# FCC 47 CFR PART 15 SUBPART E

# CERTIFICATION TEST REPORT

# FOR

# GSM/WCDMA/LTE + BLUETOOTH + DTS/UNII a/b/g/n/ac + ANT+ and NFC

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# TABLE OF CONTENTS

**1. ATTESTATION OF TEST RESULTS ..... 7**

**2. TEST METHODOLOGY ..... 8**

**3. FACILITIES AND ACCREDITATION ..... 8**

**4. CALIBRATION AND UNCERTAINTY ..... 8**

*4.1. MEASURING INSTRUMENT CALIBRATION ..... 8*

*4.2. SAMPLE CALCULATION ..... 8*

*4.3. MEASUREMENT UNCERTAINTY ..... 8*

**5. EQUIPMENT UNDER TEST ..... 9**

*5.1. DESCRIPTION OF EUT ..... 9*

*5.2. MAXIMUM OUTPUT POWER ..... 9*

*5.3. DESCRIPTION OF AVAILABLE ANTENNAS ..... 13*

*5.4. WORST-CASE CONFIGURATION AND MODE ..... 15*

*5.5. DESCRIPTION OF TEST SETUP ..... 16*

**6. TEST AND MEASUREMENT EQUIPMENT ..... 18**

**7. SUMMARY TABLE ..... 19**

**8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS ..... 20**

*8.1. ON TIME AND DUTY CYCLE RESULTS ..... 20*

*8.2. DUTY CYCLE PLOTS ..... 20*

**9. MEASUREMENT METHOD ..... 23**

**10. ANTENNA PORT TEST RESULTS ..... 24**

*10.1. 6 dB BANDWIDTH ..... 24*

10.1.1. 802.11a MODE IN THE 5.8 GHz BAND ..... 24
10.1.2. 802.11n HT20 MODE IN THE 5.8 GHz BAND ..... 24
10.1.3. 802.11n HT40 MODE IN THE 5.8 GHz BAND ..... 25
10.1.4. 802.11ac HT80 MODE IN THE 5.8 GHz BAND ..... 25
10.1.5. 802.11a MODE THE CHANNEL 144 ..... 25
10.1.6. 802.11n HT20 MODE THE CHANNEL 144 ..... 25
10.1.7. 802.11n HT40 MODE THE CHANNEL 142 ..... 26
10.1.8. 802.11ac HT80 MODE IN THE 5.8 GHz BAND ..... 26
10.1.9. 6 dB BANDWIDTH MID CH PLOTS ..... 27

*10.2. 26 dB BANDWIDTH ..... 31*

10.2.1. 802.11a MODE IN THE 5.2 GHz BAND ..... 31
10.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND ..... 31
10.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND ..... 31
10.2.4. 802.11ac HT80 MODE IN THE 5.2 GHz BAND ..... 31
10.2.5. 802.11a MODE IN THE 5.3 GHz BAND ..... 32


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10.2.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND ....32
10.2.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND ....32
10.2.8. 802.11ac HT80 MODE IN THE 5.3 GHz BAND ....32
10.2.9. 802.11a MODE IN THE 5.5 GHz BAND ....33
10.2.10. 802.11n HT20 MODE IN THE 5.5 GHz BAND ....33
10.2.11. 802.11n HT40 MODE IN THE 5.5 GHz BAND ....33
10.2.12. 802.11ac HT80 MODE IN THE 5.5 GHz BAND ....33
10.2.13. 802.11a MODE IN THE 5.8 GHz BAND ....34
10.2.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND ....34
10.2.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND ....34
10.2.16. 802.11ac HT80 MODE IN THE 5.8 GHz BAND ....34
10.2.17. 26 dB BANDWIDTH PLOTS ....35

*10.3. 99% BANDWIDTH ....42*
10.3.1. 802.11a MODE IN THE 5.2 GHz BAND ....42
10.3.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND ....42
10.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND ....42
10.3.4. 802.11ac HT80 MODE IN THE 5.2 GHz BAND ....42
10.3.5. 802.11a MODE IN THE 5.3 GHz BAND ....43
10.3.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND ....43
10.3.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND ....43
10.3.8. 802.11ac HT80 MODE IN THE 5.3 GHz BAND ....43
10.3.9. 802.11a MODE IN THE 5.5 GHz BAND ....44
10.3.10. 802.11n HT20 MODE IN THE 5.5 GHz BAND ....44
10.3.11. 802.11n HT40 MODE IN THE 5.5 GHz BAND ....44
10.3.12. 802.11ac HT80 MODE IN THE 5.5 GHz BAND ....44
10.3.13. 802.11a MODE IN THE 5.8 GHz BAND ....45
10.3.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND ....45
10.3.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND ....45
10.3.16. 802.11ac HT80 MODE IN THE 5.8 GHz BAND ....45
10.3.17. 99% BANDWIDTH PLOTS ....46

*10.4. OUTPUT POWER AND PPSD ....53*
10.4.1. 802.11a MODE IN THE 5.2 GHz BAND ....56
10.4.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND ....57
10.4.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND ....58
10.4.4. 802.11ac HT80 MODE IN THE 5.2 GHz BAND ....59
10.4.5. 802.11a MODE IN THE 5.3 GHz BAND ....60
10.4.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND ....61
10.4.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND ....62
10.4.8. 802.11ac HT80 MODE IN THE 5.3 GHz BAND ....63
10.4.9. 802.11a MODE IN THE 5.5 GHz BAND ....64
10.4.10. 802.11n HT20 MODE IN THE 5.5 GHz BAND ....65
10.4.11. 802.11n HT40 MODE IN THE 5.5 GHz BAND ....66
10.4.12. 802.11ac HT80 MODE IN THE 5.5 GHz BAND ....67
10.4.13. 802.11a MODE STRADDLE CHANNEL 144 ....68
10.4.14. 802.11n HT20 MODE STRADDLE CHANNEL 144 ....71
10.4.15. 802.11n HT40 MODE STRADDLE CHANNEL 142 ....74
10.4.16. 802.11ac80 MODE STRADDLE CHANNEL 138 ....77
10.4.17. 802.11a MODE IN THE 5.8 GHz BAND ....80
10.4.18. 802.11n HT20 MODE IN THE 5.8 GHz BAND ....81
10.4.19. 802.11n HT40 MODE IN THE 5.8 GHz BAND ....82
10.4.20. 802.11ac HT80 MODE IN THE 5.8 GHz BAND ....83
10.4.21. OUTPUT POWER AND PPSD PLOTS ....84


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**11. TRANSMITTER ABOVE 1 GHz.....97**

*11.1. 5.2 GHz.....98*
11.1.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND .....98
11.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND.....109
11.1.3. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.2 GHz BAND.....120
11.1.4. TX ABOVE 1 GHz 802.11ac HT80 MODE IN THE 5.2 GHz BAND.....128

*11.1. 5.3 GHz.....133*
11.1.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND .....133
11.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND.....144
11.1.3. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.3 GHz BAND.....155
11.1.4. TX ABOVE 1 GHz 802.11ac HT80 MODE IN THE 5.3 GHz BAND.....163

*11.2. 5.5-5.6 GHz.....168*
11.2.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.5 GHz BAND .....168
11.2.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.5 GHz BAND.....181
11.2.3. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.5 GHz BAND.....194
11.2.4. TX ABOVE 1 GHz 802.11ac HT80 MODE IN THE 5.5 GHz BAND.....207

*11.3. 5.8 GHz.....214*
11.3.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.8 GHz BAND .....214
11.3.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.8 GHz BAND.....227
11.3.3. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.8 GHz BAND.....240
11.3.4. TX ABOVE 1 GHz 802.11ac HT80 MODE IN THE 5.8 GHz BAND.....250

**12. WORST-CASE BELOW 1 GHz (in the 5.3 GHz Band).....257**

**13. AC POWER LINE CONDUCTED EMISSIONS.....260**

**14. DYNAMIC FREQUENCY SELECTION.....265**

*14.1. OVERVIEW.....265*
14.1.1. LIMITS.....265
14.1.2. TEST AND MEASUREMENT SYSTEM.....269
14.1.3. SETUP OF EUT.....272
14.1.4. DESCRIPTION OF EUT .....273

*14.2. RESULTS FOR 20 MHz BANDWIDTH.....275*
14.2.1. TEST CHANNEL .....275
14.2.2. RADAR WAVEFORM AND TRAFFIC.....275
14.2.3. OVERLAPPING CHANNEL TESTS.....278
14.2.4. MOVE AND CLOSING TIME .....278

*14.3. RESULTS FOR 40 MHz BANDWIDTH.....282*
14.3.1. TEST CHANNEL .....282
14.3.2. RADAR WAVEFORM AND TRAFFIC.....282
14.3.3. OVERLAPPING CHANNEL TESTS.....285
14.3.4. MOVE AND CLOSING TIME .....285
14.3.5. 10-MINUTE BEACON MONITORING PERIOD .....289

*14.4. RESULTS FOR 80 MHz BANDWIDTH.....290*
14.4.1. TEST CHANNEL .....290
14.4.2. RADAR WAVEFORM AND TRAFFIC.....290
14.4.3. OVERLAPPING CHANNEL TESTS.....293
14.4.4. MOVE AND CLOSING TIME .....293
14.4.5. 10-MINUTE BEACON MONITORING PERIOD .....297


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**15. SETUP PHOTOS.....298**


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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SONY MOBILE COMMUNICATIONS, INC.

**EUT DESCRIPTION:** GSM/WCDMA/LTE + BLUETOOTH, DTS/UNII a/b/g/n/ac + ANT+ and NFC

**SERIAL NUMBER:** CB5A23QZE2 (Conducted), CB5A246Q9P (Radiated)

**DATE TESTED:** MARCH 17 - 25, 2015

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| CFR 47 Part 15 Subpart E | 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, ANSI C63.4-2009. 789033 D02 General UNII Test Procedures New Rules v01

# 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 47173 Benicia Street | 47266 Benicia Street |
|---|---|
| ☒ Chamber A | ☐ Chamber F |
| ☐ Chamber B | ☐ Chamber G |
| ☒ Chamber C | ☐ Chamber H |

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

# 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 40000 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 a GSM/WCDMA/LTE + BLUETOOTH, DTS/UNII a/b/g/n/ac + ANT+ and NFC

## 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted output power as follows:

| Frequency Range (MHz) | Mode | Total Output Power (dBm) | Total Output Power (mW) |
|---|---|---|---|
| 5180-5240 | 802.11a | 14.34 | 27.16 |
| 5180-5240 | 802.11n HT20 | 14.11 | 25.76 |
| 5190-5230 | 802.11n HT40 | 14.1 | 25.70 |
| 5210 | 802.11ac HT80 | 14.2 | 26.30 |
| 5260-5320 | 802.11a | 14.44 | 27.80 |
| 5260-5320 | 802.11n HT20 | 14.43 | 27.73 |
| 5270-5310 | 802.11n HT40 | 14.4 | 27.54 |
| 5290 | 802.11ac HT80 | 14.26 | 26.67 |
| 5500-5700 | 802.11a | 14.83 | 30.41 |
| 5720 | 802.11a | 13.524 | 22.51 |
| 5500-5700 | 802.11n HT20 | 15.07 | 32.14 |
| 5720 | 802.11n HT20 | 13.324 | 21.50 |
| 5510-5670 | 802.11n HT40 | 14.81 | 30.27 |
| 5710 | 802.11n HT40 | 13.568 | 22.74 |
| 5530 | 802.11ac HT80 | 14.12 | 25.82 |
| 5690 | 802.11ac HT80 | 14.37 | 27.35 |
| 5745-5825 | 802.11a | 14.9 | 30.90 |
| 5745-5825 | 802.11n HT20 | 14.88 | 30.76 |
| 5755-5795 | 802.11n HT40 | 14.54 | 28.44 |
| 5775 | 802.11ac HT80 | 14.65 | 29.17 |


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The transmitter has average conducted output power (measured by power meter) as follows:

| Band (GHz) | Mode | Data Rate | Ch # | Freq. (MHz) | Avg Pwr C0 (dBm) | Avg Pwr C1 (dBm) |
|---|---|---|---|---|---|---|
| UNII-1 | 802.11a | 6 Mbps | 36 | 5180 | 10.7 | 9.7 |
| | | | 40 | 5200 | 10.7 | 10.0 |
| | | | 44 | 5220 | 10.9 | 9.7 |
| | | | 48 | 5240 | 10.9 | 9.7 |
| | 802.11n (HT20) | 6.5 Mbps | 36 | 5180 | 10.8 | 9.6 |
| | | | 40 | 5200 | 10.8 | 9.9 |
| | | | 44 | 5220 | 10.8 | 10.0 |
| | | | 48 | 5240 | 10.7 | 9.7 |
| | 802.11n (HT40) | 13.5 Mbps | 38 | 5190 | 10.8 | 10.0 |
| | | | 46 | 5230 | 10.8 | 9.7 |
| | 802.11ac (VHT20) | 6.5 Mbps | 36 | 5180 | 10.8 | 9.7 |
| | | | 40 | 5200 | 10.9 | 9.7 |
| | | | 44 | 5220 | 10.8 | 10.0 |
| | | | 48 | 5240 | 10.8 | 9.8 |
| | 802.11ac (VHT40) | 13.5 Mbps | 38 | 5190 | 10.6 | 9.9 |
| | | | 46 | 5230 | 10.7 | 9.8 |
| | 802.11ac (VHT80) | 29.3 Mbps | 42 | 5210 | 10.9 | 9.9 |
| UNII-2A | 802.11a | 6 Mbps | 52 | 5260 | 10.9 | 10.0 |
| | | | 56 | 5280 | 10.8 | 9.8 |
| | | | 60 | 5300 | 10.9 | 9.6 |
| | | | 64 | 5320 | 10.7 | 9.5 |
| | 802.11n (HT20) | 6.5 Mbps | 52 | 5260 | 11.0 | 10.1 |
| | | | 56 | 5280 | 10.6 | 9.5 |
| | | | 60 | 5300 | 10.7 | 9.8 |
| | | | 64 | 5320 | 10.8 | 9.6 |
| | 802.11n (HT40) | 13.5 Mbps | 54 | 5270 | 11.0 | 10.0 |
| | | | 62 | 5310 | 10.7 | 9.6 |
| | 802.11ac (VHT20) | 6.5 Mbps | 52 | 5260 | 10.8 | 10.0 |
| | | | 56 | 5280 | 10.7 | 9.5 |
| | | | 60 | 5300 | 10.6 | 9.4 |
| | | | 64 | 5320 | 10.9 | 9.5 |
| | 802.11ac (VHT40) | 13.5 Mbps | 54 | 5270 | 11.0 | 10.0 |
| | | | 62 | 5310 | 10.7 | 9.7 |
| | 802.11ac (VHT80) | 29.3 Mbps | 58 | 5290 | 10.6 | 9.3 |
| UNII-2C | 802.11a | 6 Mbps | 100 | 5500 | 11.0 | 10.1 |
| | | | 104 | 5520 | 11.0 | 10.0 |
| | | | 108 | 5540 | 11.3 | 10.0 |
| | | | 112 | 5560 | 11.4 | 10.0 |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 116 | 5580 | 11.5 | 9.8 |
| | | | 120 | 5600 | 11.5 | 9.7 |
| | | | 124 | 5620 | 11.4 | 9.5 |
| | | | 128 | 5640 | 11.4 | 9.3 |
| | | | 132 | 5660 | 11.4 | 9.4 |
| | | | 136 | 5680 | 11.4 | 9.3 |
| | | | 140 | 5700 | 11.4 | 9.3 |
| | | | 144 | 5720 | 11.4 | 9.4 |
| | 802.11n (HT20) | 6.5 Mbps | 100 | 5500 | 11.4 | 9.7 |
| | | | 104 | 5520 | 11.2 | 10.0 |
| | | | 108 | 5540 | 11.4 | 10.1 |
| | | | 112 | 5560 | 11.4 | 10.1 |
| | | | 116 | 5580 | 11.4 | 9.8 |
| | | | 120 | 5600 | 11.5 | 9.7 |
| | | | 124 | 5620 | 11.3 | 9.5 |
| | | | 128 | 5640 | 11.4 | 9.5 |
| | | | 132 | 5660 | 11.3 | 9.5 |
| | | | 136 | 5680 | 11.3 | 9.3 |
| | | | 140 | 5700 | 11.2 | 9.2 |
| | | | 144 | 5720 | 11.2 | 9.2 |
| | 802.11n (HT40) | 13.5 Mbps | 102 | 5510 | 11.2 | 9.8 |
| | | | 110 | 5550 | 11.3 | 9.9 |
| | | | 118 | 5590 | 11.4 | 9.7 |
| | | | 126 | 5630 | 11.4 | 9.4 |
| | | | 134 | 5670 | 11.4 | 9.4 |
| | | | 142 | 5710 | 11.4 | 9.4 |
| | 802.11ac (VHT20) | 6.5 Mbps | 100 | 5500 | 11.2 | 9.6 |
| | | | 104 | 5520 | 11.2 | 10.0 |
| | | | 108 | 5540 | 11.3 | 10.0 |
| | | | 112 | 5560 | 11.4 | 10.0 |
| | | | 116 | 5580 | 11.3 | 9.8 |
| | | | 120 | 5600 | 11.4 | 9.7 |
| | | | 124 | 5620 | 11.4 | 9.4 |
| | | | 128 | 5640 | 11.4 | 9.3 |
| | | | 132 | 5660 | 11.4 | 9.3 |
| | | | 136 | 5680 | 11.5 | 9.2 |
| | | | 140 | 5700 | 11.3 | 9.2 |
| | | | 144 | 5720 | 11.1 | 9.2 |
| | 802.11ac (VHT40) | 13.5 Mbps | 102 | 5510 | 11.3 | 10.0 |
| | | | 110 | 5550 | 11.4 | 10.0 |
| | | | 118 | 5590 | 11.4 | 9.6 |
| | | | 126 | 5630 | 11.5 | 9.4 |
| | | | 134 | 5670 | 11.5 | 9.2 |
| | | | 142 | 5710 | 11.4 | 9.2 |


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| | | | | | | |
|---|---|---|---|---|---|---|
| | 802.11ac (VHT80) | 29.3 Mbps | 106 | 5530 | 11.2 | 10.0 |
| | | | 122 | 5610 | 11.3 | 9.4 |
| | | | 138 | 5690 | 11.1 | 9.1 |
| UNII-3 or §15.247 | 802.11a | 6 Mbps | 149 | 5745 | 10.8 | 9.0 |
| | | | 153 | 5765 | 10.8 | 9.1 |
| | | | 157 | 5785 | 10.8 | 9.3 |
| | | | 161 | 5805 | 10.6 | 9.2 |
| | | | 165 | 5825 | 10.8 | 9.4 |
| | 802.11n (HT20) | 6.5 Mbps | 149 | 5745 | 11.0 | 9.2 |
| | | | 153 | 5765 | 10.9 | 9.2 |
| | | | 157 | 5785 | 11.0 | 9.5 |
| | | | 161 | 5805 | 10.6 | 9.1 |
| | | | 165 | 5825 | 10.9 | 9.5 |
| | 802.11n (HT40) | 13.5 Mbps | 151 | 5755 | 10.8 | 9.2 |
| | | | 159 | 5795 | 10.9 | 9.2 |
| | 802.11ac (VHT20) | 6.5 Mbps | 149 | 5745 | 11.0 | 9.1 |
| | | | 153 | 5765 | 11.0 | 9.2 |
| | | | 157 | 5785 | 10.9 | 9.2 |
| | | | 161 | 5805 | 10.8 | 9.3 |
| | | | 165 | 5825 | 10.9 | 9.4 |
| | 802.11ac (VHT40) | 13.5 Mbps | 151 | 5755 | 10.8 | 9.2 |
| | | | 159 | 5795 | 10.9 | 9.3 |
| | 802.11ac (VHT80) | 29.3 Mbps | 155 | 5775 | 10.7 | 9.0 |


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## 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, please refer to section 10.4 for antenna gain information.

**List of test reduction and modes covering other modes:**

| Authorized Frequency Band (Antenna port & Radiated Testing) | | |
|---|---|---|
| **Frequency Range (MHz)** | **Mode** | **Covered by** |
| 5180 - 5240 | 802.11a legacy 1TX/STBC 2TX | 802.11a 2TX CDD |
| 5180 - 5240 | 802.11HT20 1TX | 802.11n HT20 2TX CDD |
| 5180 - 5240 | 802.11HT20 2TX STBC/SDM | 802.11n HT20 2TX CDD |
| 5180 - 5240 | 802.11ac VHT20 1TX | 802.11n HT20 2TX CDD |
| 5180 - 5240 | 802.11ac VHT20 2TX STBC/SDM | 802.11n HT20 2TX CDD |
| 5180 - 5240 | 802.11ac VHT20 2TX CDD/Tx BF | 802.11n HT20 2TX CDD |
| 5190 - 5230 | 802.11n HT40 1TX | 802.11n HT40 2TX CDD |
| 5190 - 5230 | 802.11n HT40 2TX STBC/SDM | 802.11n HT40 2TX CDD |
| 5190 - 5230 | 802.11ac VHT40 1TX | 802.11n HT40 2TX CDD |
| 5190 - 5230 | 802.11ac VHT40 2TX STBC/SDM | 802.11n HT40 2TX CDD |
| 5190 - 5230 | 802.11ac VHT40 2TX CDD/Tx BF | 802.11n HT40 2TX CDD |
| 5210 | 802.11ac VHT80 1TX | 802.11ac VHT80 2TX CDD |
| 5210 | 802.11ac VHT80 2TX STBC/SDM/Tx BF | 802.11ac VHT80 2TX CDD |

| Authorized Frequency Band (Antenna port & Radiated Testing) | | |
|---|---|---|
| **Frequency Range (MHz)** | **Mode** | **Covered by** |
| 5260 - 5320 | 802.11a legacy 1TX/STBC 2TX | 802.11a 2TX CDD |
| 5260 - 5320 | 802.11HT20 1TX | 802.11n HT20 2TX CDD |
| 5260 - 5320 | 802.11HT20 2TX STBC/SDM | 802.11n HT20 2TX CDD |
| 5260 - 5320 | 802.11ac VHT20 1TX | 802.11n HT20 2TX CDD |
| 5260 - 5320 | 802.11ac VHT20 2TX STBC/SDM | 802.11n HT20 2TX CDD |
| 5260 - 5320 | 802.11ac VHT20 2TX CDD/Tx BF | 802.11n HT20 2TX CDD |
| 5270 - 5310 | 802.11n HT40 1TX | 802.11n HT40 2TX CDD |
| 5270 - 5310 | 802.11n HT40 2TX STBC/SDM | 802.11n HT40 2TX CDD |
| 5270 - 5310 | 802.11ac VHT40 1TX | 802.11n HT40 2TX CDD |
| 5270 - 5310 | 802.11ac VHT40 2TX STBC/SDM | 802.11n HT40 2TX CDD |
| 5270 - 5310 | 802.11ac VHT40 2TX CDD/Tx BF | 802.11n HT40 2TX CDD |
| 5290 | 802.11ac VHT80 1TX | 802.11ac VHT80 2TX CDD |
| 5290 | 802.11ac VHT80 2TX STBC/SDM/Tx BF | 802.11ac VHT80 2TX CDD |


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| Authorized Frequency Band (Antenna port & Radiated Testing) | | |
|---|---|---|
| **Frequency Range (MHz)** | **Mode** | **Covered by** |
| 5500 - 5720 | 802.11a legacy 1TX/STBC 2TX | 802.11a 2TX CDD |
| 5500 - 5720 | 802.11HT20 1TX | 802.11n HT20 2TX CDD |
| 5500 - 5720 | 802.11HT20 2TX STBC/SDM | 802.11n HT20 2TX CDD |
| 5500 - 5720 | 802.11ac VHT20 1TX | 802.11n HT20 2TX CDD |
| 5500 - 5720 | 802.11ac VHT20 2TX STBC/SDM | 802.11n HT20 2TX CDD |
| 5500 - 5720 | 802.11ac VHT20 2TX CDD/Tx BF | 802.11n HT20 2TX CDD |
| 5510 - 5710 | 802.11n HT40 1TX | 802.11n HT40 2TX CDD |
| 5510 - 5710 | 802.11n HT40 2TX STBC/SDM | 802.11n HT40 2TX CDD |
| 5510 - 5710 | 802.11ac VHT40 1TX | 802.11n HT40 2TX CDD |
| 5510 - 5710 | 802.11ac VHT40 2TX STBC/SDM | 802.11n HT40 2TX CDD |
| 5510 - 5710 | 802.11ac VHT40 2TX CDD/Tx BF | 802.11n HT40 2TX CDD |
| 5530-5690 | 802.11ac VHT80 1TX | 802.11ac VHT80 2TX CDD |
| 5530-5690 | 802.11ac VHT80 2TX STBC/SDM/Tx BF | 802.11ac VHT80 2TX CDD |

| Authorized Frequency Band (Antenna port & Radiated Testing) | | |
|---|---|---|
| **Frequency Range (MHz)** | **Mode** | **Covered by** |
| 5745 - 5825 | 802.11a legacy 1TX/STBC 2TX | 802.11a 2TX CDD |
| 5745 - 5825 | 802.11HT20 1TX | 802.11n HT20 2TX CDD |
| 5745 - 5825 | 802.11HT20 2TX STBC/SDM | 802.11n HT20 2TX CDD |
| 5745 - 5825 | 802.11ac VHT20 1TX | 802.11n HT20 2TX CDD |
| 5745 - 5825 | 802.11ac VHT20 2TX STBC/SDM | 802.11n HT20 2TX CDD |
| 5745 - 5825 | 802.11ac VHT20 2TX CDD/Tx BF | 802.11n HT20 2TX CDD |
| 5755 - 5795 | 802.11n HT40 1TX | 802.11n HT40 2TX CDD |
| 5755 - 5795 | 802.11n HT40 2TX STBC/SDM | 802.11n HT40 2TX CDD |
| 5755 - 5795 | 802.11ac VHT40 1TX | 802.11n HT40 2TX CDD |
| 5755 - 5795 | 802.11ac VHT40 2TX STBC/SDM | 802.11n HT40 2TX CDD |
| 5755 - 5795 | 802.11ac VHT40 2TX CDD/Tx BF | 802.11n HT40 2TX CDD |
| 5775 | 802.11ac VHT80 1TX | 802.11ac VHT80 2TX CDD |
| 5775 | 802.11ac VHT80 2TX STBC/SDM/Tx BF | 802.11ac VHT80 2TX CDD |


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## 5.4. 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.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that the X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in the X orientation.

Based on the baseline scan, the worst-case data rates were:

802.11a mode: 6 Mbps
802.11n HT20mode: MCS0
802.11n HT40mode: MCS0
802.11ac VHT80mode: MCS0


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## 5.5. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| Support Equipment List | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Serial Number** | **FCC ID** |
| AC Adapter | SONY | EP880 | 3514W 01 S08328 | N/A |
| Earphone | SONY | MH410C | N/A | N/A |

**I/O CABLES**

| I/O Cable List | | | | | | |
|---|---|---|---|---|---|---|
| **Cable No** | **Port** | **# of identical ports** | **Connector Type** | **Cable Type** | **Cable Length (m)** | **Remarks** |
| 1 | DC Power | 1 | Mini-USB | Shielded | 1.2m | N/A |
| 2 | Audio | 1 | Mini-Jack | Unshielded | 1.0m | N/A |

**TEST SETUP**

The EUT is setup as a stand-alone device.


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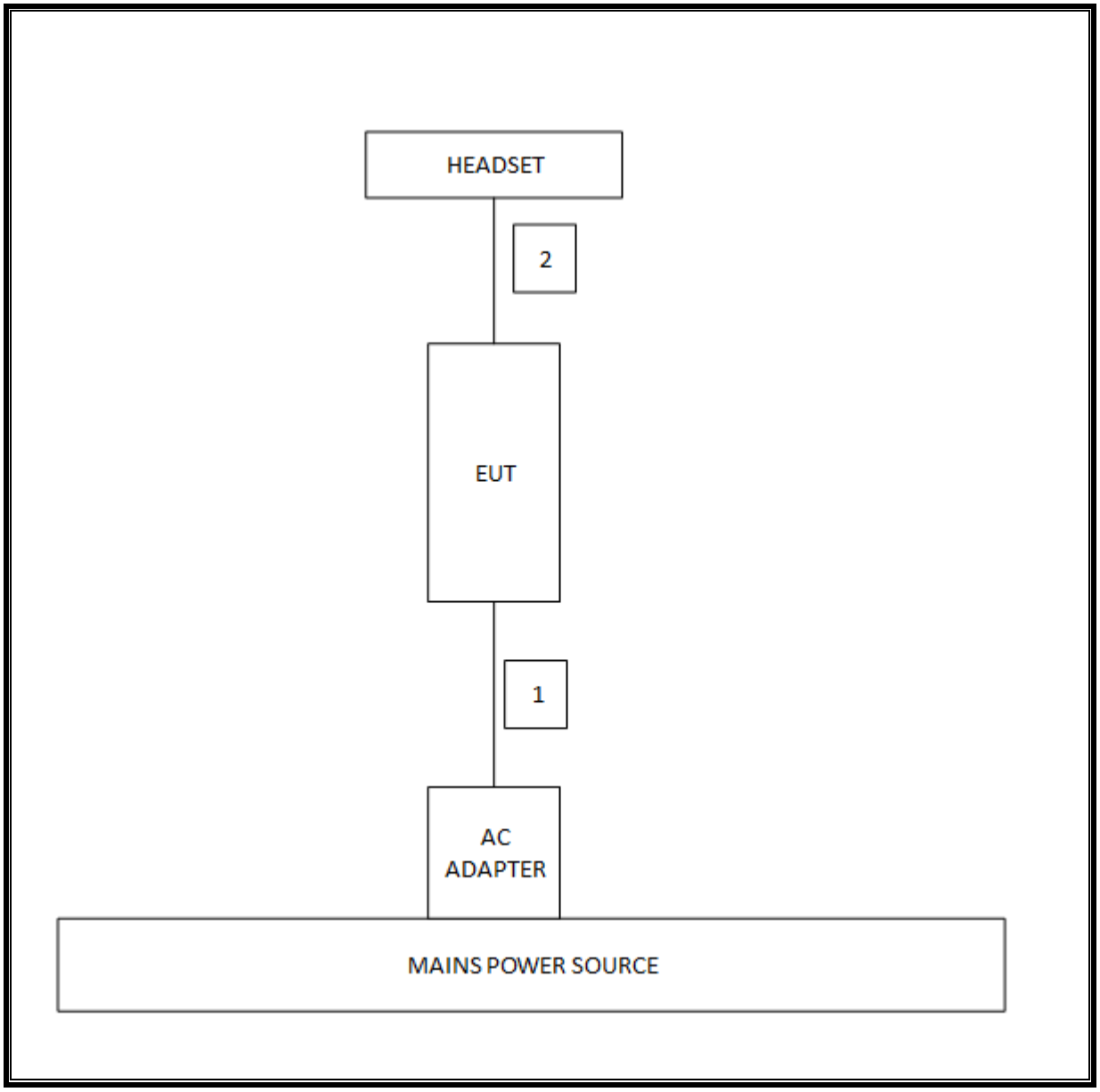
**SETUP DIAGRAM FOR TESTS**





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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 Due** |
| Spectrum Analyzer, 44 GHz | Agilent / HP | E4446A | C01069 | 12/20/15 |
| Spectrum Analyzer,9KHz-40GHz | HP | 8564E | C00986 | 04/01/15 |
| EMI Test Receiver, 9 kHz-7 GHz | R & S | ESCI 7 | 100773 | 08/15/15 |
| Peak Power Meter | Agilent / HP | E4416A | C00963 | 12/13/15 |
| Peak / Average Power Sensor | Agilent / HP | E9327A | C00964 | 12/13/15 |
| Antenna, Horn, 18GHz | EMCO | 3115 | C00783 | 10/25/15 |
| Antenna, Horn,18- 26 GHz | ARA | MWH-1826/B | C00946 | 11/12/15 |
| Antenna, Horn, 26-40 GHz | ARA | MWH-2640 | C00891 | 06/28/15 |
| Antenna, Bilog, 30MHz-1 GHz | Sunol Sciences | JB1 | T243 | 12/08/15 |
| RF Preamplifier, 100KHz -> 1300MHz | HP | TBD | C00825 | 06/01/15 |
| RF Preamplifier, 1GHz - 18GHz | Miteq | NSP4000-SP2 | 924343 | 09/03/15 |
| RF Preamplifier, 1GHz - 26.5GHz | HP | 8449B | F00351 | 06/27/15 |
| AC Power Supply, 2,500VA 45-500Hz | Elgar-Ametek | CW2501M | F00013 | CNR |
| RF Preamplifier, 1GHz - 18GHz | Miteq | AFS42-00101800-25-S-42 | 1818466 | 05/09/15 |
| Attenuator / Switch driver | HP | 11713A | F00204 | CNR |
| Low Pass Filter 3GHz | Micro-Tronics | LPS17541 | F00219 | 05/23/15 |
| High Pass Filter 5GHz | Micro-Tronics | HPS17542 | F00222 | 05/22/15 |
| High Pass Filter 6GHz | Micro-Tronics | HPM17543 | F00224 | 05/22/15 |

| Test Software List | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Version** |
| Radiated Software | UL | UL EMC | Version 9.5, 07/22/14 |
| Conducted Software | UL | UL EMC | Version 9.5, 05/17/14 |
| CLT Software | UL | UL RF | Version 1.0, 02/02/15 |
| Antenna Port Software | UL | UL RF | Version 2.1.1.1, 1/20/15 |


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# 7. SUMMARY TABLE

| FCC Part Section | Test Description | Test Limit | Test Condition | Test Result | Worst Case |
|---|---|---|---|---|---|
| 15.407 (a) | Occupied Band width (26dB) | N/A | Conducted | Pass | 82.5MHz |
| 14.407 | 6dB Band width | >500KHz | | Pass | 76.08MHz |
| 15.407 (a)(2) | TX Cond. Power5.15-2.25, 5.25-5.35 & 5.47-5.725 | <24dBm or 11+10Log(OBW) | | Pass | 15.07dBm |
| 15.407 (a)(3) | TX Cond. Power 5.725-5.850 | < 30dBm or 17+10Log(OBW) | | Pass | 14.88dBm |
| 15.407 (a)(5) | PSD (5.2,5.3,5.5GHz) | <11dBm | | Pass | 3.49dBm |
| 15.407 (a)(5) | PSD | 30dBm per 500kHz | | Pass | 1.25dBm |
| 15.207 (a) | AC Power Line conducted emissions | Section 10 | Radiated | Pass | 44.76dBuV(AV) |
| 15.407 (b) & 15.209 | Radiated Spurious Emission | < 54dBuV/m | | Pass | 49.66dBuV/m |
| 15.407 (h)(2) | Dynamic Frequency Selection | N/A | Radiated / Condcuted | Pass | N/A |


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# 8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

**LIMITS**

None; for reporting purposes only.

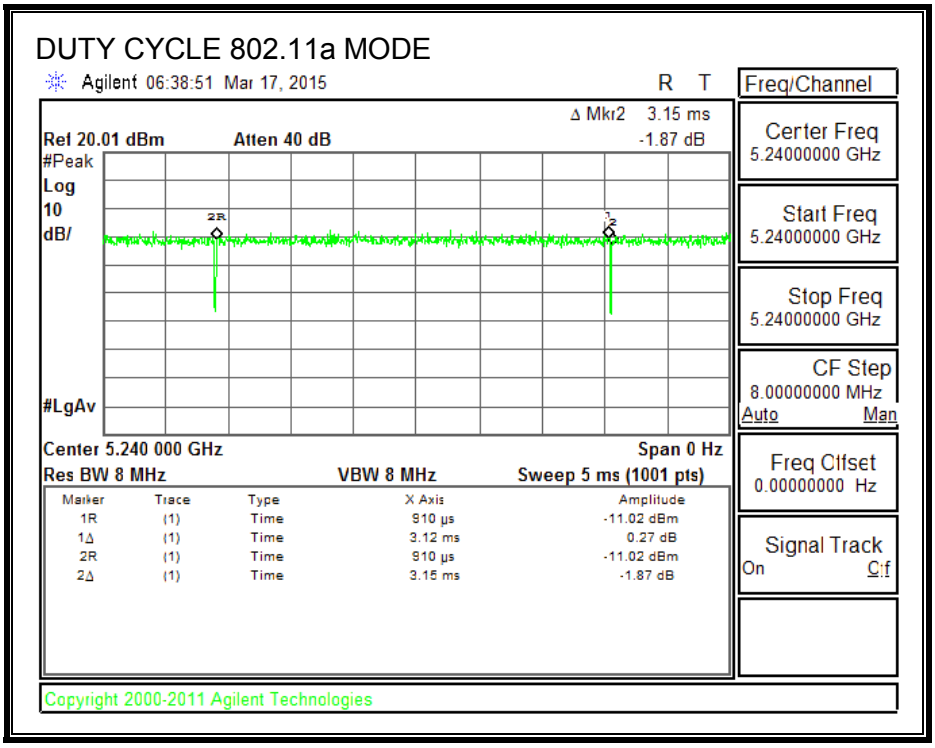
**PROCEDURE**

KDB 789033 Zero-Span Spectrum Analyzer Method.

## 8.1. 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) |
|---|---|---|---|---|---|---|
| 802.11a | 3.12 | 3.15 | 0.992 | 99.2% | 0.00 | 0.010 |
| 802.11n HT20 | 2.91 | 2.930 | 0.991 | 99.1% | 0.00 | 0.010 |
| 802.11n HT40 | 1.42 | 1.442 | 0.983 | 98.3% | 0.00 | 0.010 |
| 802.11ac HT80 | 0.68 | 0.698 | 0.971 | 97.1% | 0.13 | 1.476 |

## 8.2. DUTY CYCLE PLOTS





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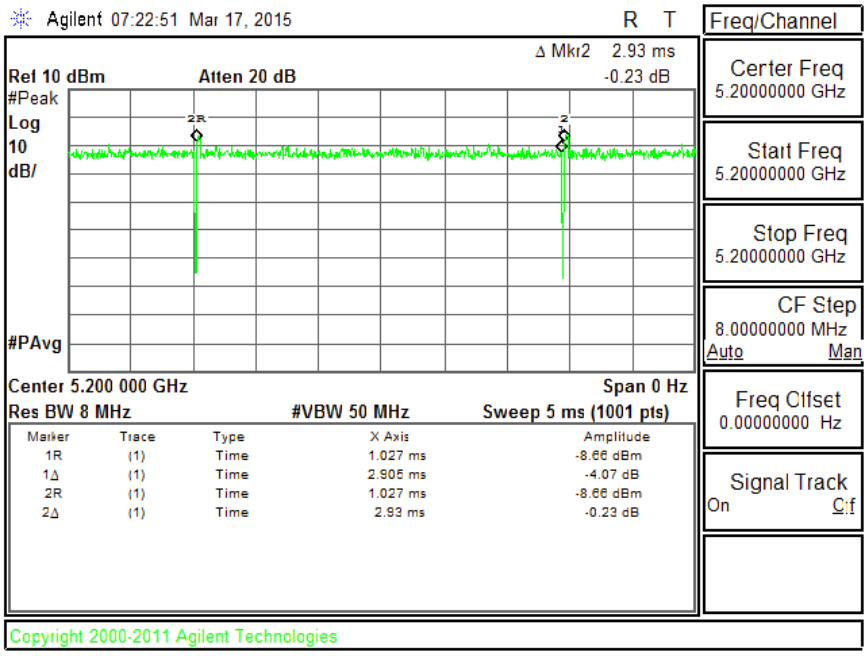
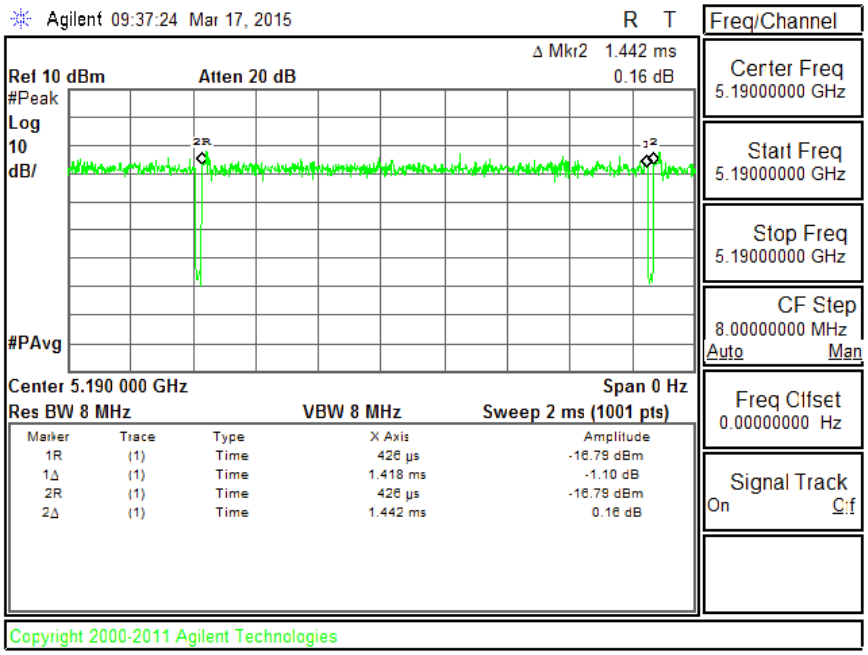
DUTY CYCLE 802.11n HT20 MODE




DUTY CYCLE 802.11n HT40 MODE





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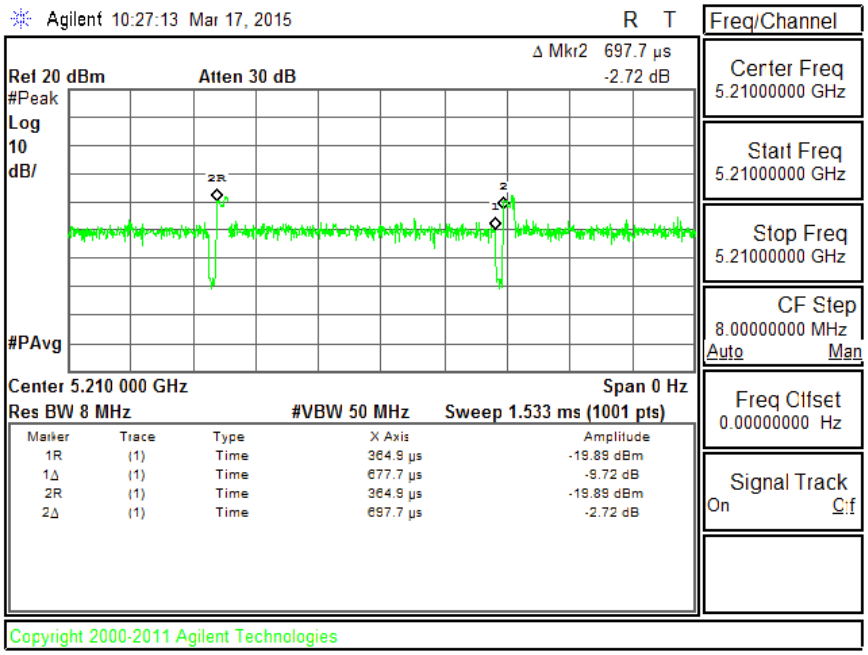
DUTY CYCLE 802.11ac HT80 MODE





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# 9. MEASUREMENT METHOD

789033 D02 General UNII Test Procedures New Rules v01

The Duty Cycle is less than 98% and consistent therefore KDB 789033 Method SA-2 is used for power and PPSD

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

Straddle Channels: KDB 644545 D01 v01r02

MIMO Device: KDB 662911 v02r01


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# 10. ANTENNA PORT TEST RESULTS

## 10.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.407

The minimum 6 dB bandwidth shall be at least 500 kHz.

**TEST PROCEDURE**

Reference to 789033 D02 General UNII Test Procedures New Rules v01: The transmitter output is connected to a spectrum analyzer with the RBW set to100KHz, the VBW >= 3 x RBW, peak detector and max hold.

**RESULTS**

### 10.1.1. 802.11a MODE IN THE 5.8 GHz BAND

| Channel | Frequency | 6 dB Bandwidth CHAIN 0 | 6 dB Bandwidth CHAIN 1 | Minimum Limit |
|---|---|---|---|---|
| | (MHz) | (MHz) | (MHz) | (MHz) |
| Low | 5745 | 16.44 | 16.44 | 0.5 |
| Mid | 5785 | 16.44 | 16.41 | 0.5 |
| High | 5825 | 16.41 | 16.44 | 0.5 |
| Worst | | 16.41 | 16.41 | |

### 10.1.2. 802.11n HT20 MODE IN THE 5.8 GHz BAND

| Channel | Frequency | 6 dB Bandwidth CHAIN 0 | 6 dB Bandwidth CHAIN 1 | Minimum Limit |
|---|---|---|---|---|
| | (MHz) | (MHz) | (MHz) | (MHz) |
| Low | 5745 | 17.64 | 17.70 | 0.5 |
| Mid | 5785 | 17.64 | 17.64 | 0.5 |
| High | 5825 | 17.64 | 17.67 | 0.5 |
| Worst | | 17.64 | 17.64 | |


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### 10.1.3. 802.11n HT40 MODE IN THE 5.8 GHz BAND

| Channel | Frequency | 6 dB Bandwidth CHAIN 0 | 6 dB Bandwidth CHAIN 1 | Minimum Limit |
|---|---|---|---|---|
| | (MHz) | (MHz) | (MHz) | (MHz) |
| Low | 5755 | 36.36 | 36.48 | 0.5 |
| High | 5795 | 36.30 | 36.42 | 0.5 |
| Worst | | 36.30 | 36.42 | 0.5 |

### 10.1.4. 802.11ac HT80 MODE IN THE 5.8 GHz BAND

| Channel | Frequency | 6 dB Bandwidth CHAIN 0 | 6 dB Bandwidth CHAIN 1 | Minimum Limit |
|---|---|---|---|---|
| | (MHz) | (MHz) | (MHz) | (MHz) |
| Low | 5775 | 76.08 | 76.08 | 0.5 |
| Worst | | | | 0.5 |

### 10.1.5. 802.11a MODE THE CHANNEL 144

| Channel | Frequency | 6 dB Bandwidth CHAIN 0 | 6 dB Bandwidth CHAIN 1 | Minimum Limit |
|---|---|---|---|---|
| | (MHz) | (MHz) | (MHz) | (MHz) |
| 144 | 5720 | 3.28 | 3.28 | 0.5 |

Note: the 6dB minimum bandwidth for the portion falling in the UNII-3 band.

### 10.1.6. 802.11n HT20 MODE THE CHANNEL 144

| Channel | Frequency | 6 dB Bandwidth CHAIN 0 | 6 dB Bandwidth CHAIN 1 | Minimum Limit |
|---|---|---|---|---|
| | (MHz) | (MHz) | (MHz) | (MHz) |
| 144 | 5720 | 3.85 | 3.91 | 0.5 |

Note: the 6dB minimum bandwidth for the portion falling in the UNII-3 band.


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### 10.1.7. 802.11n HT40 MODE THE CHANNEL 142

| Channel | Frequency | 6 dB Bandwidth CHAIN 0 | 6 dB Bandwidth CHAIN 1 | Minimum Limit |
|---|---|---|---|---|
| | (MHz) | (MHz) | (MHz) | (MHz) |
| 142 | 5710 | 3.25 | 3.22 | 0.5 |

Note: the 6dB minimum bandwidth for the portion falling in the UNII-3 band.

### 10.1.8. 802.11ac HT80 MODE IN THE 5.8 GHz BAND

| Channel | Frequency | 6 dB Bandwidth CHAIN 0 | 6 dB Bandwidth CHAIN 1 | Minimum Limit |
|---|---|---|---|---|
| | (MHz) | (MHz) | (MHz) | (MHz) |
| 138 | 5690 | 3.10 | 3.10 | 0.5 |

Note: the 6dB minimum bandwidth for the portion falling in the UNII-3 band.


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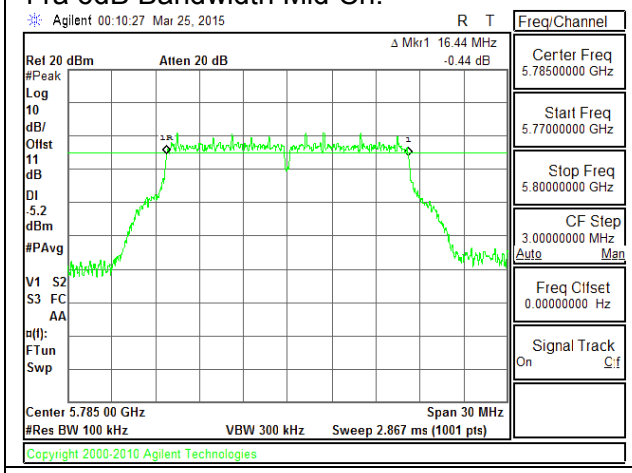
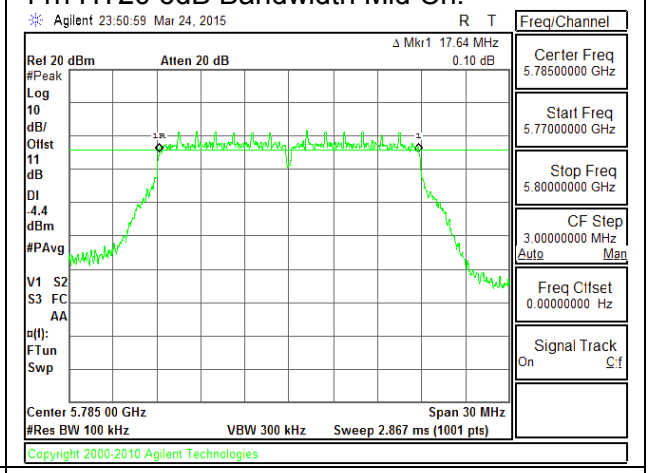
## 10.1.9. 6 dB BANDWIDTH MID CH PLOTS

**6 dB BANDWIDTH Chain 0**

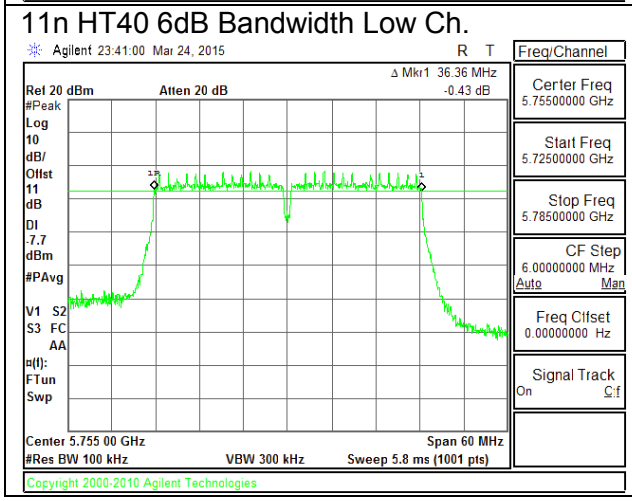
11a 6dB Bandwidth Mid Ch.



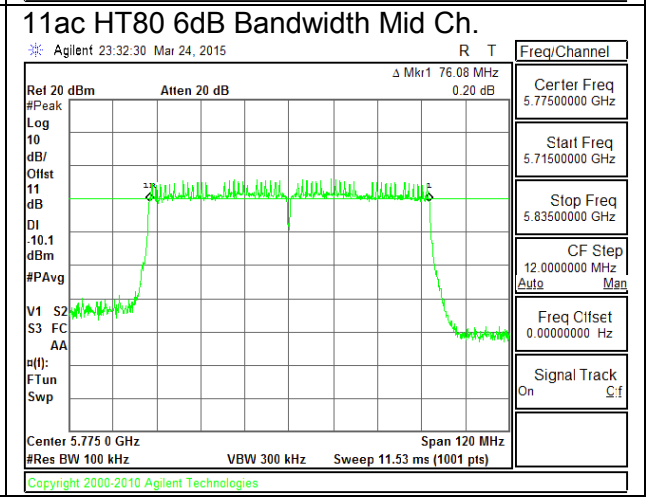

11n HT20 6dB Bandwidth Mid Ch.




11n HT40 6dB Bandwidth Low Ch.




11ac HT80 6dB Bandwidth Mid Ch.





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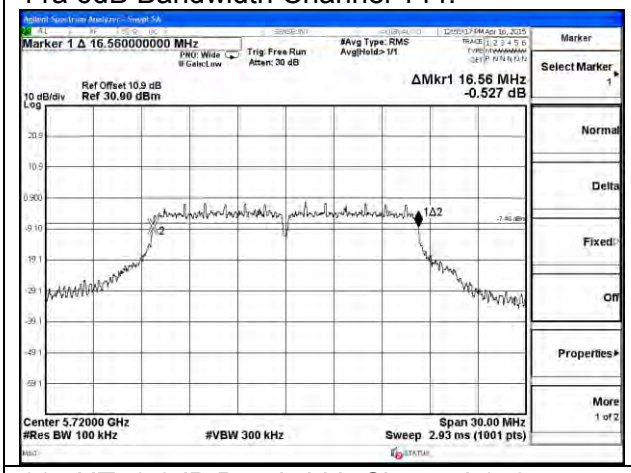
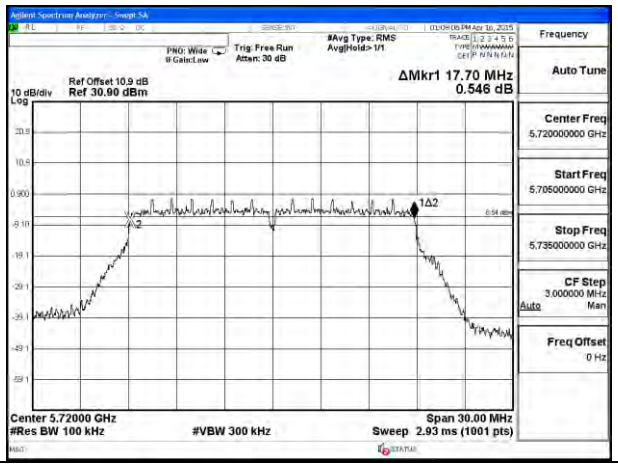
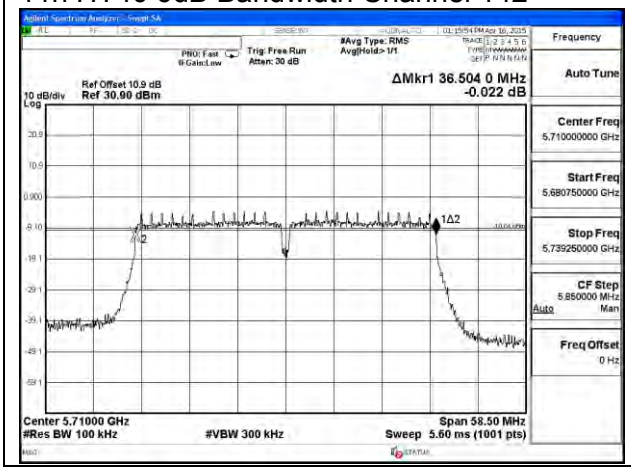
11a 6dB Bandwidth Channel 144.



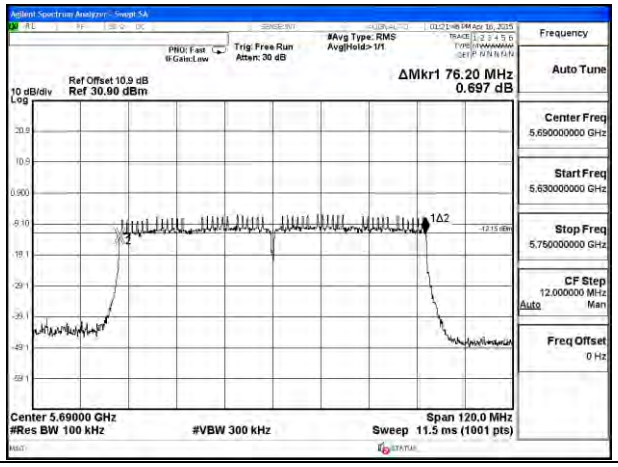

11n HT20 6dB Bandwidth Channel 144.




11n HT40 6dB Bandwidth Channel 142




11ac HT80 6dB Bandwidth Channel 138





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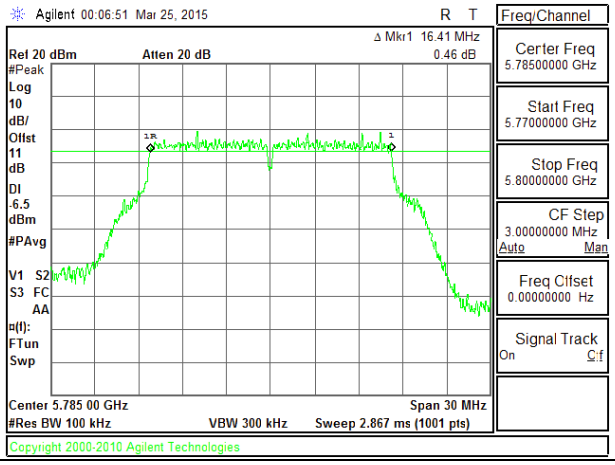
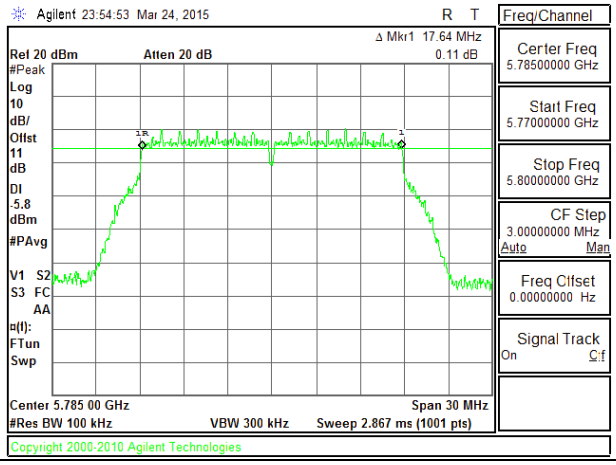
## 6 dB BANDWIDTH Chain 1

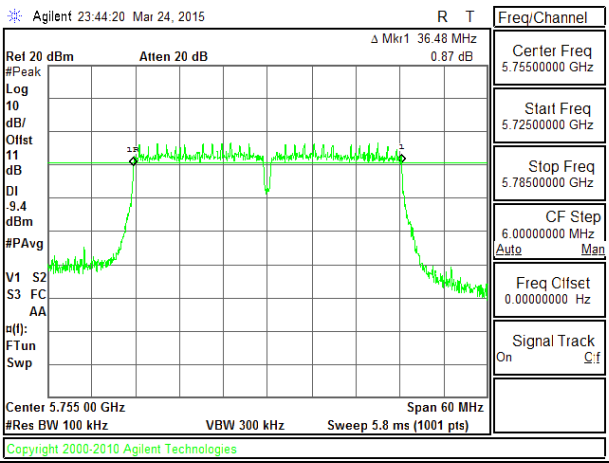
11a 6dB Bandwidth Mid Ch.



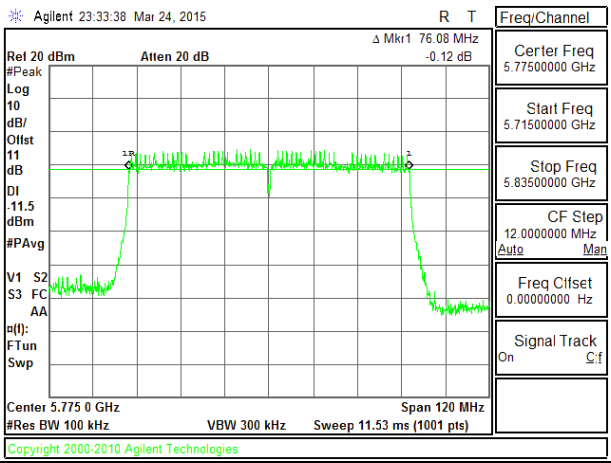

11n HT20 6dB Bandwidth Mid Ch.




11n HT40 6dB Bandwidth Low Ch.




11ac HT80 6dB Bandwidth Mid Ch.





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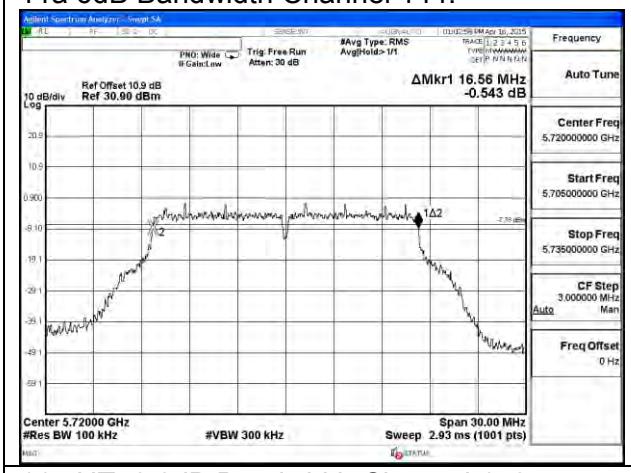
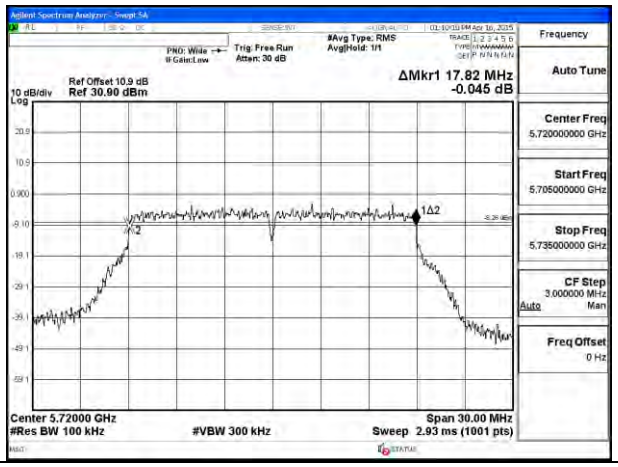
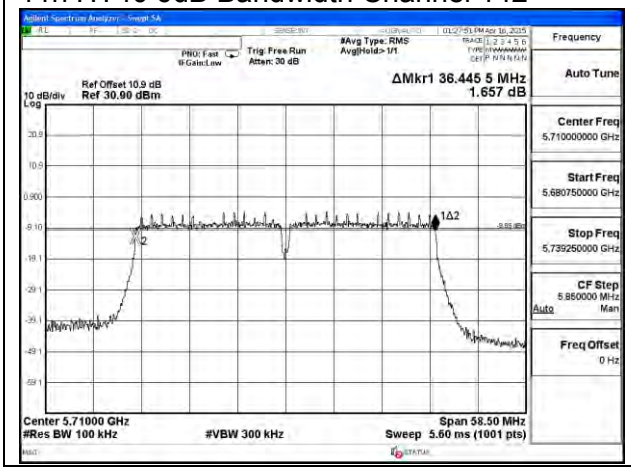
11a 6dB Bandwidth Channel 144.



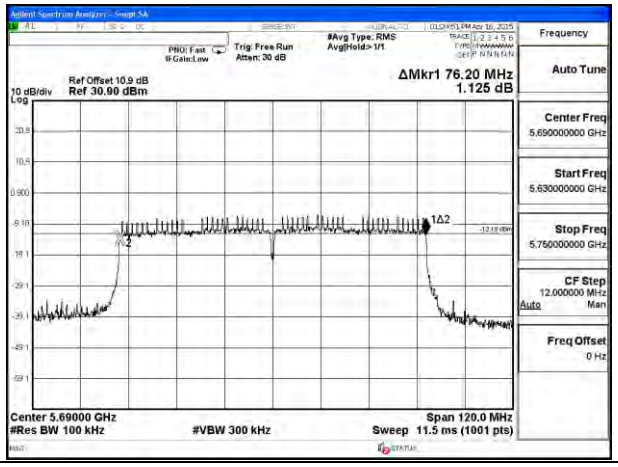

11n HT20 6dB Bandwidth Channel 144.




11n HT40 6dB Bandwidth Channel 142




11ac HT80 6dB Bandwidth Channel 138





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## 10.2. 26 dB BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

### 10.2.1. 802.11a MODE IN THE 5.2 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5180 | 21.4 | 23.3 |
| Mid | 5200 | 21.3 | 21.5 |
| High | 5240 | 18.4 | 18.5 |

### 10.2.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5180 | 21.9 | 21.6 |
| Mid | 5200 | 21.8 | 21.8 |
| High | 5240 | 18.9 | 18.8 |

### 10.2.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5190 | 40.0 | 39.5 |
| High | 5230 | 40.0 | 39.7 |

### 10.2.4. 802.11ac HT80 MODE IN THE 5.2 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5210 | 81.6 | 80.8 |


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### 10.2.5. 802.11a MODE IN THE 5.3 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5260 | 18.5 | 18.6 |
| Mid | 5300 | 21.4 | 21.8 |
| High | 5320 | 21.6 | 21.5 |

### 10.2.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5260 | 19.0 | 18.8 |
| Mid | 5300 | 21.8 | 21.7 |
| High | 5320 | 21.6 | 21.6 |

### 10.2.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5270 | 39.7 | 39.9 |
| High | 5310 | 40.3 | 39.7 |

### 10.2.8. 802.11ac HT80 MODE IN THE 5.3 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5290 | 81.6 | 81.6 |


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### 10.2.9. 802.11a MODE IN THE 5.5 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5500 | 21.6 | 21.5 |
| Mid | 5580 | 18.6 | 18.5 |
| High | 5700 | 21.6 | 21.4 |
| 144 | 5720 | 21.2 | 21.3 |

### 10.2.10. 802.11n HT20 MODE IN THE 5.5 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5500 | 21.9 | 21.9 |
| Mid | 5580 | 19.1 | 19.0 |
| High | 5700 | 22.1 | 21.6 |
| 144 | 5720 | 21.5 | 21.4 |

### 10.2.11. 802.11n HT40 MODE IN THE 5.5 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5510 | 40.0 | 39.5 |
| Mid | 5550 | 40.2 | 39.6 |
| High | 5670 | 40.2 | 39.5 |
| 142 | 5710 | 39.8 | 39.8 |

### 10.2.12. 802.11ac HT80 MODE IN THE 5.5 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5530 | 81.8 | 81.1 |
| 138 | 5690 | 82.5 | 82 |


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### 10.2.13. 802.11a MODE IN THE 5.8 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5745 | 21.7 | 21.7 |
| Mid | 5785 | 21.6 | 21.5 |
| High | 5825 | 21.7 | 21.5 |

### 10.2.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5745 | 21.6 | 21.7 |
| Mid | 5785 | 22.2 | 21.6 |
| High | 5825 | 21.8 | 21.7 |

### 10.2.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5755 | 40.0 | 39.4 |
| High | 5795 | 39.9 | 39.8 |

### 10.2.16. 802.11ac HT80 MODE IN THE 5.8 GHz BAND

| Channel | Frequency (MHz) | 26 dB BW Chain 0 (MHz) | 26 dB BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5775 | 82.0 | 81.5 |


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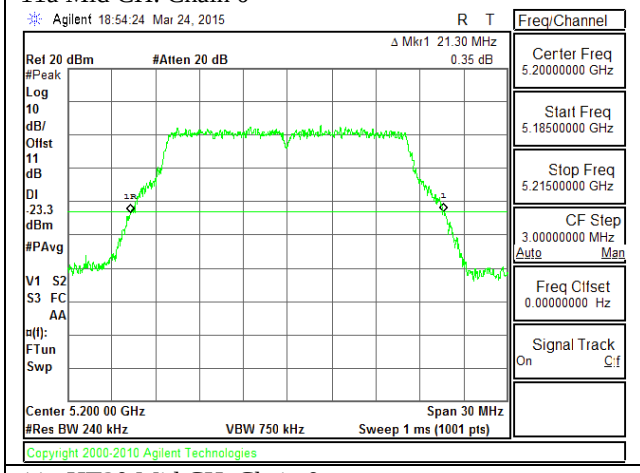
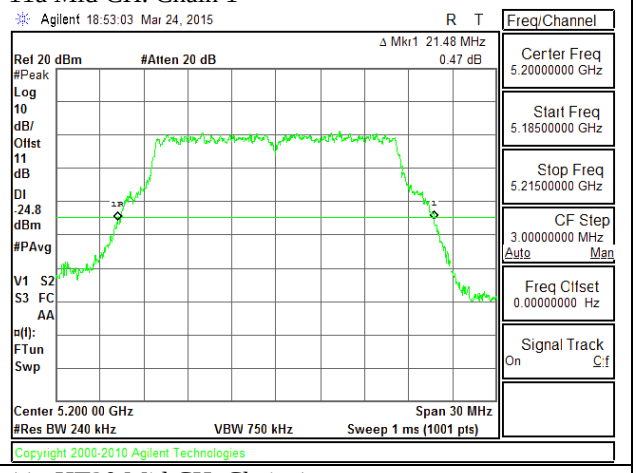
## 10.2.17. 26 dB BANDWIDTH PLOTS

### UNII 5.2 GHz

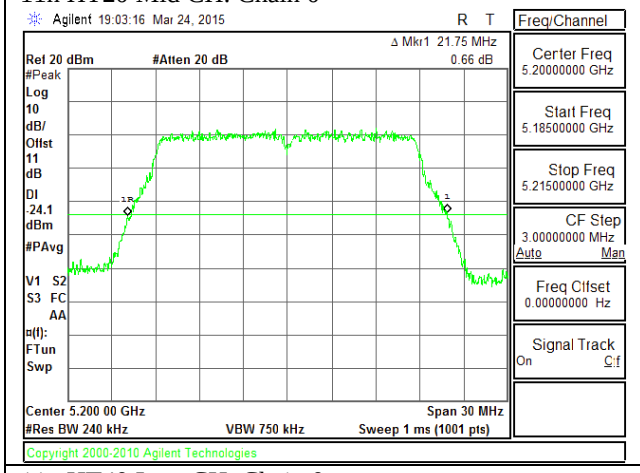
11a Mid CH. Chain 0



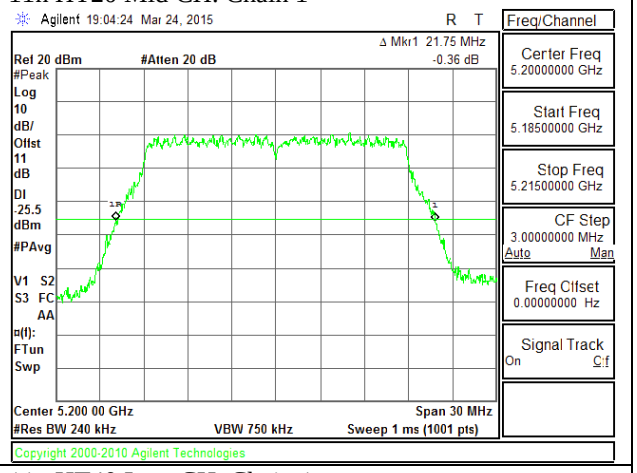

11a Mid CH. Chain 1



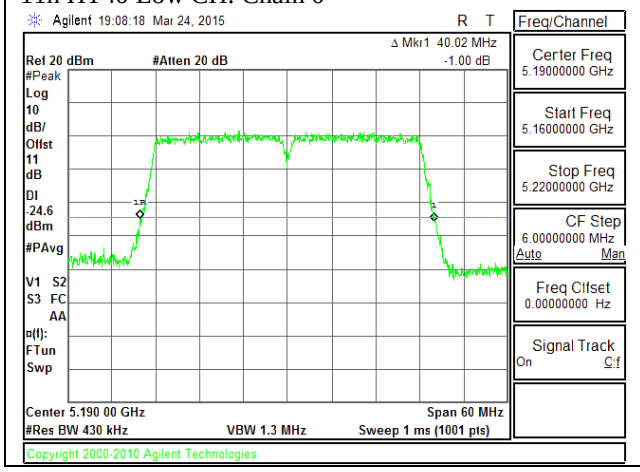

11n HT20 Mid CH. Chain 0



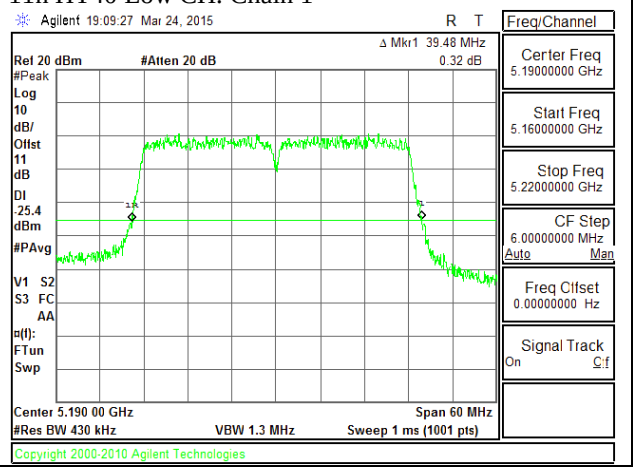

11n HT20 Mid CH. Chain 1




11n HT40 Low CH. Chain 0




11n HT40 Low CH. Chain 1





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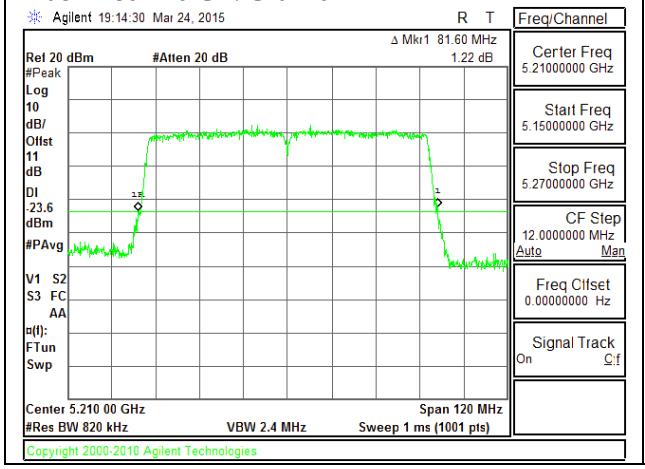
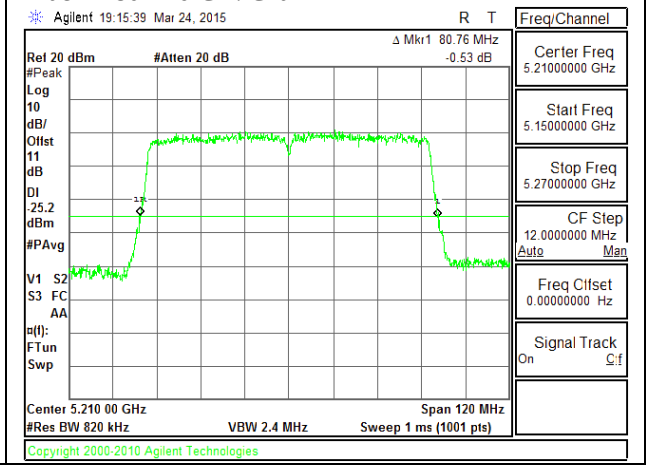
11ac HT80 Mid CH. Chain 0

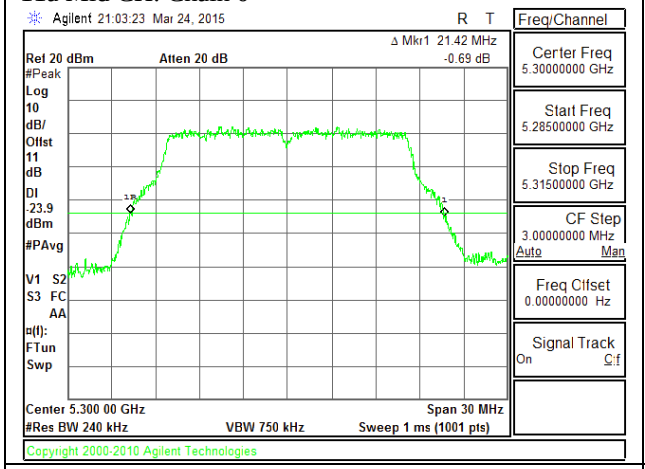



11ac HT80 Mid CH. Chain 1

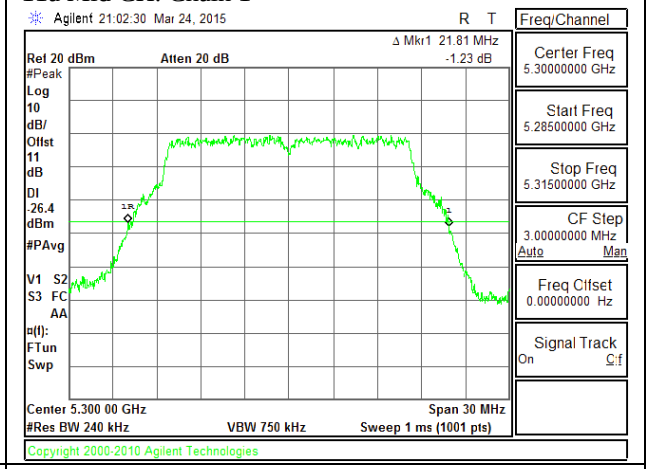



## UNII 5.3GHz

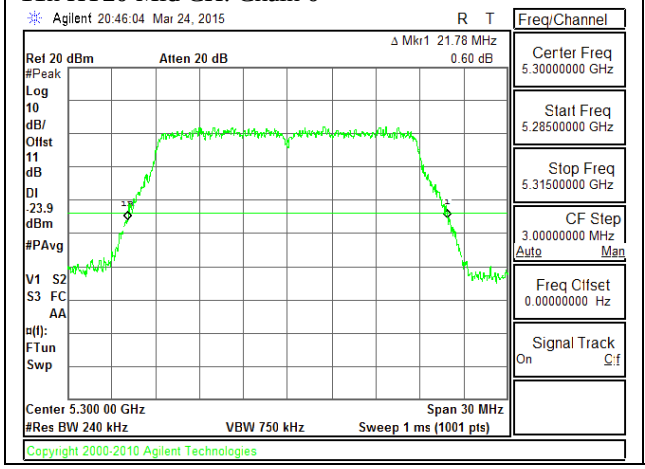
11a Mid CH. Chain 0



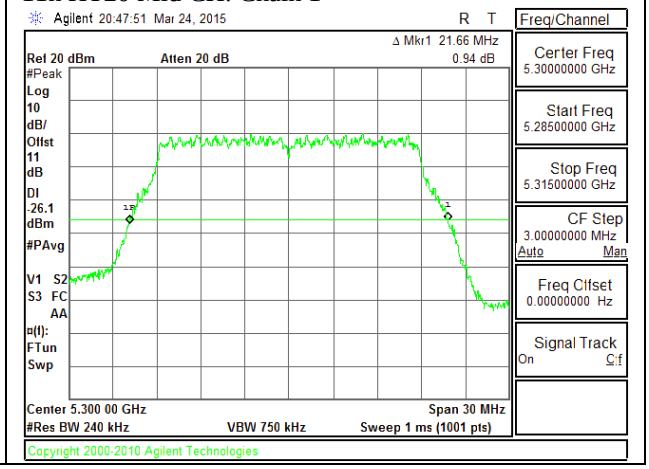

11a Mid CH. Chain 1




11n HT20 Mid CH. Chain 0




11n HT20 Mid CH. Chain 1





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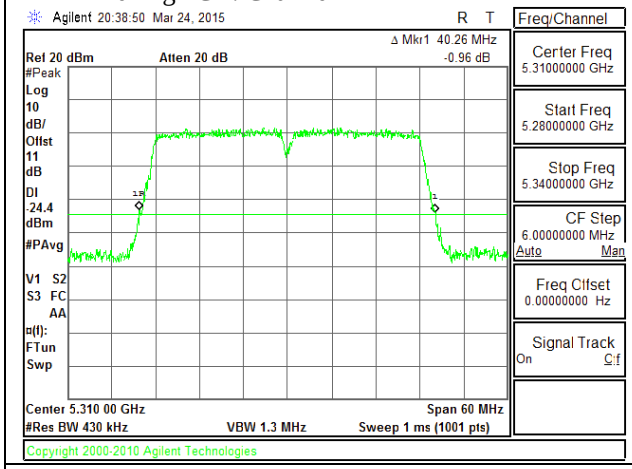
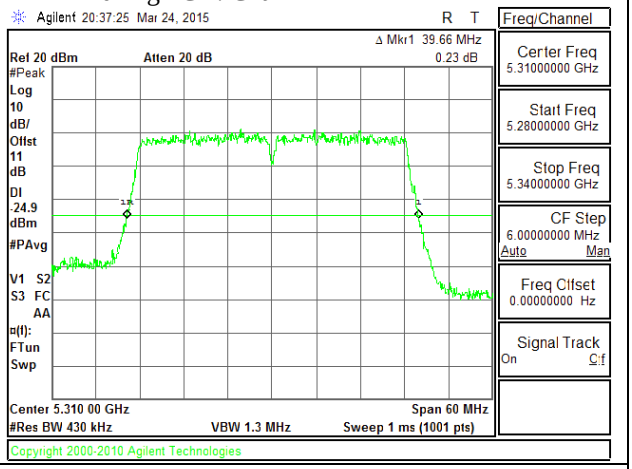
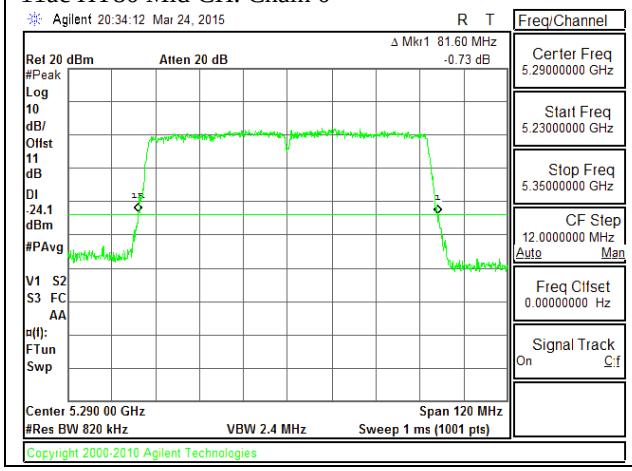
11n HT40 High CH. Chain 0



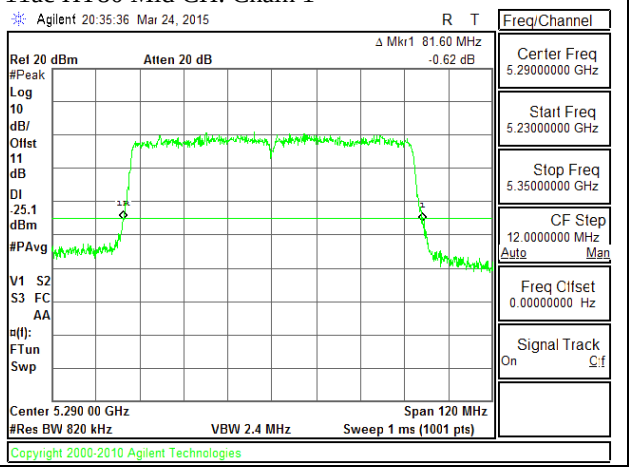

11n HT40 High CH. Chain 1




11ac HT80 Mid CH. Chain 0

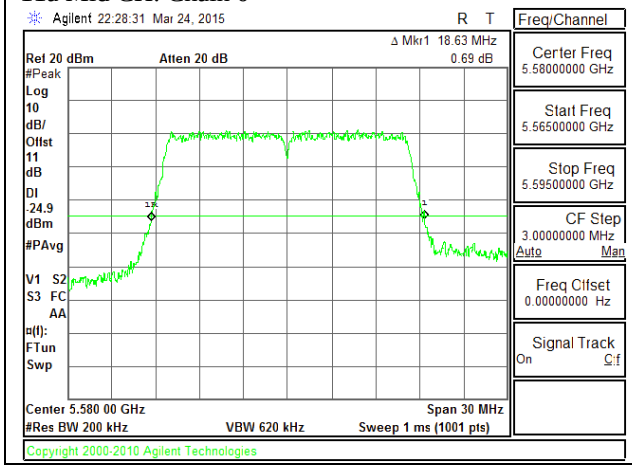



11ac HT80 Mid CH. Chain 1

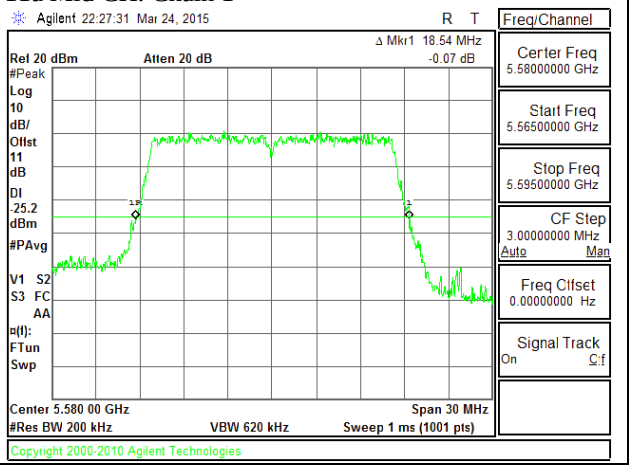



## UNII 5.5GHz

11a Mid CH. Chain 0




11a Mid CH. Chain 1





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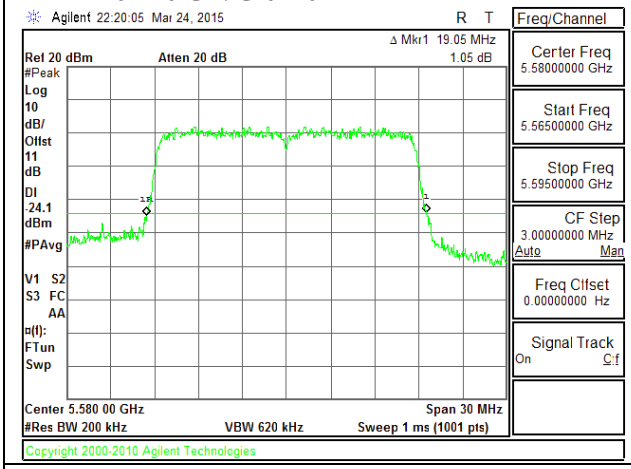
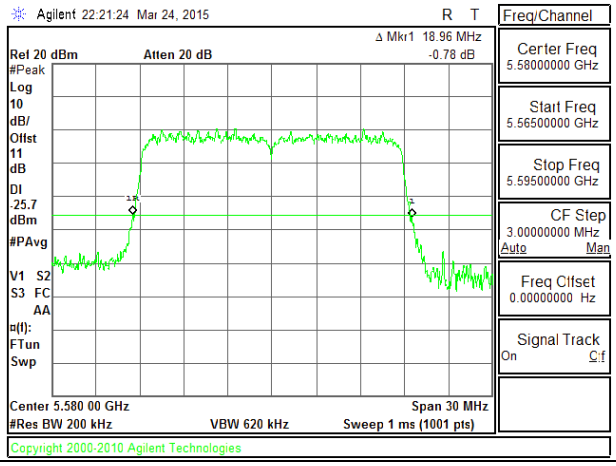
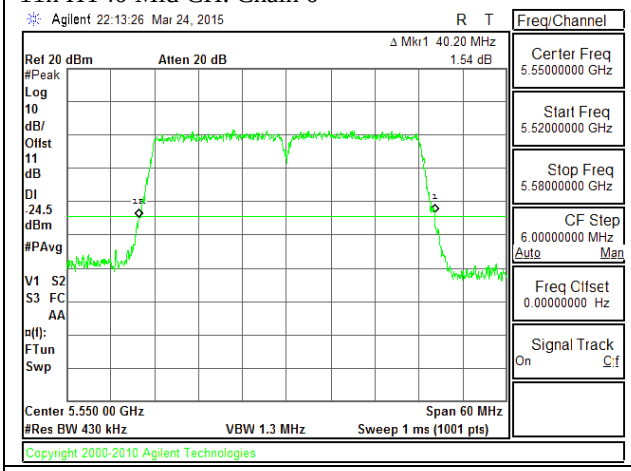
11n HT20 Mid CH. Chain 0



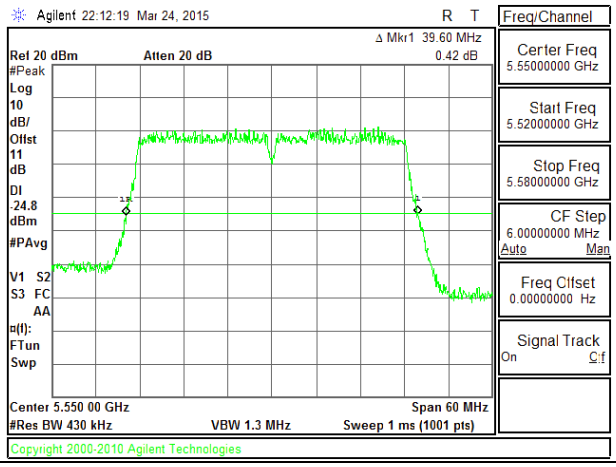

11n HT20 Mid CH. Chain 1



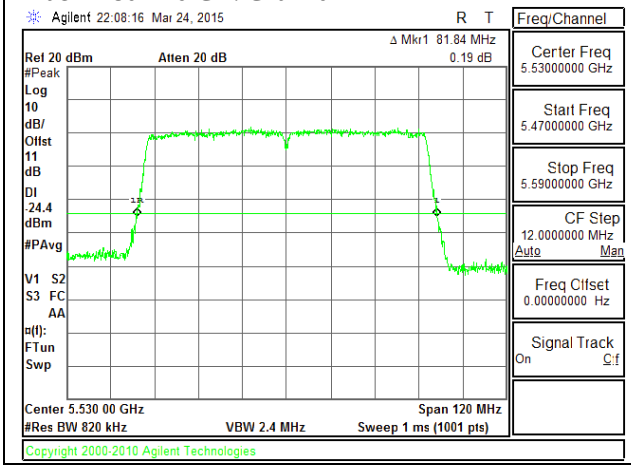

11n HT40 Mid CH. Chain 0



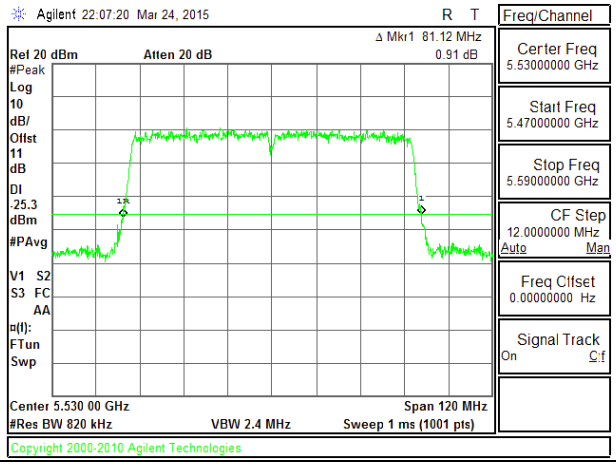

11n HT40 Mid CH. Chain 1




11ac HT80 Mid CH. Chain 0




11ac HT80 Mid CH. Chain 1





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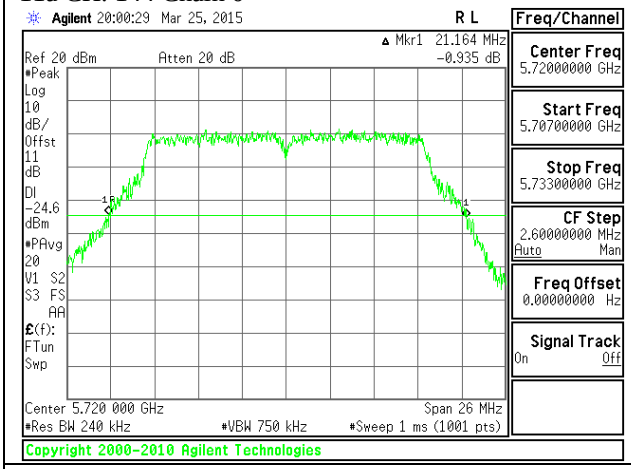
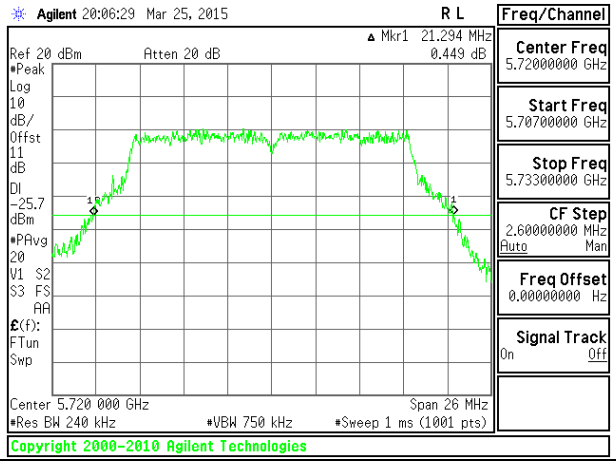
## UNII Straddling Channels

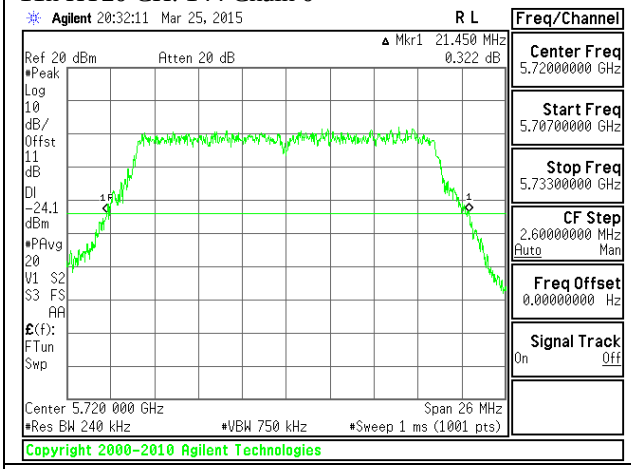
11a CH. 144 Chain 0



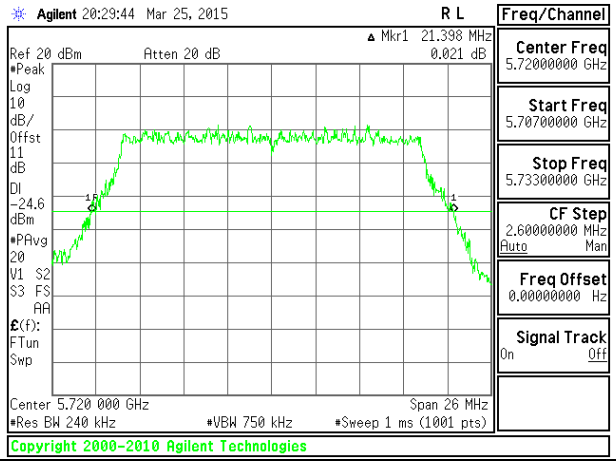

11a CH. 144 Chain 1



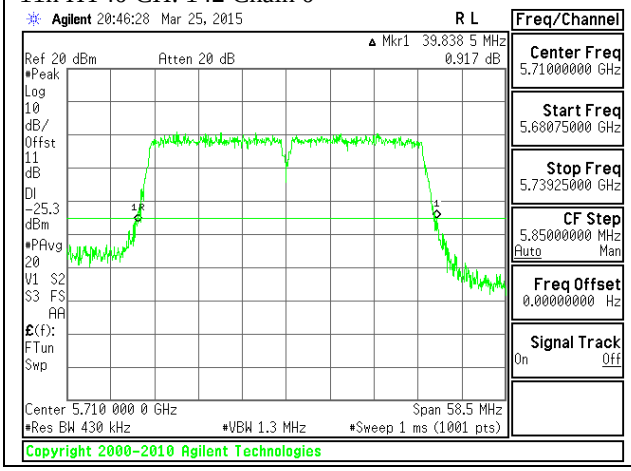

11n HT20 CH. 144 Chain 0



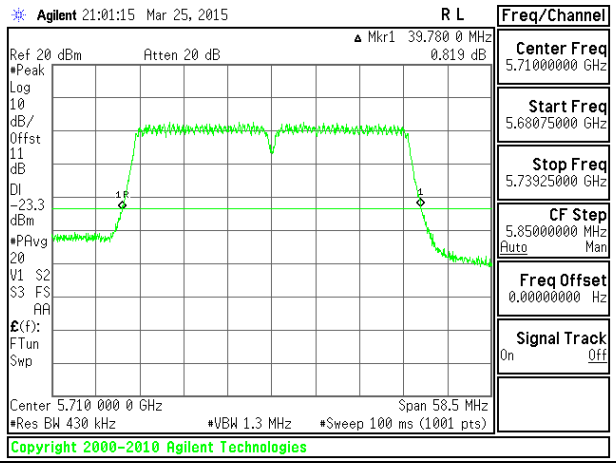

11n HT20 CH. 144 Chain 1




11n HT40 CH. 142 Chain 0




11n HT40 CH. 142 Chain 1





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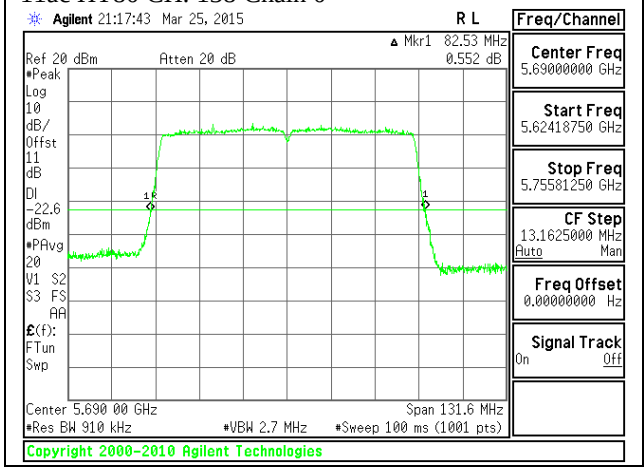
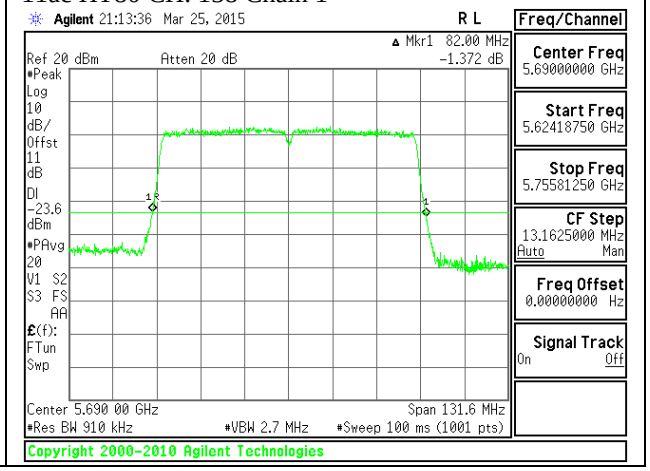
11ac HT80 CH. 138 Chain 0

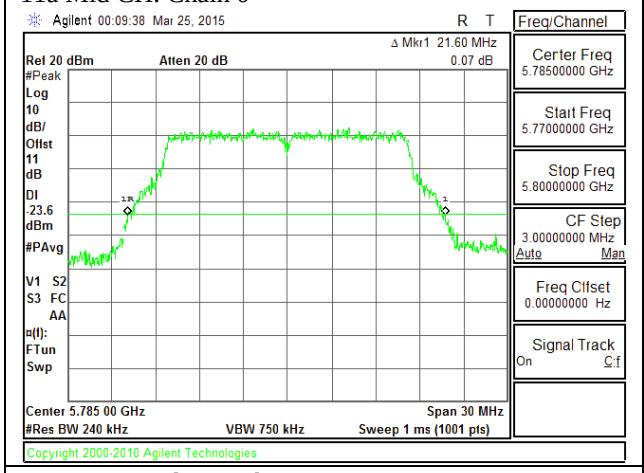



11ac HT80 CH. 138 Chain 1

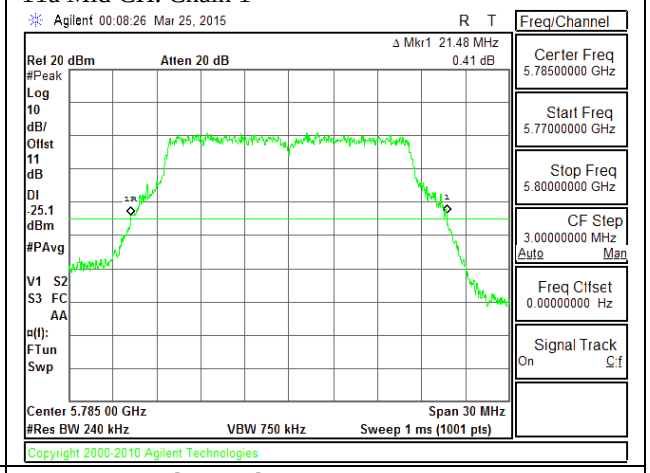



## UNII 5.8GHz

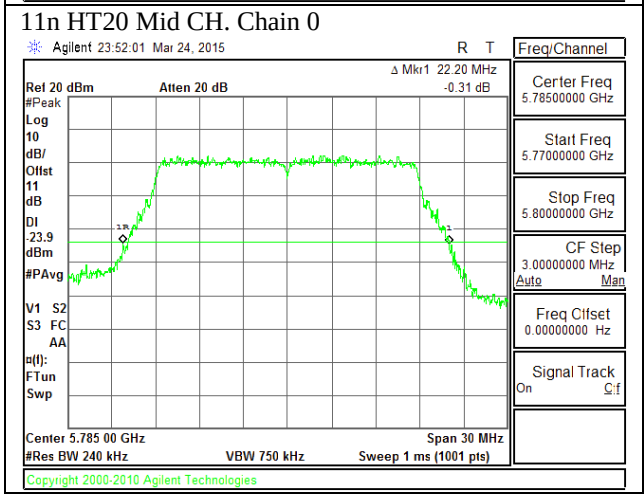
11a Mid CH. Chain 0



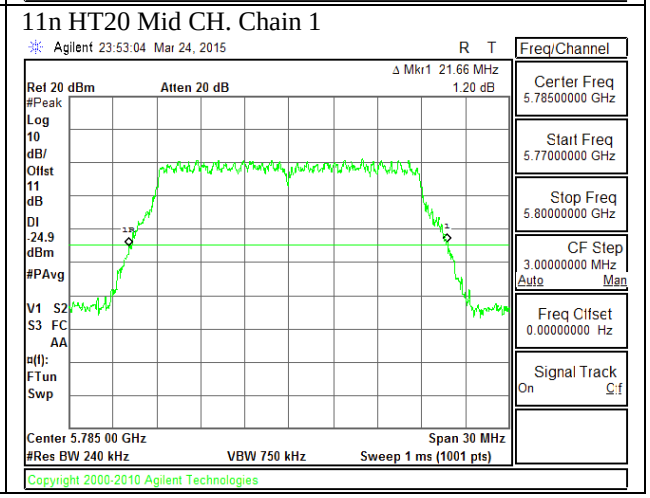

11a Mid CH. Chain 1




11n HT20 Mid CH. Chain 0




11n HT20 Mid CH. Chain 1





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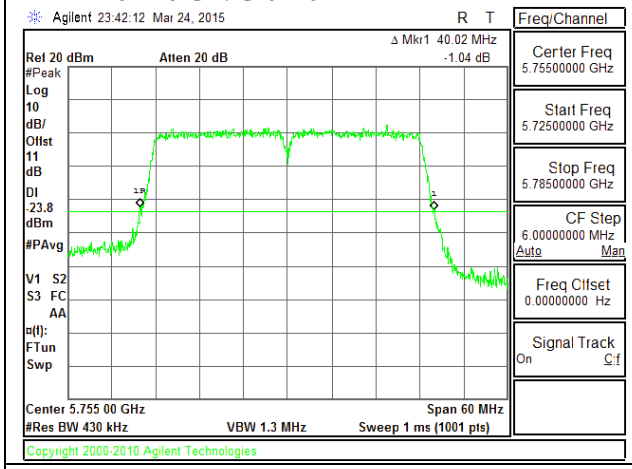
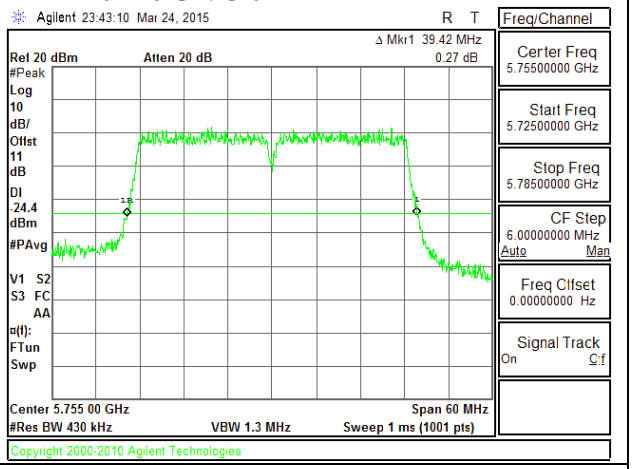
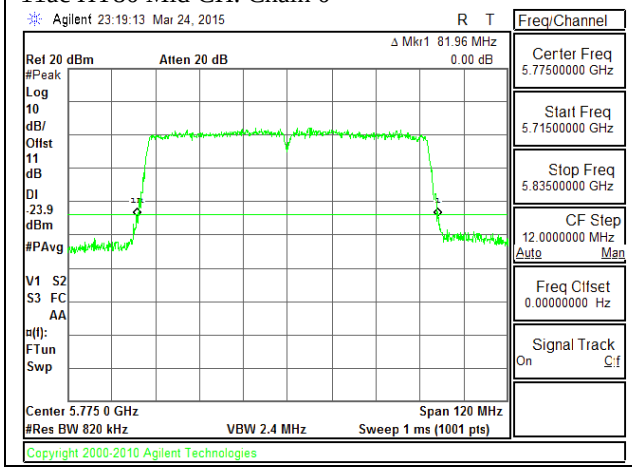
11n HT40 Mid CH. Chain 0



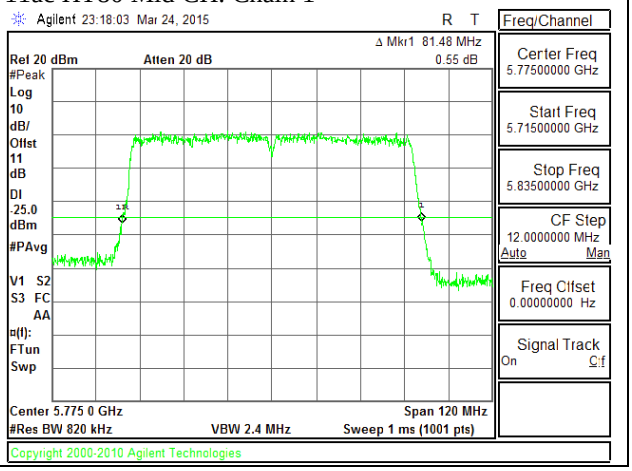

11n HT40 Mid CH. Chain 1




11ac HT80 Mid CH. Chain 0




11ac HT80 Mid CH. Chain 1





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## 10.3. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**RESULTS**

### 10.3.1. 802.11a MODE IN THE 5.2 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5180 | 16.6 | 16.5 |
| Mid | 5200 | 16.4 | 16.5 |
| High | 5240 | 16.4 | 16.4 |

### 10.3.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5180 | 17.8 | 17.8 |
| Mid | 5200 | 17.8 | 17.7 |
| High | 5240 | 17.5 | 17.5 |

### 10.3.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5190 | 36.2 | 36.4 |
| High | 5230 | 36.4 | 36.4 |

### 10.3.4. 802.11ac HT80 MODE IN THE 5.2 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5210 | 76.0 | 76.3 |


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### 10.3.5. 802.11a MODE IN THE 5.3 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5260 | 16.4 | 16.4 |
| Mid | 5300 | 16.5 | 16.4 |
| High | 5320 | 16.4 | 16.5 |

### 10.3.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5260 | 17.5 | 17.4 |
| Mid | 5300 | 17.8 | 17.9 |
| High | 5320 | 17.7 | 17.7 |

### 10.3.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5270 | 36.2 | 36.1 |
| High | 5310 | 36.2 | 36.2 |

### 10.3.8. 802.11ac HT80 MODE IN THE 5.3 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5290 | 75.4 | 76.2 |


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### 10.3.9. 802.11a MODE IN THE 5.5 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5500 | 16.4 | 16.5 |
| Mid | 5580 | 16.4 | 16.5 |
| High | 5700 | 16.5 | 16.5 |
| 144 | 5720 | 17.2 | 17.1 |

### 10.3.10. 802.11n HT20 MODE IN THE 5.5 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5500 | 17.8 | 17.9 |
| Mid | 5580 | 17.6 | 17.4 |
| High | 5700 | 17.7 | 17.8 |
| 144 | 5720 | 18.3 | 18.1 |

### 10.3.11. 802.11n HT40 MODE IN THE 5.5 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5510 | 36.4 | 36.3 |
| Mid | 5550 | 36.4 | 36.3 |
| High | 5670 | 36.3 | 36.3 |
| 142 | 5710 | 36.6 | 36.4 |

### 10.3.12. 802.11ac HT80 MODE IN THE 5.5 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5530 | 76.0 | 76.0 |
| 138 | 5690 | 76.1 | 75.8 |


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### 10.3.13. 802.11a MODE IN THE 5.8 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5745 | 16.7 | 16.7 |
| Mid | 5785 | 16.5 | 16.5 |
| High | 5825 | 16.8 | 16.6 |

### 10.3.14. 802.11n HT20 MODE IN THE 5.8 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5745 | 17.7 | 17.7 |
| Mid | 5785 | 17.8 | 17.8 |
| High | 5825 | 17.7 | 17.8 |

### 10.3.15. 802.11n HT40 MODE IN THE 5.8 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5755 | 36.0 | 36.2 |
| High | 5795 | 36.3 | 36.4 |

### 10.3.16. 802.11ac HT80 MODE IN THE 5.8 GHz BAND

| Channel | Frequency (MHz) | 99% BW Chain 0 (MHz) | 99% BW Chain 1 (MHz) |
|---|---|---|---|
| Low | 5775 | 76.1 | 75.8 |


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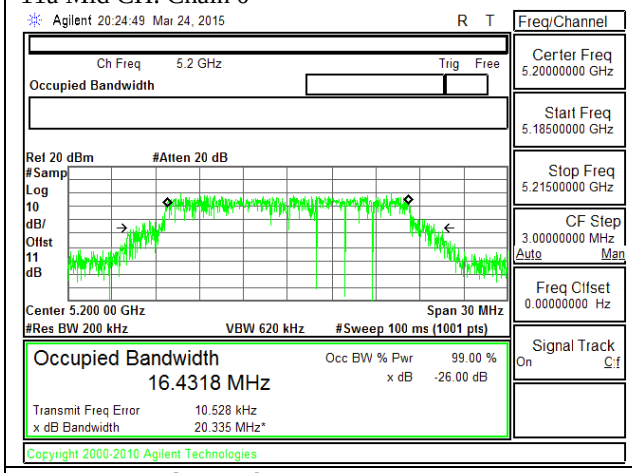
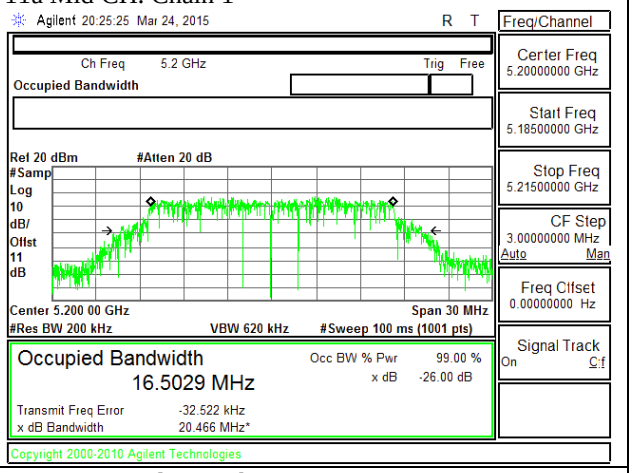
## 10.3.17. 99% BANDWIDTH PLOTS

### UNII 5.2GHz

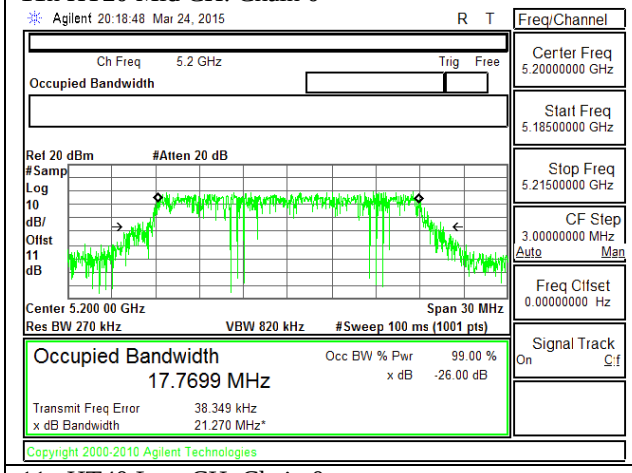
11a Mid CH. Chain 0



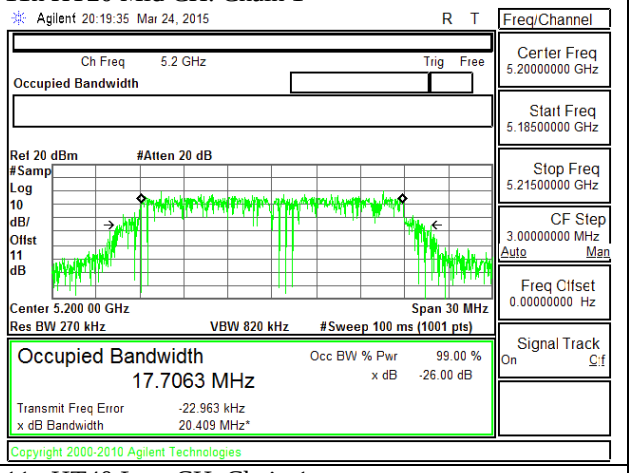

11a Mid CH. Chain 1



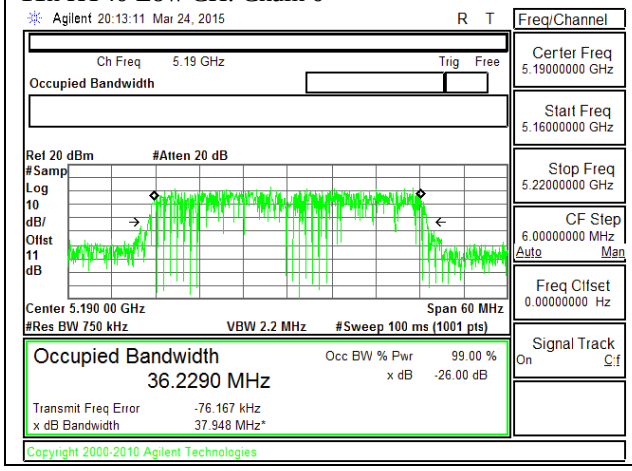

11n HT20 Mid CH. Chain 0



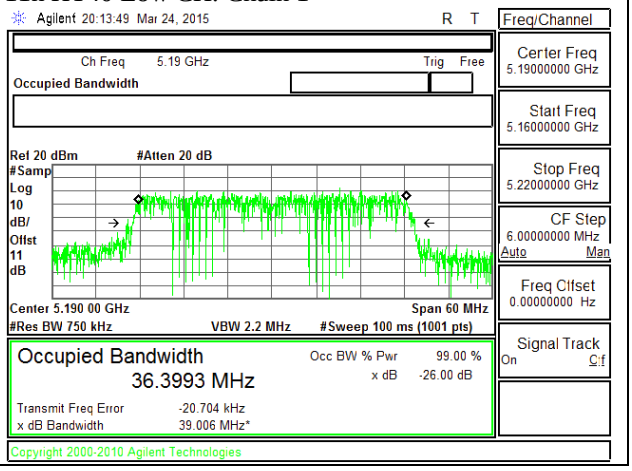

11n HT20 Mid CH. Chain 1




11n HT40 Low CH. Chain 0




11n HT40 Low CH. Chain 1





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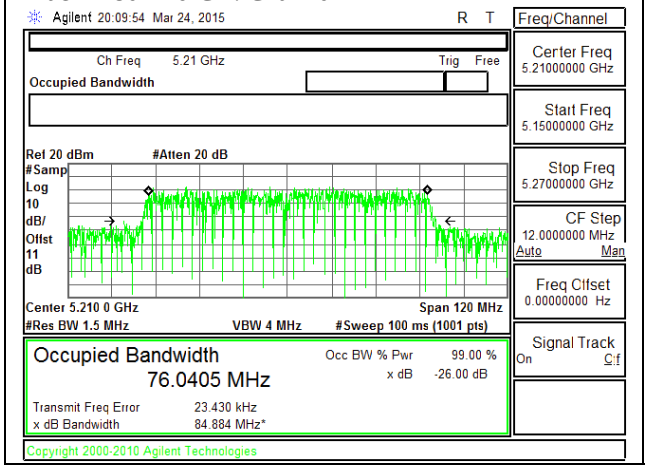
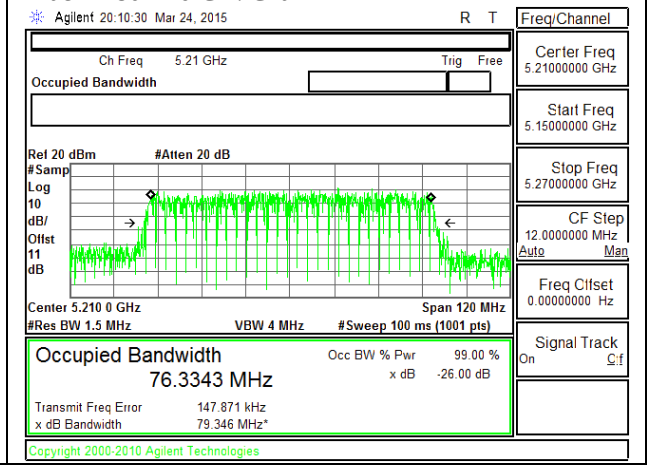
11ac HT80 Mid CH. Chain 0

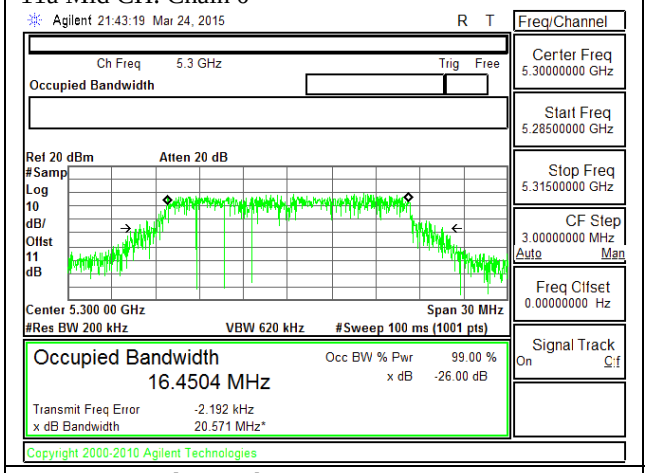



11ac HT80 Mid CH. Chain 1

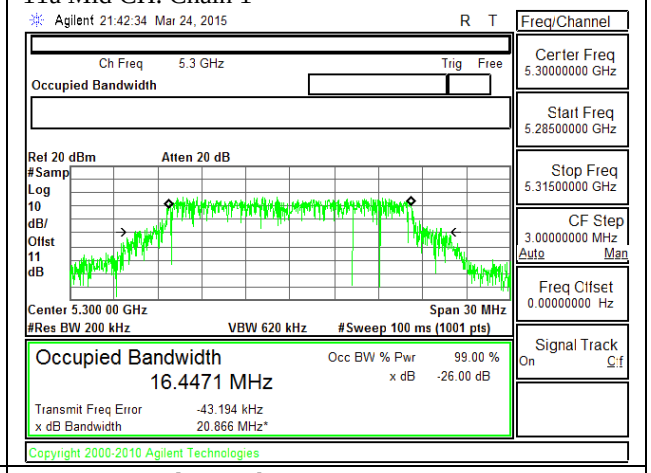



## UNII 5.3GHz

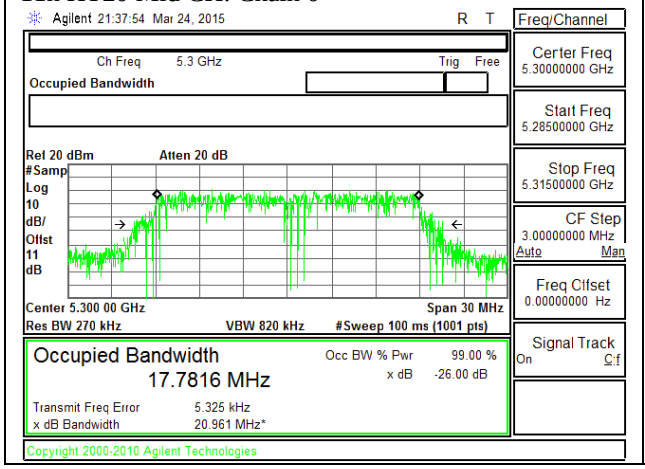
11a Mid CH. Chain 0



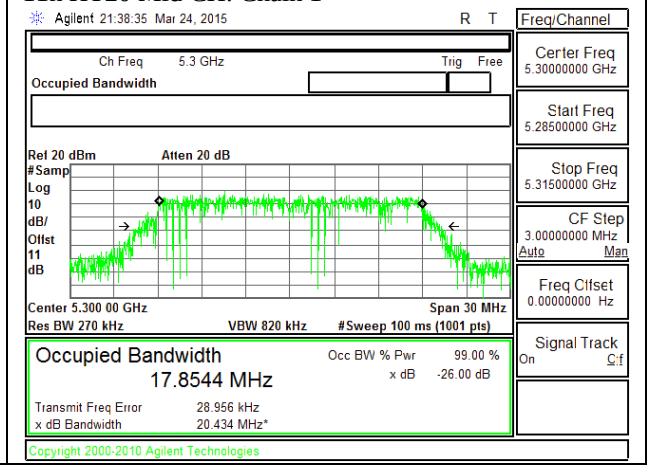

11a Mid CH. Chain 1




11n HT20 Mid CH. Chain 0




11n HT20 Mid CH. Chain 1





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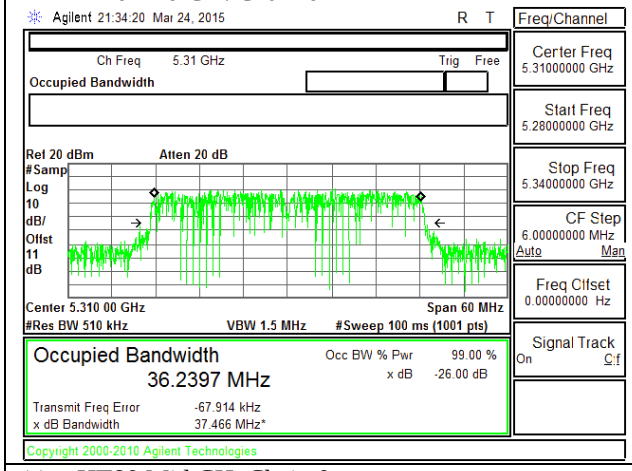
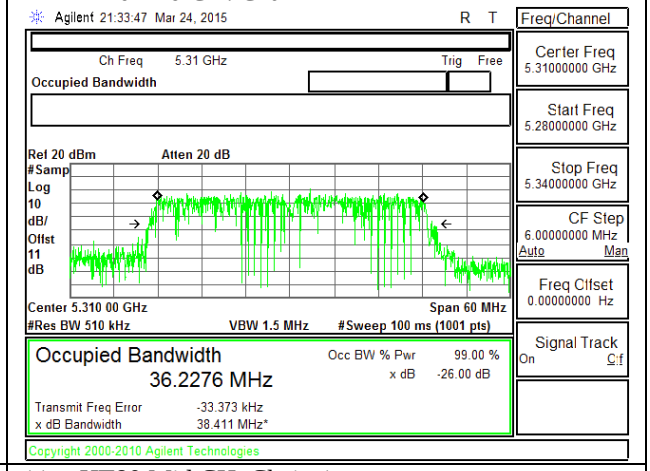
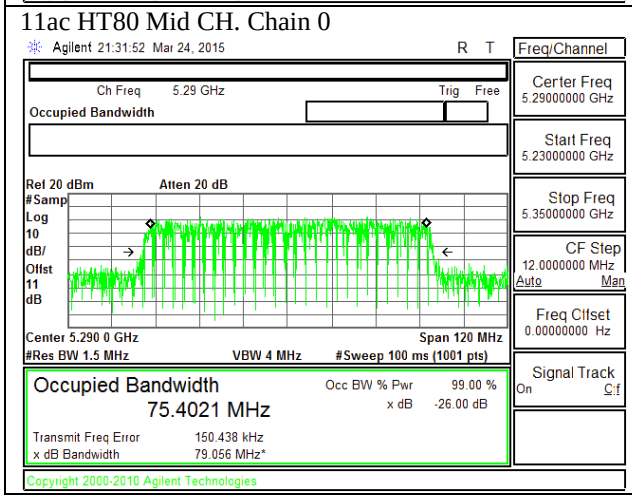
11n HT40 Mid CH. Chain 0



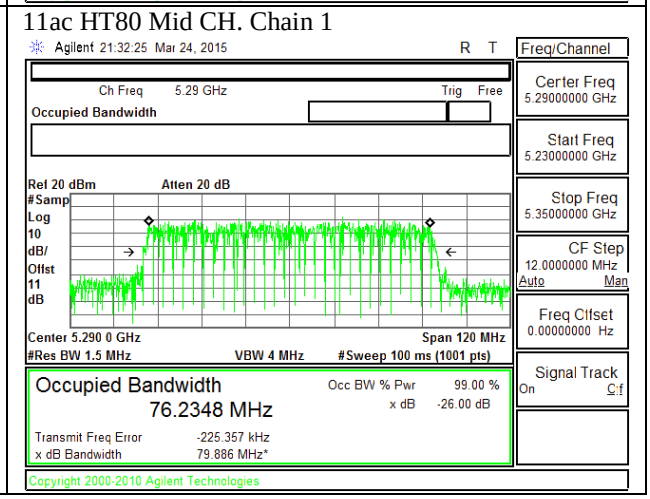

11n HT40 Mid CH. Chain 1




11ac HT80 Mid CH. Chain 0

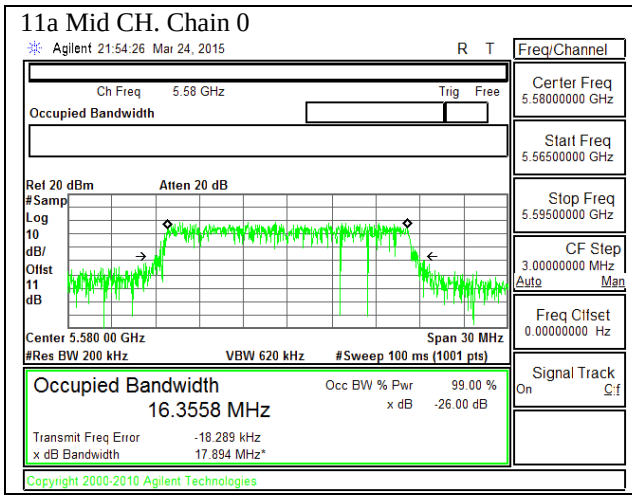



11ac HT80 Mid CH. Chain 1

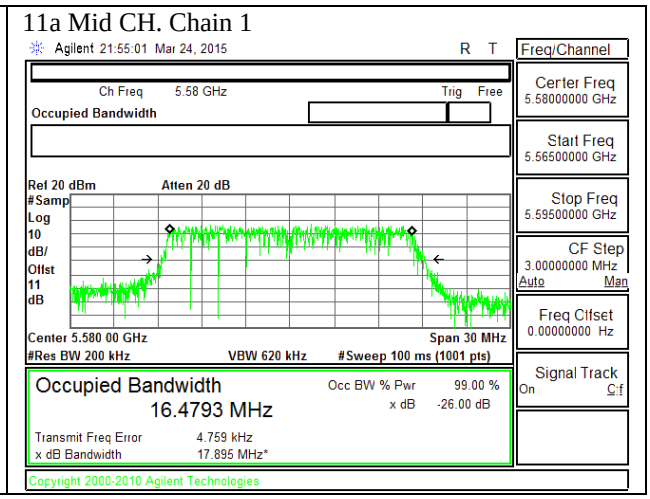



## UNII 5.5GHz

11a Mid CH. Chain 0




11a Mid CH. Chain 1





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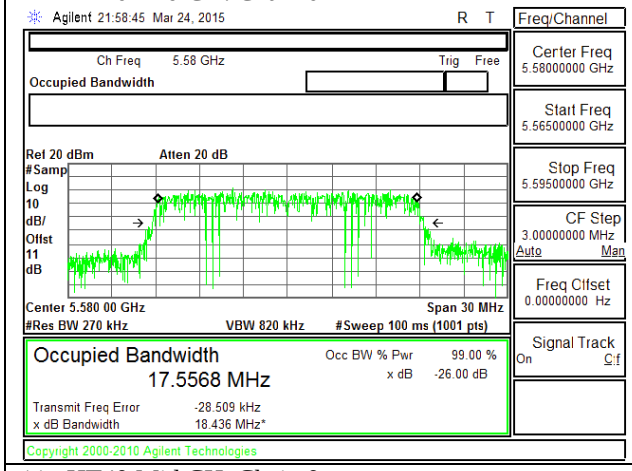
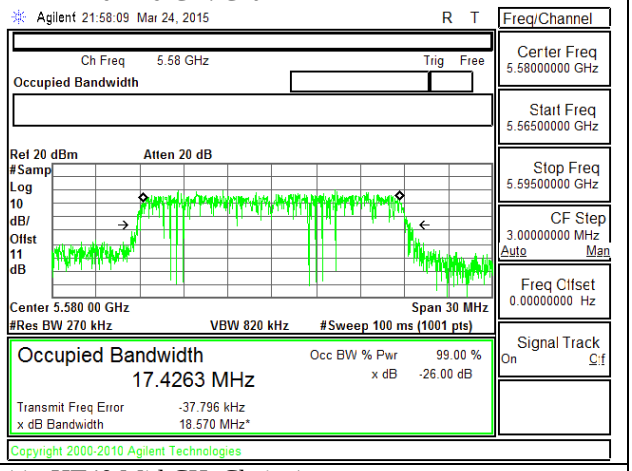
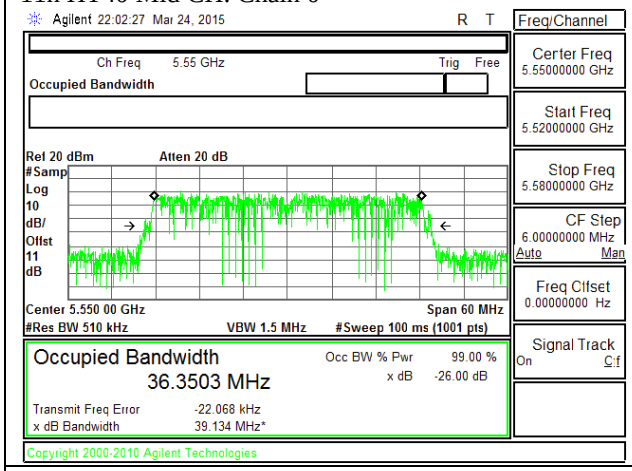
11n HT20 Mid CH. Chain 0



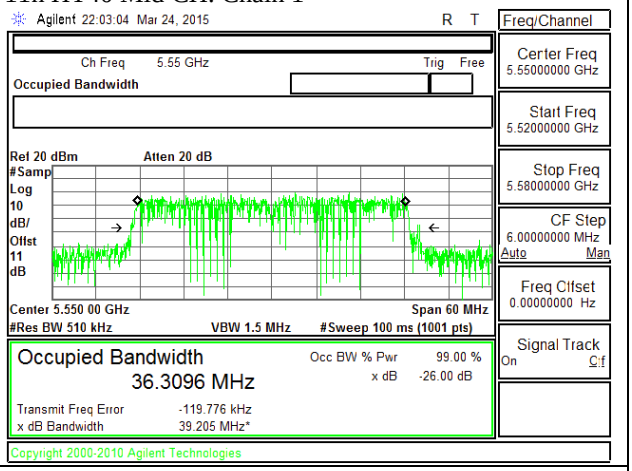

11n HT20 Mid CH. Chain 1



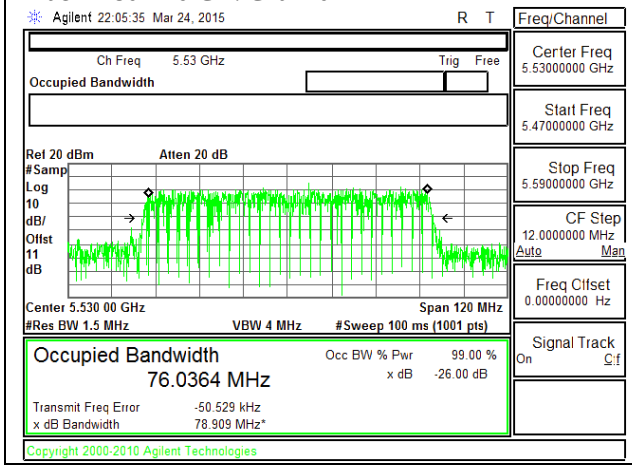

11n HT40 Mid CH. Chain 0



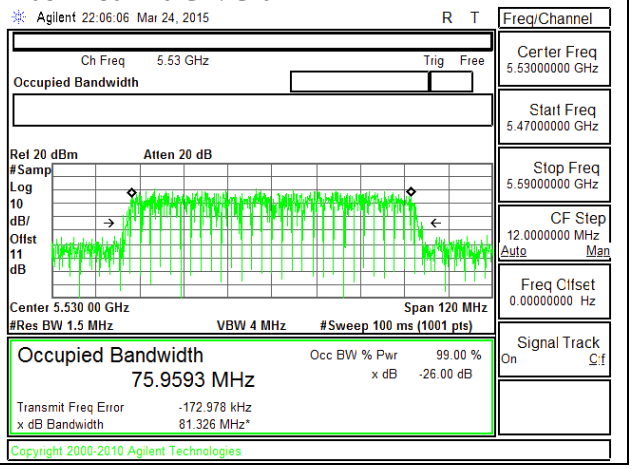

11n HT40 Mid CH. Chain 1




11ac HT80 Mid CH. Chain 0




11ac HT80 Mid CH. Chain 1





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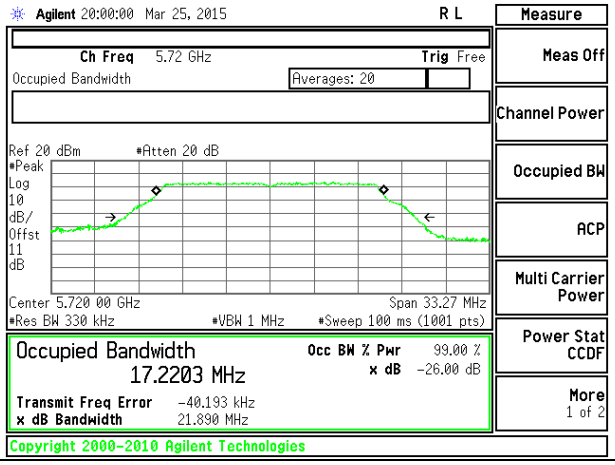
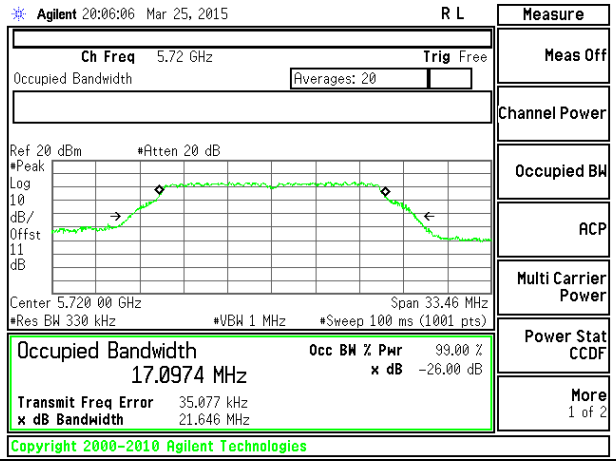
## UNII Straddling Channels

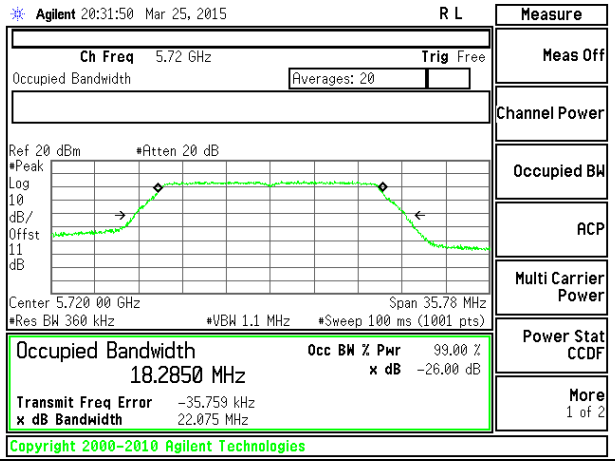
11a CH. 144 Chain 0



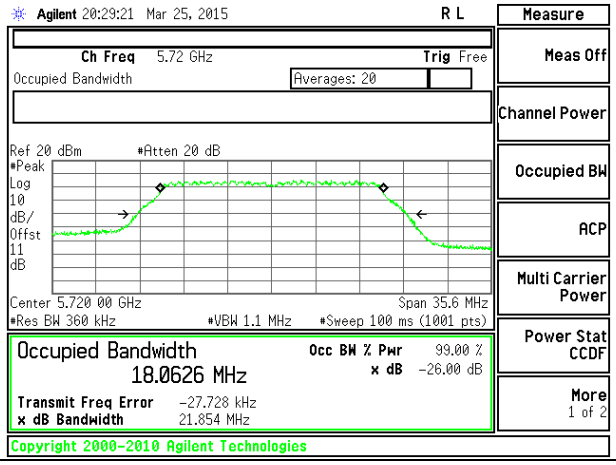

11a CH. 144 Chain 1



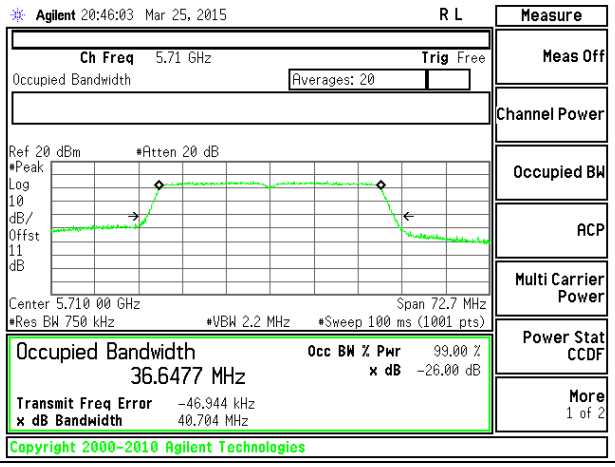

11n HT20 CH. 144 Chain 0



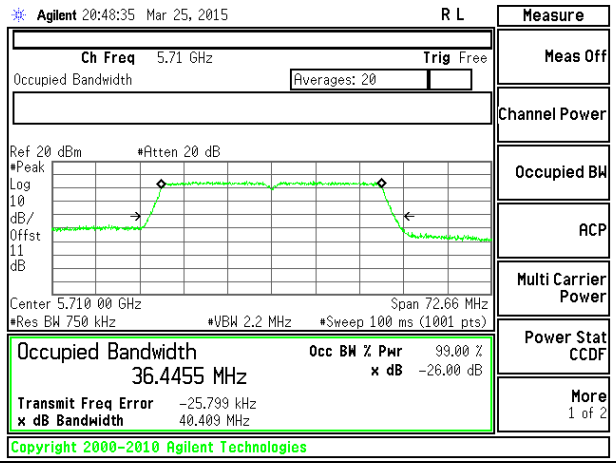

11n HT20 CH. 144 Chain 1




11n HT40 CH. 142 Chain 0




11n HT40 CH. 142 Chain 1





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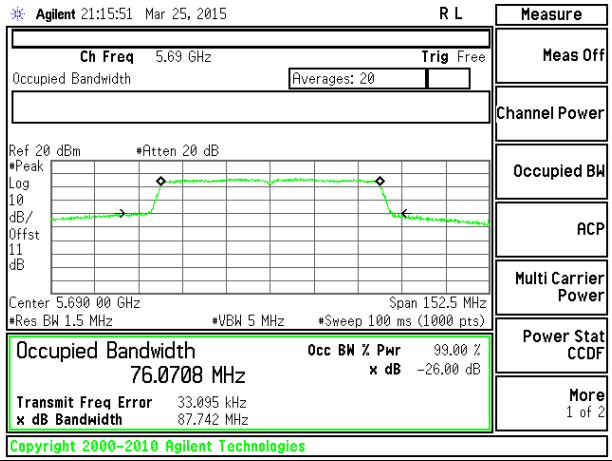
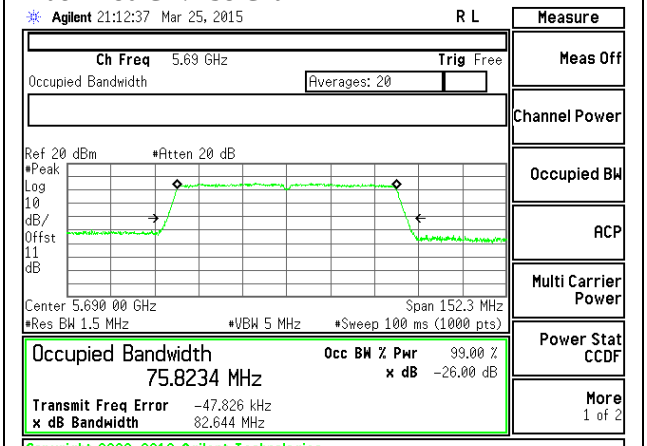
11ac HT80 CH. 138 Chain 0

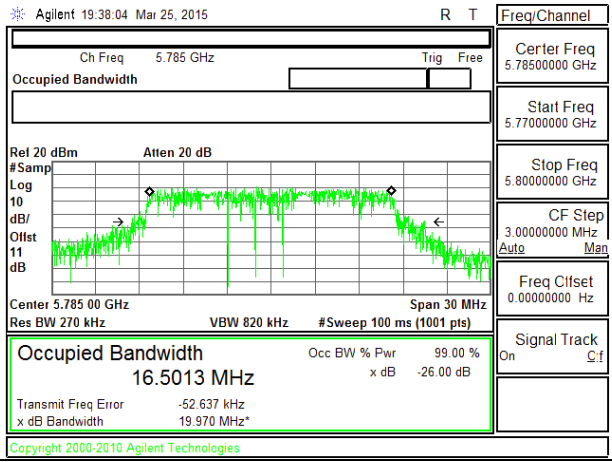



11ac HT80 CH. 138 Chain 1

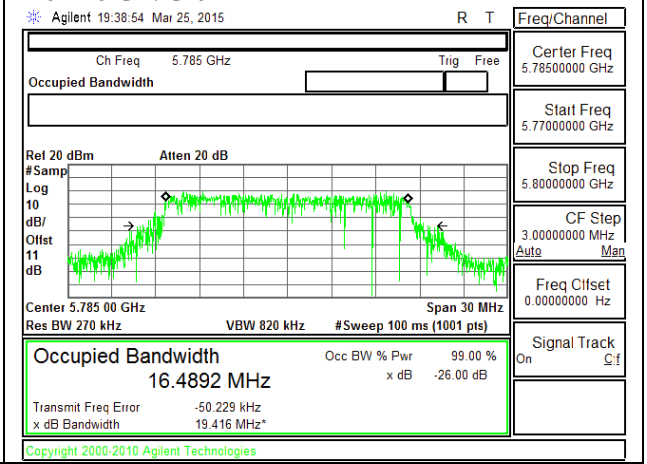



## UNII 5.8GHz

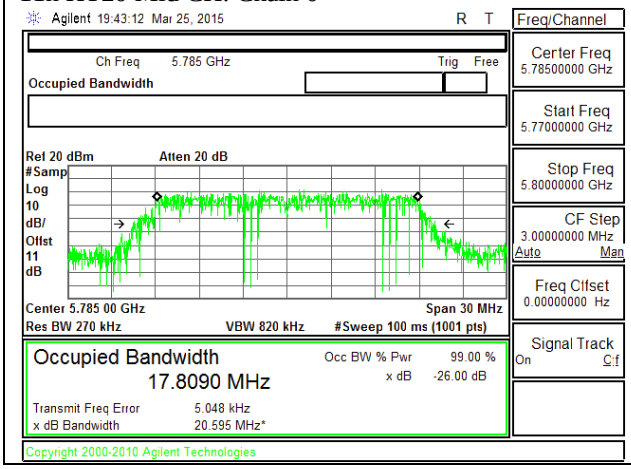
11a Mid CH. Chain 0



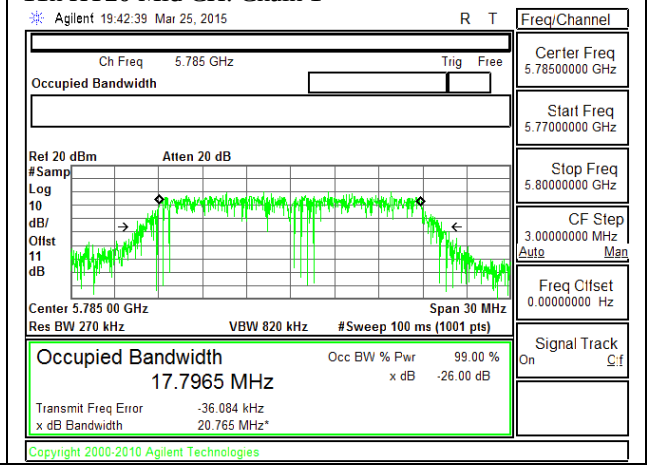

11a Mid CH. Chain 1




11n HT20 Mid CH. Chain 0




11n HT20 Mid CH. Chain 1





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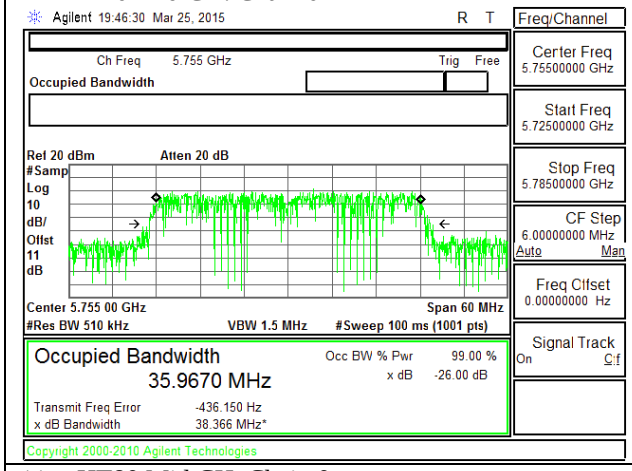
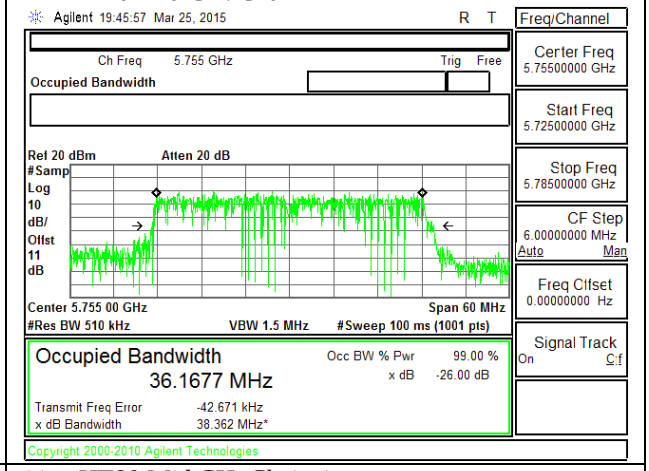
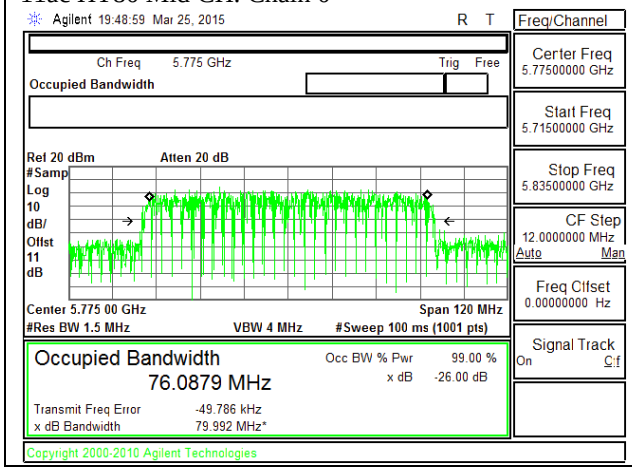
11n HT40 Mid CH. Chain 0



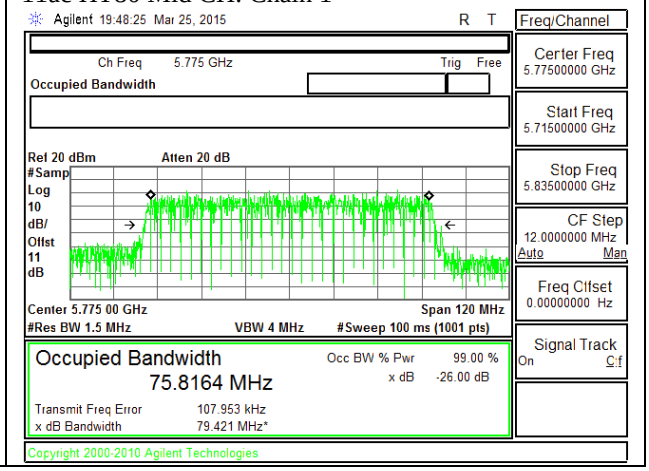

11n HT40 Mid CH. Chain 1




11ac HT80 Mid CH. Chain 0




11ac HT80 Mid CH. Chain 1





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## 10.4. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1) (2) (3)

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 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 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.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands 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 megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.


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**DIRECTIONAL ANTENNA GAIN**

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

5180-5320MHz

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|
| -2.70 | -2.70 | -2.70 |

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

5180-5320MHz

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|
| -2.70 | -2.70 | 0.31 |

5500-5700MHz

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|
| -2.80 | -2.80 | -2.80 |

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

5500-5700MHz

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|
| -2.80 | -2.80 | 0.21 |


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5725-5850MHz

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|
| -3.00 | -3.00 | -3.00 |

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

5725-5850MHz

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|
| -3.00 | -3.00 | 0.01 |


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**RESULTS**

## 10.4.1. 802.11a MODE IN THE 5.2 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5180 | 23.31 | 16.5500 | -2.70 | 0.31 |
| Mid | 5200 | 21.48 | 16.5000 | -2.70 | 0.31 |
| High | 5240 | 18.45 | 16.4400 | -2.70 | 0.31 |

**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 | 24.00 | 22.19 | 26.70 | 24.00 | 11.00 | 10.00 | 10.69 |
| Mid | 5200 | 24.00 | 22.17 | 26.70 | 24.00 | 11.00 | 10.00 | 10.69 |
| High | 5240 | 24.00 | 22.16 | 26.70 | 24.00 | 11.00 | 10.00 | 10.69 |

| 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 | 11.89 | 10.26 | 14.16 | 24.00 | -9.84 |
| Mid | 5200 | 12.05 | 10.47 | 14.34 | 24.00 | -9.66 |
| High | 5240 | 12.05 | 10.32 | 14.28 | 24.00 | -9.72 |

**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 | 0.51 | -1.14 | 2.77 | 11.00 | -8.23 |
| Mid | 5200 | 0.75 | -0.77 | 3.07 | 11.00 | -7.93 |
| High | 5240 | 0.96 | -0.91 | 3.14 | 11.00 | -7.86 |


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## 10.4.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5180 | 21.93 | 17.7600 | -2.70 | 0.31 |
| Mid | 5200 | 21.75 | 17.7600 | -2.70 | 0.31 |
| High | 5240 | 18.87 | 17.4700 | -2.70 | 0.31 |

**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 | 24.00 | 22.49 | 25.19 | 24.00 | 11.00 | 10.00 | 10.69 |
| Mid | 5200 | 24.00 | 22.49 | 25.19 | 24.00 | 11.00 | 10.00 | 10.69 |
| High | 5240 | 23.76 | 22.42 | 25.12 | 23.76 | 11.00 | 10.00 | 10.69 |

| 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 | 11.77 | 10.22 | 14.07 | 24.00 | -9.93 |
| Mid | 5200 | 11.90 | 10.13 | 14.11 | 24.00 | -9.89 |
| High | 5240 | 11.82 | 10.09 | 14.05 | 23.76 | -9.71 |

**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 | 0.18 | -1.43 | 2.46 | 11.00 | -8.54 |
| Mid | 5200 | 0.17 | -1.48 | 2.43 | 11.00 | -8.57 |
| High | 5240 | 0.34 | -1.34 | 2.59 | 11.00 | -8.41 |


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## 10.4.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5190 | 40.02 | 36.3900 | -2.70 | 0.31 |
| High | 5230 | 39.96 | 36.4000 | -2.70 | 0.31 |

**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 | 24.00 | 23.00 | 25.70 | 26.70 | 11.00 | 10.00 | 10.69 |
| High | 5230 | 24.00 | 23.00 | 25.70 | 26.70 | 11.00 | 10.00 | 10.69 |

| 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 | 11.98 | 9.97 | 14.10 | 24.00 | -9.90 |
| High | 5230 | 11.86 | 9.71 | 13.92 | 24.00 | -10.08 |

**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 | 5190 | -2.70 | -4.54 | -0.51 | 11.00 | -11.51 |
| High | 5230 | -2.82 | -4.89 | -0.72 | 11.00 | -11.72 |


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## 10.4.4. 802.11ac HT80 MODE IN THE 5.2 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5210 | 81.60 | 76.3300 | -2.70 | 0.31 |

**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 | 5210 | 24.00 | 23.00 | 25.70 | 26.70 | 11.00 | 10.00 | 10.69 |

| Duty Cycle CF (dB) | 0.13 | 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 | 5210 | 11.93 | 9.99 | 14.20 | 24.00 | -9.80 |

**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 | 5210 | -5.59 | -7.59 | -3.34 | 11.00 | -14.34 |


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## 10.4.5. 802.11a MODE IN THE 5.3 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5260 | 18.57 | 16.4200 | -2.70 | 0.31 |
| Mid | 5300 | 21.81 | 16.4500 | -2.70 | 0.31 |
| High | 5320 | 21.57 | 16.4900 | -2.70 | 0.31 |

**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 | 23.15 | 29.15 | 26.70 | 11.00 | 11.00 | 10.69 |
| Mid | 5300 | 24.00 | 23.16 | 29.16 | 26.70 | 11.00 | 11.00 | 10.69 |
| High | 5320 | 24.00 | 23.17 | 29.17 | 26.70 | 11.00 | 11.00 | 10.69 |

| 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 | 12.40 | 10.14 | 14.43 | 24.00 | -9.57 |
| Mid | 5300 | 12.44 | 10.11 | 14.44 | 24.00 | -9.56 |
| High | 5320 | 12.37 | 10.18 | 14.42 | 24.00 | -9.58 |

**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 | 1.07 | -1.18 | 3.10 | 11.00 | -7.90 |
| Mid | 5300 | 1.03 | -1.28 | 3.04 | 11.00 | -7.96 |
| High | 5320 | 1.00 | -1.19 | 3.05 | 11.00 | -7.95 |


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## 10.4.6. 802.11n HT20 MODE IN THE 5.3 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5260 | 19.02 | 17.4700 | -2.70 | 0.31 |
| Mid | 5300 | 21.78 | 17.8500 | -2.70 | 0.31 |
| High | 5320 | 21.63 | 17.7300 | -2.70 | 0.31 |

**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 | 23.42 | 29.42 | 26.70 | 11.00 | 11.00 | 10.69 |
| Mid | 5300 | 24.00 | 23.52 | 29.52 | 26.70 | 11.00 | 11.00 | 10.69 |
| High | 5320 | 24.00 | 23.49 | 29.49 | 26.70 | 11.00 | 11.00 | 10.69 |

| 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 | 12.28 | 10.00 | 14.30 | 24.00 | -9.70 |
| Mid | 5300 | 12.21 | 9.87 | 14.20 | 24.00 | -9.80 |
| High | 5320 | 12.47 | 10.04 | 14.43 | 24.00 | -9.57 |

**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 | 5260 | 0.73 | -1.55 | 2.75 | 11.00 | -8.25 |
| Mid | 5300 | 0.50 | -1.71 | 2.54 | 11.00 | -8.46 |
| High | 5320 | 0.85 | -1.61 | 2.80 | 11.00 | -8.20 |


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## 10.4.7. 802.11n HT40 MODE IN THE 5.3 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5270 | 39.90 | 36.1600 | -2.70 | 0.31 |
| High | 5310 | 40.26 | 36.2300 | -2.70 | 0.31 |

**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 | 26.70 | 11.00 | 11.00 | 10.69 |
| High | 5310 | 24.00 | 24.00 | 30.00 | 26.70 | 11.00 | 11.00 | 10.69 |

| 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 | 12.37 | 10.13 | 14.40 | 24.00 | -9.60 |
| High | 5310 | 12.32 | 9.80 | 14.25 | 24.00 | -9.75 |

**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 | -2.01 | -4.38 | -0.02 | 11.00 | -11.02 |
| High | 5310 | -2.29 | -4.82 | -0.36 | 11.00 | -11.36 |


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## 10.4.8. 802.11ac HT80 MODE IN THE 5.3 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW | Min 99% BW | Directional Gain for Power | Directional Gain for PPSD |
|---|---|---|---|---|---|
| Low | 5290 | 81.60 | 76.2300 | -2.70 | 0.31 |

**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 | 5290 | 24.00 | 24.00 | 30.00 | 26.70 | 11.00 | 11.00 | 10.69 |

| Duty Cycle CF (dB) | 0.13 | 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 | 5290 | 12.09 | 9.86 | 14.26 | 24.00 | -9.74 |

**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 | 5290 | -5.53 | -7.61 | -3.31 | 11.00 | -14.31 |


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## 10.4.9. 802.11a MODE IN THE 5.5 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5500 | 21.63 | 16.4500 | -2.80 | 0.21 |
| Mid | 5580 | 18.63 | 16.4700 | -2.80 | 0.21 |
| High | 5700 | 21.63 | 16.4900 | -2.80 | 0.21 |

**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 | 23.16 | 29.16 | 26.80 | 11.00 | 11.00 | 10.79 |
| Mid | 5580 | 24.00 | 23.17 | 29.17 | 26.80 | 11.00 | 11.00 | 10.79 |
| High | 5700 | 24.00 | 23.17 | 29.17 | 26.80 | 11.00 | 11.00 | 10.79 |

| 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 | 11.73 | 9.82 | 13.89 | 24.00 | -10.11 |
| Mid | 5580 | 12.19 | 10.93 | 14.62 | 24.00 | -9.38 |
| High | 5700 | 12.22 | 11.38 | 14.83 | 24.00 | -9.17 |

**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 | 0.52 | -1.48 | 2.64 | 11.00 | -8.36 |
| Mid | 5580 | 0.92 | -0.38 | 3.33 | 11.00 | -7.67 |
| High | 5700 | 0.85 | 0.08 | 3.49 | 11.00 | -7.51 |


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## 10.4.10. 802.11n HT20 MODE IN THE 5.5 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5500 | 21.93 | 17.8800 | -2.80 | 0.21 |
| Mid | 5580 | 19.05 | 17.5500 | -2.80 | 0.21 |
| High | 5700 | 22.08 | 17.7500 | -2.80 | 0.21 |

**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 | 23.52 | 29.52 | 26.80 | 11.00 | 11.00 | 10.79 |
| Mid | 5580 | 24.00 | 23.44 | 29.44 | 26.80 | 11.00 | 11.00 | 10.79 |
| High | 5700 | 24.00 | 23.49 | 29.49 | 26.80 | 11.00 | 11.00 | 10.79 |

| 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 | 11.90 | 9.97 | 14.05 | 24.00 | -9.95 |
| Mid | 5580 | 11.85 | 10.63 | 14.29 | 24.00 | -9.71 |
| High | 5700 | 12.50 | 11.56 | 15.07 | 24.00 | -8.93 |

**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 | 0.30 | -1.56 | 2.48 | 11.00 | -8.52 |
| Mid | 5580 | 0.26 | -0.86 | 2.75 | 11.00 | -8.25 |
| High | 5700 | 0.82 | -0.11 | 3.39 | 11.00 | -7.61 |


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## 10.4.11. 802.11n HT40 MODE IN THE 5.5 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5510 | 40.02 | 36.4200 | -2.80 | 0.21 |
| Mid | 5550 | 40.20 | 36.3500 | -2.80 | 0.21 |
| High | 5670 | 40.20 | 36.3100 | -2.80 | 0.21 |

**Limits**

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

| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power & 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 | 11.92 | 9.87 | 14.03 | 24.00 | -9.97 |
| Mid | 5550 | 12.00 | 10.34 | 14.25 | 24.00 | -9.75 |
| High | 5670 | 12.38 | 11.13 | 14.81 | 24.00 | -9.19 |

**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 | -2.76 | -4.70 | -0.61 | 11.00 | -11.61 |
| Mid | 5550 | -2.56 | -4.28 | -0.33 | 11.00 | -11.33 |
| High | 5670 | -2.29 | -3.44 | 0.18 | 11.00 | -10.82 |


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## 10.4.12. 802.11ac HT80 MODE IN THE 5.5 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5530 | 81.84 | 76.0300 | -2.80 | 0.21 |

**Limits**

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

| Duty Cycle CF (dB) | 0.13 | 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 | 5530 | 11.83 | 9.93 | 14.12 | 24.00 | -9.88 |

**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 | 5530 | -5.84 | -7.81 | -3.57 | 11.00 | -14.57 |


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## 10.4.13. 802.11a MODE STRADDLE CHANNEL 144

**UNII-2C BAND**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| 144 | 5720 | 15.60 | 13.5500 | -2.80 | 0.21 |

**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) |
|---|---|---|---|---|---|---|---|---|
| 144 | 5720 | 22.93 | 22.32 | 28.32 | 22.32 | 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) |
|---|---|---|---|---|---|---|
| 144 | 5720 | 11.12 | 10.46 | 13.81 | 22.32 | -8.51 |

**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) |
|---|---|---|---|---|---|---|
| 144 | 5720 | 0.40 | -0.31 | 3.07 | 11.00 | -7.93 |


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**UNII-3 BAND**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| 144 | 5720 | 5.60 | 3.5500 | -2.80 | 0.21 |

**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) |
|---|---|---|---|---|---|---|---|---|
| 144 | 5720 | 18.48 | 16.50 | 22.50 | 16.50 | 11.00 | 11.00 | 11.00 |

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

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|
| 144 | 5720 | 5.70 | 4.72 | 8.25 | 16.50 | -8.25 |

**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) |
|---|---|---|---|---|---|---|
| 144 | 5720 | -2.52 | -3.59 | -0.01 | 11.00 | -11.01 |


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## AVERAGE OUTPUT POWER (WHOLE FUNDAMENTAL)

### Results

| Frequency | Power, Chain 0 (dBm) | Power, Chain 1 (dBm) | Output Power (dBm) | Output Power (mW) |
|---|---|---|---|---|
| **5.6 GHz band, 2TX (Channels overlapping UNII-2 and UNII-3 bands)** | | | | |
| 5720 (UNII-2 portion) | 11.12 | 10.46 | 13.813 | 24.06 |
| 5720 (UNII-3 portion) | 5.70 | 4.72 | 8.248 | 6.68 |
| 5720 (Whole signal) | 11.40 | 9.40 | 13.524 | 22.51 |


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## 10.4.14. 802.11n HT20 MODE STRADDLE CHANNEL 144

**UNII-2C BAND**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| 144 | 5720 | 15.75 | 14.0500 | -2.80 | 0.21 |

**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) |
|---|---|---|---|---|---|---|---|---|
| 144 | 5720 | 22.97 | 22.48 | 28.48 | 22.48 | 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) |
|---|---|---|---|---|---|---|
| 144 | 5720 | 11.11 | 10.42 | 13.79 | 22.48 | -8.69 |

**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) |
|---|---|---|---|---|---|---|
| 144 | 5720 | 0.15 | -0.53 | 2.83 | 11.00 | -8.17 |


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**UNII-3 BAND**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| 144 | 5720 | 5.75 | 4.0500 | -2.80 | 0.21 |

**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) |
|---|---|---|---|---|---|---|---|---|
| 144 | 5720 | 18.60 | 17.07 | 23.07 | 17.07 | 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) |
|---|---|---|---|---|---|---|
| 144 | 5720 | 5.70 | 4.72 | 8.25 | 17.07 | -8.82 |

**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) |
|---|---|---|---|---|---|---|
| 144 | 5720 | -2.52 | -3.59 | -0.01 | 11.00 | -11.01 |


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## AVERAGE OUTPUT POWER (WHOLE FUNDAMENTAL

### Results

| Frequency | Power, Chain 0 (dBm) | Power, Chain 1 (dBm) | Output Power (dBm) | Output Power (mW) |
|---|---|---|---|---|
| **5.6 GHz band, 2TX (Channels overlapping UNII-2 and UNII-3 bands)** | | | | |
| 5720 (UNII-2 portion) | 11.11 | 10.42 | 13.789 | 23.93 |
| 5720 (UNII-3 portion) | 5.70 | 4.72 | 8.248 | 6.68 |
| 5720 (Whole signal) | 11.20 | 9.20 | 13.324 | 21.50 |


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## 10.4.15. 802.11n HT40 MODE STRADDLE CHANNEL 142

**UNII-2C BAND**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| 142 | 5710 | 34.90 | 33.2000 | -2.80 | 0.21 |

**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) |
|---|---|---|---|---|---|---|---|---|
| 142 | 5710 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |

| Duty Cycle CF (dB) | 0.12 | 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) |
|---|---|---|---|---|---|---|
| 142 | 5710 | 11.71 | 10.67 | 14.35 | 24.00 | -9.65 |

**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) |
|---|---|---|---|---|---|---|
| 142 | 5710 | -2.80 | -3.86 | -0.17 | 11.00 | -11.17 |


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**UNII-3 BAND**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| 142 | 5710 | 4.90 | 3.2000 | -2.80 | 0.21 |

**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) |
|---|---|---|---|---|---|---|---|---|
| 142 | 5710 | 17.90 | 16.05 | 22.05 | 16.05 | 11.00 | 11.00 | 11.00 |

| | | |
|---|---|---|
| Duty Cycle CF (dB) | 0.12 | 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) |
|---|---|---|---|---|---|---|
| 142 | 5710 | 1.41 | 0.39 | 4.06 | 16.05 | -11.99 |

**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) |
|---|---|---|---|---|---|---|
| 142 | 5710 | -6.03 | -7.04 | -3.38 | 11.00 | -14.38 |


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## AVERAGE OUTPUT POWER (WHOLE FUNDAMENTAL

### Results

| Frequency | Power, Chain 0 (dBm) | Power, Chain 1 (dBm) | Output Power (dBm) | Output Power (mW) |
|---|---|---|---|---|
| **5.6 GHz band, 2TX (Channels overlapping UNII-2 and UNII-3 bands)** | | | | |
| 5710 (UNII-2 portion) | 11.71 | 10.67 | 14.351 | 27.24 |
| 5710 (UNII-3 portion) | 1.41 | 0.39 | 4.060 | 2.55 |
| 5710 (Whole signal) | 11.40 | 9.20 | 13.568 | 22.74 |


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## 10.4.16. 802.11ac80 MODE STRADDLE CHANNEL 138

**UNII-2C BAND**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| 138 | 5690 | 56.00 | 52.9000 | -2.80 | 0.21 |

**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) |
|---|---|---|---|---|---|---|---|---|
| 138 | 5690 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |

| Duty Cycle CF (dB) | 0.24 | 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) |
|---|---|---|---|---|---|---|
| 138 | 5690 | 11.63 | 10.54 | 14.37 | 24.00 | -9.63 |

**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) |
|---|---|---|---|---|---|---|
| 138 | 5690 | -5.87 | -6.97 | -3.13 | 11.00 | -14.13 |


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**UNII-3 BAND**

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| 138 | 5690 | 26.00 | 22.9000 | -2.80 | 0.21 |

**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) |
|---|---|---|---|---|---|---|---|---|
| 138 | 5690 | 24.00 | 24.00 | 30.00 | 24.00 | 11.00 | 11.00 | 11.00 |

| | | |
|---|---|---|
| Duty Cycle CF (dB) | 0.24 | 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) |
|---|---|---|---|---|---|---|
| 138 | 5690 | -2.34 | -3.60 | 0.32 | 24.00 | -23.68 |

**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) |
|---|---|---|---|---|---|---|
| 138 | 5690 | -9.64 | -10.74 | -6.90 | 11.00 | -17.90 |


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## AVERAGE OUTPUT POWER (WHOLE FUNDAMENTAL

### Results

| Frequency | Power, Chain 0 (dBm) | Power, Chain 1 (dBm) | Output Power (dBm) | Output Power (mW) |
|---|---|---|---|---|
| **5.6 GHz band, 2TX (Channels overlapping UNII-2 and UNII-3 bands)** | | | | |
| 5690 (UNII-2 portion) | 11.63 | 10.54 | 14.249 | 26.60 |
| 5690 (UNII-3 portion) | -2.34 | -3.60 | 0.326 | 1.08 |
| 5690 (Whole signal) | 11.10 | 9.10 | 13.464 | 22.20 |


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## 10.4.17. 802.11a MODE IN THE 5.8 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5745 | 21.72 | 16.6800 | -3.00 | 0.01 |
| Mid | 5785 | 21.60 | 16.5000 | -3.00 | 0.01 |
| High | 5825 | 21.66 | 16.7500 | -3.00 | 0.01 |

**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 | 5745 | 30.00 | 29.22 | 35.22 | 29.22 | 30.00 | 17.00 | 17.00 |
| Mid | 5785 | 30.00 | 29.17 | 35.17 | 29.17 | 30.00 | 17.00 | 17.00 |
| High | 5825 | 30.00 | 29.24 | 35.24 | 29.24 | 30.00 | 17.00 | 17.00 |

| 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 | 5745 | 12.50 | 10.86 | 14.77 | 30.00 | -15.23 |
| Mid | 5785 | 12.49 | 10.87 | 14.77 | 30.00 | -15.23 |
| High | 5825 | 12.63 | 11.01 | 14.90 | 30.00 | -15.10 |

**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 | 5745 | -1.11 | -3.12 | 1.01 | 17.00 | -15.99 |
| Mid | 5785 | -1.58 | -2.97 | 0.79 | 17.00 | -16.21 |
| High | 5825 | -1.07 | -2.59 | 1.25 | 17.00 | -15.75 |


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## 10.4.18. 802.11n HT20 MODE IN THE 5.8 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5745 | 21.66 | 17.7300 | -3.00 | 0.01 |
| Mid | 5785 | 22.20 | 17.8000 | -3.00 | 0.01 |
| High | 5825 | 21.78 | 17.7700 | -3.00 | 0.01 |

**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 | 5745 | 30.00 | 29.49 | 35.49 | 29.49 | 30.00 | 17.00 | 17.00 |
| Mid | 5785 | 30.00 | 29.50 | 35.50 | 29.50 | 30.00 | 17.00 | 17.00 |
| High | 5825 | 30.00 | 29.50 | 35.50 | 29.50 | 30.00 | 17.00 | 17.00 |

| 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 | 5745 | 12.55 | 11.05 | 14.88 | 29.49 | -14.61 |
| Mid | 5785 | 12.62 | 10.94 | 14.87 | 29.50 | -14.63 |
| High | 5825 | 12.53 | 11.00 | 14.84 | 29.50 | -14.65 |

**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 | 5745 | -1.71 | -3.05 | 0.68 | 17.00 | -16.32 |
| Mid | 5785 | -1.58 | -2.87 | 0.83 | 17.00 | -16.17 |
| High | 5825 | -1.68 | -2.96 | 0.73 | 17.00 | -16.27 |


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## 10.4.19. 802.11n HT40 MODE IN THE 5.8 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5755 | 40.0 | 36.1600 | -3.00 | 0.01 |
| High | 5795 | 39.9 | 36.3600 | -3.00 | 0.01 |

**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 | 5755 | 30.00 | 30.00 | 36.00 | 30.00 | 30.00 | 17.00 | 17.00 |
| High | 5795 | 30.00 | 30.00 | 36.00 | 30.00 | 30.00 | 17.00 | 17.00 |

| 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 | 5755 | 12.20 | 10.74 | 14.54 | 30.00 | -15.46 |
| High | 5795 | 12.13 | 10.57 | 14.43 | 30.00 | -15.57 |

**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 | 5755 | -4.74 | -6.53 | -2.53 | 17.00 | -19.53 |
| High | 5795 | -4.98 | -6.66 | -2.73 | 17.00 | -19.73 |


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## 10.4.20. 802.11ac HT80 MODE IN THE 5.8 GHz BAND

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain for Power (dBi) | Directional Gain for PPSD (dBi) |
|---|---|---|---|---|---|
| Low | 5775 | 81.96 | 76.0800 | -3.00 | 0.01 |

**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 | 5775 | 30.00 | 30.00 | 36.00 | 30.00 | 30.00 | 17.00 | 17.00 |

| Duty Cycle CF (dB) | 0.13 | 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 | 5775 | 12.22 | 10.66 | 14.65 | 30.00 | -15.35 |

**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 | 5775 | -8.00 | -9.70 | -5.63 | 17.00 | -22.63 |


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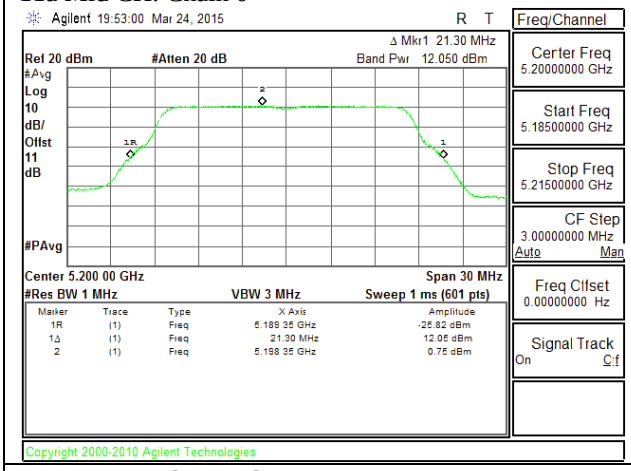
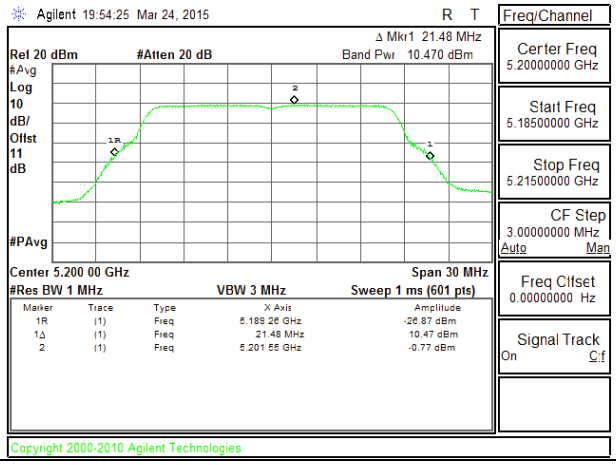
## 10.4.21. OUTPUT POWER AND PPSD PLOTS

### UNII 5.2GHz

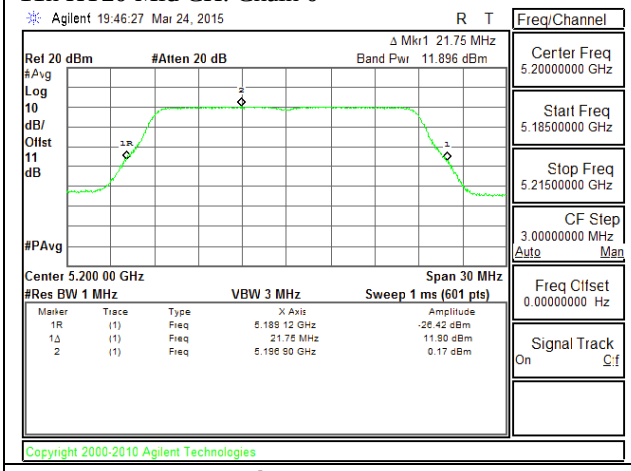
11a Mid CH. Chain 0



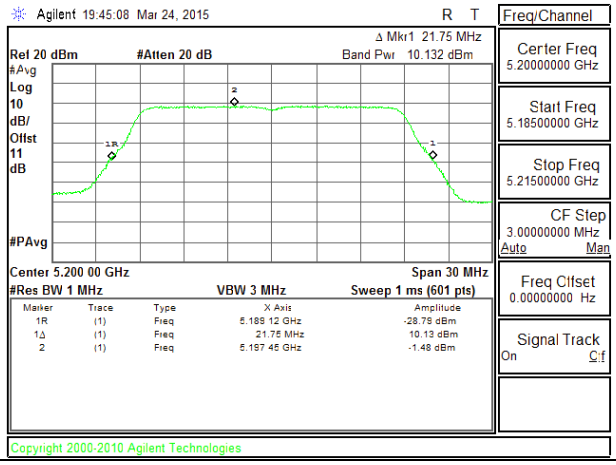

11a Mid CH. Chain 1



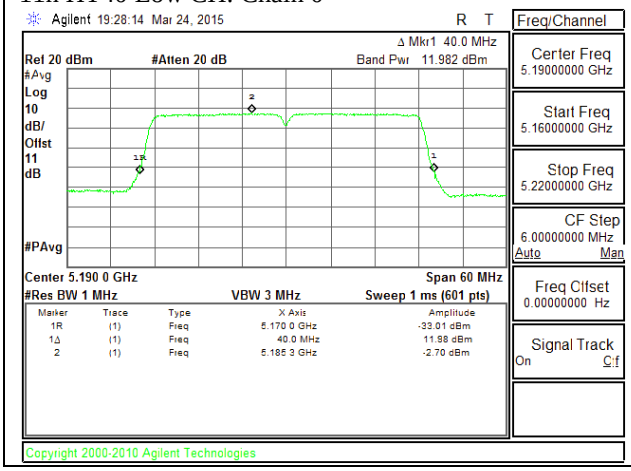

11n HT20 Mid CH. Chain 0



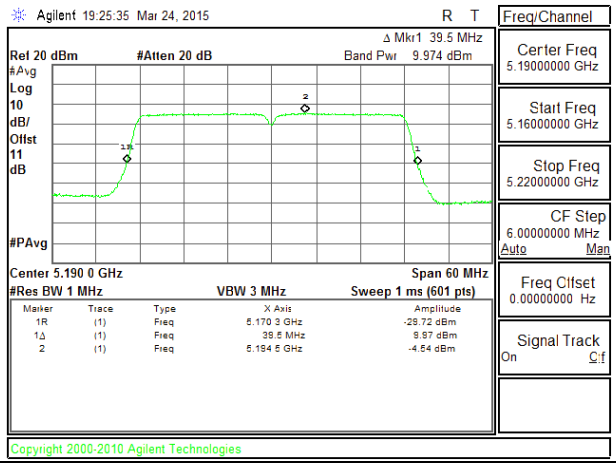

11n HT20 Mid CH. Chain 1




11n HT40 Low CH. Chain 0




11n HT40 Low CH. Chain 1





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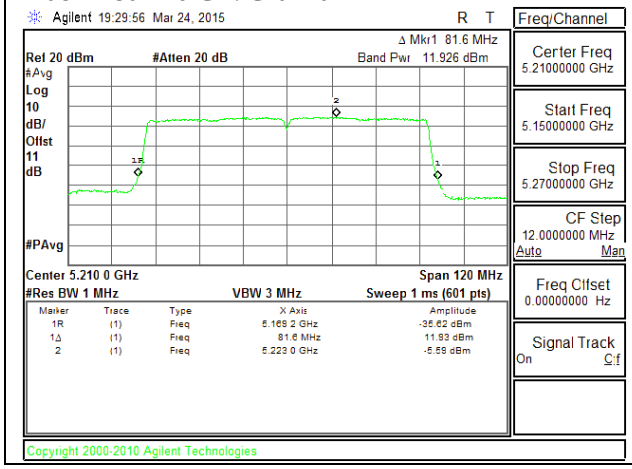
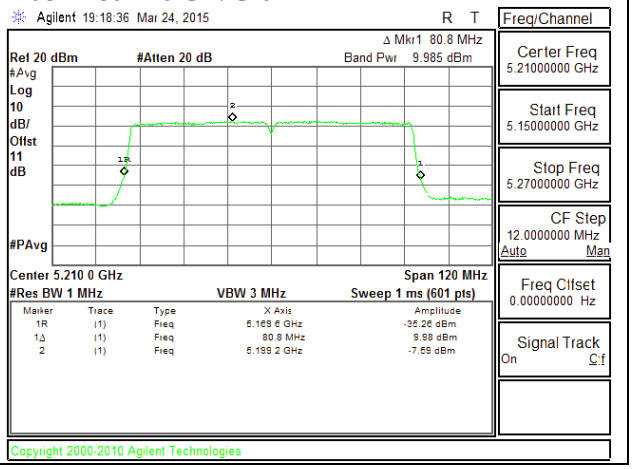
11ac HT80 Mid CH. Chain 0

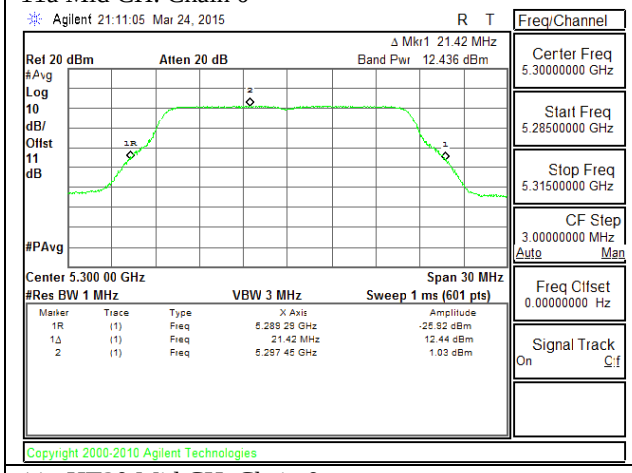



11ac HT80 Mid CH. Chain 1

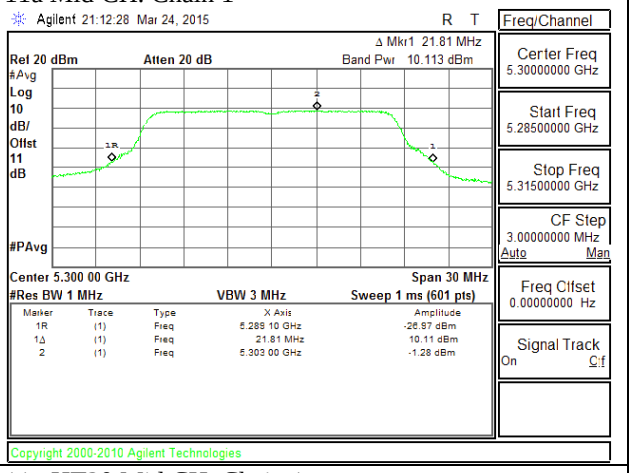



## UNII 5.3GHz

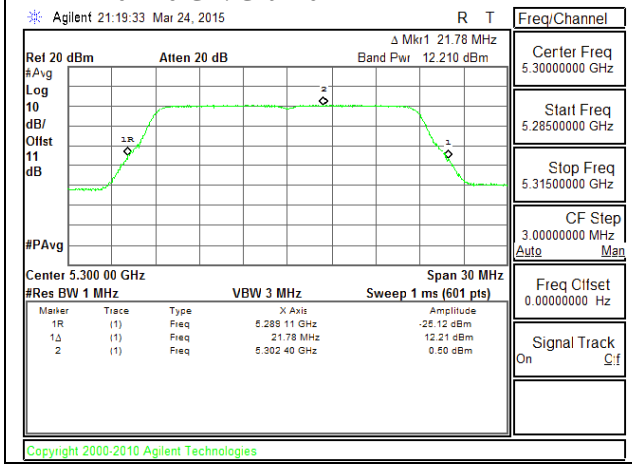
11a Mid CH. Chain 0



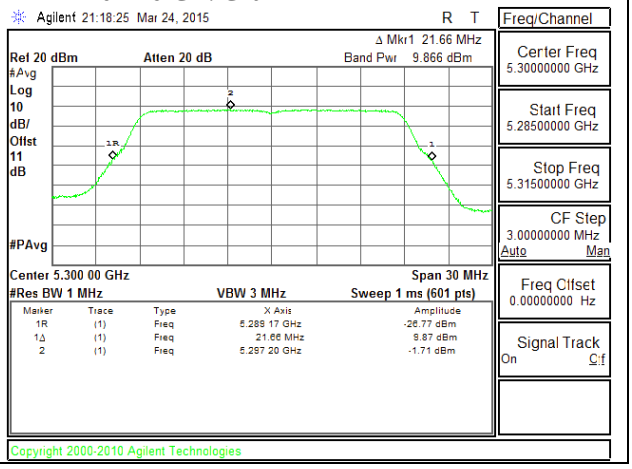

11a Mid CH. Chain 1




11n HT20 Mid CH. Chain 0




11n HT20 Mid CH. Chain 1





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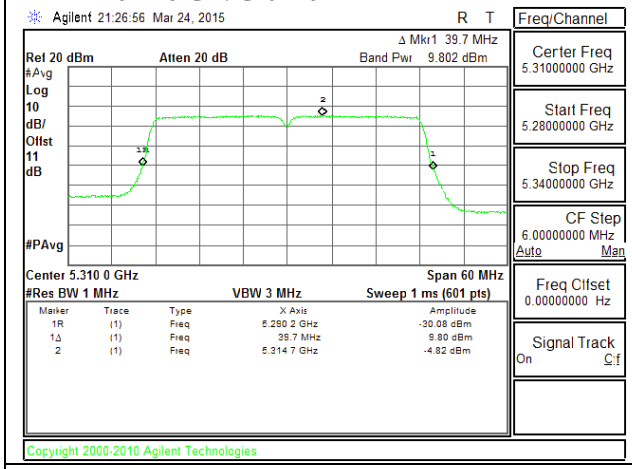
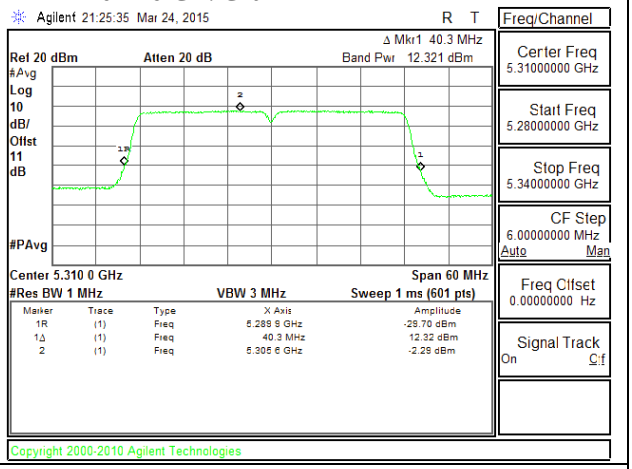
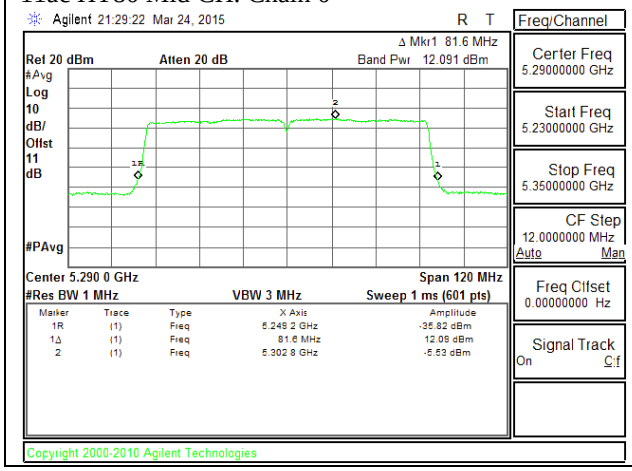
11n HT40 Mid CH. Chain 0



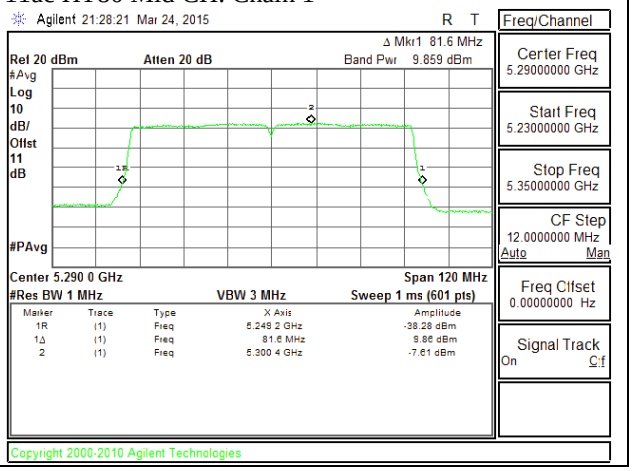

11n HT40 Mid CH. Chain 1




11ac HT80 Mid CH. Chain 0

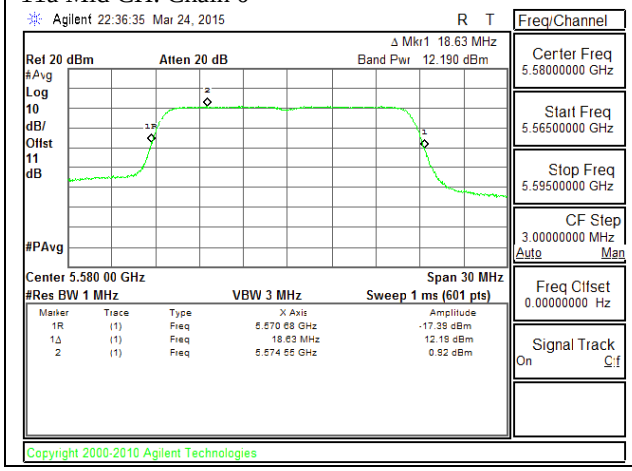



11ac HT80 Mid CH. Chain 1

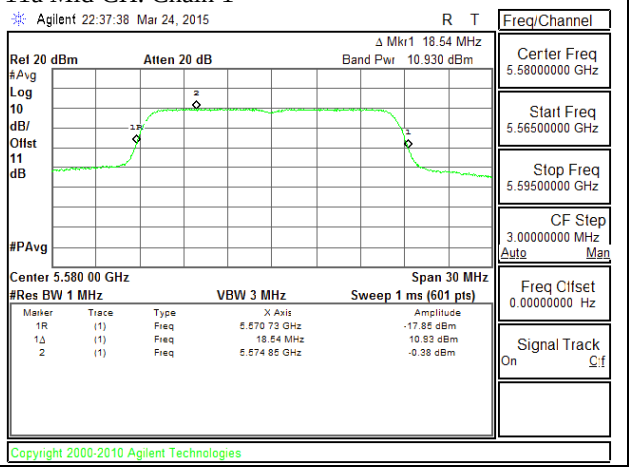



## UNII 5.5GHz

11a Mid CH. Chain 0




11a Mid CH. Chain 1





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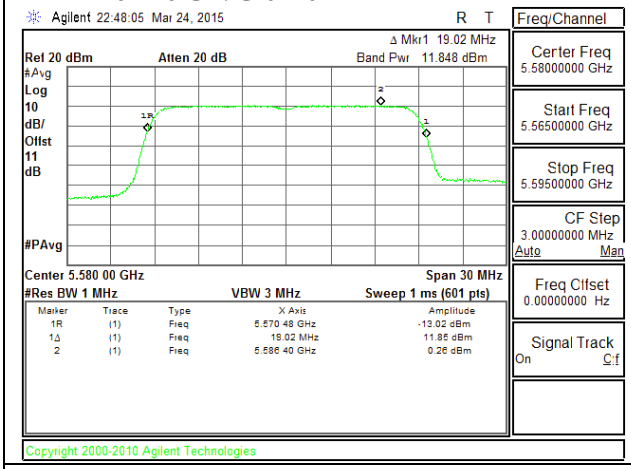
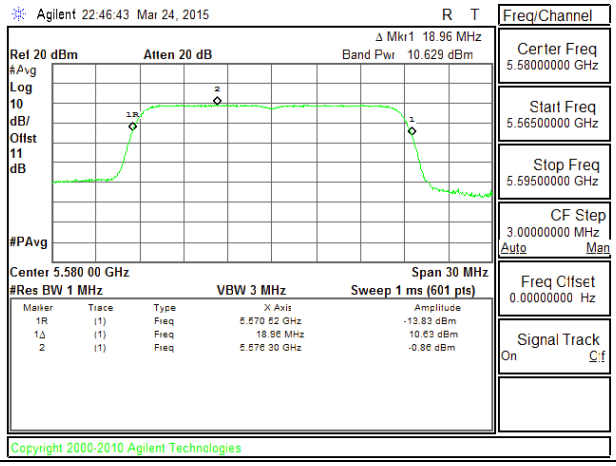
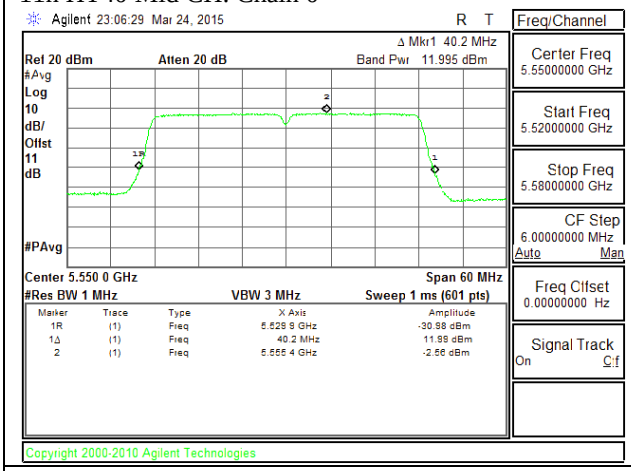
11n HT20 Mid CH. Chain 0



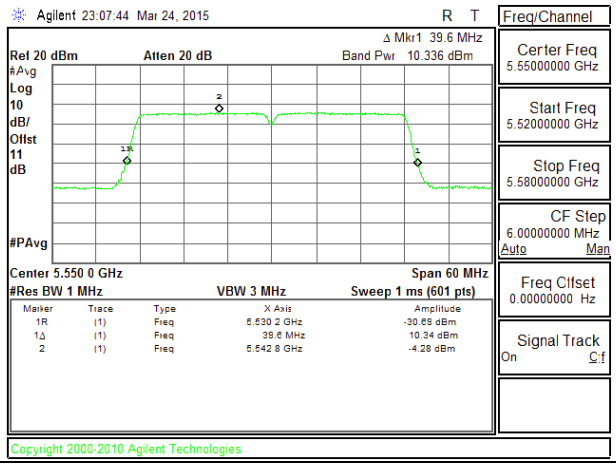

11n HT20 Mid CH. Chain 1



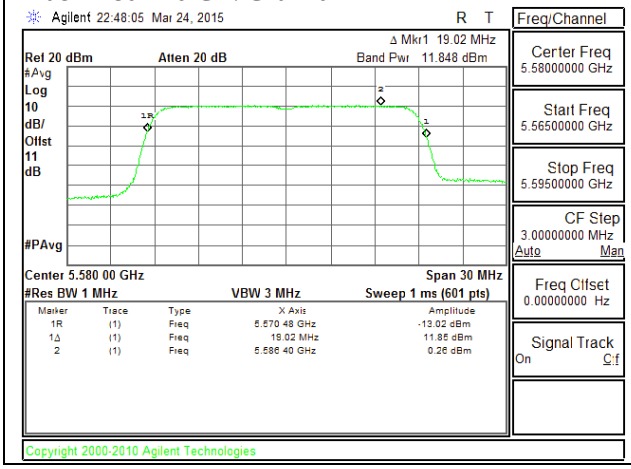

11n HT40 Mid CH. Chain 0



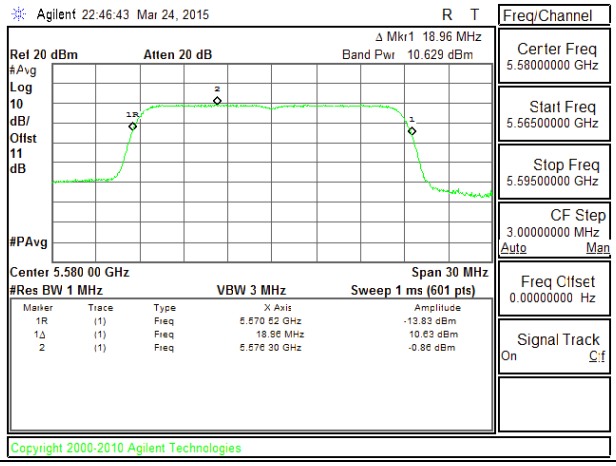

11n HT40 Mid CH. Chain 1




11ac HT80 Mid CH. Chain 0




11ac HT80 Mid CH. Chain 1





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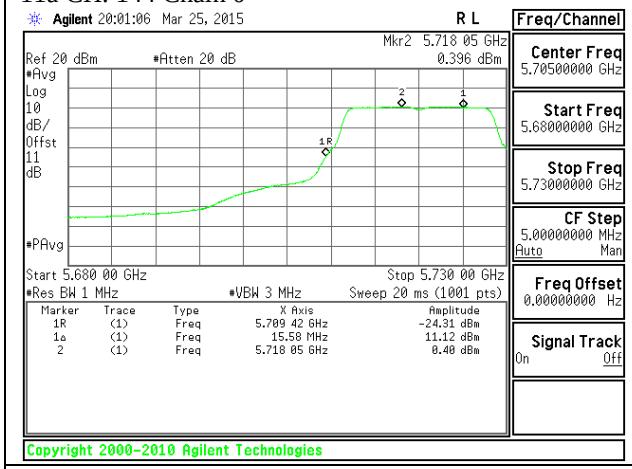
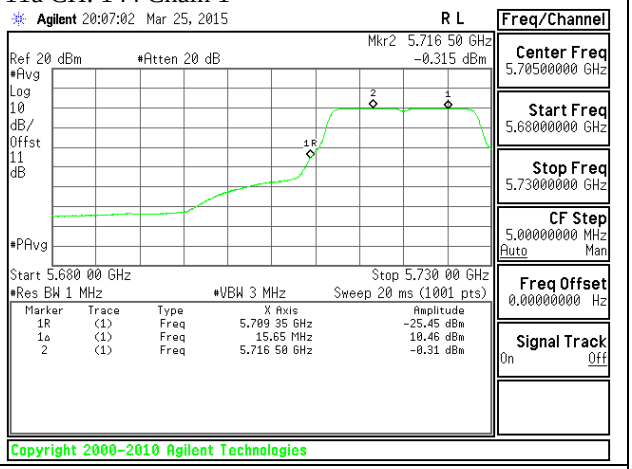
# UNII STRADDLE CHANNEL

## UNII-2C BAND

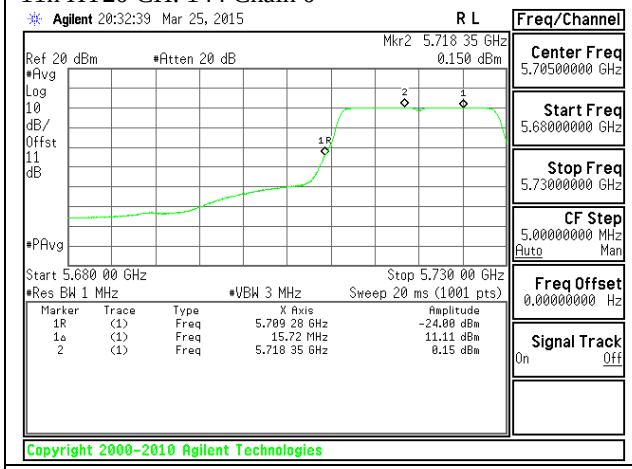
11a CH. 144 Chain 0



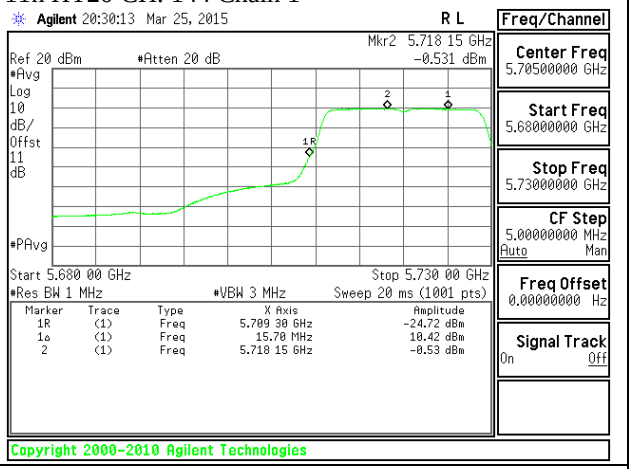

11a CH. 144 Chain 1



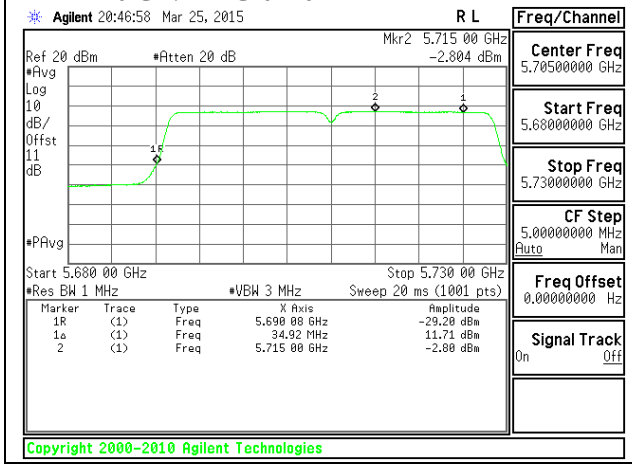

11n HT20 CH. 144 Chain 0



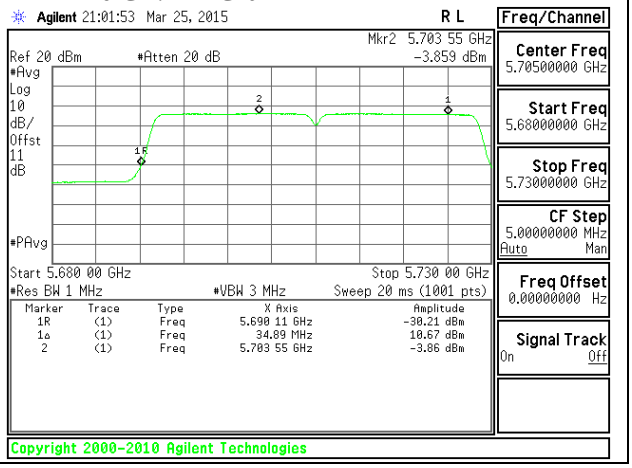

11n HT20 CH. 144 Chain 1




11n HT40 CH. 142 Chain 0




11n HT40 CH. 142 Chain 1





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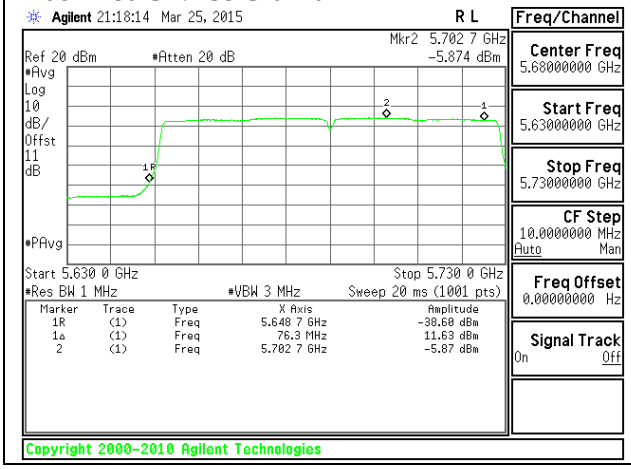
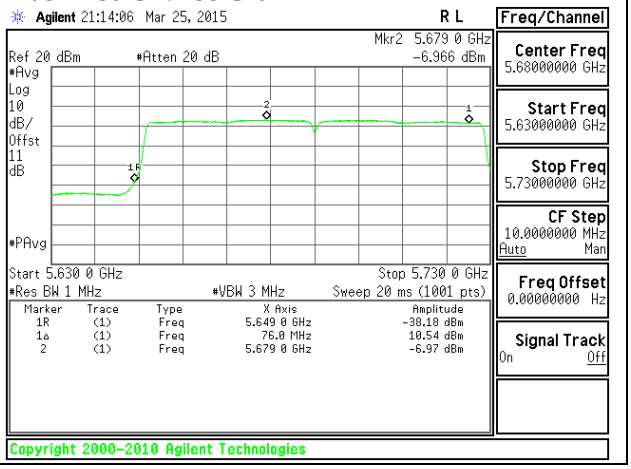
11ac HT80 CH. 138 Chain 0




11ac HT80 CH. 138 Chain 1





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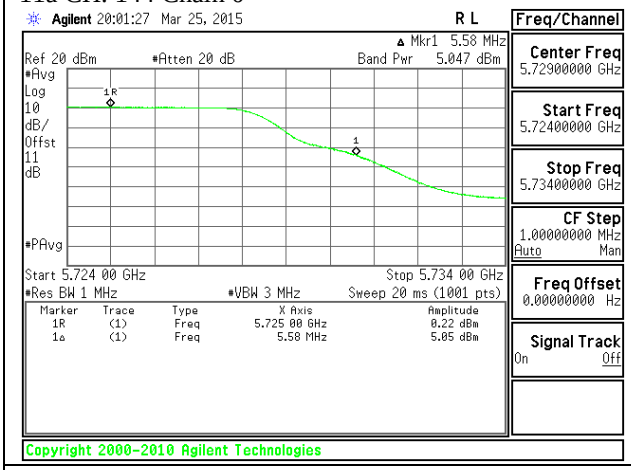
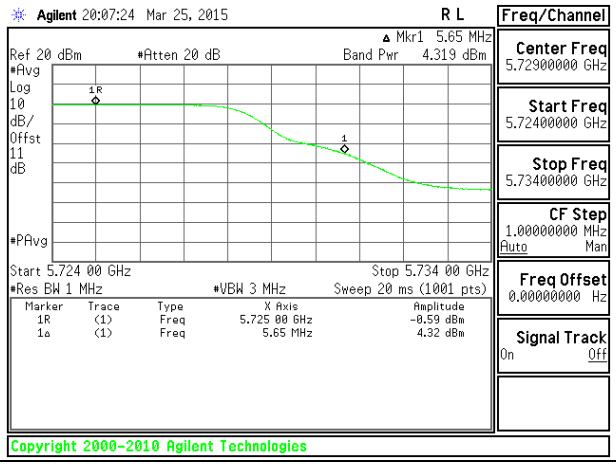
**UNII-3 BAND**

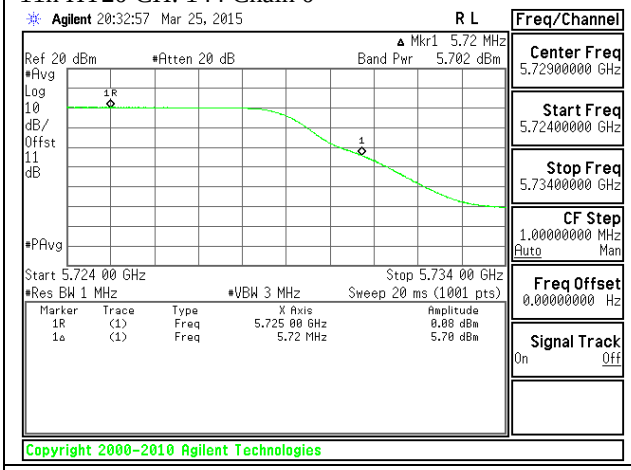
11a CH. 144 Chain 0



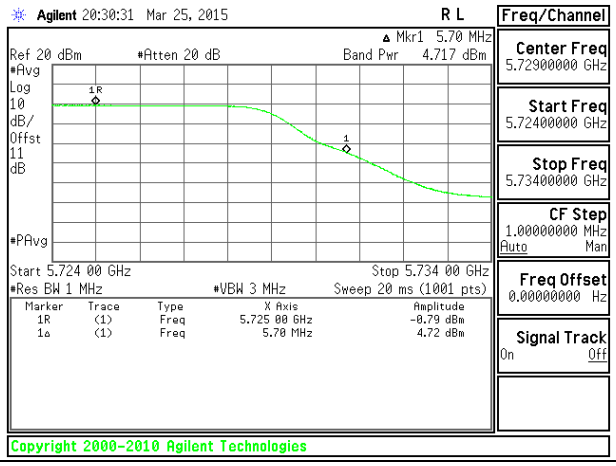

11a CH. 144 Chain 1



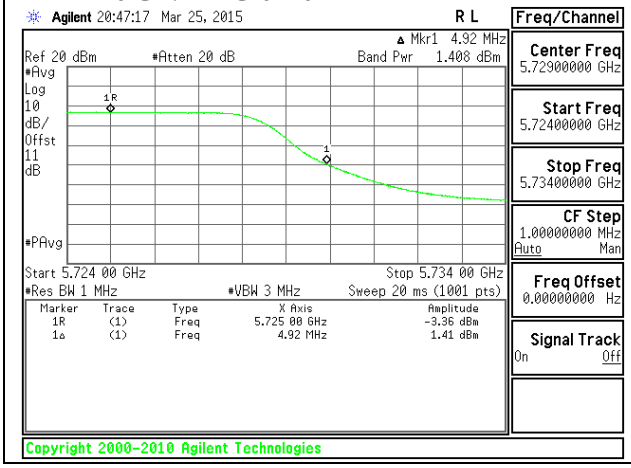

11n HT20 CH. 144 Chain 0



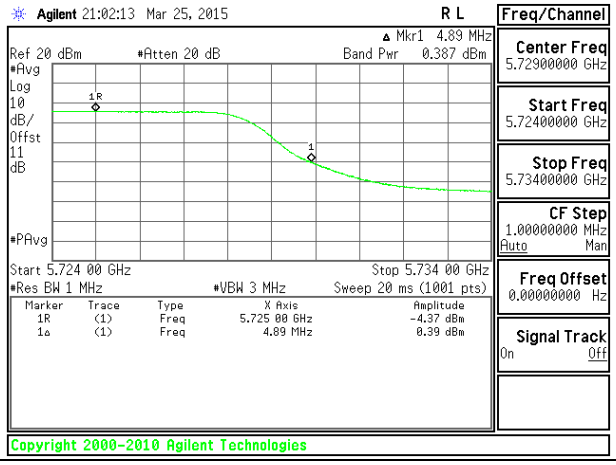

11n HT20 CH. 144 Chain 1




11n HT40 CH. 142 Chain 0




11n HT40 CH. 142 Chain 1





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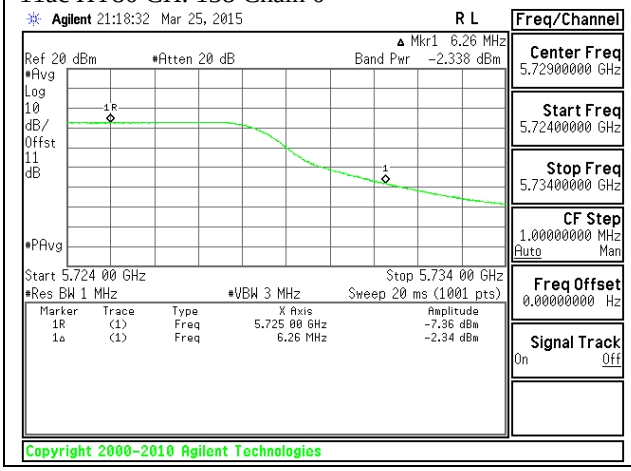
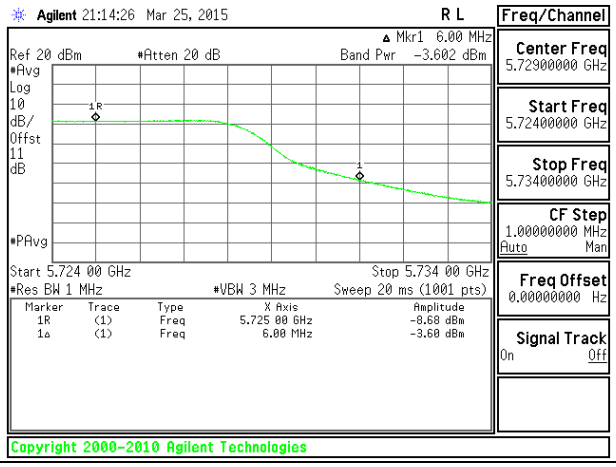
11ac HT80 CH. 138 Chain 0




11ac HT80 CH. 138 Chain 1





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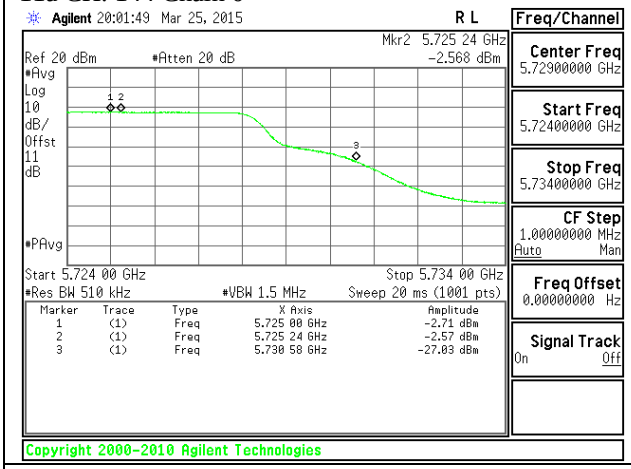
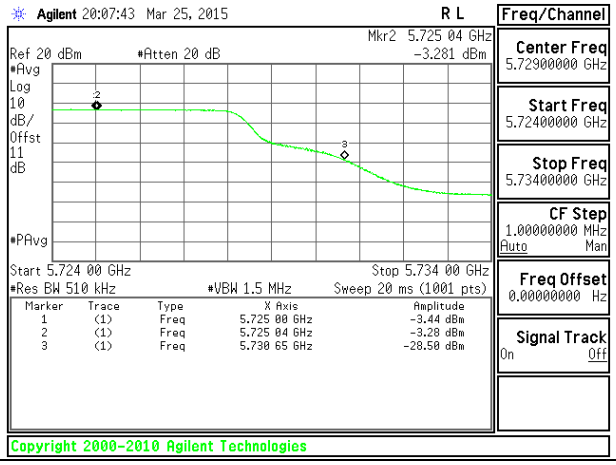
**UNII-3 BAND PSD**

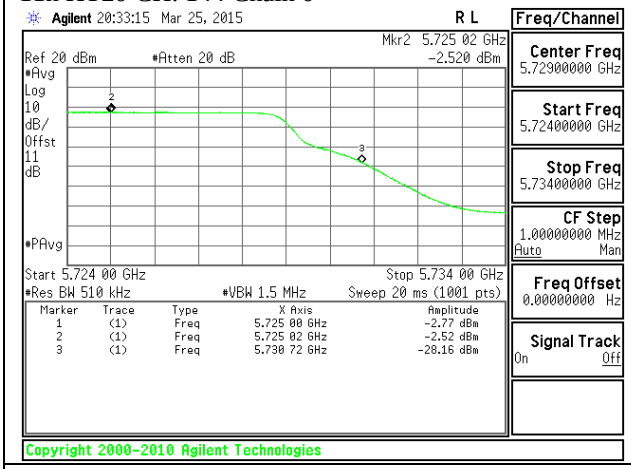
11a CH. 144 Chain 0



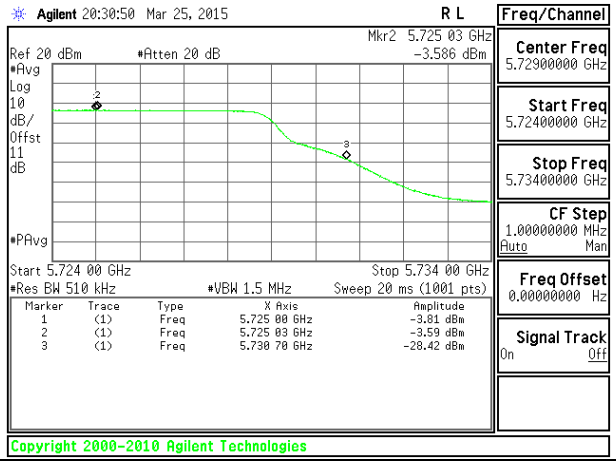

11a CH. 144 Chain 1



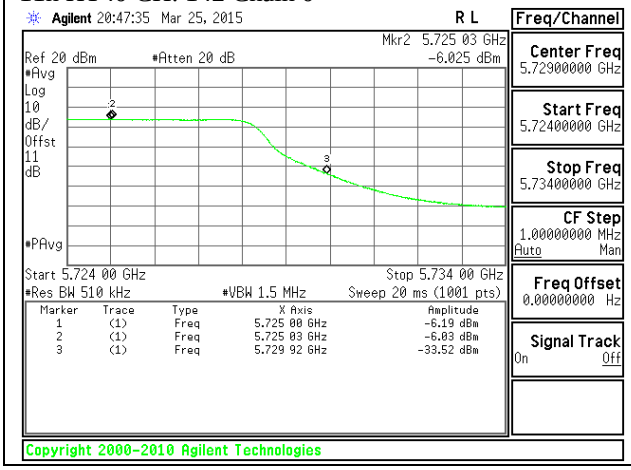

11n HT20 CH. 144 Chain 0



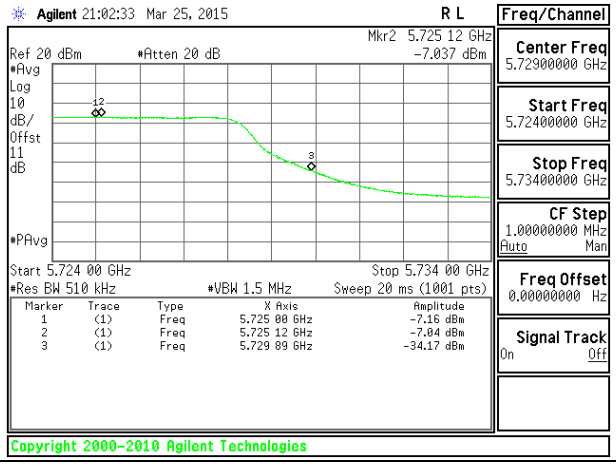

11n HT20 CH. 144 Chain 1




11n HT40 CH. 142 Chain 0




11n HT40 CH. 142 Chain 1





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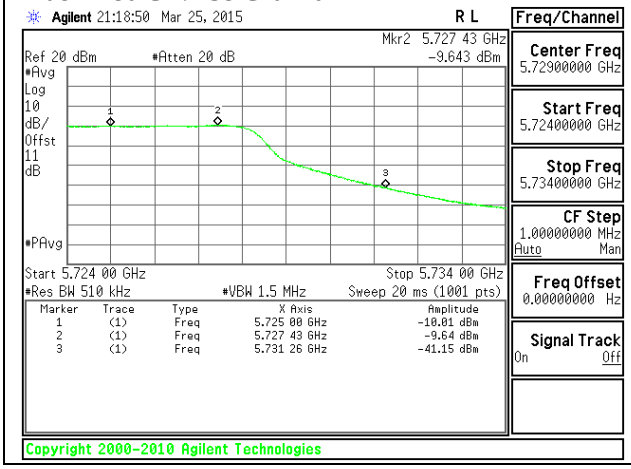
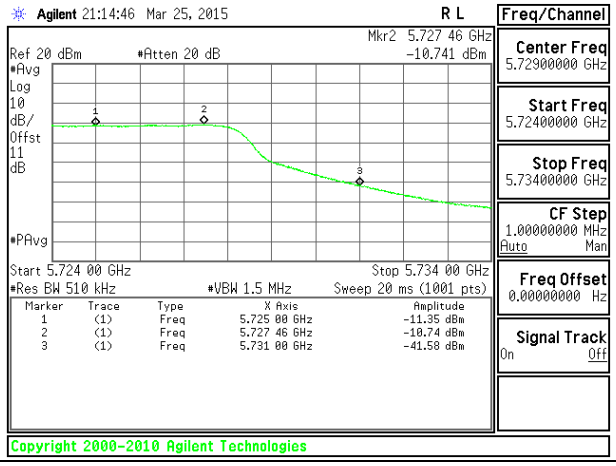
11ac HT80 CH. 138 Chain 0




11ac HT80 CH. 138 Chain 1





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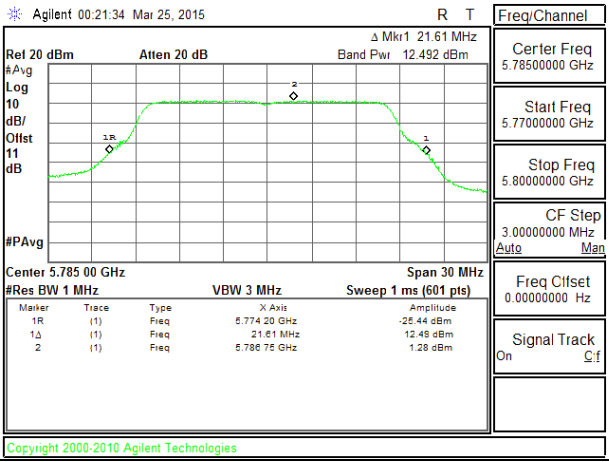
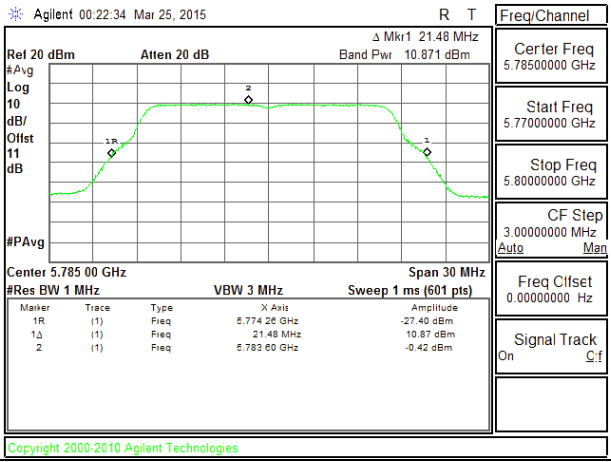
## UNII 5.8GHz

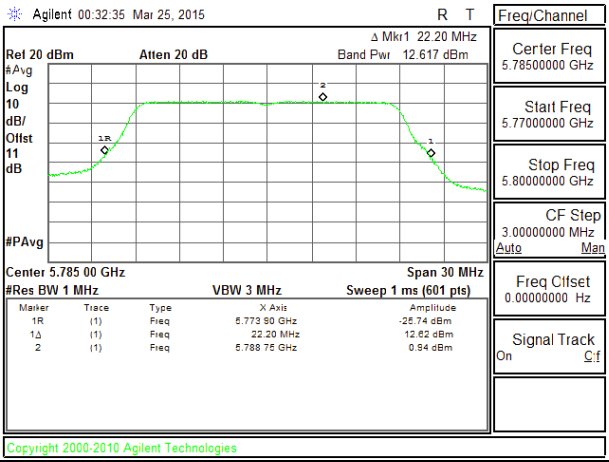
11a Mid CH. Chain 0



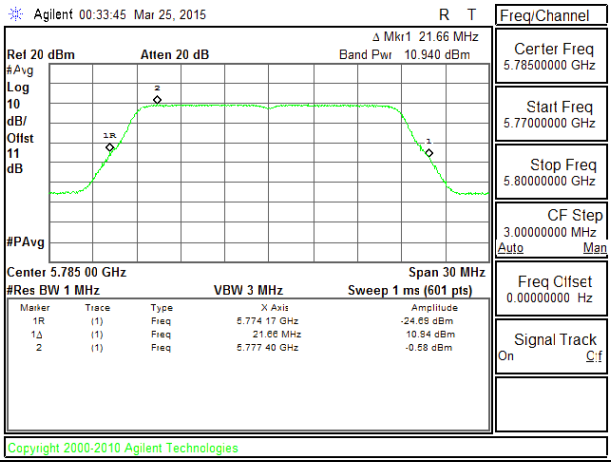

11a Mid CH. Chain 1



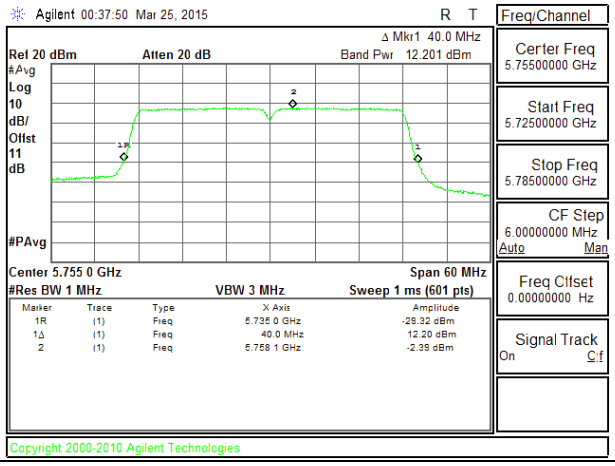

11n HT20 Mid CH. Chain 0



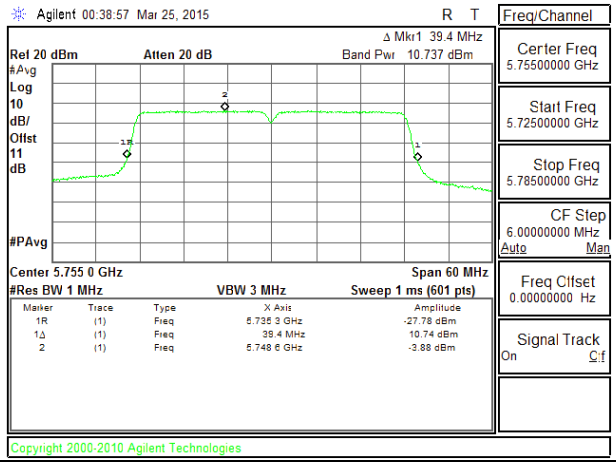

11n HT20 Mid CH. Chain 1




11n HT40 Mid CH. Chain 0




11n HT40 Mid CH. Chain 1





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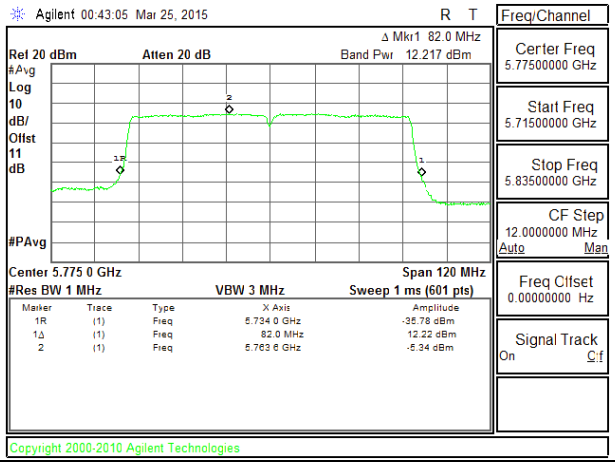
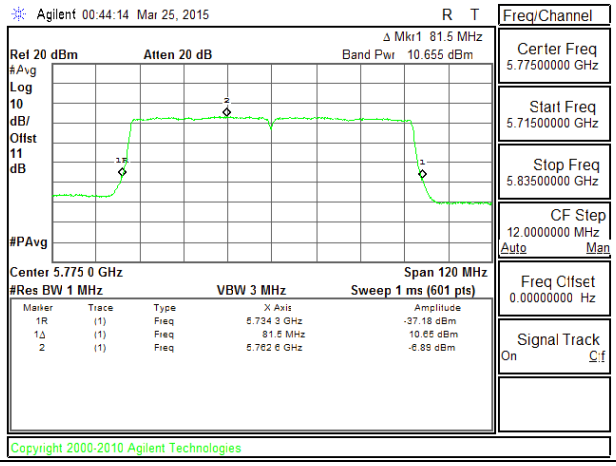
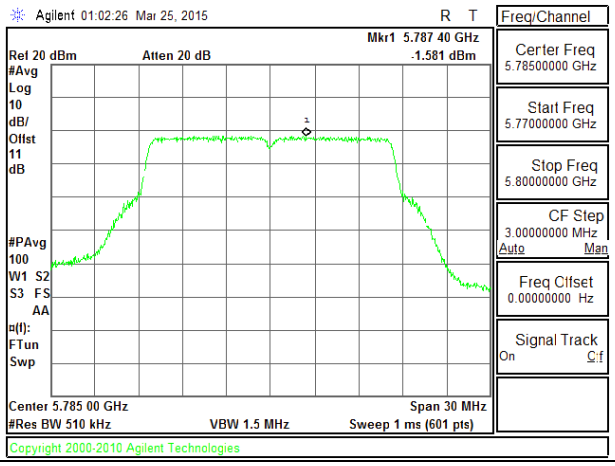
11ac HT80 Mid CH. Chain 0



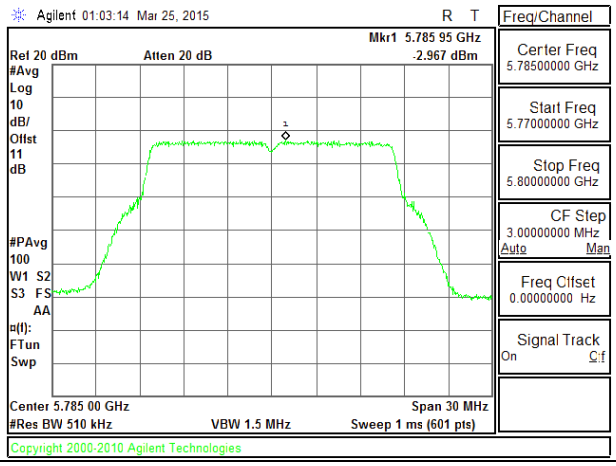

11ac HT80 Mid CH. Chain 1



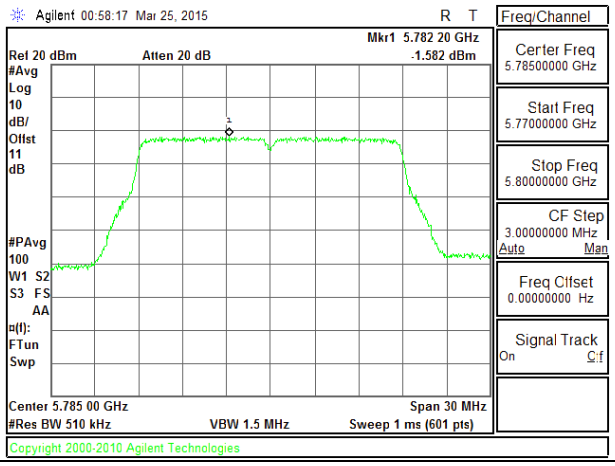

11a Mid CH. PSD Chain 0



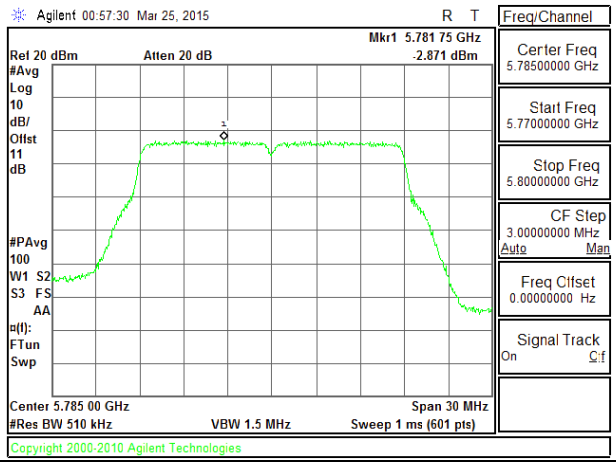

11a Mid CH. PSD Chain 1




11n HT20 Mid CH. PSD Chain 0




11n HT20 Mid CH. PSD Chain 1





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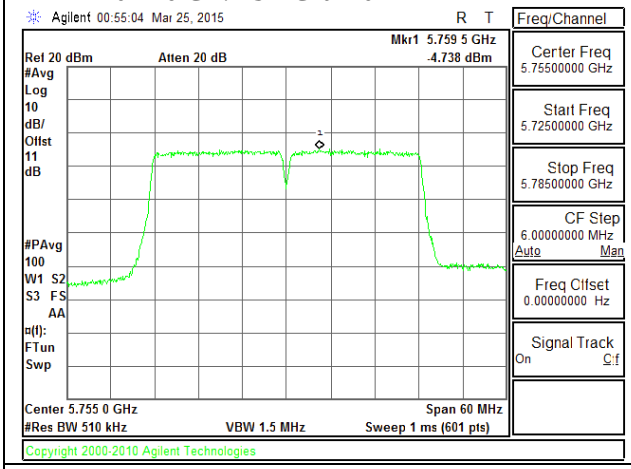
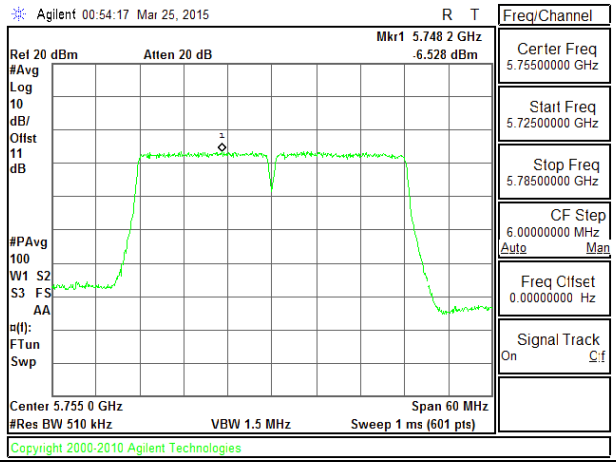
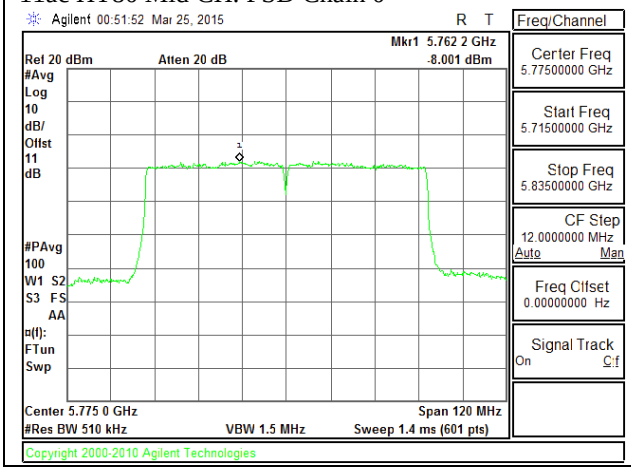
11n HT40 Mid CH. PSD Chain 0



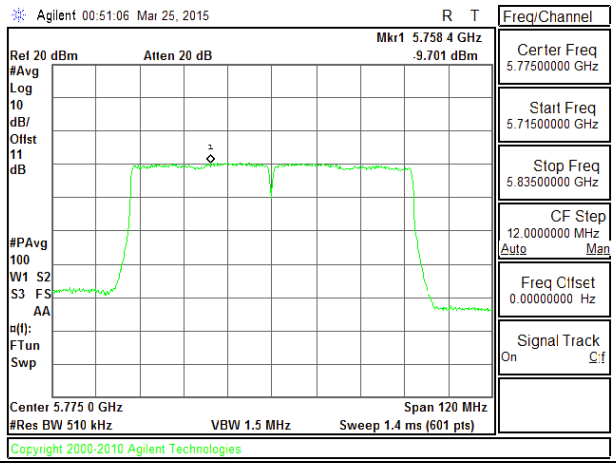

11n HT40 Mid CH. PSD Chain 1




11ac HT80 Mid CH. PSD Chain 0




11ac HT80 Mid CH. PSD Chain 1





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# 11. TRANSMITTER ABOVE 1 GHz

**LIMITS**

FCC §15.205 and §15.209

| 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.

Reference to KDB 789033 UNII part H) 6) d) Method AD:
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor to the reading offset 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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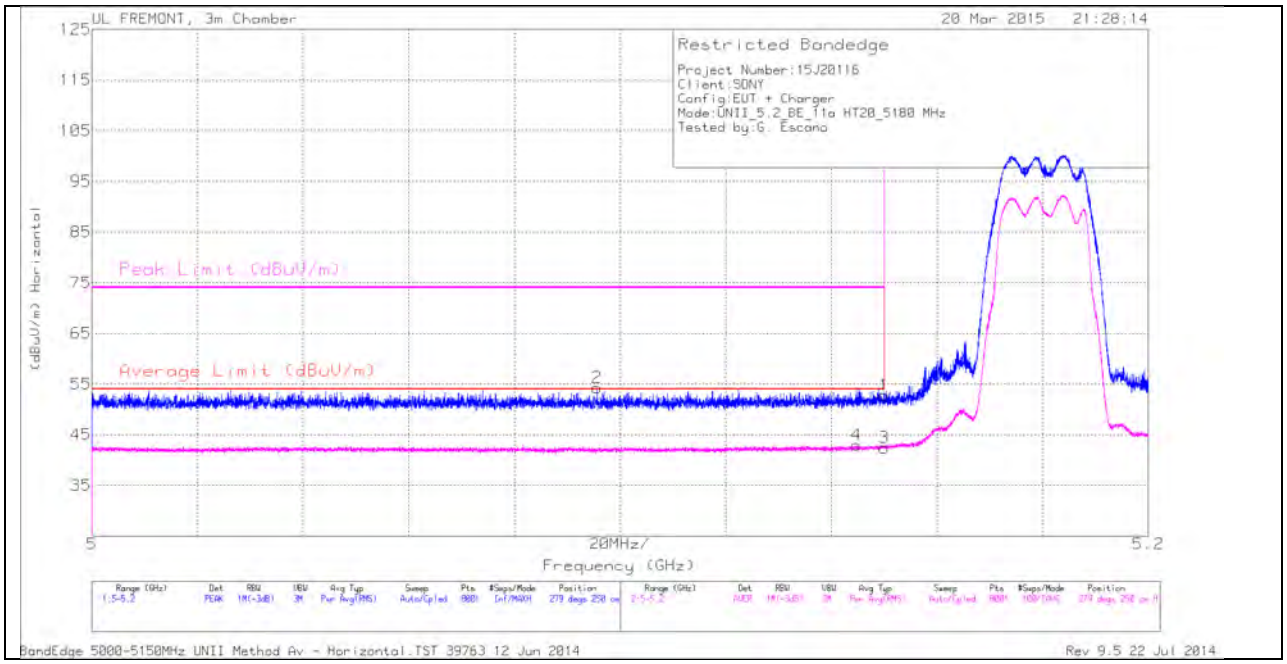
## 11.1. 5.2 GHz

### 11.1.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND

### RESTRICTED BANDEDGE (LOW CHANNEL)

#### HORIZONTAL PEAK AND AVERAGE PLOT




#### HORIZONTAL DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 5.096 | 41.76 | PK | 34.1 | -21.6 | 0 | 54.26 | - | - | 74 | -19.74 | 279 | 250 | H |
| 4 | 5.145 | 30.34 | RMS | 34.2 | -21.6 | 0 | 42.94 | 54 | -11.06 | - | - | 279 | 250 | H |
| 1 | 5.15 | 40.13 | PK | 34.2 | -21.6 | 0 | 52.73 | - | - | 74 | -21.27 | 279 | 250 | H |
| 3 | 5.15 | 29.81 | RMS | 34.2 | -21.6 | 0 | 42.41 | 54 | -11.59 | - | - | 279 | 250 | H |

PK - Peak detector

RMS - RMS detection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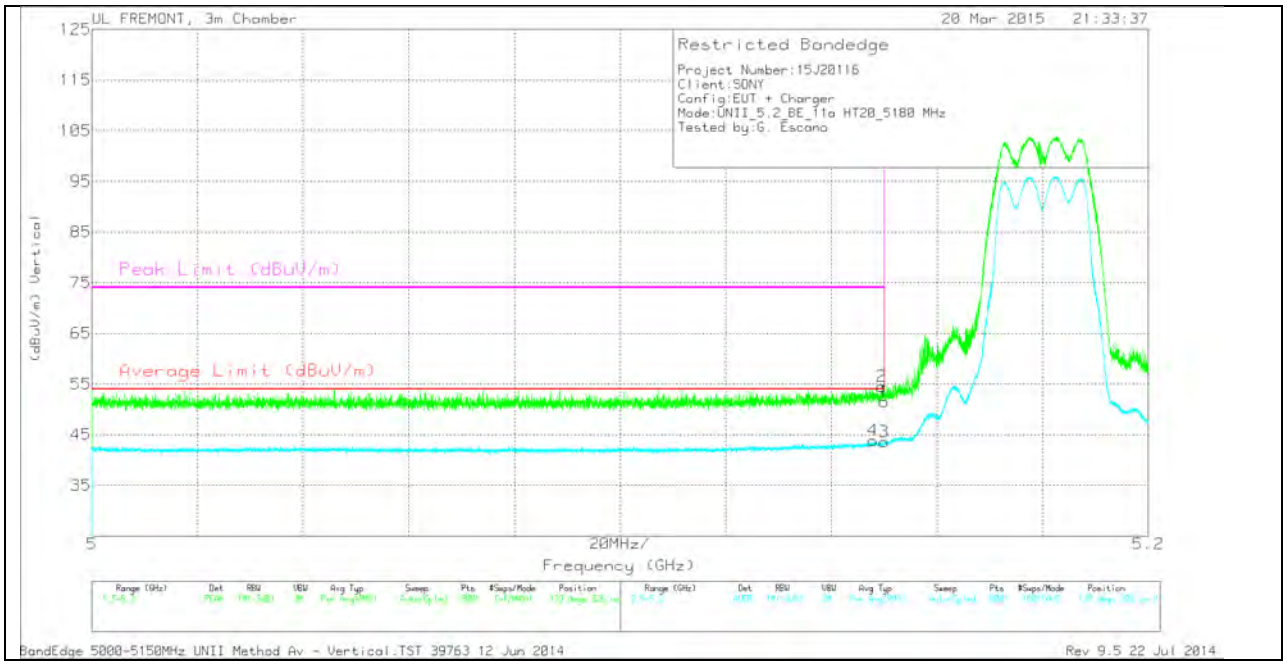
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 5.148 | 31.18 | RMS | 34.2 | -21.6 | 0 | 43.78 | 54 | -10.22 | - | - | 139 | 326 | V |
| 1 | 5.15 | 38.89 | PK | 34.2 | -21.6 | 0 | 51.49 | - | - | 74 | -22.51 | 139 | 326 | V |
| 2 | 5.15 | 41.92 | PK | 34.2 | -21.6 | 0 | 54.52 | - | - | 74 | -19.48 | 139 | 326 | V |
| 3 | 5.15 | 30.97 | RMS | 34.2 | -21.6 | 0 | 43.57 | 54 | -10.43 | - | - | 139 | 326 | V |

PK - Peak detector

RMS - RMS detection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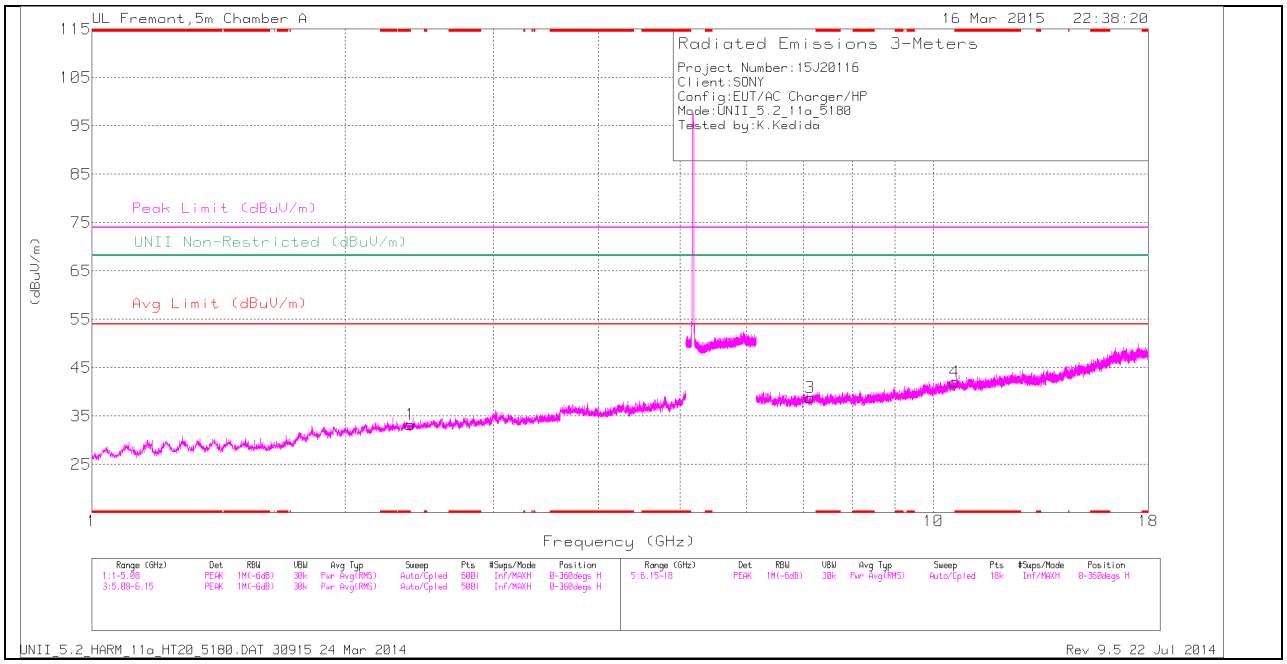
# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL HORIZONTAL




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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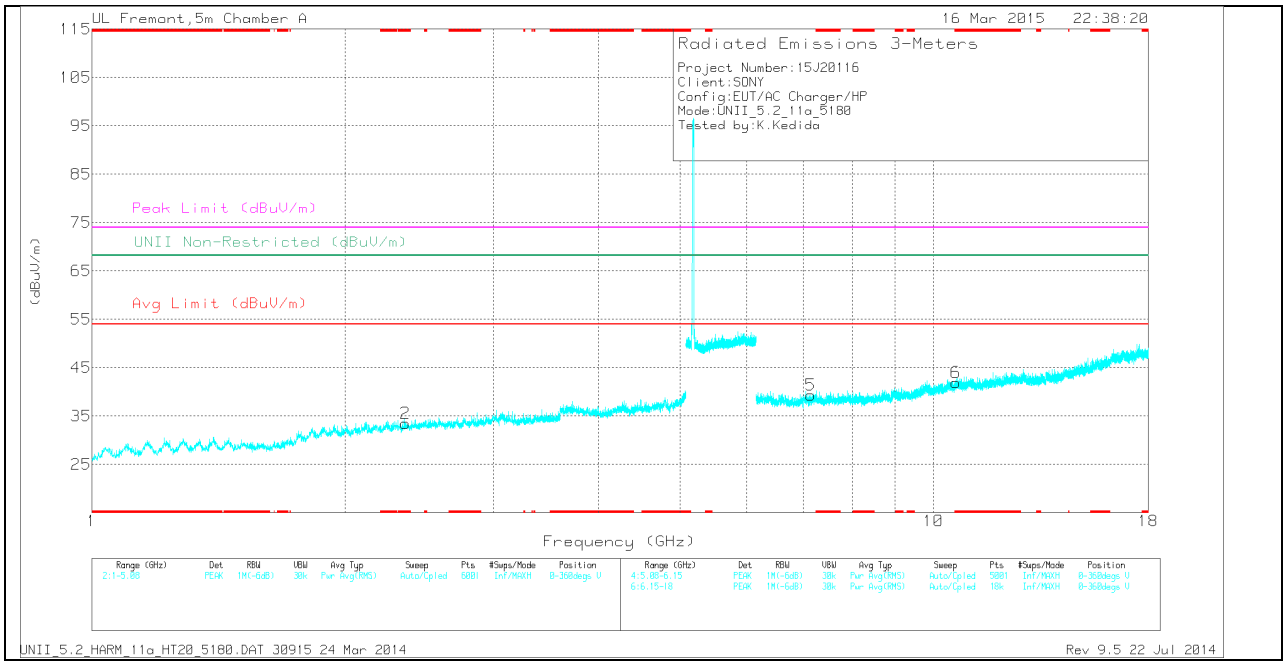
**LOW CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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## LOW CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | * 10.602 | 26.27 | PK | 37.7 | -21.9 | 0 | 42.07 | - | - | 74 | -31.93 | - | - | 0-360 | 201 | H |
| 6 | * 10.636 | 26.08 | PK | 37.7 | -21.9 | 0 | 41.88 | - | - | 74 | -32.12 | - | - | 0-360 | 100 | V |
| 2 | * 2.359 | 33.89 | PK | 31.9 | -32.3 | 0 | 33.49 | - | - | 74 | -40.51 | - | - | 0-360 | 100 | V |
| 1 | * 2.389 | 33.44 | PK | 32 | -32.2 | 0 | 33.24 | - | - | 74 | -40.76 | - | - | 0-360 | 201 | H |
| 3 | 7.135 | 30.11 | PK | 35.5 | -26.8 | 0 | 38.81 | - | - | - | - | 68.2 | -29.39 | 0-360 | 201 | H |
| 5 | 7.148 | 30.3 | PK | 35.5 | -26.5 | 0 | 39.3 | - | - | - | - | 68.2 | -28.9 | 0-360 | 100 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector


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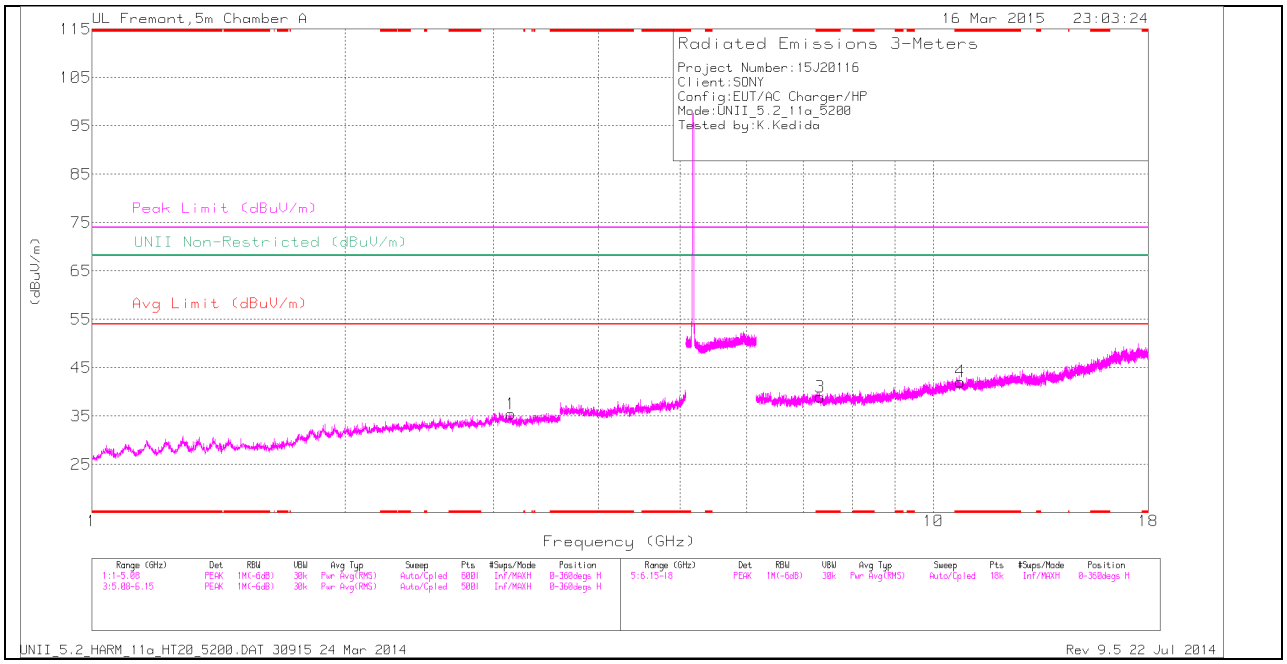
**MID CHANNEL HORIZONTAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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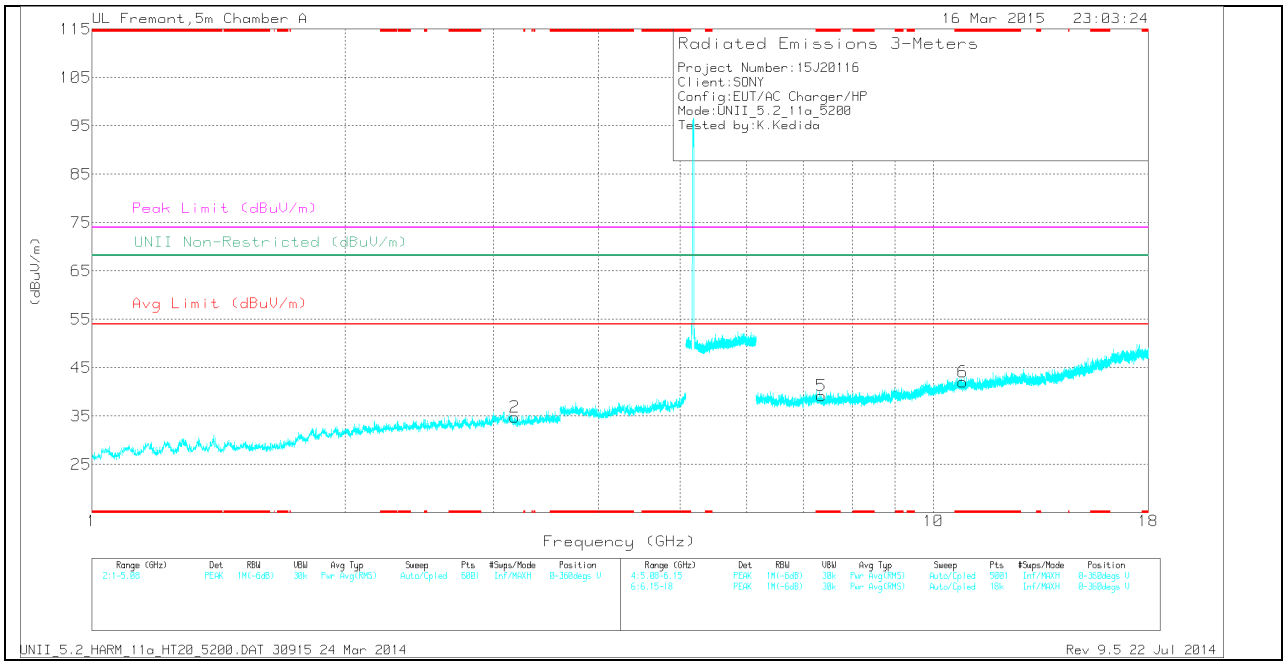
**MID CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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## MID CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | * 7.329 | 29.11 | PK | 35.5 | -25.7 | 0 | 38.91 | - | - | 74 | -35.09 | - | - | 0-360 | 201 | H |
| 4 | * 10.755 | 26.13 | PK | 37.8 | -21.8 | 0 | 42.13 | - | - | 74 | -31.87 | - | - | 0-360 | 100 | H |
| 5 | * 7.365 | 29.75 | PK | 35.5 | -26 | 0 | 39.25 | - | - | 74 | -34.75 | - | - | 0-360 | 201 | V |
| 6 | * 10.83 | 26.47 | PK | 37.8 | -22.2 | 0 | 42.07 | - | - | 74 | -31.93 | - | - | 0-360 | 201 | V |
| 1 | 3.15 | 33.44 | PK | 32.8 | -30.8 | 0 | 35.44 | - | - | - | - | 68.2 | -32.76 | 0-360 | 100 | H |
| 2 | 3.178 | 33.02 | PK | 32.8 | -31 | 0 | 34.82 | - | - | - | - | 68.2 | -33.38 | 0-360 | 100 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector


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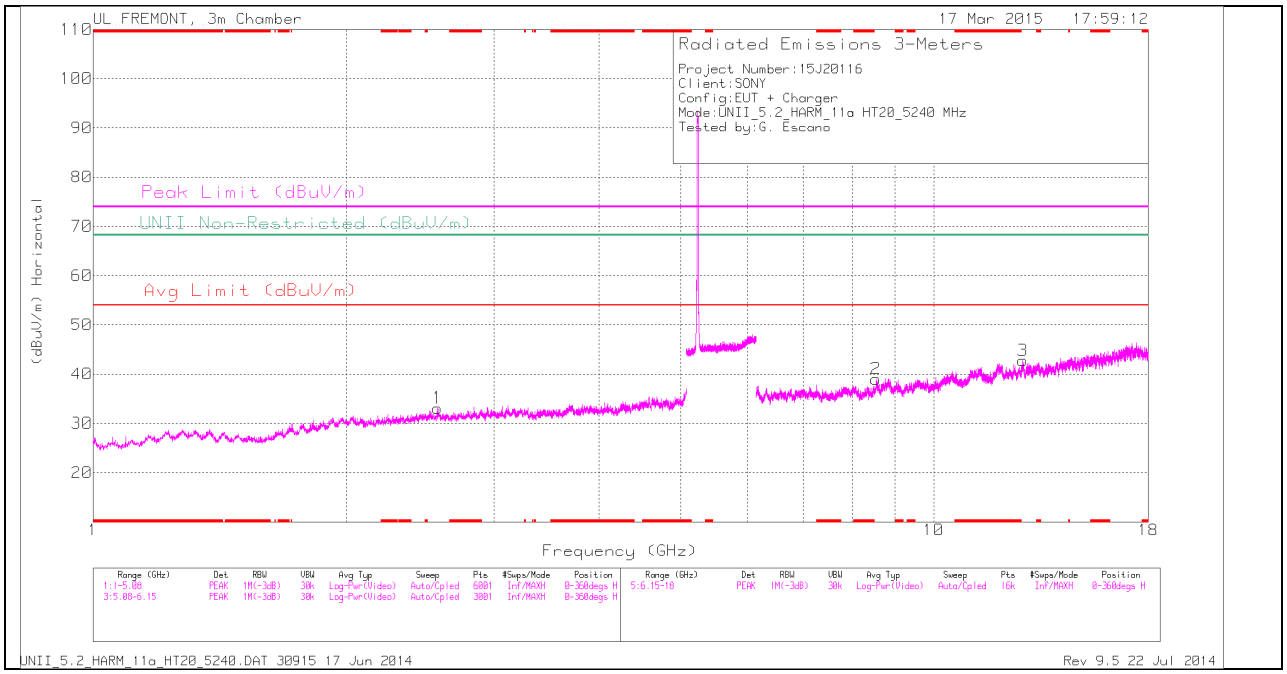
**HIGH CHANNEL HORIZONTAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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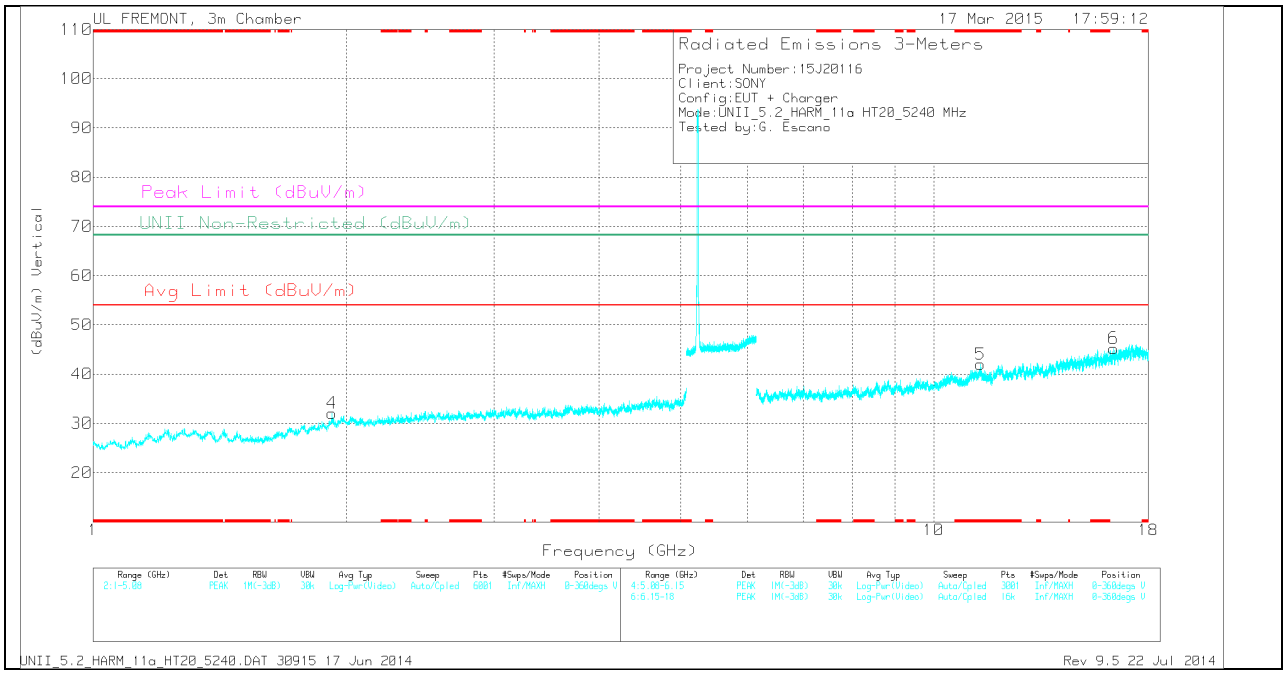
**HIGH CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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## HIGH CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | * 11.358 | 29.6 | PK | 38.1 | -25.7 | 0 | 42 | - | - | 74 | -32 | - | - | 0-360 | 200 | V |
| 4 | 1.925 | 33.37 | PK | 31.2 | -32.5 | 0 | 32.07 | - | - | - | - | 68.2 | -36.13 | 0-360 | 100 | V |
| 1 | 2.569 | 32.99 | PK | 32.4 | -32.3 | 0 | 33.09 | - | - | - | - | 68.2 | -35.11 | 0-360 | 100 | H |
| 2 | 8.535 | 29.71 | PK | 35.8 | -26.5 | 0 | 39.01 | - | - | - | - | 68.2 | -29.19 | 0-360 | 100 | H |
| 3 | 12.765 | 29.78 | PK | 39.1 | -26.1 | 0 | 42.78 | - | - | - | - | 68.2 | -25.42 | 0-360 | 100 | H |
| 6 | 16.364 | 29.73 | PK | 40.7 | -25.2 | 0 | 45.23 | - | - | - | - | 68.2 | -22.97 | 0-360 | 200 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Fl tr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 11.359 | 37.58 | PK1 | 38.1 | -25.7 | 0 | 49.98 | - | - | 74 | -24.02 | - | - | 21 | 220 | V |
| * 11.36 | 25.92 | AD1 | 38.1 | -25.8 | 0 | 38.22 | 54 | -15.78 | - | - | - | - | 21 | 220 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average


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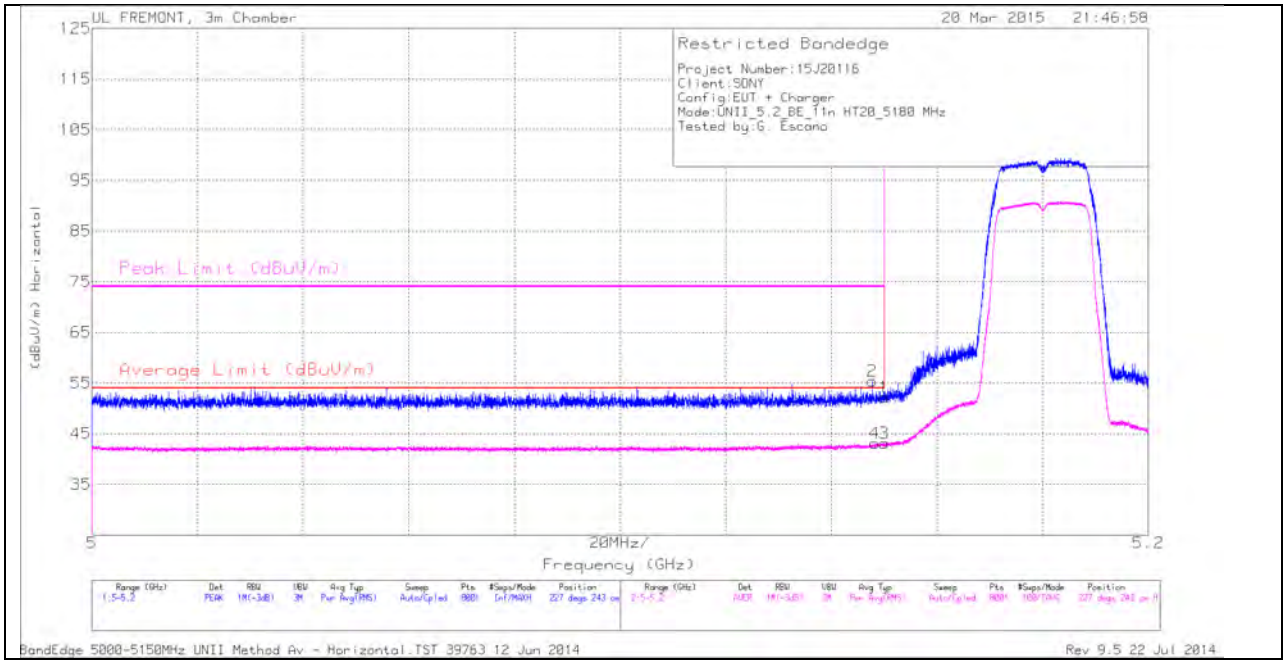
## 11.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

### HORIZONTAL PEAK AND AVERAGE PLOT




### HORIZONTAL DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 5.148 | 42.82 | PK | 34.2 | -21.6 | 0 | 55.42 | - | - | 74 | -18.58 | 227 | 243 | H |
| 4 | 5.148 | 30.52 | RMS | 34.2 | -21.6 | 0 | 43.12 | 54 | -10.88 | - | - | 227 | 243 | H |
| 1 | 5.15 | 39.59 | PK | 34.2 | -21.6 | 0 | 52.19 | - | - | 74 | -21.81 | 227 | 243 | H |
| 3 | 5.15 | 30.49 | RMS | 34.2 | -21.6 | 0 | 43.09 | 54 | -10.91 | - | - | 227 | 243 | H |

PK - Peak detector

RMS - RMS detection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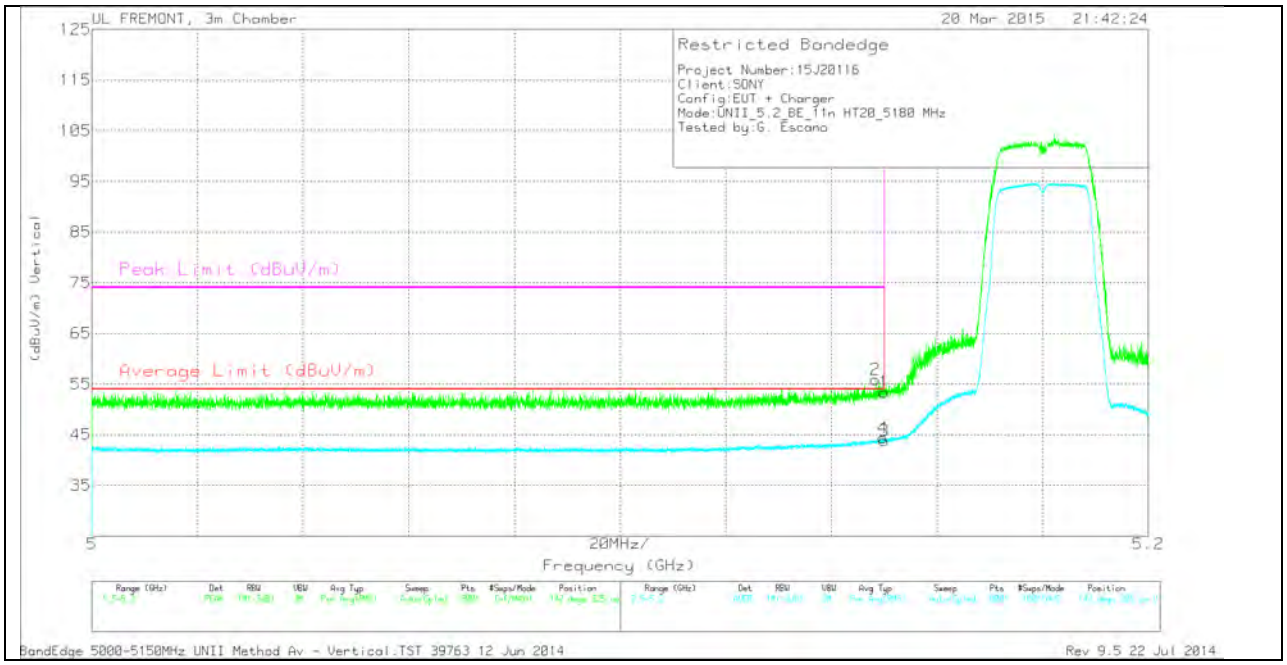
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 5.148 | 43.27 | PK | 34.2 | -21.6 | 0 | 55.87 | - | - | 74 | -18.13 | 142 | 325 | V |
| 1 | 5.15 | 40.83 | PK | 34.2 | -21.6 | 0 | 53.43 | - | - | 74 | -20.57 | 142 | 325 | V |
| 3 | 5.15 | 31.25 | RMS | 34.2 | -21.6 | 0 | 43.85 | 54 | -10.15 | - | - | 142 | 325 | V |
| 4 | 5.15 | 31.69 | RMS | 34.2 | -21.6 | 0 | 44.29 | 54 | -9.71 | - | - | 142 | 325 | V |

PK - Peak detector

RMS - RMS detection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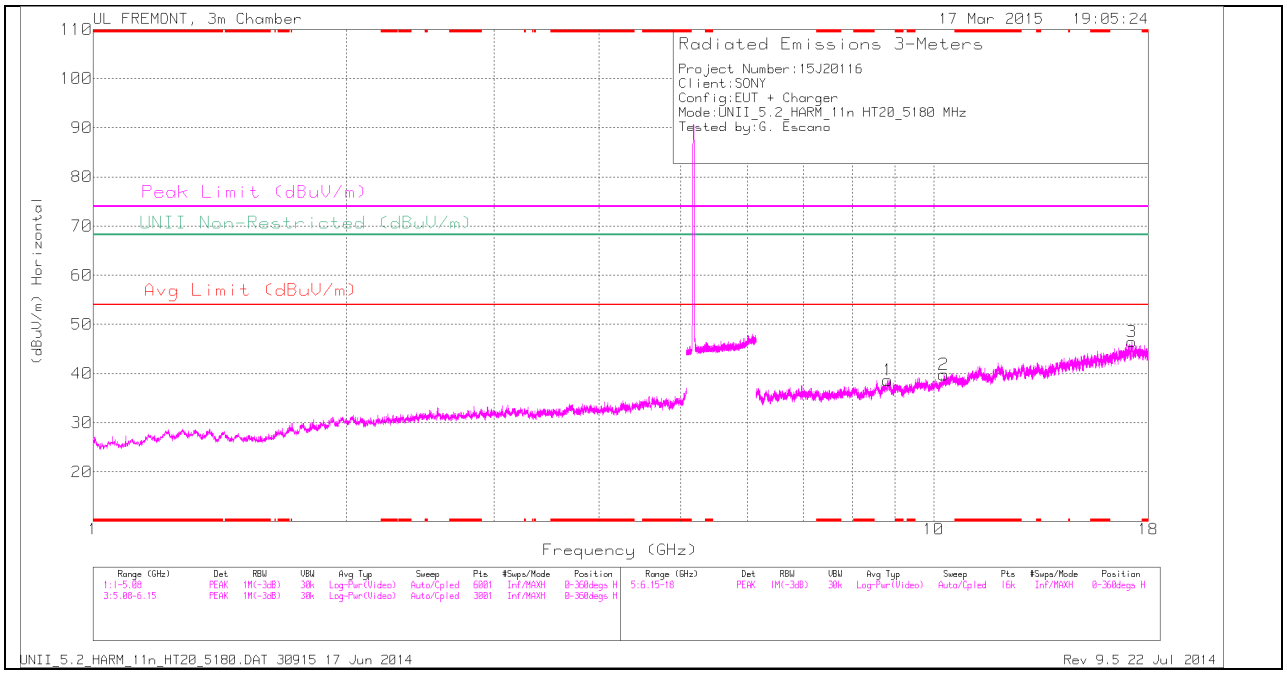
# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL HORIZONTAL




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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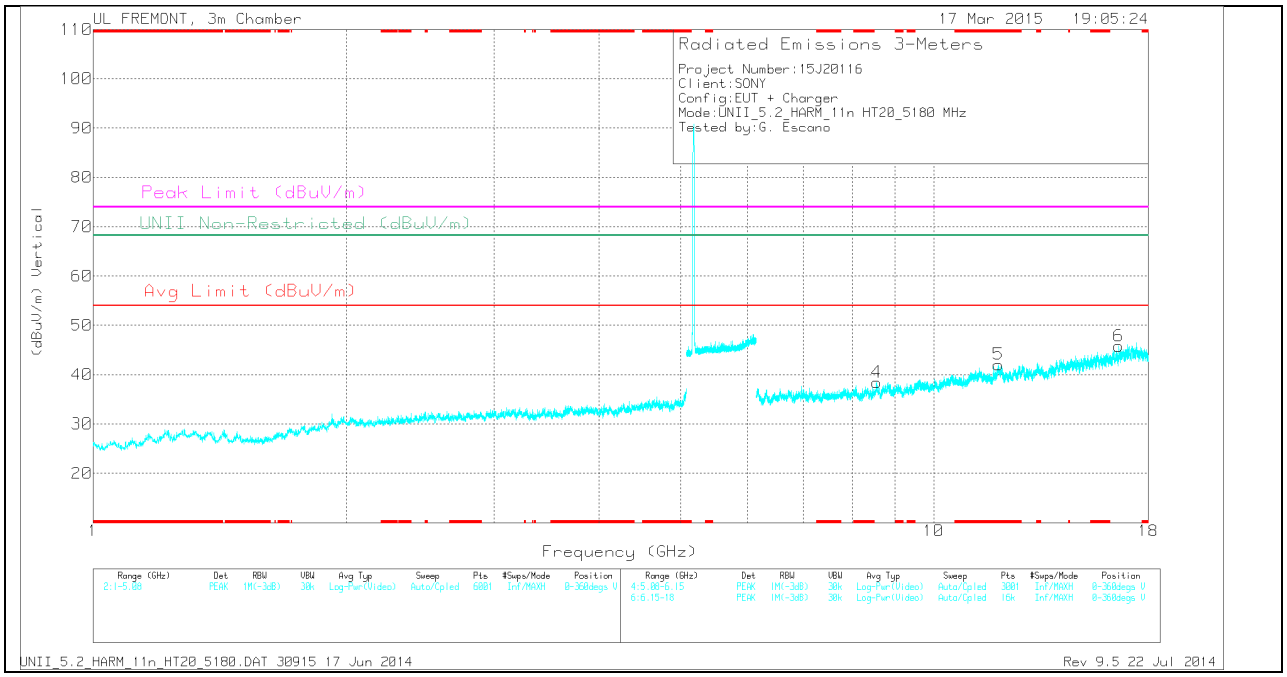
**LOW CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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## LOW CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | * 11.939 | 29.26 | PK | 39.1 | -26.3 | 0 | 42.06 | - | - | 74 | -31.94 | - | - | 0-360 | 100 | V |
| 4 | 8.552 | 28.75 | PK | 35.8 | -26.1 | 0 | 38.45 | - | - | - | - | 68.2 | -29.75 | 0-360 | 100 | V |
| 1 | 8.818 | 28.34 | PK | 35.9 | -25.6 | 0 | 38.64 | - | - | - | - | 68.2 | -29.56 | 0-360 | 100 | H |
| 2 | 10.279 | 28.19 | PK | 37.1 | -25.5 | 0 | 39.79 | - | - | - | - | 68.2 | -28.41 | 0-360 | 200 | H |
| 6 | 16.588 | 29.5 | PK | 41 | -24.7 | 0 | 45.8 | - | - | - | - | 68.2 | -22.4 | 0-360 | 200 | V |
| 3 | 17.207 | 28.05 | PK | 41.3 | -22.9 | 0 | 46.45 | - | - | - | - | 68.2 | -21.75 | 0-360 | 100 | H |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Fl tr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 11.937 | 37.68 | PK1 | 39.1 | -26.3 | 0 | 50.48 | - | - | 74 | -23.52 | - | - | 186 | 100 | V |
| * 11.937 | 25.96 | AD1 | 39.1 | -26.3 | 0 | 38.76 | 54 | -15.24 | - | - | - | - | 186 | 100 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average


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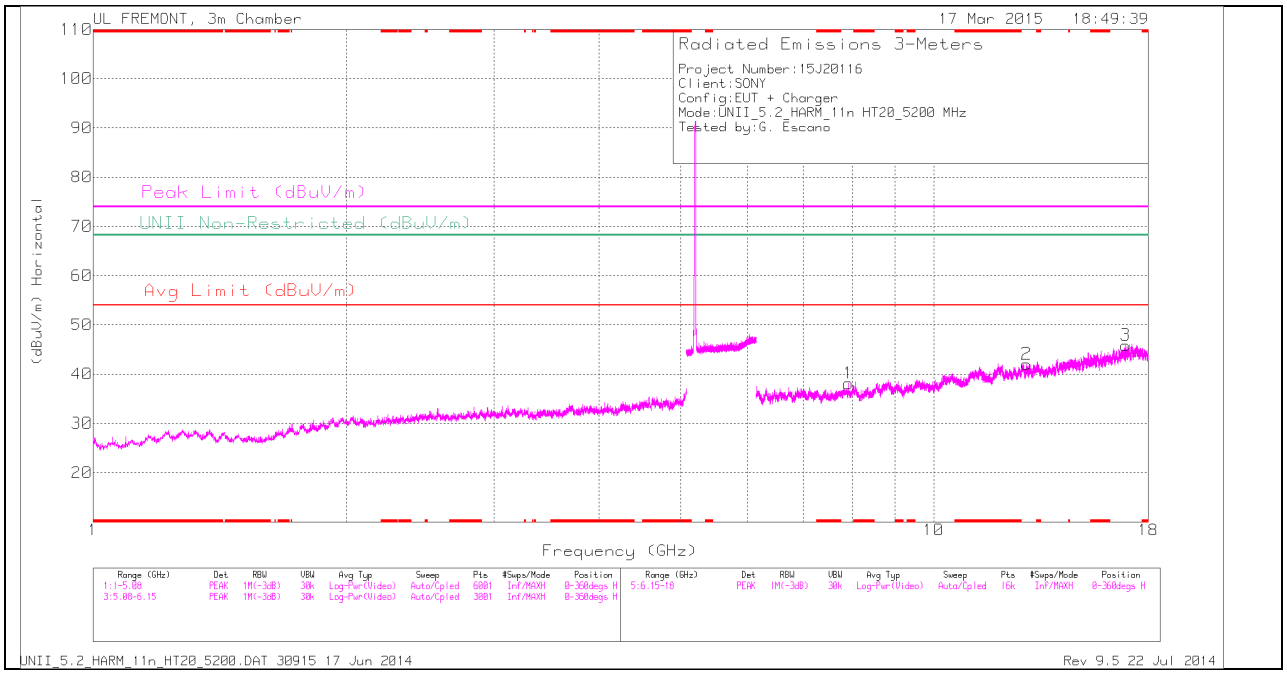
**MID CHANNEL HORIZONTAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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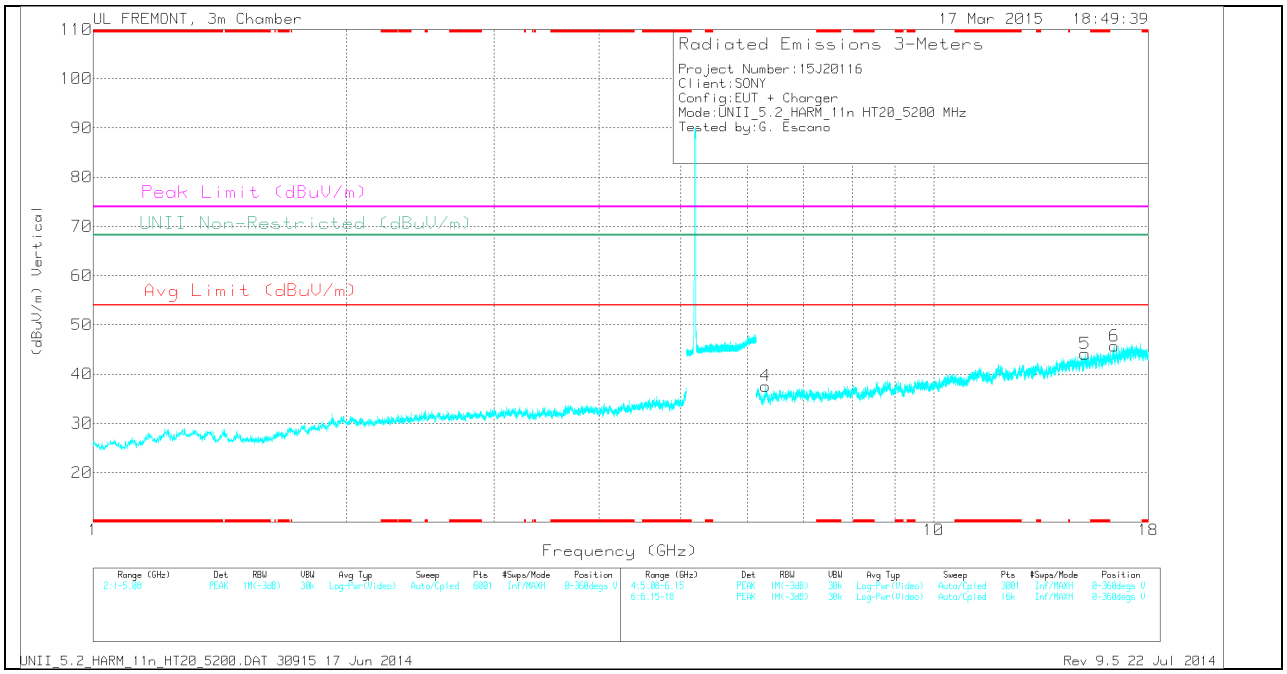
**MID CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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## MID CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 6.311 | 31.8 | PK | 35.4 | -29.6 | 0 | 37.6 | - | - | - | - | 68.2 | -30.6 | 0-360 | 100 | V |
| 1 | 7.92 | 30.62 | PK | 35.8 | -28.3 | 0 | 38.12 | - | - | - | - | 68.2 | -30.08 | 0-360 | 100 | H |
| 2 | 12.897 | 30.05 | PK | 39.1 | -27.1 | 0 | 42.05 | - | - | - | - | 68.2 | -26.15 | 0-360 | 100 | H |
| 5 | 15.139 | 31.13 | PK | 39.9 | -26.9 | 0 | 44.13 | - | - | - | - | 68.2 | -24.07 | 0-360 | 100 | V |
| 6 | 16.391 | 29.29 | PK | 40.7 | -24.3 | 0 | 45.69 | - | - | - | - | 68.2 | -22.51 | 0-360 | 100 | V |
| 3 | 16.926 | 28.29 | PK | 41.2 | -23.6 | 0 | 45.89 | - | - | - | - | 68.2 | -22.31 | 0-360 | 200 | H |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector


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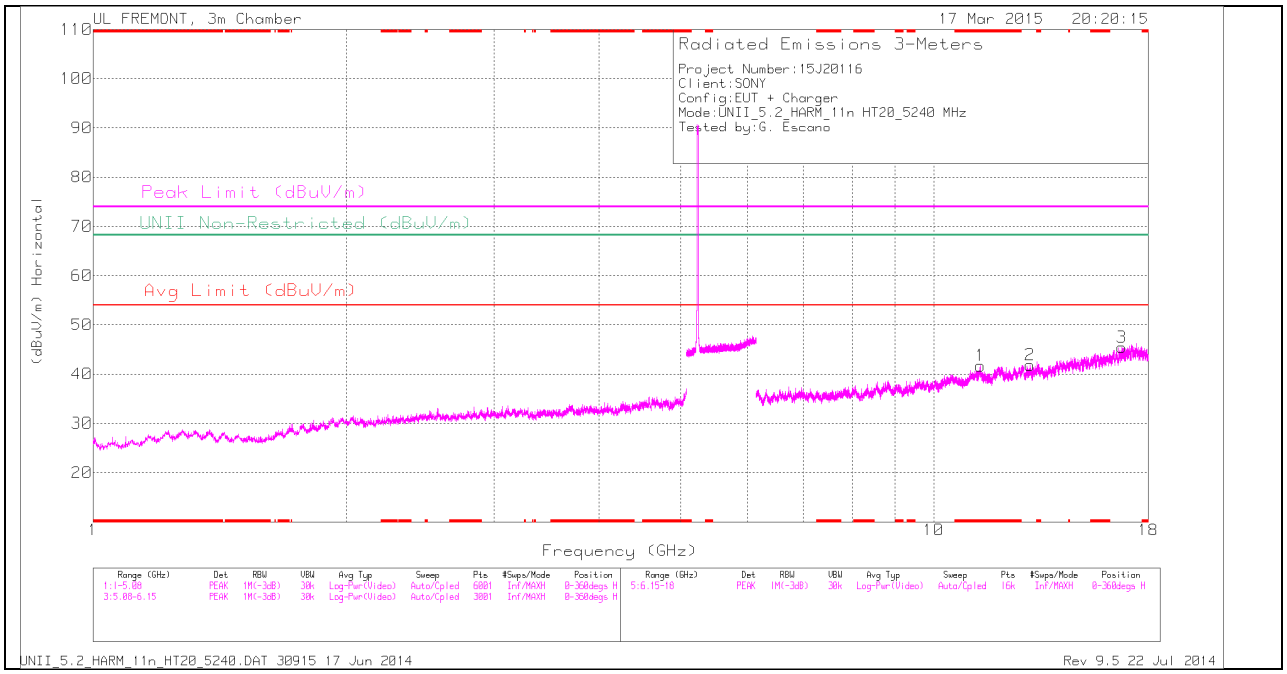
**HIGH CHANNEL HORIZONTAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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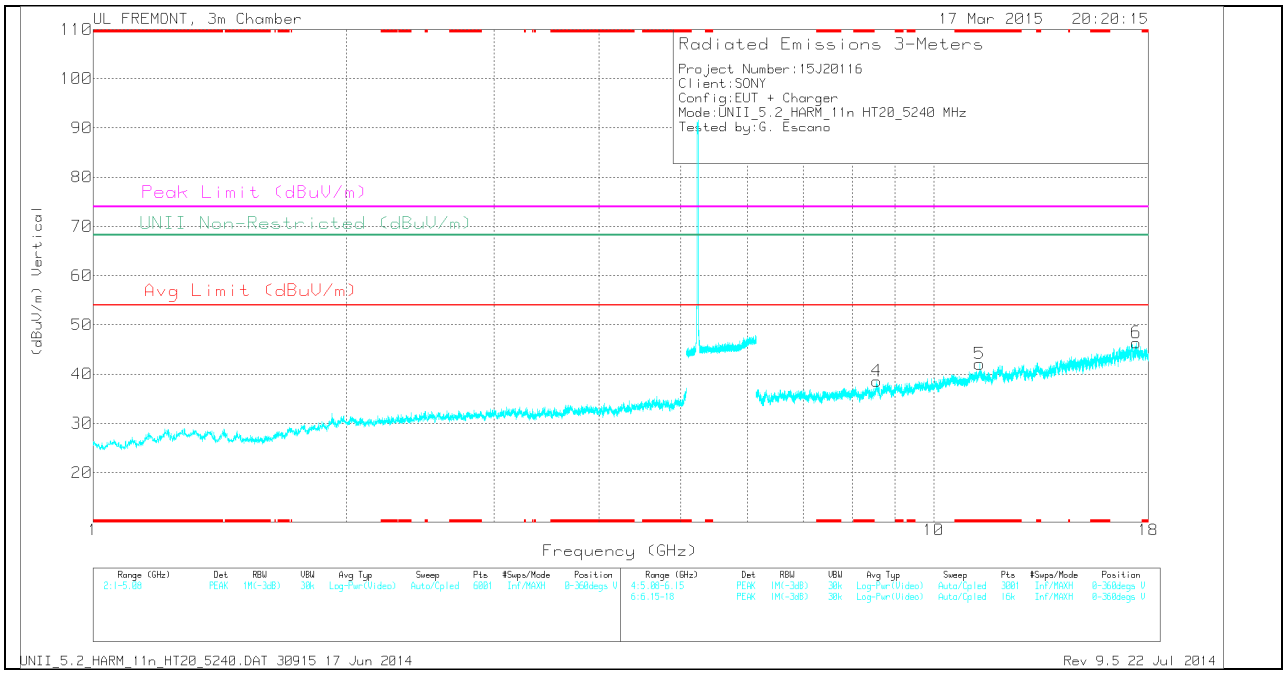
**HIGH CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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## HIGH CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 11.361 | 29.4 | PK | 38.1 | -25.8 | 0 | 41.7 | - | - | 74 | -32.3 | - | - | 0-360 | 100 | H |
| 5 | * 11.338 | 29.48 | PK | 38.1 | -25.5 | 0 | 42.08 | - | - | 74 | -31.92 | - | - | 0-360 | 100 | V |
| 4 | 8.55 | 28.8 | PK | 35.8 | -26 | 0 | 38.6 | - | - | - | - | 68.2 | -29.6 | 0-360 | 200 | V |
| 2 | 13.026 | 30.13 | PK | 39 | -27.3 | 0 | 41.83 | - | - | - | - | 68.2 | -26.37 | 0-360 | 100 | H |
| 3 | 16.745 | 29.64 | PK | 41.2 | -25.4 | 0 | 45.44 | - | - | - | - | 68.2 | -22.76 | 0-360 | 100 | H |
| 6 | 17.422 | 27.2 | PK | 41.4 | -22.2 | 0 | 46.4 | - | - | - | - | 68.2 | -21.8 | 0-360 | 200 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Fl tr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 11.362 | 37.05 | PK1 | 38.1 | -25.8 | 0 | 49.35 | - | - | 74 | -24.65 | - | - | 15 | 395 | H |
| * 11.362 | 25.27 | AD1 | 38.1 | -25.8 | 0 | 37.57 | 54 | -16.43 | - | - | - | - | 15 | 395 | H |
| * 11.339 | 37.18 | PK1 | 38.1 | -25.5 | 0 | 49.78 | - | - | 74 | -24.22 | - | - | 26 | 339 | V |
| * 11.339 | 24.98 | AD1 | 38.1 | -25.5 | 0 | 37.58 | 54 | -16.42 | - | - | - | - | 26 | 339 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average


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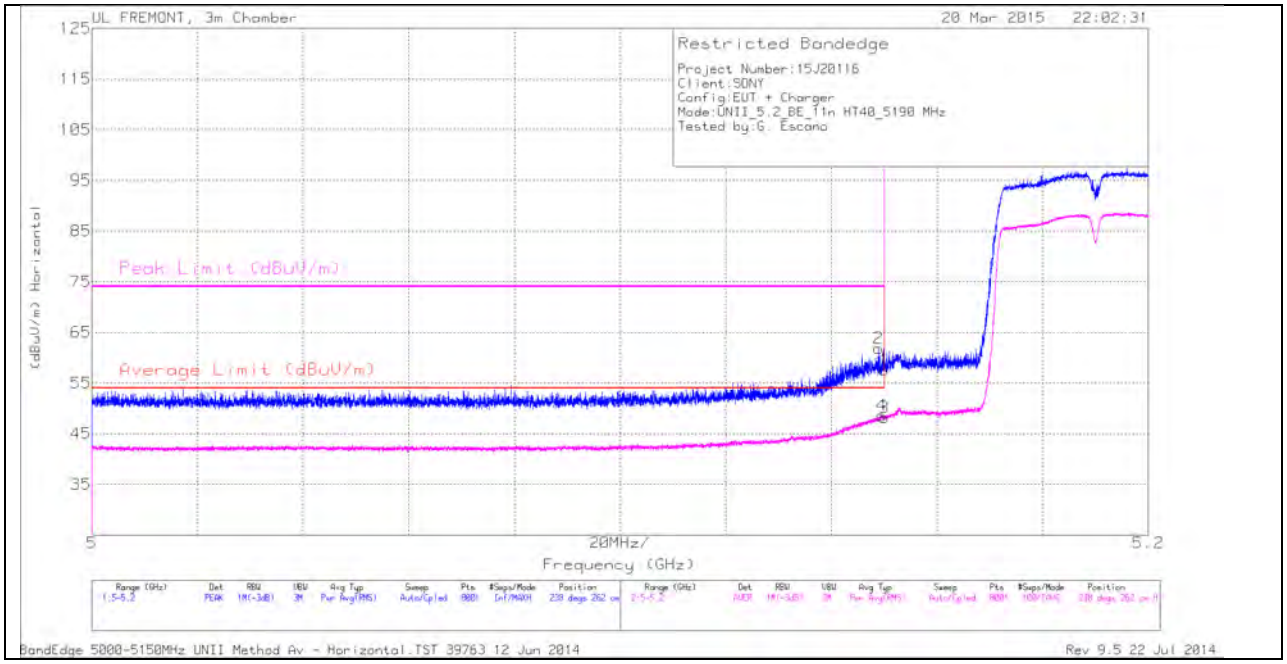
## 11.1.3. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.2 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

### HORIZONTAL PEAK AND AVERAGE PLOT




### HORIZONTAL DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 5.149 | 49.27 | PK | 34.2 | -21.6 | 0 | 61.87 | - | - | 74 | -12.13 | 238 | 262 | H |
| 1 | 5.15 | 45.05 | PK | 34.2 | -21.6 | 0 | 57.65 | - | - | 74 | -16.35 | 238 | 262 | H |
| 3 | 5.15 | 35.56 | RMS | 34.2 | -21.6 | 0 | 48.16 | 54 | -5.84 | - | - | 238 | 262 | H |
| 4 | 5.15 | 35.91 | RMS | 34.2 | -21.6 | 0 | 48.51 | 54 | -5.49 | - | - | 238 | 262 | H |

PK - Peak detector

RMS - RMS detection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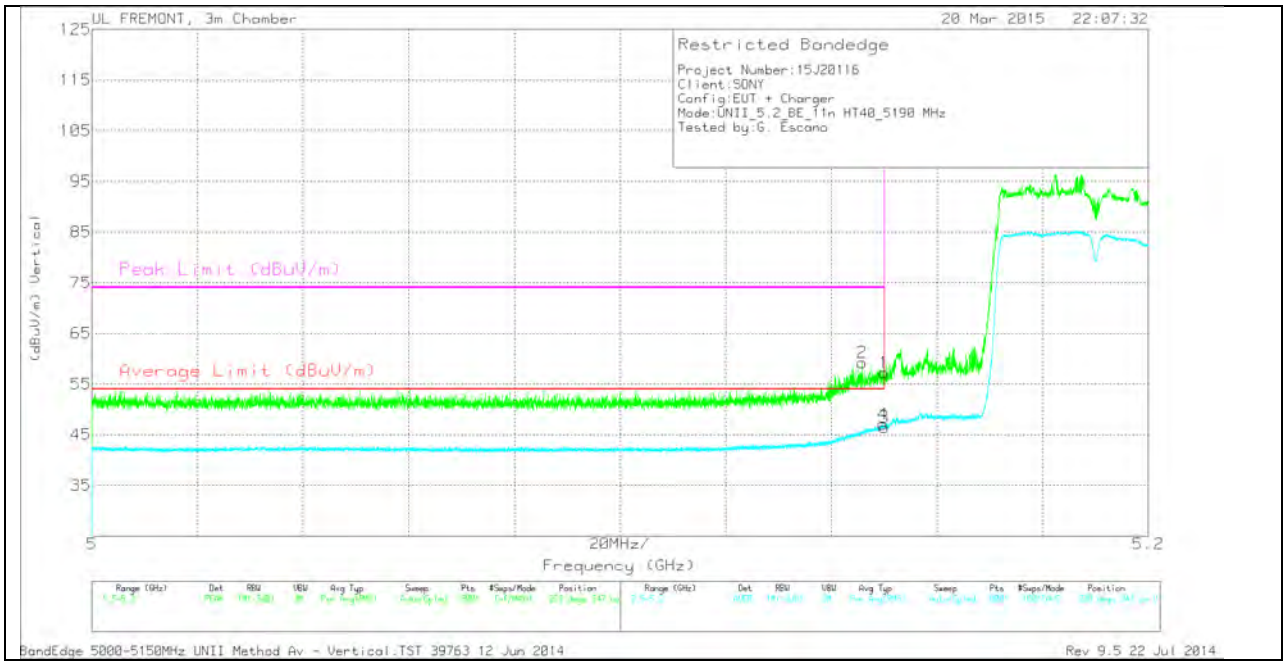
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 5.146 | 46.63 | PK | 34.2 | -21.6 | 0 | 59.23 | - | - | 74 | -14.77 | 228 | 347 | V |
| 1 | 5.15 | 44.64 | PK | 34.2 | -21.6 | 0 | 57.24 | - | - | 74 | -16.76 | 228 | 347 | V |
| 3 | 5.15 | 33.9 | RMS | 34.2 | -21.6 | 0 | 46.50 | 54 | -7.50 | - | - | 228 | 347 | V |
| 4 | 5.15 | 34.46 | RMS | 34.2 | -21.6 | 0 | 47.06 | 54 | -6.94 | - | - | 228 | 347 | V |

PK - Peak detector

RMS - RMS detection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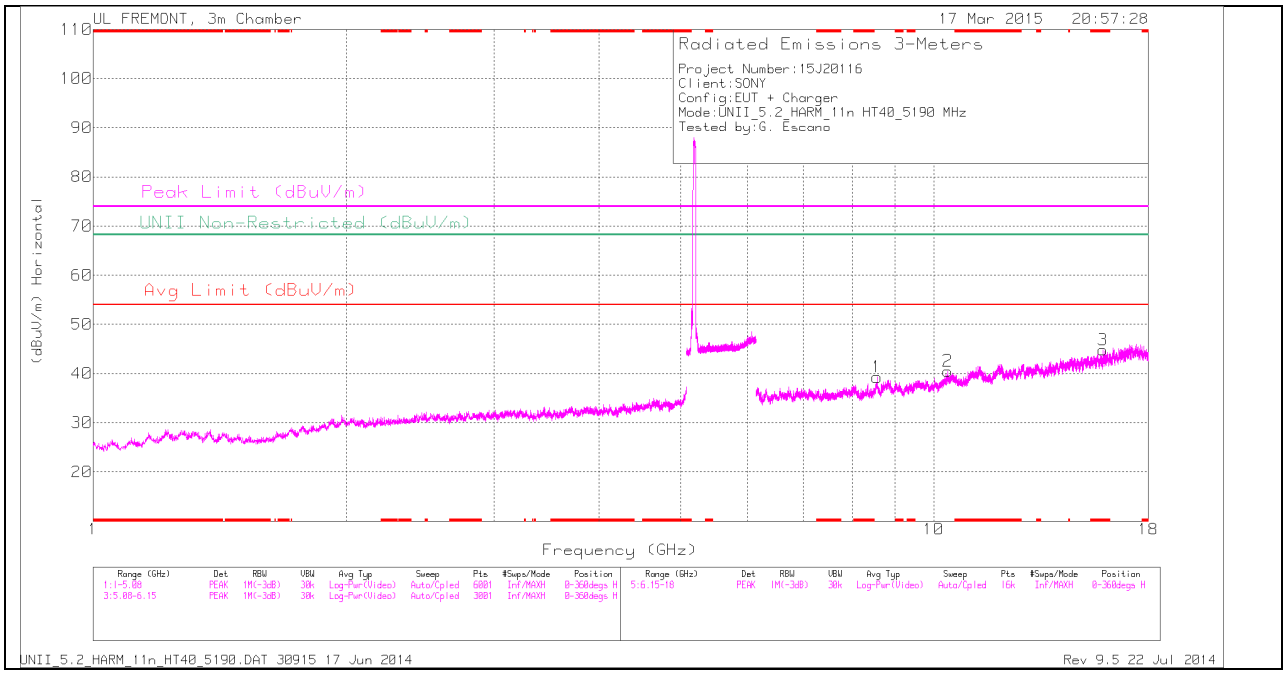
# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL HORIZONTAL




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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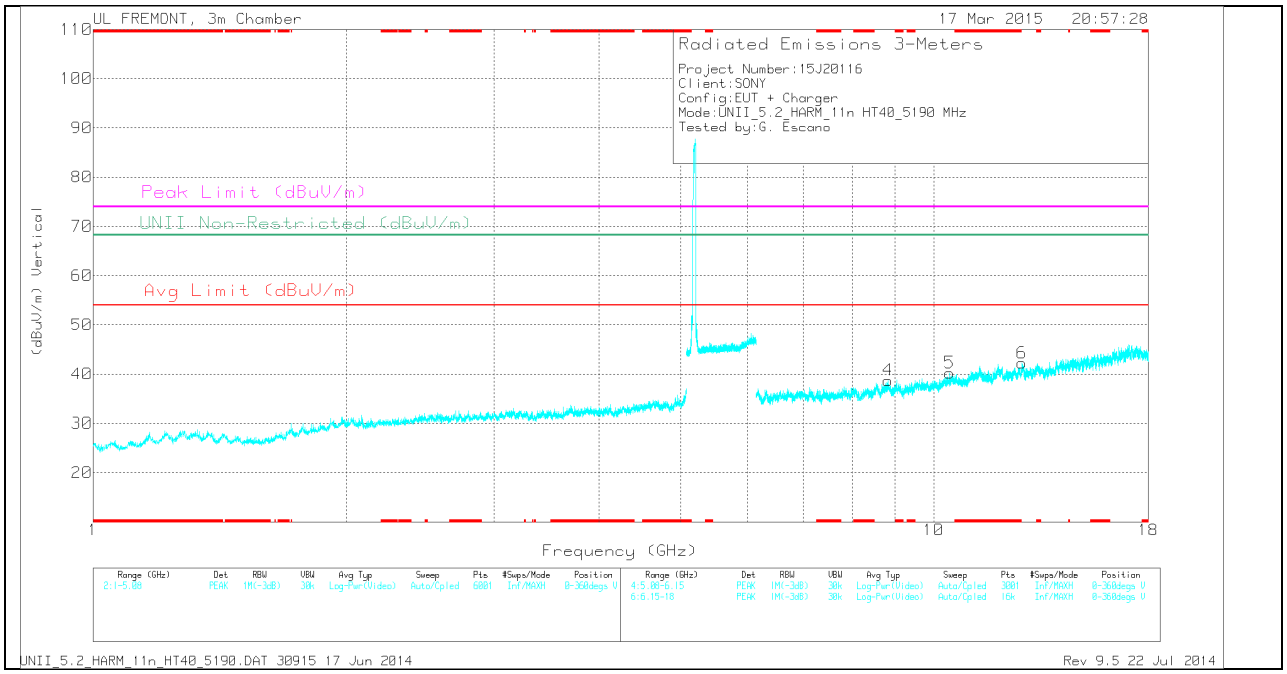
**LOW CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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## LOW CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | * 15.909 | 30.41 | PK | 40.3 | -25.9 | 0 | 44.81 | - | - | 74 | -29.19 | - | - | 0-360 | 200 | H |
| 1 | 8.563 | 29.67 | PK | 35.8 | -26.2 | 0 | 39.27 | - | - | - | - | 68.2 | -28.93 | 0-360 | 100 | H |
| 4 | 8.826 | 28.74 | PK | 35.9 | -25.9 | 0 | 38.74 | - | - | - | - | 68.2 | -29.46 | 0-360 | 200 | V |
| 2 | 10.399 | 28.99 | PK | 37.3 | -25.8 | 0 | 40.49 | - | - | - | - | 68.2 | -27.71 | 0-360 | 100 | H |
| 5 | 10.442 | 28.75 | PK | 37.3 | -25.8 | 0 | 40.25 | - | - | - | - | 68.2 | -27.95 | 0-360 | 100 | V |
| 6 | 12.741 | 28.96 | PK | 39.1 | -25.8 | 0 | 42.26 | - | - | - | - | 68.2 | -25.94 | 0-360 | 100 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Fl tr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 15.911 | 38.67 | PK1 | 40.3 | -26 | 0 | 52.97 | - | - | 74 | -21.03 | - | - | 75 | 169 | H |
| * 15.911 | 27.3 | AD1 | 40.3 | -26 | 0 | 41.60 | 54 | -12.40 | - | - | - | - | 75 | 169 | H |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average


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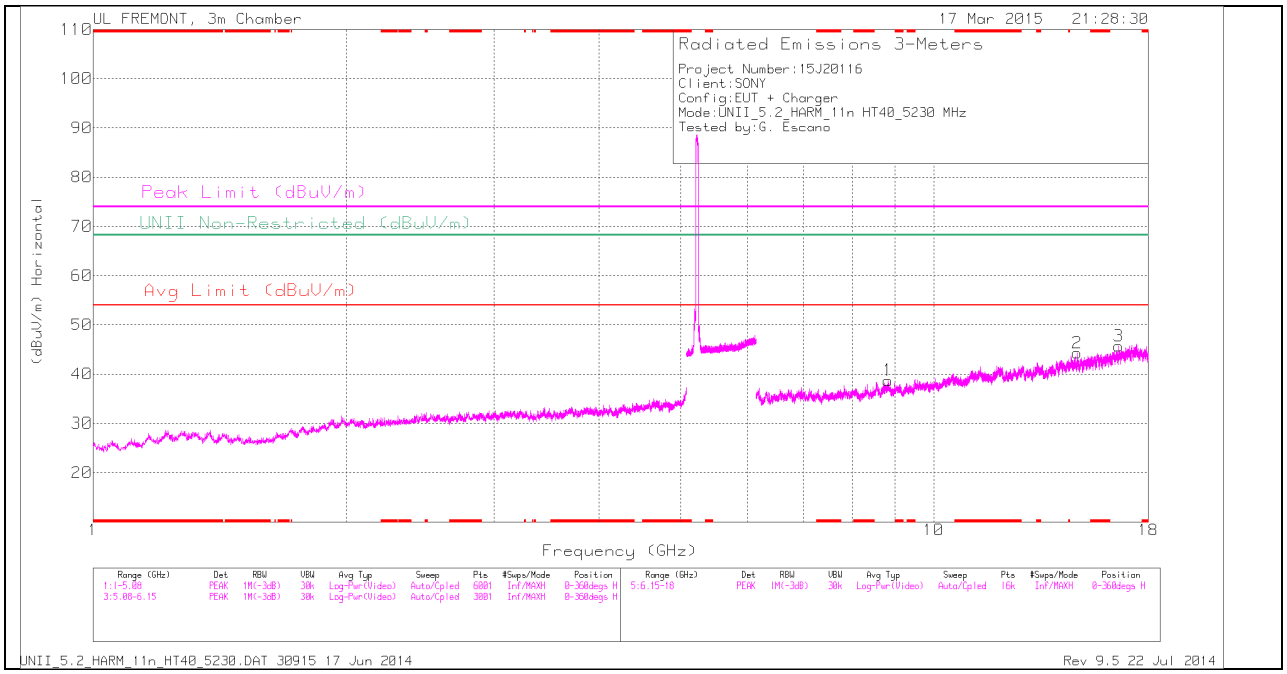
**HIGH CHANNEL HORIZONTAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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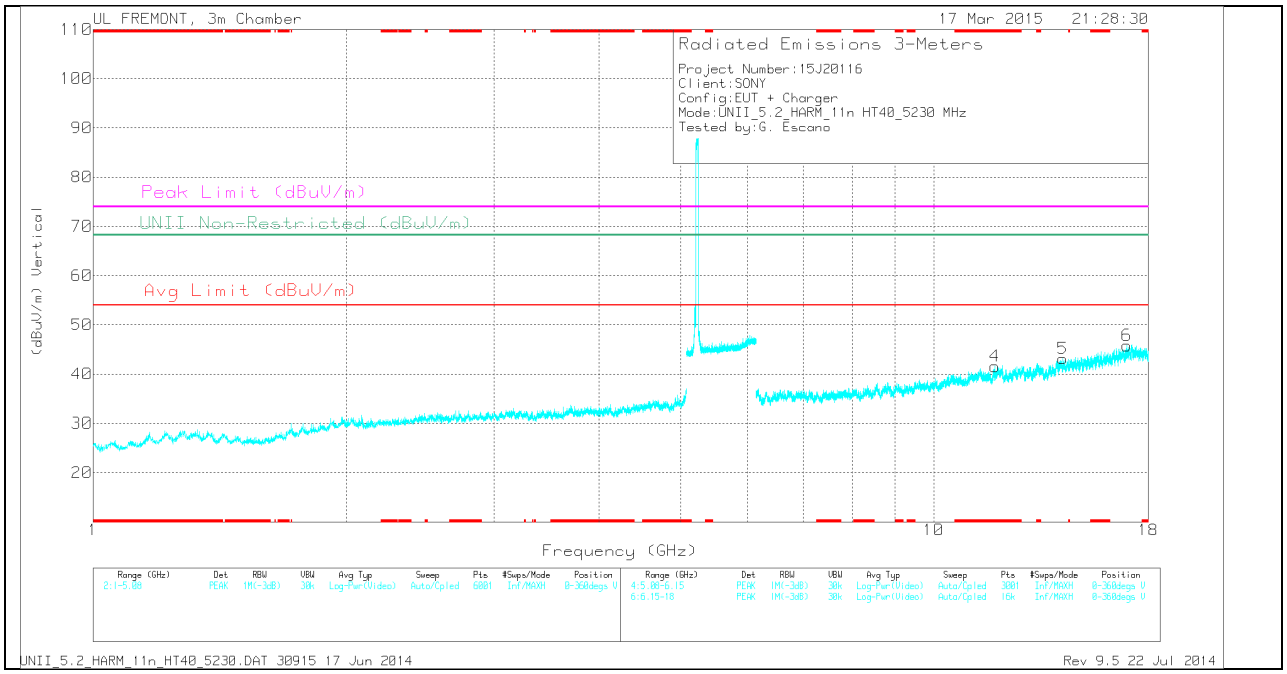
**HIGH CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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## HIGH CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | * 11.827 | 28.77 | PK | 39 | -26.2 | 0 | 41.57 | - | - | 74 | -32.43 | - | - | 0-360 | 200 | V |
| 1 | 8.822 | 28.52 | PK | 35.9 | -25.7 | 0 | 38.72 | - | - | - | - | 68.2 | -29.48 | 0-360 | 200 | H |
| 5 | 14.24 | 30.55 | PK | 39.2 | -26.6 | 0 | 43.15 | - | - | - | - | 68.2 | -25.05 | 0-360 | 200 | V |
| 2 | 14.806 | 31.89 | PK | 39.8 | -27.4 | 0 | 44.29 | - | - | - | - | 68.2 | -23.91 | 0-360 | 100 | H |
| 3 | 16.603 | 28.91 | PK | 41 | -24.2 | 0 | 45.71 | - | - | - | - | 68.2 | -22.49 | 0-360 | 200 | H |
| 6 | 16.982 | 28.1 | PK | 41.3 | -23.6 | 0 | 45.8 | - | - | - | - | 68.2 | -22.4 | 0-360 | 100 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Fl tr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 11.827 | 37.92 | PK1 | 39 | -26.2 | 0 | 50.72 | - | - | 74 | -23.28 | - | - | 251 | 186 | V |
| * 11.825 | 26.11 | AD1 | 39 | -26.3 | 0 | 38.81 | 54 | -15.19 | - | - | - | - | 251 | 186 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average


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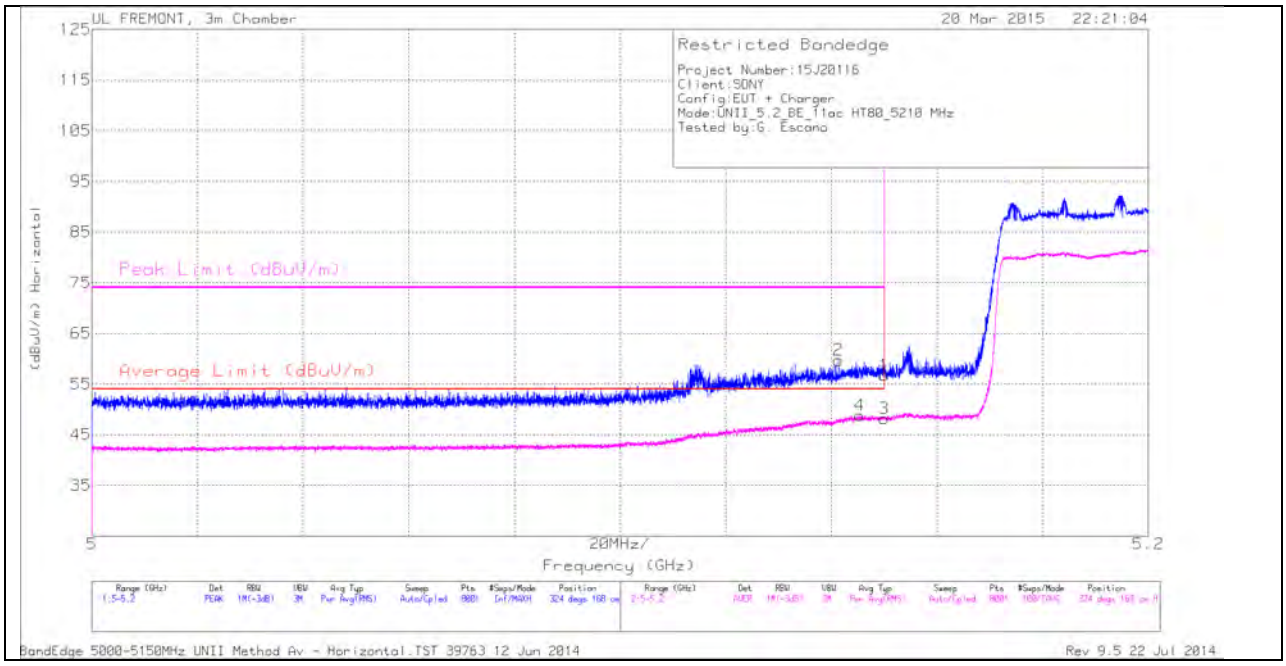
## 11.1.4. TX ABOVE 1 GHz 802.11ac HT80 MODE IN THE 5.2 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

### HORIZONTAL PEAK AND AVERAGE PLOT




### HORIZONTAL DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 5.141 | 47.07 | PK | 34.2 | -21.6 | 0 | 59.67 | - | - | 74 | -14.33 | 324 | 168 | H |
| 4 | 5.145 | 36.17 | RMS | 34.2 | -21.6 | .13 | 48.9 | 54 | -5.1 | - | - | 324 | 168 | H |
| 1 | 5.15 | 44.12 | PK | 34.2 | -21.6 | 0 | 56.72 | - | - | 74 | -17.28 | 324 | 168 | H |
| 3 | 5.15 | 35.56 | RMS | 34.2 | -21.6 | .13 | 48.29 | 54 | -5.71 | - | - | 324 | 168 | H |

PK - Peak detector

RMS - RMS detection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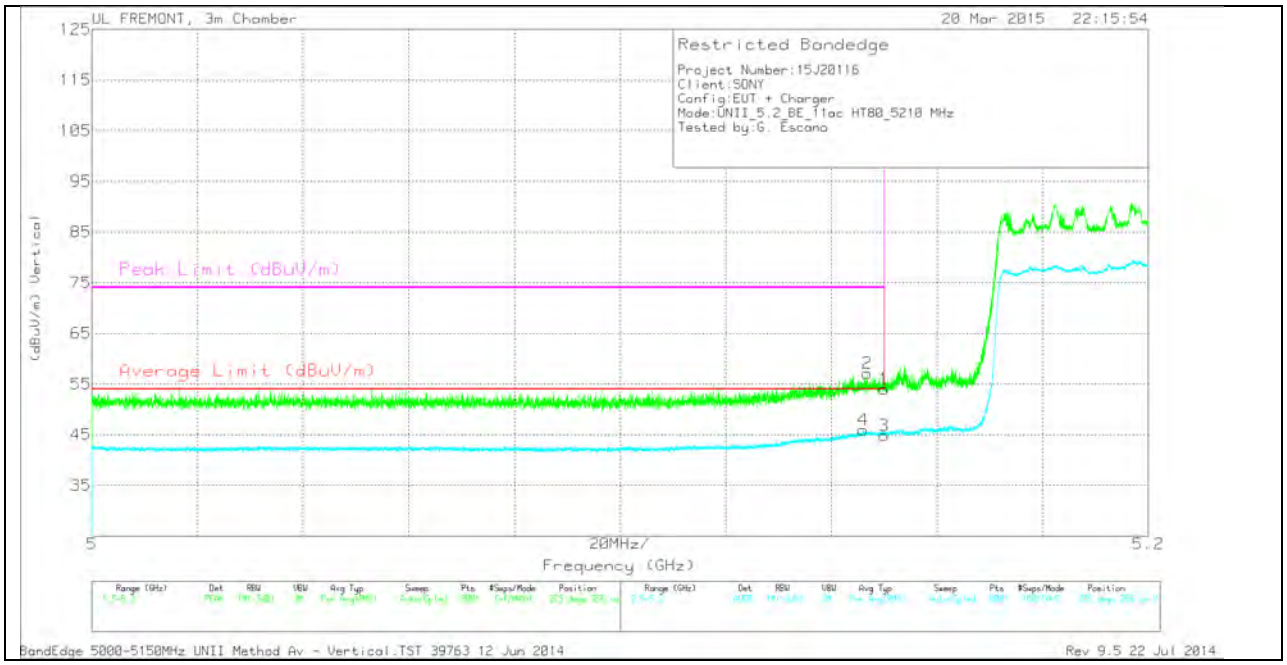
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 5.146 | 33.19 | RMS | 34.2 | -21.6 | .13 | 45.92 | 54 | -8.08 | - | - | 225 | 256 | V |
| 2 | 5.147 | 44.54 | PK | 34.2 | -21.6 | 0 | 57.14 | - | - | 74 | -16.86 | 225 | 256 | V |
| 1 | 5.15 | 41.39 | PK | 34.2 | -21.6 | 0 | 53.99 | - | - | 74 | -20.01 | 225 | 256 | V |
| 3 | 5.15 | 32.11 | RMS | 34.2 | -21.6 | .13 | 44.84 | 54 | -9.16 | - | - | 225 | 256 | V |

PK - Peak detector

RMS - RMS detection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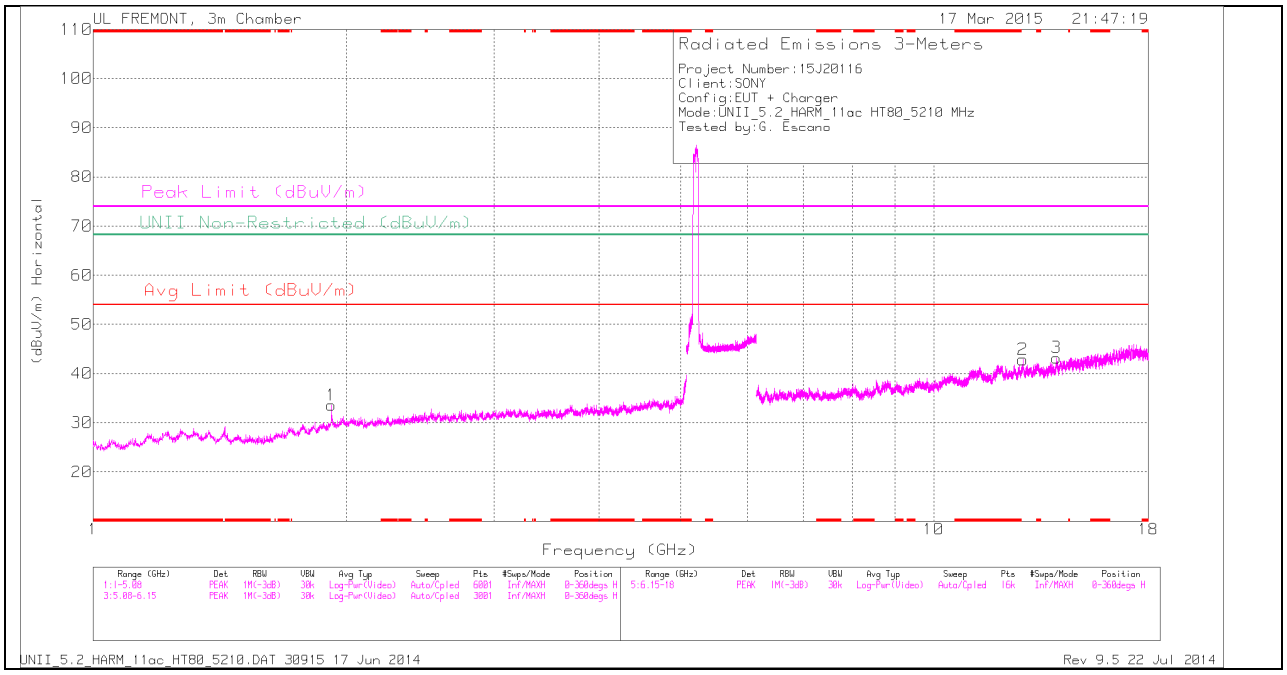
# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL HORIZONTAL




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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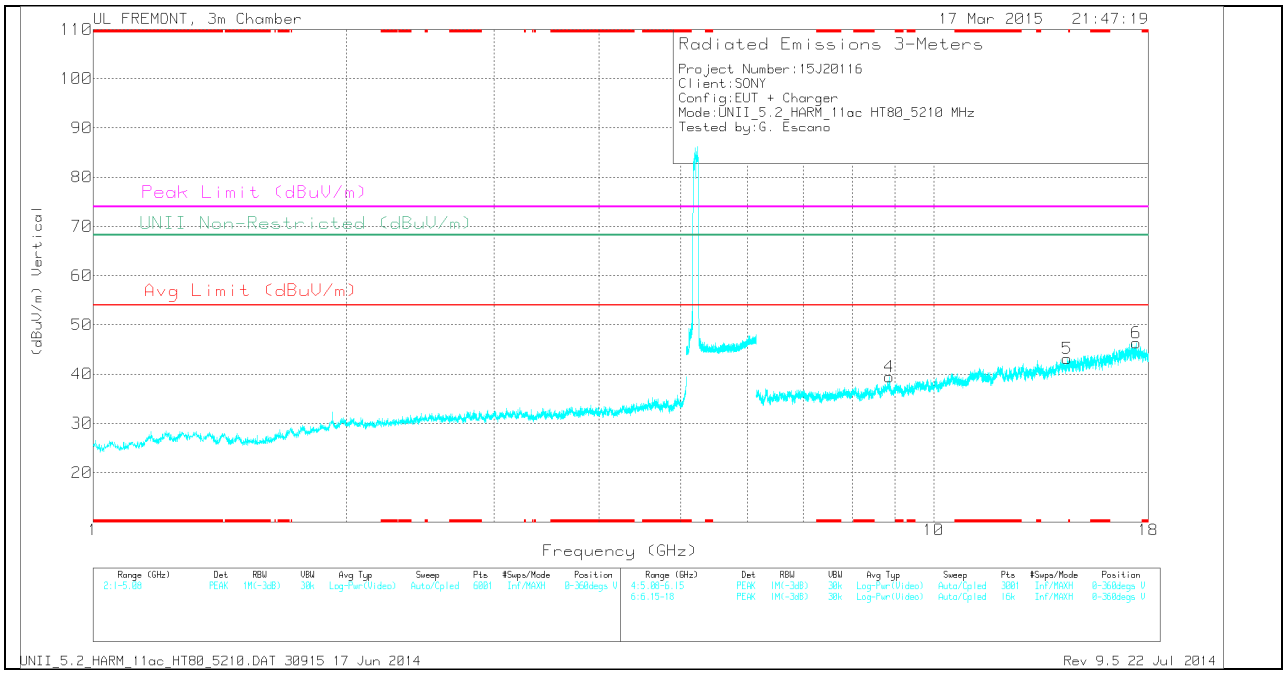
**LOW CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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## LOW CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.921 | 34.96 | PK | 31.2 | -32.6 | 0 | 33.56 | - | - | - | - | 68.2 | -34.64 | 0-360 | 200 | H |
| 4 | 8.852 | 30.16 | PK | 35.9 | -26.6 | 0 | 39.46 | - | - | - | - | 68.2 | -28.74 | 0-360 | 100 | V |
| 2 | 12.766 | 29.75 | PK | 39.1 | -26 | 0 | 42.85 | - | - | - | - | 68.2 | -25.35 | 0-360 | 100 | H |
| 3 | 13.992 | 32.11 | PK | 38.8 | -27.7 | 0 | 43.21 | - | - | - | - | 68.2 | -24.99 | 0-360 | 100 | H |
| 5 | 14.422 | 30.95 | PK | 39.6 | -27.4 | 0 | 43.15 | - | - | - | - | 68.2 | -25.05 | 0-360 | 100 | V |
| 6 | 17.42 | 27.02 | PK | 41.4 | -22.1 | 0 | 46.32 | - | - | - | - | 68.2 | -21.88 | 0-360 | 100 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector


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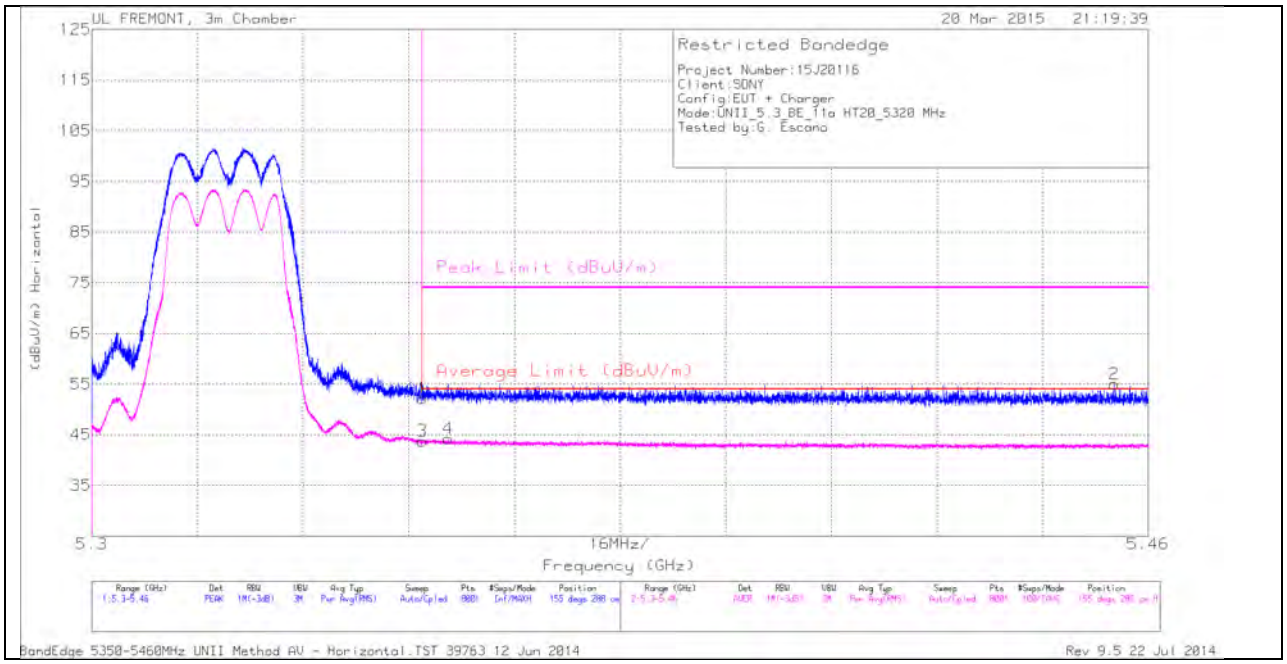
## 11.1. 5.3 GHz

### 11.1.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND AUTHORIZED BANDEDGE (HIGH CHANNEL)

**HORIZONTAL PEAK AND AVERAGE PLOT**




**HORIZONTAL DATA**

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.35 | 39.09 | PK | 34.5 | -21.4 | 0 | 52.19 | - | - | 74 | -21.81 | 155 | 288 | H |
| 3 | 5.35 | 30.67 | RMS | 34.5 | -21.4 | 0 | 43.77 | 54 | -10.23 | - | - | 155 | 288 | H |
| 4 | 5.354 | 31.12 | RMS | 34.5 | -21.4 | 0 | 44.22 | 54 | -9.78 | - | - | 155 | 288 | H |
| 2 | 5.455 | 41.8 | PK | 34.6 | -21.4 | 0 | 55 | - | - | 74 | -19 | 155 | 288 | H |

PK - Peak detector

RMS - RMS detection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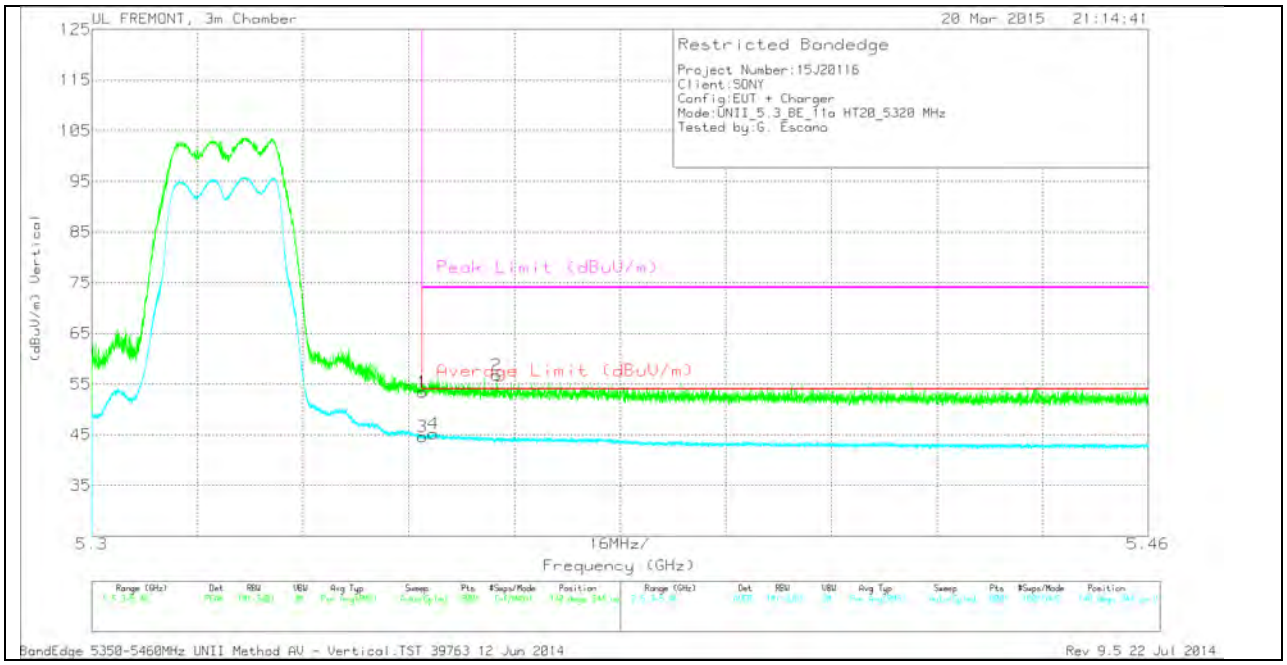
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.35 | 40.34 | PK | 34.5 | -21.4 | 0 | 53.44 | - | - | 74 | -20.56 | 140 | 344 | V |
| 3 | 5.35 | 31.49 | RMS | 34.5 | -21.4 | 0 | 44.59 | 54 | -9.41 | - | - | 140 | 344 | V |
| 4 | 5.352 | 32.1 | RMS | 34.5 | -21.4 | 0 | 45.2 | 54 | -8.8 | - | - | 140 | 344 | V |
| 2 | 5.361 | 43.6 | PK | 34.5 | -21.4 | 0 | 56.7 | - | - | 74 | -17.3 | 140 | 344 | V |

PK - Peak detector

RMS - RMS detection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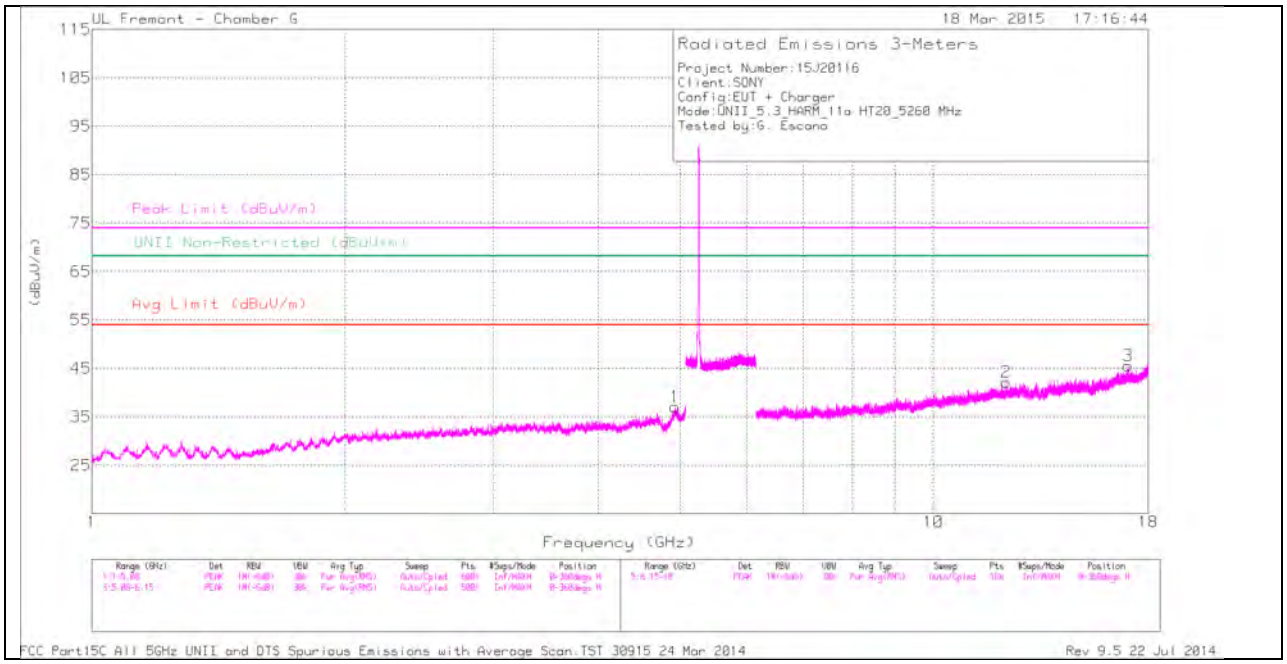
# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL HORIZONTAL




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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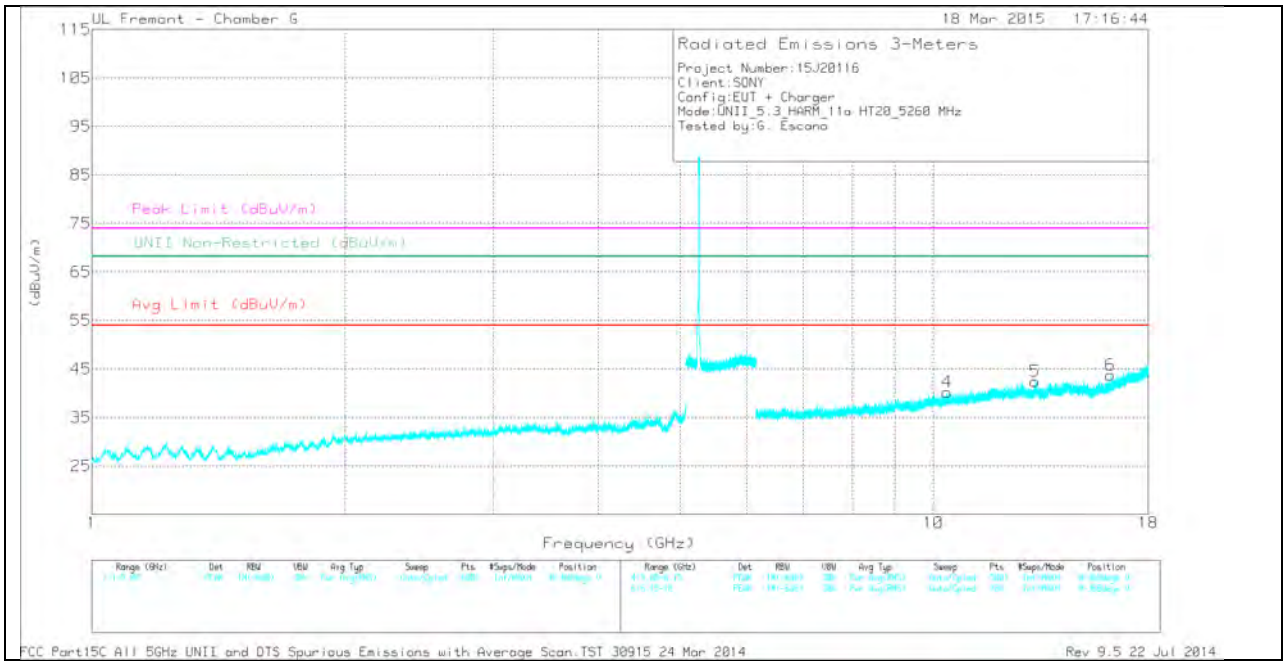
**LOW CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



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## LOW CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 4.933 | 34.75 | PK | 34.1 | -31.7 | 0 | 37.15 | - | - | 74 | -36.85 | - | - | 0-360 | 201 | H |
| 2 | * 12.192 | 29.87 | PK | 38.8 | -26.5 | 0 | 42.17 | - | - | 74 | -31.83 | - | - | 0-360 | 201 | H |
| 4 | 10.372 | 29.88 | PK | 37.5 | -27.1 | 0 | 40.28 | - | - | - | - | 68.2 | -27.92 | 0-360 | 201 | V |
| 5 | 13.2 | 29.64 | PK | 39 | -26.2 | 0 | 42.44 | - | - | - | - | 68.2 | -25.76 | 0-360 | 201 | V |
| 6 | 16.243 | 29.62 | PK | 40.8 | -26.7 | 0 | 43.72 | - | - | - | - | 68.2 | -24.48 | 0-360 | 201 | V |
| 3 | 17.043 | 28.92 | PK | 42 | -25.4 | 0 | 45.52 | - | - | - | - | 68.2 | -22.68 | 0-360 | 101 | H |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Fl tr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 4.933 | 42.98 | PK1 | 34.1 | -31.7 | 0 | 45.38 | - | - | 74 | -28.62 | - | - | 114 | 197 | H |
| * 4.933 | 30.39 | AD1 | 34.1 | -31.7 | 0 | 32.79 | 54 | -21.21 | - | - | - | - | 114 | 197 | H |
| * 12.192 | 36.33 | PK1 | 38.8 | -26.5 | 0 | 48.63 | - | - | 74 | -25.37 | - | - | 294 | 222 | H |
| * 12.191 | 25.24 | AD1 | 38.8 | -26.6 | 0 | 37.44 | 54 | -16.56 | - | - | - | - | 294 | 222 | H |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average


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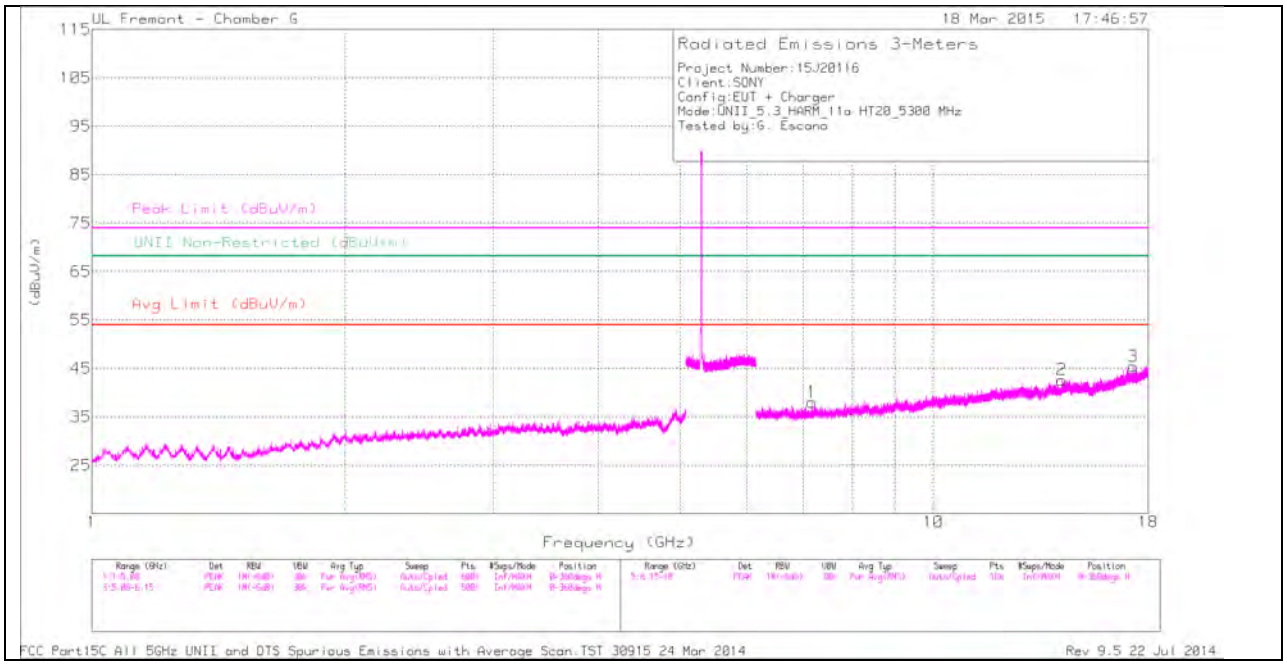
**MID CHANNEL HORIZONTAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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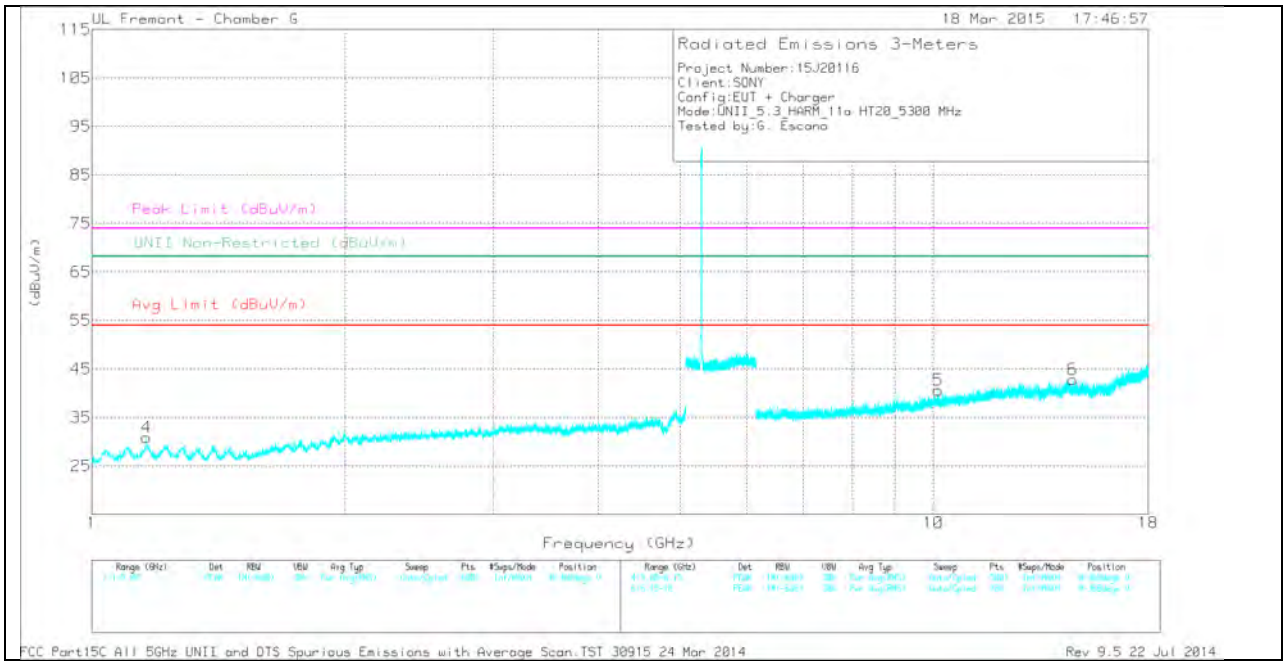
**MID CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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## MID CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | * 1.161 | 37.63 | PK | 28.8 | -35.5 | 0 | 30.93 | - | - | 74 | -43.07 | - | - | 0-360 | 101 | V |
| 1 | 7.169 | 34.16 | PK | 35.6 | -31.7 | 0 | 38.06 | - | - | - | - | 68.2 | -30.14 | 0-360 | 201 | H |
| 5 | 10.137 | 30.89 | PK | 37.5 | -27.8 | 0 | 40.59 | - | - | - | - | 68.2 | -27.61 | 0-360 | 201 | V |
| 2 | 14.206 | 30.65 | PK | 39.7 | -27.7 | 0 | 42.65 | - | - | - | - | 68.2 | -25.55 | 0-360 | 101 | H |
| 6 | 14.638 | 31.16 | PK | 40 | -28.3 | 0 | 42.86 | - | - | - | - | 68.2 | -25.34 | 0-360 | 201 | V |
| 3 | 17.257 | 29.16 | PK | 41.5 | -25.2 | 0 | 45.46 | - | - | - | - | 68.2 | -22.74 | 0-360 | 201 | H |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 1.162 | 45.06 | PK1 | 28.8 | -35.5 | 0 | 38.36 | - | - | 74 | -35.64 | - | - | 288 | 122 | V |
| * 1.161 | 32.8 | AD1 | 28.8 | -35.5 | 0 | 26.1 | 54 | -27.9 | - | - | - | - | 288 | 122 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average


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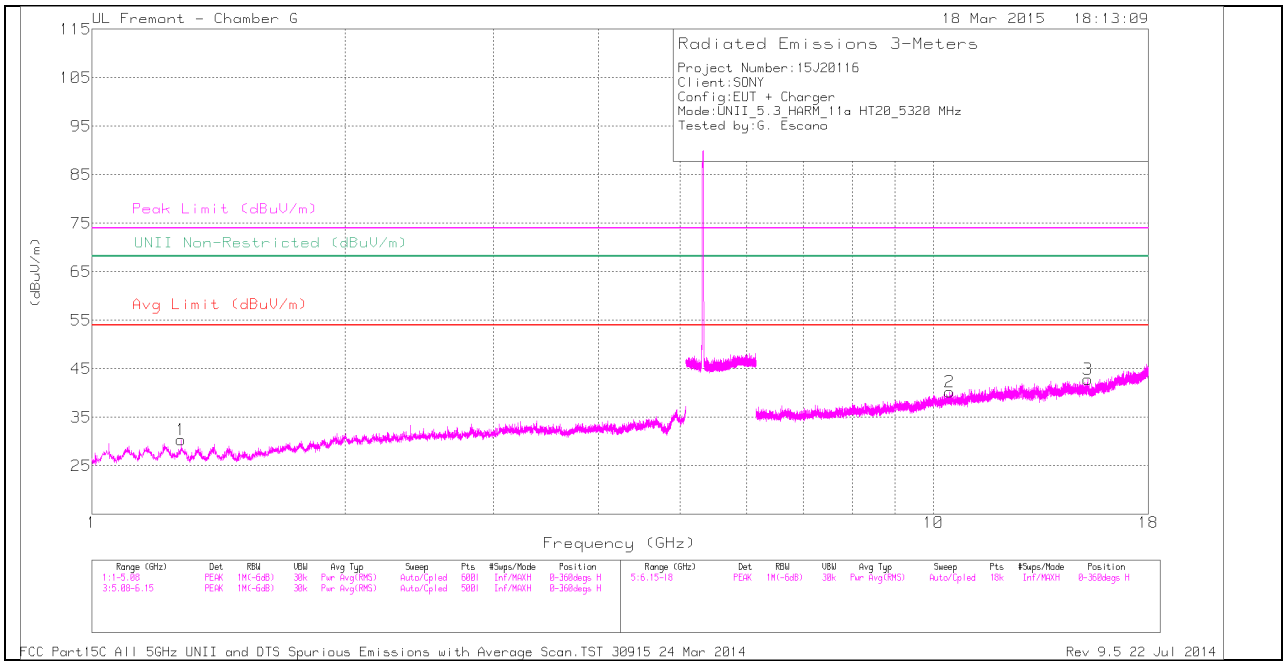
**HIGH CHANNEL HORIZONTAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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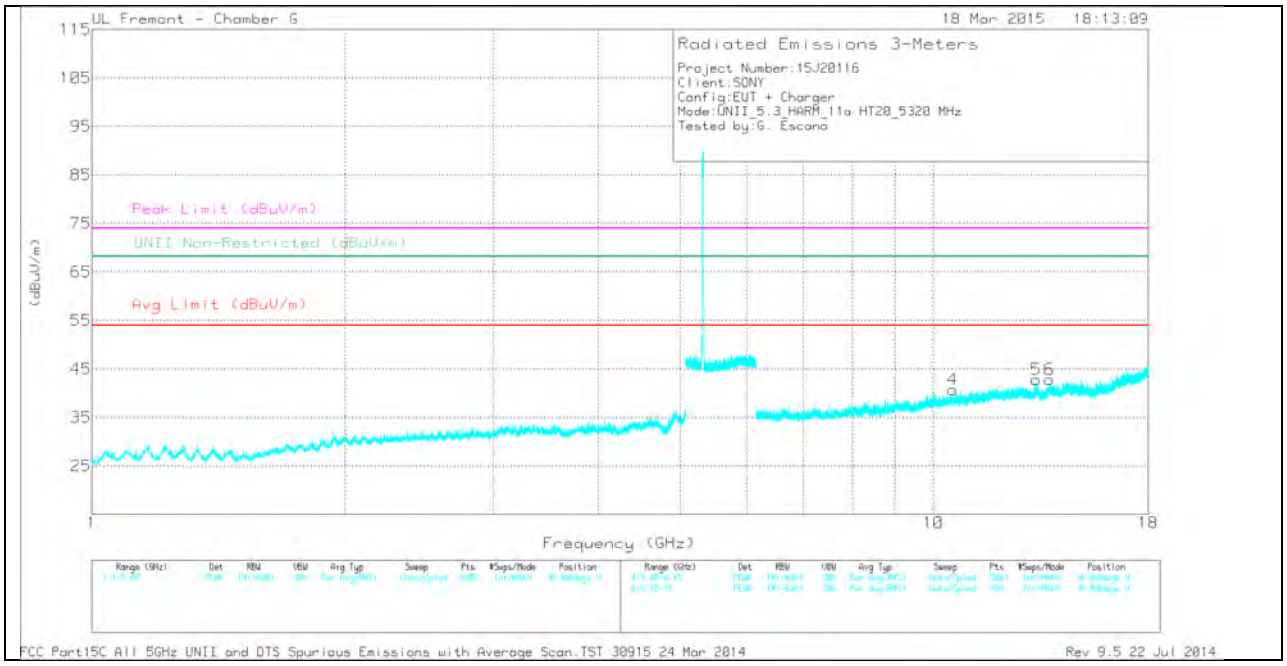
**HIGH CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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## HIGH CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 1.276 | 37.06 | PK | 29.1 | -35.8 | 0 | 30.36 | - | - | 74 | -43.64 | - | - | 0-360 | 101 | H |
| 5 | * 13.252 | 29.61 | PK | 39 | -25.8 | 0 | 42.81 | - | - | 74 | -31.19 | - | - | 0-360 | 201 | V |
| 2 | 10.449 | 30.39 | PK | 37.6 | -27.7 | 0 | 40.29 | - | - | - | - | 68.2 | -27.91 | 0-360 | 201 | H |
| 4 | 10.534 | 30.21 | PK | 37.6 | -27 | 0 | 40.81 | - | - | - | - | 68.2 | -27.39 | 0-360 | 201 | V |
| 6 | 13.733 | 30.38 | PK | 39.2 | -26.7 | 0 | 42.88 | - | - | - | - | 68.2 | -25.32 | 0-360 | 101 | V |
| 3 | 15.244 | 30.34 | PK | 39.8 | -27.3 | 0 | 42.84 | - | - | - | - | 68.2 | -25.36 | 0-360 | 101 | H |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T862 (dB/m) | Amp/Cbl/Fl tr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 1.276 | 44.34 | PK1 | 29.1 | -35.8 | 0 | 37.64 | - | - | 74 | -36.36 | - | - | 123 | 291 | H |
| * 1.276 | 32.19 | AD1 | 29.1 | -35.8 | 0 | 25.49 | 54 | -28.51 | - | - | - | - | 123 | 291 | H |
| * 13.252 | 36.94 | PK1 | 39 | -25.8 | 0 | 50.14 | - | - | 74 | -23.86 | - | - | 74 | 172 | V |
| * 13.253 | 25.51 | AD1 | 39 | -25.8 | 0 | 38.71 | 54 | -15.29 | - | - | - | - | 74 | 172 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average


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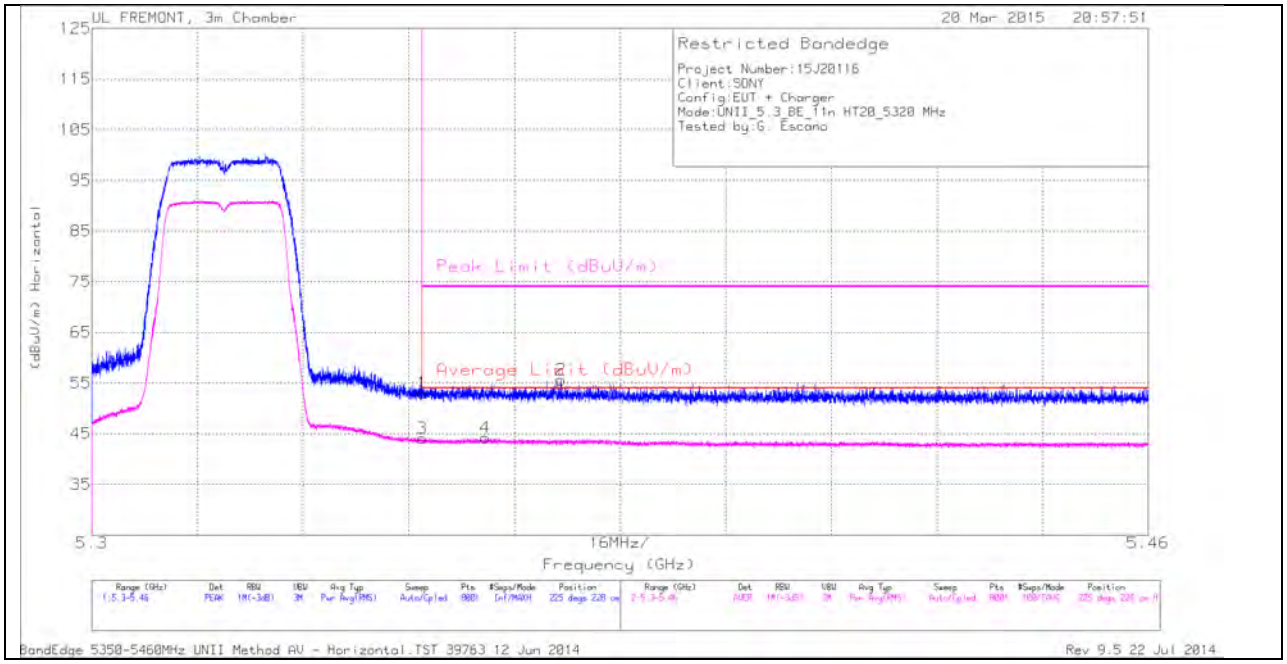
## 11.1.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND

## AUTHORIZED BANDEDGE (HIGH CHANNEL)

### HORIZONTAL PEAK AND AVERAGE PLOT




### HORIZONTAL DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.35 | 39.95 | PK | 34.5 | -21.4 | 0 | 53.05 | - | - | 74 | -20.95 | 225 | 228 | H |
| 3 | 5.35 | 30.93 | RMS | 34.5 | -21.4 | 0 | 44.03 | 54 | -9.97 | - | - | 225 | 228 | H |
| 4 | 5.36 | 31.12 | RMS | 34.5 | -21.4 | 0 | 44.22 | 54 | -9.78 | - | - | 225 | 228 | H |
| 2 | 5.371 | 42.56 | PK | 34.6 | -21.5 | 0 | 55.66 | - | - | 74 | -18.34 | 225 | 228 | H |

PK - Peak detector

RMS - RMS detection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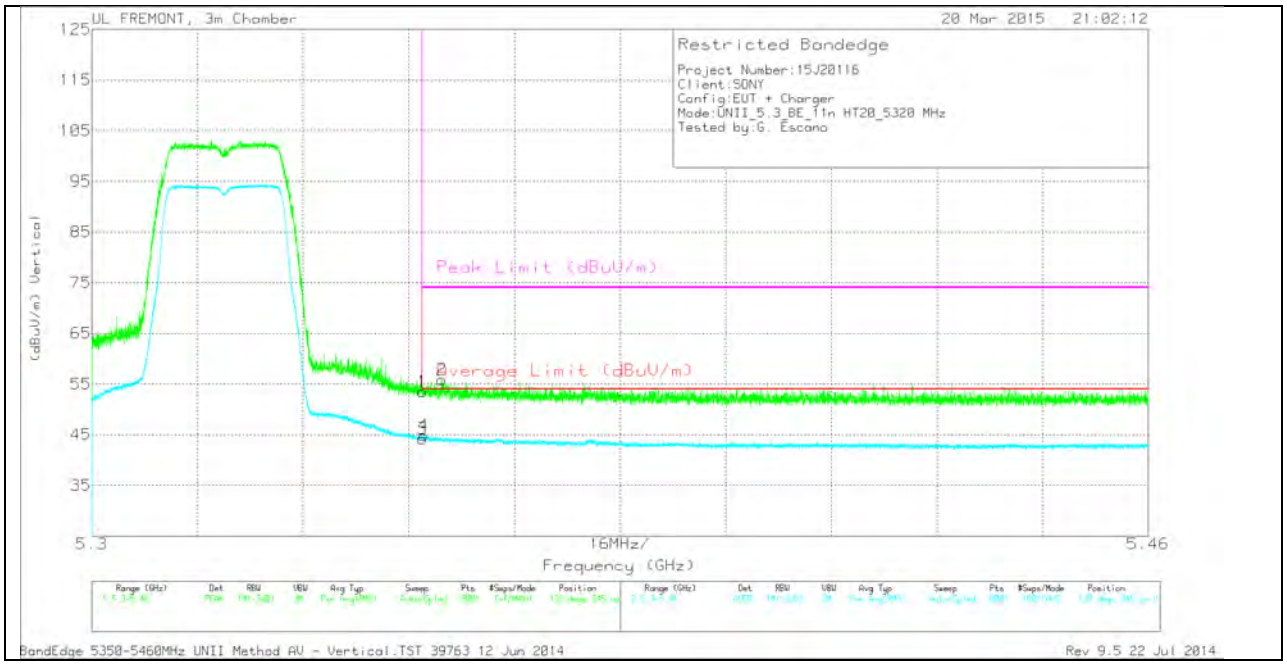
## VERTICAL PEAK AND AVERAGE PLOT




## VERTICAL DATA

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Flt r/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.35 | 40.37 | PK | 34.5 | -21.4 | 0 | 53.47 | - | - | 74 | -20.53 | 138 | 345 | V |
| 3 | 5.35 | 31.1 | RMS | 34.5 | -21.4 | 0 | 44.2 | 54 | -9.8 | - | - | 138 | 345 | V |
| 4 | 5.35 | 31.78 | RMS | 34.5 | -21.4 | 0 | 44.88 | 54 | -9.12 | - | - | 138 | 345 | V |
| 2 | 5.353 | 42.75 | PK | 34.5 | -21.4 | 0 | 55.85 | - | - | 74 | -18.15 | 138 | 345 | V |

PK - Peak detector

RMS - RMS detection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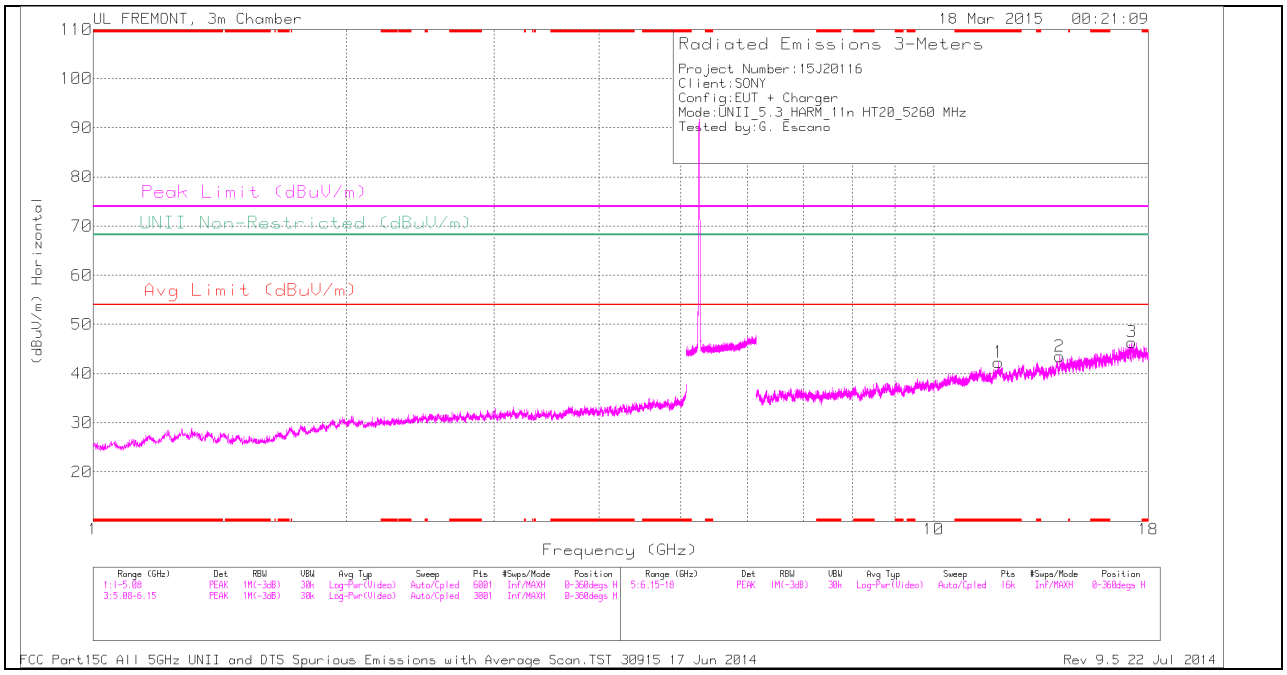
# HARMONICS AND SPURIOUS EMISSIONS

## LOW CHANNEL HORIZONTAL




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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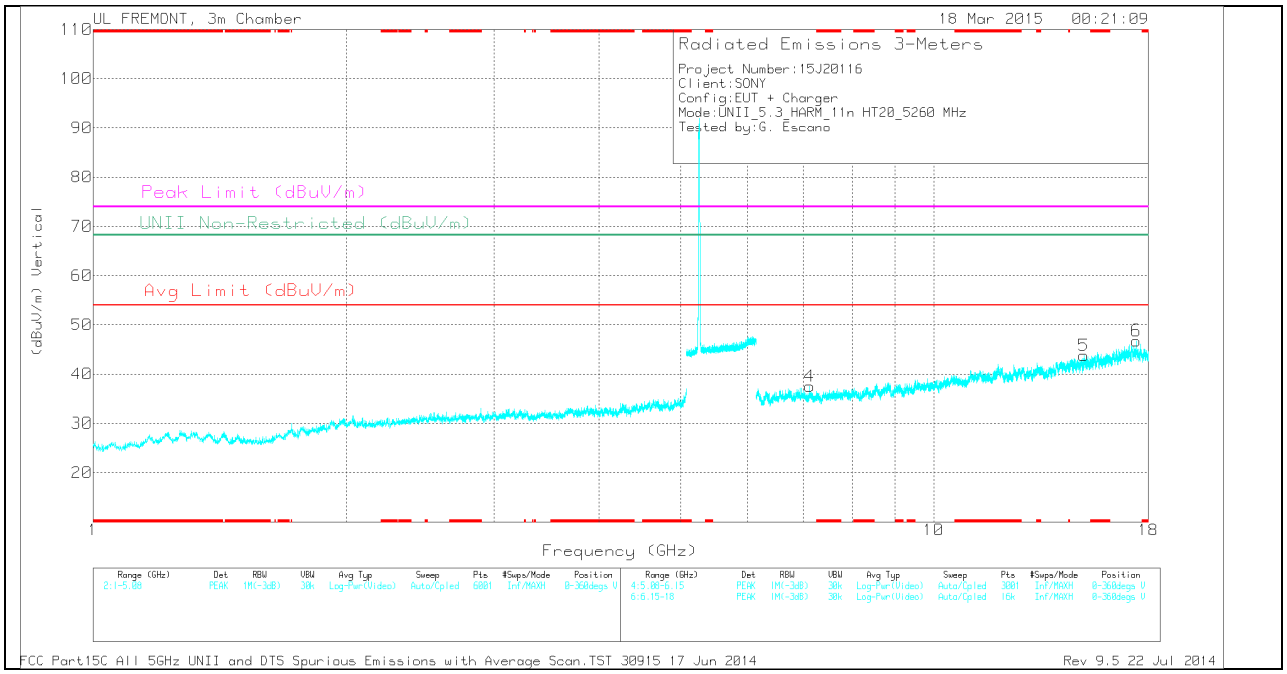
**LOW CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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## LOW CHANNEL DATA

*TRACE MARKERS*

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/ Fltr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | * 11.938 | 29.51 | PK | 39.1 | -26.3 | 0 | 42.31 | - | - | 74 | -31.69 | - | - | 0-360 | 200 | H |
| 2 | 14.116 | 32.1 | PK | 39 | -27.6 | 0 | 43.5 | - | - | - | - | 68.2 | -24.7 | 0-360 | 100 | H |
| 5 | 15.087 | 30.57 | PK | 39.8 | -26.6 | 0 | 43.77 | - | - | - | - | 68.2 | -24.43 | 0-360 | 200 | V |
| 3 | 17.202 | 28.01 | PK | 41.3 | -22.9 | 0 | 46.41 | - | - | - | - | 68.2 | -21.79 | 0-360 | 100 | H |
| 6 | 17.42 | 27.46 | PK | 41.4 | -22.1 | 0 | 46.76 | - | - | - | - | 68.2 | -21.44 | 0-360 | 100 | V |
| 4 | 7.122 | 30.93 | PK | 35.6 | -29 | 0 | 37.53 | - | - | - | - | 68.2 | -30.67 | 0-360 | 200 | V |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

## Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T119 (dB/m) | Amp/Cbl/Fl tr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non-Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| * 11.938 | 38.14 | PK1 | 39.1 | -26.3 | 0 | 50.94 | - | - | 74 | -23.06 | - | - | 89 | 229 | H |
| * 11.94 | 26.35 | AD1 | 39.1 | -26.3 | 0 | 39.15 | 54 | -14.85 | - | - | - | - | 89 | 229 | H |

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK1 - KDB789033 Method: Peak

AD1 - KDB789033 Method: AD Primary Power Average


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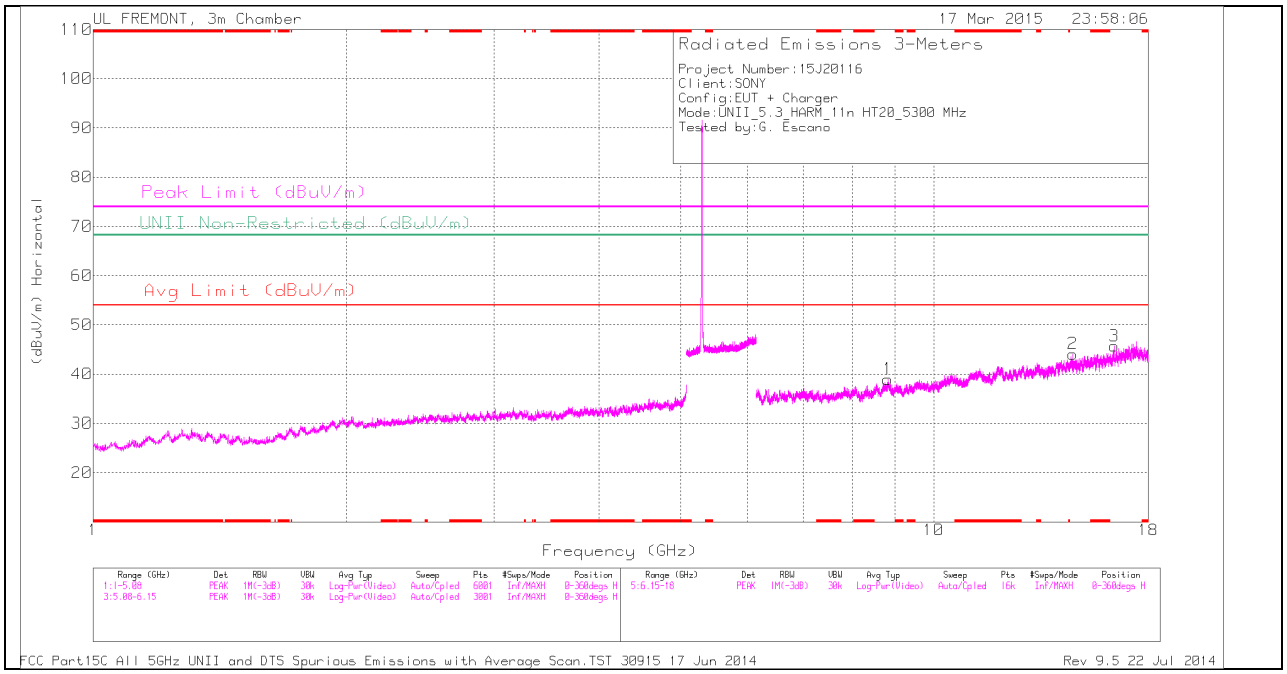
**MID CHANNEL HORIZONTAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.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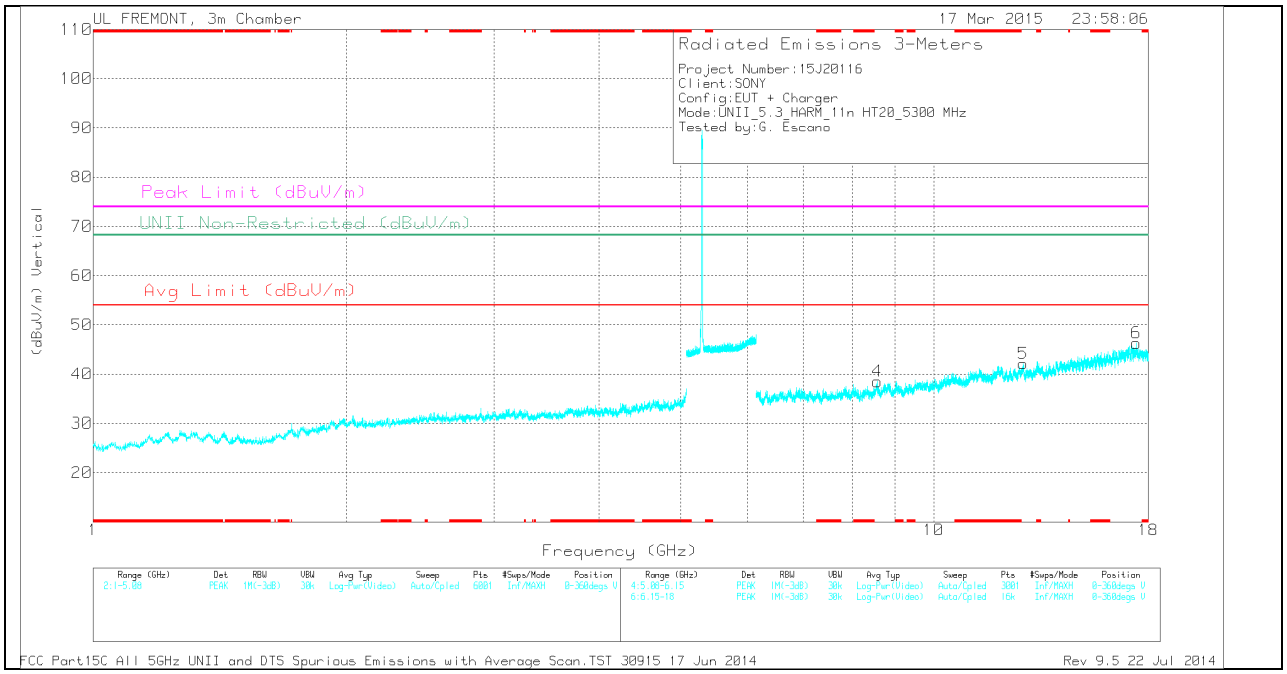
**MID CHANNEL VERTICAL**




Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

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