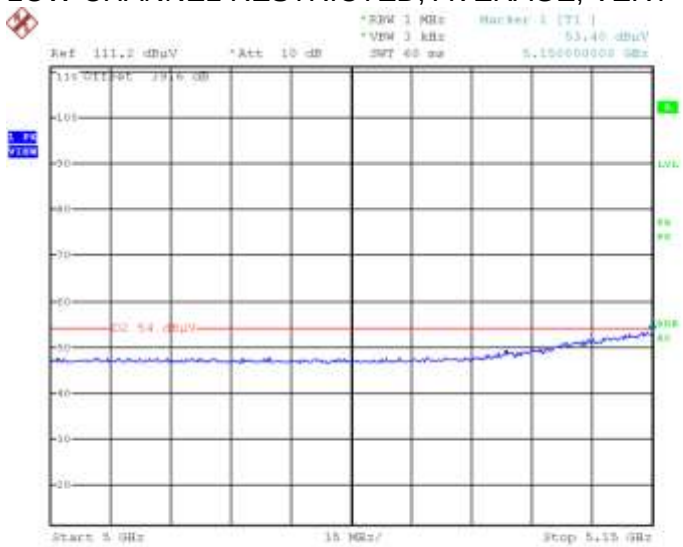

LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED, PEAK, VERT




LOW CHANNEL RESTRICTED, AVERAGE, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 5m Chamber-A**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/13/2012 |
| **Test Engineer:** | M. Mekuria |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT80 BF 3TX mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF_7.6GHz | |

**Peak Measurements**
RBW1MHz, BW=3MHz
**Average Measurements**
RBW=1MHz ; VBW=1.1kHz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5210.0 MHz) | | | | | | | | | | | | | | | |
| 15.630 | 3.0 | 48.1 | 35.1 | 38.7 | 12.2 | -34.0 | 0.0 | 0.7 | 65.8 | 52.7 | 74 | 54 | -8.2 | -1.3 | H, q89 |
| 15.630 | 3.0 | 45.3 | 33.2 | 38.7 | 12.2 | -34.0 | 0.0 | 0.7 | 63.0 | 50.9 | 74 | 54 | -11.0 | -3.1 | V, q89 |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

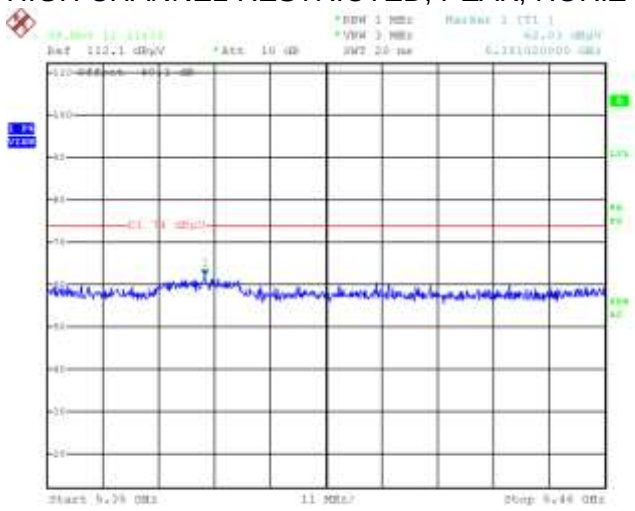
Rev. 11.10.11

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

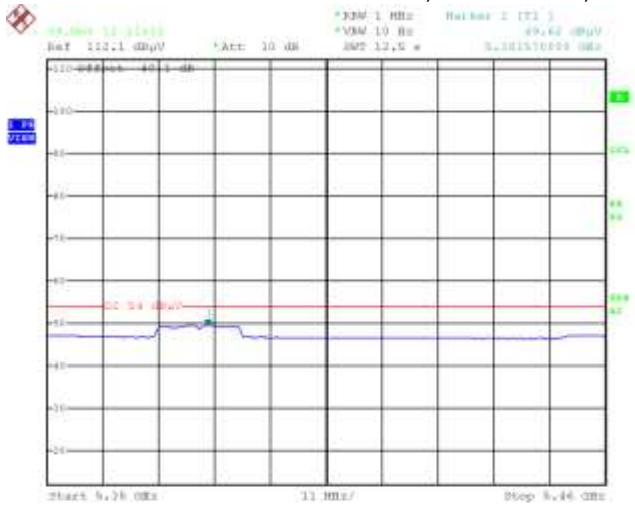
## 9.2.8. TX ABOVE 1 GHz 802.11a 1TX MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (HIGH CHANNEL, 5300 MHz)**

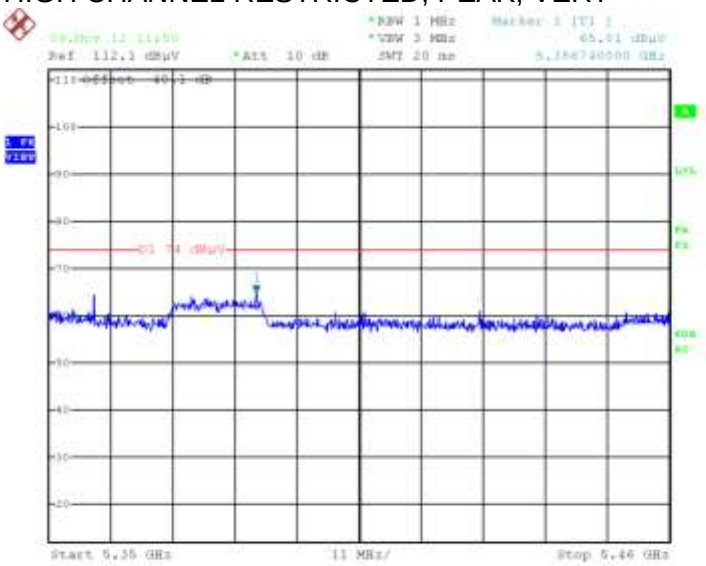
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ

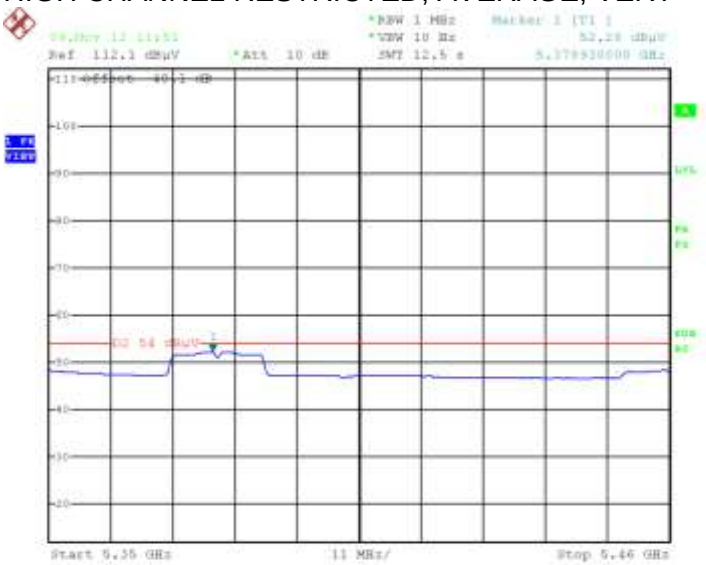


HIGH CHANNEL RESTRICTED, PEAK, VERT




Date: 9.NOV.2012 11:50:12

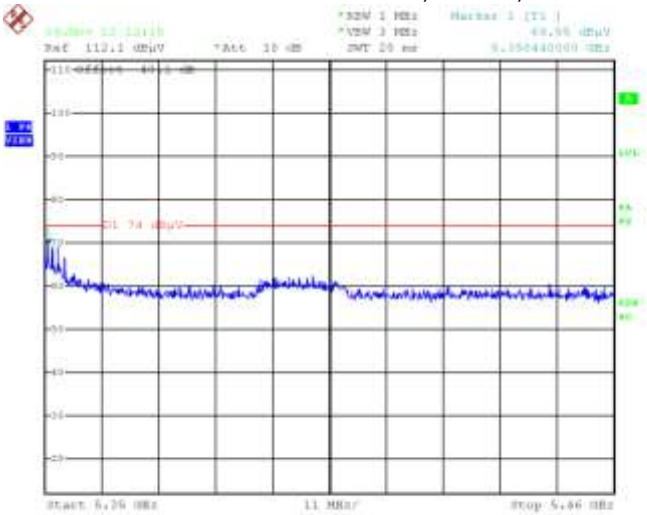
HIGH CHANNEL RESTRICTED, AVERAGE, VERT



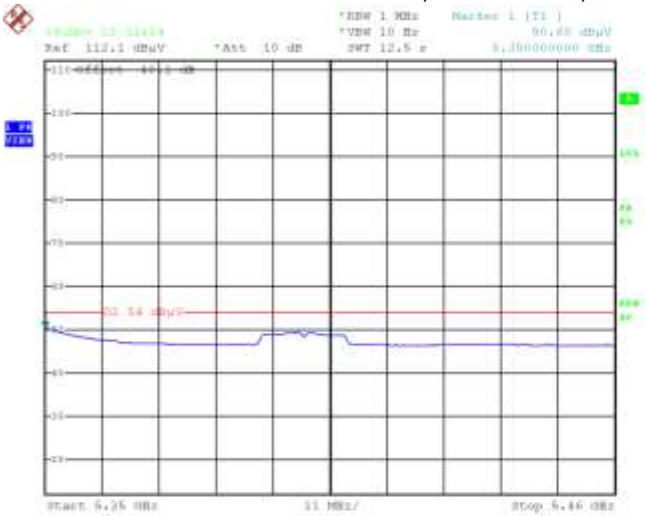

Date: 9.NOV.2012 11:51:08

**RESTRICTED BANDEDGE (HIGH CHANNEL, 5320 MHz)**

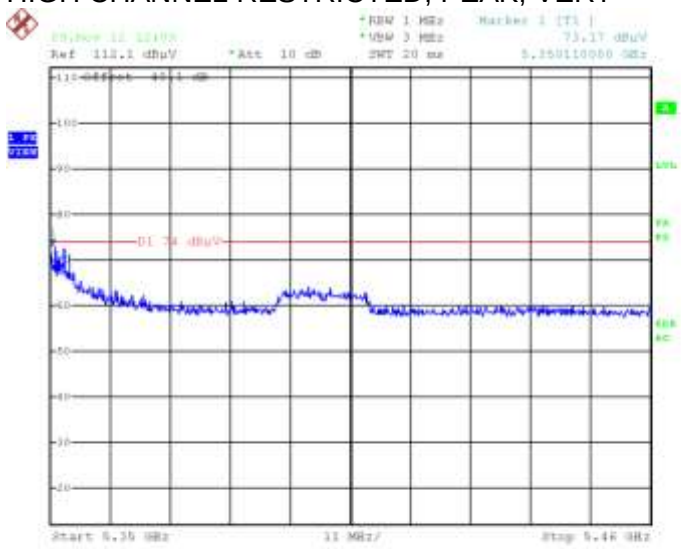
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



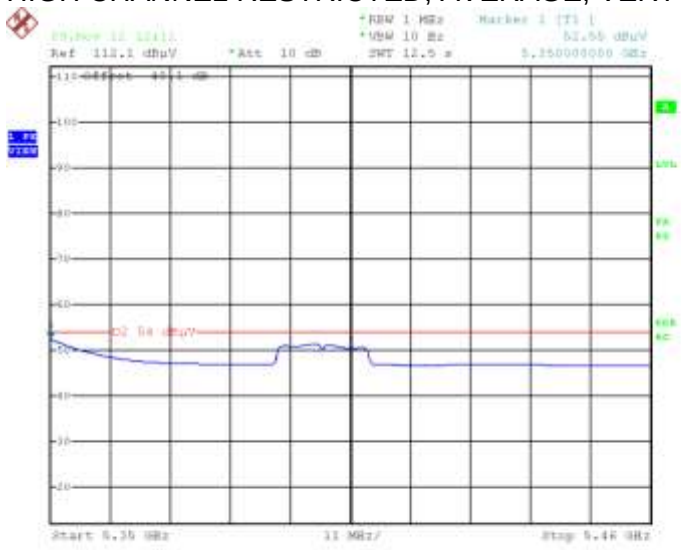
HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



HIGH CHANNEL RESTRICTED, PEAK, VERT




HIGH CHANNEL RESTRICTED, AVERAGE, VERT



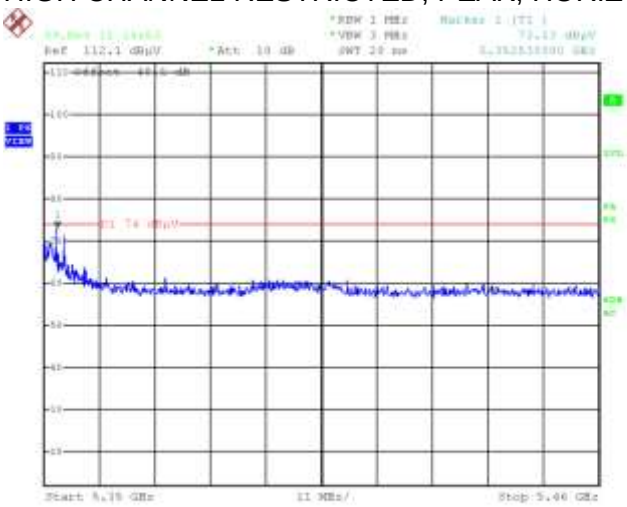
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by testing 11n HT20 CCD MCS0 3TX, total power across all three chains is higher than the power level the device will operate at.

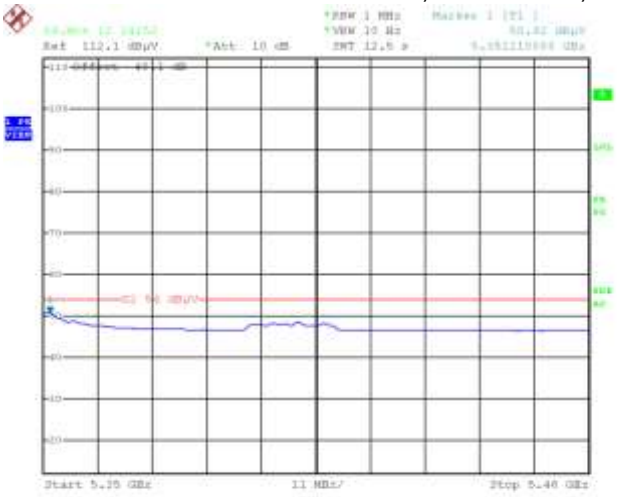
## 9.2.9. TX ABOVE 1 GHz 802.11n HT20 CDD 3TX MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (HIGH CHANNEL)**

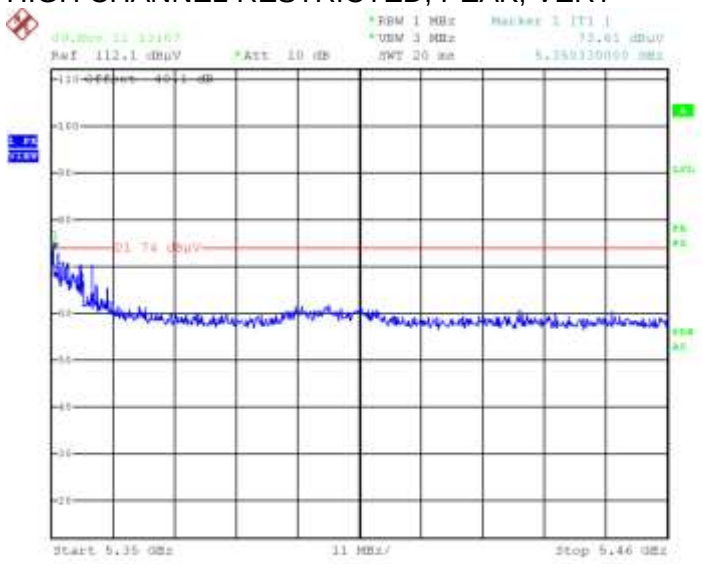
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ

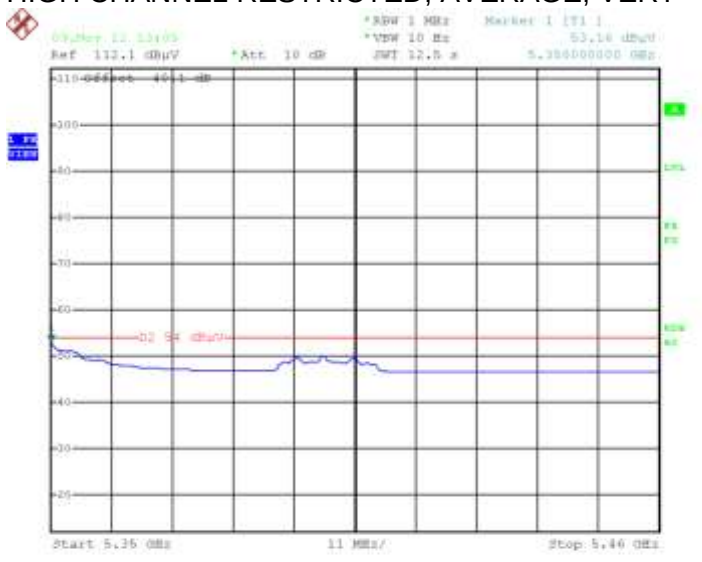


HIGH CHANNEL RESTRICTED, PEAK, VERT




Date: 9.NOV.2012 13:07:24

HIGH CHANNEL RESTRICTED, AVERAGE, VERT




Date: 9.NOV.2012 13:05:24

## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 3m Chamber**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/5/2012 |
| **Test Engineer:** | M. Mekuria/Danny Vu |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT20 3TX mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T60; S/N: 2238 @3m | T34 HP 8449B | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | | R_001 |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5260 MHz) | | | | | | | | | | | | | | | |
| 15.780 | 3.0 | 44.3 | 33.6 | 38.2 | 13.1 | -31.9 | 0.0 | 0.0 | 63.7 | 53.0 | 74 | 54 | -10.3 | -1.0 | H |
| 15.780 | 3.0 | 43.0 | 32.2 | 38.2 | 13.1 | -31.9 | 0.0 | 0.0 | 62.4 | 51.6 | 74 | 54 | -11.6 | -2.4 | V |
| | | | | | | | | | | | | | | | |
| Mid Channel (5300 MHz) | | | | | | | | | | | | | | | |
| 10.600 | 3.0 | 48.6 | 35.6 | 38.4 | 9.9 | -34.0 | 0.0 | 0.0 | 62.9 | 49.8 | 74 | 54 | -11.1 | -4.2 | H |
| 15.900 | 3.0 | 46.4 | 34.8 | 37.8 | 13.2 | -31.8 | 0.0 | 0.0 | 65.5 | 53.9 | 74 | 54 | -8.5 | -0.1 | H |
| 10.600 | 3.0 | 47.3 | 35.7 | 38.4 | 9.9 | -34.0 | 0.0 | 0.0 | 61.6 | 50.0 | 74 | 54 | -12.4 | -4.0 | V |
| 10.600 | 3.0 | 48.6 | 36.2 | 38.4 | 9.9 | -34.0 | 0.0 | 0.0 | 62.9 | 50.4 | 74 | 54 | -11.1 | -3.6 | V |
| 15.900 | 3.0 | 42.7 | 33.6 | 37.8 | 13.2 | -31.8 | 0.0 | 0.0 | 61.8 | 52.7 | 74 | 54 | -12.2 | -1.3 | V |
| | | | | | | | | | | | | | | | |

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| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

**High Frequency Measurement**
**Compliance Certification Services, Fremont 5m Chamber-A**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/7/2012 |
| **Test Engineer:** | D. Garcia/Danny Vu |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT20 3TX mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | | R_001 |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High Channel (5320.0 MHz) | | | | | | | | | | | | | | | |
| 10.640 | 3.0 | 46.1 | 38.7 | 38.3 | 9.8 | -35.7 | 0.0 | 0.0 | 58.4 | 51.0 | 74 | 54 | -15.6 | -3.0 | H, q83 |
| 15.960 | 3.0 | 44.5 | 37.5 | 37.6 | 12.4 | -33.9 | 0.0 | 0.0 | 60.6 | 53.7 | 74 | 54 | -13.4 | -0.3 | H, q83 |
| 10.640 | 3.0 | 46.8 | 32.9 | 38.3 | 9.8 | -35.7 | 0.0 | 0.0 | 59.2 | 45.2 | 74 | 54 | -14.8 | -8.8 | V, q83 |
| 15.960 | 3.0 | 48.2 | 35.0 | 37.6 | 12.4 | -33.9 | 0.0 | 0.0 | 64.3 | 51.1 | 74 | 54 | -9.7 | -2.9 | V, q83 |

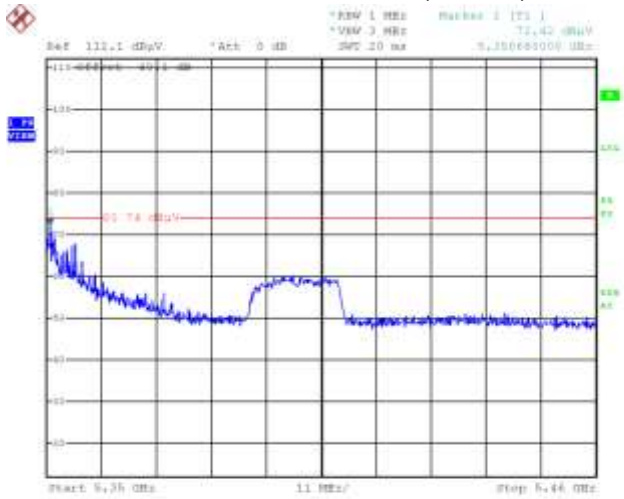
Rev. 11.10.11

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

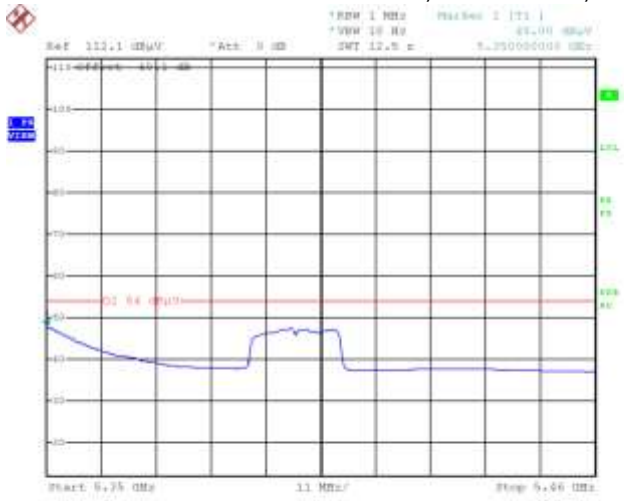
## 9.2.10. TX ABOVE 1 GHz 802.11n HT20 BF 3TX MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (HIGH CHANNEL)**

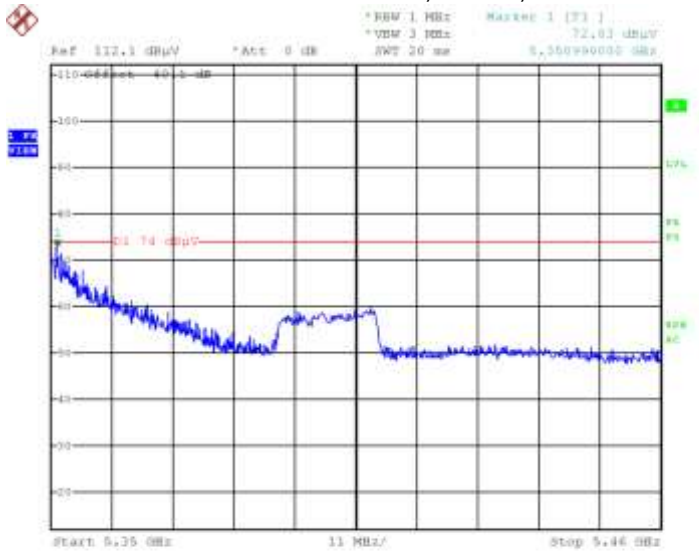
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ

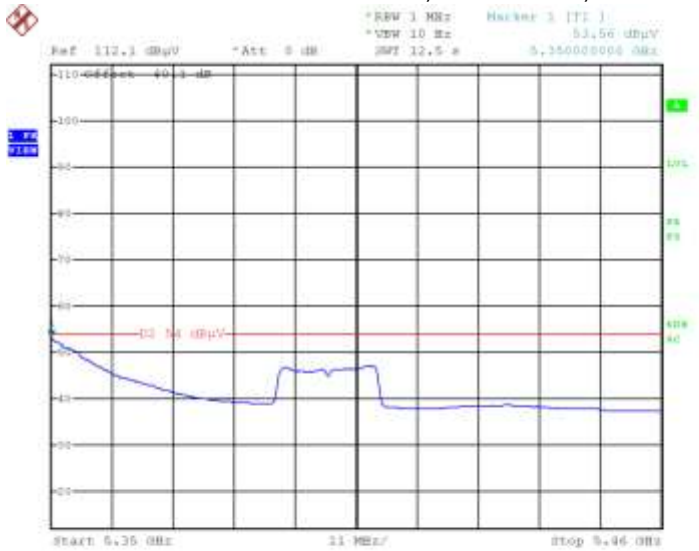


HIGH CHANNEL RESTRICTED, PEAK, VERT




Date: 11.DEC.2012 15:15:54

HIGH CHANNEL RESTRICTED, AVERAGE, VERT




Date: 11.DEC.2012 15:10:06

## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 3m Chamber**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/12/2012 |
| **Test Engineer:** | M. Mekuria |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT20 BF 3TX mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T60; S/N: 2238 @3m | T34 HP 8449B | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | | R_001 |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low Channel (5260 MHz)** | | | | | | | | | | | | | | | |
| 15.780 | 3.0 | 47.9 | 33.7 | 38.2 | 13.1 | -31.9 | 0.0 | 0.0 | 67.3 | 53.2 | 74 | 54 | -6.7 | -0.8 | H |
| 15.780 | 3.0 | 42.5 | 32.5 | 38.2 | 13.1 | -31.9 | 0.0 | 0.0 | 61.9 | 51.9 | 74 | 54 | -12.1 | -2.1 | V |
| **Mid Channel (5300 MHz)** | | | | | | | | | | | | | | | |
| 10.600 | 3.0 | 51.9 | 39.6 | 38.4 | 9.9 | -34.0 | 0.0 | 0.0 | 66.2 | 53.8 | 74 | 54 | -7.8 | -0.2 | H |
| 15.900 | 3.0 | 47.3 | 34.8 | 37.8 | 13.2 | -31.8 | 0.0 | 0.0 | 66.4 | 53.9 | 74 | 54 | -7.6 | -0.1 | H |
| 10.600 | 3.0 | 49.0 | 35.3 | 38.4 | 9.9 | -34.0 | 0.0 | 0.0 | 63.3 | 49.6 | 74 | 54 | -10.7 | -4.4 | V |
| 15.900 | 3.0 | 45.7 | 31.8 | 37.8 | 13.2 | -31.8 | 0.0 | 0.0 | 64.8 | 50.9 | 74 | 54 | -9.2 | -3.1 | V |
| **High Channel (5320 MHz)** | | | | | | | | | | | | | | | |
| 10.640 | 3.0 | 52.1 | 38.9 | 38.4 | 10.0 | -34.0 | 0.0 | 0.0 | 66.5 | 53.3 | 74 | 54 | -7.5 | -0.7 | H |
| 15.960 | 3.0 | 49.5 | 34.9 | 37.6 | 13.2 | -31.8 | 0.0 | 0.0 | 68.4 | 53.8 | 74 | 54 | -5.6 | -0.2 | H |
| 10.640 | 3.0 | 51.7 | 37.9 | 38.4 | 10.0 | -34.0 | 0.0 | 0.0 | 66.1 | 52.3 | 74 | 54 | -7.9 | -1.7 | V |
| 15.960 | 3.0 | 46.0 | 33.1 | 37.6 | 13.2 | -31.8 | 0.0 | 0.0 | 65.0 | 52.0 | 74 | 54 | -9.0 | -2.0 | V |

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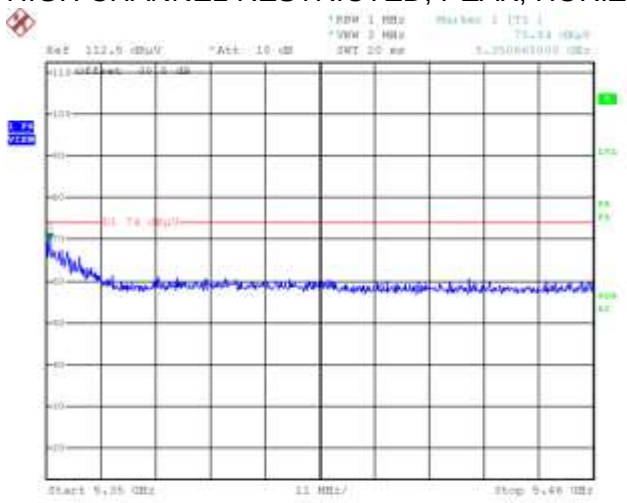
| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

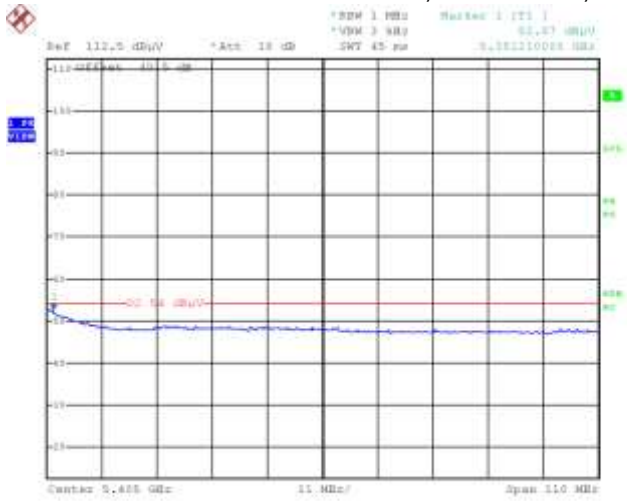
## 9.2.11. TX ABOVE 1 GHz 802.11n HT40 1TX MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (HIGH CHANNEL)**

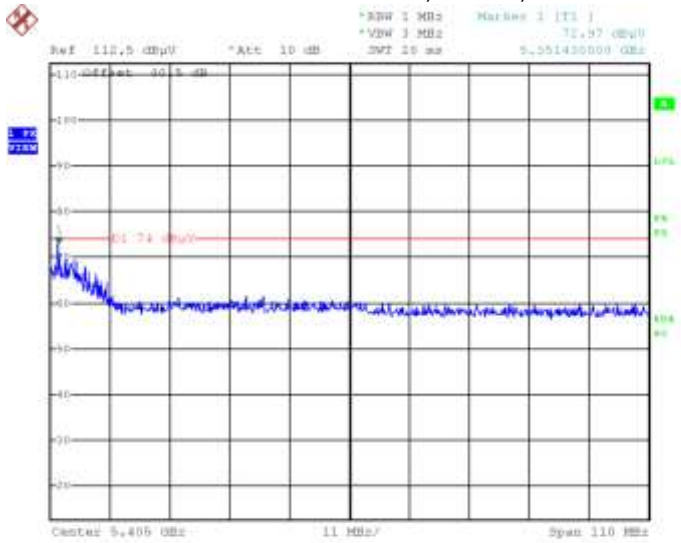
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



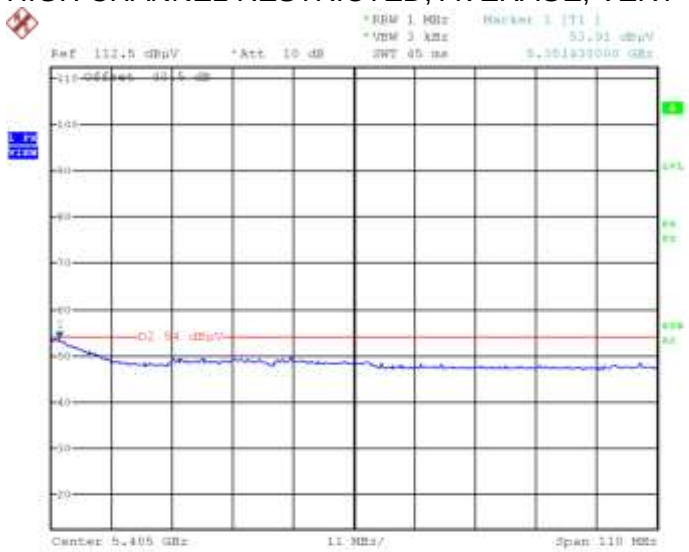
HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



HIGH CHANNEL RESTRICTED, PEAK, VERT




HIGH CHANNEL RESTRICTED, AVERAGE, VERT



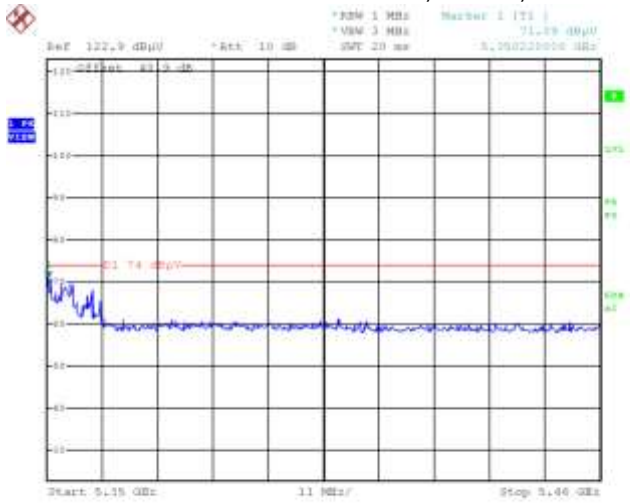
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by testing 11n HT40 CCD MCS0 3TX, total power across all three chains is higher than the power level the device will operate at.

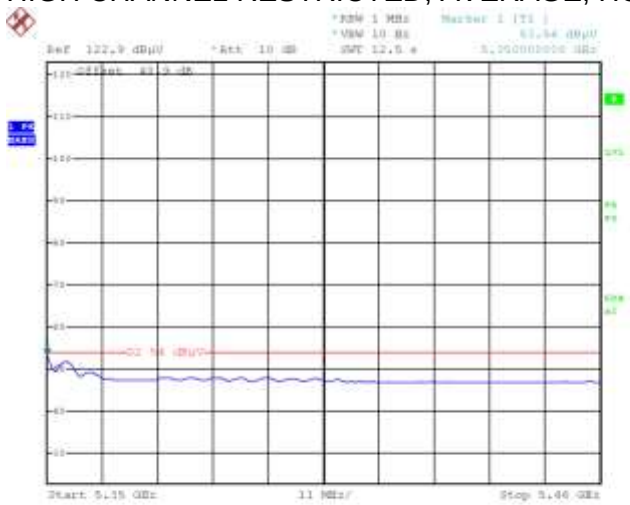
## 9.2.12. TX ABOVE 1 GHz 802.11n HT40 CDD 3TX MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (HIGH CHANNEL)**

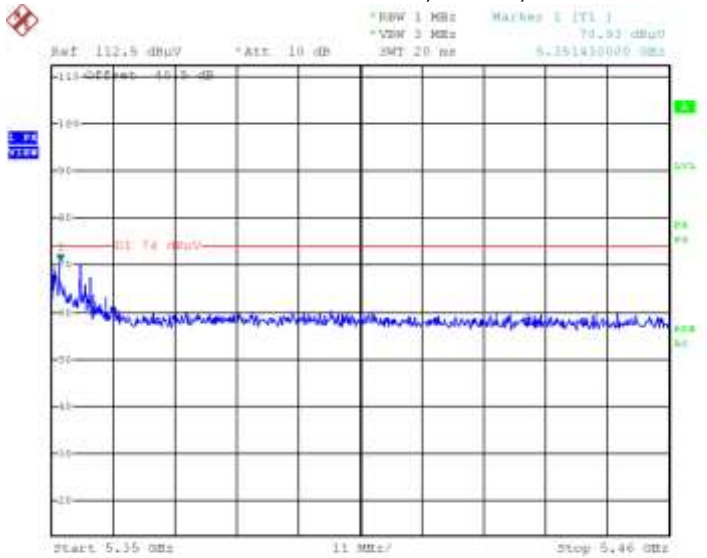
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



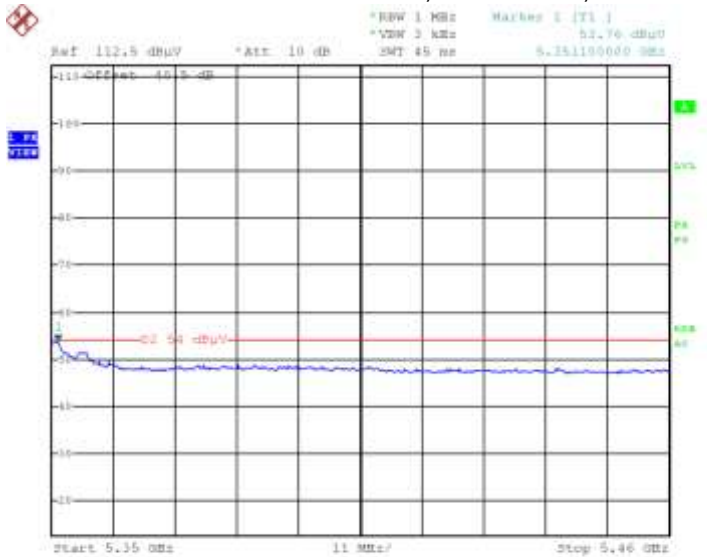

HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



HIGH CHANNEL RESTRICTED, PEAK, VERT




HIGH CHANNEL RESTRICTED, AVERAGE, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 5m Chamber-A**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/7/2012 |
| **Test Engineer:** | D. Garcia/Danny Vu |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT40 3TX mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF_7.6GHz | |

**Peak Measurements**
RBW1MHz, BW=3MHz
**Average Measurements**
RBW=1MHz ; VBW=1.1kHz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5270.0 MHz) | | | | | | | | | | | | | | | |
| 15.810 | 3.0 | 48.1 | 36.0 | 38.1 | 12.3 | -33.9 | 0.0 | 0.7 | 65.3 | 53.3 | 74 | 54 | -8.7 | -0.7 | H, q88 |
| 15.810 | 3.0 | 44.8 | 34.2 | 38.1 | 12.3 | -33.9 | 0.0 | 0.7 | 62.0 | 51.5 | 74 | 54 | -12.0 | -2.5 | V, q88 |
| High Channel (5310 MHz) | | | | | | | | | | | | | | | |
| 10.620 | 3.0 | 50.7 | 39.2 | 38.3 | 9.7 | -35.7 | 0.0 | 0.8 | 63.8 | 52.2 | 74 | 54 | -10.2 | -1.8 | H, q90 |
| 15.930 | 3.0 | 47.2 | 36.7 | 37.7 | 12.4 | -33.9 | 0.0 | 0.7 | 64.1 | 53.6 | 74 | 54 | -9.9 | -0.4 | H, q89 |
| 10.620 | 3.0 | 44.4 | 33.2 | 38.3 | 9.7 | -35.7 | 0.0 | 0.8 | 57.5 | 46.2 | 74 | 54 | -16.5 | -7.8 | V, q89 |
| 15.930 | 3.0 | 44.7 | 34.1 | 37.7 | 12.4 | -33.9 | 0.0 | 0.7 | 61.6 | 51.0 | 74 | 54 | -12.4 | -3.0 | V, q89 |

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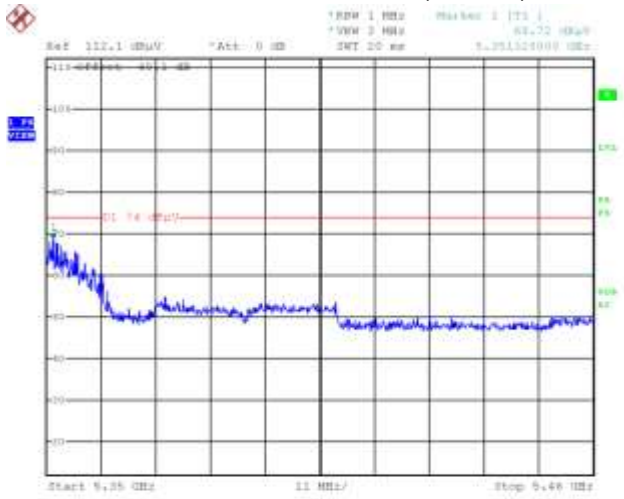
| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

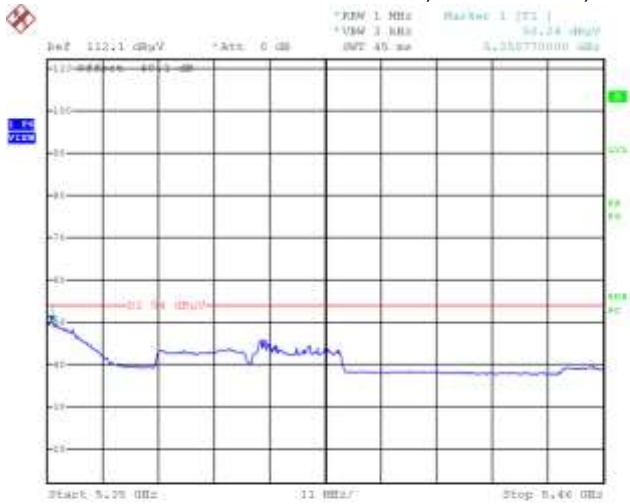
## 9.2.13. TX ABOVE 1 GHz 802.11n HT40 BF 3TX MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (HIGH CHANNEL)**

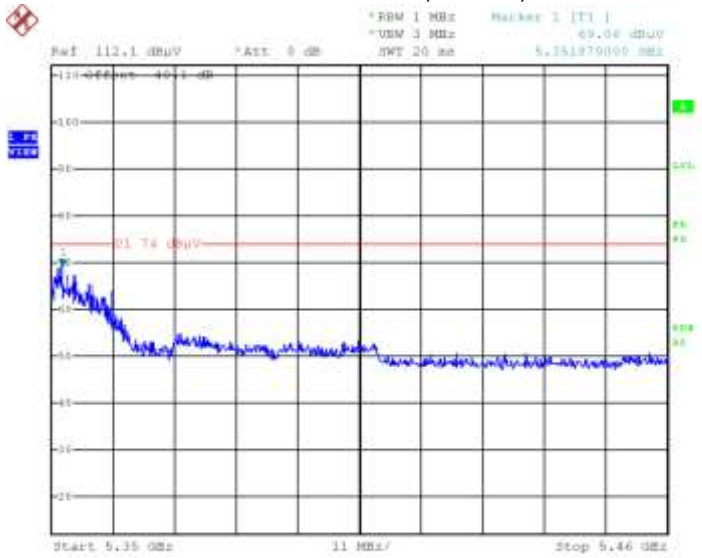
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ

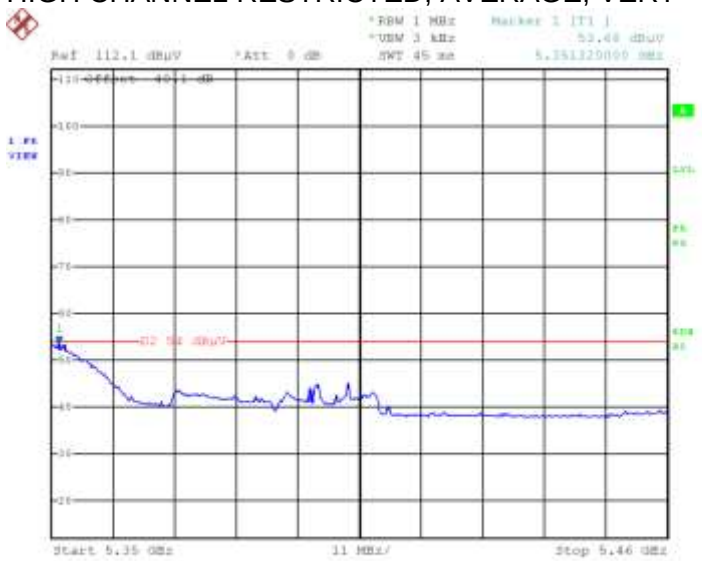


HIGH CHANNEL RESTRICTED, PEAK, VERT




Date: 11.DEC.2012 16:13:40

HIGH CHANNEL RESTRICTED, AVERAGE, VERT




Date: 11.DEC.2012 16:12:45

## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 3m Chamber**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/12/2012 |
| **Test Engineer:** | D. Garcia |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT40 3TX Beam Forming mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | | R_001 |

**Peak Measurements**
RBW=1MHz ; VBW=3MHz
**Average Measurements**
RBW=1MHz ; VBW=1.1kHz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low Channel (5270 MHz)** | | | | | | | | | | | | | | | |
| 15.810 | 3.0 | 47.3 | 36.4 | 38.1 | 13.1 | -33.9 | 0.0 | 0.0 | 64.6 | 53.7 | 74 | 54 | -9.4 | -0.3 | H |
| 15.810 | 3.0 | 45.5 | 35.3 | 38.1 | 13.1 | -33.9 | 0.0 | 0.0 | 62.7 | 52.6 | 74 | 54 | -11.3 | -1.4 | V |
| **High Channel (5310 MHz)** | | | | | | | | | | | | | | | |
| 10.620 | 3.0 | 49.1 | 37.6 | 38.3 | 9.9 | -35.7 | 0.0 | 0.0 | 61.6 | 50.1 | 74 | 54 | -12.4 | -3.9 | H |
| 15.930 | 3.0 | 46.8 | 36.6 | 37.7 | 13.2 | -33.9 | 0.0 | 0.0 | 63.8 | 53.5 | 74 | 54 | -10.2 | -0.5 | H |
| 10.620 | 3.0 | 46.7 | 33.9 | 38.3 | 9.9 | -35.7 | 0.0 | 0.0 | 59.2 | 46.3 | 74 | 54 | -14.8 | -7.7 | V |
| 15.930 | 3.0 | 47.9 | 36.9 | 37.7 | 13.2 | -33.9 | 0.0 | 0.0 | 64.9 | 53.9 | 74 | 54 | -9.1 | -0.1 | V |

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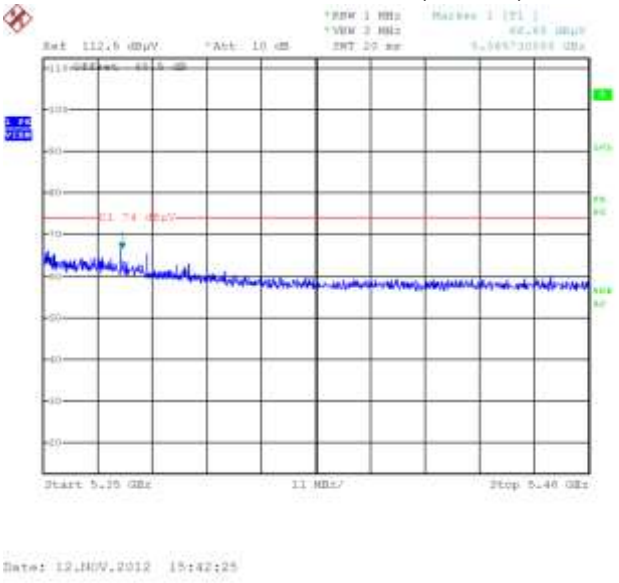
| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

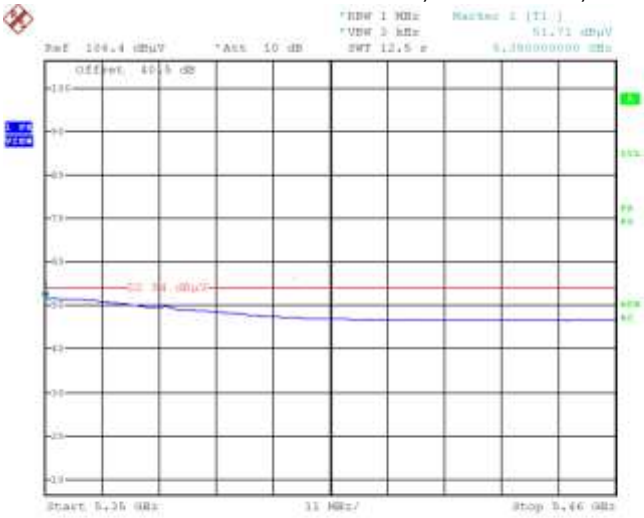
## 9.2.14. TX ABOVE 1 GHz 802.11n AC80 1TX MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (HIGH CHANNEL)**

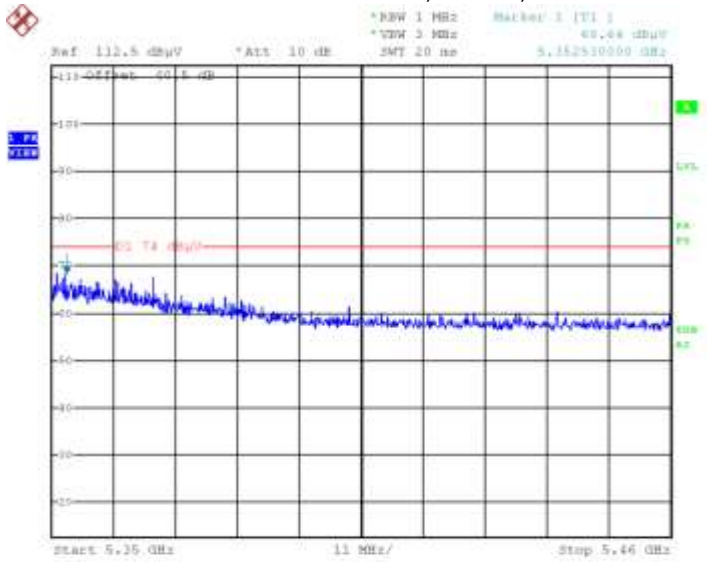
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



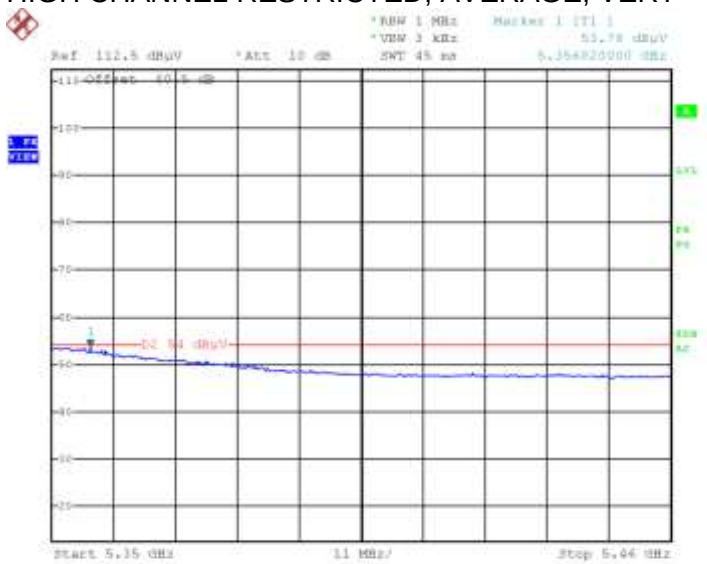
HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



HIGH CHANNEL RESTRICTED, PEAK, VERT




HIGH CHANNEL RESTRICTED, AVERAGE, VERT



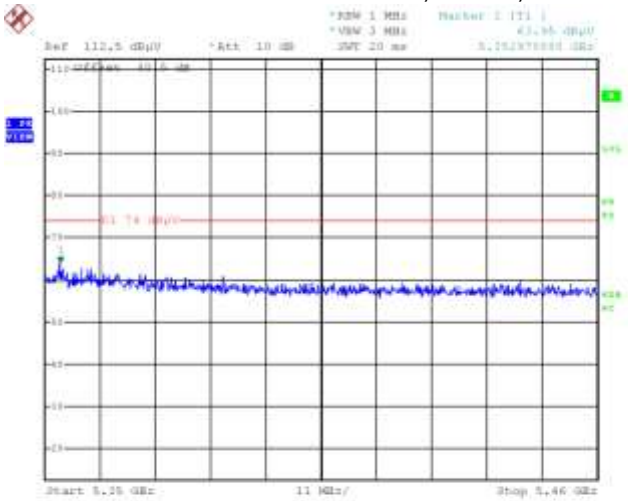
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by testing 11n AC80 CCD MCS0 3TX at the same power level.

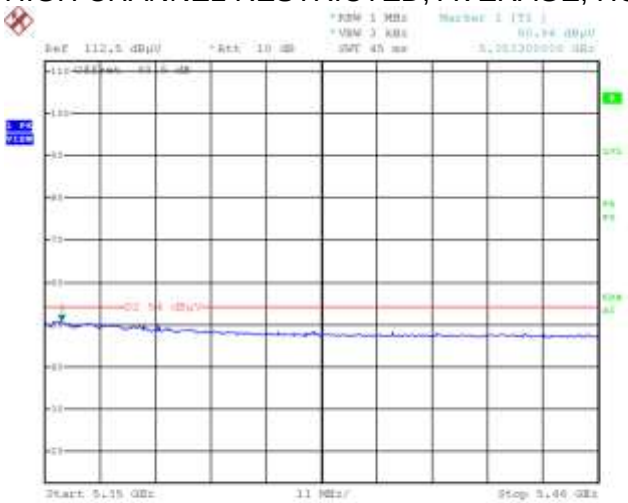
## 9.2.15. TX ABOVE 1 GHz 802.11n AC80 CDD 3TX MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (HIGH CHANNEL)**

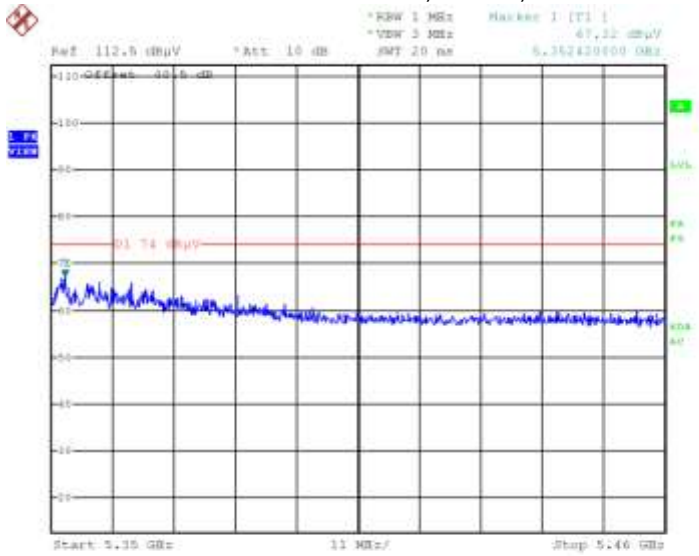
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



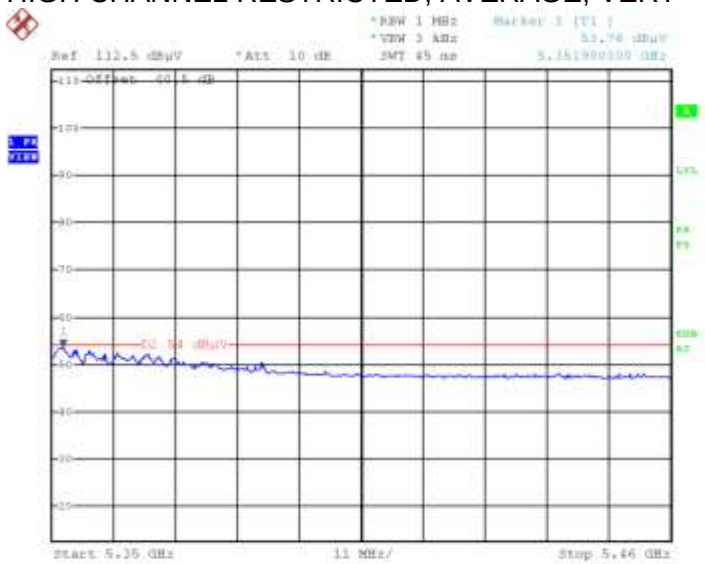
HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



HIGH CHANNEL RESTRICTED, PEAK, VERT




HIGH CHANNEL RESTRICTED, AVERAGE, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 5m Chamber-A**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/9/2012 |
| **Test Engineer:** | M. Mekuria |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n AC80 3TX mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF_7.6GHz | |

**Peak Measurements**
RBW1MHz, BW=3MHz
**Average Measurements**
RBW=1MHz ; VBW=1.1kHz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5290.0 MHz) | | | | | | | | | | | | | | | |
| 15.870 | 3.0 | 47.8 | 36.3 | 37.9 | 12.4 | -33.9 | 0.0 | 0.7 | 64.9 | 53.4 | 74 | 54 | -9.1 | -0.6 | H, q90 |
| 15.870 | 3.0 | 44.6 | 32.8 | 37.9 | 12.4 | -33.9 | 0.0 | 0.7 | 61.6 | 49.8 | 74 | 54 | -12.4 | -4.2 | V, q90 |

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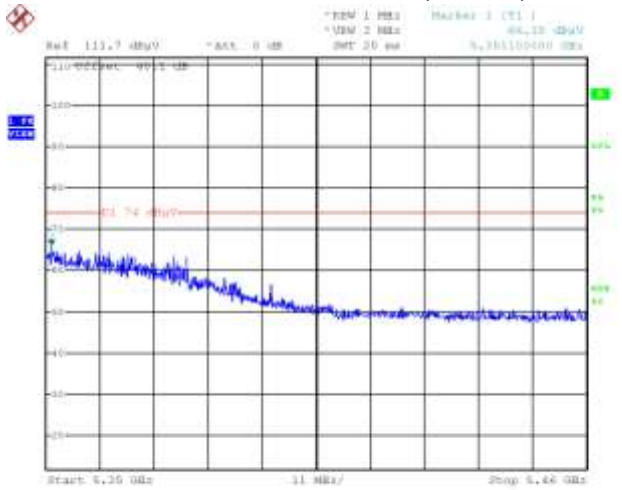
| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

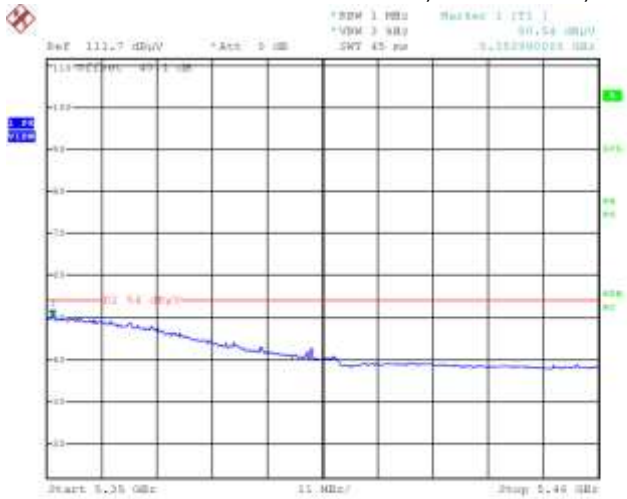
## 9.2.16. TX ABOVE 1 GHz 802.11n AC80 BF 3TX MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (HIGH CHANNEL)**

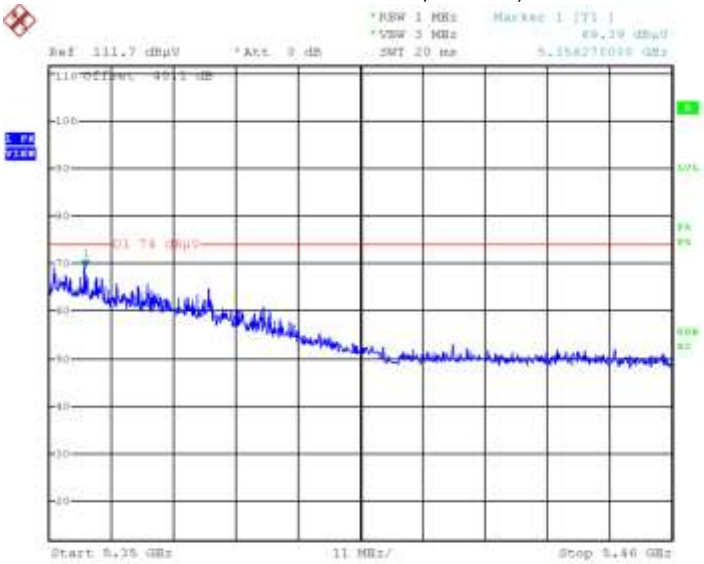
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



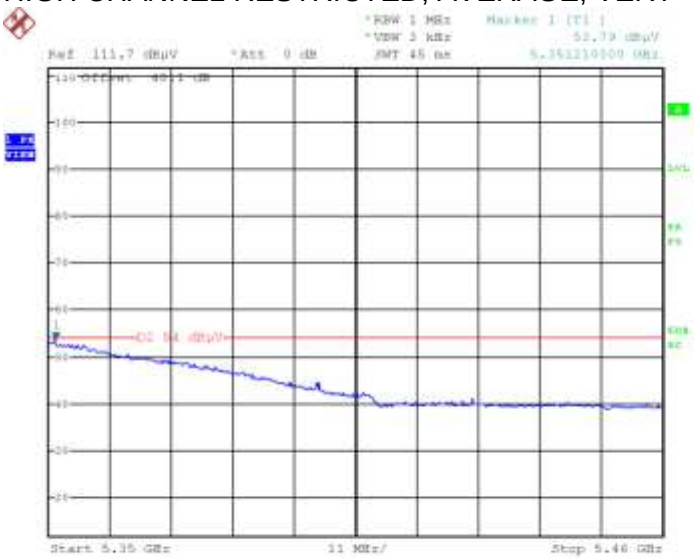
HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



HIGH CHANNEL RESTRICTED, PEAK, VERT




HIGH CHANNEL RESTRICTED, AVERAGE, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 5m Chamber-A**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/13/2012 |
| **Test Engineer:** | M. Mekuria |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT80 3TX mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF_7.6GHz | |

**Peak Measurements**
RBW1MHz, BW=3MHz
**Average Measurements**
RBW=1MHz ; VBW=1.1kHz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5290.0 MHz) | | | | | | | | | | | | | | | |
| 15.870 | 3.0 | 45.1 | 33.3 | 37.9 | 12.4 | -33.9 | 0.0 | 0.7 | 62.1 | 50.4 | 74 | 54 | -11.9 | -3.6 | H, q89 |
| 15.870 | 3.0 | 43.9 | 31.1 | 37.9 | 12.4 | -33.9 | 0.0 | 0.7 | 61.0 | 48.1 | 74 | 54 | -13.0 | -5.9 | V, q89 |

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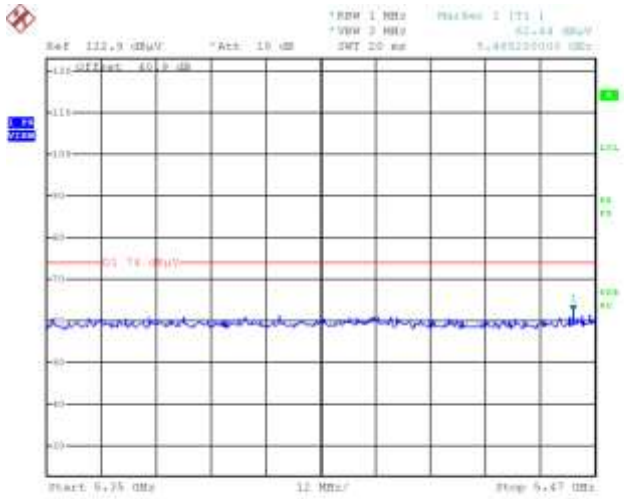
| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

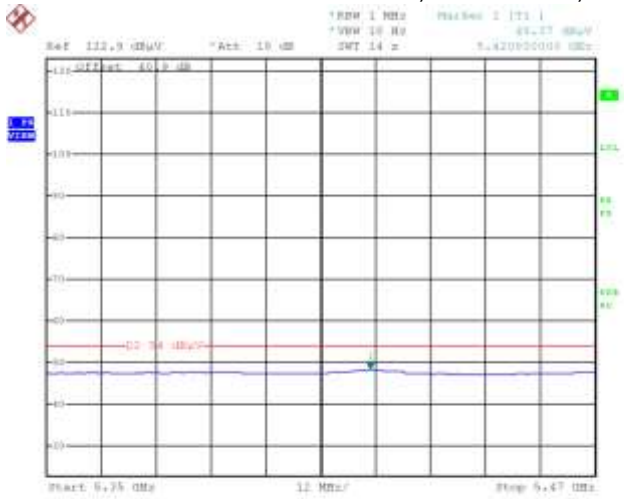
## 9.2.17. TX ABOVE 1 GHz 802.11a MODE, 5.6 GHz BAND

**RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)**

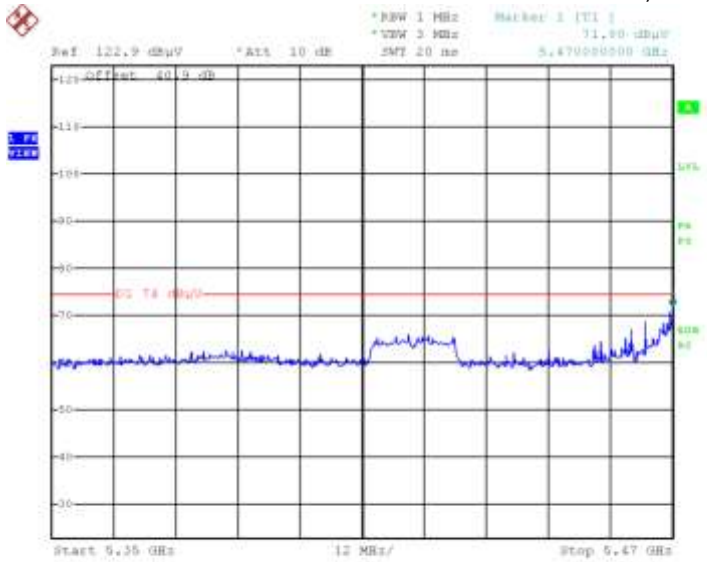
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



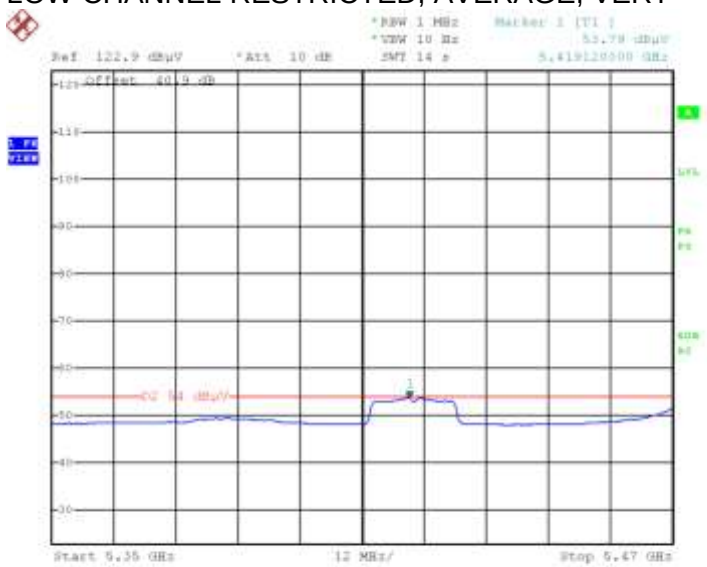
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT

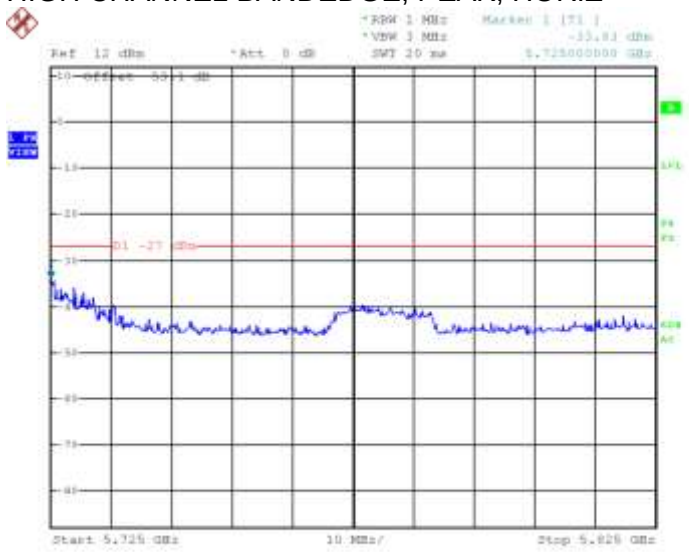



LOW CHANNEL RESTRICTED, AVERAGE, VERT

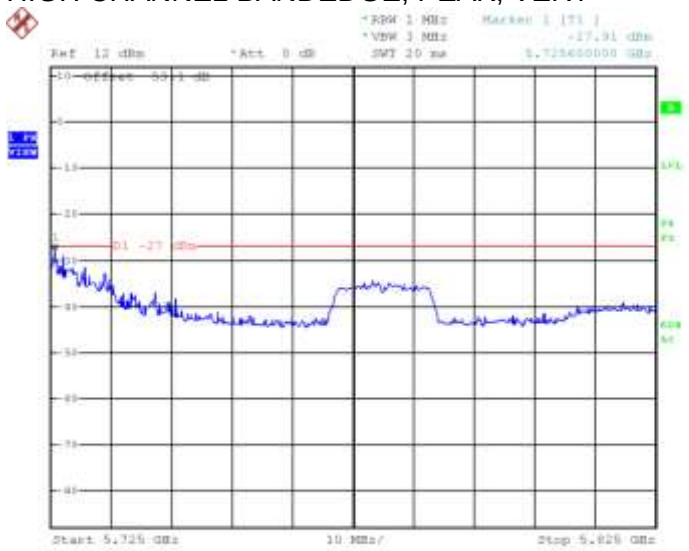


**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL BANDEDGE, PEAK, HORIZ




HIGH CHANNEL BANDEDGE, PEAK, VERT



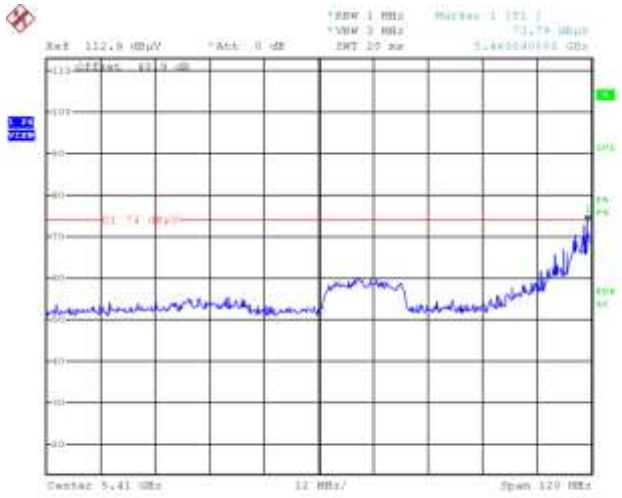
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by testing HT20 CDD MCS0 3TX, total power across all three chains is higher than the power level the device will operate at.

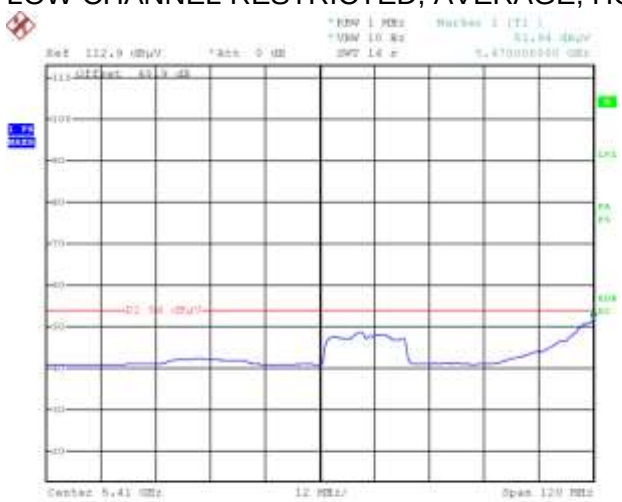
## 9.2.18. TX ABOVE 1 GHz 802.11n HT20 CDD 3TX MODE, 5.6 GHz BAND

**RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)**

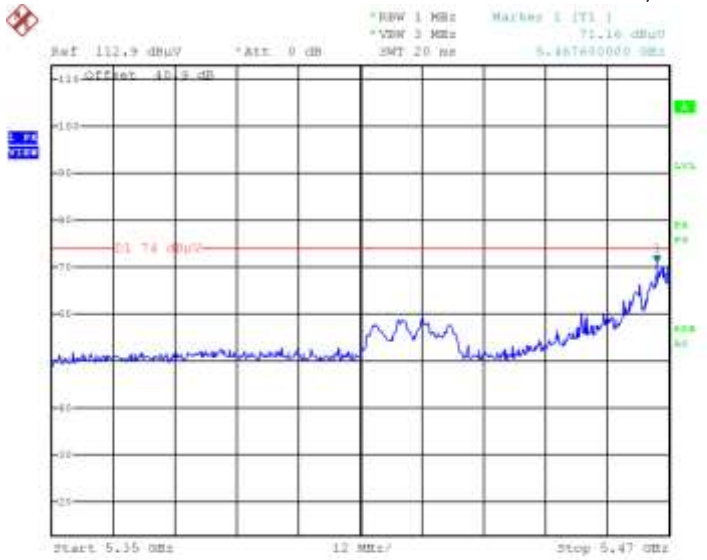
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



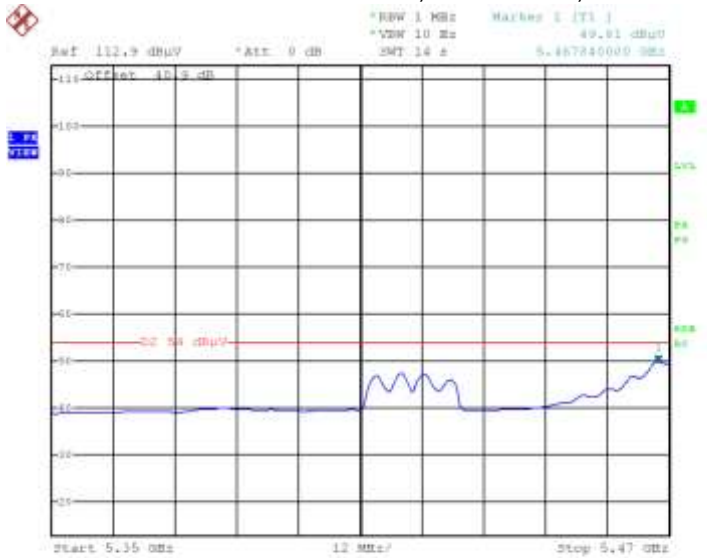
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT

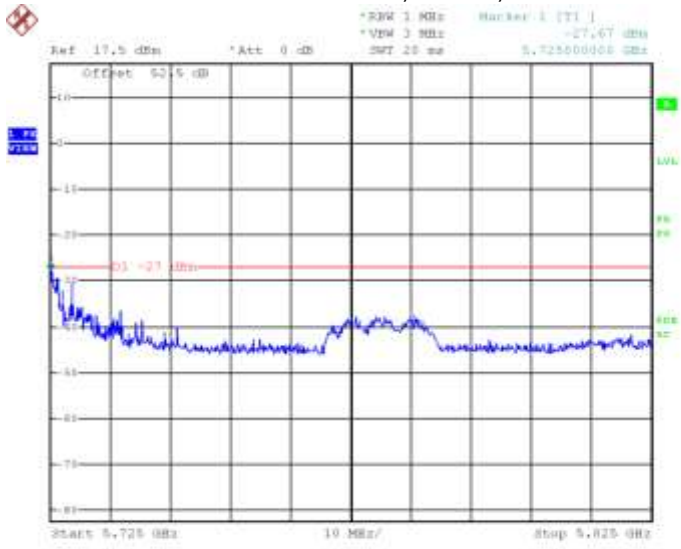



LOW CHANNEL RESTRICTED, AVERAGE, VERT

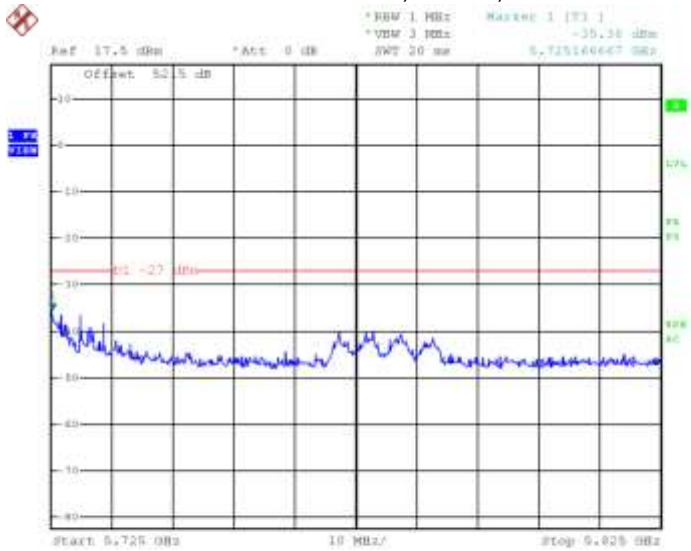


**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL BANDEDGE, PEAK, HORIZ




HIGH CHANNEL BANDEDGE, PEAK, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 3m Chamber**

**Company:** Broadcom
**Project #:** 12U14669
**Date:** 12/6/2012
**Test Engineer:** M. Mekuria/Danny Vu
**Configuration:** EUT, Adapter Board, Antenna
**Mode:** 11n HT20 3TX mode

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | | R_001 |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5500 MHz) | | | | | | | | | | | | | | | |
| 11.000 | 3.0 | 49.3 | 37.9 | 38.4 | 10.5 | -35.6 | 0.0 | 0.0 | 62.5 | 51.1 | 74 | 54 | -11.5 | -2.9 | H, q86 |
| 11.000 | 3.0 | 50.6 | 39.7 | 38.4 | 10.5 | -35.6 | 0.0 | 0.0 | 63.8 | 52.9 | 74 | 54 | -10.2 | -1.1 | V, q86 |
| Mid Channel (5580 MHz) | | | | | | | | | | | | | | | |
| 11.160 | 3.0 | 48.8 | 37.1 | 38.5 | 10.7 | -35.6 | 0.0 | 0.0 | 62.4 | 50.7 | 74 | 54 | -11.6 | -3.3 | H, q85 |
| 11.160 | 3.0 | 53.1 | 39.4 | 38.5 | 10.7 | -35.6 | 0.0 | 0.0 | 66.7 | 53.1 | 74 | 54 | -7.3 | -0.9 | V, q82 |
| High Channel (5700 MHz) | | | | | | | | | | | | | | | |
| 11.400 | 3.0 | 53.1 | 38.4 | 38.7 | 11.1 | -35.6 | 0.0 | 0.0 | 67.4 | 52.7 | 74 | 54 | -6.6 | -1.3 | H, q85 |
| 11.400 | 3.0 | | 38.6 | 38.7 | 11.1 | -35.6 | 0.0 | 0.0 | 14.3 | 52.8 | 74 | 54 | -59.7 | -1.2 | V, q85 |

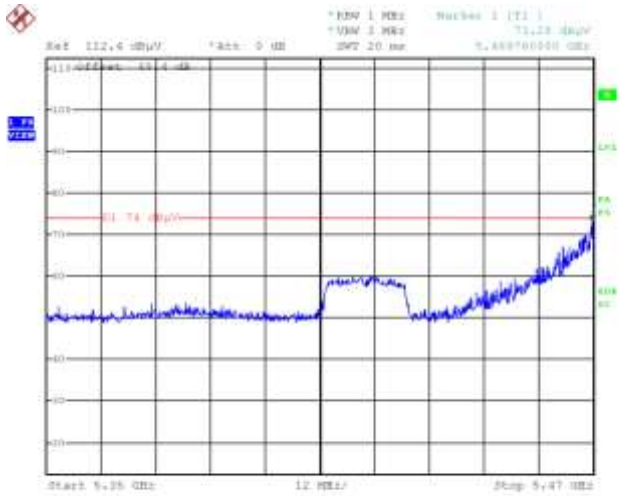
Rev. 11.10.11

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

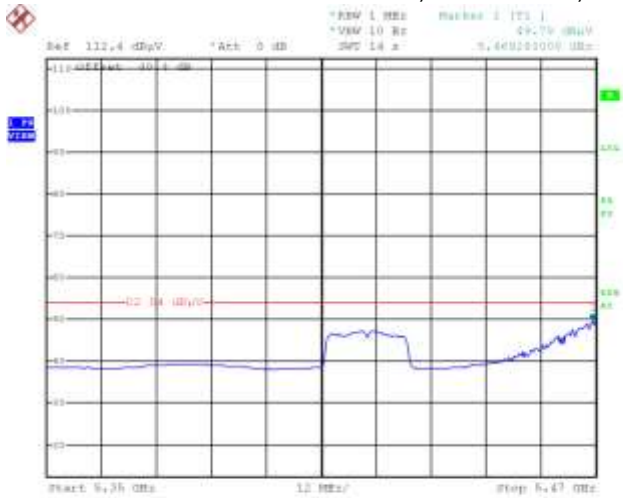
## 9.2.19. TX ABOVE 1 GHz 802.11n HT20 BF 3TX MODE, 5.6 GHz BAND

**RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)**

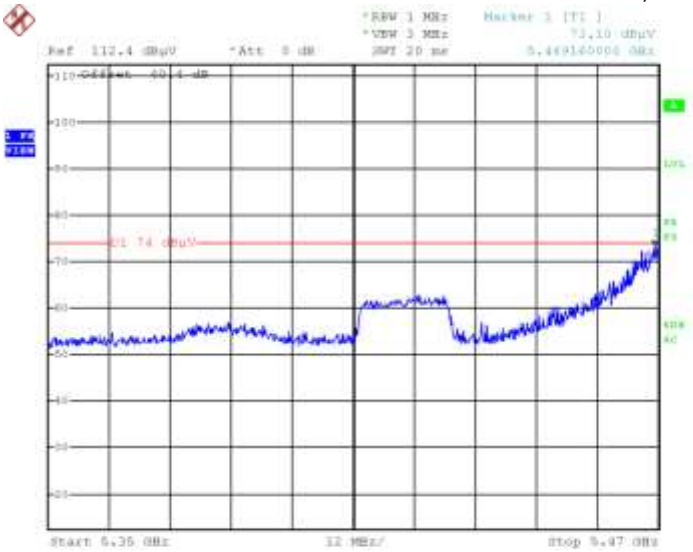
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

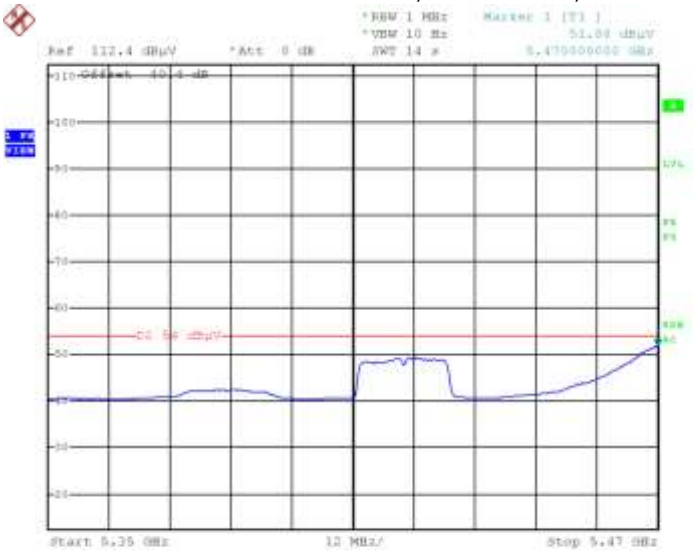


LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT




Date: 11.DEC.2012 17:54:20

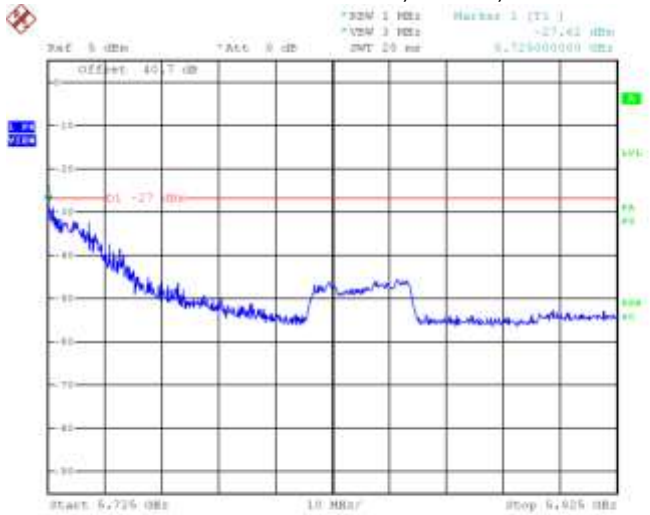
LOW CHANNEL RESTRICTED, AVERAGE, VERT



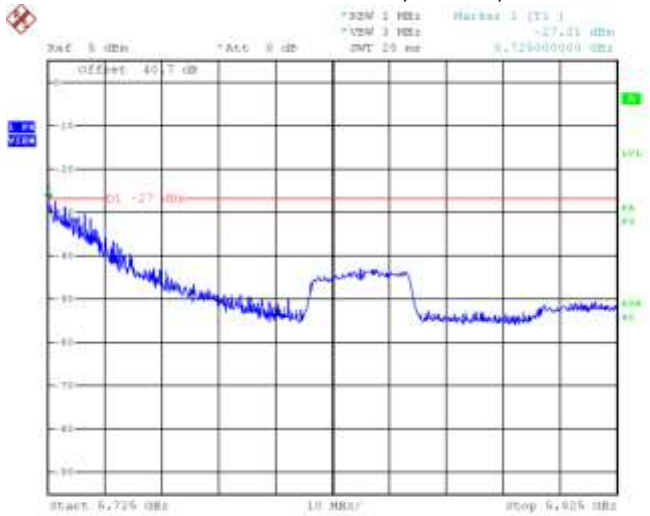

Date: 11.DEC.2012 17:56:10

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL BANDEDGE, PEAK, HORIZ



HIGH CHANNEL BANDEDGE, PEAK, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 3m Chamber**

**Company:** Broadcom
**Project #:** 12U14669
**Date:** 12/12/2012
**Test Engineer:** D. Garcia
**Configuration:** EUT, Adapter Board, Antenna
**Mode:** 11n HT20 3TX Beam Forming mode

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | | R_001 |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5500 MHz) | | | | | | | | | | | | | | | |
| 11.000 | 3.0 | 52.9 | 38.2 | 38.4 | 10.5 | -35.6 | 0.0 | 0.0 | 66.1 | 51.4 | 74 | 54 | -7.9 | -2.6 | H, q86 |
| 11.000 | 3.0 | 54.8 | 39.9 | 38.4 | 10.5 | -35.6 | 0.0 | 0.0 | 68.0 | 53.1 | 74 | 54 | -6.0 | -0.9 | V, q85 |
| Mid Channel (5580 MHz) | | | | | | | | | | | | | | | |
| 11.160 | 3.0 | 49.2 | 33.2 | 38.5 | 10.7 | -35.6 | 0.0 | 0.0 | 62.8 | 46.8 | 74 | 54 | -11.2 | -7.2 | H q80 |
| 11.160 | 3.0 | 55.8 | 40.1 | 38.5 | 10.7 | -35.6 | 0.0 | 0.0 | 69.4 | 53.7 | 74 | 54 | -4.6 | -0.3 | V, q80 |
| High Channel (5700 MHz) | | | | | | | | | | | | | | | |
| 11.400 | 3.0 | | 36.3 | 38.7 | 11.1 | -35.6 | 0.0 | 0.0 | 14.3 | 50.6 | 74 | 54 | -59.7 | -3.4 | H, q86 |
| 11.400 | 3.0 | 49.3 | 35.1 | 38.7 | 11.1 | -35.6 | 0.0 | 0.0 | 63.6 | 49.4 | 74 | 54 | -10.4 | -4.6 | V, q86 |

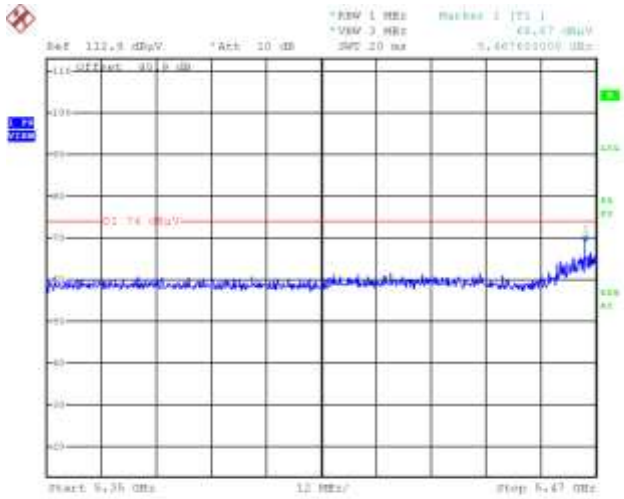
Rev. 11.10.11

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

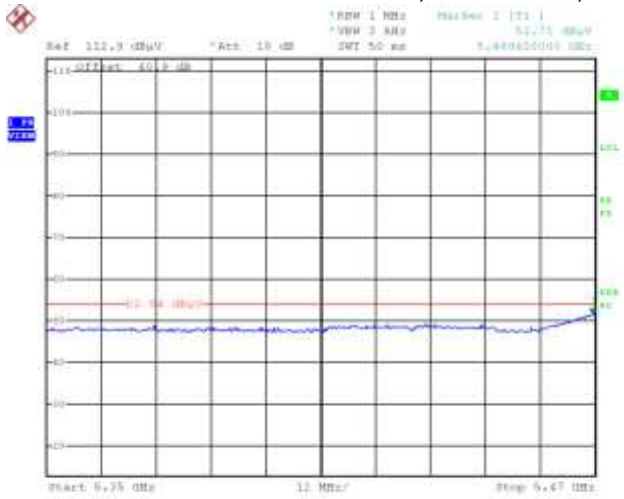
## 9.2.20. TX ABOVE 1 GHz 802.11n HT40 1TX MODE, 5.6 GHz BAND

**RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)**

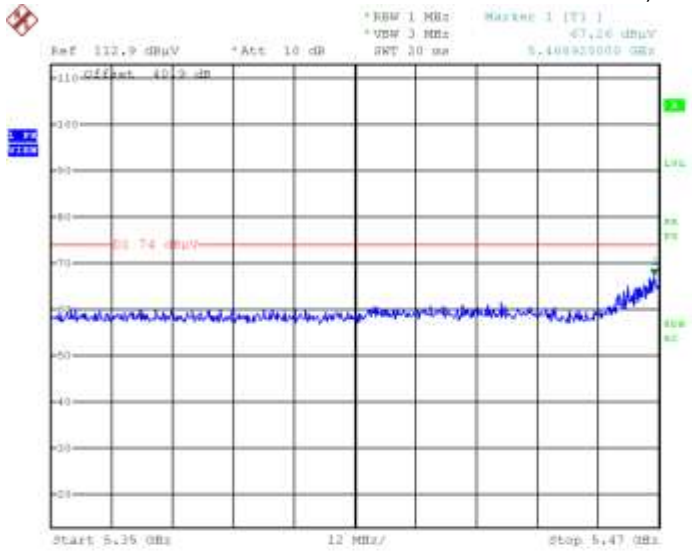
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



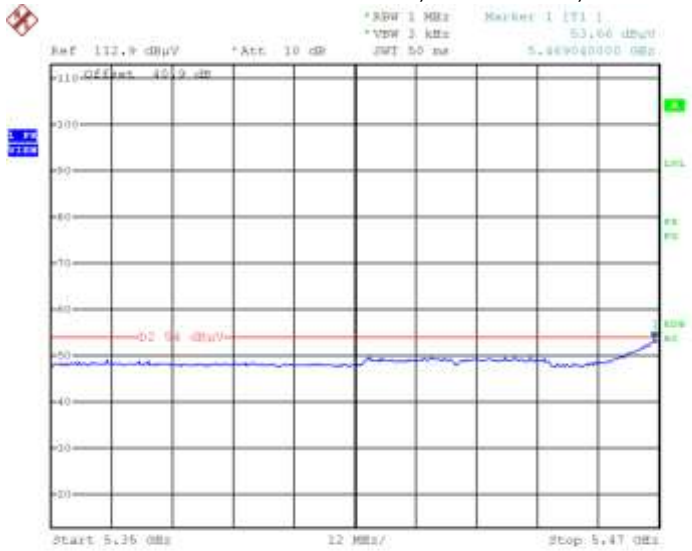
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT

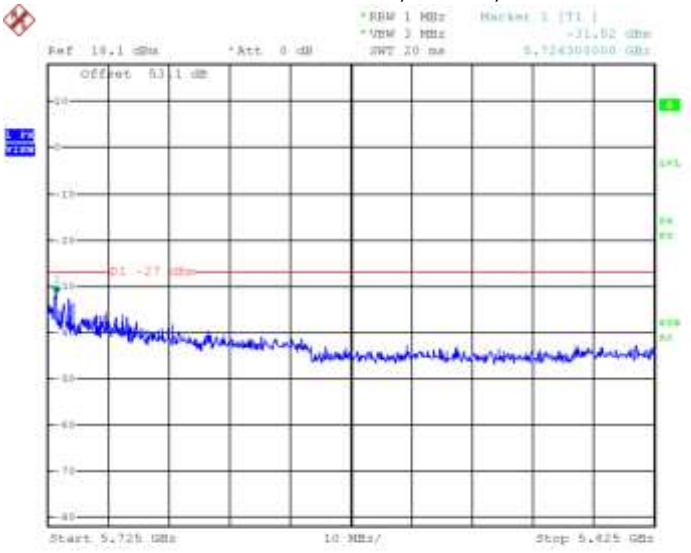



LOW CHANNEL RESTRICTED, AVERAGE, VERT



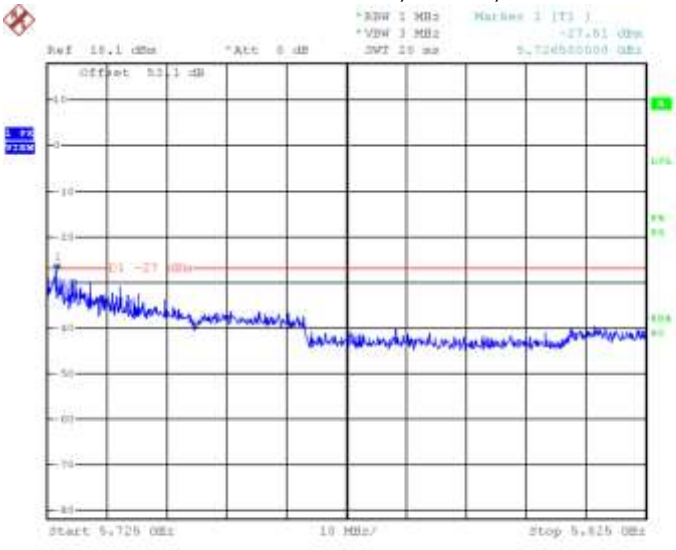
**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL BANDEDGE, PEAK, HORIZ




Date: 2.NOV.2012 15:38:06

HIGH CHANNEL BANDEDGE, PEAK, VERT




Date: 2.NOV.2012 15:32:38

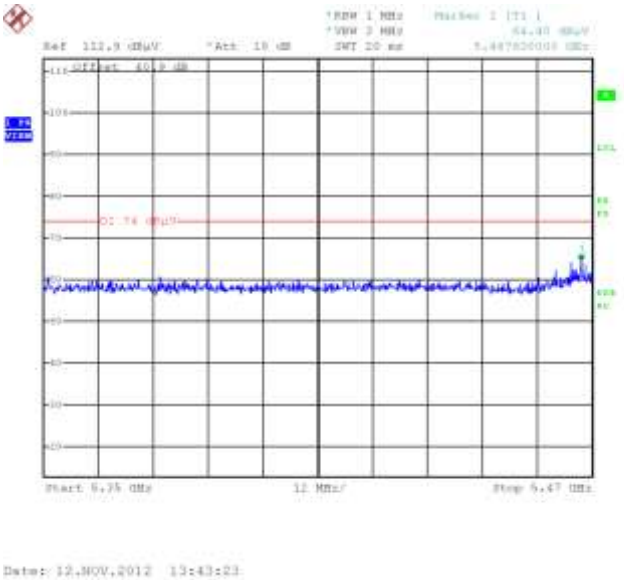
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by testing HT40 CDD MCS0 3TX, total power across all three chains is higher than the power level the device will operate at.

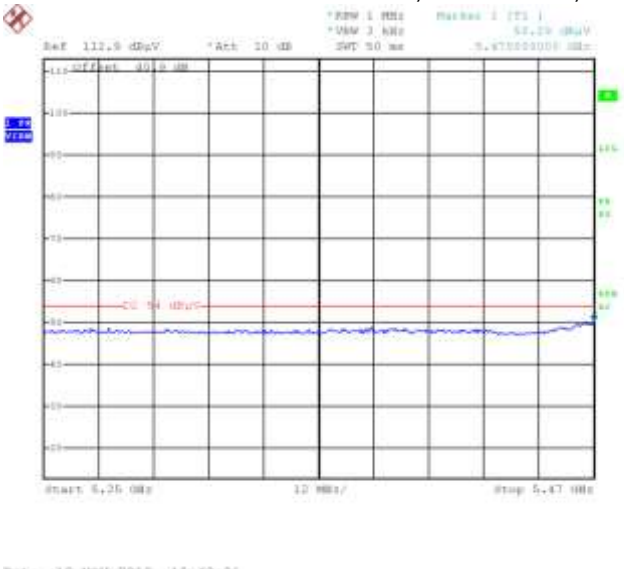
## 9.2.21. TX ABOVE 1 GHz 802.11n HT40 CDD 3TX MODE, 5.6 GHz BAND

**RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)**

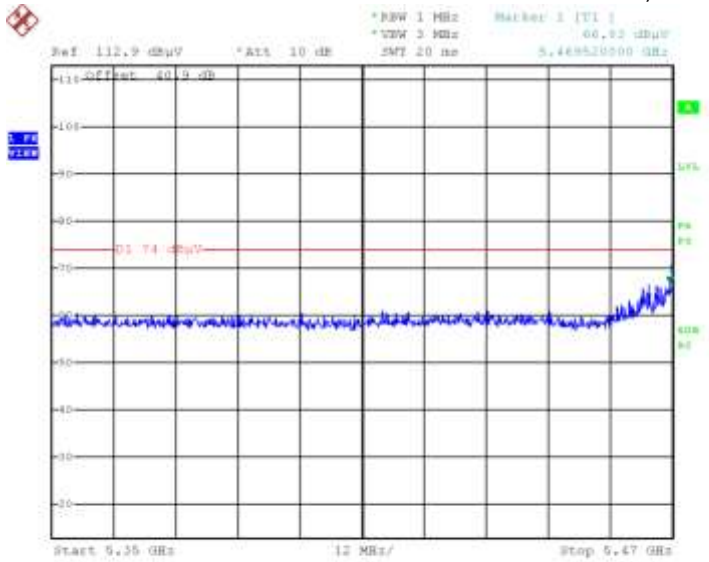
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



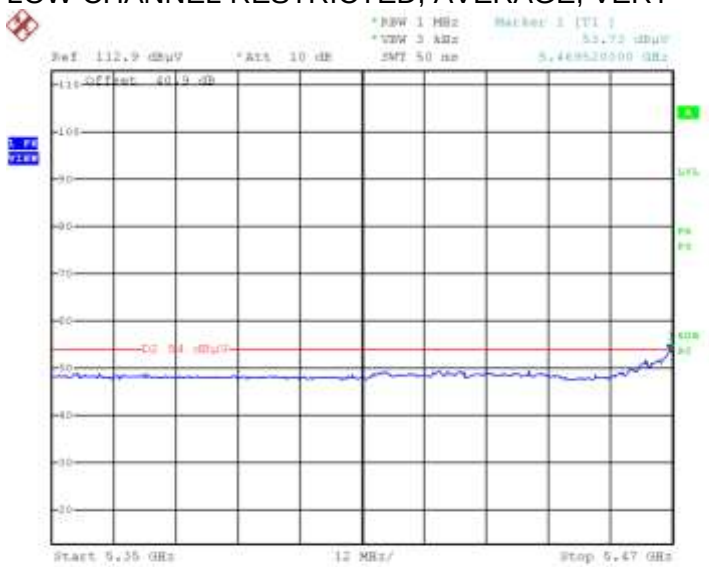
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT

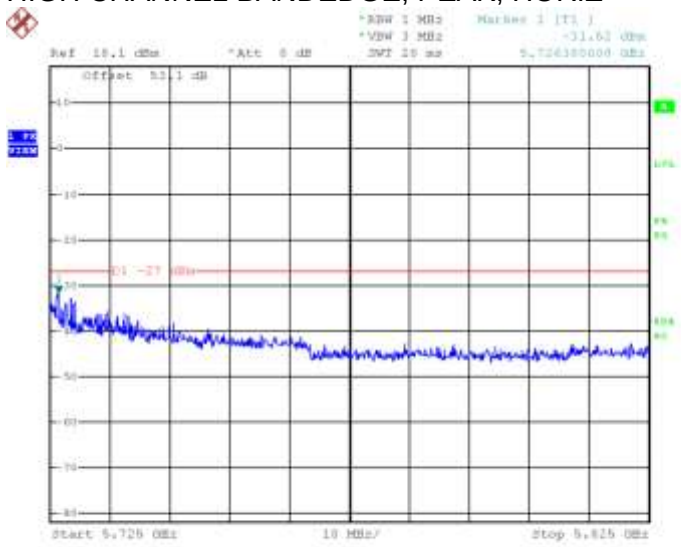



LOW CHANNEL RESTRICTED, AVERAGE, VERT

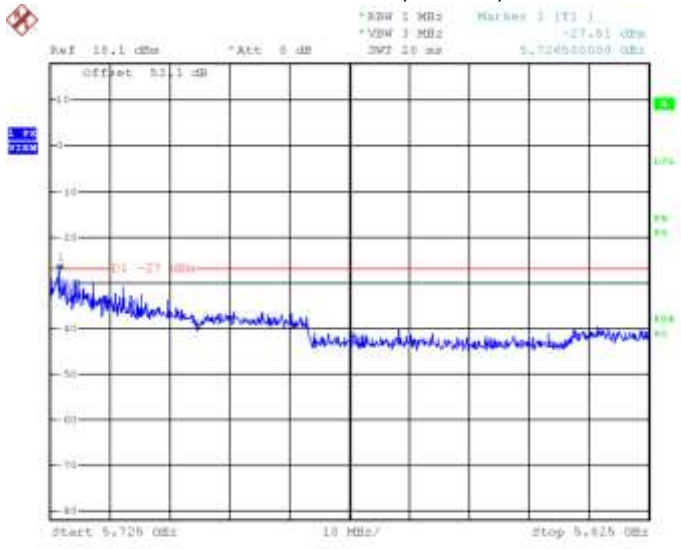


**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL BANDEDGE, PEAK, HORIZ




HIGH CHANNEL BANDEDGE, PEAK, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 3m Chamber**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/7/2012 |
| **Test Engineer:** | M. Mekuria |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT40 3TX mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | | R_001 |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low Channel (5510 MHz)** | | | | | | | | | | | | | | | |
| 11.020 | 3.0 | 49.6 | 38.1 | 38.4 | 10.5 | -35.6 | 0.0 | 0.0 | 62.8 | 51.4 | 74 | 54 | -11.2 | -2.6 | H, q88 |
| 11.020 | 3.0 | 49.5 | 39.3 | 38.4 | 10.5 | -35.6 | 0.0 | 0.0 | 62.7 | 52.5 | 74 | 54 | -11.3 | -1.5 | V, q88 |
| **Mid Channel (5550 MHz)** | | | | | | | | | | | | | | | |
| 11.100 | 3.0 | 47.8 | 36.1 | 38.5 | 10.6 | -35.6 | 0.0 | 0.0 | 61.3 | 49.5 | 74 | 54 | -12.7 | -4.5 | H, q87 |
| 11.100 | 3.0 | 49.2 | 37.9 | 38.5 | 10.6 | -35.6 | 0.0 | 0.0 | 62.7 | 51.4 | 74 | 54 | -11.3 | -2.6 | V, q87 |
| **High Channel (5670 MHz)** | | | | | | | | | | | | | | | |
| 11.340 | 3.0 | 48.9 | 36.6 | 38.7 | 11.0 | -35.6 | 0.0 | 0.0 | 63.0 | 50.7 | 74 | 54 | -11.0 | -3.3 | H, q88 |
| 11.340 | 3.0 | 48.9 | 37.6 | 38.7 | 11.0 | -35.6 | 0.0 | 0.0 | 63.0 | 51.7 | 74 | 54 | -11.0 | -2.3 | V, q88 |

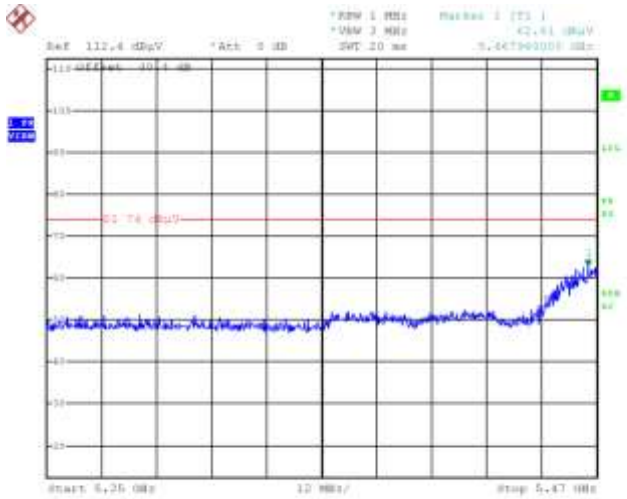
Rev. 11.10.11

| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

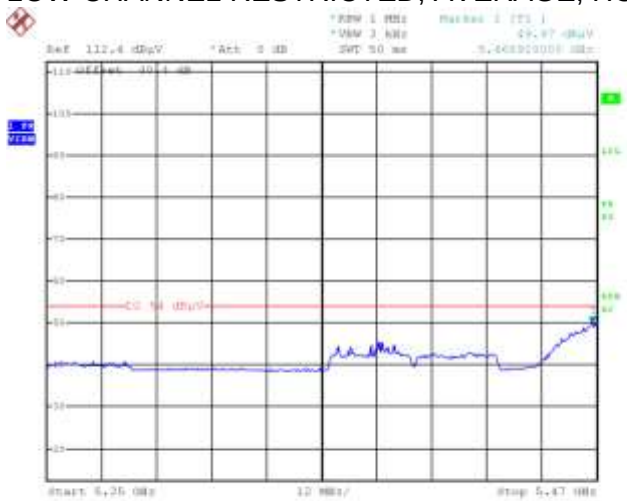
## 9.2.22. TX ABOVE 1 GHz 802.11n HT40 BF 3TX MODE, 5.6 GHz BAND

**RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)**

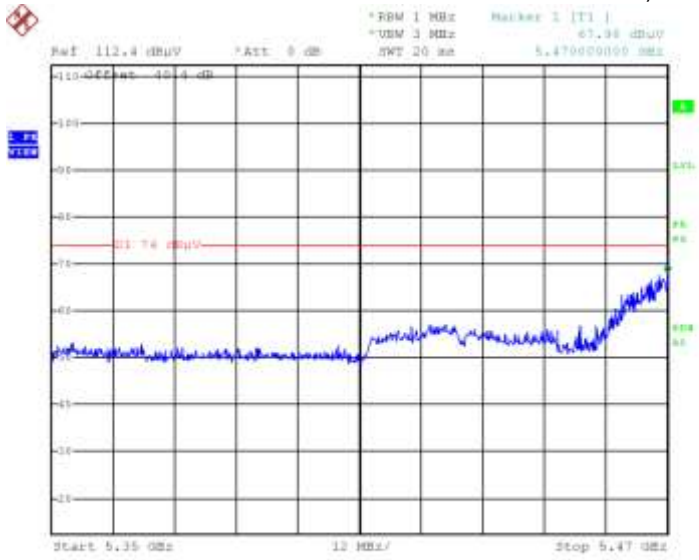
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



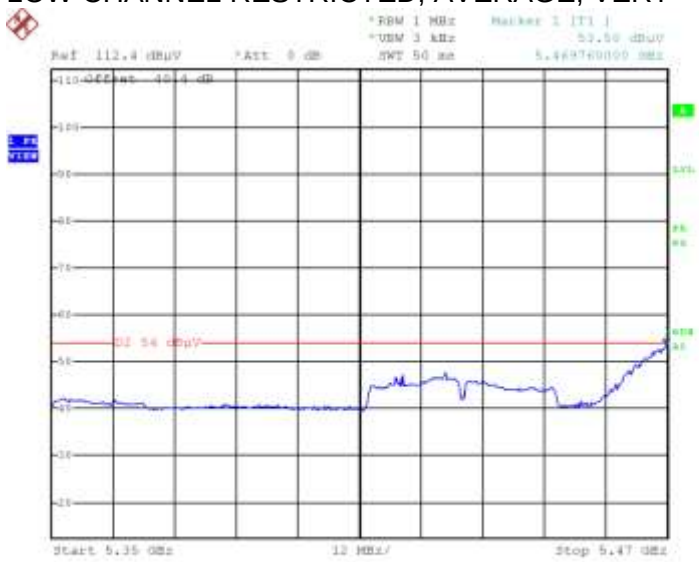
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



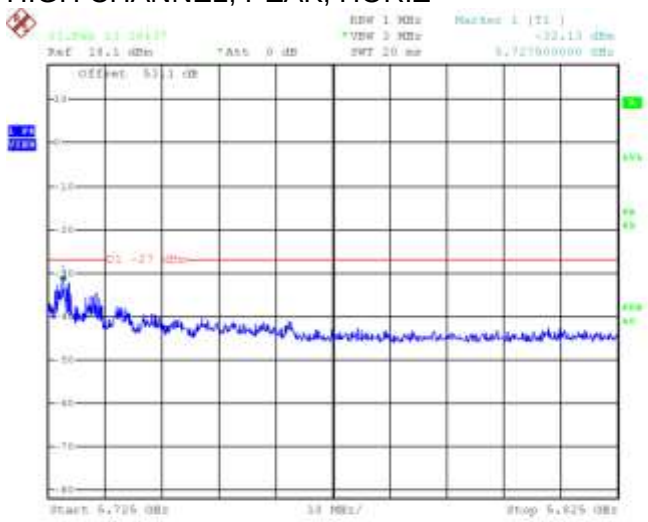
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT



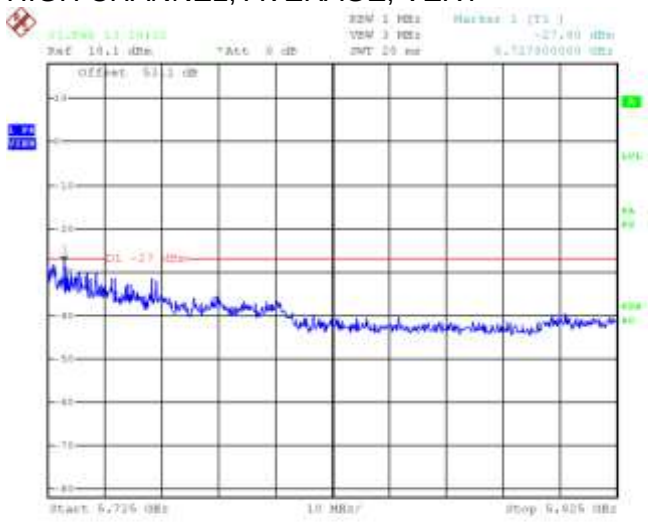

LOW CHANNEL RESTRICTED, AVERAGE, VERT



HIGH CHANNEL, PEAK, HORIZ



HIGH CHANNEL, AVERAGE, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 3m Chamber**

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/12/2012 |
| **Test Engineer:** | D. Garcia |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT40 3TX Beam Forming mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | | R_001 |

**Peak Measurements**
RBW=1MHz ; VBW=3MHz
**Average Measurements**
RBW=1MHz ; VBW=1.1kHz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low Channel (5510 MHz)** | | | | | | | | | | | | | | | |
| 11.020 | 3.0 | 49.2 | 37.8 | 38.4 | 10.5 | -35.6 | 0.0 | 0.0 | 62.4 | 51.1 | 74 | 54 | -11.6 | -2.9 | H, q88 |
| 11.020 | 3.0 | 32.3 | 40.1 | 38.4 | 10.5 | -35.6 | 0.0 | 0.0 | 45.6 | 53.4 | 74 | 54 | -28.4 | -0.6 | V, q88 |
| **Mid Channel (5550 MHz)** | | | | | | | | | | | | | | | |
| 11.100 | 3.0 | 51.5 | 40.0 | 38.5 | 10.6 | -35.6 | 0.0 | 0.0 | 65.0 | 53.4 | 74 | 54 | -9.0 | -0.6 | V, q86 |
| 11.100 | 3.0 | 47.2 | 36.2 | 38.5 | 10.6 | -35.6 | 0.0 | 0.0 | 60.7 | 49.7 | 74 | 54 | -13.3 | -4.3 | H, q86 |
| **HighChannel (5670 MHz)** | | | | | | | | | | | | | | | |
| 11.340 | 3.0 | 47.4 | 36.8 | 38.7 | 11.0 | -35.6 | 0.0 | 0.0 | 61.5 | 50.9 | 74 | 54 | -12.5 | -3.1 | V, q86 |
| 11.340 | 3.0 | 48.4 | 36.9 | 38.7 | 11.0 | -35.6 | 0.0 | 0.0 | 62.5 | 51.0 | 74 | 54 | -11.5 | -3.0 | H, q86 |

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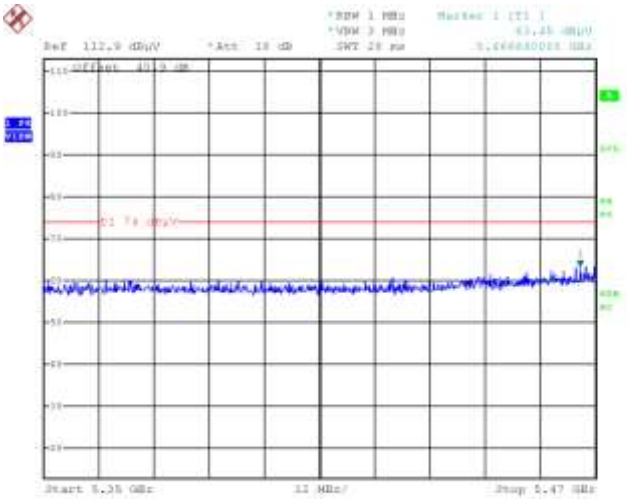
| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

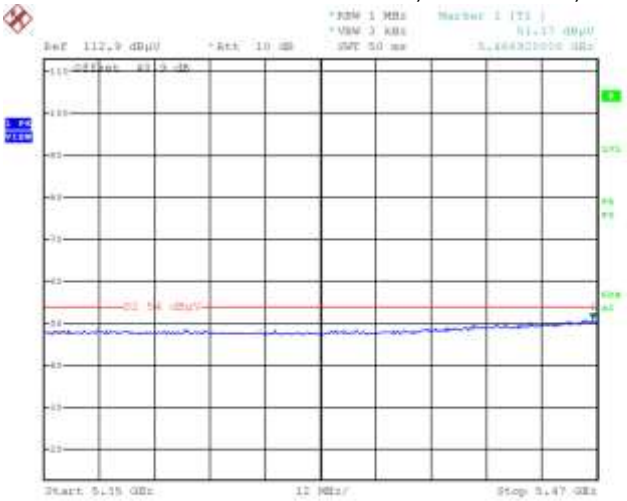
## 9.2.23. TX ABOVE 1 GHz 802.11n AC80 1TX MODE, 5.6 GHz BAND

**RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)**

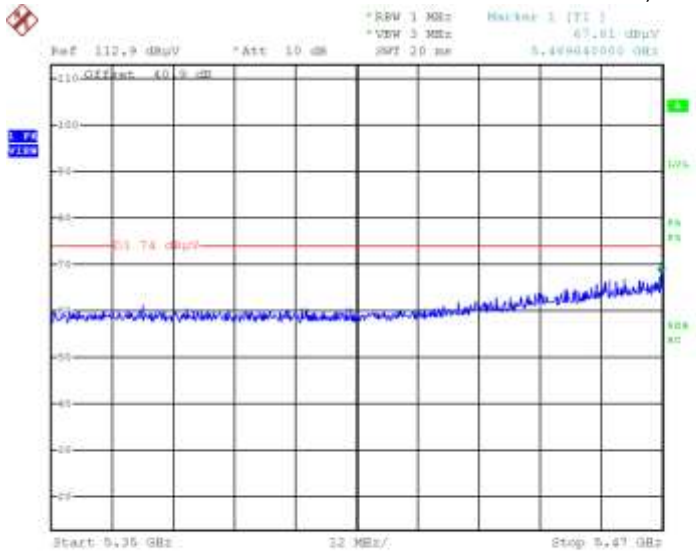
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



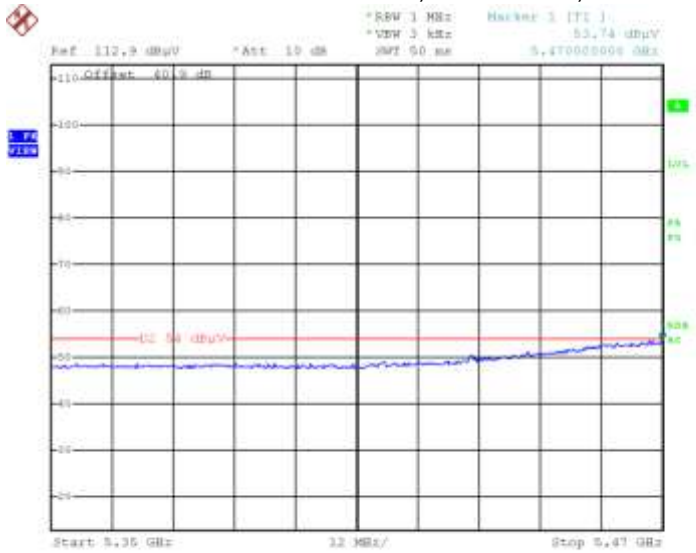
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT




LOW CHANNEL RESTRICTED, AVERAGE, VERT



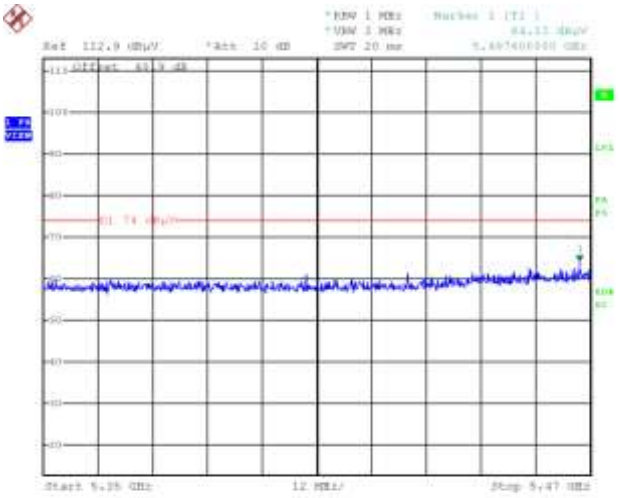
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by testing AC80 CDD MCS0 3TX at the same power level.

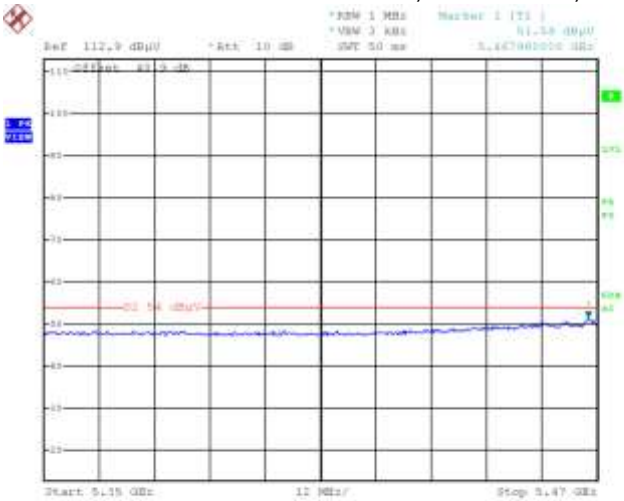
## 9.2.24. TX ABOVE 1 GHz 802.11n AC80 CDD 3TX MODE, 5.6 GHz BAND

**RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)**

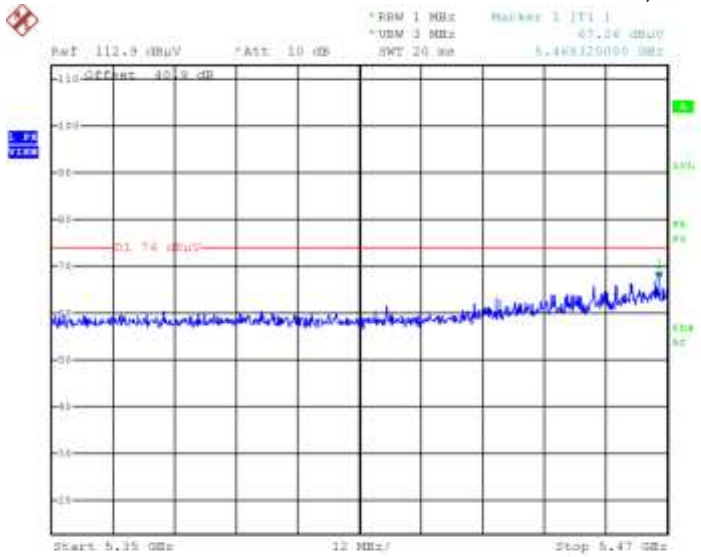
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

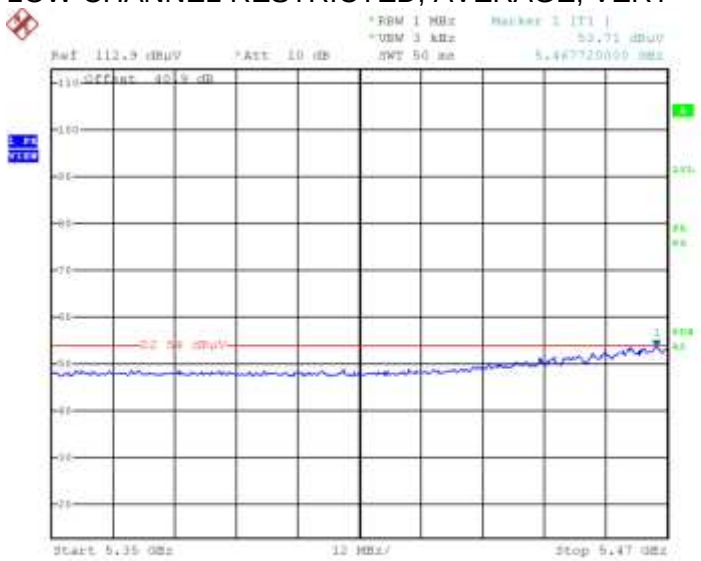


LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT




Date: 12.NOV.2012 16:10:30

LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 12.NOV.2012 16:09:45

## HARMONICS AND SPURIOUS EMISSIONS

| | |
|---|---|
| **Company:** | Broadcom |
| **Project #:** | 12U14669 |
| **Date:** | 12/9/2012 |
| **Test Engineer:** | M. Mekuria |
| **Configuration:** | EUT, Adapter Board, Antenna |
| **Mode:** | 11n HT80 3TX mode |

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.205 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | | R_001 |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5530 MHz) | | | | | | | | | | | | | | | |
| 11.060 | 3.0 | 50.1 | 38.3 | 38.4 | 10.6 | -35.6 | 0.0 | 0.0 | 63.5 | 51.7 | 74 | 54 | -10.5 | -2.3 | H, q89 |
| 11.060 | 3.0 | 52.5 | 39.7 | 38.4 | 10.6 | -35.6 | 0.0 | 0.0 | 65.8 | 53.1 | 74 | 54 | -8.2 | -0.9 | V, q89 |
| | | | | | | | | | | | | | | | |
| High Channel (5690 MHz) | | | | | | | | | | | | | | | |
| 11.380 | 3.0 | 50.8 | 38.1 | 38.7 | 11.0 | -35.6 | 0.0 | 0.0 | 65.0 | 52.3 | 74 | 54 | -9.0 | -1.7 | H, q90 |
| 11.380 | 3.0 | 49.8 | 37.0 | 38.7 | 11.0 | -35.6 | 0.0 | 0.0 | 64.0 | 51.2 | 74 | 54 | -10.0 | -2.8 | V, q90 |
| | | | | | | | | | | | | | | | |

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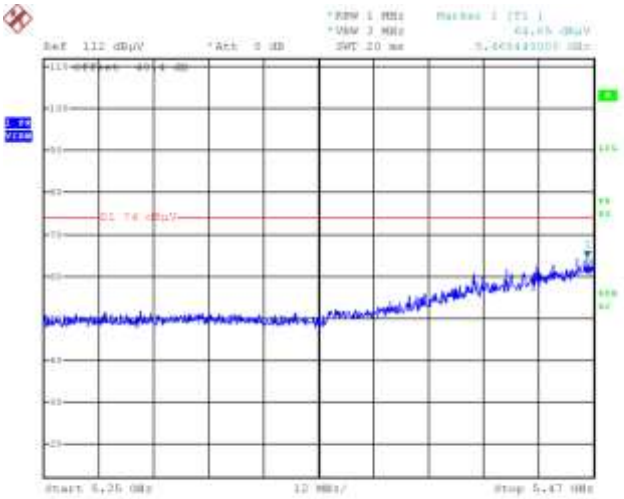
| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

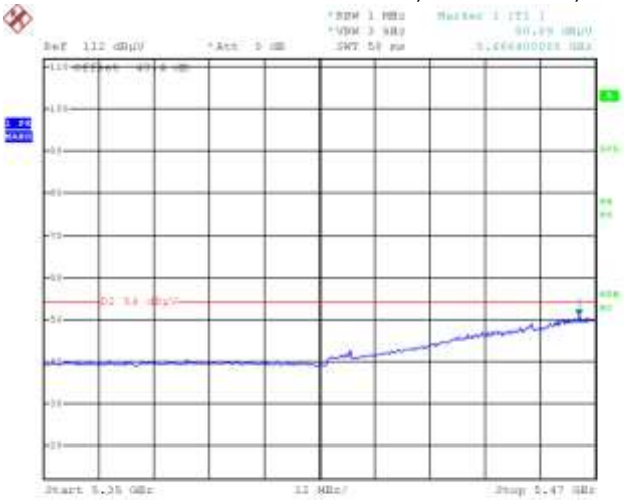
## 9.2.25. TX ABOVE 1 GHz 802.11n AC80 BF 3TX MODE, 5.6 GHz BAND

**RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)**

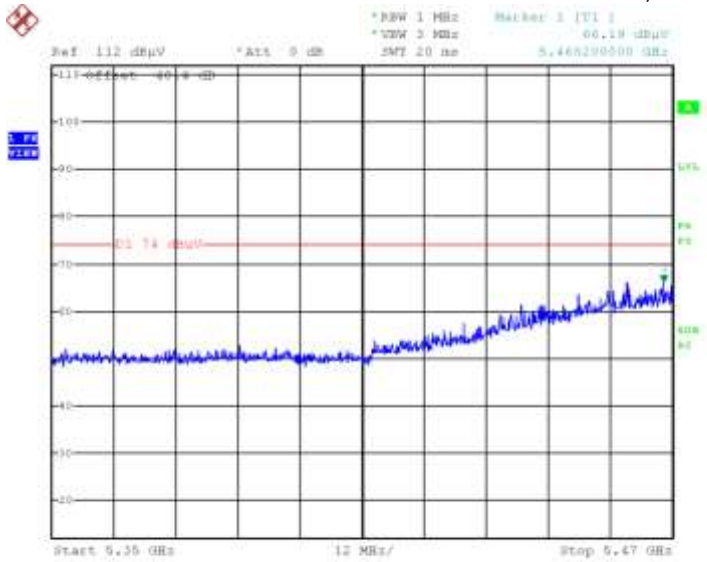
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



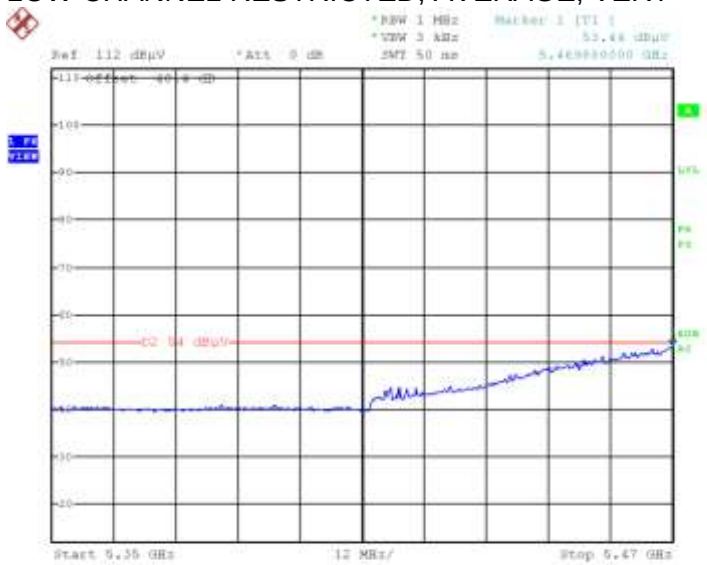
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT




LOW CHANNEL RESTRICTED, AVERAGE, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**Compliance Certification Services, Fremont 3m Chamber**

**Company:** Broadcom
**Project #:** 12U14669
**Date:** 12/13/2012
**Test Engineer:** M. Mekuria
**Configuration:** EUT, Adapter Board, Antenna
**Mode:** 11n HT80 BF 3TX mode

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T39; ARA 18-26GHz; S/N:1013 | FCC 15.209 |

Hi Frequency Cables

| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | HPF | Reject Filter |
|---|---|---|---|---|
| 3' cable 22807700 | 12' cable 22807600 | 20' cable 22807500 | | R_001 |

**Peak Measurements**
RBW=VBW=1MHz
**Average Measurements**
RBW=1MHz ; VBW=10Hz

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (5530 MHz) | | | | | | | | | | | | | | | |
| 11.060 | 3.0 | 49.1 | 34.7 | 38.4 | 10.6 | -35.6 | 0.0 | 0.0 | 62.4 | 48.1 | 74 | 54 | -11.6 | -5.9 | H, q88 |
| 11.060 | 3.0 | 53.1 | 38.3 | 38.4 | 10.6 | -35.6 | 0.0 | 0.0 | 66.4 | 51.7 | 74 | 54 | -7.6 | -2.3 | V, q88 |
| | | | | | | | | | | | | | | | |
| High Channel (5690 MHz) | | | | | | | | | | | | | | | |
| 11.380 | 3.0 | 53.2 | 35.8 | 38.7 | 11.0 | -35.6 | 0.0 | 0.0 | 67.4 | 50.0 | 74 | 54 | -6.6 | -4.0 | H, q90 |
| 11.380 | 3.0 | 52.6 | 38.1 | 38.7 | 11.0 | -35.6 | 0.0 | 0.0 | 66.8 | 52.3 | 74 | 54 | -7.2 | -1.7 | V, q90 |

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| | | | | | |
|---|---|---|---|---|---|
| f | Measurement Frequency | Amp | Preamp Gain | Avg Lim | Average Field Strength Limit |
| Dist | Distance to Antenna | D Corr | Distance Correct to 3 meters | Pk Lim | Peak Field Strength Limit |
| Read | Analyzer Reading | Avg | Average Field Strength @ 3 m | Avg Mar | Margin vs. Average Limit |
| AF | Antenna Factor | Peak | Calculated Peak Field Strength | Pk Mar | Margin vs. Peak Limit |
| CL | Cable Loss | HPF | High Pass Filter | | |

## 9.3. WORST-CASE BELOW 1 GHz

HORIZONTAL AND VERTICAL DATA

Project No:12U14669
Client Name:Broadcom
Model / Device: BCM94360CD
Config / Other:EUT, Adapter Board, Antenna
Test By:John Nguyen

| Test Frequency | Meter Reading | Detector | 25MHz-1GHz ChmbrA Amplified.TX (dB) | T243 Sunol Bilog.TXT (dB) | dBuV/m | CFR 47 Part 15 Class B 3m | Margin | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal 30 - 1000MHz | | | | | | | | | |
| 160.8453 | 52.8 | PK | -26.5 | 12 | 38.3 | 43.5 | -5.2 | 200 | Horz |
| 299.6383 | 55.19 | PK | -25.8 | 13.2 | 42.59 | 46 | -3.41 | 300 | Horz |
| 798.789 | 42.81 | PK | -23.3 | 21 | 40.51 | 46 | -5.49 | 100 | Horz |
| | | | | | | | | | |
| Vertical 30 - 1000MHz | | | | | | | | | |
| 47.0584 | 46.58 | PK | -27.4 | 9.4 | 28.58 | 40 | -11.42 | 100 | Vert |
| 66.249 | 46.38 | PK | -27.2 | 7.8 | 26.98 | 40 | -13.02 | 100 | Vert |
| 294.4045 | 44.64 | PK | -25.8 | 13.3 | 32.14 | 46 | -13.86 | 200 | Vert |

PK - Peak detector
QP - Quasi-Peak detector

# 10. DYNAMIC FREQUENCY SELECTION

## 10.1. OVERVIEW

### 10.1.1. LIMITS

**INDUSTRY CANADA**

IC RSS-210 is closely harmonized with FCC Part 15 DFS rules. The deviations are as follows:

RSS-210 Issue 7 A9.4 (b) (ii) **Channel Availability Check Time:** …

**Additional requirements for the band 5600-5650 MHz**: Until further notice, devices subject to this Section shall not be capable of transmitting in the band 5600-5650 MHz, so that Environment Canada weather radars operating in this band are protected.

RSS-210 Issue 7 A9.4 (b) (iv) **Channel closing time:** the maximum channel closing time is 260 ms.

**FCC**

§15.407 (h) and FCC 06-96 APPENDIX “COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVCIES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION”.

**Table 1: Applicability of DFS requirements prior to use of a channel**

| Requirement | Operational Mode | | |
|---|---|---|---|
| | Master | Client (without radar detection) | Client (with radar detection) |
| Non-Occupancy Period | Yes | Not required | Yes |
| DFS Detection Threshold | Yes | Not required | Yes |
| Channel Availability Check Time | Yes | Not required | Not required |
| Uniform Spreading | Yes | Not required | Not required |

**Table 2: Applicability of DFS requirements during normal operation**

| Requirement | Operational Mode | | |
|---|---|---|---|
| | Master | Client **(without DFS)** | Client **(with DFS)** |
| DFS Detection Threshold | Yes | Not required | Yes |
| Channel Closing Transmission Time | Yes | Yes | Yes |
| Channel Move Time | Yes | Yes | Yes |

**Table 3: Interference Threshold values, Master or Client incorporating In-Service Monitoring**

| Maximum Transmit Power | Value (see note) |
|---|---|
| ≥ 200 milliwatt | -64 dBm |
| < 200 milliwatt | -62 dBm |
| Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna<br>Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. | | |

**Table 4: DFS Response requirement values**

| Parameter | Value |
|---|---|
| *Non-occupancy period* | 30 minutes |
| *Channel Availability Check Time* | 60 seconds |
| *Channel Move Time* | 10 seconds |
| *Channel Closing Transmission Time* | 200 milliseconds + approx. 60 milliseconds over remaining 10 second period |
| The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows:<br>For the Short pulse radar Test Signals this instant is the end of the *Burst*.<br>For the Frequency Hopping radar Test Signal, this instant is the end of the last radar burst generated.<br>For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.<br>The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate channel changes (an aggregate of approximately 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. | |

**Table 5 – Short Pulse Radar Test Waveforms**

| Radar Type | Pulse Width (Microseconds) | PRI (Microseconds) | Pulses | Minimum Percentage of Successful Detection | Minimum Trials |
|---|---|---|---|---|---|
| 1 | 1 | 1428 | 18 | 60% | 30 |
| 2 | 1-5 | 150-230 | 23-29 | 60% | 30 |
| 3 | 6-10 | 200-500 | 16-18 | 60% | 30 |
| 4 | 11-20 | 200-500 | 12-16 | 60% | 30 |
| Aggregate (Radar Types 1-4) | | | | 80% | 120 |

**Table 6 – Long Pulse Radar Test Signal**

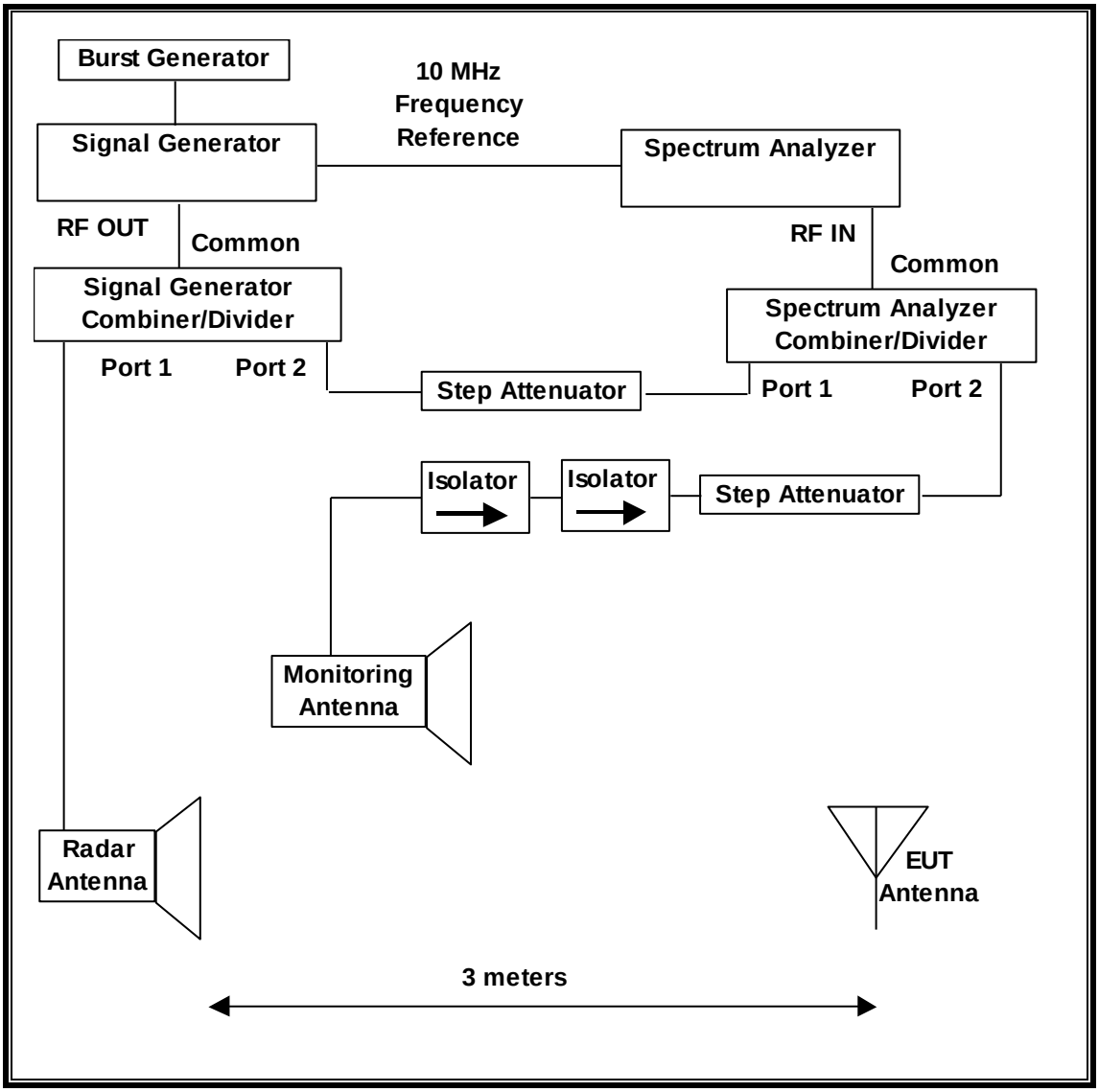
| Radar Waveform | Bursts | Pulses per Burst | Pulse Width (µsec) | Chirp Width (MHz) | PRI (µsec) | Minimum Percentage of Successful Detection | Minimum Trials |
|---|---|---|---|---|---|---|---|
| 5 | 8-20 | 1-3 | 50-100 | 5-20 | 1000-2000 | 80% | 30 |

**Table 7 – Frequency Hopping Radar Test Signal**

| Radar Waveform | Pulse Width (µsec) | PRI (µsec) | Burst Length (ms) | Pulses per Hop | Hopping Rate (kHz) | Minimum Percentage of Successful Detection | Minimum Trials |
|---|---|---|---|---|---|---|---|
| 6 | 1 | 333 | 300 | 9 | .333 | 70% | 30 |

## 10.1.2. TEST AND MEASUREMENT SYSTEM

**RADIATED METHOD SYSTEM BLOCK DIAGRAM**



**SYSTEM OVERVIEW**

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

The short pulse types 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of FCC 06-96 APPENDIX. The frequency of the signal generator is incremented in 1 MHz steps from $F_L$ to $F_H$ for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold.

**SYSTEM CALIBRATION**

A 50-ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to a horn antenna via a coaxial cable, with the reference level offset set to (horn antenna gain – coaxial cable loss). The signal generator is set to CW mode. The amplitude of the signal generator is adjusted to yield a level of –64 dBm as measured on the spectrum analyzer.

Without changing any of the instrument settings, the spectrum analyzer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. The Reference Level Offset of the spectrum analyzer is adjusted so that the displayed amplitude of the signal is –64 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –64 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

## ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

A link is established between the Master and Slave and the distance between the units is adjusted as needed to provide a suitable received level at the Master and Slave devices. The video test file is streamed to generate WLAN traffic. The monitoring antenna is adjusted so that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

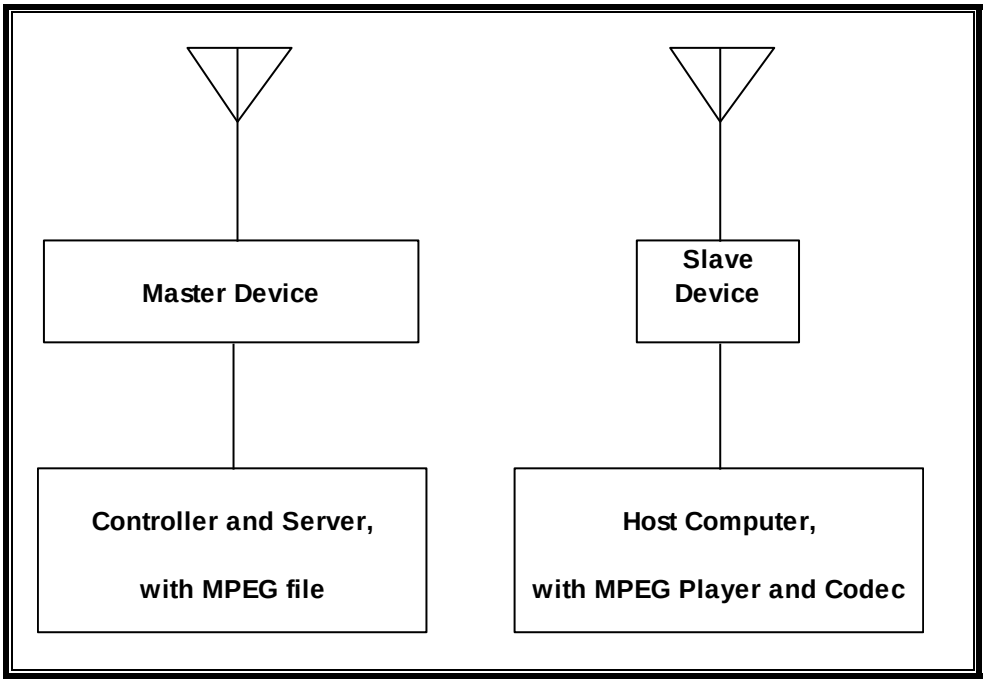
## TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the DFS tests documented in this report:

| TEST EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Asset Number** | **Cal Due** |
| Spectrum Analyzer, 26.5 GHz | Agilent / HP | E4440A | C01178 | 08/18/13 |
| Vector Signal Generator, 20GHz | Agilent / HP | E8267C | C01066 | 11/20/13 |

### 10.1.3. SETUP OF EUT

**RADIATED METHOD EUT TEST SETUP**




**SUPPORT EQUIPMENT**

The following support equipment was utilized for the DFS tests documented in this report:

| PERIPHERAL SUPPORT EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Serial Number** | **FCC ID** |
| N600 Wireless Dual Band Router | Netgear | WNDR3400 | 2BK311730FF6B | PY309300116 |
| AC Adapter (AP) | Netgear | FA-1201500SJA / FA-1201500SUA | 4F105116T10209045B | DoC |
| Notebook PC (Controller/Server) | HP | Pavilion zv6000 | CND5290401 | DoC |
| AC Adapter (Controller/ Server PC) | HP | PA-1121-12HD | 58B240ALLRK0HU | DoC |
| Notebook PC (Host) | Apple | MacBook Pro A1297 | C02H124BDV10 | DoC |
| AC Adapter (Host PC) | Delta Electronics | ADP-85EB T V85 | C04207625HVDJ92BD | DoC |

### 10.1.4. DESCRIPTION OF EUT

The EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges.

The EUT is a Slave Device without radar detection capabilities.

The highest power level within these bands is 27.34 dBm EIRP in the 5250-5350 MHz band and 27.41 dBm EIRP in the 5470-5725 MHz band.

The highest gain antenna assembly consists of 3 antennas with individual gains of 5.53 dBi, 1.34 dBi and 1.93 dBi in the 5250-5350 MHz band and 5.53 dBi, 2.68 dBi and 1.26 dBi in the 5470-5725 MHz band. The lowest gain antenna assembly consists of 3 antennas with individual gains of 4.52 dBi, 3.21 dBi and 1.48 dBi in the 5250-5350 MHz band and 4.72 dBi, 2.09 dBi and 2.85 dBi in the 5470-5725 MHz band.

Three antennas are utilized to meet the diversity and MIMO operational requirements.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is –64 dBm. After correction for procedural adjustments, the required radiated threshold at the antenna port is –64 + 1 = -63 dBm.

The calibrated radiated DFS Detection Threshold level is set to –64 dBm. The tested level is lower than the required level hence it provides margin to the limit.

The EUT uses three transmitter/receiver chains, each connected to an antenna to perform radiated tests.

WLAN traffic exceeding the transmitter minimum activity ratio of 30% is generated by streaming the compressed video file “6 ½ Magic Hours” from the Master to the Slave in full motion video.

TPC is required since the maximum EIRP is greater than 500 mW (27 dBm).

The EUT utilizes the 802.11a/n architecture. Two nominal channel bandwidths are implemented: 20 MHz and 40 MHz.

The software installed in the access point is Linux revision 5.22.84.0.

**MANUFACTURER'S STATEMENT REGARDING UNIFORM CHANNEL SPREADING**

This is not applicable to slave devices.

**OVERVIEW OF MASTER DEVICE WITH RESPECT TO §15.407 (h) REQUIREMENTS**

The Master Device is a Netgear N600 Dual Band Router, FCC ID: PY309300116. The DFS software installed in the Master Device is Linux revision 5.22.84.0. The minimum antenna gain for the Master Device is 2.73 dBi.

The calibrated radiated DFS Detection Threshold level is set to –64 dBm.

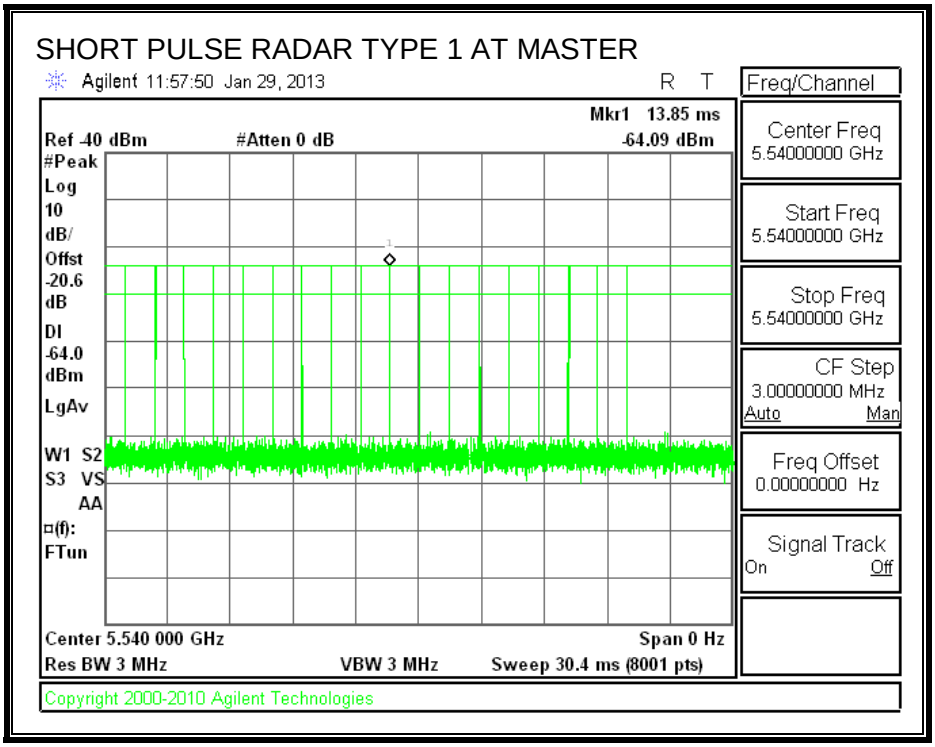
## 10.2. RESULTS FOR 20 MHz BANDWIDTH

### 10.2.1. TEST CHANNEL

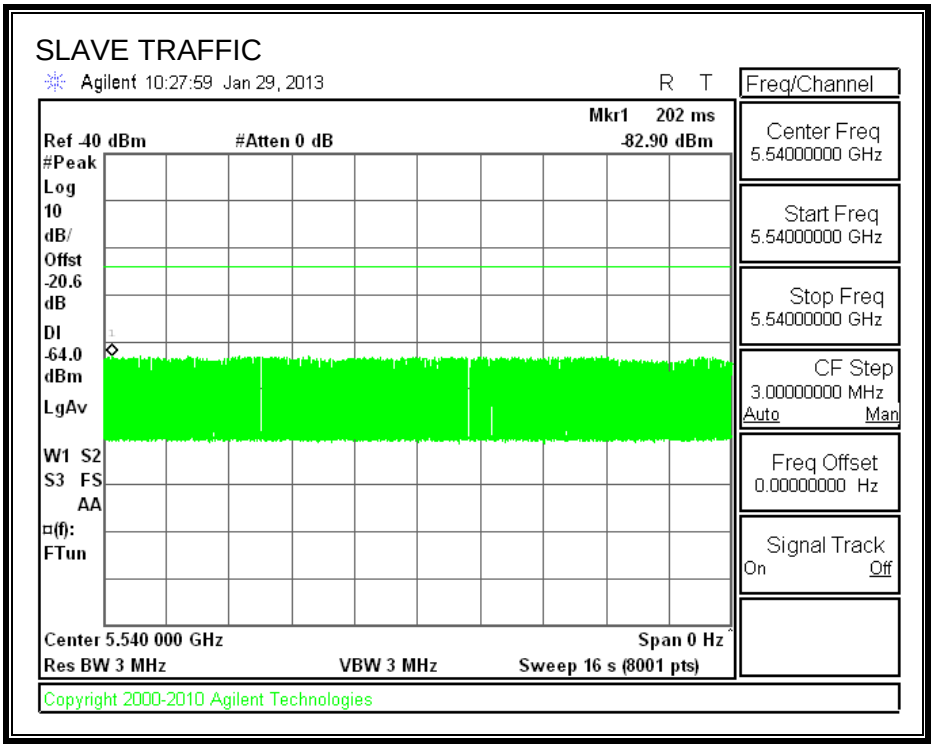
All tests were performed at a channel center frequency of 5540 MHz.

### 10.2.2. RADAR WAVEFORM AND TRAFFIC

**RADAR WAVEFORM**



**TRAFFIC**



### 10.2.3. OVERLAPPING CHANNEL TESTS

**RESULTS**

These tests are not applicable.

### 10.2.4. MOVE AND CLOSING TIME

**REPORTING NOTES**

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

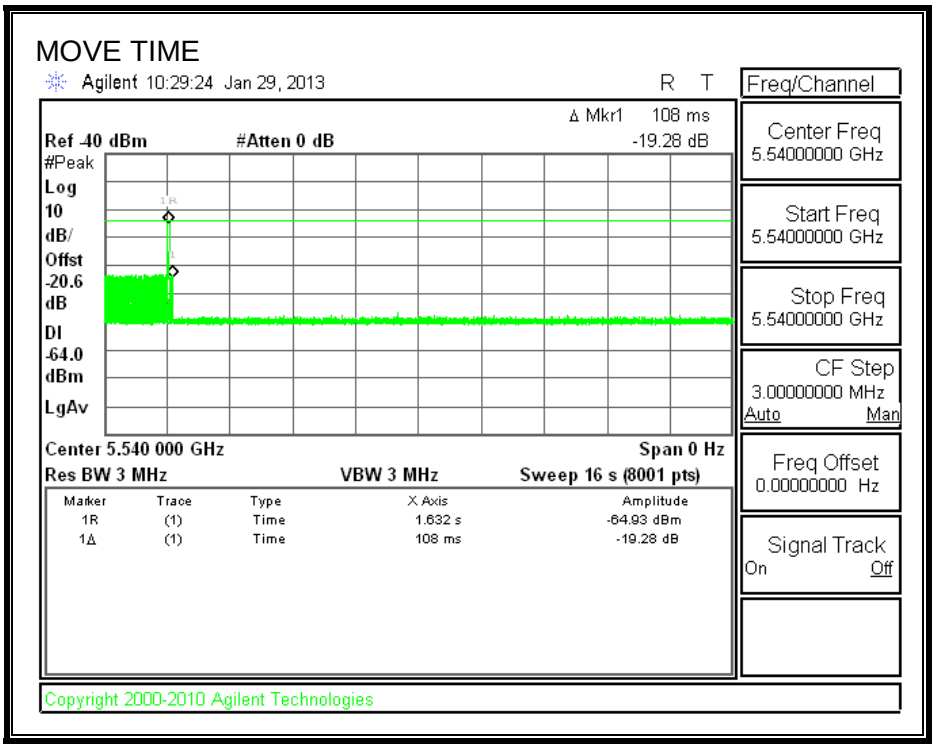
The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

**RESULTS**

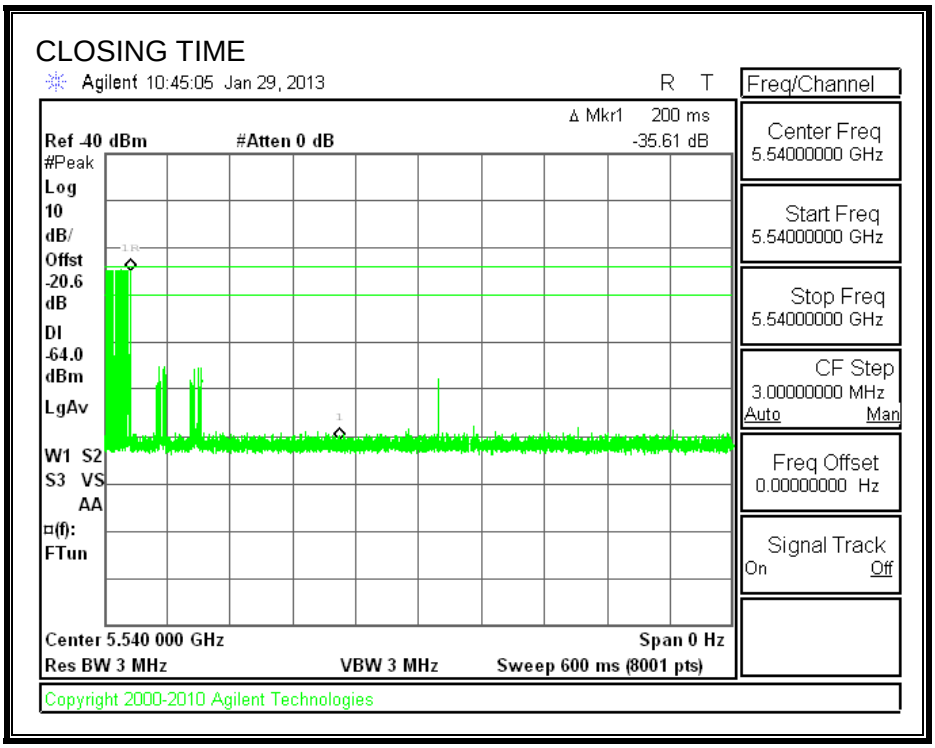
| Agency | Channel Move Time (sec) | Limit (sec) |
|---|---|---|
| FCC / IC | 0.108 | 10 |

| Agency | Aggregate Channel Closing Transmission Time (msec) | Limit (msec) |
|---|---|---|
| FCC | 0.0 | 60 |
| IC | 40.0 | 260 |

**MOVE TIME**

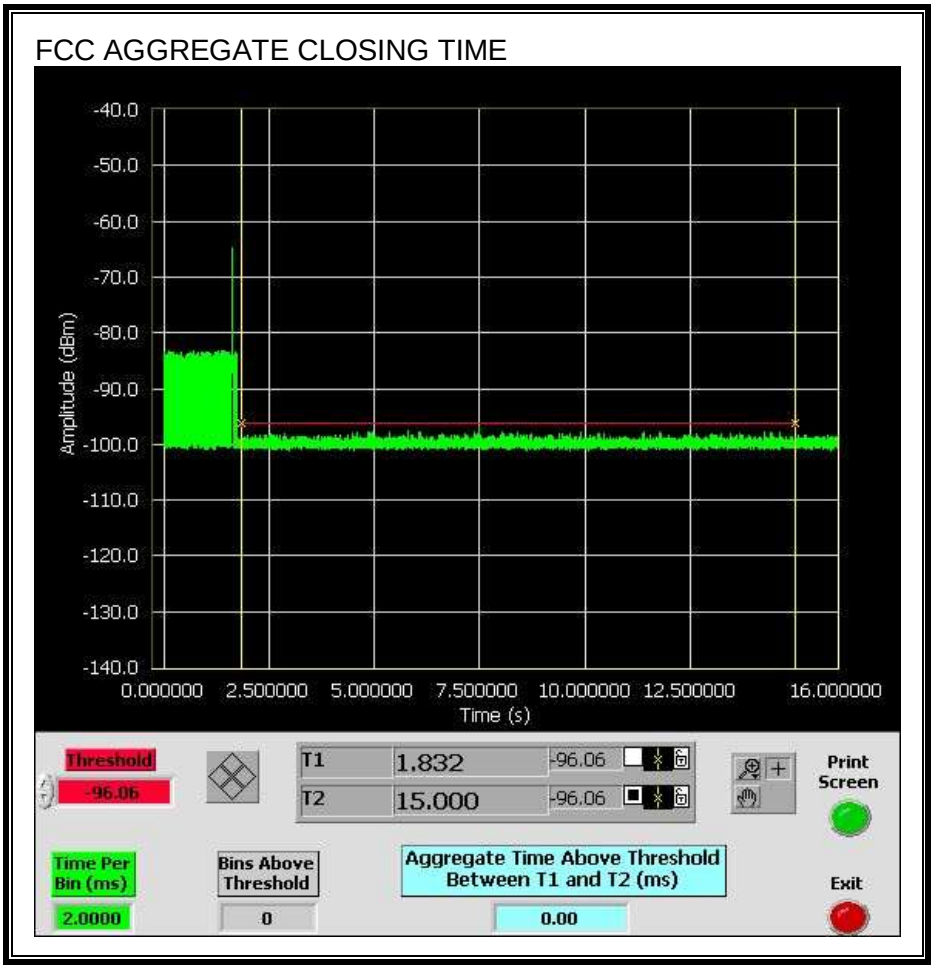


**CHANNEL CLOSING TIME**



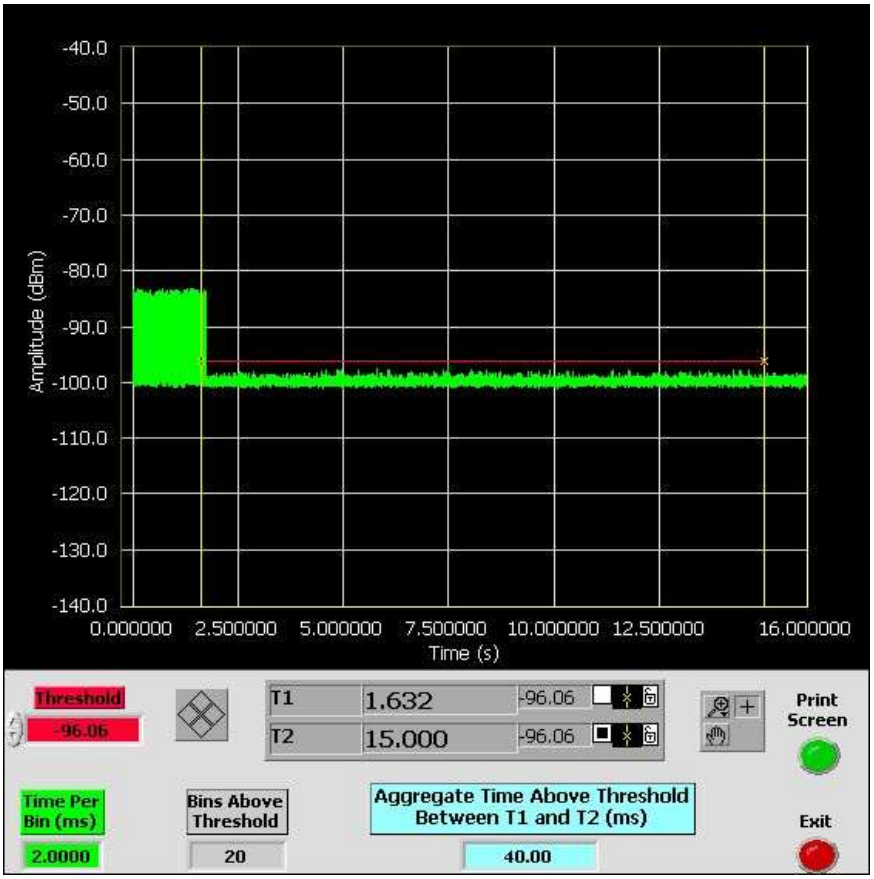
**AGGREGATE CHANNEL CLOSING TRANSMISSION TIME**

No transmissions are observed during the FCC aggregate monitoring period.



Only intermittent transmissions are observed during the IC aggregate monitoring period.

IC AGGREGATE CLOSING TIME



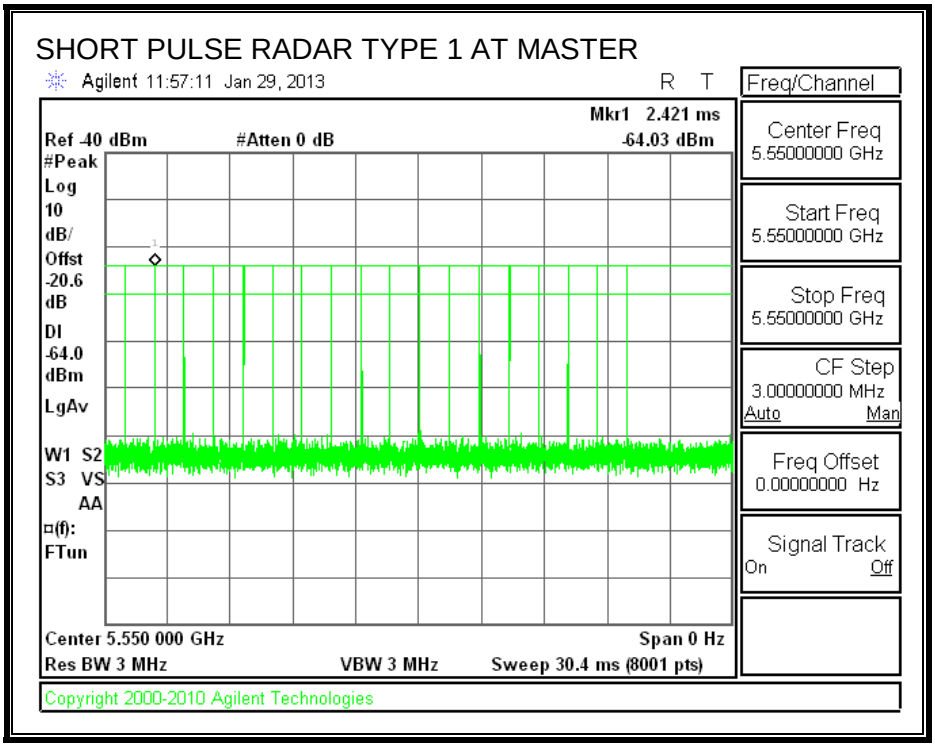
## 10.3. RESULTS FOR 40 MHz BANDWIDTH

### 10.3.1. TEST CHANNEL

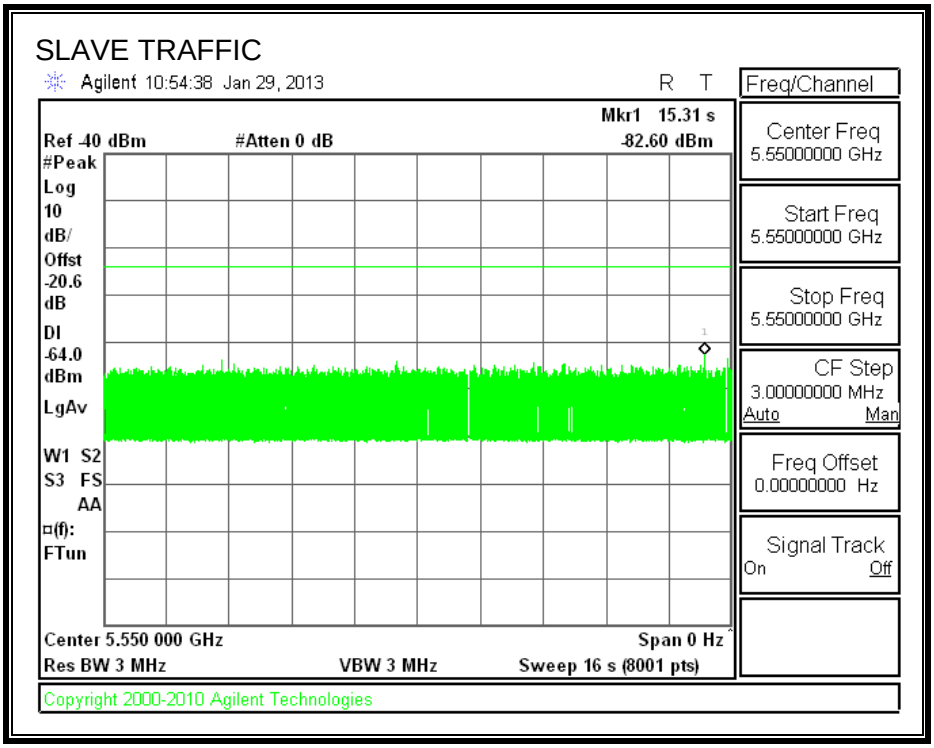
All tests were performed at a channel center frequency of 5550 MHz.

### 10.3.2. RADAR WAVEFORM AND TRAFFIC

**RADAR WAVEFORM**



**TRAFFIC**



### 10.3.3. OVERLAPPING CHANNEL TESTS

**RESULTS**

These tests are not applicable.

### 10.3.4. MOVE AND CLOSING TIME

**REPORTING NOTES**

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

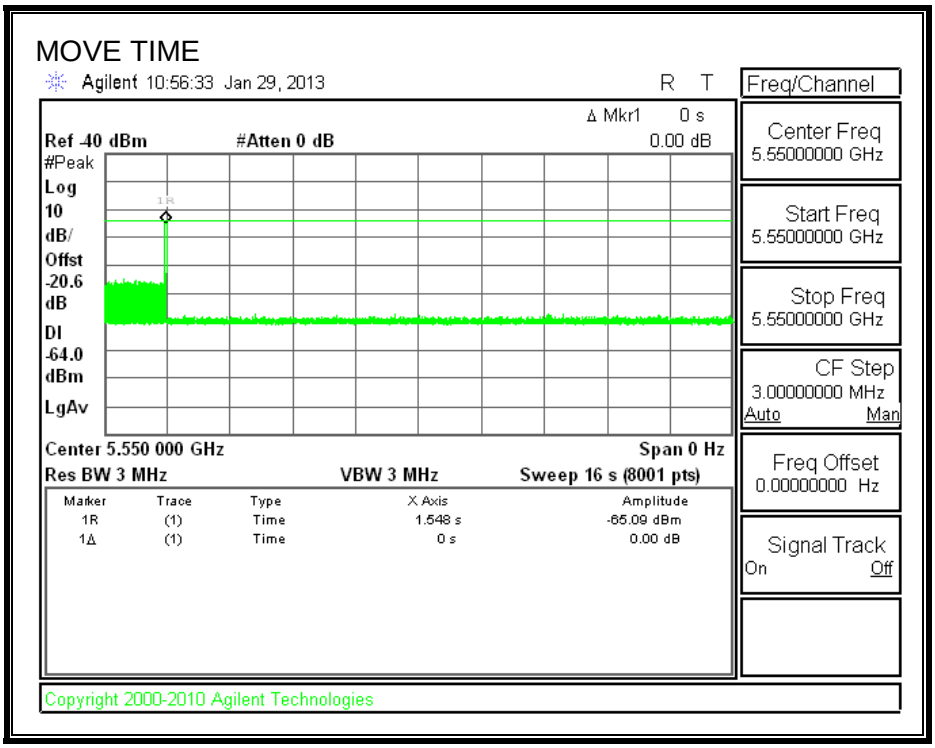
The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

**RESULTS**

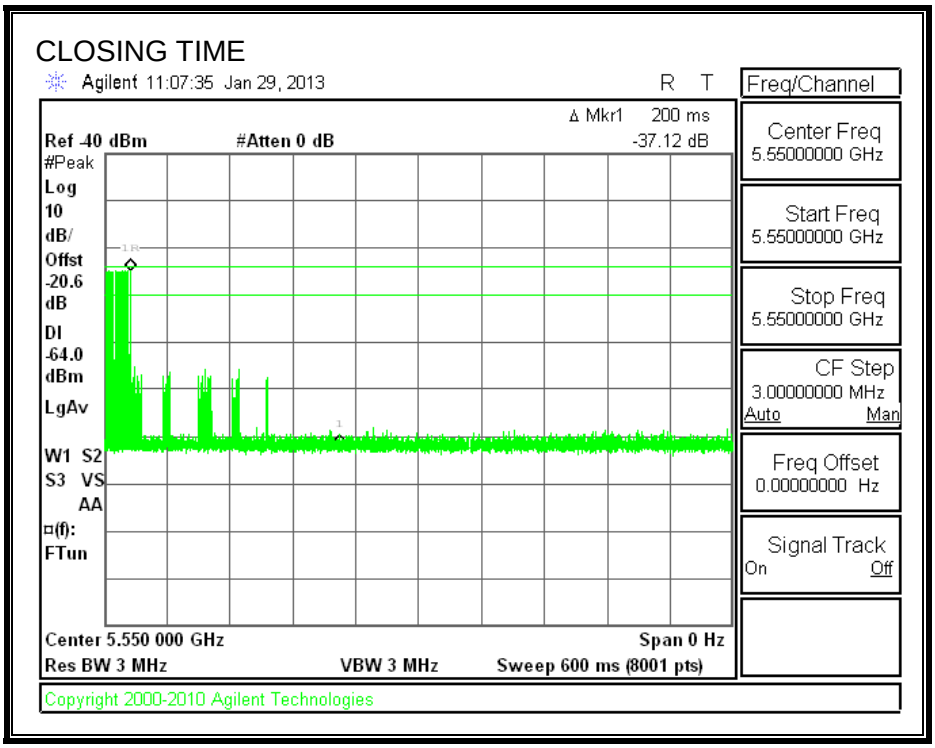
| Agency | Channel Move Time (sec) | Limit (sec) |
|---|---|---|
| FCC / IC | 0.000 | 10 |

| Agency | Aggregate Channel Closing Transmission Time (msec) | Limit (msec) |
|---|---|---|
| FCC | 0.0 | 60 |
| IC | 0.0 | 260 |

**MOVE TIME**

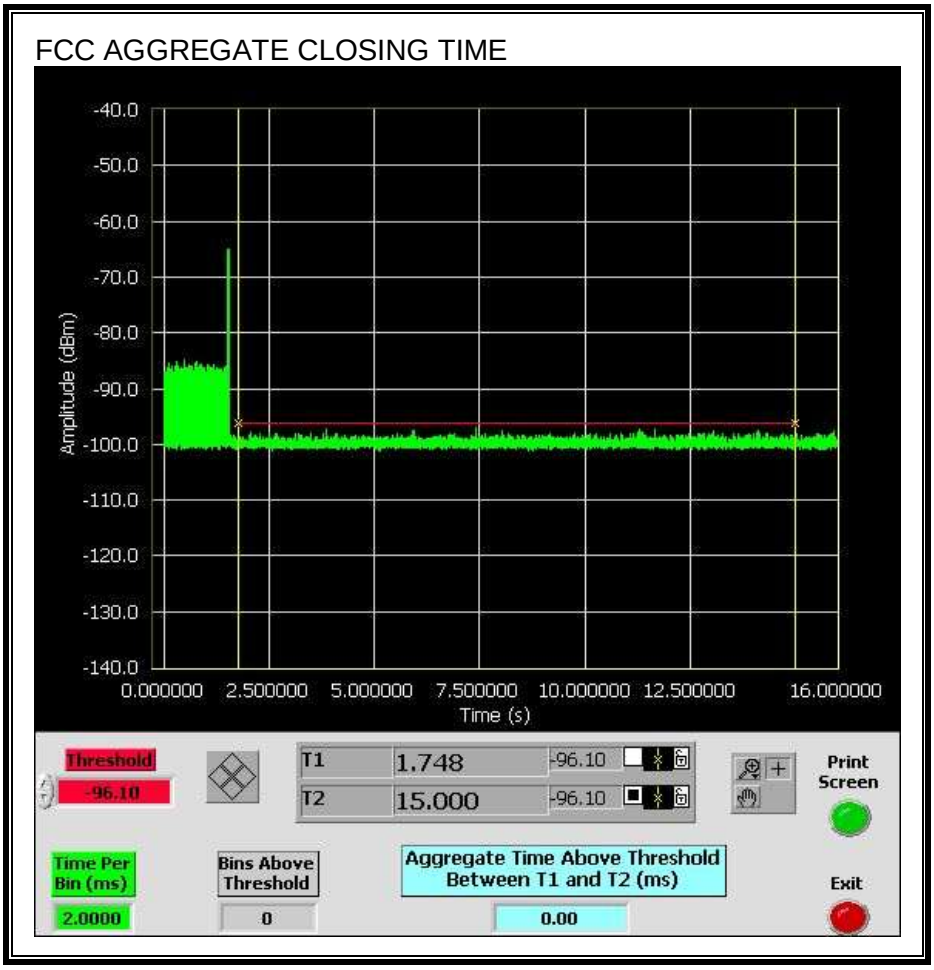


**CHANNEL CLOSING TIME**



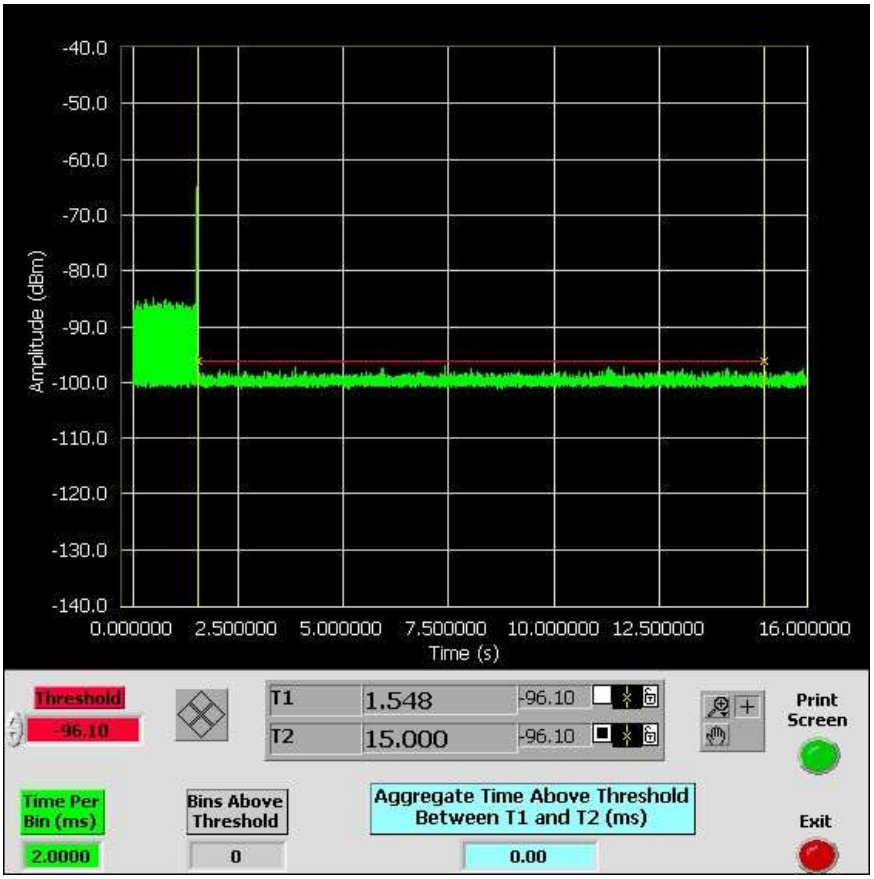
**AGGREGATE CHANNEL CLOSING TRANSMISSION TIME**

No transmissions are observed during the FCC aggregate monitoring period.



No transmissions are observed during the IC aggregate monitoring period.

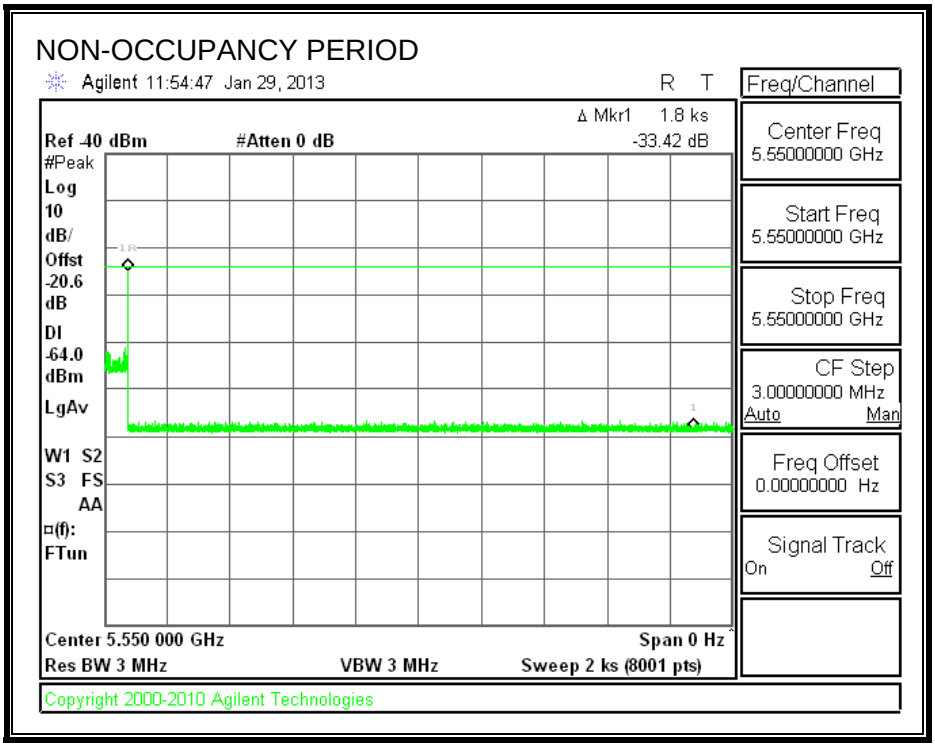
IC AGGREGATE CLOSING TIME



## 10.3.5. NON-OCCUPANCY PERIOD

**RESULTS**

No EUT transmissions were observed on the test channel during the 30-minute observation time.



# 11. AC POWER LINE CONDUCTED EMISSIONS

**LIMITS**

FCC §15.207 (a)

RSS-Gen 7.2.2

| Frequency of Emission (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.

**TEST PROCEDURE**

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

## RESULTS

## 6 WORST EMISSIONS

Project No :12U14669
Client Name: Broadcom
Model/Device: BCM94360CD
Test Volt/Freq: EUT, Adapter Board, Antenna
Test By: John Nguyen

| Test Frequency | Meter Reading | Detector | T24 IL L1.TXT (dB) | LC Cables 1&3.TXT (dB) | dB(uVolts) | CFR 47 Part 15 Class B QP | Margin | CFR 47 Part 15 Class B Avg | Margin |
|---|---|---|---|---|---|---|---|---|---|
| Line-L1 .15 - 30MHz | | | | | | | | | |
| 0.1635 | 49.99 | PK | 0.1 | 0 | 50.09 | 65.3 | -15.21 | - | - |
| 0.1635 | 32.23 | Av | 0.1 | 0 | 32.33 | - | - | 55.3 | -22.97 |
| 3.579 | 43.91 | PK | 0.2 | 0.1 | 44.21 | 56 | -11.79 | - | - |
| 3.579 | 30.95 | Av | 0.2 | 0.1 | 31.25 | - | - | 46 | -14.75 |
| 16.9935 | 50.75 | PK | 0.2 | 0.2 | 51.15 | 60 | -8.85 | - | - |
| 16.9935 | 39.3 | Av | 0.2 | 0.2 | 39.7 | - | - | 50 | -10.3 |
| | | | | | | | | | |
| Line-L2 .15 - 30MHz | | | | | | | | | |
| 0.312 | 50.32 | PK | 0.1 | 0 | 50.42 | 59.9 | -9.48 | - | - |
| 0.312 | 32.37 | Av | 0.1 | 0 | 32.47 | - | - | 49.9 | -17.43 |
| 0.555 | 45.45 | PK | 0.1 | 0 | 45.55 | 56 | -10.45 | - | - |
| 0.555 | 27.34 | Av | 0.1 | 0 | 27.44 | - | - | 46 | -18.56 |
| 15.837 | 50.95 | PK | 0.2 | 0.2 | 51.35 | 60 | -8.65 | - | - |
| 15.837 | 39.95 | Av | 0.2 | 0.2 | 40.35 | - | - | 50 | -9.65 |

PK - Peak detector
QP - Quasi-Peak detector

**LINE 1 RESULTS**

**LINE 2 RESULTS**