**FCC CFR47 PART 15 SUBPART E**
**INDUSTRY CANADA RSS-210 ISSUE 8**

# CERTIFICATION TEST REPORT

**FOR**

**802.11abgn 2X2 MIMO + BT/BLE RADIO MODULE**

**MODEL NUMBER: DWM-W095A**

**FCC ID: EW4DWMW095A**
**IC: 4250A-DWMW095A**

**REPORT NUMBER: 13J14910-6**

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NVLAP LAB CODE 200065-0

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|---|---|---|---|
| -- | 07/09/13 | Initial Issue | |


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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** MITSUMI ELECTRIC CO., LTD.
1601, SAKAI, ATSUGI-SHI,
KANAGAWA- KEN, 243-8533 JAPAN

**EUT DESCRIPTION:** 802.11abgn 2X2 MIMO + BT/BLE RADIO MODULE

**MODEL:** DWM-W095A

**SERIAL NUMBER:** B4-06

**DATE TESTED:** MARCH 16 – JUNE 08, 2013

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| CFR 47 Part 15 Subpart E | Pass |
| INDUSTRY CANADA RSS-210 Issue 8 Annex 9 | Pass |
| INDUSTRY CANADA RSS-GEN Issue 3 | Pass |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 06-96, FCC KDB 789033, ANSI C63.10-2009, RSS-GEN Issue 3, and RSS-210 Issue 8.

# 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

# 4. CALIBRATION AND UNCERTAINTY

## 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

## 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

## 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER | UNCERTAINTY |
|---|---|
| Conducted Disturbance, 0.15 to 30 MHz | 3.52 dB |
| Radiated Disturbance, 30 to 1000 MHz | 4.94 dB |

Uncertainty figures are valid to a confidence level of 95%.


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# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

The EUT is an 802.11abgn 2X2 MIMO + BT/BLE Radio Module

The radio module is manufactured by Mitsumi.

## 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

| Frequency Range (MHz) | Mode | Output Power (dBm) | Output Power (mW) |
|---|---|---|---|
| 5180 – 5240 | 802.11a CDD 2TX | 15.75 | 37.58 |
| 5180 – 5240 | 802.11n HT20 CDD 2TX | 15.29 | 33.81 |
| 5180 – 5240 | 802.11n HT20 SDM 2TX | 15.89 | 38.82 |
| 5190 – 5230 | 802.11n HT40 CDD 2TX | 15.98 | 39.63 |
| 5190 – 5230 | 802.11n HT40 SDM 2TX | 15.76 | 37.67 |
| 5260 – 5320 | 802.11a CDD 2TX | 16.79 | 47.75 |
| 5260 – 5320 | 802.11n HT20 CDD 2TX | 16.36 | 43.25 |
| 5260 – 5320 | 802.11n HT20 SDM 2TX | 16.89 | 48.87 |
| 5270 – 5310 | 802.11n HT40 CDD 2TX | 16.57 | 45.39 |
| 5270 – 5310 | 802.11n HT40 SDM 2TX | 15.83 | 38.28 |
| 5500 – 5700 | 802.11a CDD 2TX | 15.95 | 39.36 |
| 5500 – 5700 | 802.11n HT20 CDD 2TX | 15.97 | 39.54 |
| 5500 – 5700 | 802.11n HT20 SDM 2TX | 15.95 | 39.36 |
| 5510 – 5670 | 802.11n HT40 CDD 2TX | 15.88 | 38.73 |
| 5510 – 5670 | 802.11n HT40 SDM 2TX | 15.92 | 39.08 |

## 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes 2 PIFA (need information) antennas, with a maximum gain of 3dBi.for 2.4GHz band and 4 dBi for 5GHz band.

## 5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed in the host support equipment during was testing BCM4324B3_002.004.006.0012.0017.hcd; version 6.10.197.6

The test utility software used during testing was Window NT Command Script batch files.


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## 5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Worst-case data rates as provided by the client were based on the baseline scan, the worst-case data rates were:

802.11a mode: 6 Mbps
802.11n HT20mode: MCS0 and MCS8
802.11n HT40mode: MCS0 and MCS8

Radiated emissions for EUT with antenna was performed and passed; therefore, antenna port spurious was not performed.


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## 5.6. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| Support Equipment List | | | | |
|---|---|---|---|---|
| Description | Manufacturer | Model | Serial Number | FCC ID |
| Laptop | Fujitsu | Q2010 | R6609927 | DoC |
| AC Adaptor | Fujitsu | SEC80N2-16 | N/A | DoC |
| Adapter Board | Broadcom | BCM94331CSAD | 1583414 | N/A |
| DC Power Supply | Lamda | LA-300 | LA3-AA30-103 2676 | N/A |

**I/O CABLES**

| I/O Cable List | | | | | | |
|---|---|---|---|---|---|---|
| Cable No | Port | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1 | AC | 2 | US 115V | Shielded | 1.5m | NA |
| 2 | DC | 2 | DC | Un-shielded | 1.5m | NA |

**TEST SETUP**

The EUT is installed in a PCB test board connected to the host laptop computer by flat cable and the PCI adapter during the executed command then removed the laptop outside the chamber.


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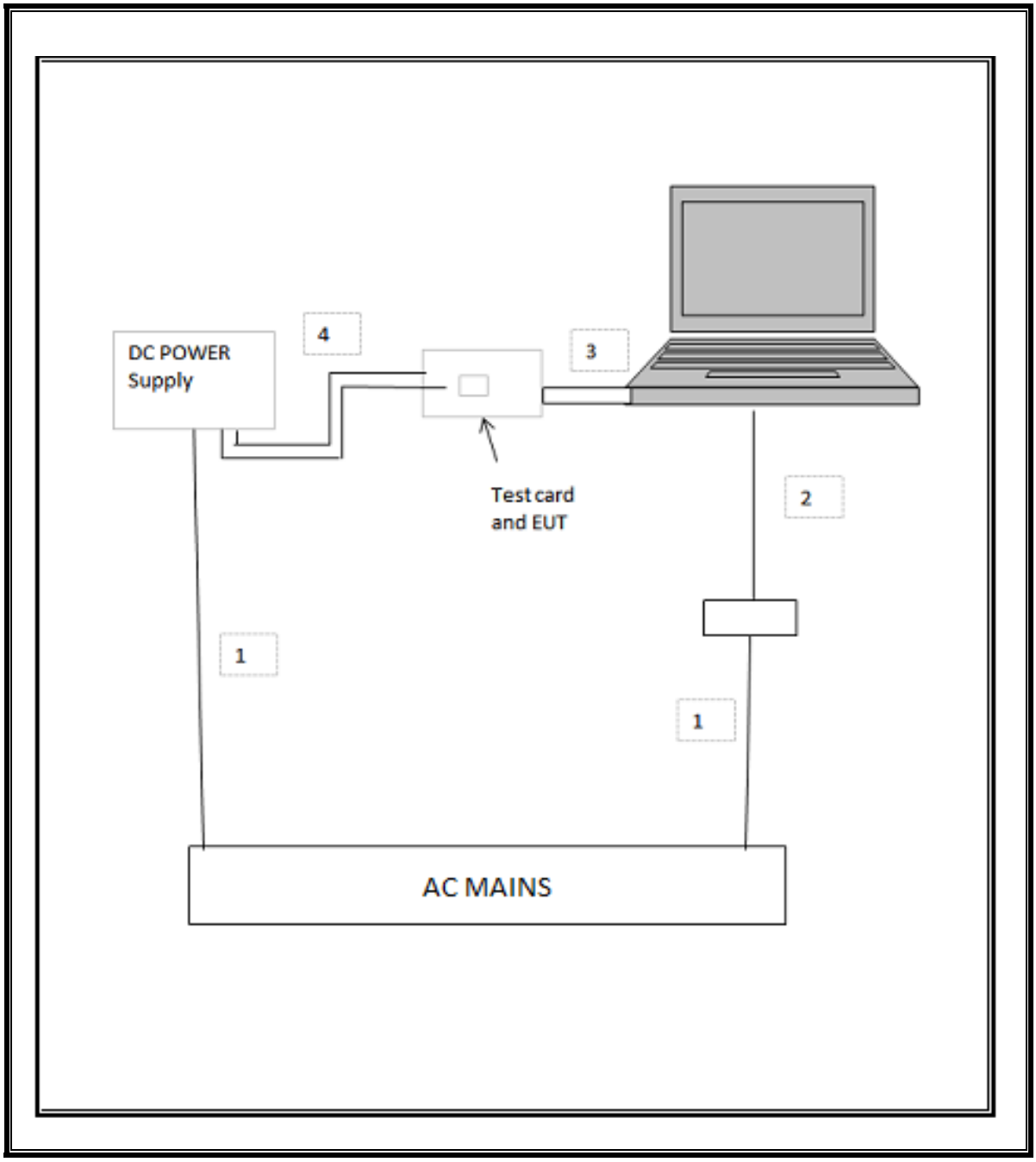
**SETUP DIAGRAM FOR TESTS**





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# 6. TEST AND MEASUREMENT EQUIPMENT

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

| Test Equipment List | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Asset** | **Cal Date** |
| Spectrum Analyzer, 44 GHz | Agilent / HP | E4446A | C00986 | 04/01/13 |
| EMI Test Receiver, 9 kHz-7 GHz | R & S | ESCI 7 | 1000741 | 07/13/12 |
| EMI Test Receiver, 30 MHz | R & S | ESHS 20 | N02396 | 08/08/12 |
| Antenna, Bilog, 30MHz-1 GHz | Sunol Sciences | JB1 | C01016 | 08/14/12 |
| Antenna, Horn, 18 GHz | ETS | 3117 | C01006 | 12/11/12 |
| Antenna, Horn, 26.5 GHz | ARA | MWH-1826/B | C00946 | 11/12/12 |
| Antenna, Horn, 40 GHz | ARA | MWH-2640/B | C00981 | 06/14/12 |
| Preamplifier, 1300 MHz | Agilent / HP | 8447D | C00558 | 03/23/13 |
| Preamplifier, 26.5 GHz | Agilent / HP | 8449B | C00749 | 10/19/12 |
| Preamplifier, 40 GHz | Miteq | NSP4000-SP2 | C00990 | 08/02/11 |
| Peak Power Meter | Agilent / HP | E4416A | C00963 | 12/13/11 |
| Peak Power Sensor | HP | E9327A | C00964 | 12/13/12 |
| Reject Filter, 5.15-5.35 GHz | Micro-Tronics | BRC13190 | N02680 | CNR |
| Reject Filter, 5.47-5.725 GHz | Micro-Tronics | BRC13191 | N02678 | CNR |
| Reject Filter, 5.725-5.825 GHz | Micro-Tronics | BRC13192 | N02676 | CNR |
| LISN, 30 MHz | FCC | 50/250-25-2 | N02396 | 08/08/12 |


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# 7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

**LIMITS**

None; for reporting purposes only.

**PROCEDURE**

KDB 789033 Zero-Span Spectrum Analyzer Method.

### 7.1.1. ON TIME AND DUTY CYCLE RESULTS

| Mode | ON Time B (msec) | Period (msec) | Duty Cycle x (linear) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | 1/T Minimum VBW (kHz) |
|---|---|---|---|---|---|---|
| 5 GHz | | | | | | |
| 802.11a CDD 6MBps | 3.13 | 3 | 0.994 | 99.4% | 0.00 | 0.010 |
| 802.11n HT20 SDM MCS8 | 1.46 | 1 | 0.986 | 98.6% | 0.00 | 0.010 |
| 802.11n HT20 CDD MCS0 | 2.89 | 3 | 0.991 | 99.1% | 0.00 | 0.010 |
| 802.11n HT40 CDD MCS0 | 1.41 | 1 | 0.987 | 98.7% | 0.00 | 0.010 |
| 802.11n HT40 SDM MCS8 | 0.72 | 1 | 0.976 | 97.6% | 0.11 | 1.389 |

### 7.1.2. MEASUREMENT METHOD FOR POWER AND PPSD

For modes with Duty Cycle greater than or equal to 98% , KDB 789033 Method SA-1 is used.

For modes with Duty Cycle less than 98% and consistent, KDB 789033 Method SA-2 is used.

### 7.1.3. MEASUREMENT METHOD FOR AVERAGE SPURIOUS EMISSIONS ABOVE 1 GHz

The Duty Cycle is greater than or equal to 98%, KDB 789033 Method VB with Power RMS Averaging is used.

The Duty Cycle is less than 98% and consistent, KDB 789033 Method VB with Power RMS Averaging is used.


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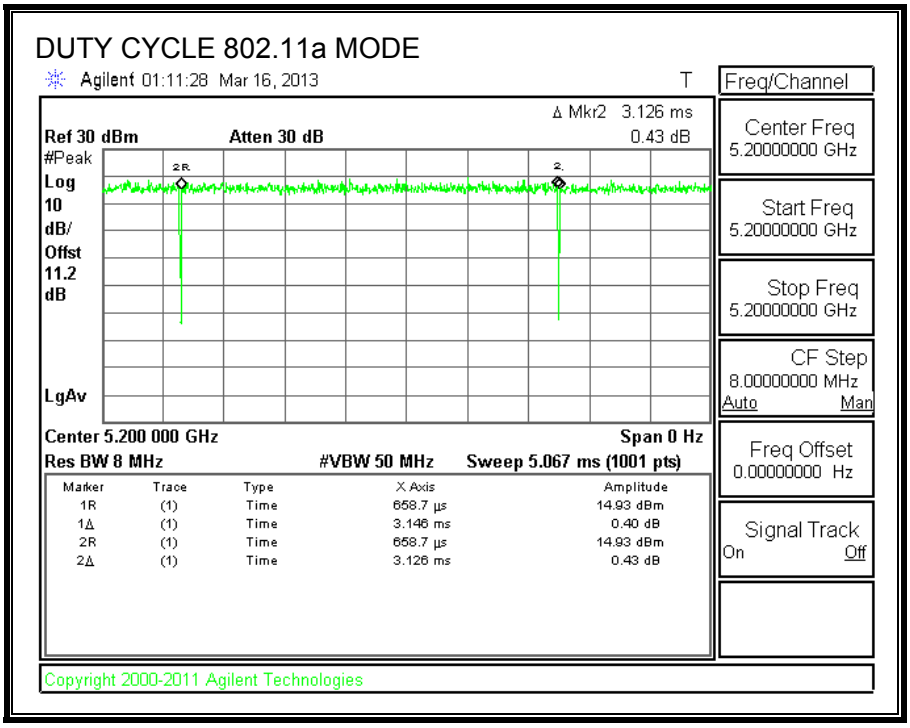
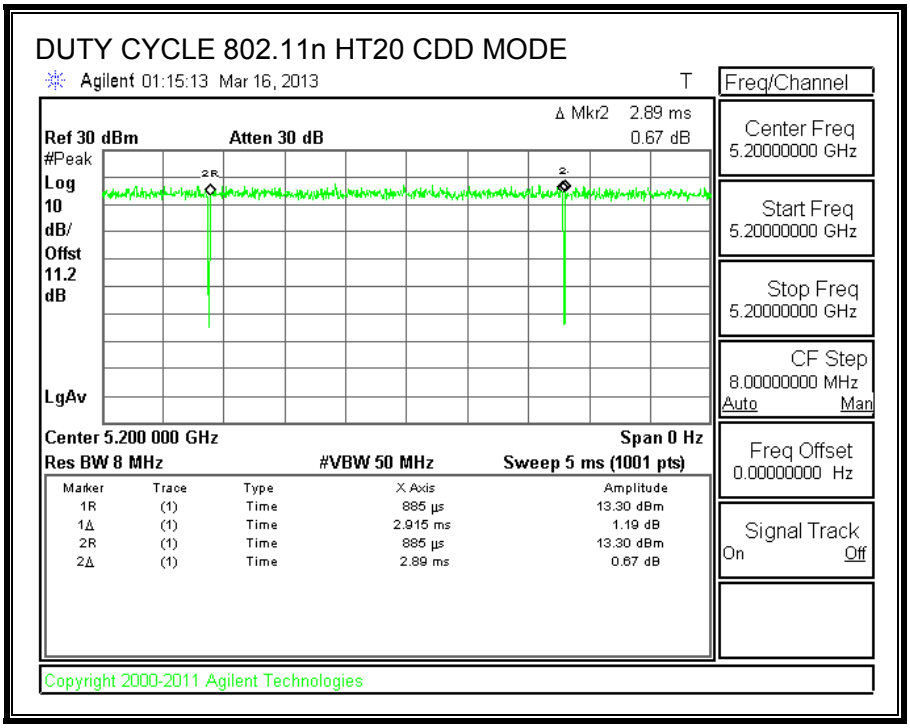
### 7.1.4. DUTY CYCLE PLOTS





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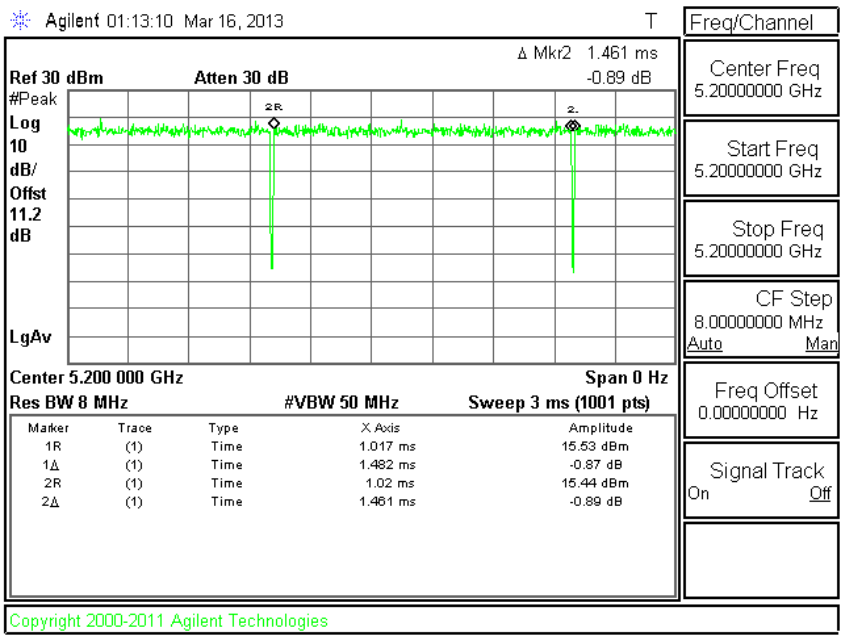
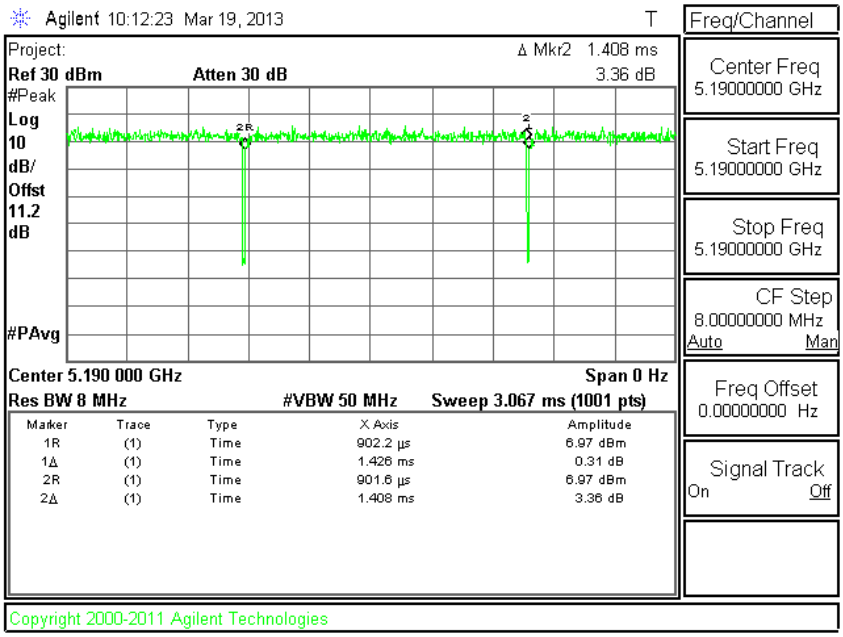
DUTY CYCLE 802.11n HT20 SDM MODE




DUTY CYCLE 802.11n HT40 CDD MODE





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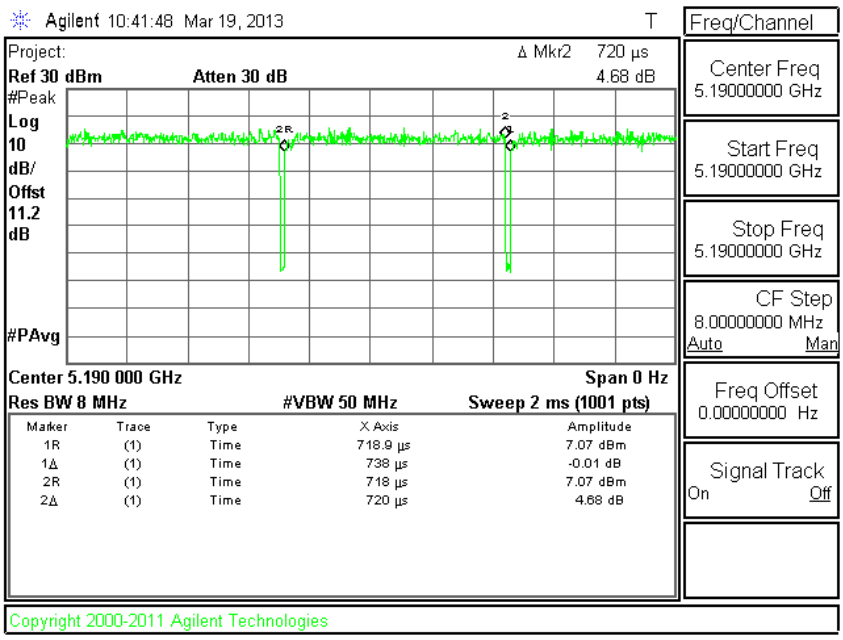
DUTY CYCLE 802.11n HT40 SDM MODE





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# 8. ANTENNA PORT TEST RESULTS

## 8.1. 802.11a CDD 2TX MODE IN THE 5.2 GHz BAND

### 8.1.1. 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) |
|---|---|---|---|
| Low | 5180 | 35.50 | 28.25 |
| Mid | 5200 | 22.42 | 37.67 |
| High | 5240 | 23.92 | 36.42 |


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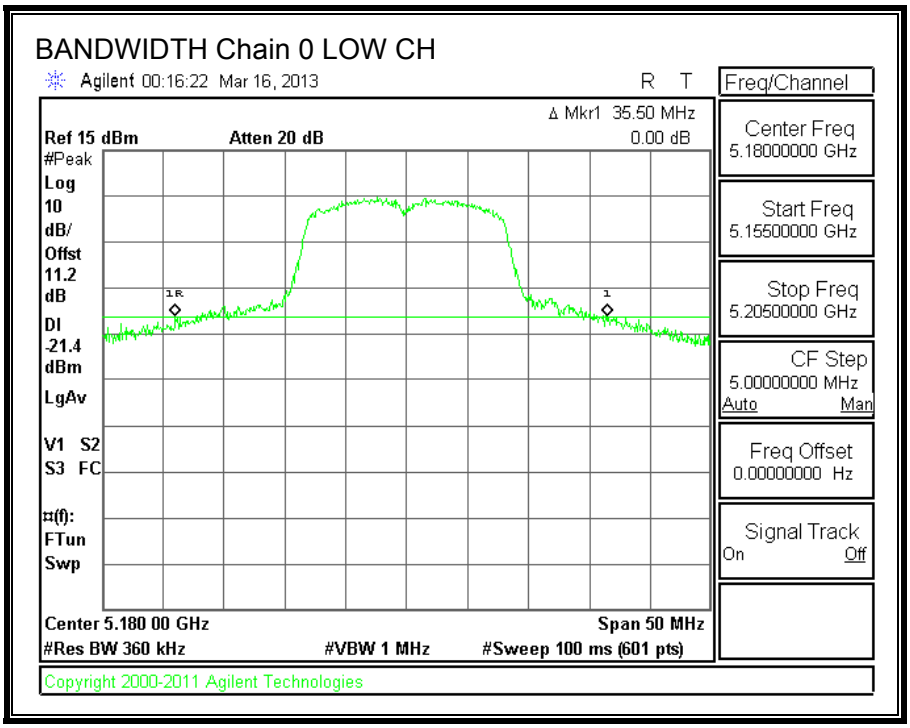
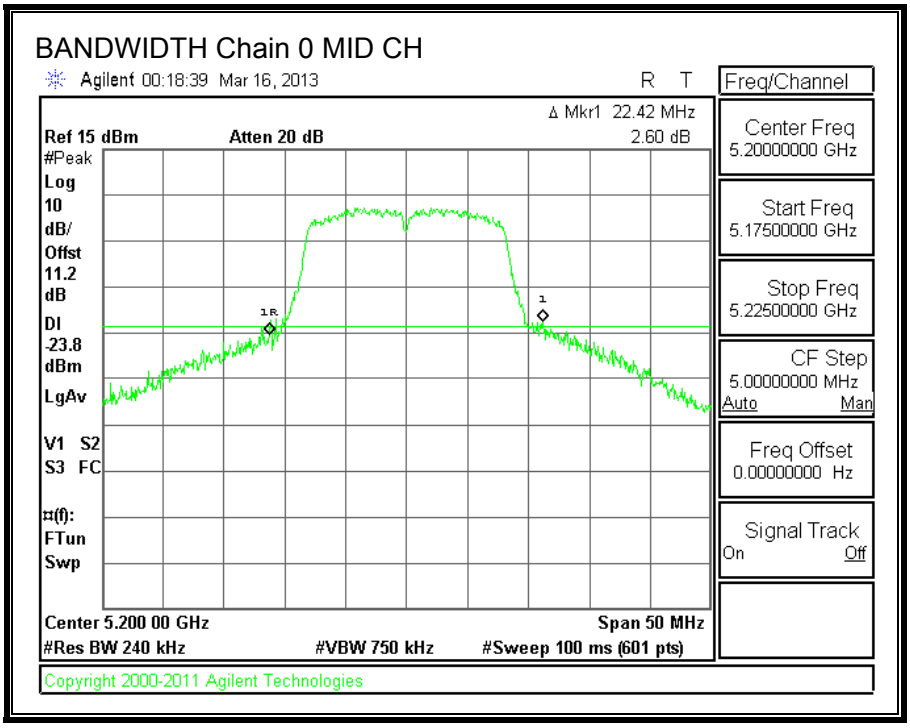
**26 dB BANDWIDTH, Chain 0**





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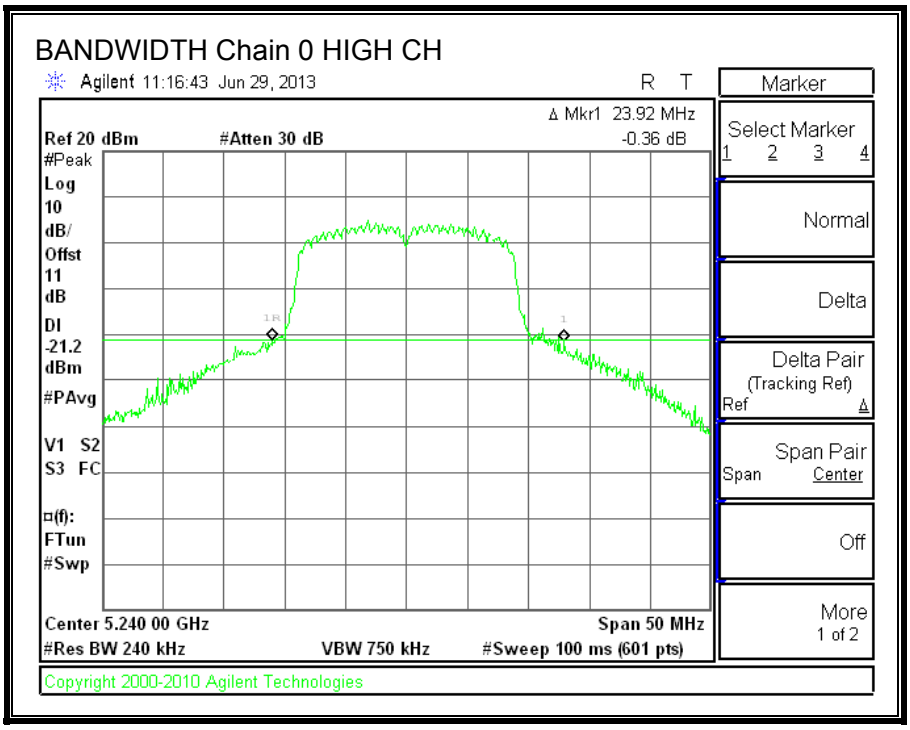
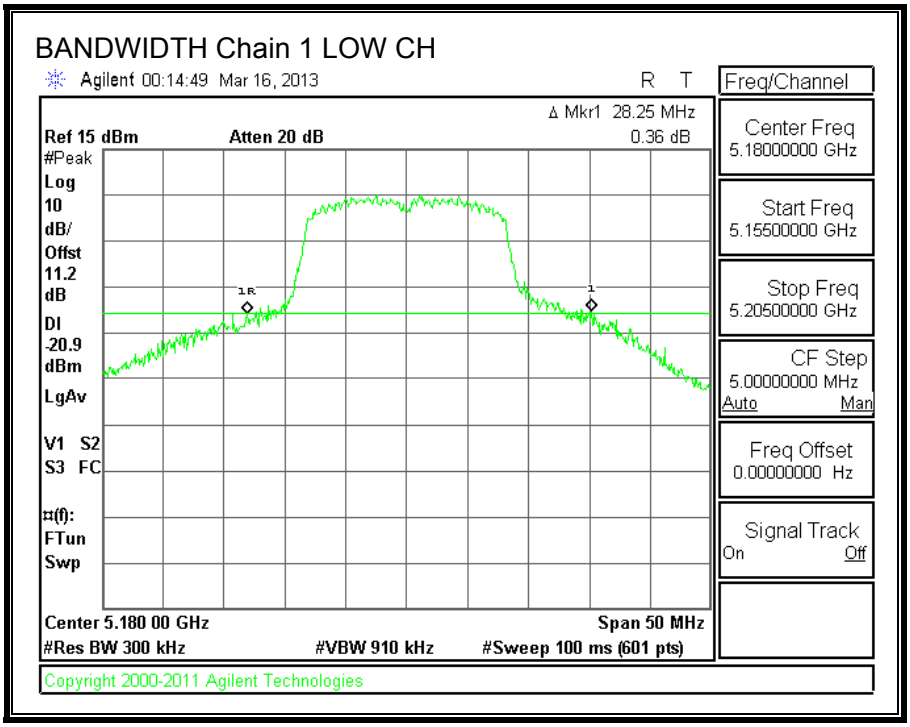



**26 dB BANDWIDTH, Chain 1**





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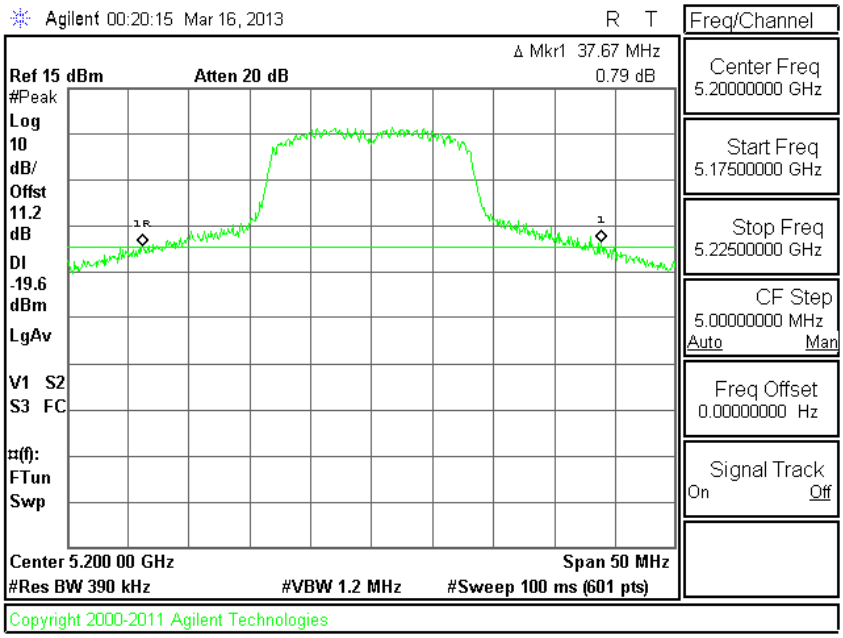
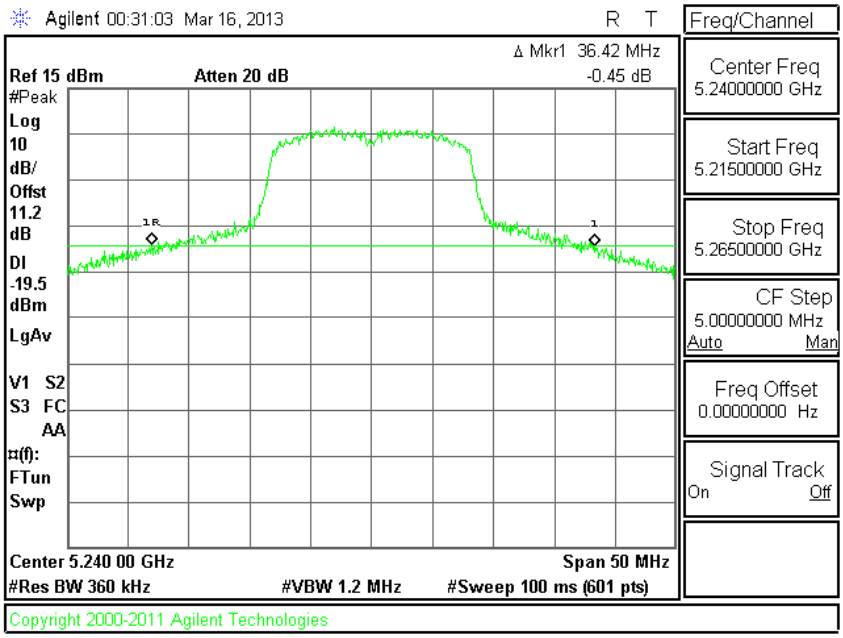
BANDWIDTH Chain 1 MID CH




BANDWIDTH Chain 1 HIGH CH





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### 8.1.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5180 | 16.3408 | 16.2990 |
| Mid | 5200 | 16.2890 | 16.4014 |
| High | 5240 | 16.3014 | 16.3975 |


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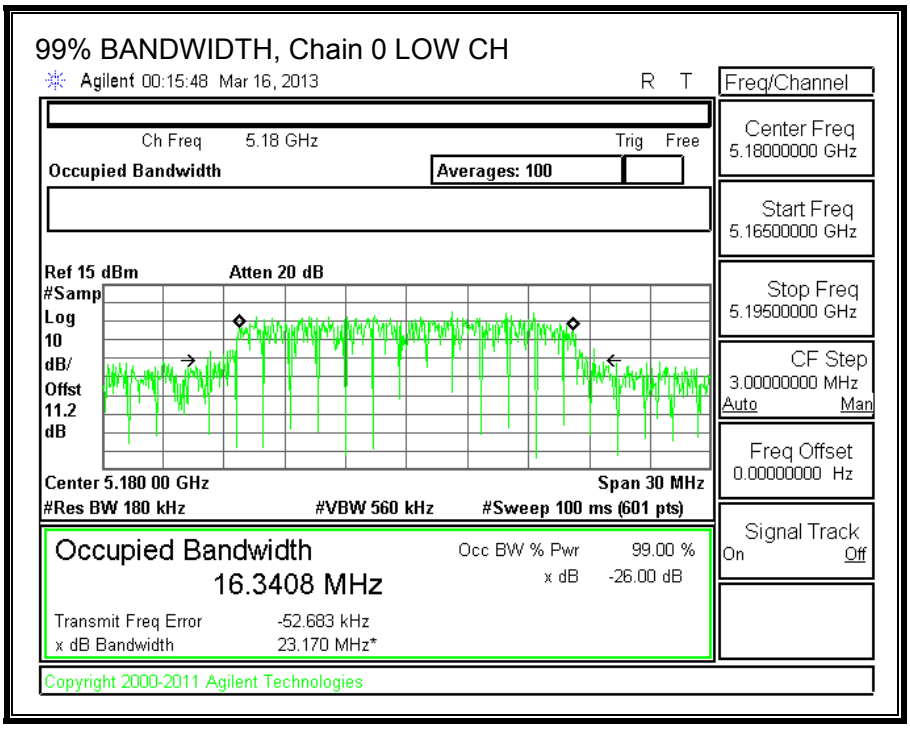
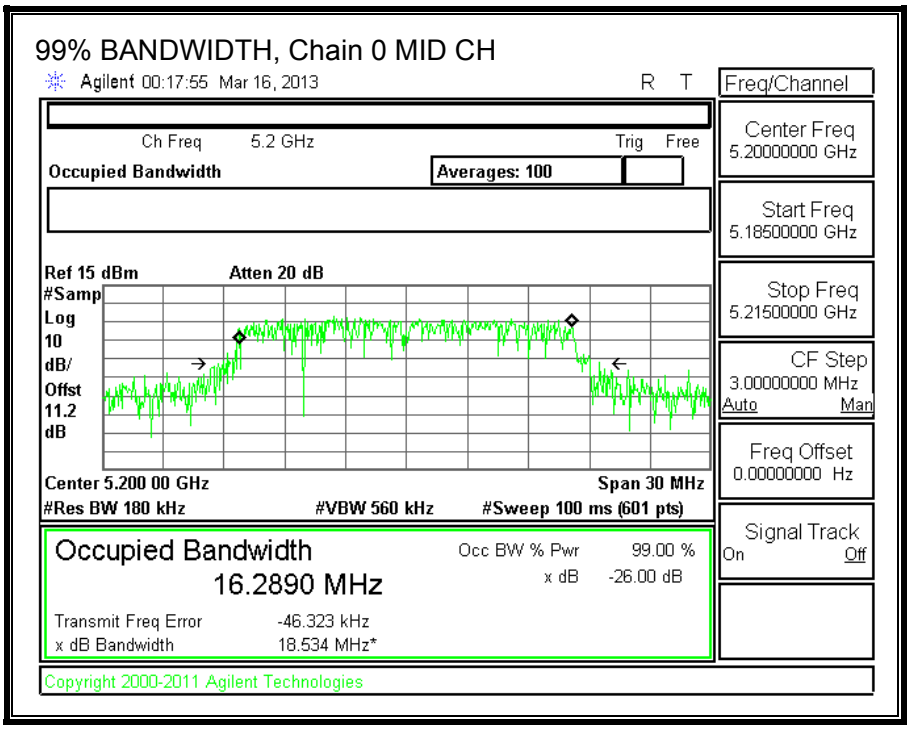
**99% BANDWIDTH, Chain 0**





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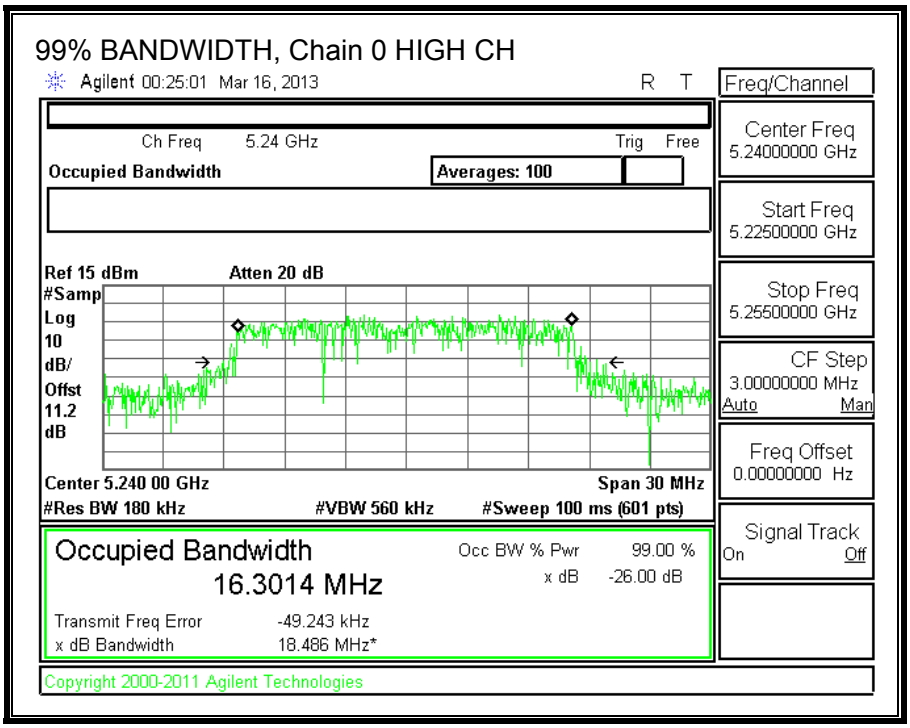
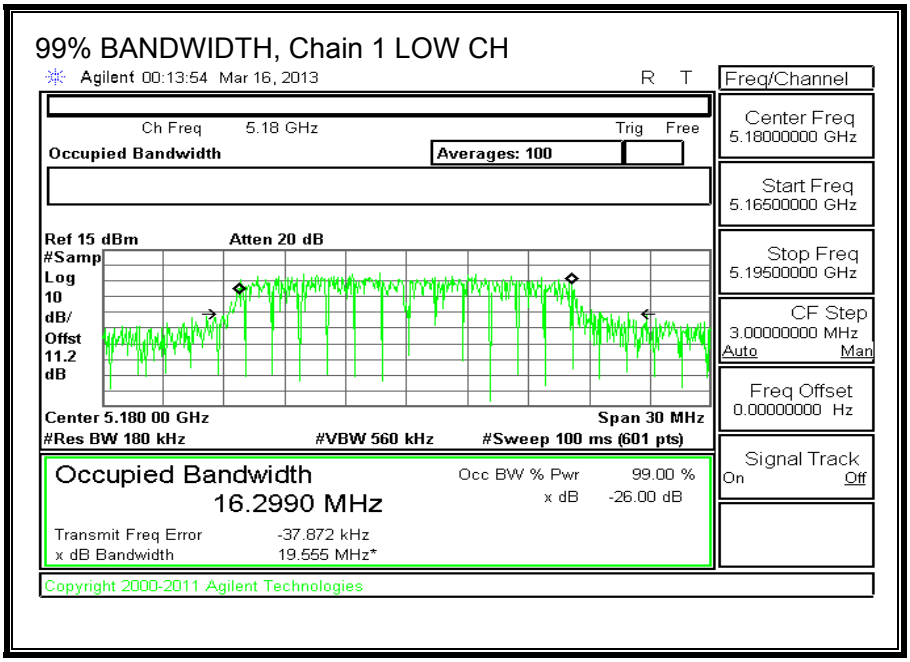



**99% BANDWIDTH, Chain 1**





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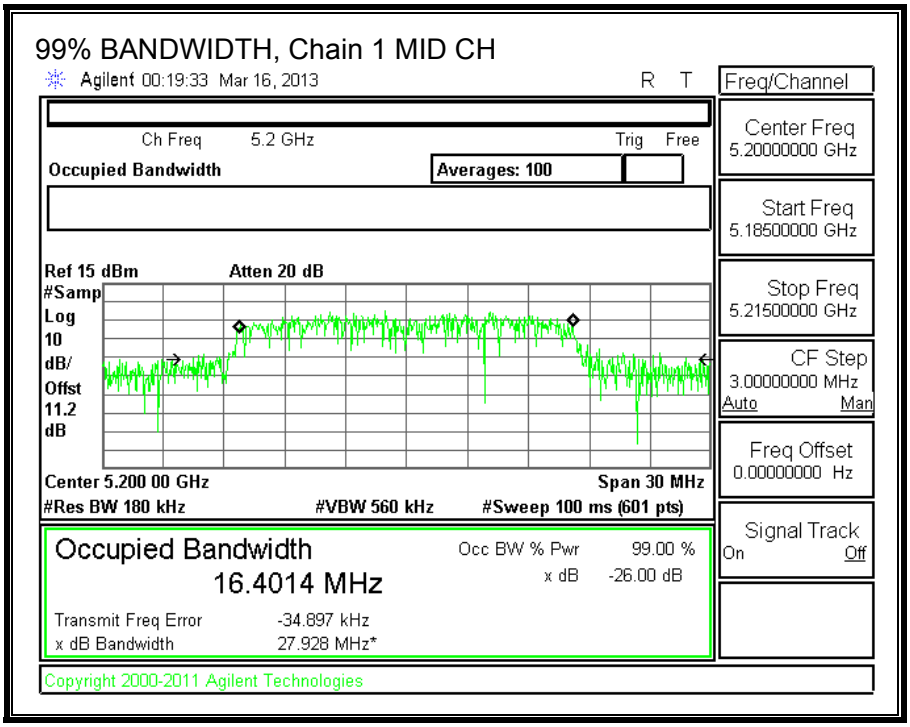


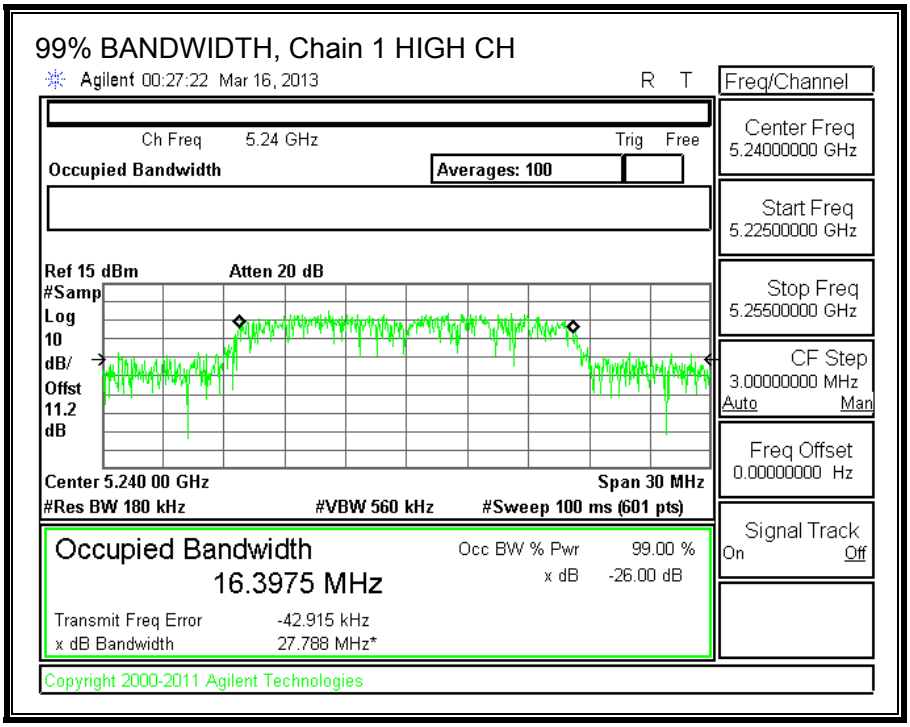



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### 8.1.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5180 | 12.08 | 13.16 | 15.66 |
| Mid | 5200 | 11.55 | 12.86 | 15.26 |
| High | 5240 | 12.42 | 13.02 | 15.74 |


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### 8.1.4. 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**

For output power, the TX chains are uncorrelated and the antenna gain is equal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|
| 4.00 | 4.00 | 4.00 |

For PPSD, the TX chains are correlated and the antenna gain is equal among the chains .The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|
| 4.00 | 4.00 | 7.01 |


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## RESULTS

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Uncorrelated Directional Gain (dBi) | Correlated Directional Gain (dBi) |
|---|---|---|---|---|---|
| Low | 5180 | 28.25 | 16.2990 | 4.00 | 7.01 |
| Mid | 5200 | 22.42 | 16.2890 | 4.00 | 7.01 |
| High | 5240 | 36.42 | 16.3014 | 4.00 | 7.01 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC EIRP Limit (dBm) | Max IC Power (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC eirp PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5180 | 17.00 | 22.12 | 18.12 | 17.00 | 2.99 | 10.00 | 2.99 |
| Mid | 5200 | 17.00 | 22.12 | 18.12 | 17.00 | 2.99 | 10.00 | 2.99 |
| High | 5240 | 17.00 | 22.12 | 18.12 | 17.00 | 2.99 | 10.00 | 2.99 |

| | | |
|---|---|---|
| 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) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5180 | 12.560 | 11.473 | 15.06 | 17.00 | -1.94 |
| Mid | 5200 | 12.651 | 12.832 | 15.75 | 17.00 | -1.25 |
| High | 5240 | 12.230 | 12.707 | 15.49 | 17.00 | -1.51 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5180 | -0.75 | 0.26 | 2.79 | 2.99 | -0.20 |
| Mid | 5200 | -0.62 | 0.37 | 2.91 | 2.99 | -0.08 |
| High | 5240 | -0.59 | 0.15 | 2.81 | 2.99 | -0.18 |


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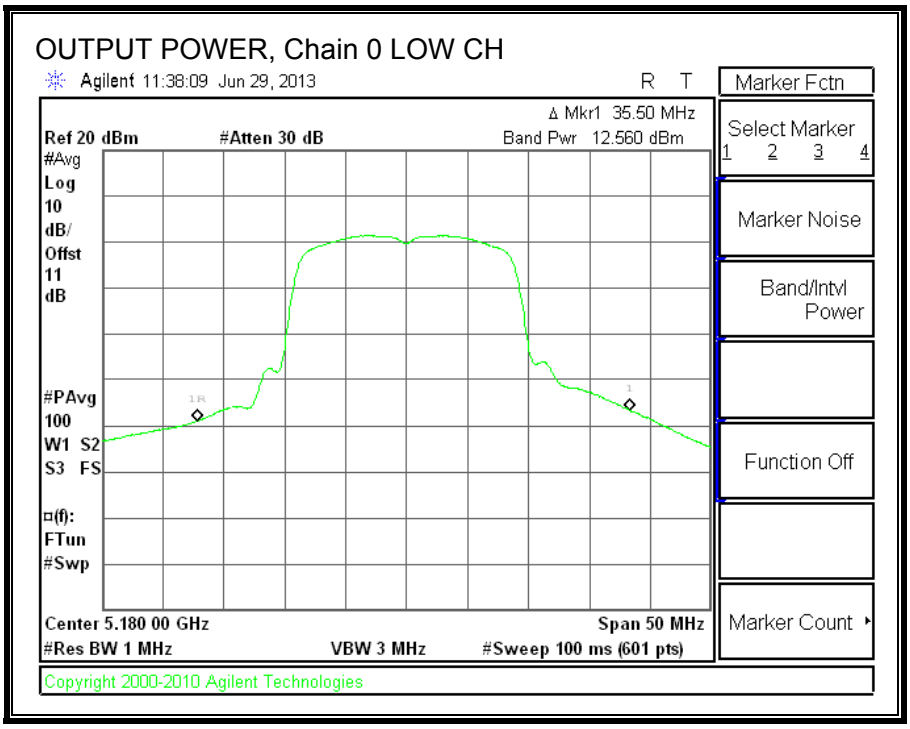
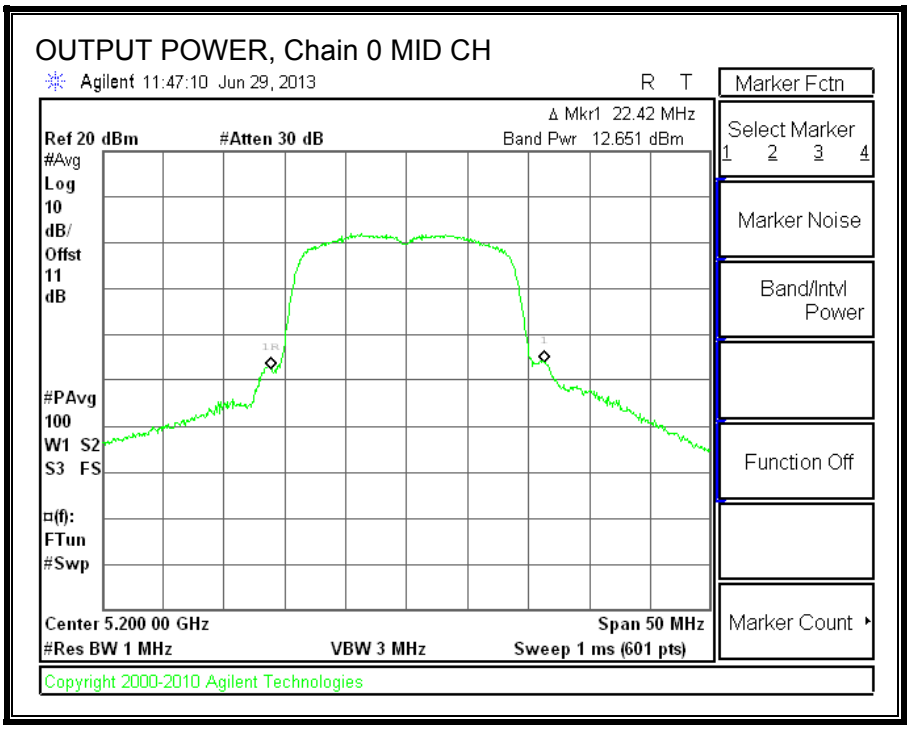
**OUTPUT POWER, Chain 0**





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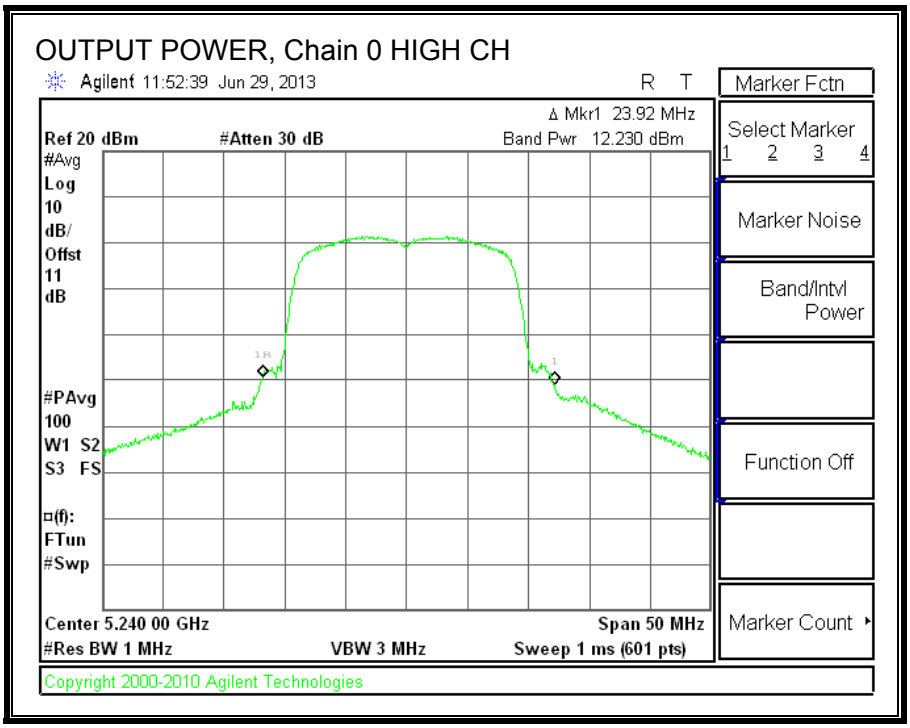
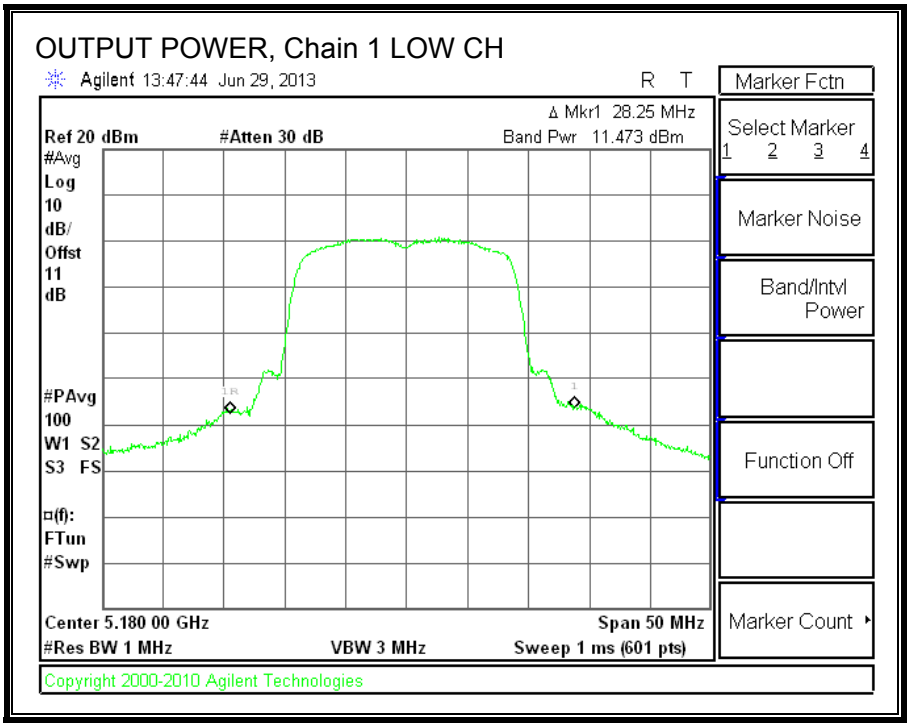



**OUTPUT POWER AND PPSD, Chain 1**





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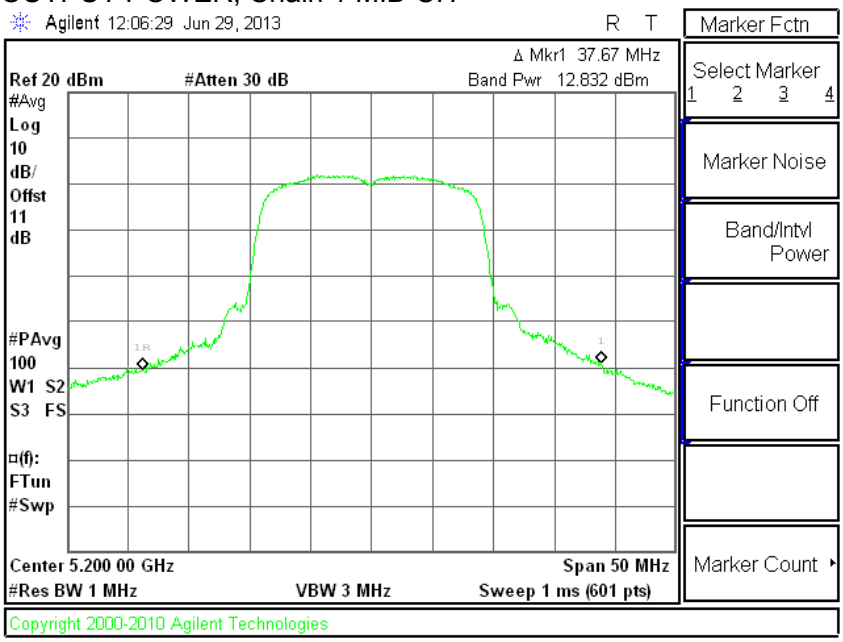
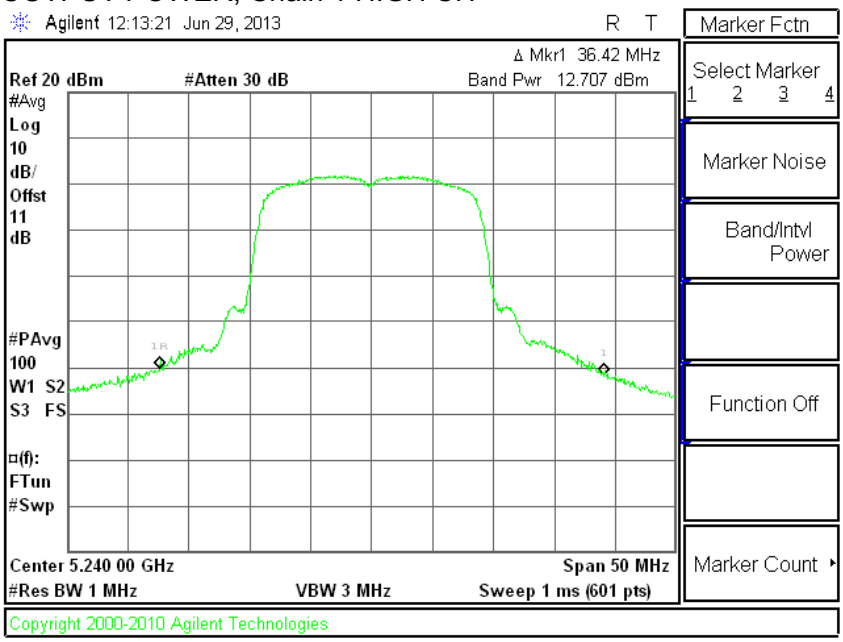
OUTPUT POWER, Chain 1 MID CH




OUTPUT POWER, Chain 1 HIGH CH





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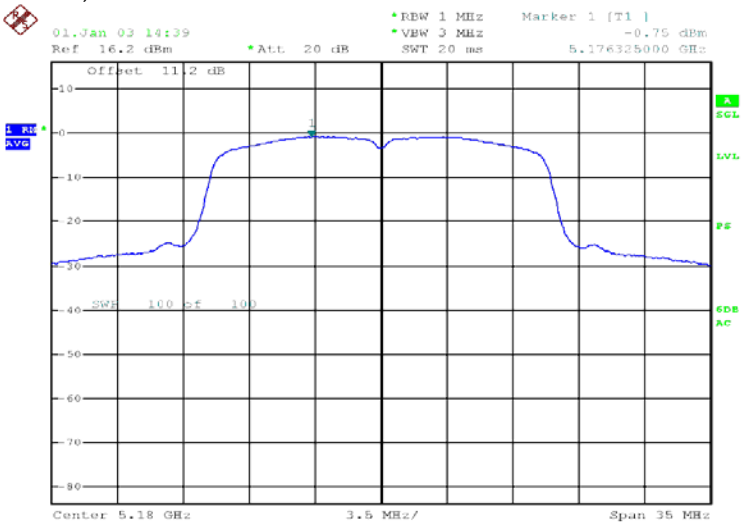
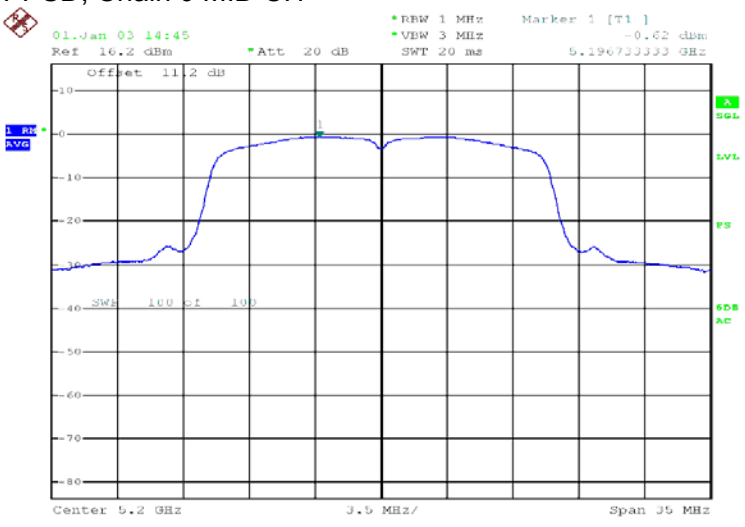
**PPSD, Chain 0**

PPSD, Chain 0 LOW CH




PPSD, Chain 0 MID CH





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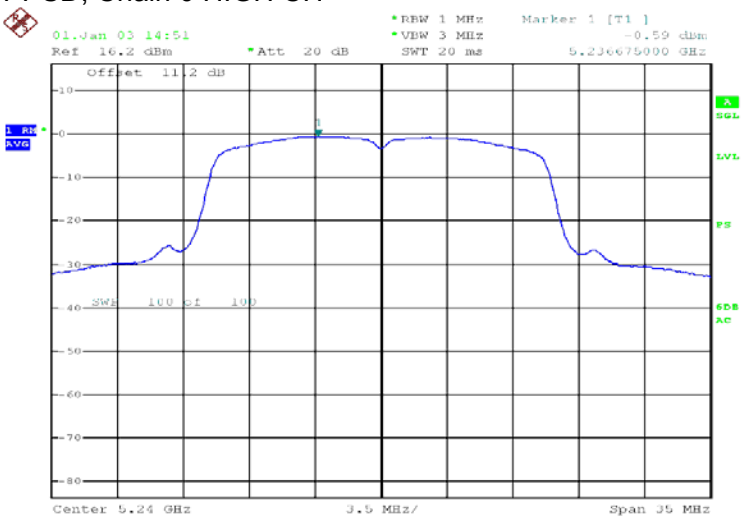
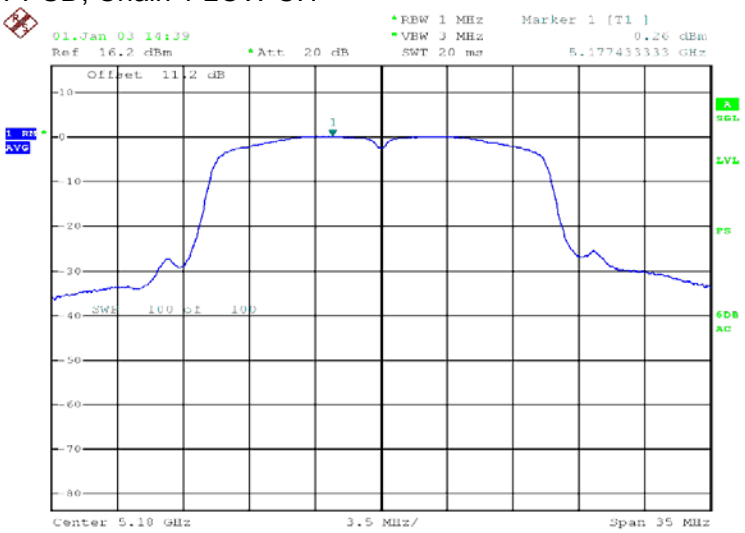
PPSD, Chain 0 HIGH CH




Date: 1.JAN.2003 14:51:48

**OUTPUT POWER AND PPSD, Chain 1**

PPSD, Chain 1 LOW CH




Date: 1.JAN.2003 14:39:10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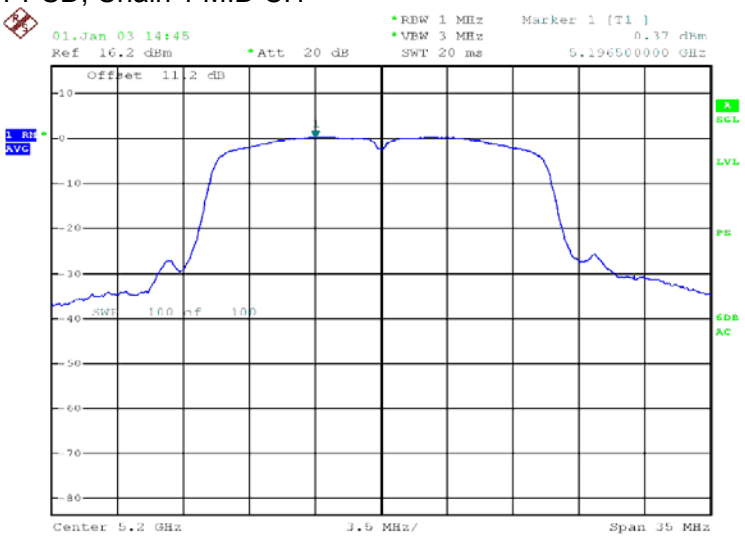
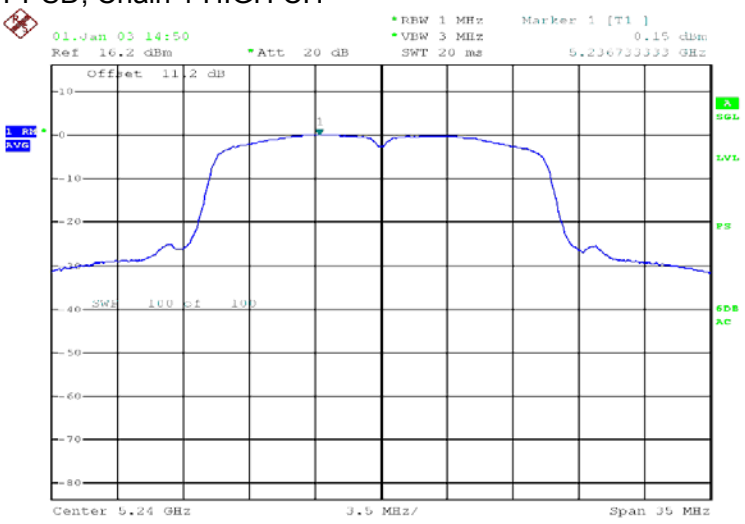
PPSD, Chain 1 MID CH




Date: 1.JAN.2003 14:45:30

PPSD, Chain 1 HIGH CH




Date: 1.JAN.2003 14:50:11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## 8.1.5. PEAK EXCURSION

**LIMITS**

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

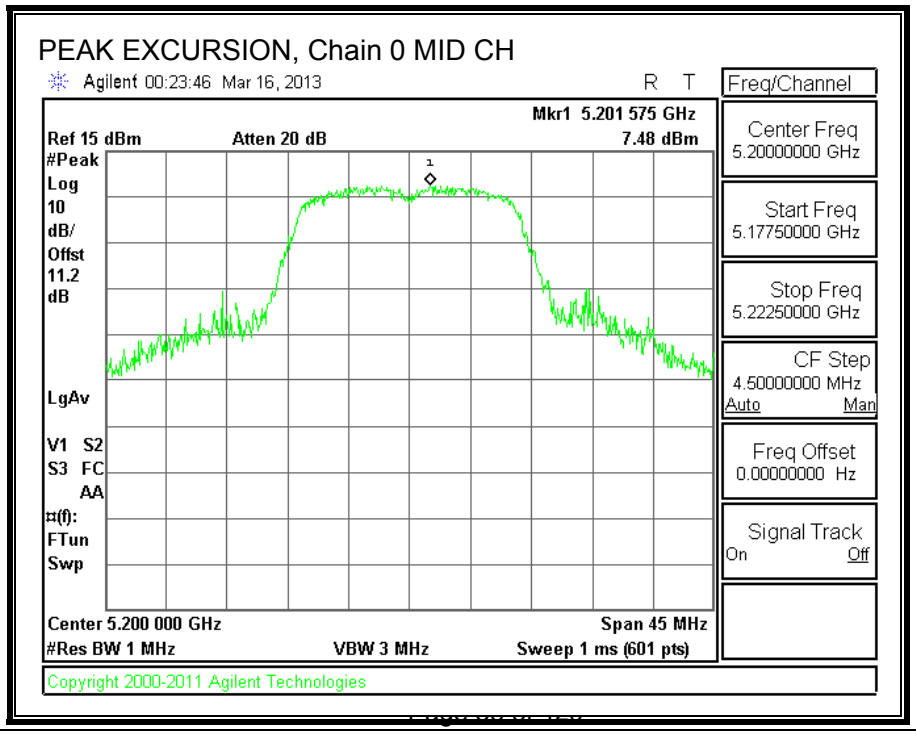
**RESULTS**

| Channel | Frequency (MHz) | PK Level (dBm) | PSD (dBm) | DCCF (dB) | Peak Excursion (dB) | Limit (dB) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5200 | 7.48 | -0.62 | 0.00 | 8.10 | 13 | -4.90 |

Chain 1

| Channel | Frequency (MHz) | PK Level (dBm) | PSD (dBm) | DCCF (dB) | Peak Excursion (dB) | Limit (dB) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5200 | 9.42 | 0.37 | 0.00 | 9.05 | 13 | -3.95 |

**PEAK EXCURSION, Chain 0**





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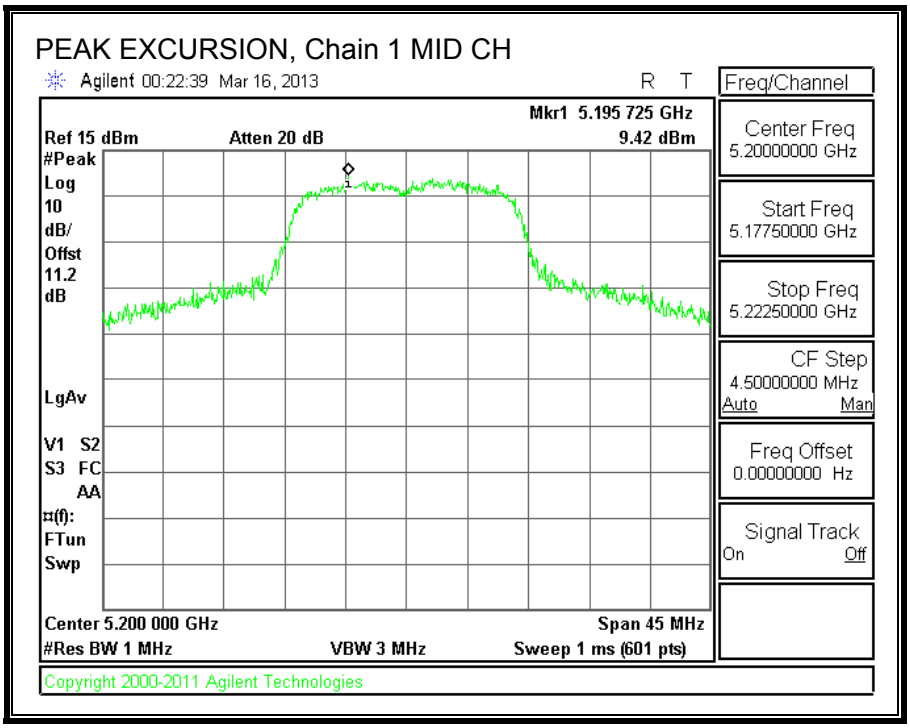
**PEAK EXCURSION, Chain 1**




## 8.2. 802.11n HT20 CDD MCS0 2TX MODE IN THE 5.2 GHz BAND

### 8.2.1. 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) |
|---|---|---|---|
| Low | 5180 | 35.42 | 25.75 |
| Mid | 5200 | 20.42 | 35.67 |
| High | 5240 | 29.42 | 26.50 |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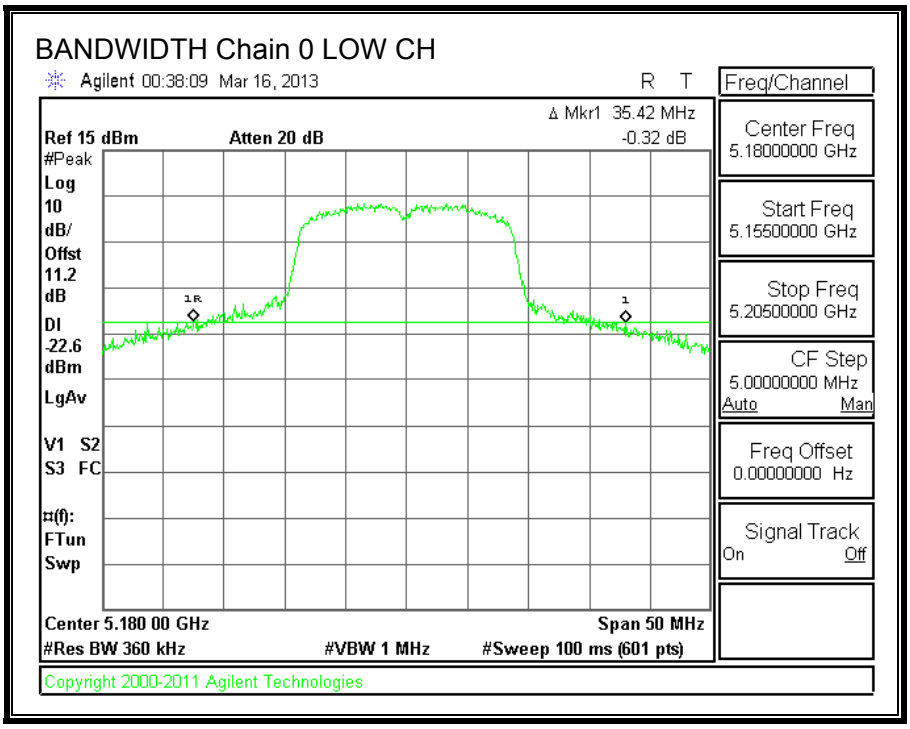
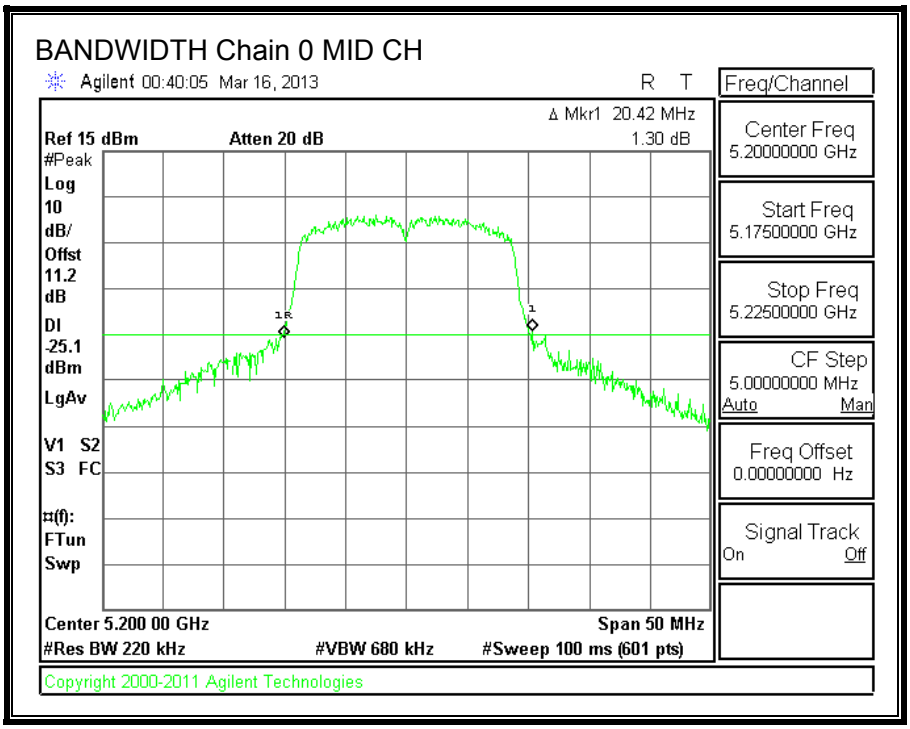
**26 dB BANDWIDTH, Chain 0**





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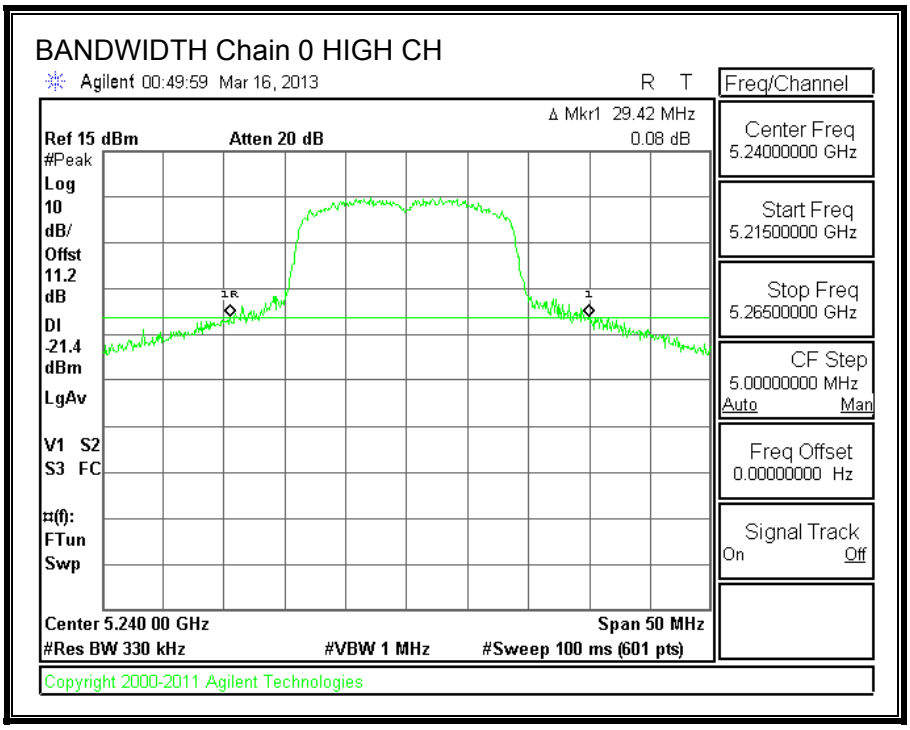
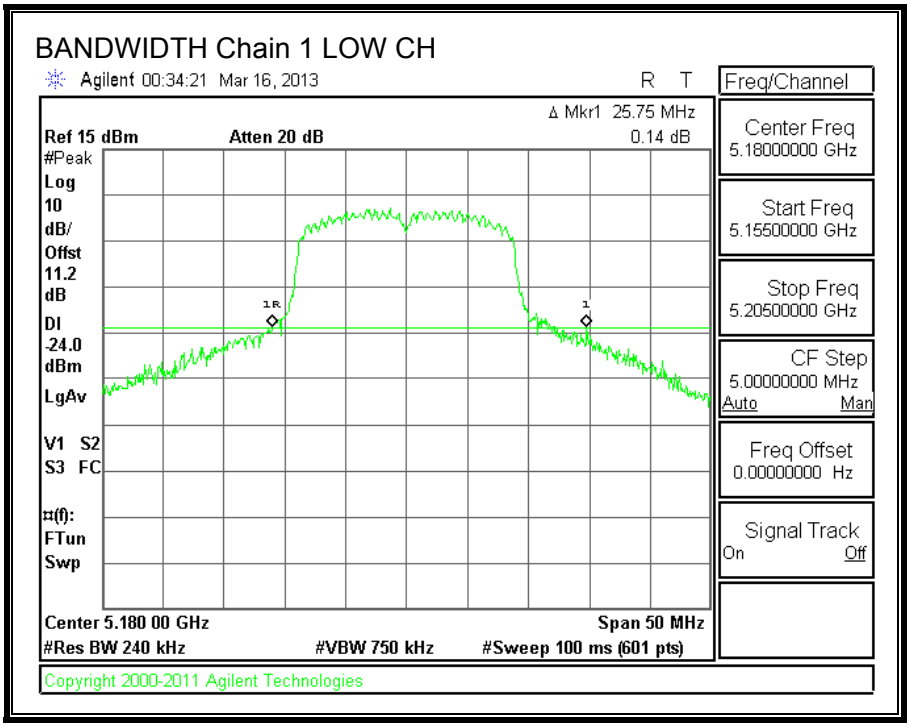



**26 dB BANDWIDTH, Chain 1**





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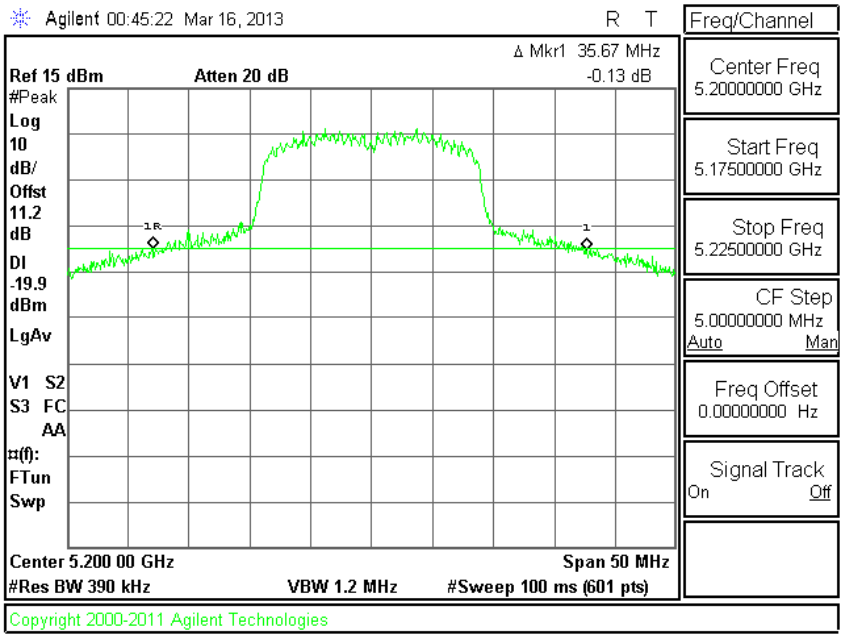
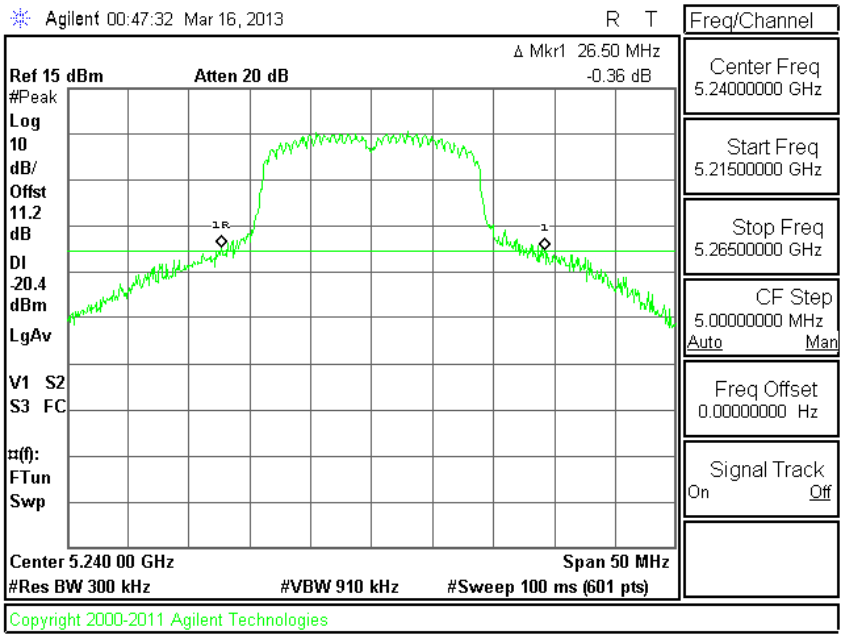
BANDWIDTH Chain 1 MID CH




BANDWIDTH Chain 1 HIGH CH





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### 8.2.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5180 | 17.4839 | 17.4083 |
| Mid | 5200 | 17.4069 | 17.5460 |
| High | 5240 | 17.4564 | 17.4285 |


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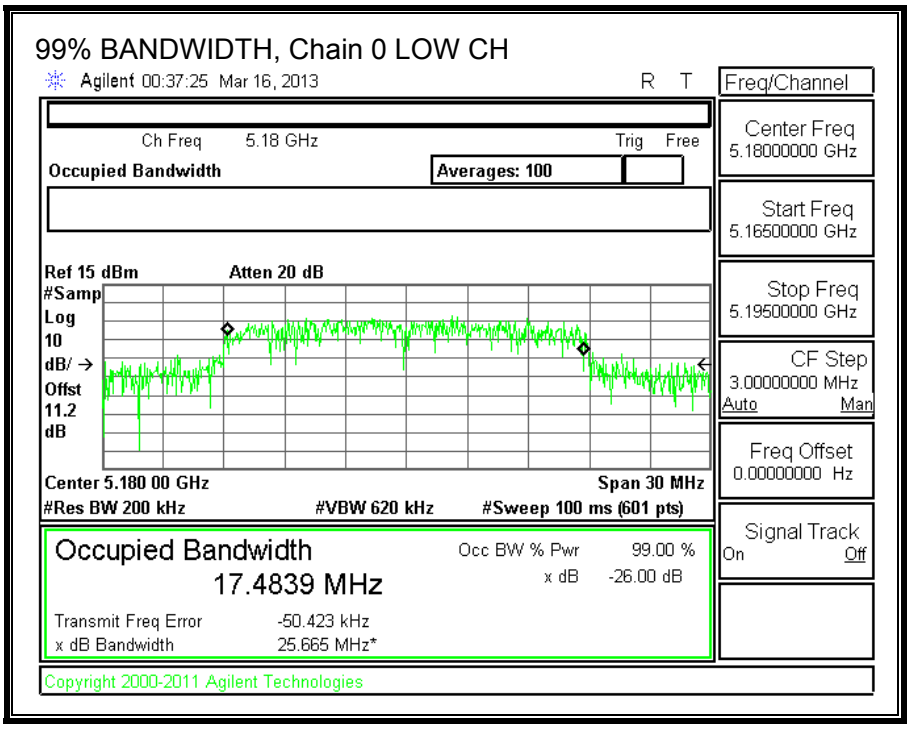
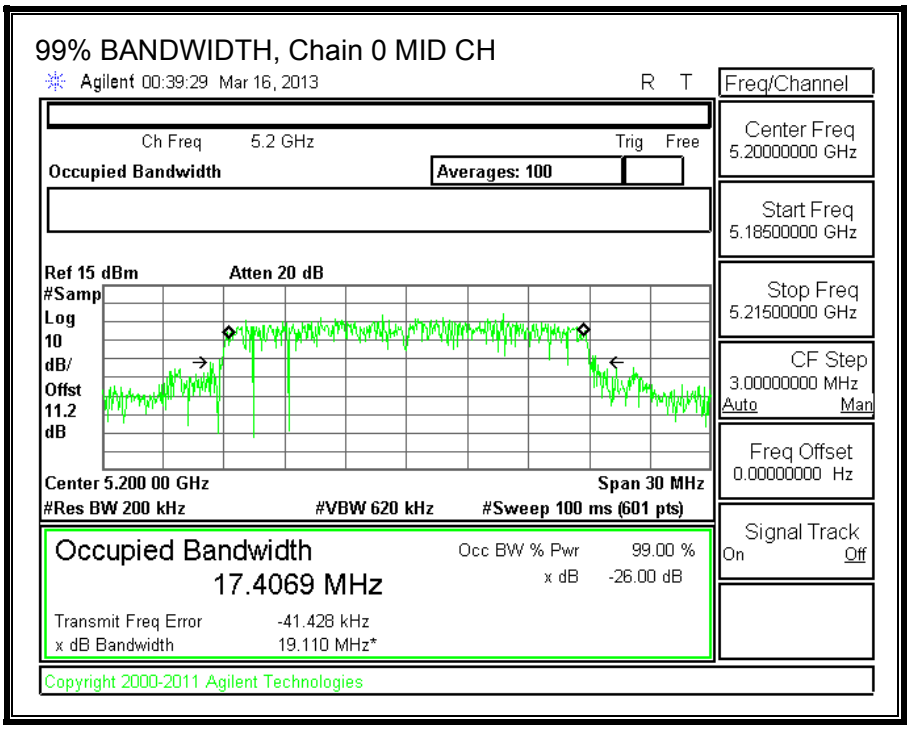
**99% BANDWIDTH, Chain 0**





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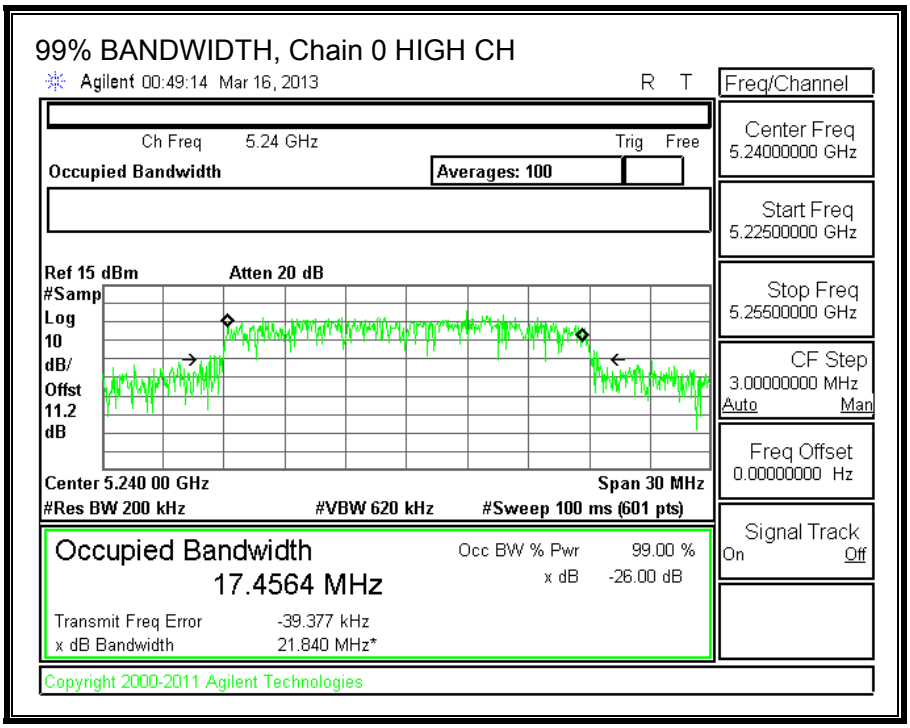
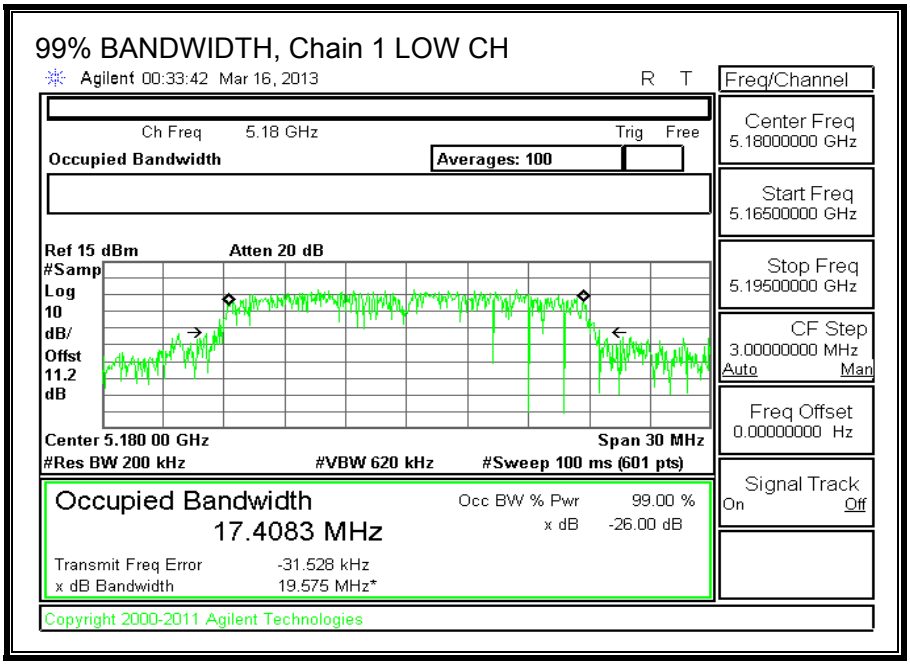



**99% BANDWIDTH, Chain 1**





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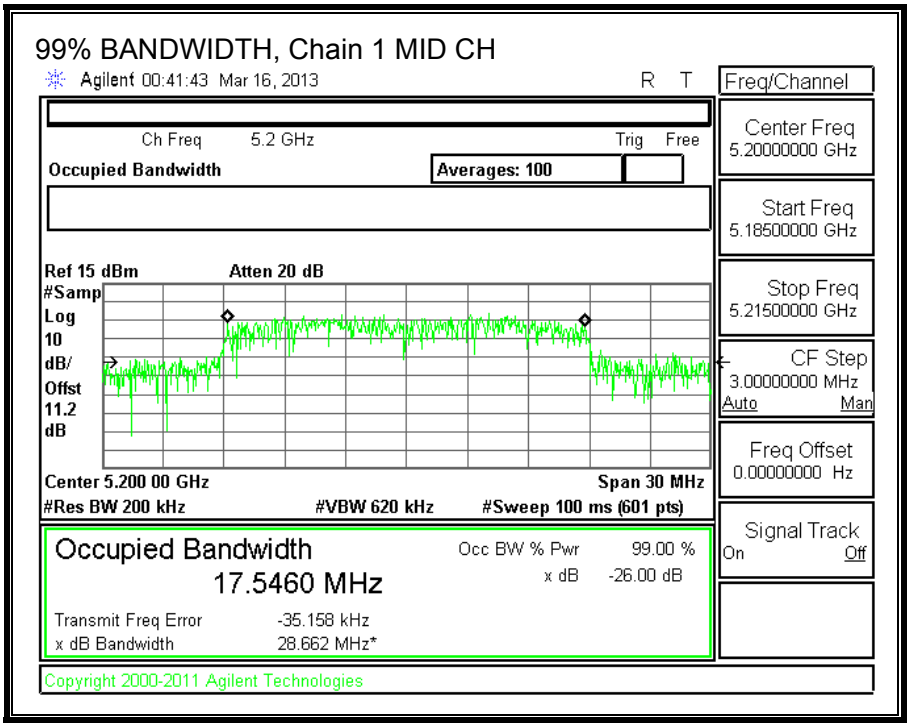


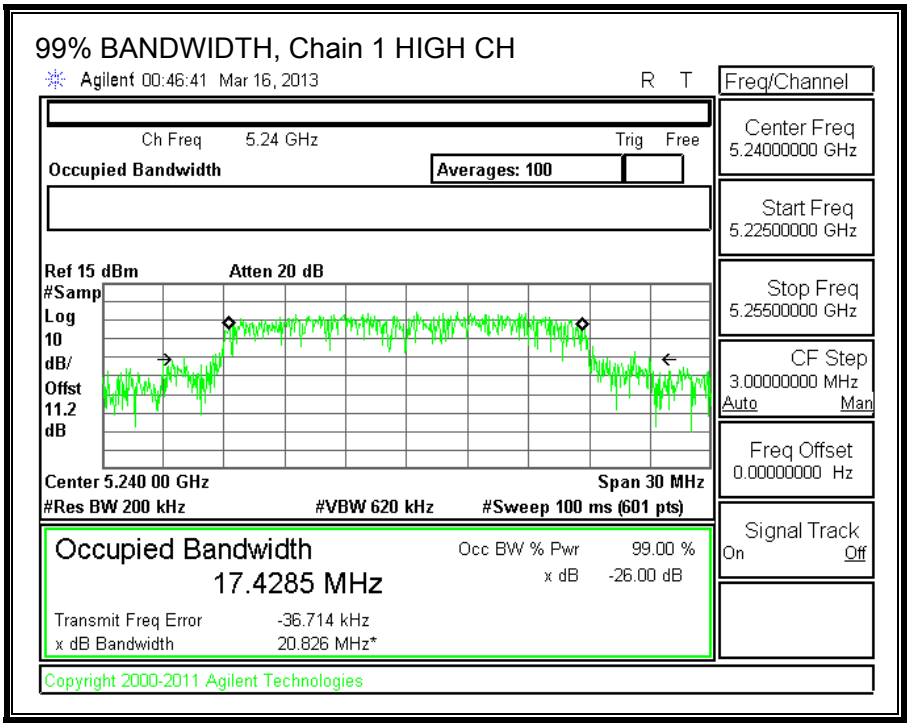



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### 8.2.1. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5180 | 12.01 | 12.81 | 15.44 |
| Mid | 5200 | 12.03 | 12.89 | 15.49 |
| High | 5240 | 12.16 | 12.89 | 15.55 |


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### 8.2.2. 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**

For output power, the TX chains are uncorrelated and the antenna gain is equal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|
| 4.00 | 4.00 | 4.00 |

For PPSD, the TX chains are correlated and the antenna gain is equal among the chains. The directional gain is:

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|
| 4.00 | 4.00 | 7.01 |


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## RESULTS

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Uncorrelated Directional Gain (dBi) | Correlated Directional Gain (dBi) |
|---|---|---|---|---|---|
| Low | 5180 | 25.75 | 17.4083 | 4.00 | 7.01 |
| Mid | 5200 | 20.42 | 17.4069 | 4.00 | 7.01 |
| High | 5240 | 26.50 | 17.4285 | 4.00 | 7.01 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC EIRP Limit (dBm) | Max IC Power (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC eirp PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5180 | 17.00 | 22.41 | 18.41 | 17.00 | 2.99 | 10.00 | 2.99 |
| Mid | 5200 | 17.00 | 22.41 | 18.41 | 17.00 | 2.99 | 10.00 | 2.99 |
| High | 5240 | 17.00 | 22.41 | 18.41 | 17.00 | 2.99 | 10.00 | 2.99 |

| | | |
|---|---|---|
| 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) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5180 | 11.572 | 11.796 | 14.70 | 17.00 | -2.30 |
| Mid | 5200 | 10.684 | 12.271 | 14.56 | 17.00 | -2.44 |
| High | 5240 | 11.354 | 13.044 | 15.29 | 17.00 | -1.71 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5180 | -1.29 | -0.06 | 2.38 | 2.99 | -0.61 |
| Mid | 5200 | -1.11 | 0.00 | 2.49 | 2.99 | -0.50 |
| High | 5240 | -1.15 | 0.06 | 2.51 | 2.99 | -0.48 |


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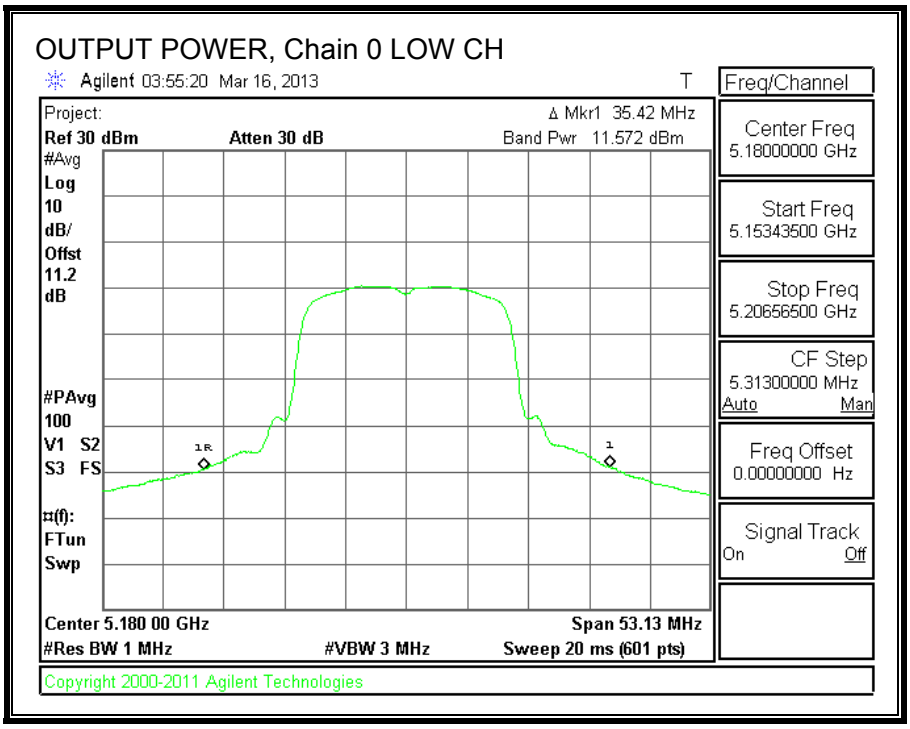
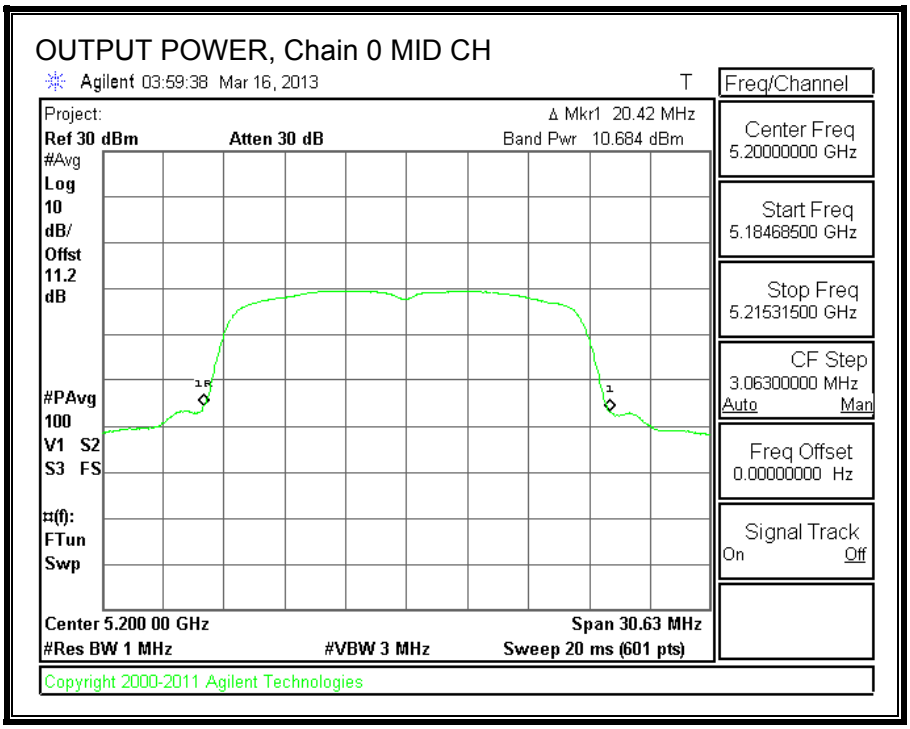
**OUTPUT POWER, Chain 0**





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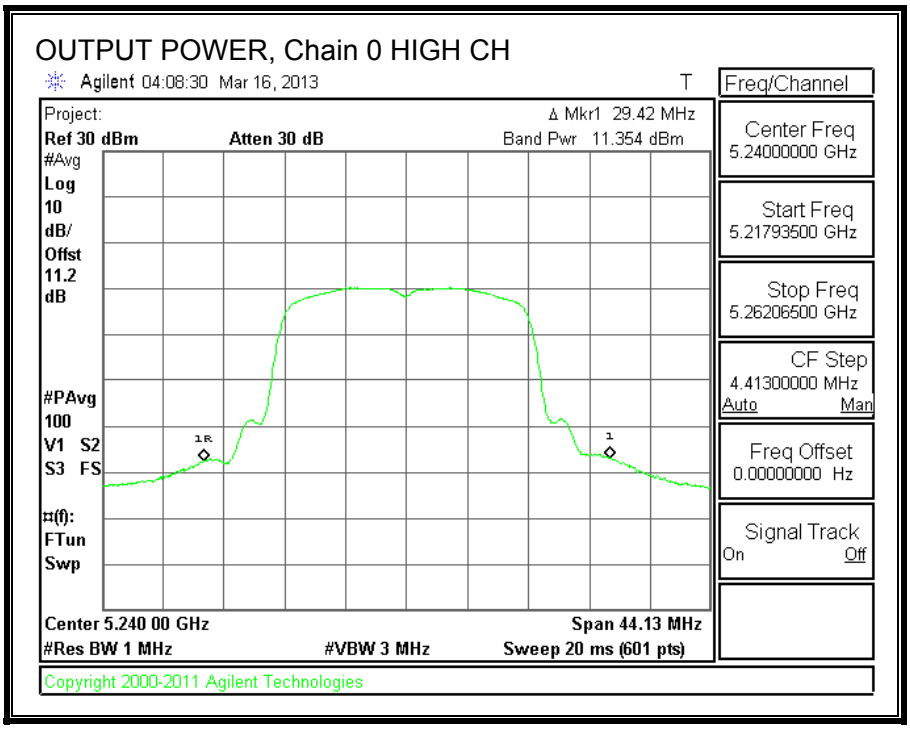
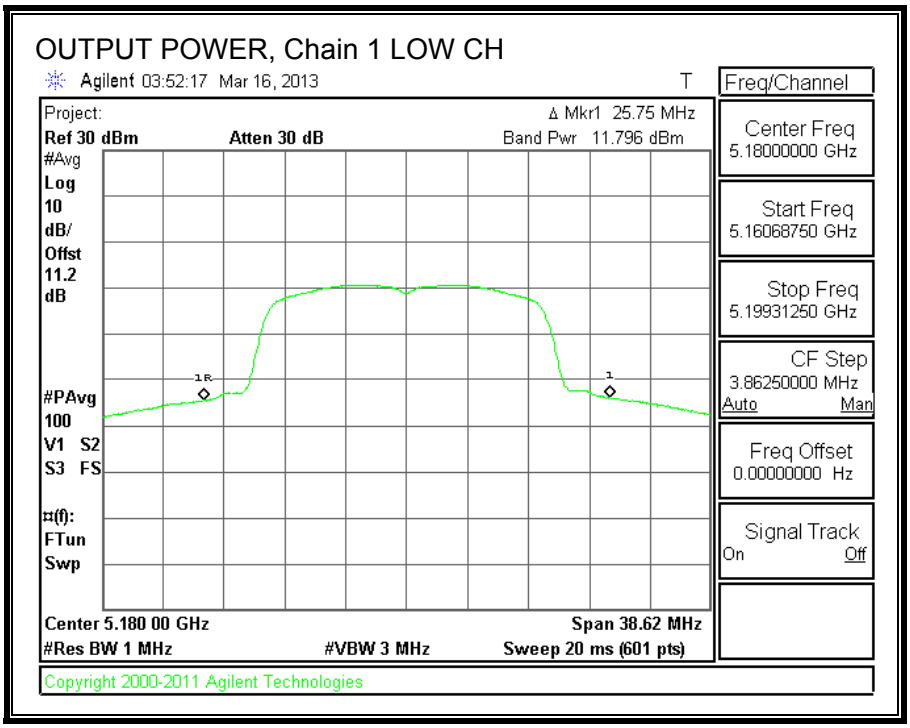



**OUTPUT POWER AND PPSD, Chain 1**





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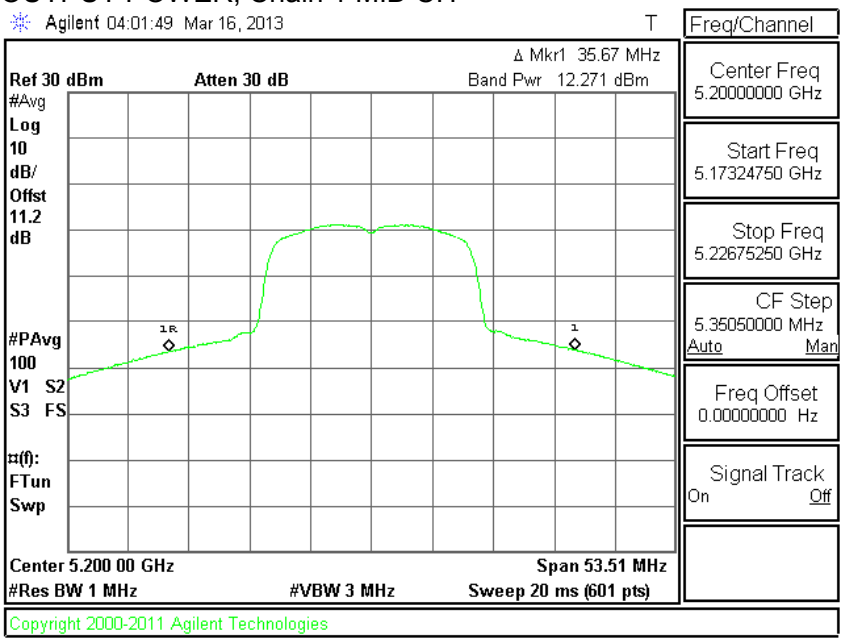
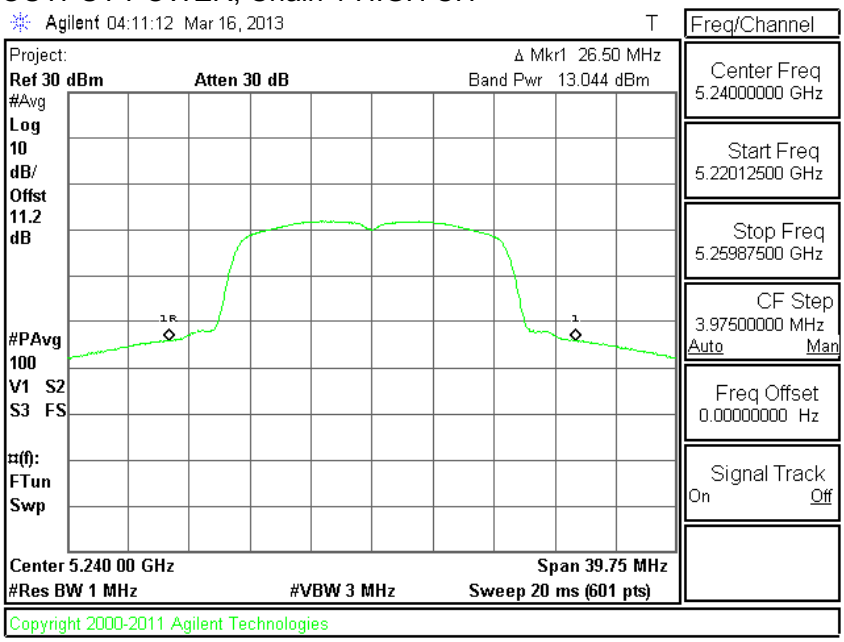
OUTPUT POWER, Chain 1 MID CH




OUTPUT POWER, Chain 1 HIGH CH





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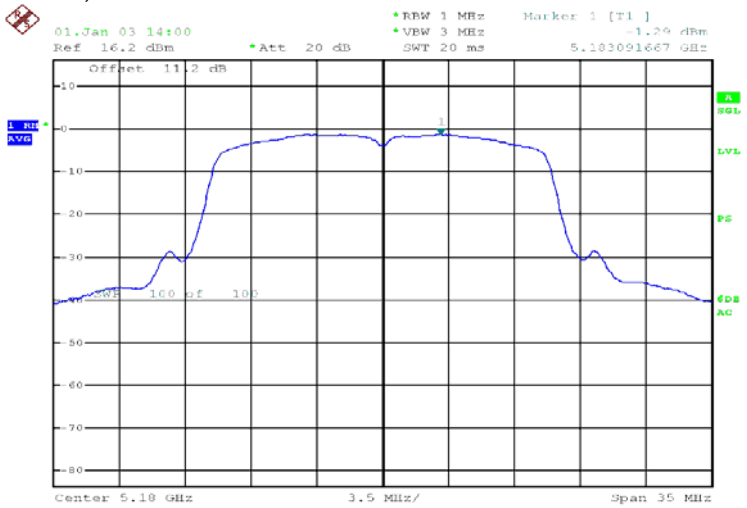
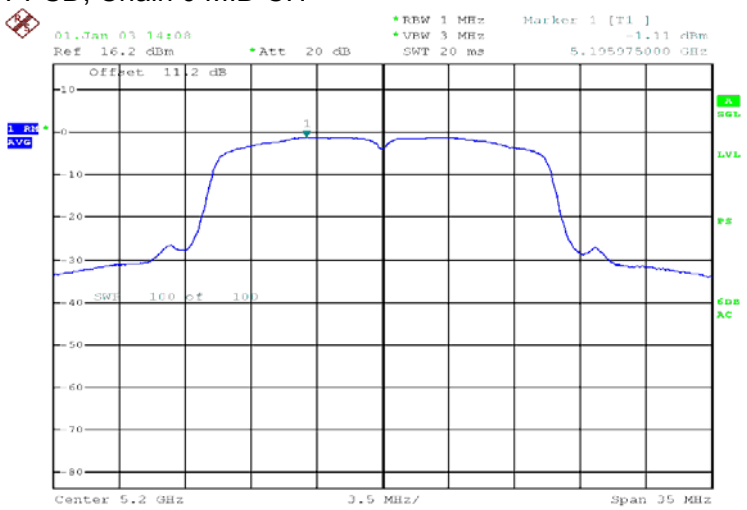
**PPSD, Chain 0**

PPSD, Chain 0 LOW CH




Date: 1.JAN.2003 14:00:57

PPSD, Chain 0 MID CH




Date: 1.JAN.2003 14:08:03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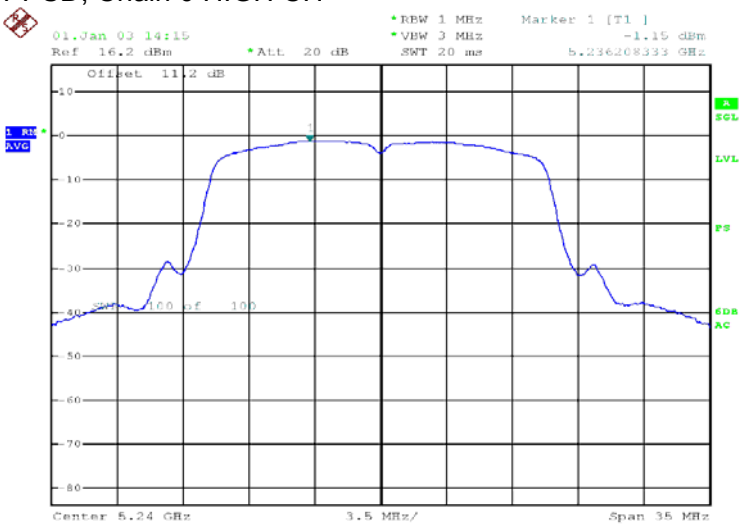
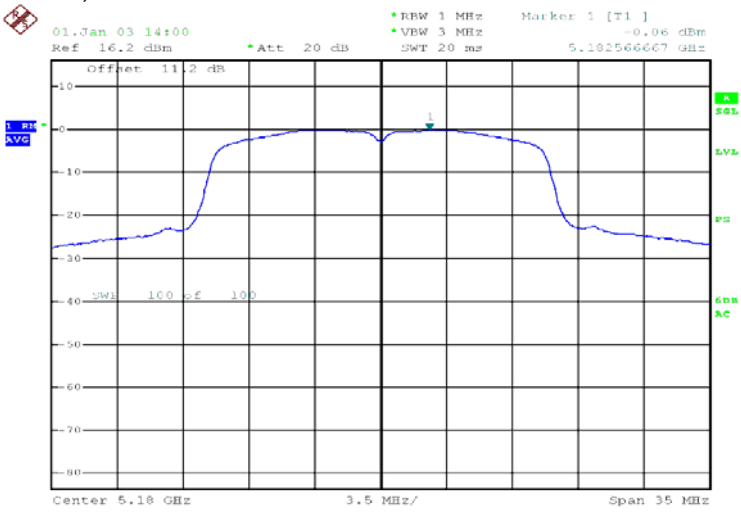
PPSD, Chain 0 HIGH CH




Date: 1.JAN.2003 14:15:40

**OUTPUT POWER AND PPSD, Chain 1**

PPSD, Chain 1 LOW CH




Date: 1.JAN.2003 14:00:32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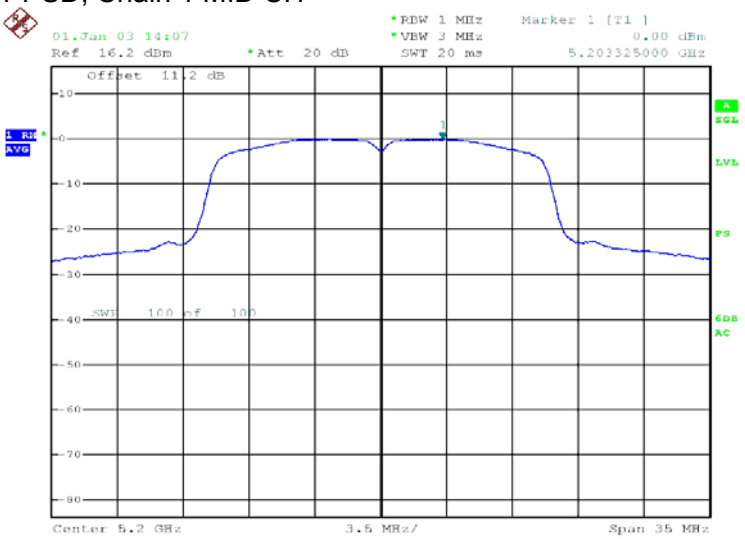
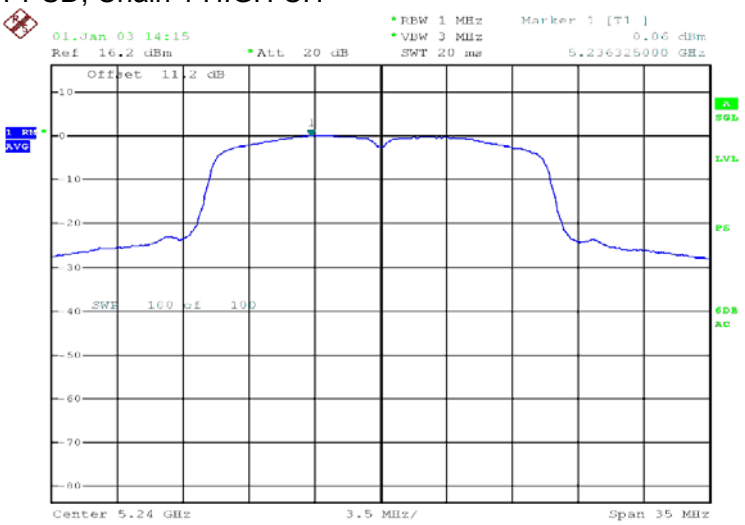
PPSD, Chain 1 MID CH




Date: 1.JAN.2003 14:07:36

PPSD, Chain 1 HIGH CH




Date: 1.JAN.2003 14:15:12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### 8.2.1. PEAK EXCURSION

**LIMITS**

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

**RESULTS**

Chain 0

| Channel | Frequency (MHz) | PK Level (dBm) | PSD (dBm) | DCCF (dB) | Peak Excursion (dB) | Limit (dB) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5200 | 8.85 | -1.11 | 0.00 | 9.96 | 13 | -3.04 |

Chain 1

| Channel | Frequency (MHz) | PK Level (dBm) | PSD (dBm) | DCCF (dB) | Peak Excursion (dB) | Limit (dB) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5200 | 10.91 | 0.00 | 0.00 | 10.91 | 13 | -2.09 |


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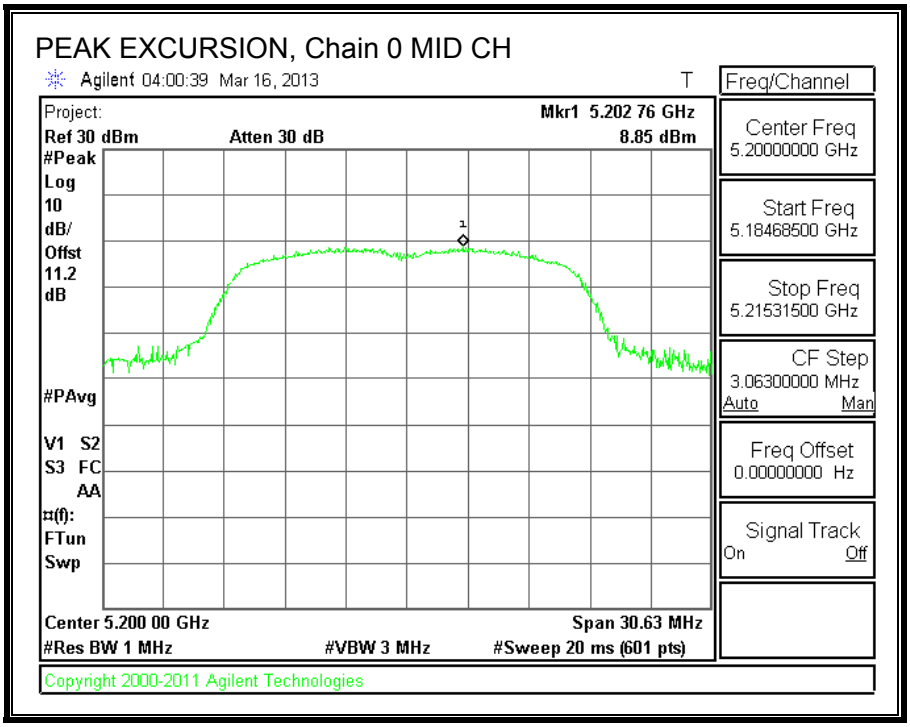
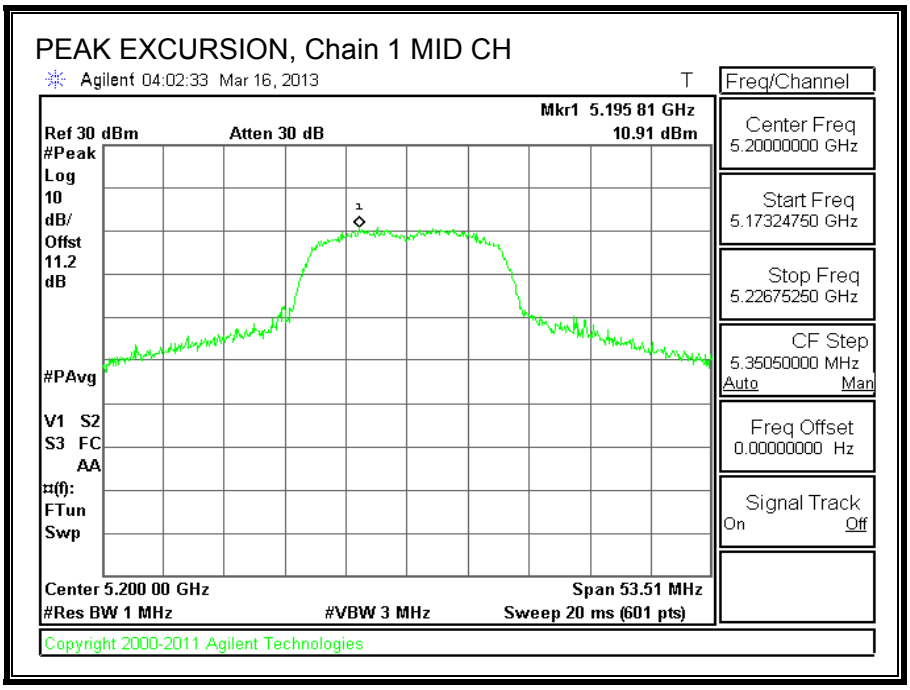
**PEAK EXCURSION, Chain 0**




**PEAK EXCURSION, Chain 1**





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## 8.3. 802.11n HT20 SDM MCS8 2TX MODE IN THE 5.2 GHz BAND

### 8.3.1. 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) |
|---|---|---|---|
| Low | 5180 | 35.25 | 28.92 |
| Mid | 5200 | 36.67 | 22.58 |
| High | 5240 | 31.17 | 24.08 |


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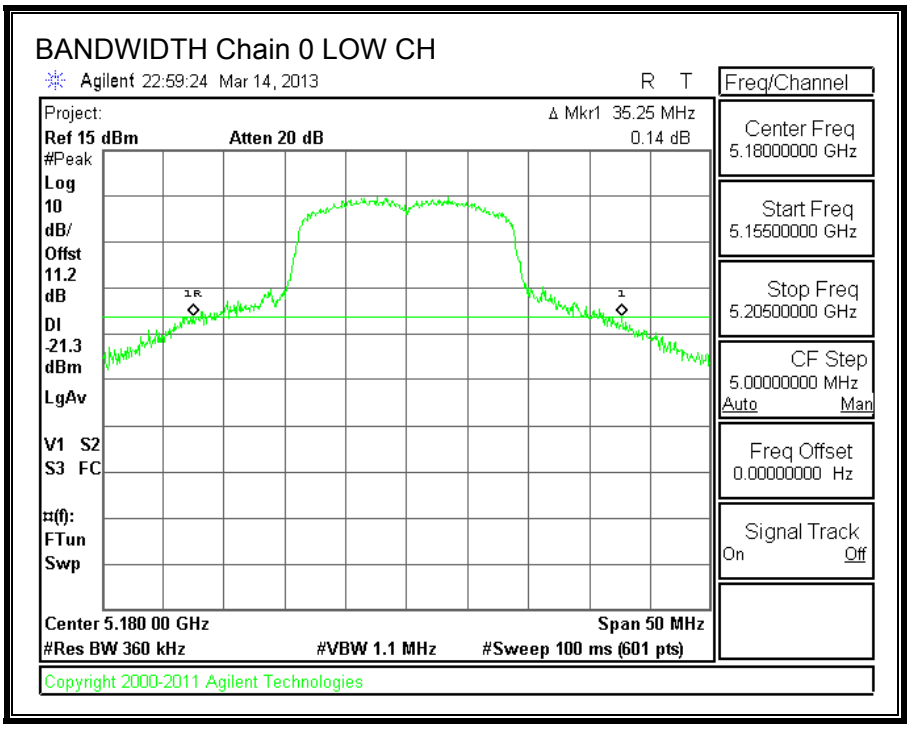
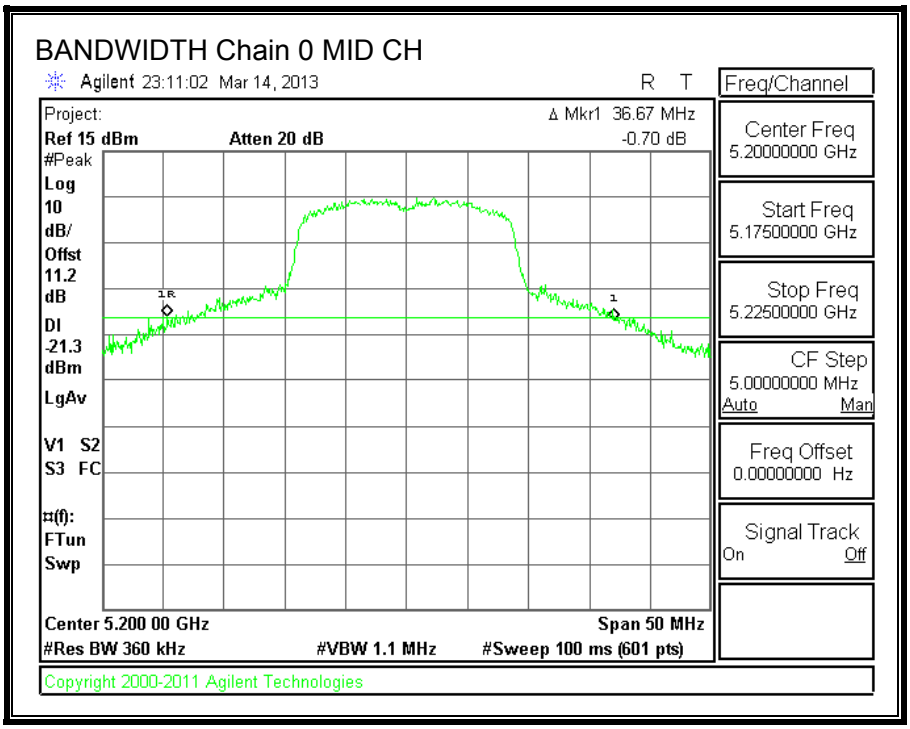
**26 dB BANDWIDTH, Chain 0**





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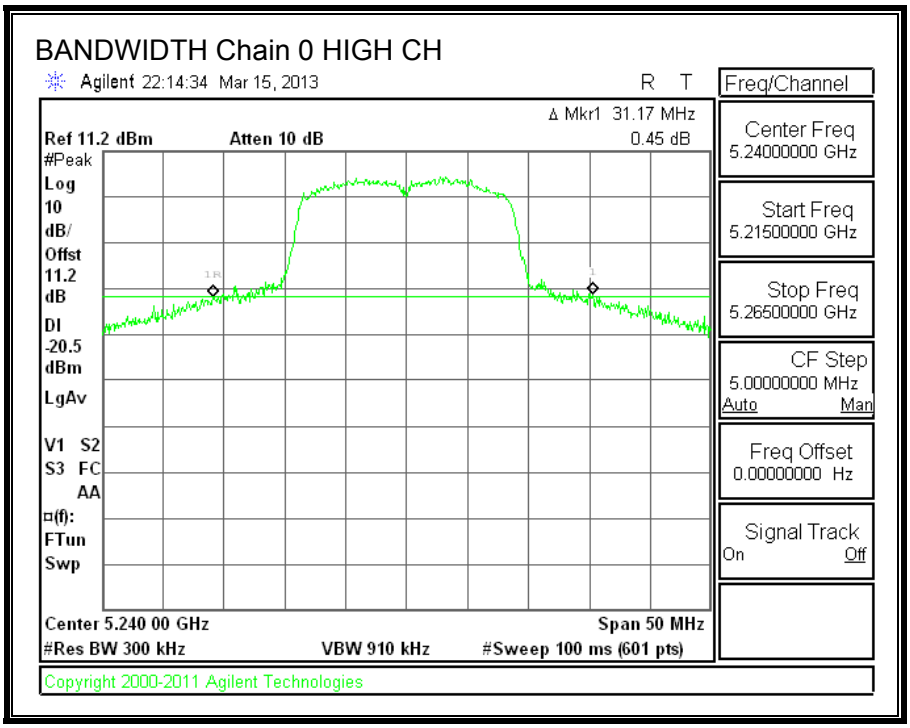
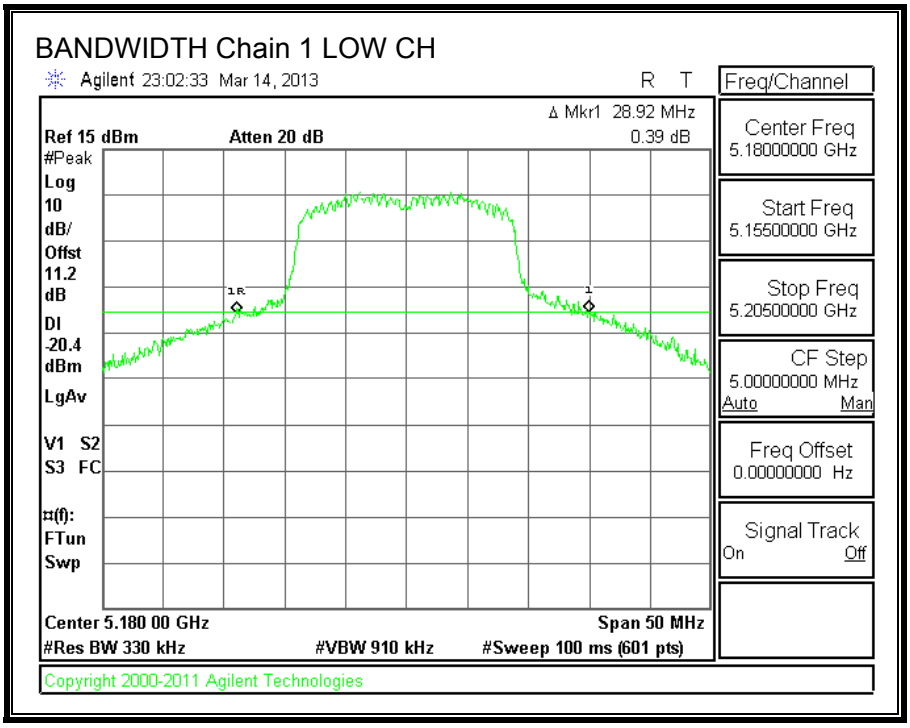



**26 dB BANDWIDTH, Chain 1**





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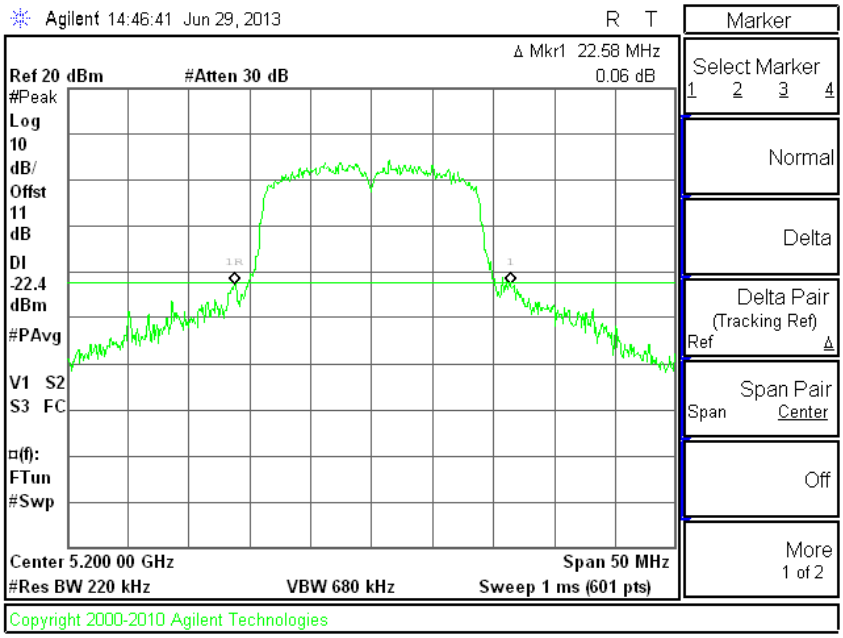
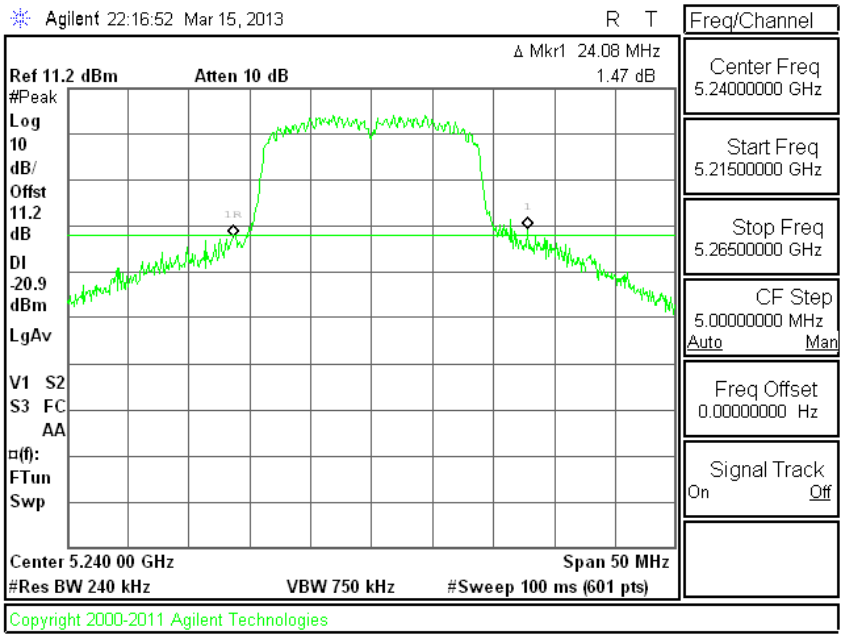
BANDWIDTH Chain 1 MID CH




BANDWIDTH Chain 1 HIGH CH





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### 8.3.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5180 | 17.5000 | 17.4836 |
| Mid | 5200 | 17.5928 | 17.4025 |
| High | 5240 | 17.4004 | 17.4057 |


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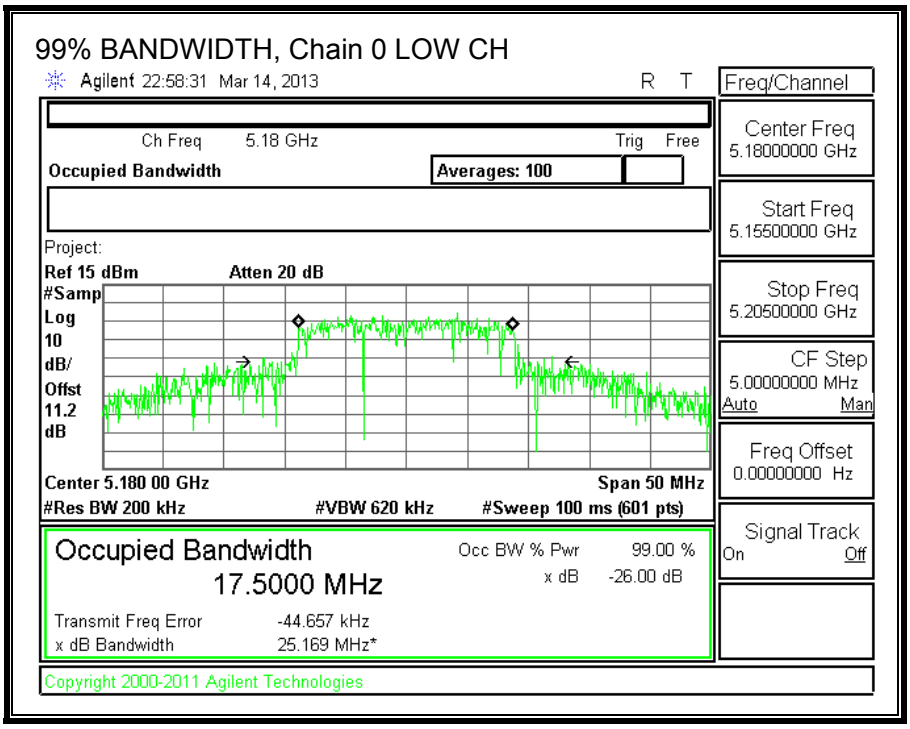
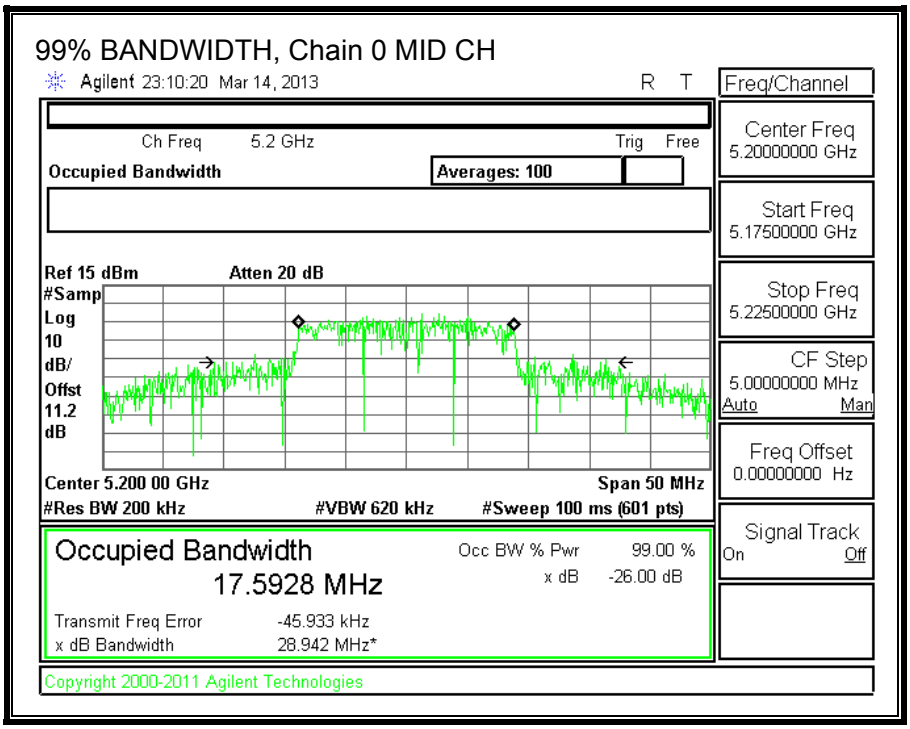
**99% BANDWIDTH, Chain 0**





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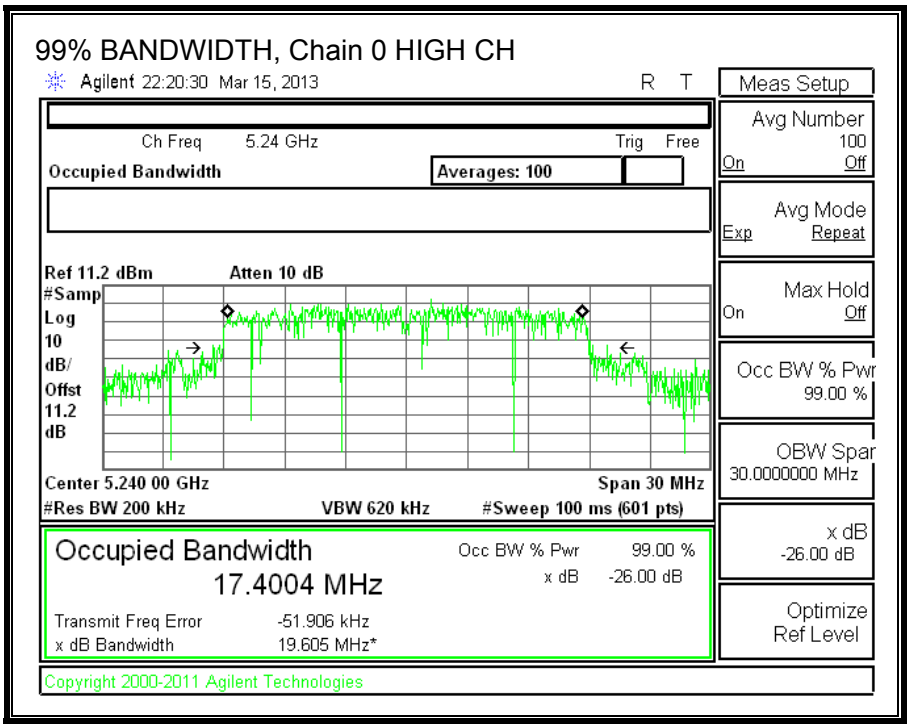
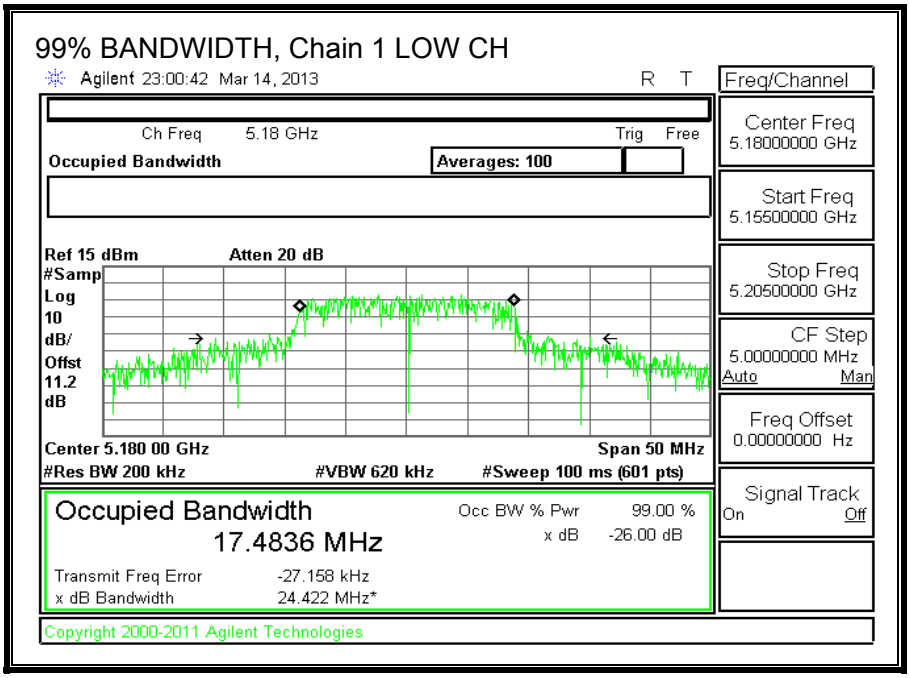



**99% BANDWIDTH, Chain 1**





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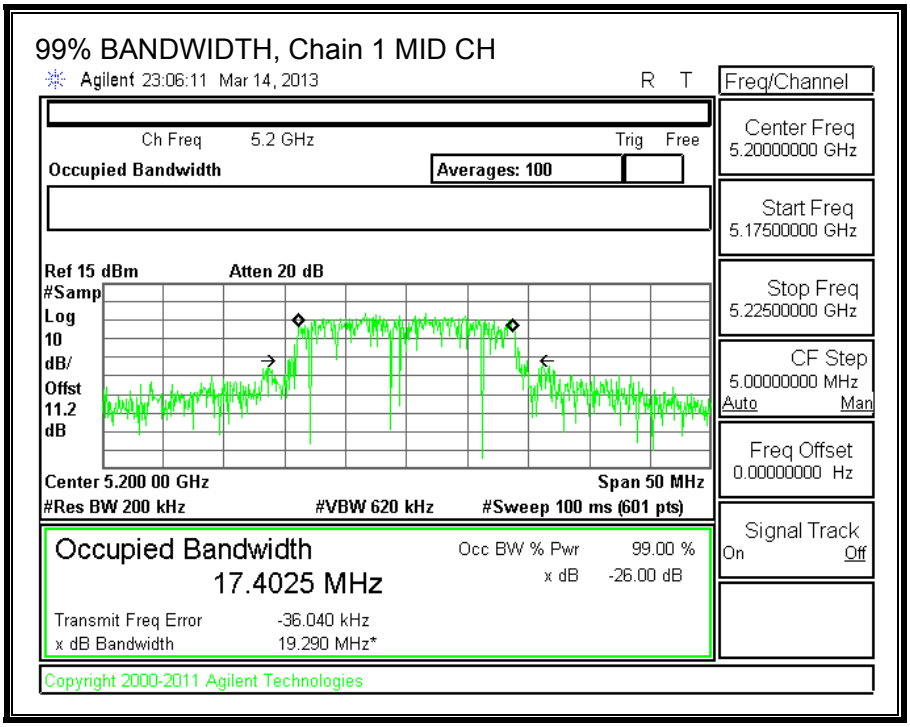


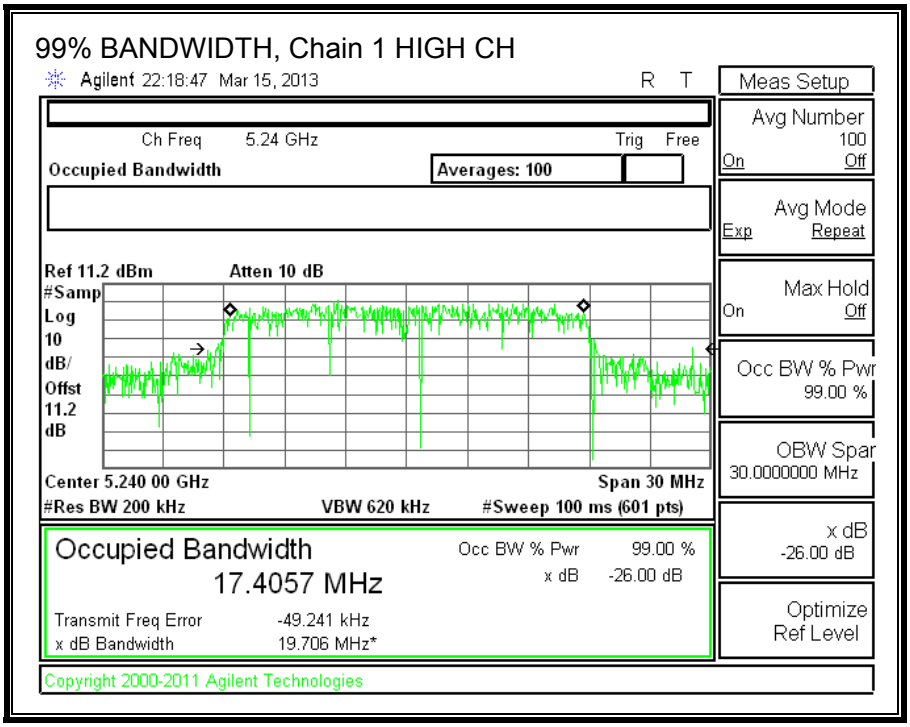



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### 8.3.1. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5180 | 12.00 | 12.60 | 15.32 |
| Mid | 5200 | 12.10 | 12.70 | 15.42 |
| High | 5240 | 12.00 | 12.70 | 15.37 |


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### 8.3.2. 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 the same for each chain. The directional gain is equal to the antenna gain.


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**RESULTS**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5180 | 28.92 | 17.4826 | 4.00 |
| Mid | 5200 | 25.83 | 17.4025 | 4.00 |
| High | 5240 | 24.08 | 17.4004 | 4.00 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC EIRP Limit (dBm) | Max IC Power (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC eirp PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5180 | 17.00 | 22.43 | 18.43 | 17.00 | 4.00 | 10.00 | 4.00 |
| Mid | 5200 | 17.00 | 22.41 | 18.41 | 17.00 | 4.00 | 10.00 | 4.00 |
| High | 5240 | 17.00 | 22.41 | 18.41 | 17.00 | 4.00 | 10.00 | 4.00 |

| | | |
|---|---|---|
| **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) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5180 | 11.97 | 13.38 | 15.74 | 17.00 | -1.26 |
| Mid | 5200 | 12.11 | 13.54 | 15.89 | 17.00 | -1.11 |
| High | 5240 | 11.93 | 12.85 | 15.43 | 17.00 | -1.57 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5180 | -0.75 | 0.26 | 2.79 | 4.00 | -1.21 |
| Mid | 5200 | -0.62 | 0.37 | 2.91 | 4.00 | -1.09 |
| High | 5240 | -0.59 | 0.15 | 2.81 | 4.00 | -1.19 |


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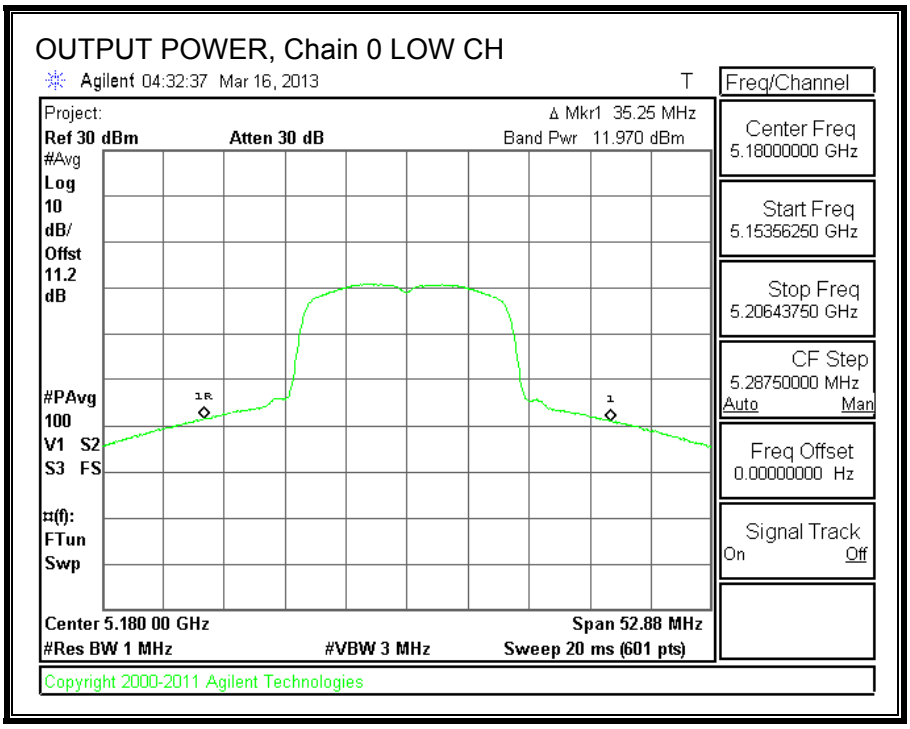
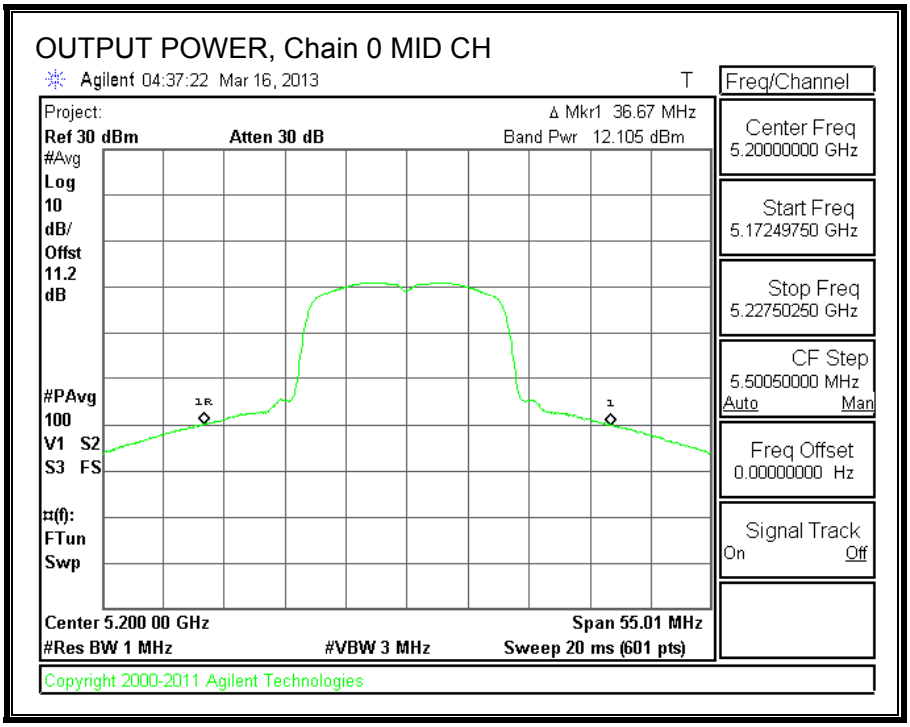
**OUTPUT POWER, Chain 0**





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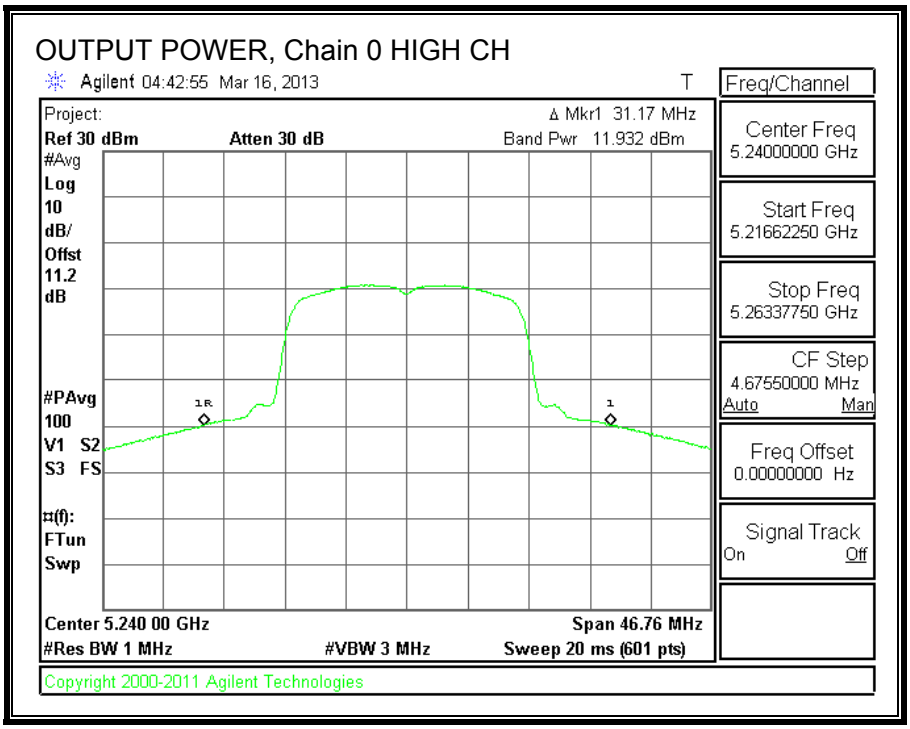
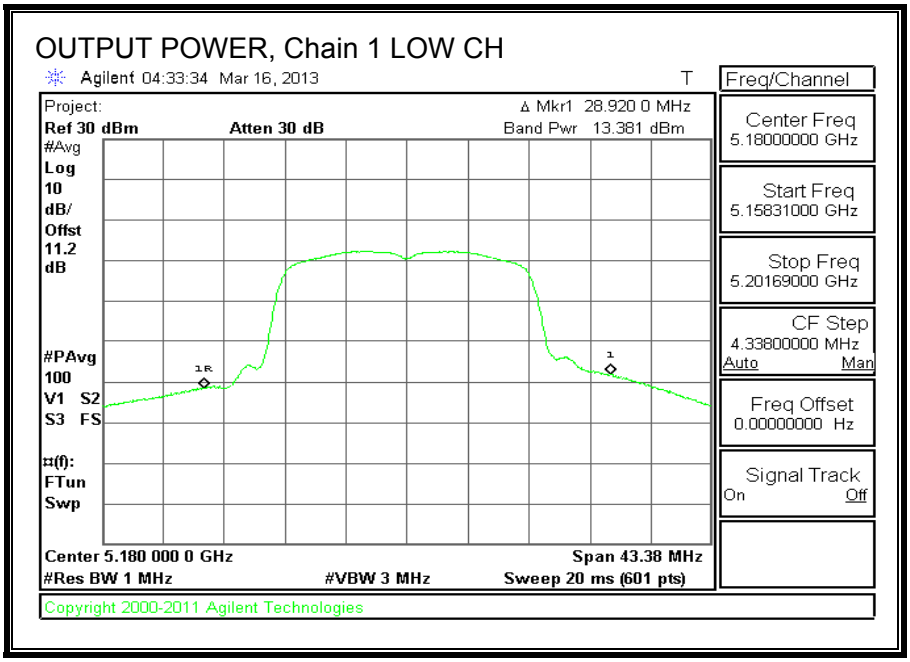



**OUTPUT POWER AND PPSD, Chain 1**





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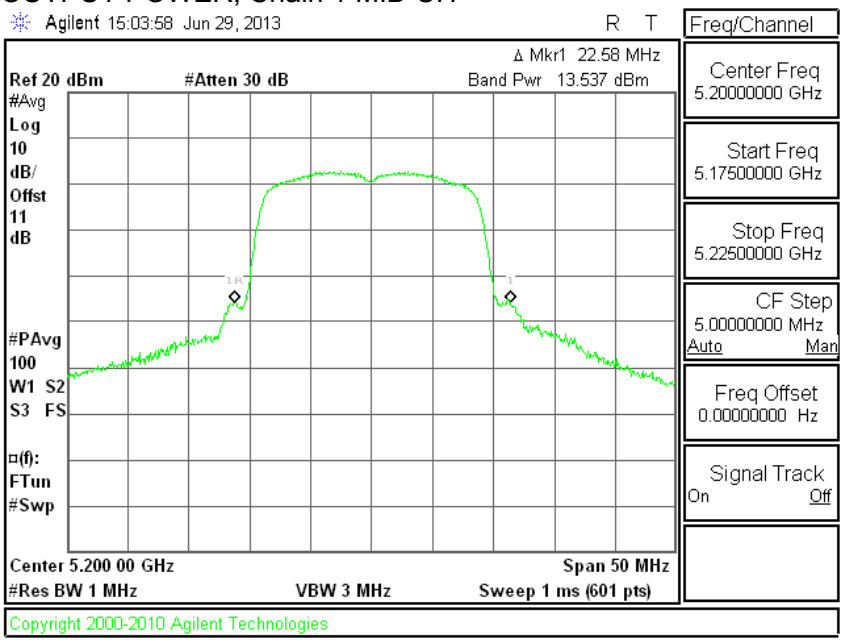
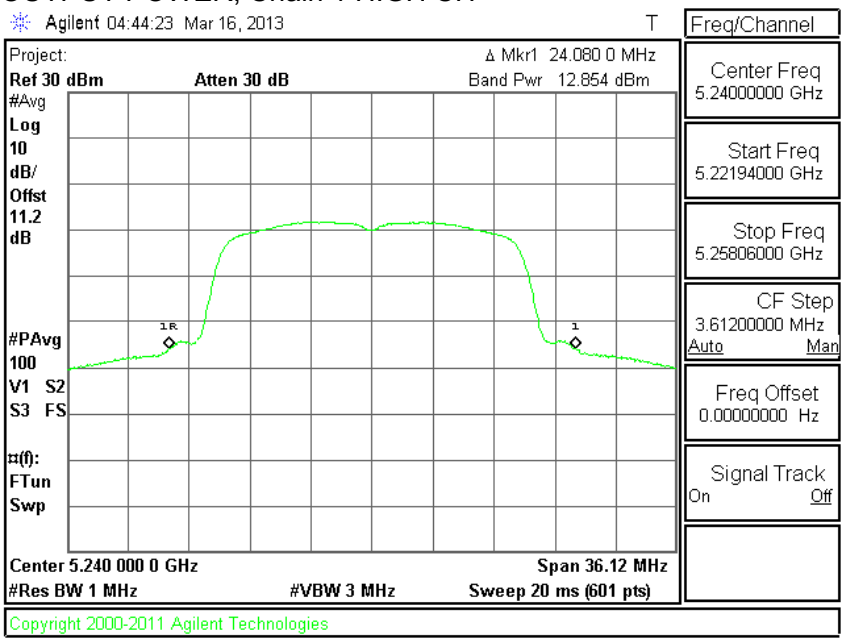
OUTPUT POWER, Chain 1 MID CH




OUTPUT POWER, Chain 1 HIGH CH





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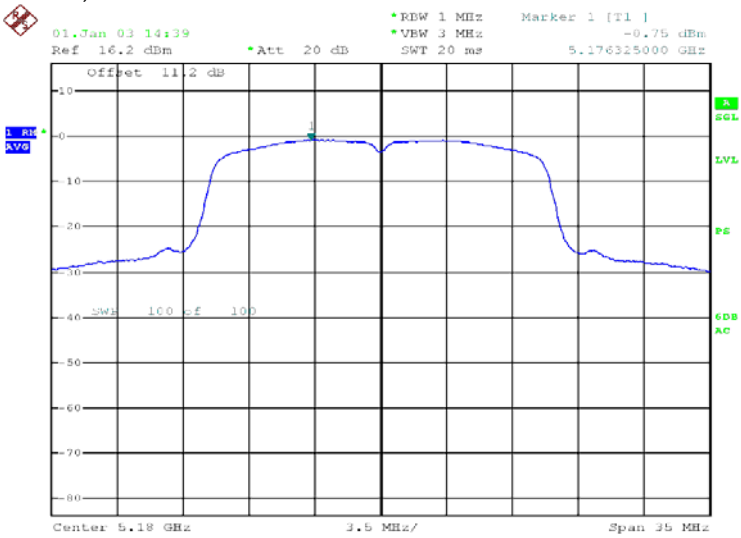
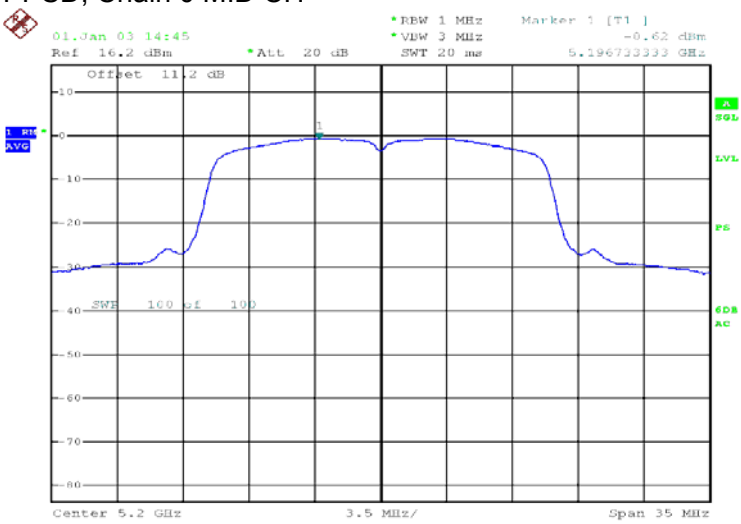
**PPSD, Chain 0**

PPSD, Chain 0 LOW CH




Date: 1.JAN.2003 14:39:38

PPSD, Chain 0 MID CH




Date: 1.JAN.2003 14:45:55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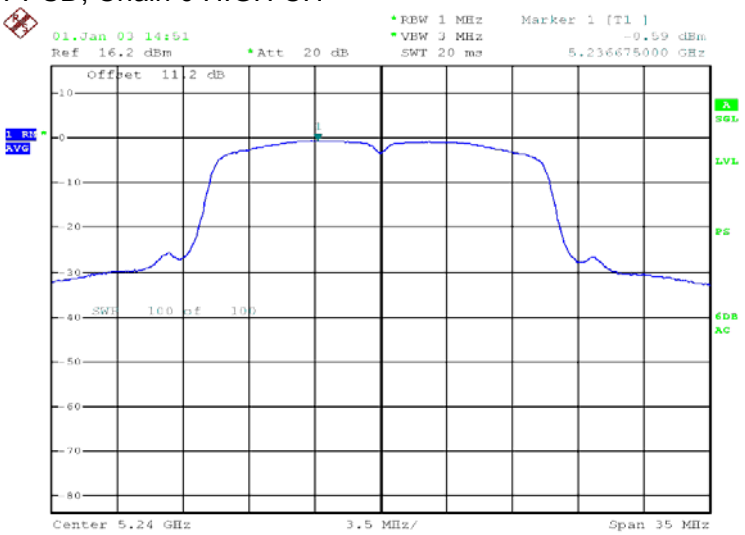
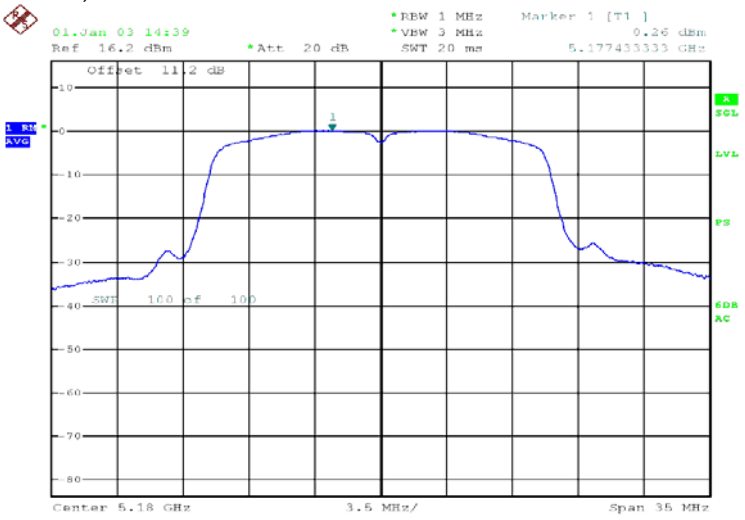
PPSD, Chain 0 HIGH CH




Date: 1.JAN.2003 14:51:48

**OUTPUT POWER AND PPSD, Chain 1**

PPSD, Chain 1 LOW CH




Date: 1.JAN.2003 14:39:10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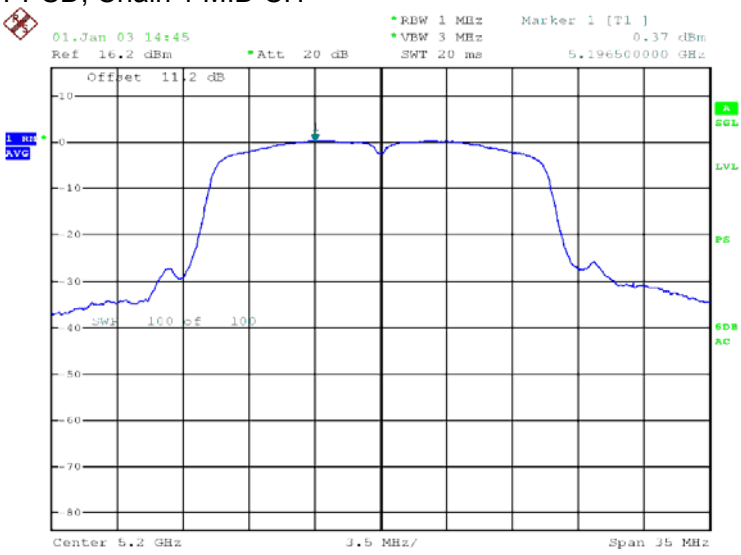
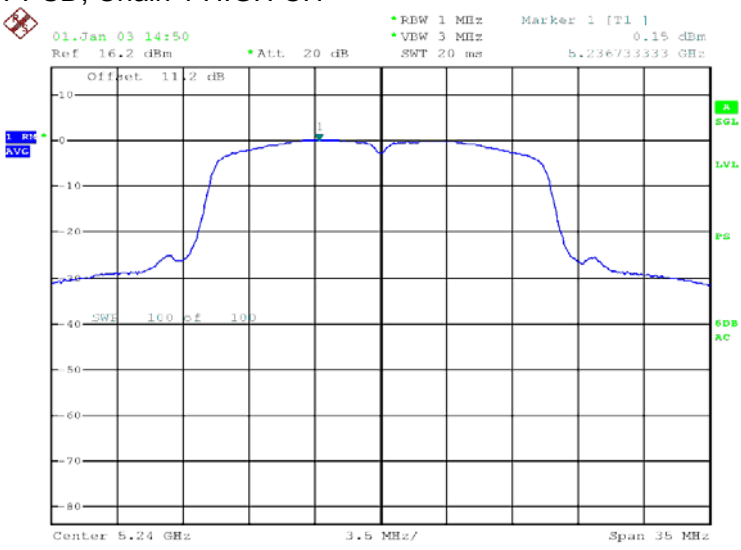
PPSD, Chain 1 MID CH




PPSD, Chain 1 HIGH CH





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### 8.3.1. PEAK EXCURSION

**LIMITS**

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

**RESULTS**

Chain 0

| Channel | Frequency (MHz) | PK Level (dBm) | PSD (dBm) | DCCF (dB) | Peak Excursion (dB) | Limit (dB) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5200 | 7.99 | -0.62 | 0.00 | 8.61 | 13 | -4.39 |

Chain 1

| Channel | Frequency (MHz) | PK Level (dBm) | PSD (dBm) | DCCF (dB) | Peak Excursion (dB) | Limit (dB) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5200 | 9.50 | 0.37 | 0.00 | 9.13 | 13 | -3.87 |


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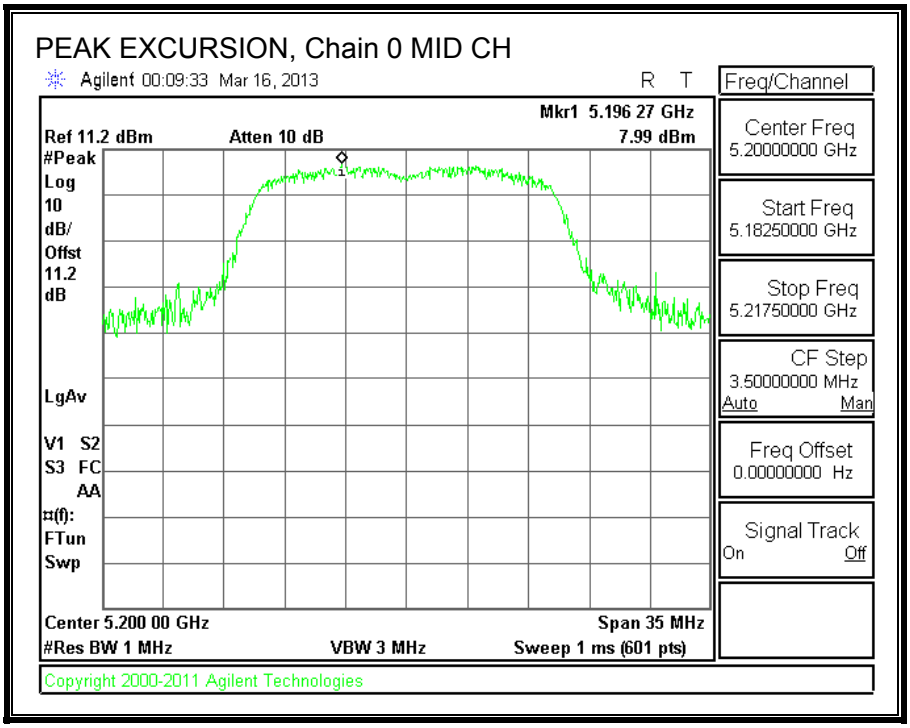
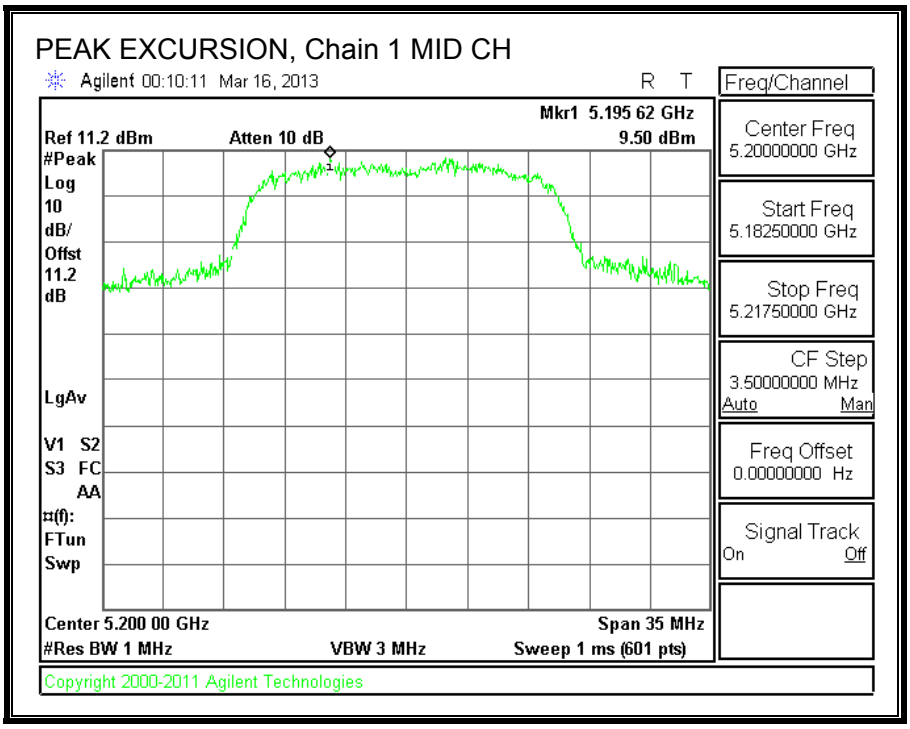
**PEAK EXCURSION, Chain 0**




**PEAK EXCURSION, Chain 1**





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## 8.4. 802.11n HT40 CDD MCS0 2TX MODE IN THE 5.2 GHz BAND

### 8.4.1. 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) |
|---|---|---|---|
| Low | 5190 | 82.98 | 82.55 |
| High | 5230 | 67.17 | 59.15 |


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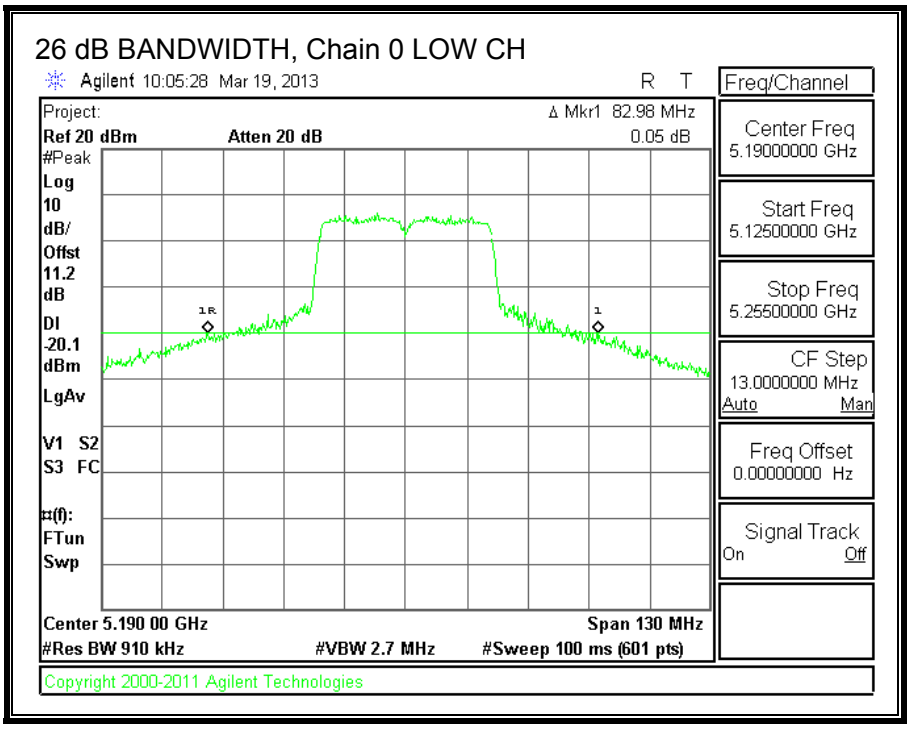
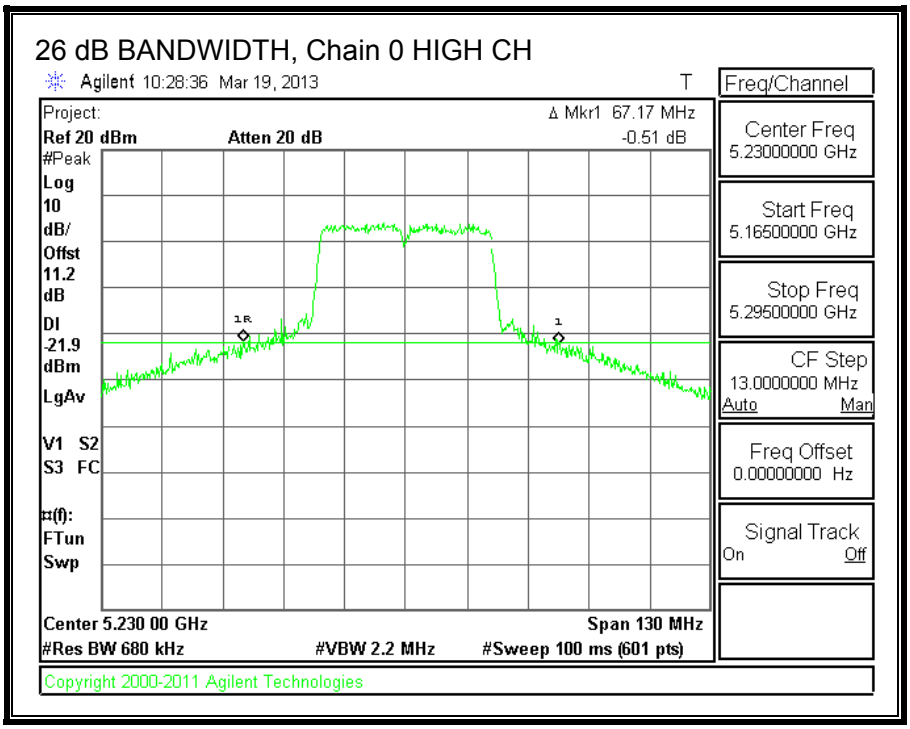
**26 dB BANDWIDTH, Chain 0**





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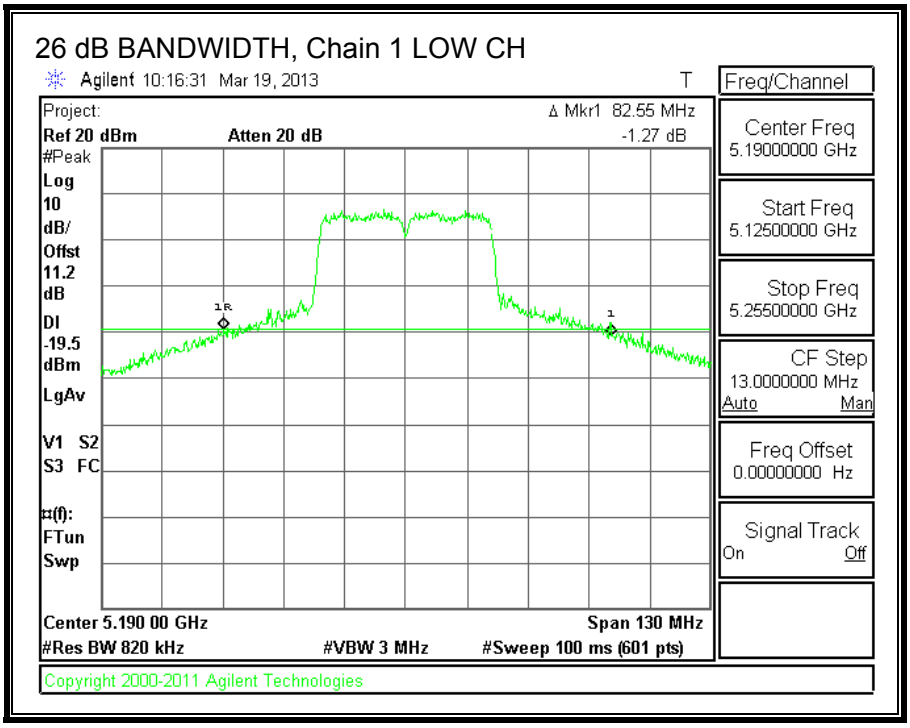
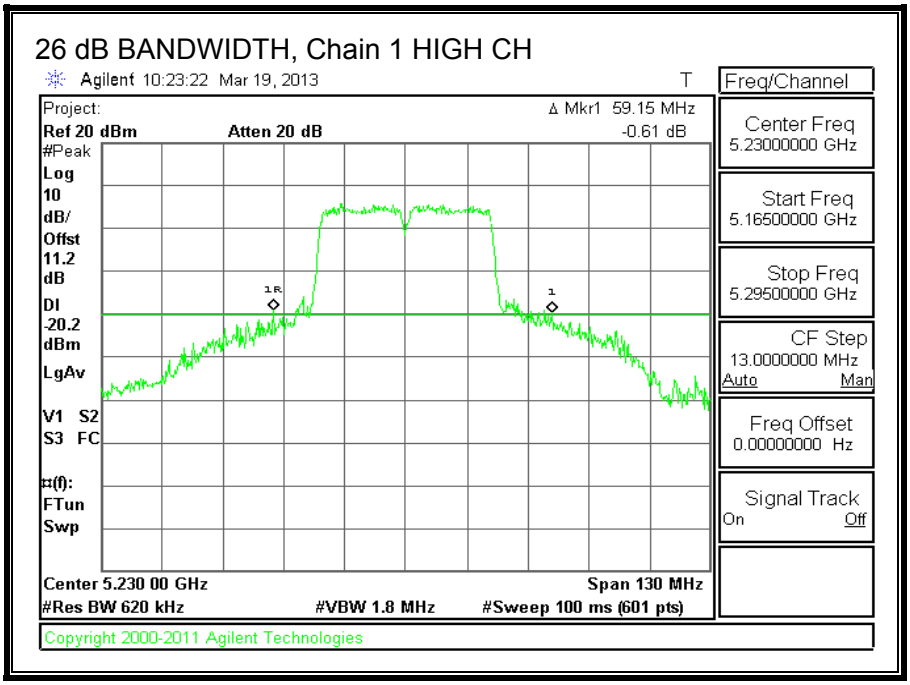
**26 dB BANDWIDTH, Chain 1**





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### 8.4.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5190 | 36.2764 | 36.4047 |
| High | 5230 | 36.2402 | 36.1612 |


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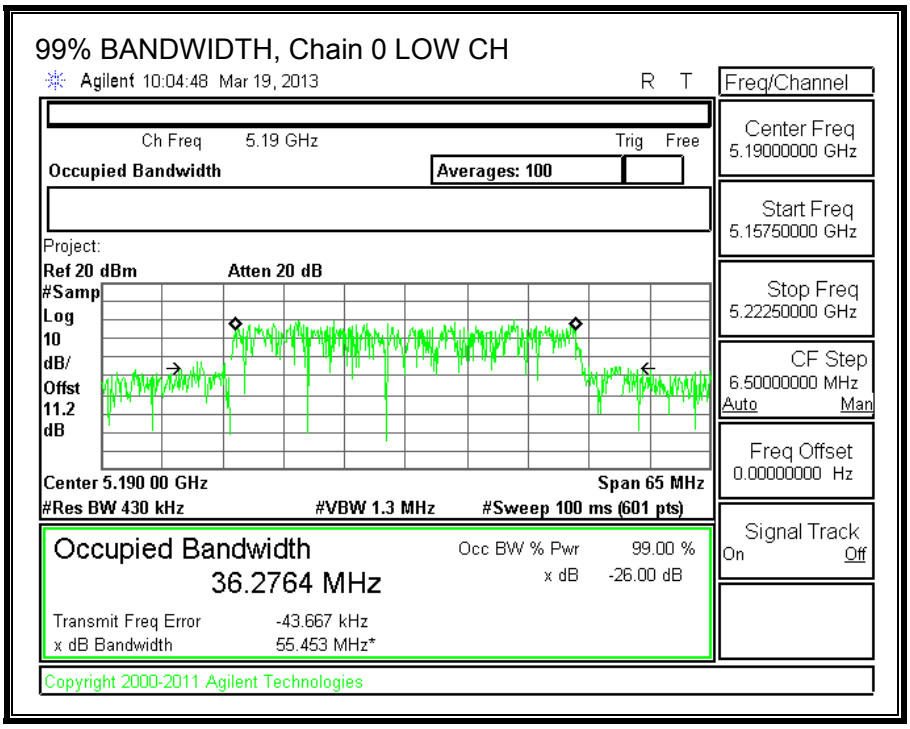
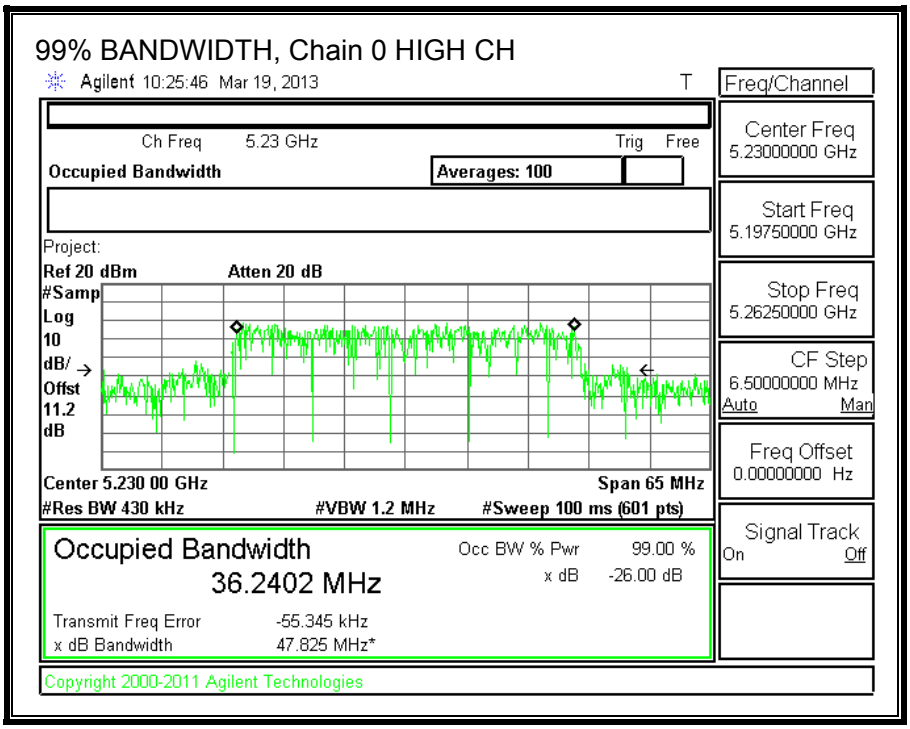
**99% BANDWIDTH, Chain 0**





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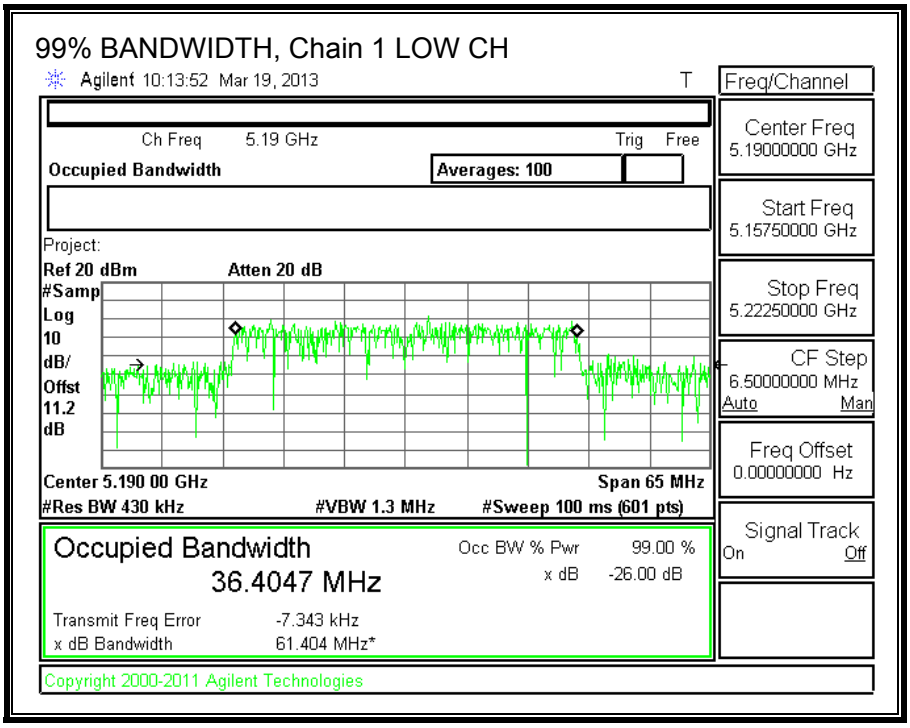
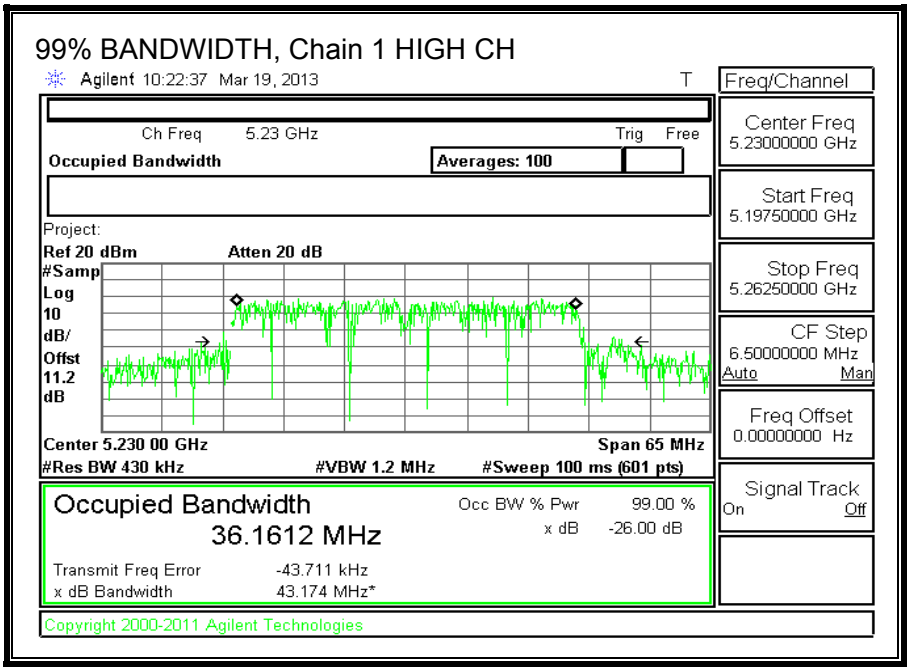
**99% BANDWIDTH, Chain 1**





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### 8.4.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5190 | 12.67 | 13.24 | 15.97 |
| High | 5230 | 12.69 | 13.12 | 15.92 |


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### 8.4.4. 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**

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

For PPSD, the TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

| Antenna Gain (dBi) | 10 * Log (2 chains) (dB) | Correlated Chains Directional Gain (dBi) |
|---|---|---|
| 4.00 | 3.01 | 7.01 |


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**RESULTS**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Uncorrelated Directional Gain (dBi) | Correlated Directional Gain (dBi) |
|---|---|---|---|---|---|
| Low | 5190 | 82.55 | 36.2764 | 4.00 | 7.01 |
| High | 5230 | 59.15 | 36.1612 | 4.00 | 7.01 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC EIRP Limit (dBm) | Max IC Power (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC eirp PSD Limit (dBm) |
|---|---|---|---|---|---|---|---|
| Low | 5190 | 17.00 | 23.00 | 19.00 | 17.00 | 2.99 | 10.00 |
| High | 5230 | 17.00 | 23.00 | 19.00 | 17.00 | 2.99 | 10.00 |

| 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) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5190 | 12.628 | 13.032 | 15.84 | 17.00 | -1.16 |
| High | 5230 | 12.832 | 13.095 | 15.98 | 17.00 | -1.02 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5190 | -4.11 | -3.64 | -0.86 | 2.99 | -3.85 |
| High | 5230 | -3.76 | -3.54 | -0.64 | 2.99 | -3.63 |


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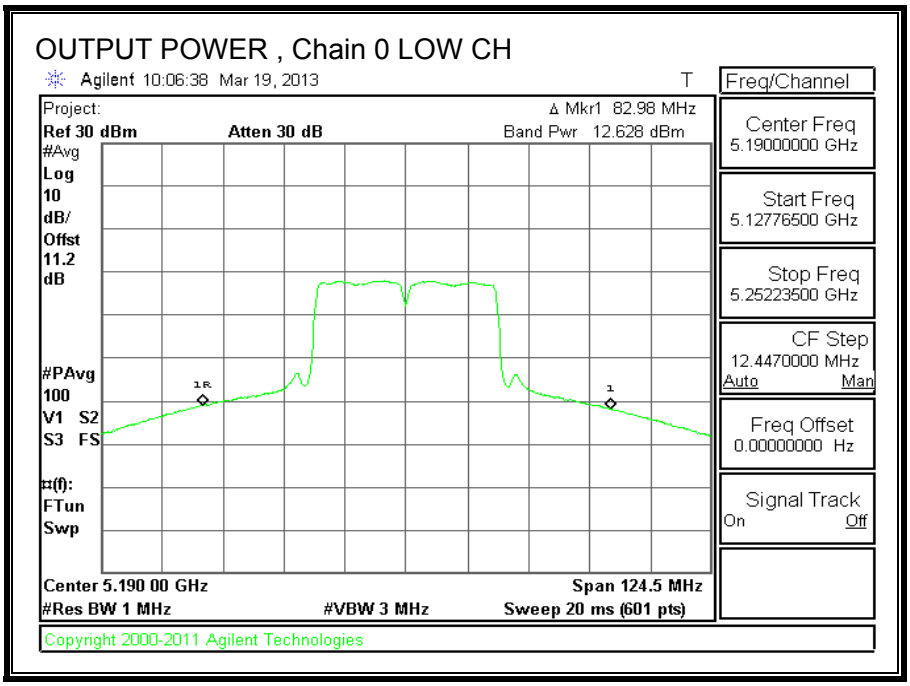
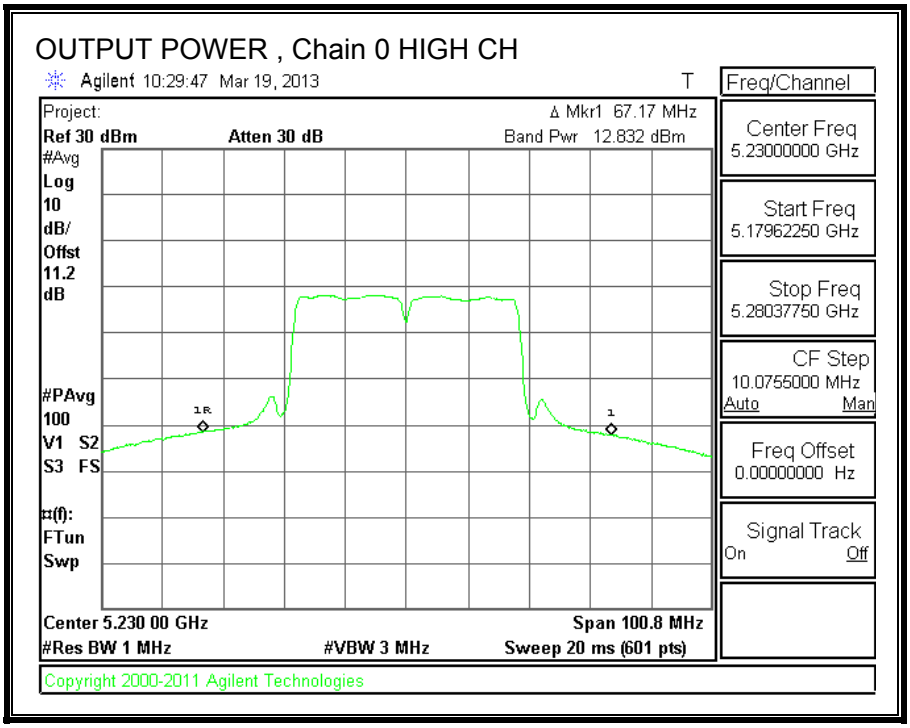
**OUTPUT POWER, Chain 0**





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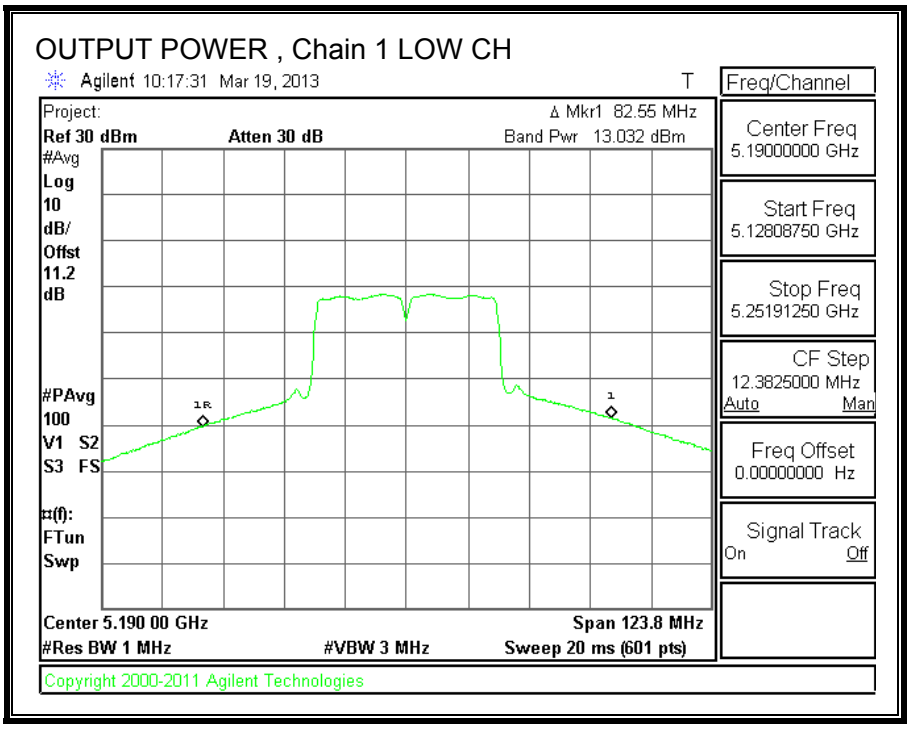
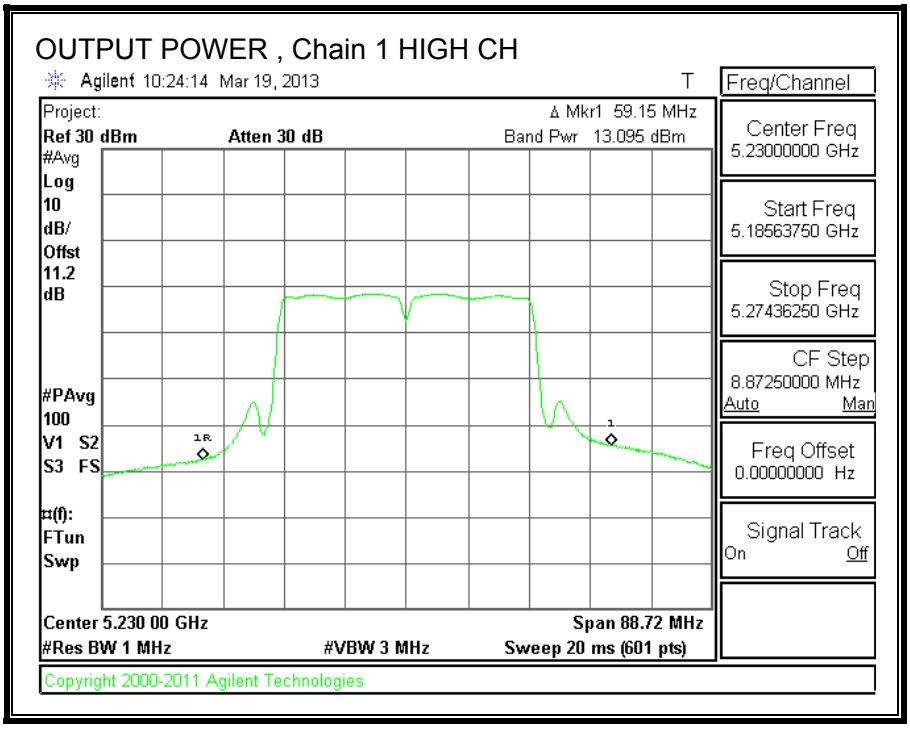
**OUTPUT POWER, Chain 1**





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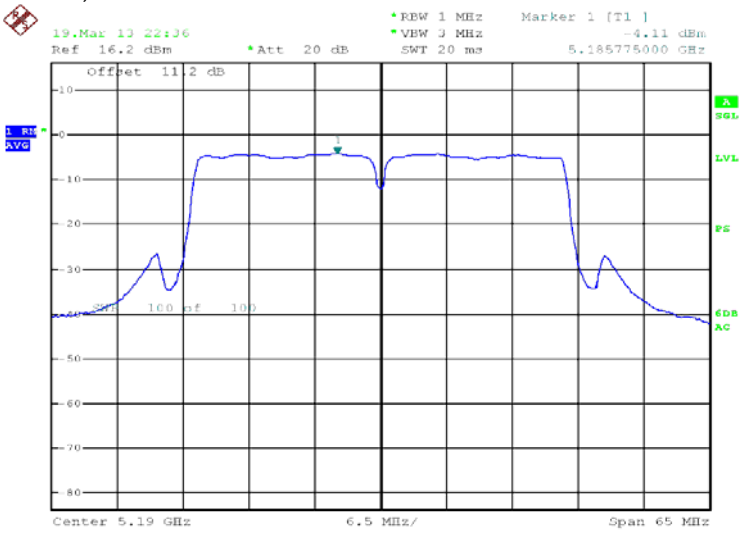
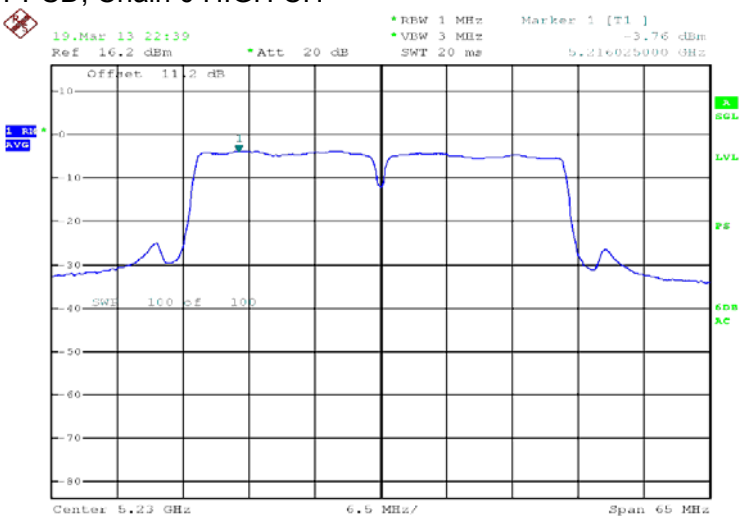
**PPSD, Chain 0**

PPSD, Chain 0 LOW CH




Date: 19.MAR.2013 22:36:30

PPSD, Chain 0 HIGH CH




Date: 19.MAR.2013 22:39:29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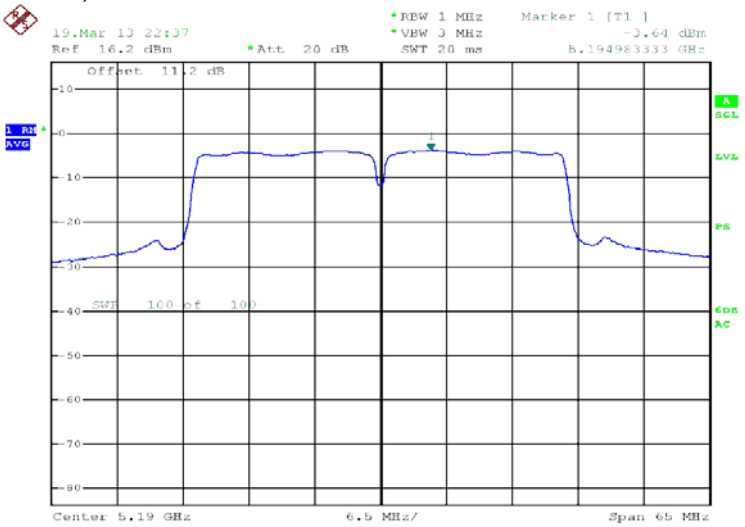
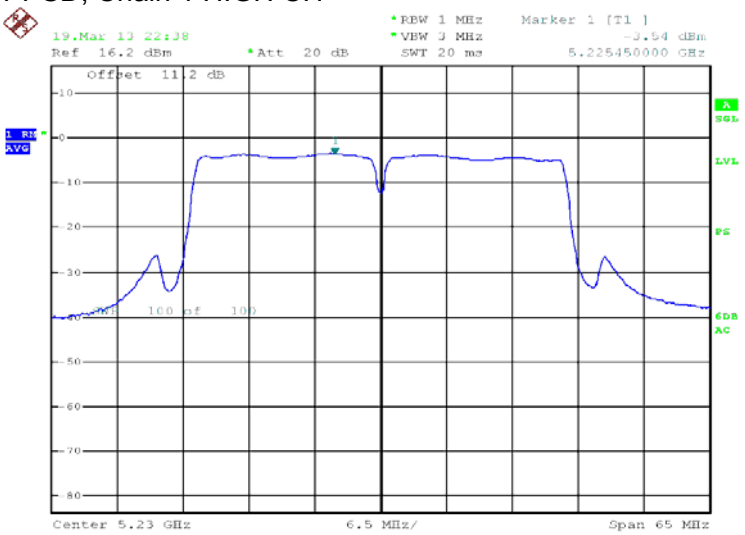
**PPSD, Chain 1**

PPSD, Chain 1 LOW CH




PPSD, Chain 1 HIGH CH





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### 8.4.5. PEAK EXCURSION

**LIMITS**

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

**RESULTS**

Chain 0

| Channel | Frequency (MHz) | PK Level (dBm) | PSD (dBm) | DCCF (dB) | Peak Excursion (dB) | Limit (dB) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5190 | 7.62 | -4.11 | 0.00 | 11.73 | 13 | -1.27 |

Chain 1

| Channel | Frequency (MHz) | PK Level (dBm) | PSD (dBm) | DCCF (dB) | Peak Excursion (dB) | Limit (dB) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5190 | 7.82 | -3.64 | 0.00 | 11.46 | 13 | -1.54 |


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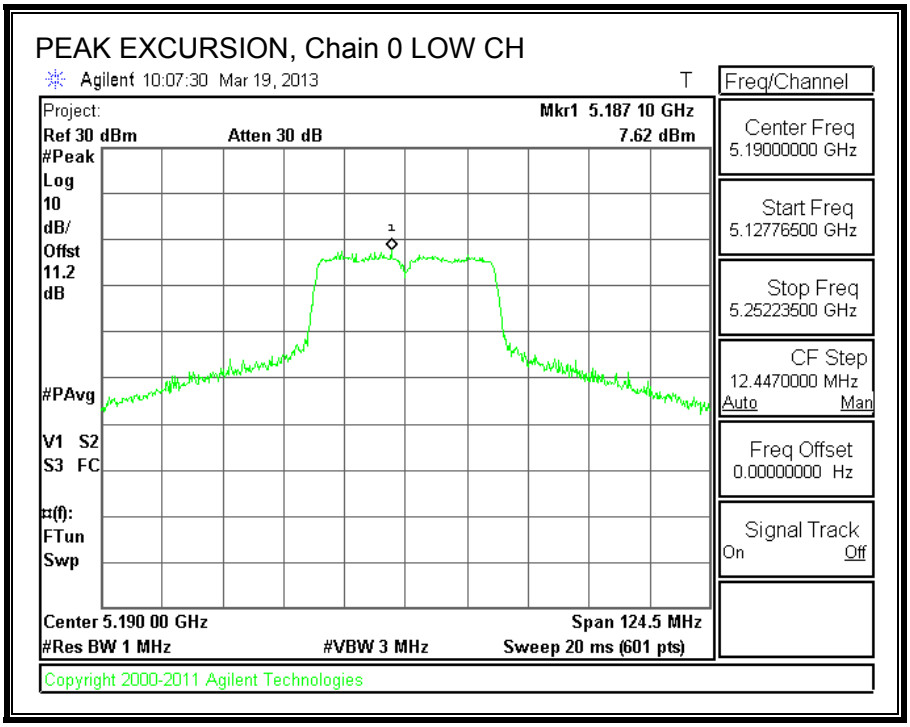
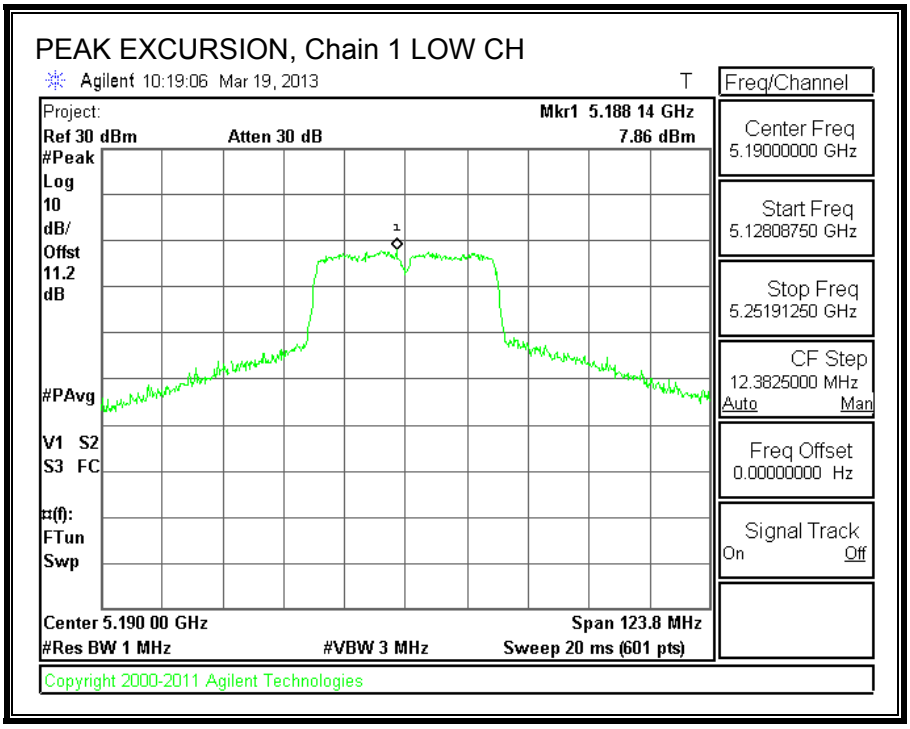
**PEAK EXCURSION, Chain 0**




**PEAK EXCURSION, Chain 1**





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## 8.5. 802.11n HT40 SDM MCS8 2TX MODE IN THE 5.2 GHz BAND

### 8.5.1. 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) |
|---|---|---|---|
| Low | 5190 | 48.97 | 51.17 |
| High | 5230 | 74.53 | 46.15 |


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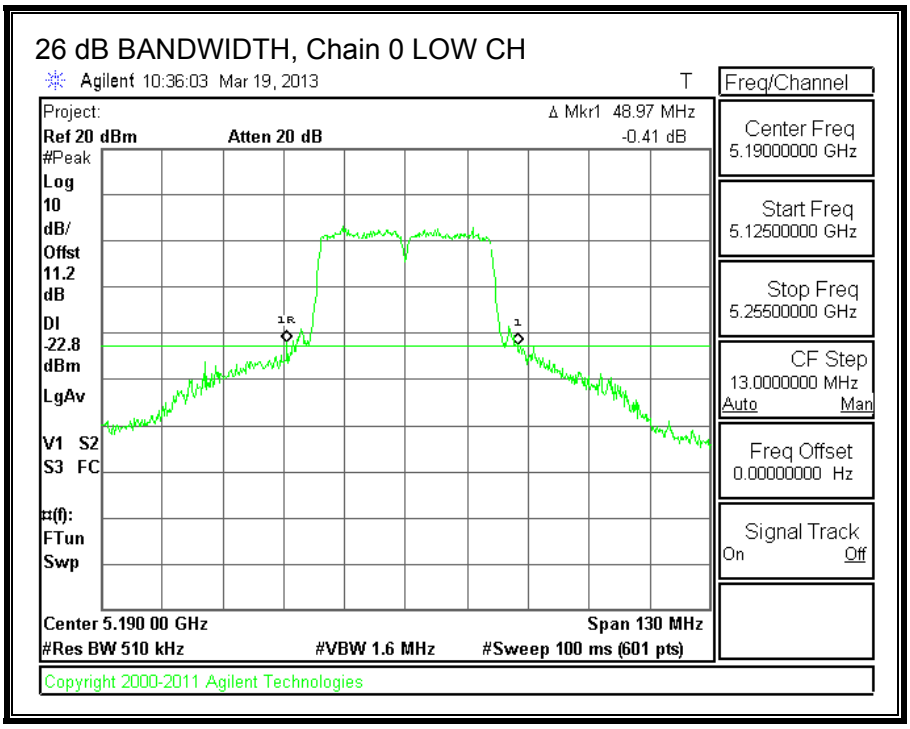
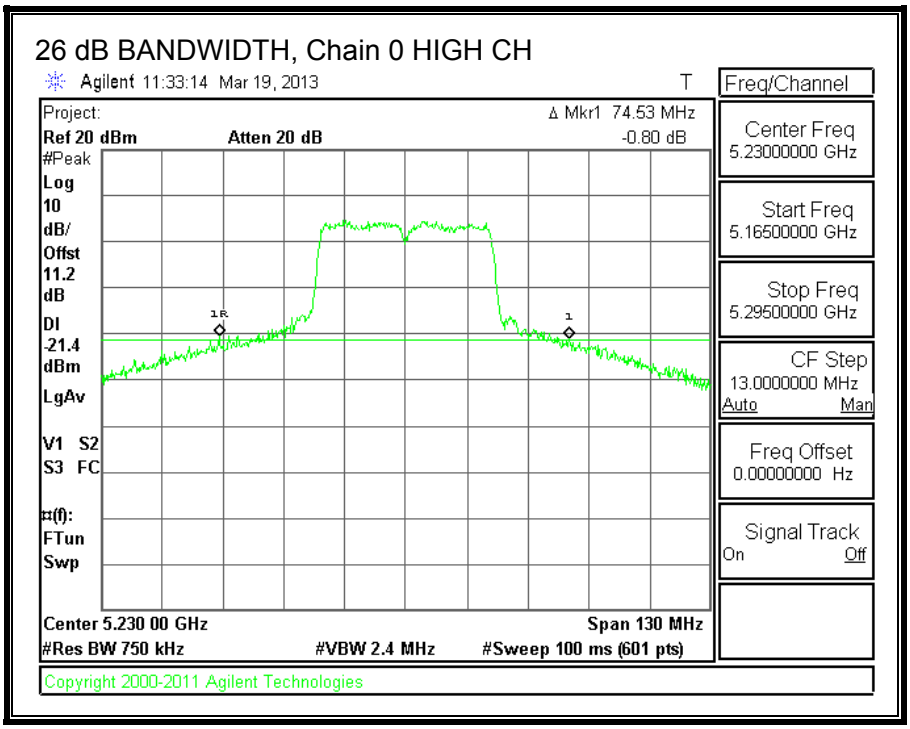
**26 dB BANDWIDTH, Chain 0**





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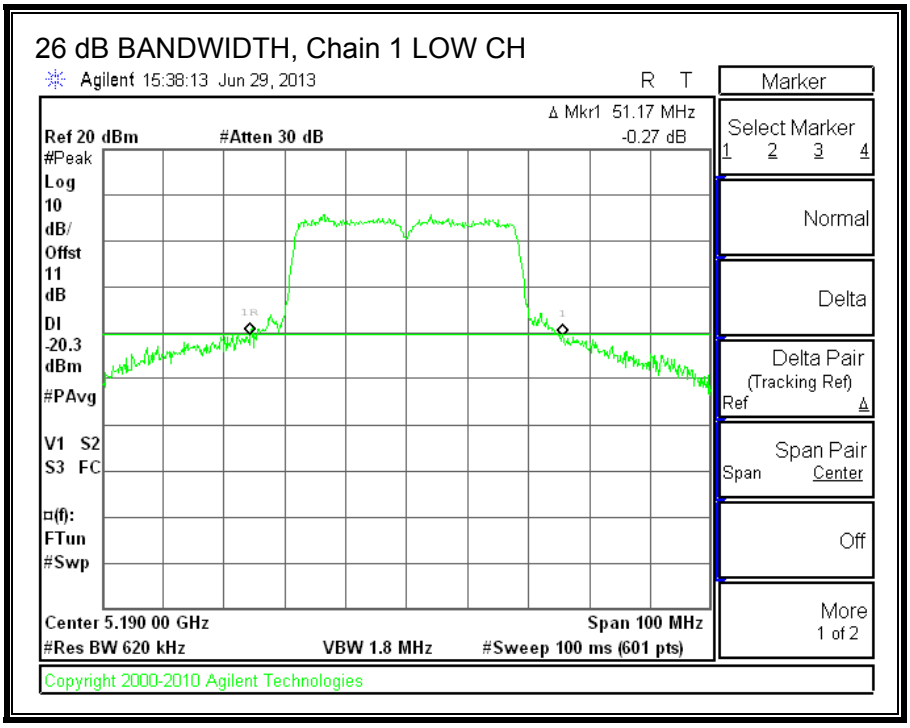
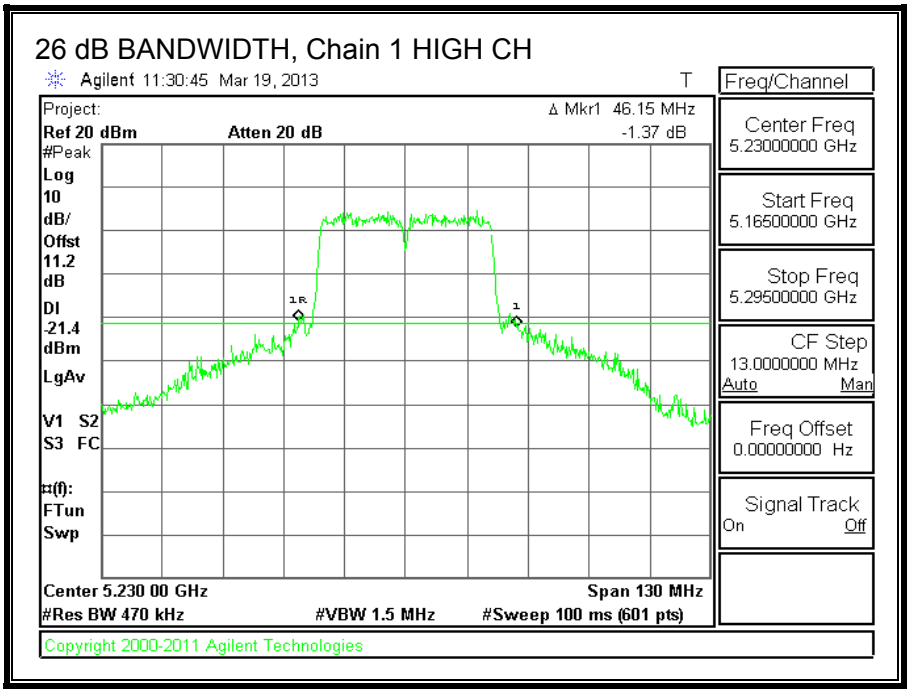
**26 dB BANDWIDTH, Chain 1**





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### 8.5.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5190 | 36.1932 | 36.4017 |
| High | 5230 | 36.2528 | 36.1496 |


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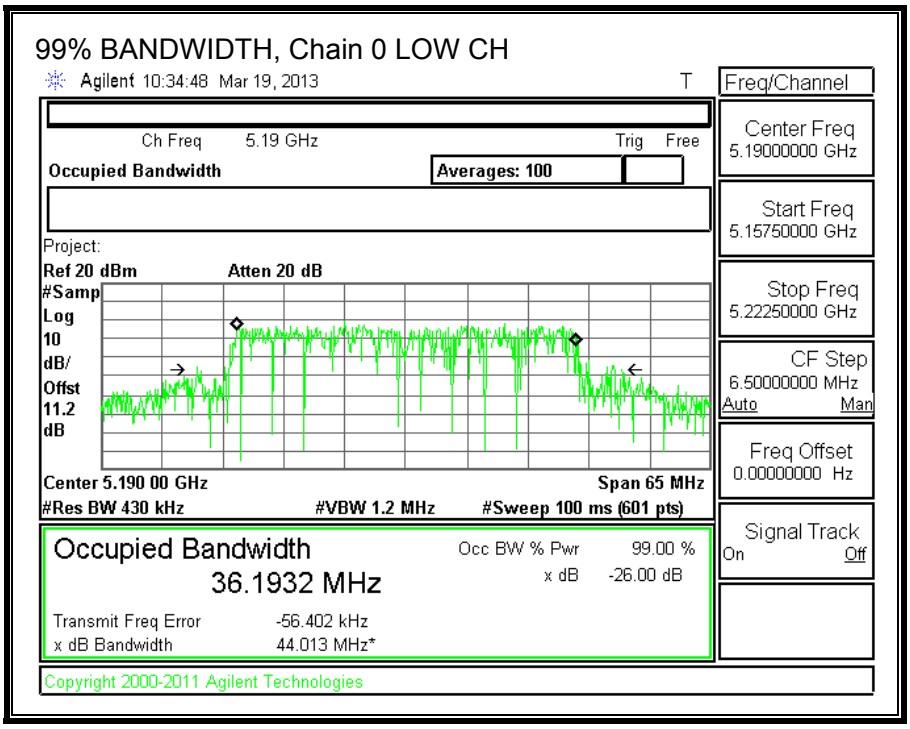
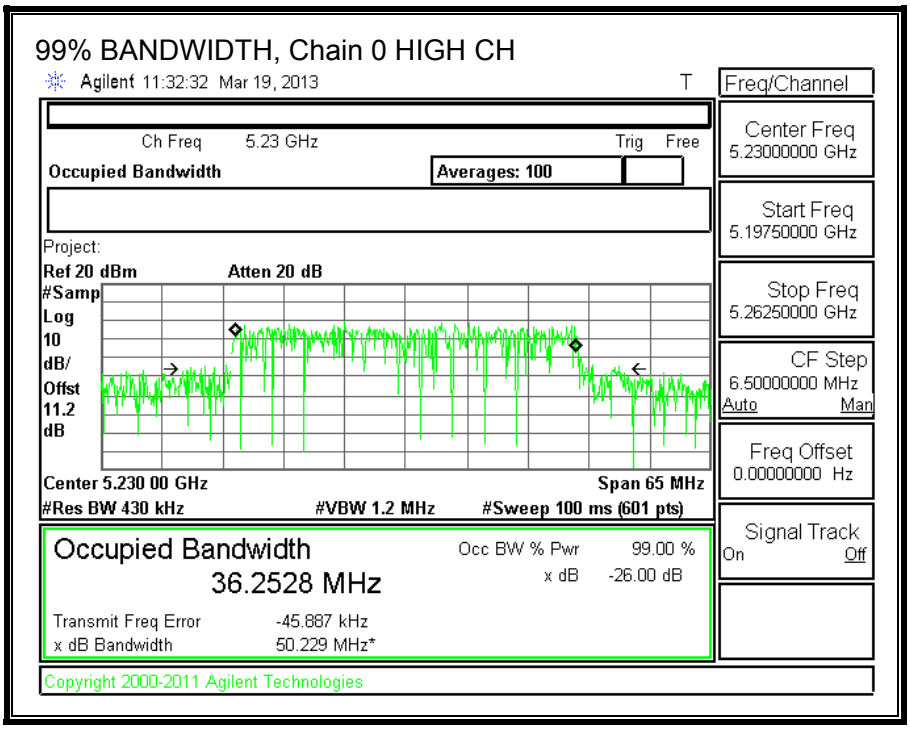
**99% BANDWIDTH, Chain 0**





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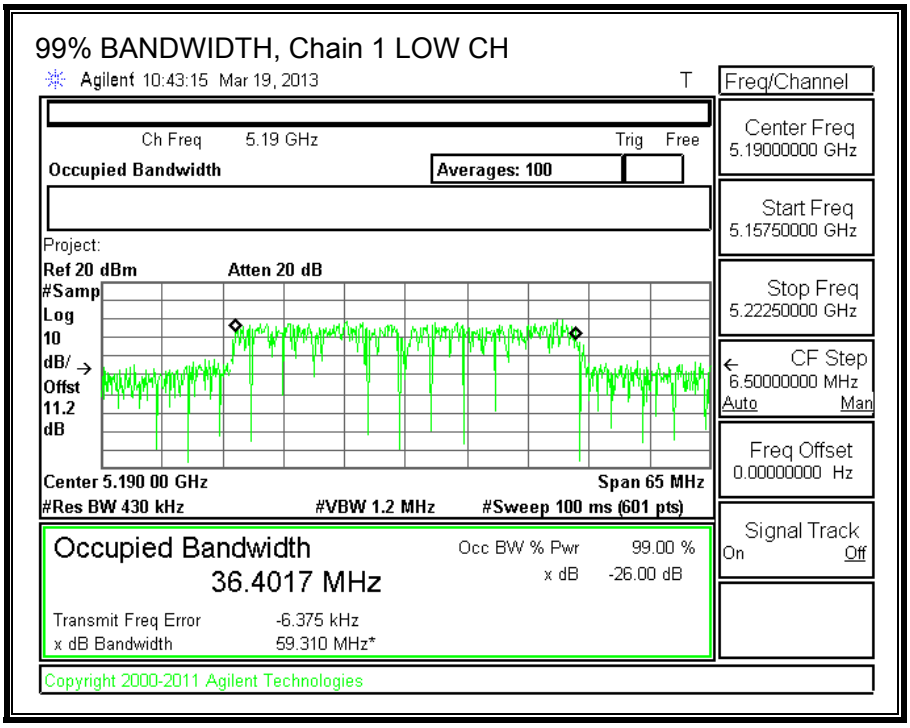
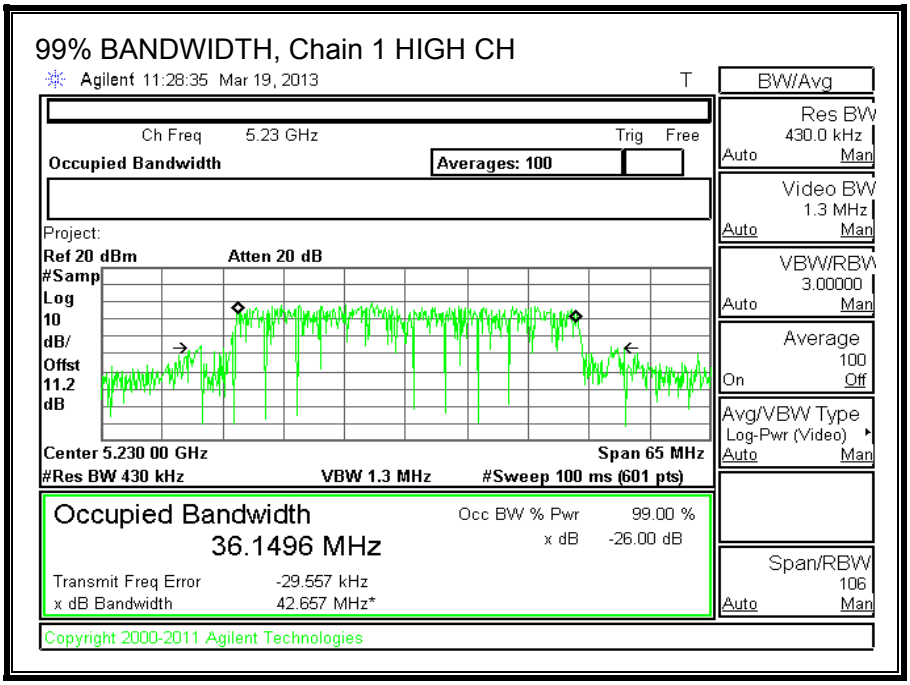
**99% BANDWIDTH, Chain 1**





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### 8.5.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5190 | 12.86 | 13.03 | 15.96 |
| High | 5230 | 12.80 | 13.21 | 16.02 |


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### 8.5.4. 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 the same for each chain. The directional gain is equal to the antenna gain.


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**RESULTS**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5190 | 48.97 | 36.1932 | 4.00 |
| High | 5230 | 46.15 | 36.1496 | 4.00 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC EIRP Limit (dBm) | Max IC Power (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC eirp PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Low | 5190 | 17.00 | 23.00 | 19.00 | 17.00 | 4.00 | 10.00 | 4.00 |
| High | 5230 | 17.00 | 23.00 | 19.00 | 17.00 | 4.00 | 10.00 | 4.00 |

| | | |
|---|---|---|
| **Duty Cycle CF (dB)** | 0.11 | **Included in Calculations of Corr'd Power & PPSD** |

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5190 | 12.295 | 12.958 | 15.76 | 17.00 | -1.24 |
| High | 5230 | 12.333 | 12.875 | 15.73 | 17.00 | -1.27 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5190 | -4.17 | -3.57 | -0.74 | 4.00 | -4.74 |
| High | 5230 | -4.19 | -3.71 | -0.82 | 4.00 | -4.82 |


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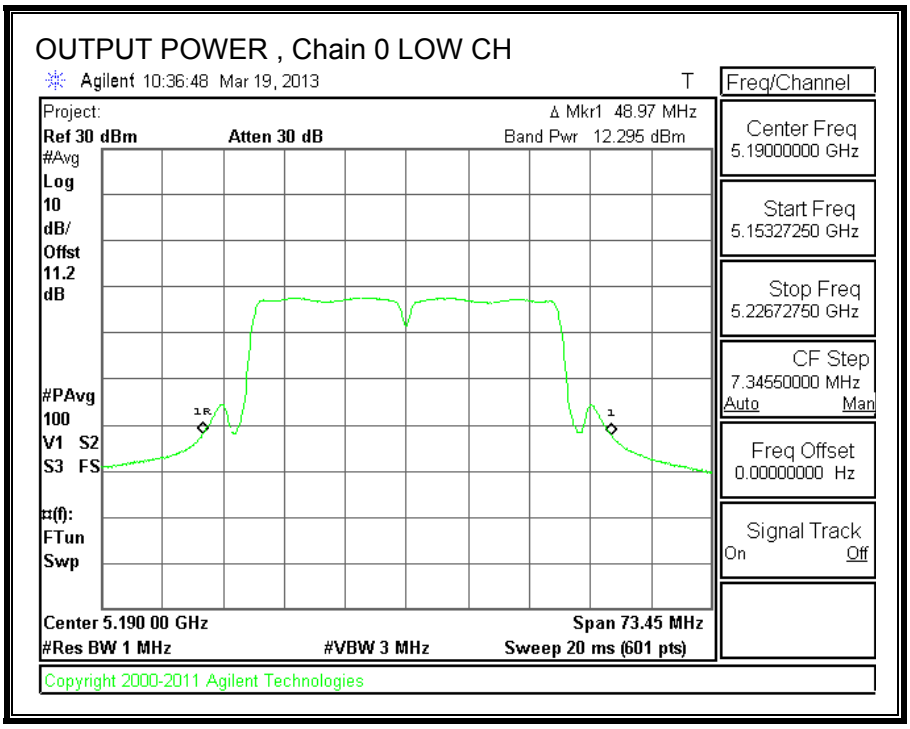
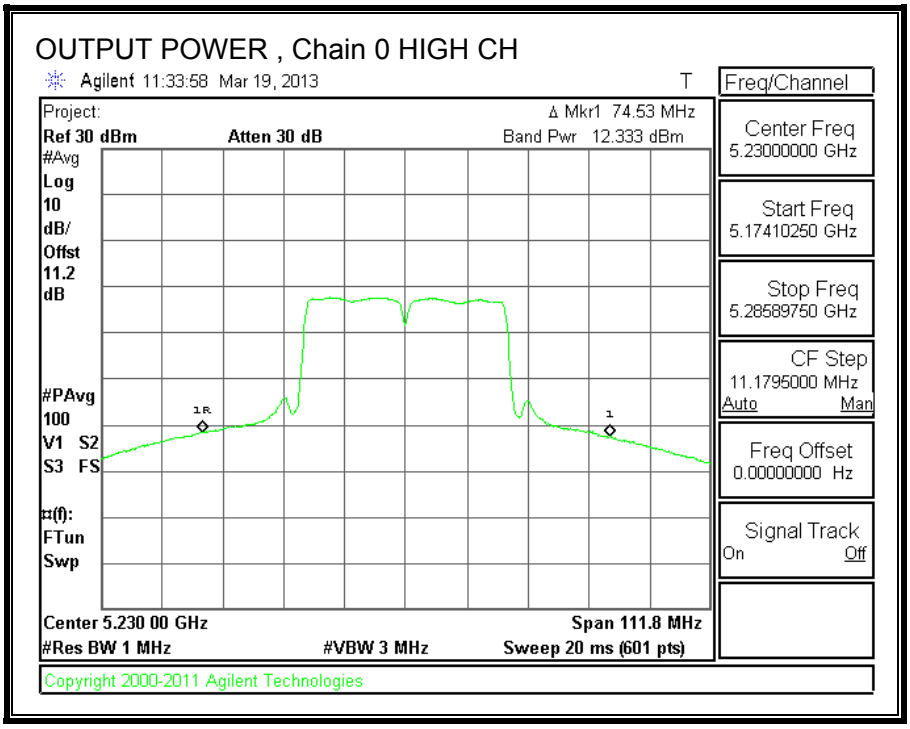
**OUTPUT POWER, Chain 0**





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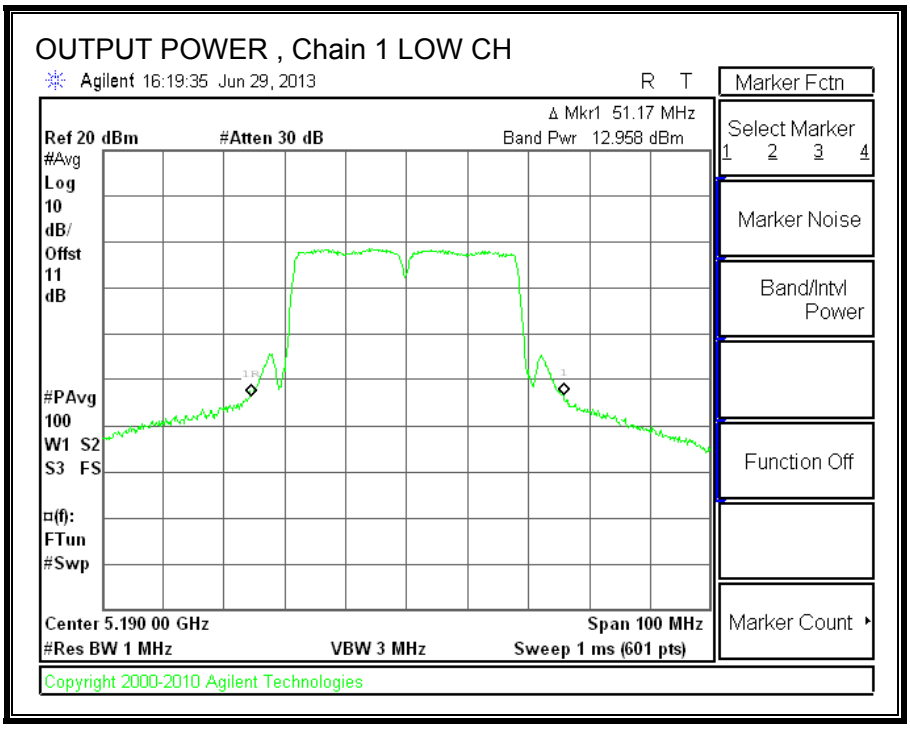
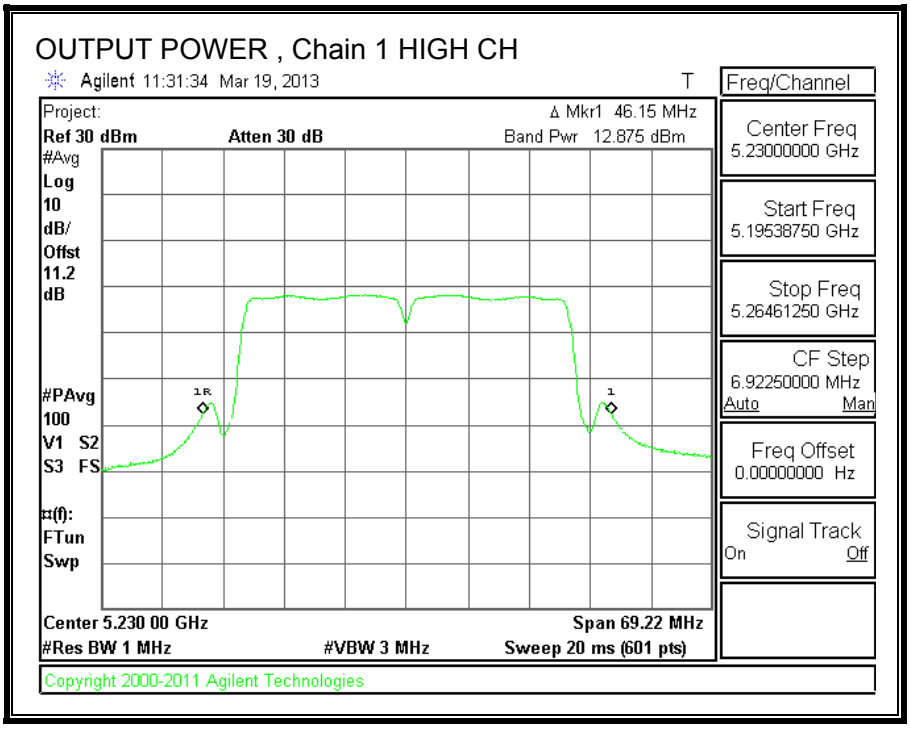
**OUTPUT POWER, Chain 1**





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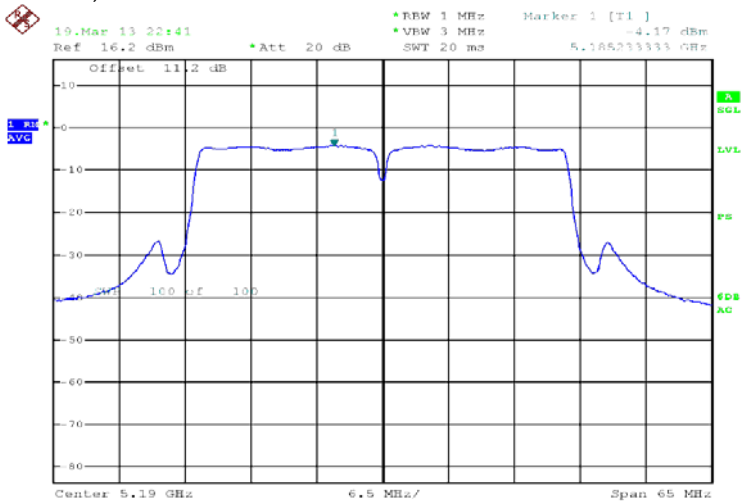
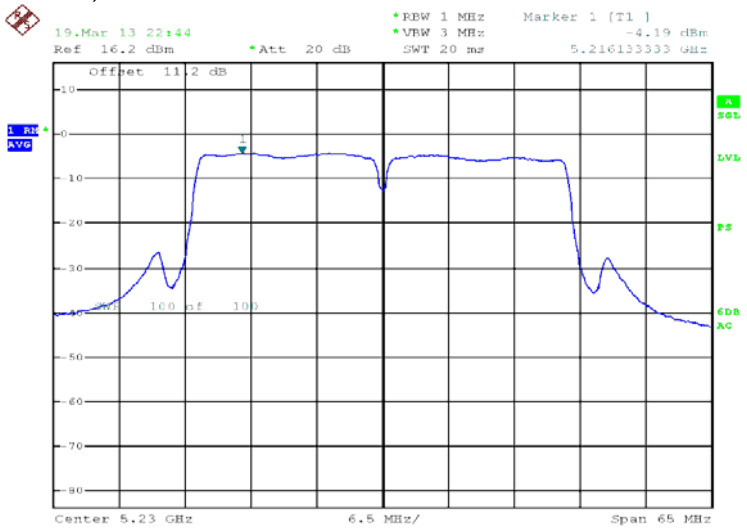
**PPSD, Chain 0**

PPSD , Chain 0 LOW CH




Date: 19.MAR.2013 22:41:30

PPSD , Chain 0 HIGH CH




Date: 19.MAR.2013 22:44:11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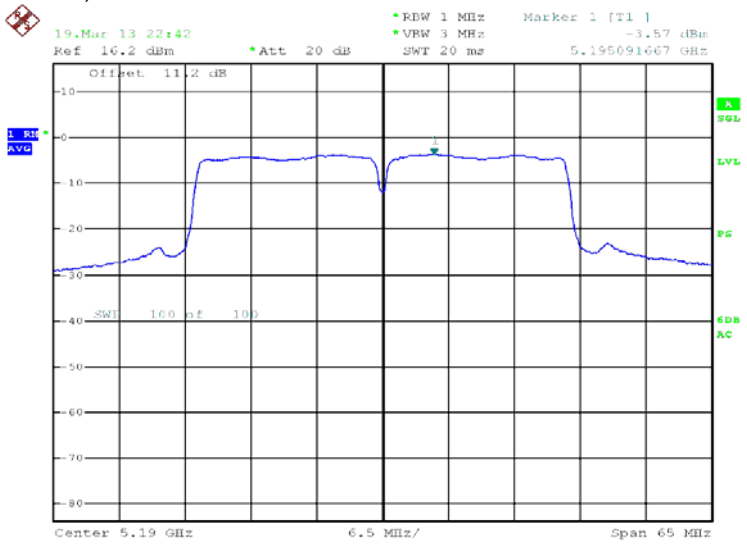
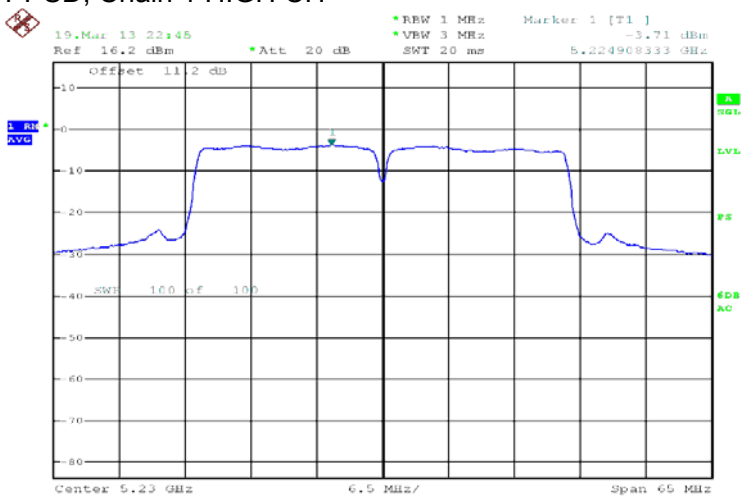
**PPSD, Chain 1**

PPSD, Chain 1 LOW CH




Date: 19.MAR.2013 22:42:03

PPSD, Chain 1 HIGH CH




Date: 19.MAR.2013 22:45:42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### 8.5.5. PEAK EXCURSION

**LIMITS**

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

**RESULTS**

Chain 0

| Channel | Frequency (MHz) | PK Level (dBm) | PSD (dBm) | DCCF (dB) | Peak Excursion (dB) | Limit (dB) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5190 | 6.97 | -4.17 | 0.11 | 11.03 | 13 | -1.97 |

Chain 1

| Channel | Frequency (MHz) | PK Level (dBm) | PSD (dBm) | DCCF (dB) | Peak Excursion (dB) | Limit (dB) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5190 | 7.96 | -3.57 | 0.11 | 11.42 | 13 | -1.58 |


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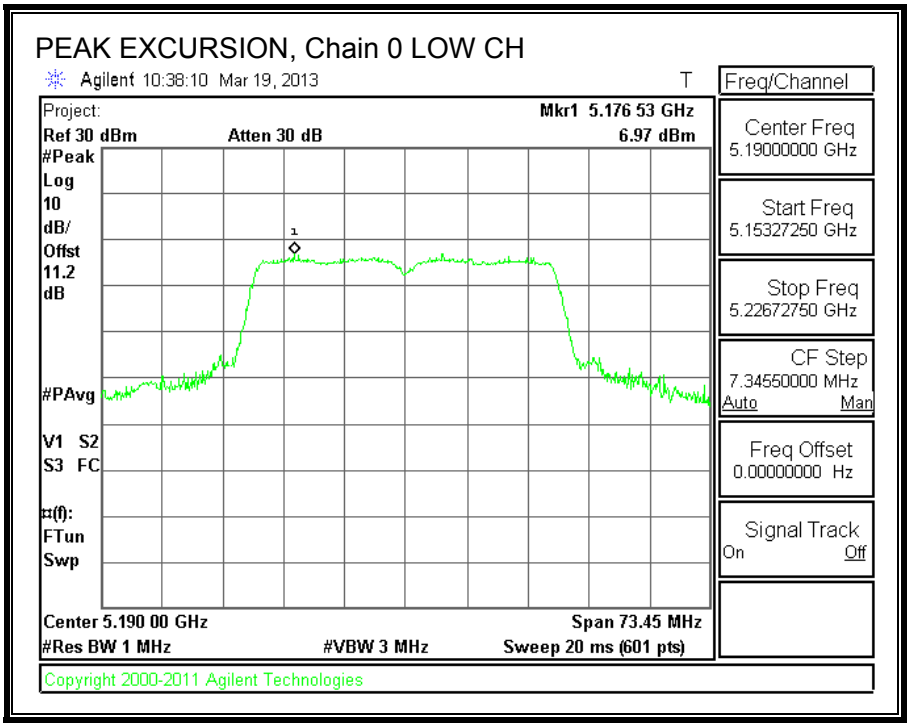
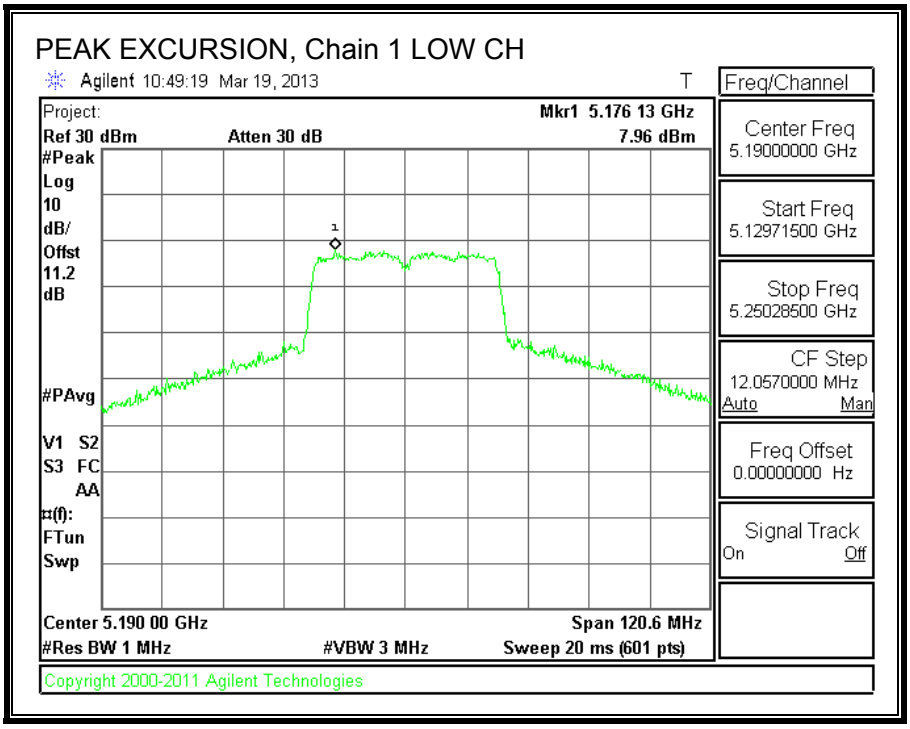
**PEAK EXCURSION, Chain 0**




**PEAK EXCURSION, Chain 1**





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## 8.6. 802.11a CDD 2TX MODE IN THE 5.3 GHz BAND

### 8.6.1. 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) |
|---|---|---|---|
| Low | 5260 | 21.78 | 36.62 |
| Mid | 5300 | 20.37 | 31.63 |
| High | 5320 | 20.58 | 21.67 |


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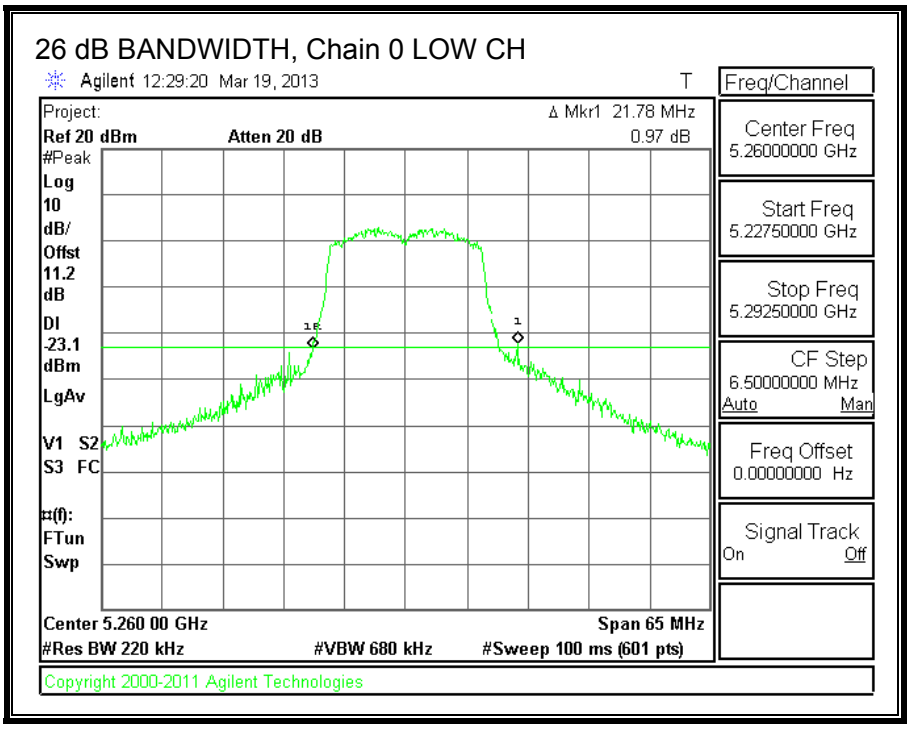
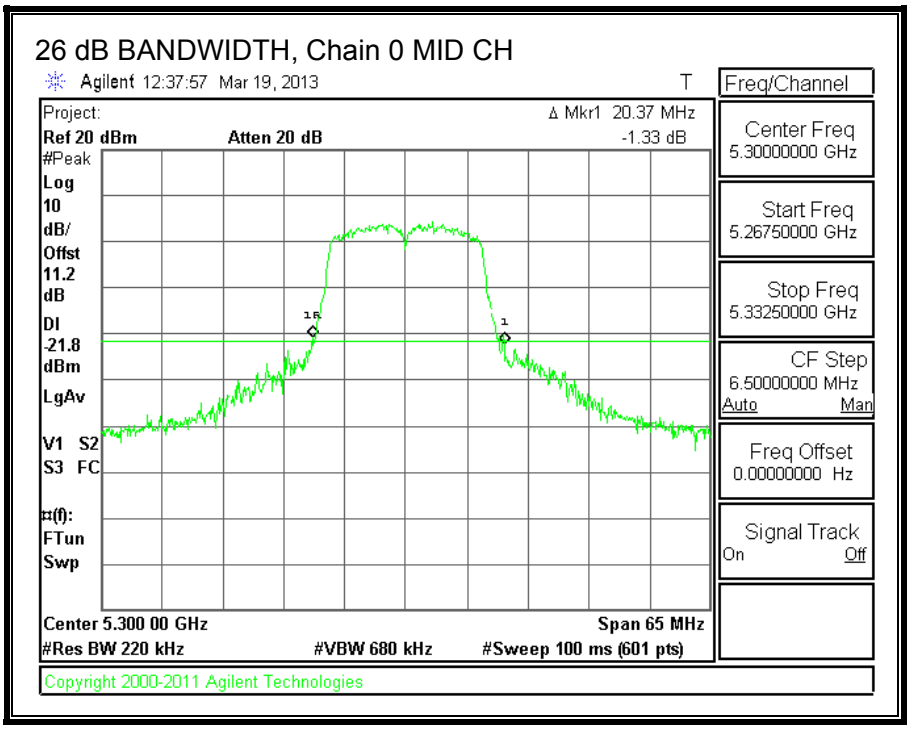
**26 dB BANDWIDTH, Chain 0**





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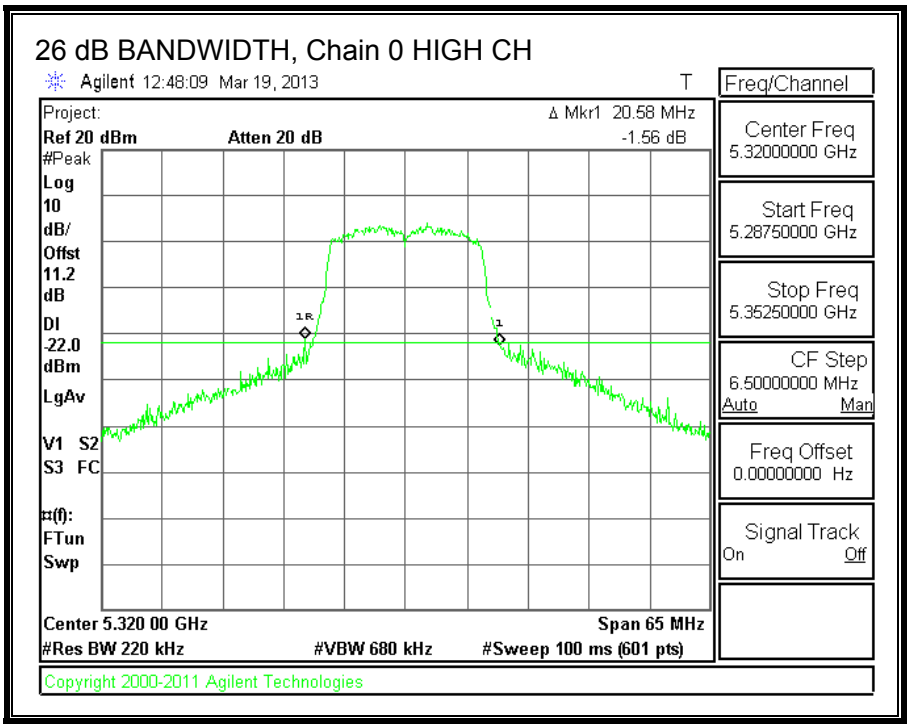
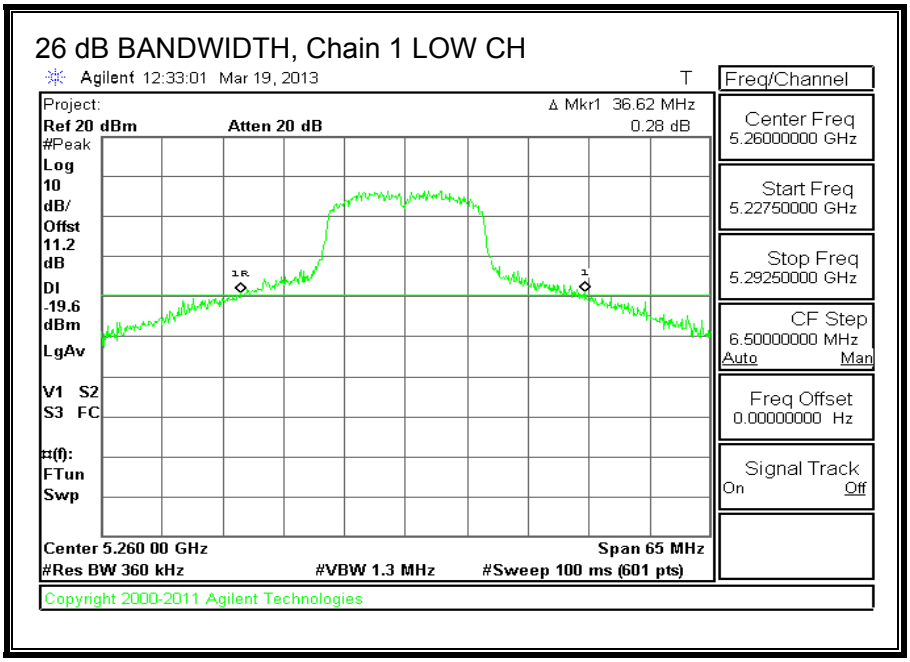



**26 dB BANDWIDTH, Chain 1**





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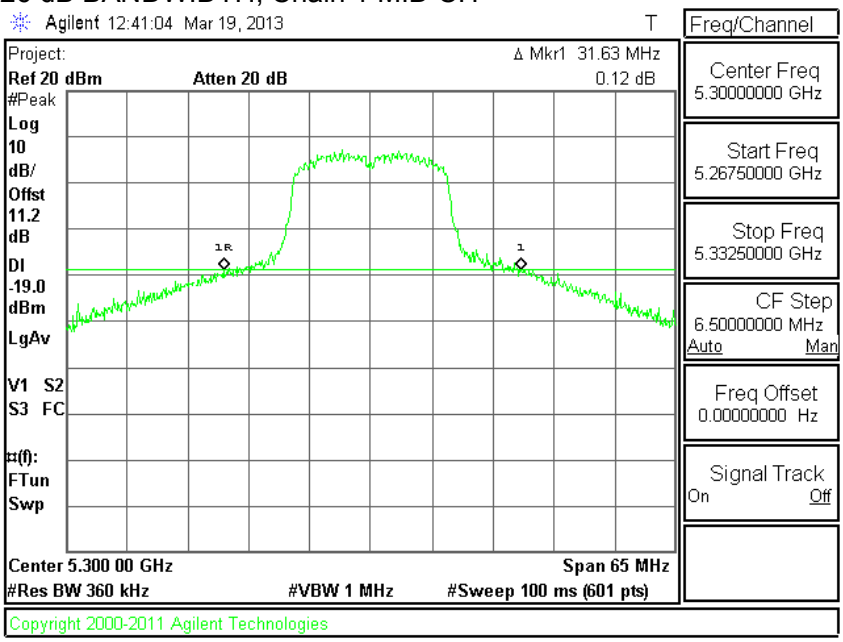
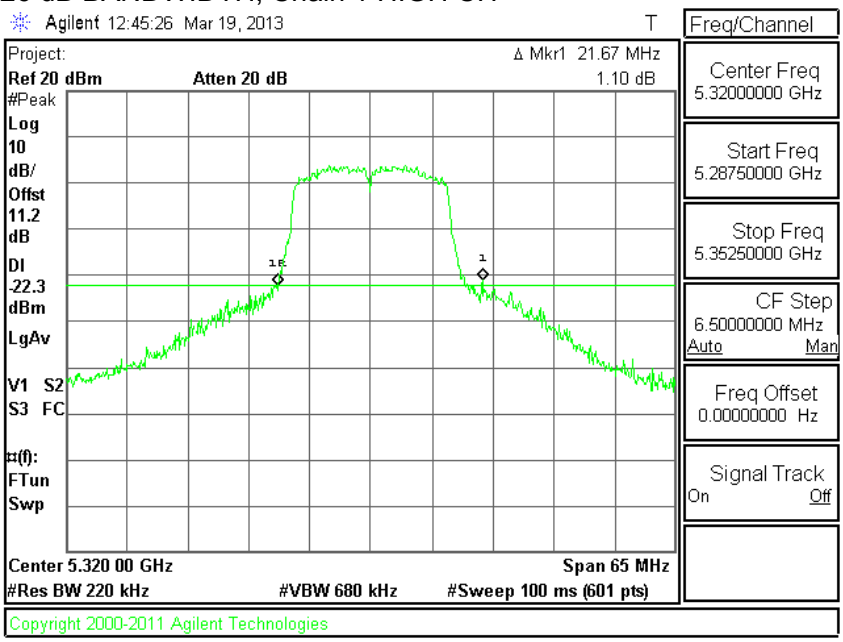
26 dB BANDWIDTH, Chain 1 MID CH




26 dB BANDWIDTH, Chain 1 HIGH CH





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### 8.6.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5260 | 16.2954 | 16.4615 |
| Mid | 5300 | 16.2922 | 16.3701 |
| High | 5320 | 16.2986 | 16.2859 |


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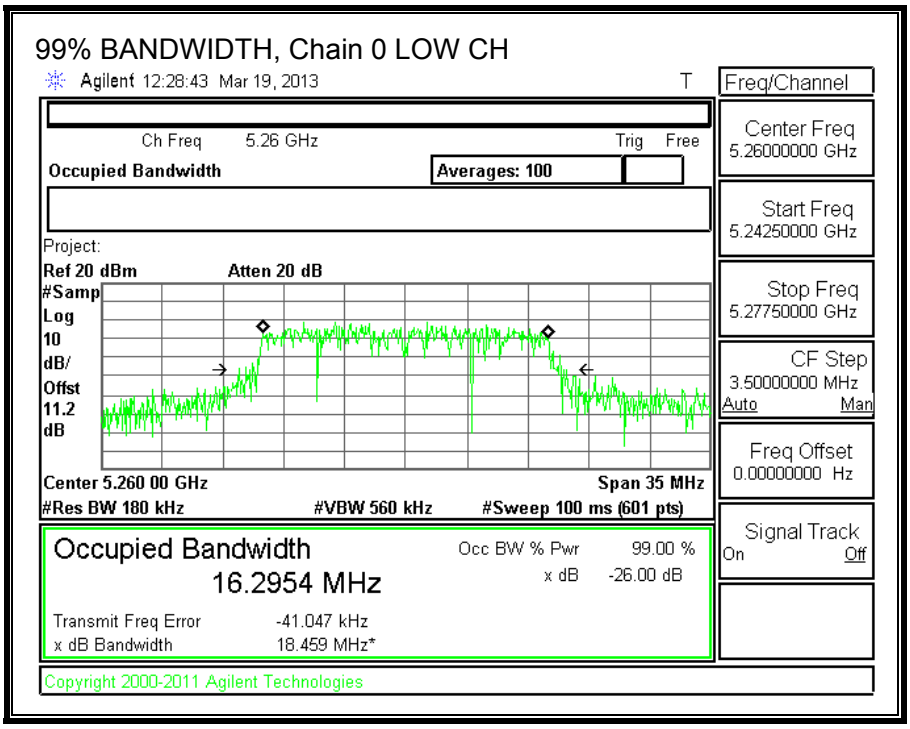
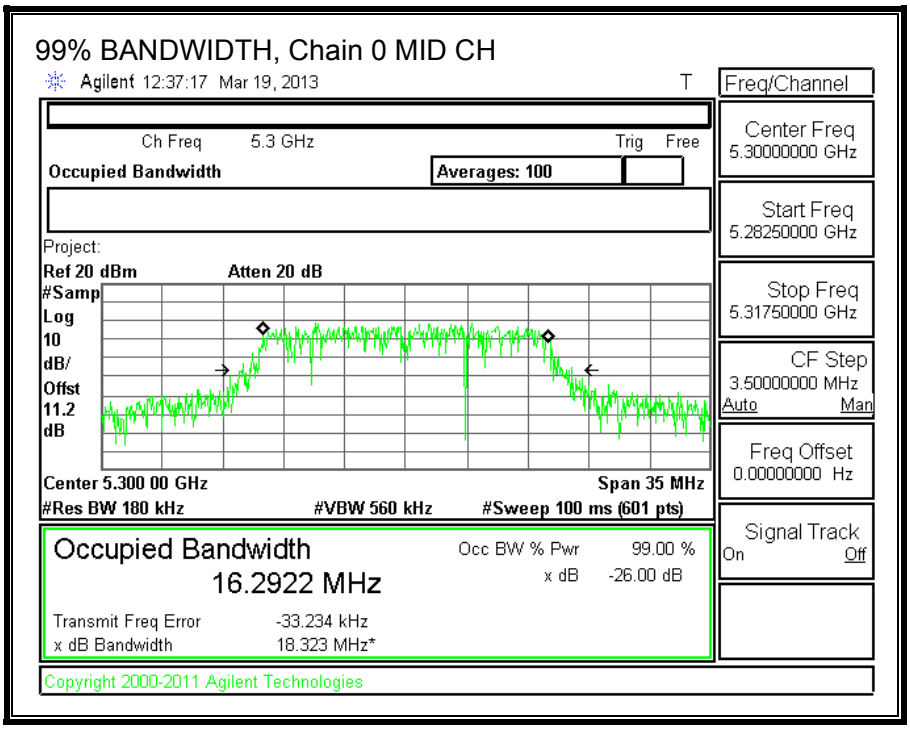
**99% BANDWIDTH, Chain 0**





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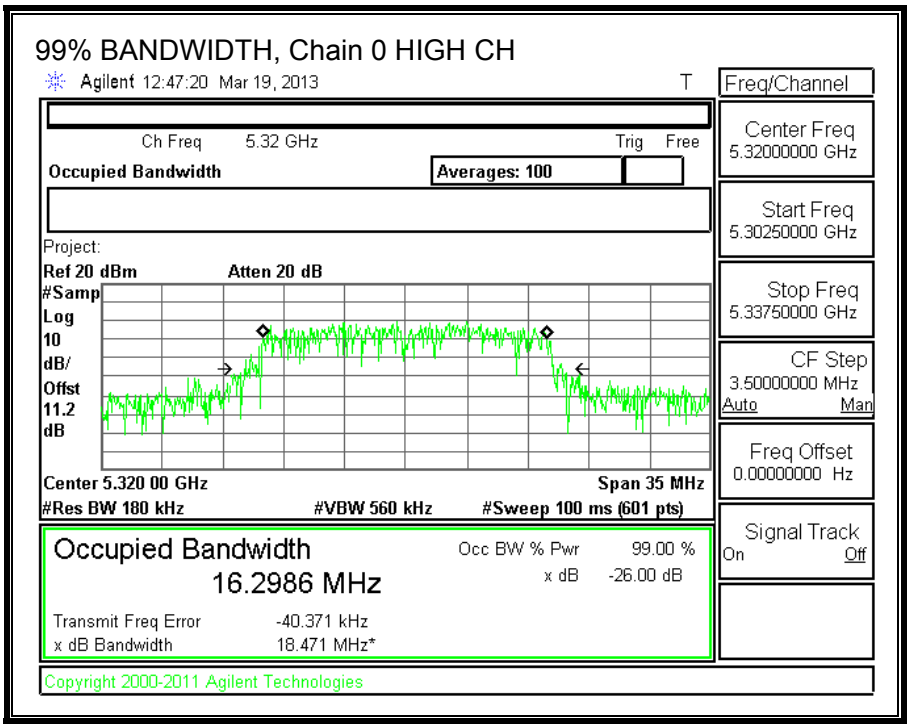
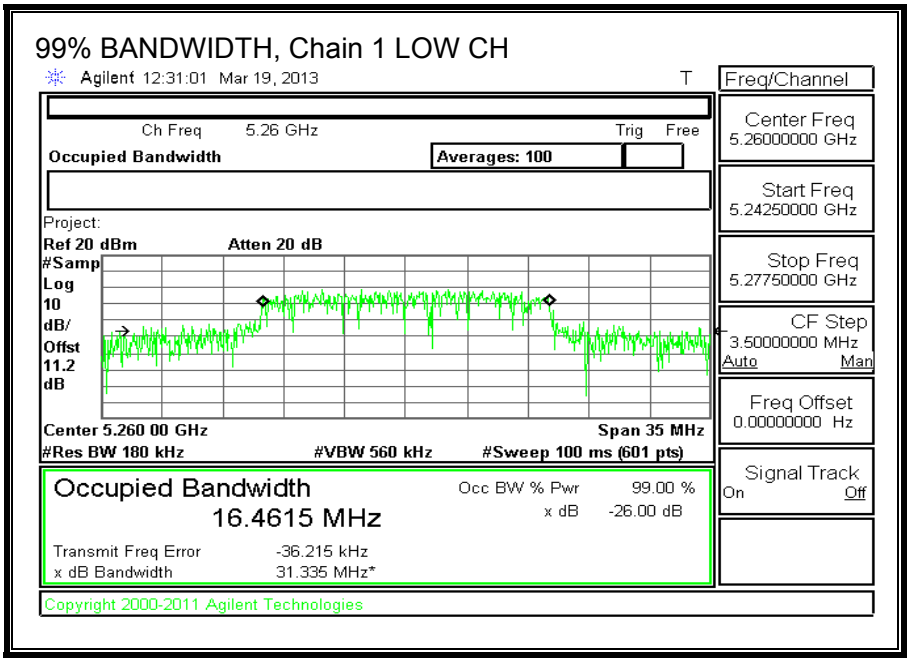



**99% BANDWIDTH, Chain 1**





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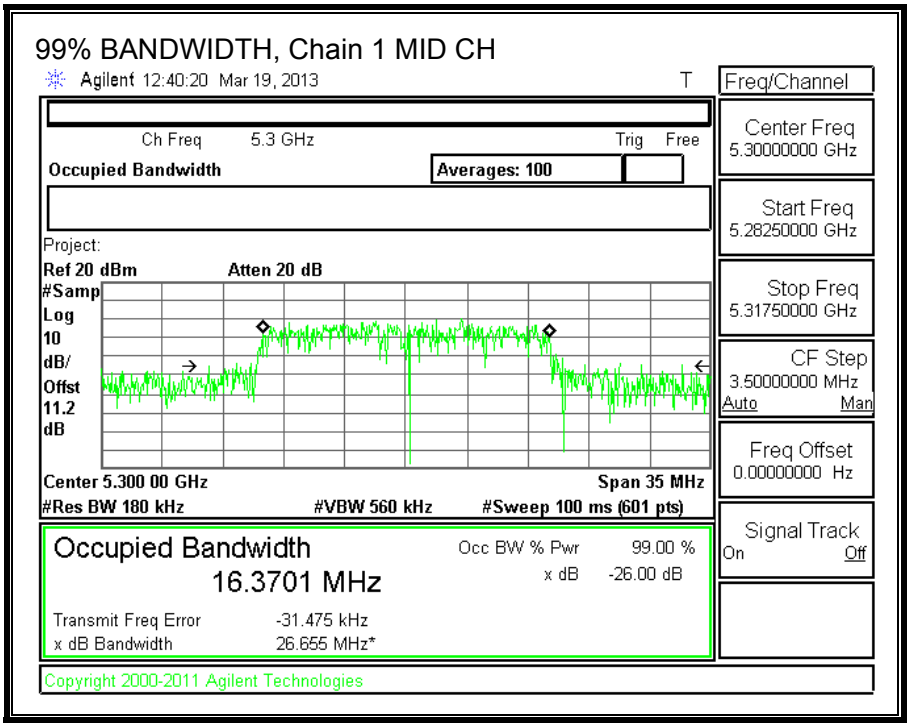


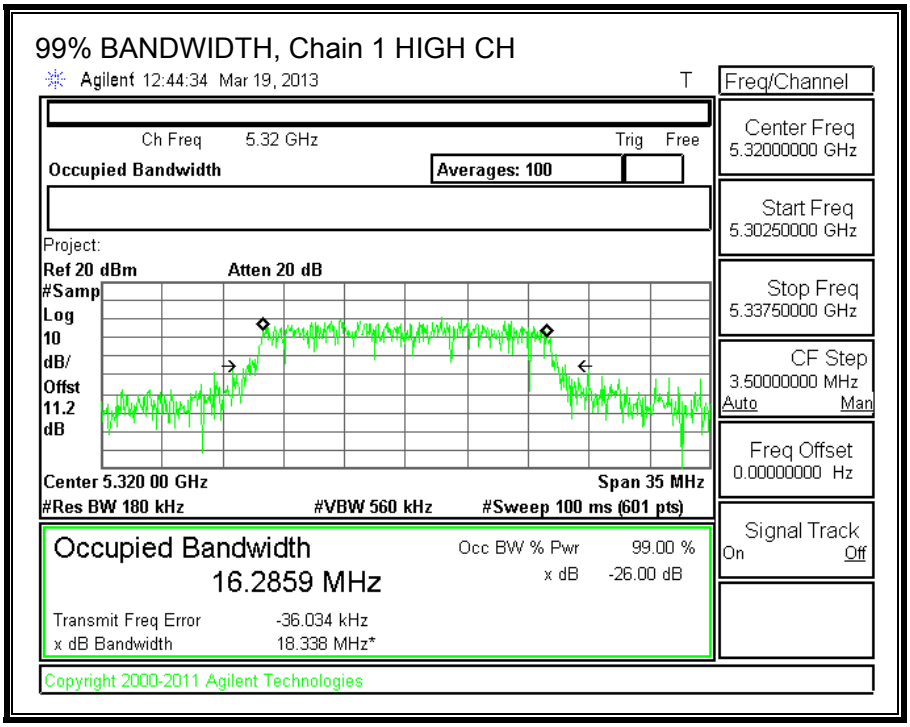



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### 8.6.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5260 | 12.99 | 13.68 | 16.36 |
| Mid | 5300 | 12.06 | 13.11 | 15.63 |
| High | 5320 | 12.31 | 13.12 | 15.74 |


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### 8.6.4. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 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**

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

For PPSD, the TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

| Antenna Gain (dBi) | 10 * Log (2 chains) (dB) | Correlated Chains Directional Gain (dBi) |
|---|---|---|
| 4.00 | 3.01 | 7.01 |


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**RESULTS**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Uncorrelated Directional Gain (dBi) | Correlated Directional Gain (dBi) |
|---|---|---|---|---|---|
| Low | 5260 | 21.78 | 16.30 | 4.00 | 7.01 |
| Mid | 5300 | 20.37 | 16.29 | 4.00 | 7.01 |
| High | 5320 | 20.58 | 16.30 | 4.00 | 7.01 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) |
|---|---|---|---|---|---|---|
| Low | 5260 | 24.00 | 23.12 | 29.12 | 23.12 | 9.99 |
| Mid | 5300 | 24.00 | 23.12 | 29.12 | 23.12 | 9.99 |
| High | 5320 | 24.00 | 23.12 | 29.12 | 23.12 | 9.99 |

| 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) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5260 | 12.657 | 13.516 | 16.12 | 23.12 | -7.00 |
| Mid | 5300 | 13.419 | 14.121 | 16.79 | 23.12 | -6.33 |
| High | 5320 | 13.538 | 13.988 | 16.78 | 23.12 | -6.34 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5260 | -0.83 | -0.37 | 2.42 | 9.99 | -7.57 |
| Mid | 5300 | -0.36 | 0.11 | 2.89 | 9.99 | -7.10 |
| High | 5320 | 0.37 | 0.64 | 3.52 | 9.99 | -6.47 |


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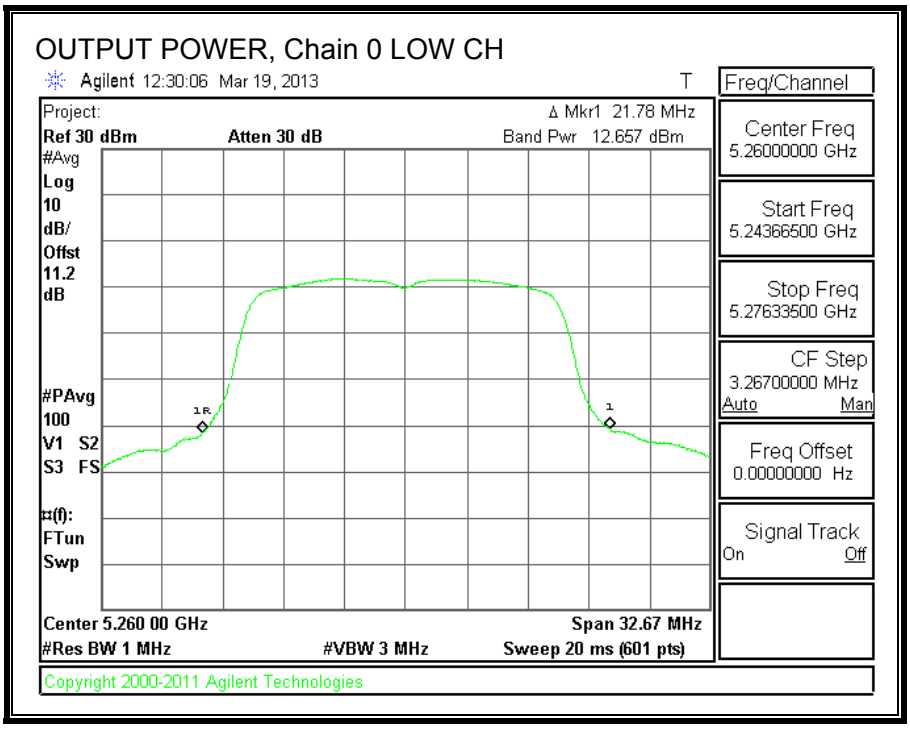
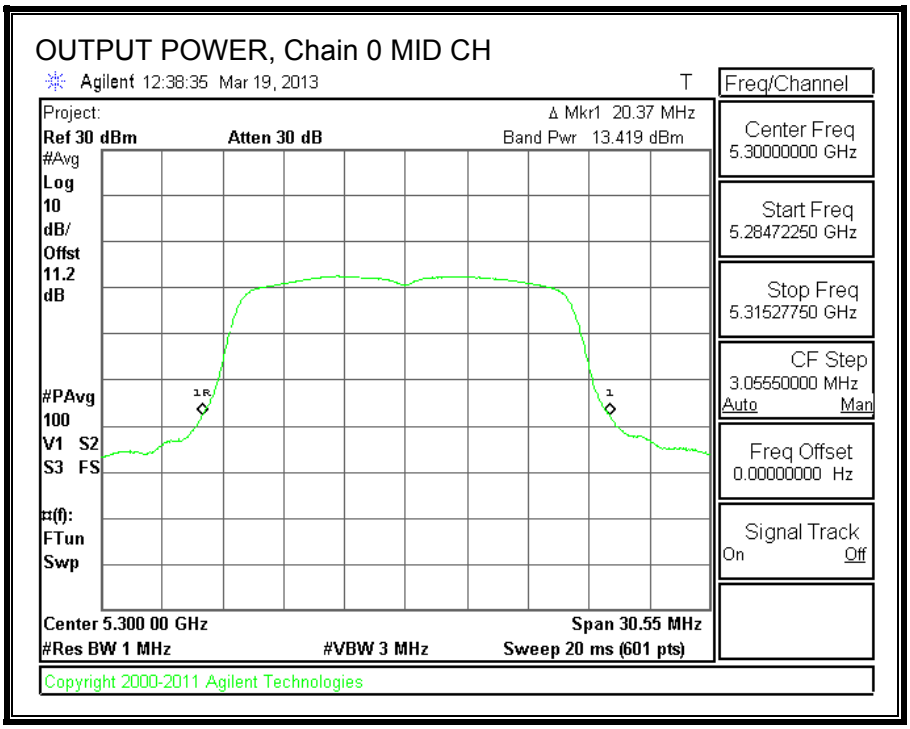
**OUTPUT POWER, Chain 0**





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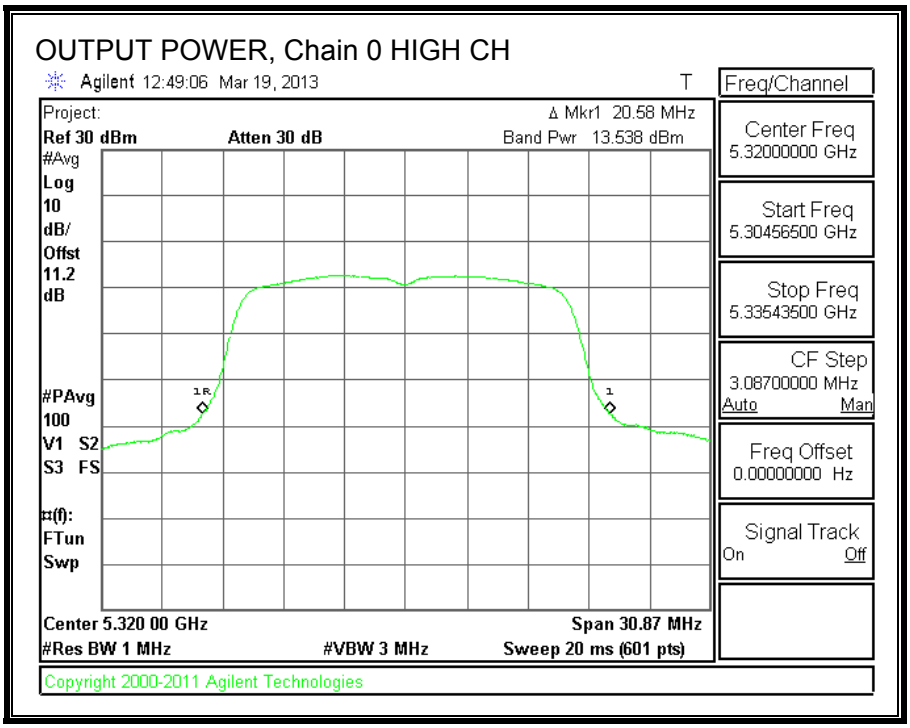
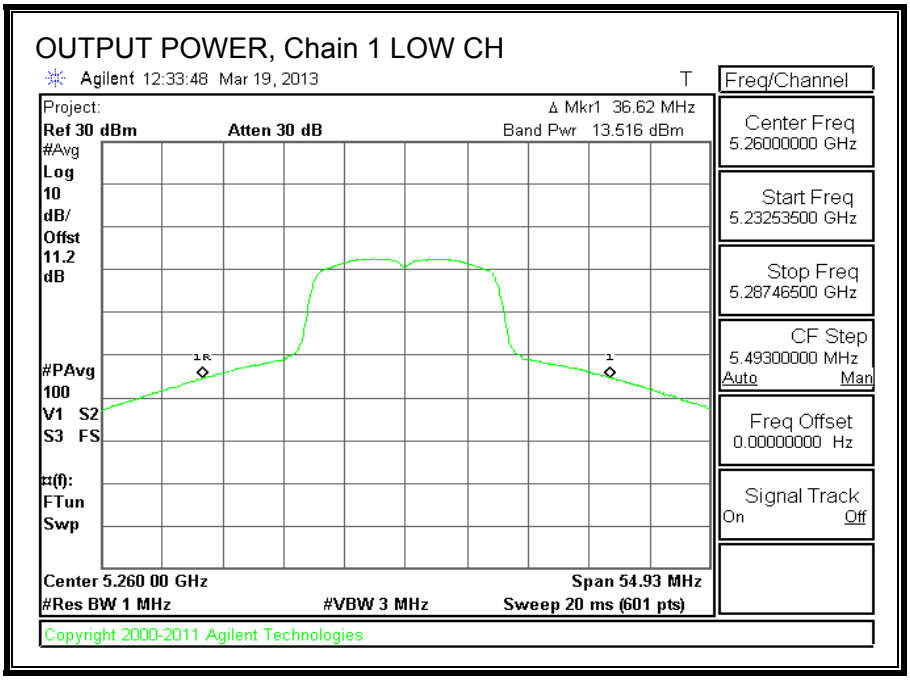



**OUTPUT POWER AND PPSD, Chain 1**





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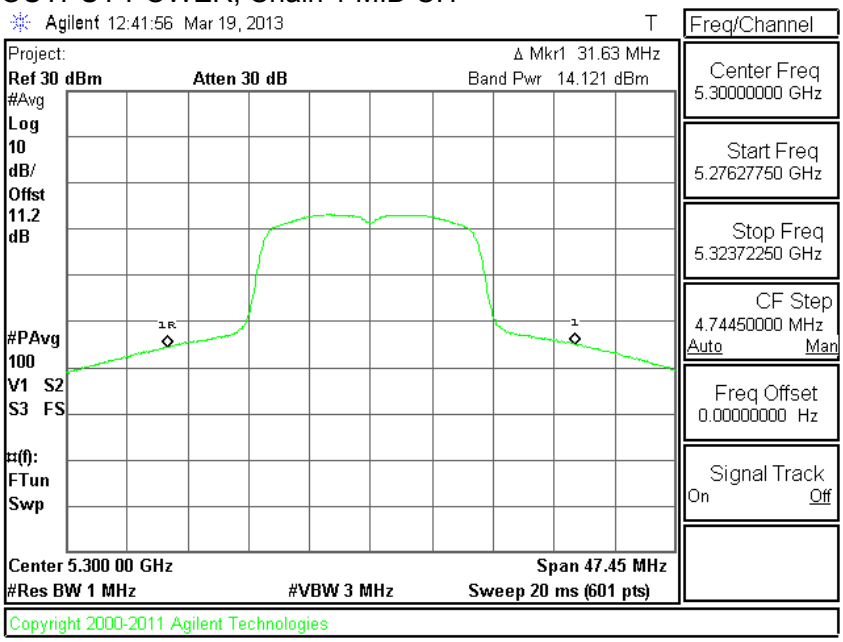
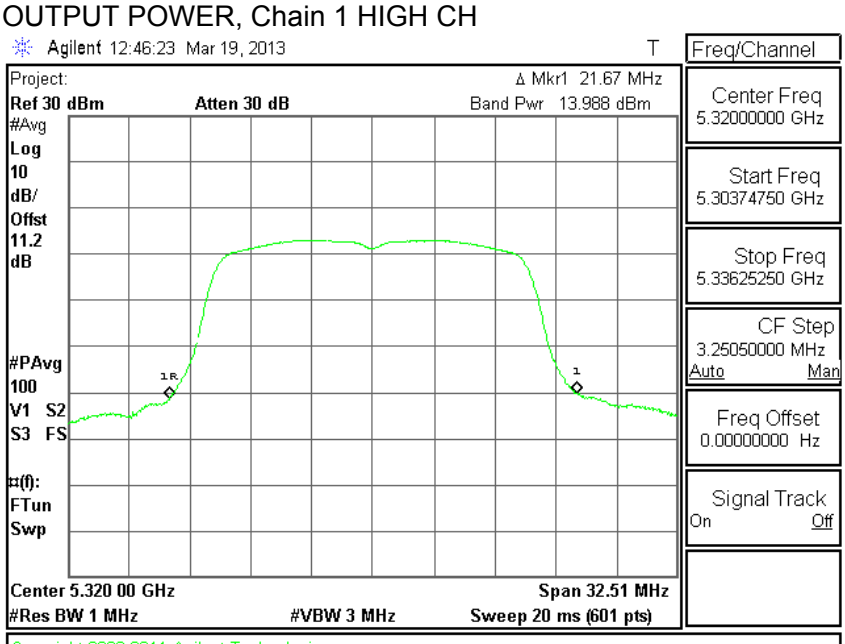
OUTPUT POWER, Chain 1 MID CH




OUTPUT POWER, Chain 1 HIGH CH





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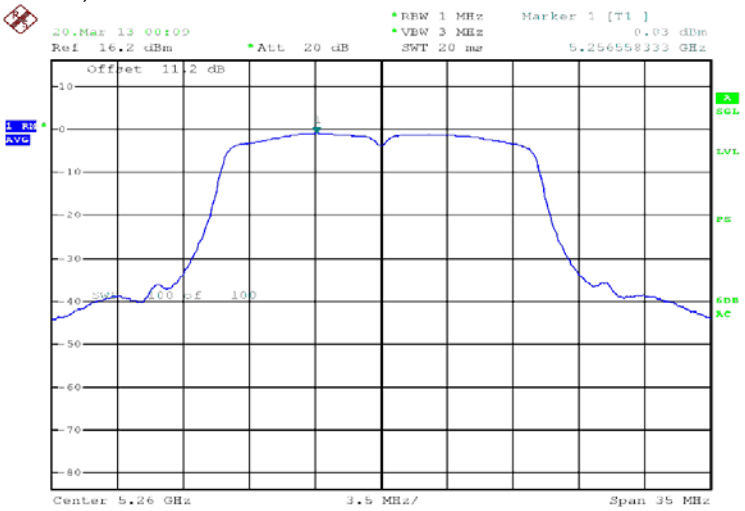
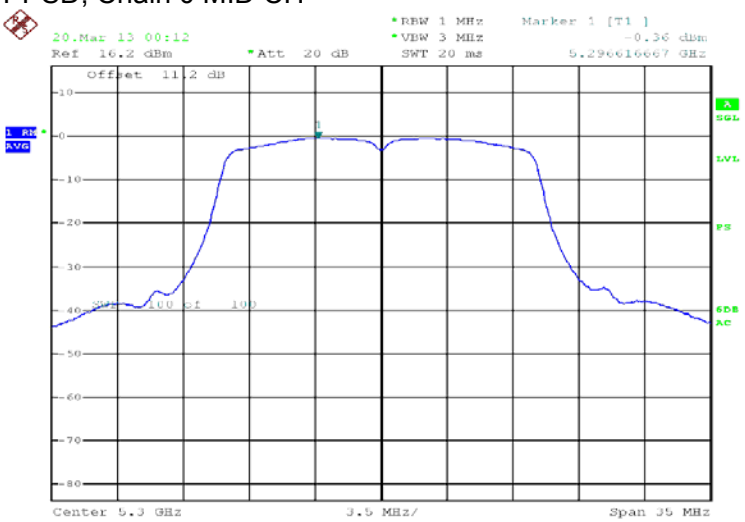
**PPSD, Chain 0**

PPSD, Chain 0 LOW CH




Date: 20.MAR.2013 00:09:35

PPSD, Chain 0 MID CH




Date: 20.MAR.2013 00:12:40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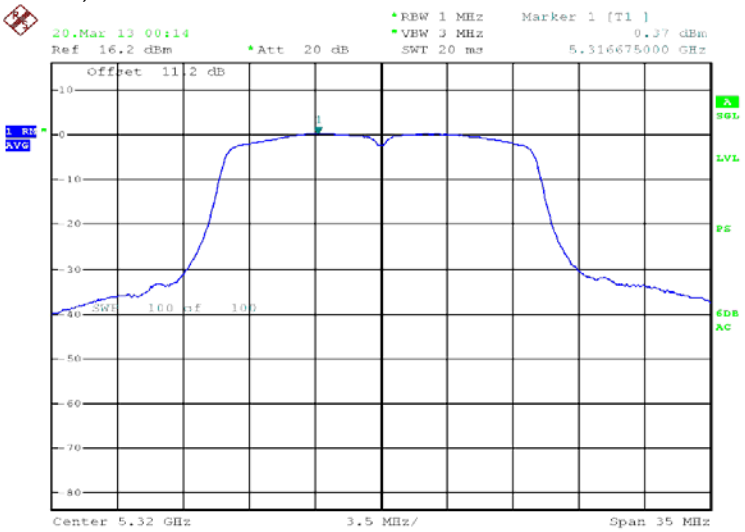
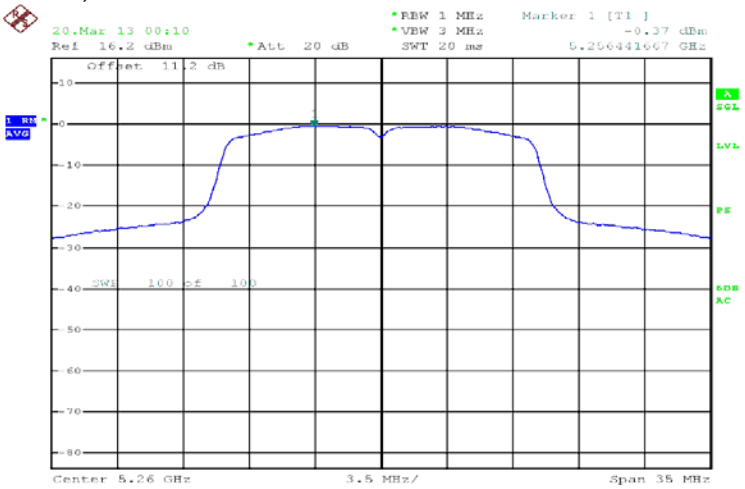
PPSD, Chain 0 HIGH CH




Date: 20.MAR.2013 00:14:31

**OUTPUT POWER AND PPSD, Chain 1**

PPSD, Chain 1 LOW CH




Date: 20.MAR.2013 00:10:28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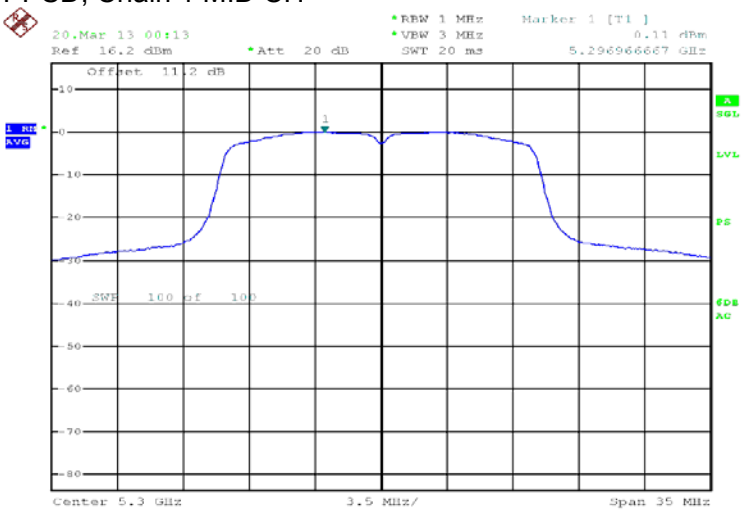
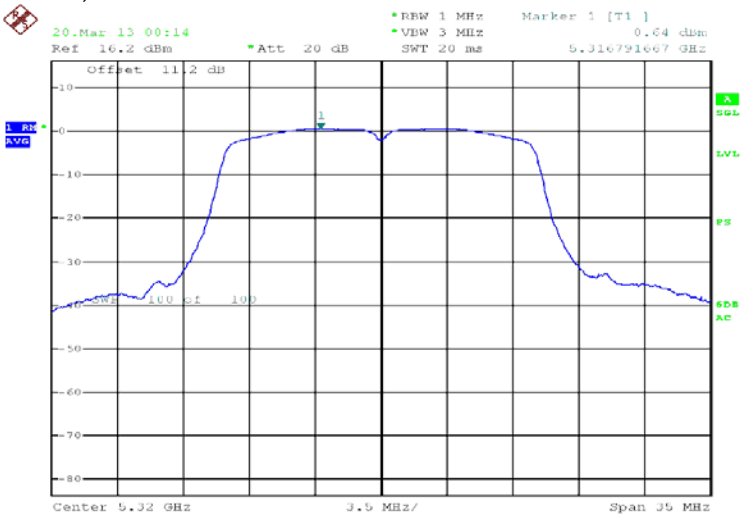
PPSD, Chain 1 MID CH




Date: 20.MAR.2013 00:13:09

PPSD, Chain 1 HIGH CH




Date: 20.MAR.2013 00:14:06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## 8.7. 802.11n HT20 CDD MCS0 2TX MODE IN THE 5.3 GHz BAND

### 8.7.1. 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) |
|---|---|---|---|
| Low | 5260 | 20.69 | 38.35 |
| Mid | 5300 | 23.08 | 22.42 |
| High | 5320 | 20.26 | 28.82 |


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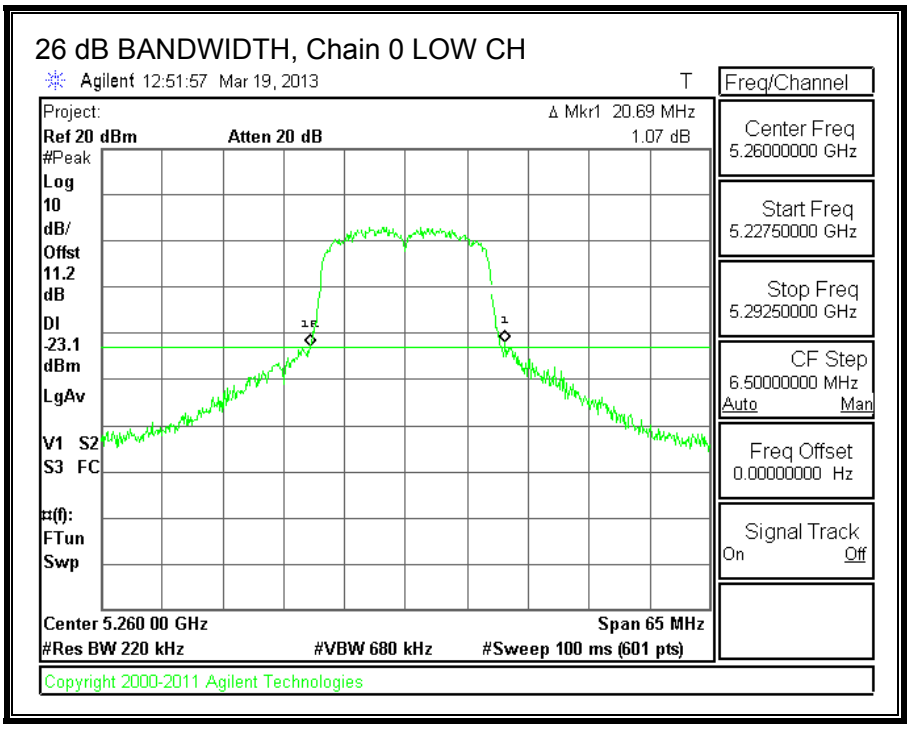
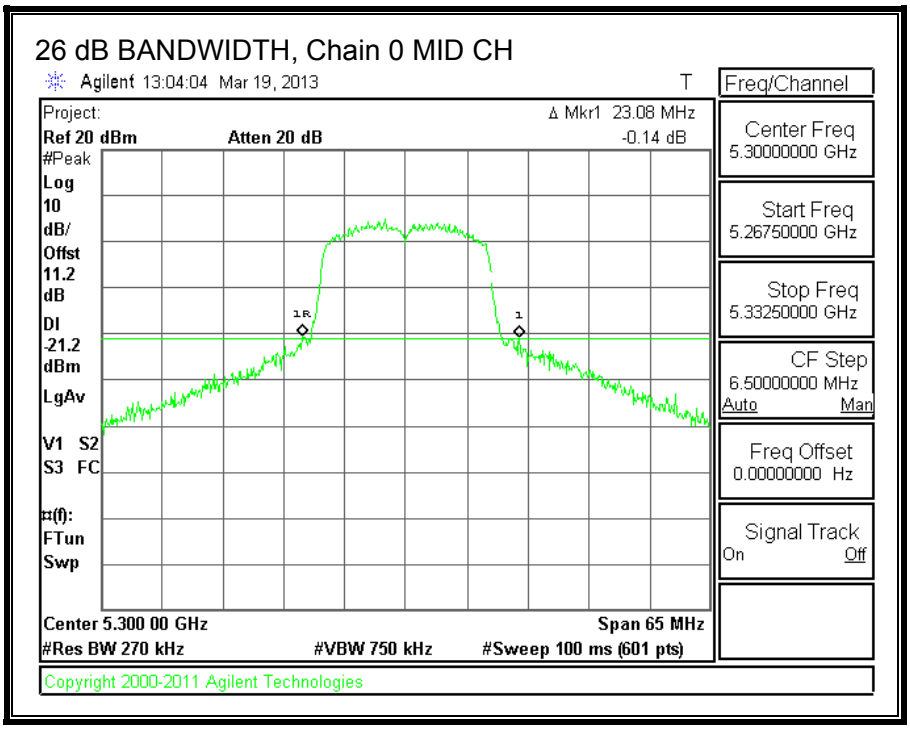
**26 dB BANDWIDTH, Chain 0**





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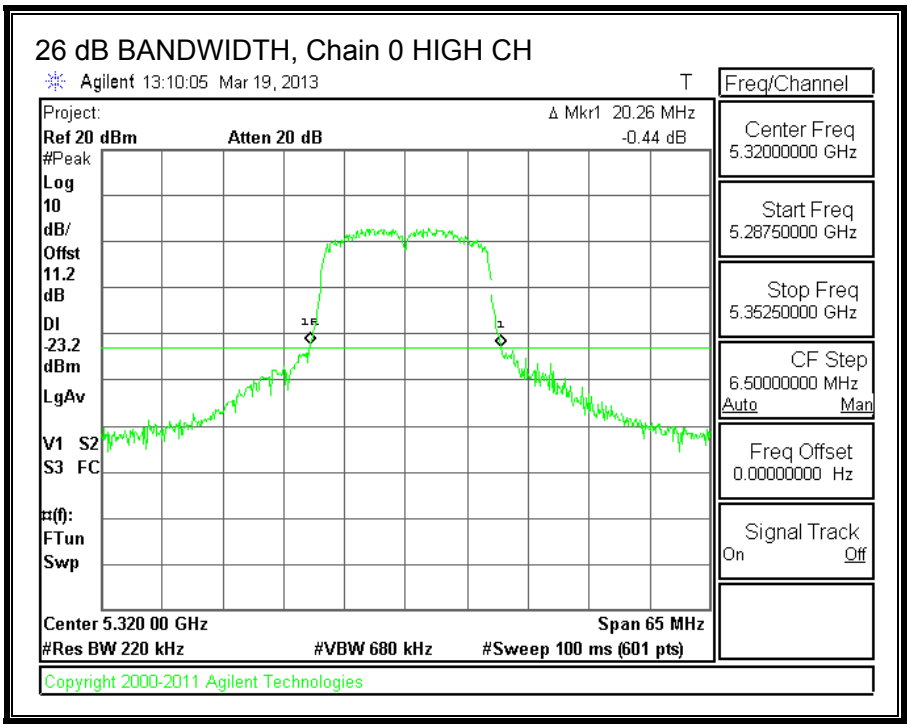
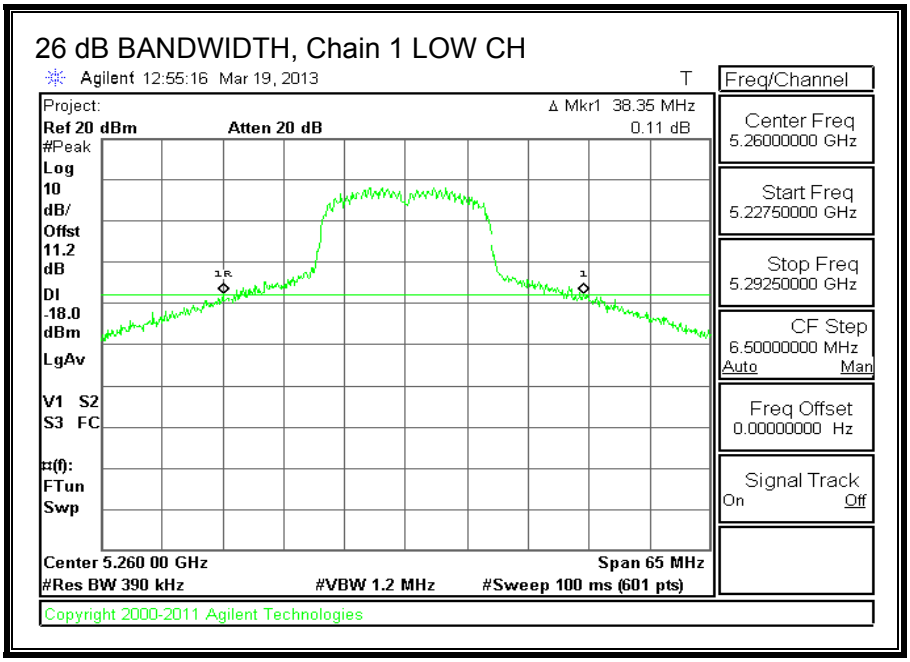



**26 dB BANDWIDTH, Chain 1**





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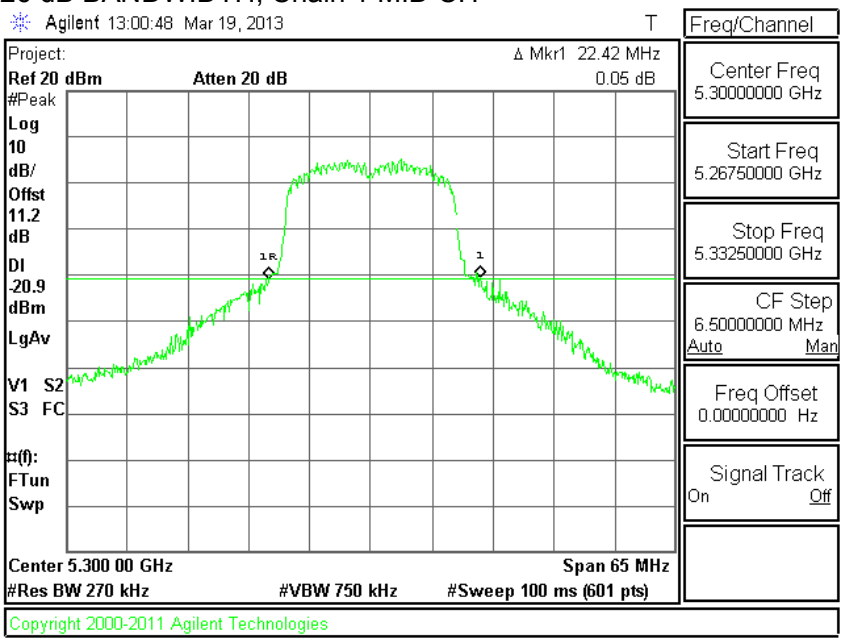
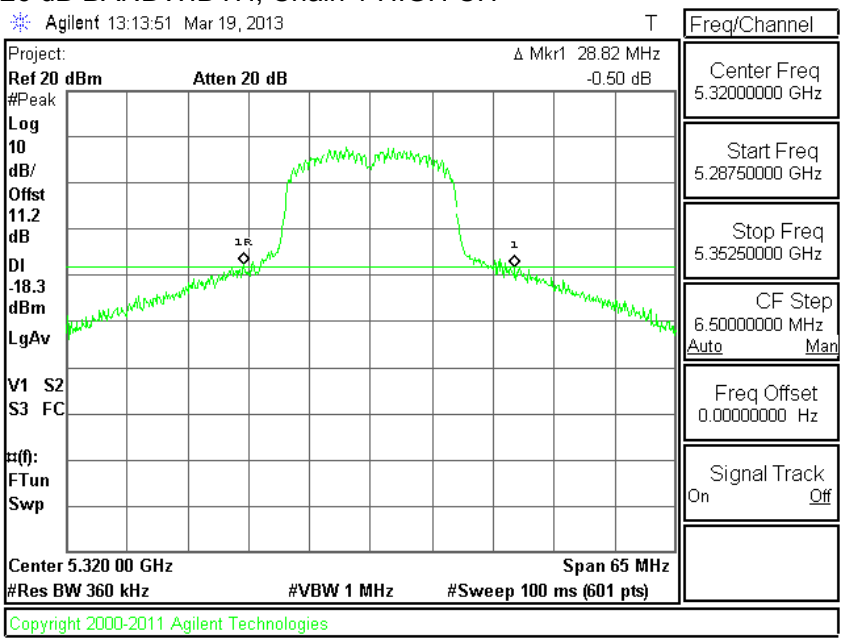
26 dB BANDWIDTH, Chain 1 MID CH




26 dB BANDWIDTH, Chain 1 HIGH CH





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### 8.7.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5260 | 17.4192 | 17.5865 |
| Mid | 5300 | 17.4289 | 17.3907 |
| High | 5320 | 17.4068 | 17.4765 |


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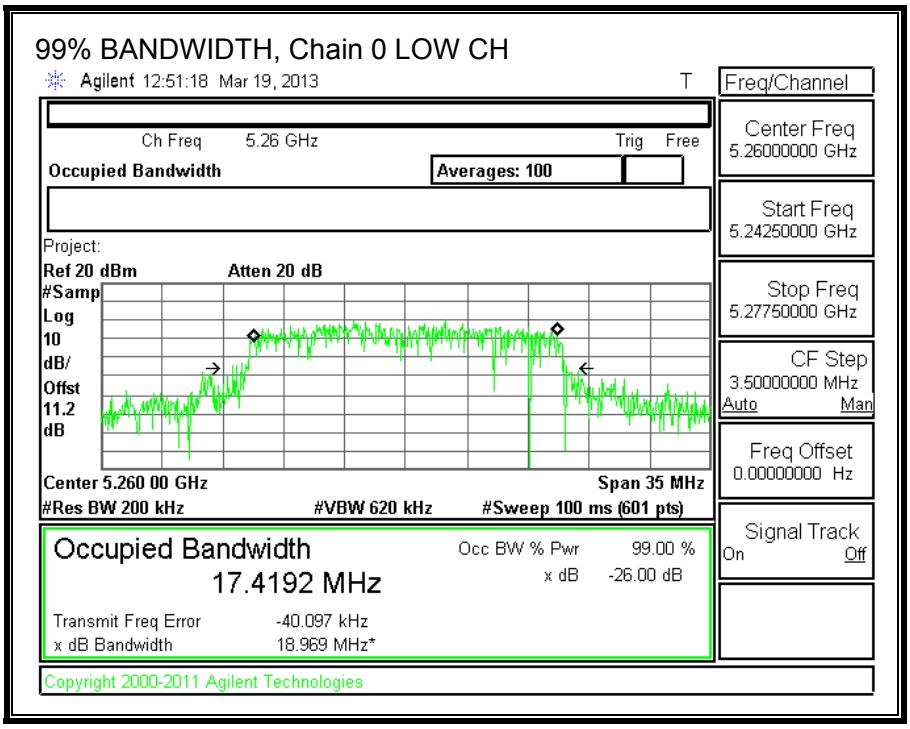
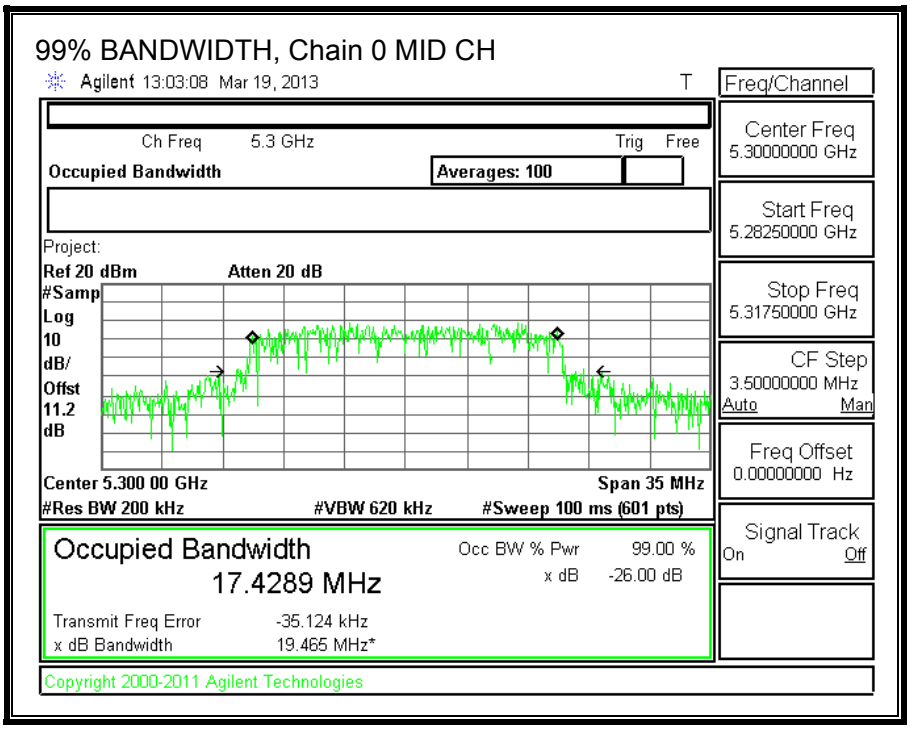
**99% BANDWIDTH, Chain 0**





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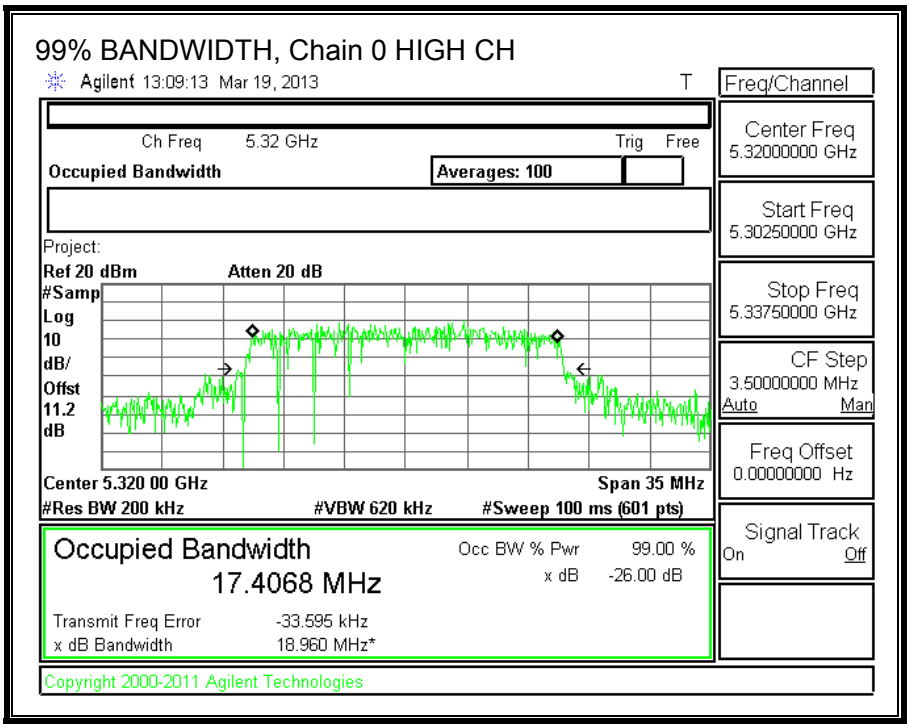
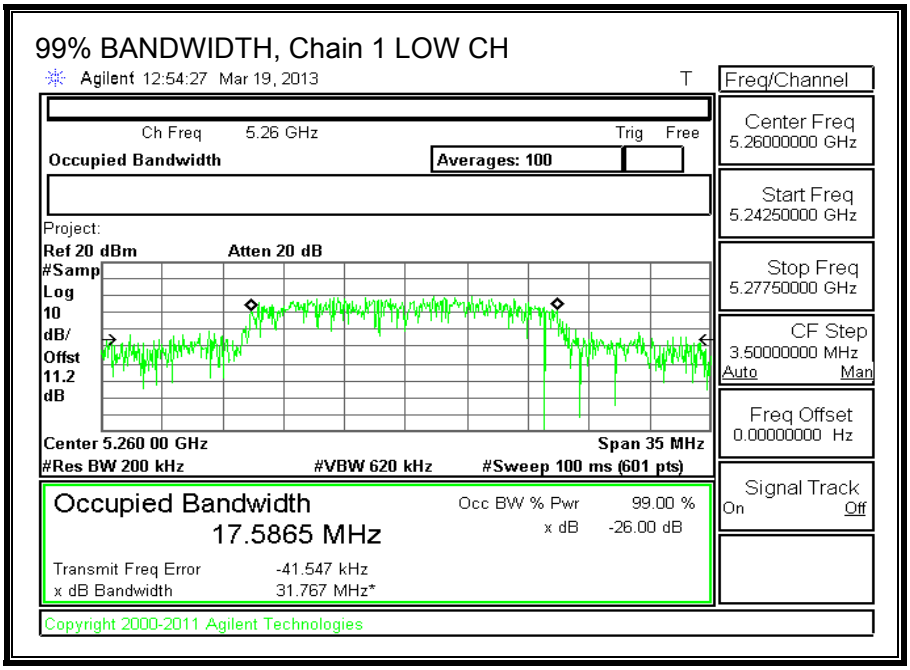



**99% BANDWIDTH, Chain 1**





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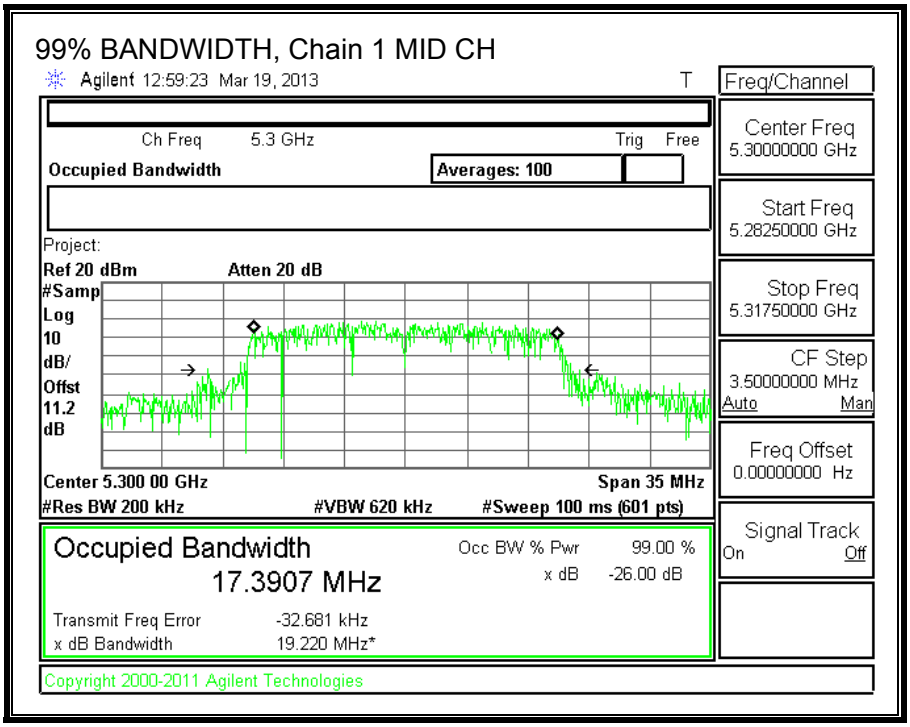


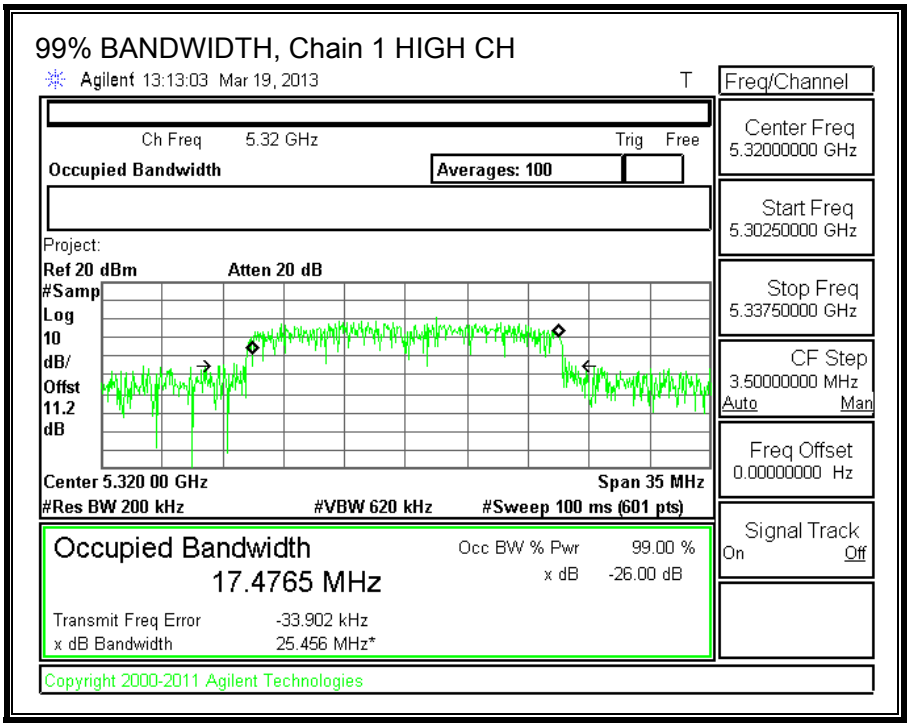



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### 8.7.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5260 | 12.07 | 12.75 | 15.43 |
| Mid | 5300 | 12.01 | 13.13 | 15.62 |
| High | 5320 | 12.14 | 12.98 | 15.59 |


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### 8.7.4. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 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**

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

For PPSD, 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) | Correlated Chains Directional Gain (dBi) |
|---|---|---|
| 4.00 | 4.00 | 7.01 |


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**RESULTS**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Uncorrelated Directional Gain (dBi) | Correlated Directional Gain (dBi) |
|---|---|---|---|---|---|
| Low | 5260 | 20.69 | 17.4192 | 4.00 | 7.01 |
| Mid | 5300 | 22.42 | 17.3907 | 4.00 | 7.01 |
| High | 5320 | 20.26 | 17.4068 | 4.00 | 7.01 |

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) |
|---|---|---|---|---|---|---|
| Low | 5260 | 24.00 | 23.41 | 29.41 | 23.41 | 9.99 |
| Mid | 5300 | 24.00 | 23.40 | 29.40 | 23.40 | 9.99 |
| High | 5320 | 24.00 | 23.41 | 29.41 | 23.41 | 9.99 |

| | | |
|---|---|---|
| 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) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5260 | 12.996 | 12.677 | 15.85 | 23.41 | -7.56 |
| Mid | 5300 | 13.253 | 13.393 | 16.33 | 23.40 | -7.07 |
| High | 5320 | 13.004 | 13.669 | 16.36 | 23.41 | -7.05 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5260 | -0.66 | -0.43 | 2.47 | 9.99 | -7.52 |
| Mid | 5300 | -0.58 | 0.02 | 2.74 | 9.99 | -7.25 |
| High | 5320 | -0.31 | 0.46 | 3.10 | 9.99 | -6.89 |


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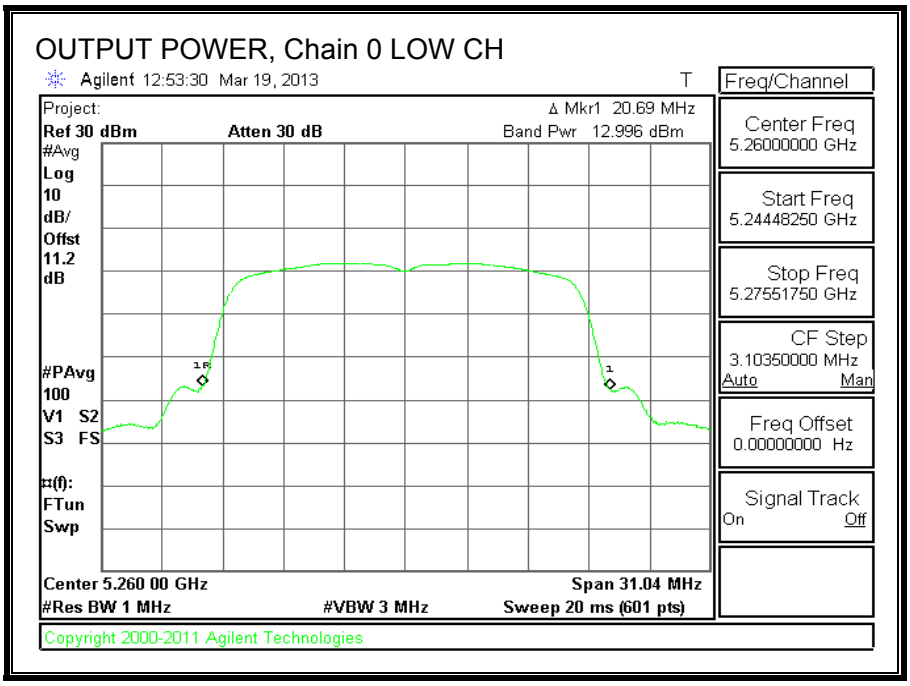
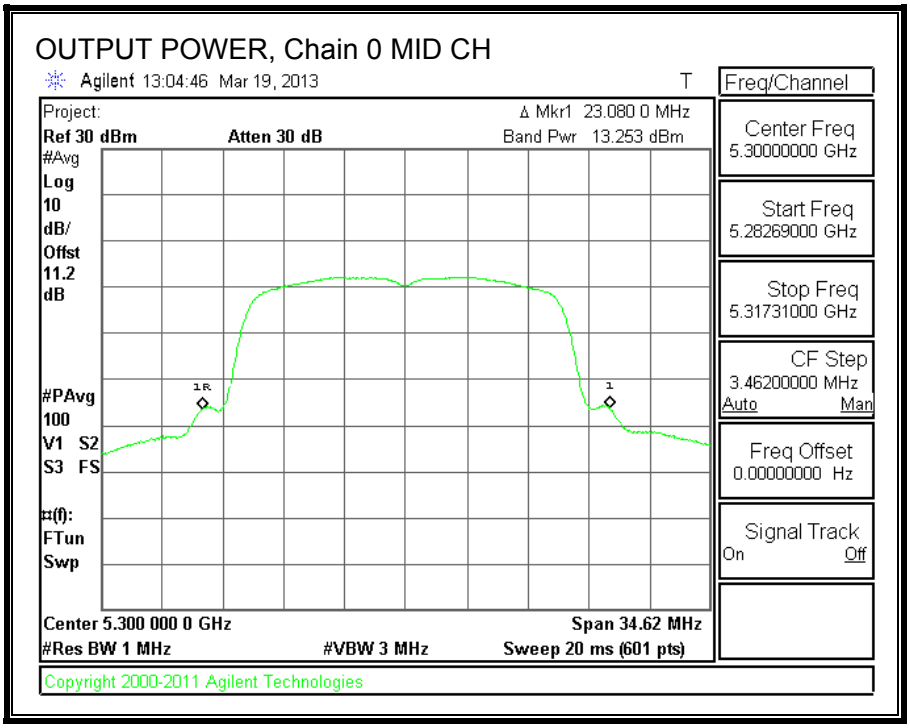
**OUTPUT POWER, Chain 0**





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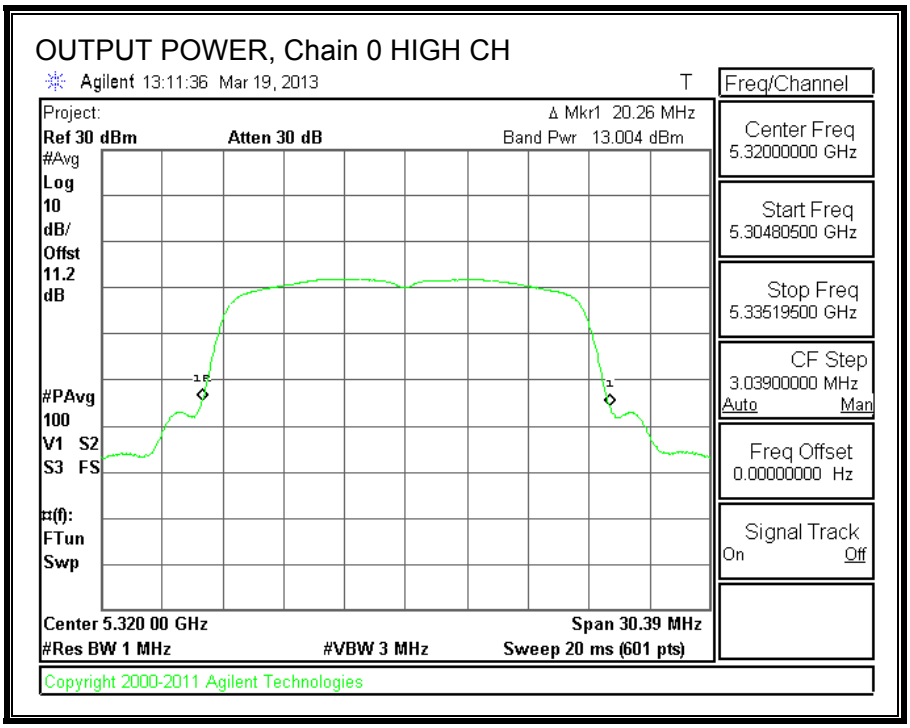
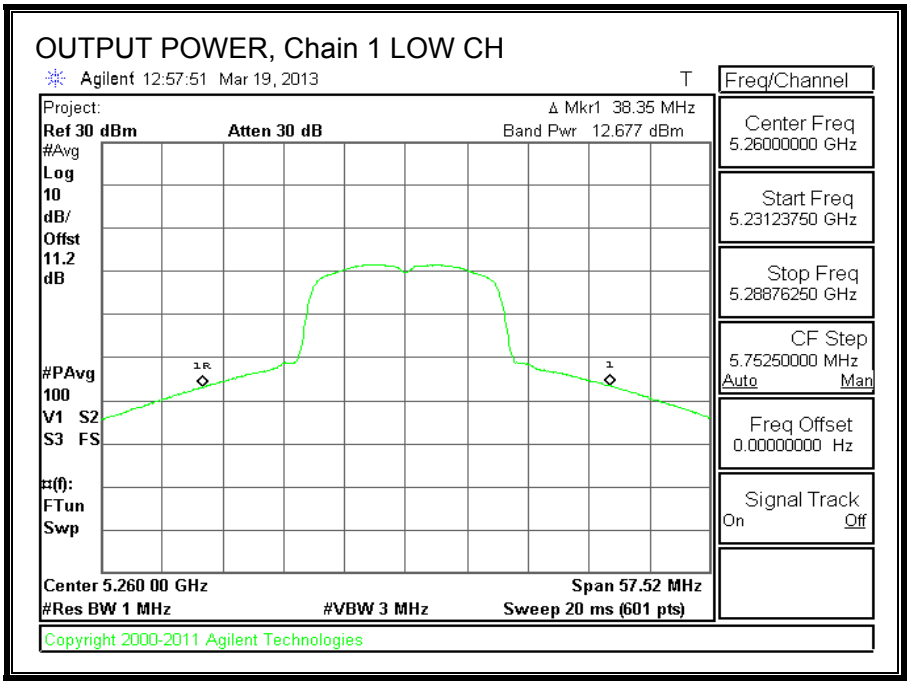



**OUTPUT POWER AND PPSD, Chain 1**





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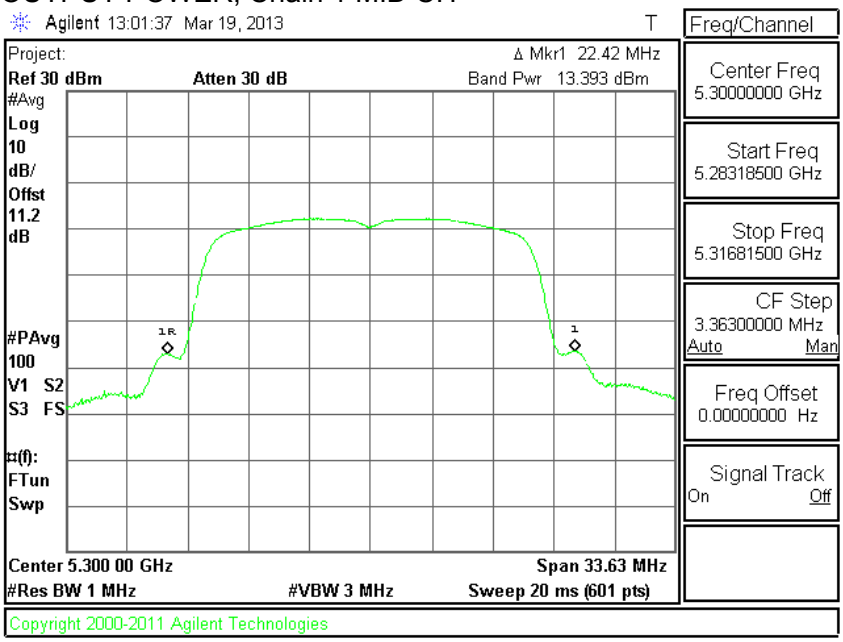
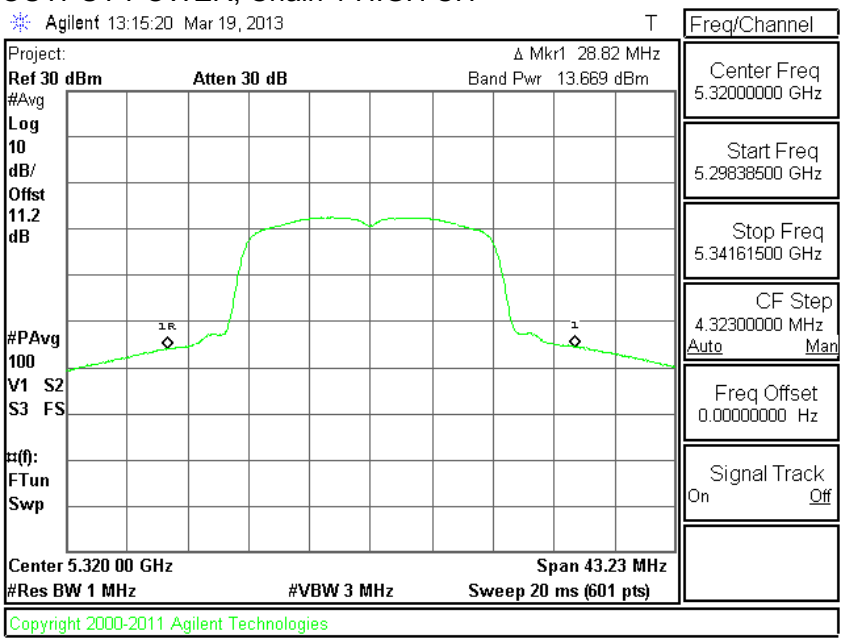
OUTPUT POWER, Chain 1 MID CH




OUTPUT POWER, Chain 1 HIGH CH





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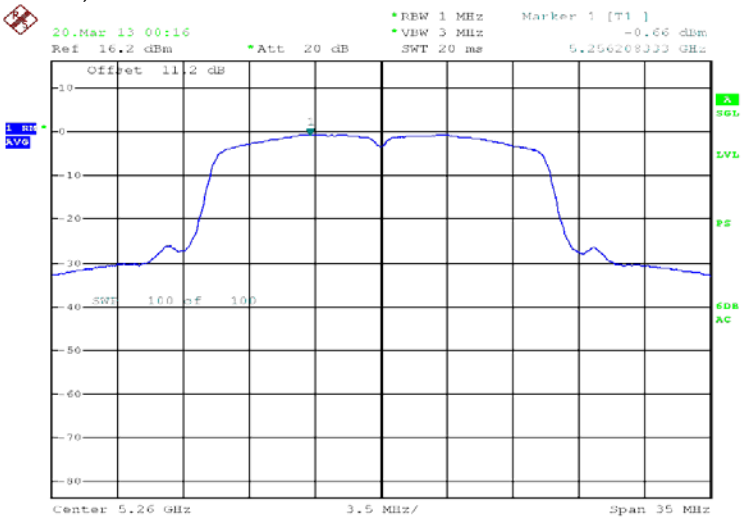
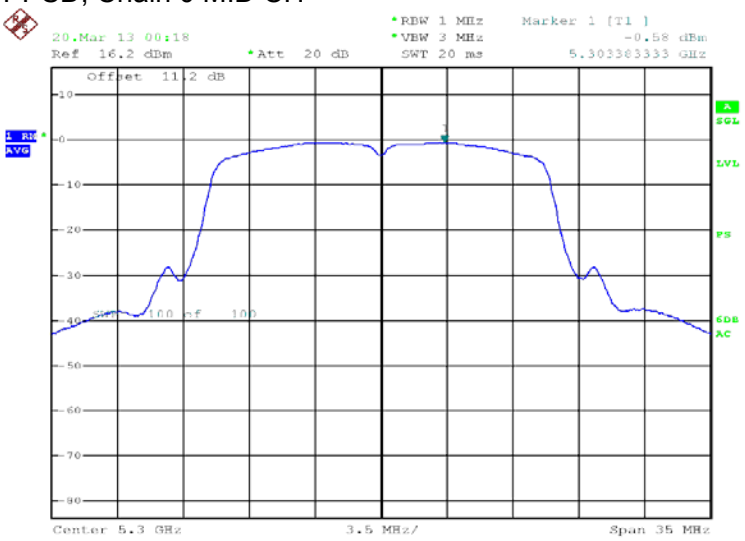
**PPSD, Chain 0**

PPSD, Chain 0 LOW CH




Date: 20.MAR.2013 00:16:49

PPSD, Chain 0 MID CH




Date: 20.MAR.2013 00:18:50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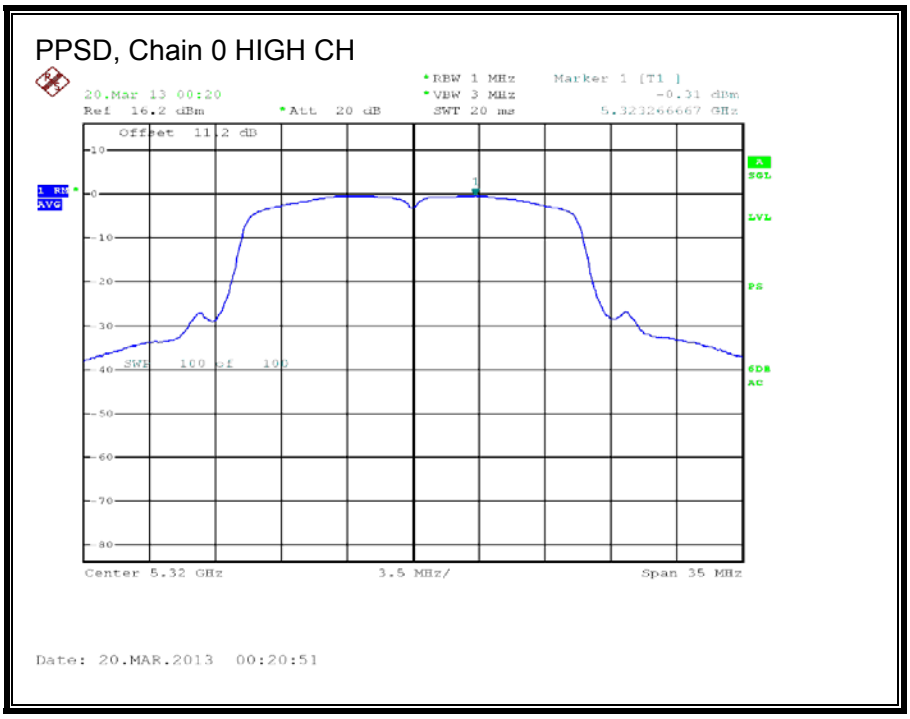
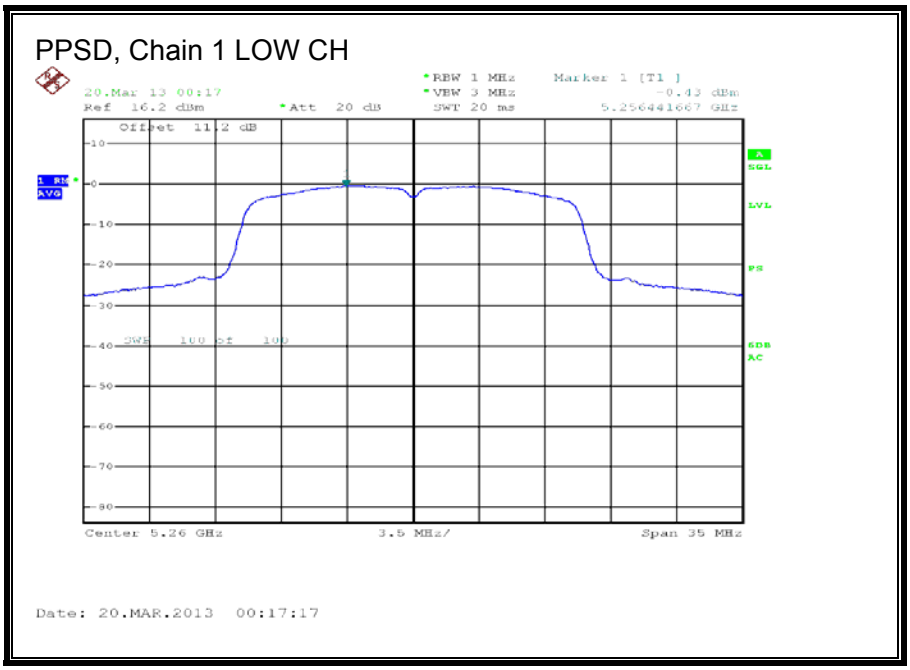



**OUTPUT POWER AND PPSD, Chain 1**





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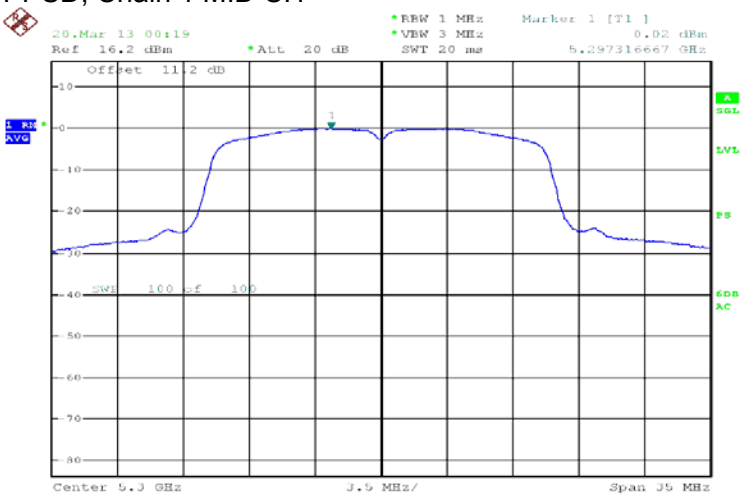
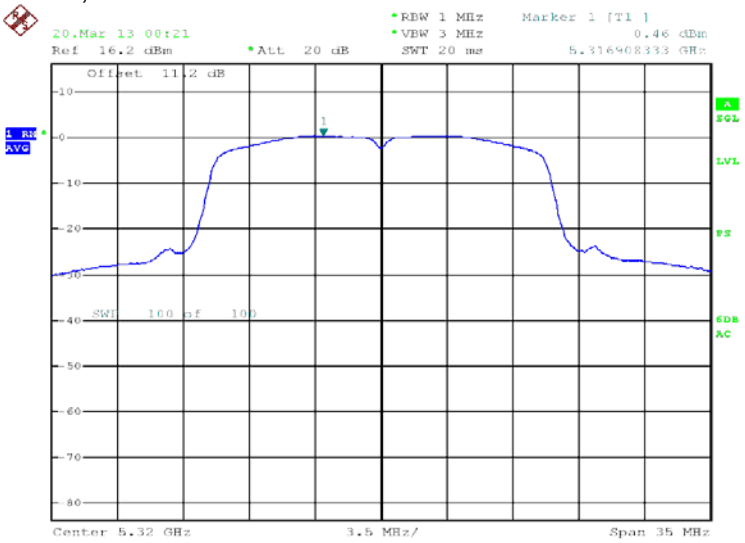
PPSD, Chain 1 MID CH




Date: 20.MAR.2013 00:19:13

PPSD, Chain 1 HIGH CH




Date: 20.MAR.2013 00:21:18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## 8.8. 802.11n HT20 SDM MCS8 2TX MODE IN THE 5.3 GHz BAND

### 8.8.1. 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) |
|---|---|---|---|
| Low | 5260 | 32.08 | 23.42 |
| Mid | 5300 | 23.83 | 20.25 |
| High | 5320 | 20.00 | 32.25 |


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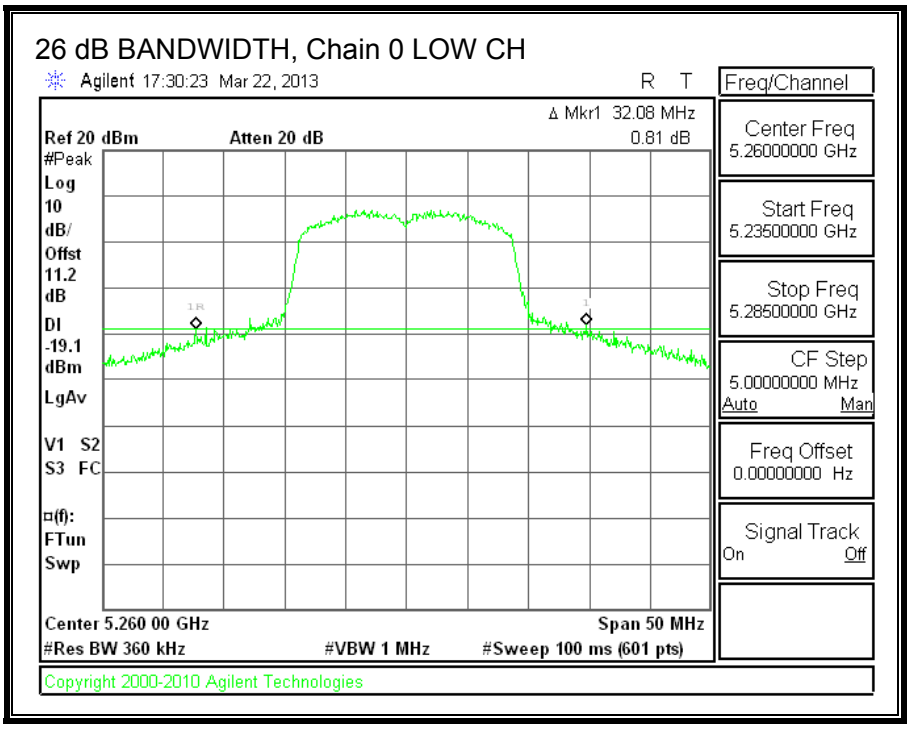
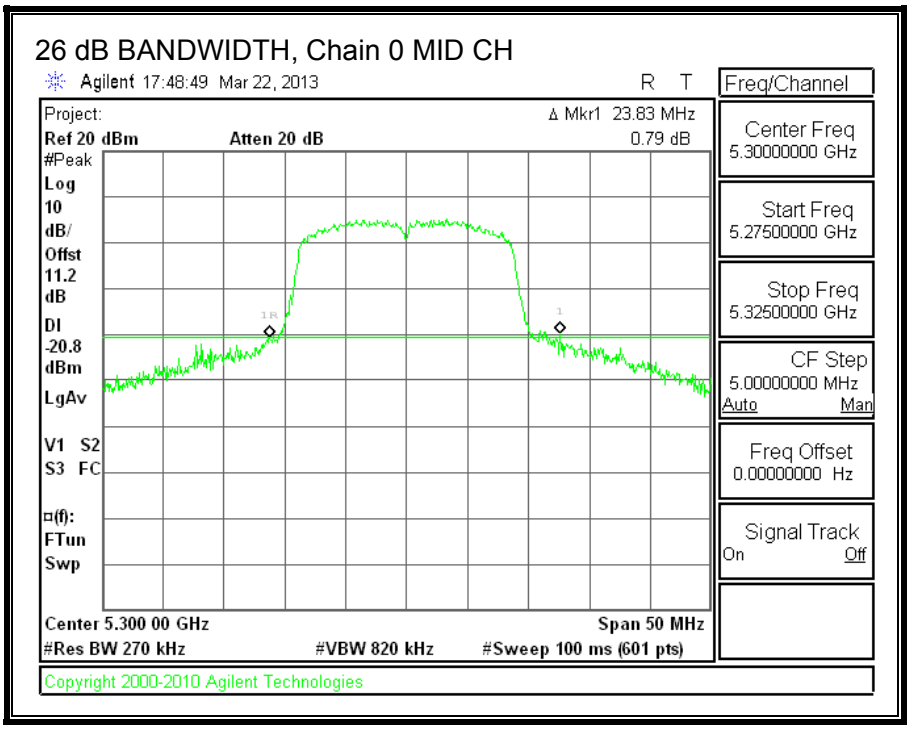
**26 dB BANDWIDTH, Chain 0**





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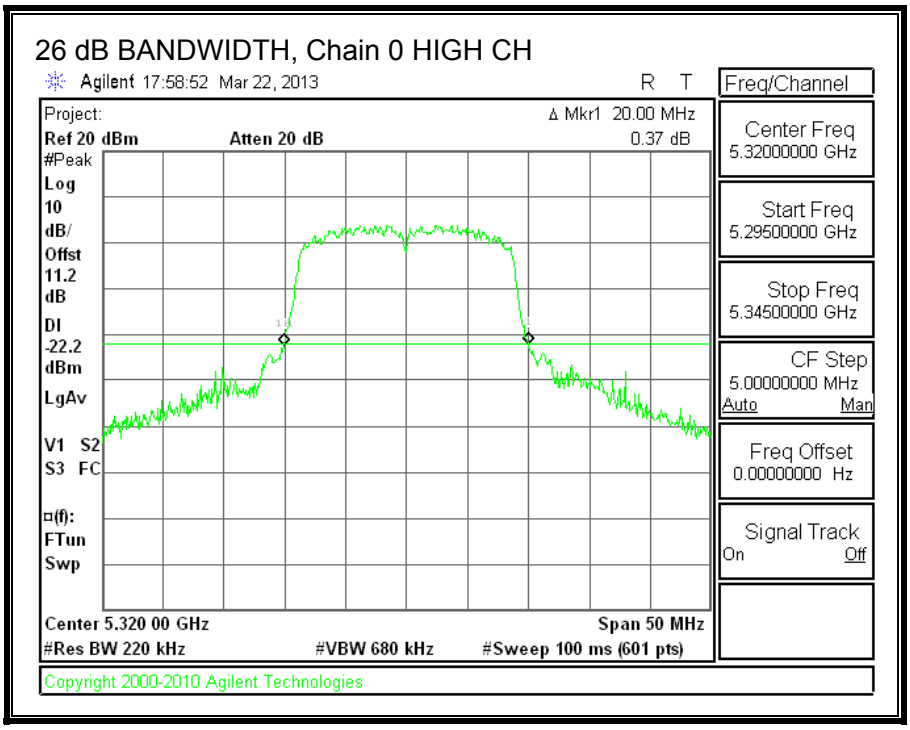
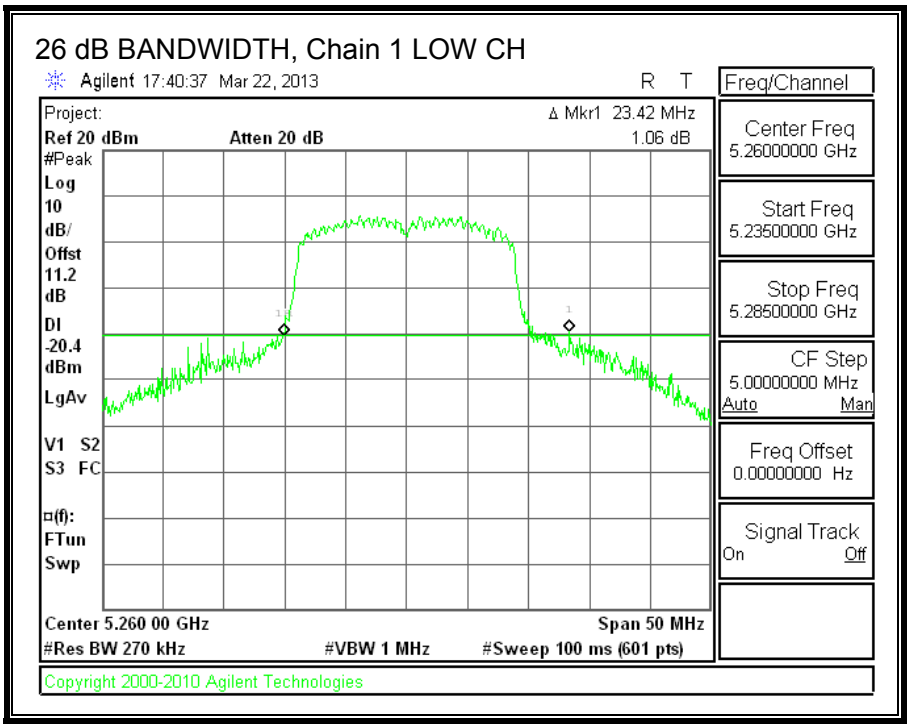



**26 dB BANDWIDTH, Chain 1**





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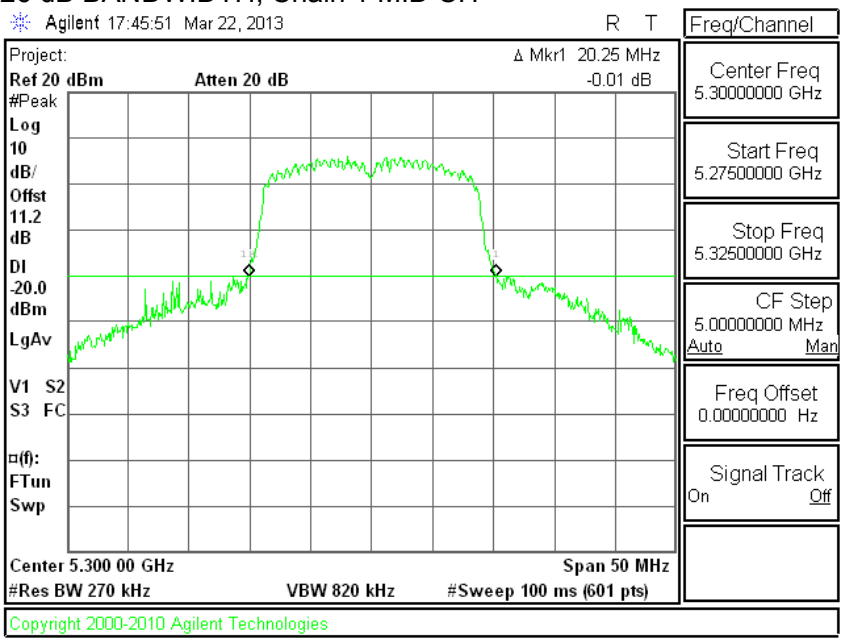
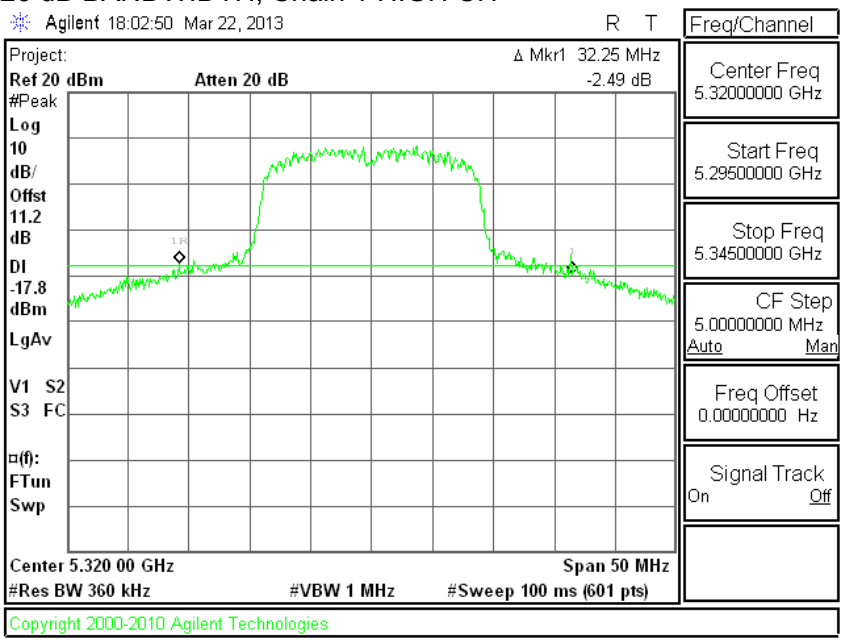
26 dB BANDWIDTH, Chain 1 MID CH




26 dB BANDWIDTH, Chain 1 HIGH CH





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### 8.8.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5260 | 17.4639 | 17.3897 |
| Mid | 5300 | 17.4291 | 17.3915 |
| High | 5320 | 17.3934 | 17.4981 |


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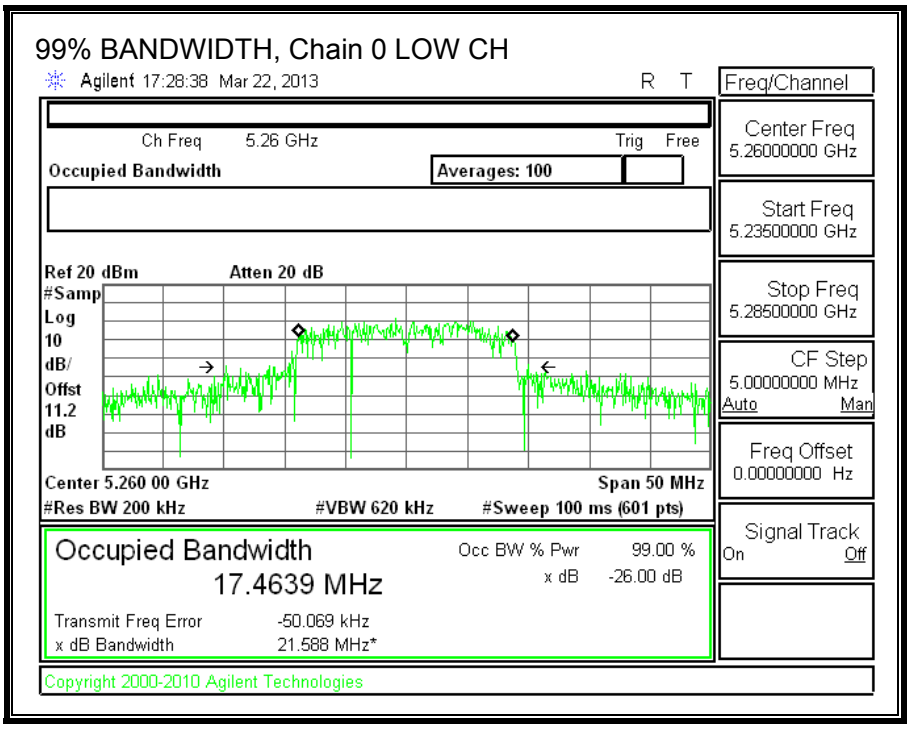
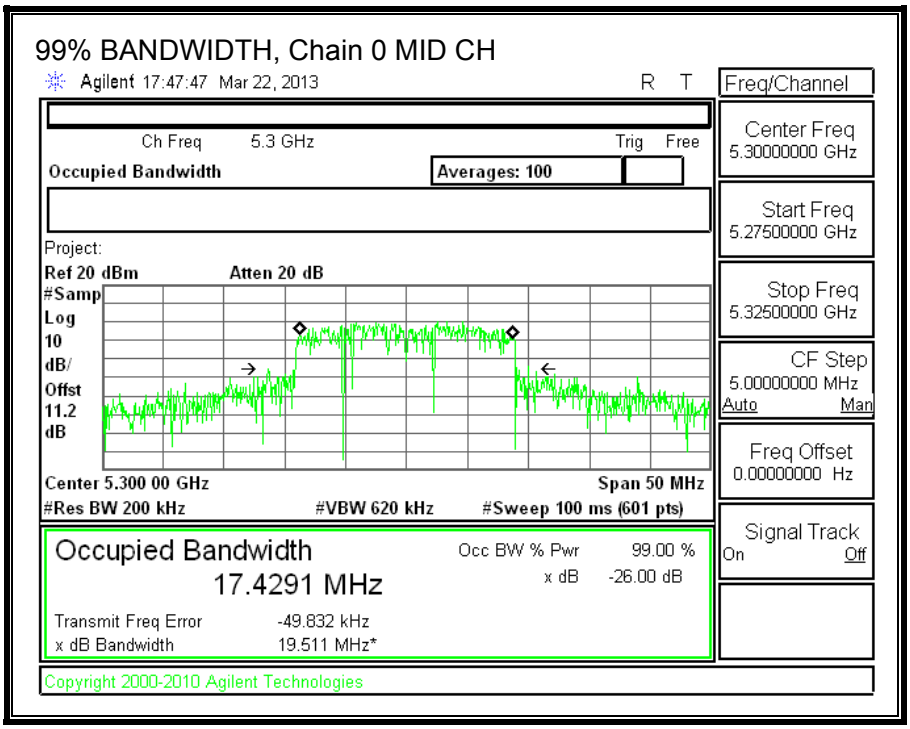
**99% BANDWIDTH, Chain 0**





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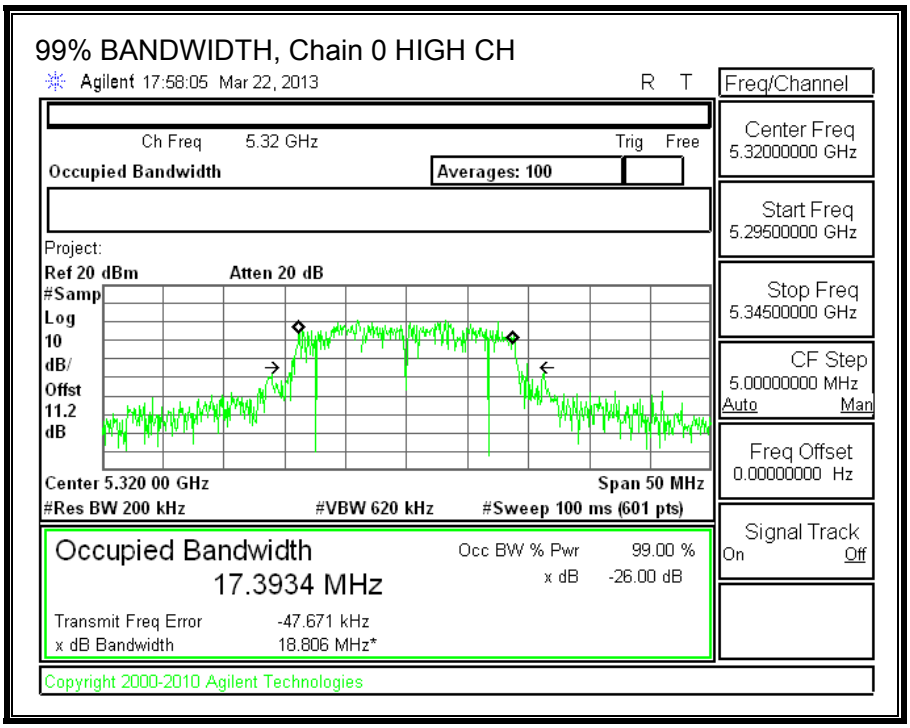
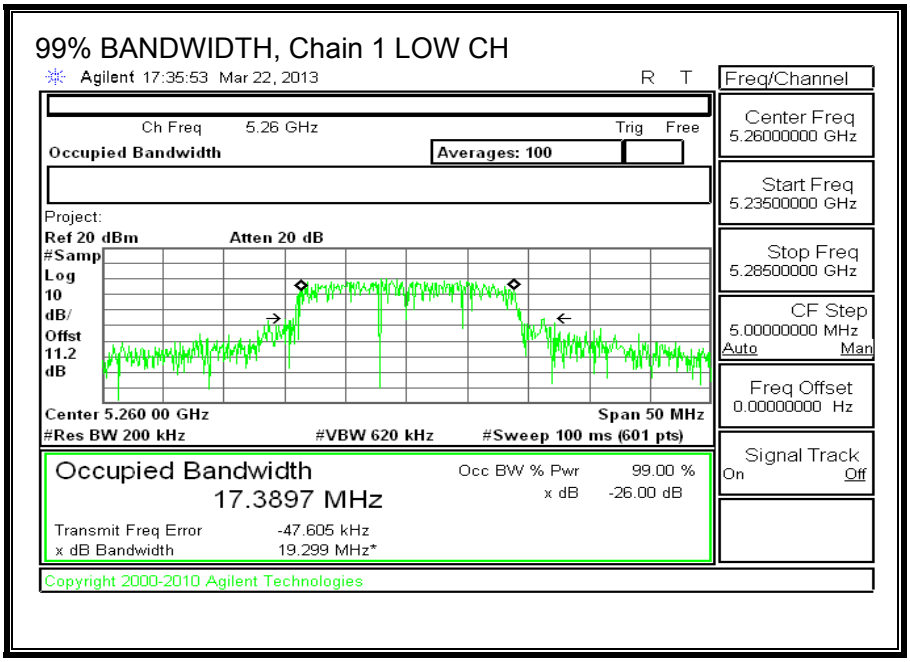



**99% BANDWIDTH, Chain 1**





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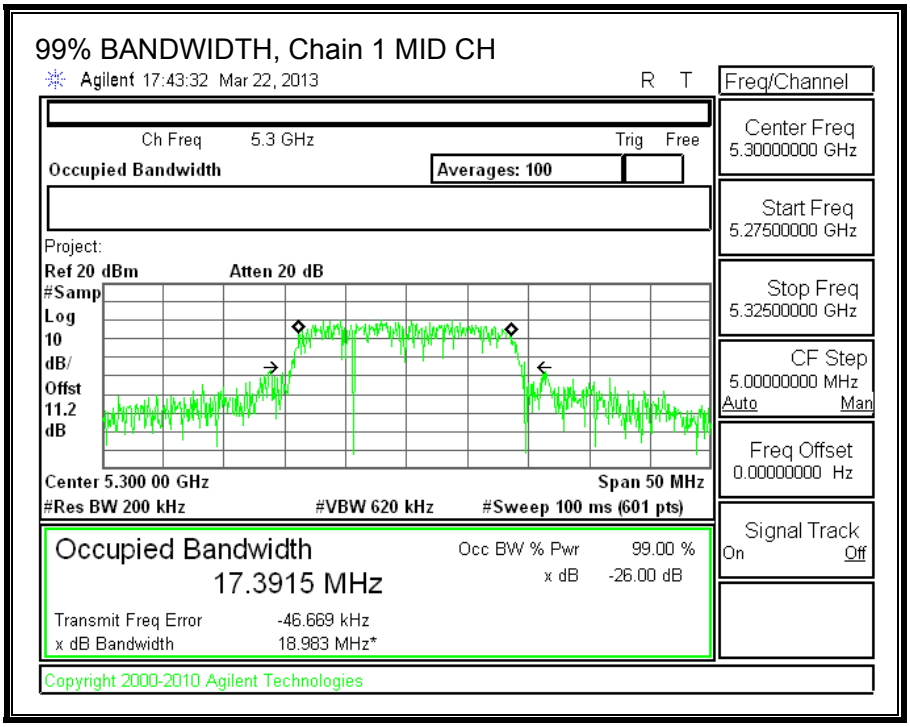


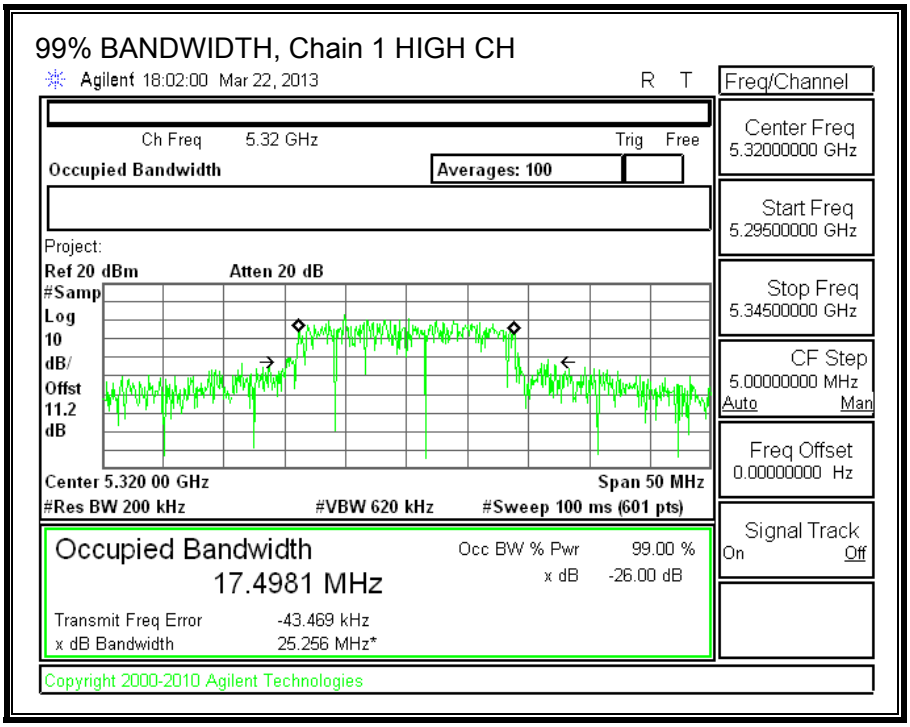



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### 8.8.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5260 | 12.10 | 12.90 | 15.53 |
| Mid | 5300 | 12.20 | 13.10 | 15.68 |
| High | 5320 | 12.00 | 13.30 | 15.71 |


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### 8.8.4. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 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 the same for each chain. The directional gain is equal to the antenna gain.


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**RESULTS**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5260 | 23.42 | 17.3897 | 4.00 |
| Mid | 5300 | 20.25 | 17.3915 | 4.00 |
| High | 5320 | 20.00 | 17.3934 | 4.00 |

**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 | 5260 | 24.00 | 23.40 | 29.40 | 23.40 | 11.00 | 11.00 | 11.00 |
| Mid | 5300 | 24.00 | 23.40 | 29.40 | 23.40 | 11.00 | 11.00 | 11.00 |
| High | 5320 | 24.00 | 23.40 | 29.40 | 23.40 | 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) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5260 | 13.912 | 13.845 | 16.89 | 23.40 | -6.51 |
| Mid | 5300 | 13.766 | 13.887 | 16.84 | 23.40 | -6.57 |
| High | 5320 | 13.466 | 14.183 | 16.85 | 23.40 | -6.55 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5260 | -1.51 | -2.04 | 1.24 | 11.00 | -9.76 |
| Mid | 5300 | -3.03 | -1.49 | 0.82 | 11.00 | -10.18 |
| High | 5320 | 0.22 | -0.43 | 2.92 | 11.00 | -8.08 |


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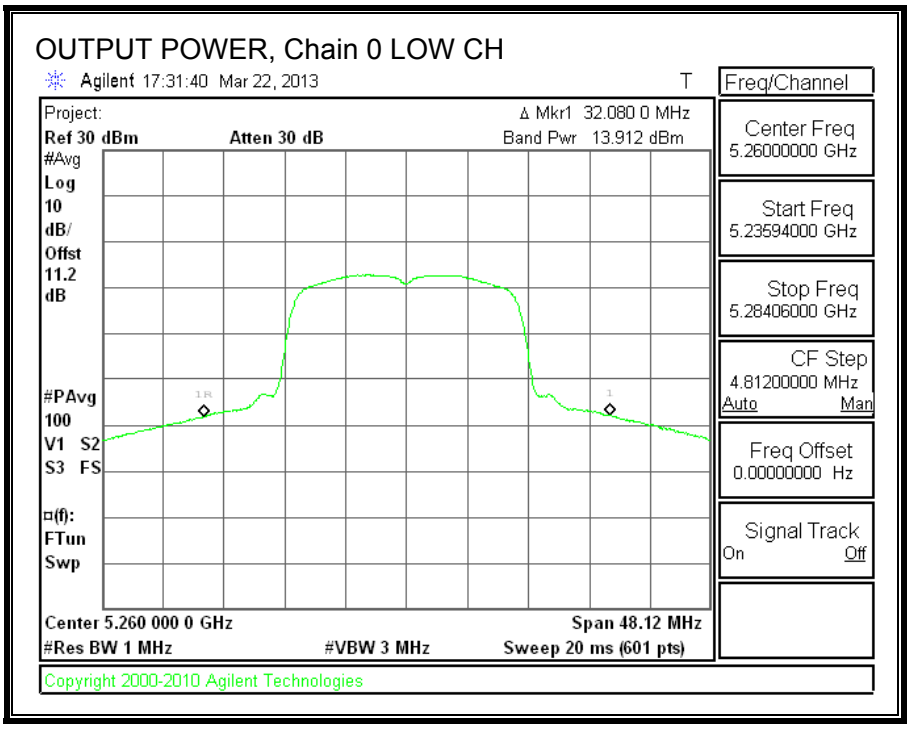
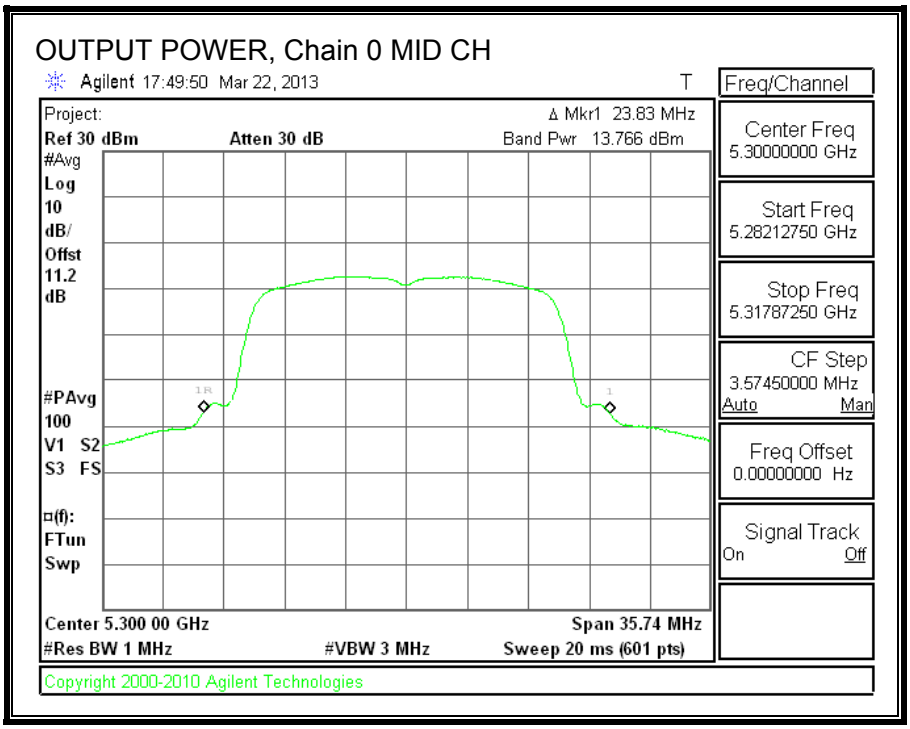
**OUTPUT POWER, Chain 0**





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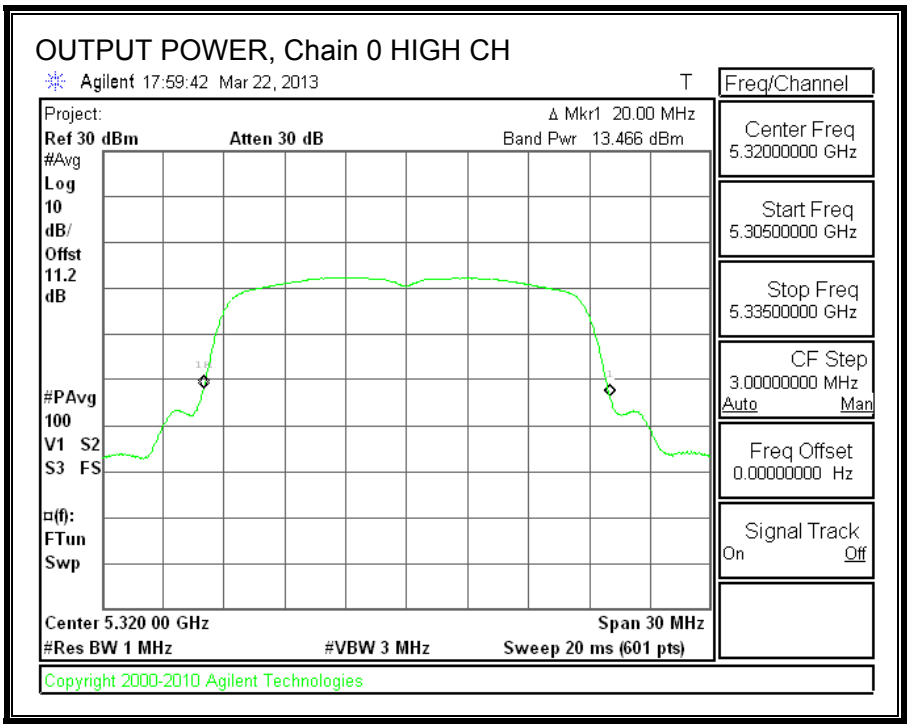
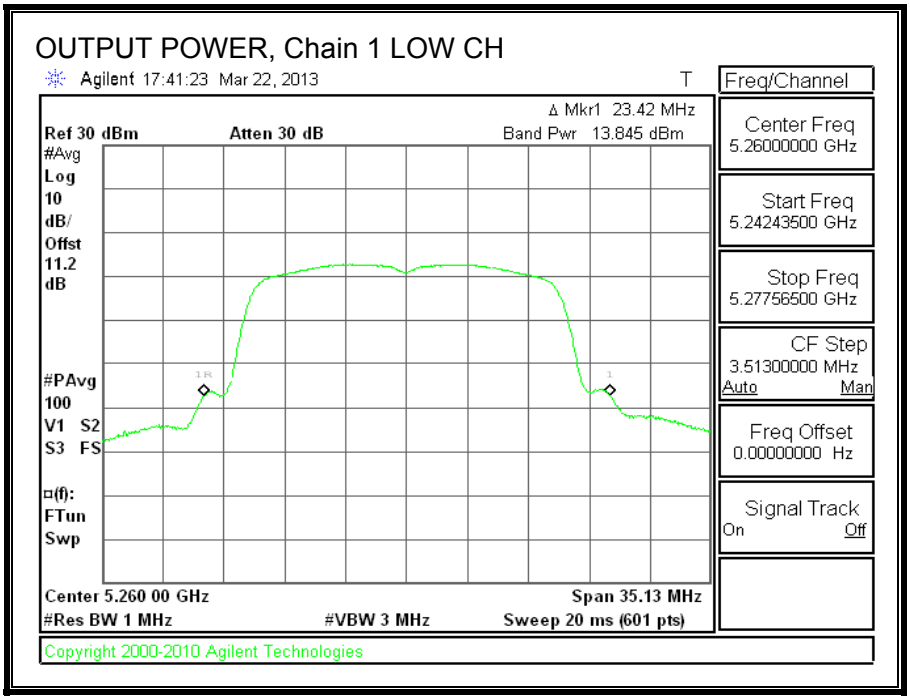



**OUTPUT POWER, Chain 1**





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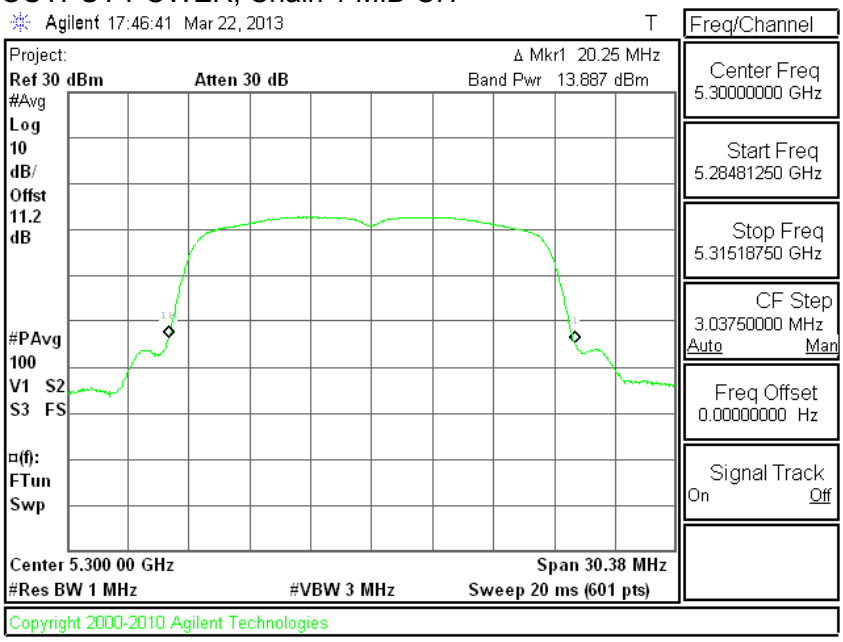
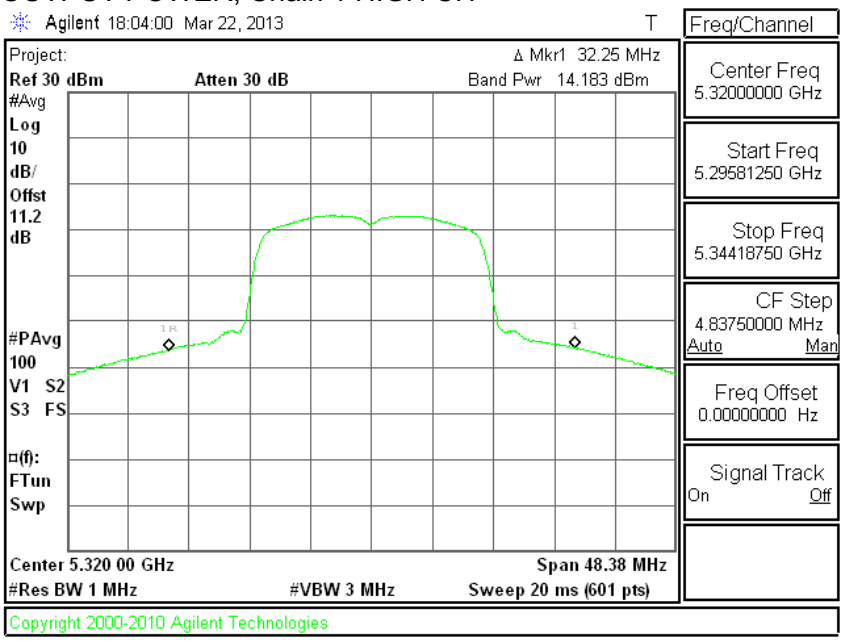
OUTPUT POWER, Chain 1 MID CH




OUTPUT POWER, Chain 1 HIGH CH





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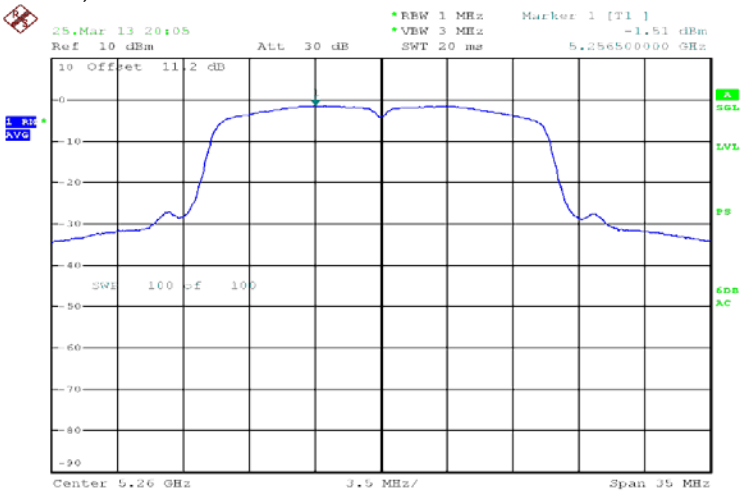
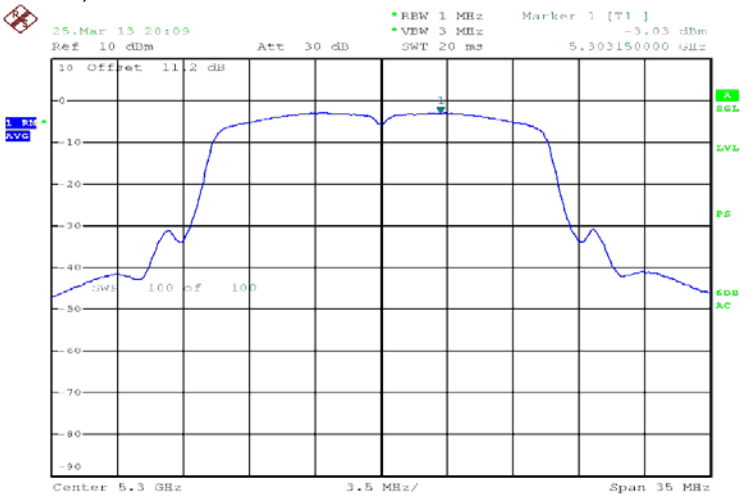
**PPSD, Chain 0**

PPSD, Chain 0 LOW CH




Date: 25.MAR.2013 20:05:39

PPSD, Chain 0 MID CH




Date: 25.MAR.2013 20:09:31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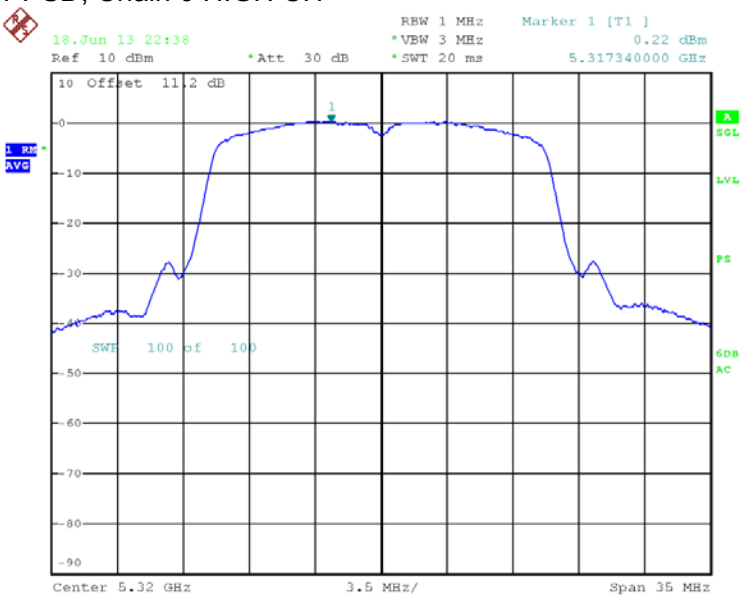
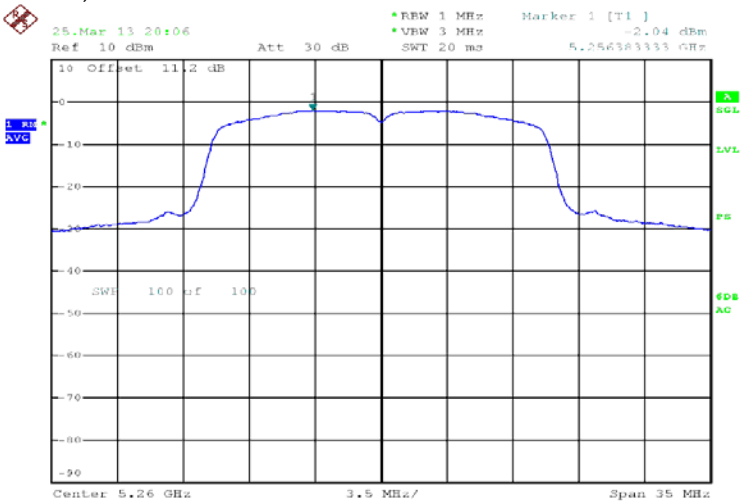
PPSD, Chain 0 HIGH CH




Date: 18.JUN.2013 22:38:50

**PPSD, Chain 1**

PPSD, Chain 1 LOW CH




Date: 25.MAR.2013 20:06:10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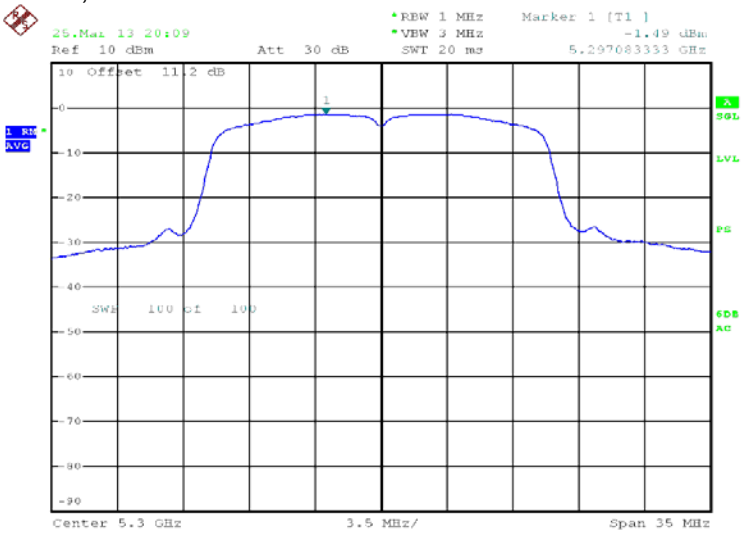
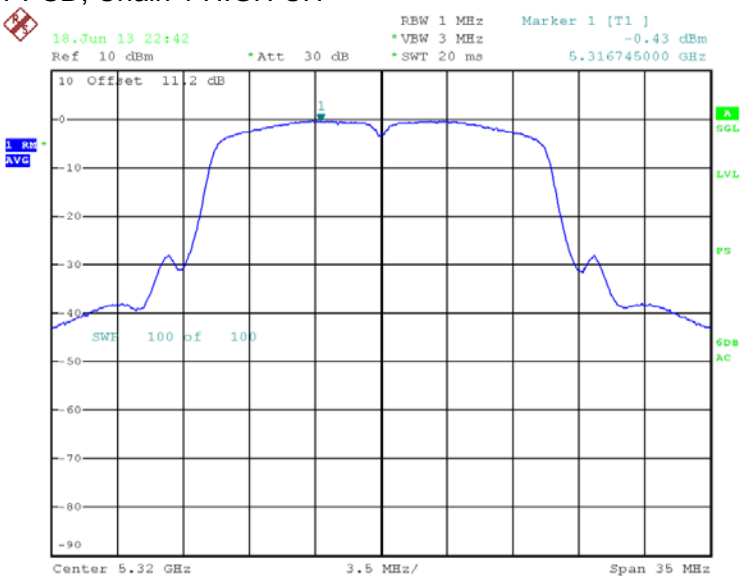
PPSD, Chain 1 MID CH




Date: 25.MAR.2013 20:09:53

PPSD, Chain 1 HIGH CH




Date: 18.JUN.2013 22:42:20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## 8.9. 802.11n HT40 CDD MCS0 2TX MODE IN THE 5.3 GHz BAND

### 8.9.1. 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) |
|---|---|---|---|
| Low | 5270 | 64.12 | 47.20 |
| High | 5310 | 46.50 | 70.95 |


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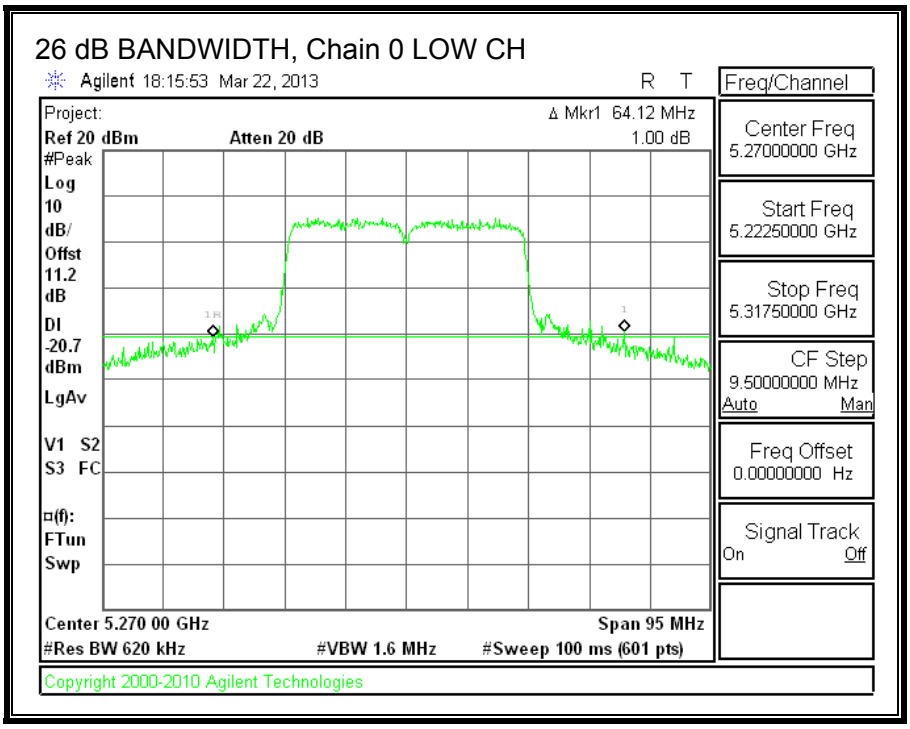
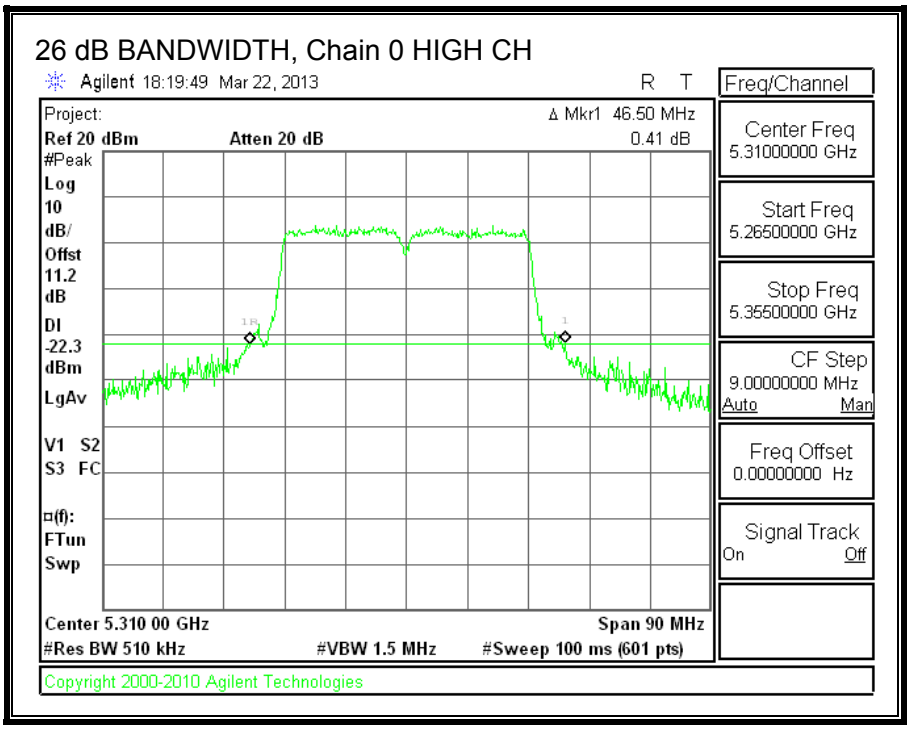
**26 dB BANDWIDTH, Chain 0**





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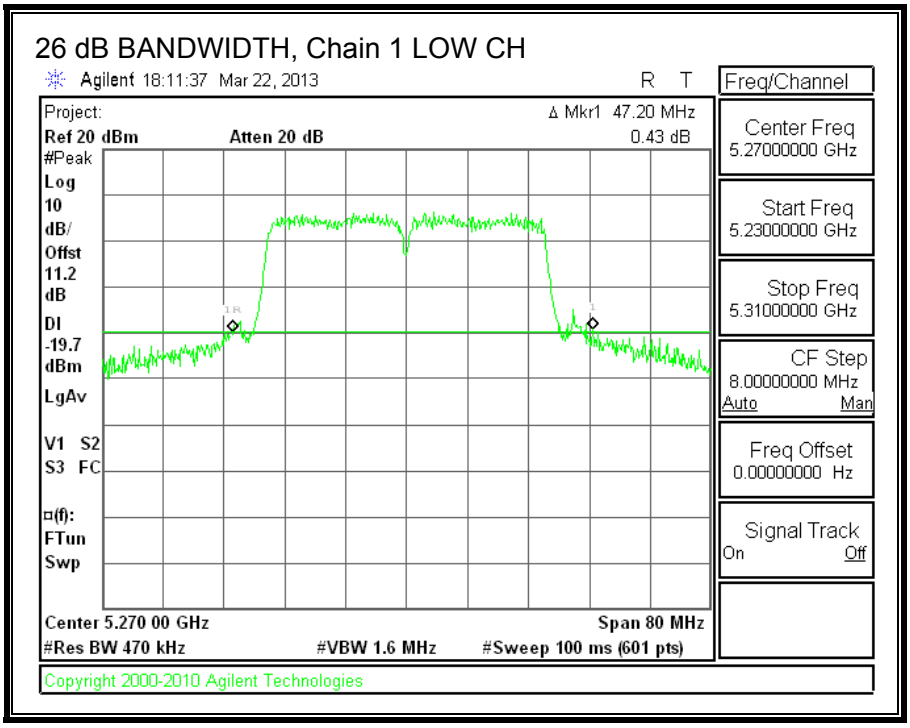
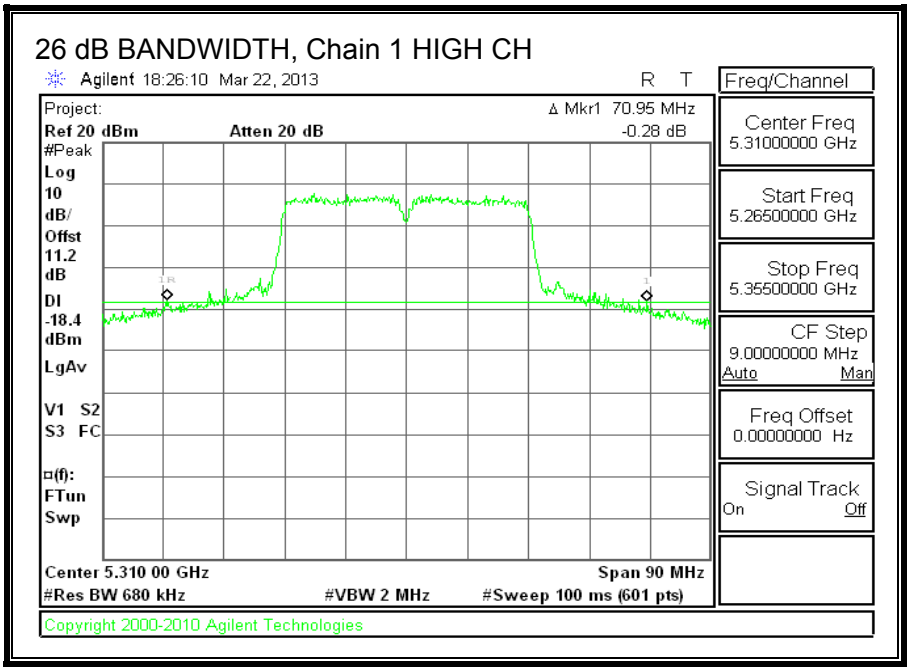
**26 dB BANDWIDTH, Chain 1**





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### 8.9.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5270 | 36.1711 | 36.1418 |
| High | 5310 | 36.1571 | 36.2044 |


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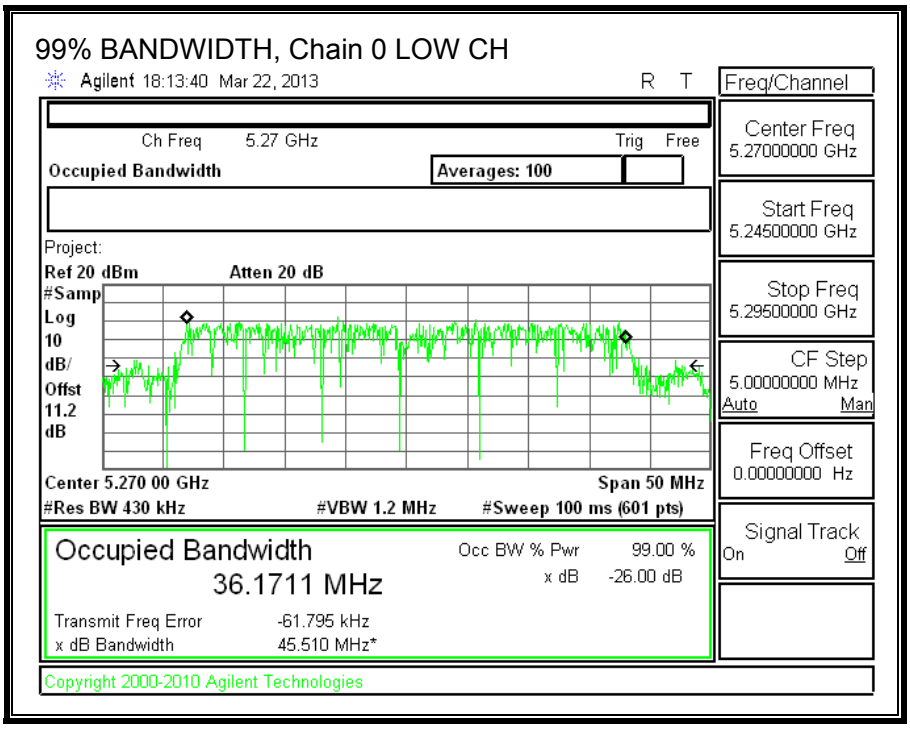
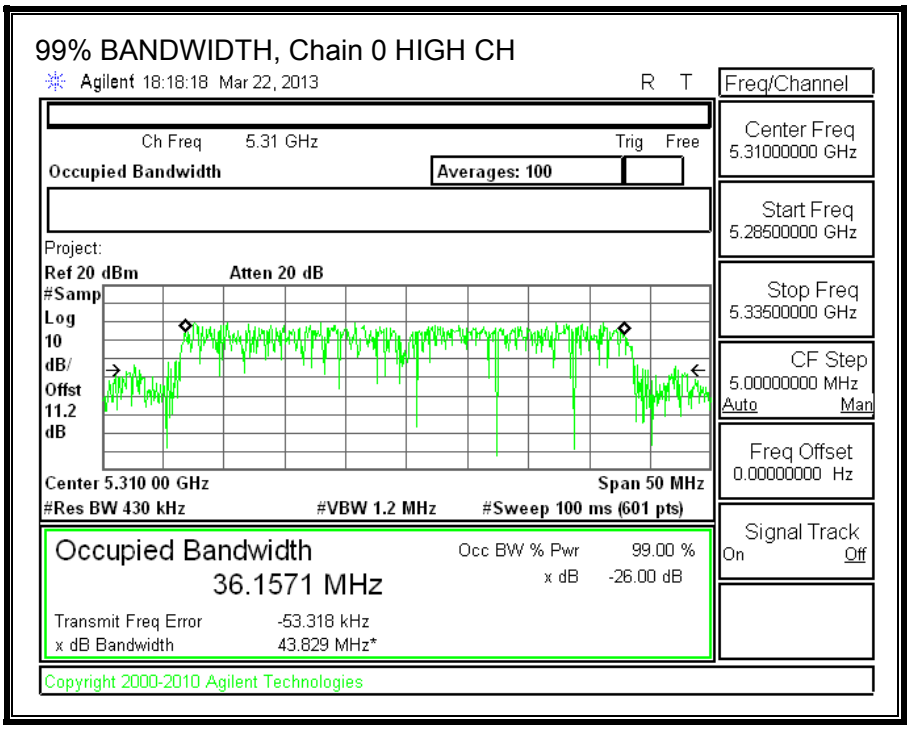
**99% BANDWIDTH, Chain 0**





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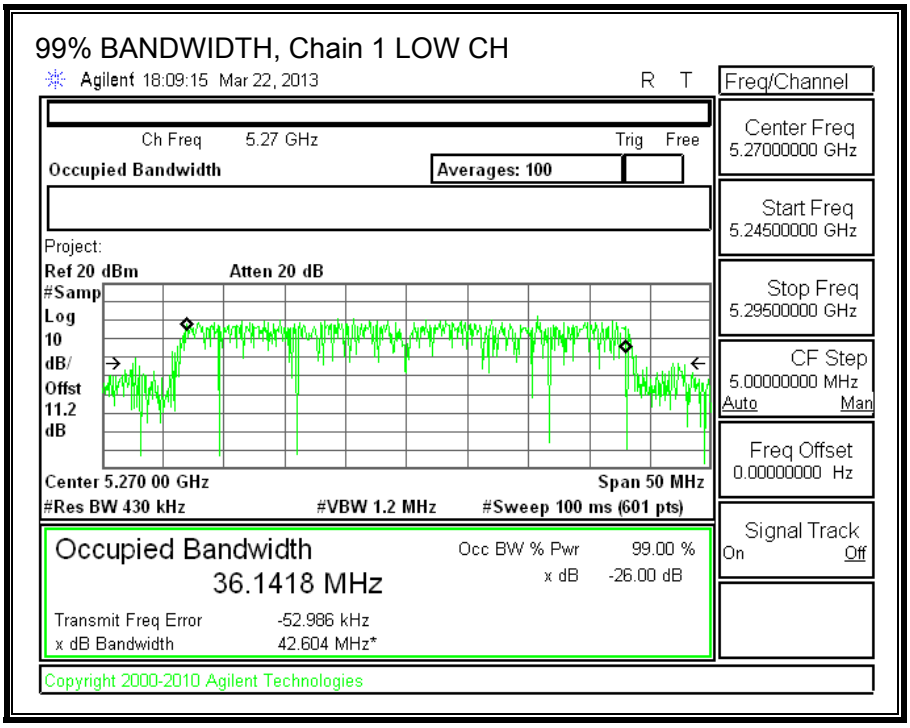
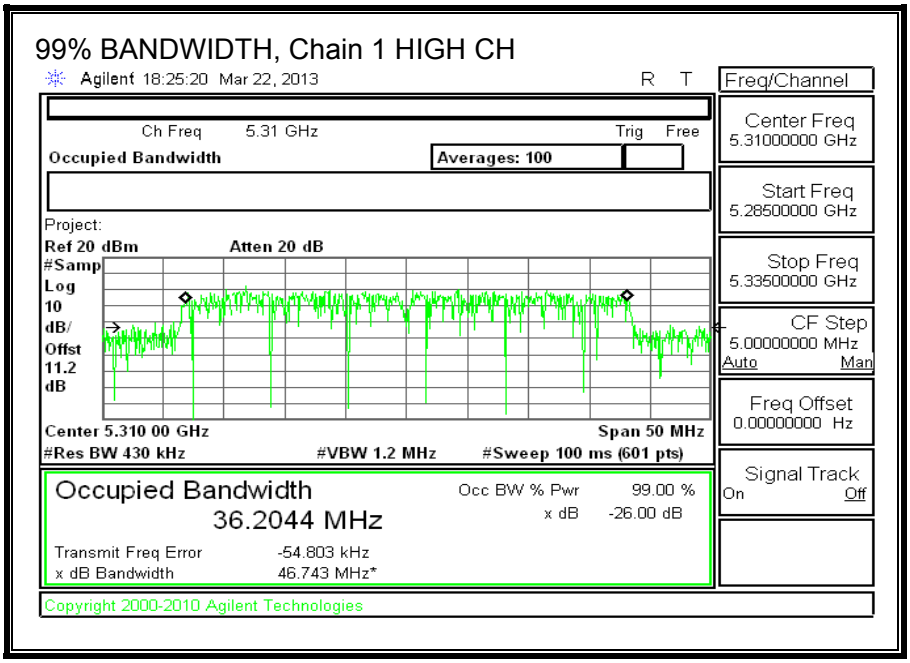
**99% BANDWIDTH, Chain 1**





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### 8.9.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5270 | 12.07 | 12.92 | 15.53 |
| High | 5310 | 12.02 | 13.36 | 15.75 |


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### 8.9.4. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 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**

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

For PPSD, the TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

| Antenna Gain (dBi) | 10 * Log (2 chains) (dB) | Correlated Chains Directional Gain (dBi) |
|---|---|---|
| 4.00 | 3.01 | 7.01 |


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## RESULTS

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Uncorrelated Directional Gain (dBi) | Correlated Directional Gain (dBi) |
|---|---|---|---|---|---|
| Low | 5270 | 47.20 | 36.1418 | 4.00 | 7.01 |
| High | 5310 | 46.50 | 36.1571 | 4.00 | 7.01 |

**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 | 5270 | 24.00 | 24.00 | 30.00 | 24.00 | 9.99 | 11.00 | 9.99 |
| High | 5310 | 24.00 | 24.00 | 30.00 | 24.00 | 9.99 | 11.00 | 9.99 |

| | | |
|---|---|---|
| **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) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5270 | 13.593 | 13.535 | 16.57 | 24.00 | -7.43 |
| High | 5310 | 12.818 | 13.641 | 16.26 | 24.00 | -7.74 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5270 | -6.13 | -4.85 | -2.43 | 9.99 | -12.42 |
| High | 5310 | -6.43 | -4.85 | -2.56 | 9.99 | -12.55 |


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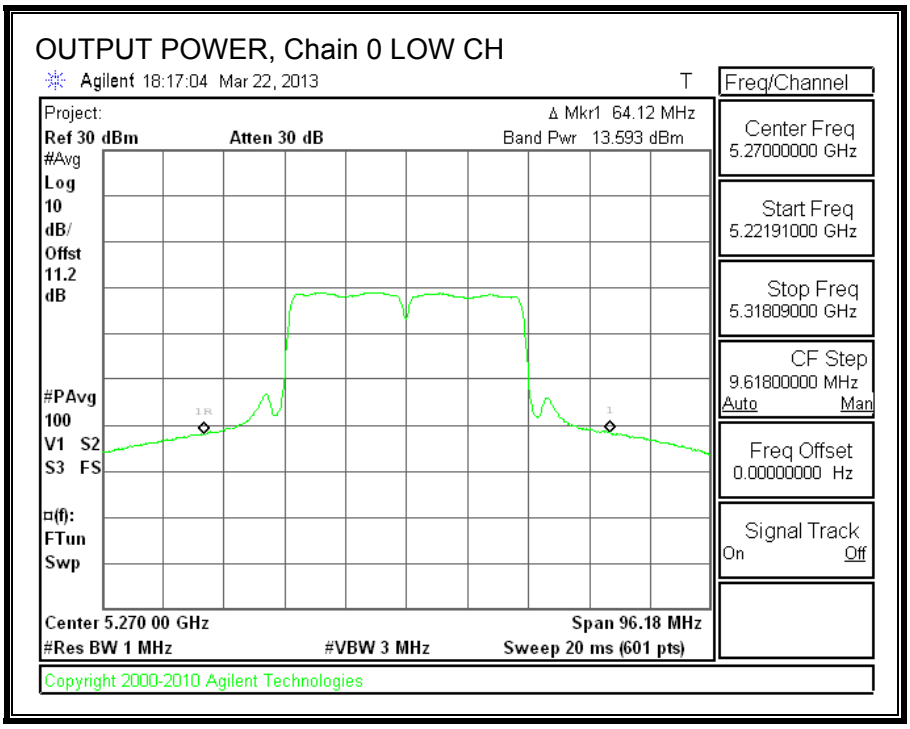
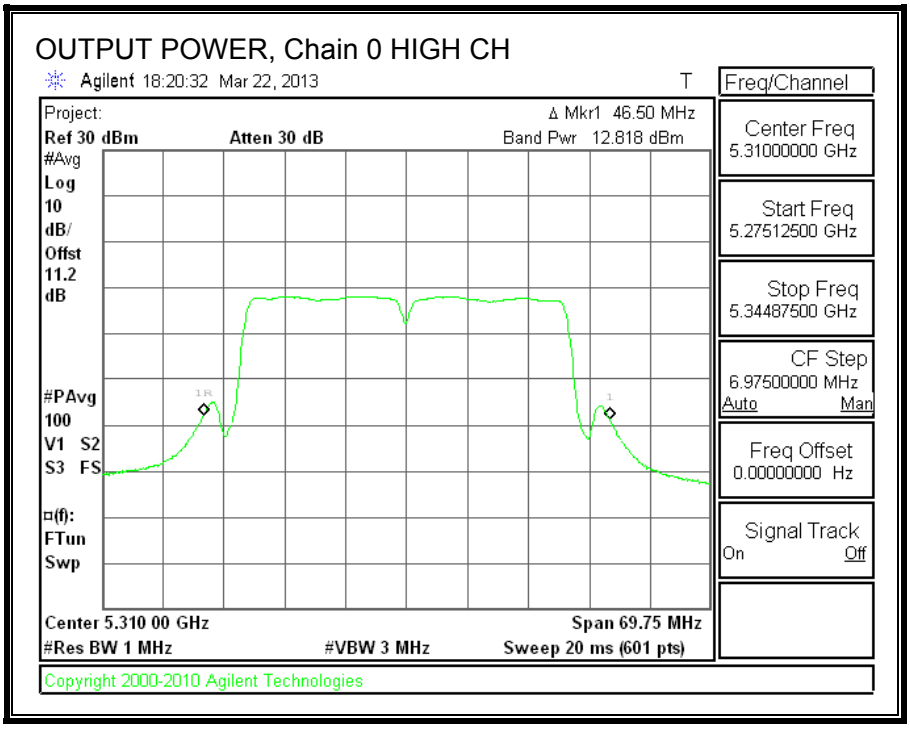
**OUTPUT POWER, Chain 0**





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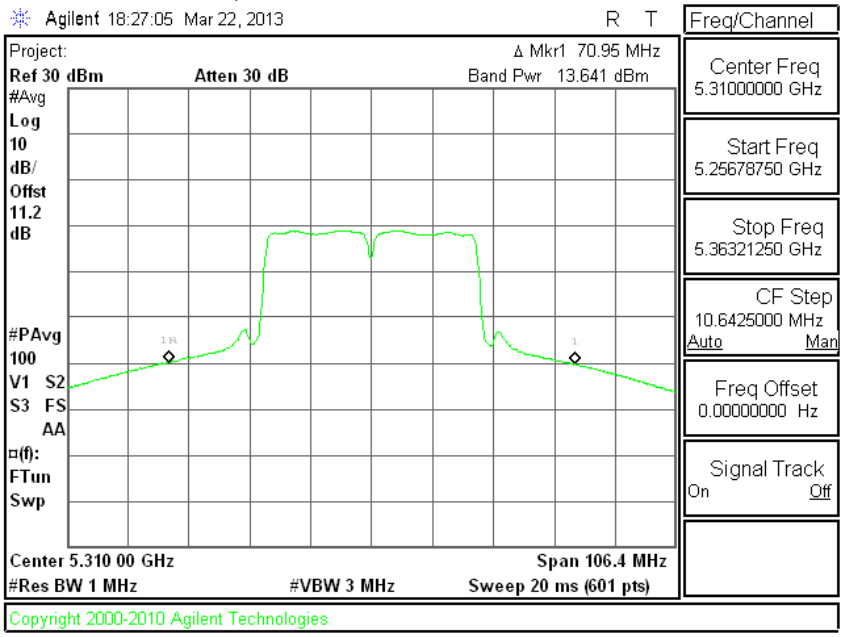
**OUTPUT POWER, Chain 1**

OUTPUT POWER, Chain 1 LOW CH

OUTPUT POWER, Chain 1 HIGH CH





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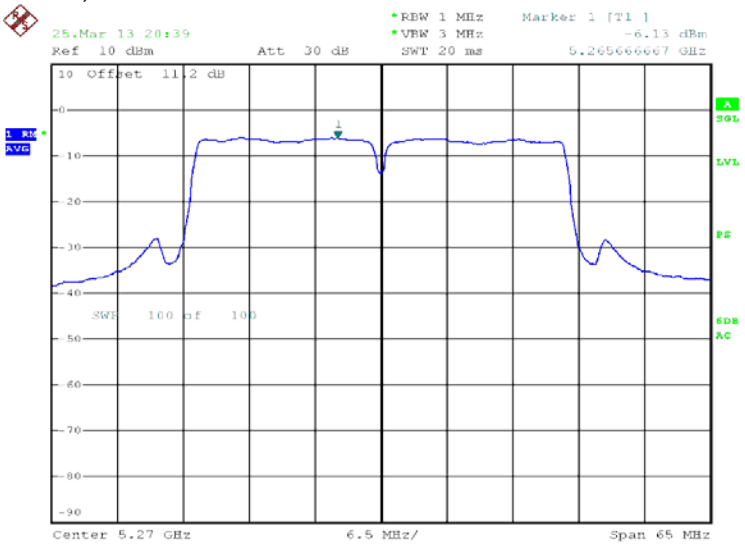
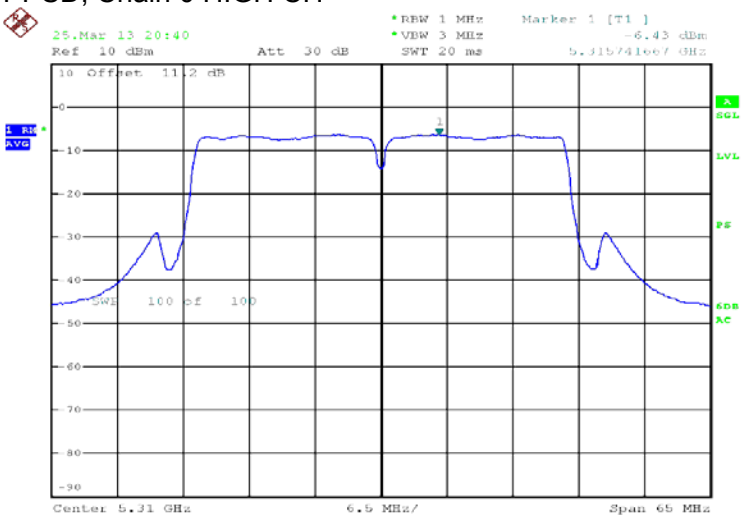
**PPSD, Chain 0**

PPSD, Chain 0 LOW CH




Date: 25.MAR.2013 20:39:07

PPSD, Chain 0 HIGH CH




Date: 25.MAR.2013 20:40:29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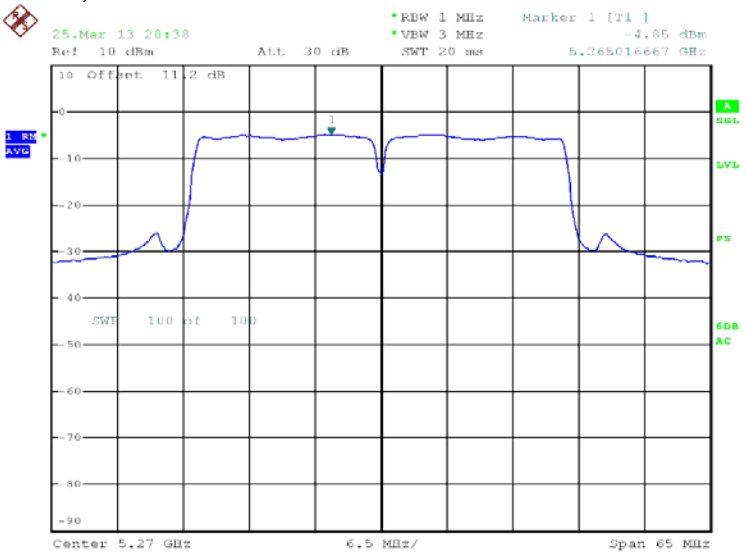
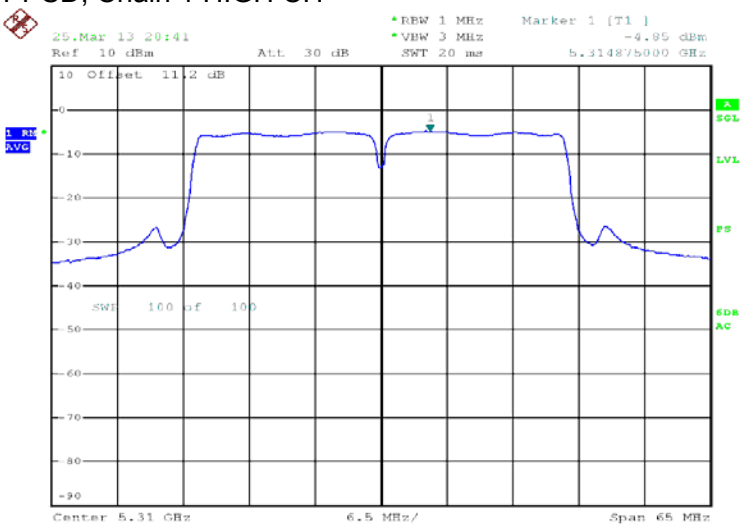
**PPSD, Chain 1**

PPSD, Chain 1 LOW CH




PPSD, Chain 1 HIGH CH





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## 8.10. 802.11n HT40 SDM MCS8 2TX MODE IN THE 5.3 GHz BAND

### 8.10.1. 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) |
|---|---|---|---|
| Low | 5270 | 54.75 | 49.20 |
| High | 5310 | 45.75 | 61.95 |


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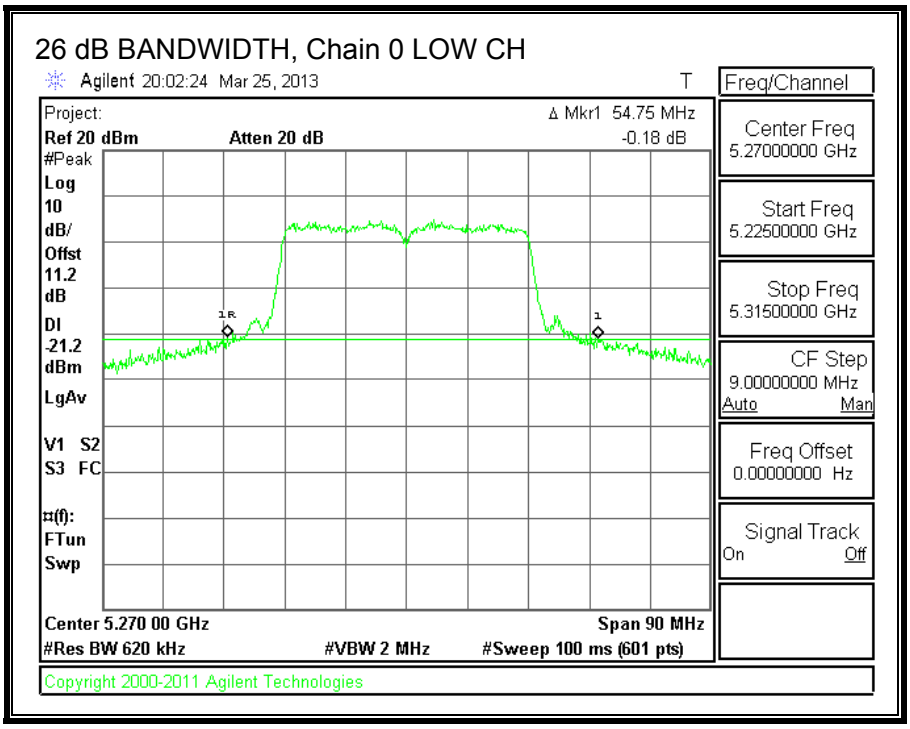
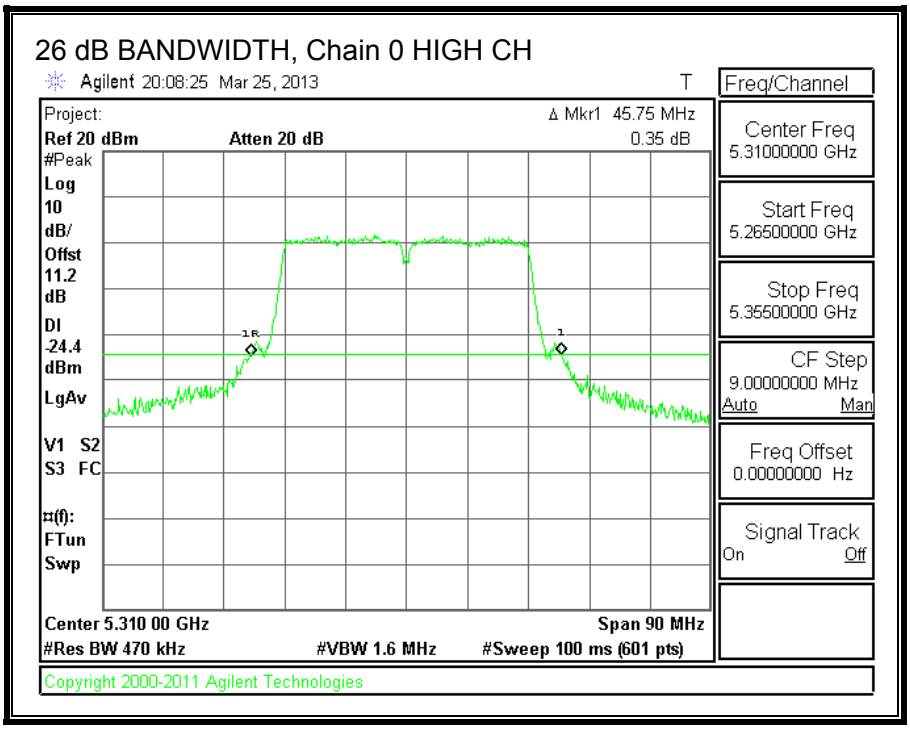
**26 dB BANDWIDTH, Chain 0**





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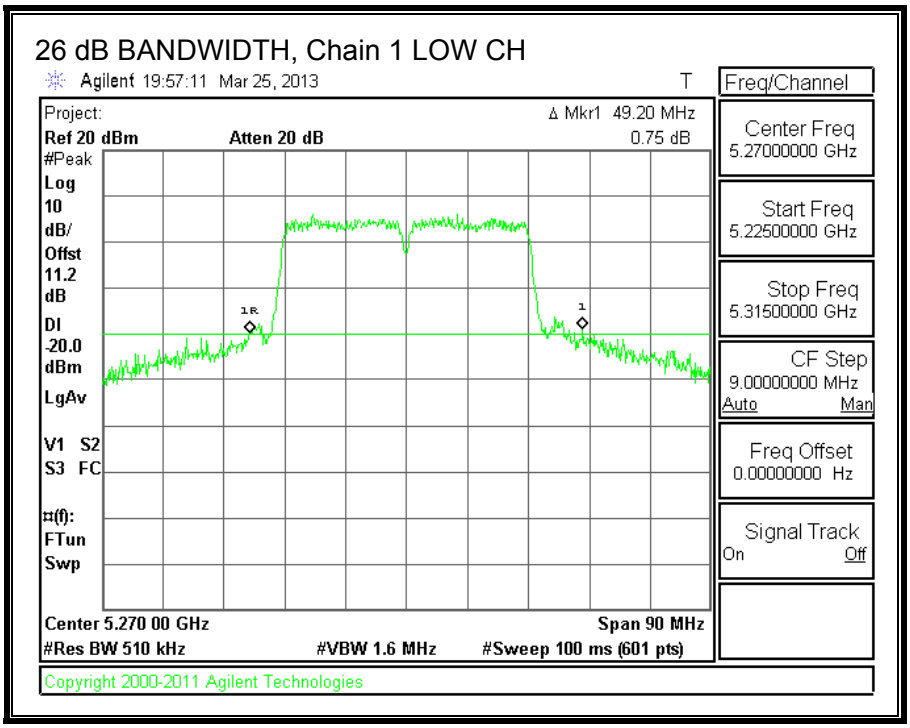
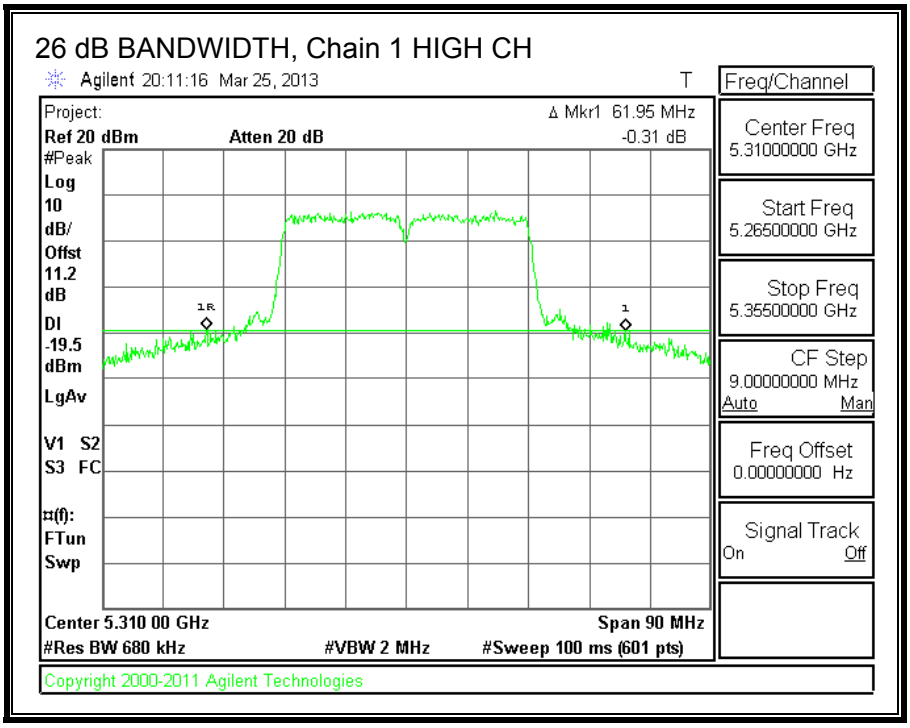
**26 dB BANDWIDTH, Chain 1**





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### 8.10.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5270 | 36.2271 | 36.1683 |
| High | 5310 | 36.1739 | 36.2234 |


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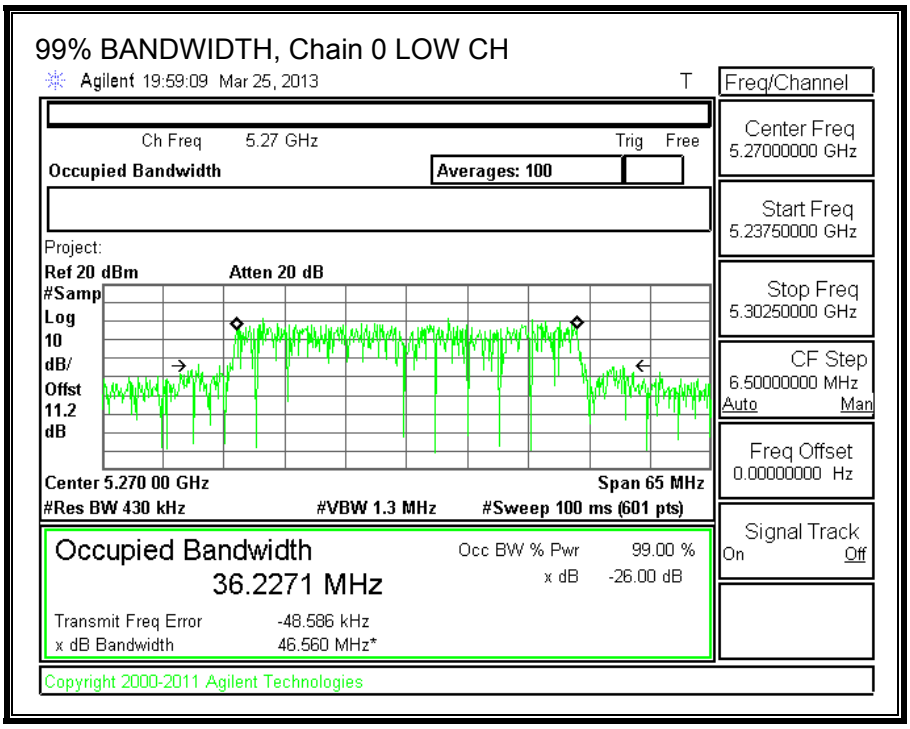
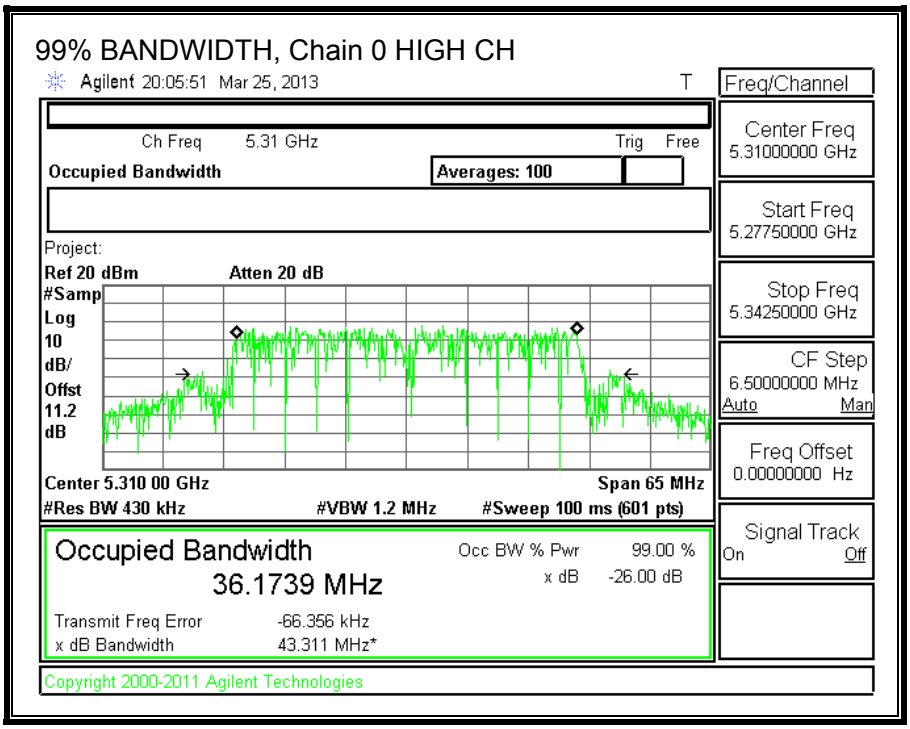
**99% BANDWIDTH, Chain 0**





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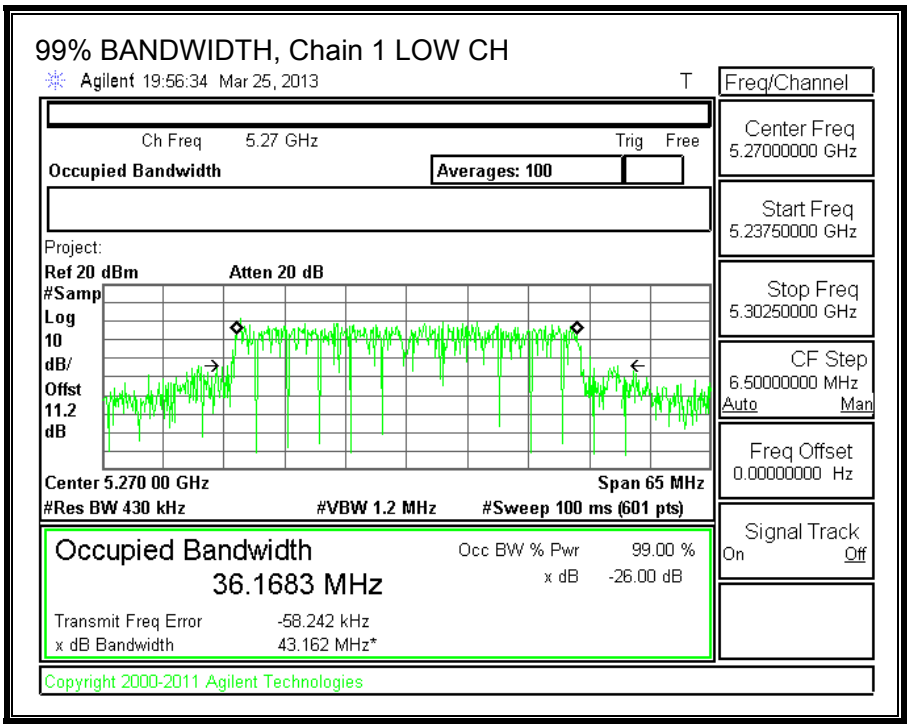
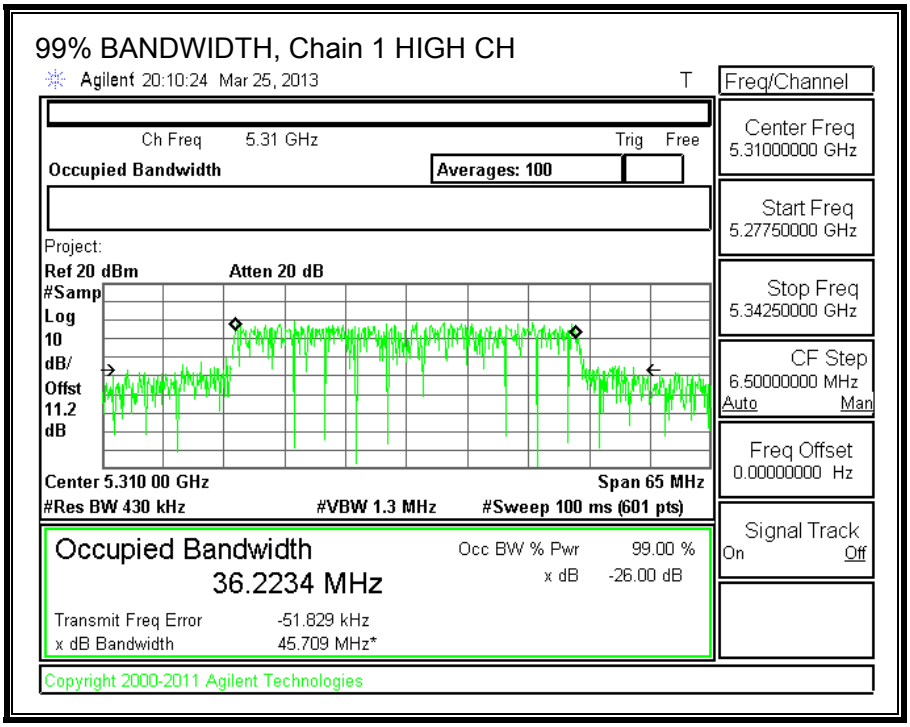
**99% BANDWIDTH, Chain 1**





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### 8.10.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5270 | 12.20 | 13.10 | 15.68 |
| High | 5310 | 12.10 | 13.30 | 15.75 |


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### 8.10.4. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 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 the same for each chain. The directional gain is equal to the antenna gain.


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**RESULTS**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5270 | 49.20 | 36.1683 | 4.00 |
| High | 5310 | 45.75 | 36.1739 | 4.00 |

**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 | 5270 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |
| High | 5310 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |

| | | |
|---|---|---|
| Duty Cycle CF (dB) | 0.11 | Included in Calculations of Corr'd Power & PPSD |

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5270 | 12.521 | 12.892 | 15.83 | 24.00 | -8.17 |
| High | 5310 | 10.857 | 12.652 | 14.97 | 24.00 | -9.03 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5270 | -2.27 | -1.82 | 1.08 | 11.00 | -9.92 |
| High | 5310 | -3.87 | -2.05 | 0.25 | 11.00 | -10.75 |


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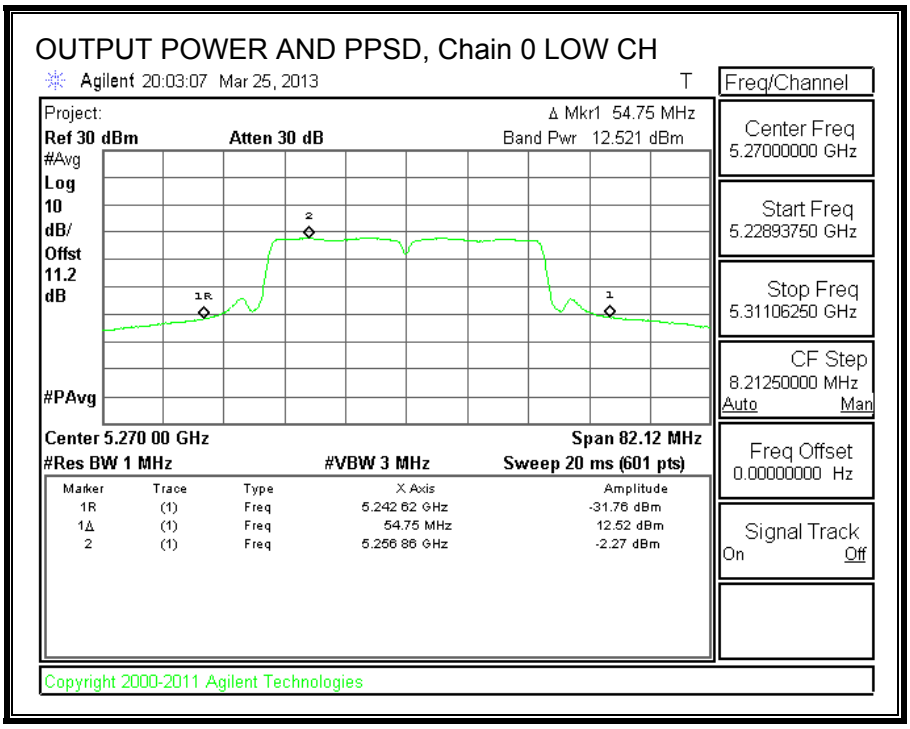
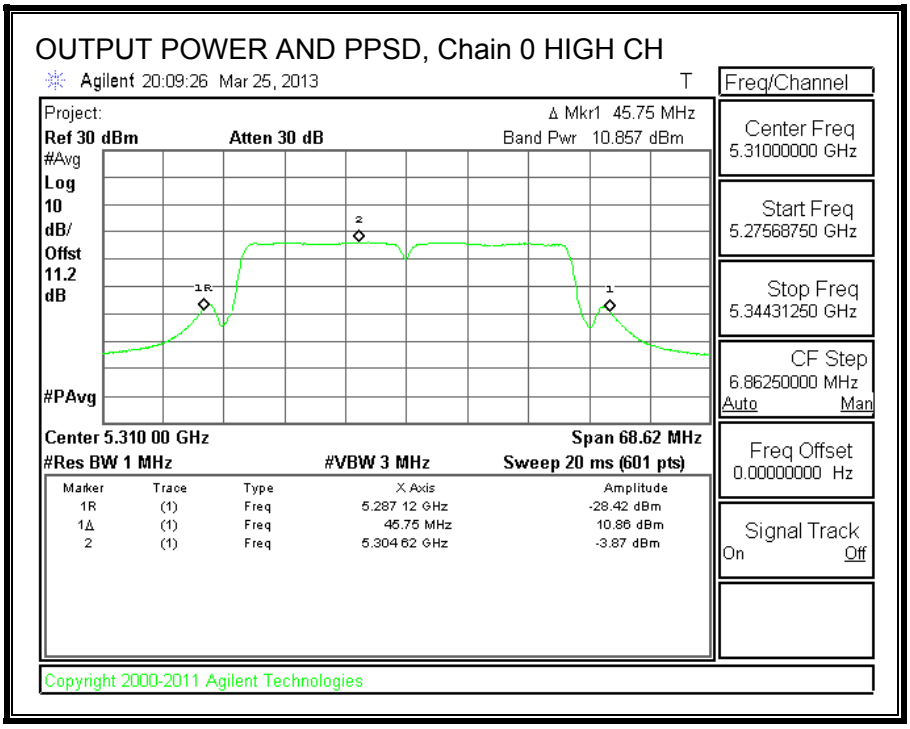
**OUTPUT POWER AND PPSD, Chain 0**





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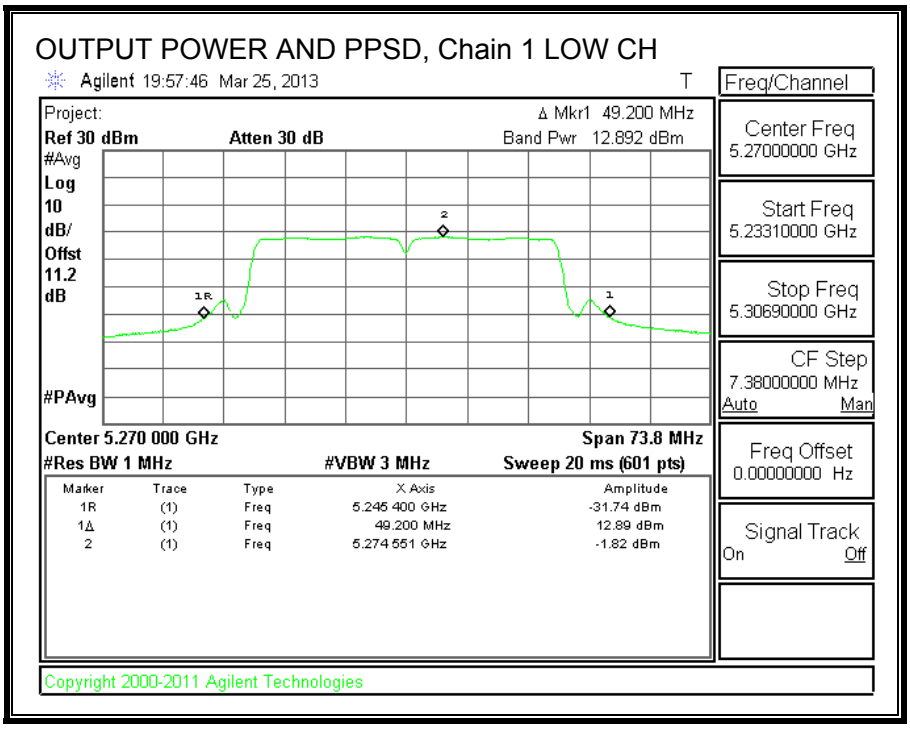
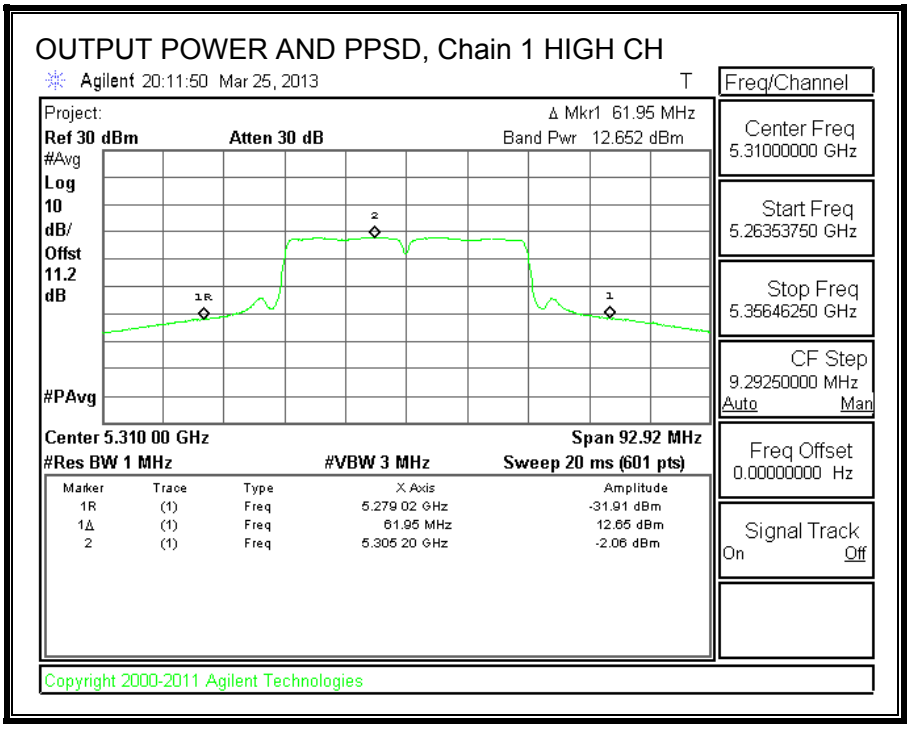
**OUTPUT POWER AND PPSD, Chain 1**





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## 8.11. 802.11a CDD 2TX MODE IN THE 5.6 GHz BAND

### 8.11.1. 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) |
|---|---|---|---|
| Low | 5500 | 19.80 | 20.07 |
| Mid | 5580 | 19.93 | 21.53 |
| High | 5700 | 19.67 | 19.80 |


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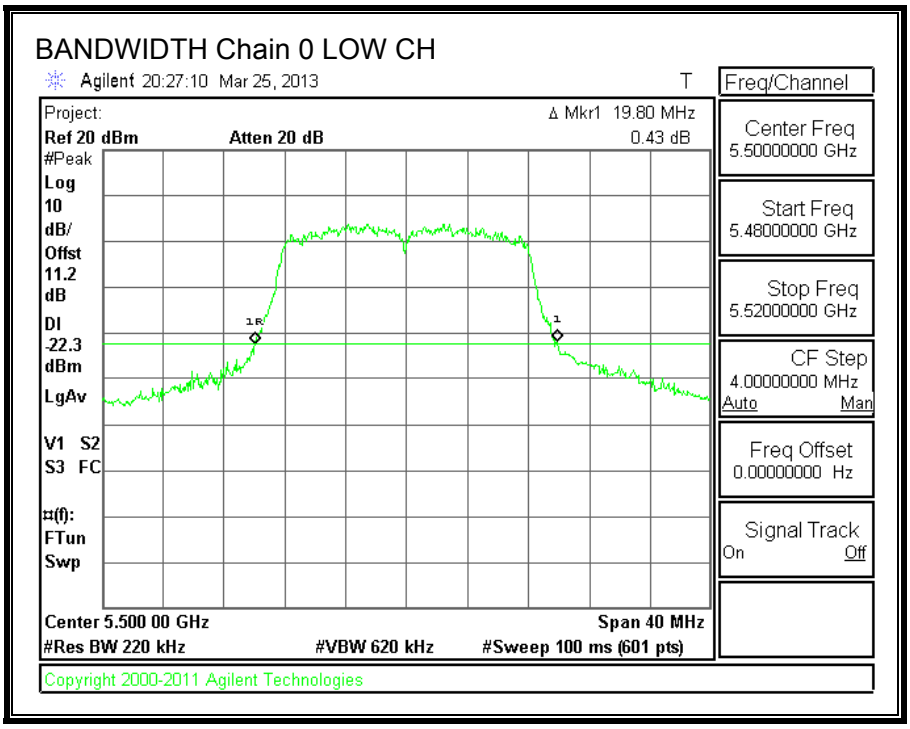
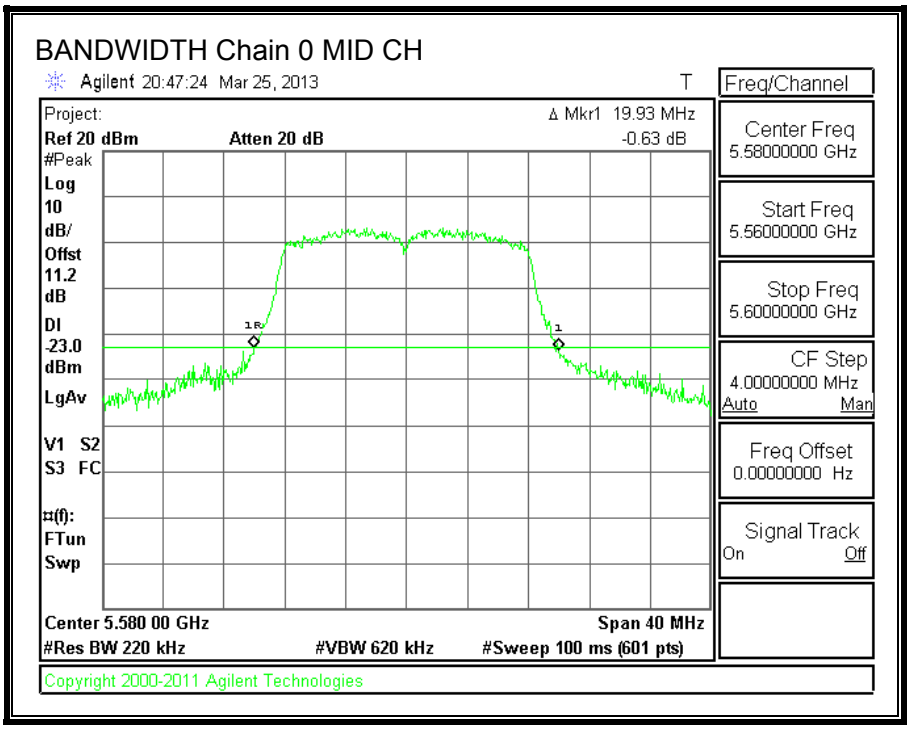
**26 dB BANDWIDTH, Chain 0**





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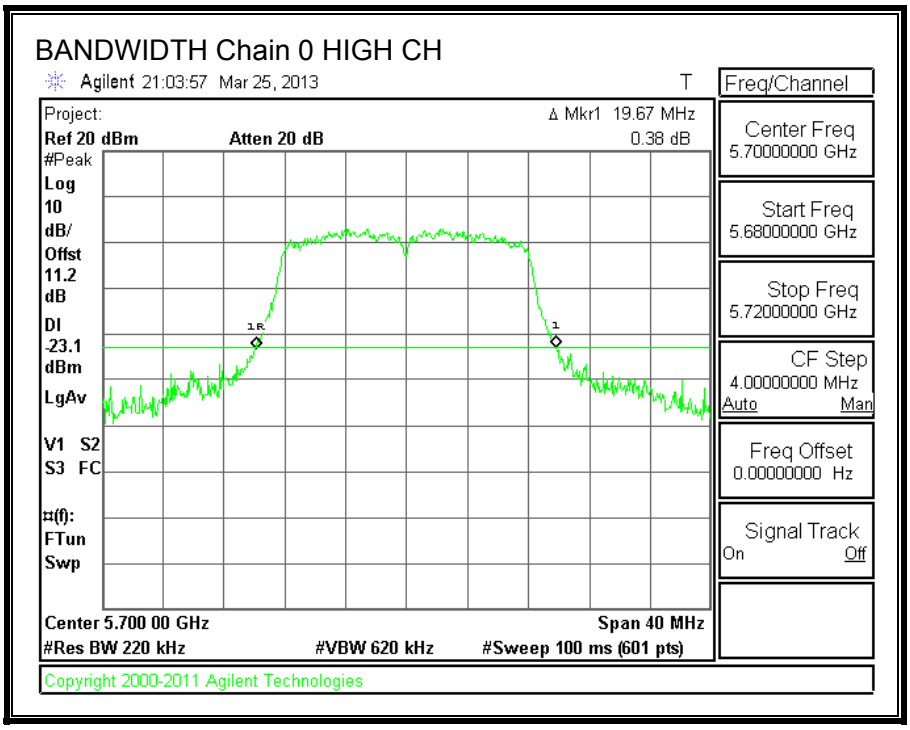
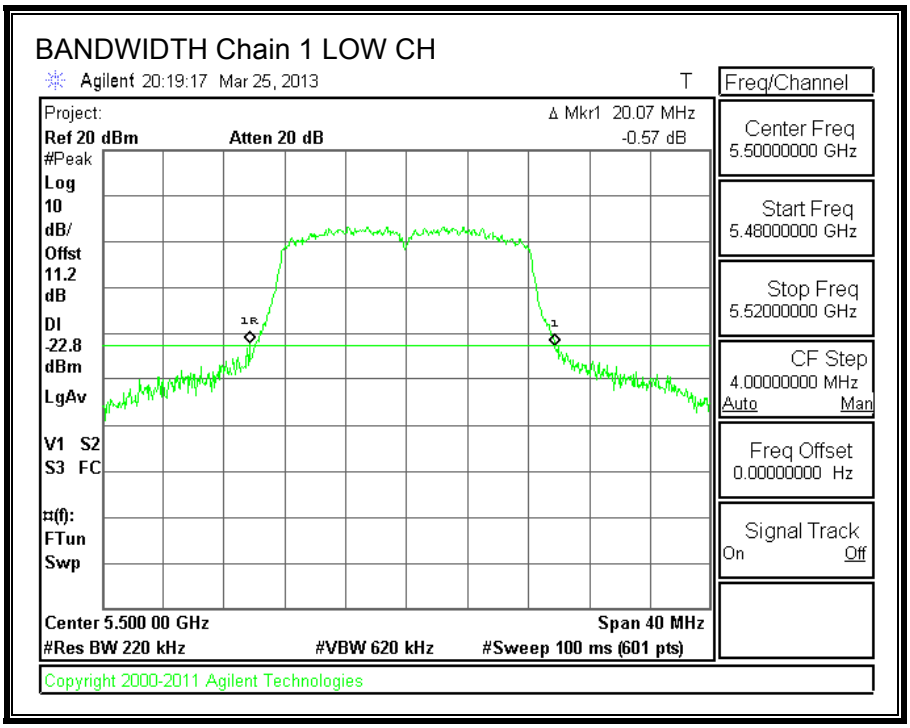



**26 dB BANDWIDTH, Chain 1**





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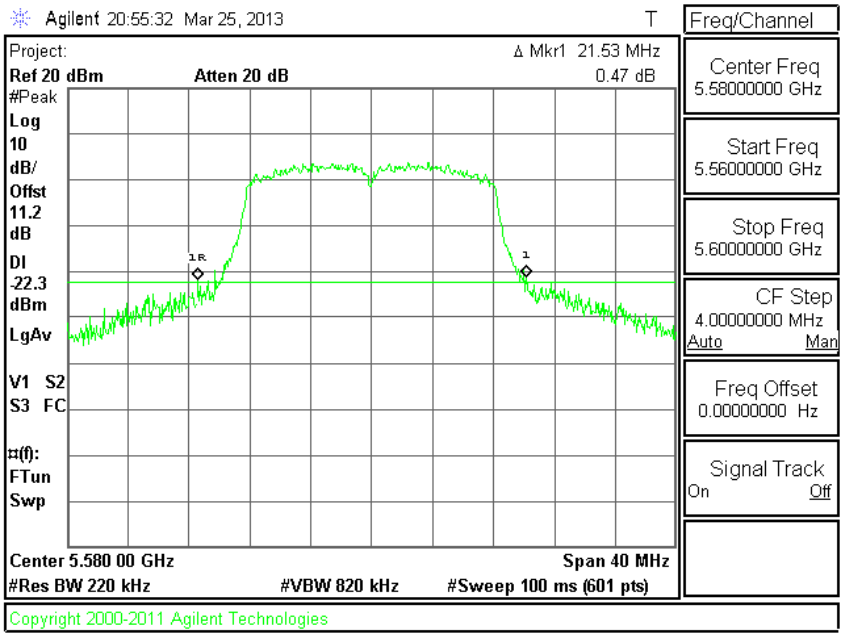
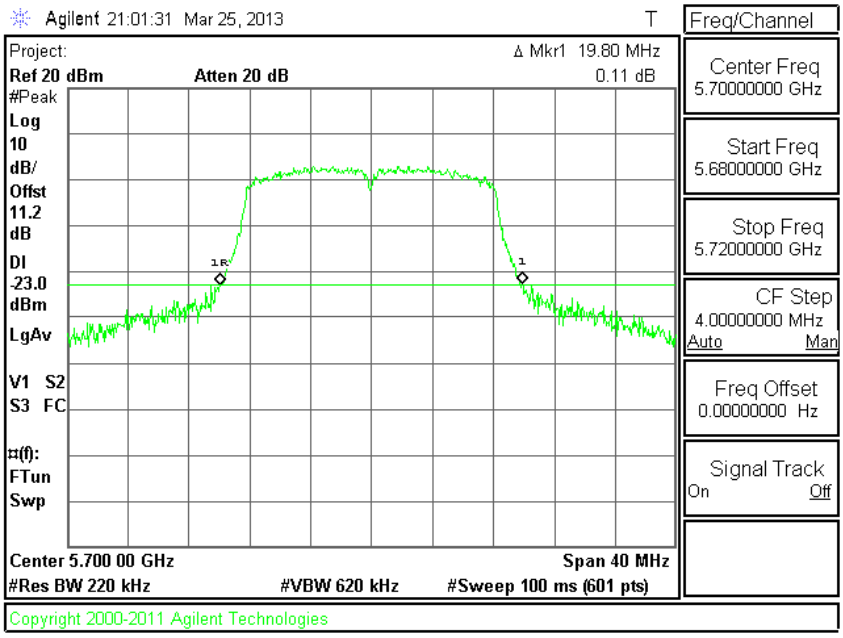
BANDWIDTH Chain 1 MID CH




BANDWIDTH Chain 1 HIGH CH





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### 8.11.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5500 | 16.2811 | 16.2641 |
| Mid | 5580 | 16.3017 | 16.2745 |
| High | 5700 | 16.2915 | 16.2873 |


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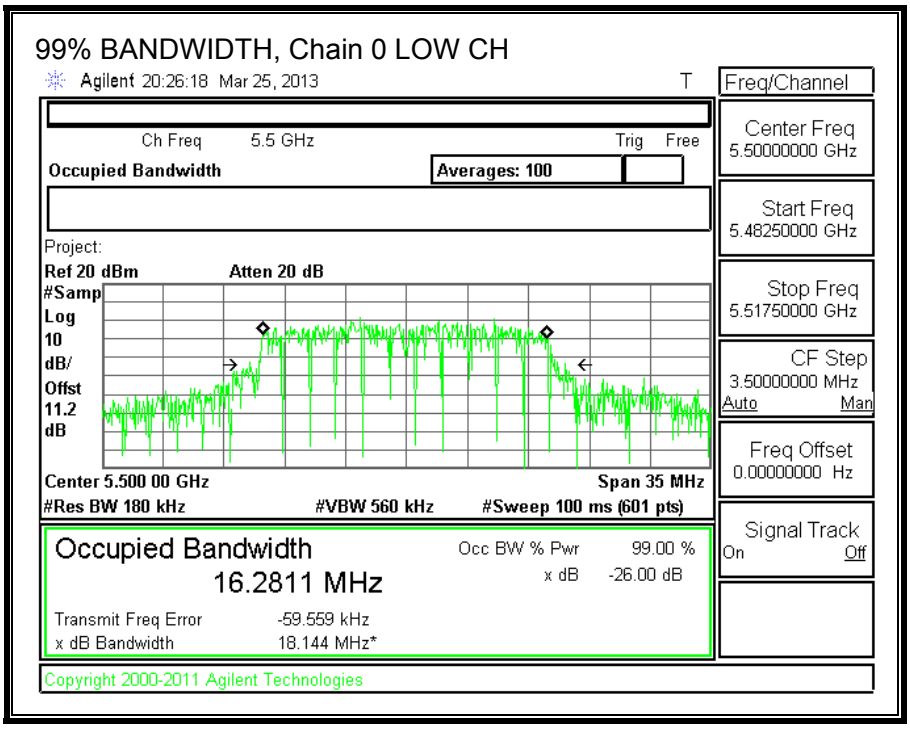
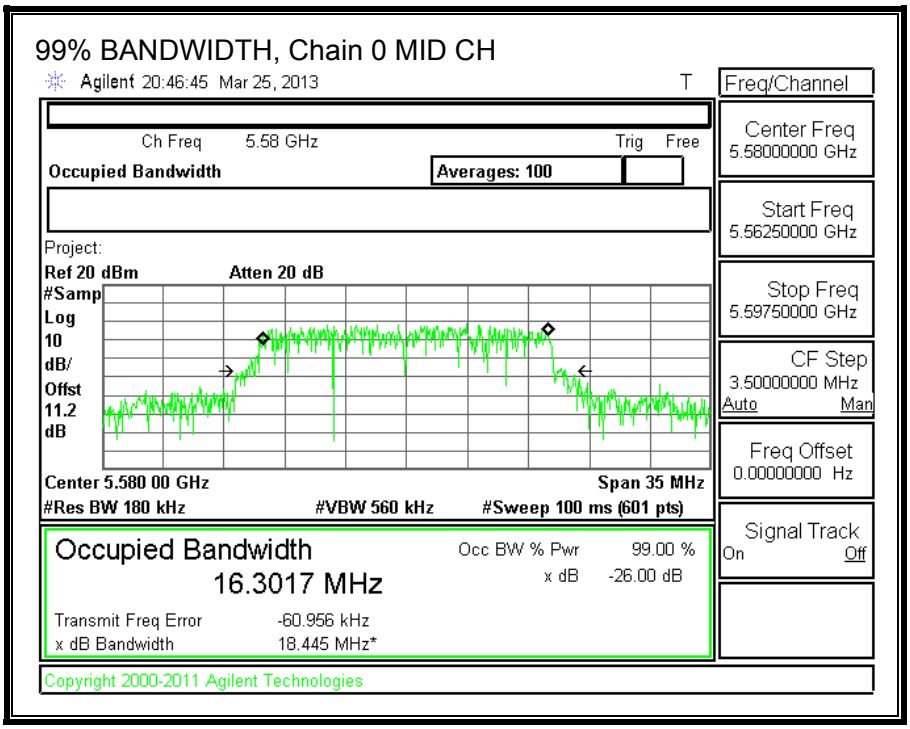
**99% BANDWIDTH, Chain 0**





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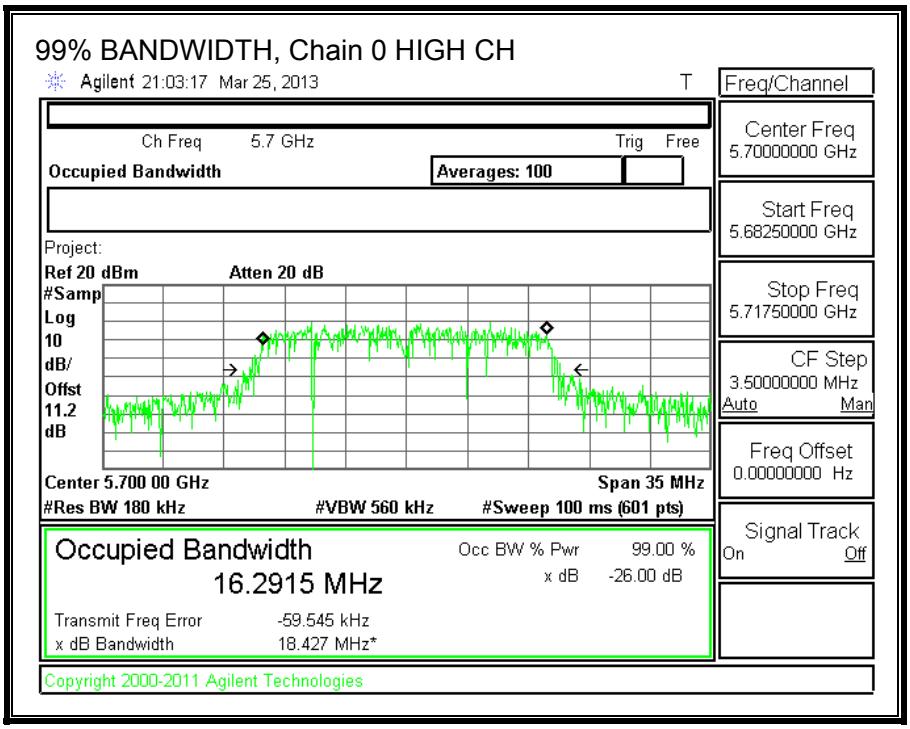
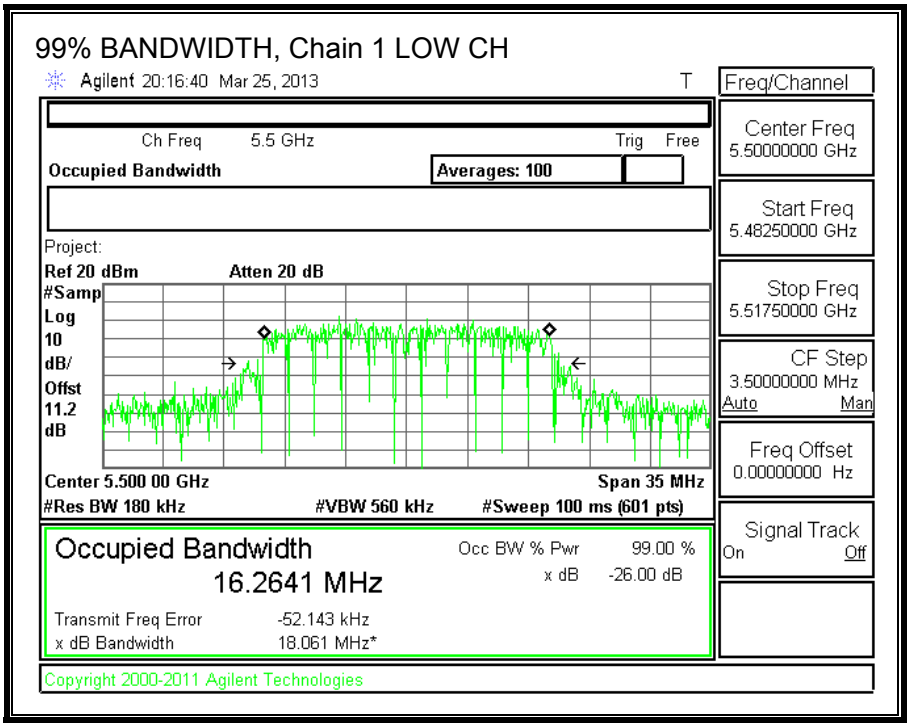



**99% BANDWIDTH, Chain 1**





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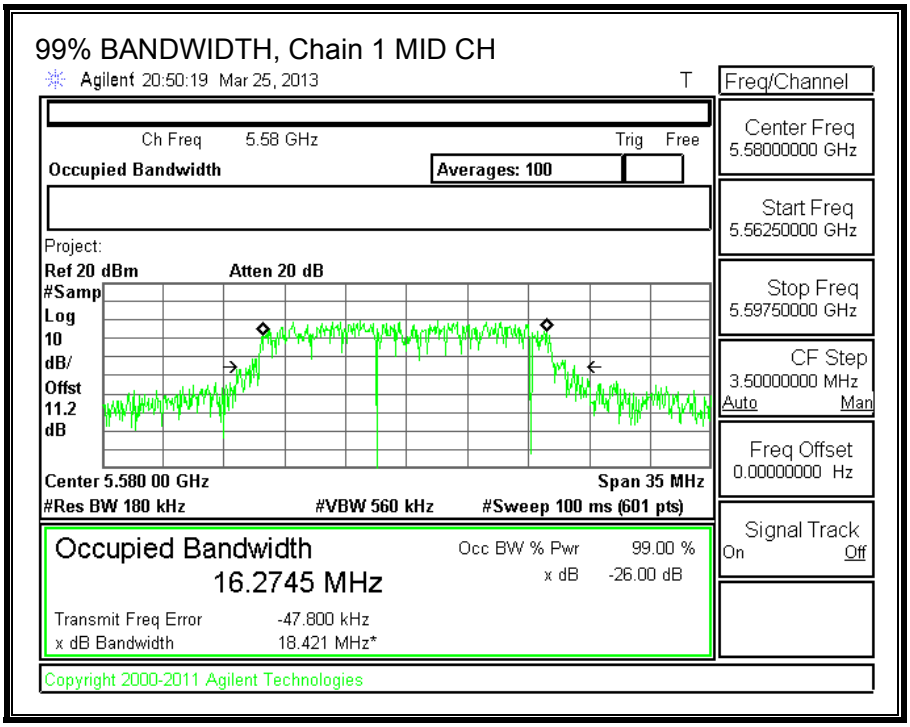


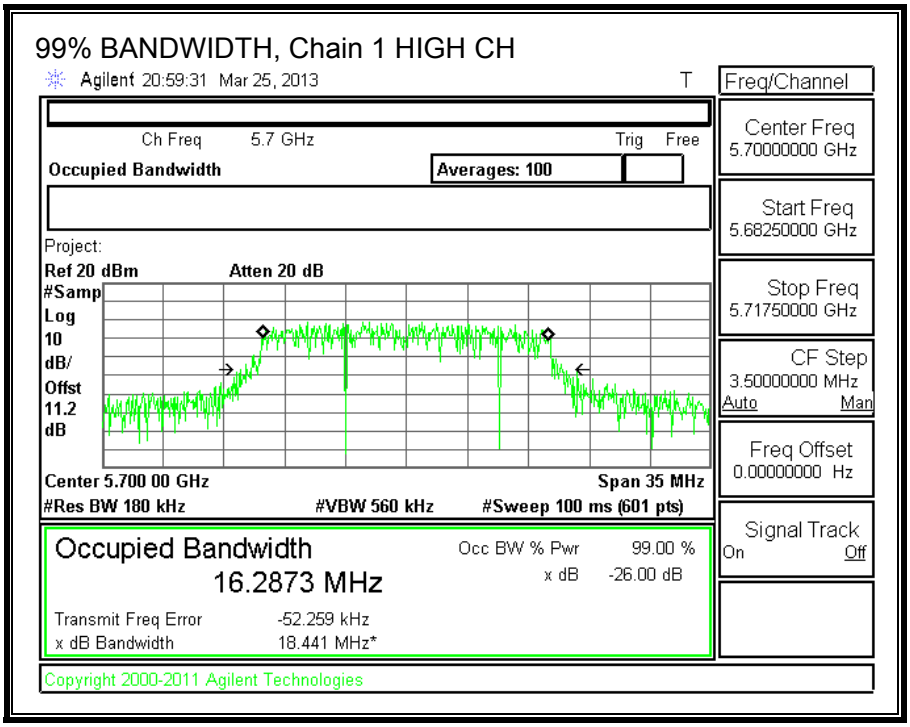



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### 8.11.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5500 | 12.42 | 12.64 | 15.54 |
| Mid | 5580 | 12.17 | 13.12 | 15.68 |
| High | 5700 | 11.79 | 12.82 | 15.35 |


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### 8.11.4. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 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**

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

The TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

| Antenna Gain (dBi) | 10 * Log (2 chains) (dB) | Correlated Chains Directional Gain (dBi) |
|---|---|---|
| 4.00 | 3.01 | 7.01 |


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## RESULTS

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Uncorrelated Directional Gain (dBi) | Correlated Directional Gain (dBi) |
|---|---|---|---|---|---|
| Low | 5500 | 19.80 | 16.2641 | 4.00 | 7.01 |
| Mid | 5580 | 19.93 | 16.2745 | 4.00 | 7.01 |
| High | 5700 | 19.67 | 16.2873 | 4.00 | 7.01 |

**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 | 23.97 | 23.11 | 29.11 | 23.11 | 9.99 | 11.00 | 9.99 |
| Mid | 5580 | 24.00 | 23.12 | 29.12 | 23.12 | 9.99 | 11.00 | 9.99 |
| High | 5700 | 23.94 | 23.12 | 29.12 | 23.12 | 9.99 | 11.00 | 9.99 |

| | | |
|---|---|---|
| **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) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5500 | 12.783 | 12.826 | 15.81 | 23.11 | -7.30 |
| Mid | 5580 | 12.461 | 13.374 | 15.95 | 23.12 | -7.16 |
| High | 5700 | 12.059 | 12.727 | 15.42 | 23.12 | -7.70 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5500 | 1.95 | 1.84 | 4.91 | 9.99 | -5.08 |
| Mid | 5580 | 1.59 | 2.35 | 5.00 | 9.99 | -4.99 |
| High | 5700 | 1.24 | 1.72 | 4.50 | 9.99 | -5.49 |


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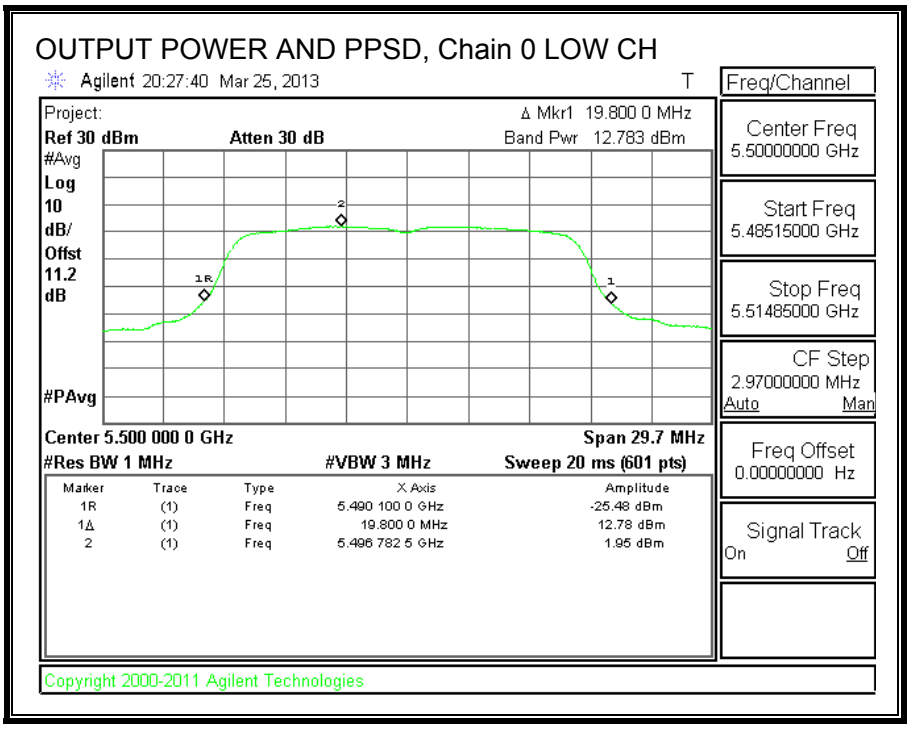
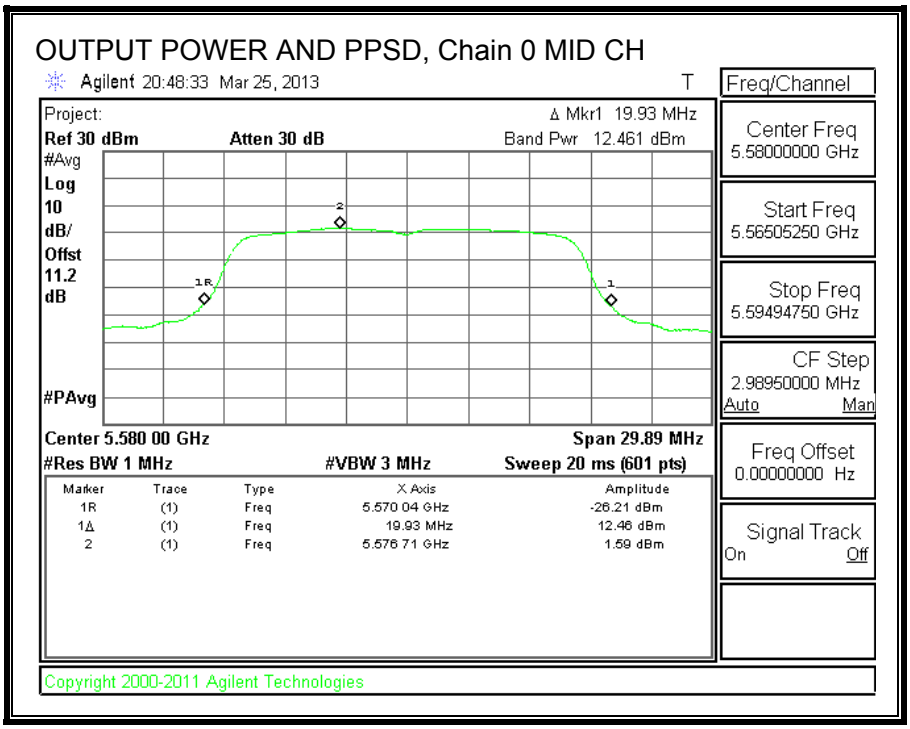
**OUTPUT POWER AND PPSD, Chain 0**





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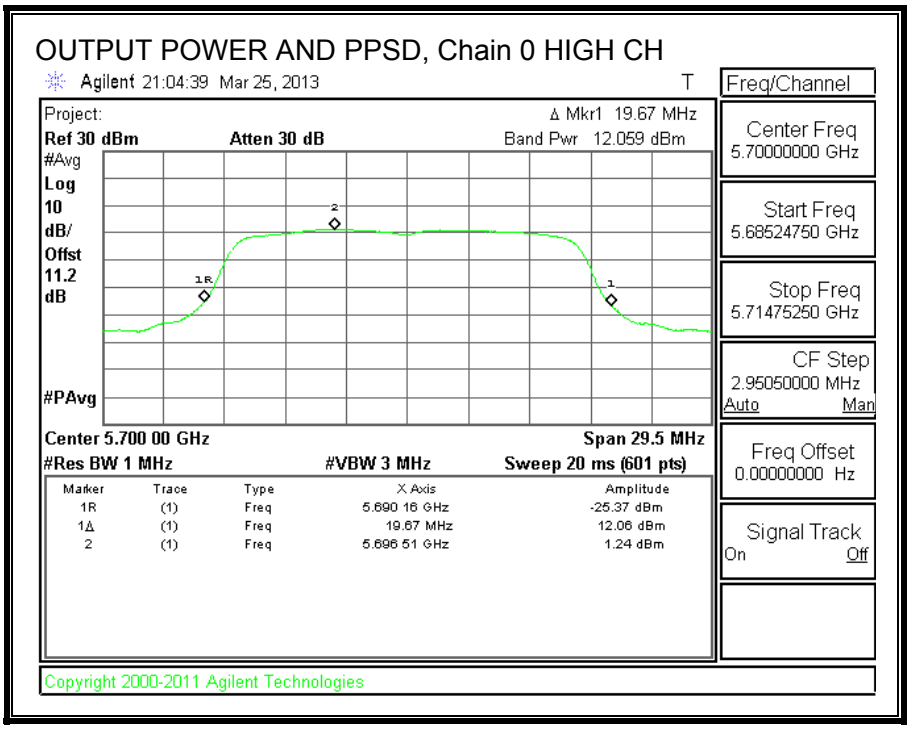
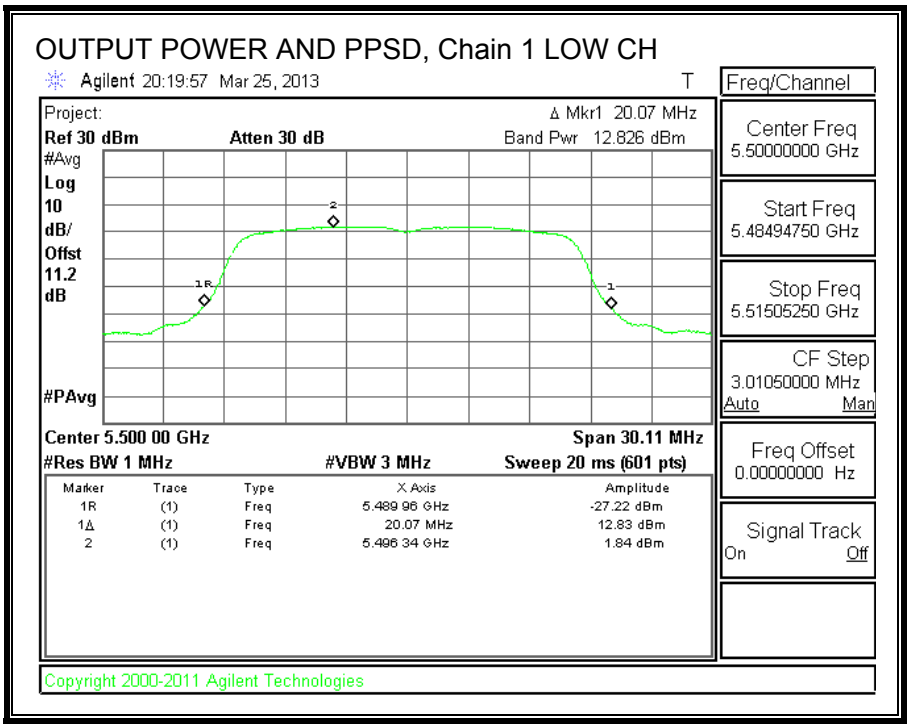



**OUTPUT POWER AND PPSD, Chain 1**





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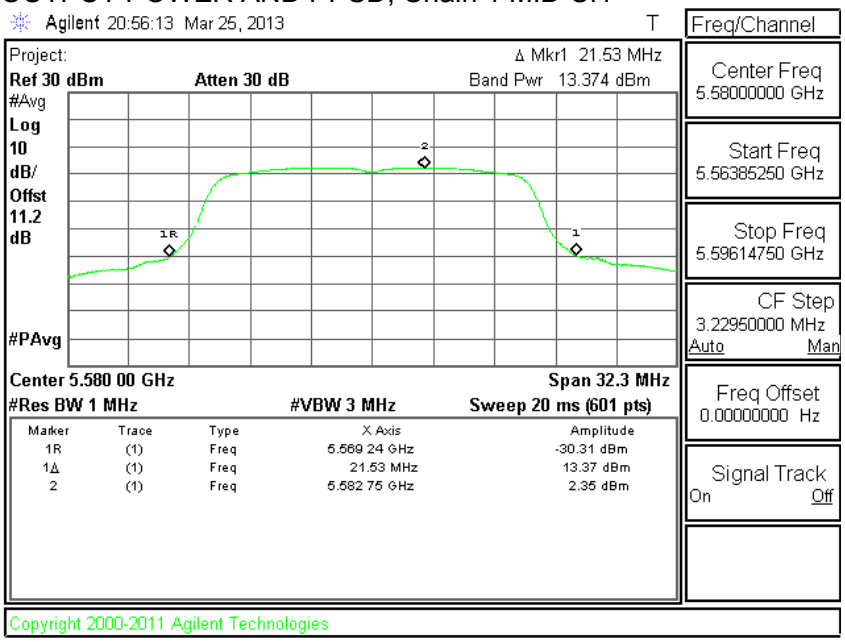
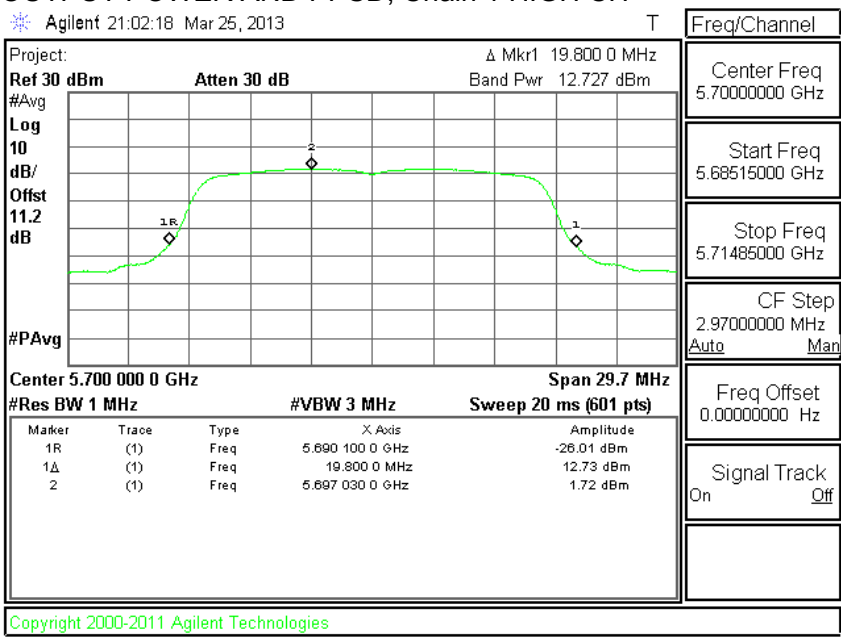
OUTPUT POWER AND PPSD, Chain 1 MID CH




OUTPUT POWER AND PPSD, Chain 1 HIGH CH





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## 8.12. 802.11n HT20 CDD MCS0 2TX MODE IN THE 5.6 GHz BAND

### 8.12.1. 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) |
|---|---|---|---|
| Low | 5500 | 20.27 | 21.20 |
| Mid | 5580 | 21.07 | 22.53 |
| High | 5700 | 20.47 | 22.53 |


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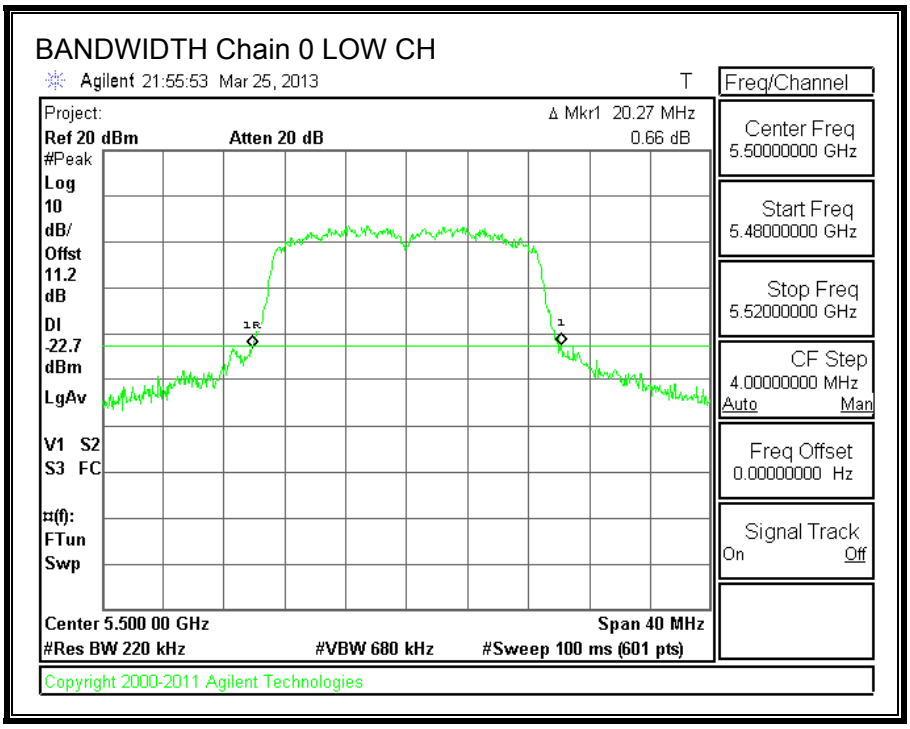
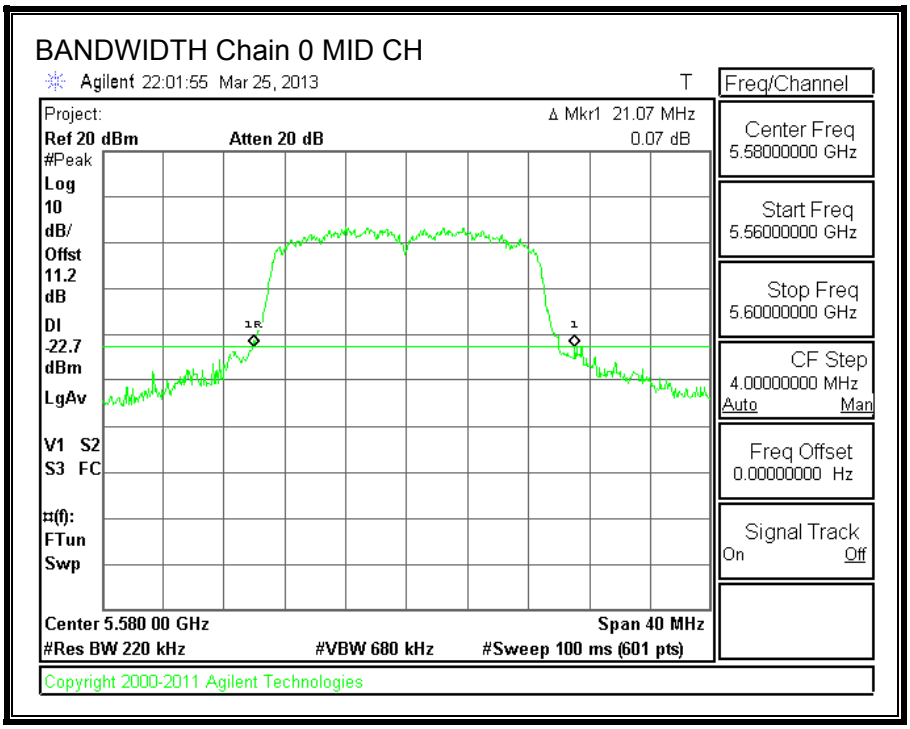
**26 dB BANDWIDTH, Chain 0**





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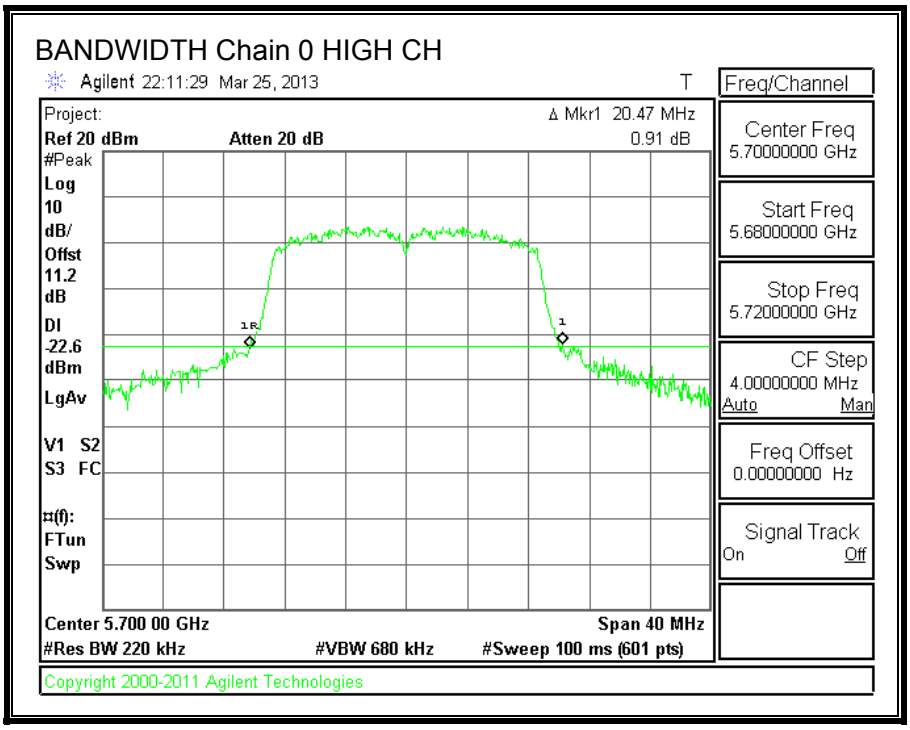
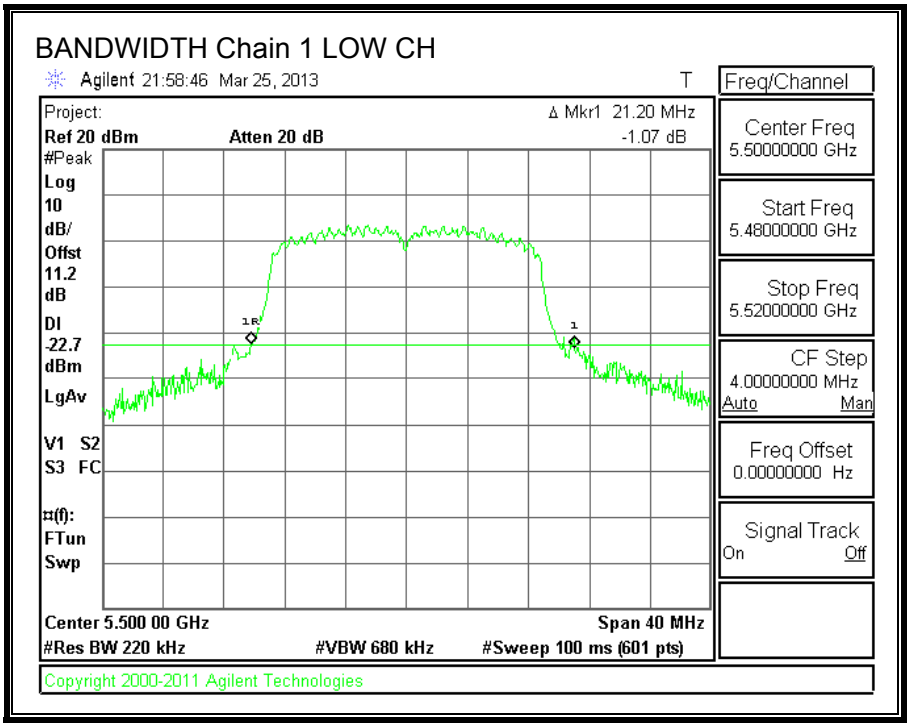



**26 dB BANDWIDTH, Chain 1**





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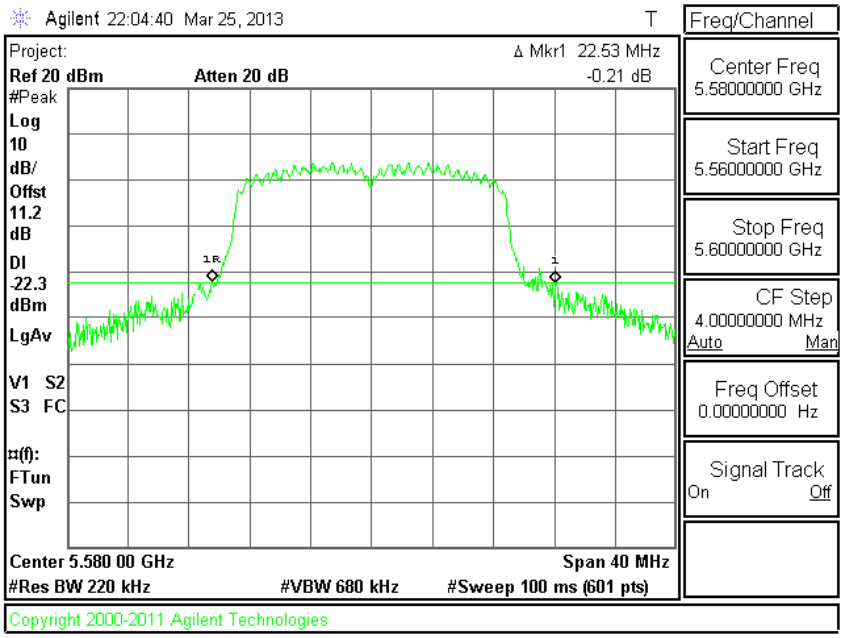
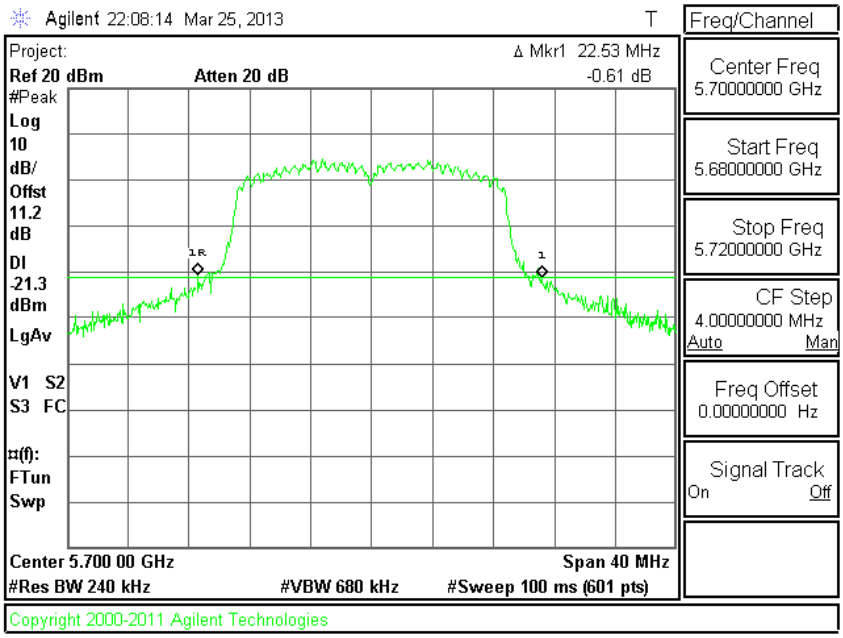
BANDWIDTH Chain 1 MID CH




BANDWIDTH Chain 1 HIGH CH





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### 8.12.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5500 | 17.3862 | 17.3687 |
| Mid | 5580 | 17.3772 | 17.3614 |
| High | 5700 | 17.4119 | 17.4078 |


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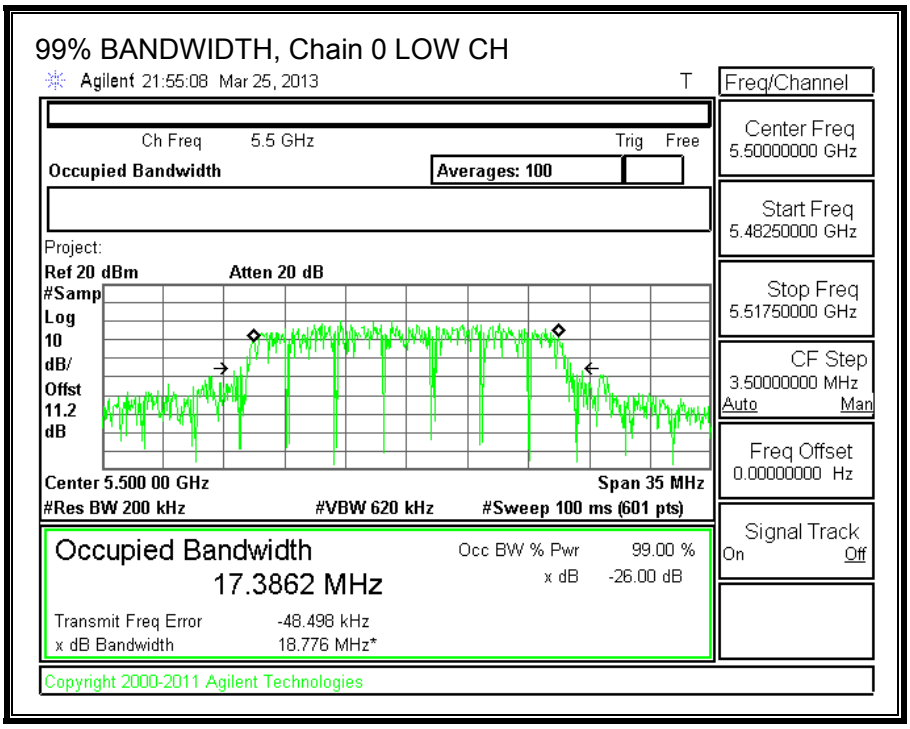
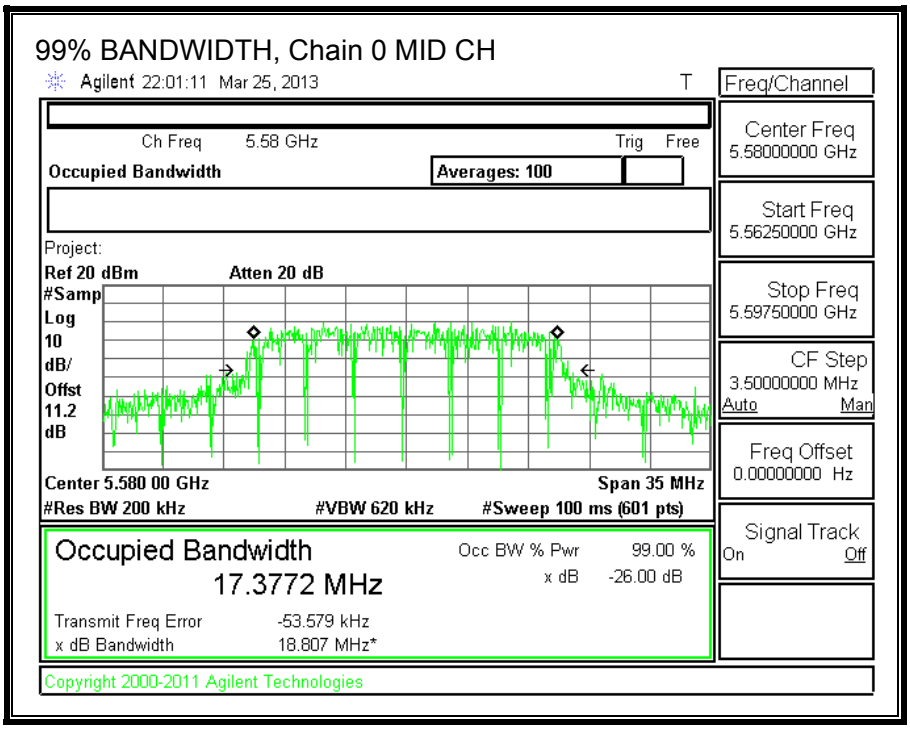
**99% BANDWIDTH, Chain 0**





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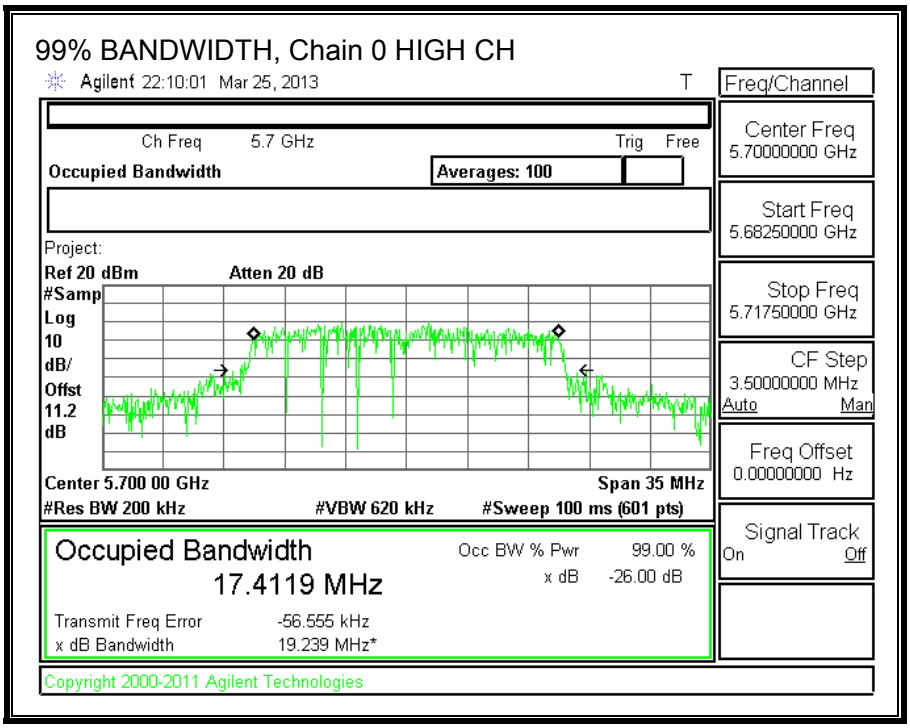
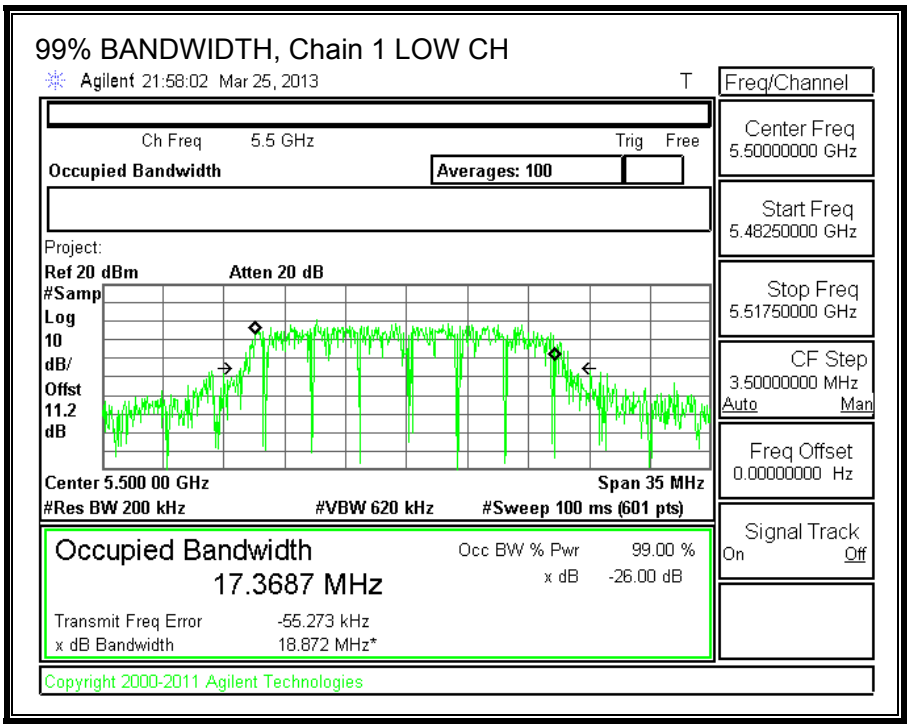



**99% BANDWIDTH, Chain 1**





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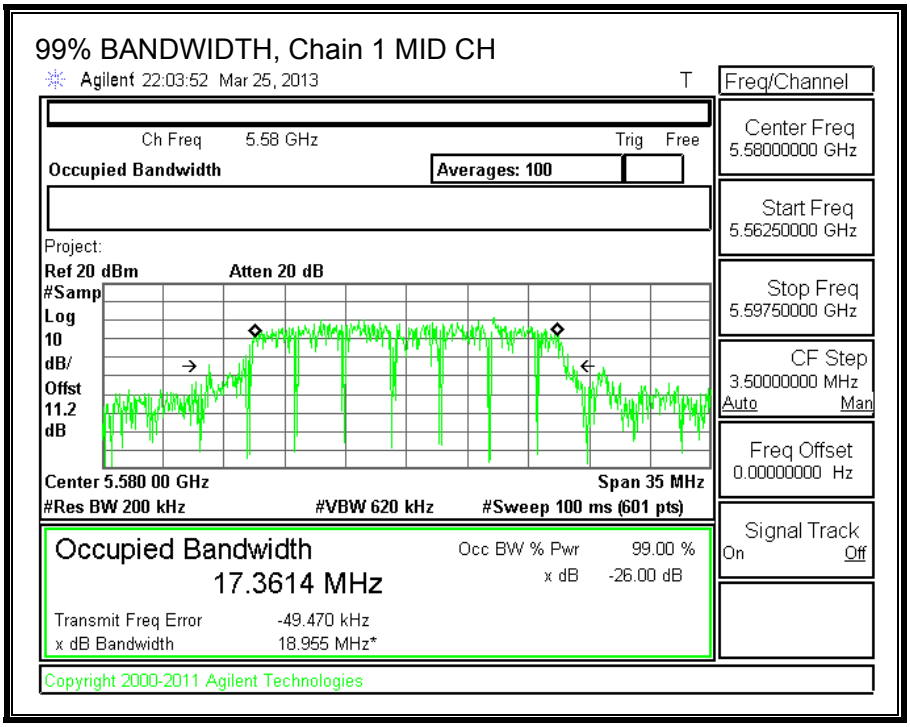


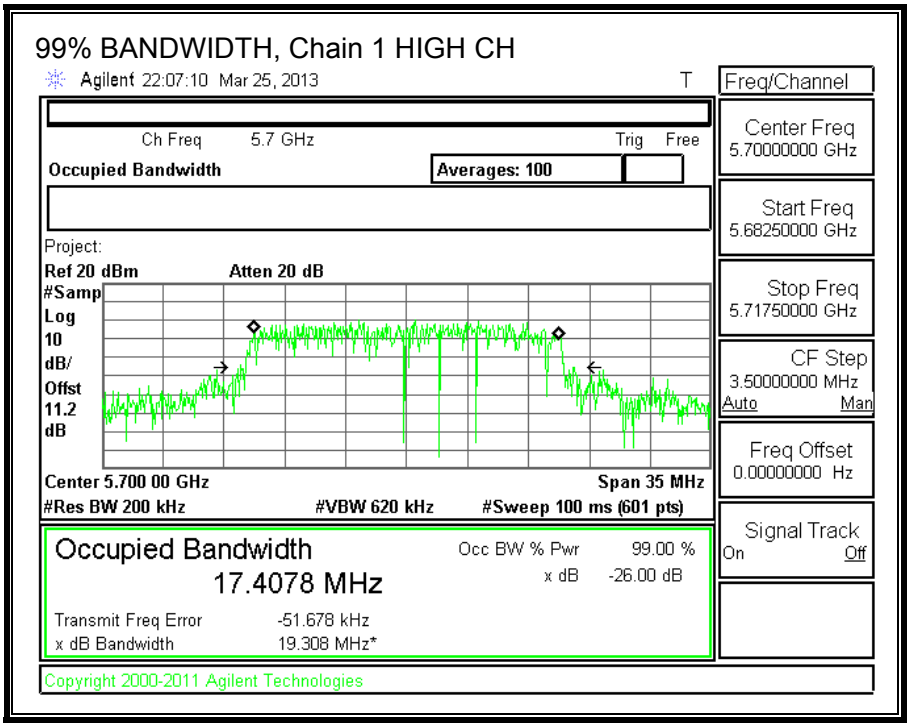



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### 8.12.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5500 | 12.37 | 12.96 | 15.69 |
| Mid | 5580 | 12.54 | 12.72 | 15.64 |
| High | 5700 | 12.04 | 12.43 | 15.25 |


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### 8.12.4. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 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**

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

For PPSD, the TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

| Antenna Gain (dBi) | 10 * Log (2 chains) (dB) | Correlated Chains Directional Gain (dBi) |
|---|---|---|
| 4.00 | 3.01 | 7.01 |


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**RESULTS**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Uncorrelated Directional Gain (dBi) | Correlated Directional Gain (dBi) |
|---|---|---|---|---|---|
| Low | 5500 | 20.27 | 17.3862 | 4.00 | 7.01 |
| Mid | 5580 | 21.07 | 17.3614 | 4.00 | 7.01 |
| High | 5700 | 20.47 | 17.4078 | 4.00 | 7.01 |

**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 | 23.40 | 29.40 | 23.40 | 9.99 | 11.00 | 9.99 |
| Mid | 5580 | 24.00 | 23.40 | 29.40 | 23.40 | 9.99 | 11.00 | 9.99 |
| High | 5700 | 24.00 | 23.41 | 29.41 | 23.41 | 9.99 | 11.00 | 9.99 |

| | | |
|---|---|---|
| **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) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5500 | 12.522 | 12.684 | 15.61 | 23.40 | -7.79 |
| Mid | 5580 | 12.368 | 12.992 | 15.70 | 23.40 | -7.69 |
| High | 5700 | 12.797 | 13.107 | 15.97 | 23.41 | -7.44 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5500 | 1.44 | 1.57 | 4.52 | 9.99 | -5.47 |
| Mid | 5580 | 1.26 | 1.86 | 4.58 | 9.99 | -5.41 |
| High | 5700 | 1.59 | 1.87 | 4.74 | 9.99 | -5.25 |


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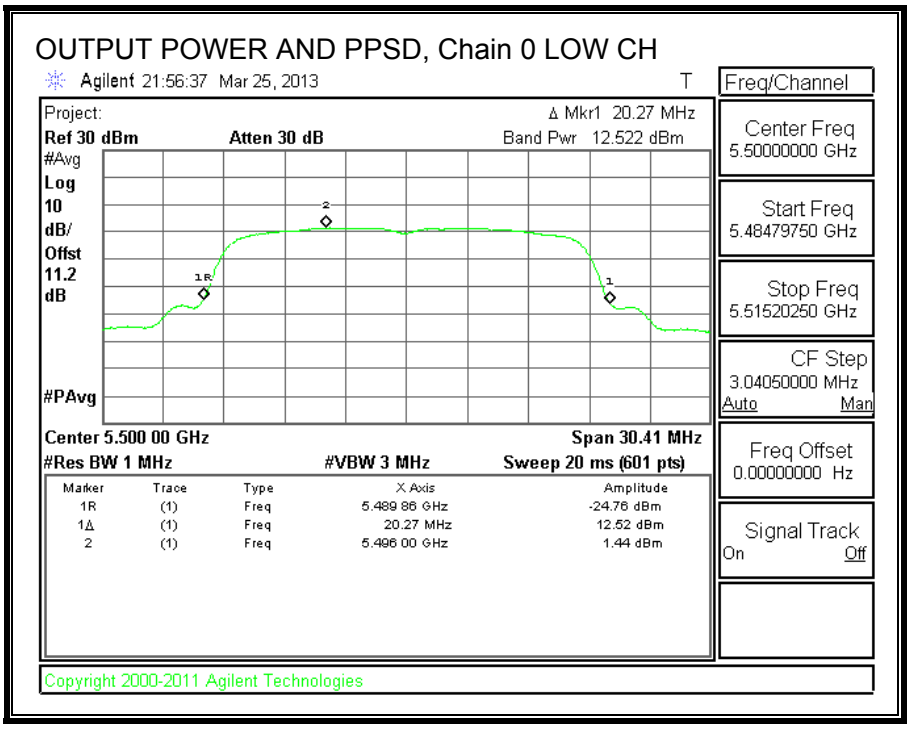
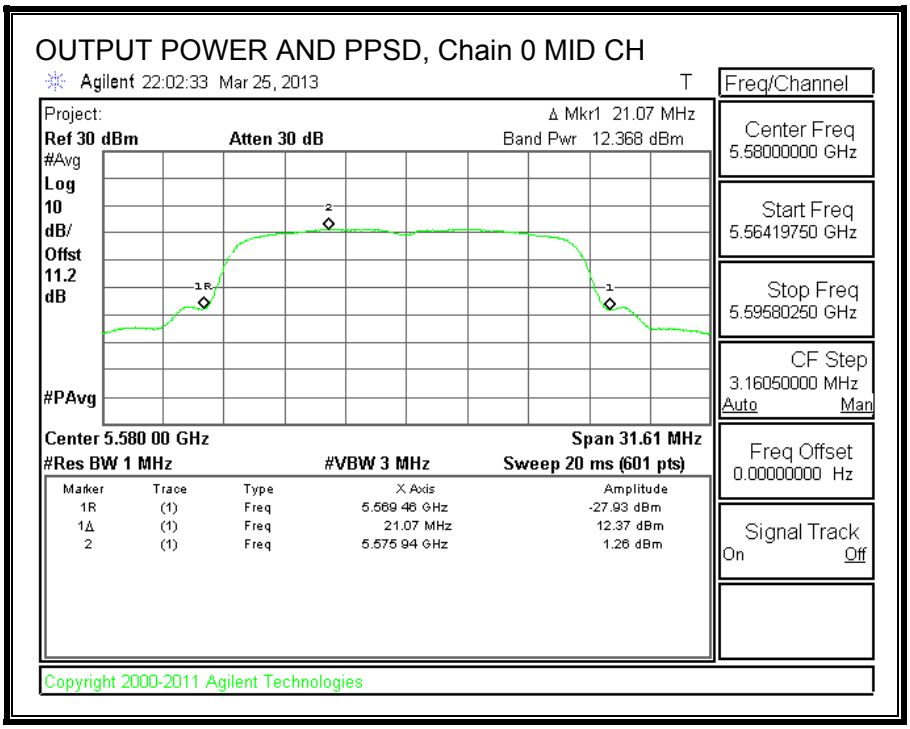
**OUTPUT POWER AND PPSD, Chain 0**





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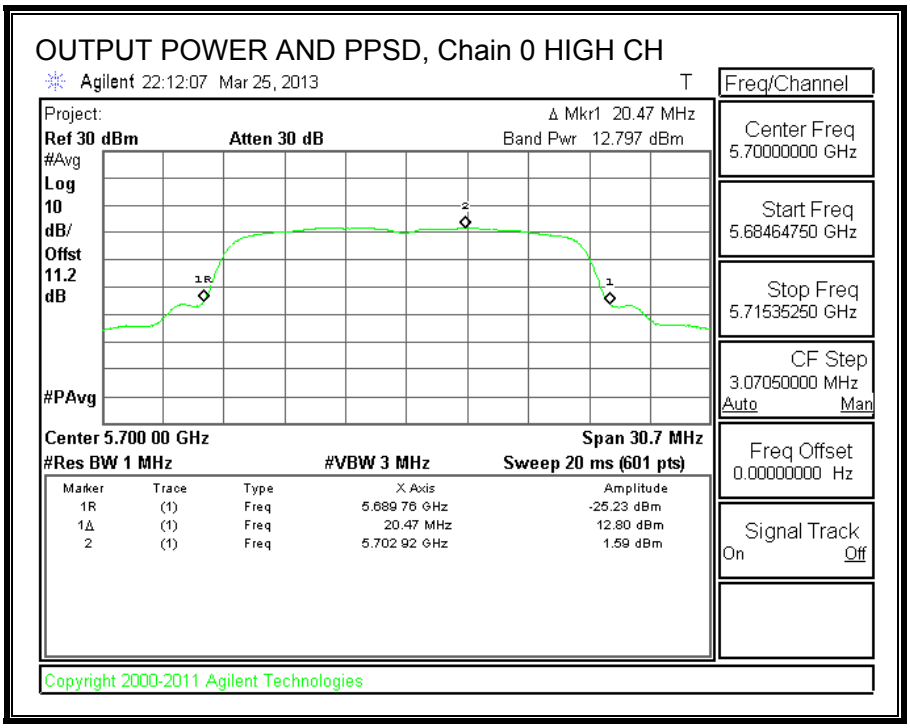
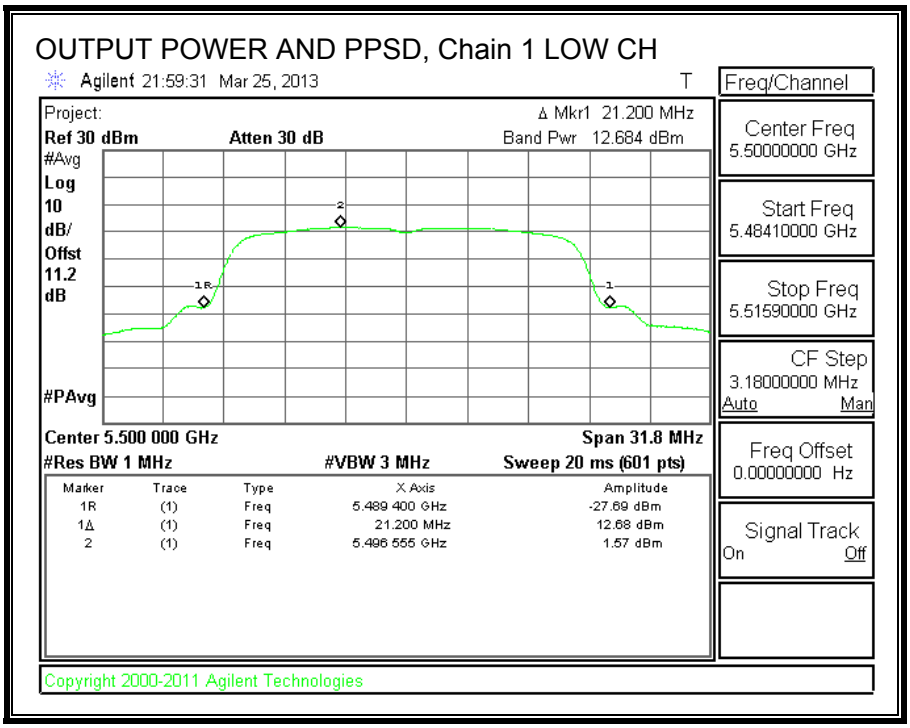



**OUTPUT POWER AND PPSD, Chain 1**





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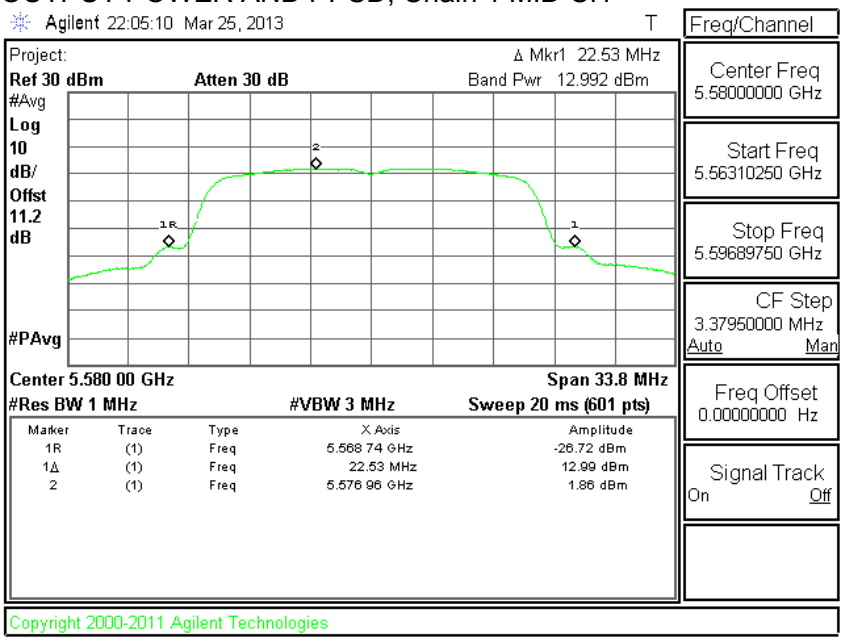
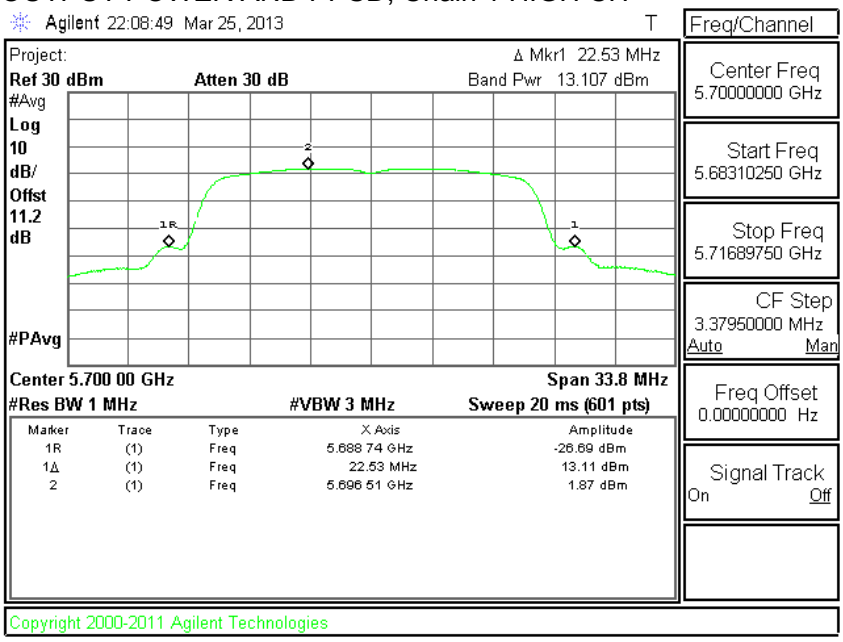
OUTPUT POWER AND PPSD, Chain 1 MID CH




OUTPUT POWER AND PPSD, Chain 1 HIGH CH





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## 8.13. 802.11n HT20 SDM MCS8 2TX MODE IN THE 5.6 GHz BAND

### 8.13.1. 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) |
|---|---|---|---|
| Low | 5500 | 20.13 | 20.53 |
| Mid | 5580 | 20.73 | 21.53 |
| High | 5700 | 21.33 | 21.47 |


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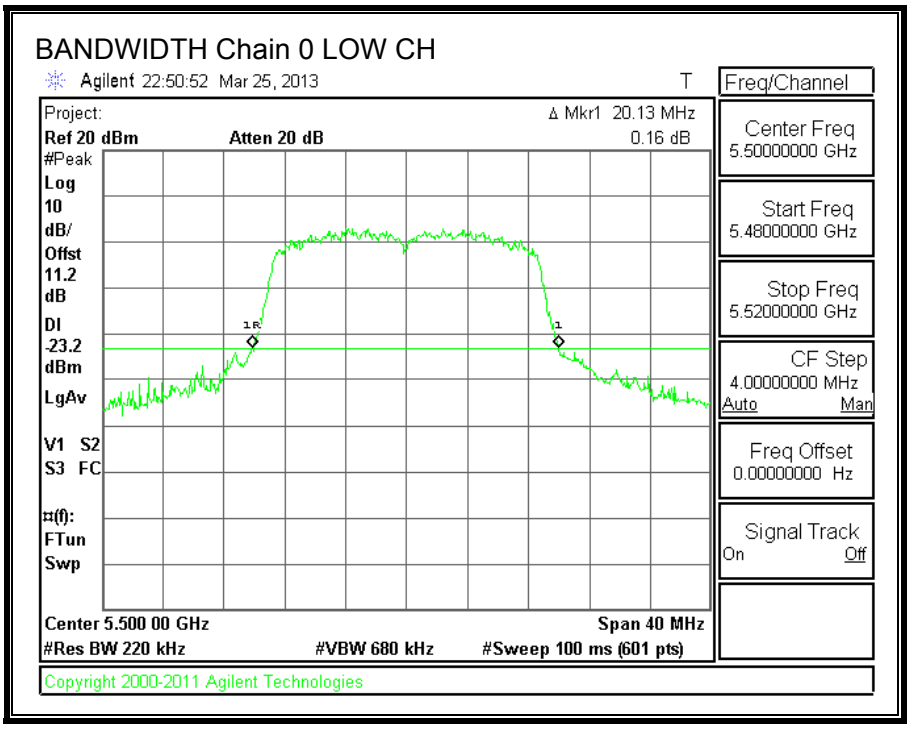
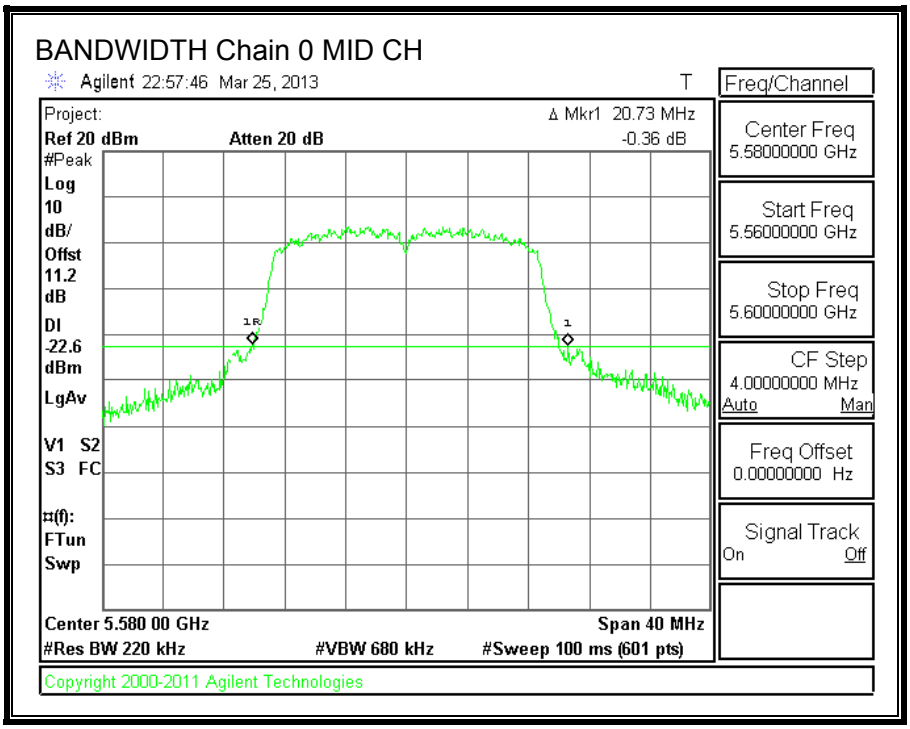
**26 dB BANDWIDTH, Chain 0**





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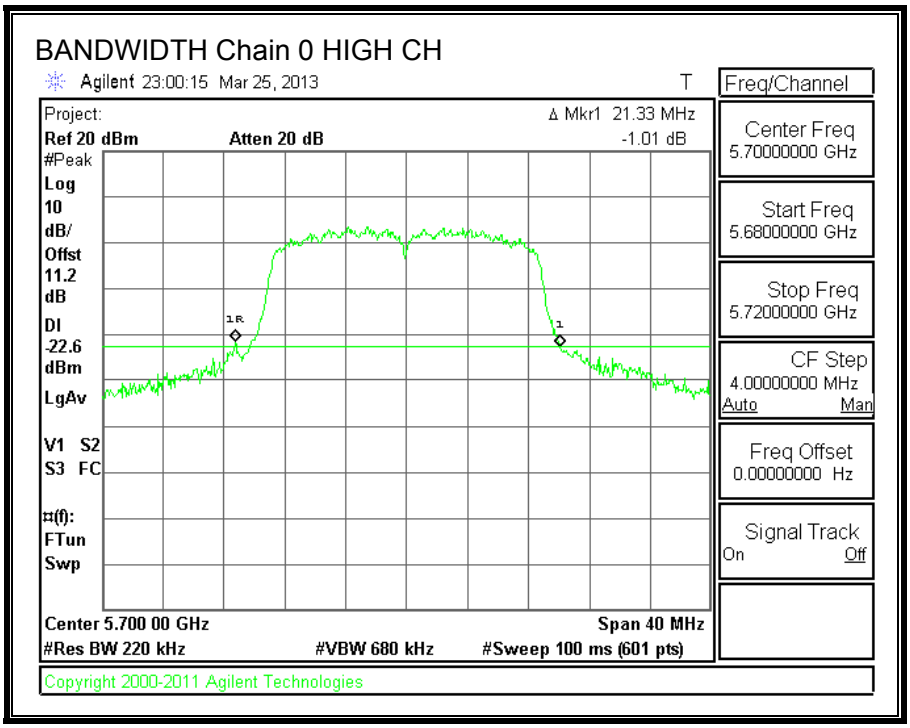
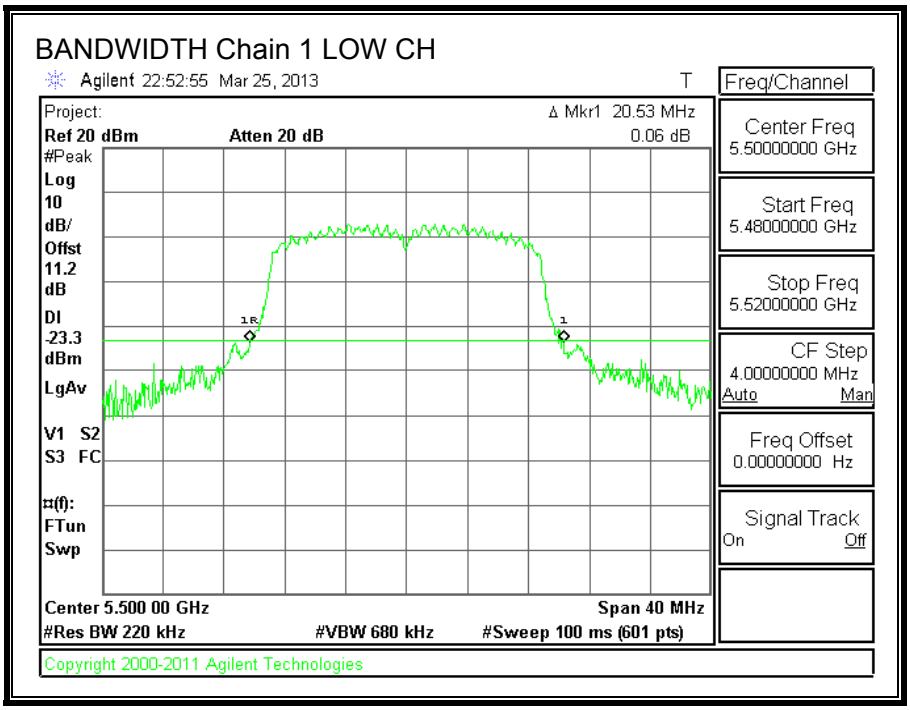



**26 dB BANDWIDTH, Chain 1**





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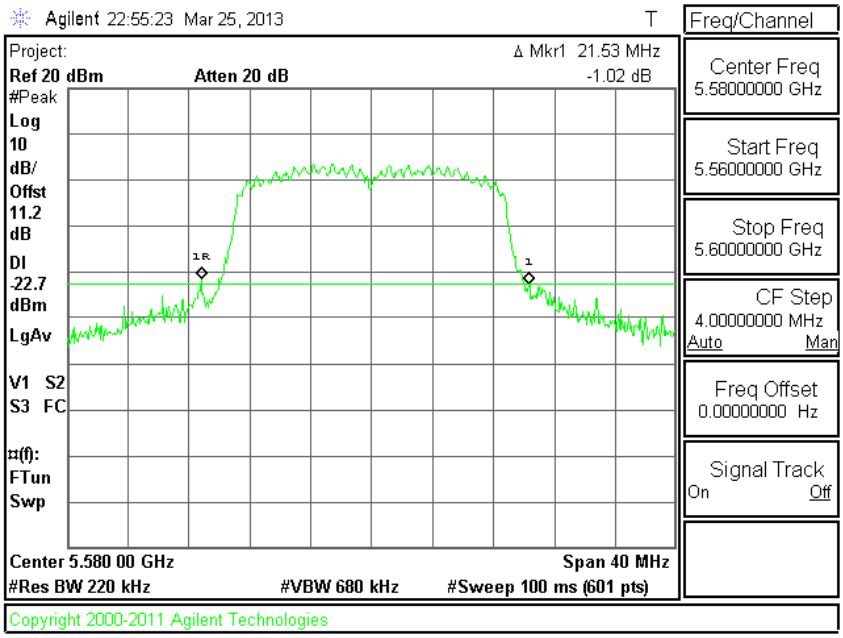
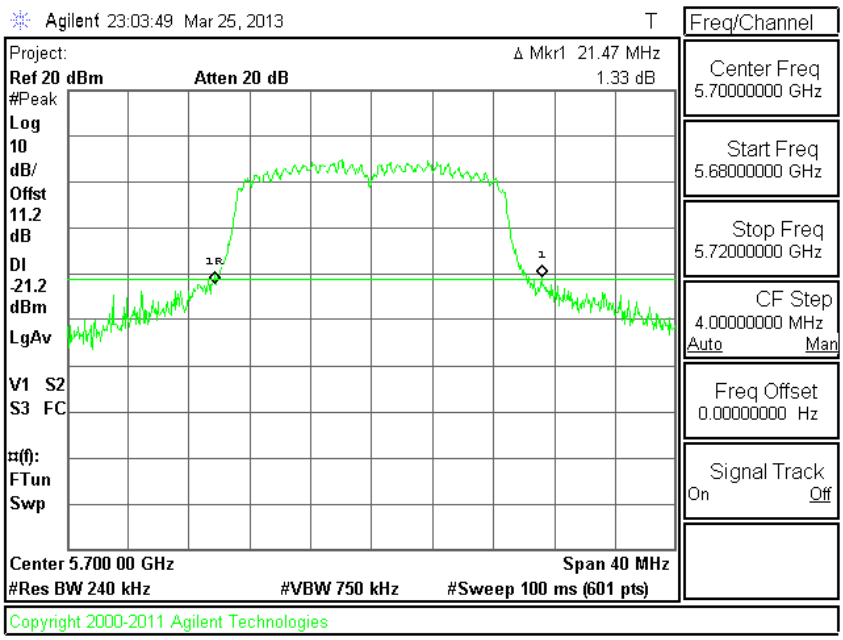
BANDWIDTH Chain 1 MID CH




BANDWIDTH Chain 1 HIGH CH





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### 8.13.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5500 | 17.4315 | 17.3986 |
| Mid | 5580 | 17.4270 | 17.4037 |
| High | 5700 | 17.4124 | 17.4067 |


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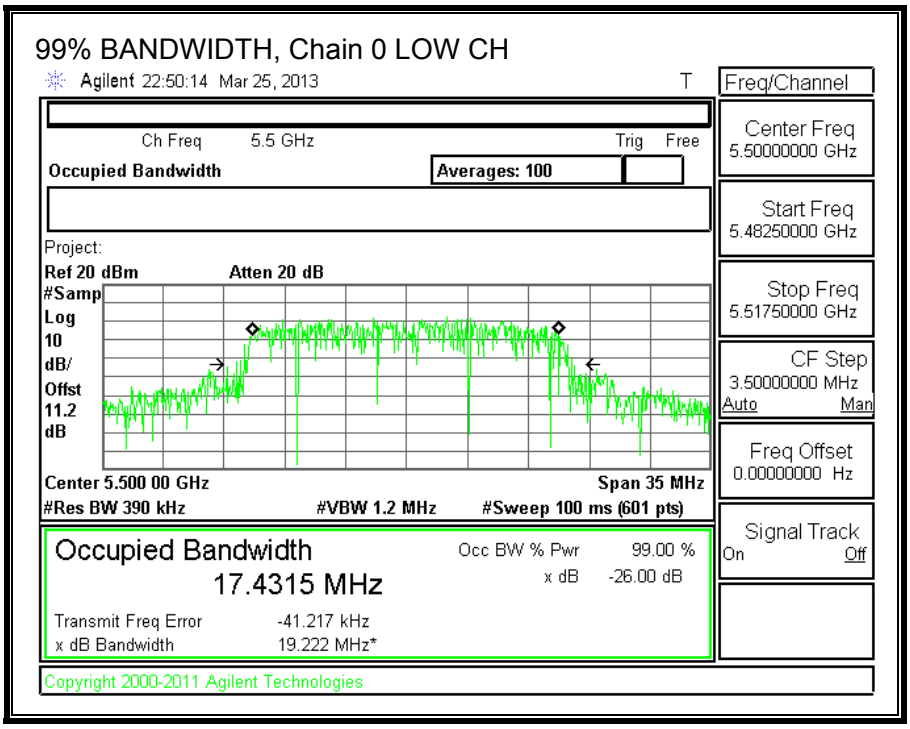
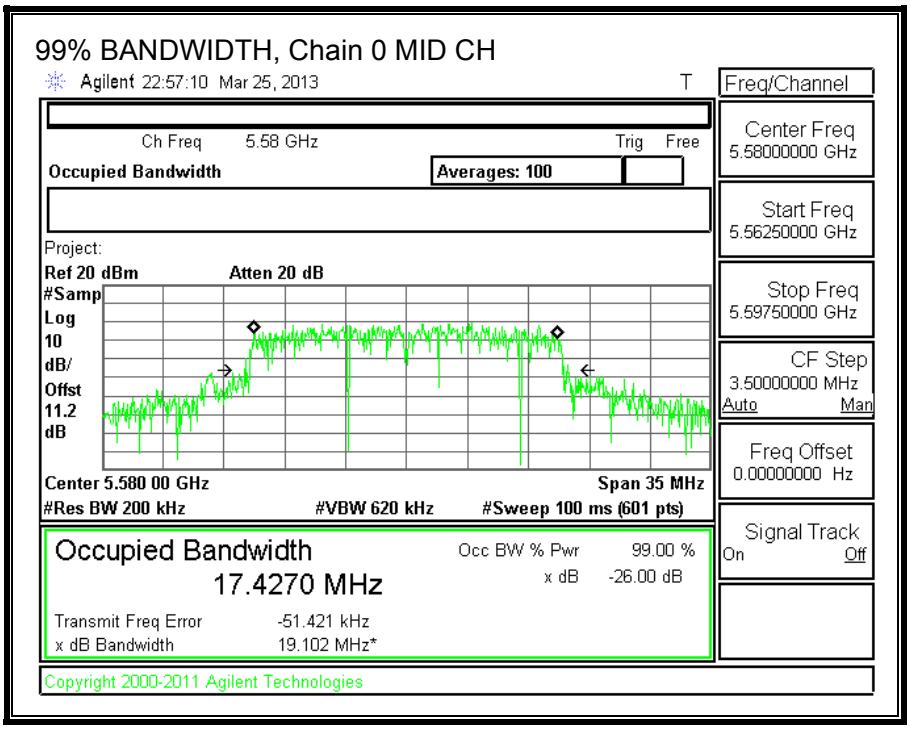
**99% BANDWIDTH, Chain 0**





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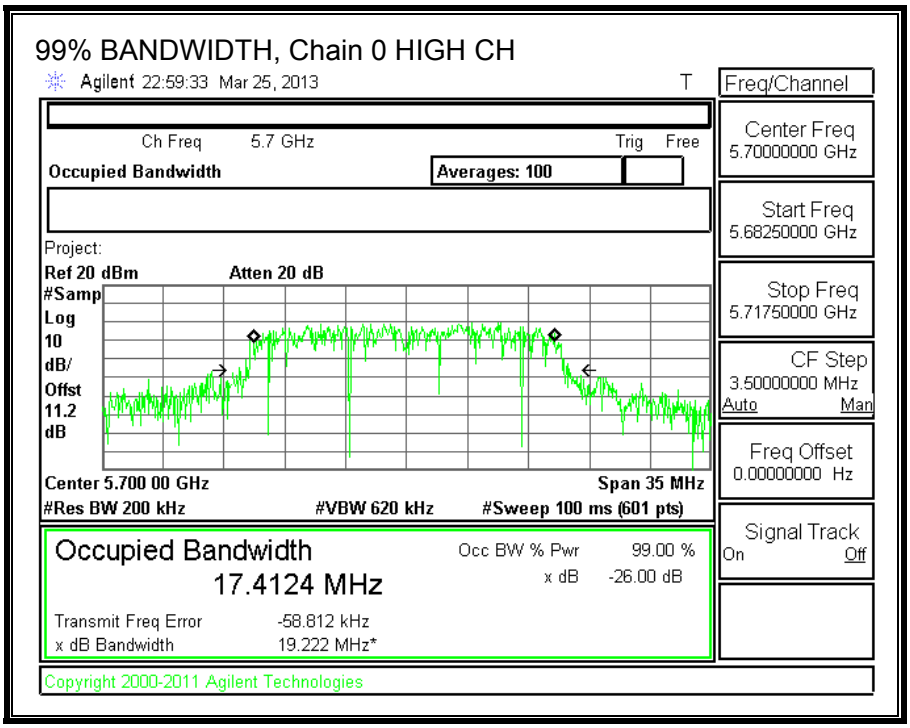
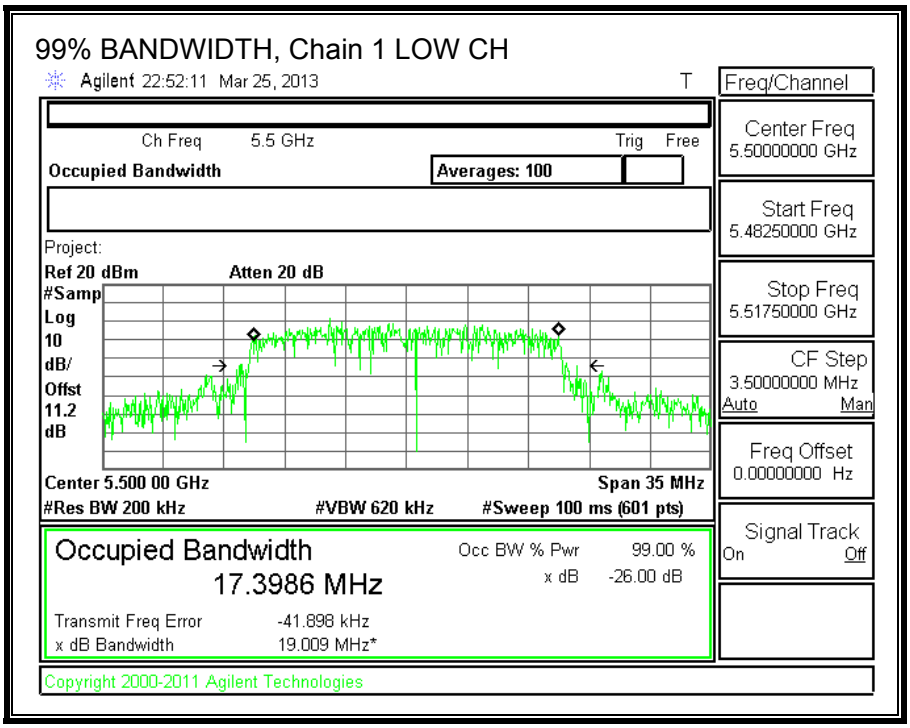



**99% BANDWIDTH, Chain 1**





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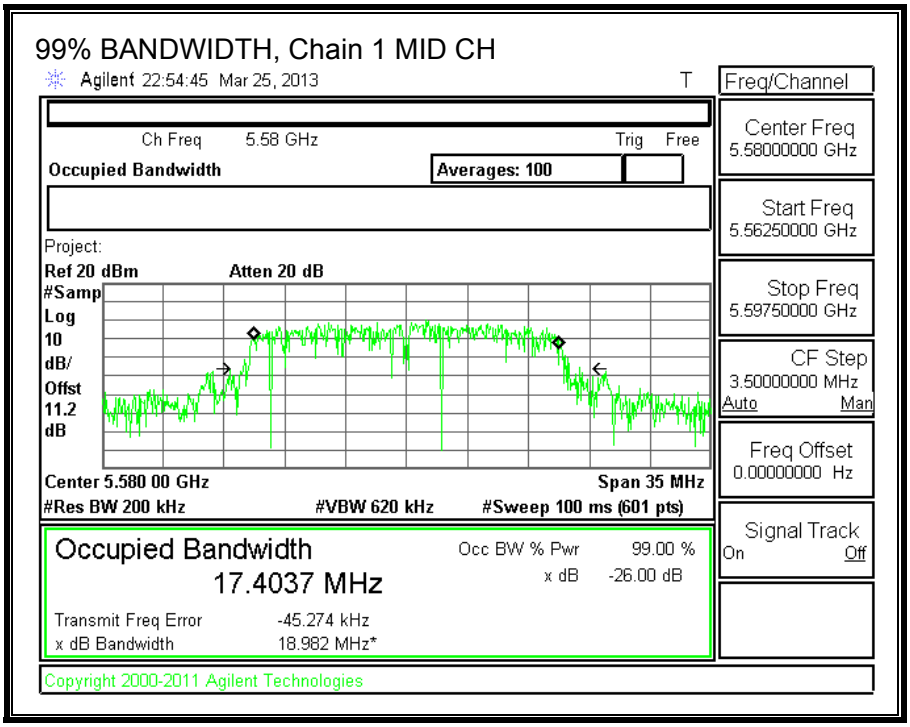


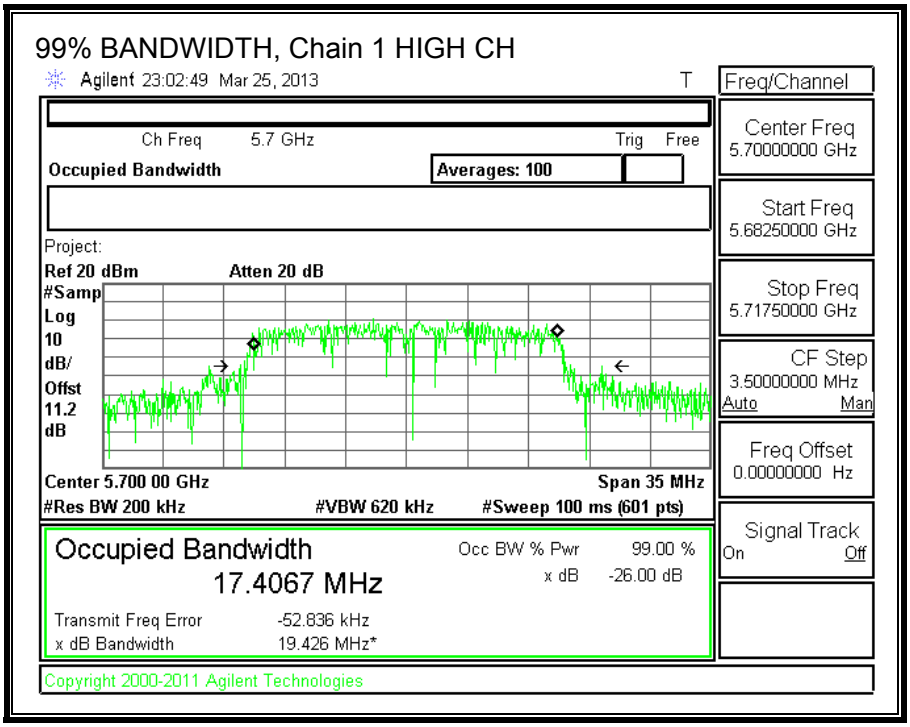



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### 8.13.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5500 | 12.00 | 12.20 | 15.11 |
| Mid | 5580 | 12.20 | 12.70 | 15.47 |
| High | 5700 | 12.00 | 12.70 | 15.37 |


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### 8.13.4. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 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 the same for each chain. The directional gain is equal to the antenna gain.


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**RESULTS**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5500 | 20.13 | 17.3986 | 4.00 |
| Mid | 5580 | 20.53 | 17.4037 | 4.00 |
| High | 5700 | 21.33 | 17.4067 | 4.00 |

**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 | 23.41 | 29.41 | 23.41 | 11.00 | 11.00 | 11.00 |
| Mid | 5580 | 24.00 | 23.41 | 29.41 | 23.41 | 11.00 | 11.00 | 11.00 |
| High | 5700 | 24.00 | 23.41 | 29.41 | 23.41 | 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) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5500 | 12.152 | 12.338 | 15.26 | 23.41 | -8.15 |
| Mid | 5580 | 12.637 | 12.866 | 15.76 | 23.41 | -7.64 |
| High | 5700 | 12.533 | 13.306 | 15.95 | 23.41 | -7.46 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5500 | 1.00 | 1.20 | 4.11 | 11.00 | -6.89 |
| Mid | 5580 | 1.42 | 1.64 | 4.54 | 11.00 | -6.46 |
| High | 5700 | 1.34 | 2.13 | 4.76 | 11.00 | -6.24 |


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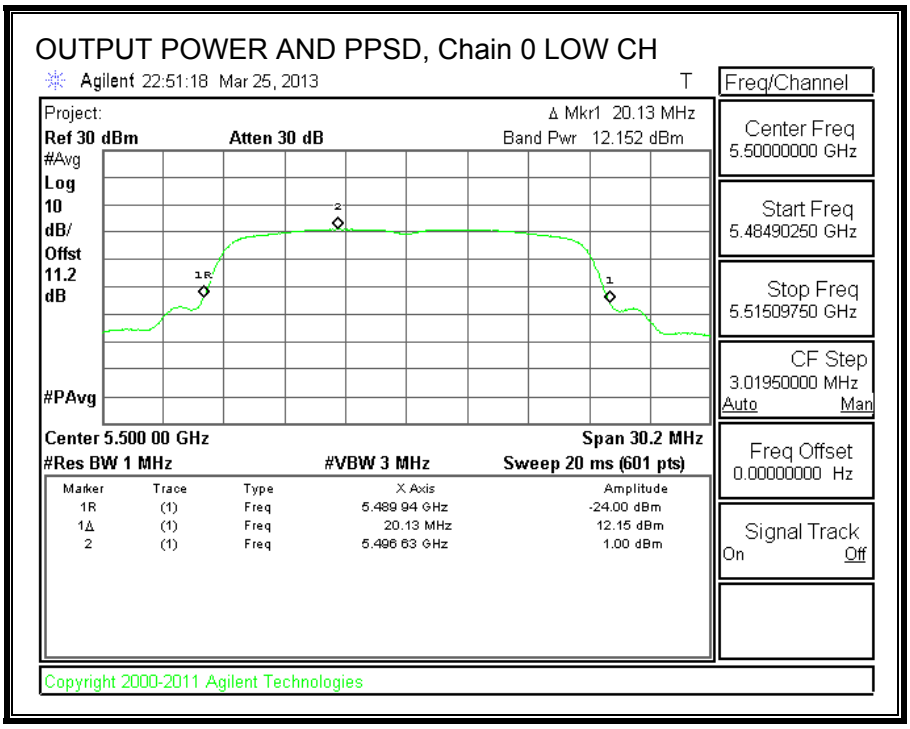
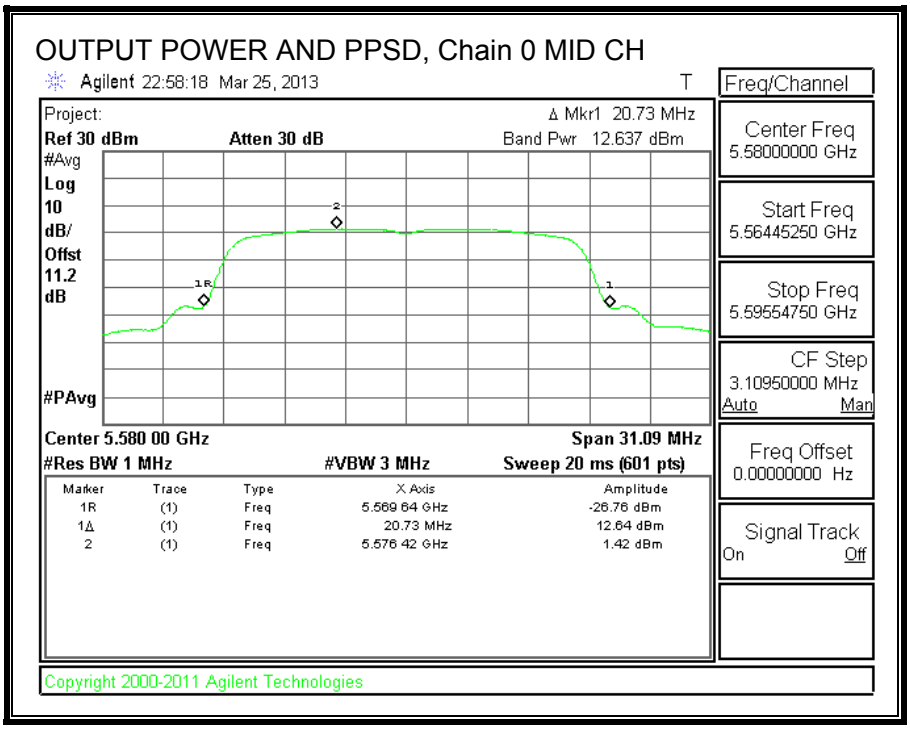
**OUTPUT POWER AND PPSD, Chain 0**





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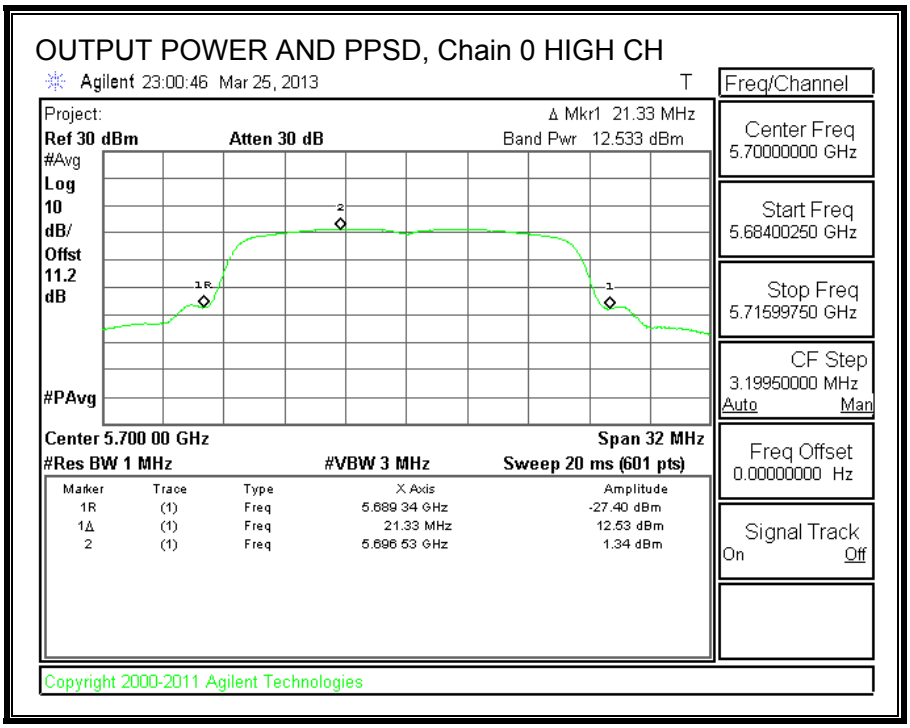
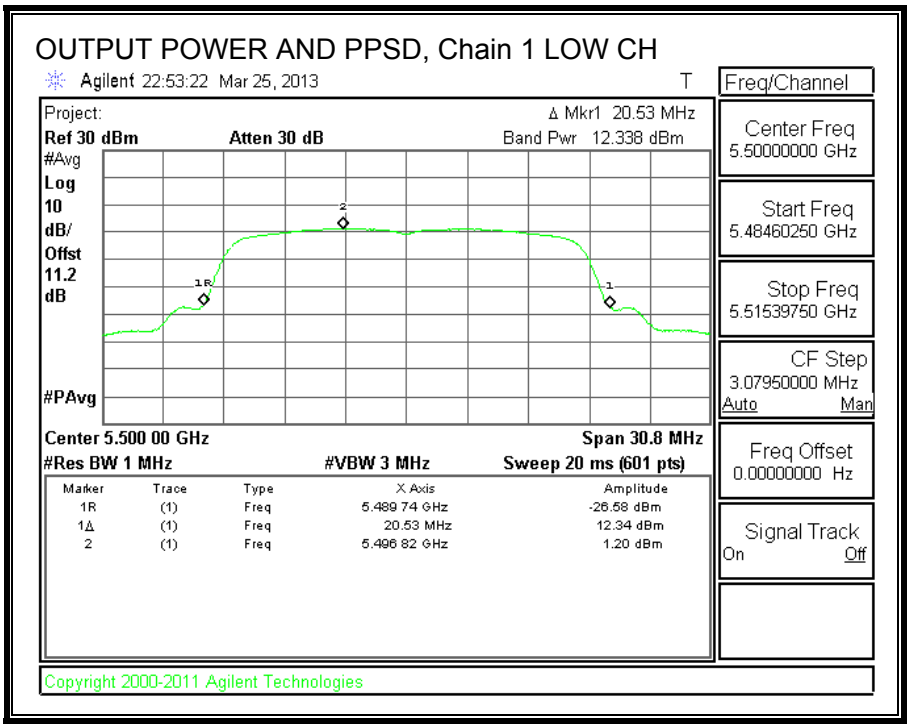



**OUTPUT POWER AND PPSD, Chain 1**





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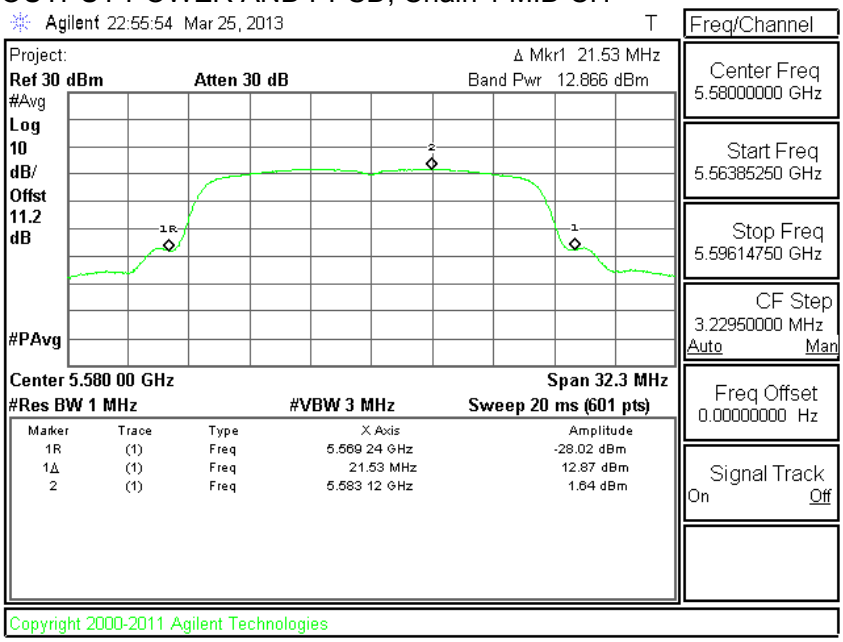
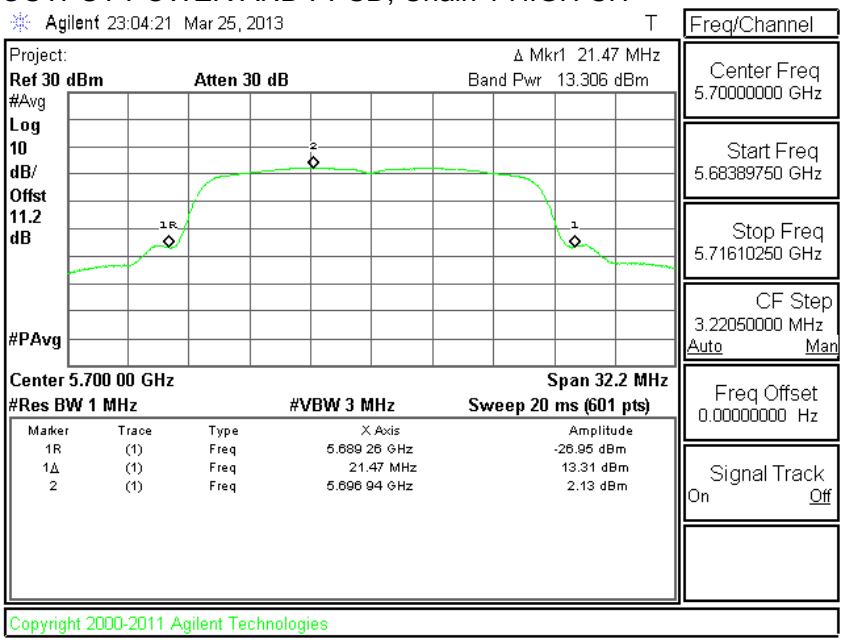
OUTPUT POWER AND PPSD, Chain 1 MID CH




OUTPUT POWER AND PPSD, Chain 1 HIGH CH





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## 8.14. 802.11n HT40 CDD MCS0 2TX MODE IN THE 5.6 GHz BAND

### 8.14.1. 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) |
|---|---|---|---|
| Low | 5510 | 49.73 | 45.87 |
| Mid | 5550 | 58.53 | 51.07 |
| High | 5670 | 50.93 | 46.40 |


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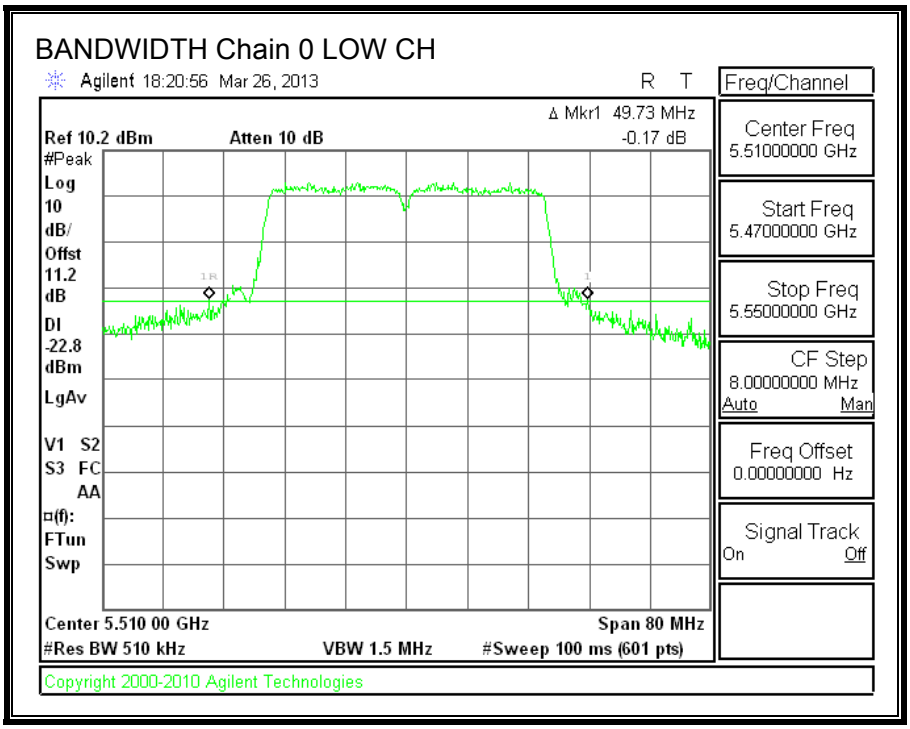
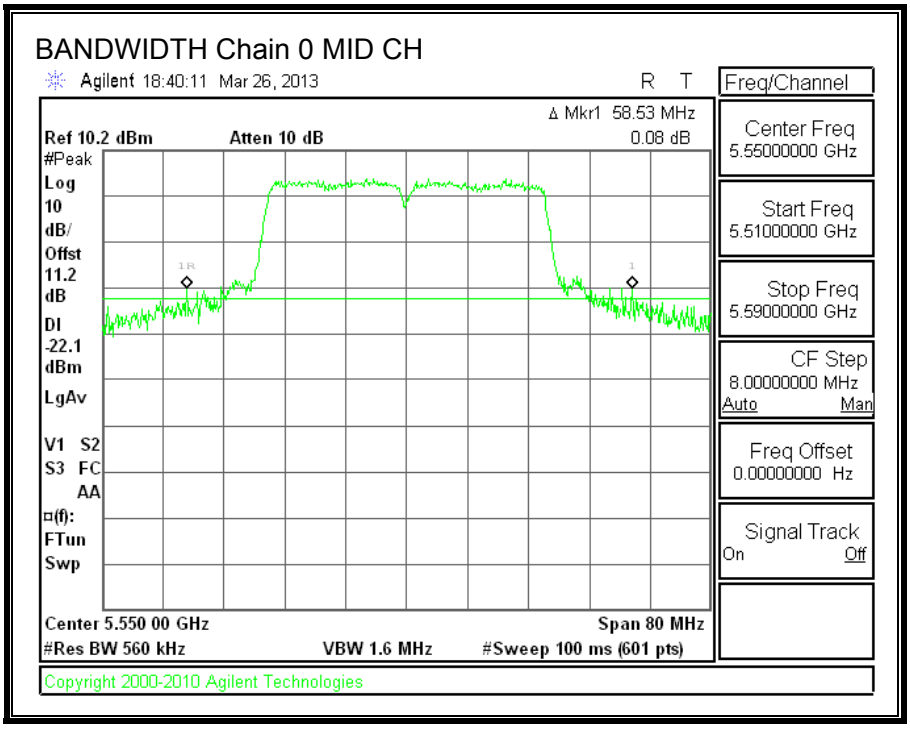
**26 dB BANDWIDTH, Chain 0**





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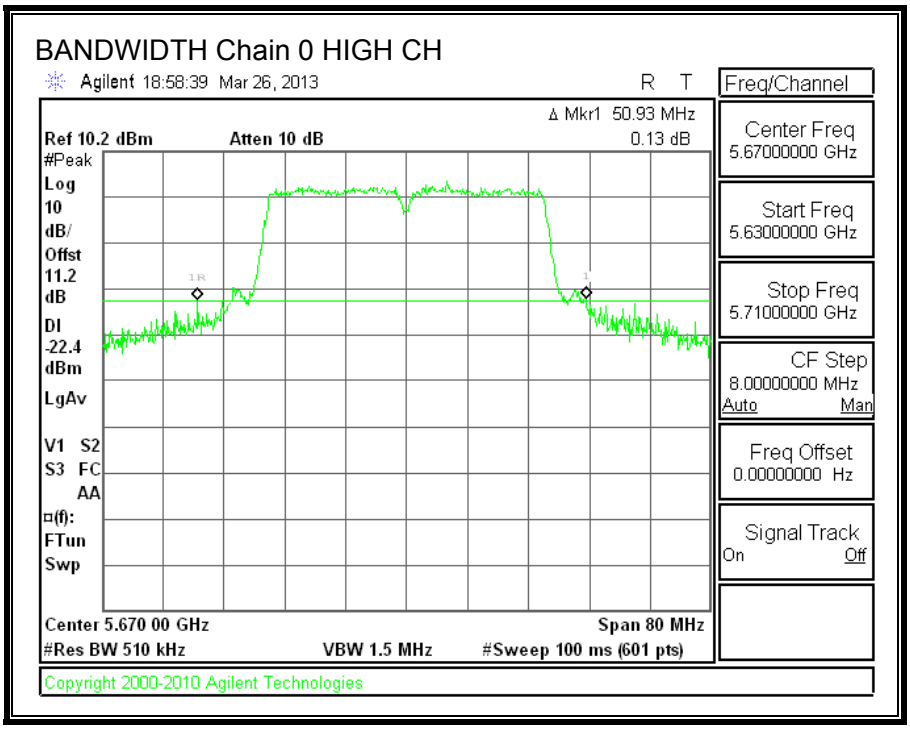
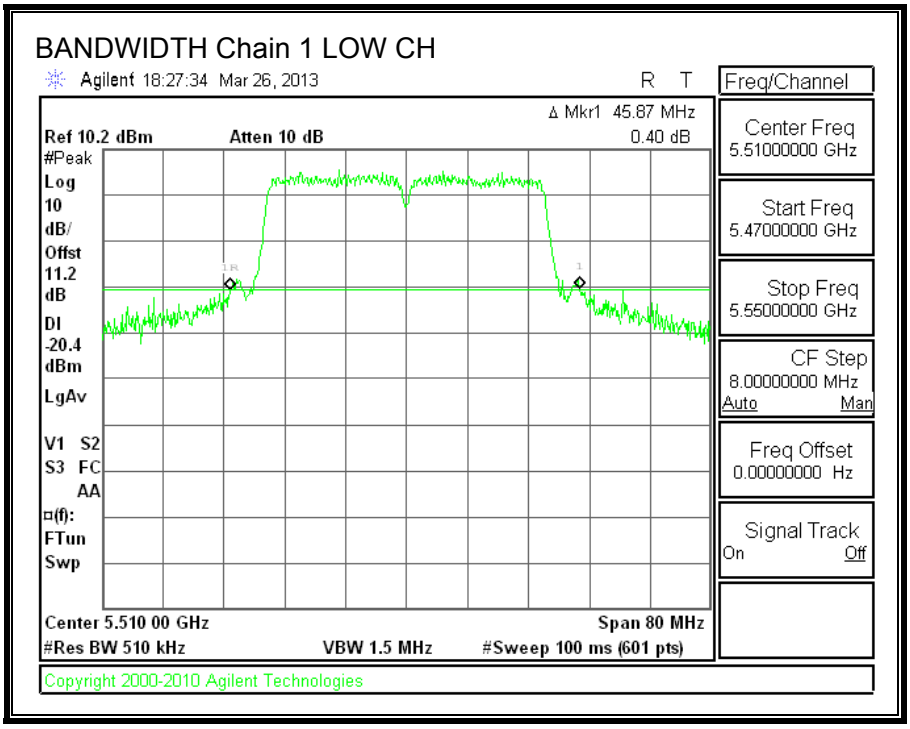



**26 dB BANDWIDTH, Chain 1**





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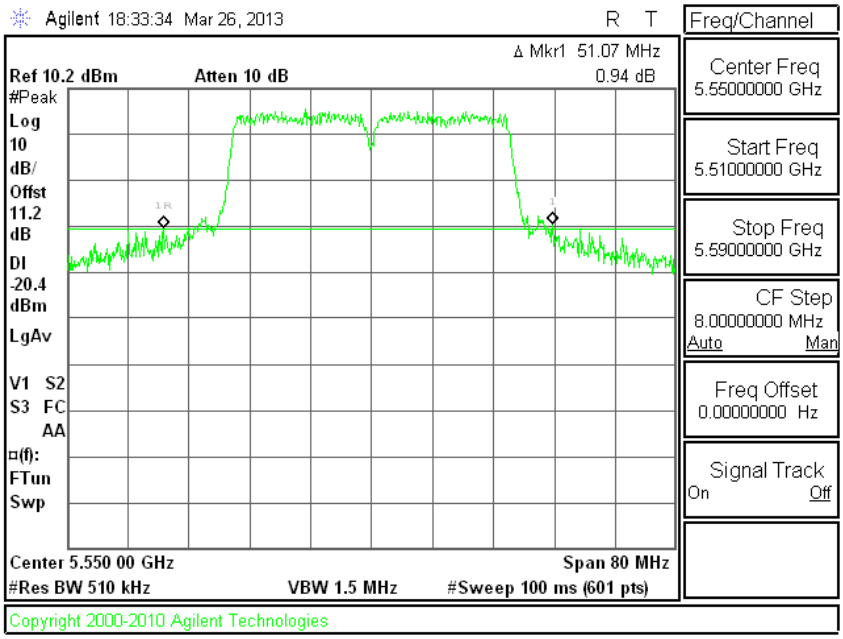
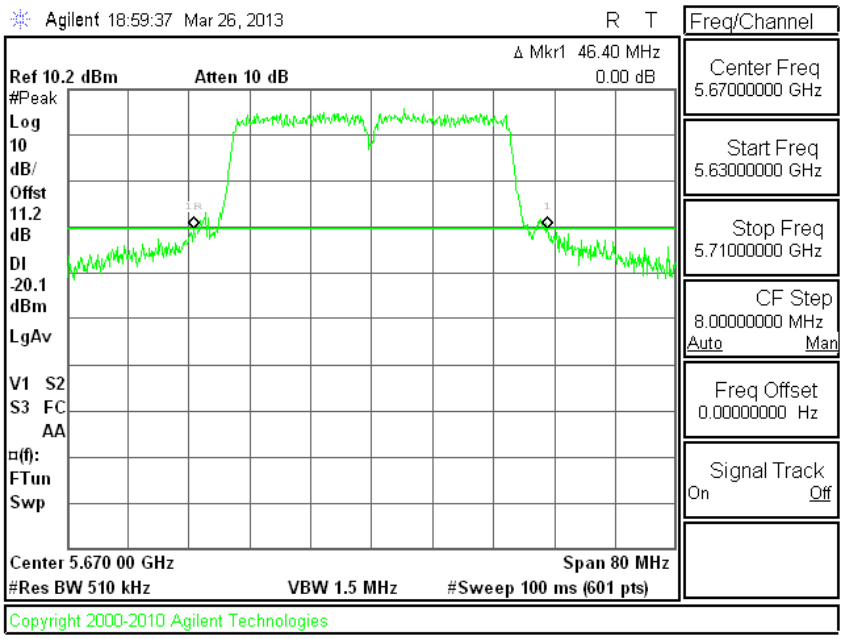
BANDWIDTH Chain 1 MID CH




BANDWIDTH Chain 1 HIGH CH





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### 8.14.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5510 | 36.1381 | 36.1337 |
| Mid | 5550 | 36.1612 | 36.1684 |
| High | 5670 | 36.1587 | 36.1304 |


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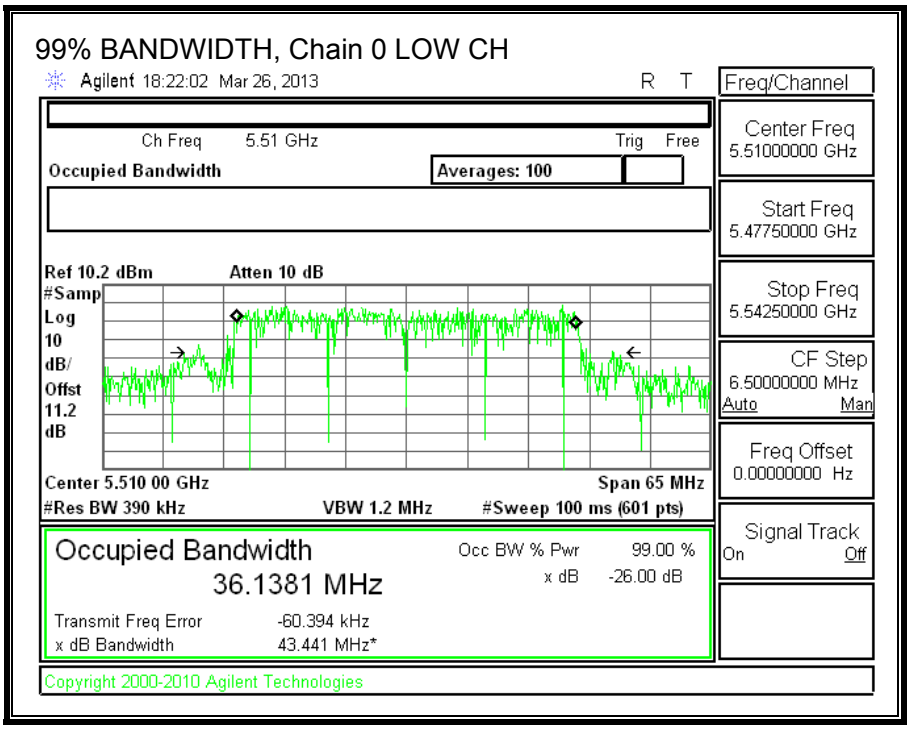
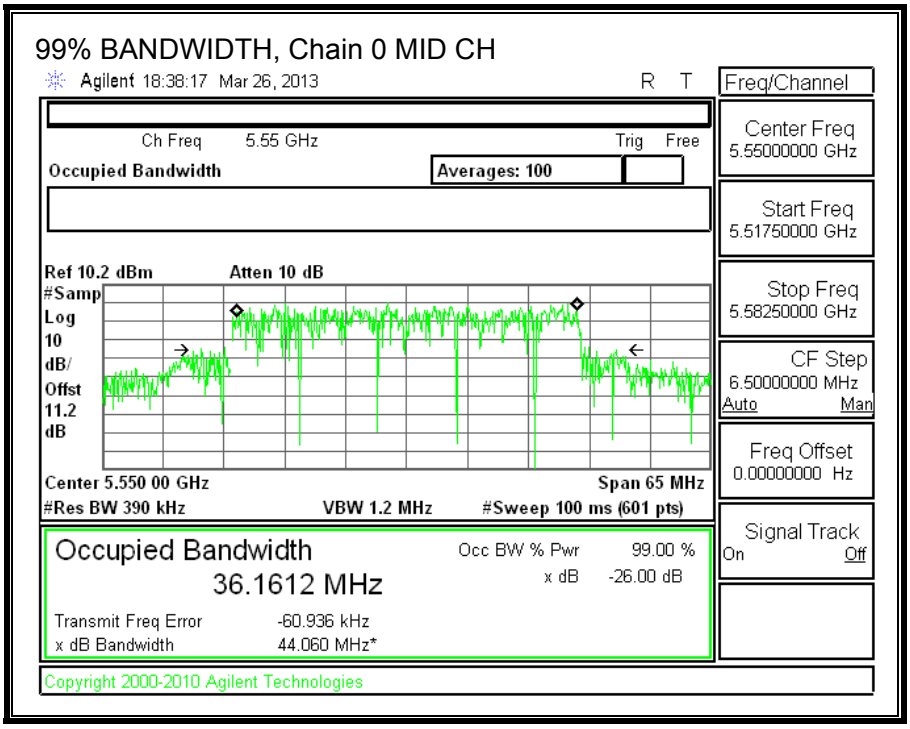
**99% BANDWIDTH, Chain 0**





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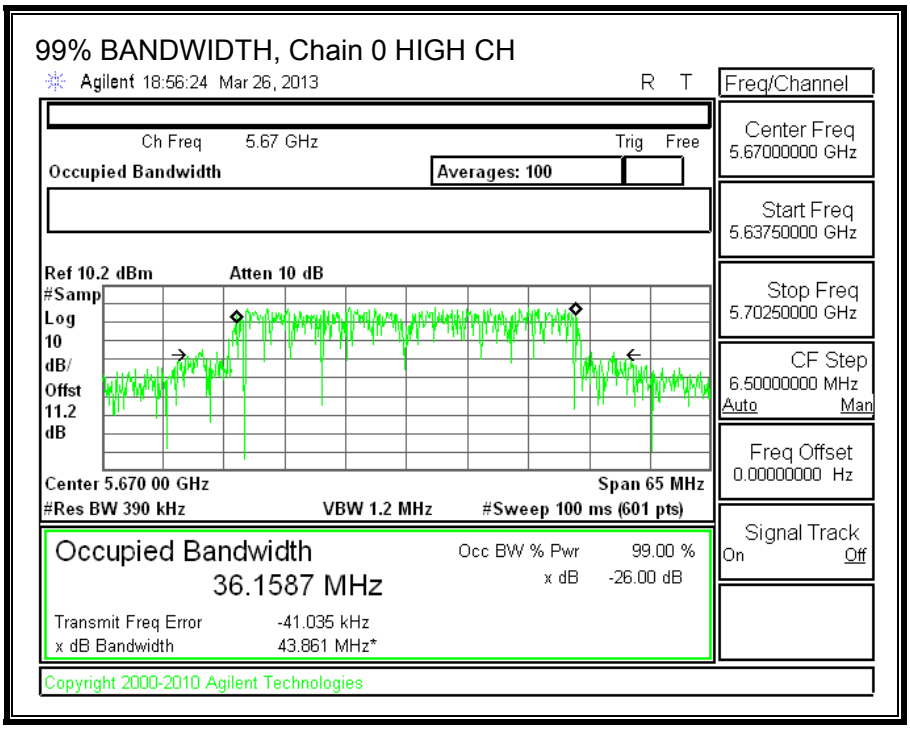
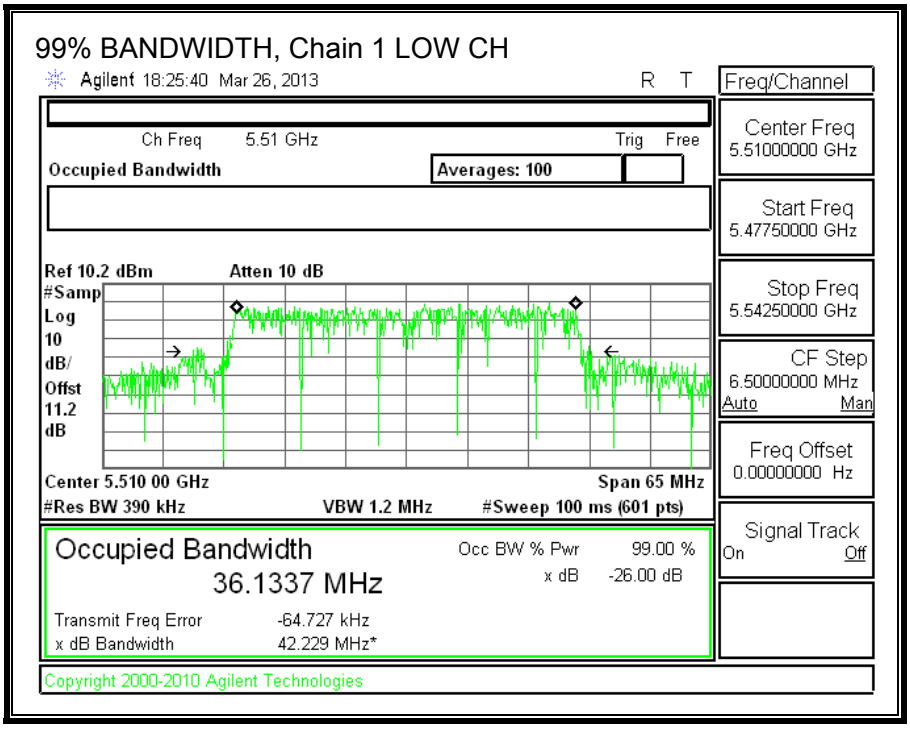



**99% BANDWIDTH, Chain 1**





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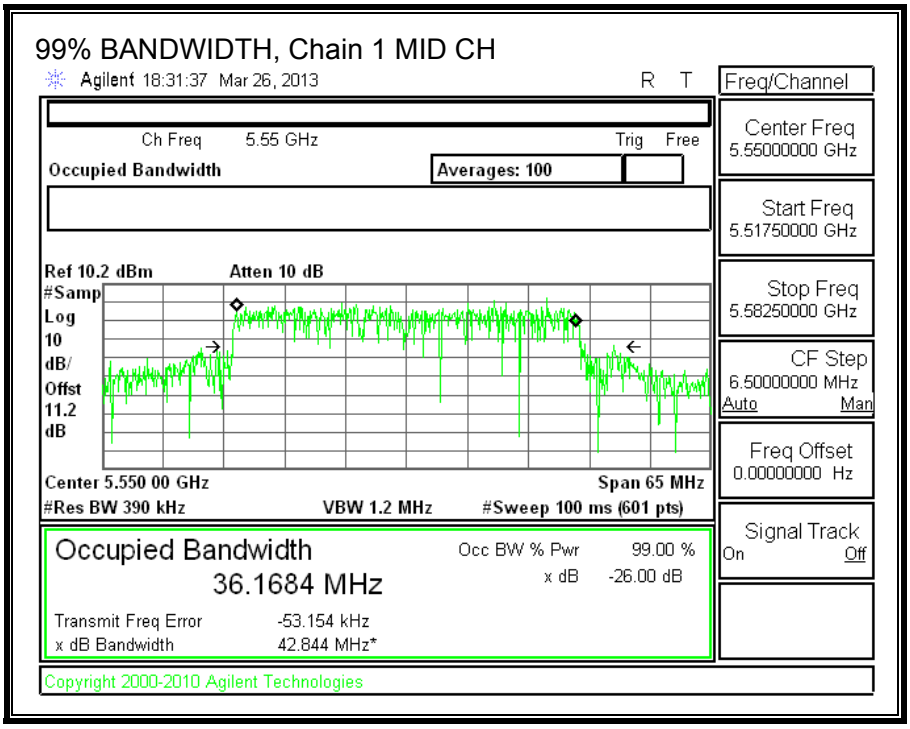


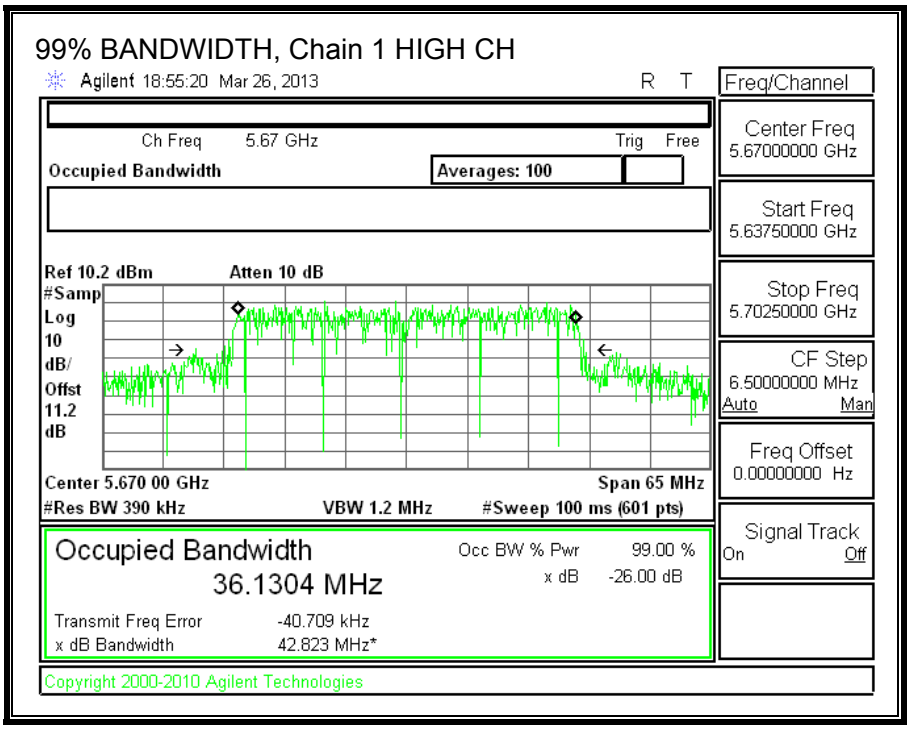



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### 8.14.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5510 | 12.41 | 12.76 | 15.60 |
| Mid | 5550 | 12.46 | 12.82 | 15.65 |
| High | 5670 | 12.01 | 12.83 | 15.45 |


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### 8.14.4. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 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**

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

For PPSD, the TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

| Antenna Gain (dBi) | 10 * Log (2 chains) (dB) | Correlated Chains Directional Gain (dBi) |
|---|---|---|
| 4.00 | 3.01 | 7.01 |


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**RESULTS**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Uncorrelated Directional Gain (dBi) | Correlated Directional Gain (dBi) |
|---|---|---|---|---|---|
| Low | 5510 | 45.87 | 36.1337 | 4.00 | 7.01 |
| Mid | 5550 | 51.07 | 36.1612 | 4.00 | 7.01 |
| High | 5670 | 46.40 | 36.1304 | 4.00 | 7.01 |

**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 | 9.99 | 11.00 | 9.99 |
| Mid | 5550 | 24.00 | 24.00 | 30.00 | 24.00 | 9.99 | 11.00 | 9.99 |
| High | 5670 | 24.00 | 24.00 | 30.00 | 24.00 | 9.99 | 11.00 | 9.99 |

| | | |
|---|---|---|
| **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) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5510 | 12.277 | 12.595 | 15.45 | 24.00 | -8.55 |
| Mid | 5550 | 12.857 | 12.875 | 15.88 | 24.00 | -8.12 |
| High | 5670 | 12.347 | 12.853 | 15.62 | 24.00 | -8.38 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5510 | -2.05 | 0.56 | 2.46 | 9.99 | -7.53 |
| Mid | 5550 | -1.54 | -1.57 | 1.46 | 9.99 | -8.53 |
| High | 5670 | -2.13 | -1.54 | 1.19 | 9.99 | -8.80 |


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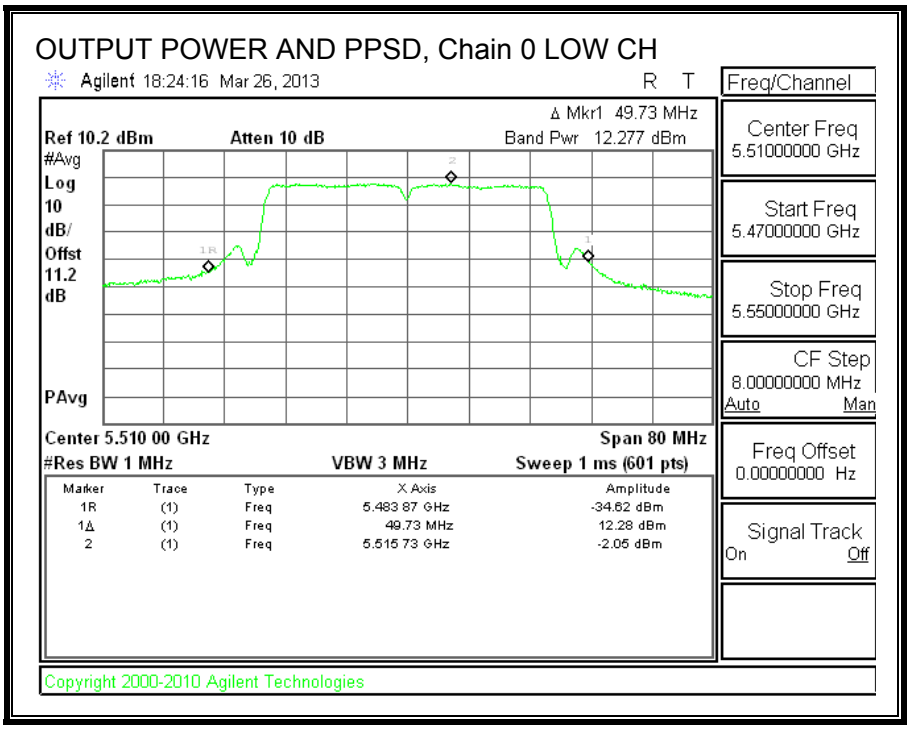
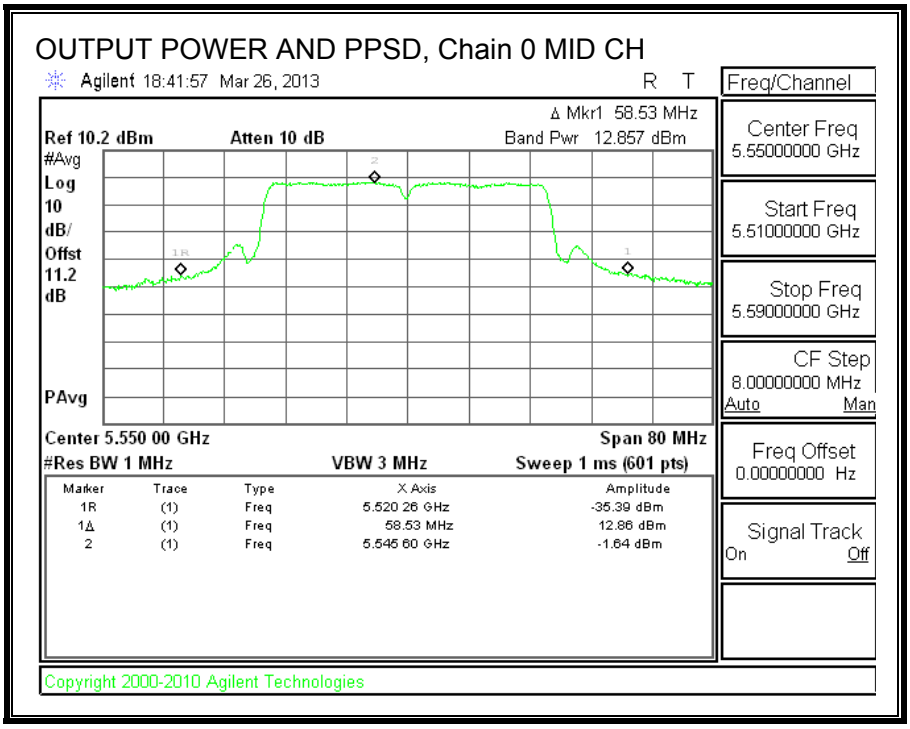
**OUTPUT POWER AND PPSD, Chain 0**





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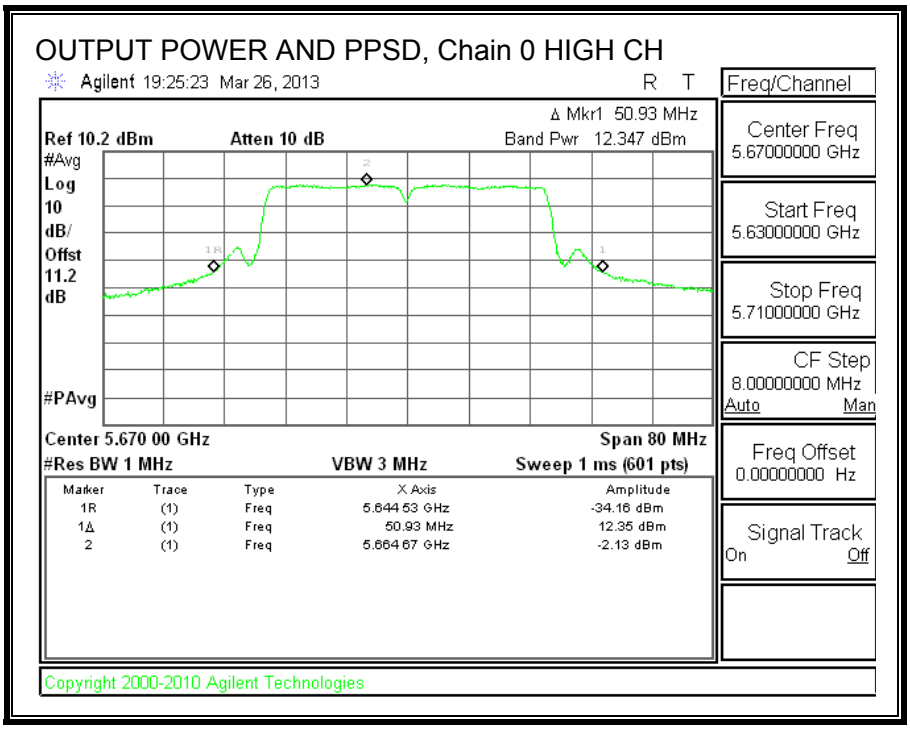
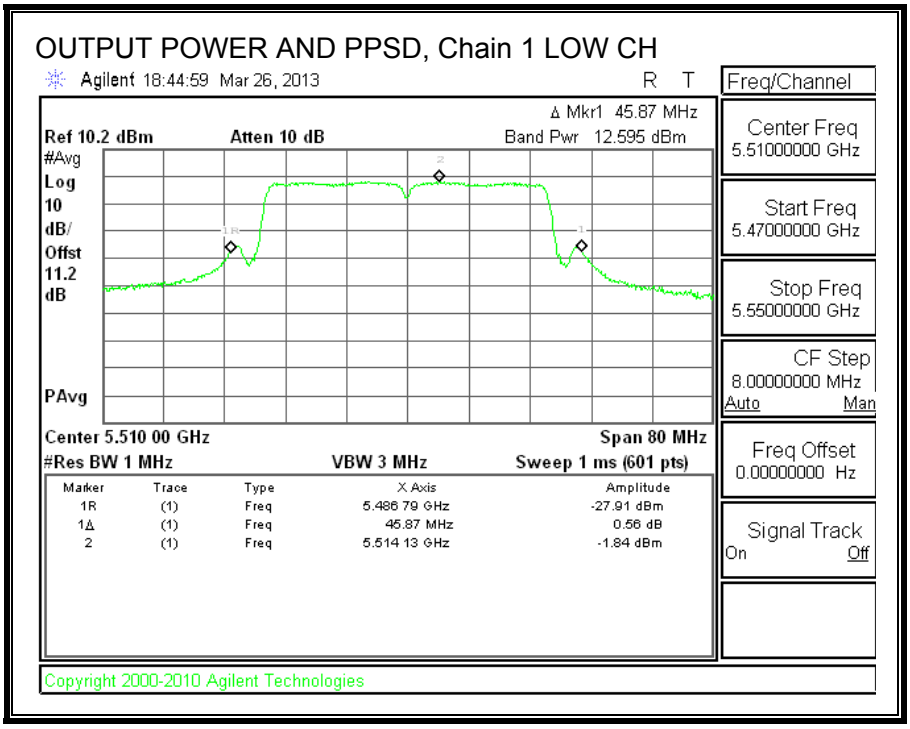



**OUTPUT POWER AND PPSD, Chain 1**





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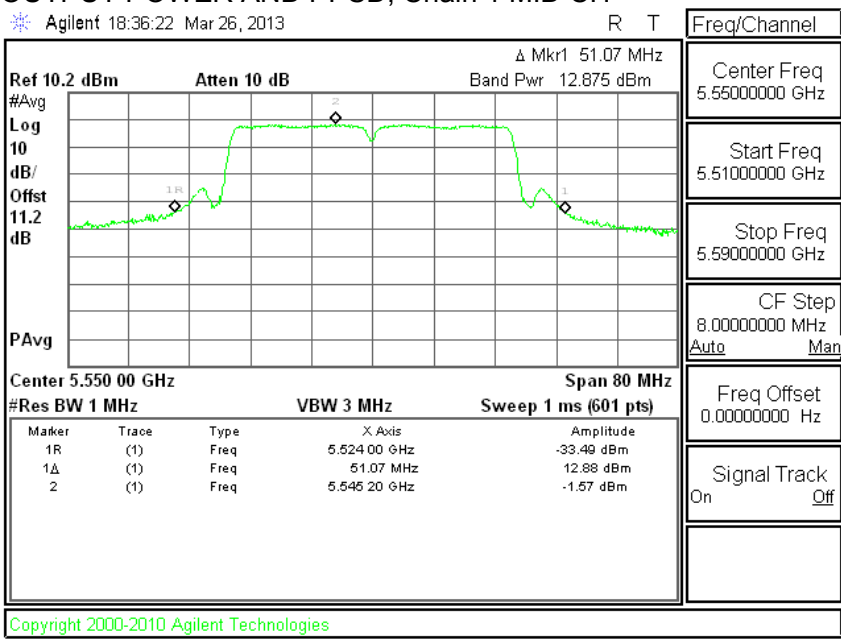
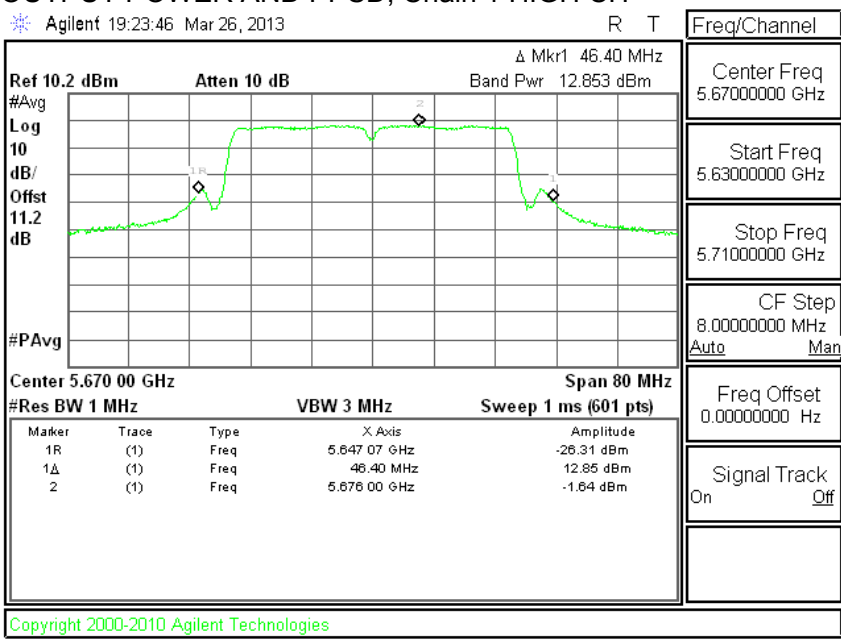
OUTPUT POWER AND PPSD, Chain 1 MID CH




OUTPUT POWER AND PPSD, Chain 1 HIGH CH





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## 8.15. 802.11n HT40 SDM MCS8 2TX MODE IN THE 5.6 GHz BAND

### 8.15.1. 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) |
|---|---|---|---|
| Low | 5510 | 48.53 | 46.13 |
| Mid | 5550 | 47.47 | 47.20 |
| High | 5670 | 53.73 | 46.80 |


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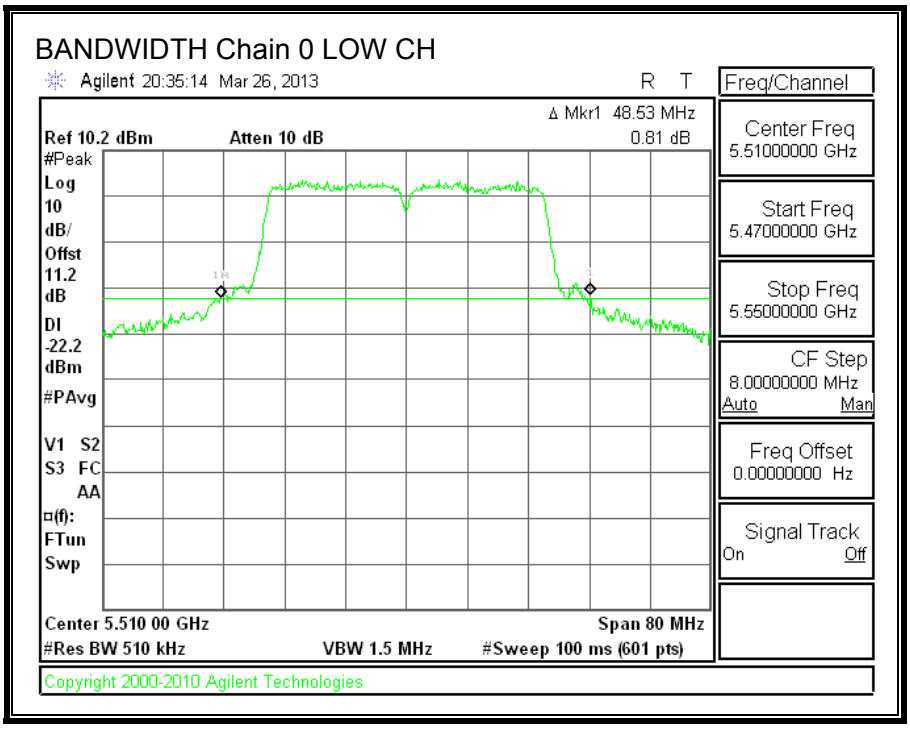
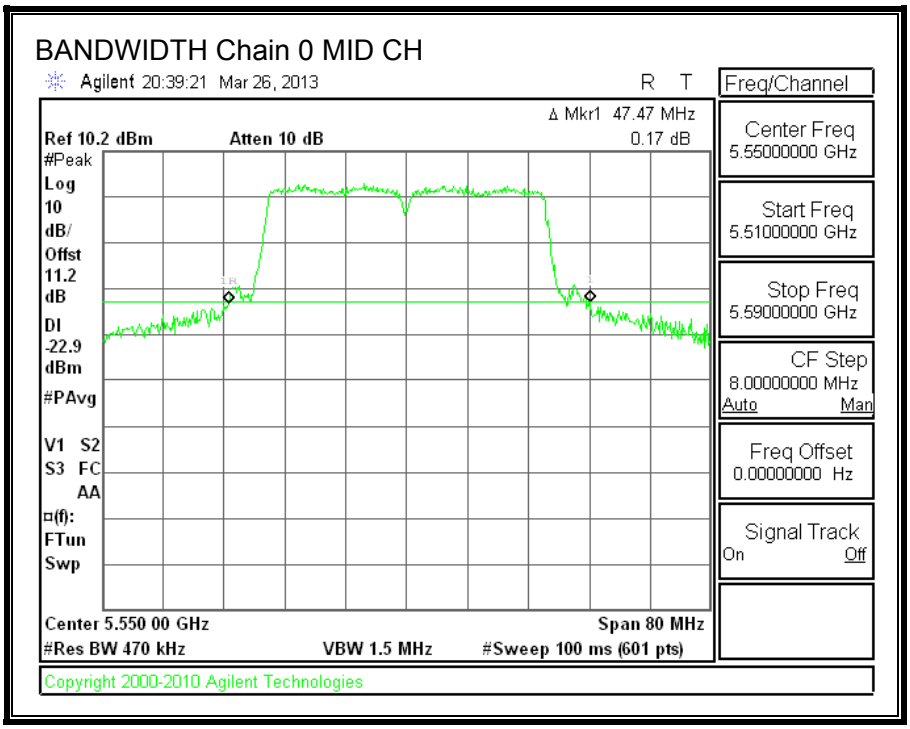
**26 dB BANDWIDTH, Chain 0**





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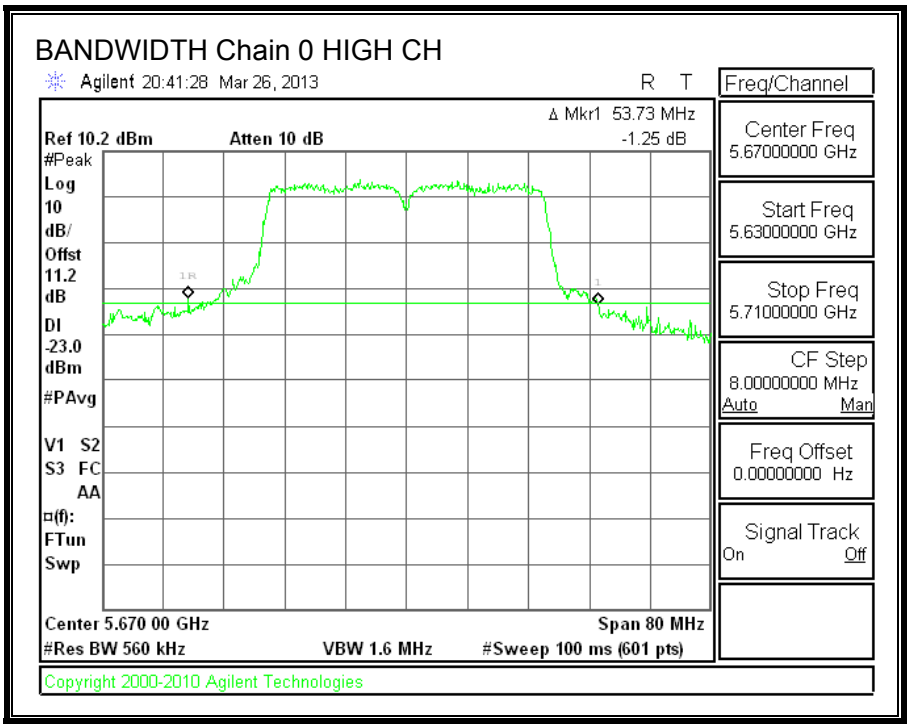
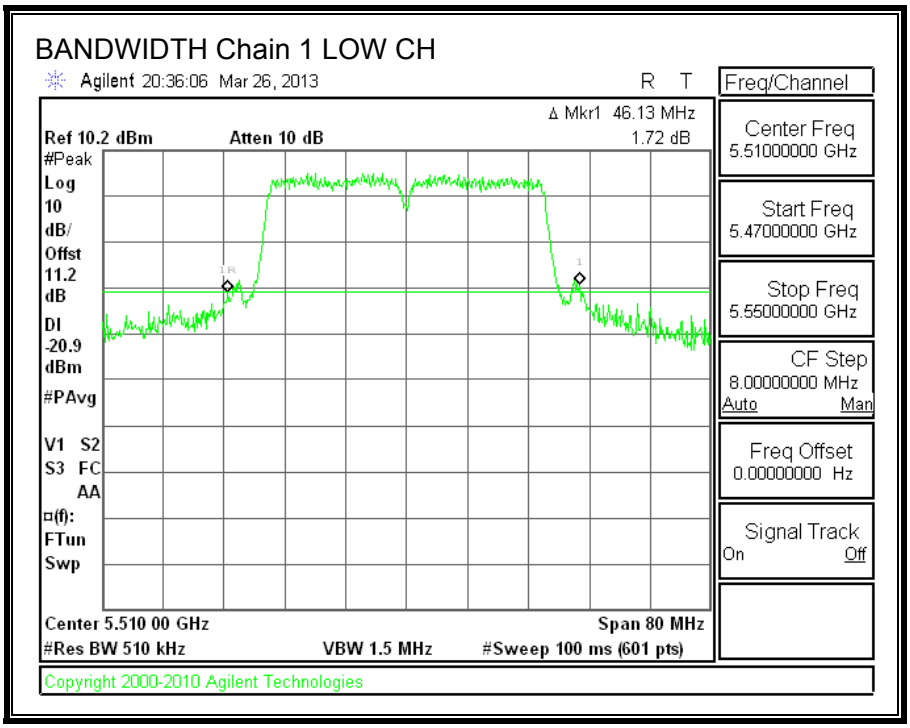



**26 dB BANDWIDTH, Chain 1**





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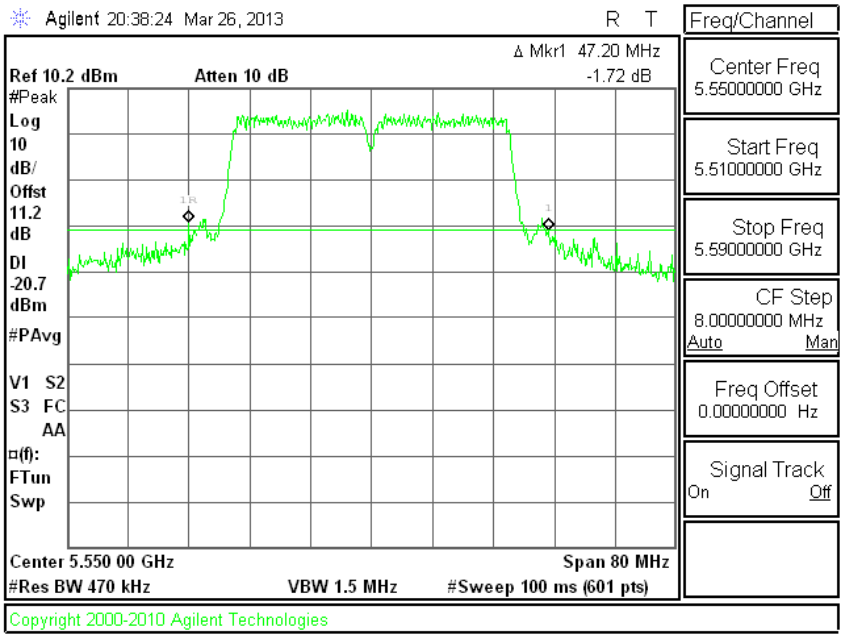
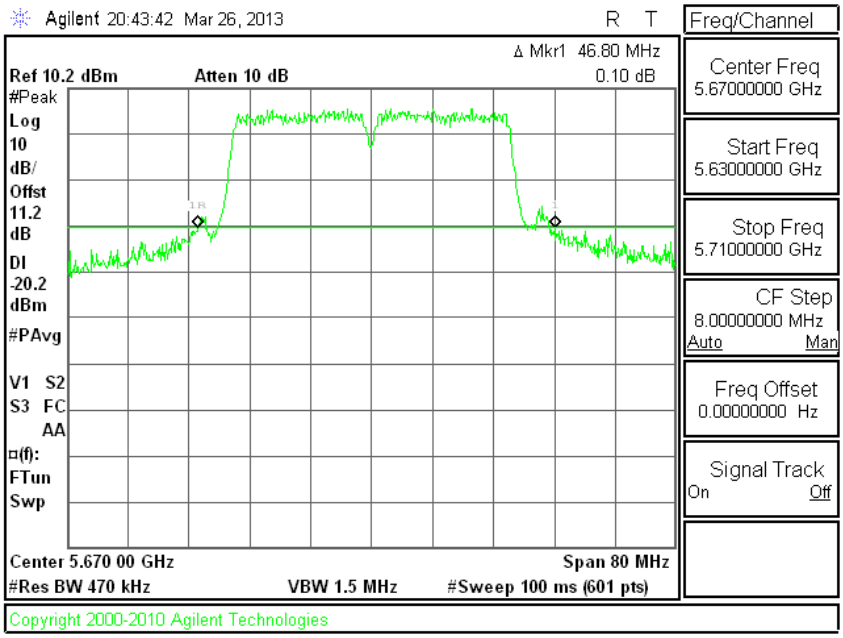
BANDWIDTH Chain 1 MID CH




BANDWIDTH Chain 1 HIGH CH





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### 8.15.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5510 | 36.1245 | 36.1328 |
| Mid | 5550 | 36.1550 | 36.1404 |
| High | 5670 | 36.1573 | 36.1330 |


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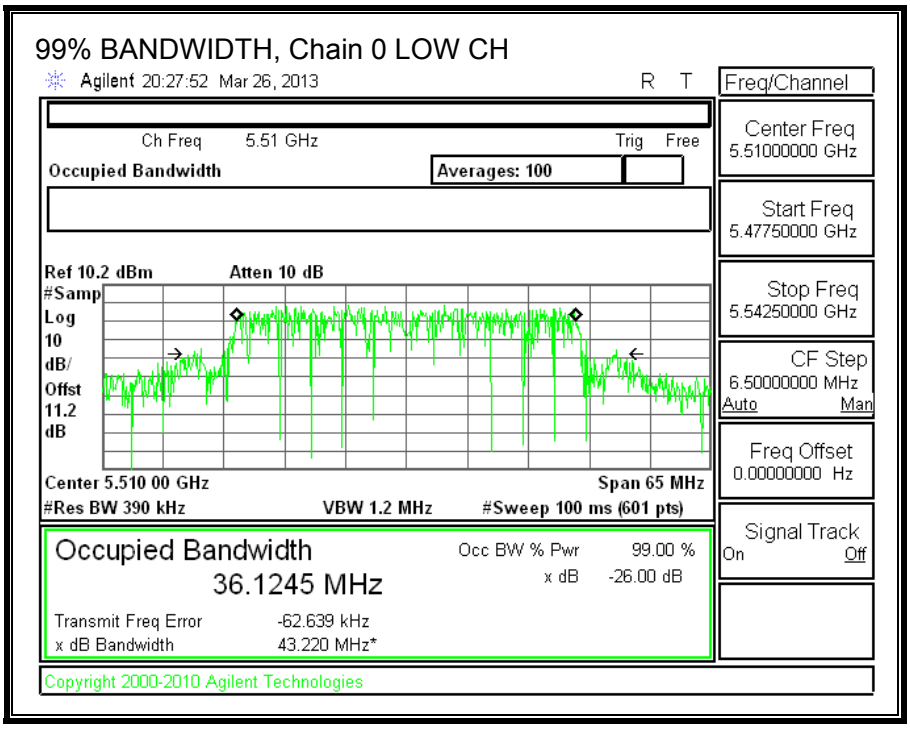
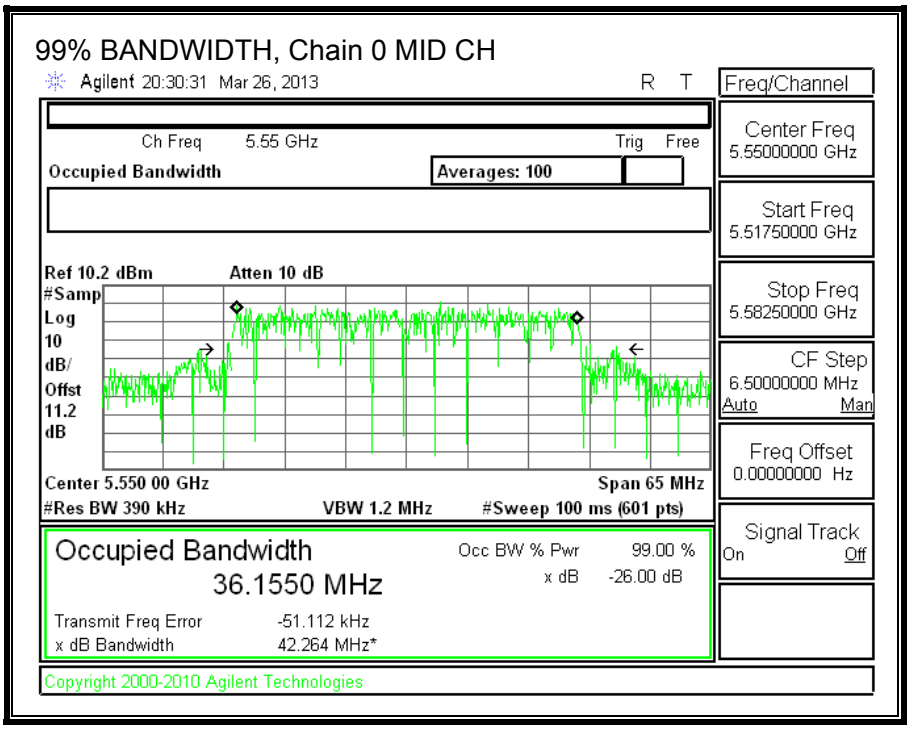
**99% BANDWIDTH, Chain 0**





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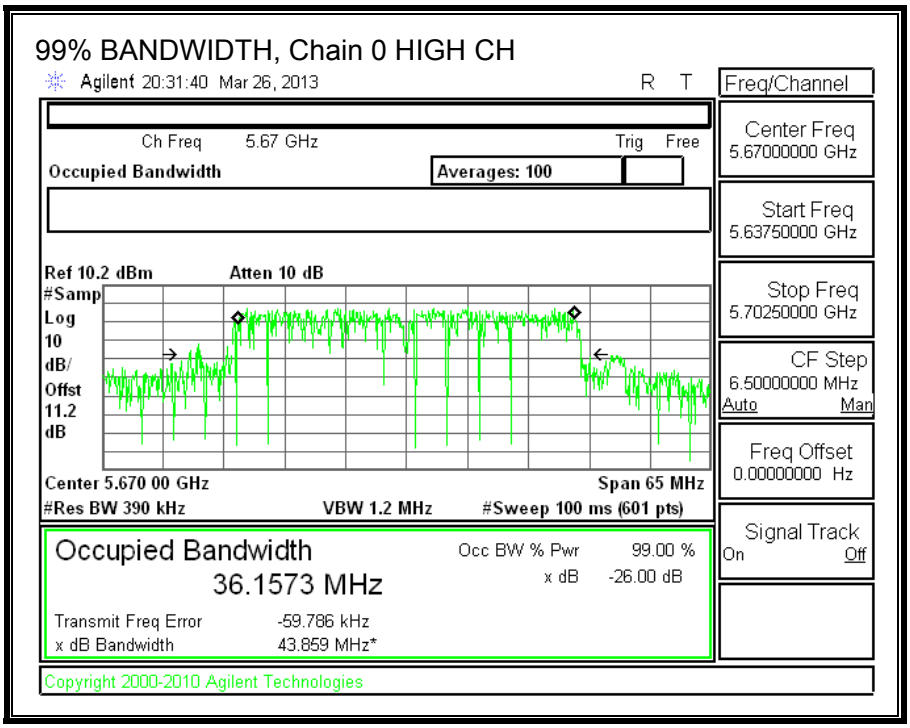
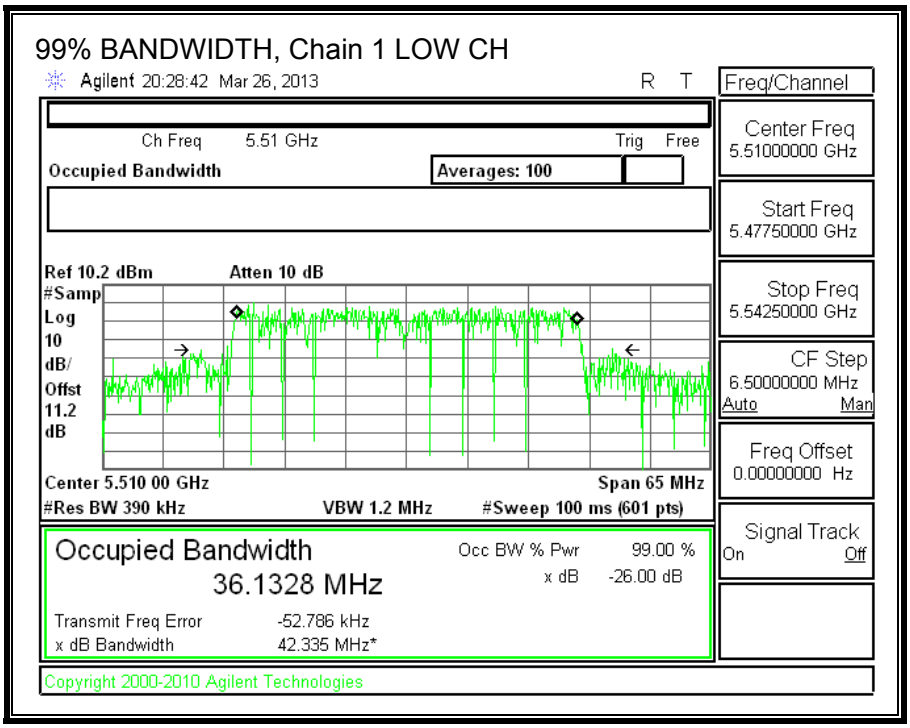



**99% BANDWIDTH, Chain 1**





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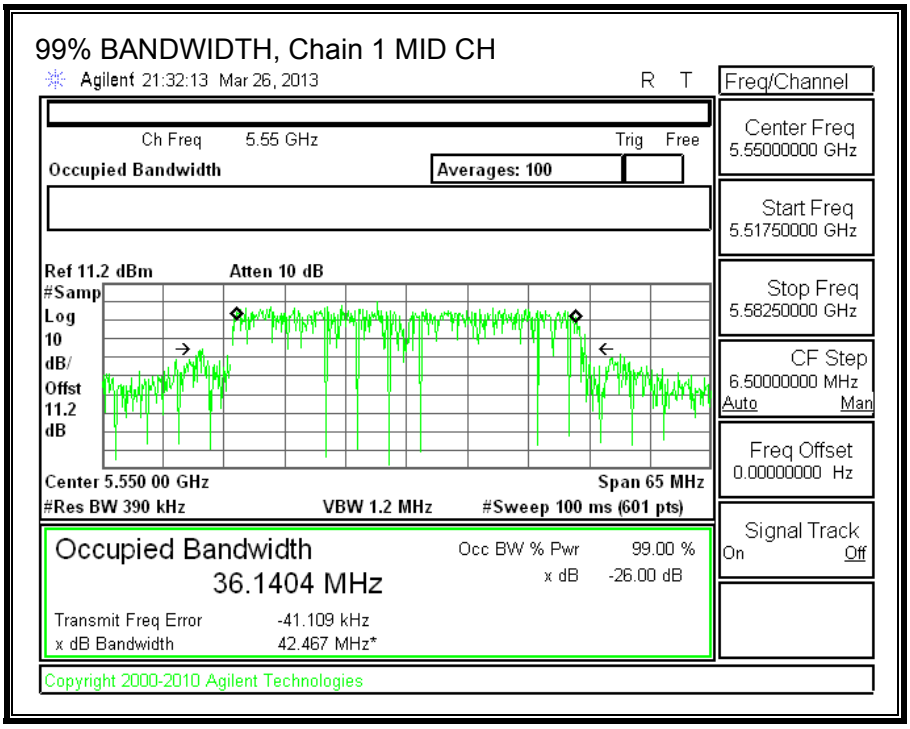


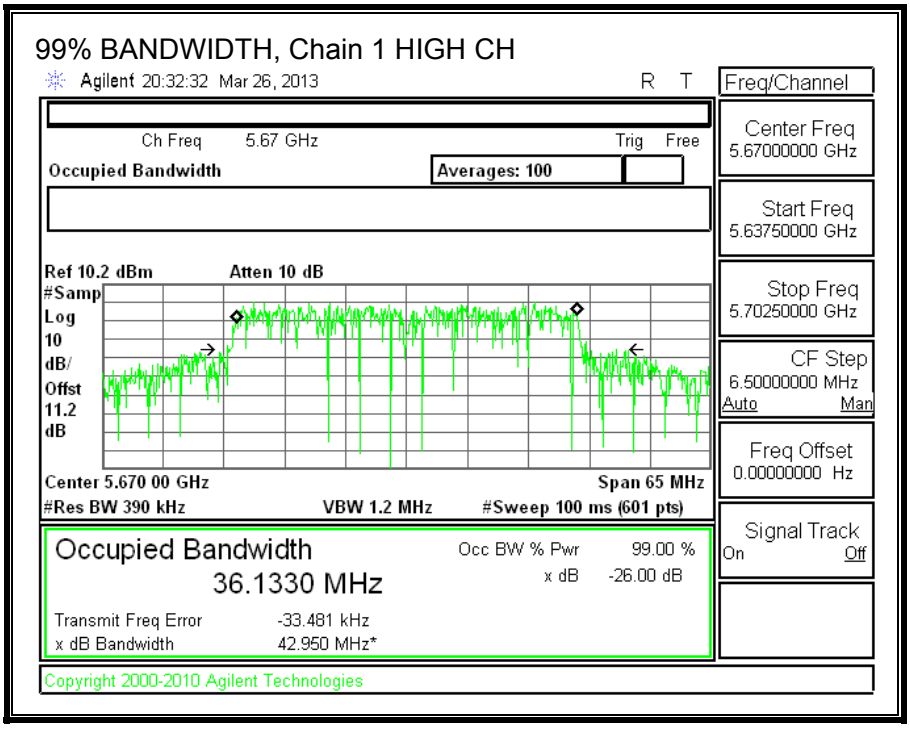



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### 8.15.3. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|
| Low | 5510 | 12.00 | 12.30 | 15.16 |
| Mid | 5550 | 12.10 | 12.50 | 15.31 |
| High | 5670 | 12.00 | 12.70 | 15.37 |


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### 8.15.4. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 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 the same for each chain. The directional gain is equal to the antenna gain.


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**RESULTS**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Low | 5510 | 46.13 | 36.1245 | 4.00 |
| Mid | 5550 | 47.20 | 36.1404 | 4.00 |
| High | 5670 | 46.80 | 36.1330 | 4.00 |

**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) | 0.11 | Included in Calculations of Corr'd Power & PPSD |
|---|---|---|

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5510 | 12.436 | 12.548 | 15.61 | 24.00 | -8.39 |
| Mid | 5550 | 12.328 | 12.575 | 15.57 | 24.00 | -8.43 |
| High | 5670 | 12.219 | 13.313 | 15.92 | 24.00 | -8.08 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5510 | -2.13 | -1.88 | 1.12 | 11.00 | -9.88 |
| Mid | 5550 | -2.18 | -1.81 | 1.13 | 11.00 | -9.87 |
| High | 5670 | -2.36 | -1.15 | 1.41 | 11.00 | -9.59 |


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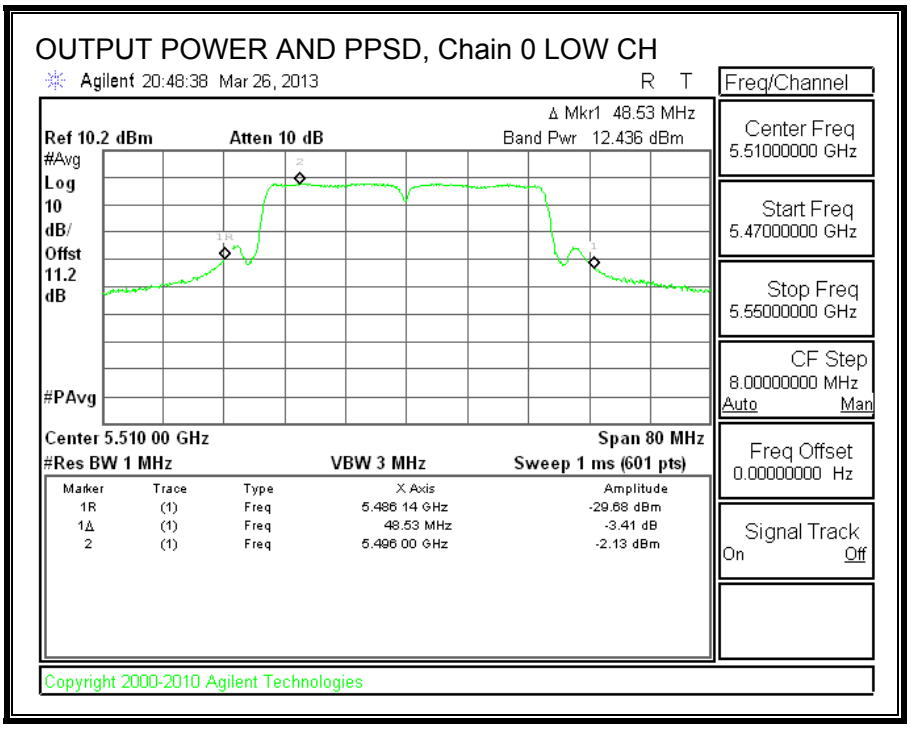
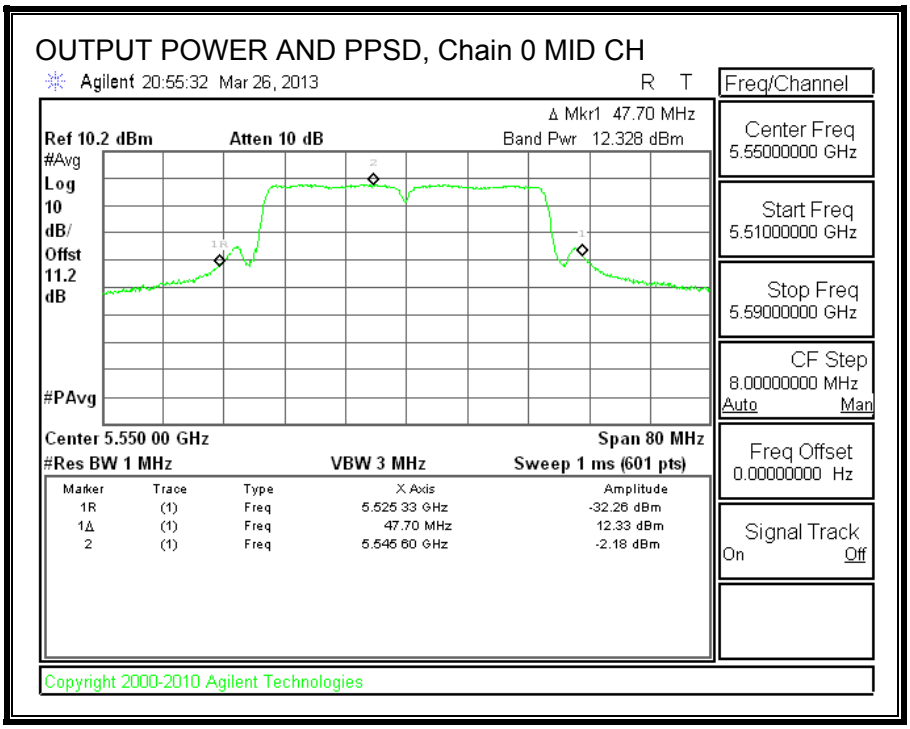
**OUTPUT POWER AND PPSD, Chain 0**





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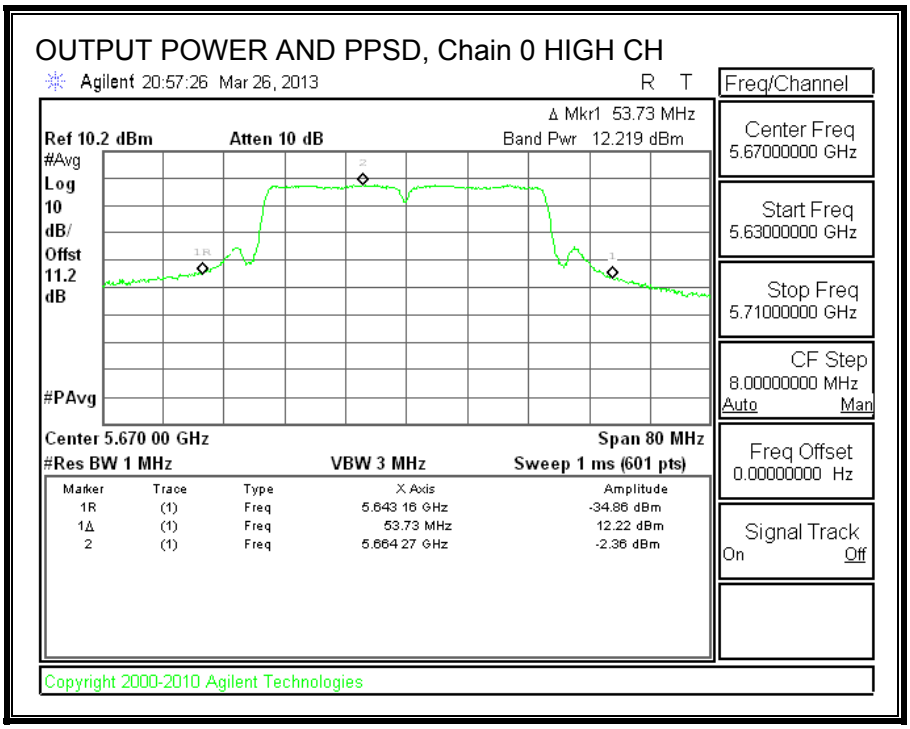
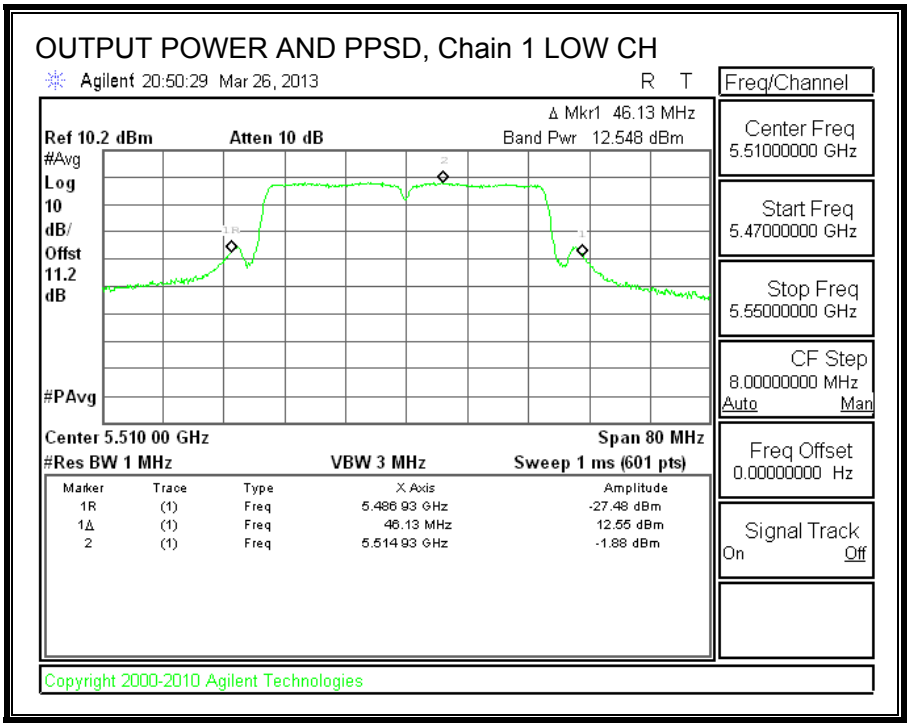



**OUTPUT POWER AND PPSD, Chain 1**





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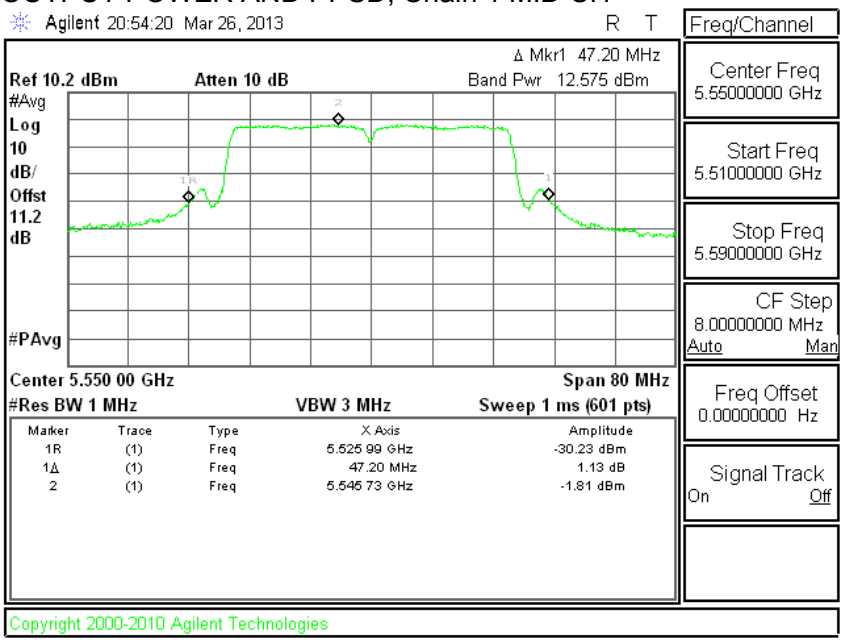
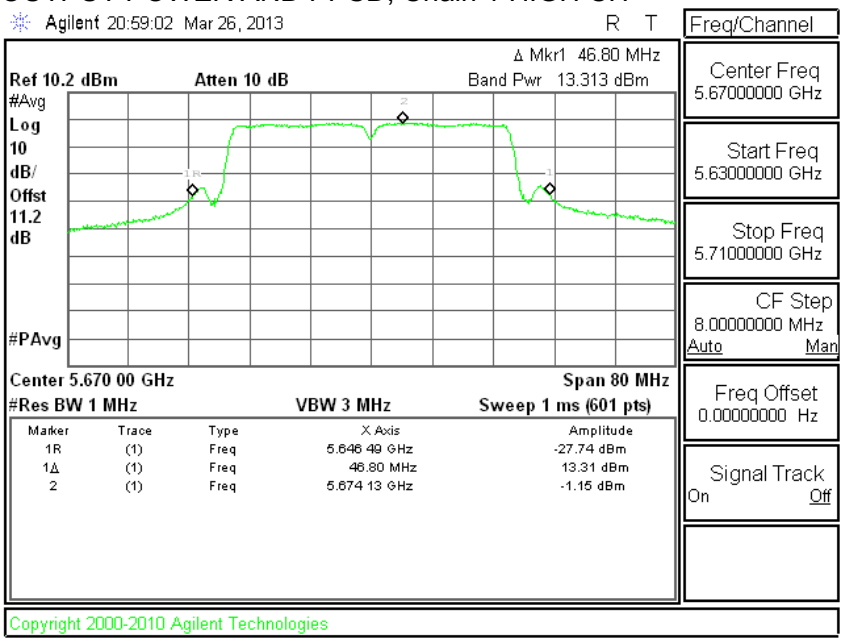
OUTPUT POWER AND PPSD, Chain 1 MID CH




OUTPUT POWER AND PPSD, Chain 1 HIGH CH





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# 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.


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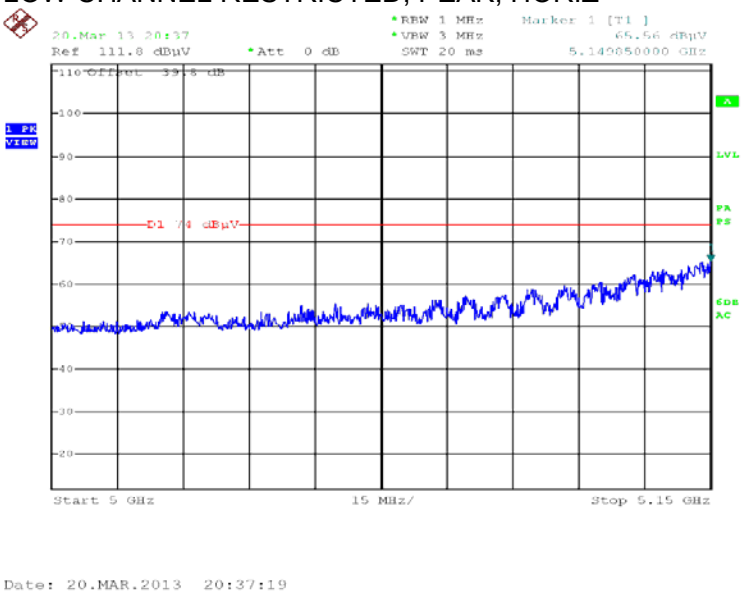
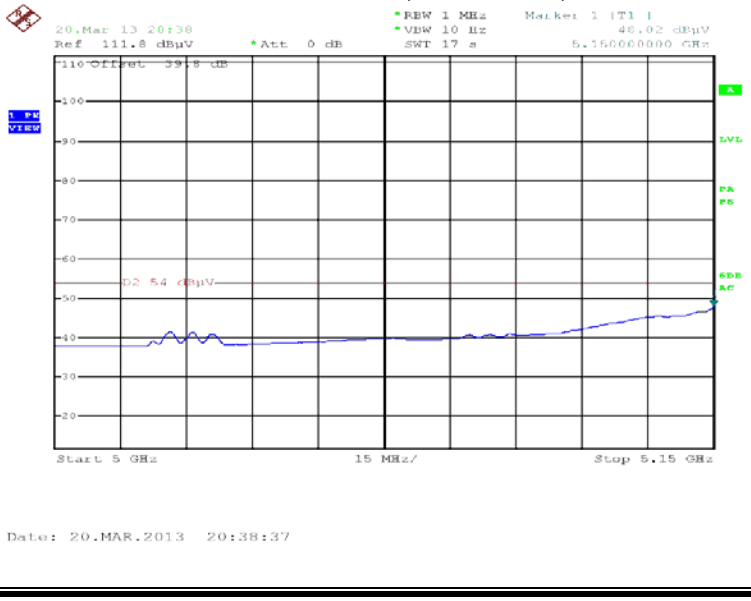
## 9.2. 802.11a CDD 2TX MODE IN THE 5.2 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

LOW CHANNEL RESTRICTED, PEAK, HORIZ




LOW CHANNEL RESTRICTED, AVERAGE, HORIZ





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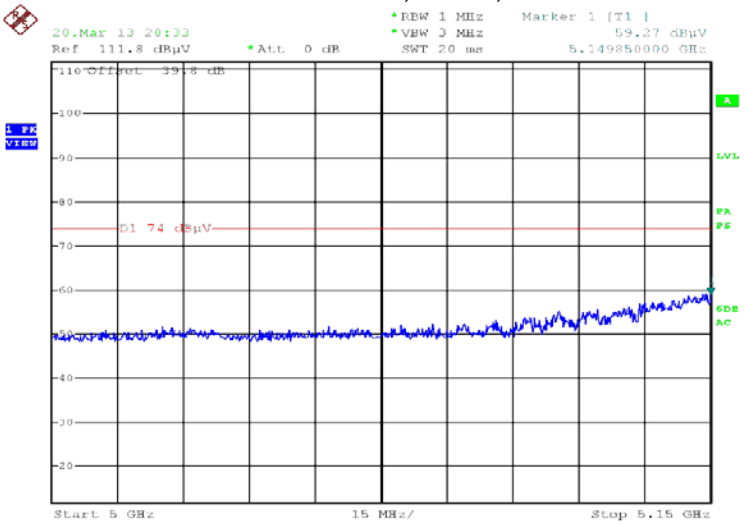
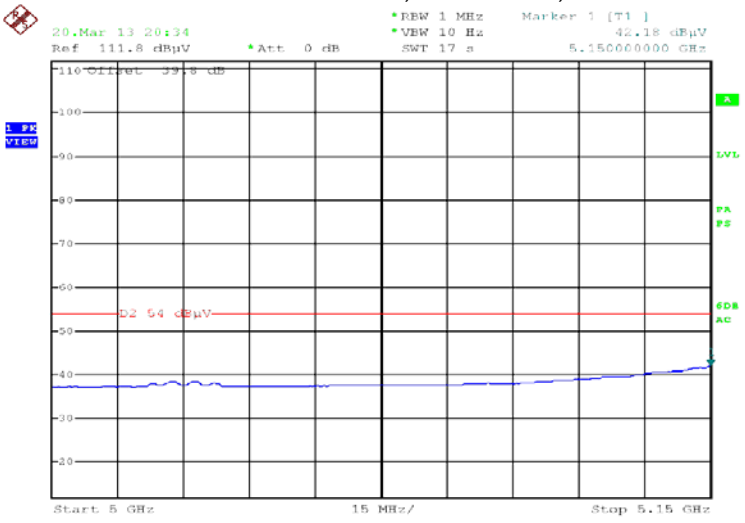
LOW CHANNEL RESTRICTED, PEAK, VERT




Date: 20.MAR.2013 20:33:10

13P

LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 20.MAR.2013 20:34:30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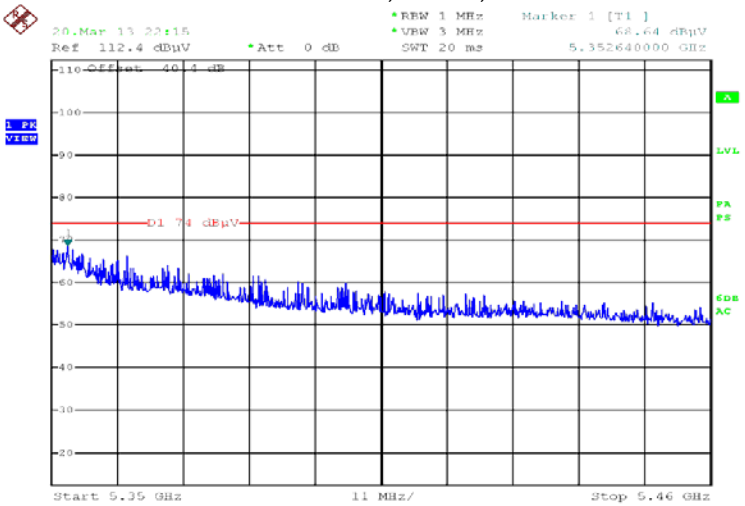
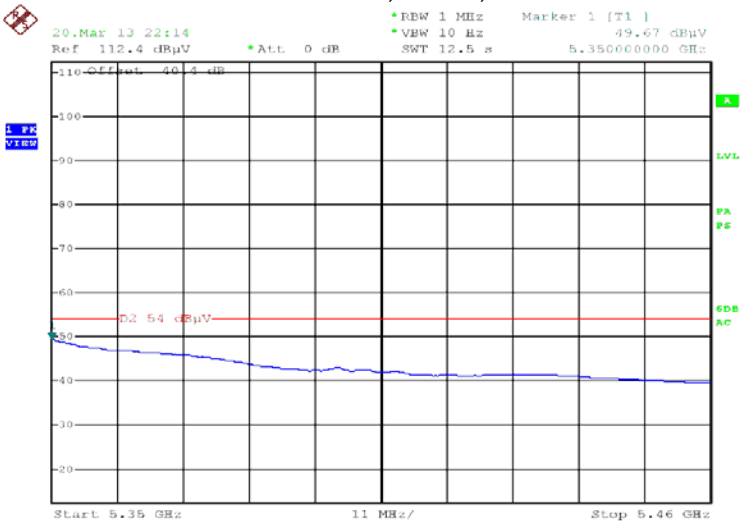
**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL BANDEDGE, PEAK, HORIZ




Date: 20.MAR.2013 22:15:24

HIGH CHANNEL BANDEDGE, PEAK, VERT




Date: 20.MAR.2013 22:14:20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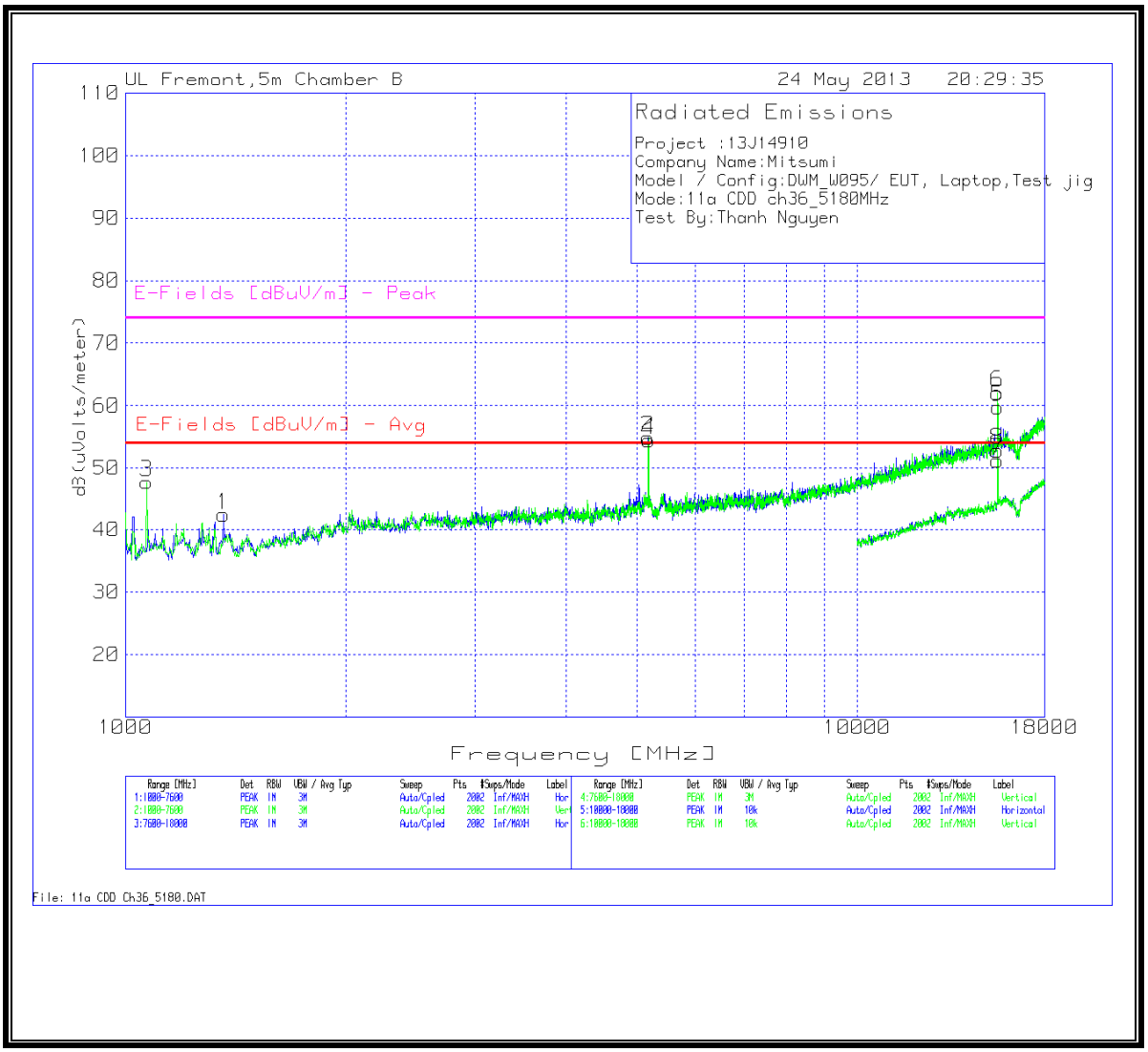
**HARMONICS AND SPURIOUS EMISSIONS**

LOW CHANNEL 36 GRAPH





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## LOW CHANNEL 36 DATA

Project :13J14910
Company Name:Mitsumi
Model / Config:DWM_W095/ EUT, Laptop,Test jig
Mode:11a CDD ch36_5180MHz
Test By:Thanh Nguyen

Horizontal 1000 - 7600MHz

| Marker No. | Test Frequency | Meter Reading(dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T159 BRF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1362.819 | 45.88 | PK | 28.4 | -35.4 | 3.5 | 0 | 42.38 | 53.97 | -11.59 | 74 | -31.62 | 100 | Horz |
| *2 | 5179.01 | 46.74 | PK | 34.8 | -34.9 | 7.3 | 0.9 | 54.84 | - | - | - | - | 200 | Horz |

Vertical 1000 - 7600MHz

| Marker No. | Test Frequency | Meter Reading(dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T159 BRF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 1069.265 | 52.67 | PK | 27.7 | -35.9 | 3.2 | 0 | 47.67 | 53.97 | -6.3 | 74 | -26.33 | 200 | Vert |
| *4 | 5185.607 | 46.33 | PK | 34.8 | -34.9 | 7.4 | 0.9 | 54.53 | - | - | - | - | 200 | Vert |

Horizontal 7600 - 18000MHz

| Marker No. | Test Frequency | Meter Reading(dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T192 HPF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 15546.827 | 37.64 | PK | 41 | -32.9 | 13.5 | 0.5 | 59.74 | - | - | 74 | -14.26 | 100 | Horz |

Vertical 7600 - 18000MHz

| Marker No. | Test Frequency | Meter Reading(dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T192 HPF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 15536.432 | 39.93 | PK | 41 | -32.9 | 13.5 | 0.6 | 62.13 | - | - | 74 | -11.87 | 200 | Vert |

Horizontal 10000 - 18000MHz

| Marker No. | Test Frequency | Meter Reading(dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T192 HPF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 15545.227 | 29.09 | PK | 41 | -32.9 | 13.5 | 0.5 | 51.19 | 53.97 | -2.78 | 74 | -22.81 | 100 | Horz |

Vertical 10000 - 18000MHz

| Marker No. | Test Frequency | Meter Reading(dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T192 HPF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 15545.227 | 30.82 | PK | 41 | -32.9 | 13.5 | 0.5 | 52.92 | 53.97 | -1.05 | 74 | -21.08 | 200 | Vert |

Horizontal 10000 - 18000MHz

| Marker No. | Test Frequency | Meter Reading (dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T159 HPF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 15543.941 | 21.14 | Av | 41 | -32.9 | 13.5 | 0.5 | 43.24 | 53.97 | -10.73 | - | - | 139 | Horz |

Vertical 10000 - 18000MHz

| Marker No. | Test Frequency | Meter Reading (dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T1959HPF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 15537.043 | 14.93 | Av | 41 | -32.9 | 13.5 | 0.6 | 37.13 | 53.97 | -16.84 | - | - | 220 | Vert |

* Fundamental

PK - Peak detector
QP - Quasi-Peak detector
Av - Average detector


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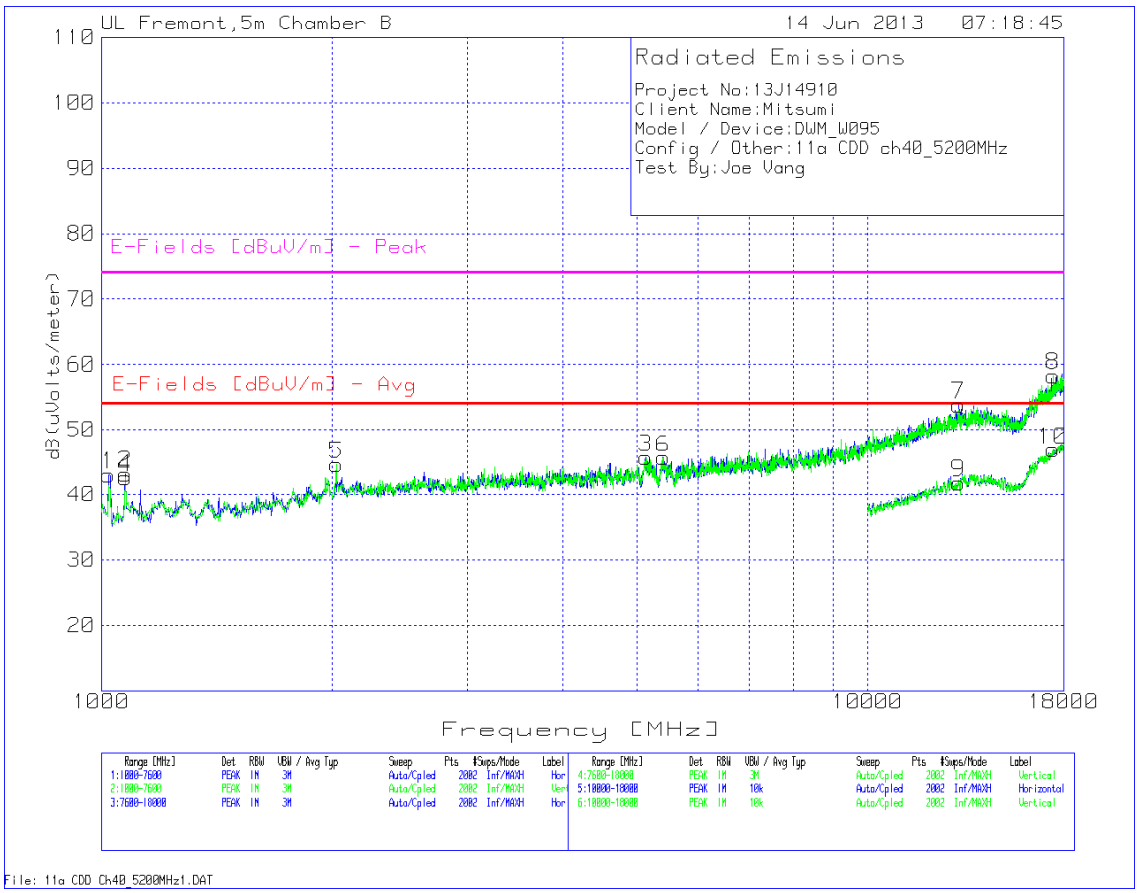
MID CHANNEL 40 GRAPH





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## MID CHANNEL 40 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11a CDD ch40_5200MHz
Test By:Joe Vang

Horizontal 1000 - 7600MHz

| Marker No. | Test Frequency (MHz) | Meter Reading(dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T159 BRF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Average Margin (dB) | E-Fields [dBuV/m] - Peak | Peak Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1023.088 | 48.26 | PK | 27.5 | -36 | 3.2 | 0 | 42.96 | 53.97 | -11.01 | 74 | -31.04 | 100 | Horz |
| 2 | 1075.862 | 47.99 | PK | 27.8 | -35.9 | 3.2 | 0 | 43.09 | 53.97 | -10.88 | 74 | -30.91 | 100 | Horz |
| 3 | 5139.43 | 37.6 | PK | 34.8 | -34.9 | 7.3 | 0.9 | 45.7 | 53.97 | -8.27 | 74 | -28.3 | 200 | Horz |

Vertical 1000 - 7600MHz

| Marker No. | Test Frequency (MHz) | Meter Reading(dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T159 BRF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Average Margin (dB) | E-Fields [dBuV/m] - Peak | Peak Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 1075.862 | 47.53 | PK | 27.8 | -35.9 | 3.2 | 0 | 42.63 | 53.97 | -11.34 | 74 | -31.37 | 200 | Vert |
| 5 | 2025.787 | 43.67 | PK | 31.8 | -35 | 4.2 | 0 | 44.67 | 53.97 | -9.3 | 74 | -29.33 | 200 | Vert |
| 6 | 5413.193 | 37.23 | PK | 34.9 | -34.9 | 7.5 | 0.9 | 45.63 | 53.97 | -8.34 | 74 | -28.37 | 100 | Vert |

Horizontal 7600 - 18000MHz

| Marker No. | Test Frequency (MHz) | Meter Reading(dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T192 HPF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Average Margin (dB) | E-Fields [dBuV/m] - Peak | Peak Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 13150.825 | 33.61 | PK | 39.1 | -31.8 | 12.2 | 0.7 | 53.81 | - | - | 74 | -20.19 | 100 | Horz |

Vertical 7600 - 18000MHz

| Marker No. | Test Frequency (MHz) | Meter Reading(dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T192 HPF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Average Margin (dB) | E-Fields [dBuV/m] - Peak | Peak Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 17469.865 | 33.3 | PK | 42 | -31.6 | 14.5 | 0.1 | 58.3 | - | - | 74 | -15.7 | 100 | Vert |

Horizontal 10000 - 18000MHz

| Marker No. | Test Frequency (MHz) | Meter Reading(dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T192 HPF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Average Margin (dB) | E-Fields [dBuV/m] - Peak | Peak Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 13138.431 | 21.77 | PK | 39.1 | -31.8 | 12.2 | 0.5 | 41.77 | 53.97 | -12.2 | 74 | -32.23 | 200 | Horz |

Vertical 10000 - 18000MHz

| Marker No. | Test Frequency (MHz) | Meter Reading(dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T192 HPF [dB] | Corrected Reading dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Average Margin (dB) | E-Fields [dBuV/m] - Peak | Peak Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 17444.278 | 21.95 | PK | 41.9 | -31.6 | 14.5 | 0.1 | 46.85 | 53.97 | -7.12 | 74 | -27.15 | 100 | Vert |

PK - Peak detector
QP - Quasi-Peak detector
Av - Average detector


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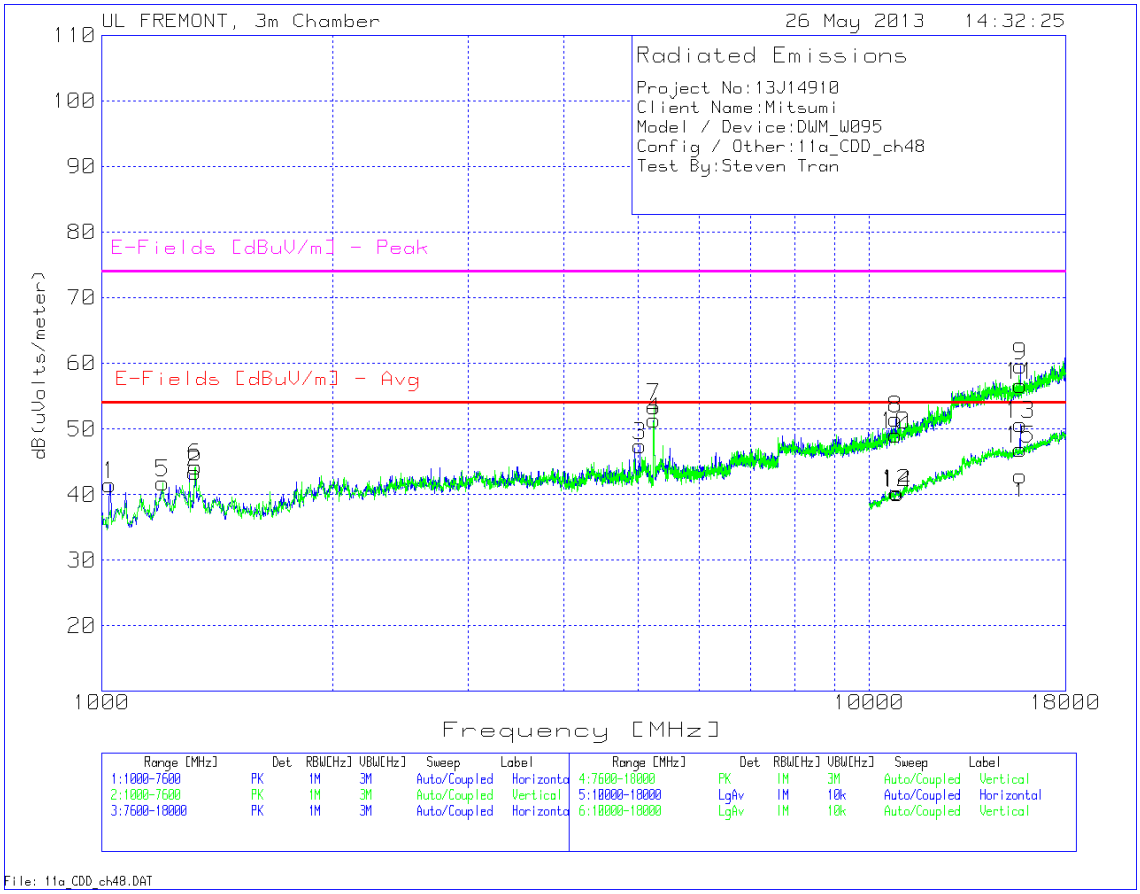
HIGH CHANNEL 48 GRAPH





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## HIGH CHANNEL 48 DATA

**Project No:13J14910**
**Client Name:Mitsumi**
**Model / Device:DWM_W095**
**Config / Other:11a CDD ch48_5240MHz**
**Test By:Joe Vang**

**Horizontal 1000 - 7600MHz**

| Marker No. | Test Frequency (MHz) | Meter Reading (dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T159 BRF [dB] | Corrected Reading dB(uVolts /meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1026.387 | 48.14 | PK | 27.5 | -36 | 3.2 | 0 | 42.84 | 53.97 | -11.13 | 74 | -31.16 | 100 | Horz |
| 2 | 1075.862 | 48.06 | PK | 27.8 | -35.9 | 3.2 | 0 | 43.16 | 53.97 | -10.81 | 74 | -30.84 | 100 | Horz |
| 3 | 4938.231 | 41.43 | PK | 34.6 | -34.9 | 7.2 | 0.3 | 48.63 | 53.97 | -5.34 | 74 | -25.37 | 100 | Horz |
| *4 | 5244.978 | 47.54 | PK | 34.9 | -34.9 | 7.4 | 0.9 | 55.84 | - | - | - | - | 200 | Horz |

**Vertical 1000 - 7600MHz**

| Marker No. | Test Frequency (MHz) | Meter Reading (dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T159 BRF [dB] | Corrected Reading dB(uVolts /meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 1075.862 | 46.56 | PK | 27.8 | -35.9 | 3.2 | 0 | 41.66 | 53.97 | -12.31 | 74 | -32.34 | 200 | Vert |
| 6 | 2025.787 | 44.47 | PK | 31.8 | -35 | 4.2 | 0 | 45.47 | 53.97 | -8.5 | 74 | -28.53 | 200 | Vert |
| *7 | 5241.679 | 46.5 | PK | 34.9 | -34.9 | 7.4 | 0.9 | 54.8 | - | - | - | - | 200 | Vert |

**Horizontal 7600 - 18000MHz**

| Marker No. | Test Frequency (MHz) | Meter Reading (dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T192 HPF [dB] | Corrected Reading dB(uVolts /meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 10468.966 | 35.12 | PK | 38.2 | -34.4 | 10.7 | 0.2 | 49.82 | - | - | 74 | -24.18 | 200 | Horz |
| 9 | 16664.268 | 32.9 | PK | 41.5 | -32.2 | 14.1 | 0.3 | 56.6 | - | - | 74 | -17.4 | 100 | Horz |

**Vertical 7600 - 18000MHz**

| Marker No. | Test Frequency (MHz) | Meter Reading (dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T192 HPF [dB] | Corrected Reading dB(uVolts /meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 10479.36 | 35.99 | PK | 38.2 | -34.4 | 10.7 | 0.2 | 50.69 | - | - | 74 | -23.31 | 200 | Vert |
| 11 | 16711.044 | 32.68 | PK | 41.6 | -32.1 | 14.1 | 0.6 | 56.88 | - | - | 74 | -17.12 | 200 | Vert |

**Horizontal 10000 - 18000MHz**

| Marker No. | Test Frequency (MHz) | Meter Reading (dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T192 HPF [dB] | Corrected Reading dB(uVolts /meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 10479.76 | 26.43 | PK | 38.2 | -34.4 | 10.7 | 0.2 | 41.13 | 53.97 | -12.84 | 74 | -32.87 | 200 | Horz |
| 13 | 16644.678 | 21.58 | PK | 41.5 | -32.2 | 14.1 | 0.3 | 45.28 | 53.97 | -8.69 | 74 | -28.72 | 100 | Horz |

**Vertical 10000 - 18000MHz**

| Marker No. | Test Frequency (MHz) | Meter Reading (dBuV) | Detector | T345 Ant Factor [dB/m] | T145 Preamp Gain [dB] | Cable Factor [dB] | T192 HPF [dB] | Corrected Reading dB(uVolts /meter) | E-Fields [dBuV/m] - Avg | Margin (dB) | E-Fields [dBuV/m] - Peak | Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 10479.76 | 25.88 | PK | 38.2 | -34.4 | 10.7 | 0.2 | 40.58 | 53.97 | -13.39 | 74 | -33.42 | 200 | Vert |
| 15 | 16708.646 | 21.28 | PK | 41.6 | -32.1 | 14.1 | 0.6 | 45.48 | 53.97 | -8.49 | 74 | -28.52 | 100 | Vert |

* Fundamental

PK - Peak detector
QP - Quasi-Peak detector
Av - Average detector


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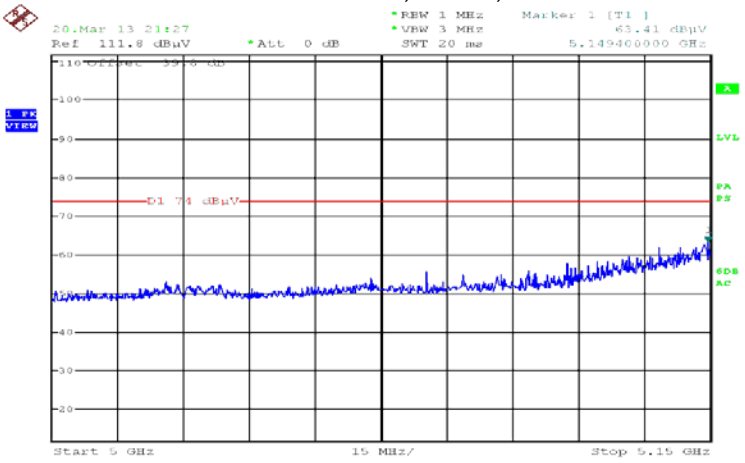
## 9.3. 802.11n HT20 CDD MCS0 2TX MODE IN THE 5.2 GHz BAND

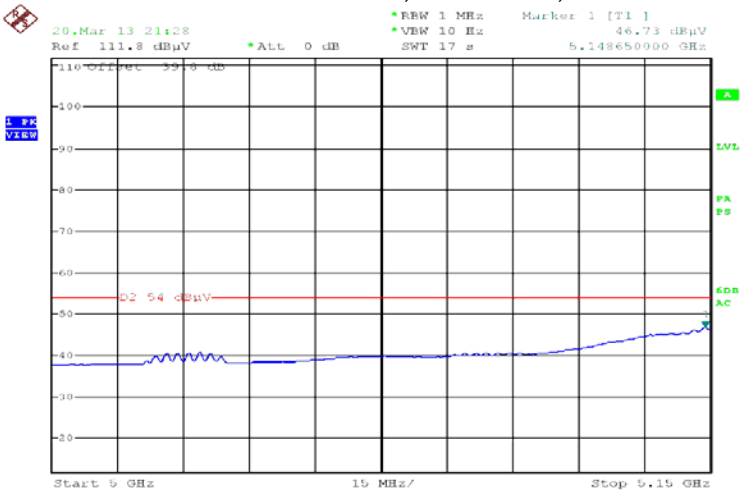
**RESTRICTED BANDEDGE (LOW CHANNEL)**

LOW CHANNEL RESTRICTED, PEAK, HORIZ




Date: 20.MAR.2013 21:27:58

LOW CHANNEL RESTRICTED, AVERAGE, HORIZ




Date: 20.MAR.2013 21:28:37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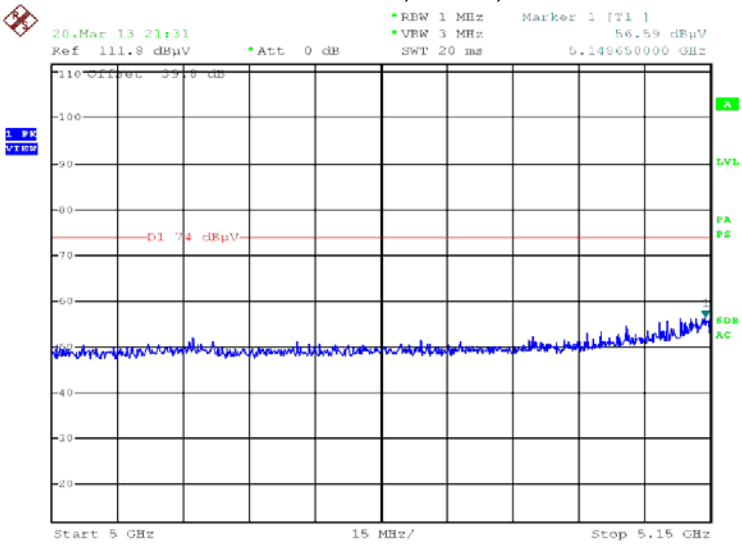
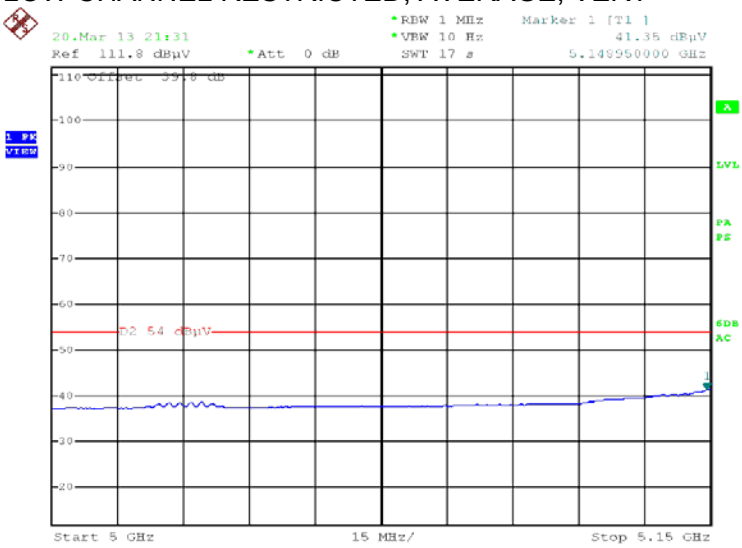
LOW CHANNEL RESTRICTED, PEAK, VERT




Date: 20.MAR.2013 21:31:08

LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 20.MAR.2013 21:31:48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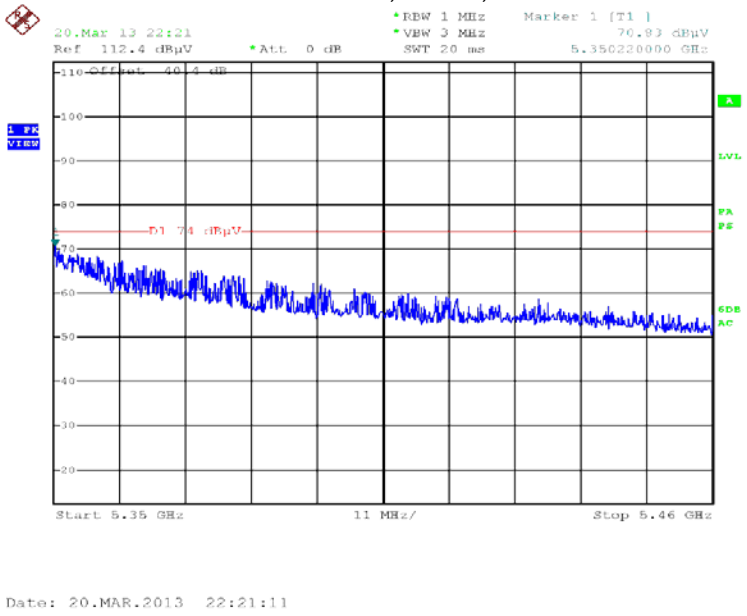
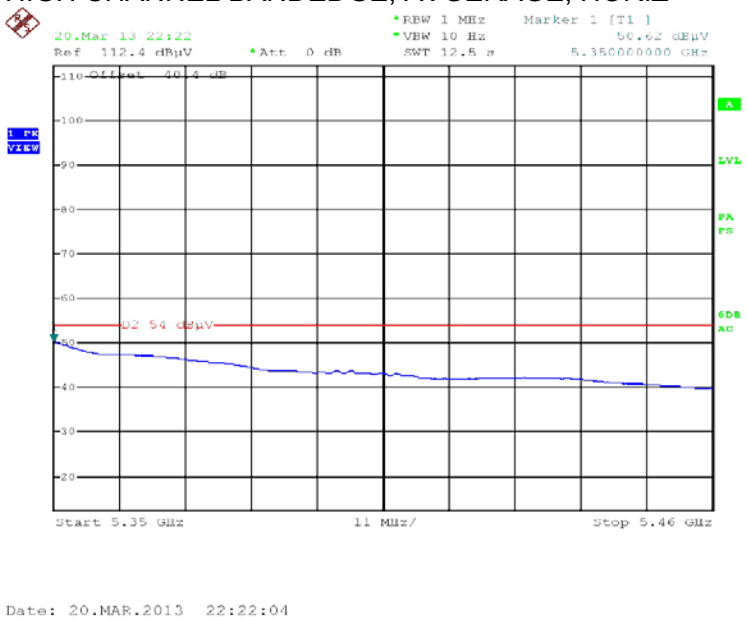
**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL BANDEDGE, PEAK, HORIZ




HIGH CHANNEL BANDEDGE, AVGERAGE, HORIZ





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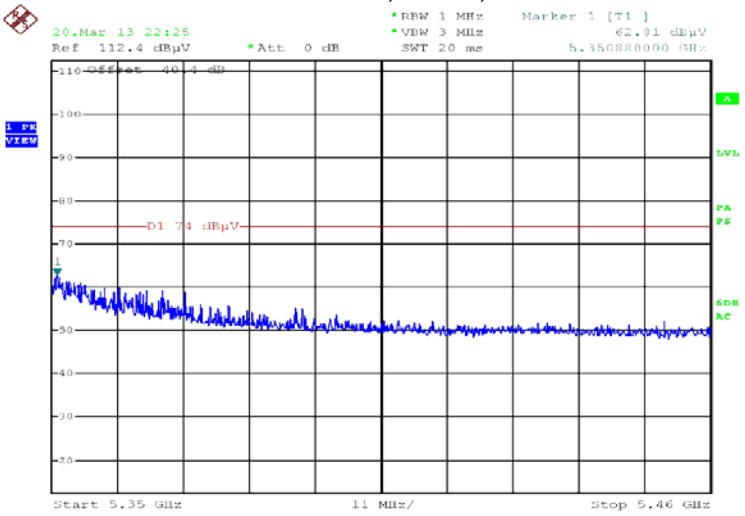
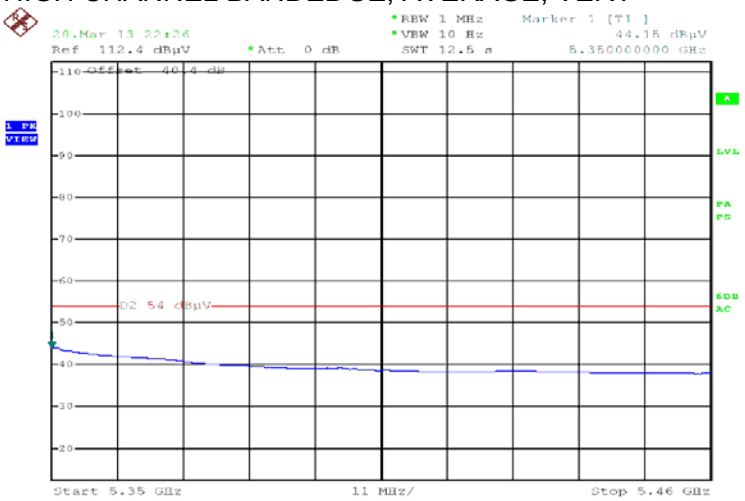
HIGH CHANNEL BANDEDGE, PEAK, VERT




Date: 20.MAR.2013 22:25:01

HIGH CHANNEL BANDEDGE, AVERAGE, VERT




Date: 20.MAR.2013 22:26:23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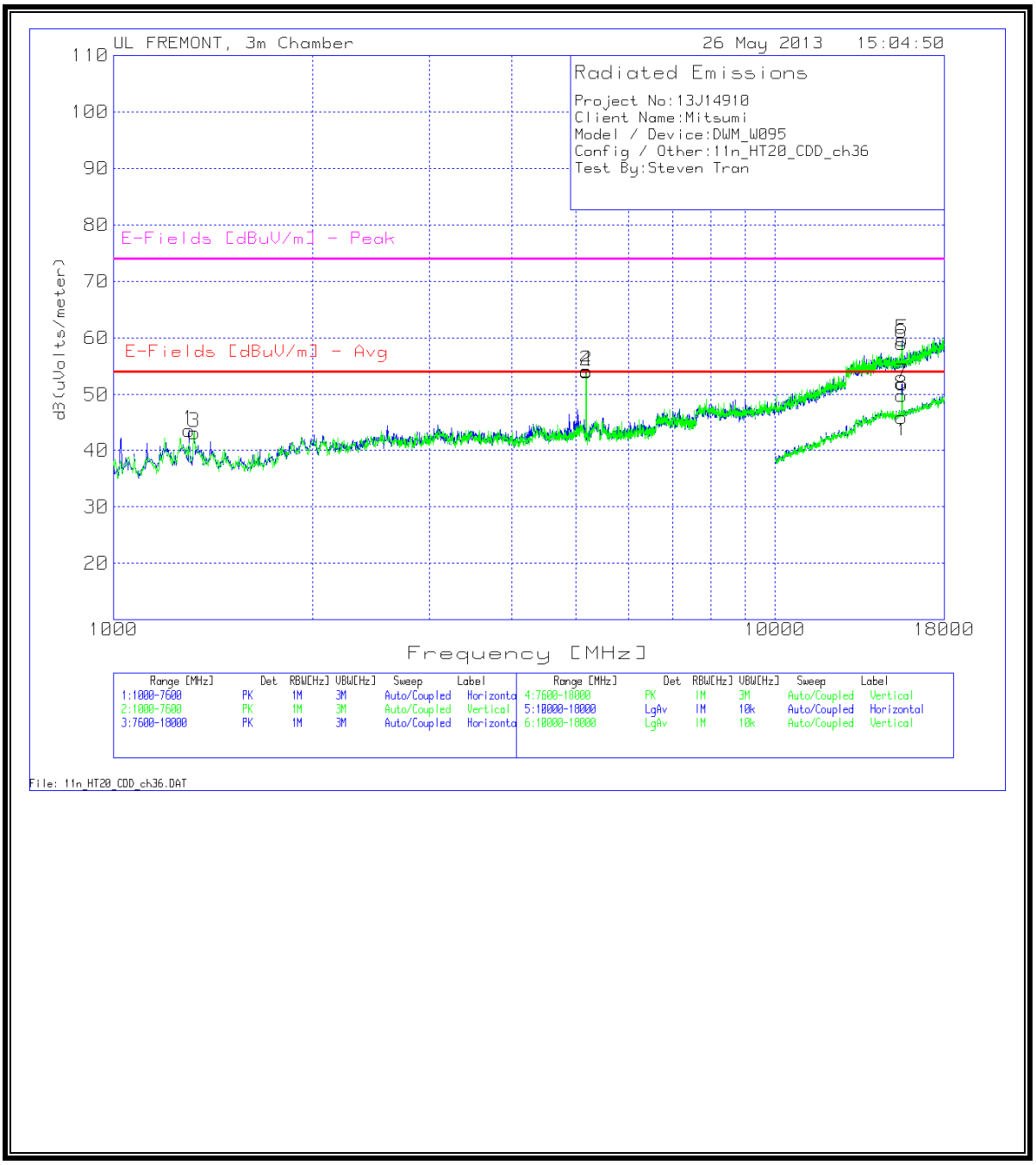
**HARMONICS AND SPURIOUS EMISSIONS**

LOW CHANNEL 36 GRAPH





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## LOW CHANNEL 36 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11n_HT20_CDD_ch36
Test By:Steven Tran

Horizontal 1000 - 7600MHz

| Marker No. | Test Frequency (MHz) | Meter Reading (dBuV) | Detector | T119 Ant Factor [dB/m] (dB) | T34 Preamp/ Cable Loss (dB) | T159 BRF [dB] (dB) | dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Average Margin (dB) | E-Fields [dBuV/m] - Peak | Peak Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1300.15 | 46.24 | PK | 30.2 | -32.9 | 0 | 43.54 | 54 | -10.46 | 74 | -30.46 | 99 | Horz |
| *2 | 5182.309 | 43.82 | PK | 34.2 | -24.7 | 0.9 | 54.22 | - | - | - | - | 201 | Horz |

Vertical 1000 - 7600MHz

| Marker No. | Test Frequency (MHz) | Meter Reading (dBuV) | Detector | T119 Ant Factor [dB/m] (dB) | T34 Preamp/ Cable Loss [dB] (dB) | T159 BRF [dB] (dB) | dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Average Margin (dB) | E-Fields [dBuV/m] - Peak | Peak Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 1326.537 | 46.09 | PK | 29.9 | -32.8 | 0 | 43.19 | 54 | -10.81 | 74 | -30.81 | 201 | Vert |
| *4 | 5182.309 | 43.67 | PK | 34.2 | -24.7 | 0.9 | 54.07 | - | - | - | - | 201 | Vert |

Horizontal 7600 - 18000MHz

| Marker No. | Test Frequency (MHz) | Meter Reading (dBuV) | Detector | T119 Ant Factor [dB/m] (dB) | T34 Preamp/Cable Loss [dB] (dB) | T159 BRF [dB] (dB) | dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Average Margin (dB) | E-Fields [dBuV/m] - Peak | Peak Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 15546.827 | 35.52 | PK | 40.3 | -16.5 | 0.4 | 59.72 | - | - | 74 | -14.28 | 99 | Horz |

Vertical 7600 - 18000MHz

| Marker No. | Test Frequency (MHz) | Meter Reading (dBuV) | Detector | T119 Ant Factor [dB/m] (dB) | T34 Preamp/Cable Loss [dB] (dB) | T159 BRF [dB] (dB) | dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Average Margin (dB) | E-Fields [dBuV/m] - Peak | Peak Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 15541.629 | 34.76 | PK | 40.3 | -16.5 | 0.5 | 59.06 | - | - | 74 | -14.94 | 201 | Vert |

Horizontal 1000 - 18000MHz

| Marker No. | Test Frequency (MHz) | Meter Reading (dBuV) | Detector | T119 Ant Factor [dB/m] (dB) | T34 Preamp/Cable Loss [dB] (dB) | T159 BRF [dB] (dB) | dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Average Margin (dB) | E-Fields [dBuV/m] - Peak | Peak Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 15556.675 | 17.83 | PK | 40.3 | -16.5 | 0.4 | 43.12 | 54 | -10.88 | 74 | -30.88 | 99 | Horz |

Vertical 1000 - 18000MHz

| Marker No. | Test Frequency (MHz) | Meter Reading (dBuV) | Detector | T119 Ant Factor [dB/m] (dB) | T34 Preamp/Cable Loss [dB] (dB) | T159 BRF [dB] (dB) | dB(uVolts/meter) | E-Fields [dBuV/m] - Avg | Average Margin (dB) | E-Fields [dBuV/m] - Peak | Peak Margin (dB) | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 15602.103 | 15.72 | PK | 40.3 | -16.5 | 0.5 | 40.12 | 54 | -13.88 | 74 | -33.88 | 201 | Vert |

* : Fundamental

PK - Peak detector
QP - Quasi-Peak detector
Av - Average detector


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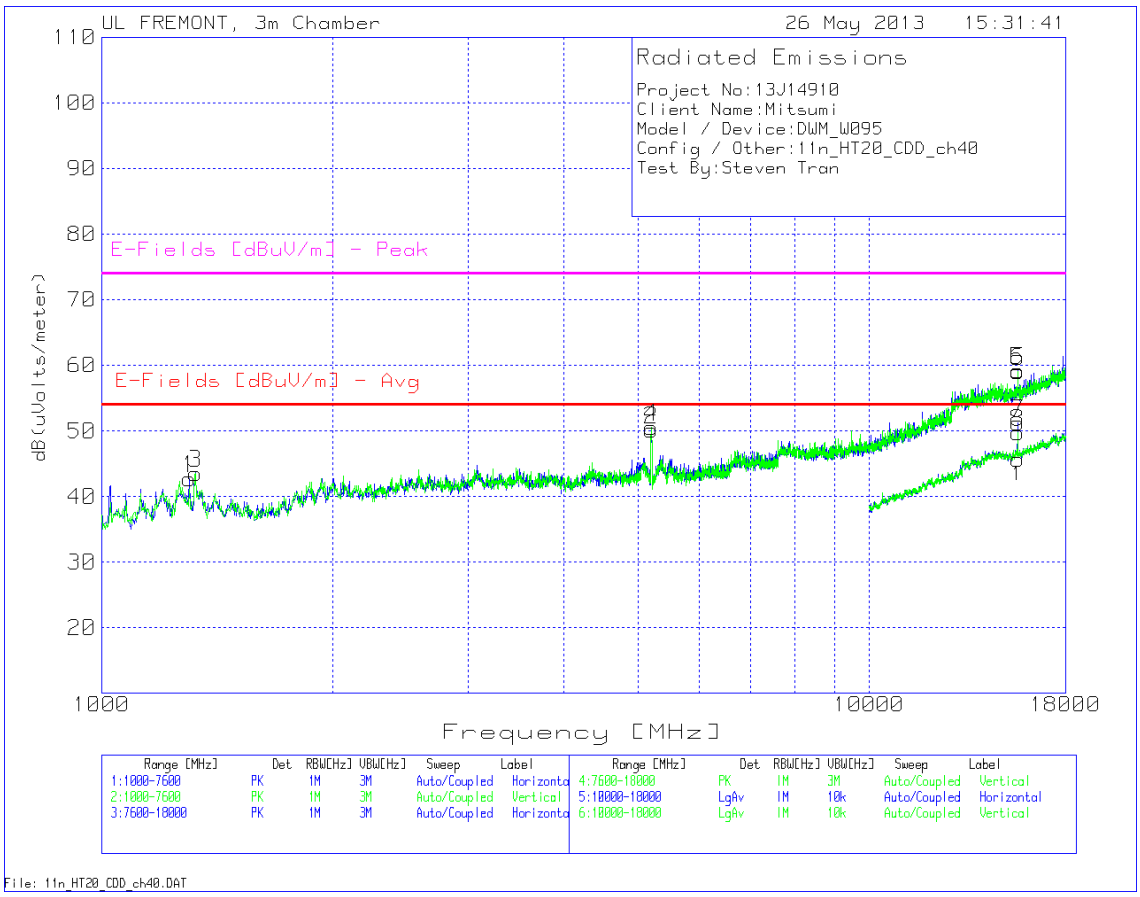
MID CHANNEL 40 GRAPH





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