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

**CLASS II PERMISSIVE CHANGE**

# TEST REPORT

**FOR**

**802.11a/g/n/ac WLAN + Bluetooth PCI-E Custom Combination Card**

**MODEL NUMBER: BCM94360CD**

**FCC ID: QDS-BRCM1070**
**IC: 4324A-BRCM1070**

**REPORT NUMBER: 13U14831-1, Revision B**
**ISSUE DATE: AUGUST 18, 2013**

*Prepared for*

**BROADCOM CORPORATION**
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**SUNNYVALE, CA 94086, U.S.A.**

*Prepared by*

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NVLAP LAB CODE 200065-0

## Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| -- | 08/07/13 | Initial Issue | M. Ferrer |
| A | 08/15/13 | Added section 5.2<br>11ac VHT40 5710MHz power has been updated in the Max Output power table | F. Ibrahim |
| B | 08/18/13 | Revised all sections from 8.1 to 8.31.<br>Clarification has been added for the leveraging of antenna port testing. | K. Nguyen |

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# 1. ATTESTATION OF TEST RESULTS

| | |
|---|---|
| **COMPANY NAME:** | BROADCOM CORPORATION<br>190 MATHILDA PLACE<br>SUNNYVALE, CA 94086, USA |
| **EUT DESCRIPTION:** | 802.11a/g/n/ac WLAN + Bluetooth PCI-E Custom Combination Card |
| **MODEL:** | BCM94360CD |
| **SERIAL NUMBER:** | C86248400DRF6RY11 (RF ) and 862386007BF6RY01 (DFS) |
| **DATE TESTED:** | NOVEMBER 12, 2012- JULY 23, 2013 |

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

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

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

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WiSE PROJECT LEAD
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Tested By:

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# 2. TEST METHODOLOGY

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

# 3. FACILITIES AND ACCREDITATION

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

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

# 4. CALIBRATION AND UNCERTAINTY

## 4.1. MEASURING INSTRUMENT CALIBRATION

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

## 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

## 4.3. MEASUREMENT UNCERTAINTY

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

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

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

# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

The EUT is an 802.11a/g/n/ac WLAN + Bluetooth PCI-E Custom Combination Card.

The radio module is manufactured by Broadcom.

## 5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

This Class II Permissive Change report is add two higher gain antennas, detailed in Section 5.4, at less than or equal to output power outlined in the original certification report UL Verifications Inc. 12U14669-4E FCC IC UNII WLAN Report.

## 5.3. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

**5.2 GHz Band**

| 5150-5250 MHz Authorized Frequency Band | | | | | | |
|---|---|---|---|---|---|---|
| Frequency Range (MHz) | Mode | AVG Power, Chain 0 (dBm) | AVG Power, Chain 1 (dBm) | AVG Power, Chain 2 (dBm) | Total AVG power (dBm) | Total AVG power (mW) |
| 5180-5240 | 802.11a Legacy 1TX | 14.30 | N/A | N/A | 14.30 | 26.92 |
| 5180-5240 | 802.11a CDD 2TX | Covered by the worst case 802.11n HT20 CDD 2TX Mode testing | | | | |
| 5180-5240 | 802.11a CDD 3TX | Covered by the worst case 802.11n HT20 CDD 3TX Mode testing | | | | |
| 5180-5240 | 802.11n HT20 1TX | Covered by the worst case 802.11a Legacy 1TX Mode testing | | | | |
| 5180-5240 | 802.11n HT20 CDD 3TX | This mode disabled in the final driver due to PPSD limitations. The mode was used to demonstrate compliance for worst case emissions testing only at worst case power levels supported in any mode. | | | | |
| 5180-5240 | 802.11n VHT20 CDD 3TX | Disabled based upon 802.11n HT20 CDD 3TX Mode PPSD testing | | | | |
| 5180-5240 | 802.11n HT/VHT20 STBC/SDM 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain) and HT20 STBC/SDM 3Tx PPSD/Power testing, see note 1). | | | | |
| 5180-5240 | 802.11n HT/VHT20 STBC/SDM 3TX | 11.00 | 11.02 | 11.04 | 15.79 | 37.94 |
| 5190-5230 | 802.11n HT/VHT40 1TX | 15.10 | N/A | N/A | 15.10 | 32.36 |
| 5190-5230 | 802.11n HT/VHT40 CDD 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain) and VHT40 CDD 3Tx PPSD/Power testing, see note 1). | | | | |
| 5190-5230 | 802.11n HT40 CDD 3TX | 10.10 | 10.28 | 10.23 | 14.98 | 31.44 |
| 5190-5230 | 802.11n HT40 STBC/SDM 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain)and HT40 STBC/SDM 3Tx PPSD/Power testing, see note 1). | | | | |
| 5190-5230 | 802.11n HT40 STBC/SDM 3TX | 11.27 | 11.92 | 11.29 | 16.28 | 42.42 |
| 5190-5230 | 802.11n HT40 BF 2TX | Covered by the worst case emissions testing of 802.11n HT20 BF 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain)and VHT40 BF 3Tx PPSD/Power testing, see note 1). | | | | |
| 5190-5230 | 802.11n HT40 BF 3TX | Disabled based upon 802.11n HT40 BF 3TX Mode testing | | | | |
| 5190-5230 | 802.11ac VHT40 BF 3TX | Disabled due to low power setting. | | | | |
| 5210 | 802.11ac VHT80 1TX | 14.28 | N/A | N/A | 15.19 | 33.04 |
| 5210 | 802.11ac VHT80 CDD 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain), and VHT80 CDD 3Tx PPSD/Power testing, see note 1). | | | | |
| 5210 | 802.11ac VHT80 CDD 3TX | 11.52 | 11.61 | 11.53 | 16.32 | 42.90 |
| 5210 | 802.11ac VHT80 BF 2TX | Covered by the worst case emissions testing of 802.11n HT20 BF 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain), and VHT80 BF 3Tx PPSD/Power testing, see note 1). | | | | |
| 5210 | 802.11ac VHT80 BF 3TX | Disabled due to low power setting. | | | | |

**5.3 GHz Band**

| 5250-5325 MHz Authorized Frequency Band | | | | | | |
|---|---|---|---|---|---|---|
| Frequency Range (MHz) | Mode | AVG Power, Chain 0 (dBm) | AVG Power, Chain 1 (dBm) | AVG Power, Chain 2 (dBm) | Total AVG power (dBm) | Total AVG power (mW) |
| 5260-5320 | 802.11a Legacy 1TX | 19.32 | N/A | N/A | 19.32 | 85.51 |
| 5260-5320 | 802.11a CDD 2TX | Covered by the worst case 802.11n HT20 CDD 3TX Mode testing | | | | |
| 5260-5320 | 802.11a CDD 3TX | Covered by the worst case 802.11n HT20 CDD 3TX Mode testing | | | | |
| 5260-5320 | 802.11n/ac HT/VHT20 1TX | Covered by the worst case 802.11a Legacy 1TX Mode testing | | | | |
| 5260-5320 | 802.11n HT20 CDD 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain) and HT20 CDD 3Tx PPSD/Power testing, see note 1). | | | | |
| 5260-5320 | 802.11n HT20 CDD 3TX | 14.38 | 14.06 | 14.25 | 19.00 | 79.49 |
| 5260-5320 | 802.11ac VHT20 CDD 2TX | Covered by the worst case 802.11n HT20 CDD 2TX Mode testing | | | | |
| 5260-5320 | 802.11ac VHT20 CDD 3TX | Covered by the worst case 802.11n HT20 CDD 3TX Mode testing | | | | |
| 5260-5320 | 802.11n/ac HT/VHT20 STBC/SDM 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain) and HT/VHT20 STBC/SDM 3Tx PPSD/Power testing, see note 1). | | | | |
| 5260-5320 | 802.11n/ac HT/VHT20 STBC/SDM 3TX | 17.72 | 17.53 | 17.26 | 22.28 | 168.99 |
| 5260-5320 | 802.11n HT20 BF 2TX | Covered by the worst case 802.11n HT20 BF 3TX Mode testing | | | | |
| 5260-5320 | 802.11n AC20 BF 2TX | Covered by the worst case 802.11n HT20 BF 3TX Mode testing | | | | |
| 5260-5320 | 802.11n AC20 BF 3TX | Covered by the worst case 802.11n HT20 BF 3TX Mode testing | | | | |
| 5270-5310 | 802.11n HT40 1TX | 19.00 | N/A | N/A | 19.00 | 79.43 |
| 5270-5310 | 802.11ac VHT40 1TX | Covered by the worst case 802.11n HT40 1TX Mode testing | | | | |
| 5270-5310 | 802.11n/ac HT/VHT40 CDD 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain) and VHT40 CDD 3Tx PPSD/Power testing, see note 1). | | | | |
| 5270-5310 | 802.11ac VHT40 CDD 3TX | Covered by the worst case 802.11n HT40 CDD 3TX Mode testing | | | | |
| 5270-5310 | 802.11n HT40 CDD 3TX | 17.12 | 17.00 | 17.34 | 21.93 | 155.84 |
| 5270-5310 | 802.11n HT40 BF 2TX | Covered by the worst case emissions testing of 802.11n HT20 BF 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain)and HT40 BF 3Tx PPSD/Power testing, see note 1). | | | | |
| 5270-5310 | 802.11n HT40 BF 3TX | Covered by the worst case emissions testing of 802.11n HT20 BF 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain)and HT40 CDD 3Tx PPSD/Power testing, see note 1). | | | | |
| 5270-5310 | 802.11n/ac HT/VHT40 STBC/SDM 2TX | Covered by the worst case emissions testing of 802.11n HT20 BF 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain)and HT40 STBC/SDM 3Tx PPSD/Power testing, see note 1). | | | | |
| 5270-5310 | 802.11n HT/VHT40 STBC/SDM 3TX | 18.13 | 17.65 | 17.74 | 22.62 | 182.65 |

**5.3 GHz Band continued**

| 5250-5325 MHz Authorized Frequency Band | | | | | | |
|---|---|---|---|---|---|---|
| Frequency Range (MHz) | Mode | AVG Power, Chain 0 (dBm) | AVG Power, Chain 1 (dBm) | AVG Power, Chain 2 (dBm) | Total AVG power (dBm) | Total AVG power (mW) |
| 5270-5310 | 802.11n HT40 BF 2TX | Covered by the worst case 802.11n HT40 BF 3TX Mode testing | | | | |
| 5270-5310 | 802.11n AC40 BF 2TX | Covered by the worst case 802.11n HT40 BF 3TX Mode testing | | | | |
| 5270-5310 | 802.11ac VHT40 BF 3TX | 13.21 | 13.45 | 13.33 | 18.10 | 64.60 |
| 5290 | 802.11ac VHT80 1TX | 16.52 | N/A | N/A | 16.52 | 44.87 |
| 5290 | 802.11ac VHT80 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain), and VHT80 CDD 3Tx PPSD/Power testing, see note 1). | | | | |
| 5290 | 802.11ac VHT80 CDD 3TX | 13.05 | 13.28 | 13.12 | 17.92 | 61.98 |
| 5290 | 802.11ac VHT80 BF 2TX | Covered by the worst case emissions testing of 802.11n HT20 BF 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain), and VHT80 BF 3Tx PPSD/Power testing, see note 1). | | | | |
| 5290 | 802.11ac VHT80 BF 3TX | 13.26 | 13.66 | 13.02 | 18.09 | 64.46 |

**5.6 GHz Band**

| 5450-5725 MHz Authorized Frequency Band | | | | | | |
|---|---|---|---|---|---|---|
| Frequency Range (MHz) | Mode | AVG Power, Chain 0 (dBm) | AVG Power, Chain 1 (dBm) | AVG Power, Chain 2 (dBm) | Total AVG power (dBm) | Total AVG power (mW) |
| 5500-5700 | 802.11a Legacy 1TX | 19.45 | N/A | N/A | 19.45 | 88.10 |
| 5500-5700 | 802.11a CDD 2TX | Covered by the worst case 802.11n HT20 CDD 3TX Mode testing | | | | |
| 5500-5700 | 802.11a CDD 3TX | Covered by the worst case 802.11n HT20 CDD 3TX Mode testing | | | | |
| 5500-5700 | 802.11n/ac HT/VHT20 1TX | Covered by the worst case 802.11a Legacy 1TX Mode testing | | | | |
| 5500-5700 | 802.11n HT20 CDD 2TX | Covered by the worst case emissions testing of 802.11n HT20 | | | | |
| 5500-5700 | 802.11n HT20 CDD 3TX | 14.19 | 13.98 | 14.03 | 18.84 | 76.54 |
| 5720 | 802.11ac VHT20 CDD 3TX | 14.83 | 14.38 | 14.92 | 19.49 | 88.87 |
| 5500-5720 | 802.11n/ac HT/VHT20 CDD 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx | | | | |
| 5500-5720 | 802.11n/ac HT/VHT20 CDD 3TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx | | | | |
| 5500-5720 | 802.11n/ac HT/VHT20 STBC/SDM 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain) and HT/VHT20 STBC 3Tx PPSD/Power testing, see note 1). | | | | |
| 5500-5720 | 802.11n/ac HT/VHT20 STBC/SDM 3TX | | | | | |
| 5500-5700 | 802.11n HT20 STBC 3TX | 18.02 | 17.70 | 17.94 | 22.66 | 184.50 |
| 5500-5720 | 802.11n/ac HT/VHT20 BF 2TX | Covered by the worst case emissions testing of 802.11n HT20 BF 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain) and HT20 CDD 3Tx PPSD/Power testing, see note 1). | | | | |
| 5500-5720 | 802.11n HT20 BF 3TX | | | | | |
| 5500-5700 | 802.11ac VHT20 BF 3TX | | | | | |
| 5720 | 802.11ac VHT20 BF 3TX | | | | | |
| 5500-5720 | 802.11ac VHT20 BF 3TX | Power levels are identical to CDD mode. | | | | |

**5.6 GHz Band continued**

| 5450-5725 MHz Authorized Frequency Band | | | | | | |
|---|---|---|---|---|---|---|
| Frequency Range (MHz) | Mode | AVG Power, Chain 0 (dBm) | AVG Power, Chain 1 (dBm) | AVG Power, Chain 2 (dBm) | Total AVG power (dBm) | Total AVG power (mW) |
| 5510-5710 | 802.11n HT40 1TX | 19.00 | N/A | N/A | 19.00 | 79.43 |
| 5510-5710 | 802.11ac VHT40 1TX | Covered by the worst case 802.11n HT40 1TX Mode testing | | | | |
| 5510-5710 | 802.11n/ac HT/VHT40 CDD 2TX | Covered by the worst case 802.11n/ac H/VHT40 CDD 3TX Mode testing | | | | |
| 5510-5670 | 802.11n HT40 CDD 3TX | 16.72 | 16.57 | 16.54 | 21.38 | 137.47 |
| 5710 | 802.11ac VHT40 CDD 3TX | 17.32 | 17.03 | 17.07 | 21.91 | 155.35 |
| 5710 | 802.11n AC40 STBC 3TX | 19.54 | 19.09 | 19.42 | 24.13 | 258.54 |
| 5510-5670 | 802.11n/ac HT/VHT40 CDD 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain)and HT40 CDD 3Tx PPSD/Power testing, see | | | | |
| 5710 | 802.11ac VHT40 CDD 3TX | | | | | |
| 5510-5670 | 802.11n HT40 CDD 3TX | 16.72 | 16.57 | 16.54 | 21.38 | 137.47 |
| 5710 | 802.11n HT40 CDD 3TX | 17.32 | 17.03 | 17.07 | 21.91 | 155.35 |
| 5510-5710 | 802.11n/ac HT/VHT40 STBC/SDM 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power | | | | |
| 5510-5710 | 802.11n/ac HT/VHT40 STBC/SDM 3TX | 18.76 | 18.15 | 18.19 | 23.15 | 206.39 |
| 5510-5710 | 802.11n/ac HT/VHT40 BF 2TX | Covered by the worst case emissions testing of 802.11n HT20 BF 3TX Mode testing (at greater than or equal to these 2Tx power levels per Tx chain)and HT40 BF 3Tx PPSD/Power testing, see note | | | | |
| 5510-5710 | 802.11n HT40 BF 3TX | | | | | |
| 5510-5710 | 802.11ac VHT40 BF 3TX | Covered by the worst case emissions testing of 802.11n HT20 BF | | | | |
| 5530 | 802.11ac VHT80 1TX | 16.08 | N/A | N/A | 16.08 | 40.55 |
| 5690 | 802.11ac VHT80 1TX | 19.02 | N/A | N/A | 19.02 | 79.80 |
| 5530-5690 | 802.11ac VHT80 CDD/STBC/SDM 2TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power | | | | |
| 5530-5690 | 802.11ac VHT80 STBC/SDM 3TX | Covered by the worst case emissions testing of 802.11n HT20 CDD 3TX Mode testing (at greater than or equal to these 2Tx power | | | | |
| 5530 | 802.11ac VHT80 CDD 3TX | 14.89 | 14.52 | 14.35 | 19.36 | 86.37 |
| 5690 | 802.11ac VHT80 CDD 3TX | 19.98 | 20.02 | 20.05 | 24.79 | 301.16 |
| 5530-5690 | 802.11ac VHT80 BF 2TX | Covered by the worst case emissions testing of 802.11n HT20 BF | | | | |
| 5530 | 802.11ac VHT80 BF 3TX | 13.73 | 13.35 | 13.52 | 18.31 | 67.72 |
| 5690 | 802.11ac VHT80 BF 3TX | 16.64 | 16.68 | 17.00 | 21.55 | 142.81 |

**Note:**

2Tx power levels may be increased up to the 3Tx emissions limits (based upon PPSD/Power limits per TX mode and differences in the number of TX chains and composite antenna gains) as long as the 2Tx composite power levels is always less 3Tx power levels tested and listed on the certificate.

## 5.4. DESCRIPTION OF AVAILABLE ANTENNAS

**Antenna Set 1:**

| Antenna Type | Model | Peak gain @ 2412, 2422, 2432MHz, (WLAN) | Peak gain (5150-5250MHz) @5200MHz | Peak gain (5250-5350MHz) @5320MHz | Peak gain (5470-5725MHz) @5500, 5700MHz | Peak gain (5725-5850MHz) @5785, 5805MHz |
|---|---|---|---|---|---|---|
| 802.11abgn WLAN Antenna | 1 | 6.6 | 7.8 | 7.7 | 6.5 | 5.9 |
| 802.11abgn WLAN Antenna | 2 | 4.8 | 6 | 5.4 | 6.8 | 5.8 |
| 802.11abgn WLAN Antenna | 3 | 5.5 | 5.9 | 5.6 | 7.2 | 6.7 |
| BT Antenna | BT | 4 | | | | |
| | | | | | | |
| | **2x2 Composite (Correlated)** | 9.08 | 9.96 | 9.72 | 10.01 | 9.32 |
| | **3x3 Composite (correlated)** | 10.44 | 11.38 | 11.07 | 11.61 | 10.91 |
| | **2x2 Composite (Un- correlated)** | 6.08 | 6.99 | 6.78 | 7.00 | 6.27 |
| | **3x3 Composite (Un-correlated)** | 5.70 | 6.66 | 6.36 | 6.84 | 6.15 |

**Antenna Set 2:**

| Antenna Type | Model | Peak gain @ 2412, 2422, 2432MHz, (WLAN) | Peak gain (5150-5250MHz) @5200MHz | Peak gain (5250-5350MHz) @5320MHz | Peak gain (5470-5725MHz) @5500, 5700MHz | Peak gain (5725-5850MHz) @5785, 5805MHz |
|---|---|---|---|---|---|---|
| 802.11abgn WLAN Antenna | 1 | 5.6 | 6.6 | 6.5 | 6.9 | 7.8 |
| 802.11abgn WLAN Antenna | 2 | 3.4 | 6.9 | 7.7 | 5.3 | 7.4 |
| 802.11abgn WLAN Antenna | 3 | 5.9 | 6 | 7 | 6.7 | 5.9 |
| BT Antenna | 4 (BT) | 3.9 | | | | |
| | | | | | | |
| | **2x2 Composite** | 8.76 | 9.76 | 10.37 | 9.81 | 10.61 |
| | **3x3 Composite** | 9.81 | 11.28 | 11.85 | 11.10 | 11.84 |
| | **2x2 Composite (Un- correlated)** | 5.75 | 6.75 | 7.36 | 6.80 | 6.71 |
| | **3x3 Composite (Un-correlated)** | 5.10 | 6.52 | 7.09 | 6.36 | 7.11 |

**Note:** Worst case composite gains for a particular band are highlighted in yellow. These worst case antenna gains were used to determine compliance for Output Power and PPSD.

## 5.5. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was Broadcom, rev. 6.30.118.23.
The test utility software used during testing was BCM Internal, rev. 6.30.RC118.23.

## 5.6. WORST-CASE CONFIGURATION AND MODE

Refer to the certification report 12U14669-4E FCC IC UNII WLAN Report.

## 5.7. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| Support Equipment List | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Serial Number** | **FCC ID** |
| Laptop | Lenovo | G560 | CBU4473193 | DoC |
| Laptop | Lenovo | G560 | CBU3475167 | DoC |
| Laptop | Dell | E6400 | 1317590773 | DoC |
| AC Adapter | Lenovo | PA-1650-56LC | CBU4473193 | N/A |
| AC Adapter | Lenovo | PA-1650-56LC | CBU3475167 | N/A |
| AC Adapter | Dell | HP-OO065B83 | CNON2765-47890-421-0062 | N/A |
| Adapter Board | Catalyst | MINI2EXP | 06824800DRF6RY11 | N/A |
| Adapter Board | Catalyst | MINI2EXP | C863194009FF6RY3E | N/A |
| Adapter Board/Jig | Atheros Comm | BCM94331CSMFG | C58639140010F6RY3K | N/A |

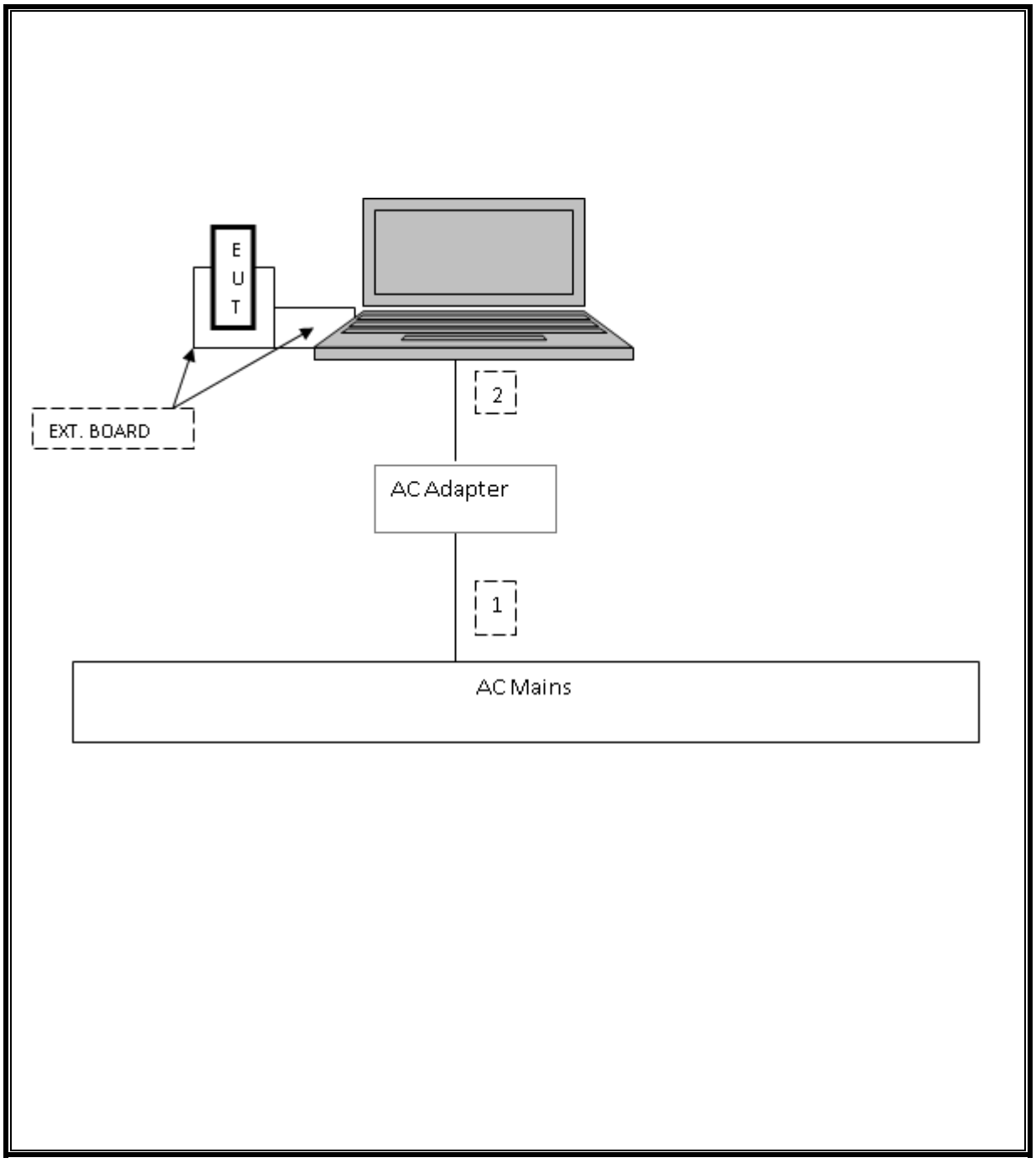
**I/O CABLES**

| I/O Cable List | | | | | | |
|---|---|---|---|---|---|---|
| **Cable No** | **Port** | **# of identical ports** | **Connector Type** | **Cable Type** | **Cable Length (m)** | **Remarks** |
| 1 | AC | 1 | US 115V | Un-Shielded | 1m | NA |
| 2 | DC | 1 | DC | Un-Shielded | 1.8m | NA |

**TEST SETUP**

The EUT is attached to a jig board which is installed in the PCMCI slot of a host laptop computer during the tests. Test software exercised the radio card.

**SETUP DIAGRAM FOR TESTS**



# 6. TEST AND MEASUREMENT EQUIPMENT

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

| Test Equipment List | | | | | |
|---|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Asset** | **Cal Date** | **Cal Due** |
| Spectrum Analyzer, 26.5 GHz | Agilent / HP | E4440A | C01179 | 02/16/12 | 02/16/13 |
| Spectrum Analyzer, 26.5 GHz | Agilent / HP | E4440A | C01179 | 02/16/13 | 02/16/14 |
| Spectrum Analyzer, 44 GHz | Agilent / HP | E4446A | C00986 | 03/22/12 | 03/22/13 |
| Spectrum Analyzer, 44 GHz | Agilent / HP | E4446A | C00986 | 03/22/13 | 03/22/14 |
| EMI Test Receiver, 9 kHz-7 GHz | R & S | ESCI 7 | 1000741 | 08/08/12 | 08/08/13 |
| EMI Test Receiver, 9 kHz-7 GHz | R & S | ESCI 7 | 0 | 08/21/12 | 08/21/13 |
| Antenna, Horn, 18 GHz | EMCO | 3115 | C01218/1000614 | 01/18/13 | 01/18/14 |
| Antenna, Horn, 18 GHz | EMCO | 3115 | C00945 | 11/12/12 | 11/12/13 |
| Antenna, Horn, 26.5 GHz | ARA | MWH-1826/B | C00980 | 11/14/12 | 11/14/13 |
| Antenna, Bilog, 30MHz-1 GHz | Sunol Sciences | JB1 | 0 | 02/07/13 | 02/07/14 |
| Preamplifier, 26.5 GHz | Agilent / HP | 8449B | C00749 | 10/19/12 | 10/19/13 |
| Preamplifier, 26.5 GHz | Agilent / HP | 8449B | C01052 | 10/22/12 | 10/22/13 |
| Preamplifier, 1300 MHz | Agilent / HP | 8447D | C00885 | 12/20/11 | 12/30/13 |
| Peak Power Meter | Agilent / HP | E4416A | C00963 | 12/13/12 | 12/13/13 |
| Peak / Average Power Sensor | Agilent / HP | E9327A | C00964 | 12/13/12 | 12/13/13 |
| Power Meter | Agilent / HP | N1911A | 0 | 07/27/12 | 07/27/13 |
| Peak / Average Power Sensor | Agilent / HP | E9323A | 0 | 07/26/13 | 07/26/14 |

# 7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

**LIMITS**

None; for reporting purposes only.

**PROCEDURE**

KDB 789033 Zero-Span Spectrum Analyzer Method.

### 7.1.1. ON TIME AND DUTY CYCLE RESULTS

| Mode | ON Time B (msec) | Period (msec) | Duty Cycle x (linear) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | 1/B Minimum VBW (kHz) |
|---|---|---|---|---|---|---|
| 802.11a 20 MHz | 2.06 | 2.09 | 0.987 | 98.7% | 0.00 | 0.010 |
| 802.11n HT20 CDD | 1.92 | 1.95 | 0.987 | 98.7% | 0.00 | 0.010 |
| 802.11n HT20 STBC | 1.92 | 1.94 | 0.988 | 98.8% | 0.00 | 0.010 |
| 802.11n HT40 SISO | 0.93 | 0.95 | 0.977 | 97.7% | 0.10 | 1.080 |
| 802.11n HT40 CDD | 0.94 | 0.98 | 0.957 | 95.7% | 0.19 | 1.070 |
| 802.11n HT40 STBC | 0.91 | 0.96 | 0.939 | 93.9% | 0.27 | 1.105 |
| 802.11ac VHT80 SISO | 0.43 | 0.48 | 0.905 | 90.5% | 0.43 | 2.312 |
| 802.11ac VHT80 CDD | 0.43 | 0.48 | 0.893 | 89.3% | 0.49 | 2.320 |

### 7.1.2. MEASUREMENT METHOD FOR POWER AND PPSD

For output power measurement, KDB 789033 Method PM as described in section C) f) was used.

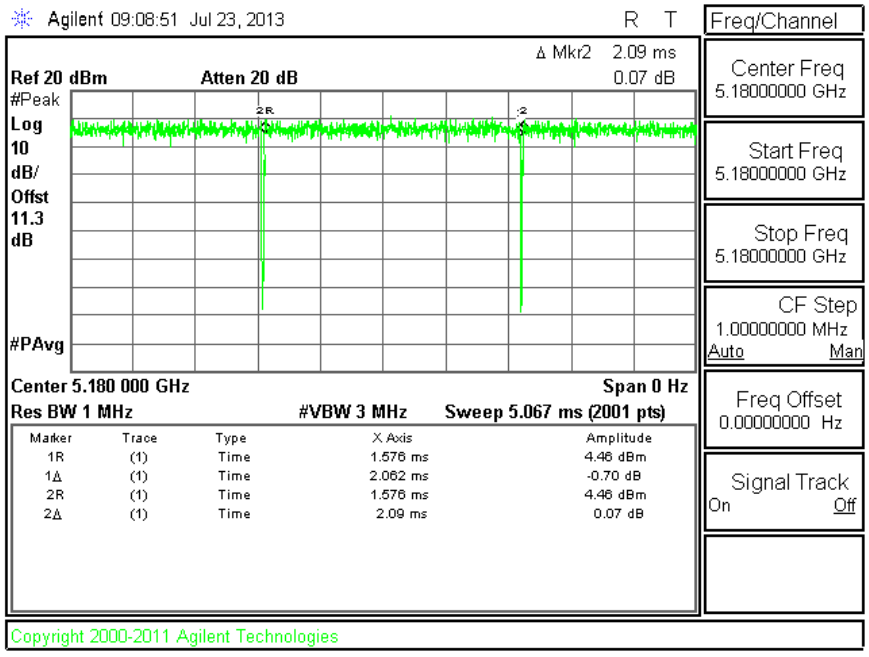
For PSD measurement, KDB 789033 Method SA-1 was used when Duty Cycle is greater than or equal to 98%.
For PSD measurement, KDB 789033 Method SA-2 was used when Duty Cycle is less than 98%.

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

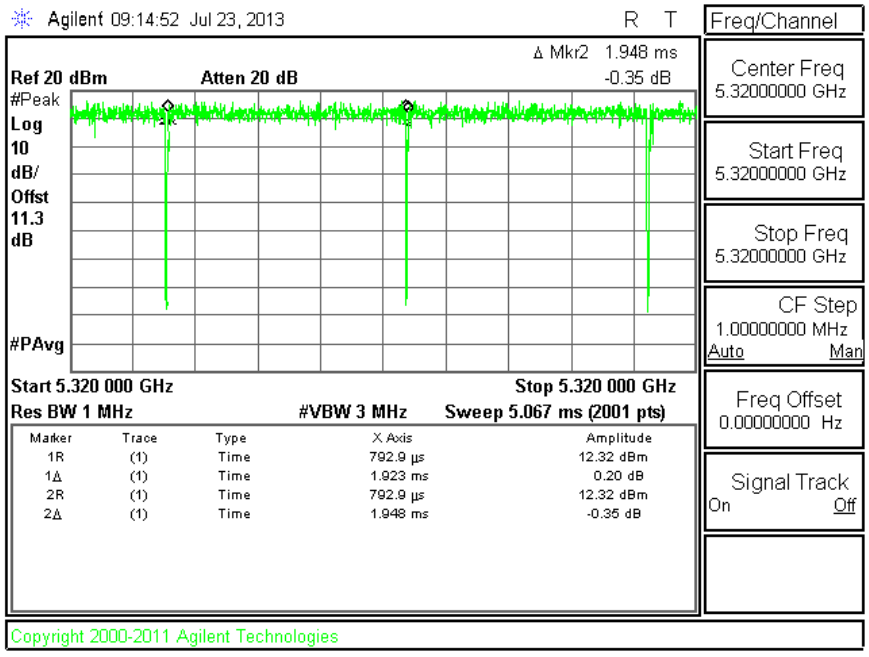
KDB 789033 Method VB with Power RMS Averaging is used.

## 7.1.4. DUTY CYCLE PLOTS

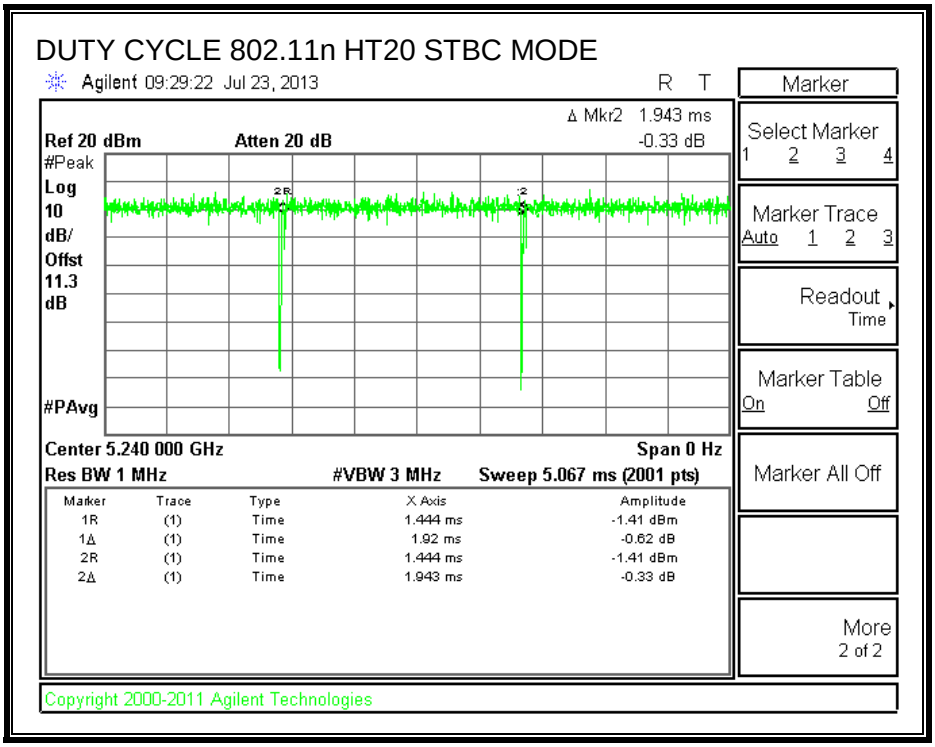
DUTY CYCLE 802.11a HT20 MODE



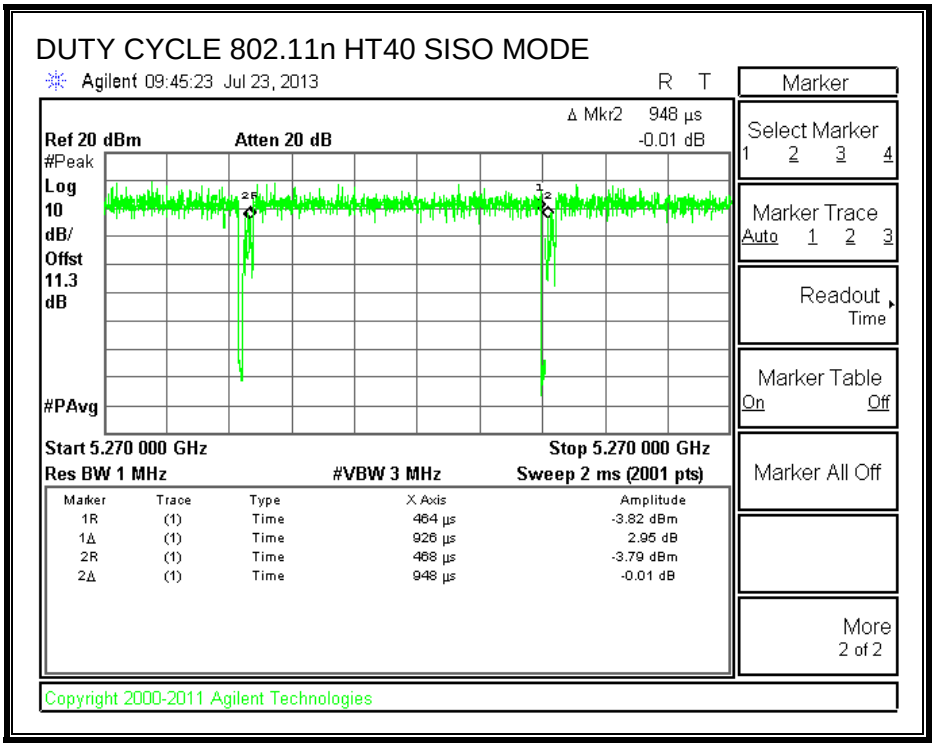

DUTY CYCLE 802.11n HT20 CDD MODE



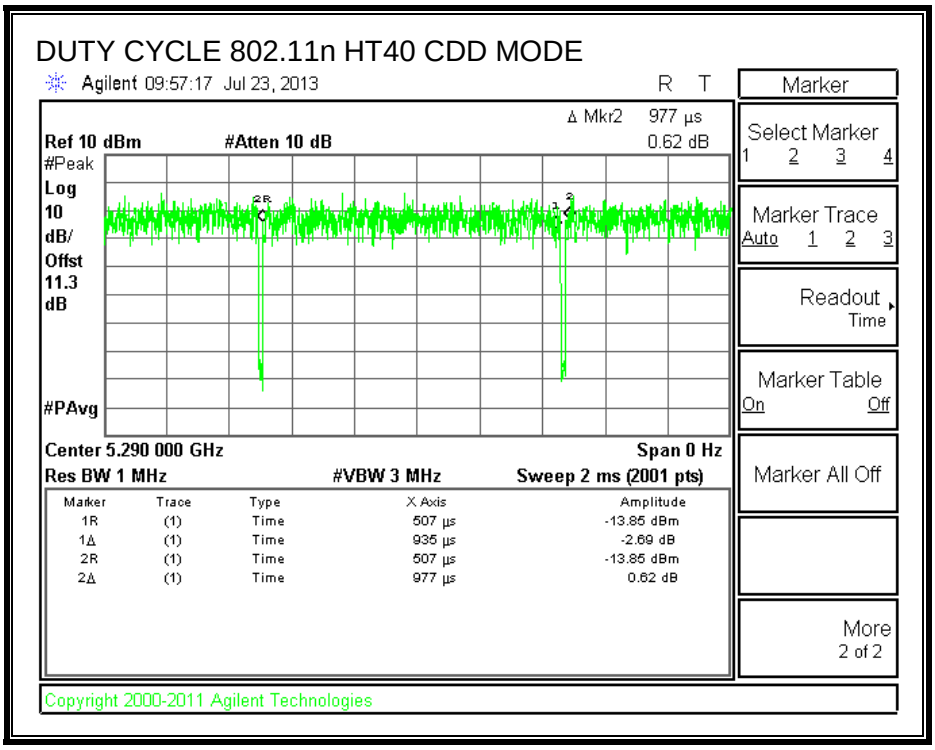
DUTY CYCLE 802.11n HT20 STBC MODE



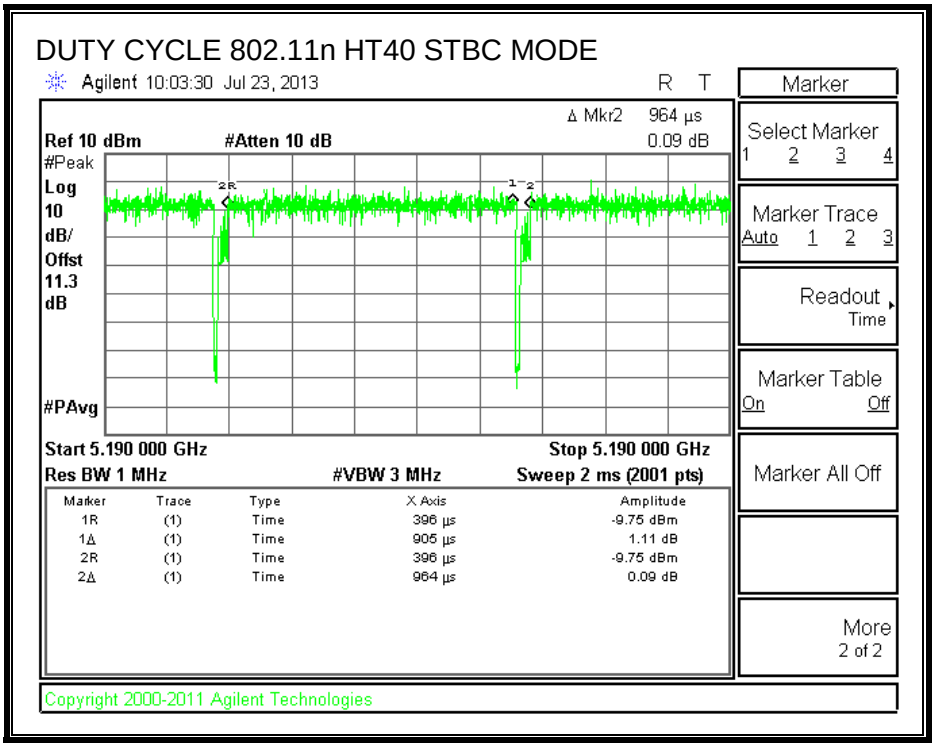

DUTY CYCLE 802.11n HT40 SISO MODE



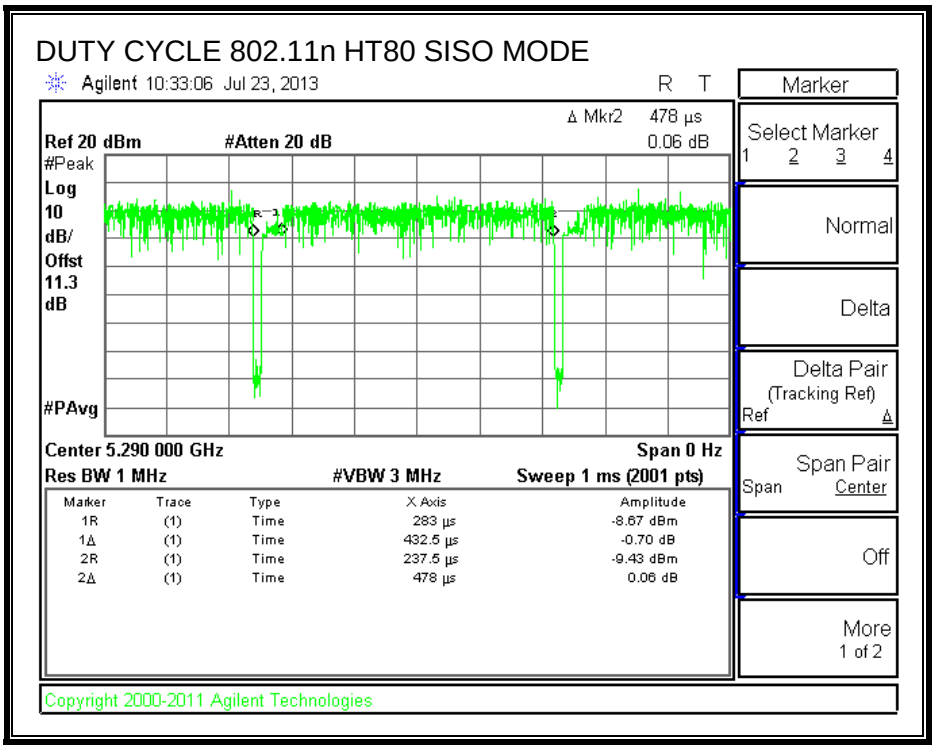
DUTY CYCLE 802.11n HT40 CDD MODE



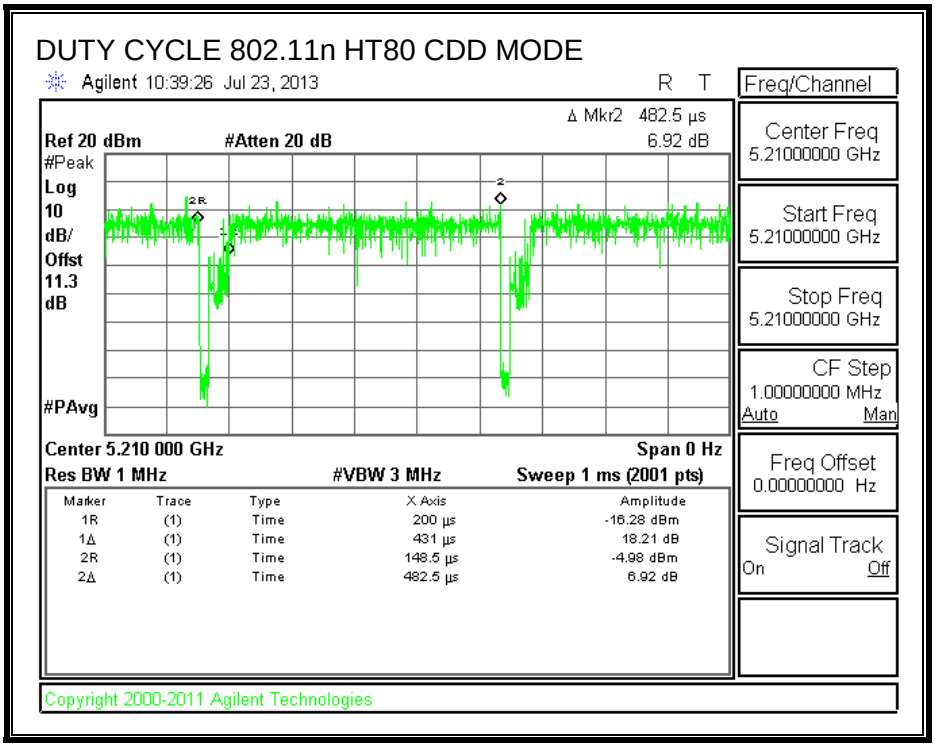

DUTY CYCLE 802.11n HT40 STBC MODE



DUTY CYCLE 802.11n HT80 SISO MODE




DUTY CYCLE 802.11n HT80 CDD MODE



# 8. ANTENNA PORT TEST RESULTS

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

## 8.1. 802.11a 1TX LEGACY MODE, 5.2 GHz BAND

### 8.1.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

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

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

## RESULTS

### Bandwidth and Antenna Gain

**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) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5200 | 15.20 | 22.16 | 14.36 | 14.36 | 2.20 | 10.00 | 2.20 |

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

**Output Power Results**

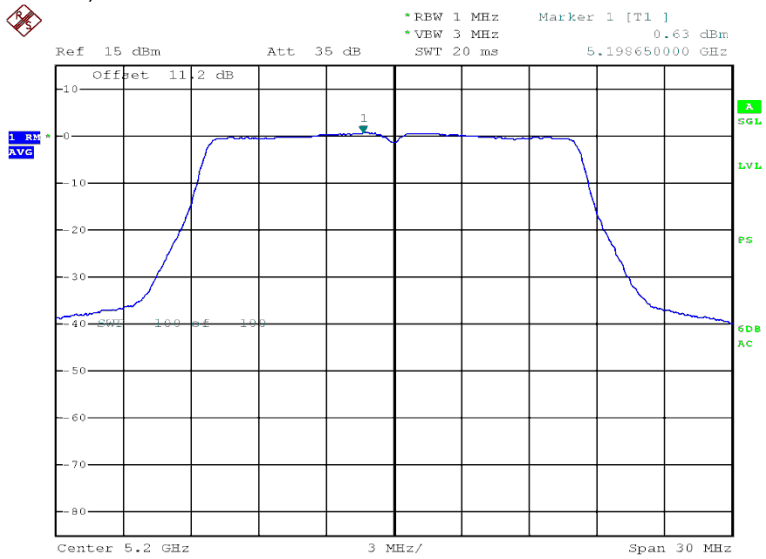
| Channel | Frequency (MHz) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5200 | 14.30 | 14.30 | 14.36 | -0.06 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5200 | 0.630 | 0.630 | 2.20 | -1.570 |

**PPSD, Chain 1**

PPSD, Chain 1 MID CH



## 8.2. 802.11n HT20 STBC 3TX MODE, 5.2 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.2.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

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

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 7.80 | 6.00 | 5.90 | 6.66 |

## RESULTS

**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) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5200 | 16.34 | 22.49 | 15.83 | 15.83 | 3.34 | 10.00 | 3.34 |

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

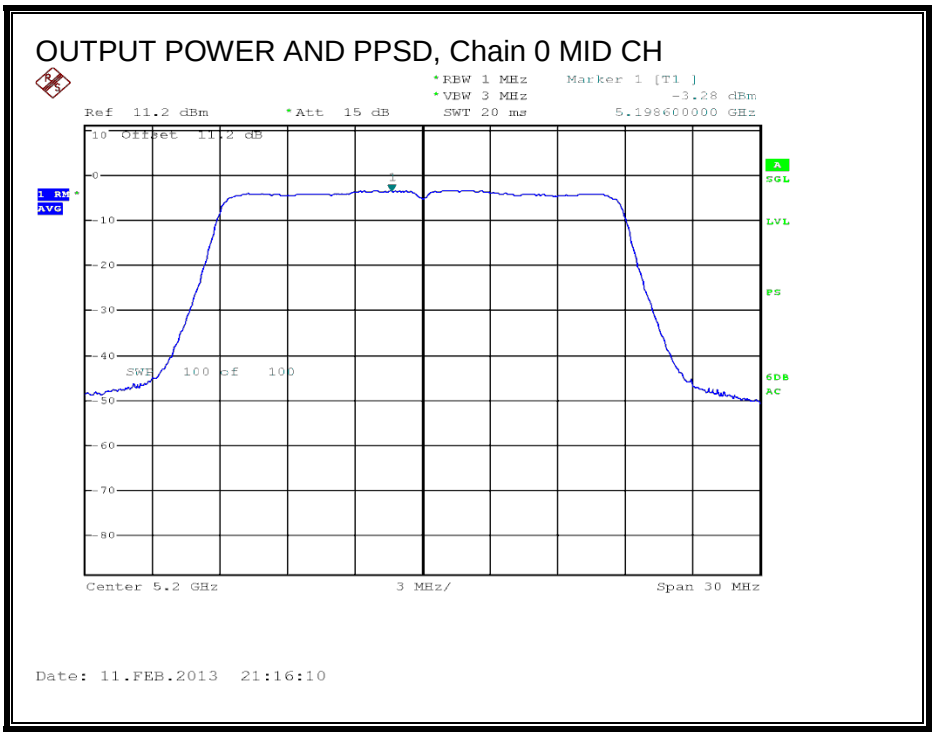
**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5200 | 11.00 | 11.02 | 11.04 | 15.79 | 15.83 | -0.03 |

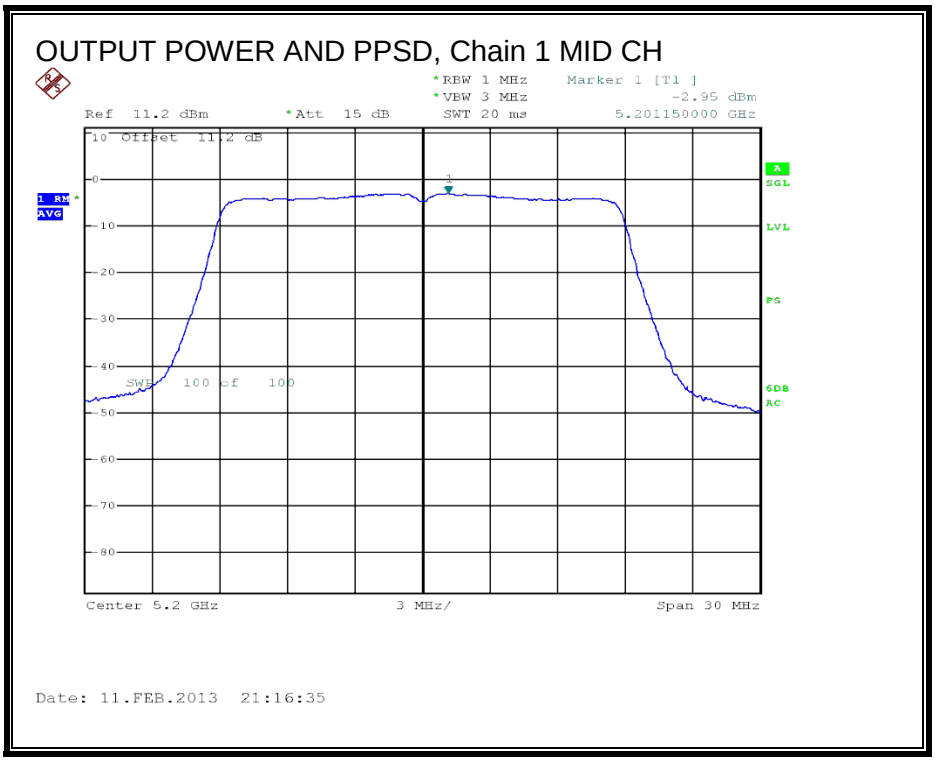
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5200 | -3.28 | -2.95 | -2.74 | 1.79 | 3.34 | -1.55 |

**OUTPUT POWER AND PPSD, Chain 0**

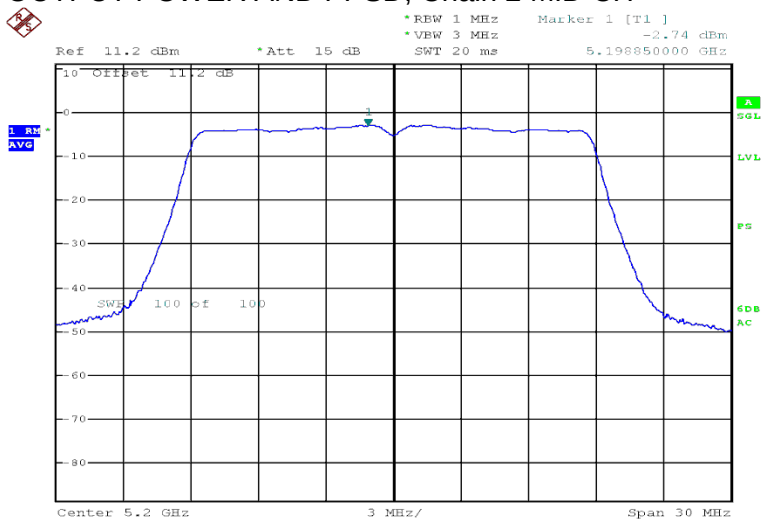



**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**

OUTPUT POWER AND PPSD, Chain 2 MID CH



## 8.3. 802.11n HT40 1TX MODE, 5.2 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.3.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

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

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

## RESULTS

**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) |
|---|---|---|---|---|---|---|---|---|
| High | 5230 | 15.20 | 23.00 | 15.20 | 15.20 | 2.20 | 10.00 | 2.20 |

| Duty Cycle CF (dB) | 0.10 | Included in Calculations of Corr'd PPSD |
|---|---|---|

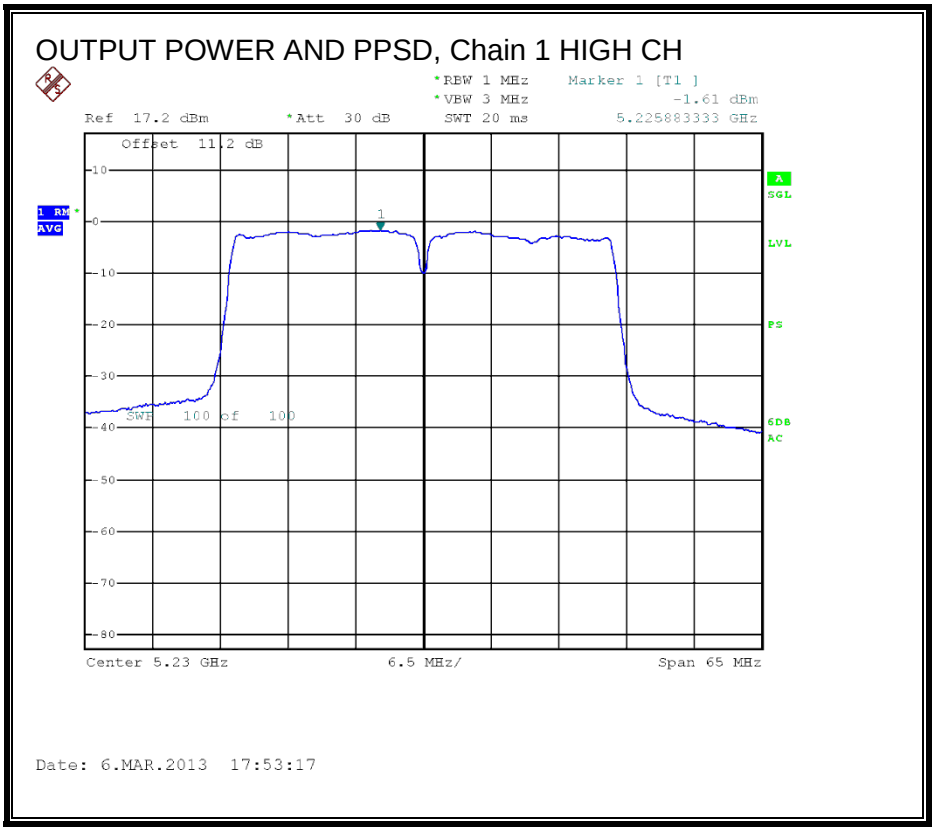
**Output Power Results**

| Channel | Frequency (MHz) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| High | 5230 | 15.10 | 15.10 | 15.20 | -0.10 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| High | 5230 | -1.610 | -1.510 | 2.20 | -3.710 |

**OUTPUT POWER AND PPSD, Chain 1**



## 8.4. 802.11n HT40 CDD 3TX MODE, 5.2 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.4.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

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

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 7.80 | 6.00 | 5.90 | 6.66 |

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 7.80 | 6.00 | 5.90 | 11.38 |

## RESULTS

**Output Power Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC EIRP Limit (dBm) | Max IC Power (dBm) | Power Limit (dBm) |
|---|---|---|---|---|---|
| High | 5230 | 16.34 | 23.00 | 16.34 | 16.34 |

**Gated Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| High | 5230 | 10.10 | 10.28 | 10.23 | 14.98 | 16.34 | -1.36 |

**PPSD Limits**

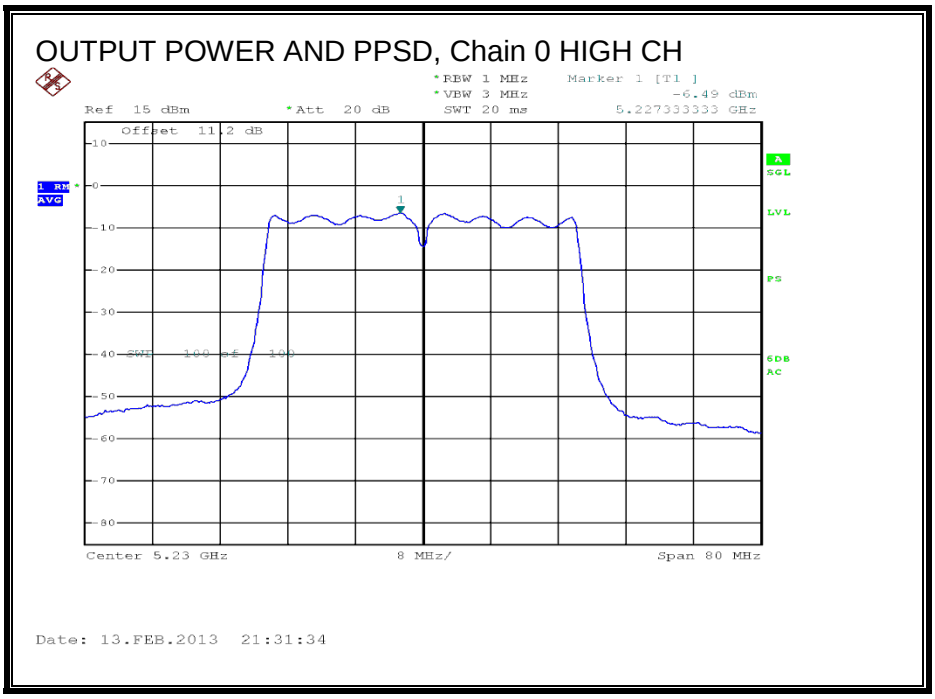
| Channel | Frequency (MHz) | FCC PPSD Limit (dBm) | IC eirp PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|
| High | 5230 | -1.38 | 10.00 | -1.38 |

| Duty Cycle CF (dB) | 0.19 | Included in Calculations of Corr'd PPSD |
|---|---|---|

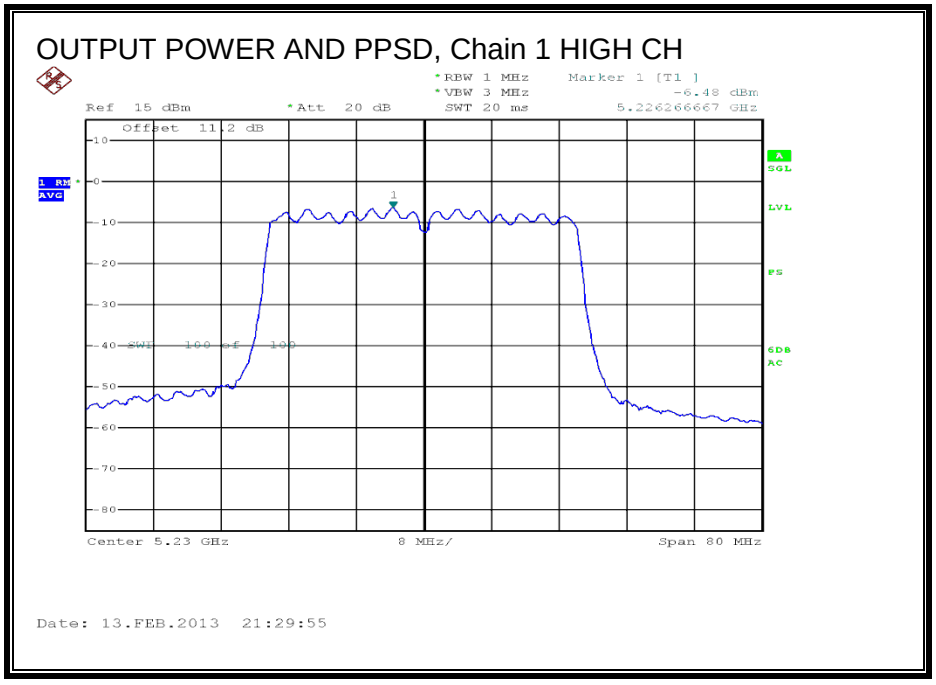
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| High | 5230 | -6.49 | -6.48 | -6.54 | -1.54 | -1.38 | -0.16 |

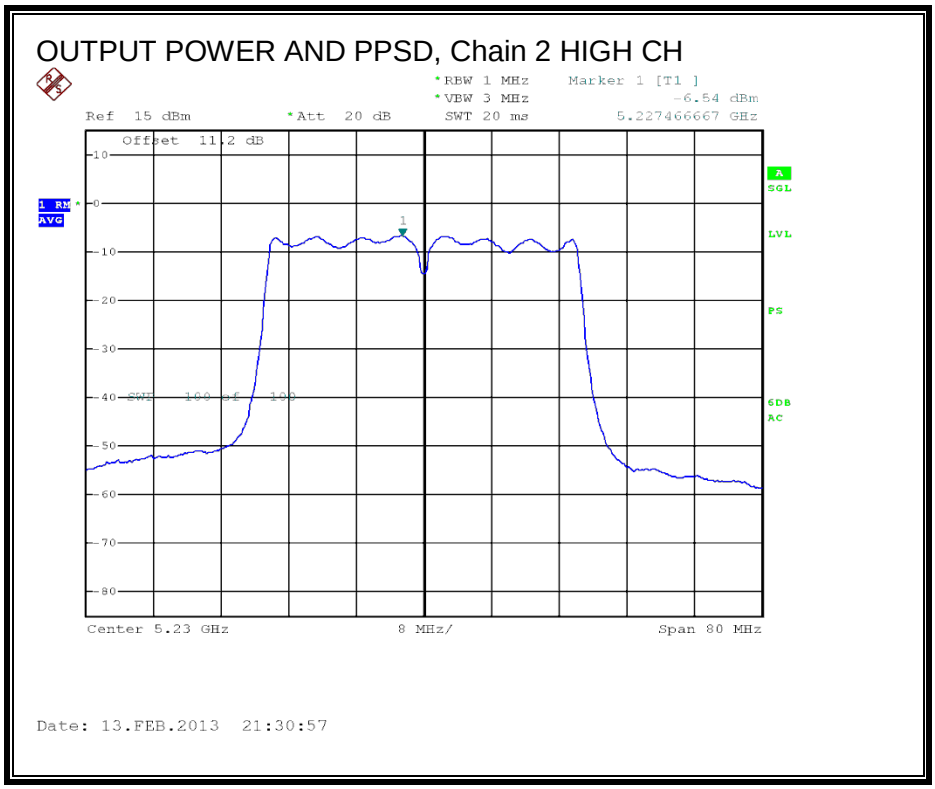
**OUTPUT POWER AND PPSD, Chain 0**




**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**



## 8.5. 802.11n HT40 STBC 3TX MODE, 5.2 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.5.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

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

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 7.80 | 6.00 | 5.90 | 6.66 |

## RESULTS

**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) |
|---|---|---|---|---|---|---|---|---|
| High | 5230 | 16.34 | 23.00 | 16.34 | 16.34 | 3.34 | 10.00 | 3.34 |

| Duty Cycle CF (dB) | 0.27 | Included in Calculations of Corr'd PPSD |
|---|---|---|

**Output Power Results**

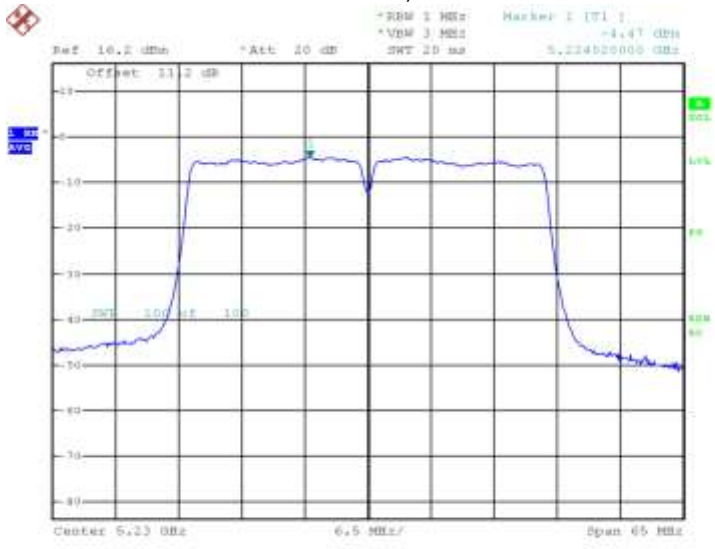
| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| High | 5230 | 11.27 | 11.92 | 11.29 | 16.28 | 16.34 | -0.06 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| High | 5230 | -4.47 | -3.87 | -4.43 | 0.79 | 3.34 | -2.55 |

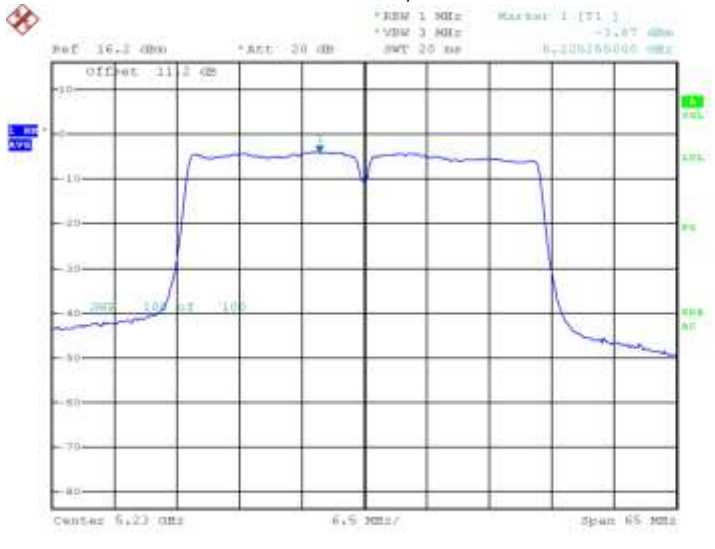
**OUTPUT POWER AND PPSD, Chain 0**

OUTPUT POWER AND PPSD, Chain 0 HIGH CH



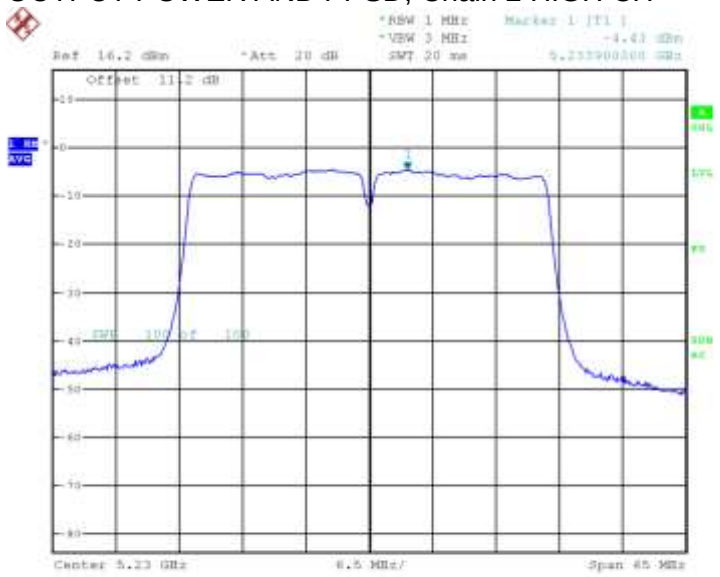

**OUTPUT POWER AND PPSD, Chain 1**

OUTPUT POWER AND PPSD, Chain 1 HIGH CH



**OUTPUT POWER AND PPSD, Chain 2**

OUTPUT POWER AND PPSD, Chain 2 HIGH CH




Date: 17.JAN.2013 16:09:08

## 8.6. 802.11ac VHT80 1TX MODE, 5.2 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.6.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

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

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

## RESULTS

**Bandwidth and Antenna Gain**

| Channel | Frequency (MHz) | Min 26 dB BW (MHz) | Min 99% BW (MHz) | Directional Gain (dBi) |
|---|---|---|---|---|
| Mid | 5210 | 125.77 | 75.4513 | 7.80 |

**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) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5210 | 15.20 | 23.00 | 15.20 | 15.20 | 2.20 | 10.00 | 2.20 |

| Duty Cycle CF (dB) | 0.43 | Included in Calculations of Corr'd PPSD |
|---|---|---|

**Gated Output Power Results**

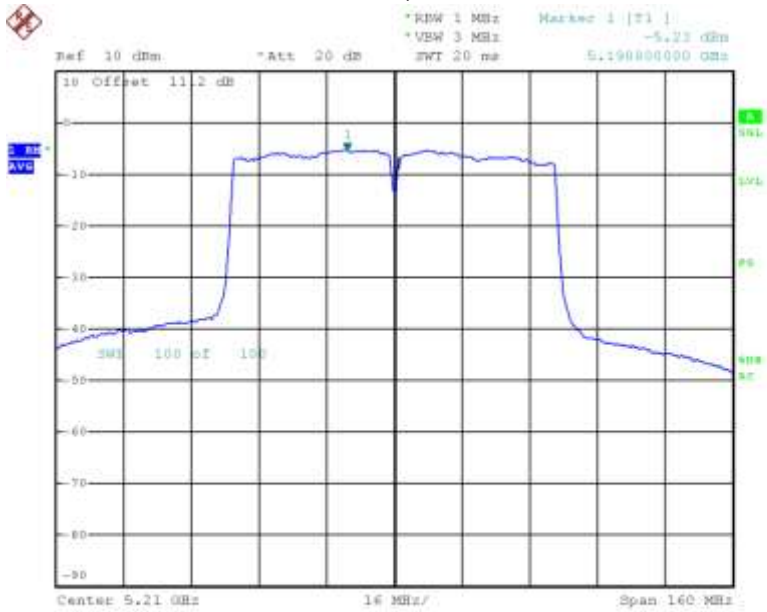
| Channel | Frequency (MHz) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5210 | 14.28 | 14.28 | 15.20 | -0.92 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5210 | -5.230 | -4.800 | 4.00 | -8.800 |

**OUTPUT POWER AND PPSD, Chain 1**

OUTPUT POWER AND PPSD, Chain 1 CH



## 8.7. 802.11ac VHT80 CDD 3TX MODE, 5.2 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.7.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

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

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 7.80 | 6.00 | 5.90 | 6.66 |

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 7.80 | 6.00 | 5.90 | 11.38 |

## RESULTS

**Output Power Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC EIRP Limit (dBm) | Max IC Power (dBm) | Power Limit (dBm) |
|---|---|---|---|---|---|
| Mid | 5210 | 16.34 | 23.00 | 16.34 | 16.34 |

**Gated Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5210 | 11.52 | 11.61 | 11.53 | 16.32 | 16.34 | -0.02 |

**PPSD Limits**

| Channel | Frequency (MHz) | FCC PPSD Limit (dBm) | IC eirp PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|
| Mid | 5210 | -1.38 | 10.00 | -1.38 |

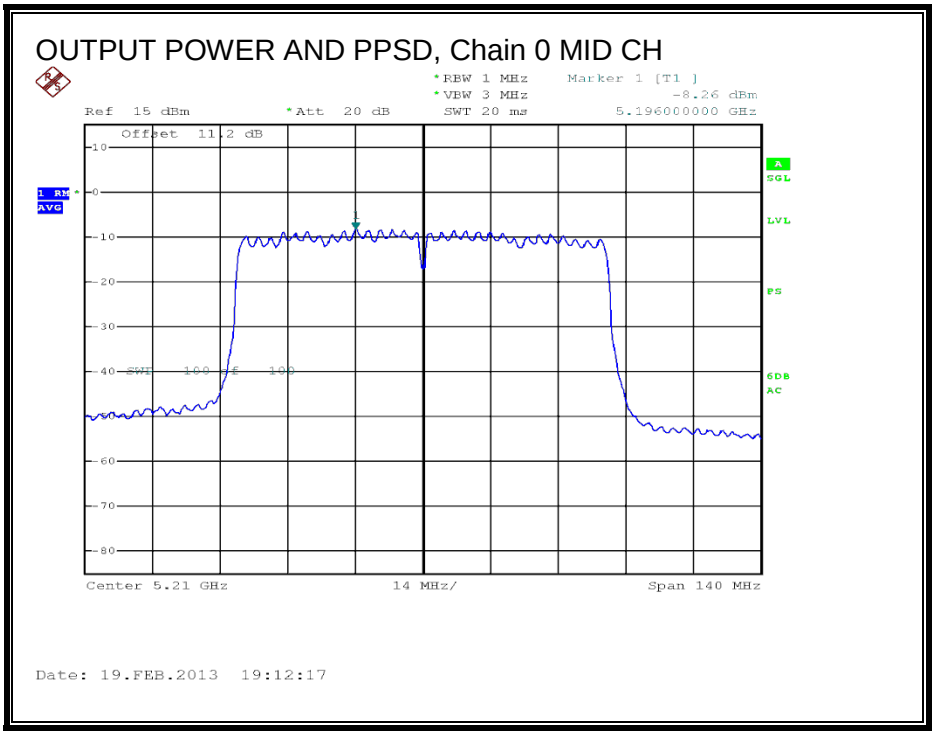
| Duty Cycle CF (dB) | 0.49 | Included in Calculations of Corr'd PPSD |
|---|---|---|

**PPSD Results**

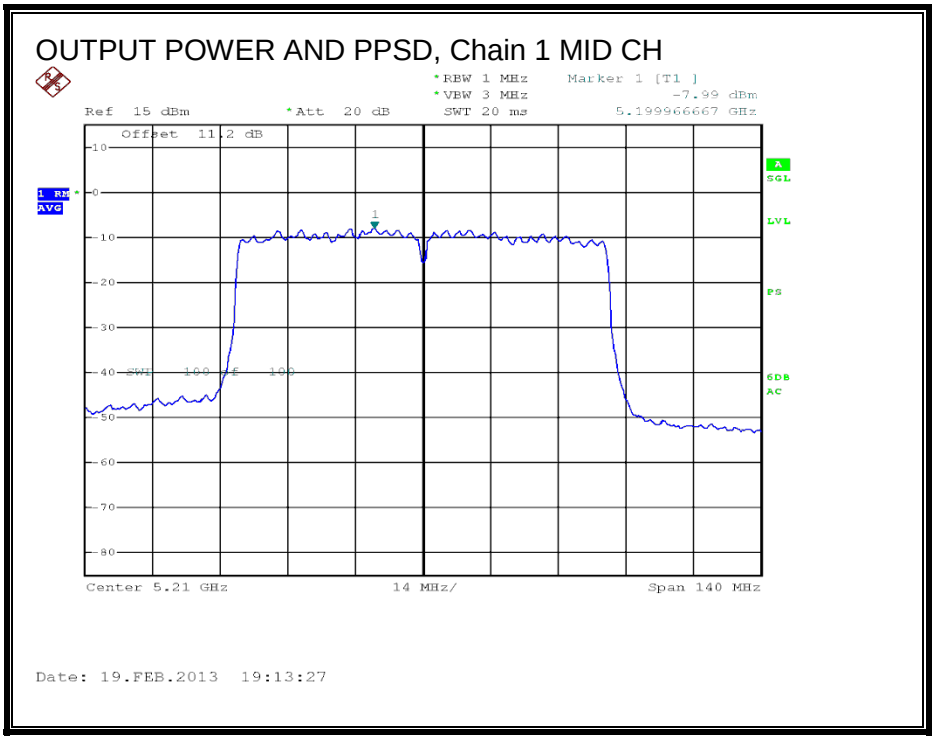
| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5210 | -8.26 | -7.99 | -8.52 | -2.99 | -1.38 | -1.61 |

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

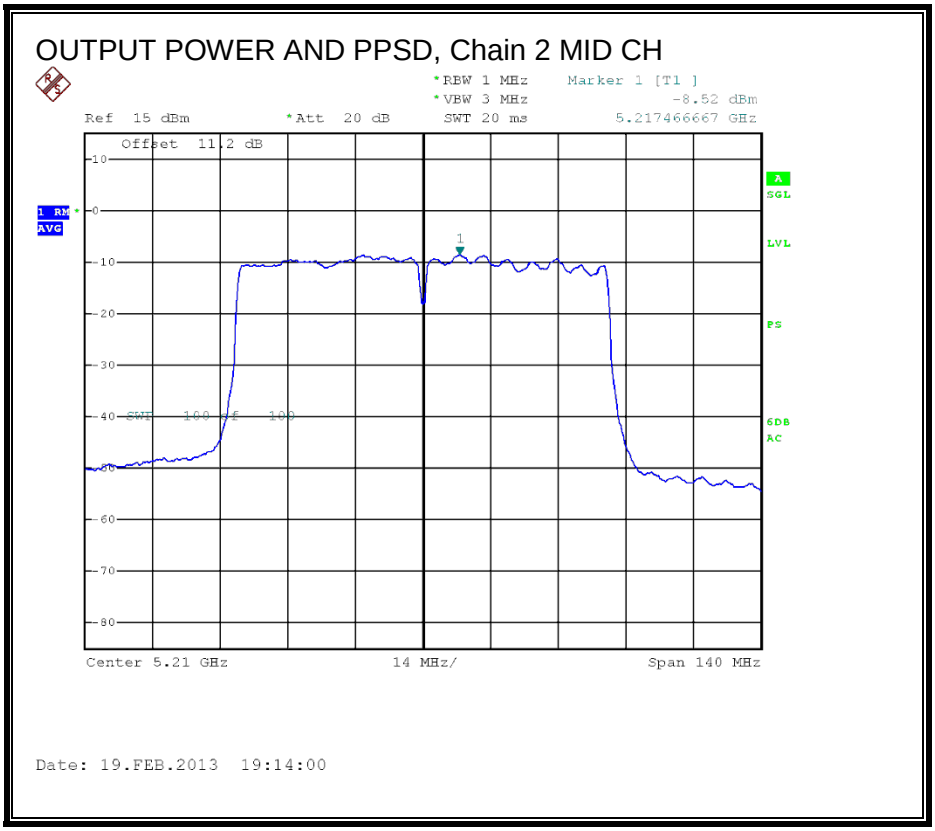
**OUTPUT POWER AND PPSD, Chain 0**




**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**



## 8.8. 802.11a Legacy 1TX LEGACY MODE, 5.3 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.8.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

## RESULTS

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5300 | 22.30 | 23.19 | 29.19 | 21.49 | 9.30 | 11.00 | 9.30 |

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

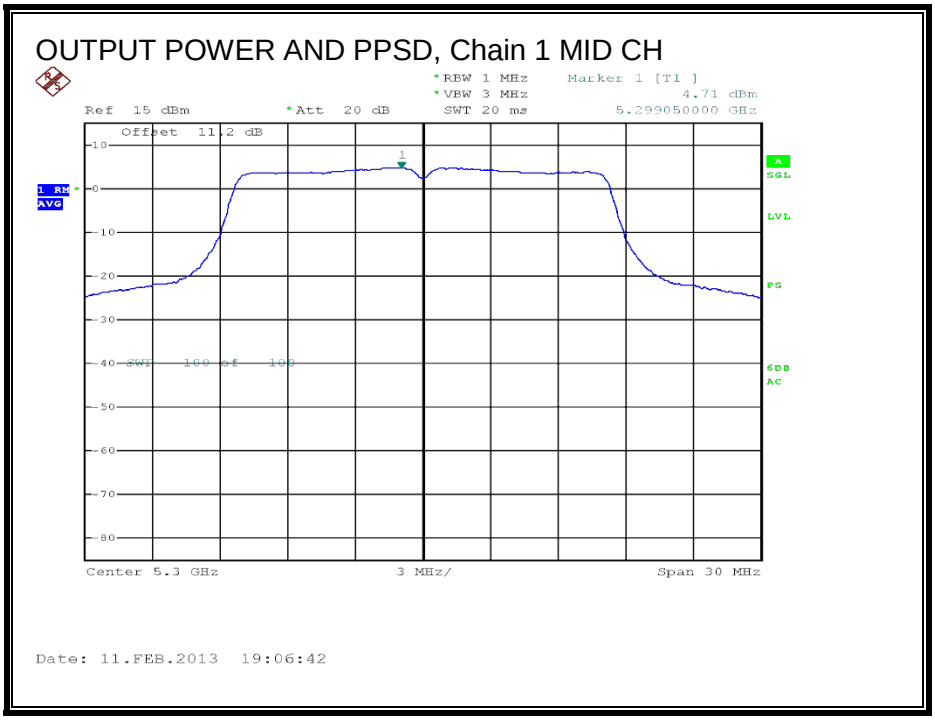
**Output Power Results**

| Channel | Frequency (MHz) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5300 | 19.32 | 19.32 | 21.49 | -2.17 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5300 | 4.710 | 4.710 | 9.30 | -4.590 |

**OUTPUT POWER AND PPSD, Chain 1**



## 8.9. 802.11n HT20 CDD 3TX MODE, 5.3 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.9.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 7.70 | 7.00 | 7.09 |

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 7.70 | 7.00 | 11.85 |

## RESULTS

**Output Power Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) |
|---|---|---|---|---|---|
| Mid | 5300 | 22.91 | 23.49 | 29.49 | 22.40 |

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5300 | 14.38 | 14.06 | 14.25 | 19.00 | 22.40 | -3.40 |

**PPSD Limits**

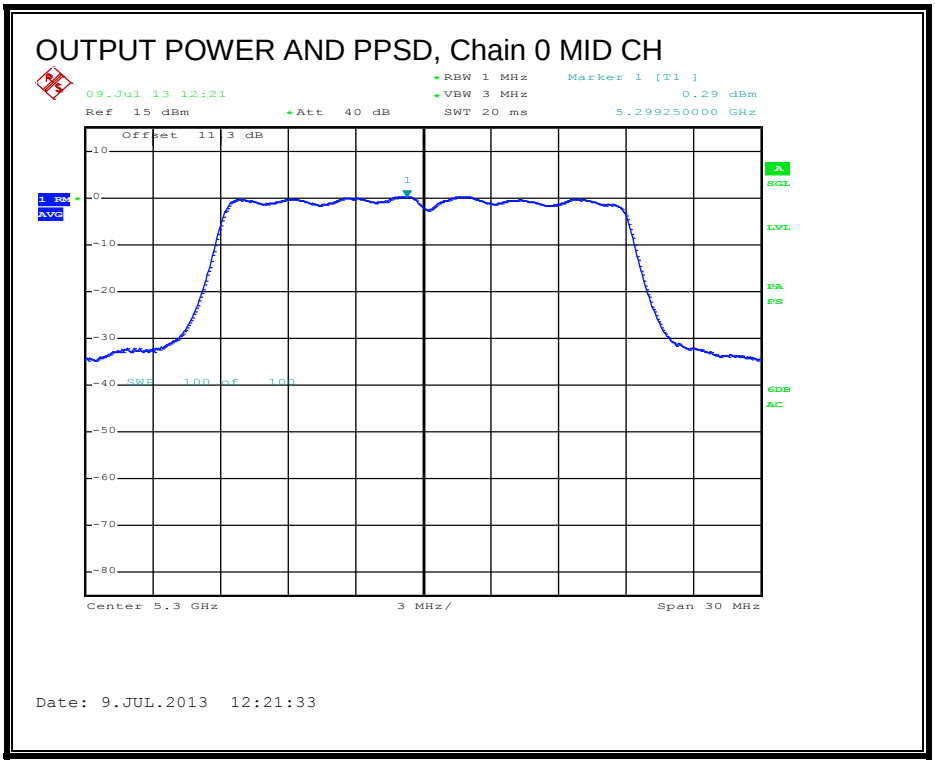
| Channel | Frequency (MHz) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|
| Mid | 5300 | 5.15 | 11.00 | 5.15 |

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

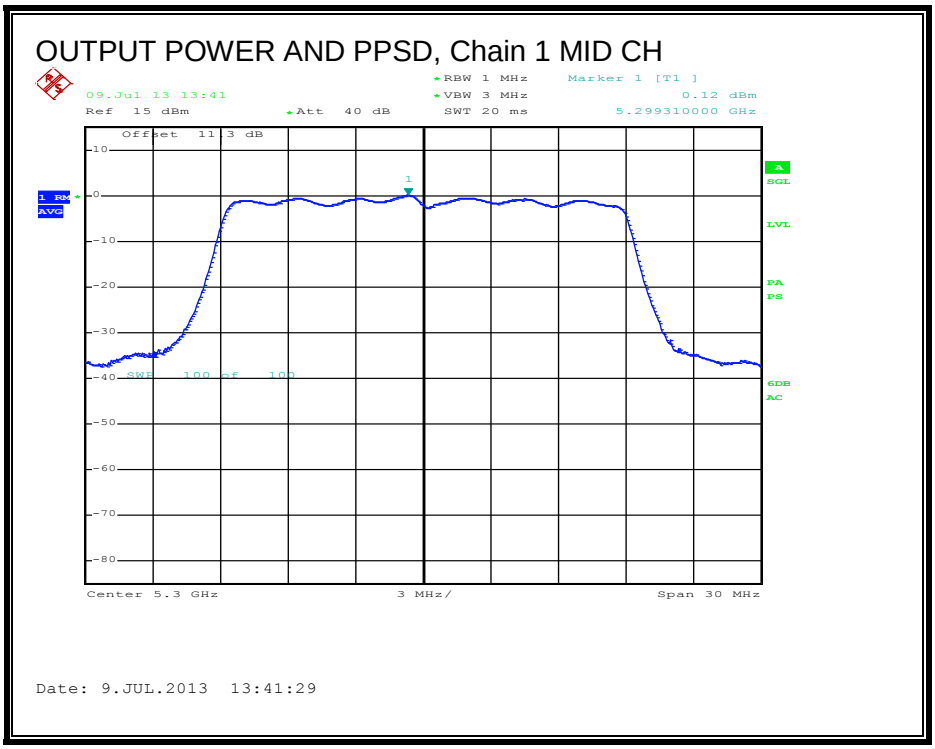
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5300 | 0.29 | 0.12 | 0.25 | 4.99 | 5.15 | -0.16 |

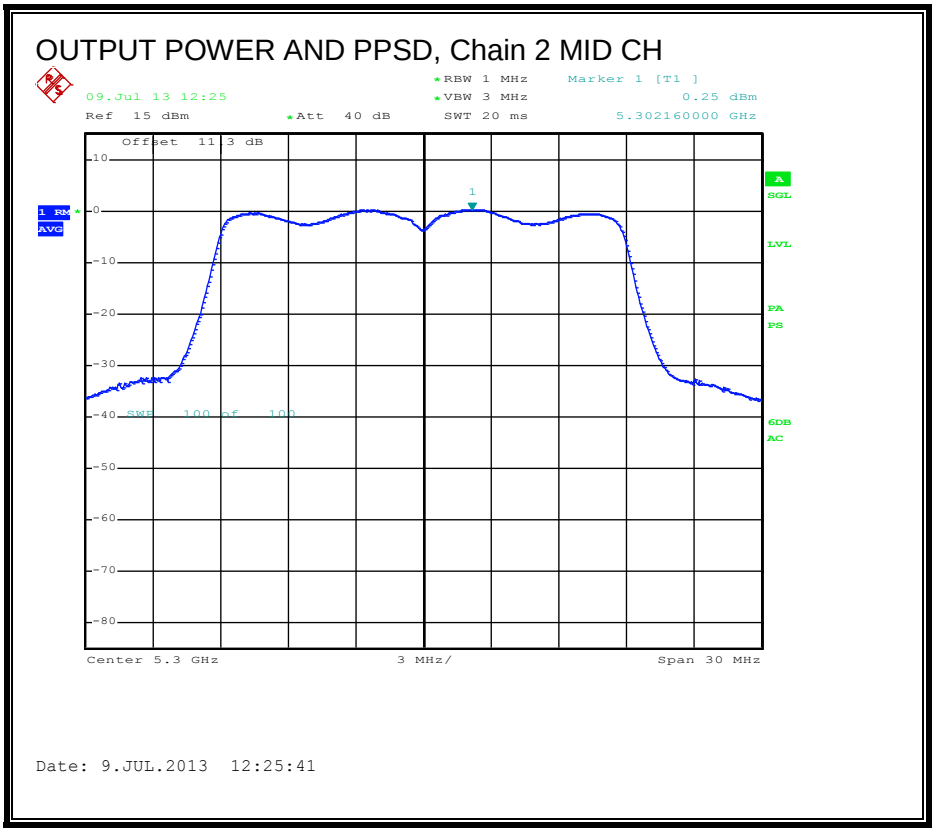
**OUTPUT POWER AND PPSD, Chain 0**




**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 1**



## 8.10. 802.11n HT20 STBC 3TX MODE, 5.3 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.10.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 7.70 | 7.00 | 7.09 |

## RESULTS

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5300 | 22.91 | 23.49 | 29.49 | 22.40 | 9.91 | 11.00 | 9.91 |

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

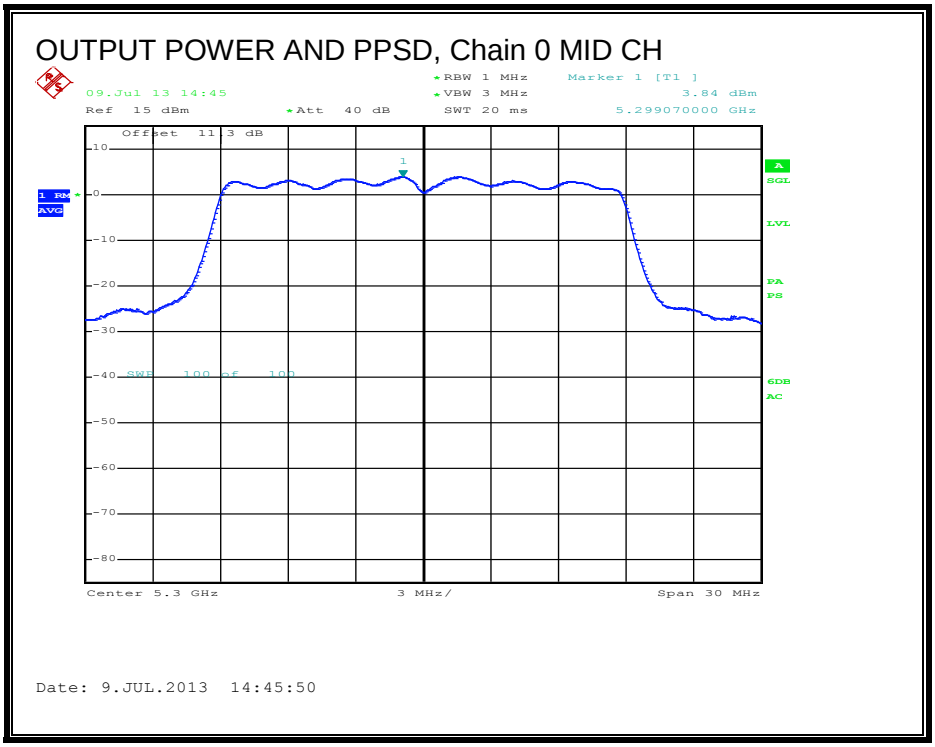
**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5300 | 17.72 | 17.53 | 17.26 | 22.28 | 22.40 | -0.12 |

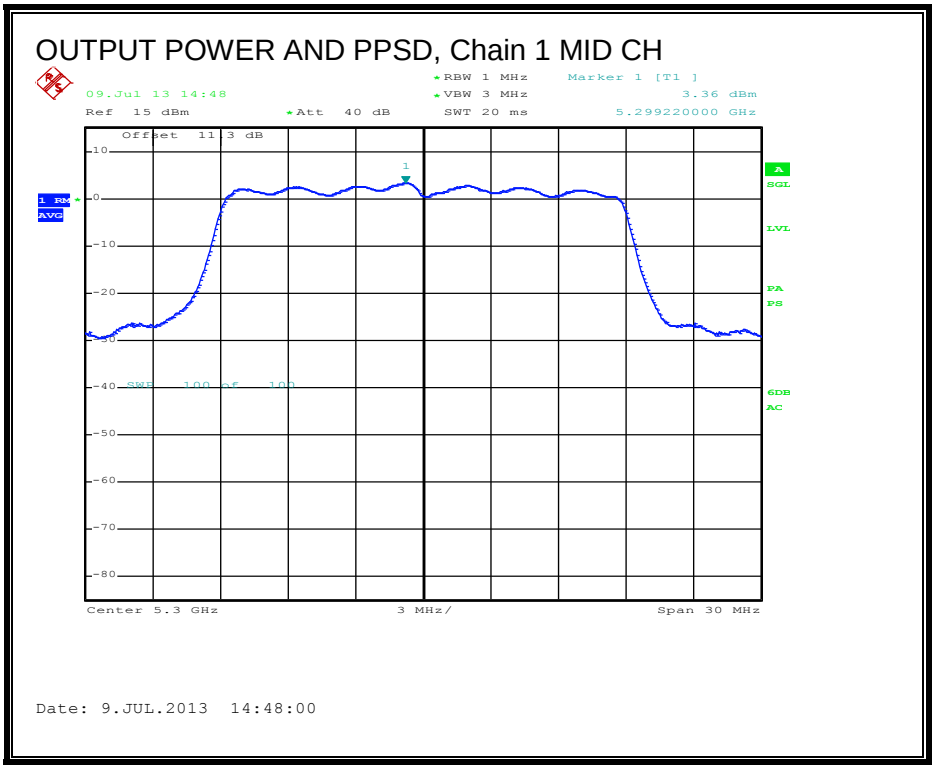
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5300 | 3.84 | 3.36 | 2.99 | 8.18 | 9.91 | -1.73 |

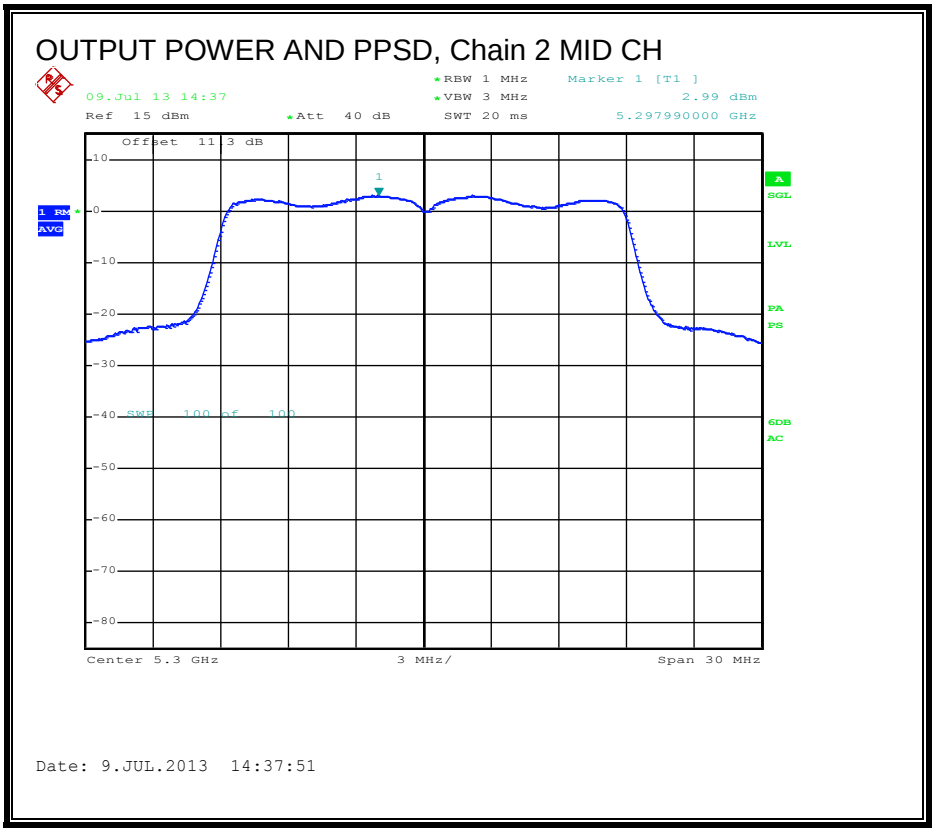
**OUTPUT POWER AND PPSD, Chain 0**




**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**



## 8.11. 802.11n HT40 1TX MODE IN THE 5.3 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.11.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

**RESULTS**

**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 | 22.30 | 24.00 | 30.00 | 22.30 | 9.30 | 11.00 | 9.30 |

| Duty Cycle CF (dB) | 0.10 | Included in Calculations of Corr'd PPSD |
|---|---|---|

**Output Power Results**

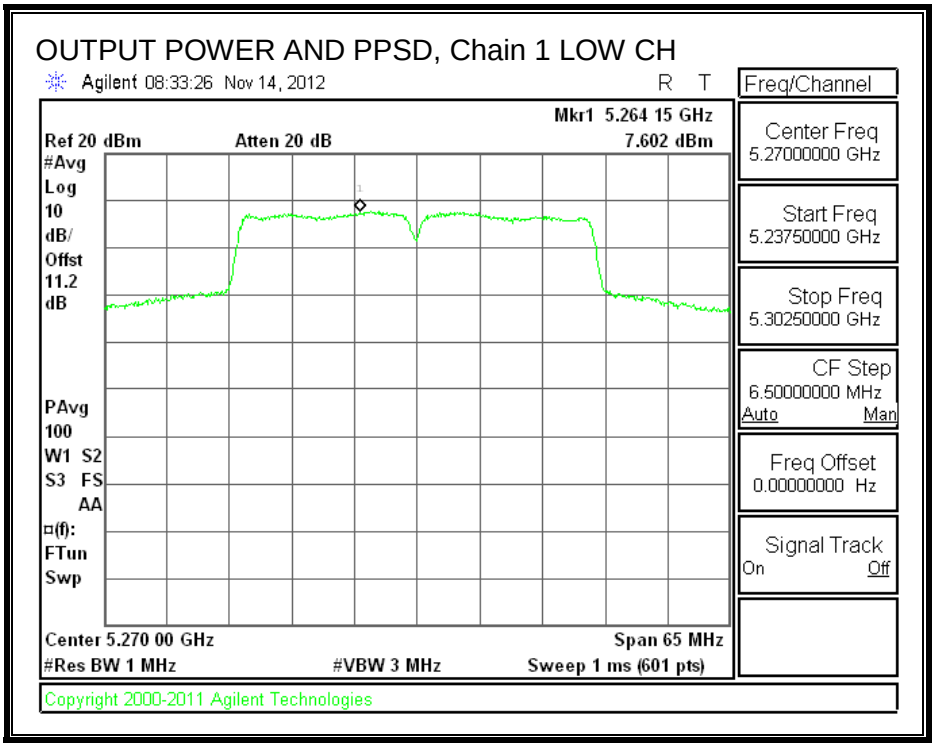
| Channel | Frequency (MHz) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| Low | 5270 | 19.00 | 19.00 | 22.30 | -3.30 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| Low | 5270 | 7.60 | 7.70 | 9.30 | -1.60 |

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

**OUTPUT POWER AND PPSD, Chain 1**



## 8.12. 802.11n HT40 CDD 3TX MODE, 5.3 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.12.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 7.70 | 7.00 | 7.09 |

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 7.70 | 7.00 | 11.85 |

## RESULTS

**Output Power Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5270 | 22.91 | 24.00 | 30.00 | 22.91 |

**Gated Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5270 | 17.12 | 17.00 | 17.34 | 21.93 | 22.91 | -0.98 |

**PPSD Limits**

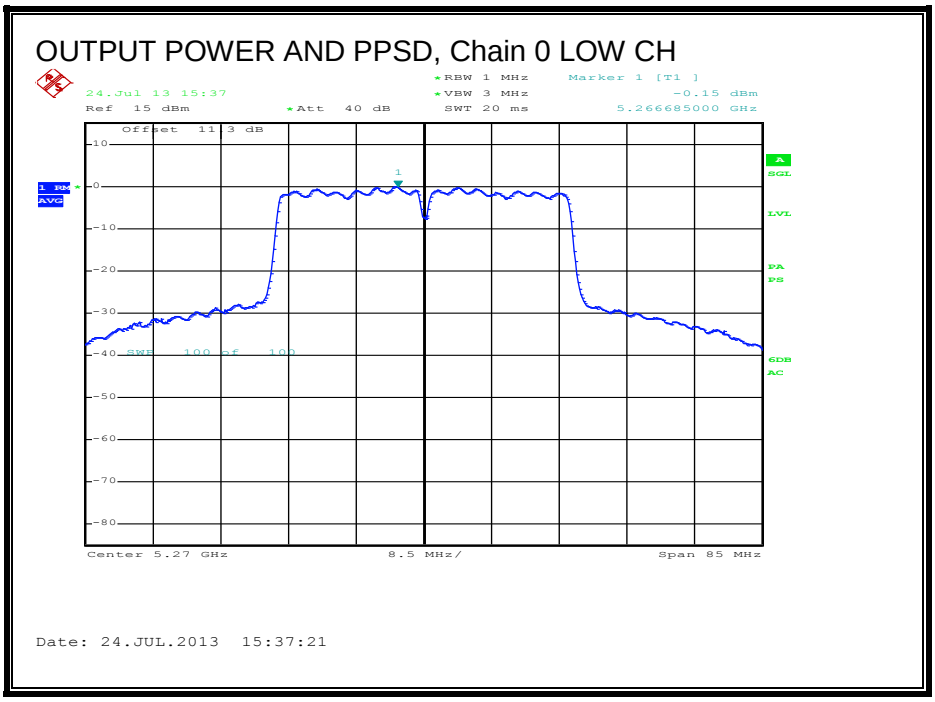
| Channel | Frequency (MHz) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|
| Low | 5270 | 5.15 | 11.00 | 5.15 |

| Duty Cycle CF (dB) | 0.19 | Included in Calculations of Corr'd PPSD |
|---|---|---|

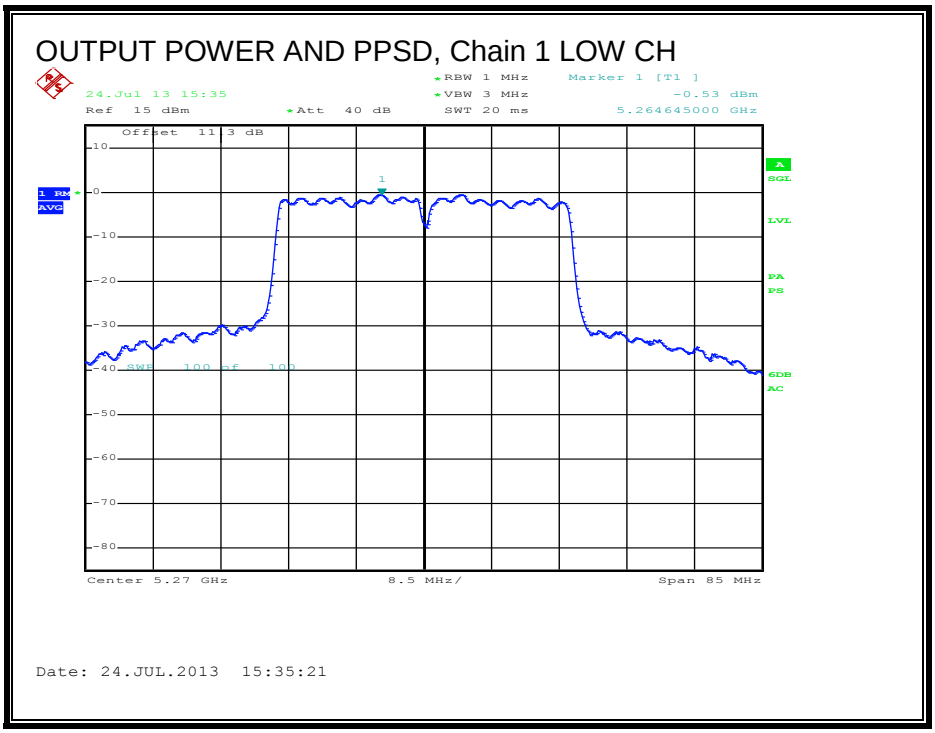
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5270 | -0.15 | -0.53 | 0.35 | 4.87 | 5.15 | -0.28 |

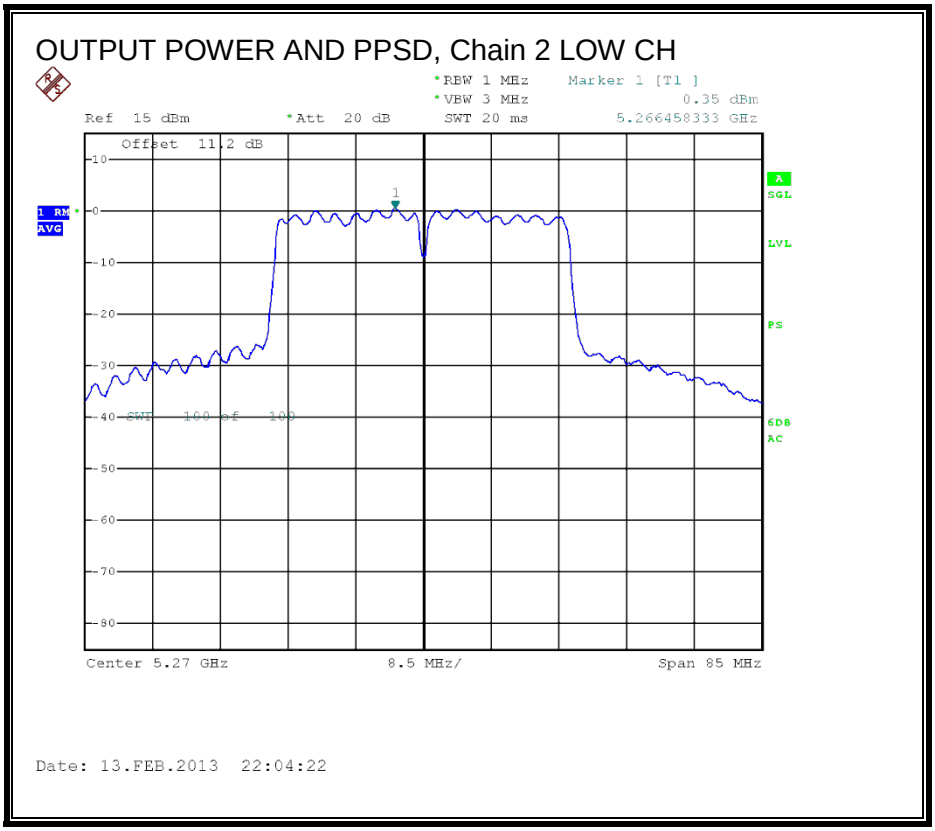
**OUTPUT POWER AND PPSD, Chain 0**




**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**



## 8.13. 802.11n HT40 STBC 3TX MODE, 5.3 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.13.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 7.70 | 7.00 | 7.09 |

## RESULTS

**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 | 22.91 | 24.00 | 30.00 | 22.91 | 9.91 | 11.00 | 9.91 |

| Duty Cycle CF (dB) | 0.27 | Included in Calculations of PPSD |
|---|---|---|

**Output Power Results**

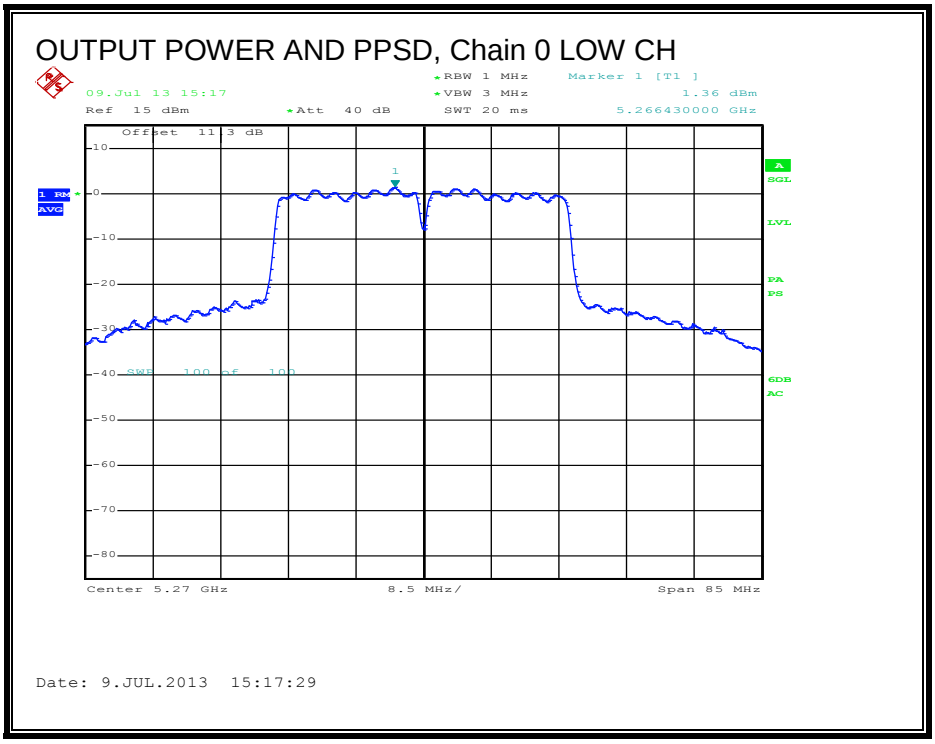
| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5270 | 18.13 | 17.65 | 17.74 | 22.62 | 22.91 | -0.29 |

**PPSD Results**

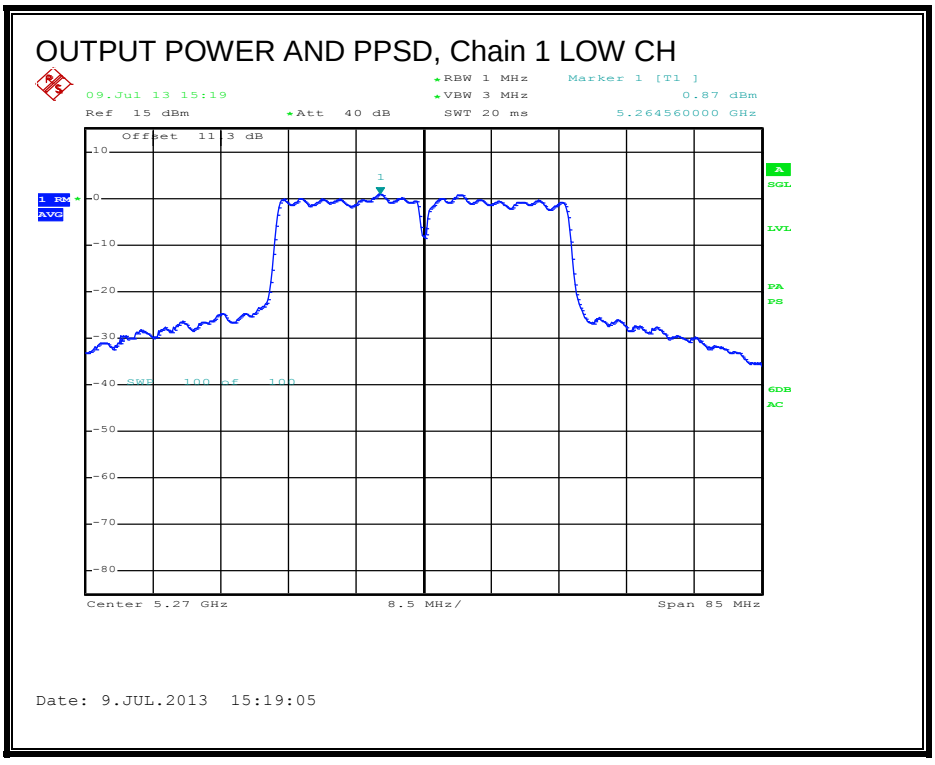
| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5270 | 1.36 | 0.87 | 0.78 | 6.05 | 9.91 | -3.86 |

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

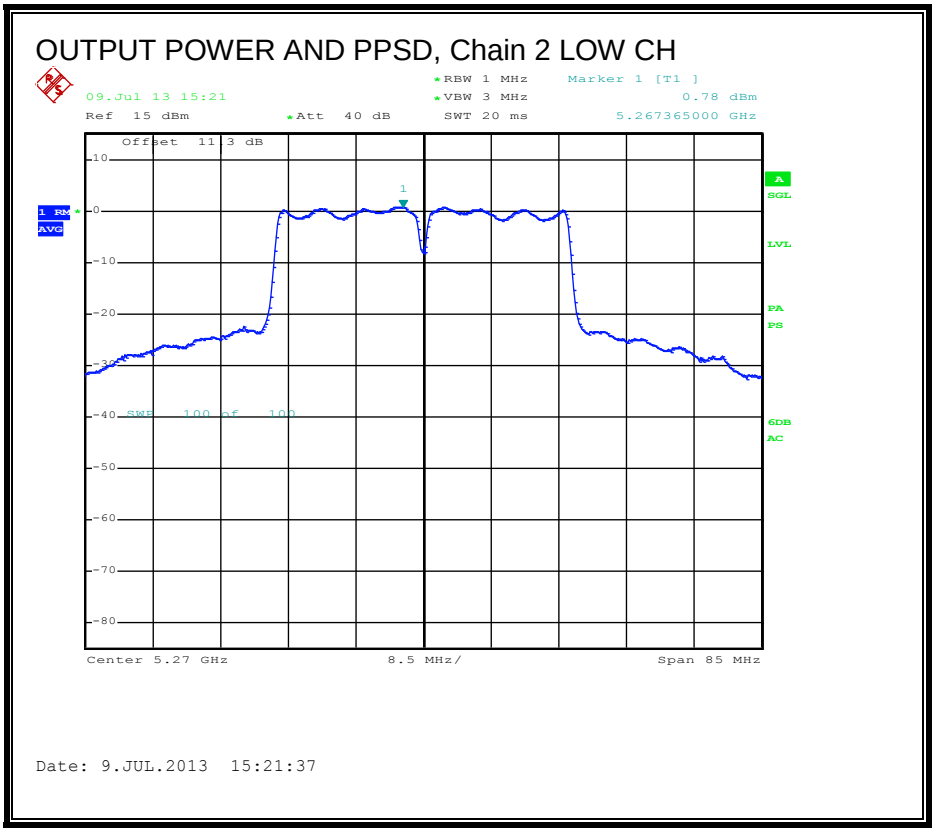
**OUTPUT POWER AND PPSD, Chain 0**




**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**



## 8.14. 802.11ac VHT40 BF 3TX MODE, 5.3 GHz BAND

This mode has same antenna port results, except for output power, as 802.11n HT40 CDD 3TX.

### 8.14.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 7.70 | 7.00 | 11.85 |

## RESULTS

**Output Power Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5270 | 18.15 | 24.00 | 30.00 | 18.15 |

**Gated Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5270 | 13.21 | 13.45 | 13.33 | 18.10 | 18.15 | -0.05 |

## 8.15. 802.11ac VHT80 1TX MODE, 5.3 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.15.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

## RESULTS

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5290 | 22.30 | 24.00 | 30.00 | 22.30 | 9.30 | 11.00 | 9.30 |

| Duty Cycle CF (dB) | 0.43 | Included in Calculations of Corr'd PPSD |
|---|---|---|

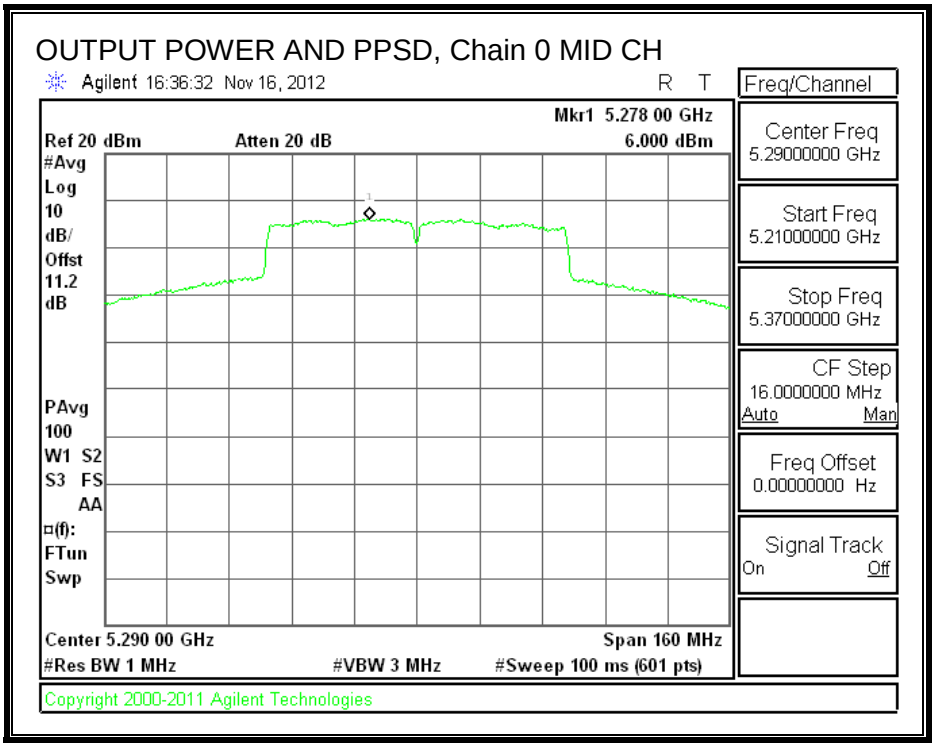
**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5290 | 16.52 | 16.52 | 22.30 | -5.78 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5290 | 6.00 | 6.43 | 9.30 | -2.87 |

**OUTPUT POWER AND PPSD, Chain 0**



## 8.16. 802.11ac VHT80 CDD 3TX MODE, 5.3 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.16.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 7.70 | 7.00 | 7.09 |

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 7.70 | 7.00 | 11.85 |

## RESULTS

**Output Power Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5290 | 24.00 | 24.00 | 30.00 | 22.91 |

**Gated Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5290 | 13.05 | 13.28 | 13.12 | 17.92 | 22.91 | -4.99 |

**PPSD Limits**

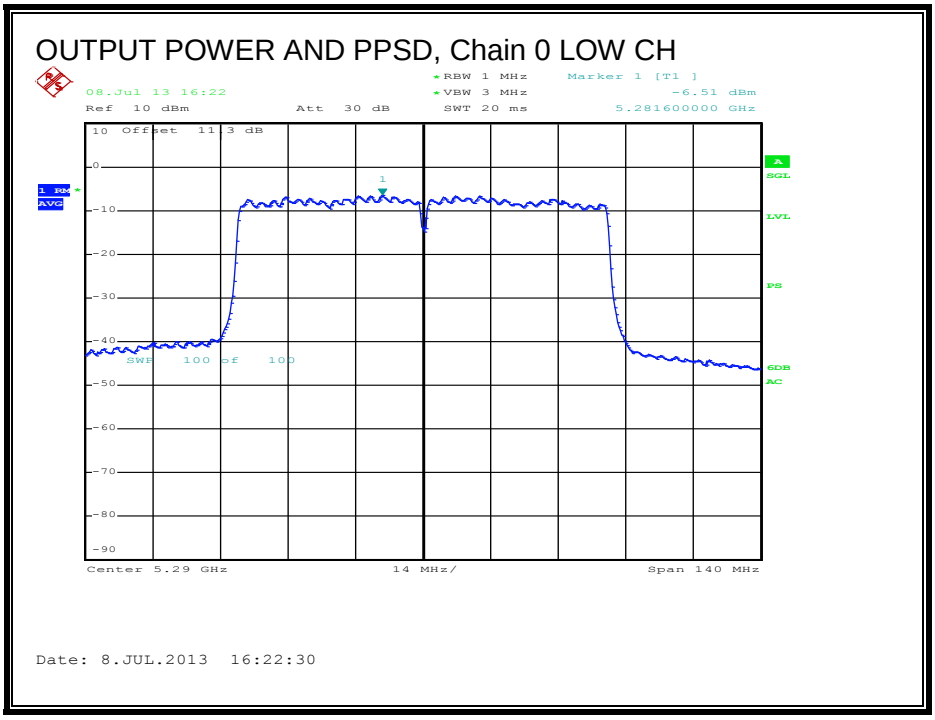
| Channel | Frequency (MHz) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|
| Low | 5290 | 5.15 | 11.00 | 5.15 |

| Duty Cycle CF (dB) | 0.49 | Included in Calculations of PPSD |
|---|---|---|

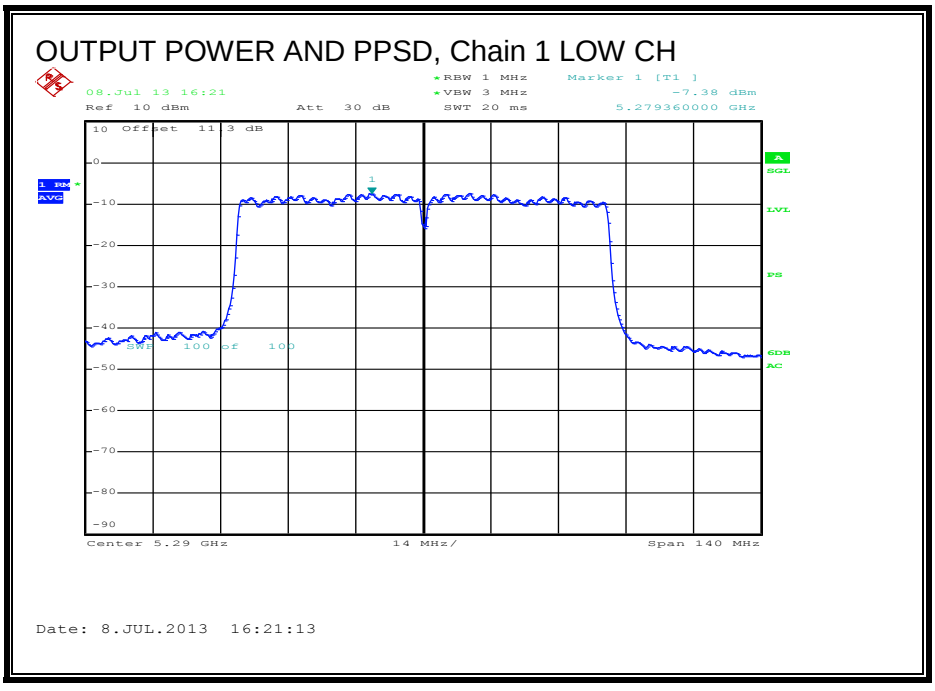
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5290 | -6.51 | -7.38 | -7.24 | -1.77 | 5.15 | -6.92 |

**OUTPUT POWER AND PPSD, Chain 0**

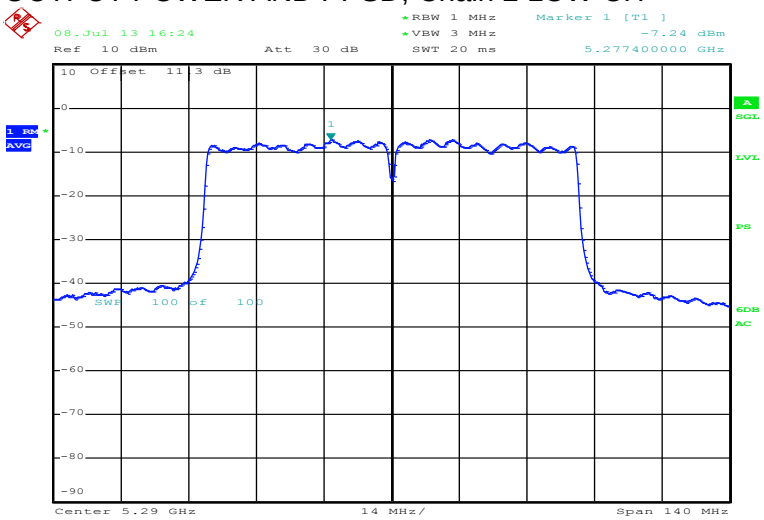



**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**

OUTPUT POWER AND PPSD, Chain 2 LOW CH

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## 8.17. 802.11ac VHT80 BF 3TX MODE, 5.3 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.17.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

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

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 7.70 | 7.00 | 11.85 |

## RESULTS

**Output Power Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5290 | 18.15 | 24.00 | 30.00 | 18.15 |

**Gated Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5290 | 13.26 | 13.66 | 13.02 | 18.09 | 18.15 | -0.06 |

**PPSD Limits**

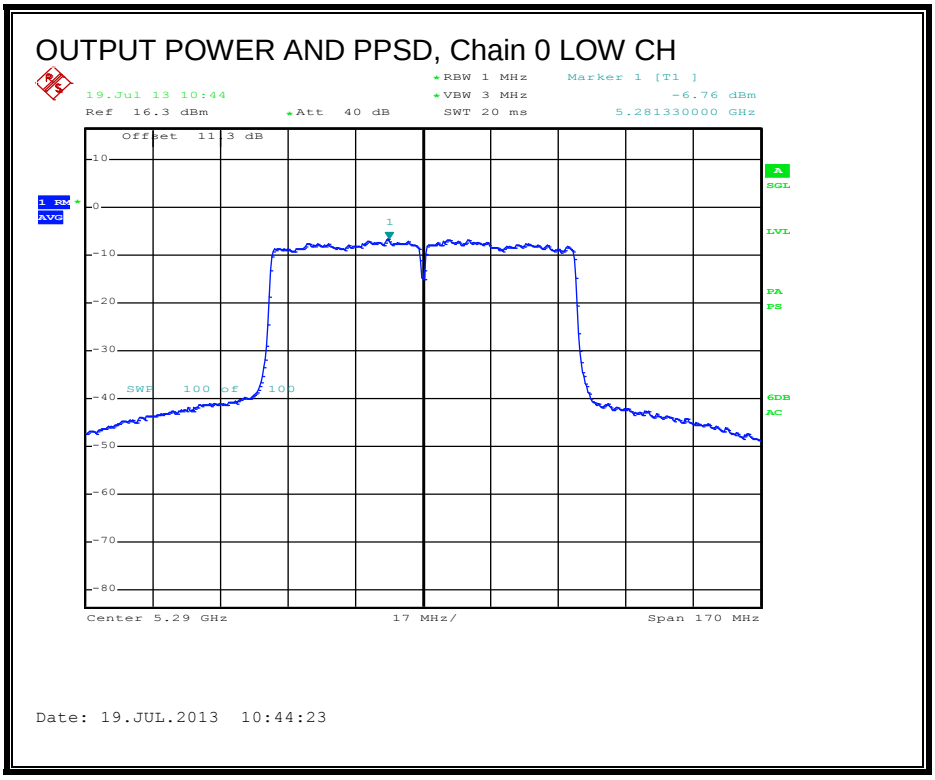
| Channel | Frequency (MHz) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|
| Low | 5290 | 5.15 | 11.00 | 5.15 |

| Duty Cycle CF (dB) | 0.49 | Included in Calculations of Corr'd PPSD |
|---|---|---|

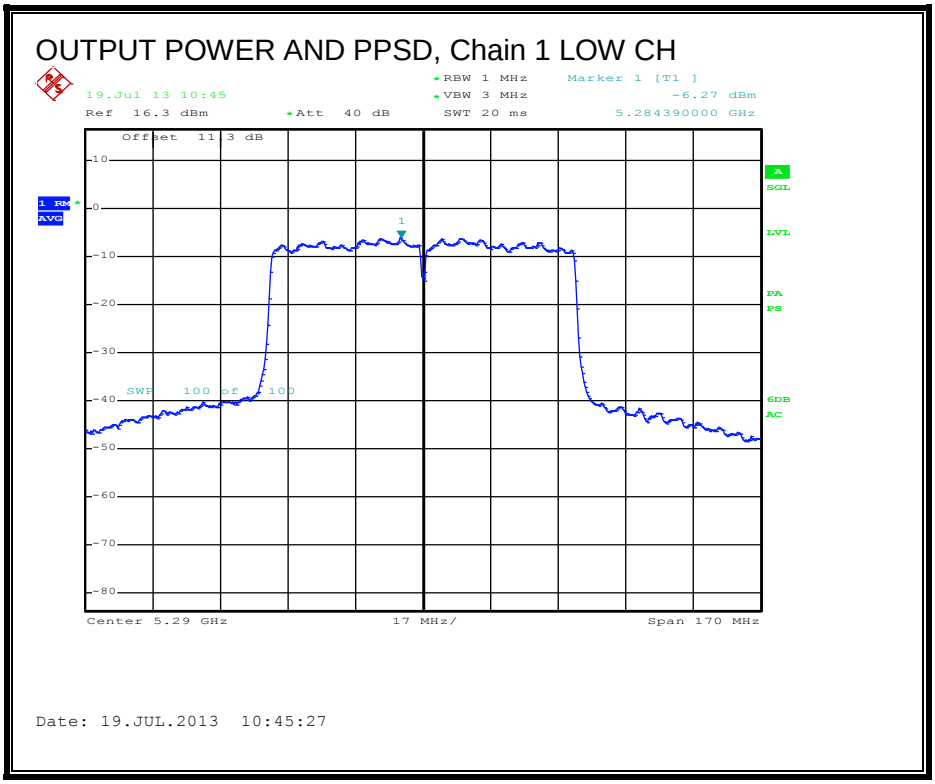
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5290 | -6.76 | -6.27 | -6.51 | -1.25 | 5.15 | -6.40 |

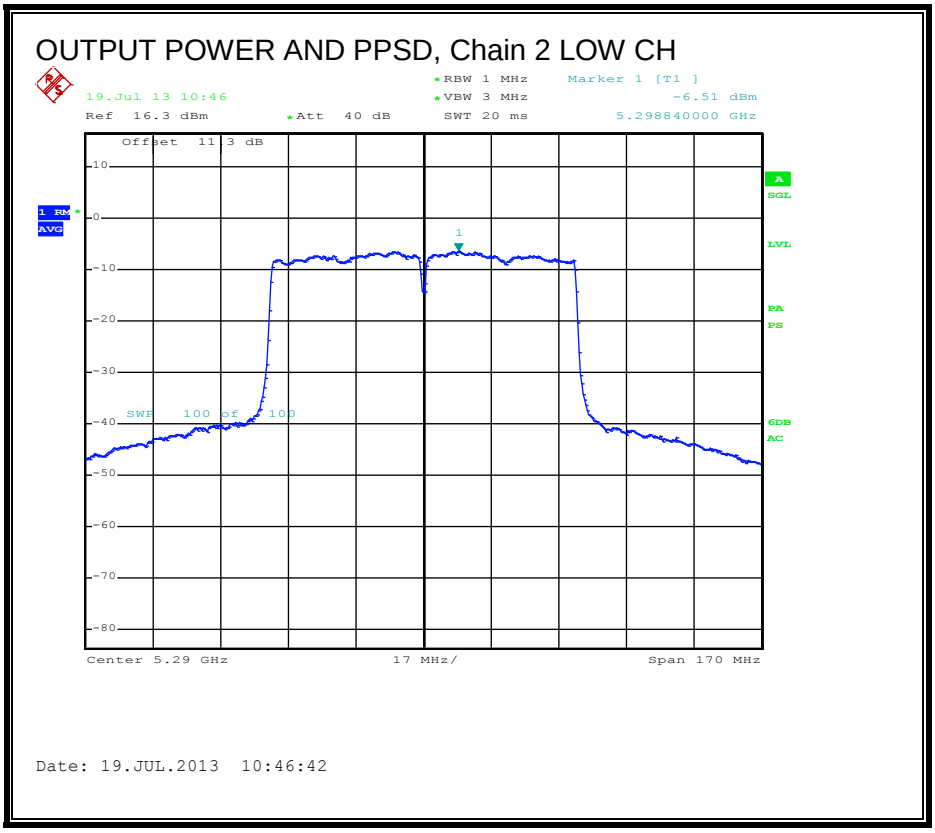
**OUTPUT POWER AND PPSD, Chain 0**




**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**



## 8.18. 802.11a Legacy 1TX LEGACY MODE, 5.6 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.18.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

## RESULTS

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5580 | 22.80 | 23.19 | 29.19 | 21.99 | 9.80 | 11.00 | 9.80 |

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

**Output Power Results**

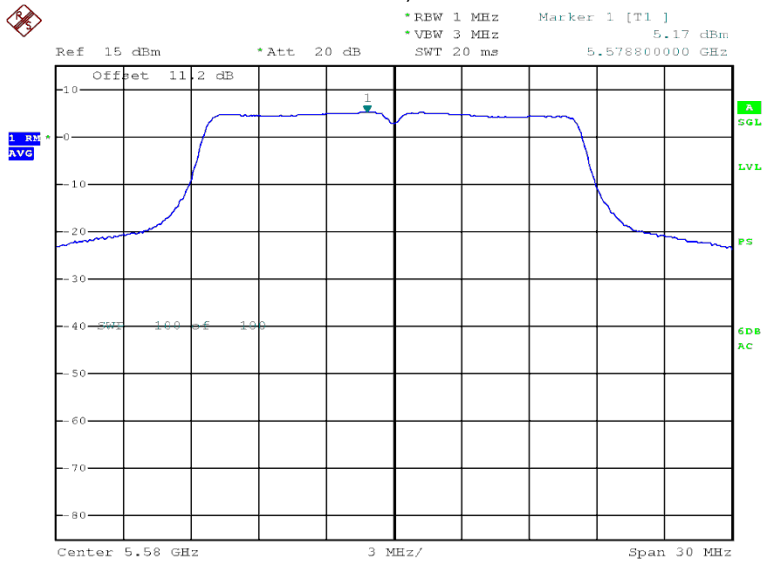
| Channel | Frequency (MHz) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5580 | 19.45 | 19.45 | 21.99 | -2.54 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5580 | 5.170 | 5.170 | 9.80 | -4.630 |

**OUTPUT POWER AND PPSD, Chain 1**

OUTPUT POWER AND PPSD, Chain 1 MID CH

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## 8.19. 802.11n HT20 3TX CDD MODE, 5.6 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.19.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 6.80 | 7.20 | 6.84 |

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 6.80 | 7.20 | 11.61 |

## RESULTS

**Output Power Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) |
|---|---|---|---|---|---|
| Mid | 5580 | 23.16 | 23.50 | 29.50 | 22.66 |

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

**Gated Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5580 | 14.19 | 13.98 | 14.03 | 18.84 | 22.66 | -3.82 |

**PPSD Limits**

| Channel | Frequency (MHz) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|
| Mid | 5580 | 5.39 | 11.00 | 5.39 |

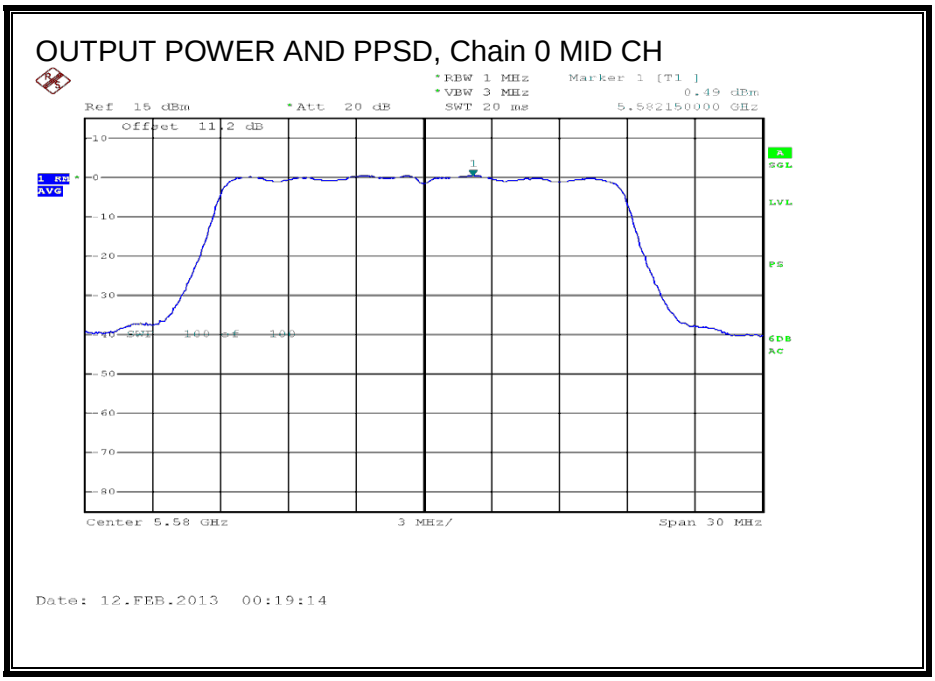
| Duty Cycle CF (dB) | 0.00 | Included in Calculations of Corr'd Power & PPSD |
|---|---|---|

**PPSD Results**

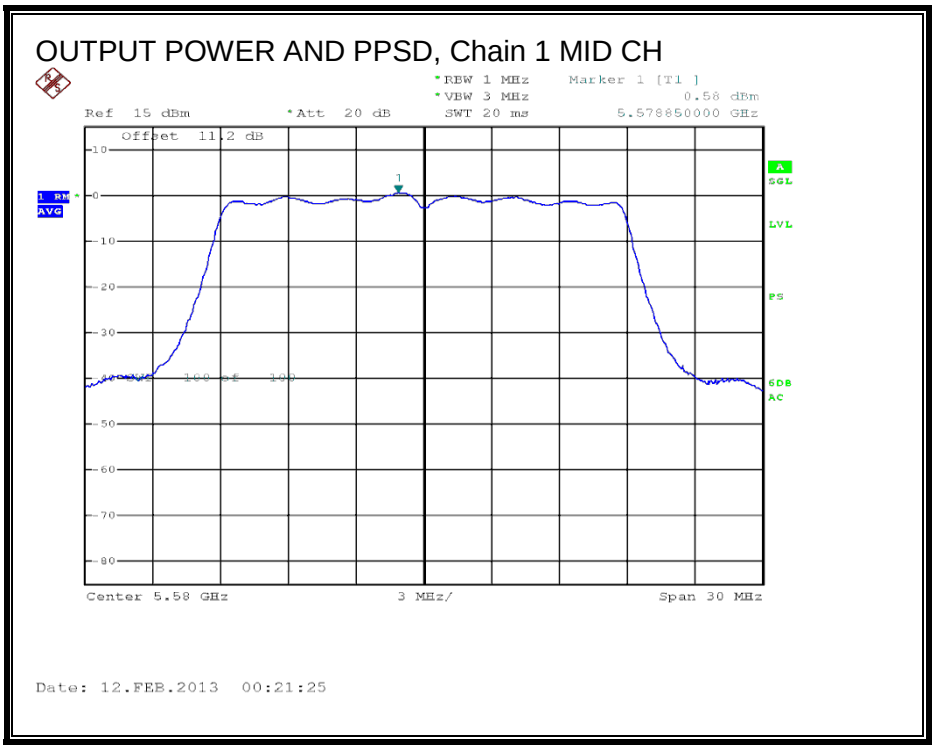
| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5580 | 0.49 | 0.58 | 0.39 | 5.26 | 5.39 | -0.13 |

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

**OUTPUT POWER AND PPSD, Chain 0**

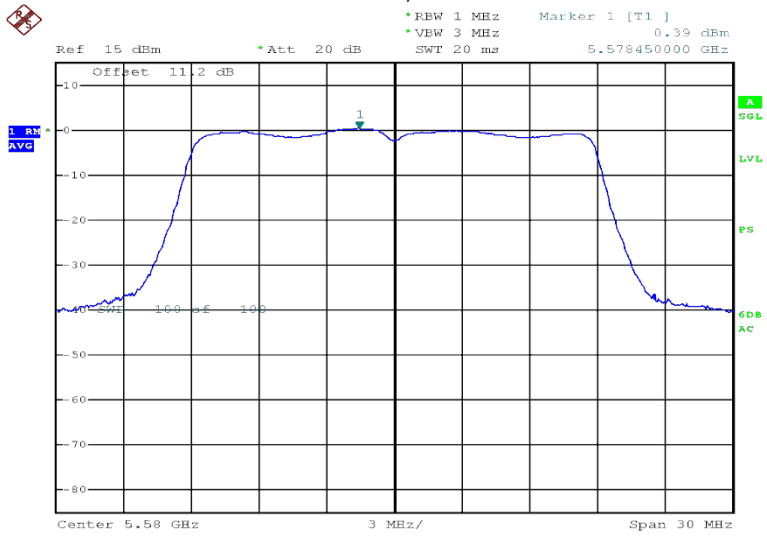



**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**

OUTPUT POWER AND PPSD, Chain 2 MID CH



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

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.20.1. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

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

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Chain 2 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|---|
| High | 5720 | 14.83 | 14.38 | 14.92 | 19.49 |

## 8.20.2. OUTPUT POWER AND PSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 6.80 | 7.20 | 6.84 |

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 6.80 | 7.20 | 11.61 |

**RESULTS**

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

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5720 | 22.37 | 22.39 | 28.39 | 21.55 | 5.39 | 11.00 | 5.39 |

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

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5720 | 10.49 | 10.00 | 10.39 | 15.07 | 21.55 | -6.48 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5720 | 0.54 | 0.29 | 0.44 | 5.20 | 5.39 | -0.19 |

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

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5720 | 18.86 | 16.85 | 22.85 | 16.01 | 5.39 | 11.00 | 5.39 |

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

**Output Power Results**

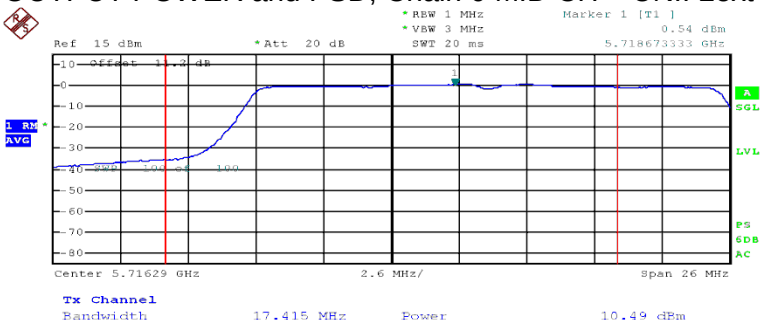
| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5720 | 4.42 | 3.79 | 4.50 | 9.02 | 16.01 | -6.99 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5720 | -0.360 | -0.790 | -0.810 | 4.12 | 5.39 | -1.27 |

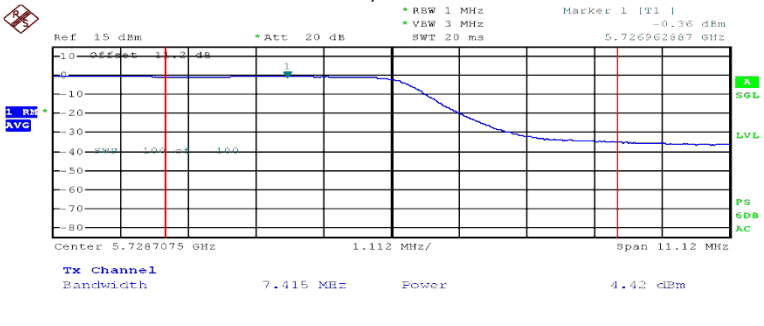
**OUTPUT POWER and PSD, Chain 0**

OUTPUT POWER and PSD, Chain 0 MID CH – UNII 2ext




Date: 13.FEB.2013 20:20:58

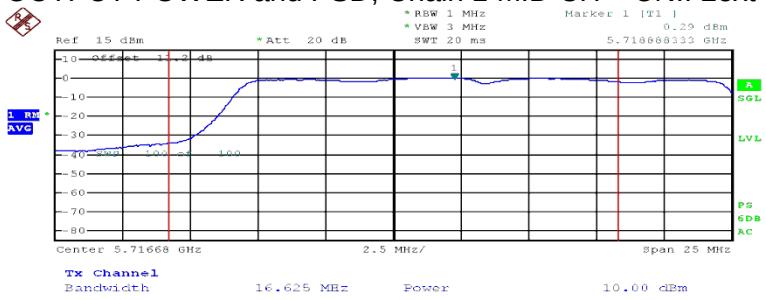
OUTPUT POWER and PSD, Chain 0 MID CH – UNII 3




Date: 13.FEB.2013 20:22:54

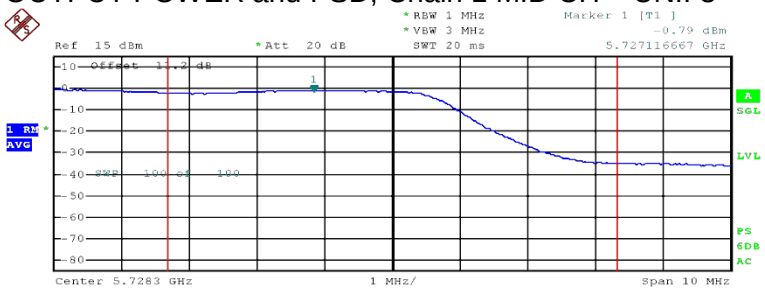
**OUTPUT POWER and PSD, Chain 1**

OUTPUT POWER and PSD, Chain 1 MID CH – UNII 2ext




Date: 13.FEB.2013 20:24:59

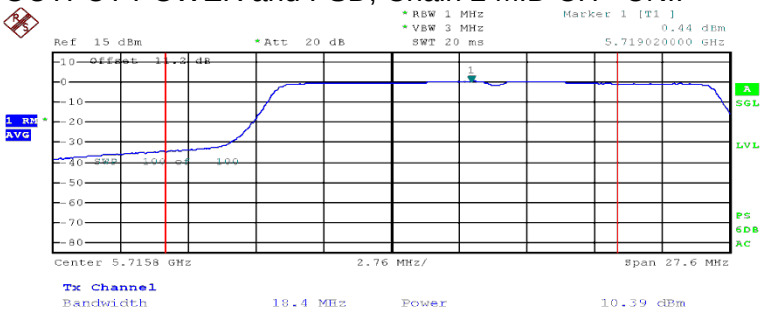
OUTPUT POWER and PSD, Chain 1 MID CH – UNII 3




Date: 13.FEB.2013 20:26:16

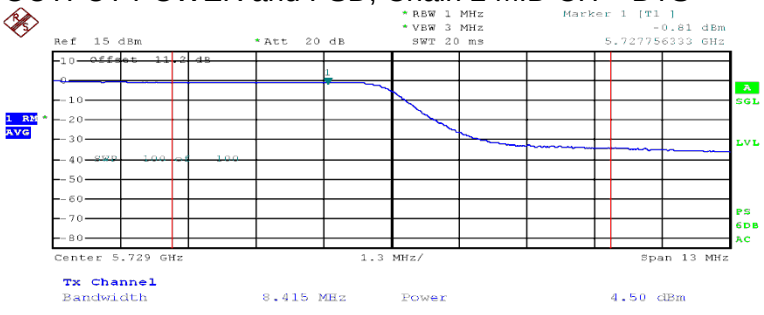
**OUTPUT POWER and PSD, Chain 2**

OUTPUT POWER and PSD, Chain 2 MID CH - UNII




Date: 13.FEB.2013 20:28:04

OUTPUT POWER and PSD, Chain 2 MID CH – DTS




Date: 13.FEB.2013 20:29:04

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

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.21.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 6.80 | 7.20 | 6.84 |

**RESULTS**

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5580 | 23.16 | 23.51 | 29.51 | 22.67 | 10.16 | 11.00 | 10.16 |

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

**Output Power Results**

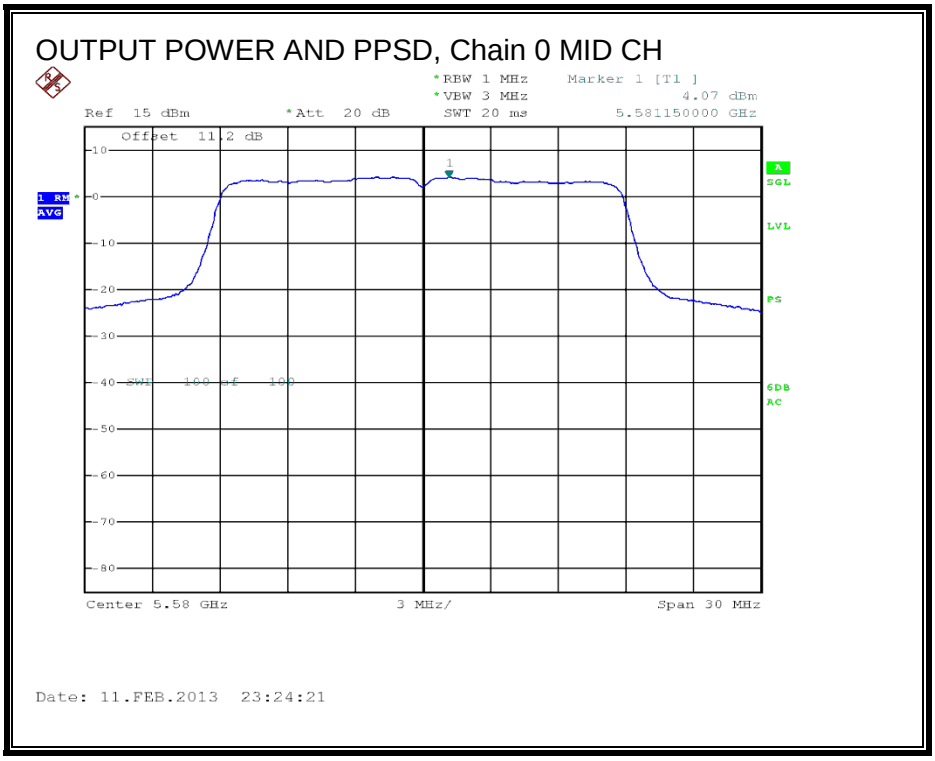
| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5580 | 18.02 | 17.70 | 17.94 | 22.66 | 22.67 | -0.01 |

**PPSD Results**

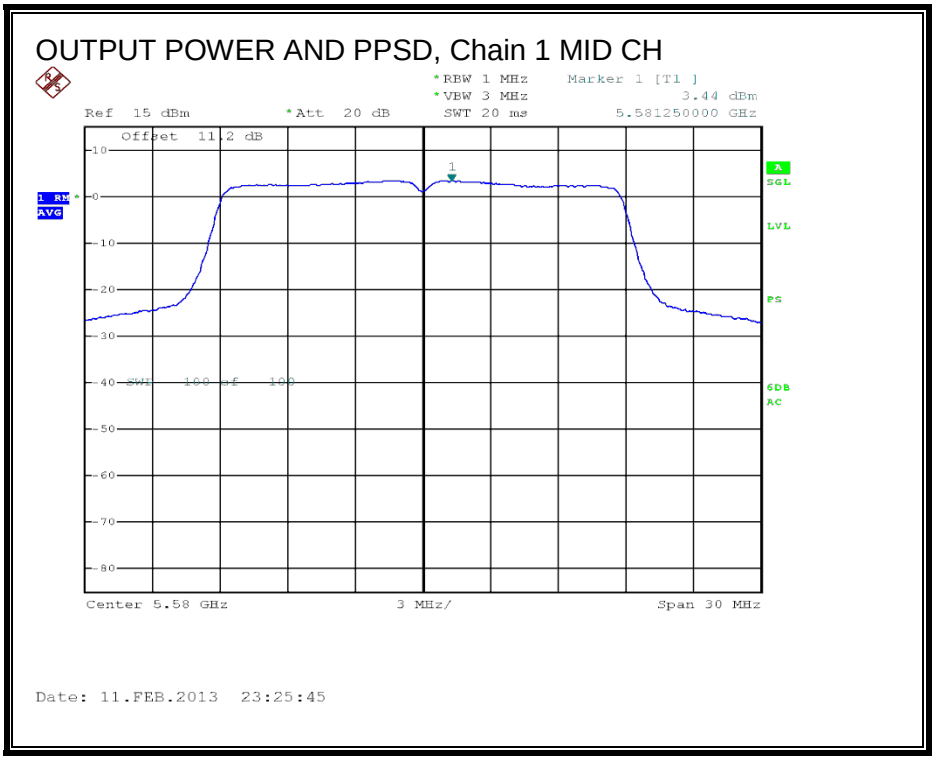
| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5580 | 4.07 | 3.44 | 3.96 | 8.60 | 10.16 | -1.56 |

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

**OUTPUT POWER AND PPSD, Chain 0**

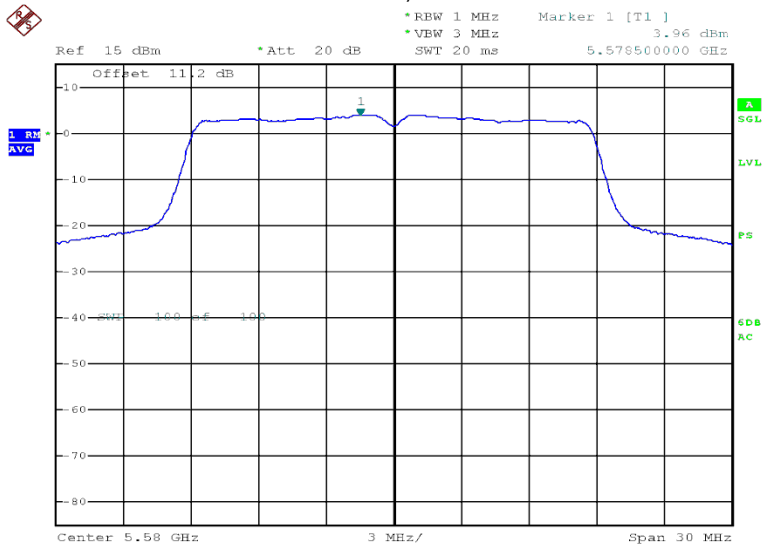



**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**

OUTPUT POWER AND PPSD, Chain 2 MID CH




Date: 11.FEB.2013 23:26:06

## 8.22. 802.11n HT40 1TX MODE, 5.6 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.22.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

## RESULTS

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5550 | 22.80 | 24.00 | 30.00 | 22.80 | 9.80 | 11.00 | 9.80 |

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

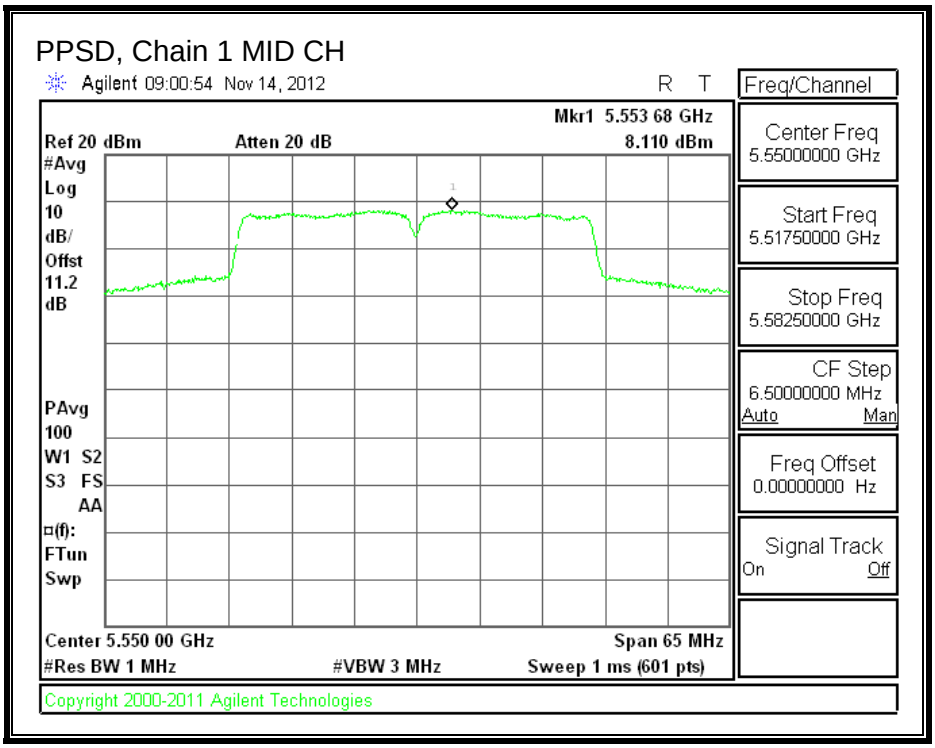
**Output Power Results**

| Channel | Frequency (MHz) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5550 | 19.00 | 19.00 | 22.80 | -3.80 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5550 | 8.110 | 8.340 | 9.80 | -1.460 |

**PPSD, Chain 1**



## 8.23. 802.11n HT40 CDD 3TX MODE, 5.6 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.23.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.5 | 6.8 | 7.2 | 6.84 |

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.5 | 6.8 | 7.2 | 11.61 |

## RESULTS

**Output Power Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) |
|---|---|---|---|---|---|
| Mid | 5550 | 23.16 | 24.00 | 30.00 | 23.16 |

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

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5550 | 16.72 | 16.57 | 16.54 | 21.38 | 23.16 | -1.78 |

**PPSD Limits**

| Channel | Frequency (MHz) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|
| Mid | 5550 | 5.39 | 11.00 | 5.39 |

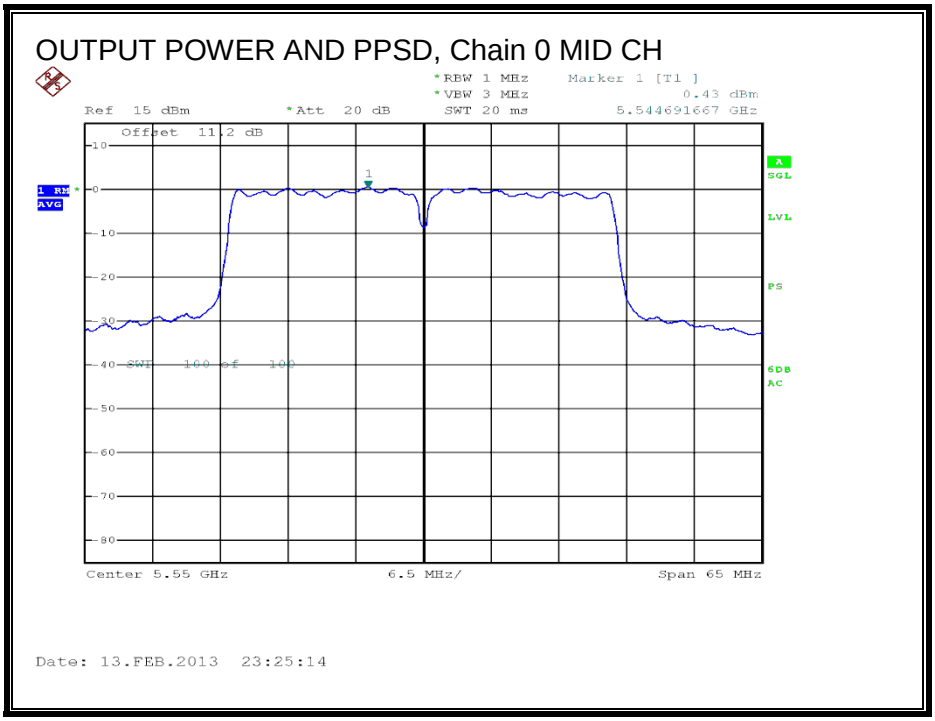
| Duty Cycle CF (dB) | 0.22 | Included in Calculations of Corr'd Power & PPSD |
|---|---|---|

**PPSD Results**

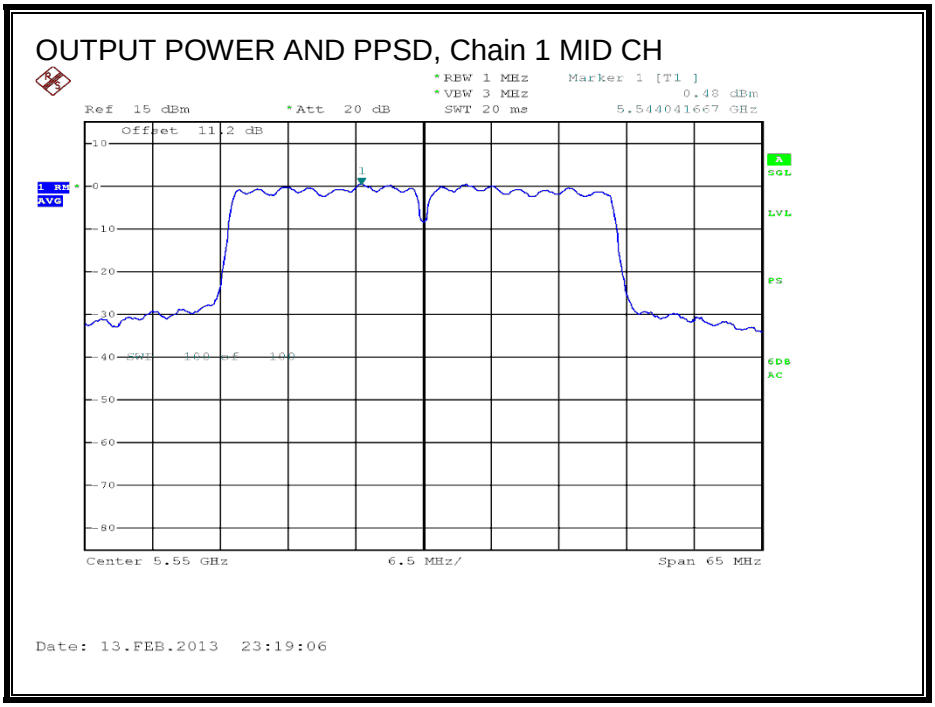
| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5550 | 0.43 | 0.48 | 0.04 | 5.31 | 5.39 | -0.08 |

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

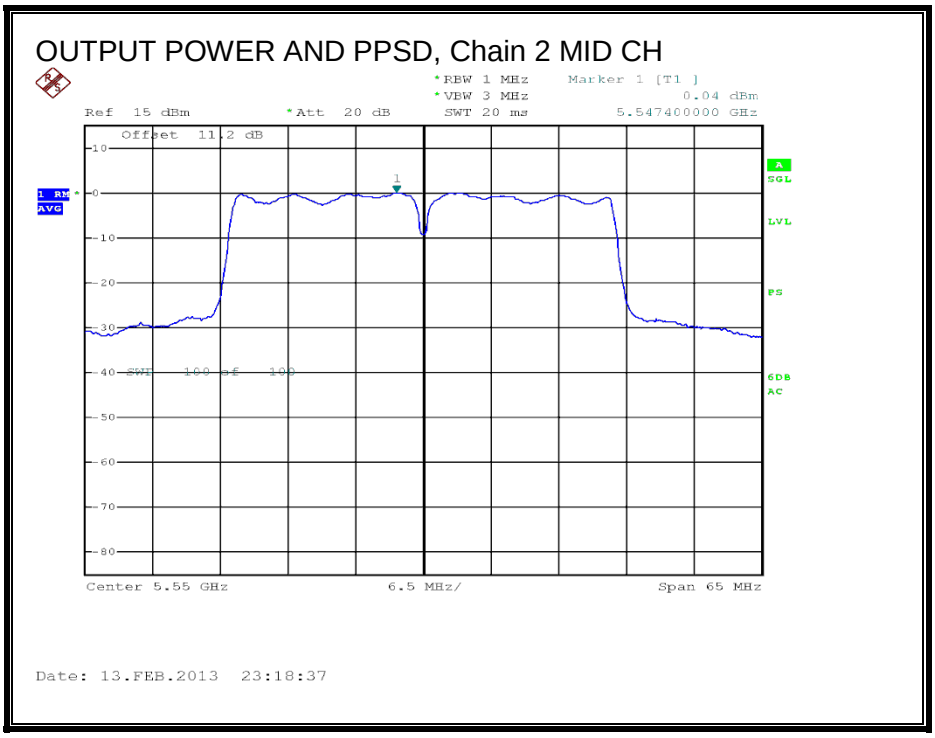
**OUTPUT POWER AND PPSD, Chain 0**




**OUTPUT POWER AND PPSD, Chain 1**



**OUTPUT POWER AND PPSD, Chain 2**



## 8.24. 802.11ac HT40 CDD 3TX CH 142 MODE, 5.6 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.24.1. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

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

**RESULTS**

**Average Power Results**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Chain 2 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|---|
| High | 5720 | 17.32 | 17.03 | 17.07 | 21.91 |

## 8.24.2. OUTPUT POWER AND PSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 6.80 | 7.20 | 6.84 |

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 6.80 | 7.20 | 11.61 |

**RESULTS**

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

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5710 | 23.16 | 24.00 | 30.00 | 23.16 | 5.39 | 11.00 | 5.39 |

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

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5710 | 13.79 | 13.82 | 13.61 | 18.73 | 23.16 | -4.43 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5710 | 0.30 | 0.22 | 0.08 | 5.19 | 5.39 | -0.20 |

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

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5710 | 23.16 | 22.17 | 28.17 | 21.33 | 5.39 | 11.00 | 5.39 |

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

**Output Power Results**

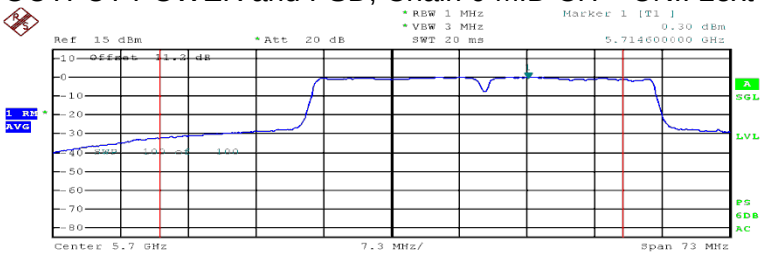
| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5710 | 3.37 | 2.89 | 2.87 | 8.04 | 21.33 | -13.29 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5710 | -0.68 | -1.20 | -1.24 | 3.96 | 5.39 | -1.43 |

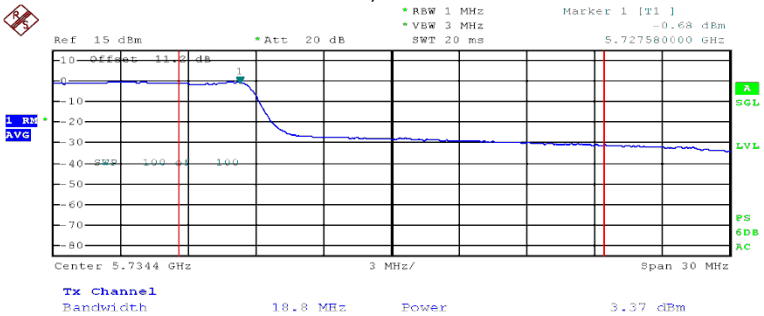
**OUTPUT POWER and PSD, Chain 0**

OUTPUT POWER and PSD, Chain 0 MID CH – UNII 2ext




Date: 14.FEB.2013 00:03:22

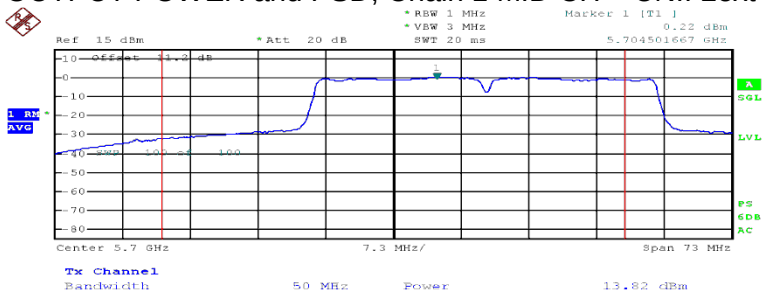
OUTPUT POWER and PSD, Chain 0 MID CH – UNII 3




Date: 14.FEB.2013 00:05:34

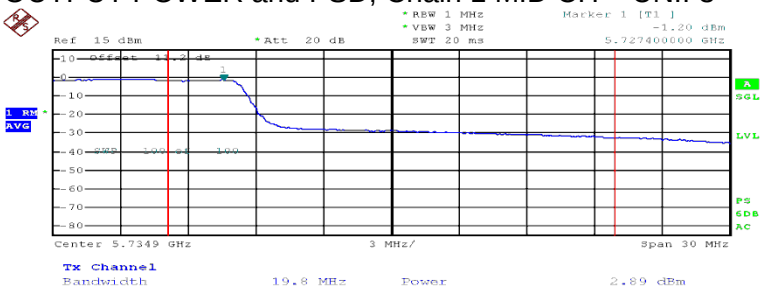
**OUTPUT POWER and PSD, Chain 1**

OUTPUT POWER and PSD, Chain 1 MID CH – UNII 2ext




Date: 14.FEB.2013 00:04:03

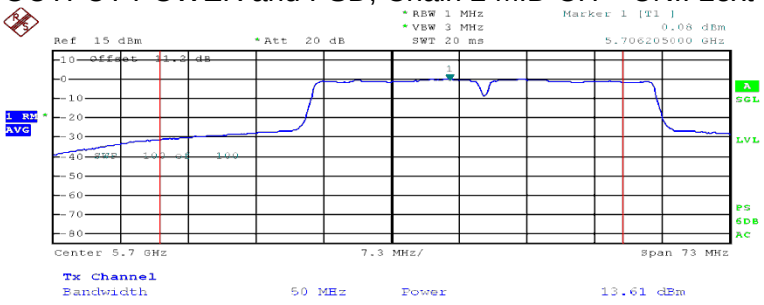
OUTPUT POWER and PSD, Chain 1 MID CH – UNII 3




Date: 14.FEB.2013 00:06:24

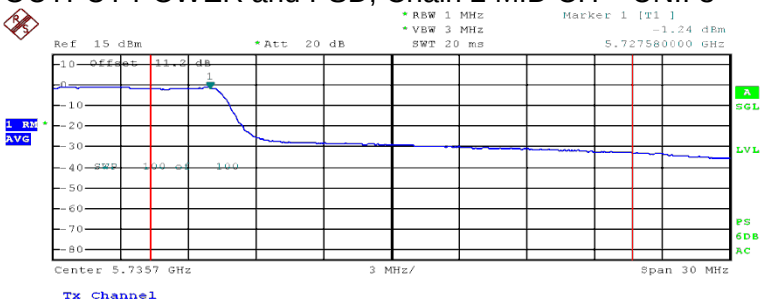
**OUTPUT POWER and PSD, Chain 2**

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




Date: 14.FEB.2013 00:02:18

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




Date: 14.FEB.2013 00:07:01

## 8.25. 802.11n HT40 STBC 3TX MODE, 5.6 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.25.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 6.80 | 7.2 | 6.84 |

## RESULTS

**Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5550 | 23.16 | 24.00 | 30.00 | 23.16 | 10.16 | 11.00 | 10.16 |

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

**Output Power Results**

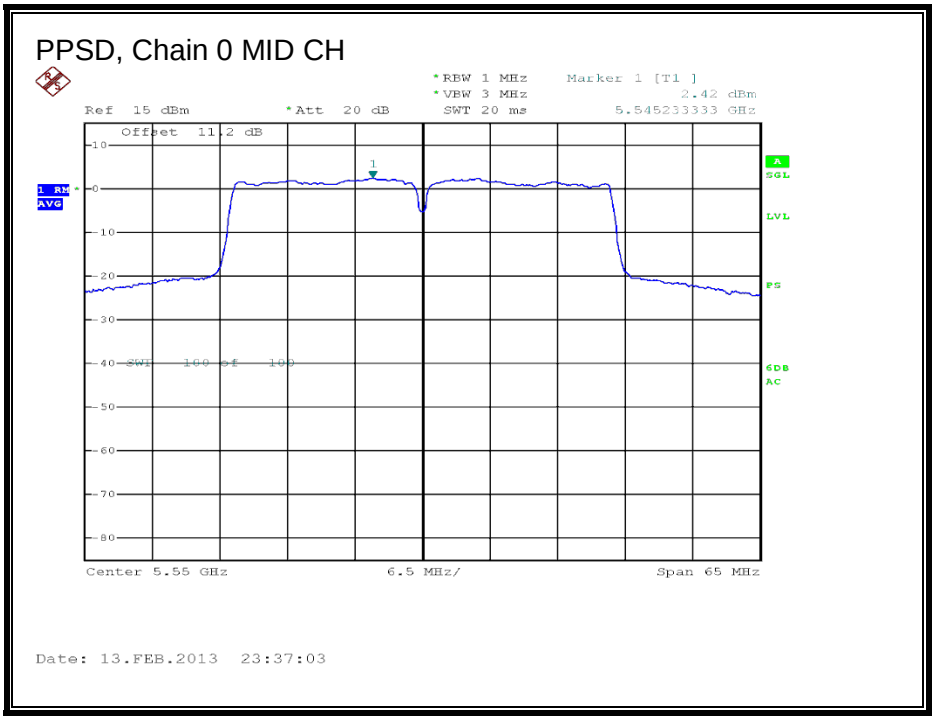
| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5550 | 18.76 | 18.15 | 18.19 | 23.15 | 23.16 | -0.01 |

**PPSD Results**

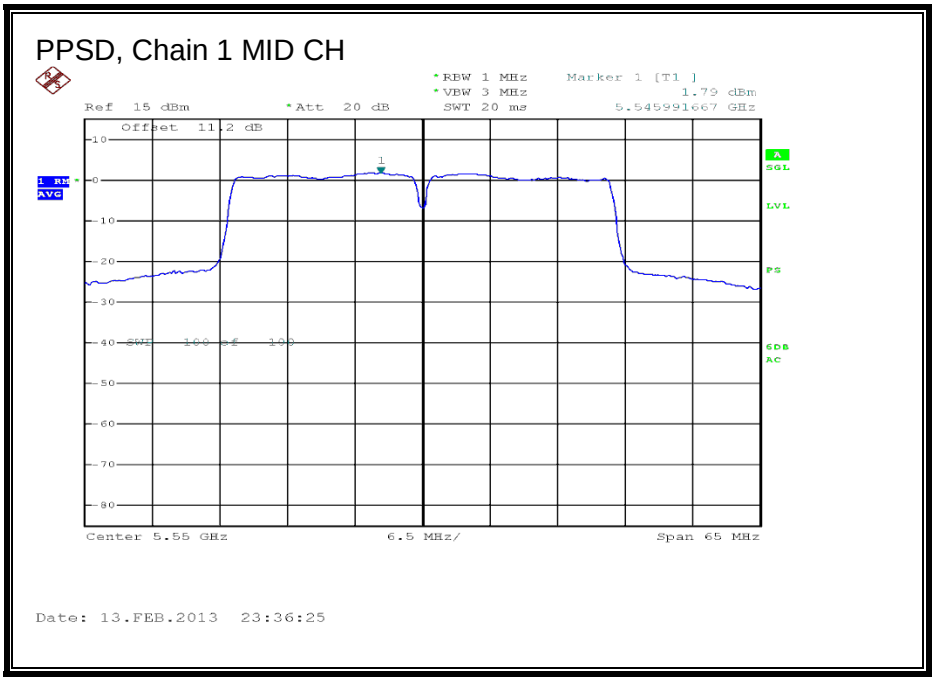
| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5550 | 2.42 | 1.79 | 1.65 | 6.97 | 10.16 | -3.19 |

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

**PPSD, Chain 0**

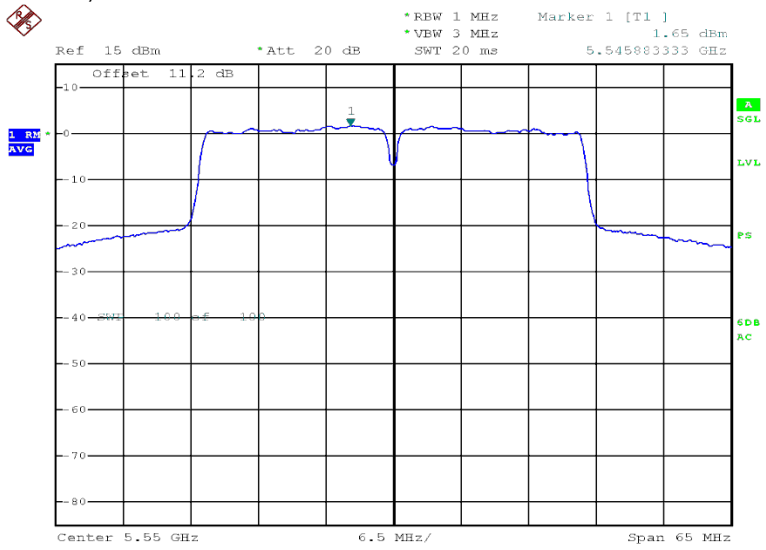



**PPSD, Chain 1**



**PPSD, Chain 2**

PPSD, Chain 2 MID CH




Date: 13.FEB.2013 23:37:35

## 8.26. 802.11ac VHT80 1TX MODE, 5.6 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.26.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

## RESULTS

**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 | 22.80 | 24.00 | 30.00 | 22.80 | 9.80 | 11.00 | 9.80 |

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

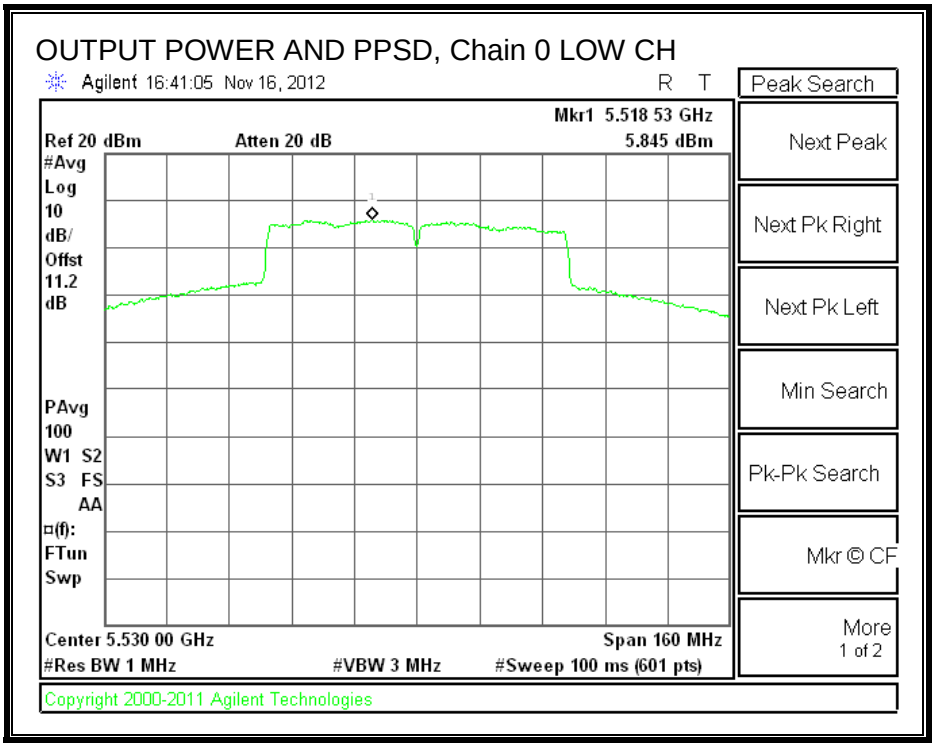
**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| Low | 5530 | 16.08 | 16.08 | 22.80 | -6.72 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| Low | 5530 | 5.845 | 6.305 | 9.80 | -3.495 |

**OUTPUT POWER AND PPSD, Chain 0**



## 8.27. 802.11ac VHT80 CH 138 1TX MODE IN THE 5.8 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.27.1. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

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

**RESULTS**

| Channel | Frequency (MHz) | Power (dBm) |
|---|---|---|
| High | 5720 | 19.02 |

## 8.27.1. OUTPUT POWER AND PSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

**RESULTS**

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

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5690 | 24.00 | 24.00 | 30.00 | 24.00 | 9.80 | 11.00 | 9.80 |

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

**Output Power Results**

| Channel | Frequency (MHz) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5690 | 15.23 | 15.69 | 24.00 | -8.31 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5690 | -1.750 | -1.29 | 9.80 | -11.09 |

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

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5690 | 24.00 | 15.45 | 21.45 | 15.45 | 9.80 | 11.00 | 9.80 |

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

**Output Power Results**

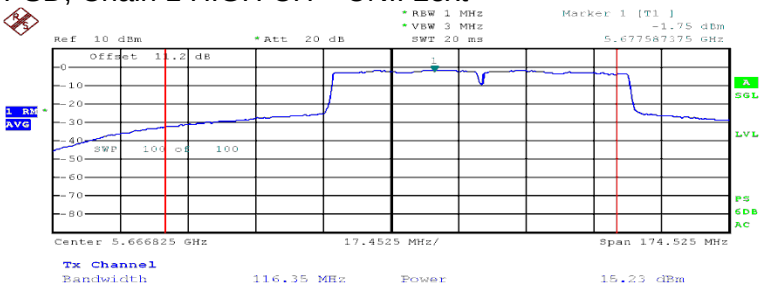
| Channel | Frequency (MHz) | Chain 1 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5690 | 1.08 | 1.54 | 15.45 | -13.91 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 1 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|
| Mid | 5690 | -3.330 | -2.87 | 9.80 | -12.67 |

**PSD, Chain 1**

PSD, Chain 1 HIGH CH – UNII 2ext

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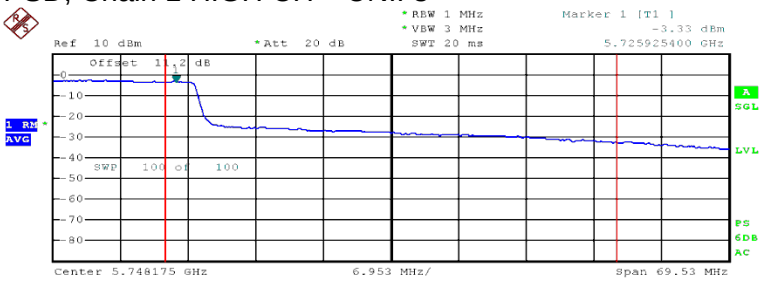
PSD, Chain 1 HIGH CH – UNII 3




Date: 14.FEB.2013 19:02:24

## 8.28. 802.11ac VHT80 CDD 3TX MODE, 5.6 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.28.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.5 | 6.8 | 7.2 | 6.84 |

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.5 | 6.8 | 7.2 | 11.61 |

## RESULTS

**Output Power Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5530 | 23.16 | 24.00 | 30.00 | 23.16 |

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

**Gated Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5530 | 14.89 | 14.52 | 14.35 | 19.36 | 23.16 | -3.80 |

**PPSD Limits**

| Channel | Frequency (MHz) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|
| Low | 5530 | 5.39 | 11.00 | 5.39 |

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

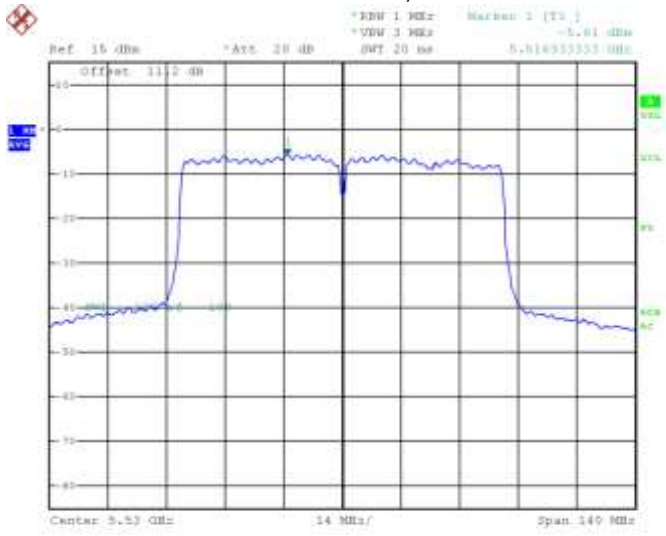
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5530 | -5.81 | -6.42 | -6.34 | -0.95 | 5.39 | -6.34 |

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

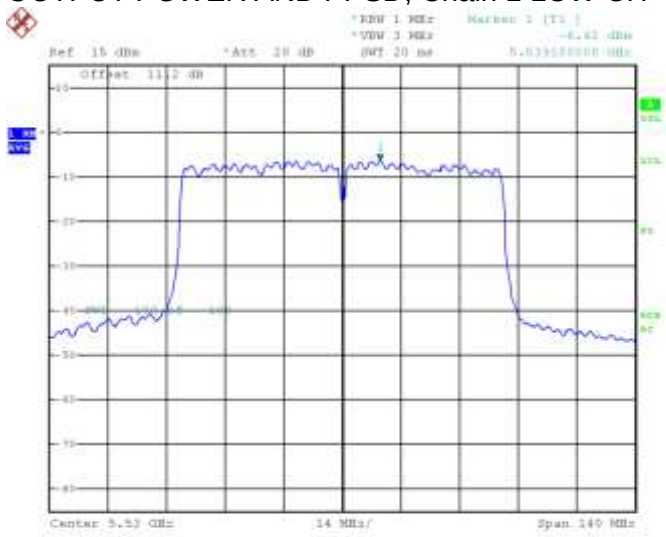
**OUTPUT POWER AND PPSD, Chain 0**

OUTPUT POWER AND PPSD, Chain 0 LOW CH



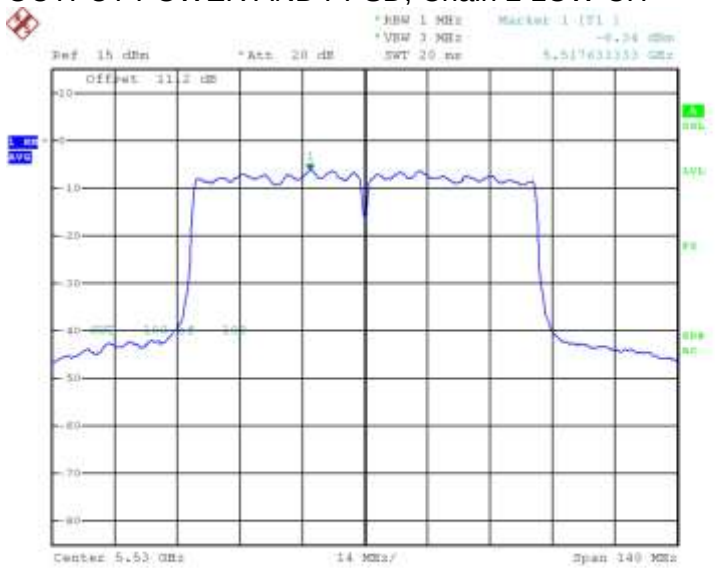

**OUTPUT POWER AND PPSD, Chain 1**

OUTPUT POWER AND PPSD, Chain 1 LOW CH



**OUTPUT POWER AND PPSD, Chain 2**

OUTPUT POWER AND PPSD, Chain 2 LOW CH




Date: 19.FEB.2013 19:35:35

## 8.29. 802.11ac VHT80 CDD 3TX CH 138 MODE, 5.6 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.29.1. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

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

**RESULTS**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Chain 2 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|---|
| Mid | 5690 | 19.98 | 20.02 | 20.05 | 24.79 |

## 8.29.2. OUTPUT POWER AND PSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 6.80 | 7.20 | 6.84 |

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 6.80 | 7.20 | 11.61 |

**RESULTS**

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

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5690 | 23.16 | 24.00 | 30.00 | 23.16 | 5.39 | 11.00 | 5.39 |

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

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | 16.42 | 16.010 | 16.00 | 21.38 | 23.16 | -1.78 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | -0.260 | -0.550 | -0.600 | 4.76 | 5.39 | -0.63 |

## Limits (FCC), portion in 5.8 GHz DTS band

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5690 | 23.36 | 15.29 | 21.29 | 14.65 | 5.39 | 11.00 | 5.39 |

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

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | 2.47 | 2.02 | 2.14 | 7.45 | 14.65 | -7.21 |

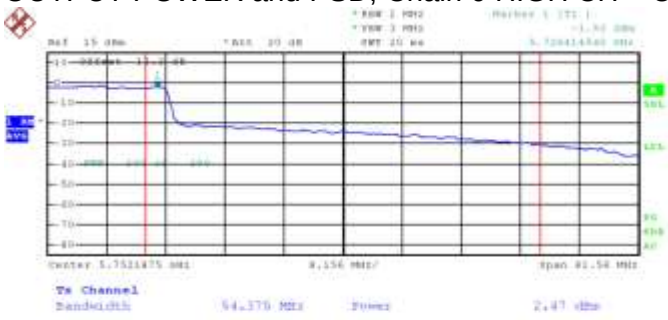
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | -1.920 | -2.420 | -2.560 | 2.94 | 5.390 | -2.450 |

**OUTPUT POWER and PSD, Cain 0**

OUTPUT POWER and PSD, Chain 0 HIGH CH – UNII 2ext


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



**OUTPUT POWER and PSD, Chain 1**

OUTPUT POWER and PSD, Chain 1 HIGH CH – UNII 2ext


Date: 19.FEB.2013 19:54:19

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


Date: 19.FEB.2013 19:55:46

**OUTPUT POWER and PSD, Chain 2**

OUTPUT POWER and PSD, Chain 2 HIGH CH – UNII 2ext


Date: 19.FEB.2013 19:58:43

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


Date: 19.FEB.2013 20:24:22

## 8.30. 802.11ac VHT80 CDD BF 3TX MODE, 5.6 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.30.1. OUTPUT POWER AND PPSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.5 | 6.8 | 7.2 | 6.84 |

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.5 | 6.8 | 7.2 | 11.61 |

## RESULTS

**Output Power Limits**

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) |
|---|---|---|---|---|---|
| Low | 5530 | 18.39 | 24.00 | 30.00 | 18.39 |

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

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5530 | 13.73 | 13.35 | 13.52 | 18.31 | 18.39 | -0.08 |

**PPSD Limits**

| Channel | Frequency (MHz) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|
| Low | 5530 | 5.39 | 11.00 | 5.39 |

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

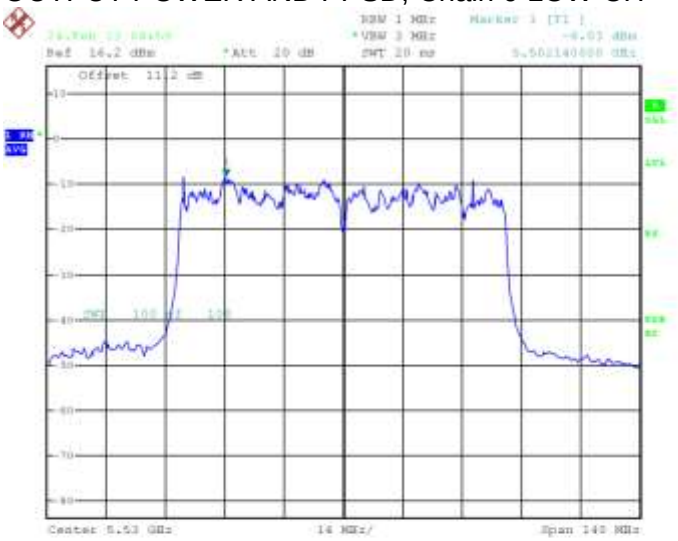
**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Low | 5530 | -8.03 | -8.01 | -8.27 | -2.87 | 5.39 | -8.26 |

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

**OUTPUT POWER AND PPSD, Chain 0**

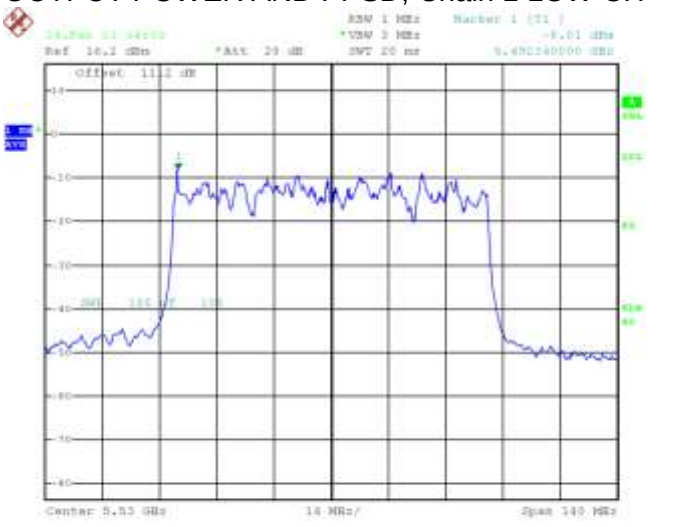
OUTPUT POWER AND PPSD, Chain 0 LOW CH




Date: 24.FEB.2013 04:59:05

**OUTPUT POWER AND PPSD, Chain 1**

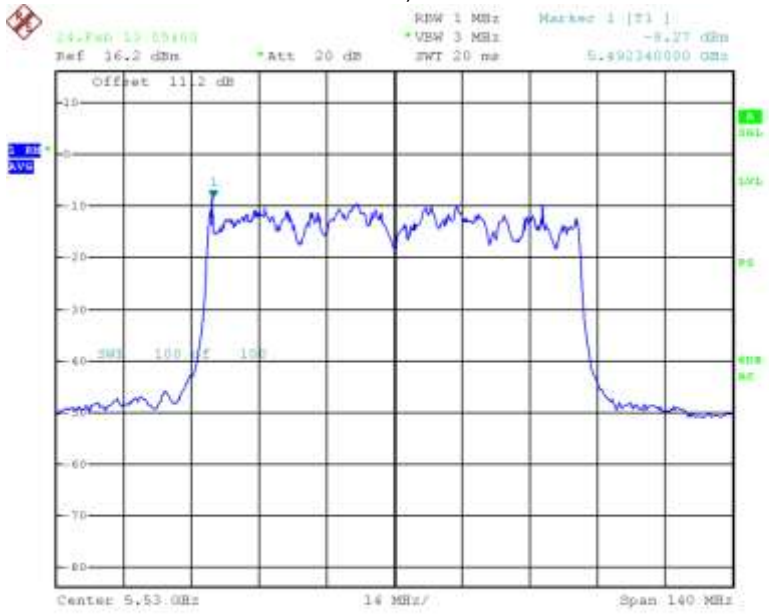
OUTPUT POWER AND PPSD, Chain 1 LOW CH




Date: 24.FEB.2013 04:59:41

**OUTPUT POWER AND PPSD, Chain 2**

OUTPUT POWER AND PPSD, Chain 2 LOW CH




Date: 24.FEB.2013 05:00:23

## 8.31. 802.11ac VHT80 BF 3TX CH 138 MODE, 5.6 GHz BAND

Bandwidth measurements remain covered by the data submitted in the original filing, report 12U14669-4E, as these are independent of antenna gain. If necessary power measurements were retested and are equal or lower to those documented in original filing, and the limits have been modified to account for the new, higher gain antennas covered by this C2PC.

### 8.31.1. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

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

**RESULTS**

| Channel | Frequency (MHz) | Chain 0 Power (dBm) | Chain 1 Power (dBm) | Chain 2 Power (dBm) | Total Power (dBm) |
|---|---|---|---|---|---|
| Mid | 5690 | 16.64 | 16.88 | 17.00 | 21.61 |

## 8.31.2. OUTPUT POWER AND PSD

**LIMITS**

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

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

**DIRECTIONAL ANTENNA GAIN**

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Uncorrelated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 6.80 | 7.20 | 6.84 |

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

| Chain 0 Antenna Gain (dBi) | Chain 1 Antenna Gain (dBi) | Chain 2 Antenna Gain (dBi) | Correlated Chains Directional Gain (dBi) |
|---|---|---|---|
| 6.50 | 6.80 | 7.20 | 11.61 |

**RESULTS**

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

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5690 | 18.39 | 24.00 | 30.00 | 18.39 | 5.39 | 11.00 | 5.39 |

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

**Output Power Results**

| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | 12.88 | 13.02 | 13.19 | 18.26 | 18.39 | -0.13 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | -3.980 | -3.230 | -3.360 | 1.72 | 5.39 | -3.67 |

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

| Channel | Frequency (MHz) | FCC Power Limit (dBm) | IC Power Limit (dBm) | IC EIRP Limit (dBm) | Power Limit (dBm) | FCC PPSD Limit (dBm) | IC PSD Limit (dBm) | PPSD Limit (dBm) |
|---|---|---|---|---|---|---|---|---|
| Mid | 5690 | 18.39 | 15.29 | 21.29 | 9.68 | 5.39 | 11.00 | 5.39 |

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

**Output Power Results**

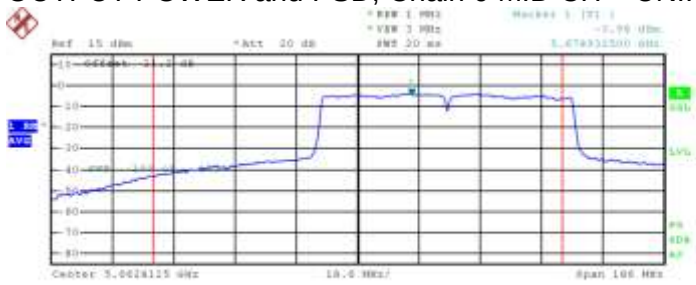
| Channel | Frequency (MHz) | Chain 0 Meas Power (dBm) | Chain 1 Meas Power (dBm) | Chain 2 Meas Power (dBm) | Total Corr'd Power (dBm) | Power Limit (dBm) | Power Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | -1.25 | -1.40 | -0.87 | 4.06 | 9.68 | -5.62 |

**PPSD Results**

| Channel | Frequency (MHz) | Chain 0 Meas PPSD (dBm) | Chain 1 Meas PPSD (dBm) | Chain 2 Meas PPSD (dBm) | Total Corr'd PPSD (dBm) | PPSD Limit (dBm) | PPSD Margin (dB) |
|---|---|---|---|---|---|---|---|
| Mid | 5690 | -5.250 | -5.430 | -5.010 | 0.00 | 5.390 | -5.385 |

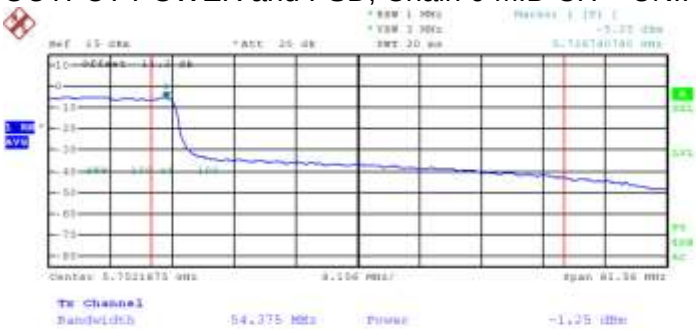
**OUTPUT POWER and PSD, Cain 0**

OUTPUT POWER and PSD, Chain 0 MID CH – UNII 2ext




Date: 19.FEB.2013 21:39:27

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



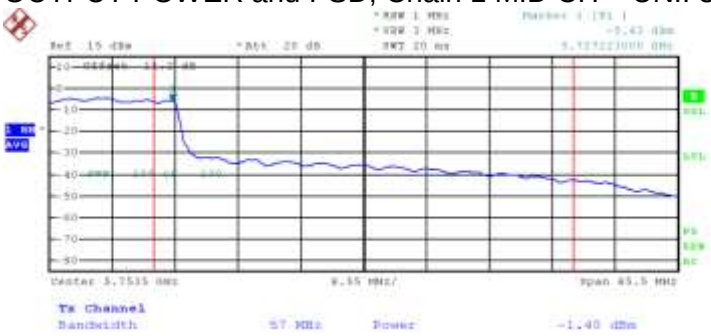

Date: 19.FEB.2013 21:41:59

**OUTPUT POWER and PSD, Chain 1**

OUTPUT POWER and PSD, Chain 1 MID CH – UNII 2ext


Date: 19.FEB.2013 21:45:48

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




Date: 19.FEB.2013 21:46:51

**OUTPUT POWER and PSD, Chain 2**

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


Date: 19.FEB.2013 21:49:20

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


Date: 19.FEB.2013 21:51:50

# 9. RADIATED TEST RESULTS

## 9.1. LIMITS AND PROCEDURE

**LIMITS**

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

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

**TEST PROCEDURE**

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

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

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

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

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

# 9.2. TRANSMITTER ABOVE 1 GHz

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

**RESTRICTED BANDEDGE (LOW CHANNEL)**

Covered by worst case band edge testing of 11n HT20 CDD 3TX at power levels, per transmit chain, greater than or equal to any 1TX, 2TX, and 3TX mode.

**HARMONICS AND SPURIOUS EMISSIONS**

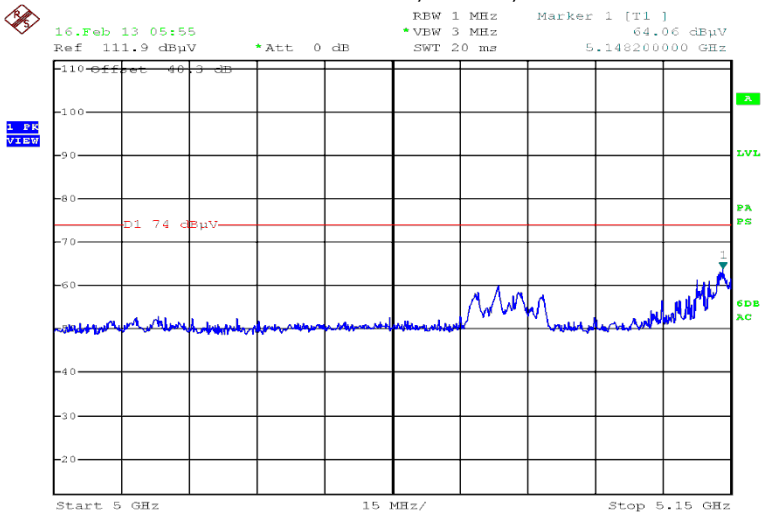
Covered by worst case emissions testing of HT20 CDD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 1TX, 2TX, and 3TX mode.

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

Note: 802.11n HT20 CDD 3TX mode is disabled, however as a worst case scenario radiated testing is used to cover any 1TX, 2TX, and 3TX mode at greater than or equal to power levels, per transmit chain.

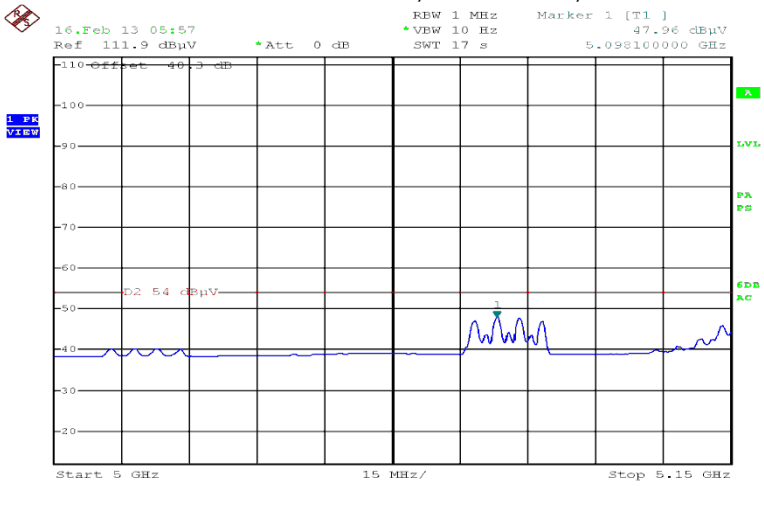
**RESTRICTED BANDEDGE (LOW CHANNEL)**

LOW CHANNEL RESTRICTED, PEAK, HORIZ



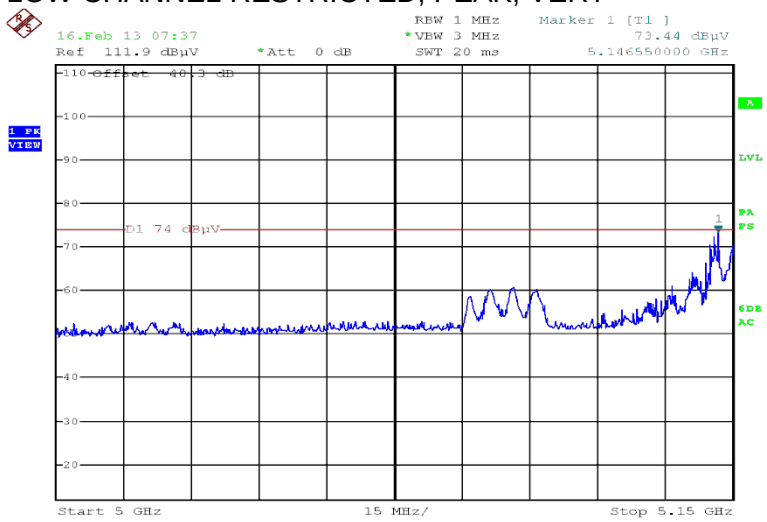

Date: 16.FEB.2013 05:55:29

LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



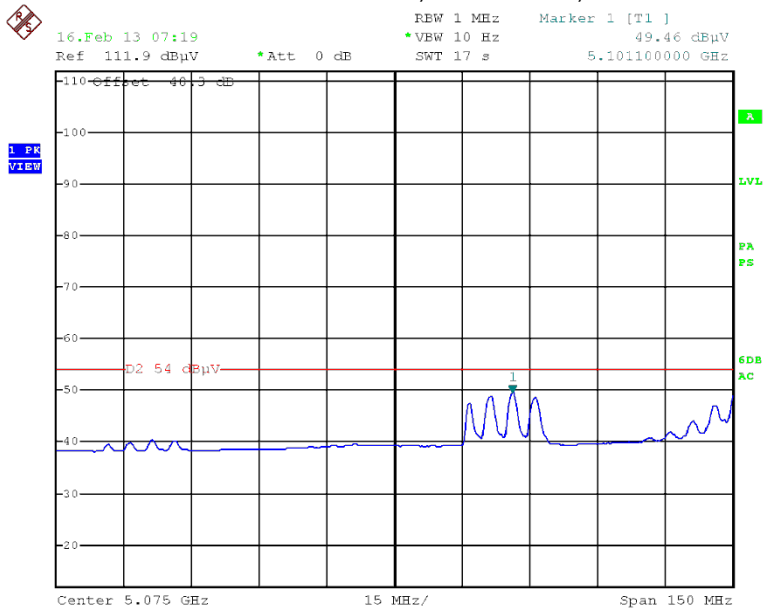

Date: 16.FEB.2013 05:57:22

LOW CHANNEL RESTRICTED, PEAK, VERT




Date: 16.FEB.2013 07:37:03

LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 16.FEB.2013 07:19:31

## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**UL Verification Services, Fremont 5m Chamber-A**

**Company:** Broadcom
**Project #:** 13U14831
**Date:** 2/20/2013
**Test Engineer:** D. Garcia/ R. Alegre
**Configuration:** EUT, adapter board, laptop, antenna setup
**Mode:** 5.2GHz Band, 11n HT20 3Tx

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T89; ARA 18-26GHz; S/N:1049 | FCC 15.205 |

Hi Frequency Cables

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

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

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Low Channel: 5180 MHz** | | | | | | | | | | | | | | | |
| 5.021 | 3.0 | 45.7 | 36.8 | 33.7 | 6.9 | -35.6 | 0.0 | 0.0 | 50.6 | 41.7 | 74 | 54 | -23.4 | -12.3 | V |
| 15.540 | 3.0 | 42.6 | 33.4 | 39.3 | 13.2 | -34.7 | 0.0 | 0.0 | 60.5 | 51.2 | 74 | 54 | -13.5 | -2.8 | V |
| 5.021 | 3.0 | 43.0 | 33.4 | 33.7 | 6.9 | -35.6 | 0.0 | 0.0 | 47.9 | 38.3 | 74 | 54 | -26.1 | -15.7 | H |
| 15.540 | 3.0 | 41.1 | 25.1 | 39.3 | 13.2 | -34.7 | 0.0 | 0.0 | 59.0 | 42.9 | 74 | 54 | -15.0 | -11.1 | H |
| **Mid Channel: 5200MHz** | | | | | | | | | | | | | | | |
| 4.985 | 3.0 | 56.7 | 48.4 | 33.6 | 6.9 | -35.6 | 0.0 | 0.0 | 61.6 | 53.3 | 74 | 54 | -12.4 | -0.7 | V |
| 5.038 | 3.0 | 41.7 | 33.3 | 33.7 | 6.9 | -35.6 | 0.0 | 0.0 | 46.7 | 38.3 | 74 | 54 | -27.3 | -15.7 | V |
| 15.600 | 3.0 | 39.5 | 28.9 | 39.1 | 13.3 | -34.6 | 0.0 | 0.0 | 57.3 | 46.7 | 74 | 54 | -16.7 | -7.3 | V |
| 4.985 | 3.0 | 52.5 | 44.1 | 33.6 | 6.9 | -35.6 | 0.0 | 0.0 | 57.3 | 49.0 | 74 | 54 | -16.7 | -5.0 | H |
| 5.038 | 3.0 | 39.5 | 29.7 | 33.7 | 6.9 | -35.6 | 0.0 | 0.0 | 44.5 | 34.7 | 74 | 54 | -29.5 | -19.3 | H |
| 15.600 | 3.0 | 35.7 | 24.7 | 39.1 | 13.3 | -34.6 | 0.0 | 0.0 | 53.4 | 42.4 | 74 | 54 | -20.6 | -11.6 | H |
| **High Channel: 5240 MHz** | | | | | | | | | | | | | | | |
| 5.021 | 3.0 | 55.1 | 46.7 | 33.6 | 6.9 | -35.6 | 0.0 | 0.0 | 60.1 | 51.6 | 74 | 54 | -13.9 | -2.4 | V |
| 15.720 | 3.0 | 35.3 | 25.6 | 38.8 | 13.3 | -34.6 | 0.0 | 0.0 | 52.9 | 43.1 | 74 | 54 | -21.1 | -10.9 | V |
| 5.021 | 3.0 | 51.6 | 43.3 | 33.6 | 6.9 | -35.6 | 0.0 | 0.0 | 56.5 | 48.3 | 74 | 54 | -17.5 | -5.7 | H |
| 15.720 | 3.0 | 35.2 | 25.0 | 38.8 | 13.3 | -34.6 | 0.0 | 0.0 | 52.8 | 42.5 | 74 | 54 | -21.2 | -11.5 | H |

Rev. 01.30.13

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

## 9.2.3. TX ABOVE 1 GHz 802.11n HT20 STBC 3TX MODE, 5.2 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

Covered by worst case band edge testing of 11n HT20 CDD 3TX at power levels, per transmit chain, greater than or equal to any 1TX, 2TX, and 3TX mode.

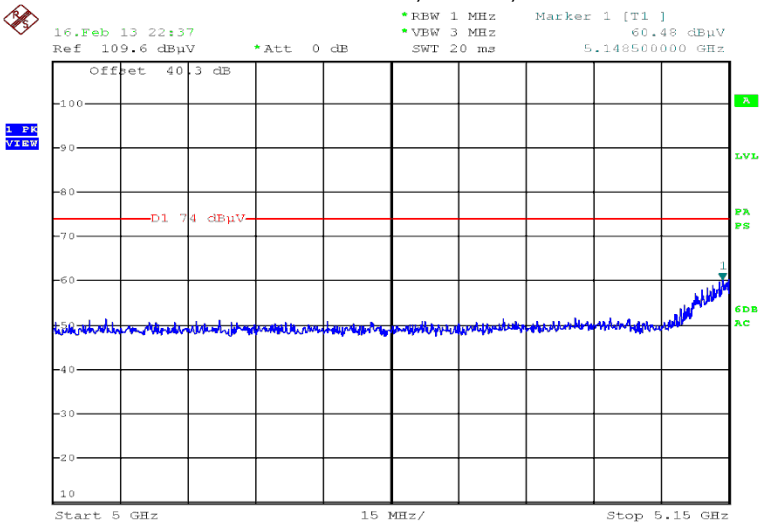
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of HT20 CDD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 1TX, 2TX, and 3TX mode.

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

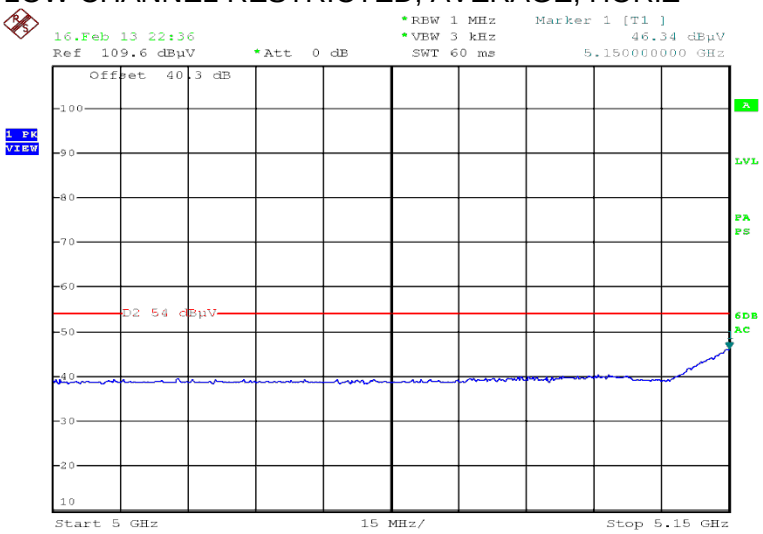
**RESTRICTED BANDEDGE (LOW CHANNEL)**

LOW CHANNEL RESTRICTED, PEAK, HORIZ



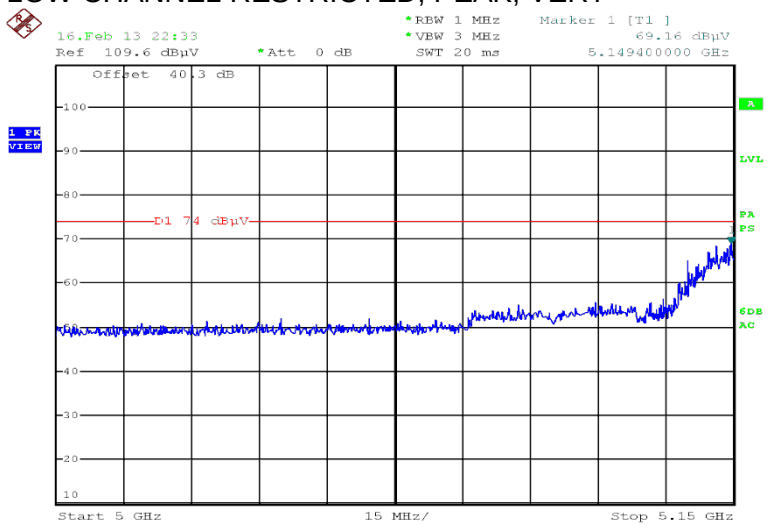

Date: 16.FEB.2013 22:37:17

LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



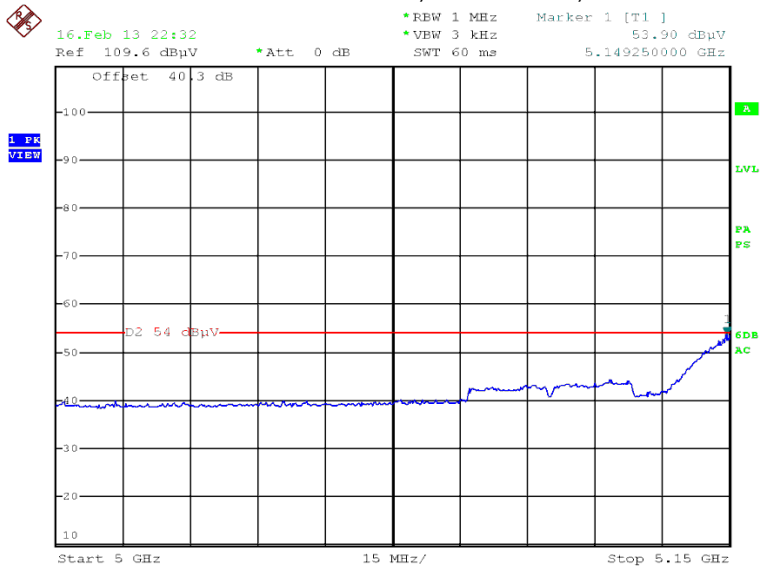

Date: 16.FEB.2013 22:36:53

LOW CHANNEL RESTRICTED, PEAK, VERT




Date: 16.FEB.2013 22:33:19

LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 16.FEB.2013 22:32:56

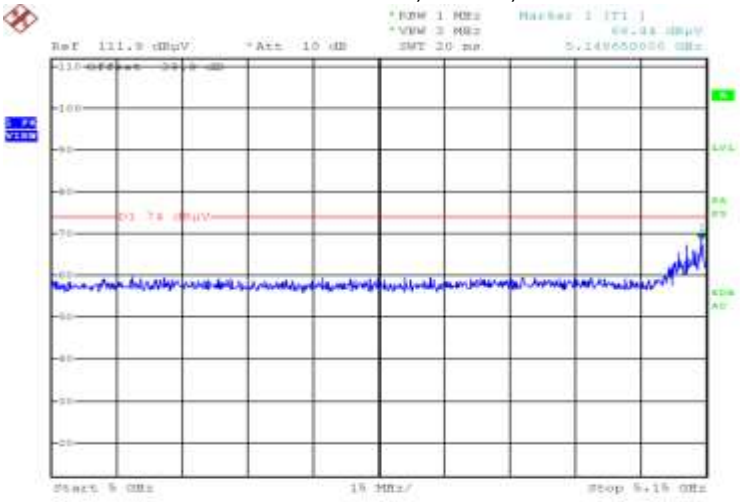
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11n HT20 CCD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

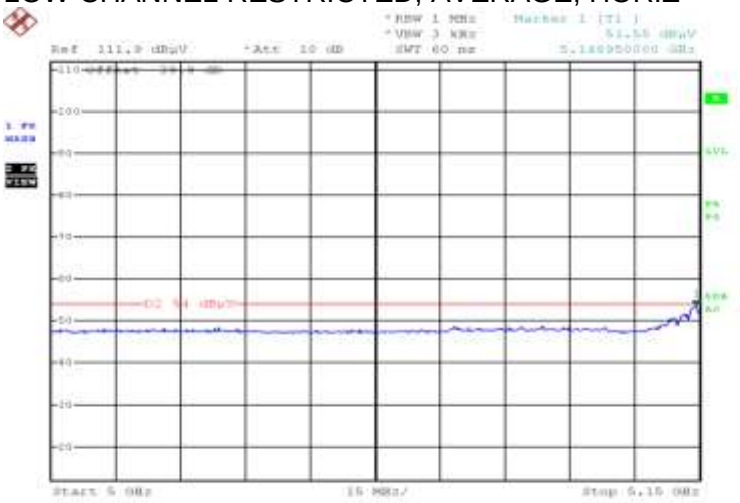
## 9.2.5. TX ABOVE 1 GHz 802.11n HT40 CDD 3TX MODE, 5.2 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

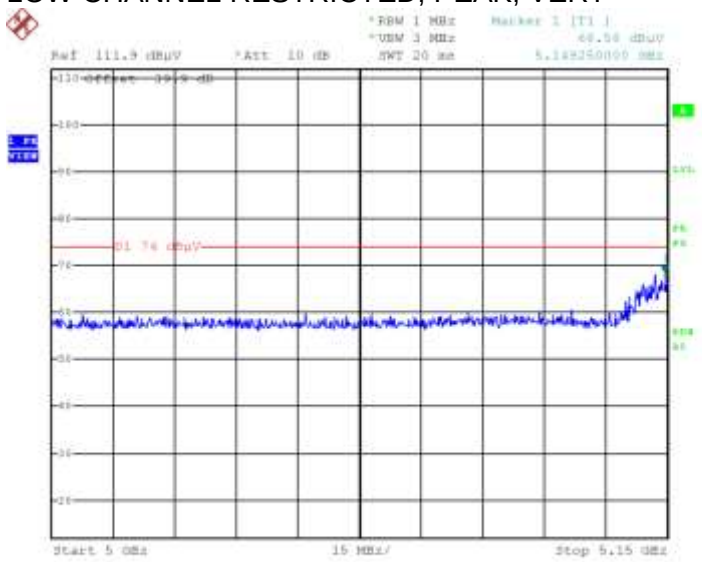
LOW CHANNEL RESTRICTED, PEAK, HORIZ



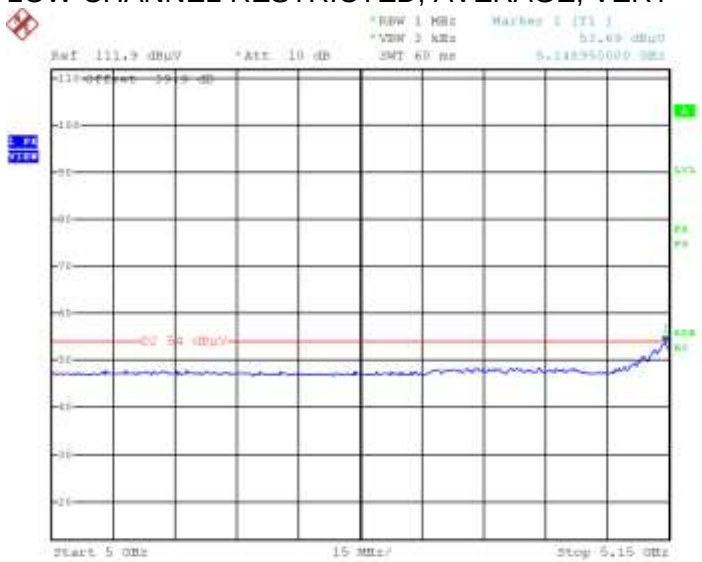

LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED, PEAK, VERT




LOW CHANNEL RESTRICTED, AVERAGE, VERT



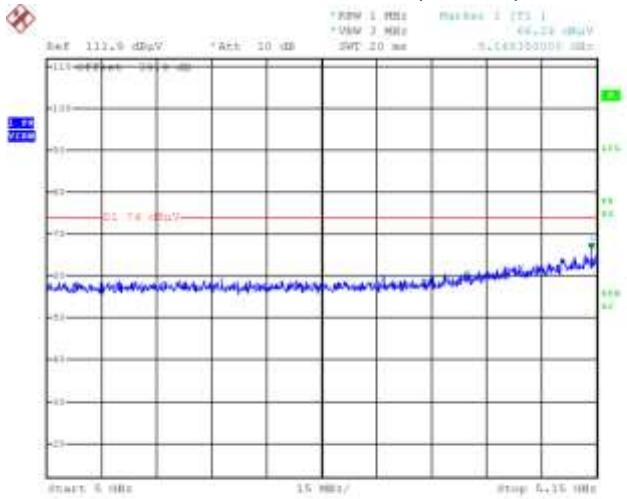
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11n HT20 CCD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

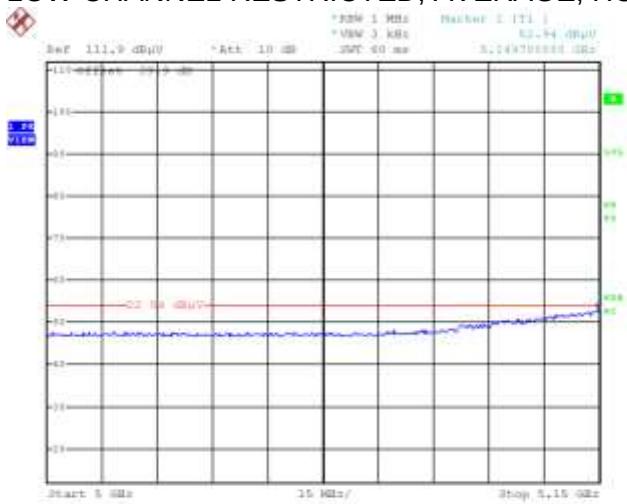
## 9.2.6. TX ABOVE 1 GHz 802.11ac VHT80 1TX MODE, 5.2 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

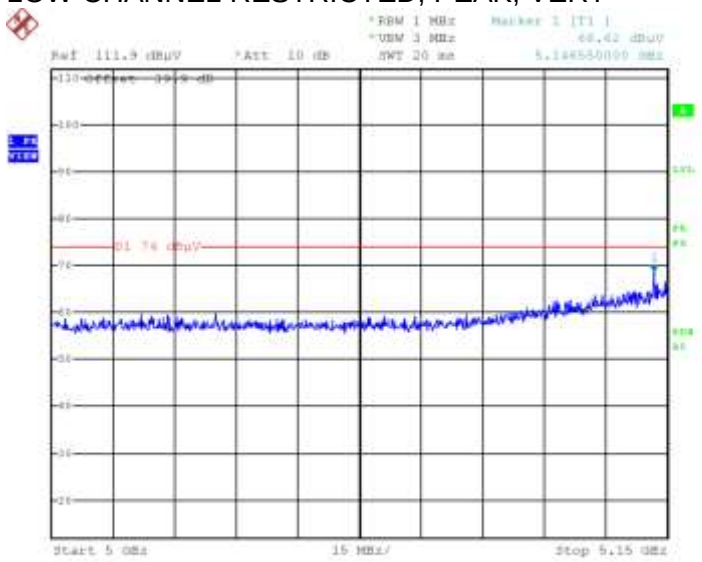
LOW CHANNEL RESTRICTED, PEAK, HORIZ



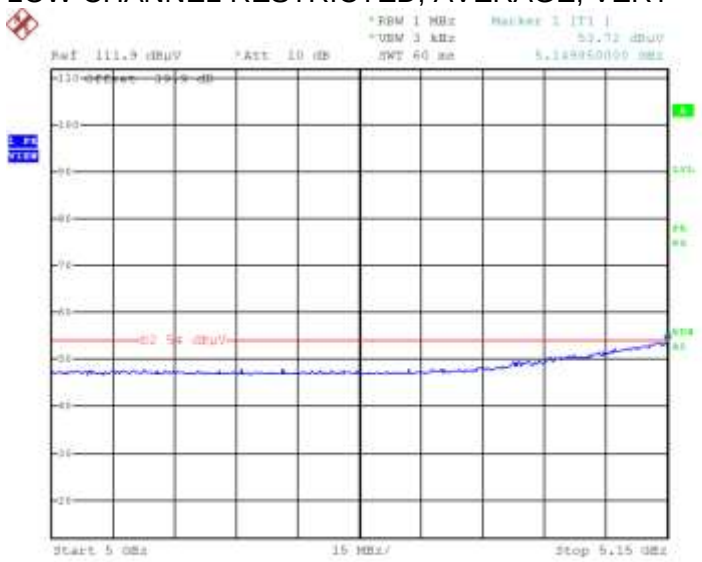
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED, PEAK, VERT




LOW CHANNEL RESTRICTED, AVERAGE, VERT



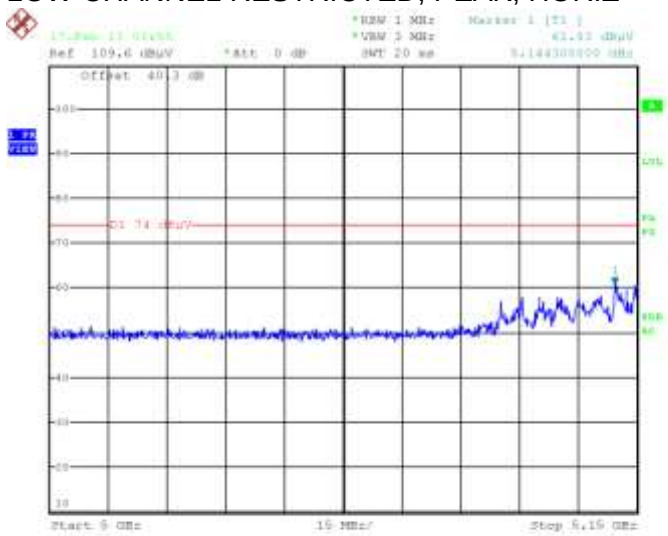
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11n HT20 CCD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

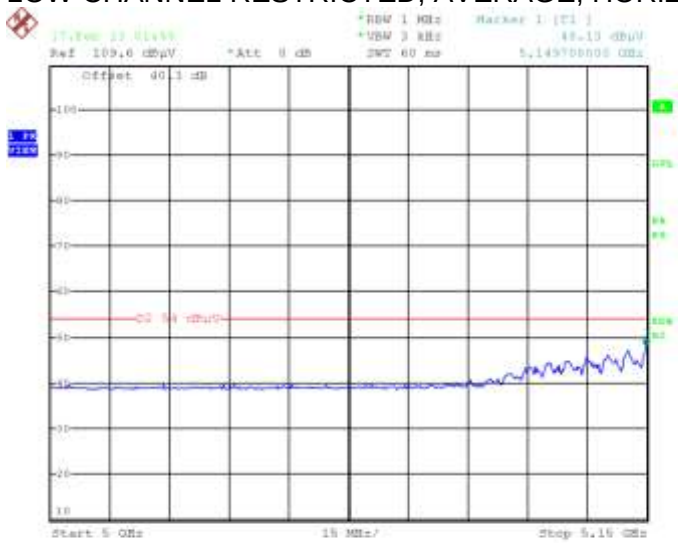
## 9.2.7. TX ABOVE 1 GHz 802.11ac VHT80 CDD 3Tx MODE, 5.2 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

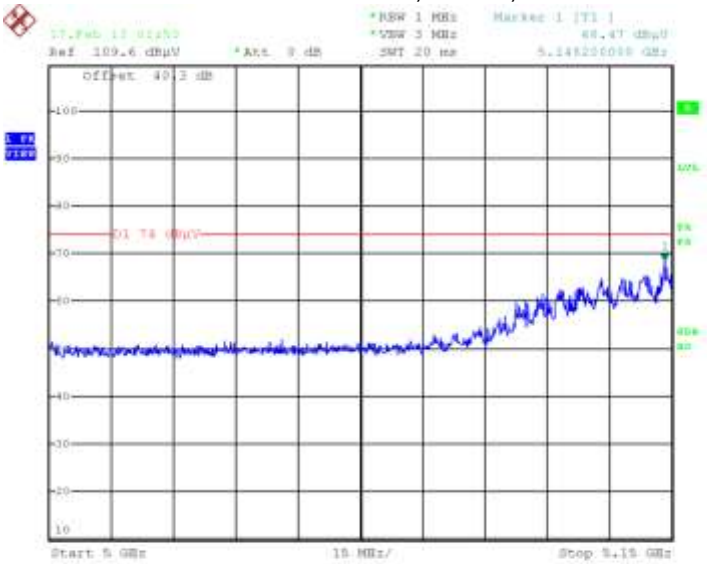
LOW CHANNEL RESTRICTED, PEAK, HORIZ




LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

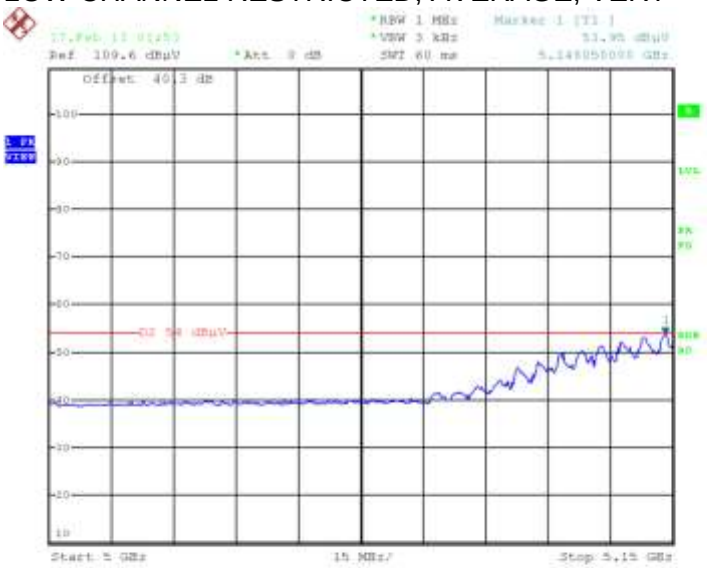


LOW CHANNEL RESTRICTED, PEAK, VERT




Date: 17.FEB.2013 01:53:52

LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 17.FEB.2013 01:53:30

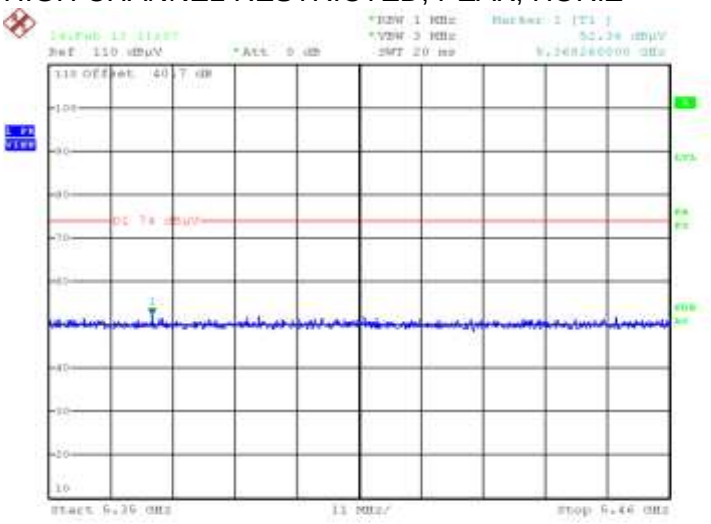
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11n HT20 CCD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

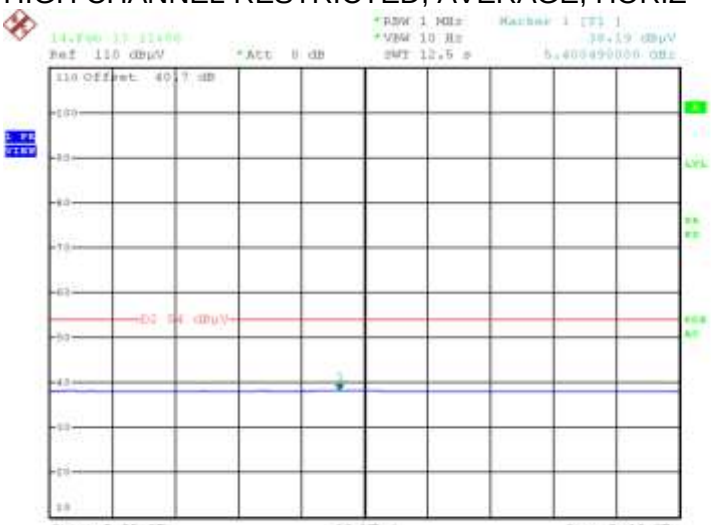
## 9.2.8. TX ABOVE 1 GHz 802.11a 1TX LEGACY MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (HIGH CHANNEL)**

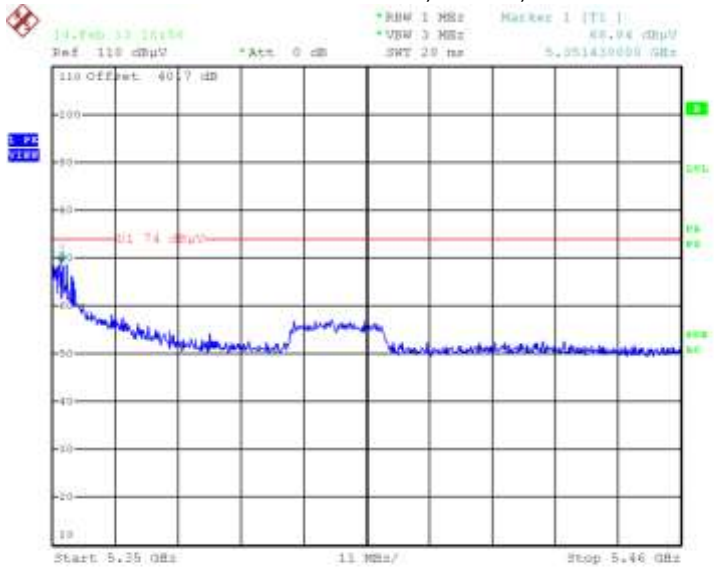
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



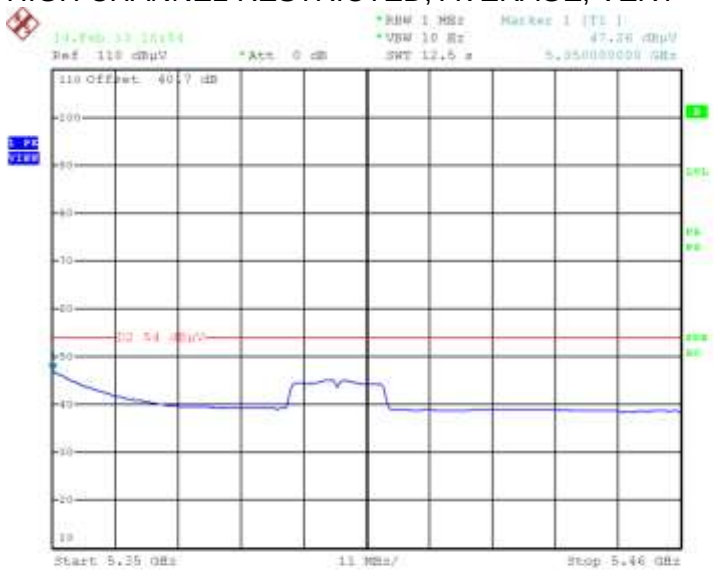

HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



HIGH CHANNEL RESTRICTED, PEAK, VERT




HIGH CHANNEL RESTRICTED, AVERAGE, VERT

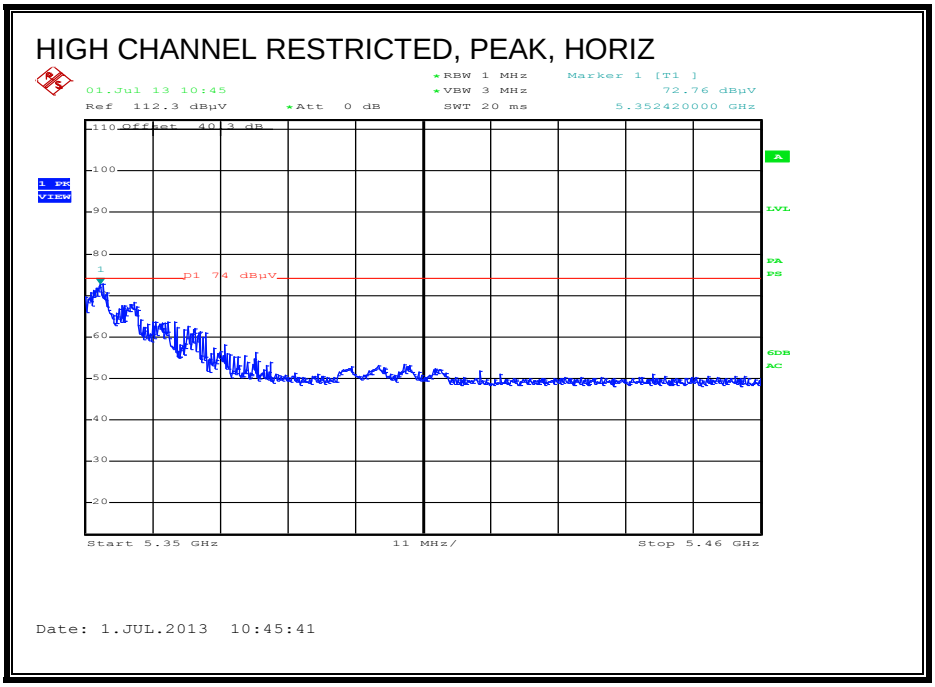


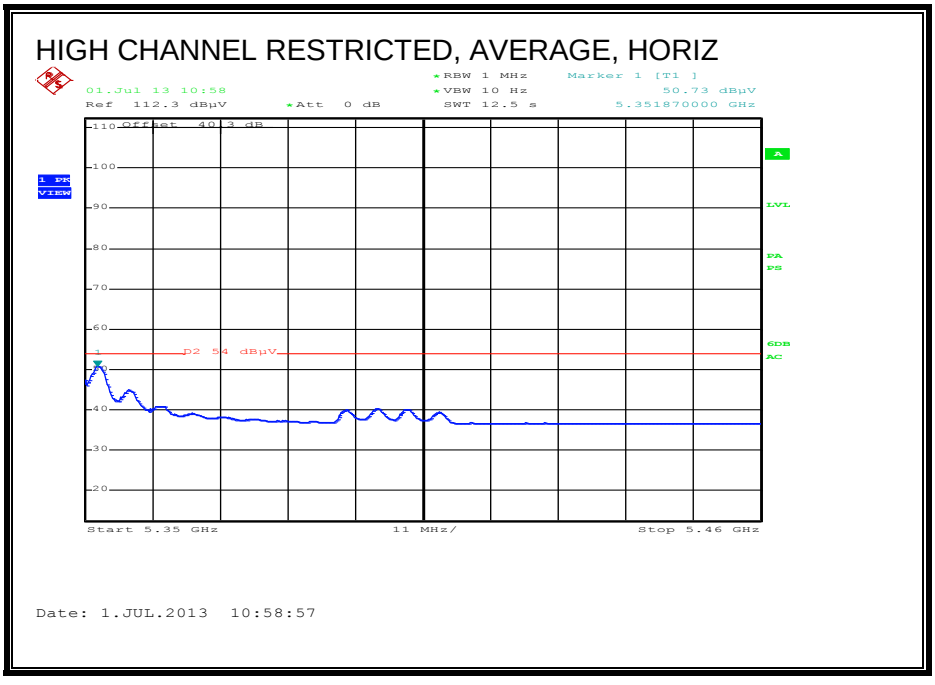
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11n HT20 CCD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

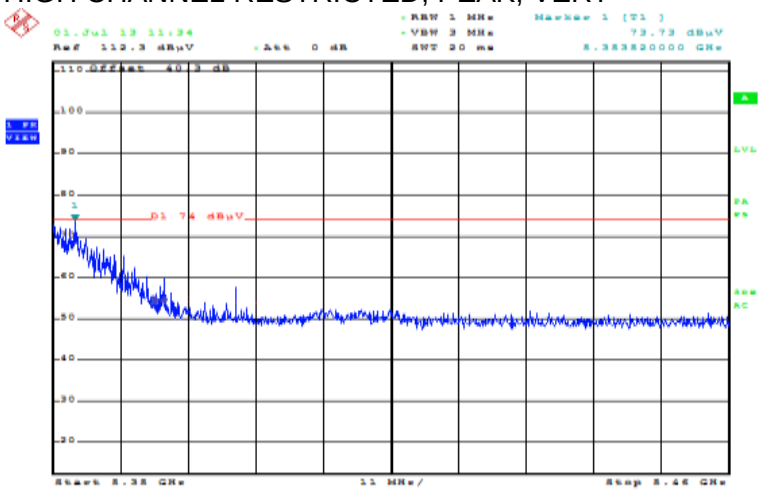
## 9.2.9. TX ABOVE 1GHz 802.11n HT20 CDD 3Tx MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (HIGH CHANNEL)**



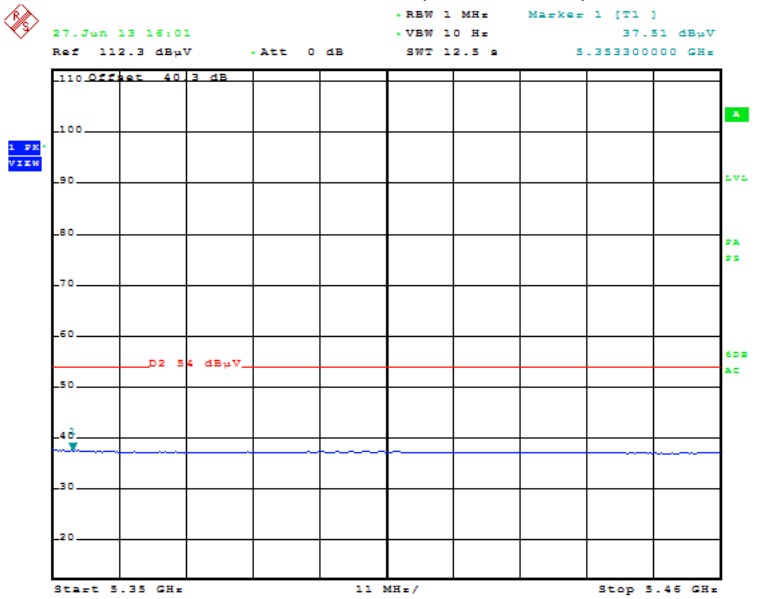



HIGH CHANNEL RESTRICTED, PEAK, VERT




Date: 1.JUL.2013 11:34:40

HIGH CHANNEL RESTRICTED, AVERAGE, VERT

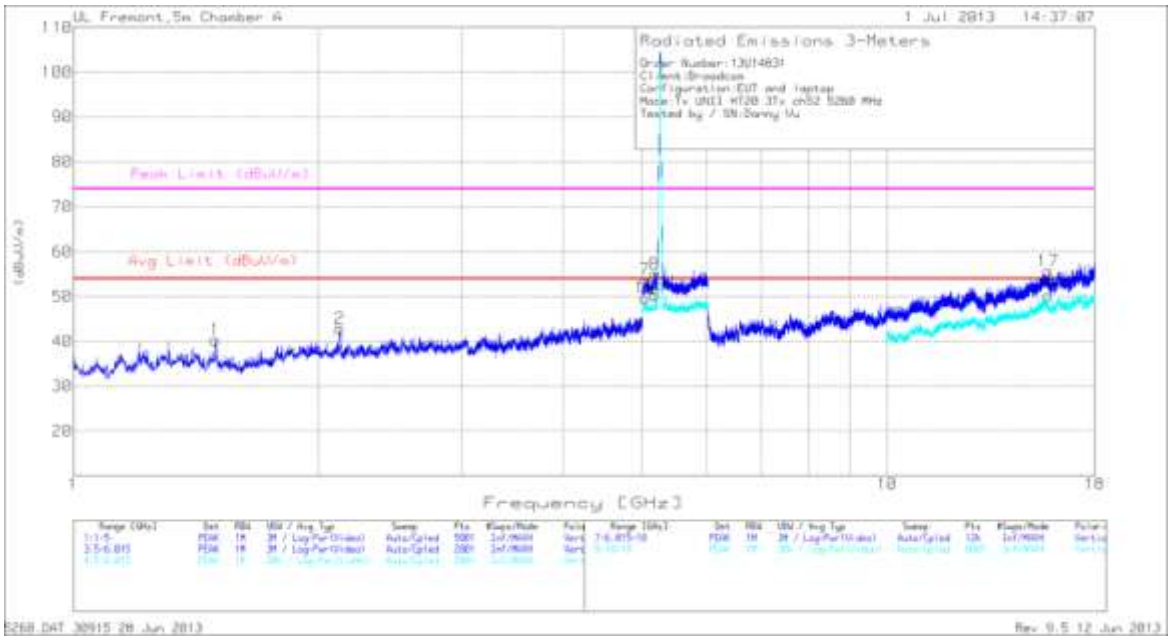



Date: 27.JUN.2013 16:01:01

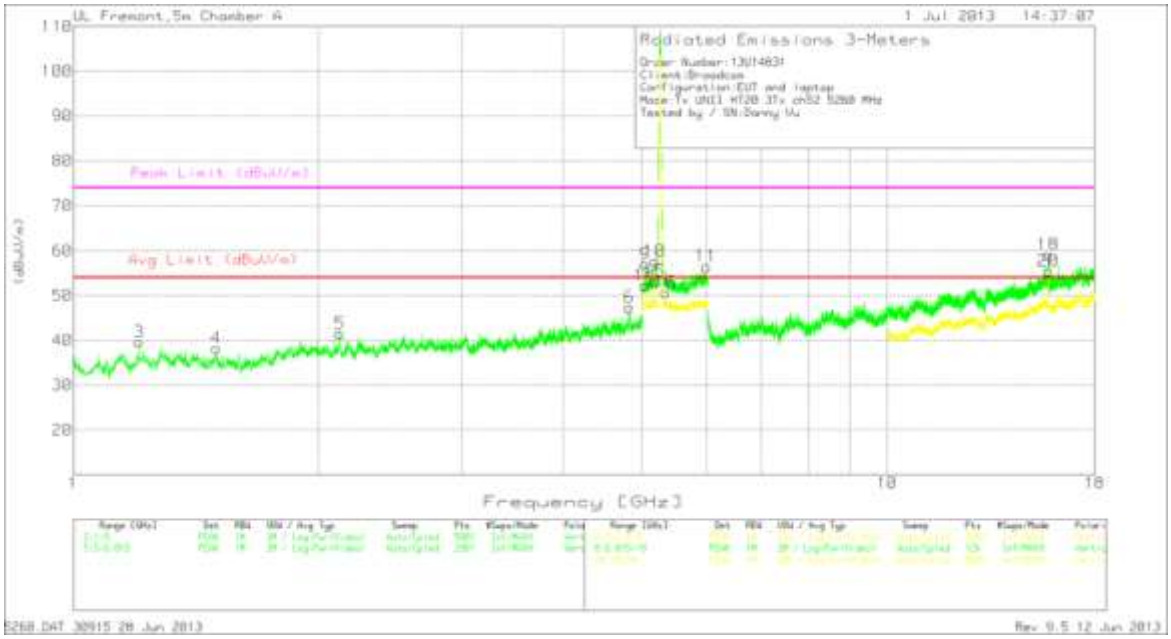
**HARMONICS AND SPURIOUS EMISSIONS**

**Low Channel**

LOW CHANNEL HORIZONTAL PLOT



LOW CHANNEL VERTICAL PLOT



## LOW CHANNEL HORIZONTAL AND VERTCAL DATA

Trace Markers

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.494 | 45.45 | PK | 29 | -34.1 | 40.35 | 53.97 | -13.62 | 74 | -33.65 | 0-360 | 200 | H |
| 2.126 | 44.45 | PK | 31.6 | -33.2 | 42.85 | 53.97 | -11.12 | 74 | -31.15 | 0-360 | 200 | H |
| 1.204 | 44.9 | PK | 29.5 | -34.7 | 39.7 | 53.97 | -14.27 | 74 | -34.3 | 0-360 | 100 | V |
| 1.498 | 43.37 | PK | 28.9 | -34 | 38.27 | 53.97 | -15.7 | 74 | -35.73 | 0-360 | 200 | V |
| 2.125 | 43.07 | PK | 31.6 | -33.2 | 41.47 | 53.97 | -12.5 | 74 | -32.53 | 0-360 | 200 | V |
| 4.822 | 41.6 | PK | 33.9 | -28.1 | 47.4 | 53.97 | -6.57 | 74 | -26.6 | 0-360 | 100 | V |
| 5.042 | 38.42 | PK | 33.9 | -18.5 | 53.82 | - | - | 68.2 | -14.38 | 0-360 | 200 | H |
| 5.181 | 39.2 | PK | 34.2 | -18.4 | 55 | - | - | 68.2 | -13.2 | 0-360 | 200 | H |
| 5.042 | 34.27 | PK | 33.9 | -18.5 | 49.67 | - | - | 68.2 | -18.53 | 0-360 | 200 | H |
| 5.183 | 34.66 | PK | 34.2 | -18.5 | 50.36 | - | - | 68.2 | -17.84 | 0-360 | 200 | H |
| 5.041 | 41.64 | PK | 33.9 | -18.5 | 57.04 | - | - | 74 | -16.96 | 0-360 | 100 | V |
| 5.181 | 41.94 | PK | 34.2 | -18.4 | 57.74 | - | - | 68.2 | -10.46 | 0-360 | 100 | V |
| 5.996 | 39.38 | PK | 35.2 | -18.1 | 56.48 | - | - | 68.2 | -11.72 | 0-360 | 200 | V |
| 5.04 | 36.88 | PK | 33.9 | -18.5 | 52.28 | 53.97 | -1.69 | 74 | -21.72 | 0-360 | 100 | V |
| 5.181 | 37.43 | PK | 34.2 | -18.4 | 53.23 | - | - | 68.2 | -14.97 | 0-360 | 100 | V |
| 5.347 | 34.8 | PK | 34.3 | -18.4 | 50.7 | - | - | 68.2 | -17.5 | 0-360 | 100 | V |
| 15.783 | 36.44 | PK | 40.4 | -21.2 | 55.64 | - | - | 74 | -18.36 | 0-360 | 100 | H |
| 15.781 | 39.92 | PK | 40.4 | -21.2 | 59.12 | - | - | 74 | -14.88 | 0-360 | 200 | V |
| 15.773 | 31.05 | PK | 40.4 | -21.2 | 50.25 | - | - | 74 | -23.75 | 0-360 | 100 | H |
| 15.786 | 36.3 | PK | 40.4 | -21.2 | 55.5 | - | - | 74 | -18.5 | 0-360 | 100 | V |

PK - Peak detector

Radiated Emissions

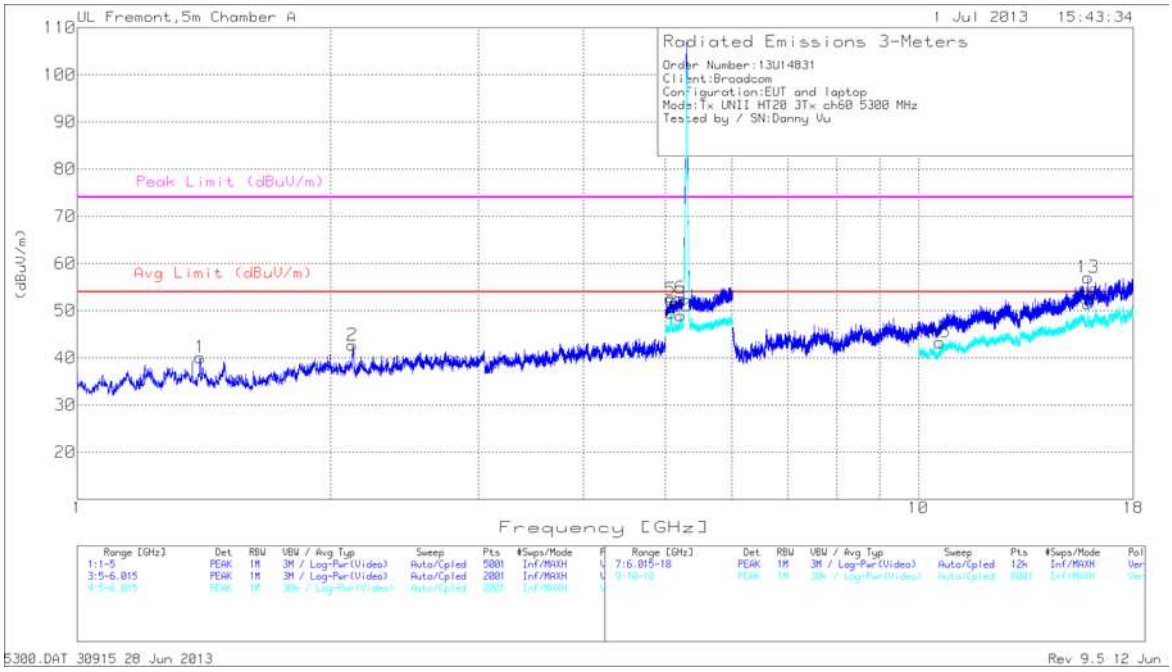
| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.04 | 32.47 | VB1 | 33.9 | -18.5 | 47.87 | 53.97 | -6.1 | - | - | 61 | 196 | V |
| 15.78 | 25.21 | VB1 | 40.4 | -21.2 | 44.41 | 53.97 | -9.56 | - | - | 229 | 171 | H |
| 15.781 | 33.97 | VB1 | 40.4 | -21.2 | 53.17 | 53.97 | -0.8 | - | - | 110 | 203 | V |
| 15.779 | 32.31 | VB1 | 40.4 | -21.2 | 51.51 | 53.97 | -2.46 | - | - | 115 | 194 | V |

VB1 - KDB 789033 v01r02 Method: VB Alternative Reduced Video

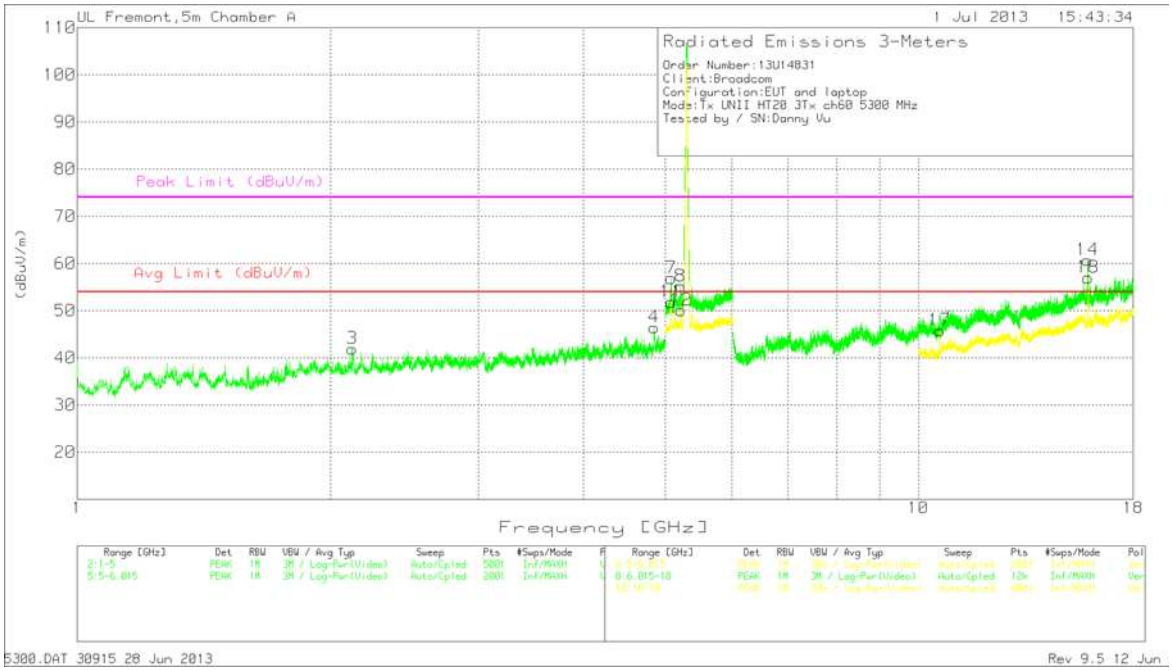
**Note**: There were no other emissions found above the system noise floor. A peak limit of 68.2 dBuV/m denotes a frequency found in a non-restricted band.

**Mid Channel**

MID CHANNEL HORIZONTAL PLOT




MID CHANNEL VERTICAL PLOT



## MID CHANNEL HORIZONTAL AND VERTCAL DATA

Trace Markers

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.401 | 45.04 | PK | 29.8 | -34.8 | 40.04 | 53.97 | -13.93 | 74 | -33.96 | 0-360 | 200 | H |
| 2.124 | 44.25 | PK | 31.6 | -33.2 | 42.65 | 53.97 | -11.32 | 74 | -31.35 | 0-360 | 200 | H |
| 2.124 | 43.49 | PK | 31.6 | -33.2 | 41.89 | 53.97 | -12.08 | 74 | -32.11 | 0-360 | 200 | V |
| 4.851 | 40.01 | PK | 34 | -27.6 | 46.41 | 53.97 | -7.56 | 74 | -27.59 | 0-360 | 100 | V |
| 5.077 | 36.82 | PK | 34 | -18.5 | 52.32 | 53.97 | -6.65 | 74 | -21.68 | 0-360 | 200 | H |
| 5.217 | 37.29 | PK | 34.2 | -18.9 | 52.59 | - | - | 68.2 | -15.61 | 0-360 | 100 | H |
| 5.079 | 33.86 | PK | 34 | -18.4 | 49.46 | - | - | 68.2 | -18.74 | 0-360 | 200 | H |
| 5.214 | 33.61 | PK | 34.2 | -18.9 | 48.91 | - | - | 68.2 | -19.29 | 0-360 | 200 | H |
| 5.085 | 41.45 | PK | 34 | -18.6 | 56.85 | - | - | 74 | -17.15 | 0-360 | 100 | V |
| 5.214 | 39.83 | PK | 34.2 | -18.9 | 55.13 | - | - | 68.2 | -13.07 | 0-360 | 100 | V |
| 5.08 | 36.2 | PK | 34 | -18.4 | 51.8 | 53.97 | -2.17 | 74 | -22.2 | 0-360 | 100 | V |
| 5.221 | 34.76 | PK | 34.2 | -18.9 | 50.06 | 53.97 | -3.91 | 74 | -23.94 | 0-360 | 100 | V |
| 15.907 | 37.67 | PK | 40.4 | -21.1 | 56.97 | - | - | 74 | -17.03 | 0-360 | 100 | H |
| 15.892 | 41.38 | PK | 40.4 | -21.1 | 60.68 | - | - | 74 | -13.32 | 0-360 | 200 | V |
| 10.6 | 28.19 | PK | 37.8 | -22.7 | 43.29 | 53.97 | -10.68 | 74 | -30.71 | 0-360 | 100 | H |
| 15.903 | 32.14 | PK | 40.4 | -21.1 | 51.44 | 53.97 | -2.53 | 74 | -22.56 | 0-360 | 100 | H |
| 10.6 | 30.64 | PK | 37.8 | -22.7 | 45.74 | 53.97 | -8.23 | 74 | -28.26 | 0-360 | 100 | V |
| 15.906 | 37.67 | PK | 40.4 | -21.1 | 56.97 | - | - | 74 | -17.03 | 0-360 | 200 | V |

PK - Peak detector

Radiated Emissions

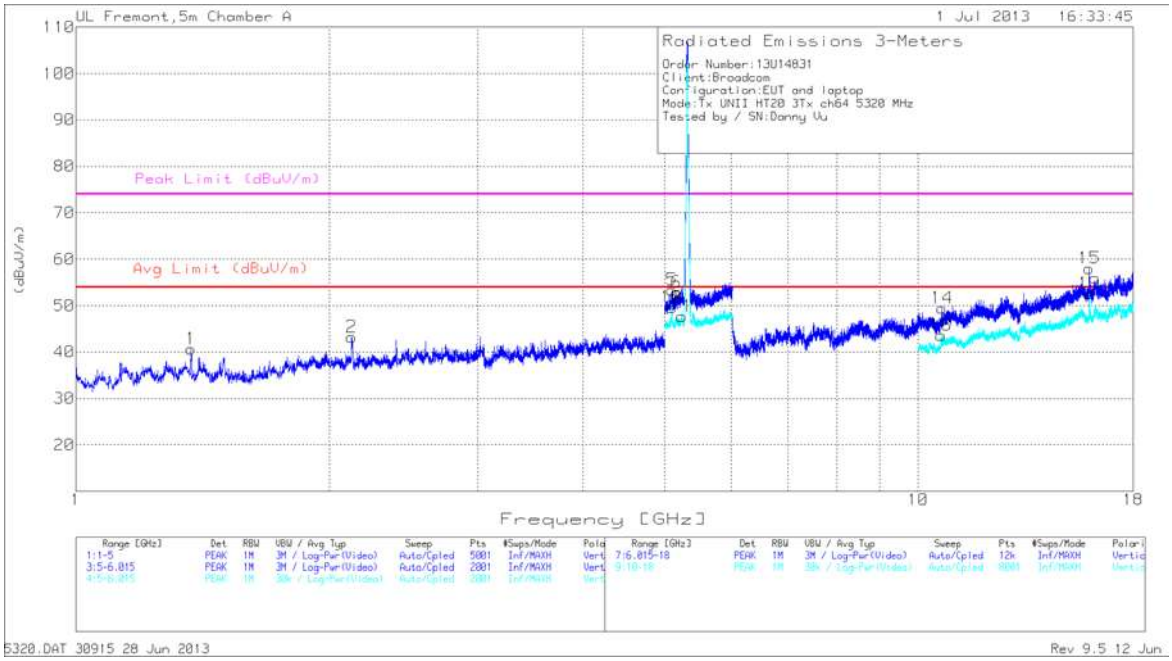
| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15.907 | 26.2 | VB1 | 35.2 | -18.1 | 43.3 | 53.97 | -10.67 | - | - | 189 | 359 | H |
| 15.892 | 29.79 | VB1 | 40.4 | -21.1 | 49.09 | 53.97 | -4.88 | - | - | 48 | 103 | V |
| 12.759 | 24.04 | VB1 | 39.1 | -22.3 | 40.84 | 53.97 | -13.13 | - | - | 95 | 201 | V |
| 15.906 | 29.65 | VB1 | 40.4 | -21.1 | 48.95 | 53.97 | -5.02 | - | - | 103 | 239 | V |

VB1 - KDB 789033 v01r02 Method: VB Alternative Reduced Video

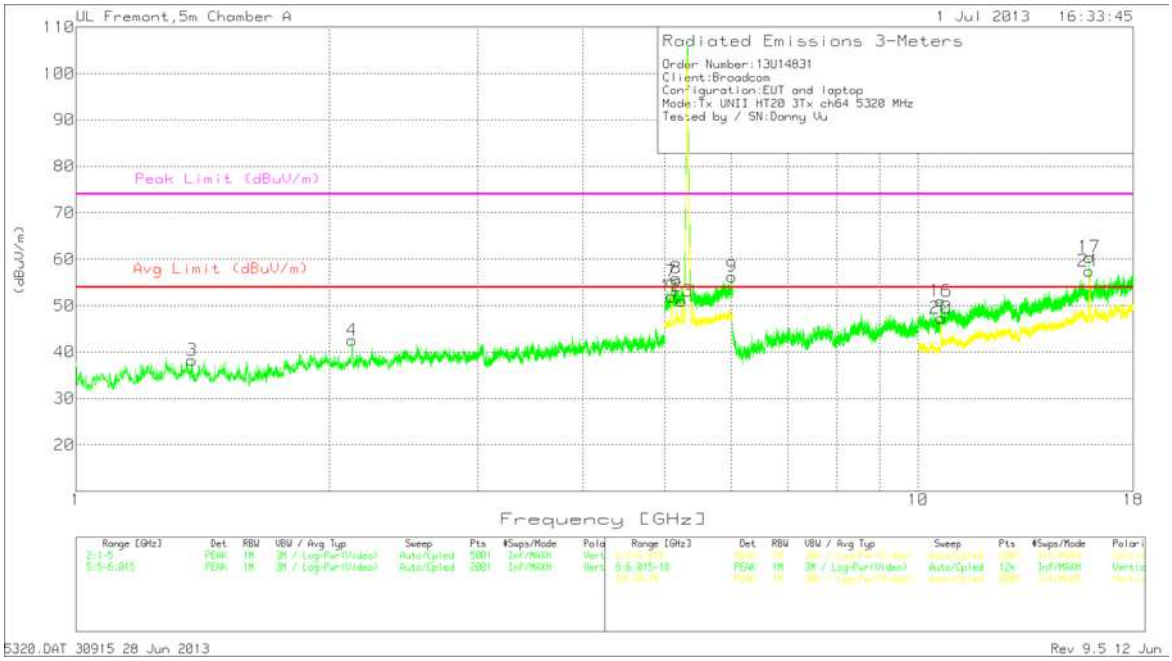
**Note**: There were no other emissions found above the system noise floor. A peak limit of 68.2 dBuV/m denotes a frequency found in a non-restricted band.

**High Channel**

HIGH CHANNEL HORIZONTAL PLOT




HIGH CHANNEL VERTICAL PLOT



## HIGH CHANNEL HORIZONTAL AND VERTCAL DATA

Trace Markers

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.37 | 45.78 | PK | 30 | -35.1 | 40.68 | 53.97 | -13.29 | 74 | -33.32 | 0-360 | 100 | H |
| 2.125 | 44.81 | PK | 31.6 | -33.2 | 43.21 | 53.97 | -10.76 | 74 | -30.79 | 0-360 | 200 | H |
| 1.374 | 43.42 | PK | 29.9 | -35.1 | 38.22 | 53.97 | -15.75 | 74 | -35.78 | 0-360 | 100 | V |
| 2.127 | 44.14 | PK | 31.6 | -33.2 | 42.54 | 53.97 | -11.43 | 74 | -31.46 | 0-360 | 100 | V |
| 5.1 | 38.01 | PK | 34 | -18.6 | 53.41 | 53.97 | -6.56 | 74 | -20.59 | 0-360 | 200 | H |
| 5.165 | 36.9 | PK | 34.1 | -18.2 | 52.8 | - | - | 68.2 | -15.4 | 0-360 | 200 | H |
| 5.1 | 34.2 | PK | 34 | -18.6 | 49.6 | 53.97 | -8.37 | 74 | -24.4 | 0-360 | 200 | H |
| 5.242 | 32.23 | PK | 34.2 | -18.7 | 47.73 | 53.97 | -6.24 | 74 | -26.27 | 0-360 | 100 | H |
| 5.098 | 39.83 | PK | 34 | -18.6 | 55.23 | - | - | 74 | -18.77 | 0-360 | 100 | V |
| 5.161 | 40.11 | PK | 34.1 | -18.3 | 55.91 | - | - | 68.2 | -18.09 | 0-360 | 100 | V |
| 6.008 | 38.9 | PK | 35.2 | -17.8 | 56.3 | - | - | 68.2 | -11.9 | 0-360 | 200 | V |
| 5.093 | 36.69 | PK | 34 | -18.7 | 51.99 | 53.97 | -6.98 | 74 | -22.01 | 0-360 | 100 | V |
| 5.241 | 35.48 | PK | 34.2 | -18.7 | 50.98 | - | - | 68.2 | -17.22 | 0-360 | 100 | V |
| 10.672 | 33.16 | PK | 37.9 | -21.6 | 49.46 | 53.97 | -6.51 | 74 | -24.54 | 0-360 | 200 | H |
| 15.961 | 38.75 | PK | 40.4 | -21.1 | 58.05 | - | - | 74 | -15.95 | 0-360 | 100 | H |
| 10.637 | 35.35 | PK | 37.8 | -22.2 | 50.95 | 53.97 | -3.02 | 74 | -23.05 | 0-360 | 100 | V |
| 15.967 | 41.13 | PK | 40.4 | -21.1 | 60.43 | - | - | 68.2 | -7.77 | 0-360 | 200 | V |
| 10.645 | 27.82 | PK | 37.8 | -22 | 43.62 | 53.97 | -10.35 | 74 | -30.38 | 0-360 | 100 | H |
| 15.966 | 33.3 | PK | 40.4 | -21.1 | 52.6 | 53.97 | -6.37 | 74 | -21.4 | 0-360 | 100 | H |
| 10.641 | 31.62 | PK | 37.8 | -22.1 | 47.32 | 53.97 | -6.65 | 74 | -26.68 | 0-360 | 100 | V |
| 15.956 | 38.05 | PK | 40.4 | -21 | 57.45 | - | - | 74 | -16.55 | 0-360 | 200 | V |

PK - Peak detector

Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.099 | 36.24 | VB1 | 34 | -18.6 | 51.64 | 53.97 | -2.33 | - | - | 194 | 226 | V |
| 15.961 | 29.15 | VB1 | 40.4 | -21.1 | 48.45 | 53.97 | -5.52 | - | - | 74 | 130 | H |
| 15.956 | 30.92 | VB1 | 40.4 | -21 | 50.32 | 53.97 | -3.65 | - | - | 272 | 158 | V |

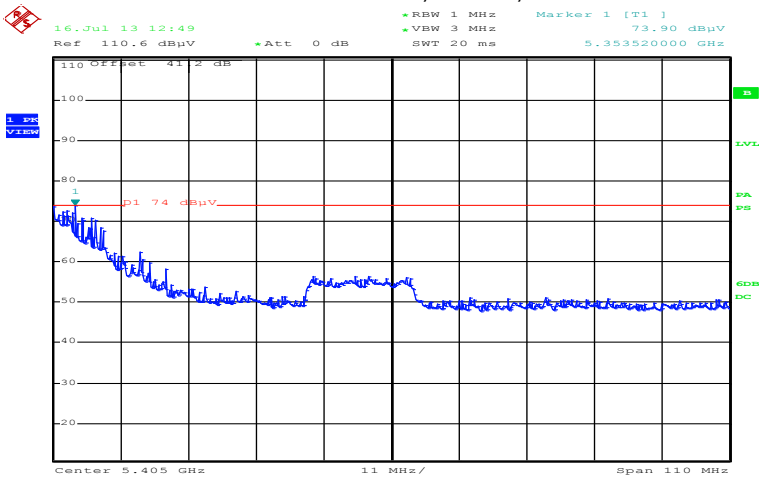
VB1 - KDB 789033 v01r02 Method: VB Alternative Reduced Video

**Note**: There were no other emissions found above the system noise floor. A peak limit of 68.2 dBuV/m denotes a frequency found in a non-restricted band.

## 9.2.10. TX ABOVE 1 GHz 802.11ac VHT20 BF 3TX MODE, 5.3 GHz BAND

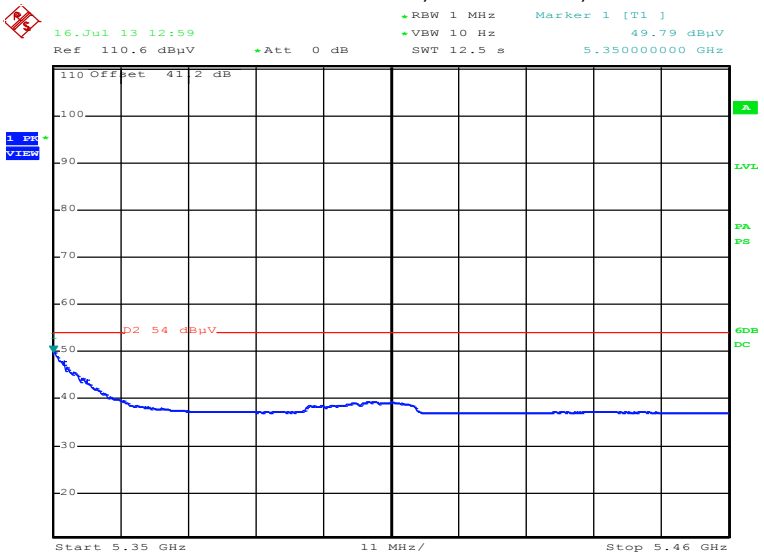
**RESTRICTED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL RESTRICTED, PEAK, HORIZ



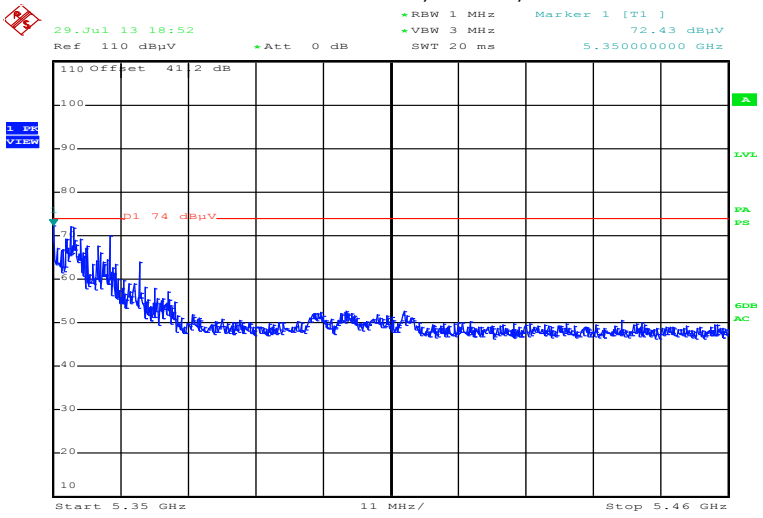

Date: 16.JUL.2013 12:49:12

HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



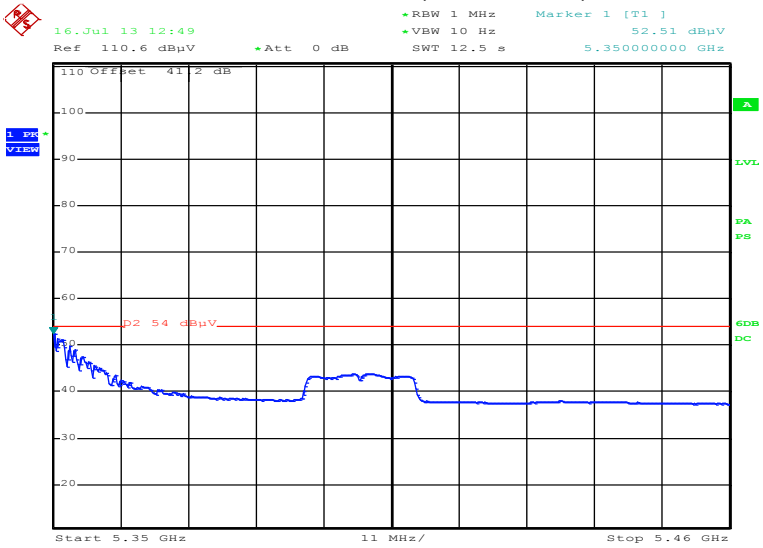

Date: 16.JUL.2013 12:59:04

## HIGH CHANNEL RESTRICTED, PEAK, VERT




Date: 29.JUL.2013 18:52:55

## HIGH CHANNEL RESTRICTED, AVERAGE, VERT

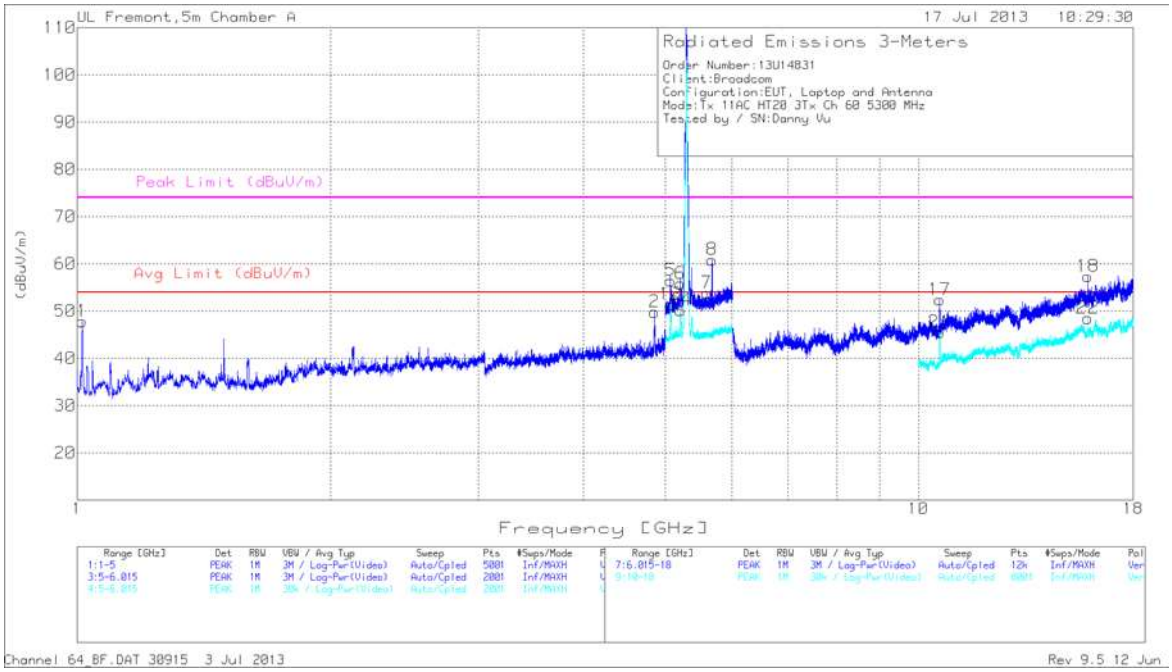



Date: 16.JUL.2013 12:49:38

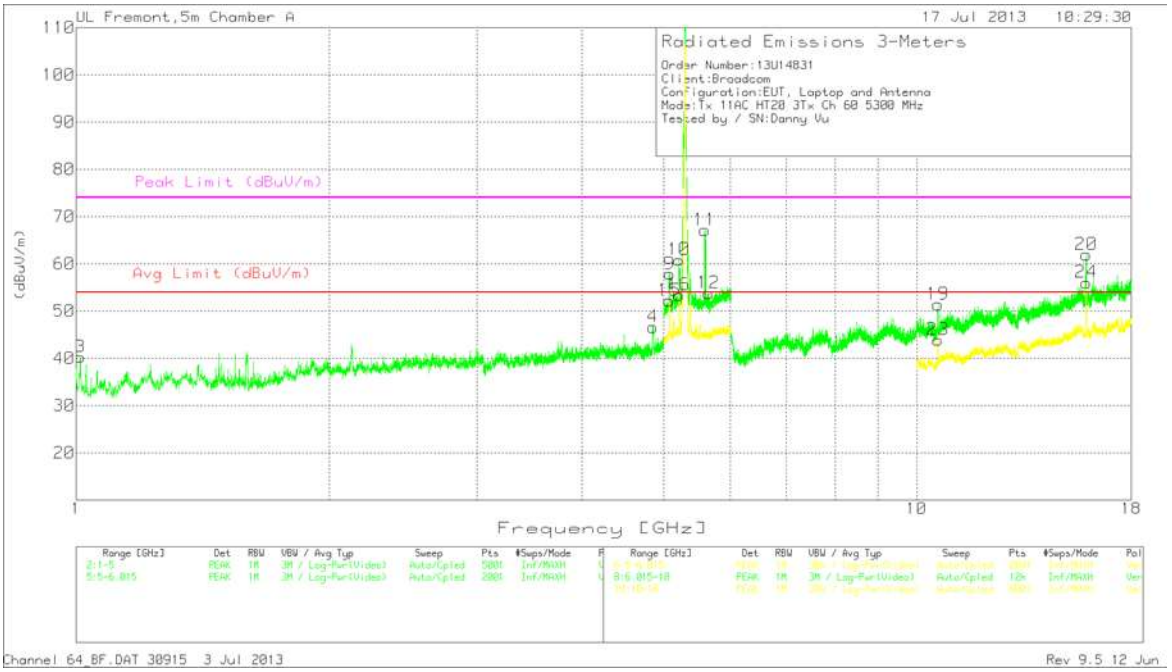
**HARMONICS AND SPURIOUS EMISSIONS**

**Mid Channel**

HORIZONTAL PLOT MID CHANNEL




VERTICAL PLOT MID CHANNEL



## HORIZONTAL AND VERTCAL DATA MID CHANNEL

Trace Markers

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.014 | 55.53 | PK | 28.1 | -35.8 | 47.83 | 53.97 | -6.14 | 74 | -26.17 | 0-360 | 100 | H |
| 4.858 | 43.4 | PK | 34 | -27.6 | 49.8 | 53.97 | -4.17 | 74 | -24.2 | 0-360 | 202 | H |
| 1.011 | 47.86 | PK | 28.1 | -35.7 | 40.26 | 53.97 | -13.71 | 74 | -33.74 | 0-360 | 200 | V |
| 4.856 | 40.2 | PK | 34 | -27.6 | 46.6 | 53.97 | -7.37 | 74 | -27.4 | 0-360 | 200 | V |
| 5.074 | 40.91 | PK | 34 | -18.5 | 56.41 | - | - | 74 | -17.59 | 0-360 | 200 | H |
| 5.214 | 40.48 | PK | 34.2 | -18.9 | 55.78 | - | - | 68.2 | -12.42 | 0-360 | 200 | H |
| 5.602 | 37.92 | PK | 34.4 | -18.5 | 53.82 | - | - | 68.2 | -14.38 | 0-360 | 200 | H |
| 5.687 | 45.12 | PK | 34.6 | -18.9 | 60.82 | - | - | 68.2 | -7.38 | 0-360 | 200 | H |
| 5.073 | 35.97 | PK | 34 | -18.6 | 51.37 | 53.97 | -2.6 | 74 | -22.63 | 0-360 | 200 | H |
| 5.214 | 34.83 | PK | 34.2 | -18.9 | 50.13 | - | - | 68.2 | -18.07 | 0-360 | 200 | H |
| 5.082 | 42.34 | PK | 34 | -18.5 | 57.84 | - | - | 74 | -16.16 | 0-360 | 200 | V |
| 5.214 | 45.52 | PK | 34.2 | -18.9 | 60.82 | - | - | 68.2 | -7.38 | 0-360 | 200 | V |
| 5.598 | 51.23 | PK | 34.4 | -18.5 | 67.13 | - | - | 68.2 | -1.07 | 0-360 | 100 | V |
| 5.656 | 38.16 | PK | 34.5 | -18.9 | 53.76 | - | - | 68.2 | -14.44 | 0-360 | 200 | V |
| 5.077 | 36.7 | PK | 34 | -18.5 | 52.2 | 53.97 | -1.77 | 74 | -21.8 | 0-360 | 200 | V |
| 5.218 | 38.11 | PK | 34.2 | -18.9 | 53.41 | - | - | 68.2 | -14.79 | 0-360 | 200 | V |
| 10.599 | 37.28 | PK | 37.8 | -22.7 | 52.38 | - | - | 68.2 | -15.82 | 0-360 | 100 | H |
| 15.901 | 38.01 | PK | 40.4 | -21.1 | 57.31 | - | - | 74 | -16.69 | 0-360 | 100 | H |
| 10.604 | 36.31 | PK | 37.8 | -22.7 | 51.41 | 53.97 | -2.56 | 74 | -22.59 | 0-360 | 200 | V |
| 15.914 | 42.63 | PK | 40.4 | -21.1 | 61.93 | - | - | 74 | -12.07 | 0-360 | 100 | V |
| 10.601 | 30.37 | PK | 37.8 | -22.7 | 45.47 | 53.97 | -8.5 | 74 | -28.53 | 0-360 | 100 | H |
| 15.899 | 29.19 | PK | 40.4 | -21.1 | 48.49 | 53.97 | -5.48 | 74 | -25.51 | 0-360 | 100 | H |
| 10.604 | 28.78 | PK | 37.8 | -22.7 | 43.88 | 53.97 | -10.09 | 74 | -30.12 | 0-360 | 200 | V |
| 15.918 | 36.71 | PK | 40.4 | -21.1 | 56.01 | - | - | 74 | -17.99 | 0-360 | 100 | V |

PK - Peak detector

Radiated Emissions

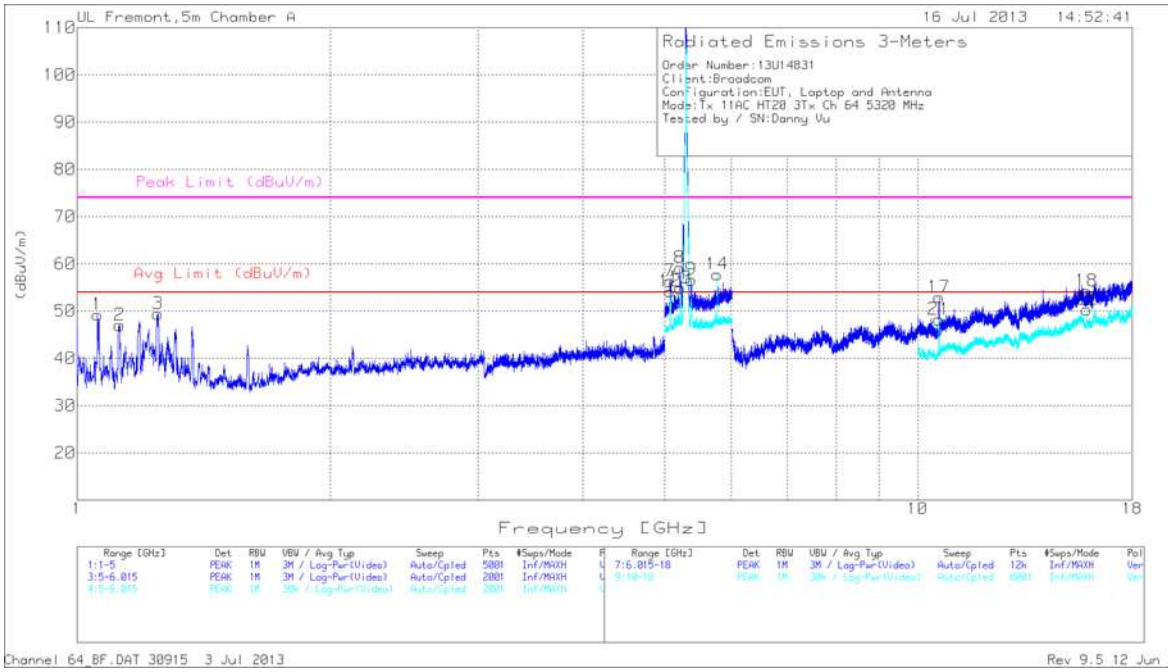
| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.071 | 27.56 | VB1 | 34 | -18.6 | 42.96 | 53.97 | -11.01 | - | - | 0 | 213 | H |
| 5.213 | 34.61 | VB1 | 34.2 | -18.9 | 49.91 | 53.97 | -4.06 | - | - | 48 | 204 | H |
| 5.686 | 27.32 | VB1 | 34.6 | -18.9 | 43.02 | 53.97 | -10.95 | - | - | 217 | 374 | H |
| 5.685 | 27.31 | VB1 | 34.6 | -18.9 | 43.01 | 53.97 | -10.96 | - | - | 327 | 240 | H |
| 5.077 | 36.43 | VB1 | 34 | -18.5 | 51.93 | 53.97 | -2.04 | - | - | 291 | 153 | V |
| 5.212 | 35.93 | VB1 | 34.2 | -18.9 | 51.23 | 53.97 | -2.74 | - | - | 48 | 172 | V |
| 5.589 | 27.37 | VB1 | 34.4 | -18.6 | 43.17 | 53.97 | -10.8 | - | - | 0 | 359 | V |
| 15.899 | 24.05 | VB1 | 40.4 | -21.1 | 43.35 | 53.97 | -10.62 | - | - | 220 | 269 | H |
| 15.916 | 30.74 | VB1 | 40.4 | -21.1 | 50.04 | 53.97 | -3.93 | - | - | 143 | 160 | V |
| 15.918 | 34.48 | VB1 | 40.4 | -21.1 | 53.78 | 53.97 | -0.19 | - | - | 135 | 103 | V |

VB1 - KDB 789033 v01r02 Method: VB Alternative Reduced Video

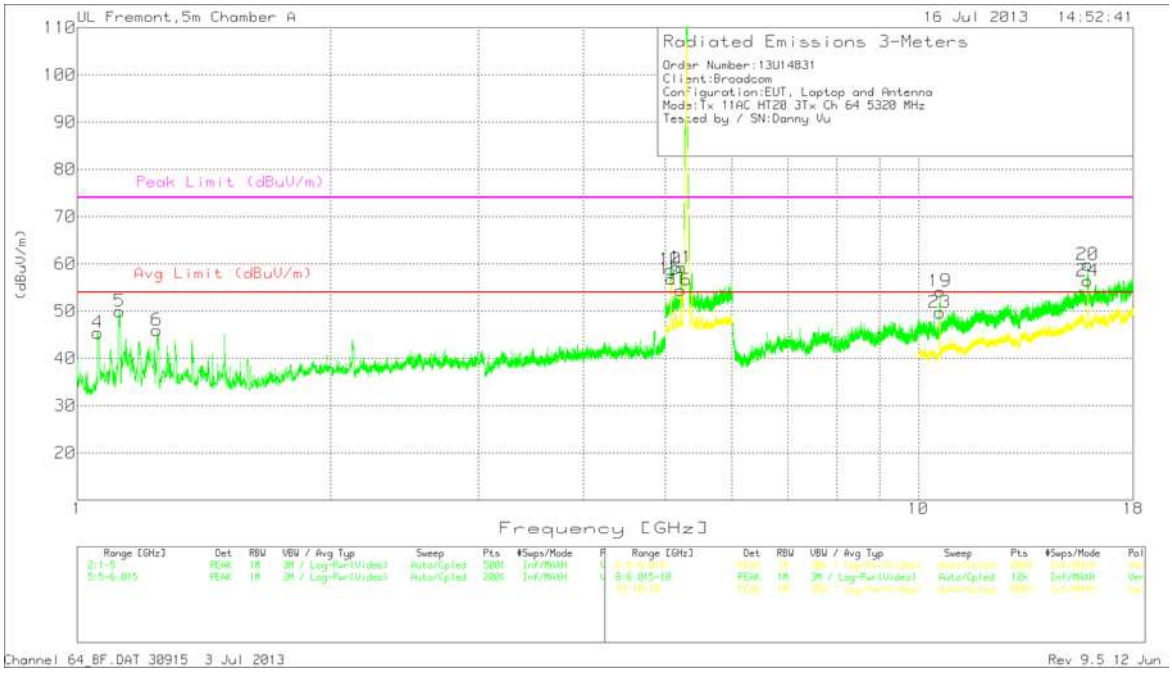
**Note**: There were no other emissions found above the system noise floor. A peak limit of 68.2 dBuV/m denotes a frequency found in a non-restricted band.

**High Channel**

HORIZONTAL PLOT HIGH CHANNEL




VERTCAL PLOT HIGH CHANNEL



## HORIZONTAL AND VERTCAL DATA HIGH CHANNEL

Trace Markers

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.058 | 56.62 | PK | 28 | -35.4 | 49.22 | 53.97 | -4.75 | 74 | -24.78 | 0-360 | 200 | H |
| 1.124 | 53.41 | PK | 28.3 | -34.7 | 47.01 | 53.97 | -6.96 | 74 | -26.99 | 0-360 | 200 | H |
| 1.248 | 54.82 | PK | 29.9 | -35.3 | 49.42 | - | - | 68.2 | -18.78 | 0-360 | 100 | H |
| 1.058 | 52.78 | PK | 28 | -35.4 | 45.38 | 53.97 | -8.59 | 74 | -28.62 | 0-360 | 200 | V |
| 1.123 | 56.31 | PK | 28.3 | -34.7 | 49.91 | 53.97 | -4.06 | 74 | -24.09 | 0-360 | 200 | V |
| 1.244 | 51.36 | PK | 29.9 | -35.3 | 45.96 | 53.97 | -8.01 | 74 | -28.04 | 0-360 | 100 | V |
| 5.072 | 40.9 | PK | 34 | -18.6 | 56.3 | - | - | 74 | -17.7 | 0-360 | 200 | H |
| 5.213 | 43.8 | PK | 34.2 | -18.9 | 59.1 | - | - | 68.2 | -9.1 | 0-360 | 200 | H |
| 5.378 | 40.63 | PK | 34.4 | -18.4 | 56.63 | - | - | 74 | -17.37 | 0-360 | 100 | H |
| 5.074 | 38.63 | PK | 34 | -18.5 | 54.13 | - | - | 74 | -19.87 | 0-360 | 200 | H |
| 5.219 | 39.6 | PK | 34.2 | -18.9 | 54.9 | - | - | 68.2 | -13.3 | 0-360 | 200 | H |
| 5.776 | 40.75 | PK | 34.8 | -17.8 | 57.75 | - | - | 68.2 | -10.45 | 0-360 | 200 | H |
| 5.074 | 43.29 | PK | 34 | -18.5 | 58.79 | - | - | 74 | -15.21 | 0-360 | 100 | V |
| 5.227 | 43.87 | PK | 34.2 | -18.9 | 59.17 | - | - | 68.2 | -9.03 | 0-360 | 200 | V |
| 5.079 | 41.17 | PK | 34 | -18.4 | 56.77 | - | - | 74 | -17.23 | 0-360 | 100 | V |
| 5.215 | 39.09 | PK | 34.2 | -18.9 | 54.39 | - | - | 68.2 | -13.81 | 0-360 | 200 | V |
| 10.604 | 37.82 | PK | 37.8 | -22.7 | 52.92 | 53.97 | -1.05 | 74 | -21.08 | 0-360 | 100 | H |
| 15.89 | 34.89 | PK | 40.4 | -21.1 | 54.19 | - | - | 74 | -19.81 | 0-360 | 100 | H |
| 10.61 | 39.04 | PK | 37.8 | -22.7 | 54.14 | - | - | 74 | -19.86 | 0-360 | 100 | V |
| 15.892 | 40.53 | PK | 40.4 | -21.1 | 59.83 | - | - | 74 | -14.17 | 0-360 | 100 | V |
| 10.6 | 33.09 | PK | 37.8 | -22.7 | 48.19 | 53.97 | -5.78 | 74 | -25.81 | 0-360 | 100 | H |
| 15.894 | 31.01 | PK | 40.4 | -21.1 | 50.31 | 53.97 | -3.66 | 74 | -23.69 | 0-360 | 100 | H |
| 10.605 | 34.58 | PK | 37.8 | -22.7 | 49.68 | 53.97 | -4.29 | 74 | -24.32 | 0-360 | 100 | V |
| 15.894 | 37.07 | PK | 40.4 | -21.1 | 56.37 | - | - | 74 | -17.63 | 0-360 | 100 | V |

PK - Peak detector

Radiated Emissions

| Frequency (GHz) | Meter Reading (dBuV) | Det | AF T136 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.082 | 27.66 | VB1 | 34 | -18.5 | 43.16 | 53.97 | -10.81 | - | - | 44 | 153 | H |
| 5.232 | 28.79 | VB1 | 34.2 | -18.8 | 44.19 | 53.97 | -9.78 | - | - | 177 | 165 | H |
| 5.393 | 27.31 | VB1 | 34.4 | -18.3 | 43.41 | 53.97 | -10.56 | - | - | 179 | 313 | H |
| 5.09 | 27.29 | VB1 | 34 | -18.7 | 42.59 | 53.97 | -11.38 | - | - | 58 | 384 | H |
| 5.233 | 27.49 | VB1 | 34.2 | -18.8 | 42.89 | 53.97 | -11.08 | - | - | 15 | 360 | H |
| 5.77 | 27.39 | VB1 | 34.7 | -18.3 | 43.79 | 53.97 | -10.18 | - | - | 54 | 226 | H |
| 5.488 | 28.09 | VB1 | 34.4 | -18.5 | 43.99 | 53.97 | -9.98 | - | - | 133 | 147 | V |
| 5.209 | 29.19 | VB1 | 34.2 | -18.8 | 44.59 | 53.97 | -9.38 | - | - | 57 | 235 | V |
| 5.08 | 27.79 | VB1 | 34 | -18.4 | 43.39 | 53.97 | -10.58 | - | - | 51 | 233 | V |
| 5.234 | 32.2 | VB1 | 34.2 | -18.8 | 47.6 | 53.97 | -6.37 | - | - | 42 | 161 | V |
| 15.894 | 24.03 | VB1 | 40.4 | -21.1 | 43.33 | 53.97 | -10.64 | - | - | 228 | 126 | H |
| 10.612 | 22.68 | VB1 | 37.8 | -22.6 | 37.88 | 53.97 | -16.09 | - | - | 272 | 144 | V |
| 15.897 | 24.01 | VB1 | 40.4 | -21.1 | 43.31 | 53.97 | -10.66 | - | - | 157 | 156 | V |
| 15.898 | 24.04 | VB1 | 40.4 | -21.1 | 43.34 | 53.97 | -10.63 | - | - | 0 | 202 | V |

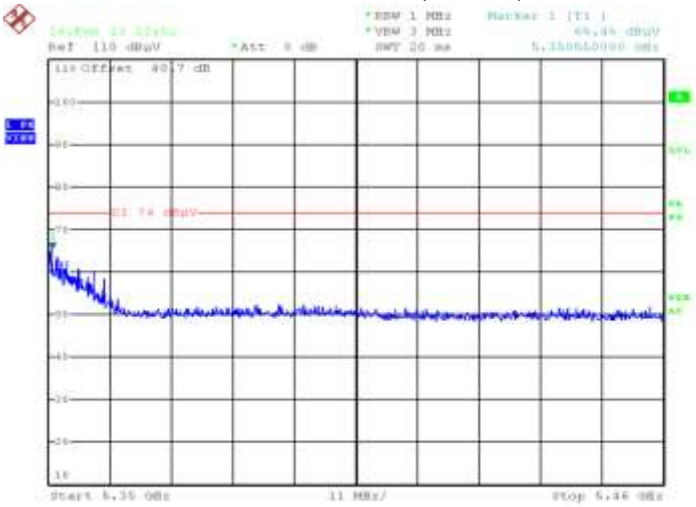
VB1 - KDB 789033 v01r02 Method: VB Alternative Reduced Video

**Note**: There were no other emissions found above the system noise floor. A peak limit of 68.2 dBuV/m denotes a frequency found in a non-restricted band.

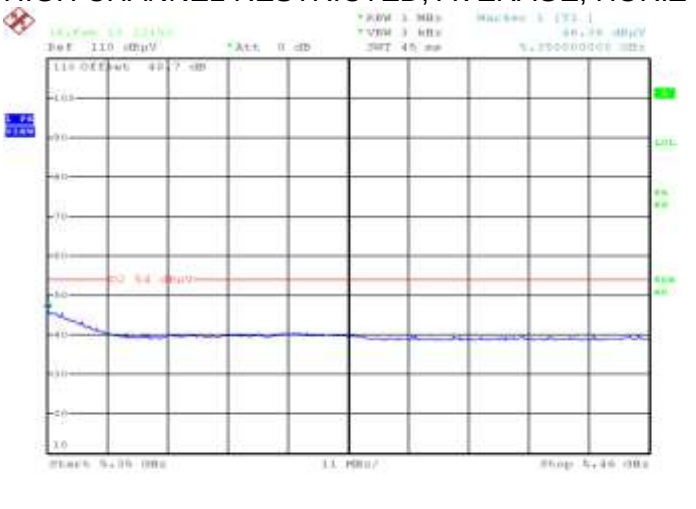
## 9.2.11. TX ABOVE 1 GHz 802.11n HT40 1TX MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (HIGH CHANNEL)**

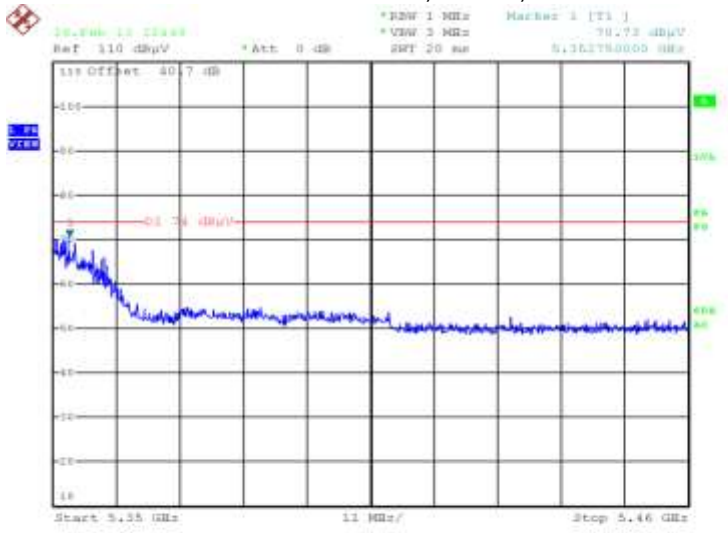
HIGH CHANNEL RESTRICTED, PEAK, HORIZ



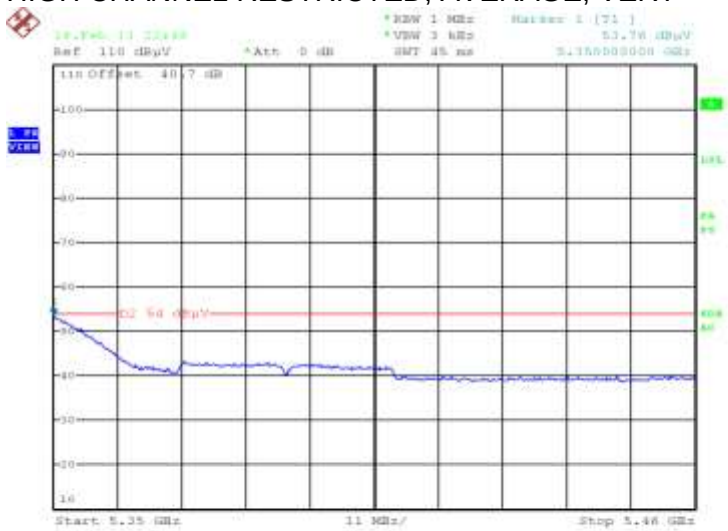

HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



HIGH CHANNEL RESTRICTED, PEAK, VERT




HIGH CHANNEL RESTRICTED, AVERAGE, VERT



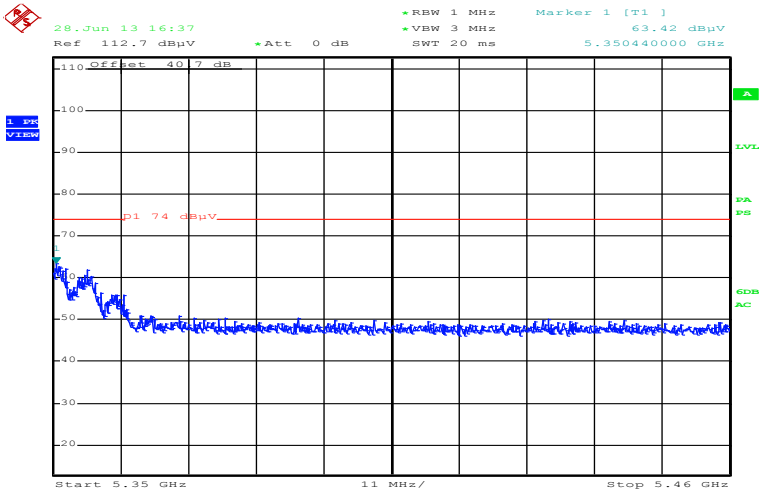
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11n HT20 CCD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

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

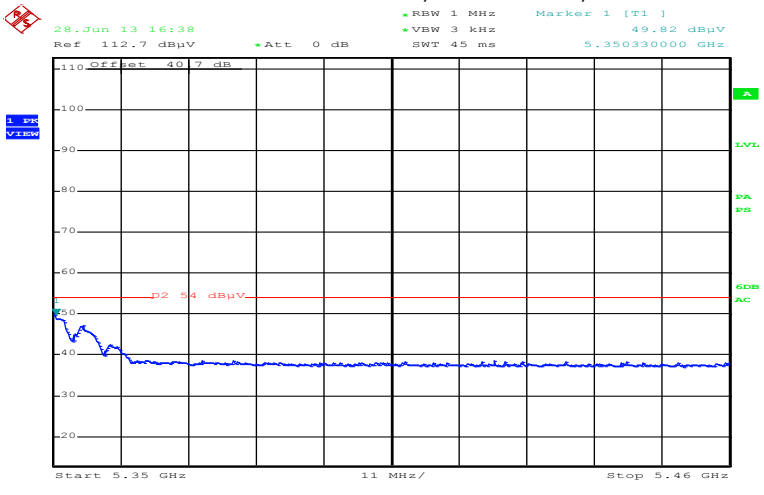
**RESTRICTED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL RESTRICTED, PEAK, HORIZ



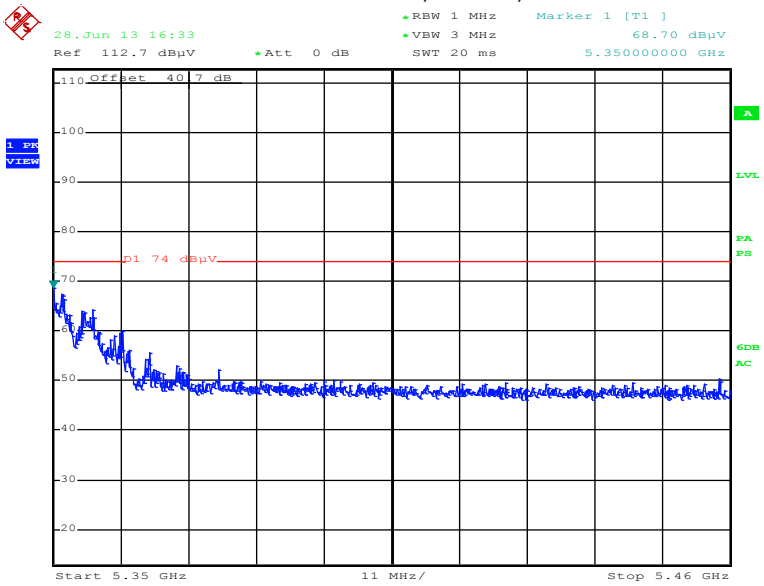

Date: 28.JUN.2013 16:37:46

HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



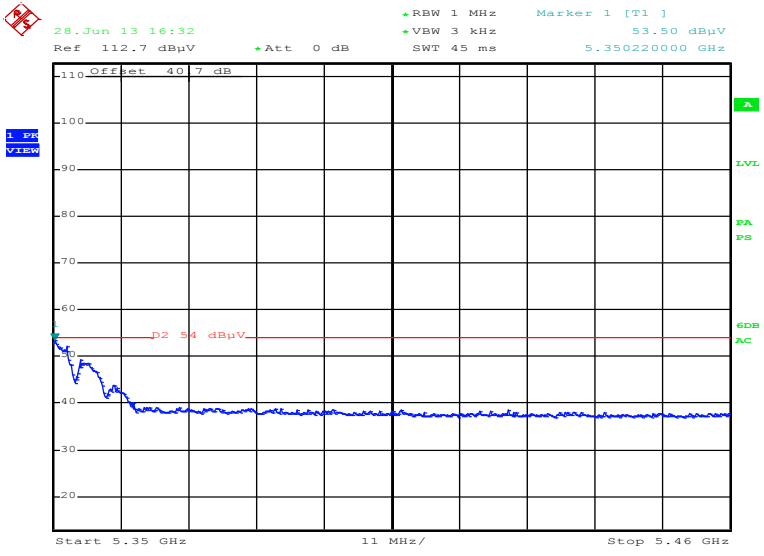

Date: 28.JUN.2013 16:38:43

## HIGH CHANNEL RESTRICTED, PEAK, VERT




Date: 28.JUN.2013 16:33:41

## HIGH CHANNEL RESTRICTED, AVERAGE, VERT




Date: 28.JUN.2013 16:32:49

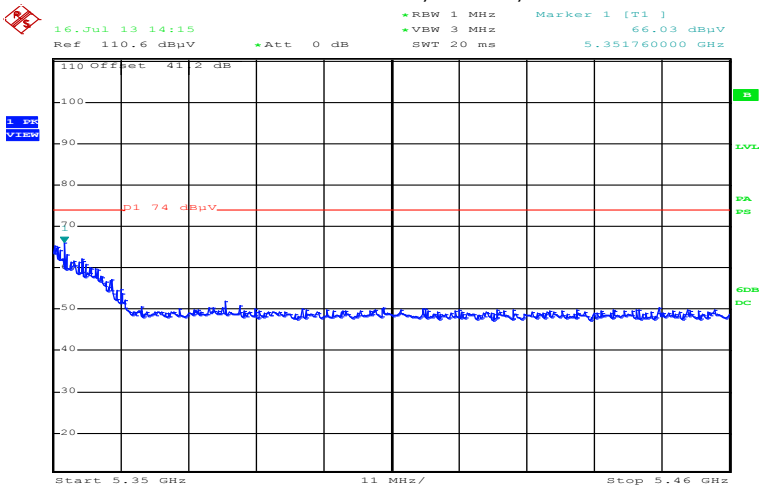
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11n HT20 CCD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

## 9.2.13. Tx ABOVE 1GHz 802.11ac VHT40 BF 3TX MODE, 5.3 GHz BAND

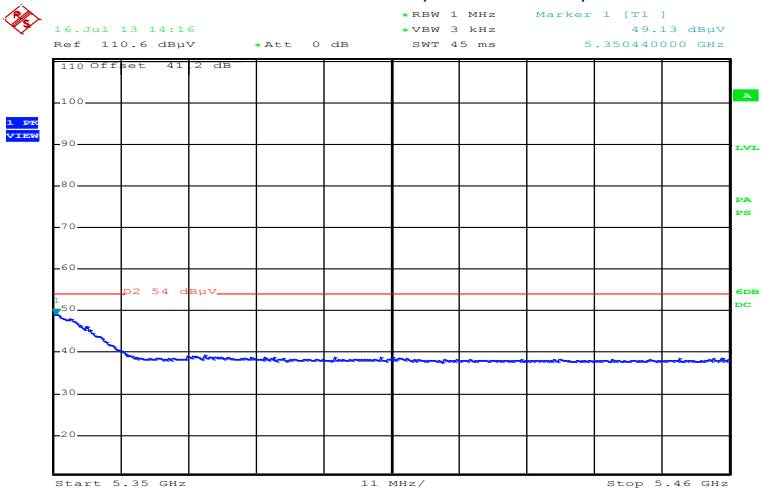
**RESTRICTED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL RESTRICTED, PEAK, HORIZ



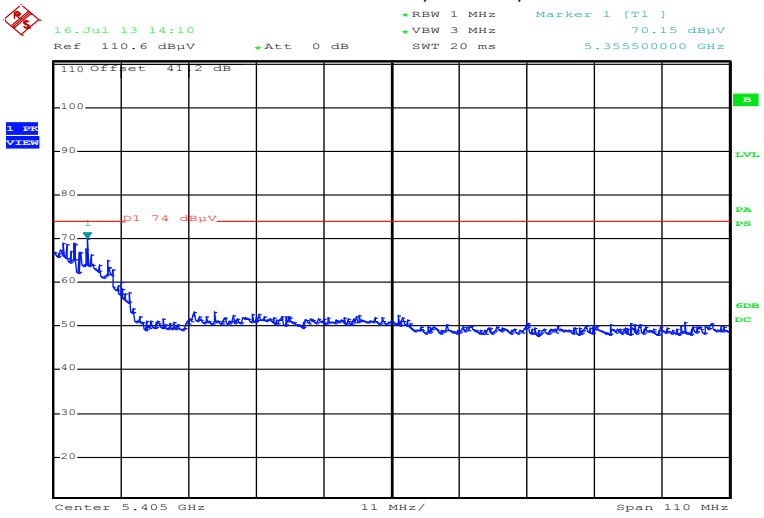

Date: 16.JUL.2013 14:15:29

HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



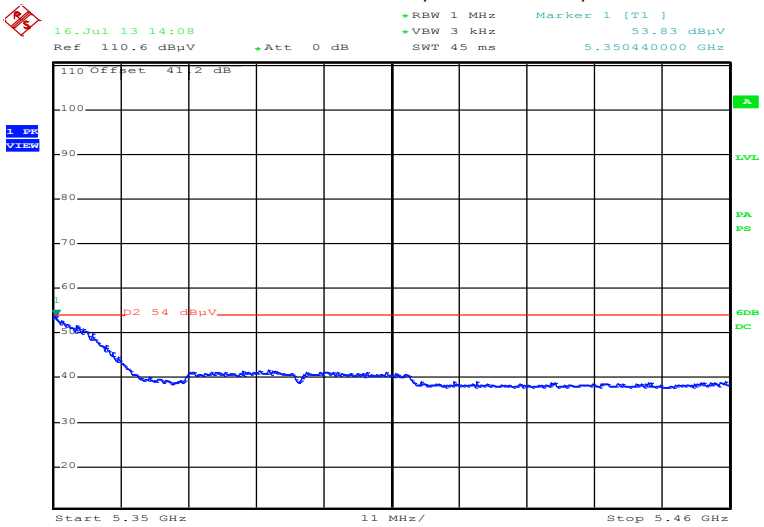

Date: 16.JUL.2013 14:16:20

## HIGH CHANNEL RESTRICTED, PEAK, VERT




Date: 16.JUL.2013 14:10:06

## HIGH CHANNEL RESTRICTED, AVERAGE, VERT




Date: 16.JUL.2013 14:08:48

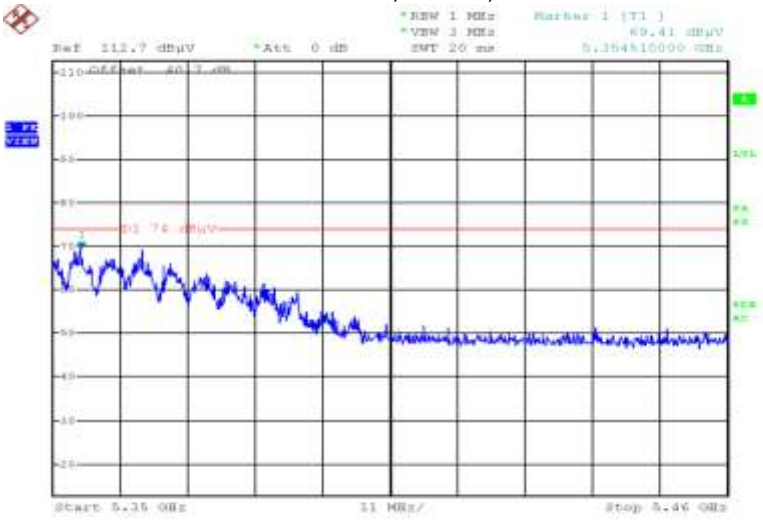
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11ac VHT20 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

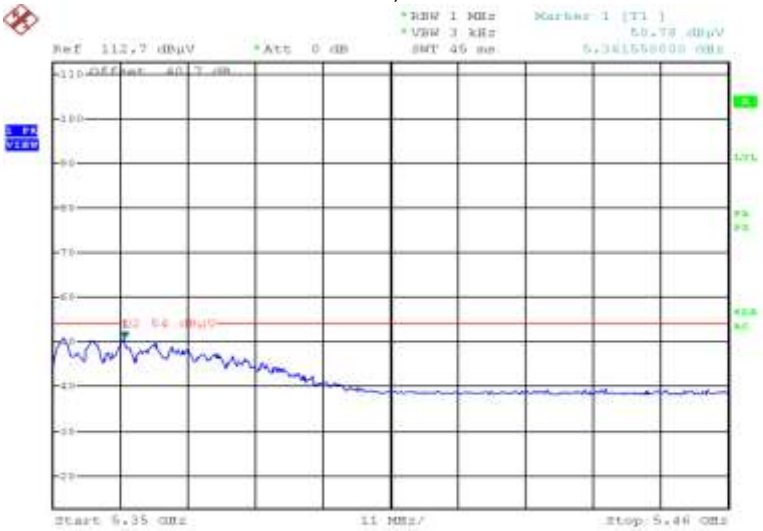
## 9.2.14. TX ABOVE 1 GHz 802.11ac VHT80 3TX MODE, 5.3 GHz BAND

**AUTHORIZED BANDEDGE (LOW CHANNEL)**

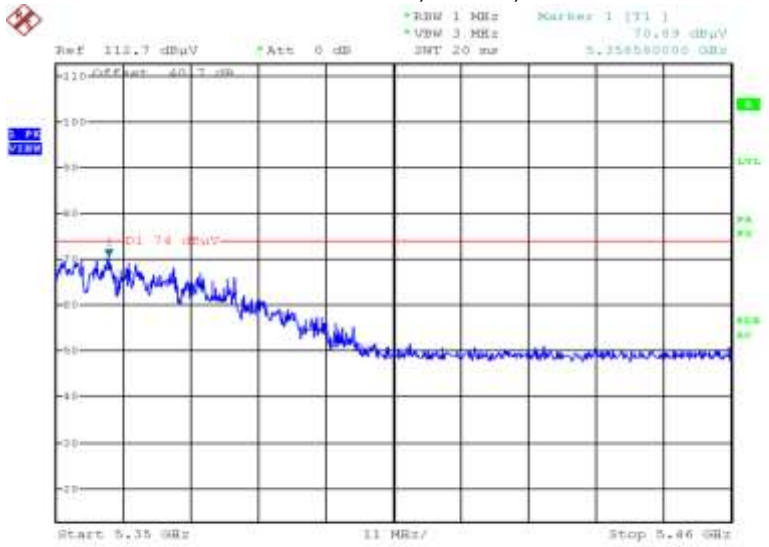
LOW CHANNEL BANDEDGE, PEAK, HORIZ



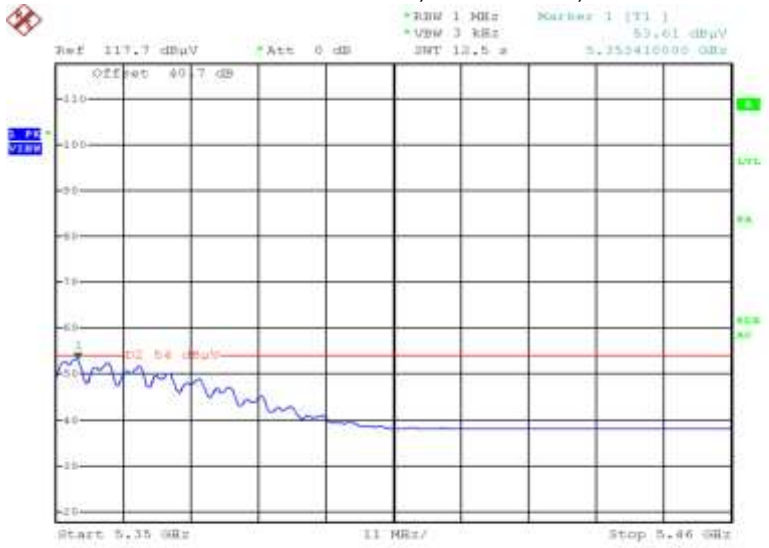

LOW CHANNEL BANDEDGE, AVERAGE HORIZ



LOW CHANNEL RESTRICTED, PEAK, VERT




LOW CHANNEL RESTRICTED, AVERAGE, VERT



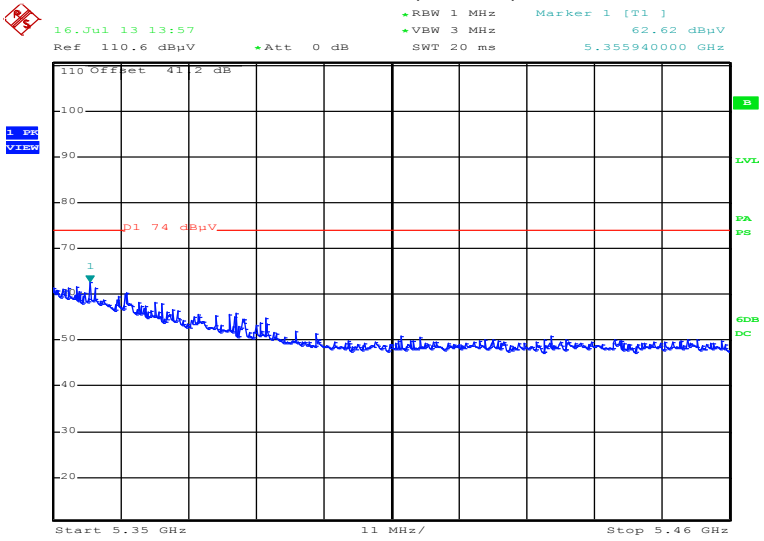
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11n HT20 CCD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

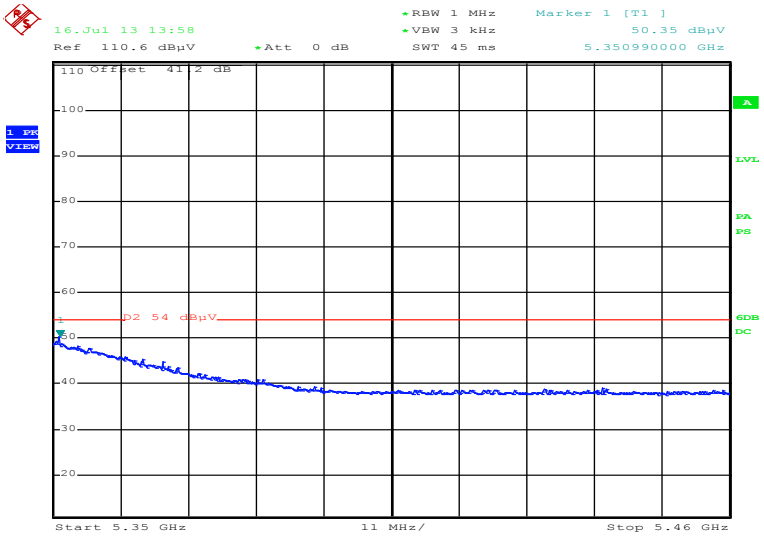
## 9.2.15. TX ABOVE 1 GHz 802.11ac VHT80 BF 3TX MODE, 5.3 GHz BAND

**RESTRICTED BANDEDGE (LOW CHANNEL)**

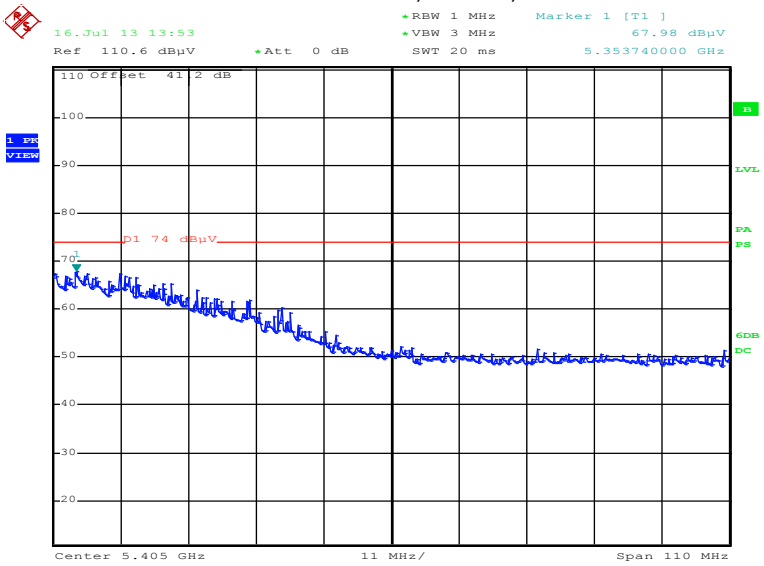
LOW CHANNEL RESTRICTED, PEAK, HORIZ




LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

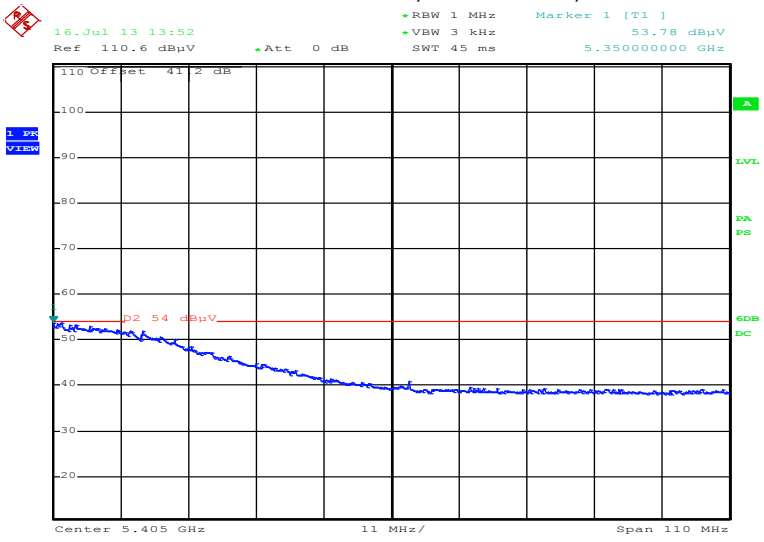


## LOW CHANNEL RESTRICTED, PEAK, VERT




Date: 16.JUL.2013 13:53:13

## LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 16.JUL.2013 13:52:06

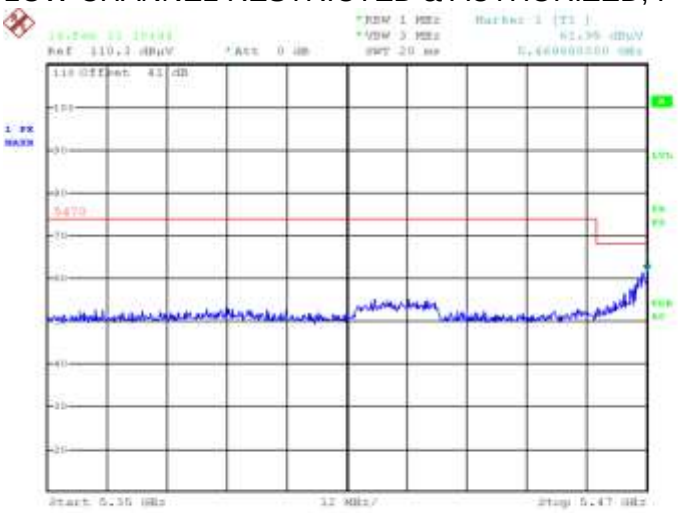
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11ac VHT20 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

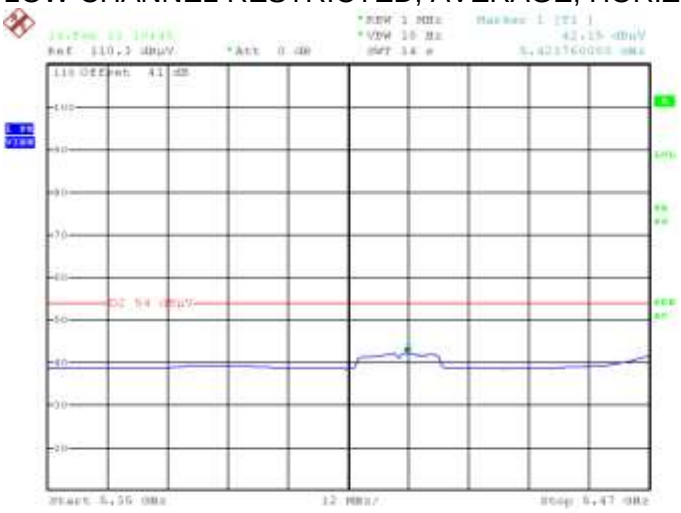
## 9.2.16. TX ABOVE 1 GHz 802.11a 1TX LEGACY MODE, 5.6 GHz BAND

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

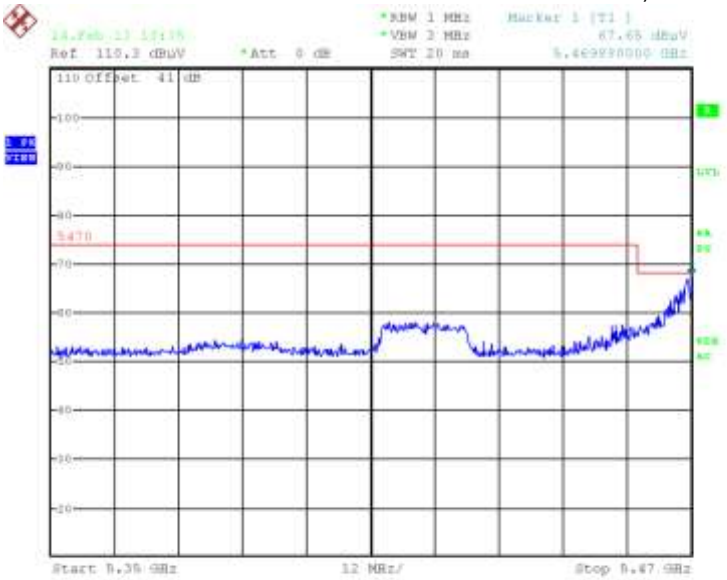
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ




LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

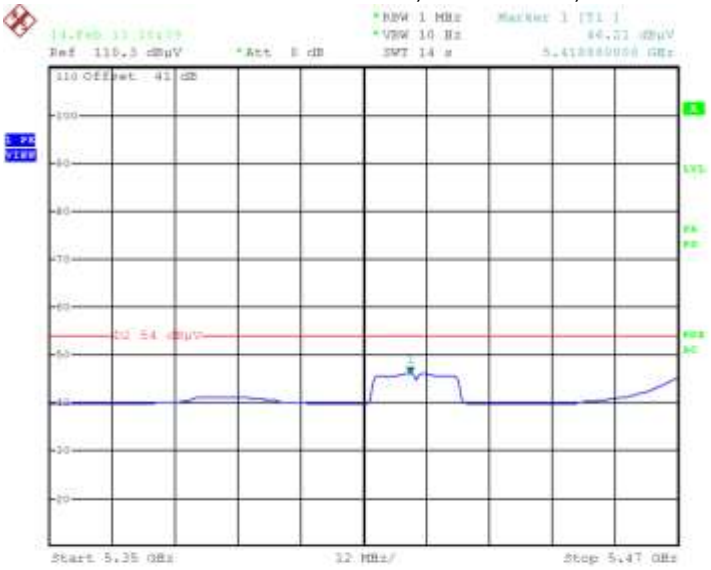


LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT




Date: 14.FEB.2013 10:35:18

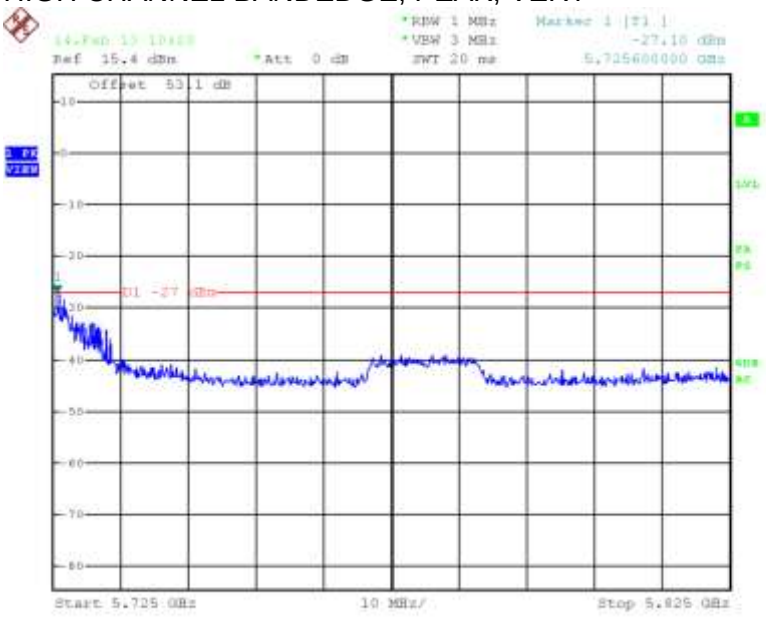
LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 14.FEB.2013 10:39:11

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL BANDEDGE, PEAK, VERT



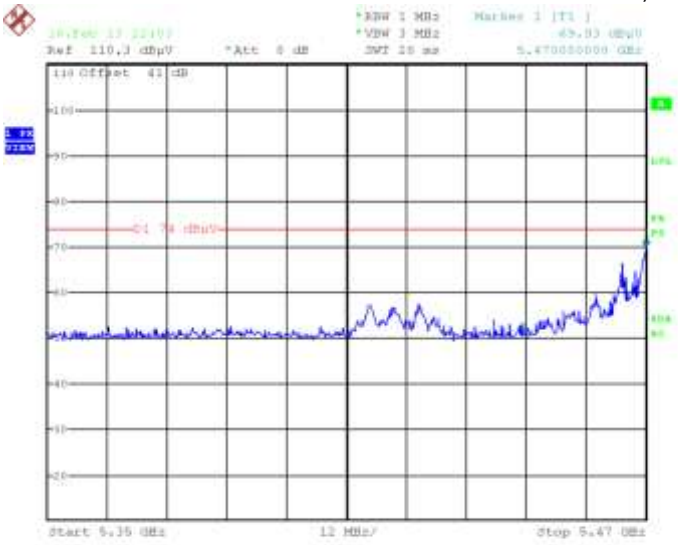
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of HT20 CDD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 1TX, 2TX, and 3TX mode.

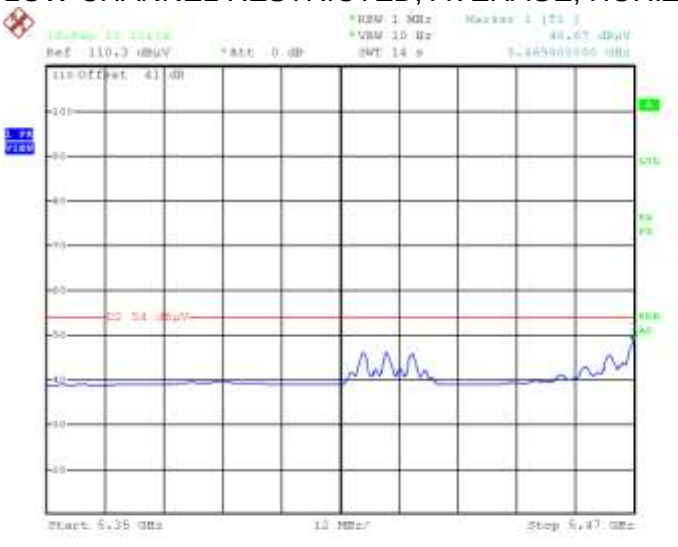
## 9.2.17. TX ABOVE 1 GHz 802.11n HT20 CDD 3TX MODE, 5.6 GHz BAND

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

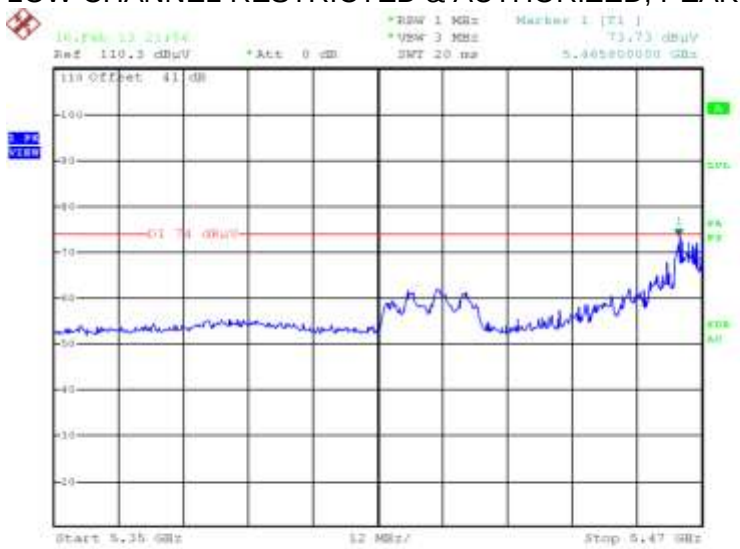
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ




LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

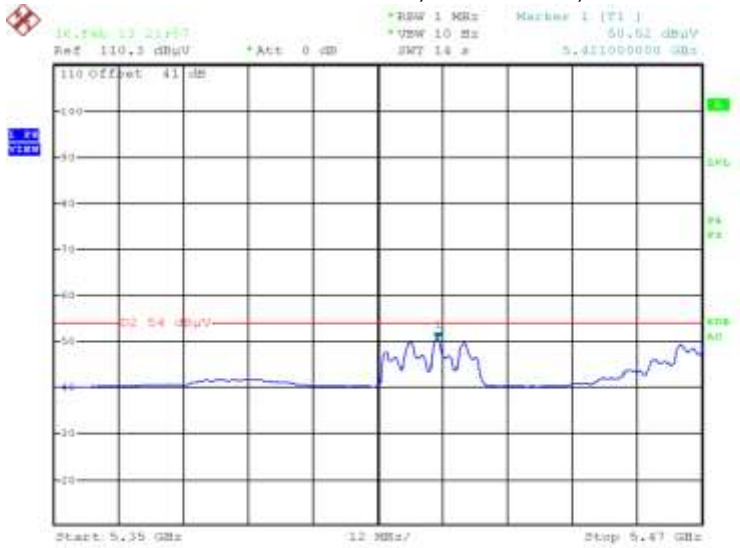


LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT




Date: 16.FEB.2013 21:56:41

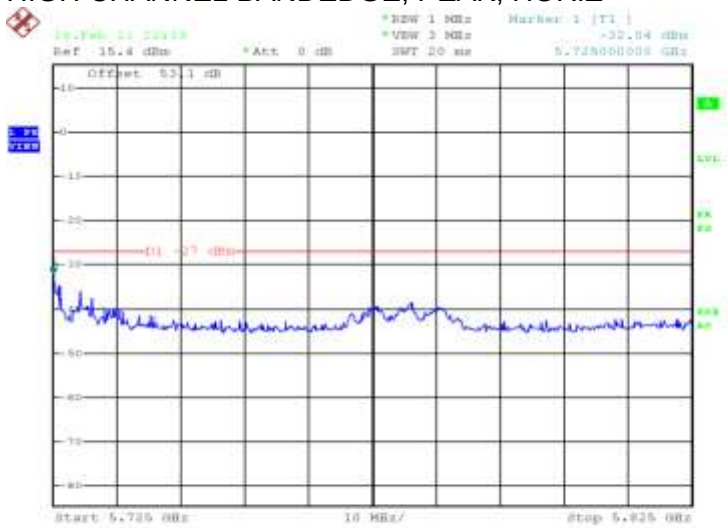
LOW CHANNEL RESTRICTED, AVERAGE, VERT



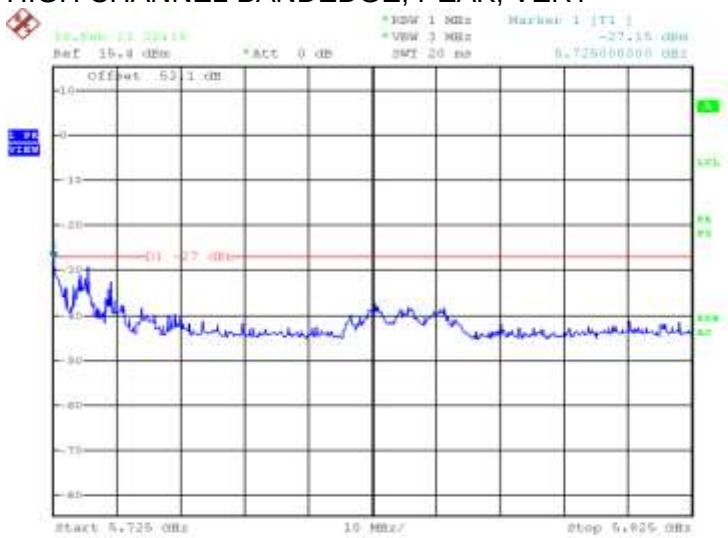

Date: 16.FEB.2013 21:57:40

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL BANDEDGE, PEAK, HORIZ




HIGH CHANNEL BANDEDGE, PEAK, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**UL Verifications Services, Fremont 5m Chamber-A**

**Company:** Broadcom
**Project #:** 13U14831
**Date:** 2/22/2013
**Test Engineer:** D. Garcia/R. Alegre
**Configuration:** EUT, Adapter, laptop, Antenna
**Mode:** HT20 3TX CDD, 5.5GHz

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T73; S/N: 6717 @3m | T144 Miteq 3008A00931 | T88 Miteq 26-40GHz | T89; ARA 18-26GHz; S/N:1049 | FCC 15.205 |

Hi Frequency Cables

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

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

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel: 5500MHz | | | | | | | | | | | | | | | |
| 11.000 | 3.0 | 46.8 | 33.8 | 38.7 | 10.9 | -36.0 | 0.0 | 0.7 | 61.1 | 48.1 | 74 | 54 | -12.9 | -5.9 | V |
| 11.000 | 3.0 | 43.5 | 31.7 | 38.7 | 10.9 | -36.0 | 0.0 | 0.7 | 57.8 | 46.0 | 74 | 54 | -16.2 | -8.0 | H |
| Mid Channel:-5580MHz | | | | | | | | | | | | | | | |
| 11.160 | 3.0 | 50.7 | 38.8 | 38.9 | 11.0 | -36.0 | 0.0 | 0.7 | 65.3 | 53.4 | 74 | 54 | -8.7 | -0.6 | V |
| 11.160 | 3.0 | 45.0 | 33.0 | 38.9 | 11.0 | -36.0 | 0.0 | 0.7 | 59.6 | 47.6 | 74 | 54 | -14.4 | -6.4 | H |
| High Channel: 5700 | | | | | | | | | | | | | | | |
| 11.400 | 3.0 | 46.2 | 34.1 | 39.1 | 11.1 | -35.9 | 0.0 | 0.7 | 61.2 | 49.1 | 74 | 54 | -12.8 | -4.9 | V |
| 11.400 | 3.0 | 37.0 | 26.7 | 39.1 | 11.1 | -35.9 | 0.0 | 0.7 | 52.0 | 41.7 | 74 | 54 | -22.0 | -12.3 | H |
| High Channel: 5720 | | | | | | | | | | | | | | | |
| 11.440 | 3.0 | 43.5 | 32.4 | 39.1 | 11.1 | -35.9 | 0.0 | 0.7 | 58.6 | 47.5 | 74 | 54 | -15.4 | -6.5 | V |
| 11.440 | 3.0 | 40.9 | 29.4 | 39.1 | 11.1 | -35.9 | 0.0 | 0.7 | 56.0 | 44.5 | 74 | 54 | -18.0 | -9.5 | H |

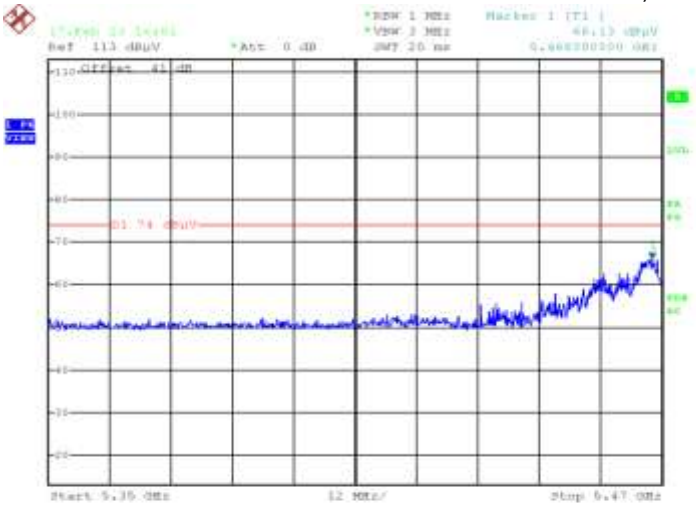
Rev. 01.30.13

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

## 9.2.18. TX ABOVE 1 GHz 802.11ac VHT20 BF 3TX MODE, 5.6 GHz BAND

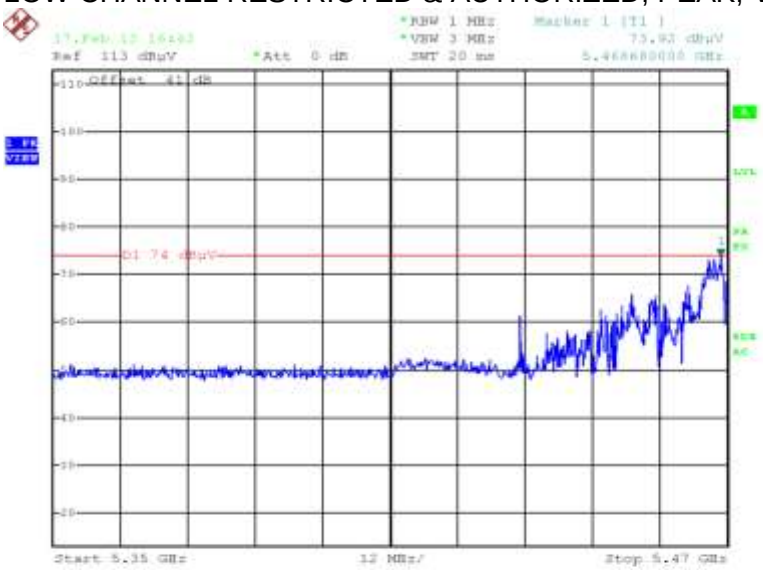
**RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)**

LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



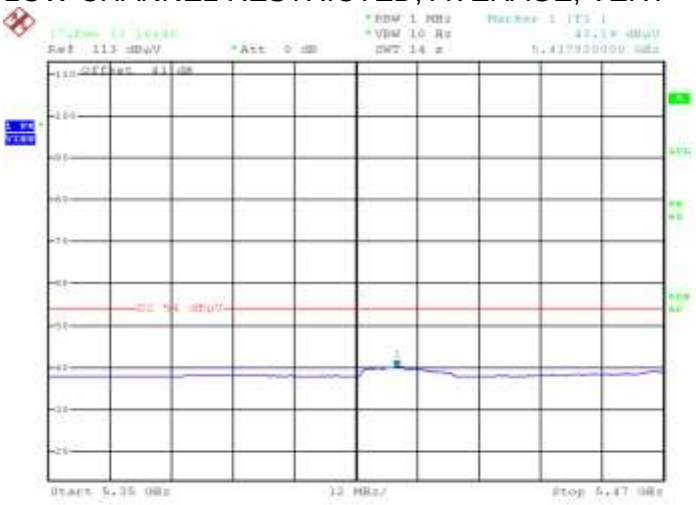

LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT




Date: 17.FEB.2013 16:43:52

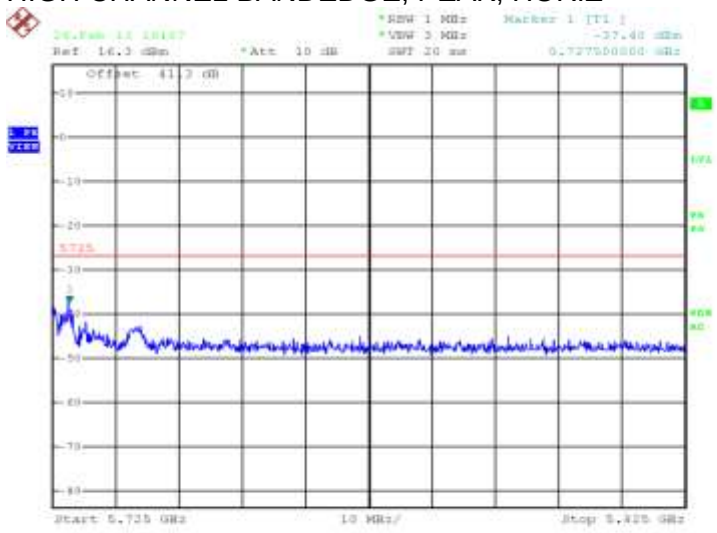
LOW CHANNEL RESTRICTED, AVERAGE, VERT



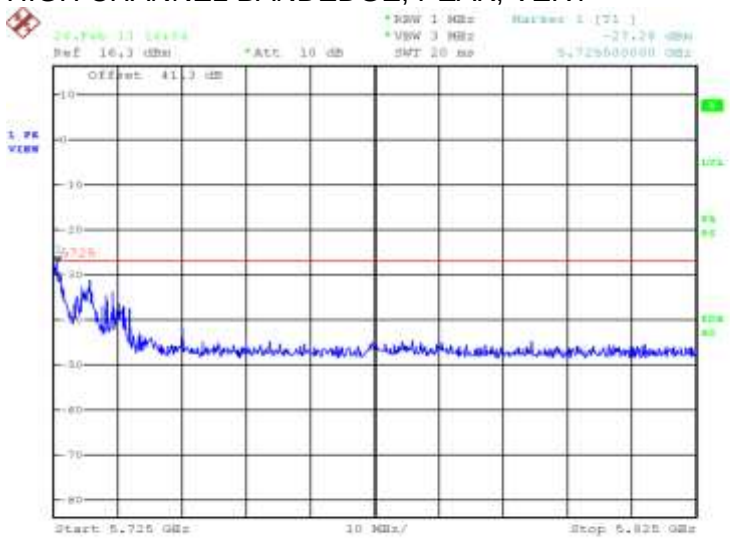

Date: 17.FEB.2013 16:46:53

**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL BANDEDGE, PEAK, HORIZ




HIGH CHANNEL BANDEDGE, PEAK, VERT



## HARMONICS AND SPURIOUS EMISSIONS

**High Frequency Measurement**
**UL Verification Services, Fremont 3m Chamber**

**Company:** Broadcom
**Project #:** 13U14831
**Date:** 2/23/2013
**Test Engineer:** D. Garcia
**Configuration:** EUT, Adapter, laptop, Antenna
**Mode:** 11ac VHT20 3TX, 5.5GHz, Beam Forming

**Test Equipment:**

| Horn 1-18GHz | Pre-amplifer 1-26GHz | Pre-amplifer 26-40GHz | Horn > 18GHz | Limit |
|---|---|---|---|---|
| T60; S/N: 2238 @3m | T34 HP 8449B | T88 Miteq 26-40GHz | T89; ARA 18-26GHz; S/N:1049 | FCC 15.205 |

Hi Frequency Cables

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

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

| f GHz | Dist (m) | Read Pk dBuV | Read Avg. dBuV | AF dB/m | CL dB | Amp dB | D Corr dB | Fltr dB | Peak dBuV/m | Avg dBuV/m | Pk Lim dBuV/m | Avg Lim dBuV/m | Pk Mar dB | Avg Mar dB | Notes (V/H) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel: 5500MHz | | | | | | | | | | | | | | | |
| 11.000 | 3.0 | 44.5 | 35.3 | 38.3 | 10.5 | -34.0 | 0.0 | 0.0 | 59.3 | 50.1 | 74 | 54 | -14.7 | -3.9 | V |
| 11.000 | 3.0 | 40.5 | 30.3 | 38.3 | 10.5 | -34.0 | 0.0 | 0.0 | 55.3 | 45.1 | 74 | 54 | -18.7 | -8.9 | H |
| Mid Channel:-5580MHz | | | | | | | | | | | | | | | |
| 11.160 | 3.0 | 44.4 | 34.5 | 38.5 | 10.7 | -33.9 | 0.0 | 0.0 | 59.7 | 49.7 | 74 | 54 | -14.3 | -4.3 | V |
| 11.160 | 3.0 | 37.0 | 30.5 | 38.5 | 10.7 | -33.9 | 0.0 | 0.0 | 52.3 | 45.8 | 74 | 54 | -21.7 | -8.2 | H |
| High Channel: 5700 | | | | | | | | | | | | | | | |
| 11.400 | 3.0 | 41.8 | 32.3 | 38.7 | 11.1 | -33.8 | 0.0 | 0.0 | 57.8 | 48.3 | 74 | 54 | -16.2 | -5.7 | V |
| 11.400 | 3.0 | 39.4 | 28.5 | 38.7 | 11.1 | -33.8 | 0.0 | 0.0 | 55.3 | 44.5 | 74 | 54 | -18.7 | -9.5 | H |
| High Channel: 5720 | | | | | | | | | | | | | | | |
| 11.440 | 3.0 | 42.5 | 34.1 | 38.7 | 11.1 | -33.8 | 0.0 | 0.0 | 58.6 | 50.2 | 74 | 54 | -15.4 | -3.8 | V |
| 11.440 | 3.0 | 41.3 | 32.3 | 38.7 | 11.1 | -33.8 | 0.0 | 0.0 | 57.3 | 48.3 | 74 | 54 | -16.7 | -5.7 | H |
| | | | | | | | | | | | | | | | |

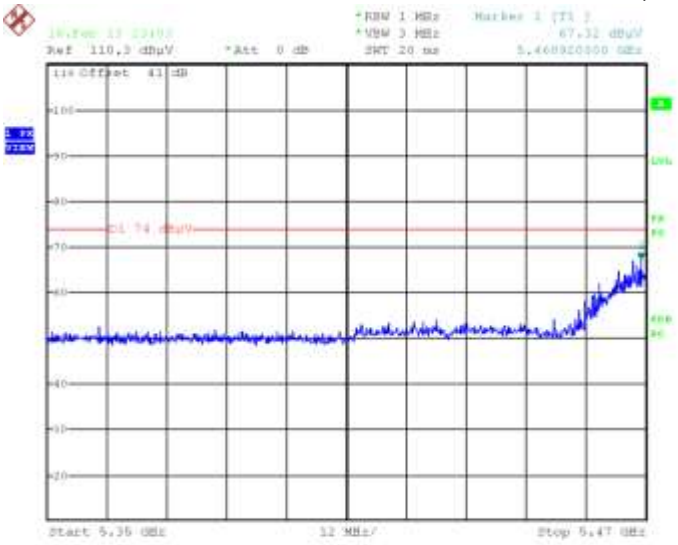
Rev. 01.30.13

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

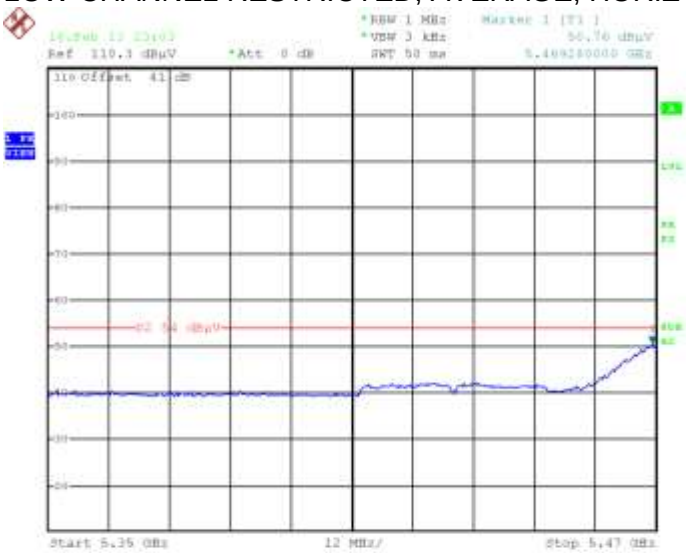
## 9.2.19. TX ABOVE 1 GHz 802.11n HT40 1TX MODE, 5.6 GHz BAND

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

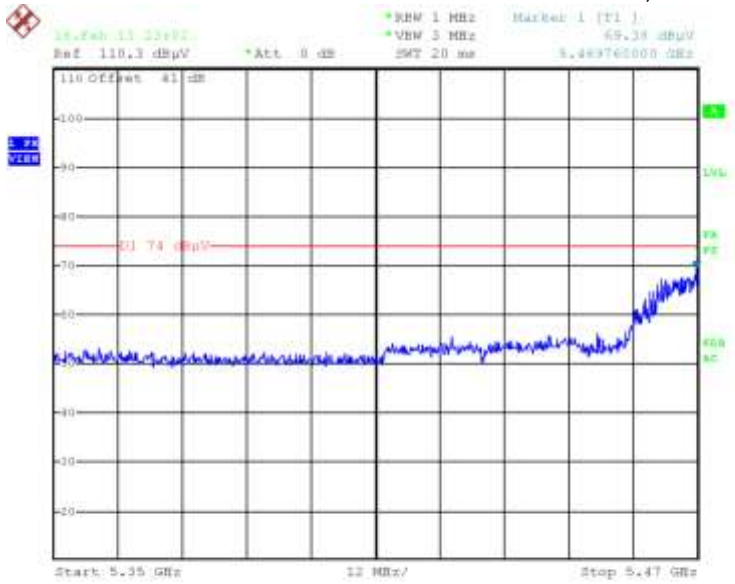
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ




LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

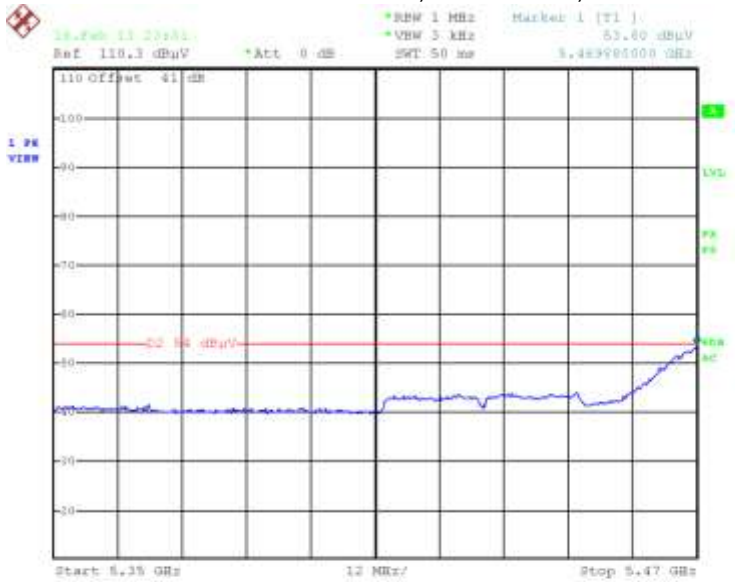


LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT




Date: 16.FEB.2013 23:02:34

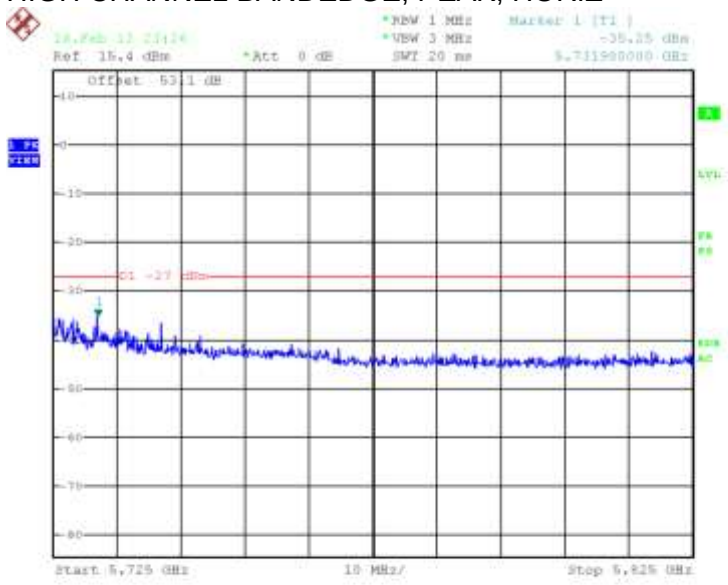
LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 16.FEB.2013 23:01:55

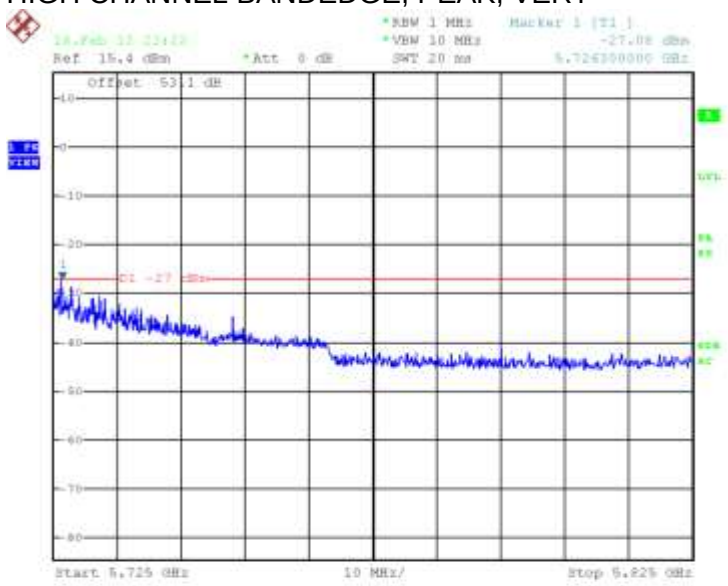
**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL BANDEDGE, PEAK, HORIZ




Date: 16.FEB.2013 23:26:22

HIGH CHANNEL BANDEDGE, PEAK, VERT




Date: 16.FEB.2013 23:22:44

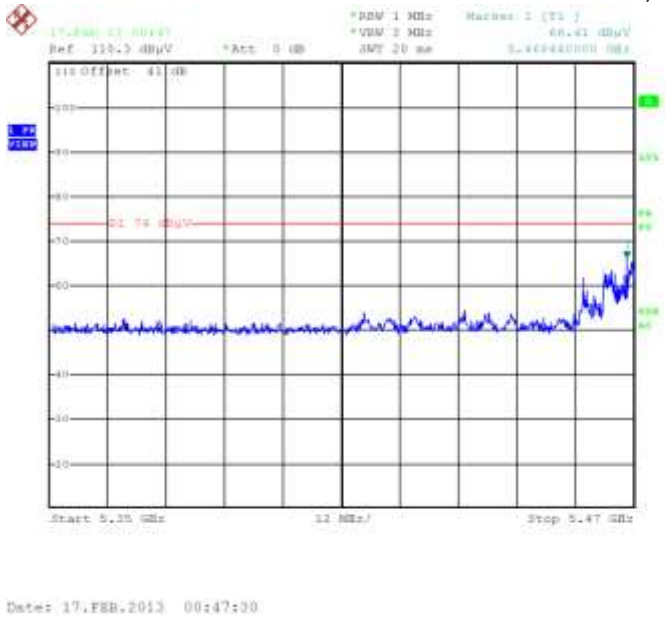
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11n HT20 CCD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

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

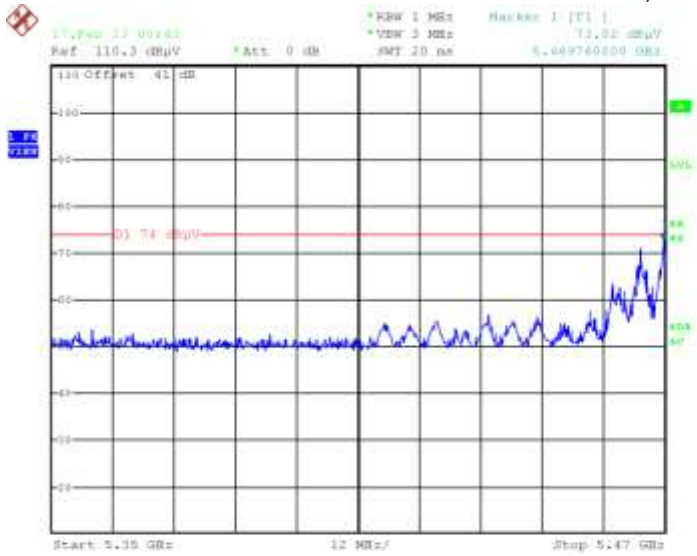
**RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)**

LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ

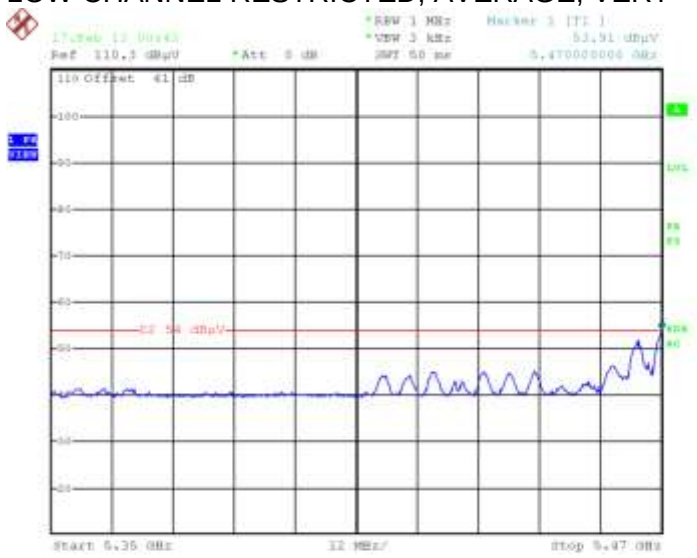



LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT

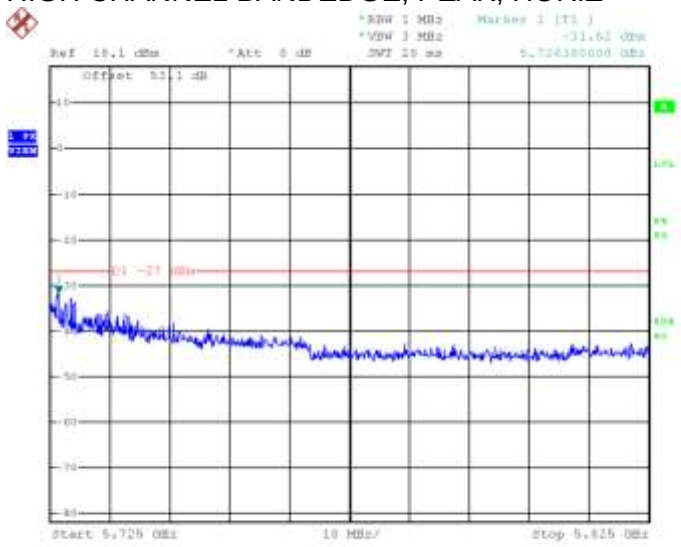



LOW CHANNEL RESTRICTED, AVERAGE, VERT

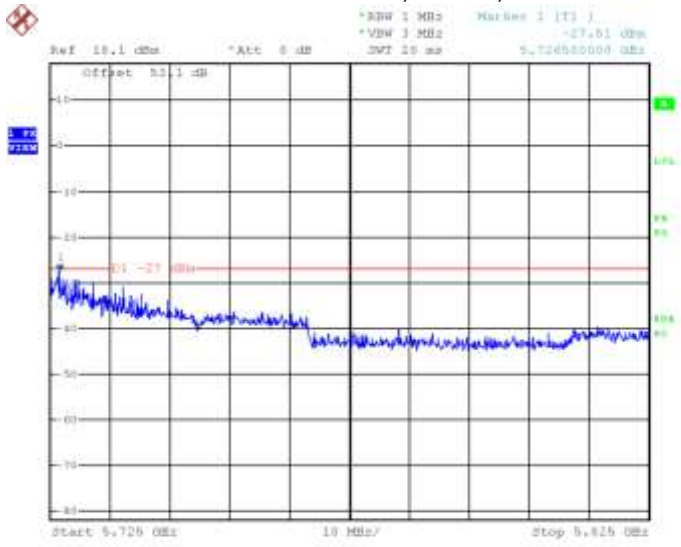


**AUTHORIZED BANDEDGE (HIGH CHANNEL)**

HIGH CHANNEL BANDEDGE, PEAK, HORIZ




HIGH CHANNEL BANDEDGE, PEAK, VERT



## HARMONICS AND SPURIOUS EMISSIONS

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

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

**Test Equipment:**

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

Hi Frequency Cables

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

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

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

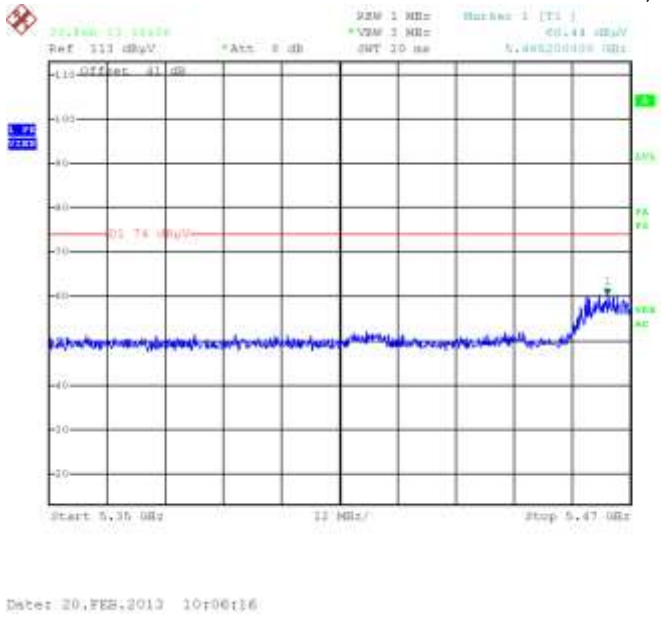
Rev. 11.10.11

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

## 9.2.21. TX ABOVE 1 GHz 802.11ac VHT40 BF 3TX MODE, 5.6 GHz BAND

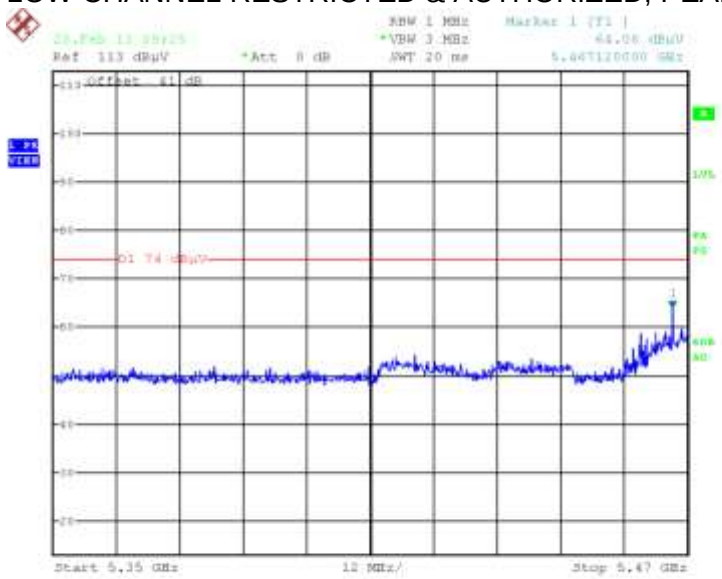
**RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)**

LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



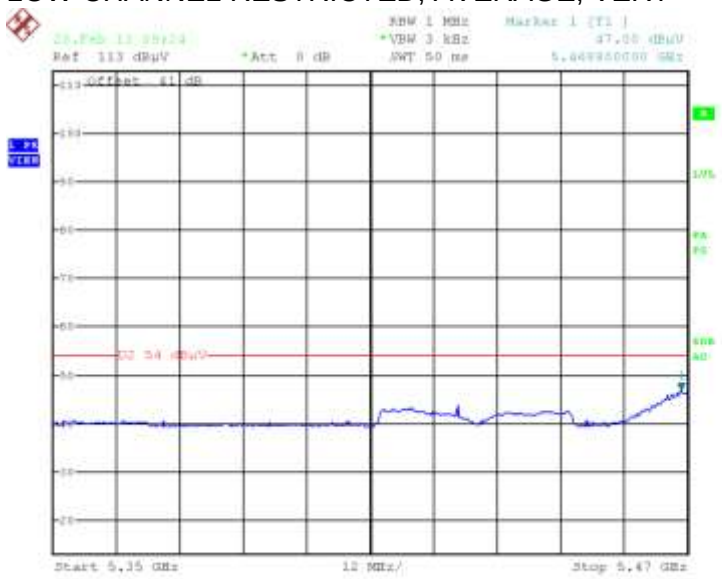

LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT




Date: 20.FEB.2013 09:25:02

LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 20.FEB.2013 09:24:22

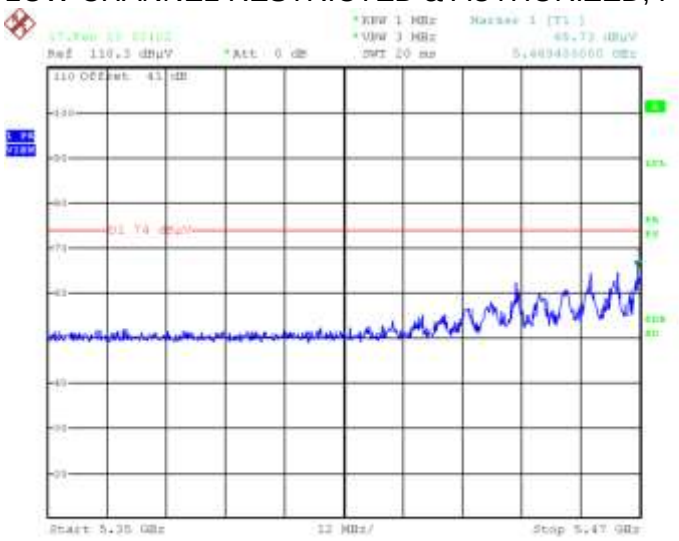
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11ac VHT20 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

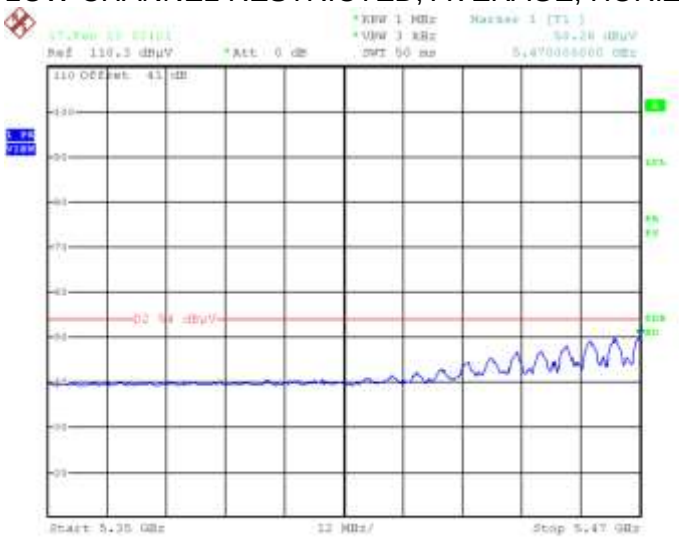
## 9.2.22. TX ABOVE 1 GHz 802.11ac VHT80 3TX MODE, 5.6 GHz BAND

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

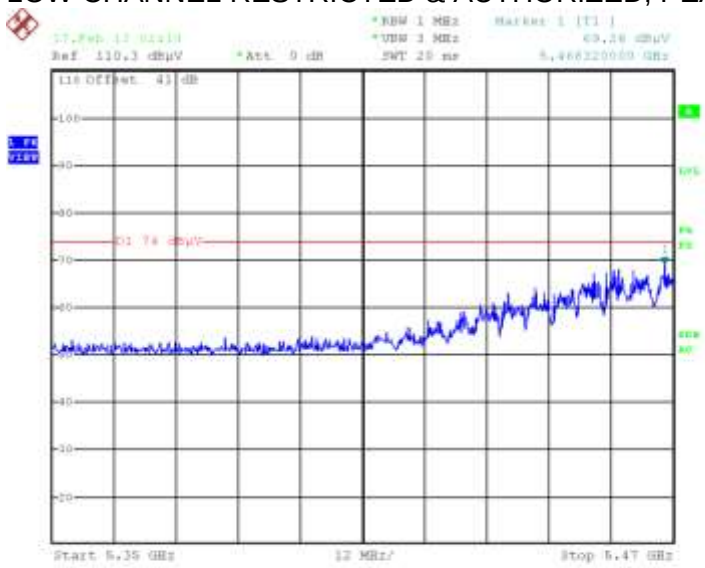
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



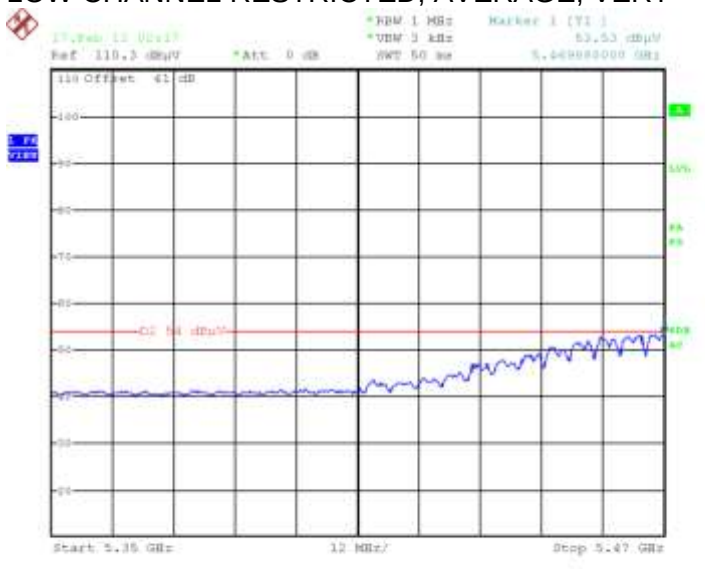

LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT




LOW CHANNEL RESTRICTED, AVERAGE, VERT



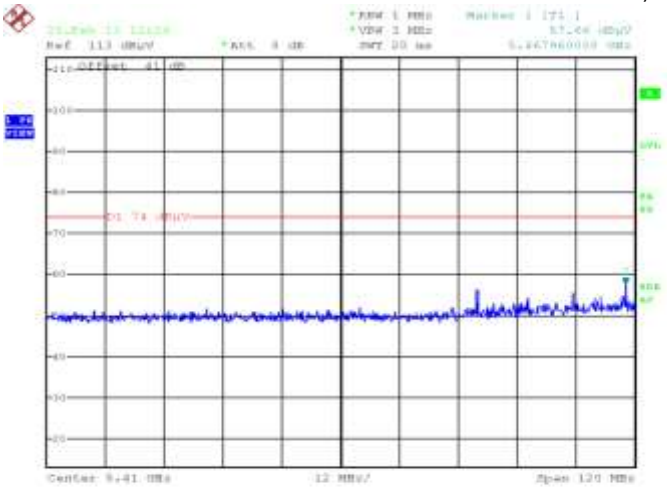
**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11n HT20 CCD MCS0 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

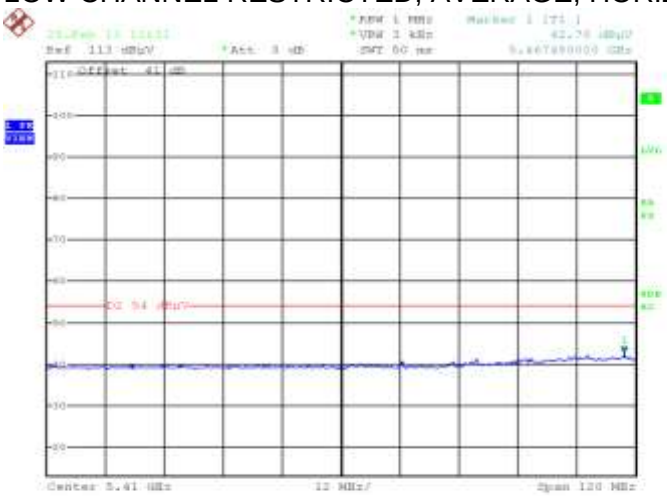
## 9.2.23. TX ABOVE 1 GHz 802.11ac VHT80 BF 3TX MODE, 5.6 GHz BAND

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

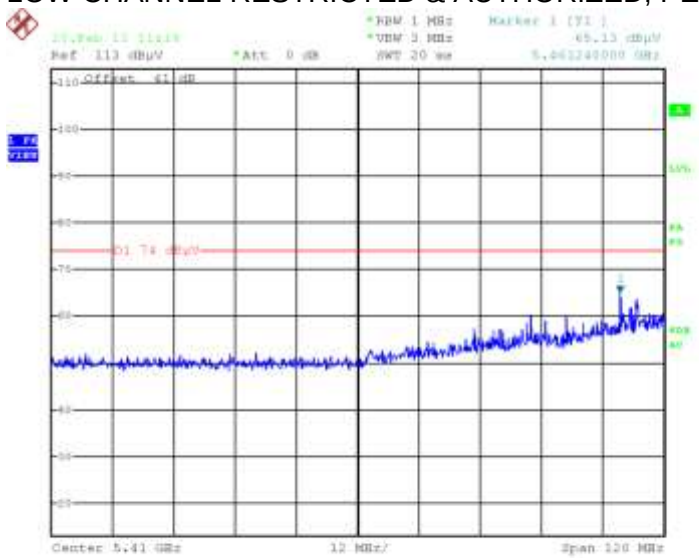
LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, HORIZ



LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

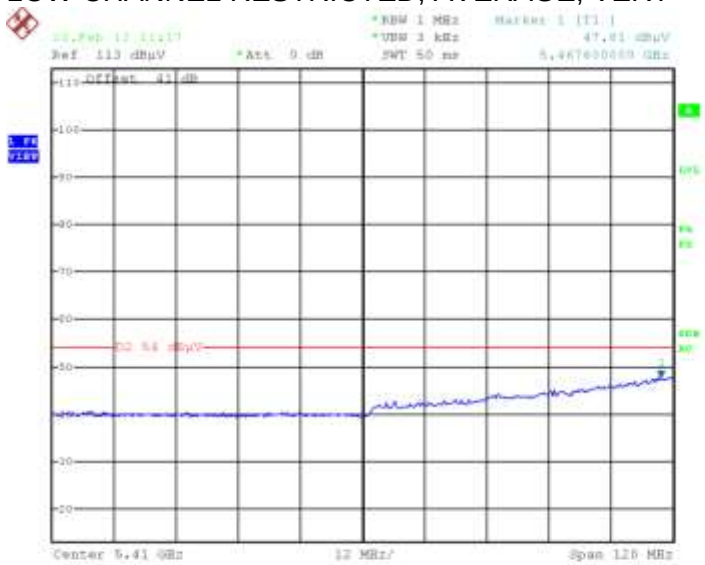


LOW CHANNEL RESTRICTED & AUTHORIZED, PEAK, VERT




Date: 20.FEB.2013 11:19:21

LOW CHANNEL RESTRICTED, AVERAGE, VERT




Date: 20.FEB.2013 11:17:43

**HARMONICS AND SPURIOUS EMISSIONS**

Covered by worst case emissions testing of 11ac VHT20 3TX at power levels, per transmit chain, greater than or equal to any 40MHz 1TX and 2TX mode and 80MHz 1TX and 2TX mode.

## 9.3. WORST-CASE BELOW 1 GHz

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)**

HORIZONTAL AND VERTICAL DATA

Trace Markers

| Frequency (MHz) | Meter Reading (dBuV) | Det | AF T477 (dB/m) | Amp/Cbl/Fltr/Pad (dB) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|
| 132.765 | 39.6 | QP | 13.4 | -26.6 | 26.4 | 43.52 | -17.12 | 0-360 | 200 | H |
| 199.15 | 47.94 | PK | 12.3 | -26.1 | 34.14 | 43.52 | -9.38 | 0-360 | 200 | H |
| 99.5725 | 55.06 | PK | 10.2 | -26.9 | 38.36 | 43.52 | -5.16 | 0-360 | 100 | V |
| 133.2325 | 49 | PK | 13.4 | -26.6 | 35.8 | 43.52 | -7.72 | 0-360 | 100 | V |
| 225.7 | 42.62 | QP | 10.7 | -25.9 | 27.42 | 46.02 | -18.6 | 0-360 | 100 | H |
| 263.3 | 49.38 | PK | 12.5 | -25.8 | 36.08 | 46.02 | -9.94 | 0-360 | 100 | H |
| 301 | 51.88 | PK | 13.2 | -25.6 | 39.48 | 46.02 | -6.54 | 0-360 | 100 | H |
| 372.3 | 48.27 | PK | 15 | -25.1 | 38.17 | 46.02 | -7.85 | 0-360 | 100 | H |
| 386.6 | 48 | PK | 15 | -25.2 | 37.8 | 46.02 | -8.22 | 0-360 | 100 | H |
| 472.5 | 45.64 | PK | 17.1 | -24.6 | 38.14 | 46.02 | -7.88 | 0-360 | 200 | H |
| 386.6 | 42.02 | PK | 15 | -25.2 | 31.82 | 46.02 | -14.2 | 0-360 | 200 | V |
| 394.4 | 41.64 | PK | 15.3 | -25 | 31.94 | 46.02 | -14.08 | 0-360 | 200 | V |
| 498 | 46.23 | PK | 17.6 | -24.4 | 39.43 | 46.02 | -6.59 | 0-360 | 200 | V |
| 895.9 | 25.71 | QP | 21.9 | -22.6 | 25.01 | 46.02 | -21.01 | 0-360 | 200 | V |

PK - Peak detector
QP - Quasi-Peak detector