

FCC 47 CFR PART 15 SUBPART E

CLASS II PERMISSIVE CHANGE

FOR

802.11a/g/n/ac WLAN + BLUETOOTH PCI-E CUSTOM COMBINATION CARD

MODEL NUMBER: BCM94360CS

FCC ID: QDS-BRCM1069

REPORT NUMBER: 15U22131 - E1V2

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Prepared for BROADCOM CORPORATION 190 MATHILDA PLACE SUNNYVALE CA, 94086, USA

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NVLAP LAB CODE 200065-0

Revision History

| Rev. | Issue Date | Revisions | Revised By |
|------|---------------|---------------------|-------------|
| V1 | 12/23/15 | Initial Issue | H. Mustapha |
| V2 | 01/06/16 | Updated Section 5.6 | H. Mustapha |

Page 2 of 136

TABLE OF CONTENTS

| 1. | AT | TESTATION OF TEST RESULTS | 5 |
|----|---|--|---|
| 2. | TES | ST METHODOLOGY | 7 |
| 3. | FAG | CILITIES AND ACCREDITATION | 7 |
| 4. | CA | LIBRATION AND UNCERTAINTY | 7 |
| | 4.1. | MEASURING INSTRUMENT CALIBRATION | 7 |
| | 4.2. | SAMPLE CALCULATION | 7 |
| | 4.3. | MEASUREMENT UNCERTAINTY | 8 |
| 5. | EQ | UIPMENT UNDER TEST | 9 |
| | 5.1. | DESCRIPTION OF EUT | 9 |
| | 5.2. | MAXIMUM OUTPUT POWER | 9 |
| | 5.3. | LIST OF TEST REDUCTION AND MODES COVERING OTHER MODES | 10 |
| | 5.4. | DESCRIPTION OF AVAILABLE ANTENNAS | 11 |
| | 5.5. | SOFTWARE AND FIRMWARE | 11 |
| | 5.6. | DESCRIPTION OF CLASS II PERMISSIVE CHANGE | 11 |
| | 5.7. | WORST-CASE CONFIGURATION AND MODE | 12 |
| | 5.8. | DESCRIPTION OF TEST SETUP | 13 |
| 6. | TES | ST AND MEASUREMENT EQUIPMENT | 15 |
| 7. | МЕ | ASUREMENT METHODS | 16 |
| | | | IU |
| • | | | 10 |
| 8. | AN [.] | | 17 |
| 8. | AN [*] 8.1. | TENNA PORT TEST RESULTS ************************************ | 17 17 |
| 8. | AN 8.1. 8.2. 8.2. | TENNA PORT TEST RESULTS " ON TIME AND DUTY CYCLE " 802.11a SISO MODE IN THE 5.8 GHz BAND " .1. OUTPUT POWER " | 17 17 24 24 |
| 8. | AN 8.1. 8.2. 8.2. 8.3. | TENNA PORT TEST RESULTS 7 ON TIME AND DUTY CYCLE 7 802.11a SISO MODE IN THE 5.8 GHz BAND 7 .1. OUTPUT POWER .11n HT20 CDD SISO MODE IN THE 5.8 GHz BAND 7 | 17 17 24 24 24 |
| 8. | AN 8.1. 8.2. 8.2. 8.3. 8.3. | TENNA PORT TEST RESULTS 7 ON TIME AND DUTY CYCLE 802.11a SISO MODE IN THE 5.8 GHz BAND 1. OUTPUT POWER 802.11n HT20 CDD SISO MODE IN THE 5.8 GHz BAND 7 1. OUTPUT POWER 1. OUTPUT POWER 1. OUTPUT POWER 1. OUTPUT POWER | 17 17 24 24 25 25 |
| 8. | AN 8.1. 8.2. 8.2. 8.3. 8.3. 8.4. | TENNA PORT TEST RESULTS ON TIME AND DUTY CYCLE 802.11a SISO MODE IN THE 5.8 GHz BAND 2 .1. OUTPUT POWER 2 802.11n HT20 CDD SISO MODE IN THE 5.8 GHz BAND 2 .1. OUTPUT POWER 3 .1. OUTPUT POWER 3 .1. OUTPUT POWER 3 .1. OUTPUT POWER | 17 17 24 25 25 25 26 |
| 8. | AN 8.1. 8.2. 8.3. 8.3. 8.4. 8.4. 8.4. | TENNA PORT TEST RESULTS 7 ON TIME AND DUTY CYCLE 802.11a SISO MODE IN THE 5.8 GHz BAND .1. OUTPUT POWER .1. 6 dB BANDWIDTH .1. 6 dB BANDWIDTH .1. 0UTPUT POWER | 17 17 24 24 25 25 25 26 26 32 |
| 8. | AN 8. 1. 8.2. 8.3. 8.3. 8.3. 8.4. 8.4. 8.4. 8.4. 8.4 | TENNA PORT TEST RESULTS 7 ON TIME AND DUTY CYCLE 802.11a SISO MODE IN THE 5.8 GHz BAND .1. OUTPUT POWER 7 .1. 6 dB BANDWIDTH 7 .2. OUTPUT POWER 7 .3. Maximum Power Spectral Density (PSD) 7 | 17 17 24 24 25 25 25 26 26 32 34 |
| 8. | AN 8.1. 8.2. 8.3. 8.3. 8.4. 8.4. 8.4. 8.4. 8.4. 8.5. 8.5. | TENNA PORT TEST RESULTS ON TIME AND DUTY CYCLE 802.11a SISO MODE IN THE 5.8 GHz BAND 2 1. OUTPUT POWER 2 802.11n HT20 CDD SISO MODE IN THE 5.8 GHz BAND 2 1. OUTPUT POWER 2 802.11n HT20 CDD 3Tx MODE IN THE 5.8 GHz BAND 2 1. 6 dB BANDWIDTH 2 2. 0UTPUT POWER 2 3. Maximum Power Spectral Density (PSD) 2 802.11n HT20 TxBF 3TX MODE IN THE 5.8 GHz BAND 2 1. OUTPUT POWER 3 | 17 17 24 24 25 25 26 26 26 32 34 41 |
| 8. | AN 8. 1. 8.2. 8.3. 8.3. 8.4. 8.4. 8.4. 8.4. 8.5. 8.5. 8.6 | TENNA PORT TEST RESULTS ON TIME AND DUTY CYCLE 802.11a SISO MODE IN THE 5.8 GHz BAND 2 1. OUTPUT POWER 2 802.11n HT20 CDD SISO MODE IN THE 5.8 GHz BAND 2 1. OUTPUT POWER 2 802.11n HT20 CDD 3Tx MODE IN THE 5.8 GHz BAND 2 802.11n HT20 CDD 3Tx MODE IN THE 5.8 GHz BAND 2 802.11n HT20 CDD 3Tx MODE IN THE 5.8 GHz BAND 2 802.11n HT20 CDD 3Tx MODE IN THE 5.8 GHz BAND 2 1. 6 dB BANDWIDTH 2 2. OUTPUT POWER 3 3. Maximum Power Spectral Density (PSD) 3 802.11n HT20 TxBF 3TX MODE IN THE 5.8 GHz BAND 4 1. OUTPUT POWER 4 802.11n HT20 TxBF 3TX MODE IN THE 5.8 GHz BAND 4 1. OUTPUT POWER 4 | 17 17 17 24 25 26 26 26 26 26 23 41 41 43 |
| 8. | AN 8. 1. 8. 2. 8. 3. 8. 3. 8. 3. 8. 3. 8. 4. 8. 4. 8. 4. 8. 5. 8. 5. 8. 6. 8. 6. | TENNA PORT TEST RESULTS 7 ON TIME AND DUTY CYCLE 802.11a SISO MODE IN THE 5.8 GHz BAND .1 OUTPUT POWER .1. 6 dB BANDWIDTH. .2. OUTPUT POWER .3. Maximum Power Spectral Density (PSD) .802.11n HT20 TxBF 3TX MODE IN THE 5.8 GHz BAND .1. OUTPUT POWER .1. OUTPUT POWER .1. OUTPUT POWER | 17 17 24 24 25 26 32 34 41 43 43 |
| 8. | AN 8. 1. 8. 2. 8. 3. 8. 3. 8. 3. 8. 3. 8. 3. 8. 4. 8. 4. 8. 4. 8. 5. 8. 5. 8. 6. 8. 6. 8. 7. | TENNA PORT TEST RESULTS ************************************ | 17 17 24 25 26 26 26 26 23 41 43 43 43 45 |
| 8. | AN 8.1. 8.2. 8.3. 8.3. 8.4. 8.4. 8.4. 8.5. 8.5. 8.6. 8.6. 8.7. 8. | TENNA PORT TEST RESULTS ^A ON TIME AND DUTY CYCLE 802.11a SISO MODE IN THE 5.8 GHz BAND ^A OUTPUT POWER 1. OUTPUT POWER ^A OUTPUT POWER 802.11n HT20 CDD SISO MODE IN THE 5.8 GHz BAND ^A OUTPUT POWER 1. OUTPUT POWER ^A OUTPUT POWER 2. OUTPUT POWER ^A OUTPUT POWER 3. Maximum Power Spectral Density (PSD) Sa Aaximum Power Spectral Density (PSD) 3. Maximum Power Spectral Density (PSD) Sa Aaximum Power Spectral Density (PSD) 4. OUTPUT POWER A A Sa ADDE IN THE 5.8 GHz BAND 1. OUTPUT POWER A A Sa ADDE IN THE 5.8 GHz BAND 1. OUTPUT POWER A A Sa ADDE IN THE 5.8 GHz BAND 1. OUTPUT POWER A A A | 17 17 24 25 26 225 26 234 41 43 45 45 48 45 48 45 48 48 48 48 48 48 48 48 48 48 |
| 8. | AN 8. 1. 8. 2. 8. 3. 8. 3. 8. 3. 8. 3. 8. 3. 8. 4. 8. 4. 8. 4. 8. 4. 8. 5. 8. 5. 8.5 | TENNA PORT TEST RESULTS ON TIME AND DUTY CYCLE 802.11a SISO MODE IN THE 5.8 GHz BAND 2 1. OUTPUT POWER 2 802.11n HT20 CDD SISO MODE IN THE 5.8 GHz BAND 2 1. OUTPUT POWER 2 802.11n HT20 CDD 3Tx MODE IN THE 5.8 GHz BAND 2 802.11n HT20 CDD 3Tx MODE IN THE 5.8 GHz BAND 2 802.11n HT20 CDD 3Tx MODE IN THE 5.8 GHz BAND 2 1. 6 dB BANDWIDTH 2 2. OUTPUT POWER 2 3. Maximum Power Spectral Density (PSD) 2 802.11n HT20 TxBF 3TX MODE IN THE 5.8 GHz BAND 2 1. OUTPUT POWER 2 802.11n HT40 SISO MODE IN THE 5.8 GHz BAND 2 1. OUTPUT POWER 2 802.11n HT40 SISO MODE IN THE 5.8 GHz BAND 2 1. OUTPUT POWER 2 802.11n HT40 CDD 3Tx MODE IN THE 5.8 GHz BAND 2 1. 6 dB BANDWIDTH 2 2. OUTPUT POWER 2 802.11n HT40 CDD 3Tx MODE IN THE 5.8 GHz BAND 1. 6 dB BANDWIDTH 2 2. OUTPUT POWER 2 3. 000000000000000000000000000000000000 | 17 17 24 25 26 225 26 233 41 43 45 45 48 |

| 8.7. | .3. Maximum Power Spectral Density (PSD) | 50 |
|--------------------------------------|--|----------|
| 8.8. | 802.11n HT40 TxBF 3TX MODE IN THE 5.8 GHz BAND | 55 |
| 8.8. 8.8. | .1. OUTPUT POWER | 55 |
| <i>8.9.</i> 8.9. | 802.11ac HT80 SISO MODE IN THE 5.8 GHz BAND | 62 62 |
| 8.10. | 802.11ac HT80 CDD 3Tx MODE IN THE 5.8 GHz BAND | 64 |
| 8.10 8.10 | 0.1. 6 dB BANDWIDTH 0.2. OUTPUT POWER | 64 |
| 8.10 | 0.3. Maximum Power Spectral Density (PSD) | 69 |
| 8.11. | 802.11ac HT80 CDD TxBF MODE IN THE 5.8 GHz BAND | 74 |
| 8.1 ⁷ 8.1 ⁷ | 1.1. OUTPUT POWER 1.2. Maximum Power Spectral Density (PSD) | 75 |
| 0 0.0 | | |
| 9. RA | | 80 |
| 9.1. | | 80 |
| 9.2. | TX ABOVE 1 GHz 802.11a MODE SISO IN THE 5.8 GHz BAND | 81 |
| 9.3. | TX ABOVE 1 GHz 802.11n HT20 MODE 1Tx IN THE 5.8 GHz BAND | 83 |
| 9.4. | TX ABOVE 1 GHz 802.11n HT20 MODE 3Tx IN THE 5.8 GHz BAND | 85 |
| 9.5. | TX ABOVE 1 GHz 802.11n HT20 MODE TxBF 3 TX IN THE 5.8 GHz BAND | 93 |
| 9.6. | TX ABOVE 1 GHz 802.11n HT40 MODE 1Tx IN THE 5.8 GHz BAND | . 101 |
| 9.7. | TX ABOVE 1 GHz 802.11n HT40 MODE 3Tx IN THE 5.8 GHz BAND | . 103 |
| 9.8. | TX ABOVE 1 GHz 802.11n HT40 MODE TxBF 3TX IN THE 5.8 GHz BAND | . 109 |
| 9.9. | TX ABOVE 1 GHz 802.11ac HT80 MODE 1Tx IN THE 5.8 GHz BAND | .115 |
| 9.10. | TX ABOVE 1 GHz 802.11ac HT80 MODE 3Tx IN THE 5.8 GHz BAND | .117 |
| 9.11. | TX ABOVE 1 GHz 802.11ac HT80 MODE TxBF 3Tx IN THE 5.8 GHz BAND | 121 |
| 9.12. | WORST-CASE BELOW 1 GHz | . 125 |
| 9.13. | WORST-CASE ABOVE 18GHz | . 126 |
| 10. AC | POWER LINE CONDUCTED EMISSIONS | .130 |
| 11. SE | TUP PHOTOS | .134 |

Page 4 of 136

1. ATTESTATION OF TEST RESULTS

| | APPLICABLE STANDARDS |
|------------------|---|
| DATE TESTED: | OCTOBER 27 ~ NOVEMBER 12, 2015 DECEMBER 14, 2012 ~ JANUARY 7, 2013 |
| SERIAL NUMBER: | C8Y40240110FHD0AD |
| MODEL: | BCM94360CS |
| EUT DESCRIPTION: | 802.11a/g/n/ac WLAN + Bluetooth PCI-E Custom Combination Card |
| COMPANY NAME: | BROADCOM CORPORATION 190 MATHILDA PLACE SUNNYVALE, CA 94086, U.S.A. |

STANDARD

TEST RESULTS

CFR 47 Part 15 Subpart E

Pass

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

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

Page 5 of 136

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Page 6 of 136

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 D02 v01 and ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

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

| 47173 Benicia Street | 47266 Benicia Street |
|----------------------|----------------------|
| Chamber A | Chamber D |
| Chamber B | Chamber E |
| Chamber C | Chamber F |
| | Chamber G |
| | Chamber H |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

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

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

Page 7 of 136

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 |
| Radiated Disturbance, 1 to 6 GHz | ± 3.86 dB |
| Radiated Disturbance, 6 to 18 GHz | ± 4.23 dB |
| Radiated Disturbance, 18 to 26 GHz | ± 5.30 dB |
| Radiated Disturbance, 26 to 40 GHz | ± 5.23 dB |

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

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Page 8 of 136

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

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

The radio module is manufactured by Broadcom.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

| Frequency Range (MHz) | Mode | Power, Chain 0 (dBm) | Power, Chain 1 (dBm) | Power, Chain 2 (dBm) | Output Power (dBm) | Output Power (mW) |
|--------------------------|---------------------|----------------------------|----------------------------|----------------------------|--------------------------|----------------------|
| 5.8 GHz band, 1TX | | (ubiii) | (ubiii) | (ubiii) | (ubiii) | |
| 5745-5825 | 802.11a HT20 CDD | 19.95 | N/A | N/A | 19.95 | 98.86 |
| 5745-5825 | 802.11n HT20 CDD | 19.50 | N/A | N/A | 19.50 | 89.13 |
| 5755-5795 | 802.11n HT40 CDD | 19.20 | N/A | N/A | 19.20 | 83.18 |
| 5775 | 802.11ac VHT80 CDD | 15.10 | N/A | N/A | 15.10 | 32.36 |
| 5.8 GHz band, 3TX | | | | | | |
| 5745-5825 | 802.11n HT20 CDD | 19.25 | 20.07 | 19.95 | 24.54 | 284.62 |
| 5745-5825 | 802.11n HT20 TxBF | 18.65 | 19.50 | 18.80 | 23.77 | 238.27 |
| 5755-5795 | 802.11n HT40 CDD | 19.00 | 19.70 | 19.54 | 24.19 | 262.71 |
| 5755-5795 | 802.11n HT40 TxBF | 18.40 | 19.00 | 18.30 | 23.35 | 216.22 |
| 5775 | 802.11ac VHT80 CDD | 12.91 | 13.20 | 13.00 | 17.81 | 60.39 |
| 5775 | 802.11ac VHT80 TxBF | 13.10 | 13.40 | 13.10 | 17.97 | 62.71 |

Page 9 of 136

5.3. LIST OF TEST REDUCTION AND MODES COVERING OTHER MODES

List of test reduction (Non Beam-Forming modes)

| Antenna Port Testing | | | | | |
|----------------------|------------------------|------------------------|--|--|--|
| Band | Mode | Covered by | | | |
| 5 GHz bands | 802.11a Legacy 1TX | 802.11n HT20 CDD 3TX | | | |
| 5 GHz bands | 802.11a CDD 2TX | 802.11n HT20 CDD 3TX | | | |
| 5 GHz bands | 802.11a CDD 3TX | 802.11n HT20 CDD 3TX | | | |
| 5 GHz bands | 802.11n HT40 1TX | 802.11n HT40 CDD 3TX | | | |
| 5 GHz bands | 802.11n HT40 CDD 2TX | 802.11n HT40 CDD 3TX | | | |
| 5 GHz bands | 802.11ac VHT80 1TX | 802.11ac VHT80 CDD 3TX | | | |
| 5 GHz bands | 802.11ac VHT80 CDD 2TX | 802.11ac VHT80 CDD 3TX | | | |

| Radiated Testing | | | | | |
|------------------|--------------------------------|------------------------------------|--|--|--|
| Band | Mode | Covered by | | | |
| 5 GHz bands | 802.11a Legacy 1TX (Harmonics) | 802.11n HT20 CDD 3TX (Harmonics) | | | |
| 5 GHz bands | 802.11a CDD 2TX | 802.11n HT20 CDD 3TX | | | |
| 5 GHz bands | 802.11a CDD 3TX | 802.11n HT20 CDD 3TX | | | |
| 5 GHz bands | 802.11n HT20 CDD 2TX | 802.11n HT20 CDD 3TX | | | |
| 5 GHz bands | 802.11n HT40 1TX (Harmonics) | 802.11n HT40 CDD 3TX (Harmonics) | | | |
| 5 GHz bands | 802.11ac VHT80 1TX (Harmonics) | 802.11ac VHT80 CDD 3TX (Harmonics) | | | |
| 5 GHz bands | 802.11ac VHT80 CDD 2TX | 802.11ac VHT80 CDD 3TX | | | |

List of test reduction (Beam-Forming modes)

| Antenna Port Testing | | | | | |
|----------------------|-----------------------|-----------------------|--|--|--|
| Band | Mode | Covered by | | | |
| 5 GHz bands | 802.11n HT40 BF 2Tx | 802.11n HT40 BF 3Tx | | | |
| 5 GHz bands | 802.11ac VHT80 BF 2Tx | 802.11ac VHT80 BF 3Tx | | | |

| Radiated Testing | | | | | |
|------------------|-----------------------|-----------------------|--|--|--|
| Band | Mode | Covered by | | | |
| 5 GHz bands | 802.11a BF 2TX | 802.11n HT20 BF 3Tx | | | |
| 5 GHz bands | 802.11a BF 3TX | 802.11n HT20 BF 3Tx | | | |
| 5 GHz bands | 802.11n HT20 BF 2Tx | 802.11n HT20 BF 3Tx | | | |
| 5 GHz bands | 802.11n HT40 BF 2Tx | 802.11n HT40 BF 3Tx | | | |
| 5 GHz bands | 802.11ac VHT80 BF 2Tx | 802.11ac VHT80 BF 3Tx | | | |

Page 10 of 136

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The following antennas are utilized for this device:

| No. | Antenna Manufacturer | Antenna Type | Model | Peak gain @ 2412, 2422, 2432MHz, | Peak gain (5150- 5250MHz) @5200MHz | Peak gain (5250- 5350MHz) @5320MHz | Peak gain (5470- 5725MHz) @5500, 5700MHz | Peak gain (5725- 5850MHz) @5785, 5805MHz | |
|-----|-------------------------|----------------------------------|--------------------------------|--|--|--|--|--|---------------|
| 1 | Amphenol/Molex | 802.11abgn WLAN Antenna | 613-1143 Wi-Fi1 | 0.12 | 7.04 | 7.09 | 5.03 | 2.66 | Host2 antenna |
| 1 | Amphenol/Molex | 802.11abgn WLAN/BT Antenna | 613-1143 Wi-Fi2 | 5.3 | 6.7 | 7.06 | 6.66 | 5.93 | Host2 antenna |
| 1 | Amphenol/Molex | 802.11abgn WLAN Antenna | 613-1143 Wi-Fi3 & Bluetooth | 4.69 | 3.79 | 3.58 | 3.94 | 6.04 | Host2 antenna |
| | | | | | | | | | |
| 2 | Amphenol/Molex | 802.11abgn WLAN Antenna | 613-1631 Wi-Fi1 | 2.47 | 4.18 | 3.35 | 3.32 | 3.56 | Host1 antenna |
| 2 | Amphenol/Molex | 802.11abgn WLAN Antenna | 613-1631 Wi-Fi2 | 2.64 | 4.22 | 3.44 | 2.41 | 3.68 | Host1 antenna |
| 2 | Amphenol/Molex | 802.11abgn WLAN | 613-1631 Wi-Fi3 & | 4.82 | 4.63 | 3.01 | 4.63 | 4.31 | Host1 antenna |

Antenna mapping:

| WiFi 3 | WiFi 2 | WiFi 1 |
|---------|---------|---------|
| Chain 1 | Chain 0 | Chain 2 |

Antonno

Bluetooth

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. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The purpose of this C2PC is to upgrade the device described under section 5.1 of this report to the new rules per KDB 789033 D02 v01.

For UNII-1, UNII-2 and UNII-2C bands, we have reviewed the original test report (report no. 12U14668-2) and are hereby attesting that all the current technical requirements are still met and all applicable test procedures remain the same. Therefore, the original test report is still applicable and no additional testing is done.

Page 11 of 136

5.7. WORST-CASE CONFIGURATION AND MODE

The EUT was tested as an external module installed in a test jig board connected to a host Laptop PC.

Worst-Case data rates, as provided by the client, were as follows:

For 5.8 GHz Band: 802.11a: 6 Mb/s. 802.11n 20MHz: MCS0. 802.11n 40MHz: MCS0. 802.11n 80MHz: MCS0.

Worst-case mode and channel used for 30-1000 MHz radiated and power line conducted emissions was the mode and channel with the highest output power.

For Radiated Band Edge measurements, preliminary testing showed that the worst case was horizontal polarization for all SISO modes. Therefore, all final measurements were performed with vertical polarization only for those modes. For 3Tx modes, preliminary testing showed that vertical polarization was the worst case for 11n HT20. Therefore, only vertical polarization was tested for this mode.

For all modes with single chain, chain 1 was selected per the software provided by the client. A preliminary investigation was performed on the three chains and chain 1 was found to be worst-case.

Page 12 of 136

5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

| Support Equipment List | | | | | | | | |
|------------------------|--------------|------------|-----------------------|--------|--|--|--|--|
| Description | Manufacturer | Model | Serial Number | FCC ID | | | | |
| Laptop | Lenovo | G560 | CBU4473193 | DoC | | | | |
| AC Adapter | Lenovo | ADP-65KH B | 11S36001646ZZ1001FKY6 | DoC | | | | |
| Adapter Board | Catalyst | MINI2EXP | N/A | N/A | | | | |
| Adapter Board | Broadcom | N/A | N/A | N/A | | | | |

I/O CABLES

| | I/O Cable List | | | | | | | | |
|-------------|----------------|-------------------------|-------------------|-------------|---------------------|-------------------------|--|--|--|
| Cable No | Port | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks | | | |
| 1 | AC | 2 | US 115V | Un-Shielded | 1.0m | NA | | | |
| 2 | DC | 2 | DC | Un-Shielded | 1.8m | Ferrite at laptop's end | | | |

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.

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Page 13 of 136

SETUP DIAGRAM FOR TESTS



Page 14 of 136

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 | T No. | Cal Date | Cal Due | | | |
| Radiated Software | UL | UL EMC | V | 'er 9.5, June 6, | 2015 | | | |
| Conducted Software | UL | ULEMC | V | 'er 9.5, May 17 | 2012 | | | |
| Horn Antenna 1-18GHz | ETS | 3117 | 136 | 01/15/15 | 01/15/16 | | | |
| Horn Antenna 18-26GHz | ARA | SWH-28 | 98 | 12/17/14 | 12/17/15 | | | |
| Horn Antenna 26.5- 40GHz | ARA | MWH-2640/B | 90 | 07/28/15 | 07/28/16 | | | |
| Preamp 10kHz-1000MHz | HP | 8447D | 10 | 01/16/15 | 01/16/16 | | | |
| Preamp 1-8GHz | Miteq | AMF-4D-01000800-30-29P | 782 | 10/22/15 | 10/22/16 | | | |
| Preamp 1-26.5GHz | Agilent | 8449B | 404 | 04/13/15 | 04/13/16 | | | |
| Amplifier, 26-40GHz | Miteq | NSP4000-SP2 | 88 | 04/07/15 | 04/07/16 | | | |
| Spectrum Analyzer 3kHz - 44GHz | Agilent | N9030A | 907 | 05/15/15 | 05/15/16 | | | |
| 3GHz HPF | Micro-Tronics | HPM17543 | 485 | 01/16/15 | 01/16/16 | | | |
| 5GHz LPF | Micro-Tronics | LPS17541 | 482 | 01/16/15 | 01/16/16 | | | |
| 6GHz HPF | Micro-Tronics | HPS17542 | 483 | 01/16/15 | 01/16/16 | | | |
| EMI Test Receiver | Rohde & Schwarz | ECSI 7 | 1124 | 09/30/15 | 09/30/16 | | | |
| Power Meter | Agilent | N1911A | T1268 | 06/07/15 | 06/07/16 | | | |
| Power Sensor | Agilent | N1921A | 1223 | 06/07/15 | 02/06/16 | | | |
| LISN for Conducted Emission | FCC | 50/250-25-2 | 24 | 01/16/15 | 01/16/16 | | | |

Page 15 of 136

7. MEASUREMENT METHODS

On Time and Duty Cycle: KDB 789033 D02 v01, Section B.

6 dB Emission BW: KDB 789033 D02 v01, Section C.2.

Conducted Output Power: KDB 789033 D02 v01, Section E.3.b (Method PM-G), and KDB 662911 D01 v02r01.

Power Spectral Density: KDB 789033 D02 v01, Section F, and KDB 662911 D01 v02r01.

<u>Unwanted emissions in restricted bands</u>: KDB 789033 D02 v01, Sections G.2, G.3, G.4, G.5, and G.6.

<u>Unwanted emissions in non-restricted bands</u>: KDB 789033 D02 v01, Sections G.2, G.3, G.4, and G.5.

Page 16 of 136

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

ON TIME AND DUTY CYCLE RESULTS

| Mode | ON Time | Period | Duty Cycle | Duty | Duty Cycle | 1/B |
|---------------------|----------------|---------|-------------------|--------|--------------------------|-------------|
| | В | | x | Cycle | Correction Factor | Minimum VBW |
| | (msec) | (msec) | (linear) | (%) | (dB) | (kHz) |
| 802.11a CDD | 2.060 | 2.160 | 0.954 | 95.37% | 0.21 | 0.485 |
| 802.11n HT20 CDD | 1.915 | 2.015 | 0.950 | 95.04% | 0.22 | 0.522 |
| 802.11n HT20 TxBF | 23.400 | 26.610 | 0.879 | 87.94% | 0.56 | 0.043 |
| 802.11n HT40 CDD | 0.9430 | 1.0410 | 0.906 | 90.59% | 0.43 | 1.060 |
| 802.11n HT40 TxBF | 25.690 | 28.240 | 0.910 | 90.97% | 0.41 | 0.039 |
| 802.11ac VHT80 CDD | 0.4600 | 0.5581 | 0.824 | 82.42% | 0.84 | 2.174 |
| 802.11ac VHT80 TxBF | 12.3750 | 31.2800 | 0.396 | 39.56% | 4.03 | 0.081 |

Page 17 of 136

DUTY CYCLE PLOTS





Page 18 of 136





Page 19 of 136





Page 20 of 136





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Page 21 of 136





Page 22 of 136



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Page 23 of 136

8.2. 802.11a SISO MODE IN THE 5.8 GHz BAND

8.2.1. OUTPUT POWER

<u>LIMITS</u>

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

This is SISO mode, AG is the highest (worst-case) =6.04 dBi

RESULTS

Antenna Gain and Limit

| Channel | Frequency | Directional | Power |
|---------|-----------|-------------|-------|
| | | Gain | Limit |
| | | for Power | |
| | (MHz) | (dBi) | (dBm) |
| Low | 5745 | 6.04 | 29.96 |
| Mid | 5785 | 6.04 | 29.96 |
| High | 5825 | 6.04 | 29.96 |

Output Power Results

| Channel | Frequency | Chain 0 | Total | Power | Power |
|---------|-----------|---------|--------|-------|--------|
| | | Meas | Corr'd | Limit | Margin |
| | | Power | Power | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dB) |
| Low | 5745 | 18.50 | 18.50 | 29.96 | -11.46 |
| Mid | 5785 | 19.80 | 19.80 | 29.96 | -10.16 |
| High | 5825 | 19.95 | 19.95 | 29.96 | -10.01 |

<u>Note:</u> the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

Page 24 of 136

8.3. 802.11n HT20 CDD SISO MODE IN THE 5.8 GHz BAND

8.3.1. OUTPUT POWER

<u>LIMITS</u>

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

This is SISO mode, AG is the highest (worst-case) =6.04 dBi

RESULTS

Antenna Gain and Limit

| Channel | Frequency | Directional | Power |
|---------|-----------|-------------|-------|
| | | Gain | Limit |
| | | for Power | |
| | (MHz) | (dBi) | (dBm) |
| Low | 5745 | 6.04 | 29.96 |
| Mid | 5785 | 6.04 | 29.96 |
| High | 5825 | 6.04 | 29.96 |

Output Power Results

| Channel | Frequency | Chain 0 | Total | Power | Power |
|---------|-----------|---------|--------|-------|--------|
| | | Meas | Corr'd | Limit | Margin |
| | | Power | Power | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dB) |
| Low | 5745 | 16.50 | 16.50 | 29.96 | -13.46 |
| High | 5825 | 19.50 | 19.50 | 29.96 | -10.46 |

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

Page 25 of 136

8.4. 802.11n HT20 CDD 3Tx MODE IN THE 5.8 GHz BAND

8.4.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

RESULTS

| Channel | Frequency | 6 dB BW 6 dB BW | | 6 dB BW | Minimum |
|---------|-----------|-----------------|---------|---------|---------|
| | | Chain 0 | Chain 1 | Chain 2 | Limit |
| | (MHz) | (MHz) | (MHz) | (MHz) | (MHz) |
| Low | 5745 | 17.595 | 17.640 | 17.550 | 0.5 |
| Mid | 5785 | 17.550 | 17.595 | 17.595 | 0.5 |
| High | 5825 | 17.460 | 17.595 | 17.640 | 0.5 |

Page 26 of 136

6 dB BANDWIDTH, Chain 0





Page 27 of 136



6 dB BANDWIDTH, Chain 1



Page 28 of 136





Page 29 of 136

6 dB BANDWIDTH, Chain 2





Page 30 of 136

| Agilent | 21:41:53 | Dec 14,1 | 2012 | | | | | + | < 1 | Fred/Channel |
|---------------------------|-----------|-------------|--------|----------|-----|--------|----------|---------------|----------------|--|
| e f 20 dBm 'eak | | Atten 2 | 20 dB | | | | ∆ Mkr1 | 17.640 0.8 |) MHz 33 dB | Center Freq 5.82500000 GHz |
|)g | lR • | peluinteres | Innlas | lasalay | mm | ndrado | fulunity | 1 | | Start Freq 5.81150000 GHz |
| .4 3 <i>MM</i> | www | | | | | | | 144A | M MAN | Stop Freq 5.83850000 GHz |
| 5 3m Av | | | | | | | | | | CF Step 2.70000000 MHz <u>Auto M</u> a |
| S2 FC AA | | | | | | | | | | Freq Offset 0.00000000 Hz |
|): `un vp | | | | | | | | | | Signal Track ^{On <u>Of</u>} |
| enter 5.82 | 5 000 GHz | | #\/F | 214/ 300 | kH7 | #5 | oon 20 . | Span 2 | 27 MHz | |

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Page 31 of 136

8.4.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

| Chain 0 | Chain 1 | Chain 2 | Uncorrelated Chains |
|---------|---------|---------|----------------------------|
| Antenna | Antenna | Antenna | Directional |
| Gain | Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) | (dBi) |
| 2.66 | 5.93 | 6.04 | 5.13 |

Page 32 of 136

RESULTS

Antenna Gain and Limit

| Channel | Frequency | Directional | Power | | |
|---------|-----------|-------------|-------|--|--|
| | | Gain Limit | | | |
| | | | | | |
| | (MHz) | (dBi) | (dBm) | | |
| Low | 5745 | 5.13 | 30.00 | | |
| Mid | 5785 | 5.13 | 30.00 | | |
| High | 5825 | 5.13 | 30.00 | | |

Output Power Results

| Channel | Frequency | Chain 0 | Chain 1 | Chain 2 | Total | Power | Power | |
|---------|-----------|---------|---------|---------|--------|-------|--------|--|
| | | Meas | Meas | Meas | Corr'd | Limit | Margin | |
| | | Power | Power | Power | Power | | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dBm) | (dBm) | (dB) | |
| Low | 5745 | 16.80 | 17.30 | 16.90 | 21.78 | 30.00 | -8.22 | |
| Mid | 5785 | 19.25 | 20.07 | 19.95 | 24.54 | 30.00 | -5.46 | |
| High | 5825 | 19.00 | 19.50 | 19.40 | 24.08 | 30.00 | -5.92 | |

<u>Note:</u> the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

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Page 33 of 136

8.4.3. Maximum Power Spectral Density (PSD)

<u>LIMITS</u>

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

| Chain 0 | Chain 1 | Chain 2 | Correlated Chains |
|---------|---------|---------|--------------------------|
| Antenna | Antenna | Antenna | Directional |
| Gain | Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) | (dBi) |
| 2.66 | 5.93 | 6.04 | 9.78 |

Page 34 of 136

RESULTS

Antenna Gain and Limit

| Channel | Frequency | Directional | PSD |
|---------|-----------|-------------|-------|
| | | Gain | Limit |
| | (MHz) | (dBi) | (dBm) |
| Low | 5745 | 9.78 | 26.22 |
| Mid | 5785 | 9.78 | 26.22 |
| High | 5825 | 9.78 | 26.22 |

Duty Cycle CF (dB) 0.22

Included in Calculations of Corr'd PSD

PSD Results

| Channel | Frequency | Chain 0 | Chain 1 | Chain 2 | Total | PSD | PSD |
|---------|-----------|---------|---------|---------|--------|-------|--------|
| | | Meas | Meas | Meas | Corr'd | Limit | Margin |
| | | PSD | PSD | PSD | PSD | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dBm) | (dBm) | (dB) |
| Low | 5745 | 5.82 | 7.10 | 6.52 | 11.50 | 26.22 | -14.71 |
| Mid | 5785 | 6.12 | 6.78 | 6.55 | 11.48 | 26.22 | -14.73 |
| High | 5825 | 4.24 | 6.54 | 7.00 | 11.07 | 26.22 | -15.14 |

Page 35 of 136

PSD, Chain 0

| 🔆 Agile | ent 12:12:03 | Oct 29, | 2015 | | | | | F | ₹ T | Freq/Channel |
|------------------------------|------------------------------|----------------------|---------------|----------|----------------|------|--------|--|----------------|--|
| AFv3.6(10 Ref20dE #Avg | 02315),DV, C Bm | anducted #Atten 2 | 1 B 20 dB | | | | Mkr1 | 5.743 00 5.819 |) GHz dBm | Center Freq 5.74500000 GHz |
| Log 10 dB/ | | uninder | gungaditeente | -1 | , and a second | ···· | andrag | | | Start Freq 5.73000000 GHz |
| 11.3 dB | and the second second second | | | | | | | horas and the second se | www.when | Stop Freq 5.7600000 GHz |
| #PAvg | | | | | | | | | | CF Step 3.00000000 MHz <u>Auto Mar</u> |
| N1 S2 S3 FS_ AA | | | | | | | | | | Freq Clfset 0.00000000 Hz |
| a(f): =Tun Swp – | | | | | | | | | | Signal Track ^{On <u>C:f</u>} |
| Center 5. Res BW | .745 00 GHz 510 kHz | | #VE | 3W 1.5 I | MHz | S | weep 1 | Span 3 ms (601 | 30 MHz pts) | |



Page 36 of 136




Page 37 of 136





Page 38 of 136

| Agilent 11: | IN ∠ L 15:28 (| _OVV Dct 29, 2 | CH 2015 | | | | | R | ιт | Freq/Channel |
|----------------------------------|-------------------|---------------------|---------------------------|----------|-----|-------------|-----------|-------------------|----------------|--|
| AFv3.6(102315) Ref 20 dBm | ,DV, Co # | nducted #Atten 2 | B 0 dB | | | | Mkr1 | 5.743 55 6.518 | i GHz dBm | Certer Freq |
| #Avg Log 10 dB/ | | anterite | anter and a second second | 1 | | - mprayaray | normation | | | Start Freq 5.73000000 GHz |
| Offst 11.3 dB | www.ch | | | | | | | - www. | marting | Stop Freq 5.7600000 GHz |
| #PAvg | | | | | | | | | | CF Step 3.00000000 MHz <u>Auto Man</u> |
| W1 S2 S3 FS AA | | | | | | | | | | Freq Clfset 0.00000000 Hz |
| ¤(f): FTun Swp | | | | | | | | | | Signal Track ^{On <u>C</u>if} |
| Center 5.745 00 #Res BW 510 k |)0 GHz Hz | | #VE | 3W 1.5 I | MHz | <u></u> | weep 1 | Span 3 ms (601 | 80 MHz pts) | |



Page 39 of 136

| PSD, Chain 2 | HIGH CH Oct 29, 2015 | | F | ч т | Freg/Channel |
|---|----------------------------|--------|-------------------------|------------------|--|
| AFv3.6(102315),DV, Co Ref 20 dBm #Avg | anducted B #Atten 20 dB | | Mkr1 5.825 7 7.003 | 0 GHz 3 dBm | Certer Freq 5.82500000 GHz |
| Log 10 dB/ | person and a second second | 1 | | | Start Freq 5.81000000 GHz |
| 11.3 dB | | | human | man | Stop Freq 5.84000000 GHz |
| #PAvg | | | | | CF Step 3.00000000 MHz <u>Auto Man</u> |
| W1 S2 S3 FS AA | | | | | Freq Clfset 0.00000000 Hz |
| ¤(f): FTun Swp | | | | | Signal Track ^{On <u>C</u>!f} |
| Center 5.825 00 GHz #Res BW 510 kHz | #VBW 1 | .5 MHz | Span Sweep 1 ms (60' | 30 MHz 1 pts) | |
| Copyright 2000-2011 A | gilent Technologies | | | | |

Page 40 of 136

8.5.802.11n HT20 TxBF 3TX MODE IN THE 5.8 GHz BAND

8.5.1. OUTPUT POWER

<u>LIMITS</u>

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

| Chain 0 | Chain 1 | Chain 2 | Correlated Chains |
|---------|---------|---------|--------------------------|
| Antenna | Antenna | Antenna | Directional |
| Gain | Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) | (dBi) |
| 2.66 | 5.93 | 6.04 | 9.78 |

Page 41 of 136

Antenna Gain and Limit

| Channel | Frequency | Directional | Power |
|---------|-----------|-------------|-------|
| | | Gain | Limit |
| | | | |
| | (MHz) | (dBi) | (dBm) |
| Low | 5745 | 9.78 | 26.22 |
| Mid | 5785 | 9.78 | 26.22 |
| High | 5825 | 9.78 | 26.22 |

Output Power Results

| Channel | Frequency | Chain 0 | Chain 1 | Chain 2 | Total | Power | Power |
|---------|-----------|---------|---------|---------|--------|-------|--------|
| | | Meas | Meas | Meas | Corr'd | Limit | Margin |
| | | Power | Power | Power | Power | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dBm) | (dBm) | (dB) |
| Low | 5745 | 14.90 | 15.20 | 14.80 | 19.74 | 26.22 | -6.48 |
| Mid | 5785 | 18.65 | 19.50 | 18.80 | 23.77 | 26.22 | -2.45 |
| High | 5825 | 17.10 | 17.45 | 17.00 | 21.96 | 26.22 | -4.26 |

<u>Note:</u> the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

Page 42 of 136

8.6. 802.11n HT40 SISO MODE IN THE 5.8 GHz BAND

8.6.1. OUTPUT POWER

<u>LIMITS</u>

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

This is SISO mode, AG is the highest (worst-case) =6.04 dBi

Page 43 of 136

Antenna Gain and Limit

| Channel | Frequency | Directional | Power |
|---------|-----------|-------------|-------|
| | | Gain | Limit |
| | (MHz) | (dBi) | (dBm) |
| Low | 5755 | 6.04 | 29.96 |
| High | 5795 | 6.04 | 29.96 |

Output Power Results

| Channel | Frequency | Chain 0 | Total | Power | Power |
|---------|-----------|---------|--------|-------|--------|
| | | Meas | Corr'd | Limit | Margin |
| | | Power | Power | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dB) |
| Low | 5755 | 15.30 | 15.30 | 29.96 | -14.66 |
| | | | | | |

<u>Note:</u> the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

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Page 44 of 136

8.7. 802.11n HT40 CDD 3Tx MODE IN THE 5.8 GHz BAND

8.7.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

<u>RESULTS</u>

| Channel | Frequency | 6 dB BW | 6 dB BW | 6 dB BW | Minimum |
|---------|-----------|---------|---------|---------|---------|
| | | Chain 0 | Chain 1 | Chain 2 | Limit |
| | (MHz) | (MHz) | (MHz) | (MHz) | (MHz) |
| Low | 5755 | 36.30 | 36.39 | 36.39 | 0.5 |
| High | 5795 | 36.21 | 36.39 | 36.48 | 0.5 |

Page 45 of 136

6 dB BANDWIDTH, Chain 0





Page 46 of 136

6 dB BANDWIDTH, Chain 1





Page 47 of 136

8.7.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

| Chain 0 | Chain 1 | Chain 2 | Uncorrelated Chains |
|---------|---------|---------|----------------------------|
| Antenna | Antenna | Antenna | Directional |
| Gain | Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) | (dBi) |
| 2.66 | 5.93 | 6.04 | 5.13 |

Page 48 of 136

Antenna Gain and Limit

| Channel | Frequency | Directional | Power |
|---------|-----------|-------------|-------|
| | | Gain | Limit |
| | | | |
| | (MHz) | (dBi) | (dBm) |
| Low | 5755 | 5 1 2 | 30.00 |
| LOW | 5755 | 5.15 | 30.00 |

Output Power Results

| Channel | Frequency | Chain 0 | Chain 1 | Chain 2 | Total | Power | Power |
|---------|-----------|---------|---------|---------|--------|-------|--------|
| | | Meas | Meas | Meas | Corr'd | Limit | Margin |
| | | Power | Power | Power | Power | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dBm) | (dBm) | (dB) |
| Low | 5755 | 15.28 | 15.67 | 15.60 | 20.29 | 30.00 | -9.71 |
| High | 5795 | 19.00 | 19.70 | 19.54 | 24.19 | 30.00 | -5.81 |

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

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Page 49 of 136

8.7.3. Maximum Power Spectral Density (PSD)

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

| Chain 0 | Chain 1 | Chain 2 | Correlated Chains |
|---------|---------|---------|--------------------------|
| Antenna | Antenna | Antenna | Directional |
| Gain | Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) | (dBi) |
| 2.66 | 5.93 | 6.04 | 9.78 |

Page 50 of 136

Antenna Gain and Limit

| Channel | Frequency | Directional | PSD | |
|---------|-----------|-------------|-------|--|
| | | Gain | Limit | |
| | | | | |
| | (MHz) | (dBi) | (dBm) | |
| Low | | | | |
| LOW | 5755 | 9.78 | 26.22 | |

Duty Cycle CF (dB) 0.43

Included in Calculations of Corr'd PSD

PPSD Results

| Channel | Frequency | Chain 0 | Chain 1 | Chain 2 | Total | PSD | PSD |
|---------|-----------|---------|---------|---------|--------|-------|--------|
| | | Meas | Meas | Meas | Corr'd | Limit | Margin |
| | | PSD | PSD | PSD | PSD | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dBm) | (dBm) | (dB) |
| Low | 5755 | 3.18 | 4.33 | 3.67 | 8.95 | 26.22 | -17.27 |
| High | 5795 | 3.09 | 4.45 | 3.69 | 8.98 | 26.22 | -17.24 |

Page 51 of 136





Page 52 of 136





Page 53 of 136

| k Ag | lient 12: | 47:13 | Uct 29, 2 | 2015 | | | | | H | | Freq/Channel |
|-----------------------|---------------------|---------|---------------------|------------|-------------|-----|-------------|----------------|-------------------|----------|---|
| Fv3.6(ef20 Avg | 102315) dBm | ,DV, Co | nducted #Atten 2 | B 20 dB | | | | Mkr1 : | 5.751 42 3.669 | dBm | Certer Freq 5.75500000 GHz |
| og 0 B/ | | proven | - | | 1 Orange | man | and any and | gerne of grave | war and the | | Start Freq 5.73000000 GHz |
| offst 1.5 B | month | | | | | | | | - (| Monagene | Stop Freq 5.78000000 GHz |
| PAvg | | | | | | | | | | | CF Step 5.00000000 MHz <u>Auto Ma</u> |
| /1 S2 3 FS AA | | | | | | | | | | | Freq Olfset 0.00000000 Hz |
| (f): Tun wp | | | | | | | | | | | Signal Track ^{On <u>Ci</u>t} |
| enter Res Bl | 5.755 00 N 510 k |) GHz | | #\/F | 3W 1 5 1 | MH7 | | ween 1 | Span 5 | i0 MHz | |



Page 54 of 136

8.8. 802.11n HT40 TxBF 3TX MODE IN THE 5.8 GHz BAND

8.8.1. OUTPUT POWER

<u>LIMITS</u>

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

| Chain 0 | Chain 1 | Chain 2 | Correlated Chains |
|---------|---------|---------|--------------------------|
| Antenna | Antenna | Antenna | Directional |
| Gain | Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) | (dBi) |
| 2.66 | 5.93 | 6.04 | 9.78 |

Page 55 of 136

Antenna Gain and Limit

| Channel | Frequency | Directional | Power |
|---------|---------------|---------------|----------------|
| | | Gain | Limit |
| | | | |
| | | · · - · · | <i></i> . |
| | (MHz) | (dBi) | (dBm) |
| Low | (MHz) 5755 | (dBi) 9.78 | (dBm) 26.22 |

Output Power Results

| Channel | Frequency | Chain 0 | Chain 1 | Chain 2 | Total | Power | Power |
|---------|-----------|---------|---------|---------|--------|-------|--------|
| | | Meas | Meas | Meas | Corr'd | Limit | Margin |
| | | Power | Power | Power | Power | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dBm) | (dBm) | (dB) |
| Low | 5755 | 14.80 | 15.20 | 14.65 | 19.66 | 26.22 | -6.56 |
| High | 5795 | 18.40 | 19.00 | 18.30 | 23.35 | 26.22 | -2.87 |

Note: the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

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Page 56 of 136

8.8.2. Maximum Power Spectral Density (PSD)

<u>LIMITS</u>

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

| Chain 0 | Chain 1 | Chain 2 | Correlated Chains |
|---------|---------|---------|--------------------------|
| Antenna | Antenna | Antenna | Directional |
| Gain | Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) | (dBi) |
| 2.66 | 5.93 | 6.04 | 9.78 |

Page 57 of 136

Antenna Gain and Limit

| Channel | Frequency | Directional | PSD | |
|---------|----------------------|---------------|----------------|--|
| | | Gain | Limit | |
| | | | | |
| | | | | |
| | (MHz) | (dBi) | (dBm) | |
| Low | (MHz) 5755 | (dBi) 9.78 | (dBm) 26.22 | |

Duty Cycle CF (dB) 0.43

Included in Calculations of Corr'd PSD

PPSD Results

| Channel | Frequency | Chain 0 | Chain 1 | Chain 2 | Total | PSD | PSD |
|---------|-----------|---------|---------|---------|--------|-------|--------|
| | | Meas | Meas | Meas | Corr'd | Limit | Margin |
| | | PSD | PSD | PSD | PSD | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dBm) | (dBm) | (dB) |
| Low | 5755 | 3.18 | 4.33 | 3.67 | 8.95 | 26.22 | -17.27 |
| High | 5795 | 3.09 | 4.45 | 3.69 | 8.98 | 26.22 | -17.24 |

Page 58 of 136





Page 59 of 136





Page 60 of 136

| R Ag | lient 12: | 47:13 | Oct 29, 2 | 2015 | | | | | R | - | Freq/Channel |
|----------------------------|---------------------|-------------|------------------|-------------------|--------|-----|-------------|---------------|-------------------|------------|--|
| APv3.6(Ref 20 (Avg | 102315), dBm | DV, Co | #Atten 2 | в 0 dB | | | | Mkr1 : | 3.669 | GHz dBm | Certer Freq 5.75500000 GHz |
| .og 0 IB/ | | | a and the second | water of the last | | man | ······ ···· | garant digang | warman | | Start Freq 5.73000000 GHz |
|)11st 1.5 IB | manuel | } | | | | | | | -l | ungerge | Stop Freq 5.78000000 GHz |
| PAvg | | | | | | | | | | | CF Step 5.0000000 MHz <u>Auto Ma</u> |
| V1 S2 3 FS AA | | | | | | | | | | | Freq Olfset 0.00000000 Hz |
| (f): Tun Swp | | | | | | | | | | | Signal Track ^{On <u>Cif</u>} |
| enter Res Bl | 5.755 00 W 510 k |) GHz Hz | | #VF | 3W 1 5 | MHz | 5 | ween 1 | Span 5 ms (601 | 0 MHz | |



Page 61 of 136

8.9. 802.11ac HT80 SISO MODE IN THE 5.8 GHz BAND

8.9.1. OUTPUT POWER

<u>LIMITS</u>

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

This is SISO mode, AG is the highest (worst-case) =6.04 dBi

Page 62 of 136

Antenna Gain and Limit

| Channel | Frequency | Directional | Power | |
|---------|-------------|-------------|-------|--|
| | | Gain | Limit | |
| | (MHz) | (dBi) | (dBm) | |
| M: d | F77F | 0.04 | 20.00 | |

Output Power Results

| Channel | Frequency | Chain 0 | Total | Power | Power |
|---------|-----------|---------|--------|-------|--------|
| | | Meas | Corr'd | Limit | Margin |
| | | Power | Power | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dB) |
| Mid | 5775 | 15.10 | 15.10 | 29.96 | -14.86 |

<u>Note:</u> the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

Page 63 of 136

8.10. 802.11ac HT80 CDD 3Tx MODE IN THE 5.8 GHz BAND

8.10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

<u>RESULTS</u>

| Channel | Frequency | 6 dB BW | 6 dB BW | 6 dB BW | Minimum |
|---------|-----------|---------|---------|---------|---------|
| | | Chain 0 | Chain 1 | Chain 2 | Limit |
| | (MHz) | (MHz) | (MHz) | (MHz) | (MHz) |
| Mid | 5775 | 75.520 | 75.710 | 75.520 | 0.5 |

Page 64 of 136

6 dB BANDWIDTH, Chain 0



6 dB BANDWIDTH, Chain 1



Page 65 of 136

6 dB BANDWIDTH, Chain 2



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Page 66 of 136

8.10.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

| Chain 0 | Chain 1 | Chain 2 | Uncorrelated Chains |
|---------|---------|---------|----------------------------|
| Antenna | Antenna | Antenna | Directional |
| Gain | Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) | (dBi) |
| 2.66 | 5.93 | 6.04 | 5.13 |

Page 67 of 136

Antenna Gain and Limit

| Channel | Frequency | Directional | Power |
|---------|-----------|-------------|-------|
| | | Gain | Limit |
| | (MHz) | (dBi) | (dBm) |
| | | | |

Output Power Results

| Channel | Frequency | Chain 0 | Chain 1 | Chain 2 | Total | Power | Power |
|---------|-----------|---------|---------|---------|--------|-------|--------|
| | | Meas | Meas | Meas | Corr'd | Limit | Margin |
| | | Power | Power | Power | Power | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dBm) | (dBm) | (dB) |
| Mid | 5775 | 12.91 | 13.20 | 13.00 | 17.81 | 30.00 | -12.19 |

<u>Note:</u> the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

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Page 68 of 136

8.10.3. Maximum Power Spectral Density (PSD)

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

| Chain 0 | Chain 1 | Chain 2 | Correlated Chains |
|---------|---------|---------|--------------------------|
| Antenna | Antenna | Antenna | Directional |
| Gain | Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) | (dBi) |
| 2.66 | 5.93 | 6.04 | 9.78 |

Page 69 of 136

Antenna Gain and Limit

| Channel | Frequency | Directional | PSD |
|---------|-----------|-------------|-------|
| | | Gain | Limit |
| | (MHz) | (dBi) | (dBm) |
| Mid | 5775 | 9.78 | 26.22 |

| Duty Cycle CF (dB) | 0.84 | Included in Calculations of Corr'd PSD |
|--------------------|------|--|
|--------------------|------|--|

PPSD Results

| Channel | Frequency | Chain 0 | Chain 1 | Chain 2 | Total | PSD | PSD |
|---------|-----------|---------|---------|---------|--------|-------|--------|
| | | Meas | Meas | Meas | Corr'd | Limit | Margin |
| | | PSD | PSD | PSD | PSD | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dBm) | (dBm) | (dB) |
| Mid | 5775 | -1.01 | 0.10 | -0.88 | 5.05 | 26.22 | -21.17 |

Page 70 of 136

| Ag | ilent 13: | 15:28 | Oct 29, 2 | 2015 | | | | | F 700 00 | ₹ T | Freq/Channel |
|---------------------------|--------------------|---------------|---------------------|-------------------|----------|-----|----|---------|--------------------|------------------|--|
| APV3.6(Ref 20 #Avg | 102315) dBm | ,DV, Co | nauctea #Atten 2 | в 0 dB | | | | MKM | -1.010 | dBm | Certer Freq 5.77500000 GHz |
| Log 10 dB/ Offet | | Obs. 1 should | | the second second | | | 1 | | | | Start Freq 5.72500000 GHz |
| II.1 dB | | | | | | | | | | | Stop Freq 5.82500000 GHz |
| #PAvg | source of the | | | | | | | | | and and a second | CF Step 10.0000000 MHz <u>Auto Man</u> |
| N1 S2 S3 FS AA | | | | | | | | | | | Freq Clfset 0.00000000 Hz |
| a(f): FTun Swp | | | | | | | | | | | Signal Track ^{On <u>C</u>!f} |
| Center #Res B | 5.775 0 W 510 k | 0 GHz Hz | | #VE | 3W 1.5 I | MHz | Sw | eep 1.2 | Span 10 ms (601 |)0 MHz pts) | |

Page 71 of 136

| Agilent 13:16:20 Oct | 29, 2015 | RT | Freq/Channel |
|---|----------------------|--|--|
| AFv3.6(102315),DV, Cond Ref 20 dBm #At #Avg | ucted B ten 20 dB | Mkr1 5.762 00 GHz 0.104 dBm | Certer Freq 5.77500000 GHz |
| Log 10 dB/ | | | Start Freq 5.72500000 GHz |
| dB | | | Stop Freq 5.82500000 GHz |
| #PAvg | | | CF Step 10.0000000 MHz Auto Man |
| M1 S2 S3 FS AA | | | Freq Clfset 0.00000000 Hz |
| ¤(1): FTun Swp | | | Signal Track ^{On <u>Cif</u>} |
| Center 5.775 00 GHz #Res BW 510 kHz | #VBW 1.5 MHz | Span 100 MHz Sweep 1.2 ms (601 pts) | |

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Page 72 of 136
| AEv3.6/ | lient 13 102315 | 3:20:05 | Oct 29, | 2015 LB | | | | Mkr1 | 5 786 00 | | Freq/Channel |
|----------------------------|--------------------|--|----------|--------------|--------|-----|-----|----------|--------------------|-------|--|
| Ref 20 o #Avg | dBm | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | #Atten 2 | 20 dB | | | | | -0.880 | dBm | Center Freq 5.77500000 GHz |
| Log 10 1B/ Difet | | | | | | | 1 | | | | Start Freq 5.72500000 GHz |
| 11.1 1B | | | | | | | | | | | Stop Freq 5.82500000 GHz |
| #PAvg | mm | | | | | | | | | | CF Step 10.0000000 MHz Auto Mar |
| 00 N1 S2 S3 FS AA | | | | | | | | | | | Freq Clifset 0.00000000 Hz |
| (f): Tun Swp | | | | | | | | | | | Signal Track ^{On <u>C</u>:f} |
| Center | 5.775 (N 510 | 0 GHz | | <u></u> #\/F | 3W 1 5 | MH7 | Cua | leen 1 ? | Span 10 ms (601 | 0 MHz | |

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Page 73 of 136

8.11. 802.11ac HT80 CDD TxBF MODE IN THE 5.8 GHz BAND

8.11.1. OUTPUT POWER

<u>LIMITS</u>

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

| Chain 0 | Chain 1 | Chain 2 | Correlated Chains |
|---------|---------|---------|--------------------------|
| Antenna | Antenna | Antenna | Directional |
| Gain | Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) | (dBi) |
| 2.66 | 5.93 | 6.04 | 9.78 |

RESULTS

Antenna Gain and Limit

| Channel | Frequency | Directional | Power |
|---------|-----------|-------------|-------|
| | | Gain | Limit |
| | (MHz) | (dBi) | (dBm) |
| | () | (| (|

Output Power Results

| Channel | Frequency | Chain 0 | Chain 1 | Chain 2 | Total | Power | Power |
|---------|-----------|---------|---------|---------|--------|-------|--------|
| | | Meas | Meas | Meas | Corr'd | Limit | Margin |
| | | Power | Power | Power | Power | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dBm) | (dBm) | (dB) |
| Mid | 5775 | 13.10 | 13.40 | 13.10 | 17.97 | 26.22 | -8.25 |

<u>Note:</u> the power readings above were measured with gated method, and the measurement was taken only during the ON time. No duty cycle correction was necessary.

Page 74 of 136

8.11.2. Maximum Power Spectral Density (PSD)

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

| Chain 0 | Chain 1 | Chain 2 | Correlated Chains |
|---------|---------|---------|--------------------------|
| Antenna | Antenna | Antenna | Directional |
| Gain | Gain | Gain | Gain |
| (dBi) | (dBi) | (dBi) | (dBi) |
| 2.66 | 5.93 | 6.04 | 9.78 |

Page 75 of 136

RESULTS

Antenna Gain and Limit

| Channel | Frequency | Directional | PSD | |
|---------|-----------|-------------|-------|--|
| | | Gain | Limit | |
| | (MHz) | (dBi) | (dBm) | |
| Mid | 5775 | 9.78 | 26.22 | |

| Duty Cycle CF (dB) | 0.84 | Included in Calculations of Corr'd PSD |
|--------------------|------|--|
|--------------------|------|--|

PPSD Results

| Channel | Frequency | Chain 0 | Chain 1 | Chain 2 | Total | PSD | PSD |
|---------|-----------|---------|---------|---------|--------|-------|--------|
| | | Meas | Meas | Meas | Corr'd | Limit | Margin |
| | | PSD | PSD | PSD | PSD | | |
| | (MHz) | (dBm) | (dBm) | (dBm) | (dBm) | (dBm) | (dB) |
| Mid | 5775 | -1.01 | 0.10 | -0.88 | 5.05 | 26.22 | -21.17 |

Page 76 of 136

| 🔆 Ag | ilent 13 | :15:28 | Oct 29, 2 | 2015 | | | | | H | | Freq/Channel |
|----------------------------|----------------|---------------|-----------|-----------|----------|-----|----|--------|--------------------|---------|--|
| Ref 20 Avg | 102315) dBm | I,DV, Co i | #Atten 2 | B 0 dB | | | | Mkr1 | 5.786 00 -1.010 | dBm | Center Freq 5.77500000 GHz |
| .og 0 IB/ | | | | | | | 1 | | | | Start Freq 5.72500000 GHz |
| I.1 IB | | | | | | | | | | | Stop Freq 5.82500000 GHz |
| PAvg | Non March | | | | | | | | | AND MAN | CF Step 10.0000000 MHz Auto Mar |
| 00 V1 S2 53 FS AA | | | | | | | | | | | Freq Clfset 0.00000000 Hz |
| (f): Tun Swp | | | | | | | | | | | Signal Track ^{On <u>C</u>!f} |
| enter | 5.775 0 | 0 GHz | | #\/F | 31/1 5 1 | MHz | Sw | en 1 2 | Span 10 ms /601 | 0 MHz | |

Page 77 of 136

| Agilent 13:16:20 Oct | 29, 2015 | RT | Freq/Channel |
|---|----------------------|--|--|
| AFv3.6(102315),DV, Cond Ref 20 dBm #At #Avg | ucted B ten 20 dB | Mkr1 5.762 00 GHz 0.104 dBm | Certer Freq 5.77500000 GHz |
| Log 10 dB/ | | | Start Freq 5.72500000 GHz |
| dB | | | Stop Freq 5.82500000 GHz |
| #PAvg | | | CF Step 10.0000000 MHz Auto Man |
| M1 S2 S3 FS AA | | | Freq Clfset 0.00000000 Hz |
| a(1): FTun Swp | | | Signal Track ^{On <u>Cif</u>} |
| Center 5.775 00 GHz #Res BW 510 kHz | #VBW 1.5 MHz | Span 100 MHz Sweep 1.2 ms (601 pts) | |

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Page 78 of 136

| AEv3.6/ | lient 13 102315 | 3:20:05 | Oct 29, | 2015 LB | | | | Mkr1 | 5 786 00 | | Freq/Channel |
|----------------------------|--------------------|--|----------|--------------|--------|-----|-----|----------|--------------------|-------|--|
| Ref 20 o #Avg | dBm | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | #Atten 2 | 20 dB | | | | | -0.880 | dBm | Center Freq 5.77500000 GHz |
| Log 10 1B/ Difet | | | | | | | 1 | | | | Start Freq 5.72500000 GHz |
| 11.1 1B | | | | | | | | | | | Stop Freq 5.82500000 GHz |
| #PAvg | mm | | | | | | | | | | CF Step 10.0000000 MHz Auto Mar |
| 00 N1 S2 S3 FS AA | | | | | | | | | | | Freq Clifset 0.00000000 Hz |
| (f): Tun Swp | | | | | | | | | | | Signal Track ^{On <u>C</u>:f} |
| Center | 5.775 (N 510 | 0 GHz | | <u></u> #\/F | 3W 1 5 | MH7 | Cua | leen 1 ? | Span 10 ms (601 | 0 MHz | |

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Page 79 of 136

9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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

Page 80 of 136

9.2. TX ABOVE 1 GHz 802.11a MODE SISO IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected Reading | Average Limit | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|------------------|-----|-------------------|-------------|--------------|----------------------|------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| | | (dBuV) | | | | | (dBuV/m) | (dBuV/m) | | | | | | |
| 2 | 5.712 | 23.39 | Pk | 35 | 7.4 | 0 | 65.79 | - | - | 74 | -8.21 | 15 | 363 | н |
| 6 | 5.714 | 9.84 | RMS | 35 | 7.3 | .21 | 52.35 | 54 | -1.65 | - | - | 15 | 363 | Н |
| 1 | 5.715 | 21.68 | Pk | 35 | 7.3 | 0 | 63.98 | - | - | 74 | -10.02 | 15 | 363 | Н |
| 5 | 5.715 | 9.1 | RMS | 35 | 7.3 | .21 | 51.61 | 54 | -2.39 | - | - | 15 | 363 | Н |
| 4 | 5.724 | 35.09 | Pk | 35 | 7.4 | 0 | 77.49 | - | - | 78.2 | 71 | 15 | 363 | н |
| 3 | 5.725 | 34.06 | Pk | 35 | 7.4 | 0 | 76.46 | - | - | 78.2 | -1.74 | 15 | 363 | Н |

Pk - Peak detector

RMS - RMS detection

Page 81 of 136

AUTHORIZED BANDEDGE (HIGH CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|-----|-------------------|-------------|--------------|----------------------------------|------------------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| 3 | 5.85 | 30.55 | Pk | 35.4 | 7.5 | 0 | 73.45 | - | - | 78.2 | -4.75 | 173 | 402 | н |
| 4 | 5.851 | 31.64 | Pk | 35.4 | 7.5 | 0 | 74.54 | - | - | 78.2 | -3.66 | 173 | 402 | н |
| 1 | 5.86 | 20.99 | Pk | 35.4 | 7.5 | 0 | 63.89 | - | - | 74 | -10.11 | 173 | 402 | н |
| 5 | 5.86 | 9.21 | RMS | 35.4 | 7.5 | .21 | 52.32 | 54 | -1.68 | - | - | 173 | 402 | н |
| 6 | 5.86 | 9.86 | RMS | 35.4 | 7.5 | .21 | 52.97 | 54 | -1.03 | - | - | 173 | 402 | н |
| 2 | 5.866 | 23.84 | Pk | 35.4 | 7.5 | 0 | 66.74 | - | - | 74 | -7.26 | 173 | 402 | н |

Pk - Peak detector

RMS - RMS detection

Page 82 of 136

9.3. TX ABOVE 1 GHz 802.11n HT20 MODE 1Tx IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|-----|-------------------|-------------|--------------|----------------------------------|------------------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| 2 | 5.714 | 22.71 | Pk | 35 | 7.3 | 0 | 65.01 | - | - | 74 | -8.99 | 21 | 367 | Н |
| 1 | 5.715 | 20.55 | Pk | 35 | 7.3 | 0 | 62.85 | - | - | 74 | -11.15 | 21 | 367 | Н |
| 5 | 5.715 | 7.89 | RMS | 35 | 7.3 | .22 | 50.41 | 54 | -3.59 | - | - | 21 | 367 | н |
| 6 | 5.715 | 8.34 | RMS | 35 | 7.3 | .22 | 50.86 | 54 | -3.14 | - | - | 21 | 367 | н |
| 4 | 5.724 | 34.58 | Pk | 35 | 7.4 | 0 | 76.98 | - | - | 78.2 | -1.22 | 21 | 367 | н |
| 3 | 5.725 | 31.5 | Pk | 35 | 7.4 | 0 | 73.9 | - | - | 78.2 | -4.3 | 21 | 367 | н |

Pk - Peak detector

RMS - RMS detection

Page 83 of 136

AUTHORIZED BANDEDGE (HIGH CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|-----|-------------------|-------------|--------------|----------------------------------|------------------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| 3 | 5.85 | 32.79 | Pk | 35.4 | 7.5 | 0 | 75.69 | - | - | 78.2 | -2.51 | 173 | 379 | н |
| 4 | 5.85 | 33.99 | Pk | 35.4 | 7.5 | 0 | 76.89 | - | - | 78.2 | -1.31 | 173 | 379 | н |
| 1 | 5.86 | 22.18 | Pk | 35.4 | 7.5 | 0 | 65.08 | - | - | 74 | -8.92 | 173 | 379 | н |
| 5 | 5.86 | 9.28 | RMS | 35.4 | 7.5 | .22 | 52.4 | 54 | -1.6 | - | - | 173 | 379 | н |
| 6 | 5.86 | 9.37 | RMS | 35.4 | 7.5 | .22 | 52.49 | 54 | -1.51 | - | - | 173 | 379 | н |
| 2 | 5.861 | 26.06 | Pk | 35.4 | 7.5 | 0 | 68.96 | - | - | 74 | -5.04 | 173 | 379 | н |

Pk - Peak detector

RMS - RMS detection

Page 84 of 136

9.4. TX ABOVE 1 GHz 802.11n HT20 MODE 3Tx IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AF T345 (dB/m) | Bypass (dB) | Conversion Factor (dB) | Corrected Reading EIRP | Peak Limit (dBm) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|---------------------------|-----|-------------------|----------------|---------------------------|------------------------------|---------------------|-------------------|-------------------|----------------|----------|
| 2 | 5.724 | -71.75 | Pk | 35 | 7.4 | 11.8 | -17.55 | -17 | 55 | 62 | 138 | V |
| 1 | 5.725 | -75.41 | Pk | 35 | 7.4 | 11.8 | -21.21 | -17 | -4.21 | 62 | 138 | V |

Pk - Peak detector

Page 85 of 136

AUTHORIZED BANDEDGE (HIGH CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|-----|-------------------|-------------|--------------|----------------------------------|------------------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| 3 | 5.85 | 30.43 | Pk | 35.4 | 7.5 | 0 | 73.33 | - | - | 78.2 | -4.87 | 164 | 244 | V |
| 4 | 5.85 | 34.78 | Pk | 35.4 | 7.5 | 0 | 77.68 | - | - | 78.2 | 52 | 164 | 244 | V |
| 1 | 5.86 | 22.44 | Pk | 35.4 | 7.5 | 0 | 65.34 | - | - | 74 | -8.66 | 164 | 244 | V |
| 2 | 5.86 | 28.26 | Pk | 35.4 | 7.5 | 0 | 71.16 | - | - | 74 | -2.84 | 164 | 244 | V |
| 5 | 5.86 | 7.64 | RMS | 35.4 | 7.5 | .22 | 50.76 | 54 | -3.24 | - | - | 164 | 244 | V |
| 6 | 5.86 | 7.78 | RMS | 35.4 | 7.5 | .22 | 50.9 | 54 | -3.1 | - | - | 164 | 244 | V |

Pk - Peak detector

RMS - RMS detection

Page 86 of 136

HARMONICS AND SPURIOUS EMISSIONS





Page 87 of 136

<u>DATA</u>

Trace Markers

| Marker | Frequency (GHz) | Meter | Det | AF T345 (dB/m) | Amp/Cbl/ | DC Corr (dB) | Corrected | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit | PK Margin (dB) | UNII Non- Restricted | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|--------|------|-------------------|----------|-----------------|-----------|-----------------------|----------------|------------|-------------------|-------------------------|-------------------|-------------------|----------------|----------|
| | (unit) | (dBuV) | | (00/11) | (dB) | (00) | (dBuV/m) | (0001711) | (0.0) | (0001)11) | (00) | (dBuV/m) | (00) | (5683) | (c) | |
| 1 | * 1.099 | 54.24 | PK-U | 27.6 | -35.5 | 0 | 46.34 | - | - | 74 | -27.66 | - | - | 294 | 221 | Н |
| | * 1.099 | 43.68 | ADR | 27.6 | -35.5 | .22 | 36 | 54 | -18 | - | - | - | - | 294 | 221 | н |
| 11 | * 11.494 | 46.52 | PK-U | 38.3 | -25.4 | 0 | 59.42 | - | - | 74 | -14.58 | - | - | 161 | 197 | V |
| | * 11.489 | 33.16 | ADR | 38.3 | -25.4 | .22 | 46.28 | 54 | -7.72 | - | - | - | - | 161 | 197 | V |
| 3 | * 2.657 | 48.87 | PK-U | 32.7 | -33.5 | 0 | 48.07 | - | - | 74 | -25.93 | - | - | 355 | 106 | V |
| | * 2.655 | 31.66 | ADR | 32.7 | -33.5 | .22 | 31.08 | 54 | -22.92 | - | - | - | - | 355 | 106 | V |
| 4 | * 3.83 | 44.4 | PK-U | 33.4 | -33 | 0 | 44.8 | - | - | 74 | -29.2 | - | - | 314 | 141 | V |
| | * 3.83 | 35.48 | ADR | 33.4 | -33 | .22 | 36.1 | 54 | -17.9 | - | - | - | - | 314 | 141 | V |
| 12 | 17.233 | 41.41 | PK-U | 41.1 | -21.7 | 0 | 60.81 | - | - | - | - | 68.2 | -7.39 | 135 | 308 | V |
| 2 | 2.124 | 50.29 | PK-U | 31.6 | -35 | 0 | 46.89 | - | - | - | - | 68.2 | -21.31 | 33 | 121 | V |
| 5 | 5.504 | 49.25 | PK-U | 34.5 | -20.7 | 0 | 63.05 | - | - | - | - | 68.2 | -5.15 | 175 | 257 | V |
| 6 | 5.594 | 44.52 | PK-U | 34.7 | -20.8 | 0 | 58.42 | - | - | - | - | 68.2 | -9.78 | 356 | 122 | V |
| 7 | **5.666 | 37.39 | Pk | 34.9 | -20.7 | 0 | 51.59 | - | - | - | - | 68.2 | -16.61 | 0-360 | 101 | V |
| 8 | ***5.826 | 37.21 | Pk | 35.3 | -20.7 | 0 | 51.81 | - | - | - | - | - | - | 0-360 | 200 | V |
| 9 | 5.903 | 43.65 | PK-U | 35.5 | -20.9 | 0 | 58.25 | - | - | - | - | 68.2 | -9.95 | 2 | 103 | V |
| 10 | 6.224 | 49.14 | PK-U | 35.5 | -31.5 | 0 | 53.14 | - | - | - | - | 68.2 | -15.06 | 204 | 269 | V |

* - indicates frequency in CFR15.205 Restricted Band

** - indicates frequency covered by the radiated band edge

*** - indicates frequency in the authorized band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

Page 88 of 136





Page 89 of 136

<u>DATA</u>

Trace Markers

| Marker | Frequency | Meter | Det | AF T345 | Amp/Cbl/ | DC Corr | Corrected | Avg Limit | Margin | Peak Limit | PK Margin | UNII Non- | PK Margin | Azimuth | Height | Polarity |
|--------|-----------|---------|------|---------|----------|---------|-----------|-----------|--------|------------|-----------|------------|-----------|---------|--------|----------|
| | (GHz) | Reading | | (dB/m) | Fltr/Pad | (dB) | Reading | (dBuV/m) | (dB) | (dBuV/m) | (dB) | Restricted | (dB) | (Degs) | (cm) | |
| | | (dBuV) | | | (dB) | | (dBuV/m) | | | | | (dBuV/m) | | | | |
| 8 | * 11.573 | 47.34 | PK-U | 38.4 | -24.5 | 0 | 61.24 | - | - | 74 | -12.76 | - | - | 163 | 209 | V |
| | * 11.572 | 35.89 | ADR | 38.4 | -24.6 | .22 | 49.91 | 54 | -4.09 | - | - | - | - | 163 | 209 | V |
| 1 | 5.301 | 46.56 | PK-U | 34.4 | -19.7 | 0 | 61.26 | - | - | - | - | 68.2 | -6.94 | 256 | 302 | V |
| 2 | 5.536 | 46.08 | PK-U | 34.6 | -20.7 | 0 | 59.98 | - | - | - | - | 68.2 | -8.22 | 353 | 117 | V |
| 3 | 5.626 | 47.19 | PK-U | 34.8 | -20.9 | 0 | 61.09 | - | - | - | - | 68.2 | -7.11 | 189 | 266 | V |
| 4 | 5.707 | 49.95 | PK-U | 35 | -21 | 0 | 63.95 | - | - | - | - | 68.2 | -4.25 | 189 | 267 | V |
| 5 | 5.862 | 48.46 | PK-U | 35.4 | -20.8 | 0 | 63.06 | - | - | - | - | 68.2 | -5.14 | 181 | 270 | V |
| 6 | 5.943 | 44.35 | PK-U | 35.6 | -20.8 | 0 | 59.15 | - | - | - | - | 68.2 | -9.05 | 0 | 101 | V |
| 7 | 6.268 | 50.76 | PK-U | 35.5 | -31.6 | 0 | 54.66 | - | - | - | - | 68.2 | -13.54 | 188 | 292 | V |
| 9 | 17.348 | 41.35 | PK-U | 40.8 | -21.5 | 0 | 60.65 | - | - | - | - | 68.2 | -7.55 | 133 | 302 | V |

* - indicates frequency in CFR15.205 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

Page 90 of 136





Page 91 of 136

DATA

Trace Markers

| Marker | Frequency | Meter | Det | AF T345 | Amp/Cbl/ | DC Corr | Corrected | Avg Limit | Margin | Peak Limit | PK Margin | UNII Non- | PK Margin | Azimuth | Height | Polarity |
|--------|-----------|---------|------|---------|----------|---------|-----------|-----------|--------|------------|-----------|------------|-----------|---------|--------|----------|
| | (GHz) | Reading | | (dB/m) | Fltr/Pad | (dB) | Reading | (dBuV/m) | (dB) | (dBuV/m) | (dB) | Restricted | (dB) | (Degs) | (cm) | |
| | | (dBuV) | | | (dB) | | (dBuV/m) | | | | | (dBuV/m) | | | | |
| 8 | * 11.651 | 48.48 | PK-U | 38.5 | -24.8 | 0 | 62.18 | - | - | 74 | -11.82 | - | - | 162 | 212 | V |
| | * 11.651 | 35.86 | ADR | 38.5 | -24.8 | .22 | 49.78 | 54 | -4.22 | - | - | - | - | 162 | 212 | V |
| 1 | 5.338 | 46.28 | PK-U | 34.4 | -19.8 | 0 | 60.88 | - | - | | - | 68.2 | -7.32 | 246 | 266 | V |
| 2 | 5.581 | 49.89 | PK-U | 34.7 | -20.5 | 0 | 64.09 | - | - | - | - | 68.2 | -4.11 | 174 | 310 | V |
| 3 | 5.664 | 44.62 | PK-U | 34.9 | -21.2 | 0 | 58.32 | - | - | - | - | 68.2 | -9.88 | 357 | 101 | V |
| 4 | ***5.747 | 37.69 | Pk | 35.1 | -21 | 0 | 51.79 | - | - | - | - | - | - | 0-360 | 199 | V |
| 5 | **5.912 | 38.38 | Pk | 35.5 | -20.6 | 0 | 53.28 | - | - | • | - | 68.2 | -14.92 | 0-360 | 199 | V |
| 6 | **5.981 | 36.46 | Pk | 35.6 | -20.7 | 0 | 51.36 | - | - | - | - | 68.2 | -16.84 | 0-360 | 199 | V |
| 7 | 6.309 | 51.34 | PK-U | 35.6 | -31.3 | 0 | 55.64 | - | - | - | - | 68.2 | -12.56 | 193 | 251 | V |
| 9 | 17.463 | 43.1 | PK-U | 40.7 | -20.9 | 0 | 62.9 | - | - | - | - | 68.2 | -5.3 | 123 | 276 | V |

* - indicates frequency in CFR15.205 Restricted Band

** - indicates frequency covered by the radiated band edge

*** - indicates frequency in the authorized band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

Page 92 of 136

9.5. TX ABOVE 1 GHz 802.11n HT20 MODE TxBF 3 TX IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|-----|-------------------|-------------|--------------|----------------------------------|------------------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| 1 | 5.715 | 19.77 | Pk | 35 | 7.3 | 0 | 62.07 | - | - | 74 | -11.93 | 299 | 368 | V |
| 2 | 5.715 | 21.28 | Pk | 35 | 7.3 | 0 | 63.58 | - | - | 74 | -10.42 | 299 | 368 | V |
| 5 | 5.715 | 6.89 | RMS | 35 | 7.3 | .56 | 49.75 | 54 | -4.25 | - | - | 299 | 368 | V |
| 6 | 5.715 | 7.56 | RMS | 35 | 7.3 | .56 | 50.42 | 54 | -3.58 | - | - | 299 | 368 | V |
| 4 | 5.724 | 35.68 | Pk | 35 | 7.4 | 0 | 78.08 | - | - | 78.2 | 12 | 299 | 368 | V |
| 3 | 5.725 | 33.33 | Pk | 35 | 7.4 | 0 | 75.73 | - | - | 78.2 | -2.47 | 299 | 368 | V |

Pk - Peak detector

RMS - RMS detection

Page 93 of 136

AUTHORIZED BANDEDGE (HIGH CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|-----|-------------------|-------------|--------------|----------------------------------|------------------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| 3 | 5.85 | 34.09 | Pk | 35.4 | 7.5 | 0 | 76.99 | - | - | 78.2 | -1.21 | 305 | 301 | V |
| 4 | 5.851 | 34.79 | Pk | 35.4 | 7.5 | 0 | 77.69 | - | - | 78.2 | 51 | 305 | 301 | V |
| 1 | 5.86 | 19.17 | Pk | 35.4 | 7.5 | 0 | 62.07 | - | - | 74 | -11.93 | 305 | 301 | V |
| 2 | 5.86 | 26.13 | Pk | 35.4 | 7.5 | 0 | 69.03 | - | - | 74 | -4.97 | 305 | 301 | V |
| 5 | 5.86 | 8.07 | RMS | 35.4 | 7.5 | .56 | 51.53 | 54 | -2.47 | - | - | 305 | 301 | V |
| 6 | 5.912 | 8.79 | RMS | 35.5 | 7.5 | .56 | 52.35 | 54 | -1.65 | - | - | 305 | 301 | V |

Pk - Peak detector

RMS - RMS detection

Page 94 of 136

HARMONICS AND SPURIOUS EMISSIONS





Page 95 of 136

DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading | Det | AF T345 (dB/m) | Amp/Cbl/ Fltr/Pad | DC Corr (dB) | Corrected Reading | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non- Restricted | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|------------------|------|-------------------|----------------------|-----------------|----------------------|-----------------------|----------------|------------------------|-------------------|-------------------------|-------------------|-------------------|----------------|----------|
| | | (dBuV) | | | (dB) | | (dBuV/m) | | | | | (dBuV/m) | | | | |
| 6 | * 11.5 | 42.88 | PK-U | 38.3 | -25.3 | 0 | 55.88 | - | - | 74 | -18.12 | - | - | 291 | 224 | V |
| | * 11.5 | 30.91 | ADR | 38.3 | -25.3 | .56 | 44.47 | 54 | -9.53 | - | - | - | - | 291 | 224 | V |
| 1 | 5.498 | 50.38 | PK-U | 34.5 | -20.6 | 0 | 64.28 | - | - | - | - | 68.2 | -3.92 | 321 | 268 | V |
| 2 | **5.663 | 40.2 | Pk | 34.9 | -21 | 0 | 54.1 | - | - | - | - | 68.2 | -14.1 | 0-360 | 199 | V |
| 3 | ***5.826 | 39.14 | Pk | 35.3 | -20.8 | 0 | 53.64 | - | - | - | - | - | - | 0-360 | 199 | V |
| 4 | 5.912 | 46.78 | PK-U | 35.5 | -20.7 | 0 | 61.58 | - | - | - | - | 68.2 | -6.62 | 311 | 271 | V |
| 5 | 6.222 | 51.39 | PK-U | 35.5 | -31.4 | 0 | 55.49 | - | | • | • | 68.2 | -12.71 | 326 | 246 | V |
| 7 | 17.237 | 43.03 | PK-U | 41.1 | -21.7 | 0 | 62.43 | - | - | - | - | 68.2 | -5.77 | 320 | 230 | V |

* - indicates frequency in CFR15.205 Restricted Band

** - indicates frequency covered by the radiated band edge

*** - indicates frequency within the authorized band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average





Page 97 of 136

DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/ Fitr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non- Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|------|-------------------|------------------------------|-----------------|----------------------------------|-----------------------|----------------|------------------------|-------------------|-------------------------------------|-------------------|-------------------|----------------|----------|
| 7 | * 11.57 | 45.92 | PK-U | 38.4 | -24.6 | 0 | 59.72 | - | - | 74 | -14.28 | - | - | 312 | 381 | н |
| | * 11.57 | 32.95 | ADR | 38.4 | -24.6 | .56 | 47.31 | 54 | -6.69 | - | - | - | - | 312 | 381 | Н |
| 1 | 5.546 | 49.86 | PK-U | 34.6 | -20.8 | 0 | 63.66 | - | - | - | - | 68.2 | -4.54 | 325 | 265 | V |
| 2 | 5.623 | 47.3 | PK-U | 34.8 | -20.7 | 0 | 61.4 | - | - | - | - | 68.2 | -6.8 | 319 | 281 | V |
| 3 | 5.708 | 51.47 | PK-U | 35 | -21 | 0 | 65.47 | - | - | - | - | 68.2 | -2.73 | 317 | 260 | V |
| 4 | 5.864 | 50.83 | PK-U | 35.4 | -20.8 | 0 | 65.43 | - | - | - | - | 68.2 | -2.77 | 315 | 259 | V |
| 5 | 5.939 | 47.48 | PK-U | 35.6 | -20.8 | 0 | 62.28 | - | - | - | - | 68.2 | -5.92 | 312 | 278 | V |
| 6 | 6.267 | 51.02 | PK-U | 35.5 | -31.6 | 0 | 54.92 | - | - | - | - | 68.2 | -13.28 | 326 | 244 | V |
| 8 | 17.356 | 39.09 | PK-U | 40.8 | -21.2 | 0 | 58.69 | - | - | - | - | 68.2 | -9.51 | 320 | 292 | V |

* - indicates frequency in CFR15.205 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

Page 98 of 136





Page 99 of 136

DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/ Fitr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non- Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|------|-------------------|------------------------------|-----------------|----------------------------------|-----------------------|----------------|------------------------|-------------------|-------------------------------------|-------------------|-------------------|----------------|----------|
| 7 | * 11.647 | 45.5 | PK-U | 38.5 | -24.8 | 0 | 59.2 | - | - | 74 | -14.8 | - | - | 298 | 209 | V |
| | * 11.646 | 32.93 | ADR | 38.5 | -24.7 | .56 | 47.29 | 54 | -6.71 | - | - | - | - | 298 | 209 | V |
| 1 | 5.575 | 51.53 | PK-U | 34.7 | -20.8 | 0 | 65.43 | - | - | - | - | 68.2 | -2.77 | 325 | 262 | V |
| 2 | 5.663 | 48.18 | PK-U | 34.9 | -21.1 | 0 | 61.98 | - | - | - | - | 68.2 | -6.22 | 319 | 258 | V |
| 3 | ***5.743 | 40.52 | Pk | 35.1 | -21.2 | 0 | 54.42 | - | - | | - | - | - | 0-360 | 200 | V |
| 4 | **5.907 | 40.44 | Pk | 35.5 | -20.8 | 0 | 55.14 | - | - | - | - | 68.2 | -13.06 | 0-360 | 200 | V |
| 5 | **5.988 | 35.88 | Pk | 35.6 | -20.9 | 0 | 50.58 | - | - | - | - | 68.2 | -17.62 | 0-360 | 200 | V |
| 6 | 6.305 | 51.58 | PK-U | 35.6 | -31.3 | 0 | 55.88 | - | | • | - | 68.2 | -12.32 | 8 | 266 | V |
| 8 | 17.467 | 41.81 | PK-U | 40.7 | -21 | 0 | 61.51 | - | - | - | - | 68.2 | -6.69 | 312 | 217 | V |

* - indicates frequency in CFR15.205 Restricted Band

** - indicates frequency covered by the radiated band edge

*** - indicates frequency within the authorized band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

Page 100 of 136

9.6. TX ABOVE 1 GHz 802.11n HT40 MODE 1Tx IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected | Average Limit | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|------------------|-----|-------------------|-------------|--------------|-----------|------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| | () | (dBuV) | | (,, | | | (dBuV/m) | (dBuV/m) | () | (,, | () | (=====) | (, | |
| 2 | 5.714 | 27.91 | Pk | 35 | 7.3 | 0 | 70.21 | - | - | 74 | -3.79 | 22 | 367 | Н |
| 4 | 5.714 | 27.91 | Pk | 35 | 7.3 | 0 | 70.21 | - | - | 74 | -3.79 | 22 | 367 | Н |
| 1 | 5.715 | 23.03 | Pk | 35 | 7.3 | 0 | 65.33 | - | - | 74 | -8.67 | 22 | 367 | Н |
| 5 | 5.715 | 10.01 | RMS | 35 | 7.3 | .43 | 52.74 | 54 | -1.26 | - | - | 22 | 367 | Н |
| 6 | 5.715 | 10.57 | RMS | 35 | 7.3 | .43 | 53.3 | 54 | 7 | - | - | 22 | 367 | Н |
| 3 | 5.725 | 27.02 | Pk | 35 | 7.4 | 0 | 69.42 | - | - | 78.2 | -8.78 | 22 | 367 | Н |

Pk - Peak detector

RMS - RMS detection

Page 101 of 136

AUTHORIZED BANDEDGE (HIGH CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|-----|-------------------|-------------|--------------|----------------------------------|------------------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| 3 | 5.85 | 26.12 | Pk | 35.4 | 7.5 | 0 | 69.02 | - | - | 78.2 | -9.18 | 166 | 400 | Н |
| 1 | 5.86 | 24.46 | Pk | 35.4 | 7.5 | 0 | 67.36 | - | - | 74 | -6.64 | 166 | 400 | Н |
| 5 | 5.86 | 9.23 | RMS | 35.4 | 7.5 | .43 | 52.56 | 54 | -1.44 | - | - | 166 | 400 | н |
| 6 | 5.86 | 9.64 | RMS | 35.4 | 7.5 | .43 | 52.97 | 54 | -1.03 | - | - | 166 | 400 | Н |
| 2 | 5.864 | 25.84 | Pk | 35.4 | 7.5 | 0 | 68.74 | - | - | 74 | -5.26 | 166 | 400 | н |
| 4 | 5.864 | 25.84 | Pk | 35.4 | 7.5 | 0 | 68.74 | - | - | 74 | -5.26 | 166 | 400 | Н |

Pk - Peak detector

RMS - RMS detection

Page 102 of 136

9.7. TX ABOVE 1 GHz 802.11n HT40 MODE 3Tx IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|-----|-------------------|-------------|--------------|----------------------------------|------------------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| 1 | 5.715 | 24.77 | Pk | 35 | 7.3 | 0 | 67.07 | - | - | 74 | -6.93 | 347 | 113 | v |
| 2 | 5.715 | 29.17 | Pk | 35 | 7.3 | 0 | 71.47 | - | - | 74 | -2.53 | 347 | 113 | V |
| 4 | 5.715 | 29.17 | Pk | 35 | 7.3 | 0 | 71.47 | - | - | 74 | -2.53 | 347 | 113 | V |
| 5 | 5.715 | 10.17 | RMS | 35 | 7.3 | .43 | 52.9 | 54 | -1.1 | - | - | 347 | 113 | V |
| 6 | 5.715 | 10.41 | RMS | 35 | 7.3 | .43 | 53.14 | 54 | 86 | - | - | 347 | 113 | V |
| 8 | 5.721 | 15.41 | RMS | 35 | 7.4 | .43 | 58.24 | - | - | - | - | 347 | 113 | V |
| 3 | 5.725 | 29.48 | Pk | 35 | 7.4 | 0 | 71.88 | - | - | 78.2 | -6.32 | 347 | 113 | V |
| 7 | 5.725 | 14.39 | RMS | 35 | 7.4 | .43 | 57.22 | - | - | - | - | 347 | 113 | V |

Pk - Peak detector

RMS - RMS detection

Page 103 of 136

AUTHORIZED BANDEDGE (HIGH CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|-----|-------------------|-------------|--------------|----------------------------------|------------------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| 3 | 5.85 | 23.78 | Pk | 35.4 | 7.5 | 0 | 66.68 | - | - | 78.2 | -11.52 | 156 | 392 | Н |
| 7 | 5.85 | 11.39 | RMS | 35.4 | 7.5 | .43 | 54.72 | - | - | - | - | 156 | 392 | Н |
| 8 | 5.853 | 14.35 | RMS | 35.4 | 7.4 | .43 | 57.58 | - | - | - | - | 156 | 392 | Н |
| 1 | 5.86 | 22.58 | Pk | 35.4 | 7.5 | 0 | 65.48 | - | - | 74 | -8.52 | 156 | 392 | Н |
| 5 | 5.86 | 8.23 | RMS | 35.4 | 7.5 | .43 | 51.56 | 54 | -2.44 | - | - | 156 | 392 | Н |
| 6 | 5.862 | 9.84 | RMS | 35.4 | 7.5 | .43 | 53.17 | 54 | 83 | - | - | 156 | 392 | Н |
| 2 | 5.863 | 28.51 | Pk | 35.4 | 7.5 | 0 | 71.41 | - | - | 74 | -2.59 | 156 | 392 | н |
| 4 | 5.863 | 28.51 | Pk | 35.4 | 7.5 | 0 | 71.41 | - | - | 74 | -2.59 | 156 | 392 | Н |

Pk - Peak detector

RMS - RMS detection

Page 104 of 136

HARMONICS AND SPURIOUS EMISSIONS





Page 105 of 136

DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/ Fitr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non- Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|------|-------------------|------------------------------|-----------------|----------------------------------|-----------------------|----------------|------------------------|-------------------|-------------------------------------|-------------------|-------------------|----------------|----------|
| 2 | * 11.508 | 40.65 | PK-U | 38.3 | -25.3 | 0 | 53.65 | - | - | 74 | -20.35 | - | - | 158 | 245 | н |
| | * 11.508 | 28.04 | ADR | 38.3 | -25.3 | .43 | 41.47 | 54 | -12.53 | - | - | - | - | 158 | 245 | н |
| 5 | * 11.513 | 44.76 | PK-U | 38.3 | -25.2 | 0 | 57.86 | - | - | 74 | -16.14 | - | - | 163 | 204 | V |
| | * 11.508 | 33.02 | ADR | 38.3 | -25.3 | .43 | 46.45 | 54 | -7.55 | - | - | - | - | 163 | 204 | V |
| 1 | 6.714 | 42.35 | PK-U | 35.9 | -31 | 0 | 47.25 | - | - | - | - | 68.2 | -20.95 | 154 | 225 | н |
| 4 | 6.714 | 41.83 | PK-U | 35.9 | -31 | 0 | 46.73 | - | - | - | - | 68.2 | -21.47 | 136 | 101 | V |
| 6 | 17.268 | 37.4 | PK-U | 41 | -21.6 | 0 | 56.8 | - | - | - | - | 68.2 | -11.4 | 139 | 317 | V |
| 3 | 17.254 | 37.27 | PK-U | 41 | -21.5 | 0 | 56.77 | - | - | - | - | 68.2 | -11.43 | 133 | 202 | н |

* - indicates frequency in CFR15.205 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

Page 106 of 136





Page 107 of 136

<u>DATA</u>

Trace Markers

| Marker | Frequency | Meter | Det | AF T345 | Amp/Cbl/ | DC Corr | Corrected | Avg Limit | Margin | Peak Limit | PK Margin | UNII Non- | PK Margin | Azimuth | Height | Polarity |
|--------|-----------|---------|------|---------|----------|---------|-----------|-----------|--------|------------|-----------|------------|-----------|---------|--------|----------|
| | (GHz) | Reading | | (dB/m) | Fitr/Pad | (dB) | Reading | (dBuV/m) | (dB) | (dBuV/m) | (dB) | Restricted | (dB) | (Degs) | (cm) | |
| | | (dBuV) | | | (dB) | | (dBuV/m) | | | | | (dBuV/m) | | | | |
| 1 | * 4.823 | 44.75 | PK-U | 34.3 | -32.1 | 0 | 46.95 | - | - | 74 | -27.05 | - | - | 346 | 102 | V |
| | * 4.829 | 34.8 | ADR | 34.3 | -32.1 | .43 | 37.43 | 54 | -16.57 | - | - | - | - | 346 | 102 | V |
| з | * 11.606 | 39.83 | PK-U | 38.4 | -24.6 | 0 | 53.63 | - | - | 74 | -20.37 | - | - | 155 | 361 | н |
| | * 11.591 | 28.53 | ADR | 38.4 | -24.7 | .43 | 42.66 | 54 | -11.34 | - | - | - | | 155 | 361 | н |
| 5 | * 11.593 | 44.89 | PK-U | 38.4 | -24.6 | 0 | 58.69 | - | - | 74 | -15.31 | - | - | 124 | 315 | V |
| | * 11.591 | 33.6 | ADR | 38.4 | -24.7 | .43 | 47.73 | 54 | -6.27 | - | - | - | - | 124 | 315 | V |
| 2 | **5.947 | 35.64 | Pk | 35.6 | -20.8 | 0 | 50.44 | - | - | - | - | 68.2 | -17.76 | 0-360 | 101 | V |
| 4 | 17.379 | 38.75 | PK-U | 40.8 | -20.7 | 0 | 58.85 | - | - | • | - | 68.2 | -9.35 | 176 | 202 | V |
| 6 | 17.385 | 37.33 | PK-U | 40.8 | -20.8 | 0 | 57.33 | - | | - | - | 68.2 | -10.87 | 128 | 205 | н |

* - indicates frequency in CFR15.205/Restricted Band

** - indicates frequency covered by radiated band edge

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

Page 108 of 136
9.8. TX ABOVE 1 GHz 802.11n HT40 MODE TxBF 3TX IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|-----|-------------------|-------------|--------------|----------------------------------|------------------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| 1 | 5.715 | 24.84 | Pk | 35 | 7.3 | 0 | 67.14 | - | - | 74 | -6.86 | 223 | 104 | V |
| 2 | 5.715 | 26.79 | Pk | 35 | 7.3 | 0 | 69.09 | - | - | 74 | -4.91 | 223 | 104 | V |
| 5 | 5.715 | 10.15 | RMS | 35 | 7.3 | .41 | 52.86 | 54 | -1.14 | - | - | 223 | 104 | V |
| 6 | 5.715 | 11.26 | RMS | 35 | 7.3 | .41 | 53.97 | 54 | 03 | - | - | 223 | 104 | V |
| 4 | 5.723 | 32.31 | Pk | 35 | 7.4 | 0 | 74.71 | - | - | 78.2 | -3.49 | 223 | 104 | V |
| 3 | 5.725 | 29.97 | Pk | 35 | 7.4 | 0 | 72.37 | - | - | 78.2 | -5.83 | 223 | 104 | V |

Pk - Peak detector

RMS - RMS detection

Page 109 of 136

AUTHORIZED BANDEDGE (HIGH CHANNEL)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Bypass (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Average Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|-----|-------------------|-------------|--------------|----------------------------------|------------------------------|----------------|------------------------|-------------------|-------------------|----------------|----------|
| 3 | 5.85 | 24.81 | Pk | 35.4 | 7.5 | 0 | 67.71 | - | - | 78.2 | -10.49 | 319 | 345 | V |
| 1 | 5.86 | 21.6 | Pk | 35.4 | 7.5 | 0 | 64.5 | - | - | 74 | -9.5 | 319 | 345 | V |
| 5 | 5.86 | 9.31 | RMS | 35.4 | 7.5 | .41 | 52.62 | 54 | -1.38 | - | - | 319 | 345 | V |
| 6 | 5.861 | 9.87 | RMS | 35.4 | 7.5 | .41 | 53.18 | 54 | 82 | - | - | 319 | 345 | V |
| 2 | 5.863 | 26.65 | Pk | 35.4 | 7.5 | 0 | 69.55 | - | - | 74 | -4.45 | 319 | 345 | V |
| 4 | 5.863 | 26.65 | Pk | 35.4 | 7.5 | 0 | 69.55 | - | - | 74 | -4.45 | 319 | 345 | V |

Pk - Peak detector

RMS - RMS detection

Page 110 of 136

HARMONICS AND SPURIOUS EMISSIONS





Page 111 of 136

DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading | Det | AF T345 (dB/m) | Amp/Cbl/ Fltr/Pad | DC Corr (dB) | Corrected Reading | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non- Restricted | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|------------------|------|-------------------|----------------------|-----------------|----------------------|-----------------------|----------------|------------------------|-------------------|-------------------------|-------------------|-------------------|----------------|----------|
| | | (dBuV) | | | (dB) | | (dBuV/m) | | | | | (dBuV/m) | | | | |
| 1 | * 4.829 | 46.26 | PK-U | 34.3 | -32.1 | 0 | 48.46 | - | - | 74 | -25.54 | - | - | 349 | 321 | V |
| | * 4.829 | 39.73 | ADR | 34.3 | -32.1 | .41 | 42.34 | 54 | -11.66 | - | - | - | - | 349 | 321 | V |
| 2 | * 11.594 | 43.27 | PK-U | 38.4 | -24.7 | 0 | 56.97 | - | | 74 | -17.03 | - | - | 296 | 247 | Н |
| | * 11.591 | 30.29 | ADR | 38.4 | -24.7 | .41 | 44.4 | 54 | -9.6 | - | - | - | - | 296 | 247 | н |
| 5 | * 11.608 | 40.68 | PK-U | 38.4 | -24.6 | 0 | 54.48 | - | - | 74 | -19.52 | - | - | 290 | 246 | V |
| | * 11.609 | 27.91 | ADR | 38.4 | -24.6 | .41 | 42.12 | 54 | -11.88 | - | - | - | - | 290 | 246 | V |
| 4 | 6.761 | 44.07 | PK-U | 35.9 | -30.9 | 0 | 49.07 | - | - | - | - | 68.2 | -19.13 | 34 | 288 | V |
| 3 | 17.364 | 38.82 | PK-U | 40.8 | -20.9 | 0 | 58.72 | - | - | - | - | 68.2 | -9.48 | 322 | 288 | Н |
| 6 | 17.386 | 36.3 | PK-U | 40.8 | -20.8 | 0 | 56.3 | - | - | - | - | 68.2 | -11.9 | 306 | 377 | V |

* - indicates frequency in CFR15.205 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

Page 112 of 136





Page 113 of 136

DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading | Det | AF T345 (dB/m) | Amp/Cbl/ Fltr/Pad | DC Corr (dB) | Corrected Reading | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non- Restricted | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|------------------|------|-------------------|----------------------|-----------------|----------------------|-----------------------|----------------|------------------------|-------------------|-------------------------|-------------------|-------------------|----------------|----------|
| | | (dBuV) | | | (dB) | | (dBuV/m) | | | | | (dBuV/m) | | | | |
| 1 | * 1.097 | 50.82 | PK-U | 27.6 | -35.6 | 0 | 42.82 | - | - | 74 | -31.18 | - | - | 218 | 259 | н |
| | * 1.096 | 38.63 | ADR | 27.6 | -35.6 | .41 | 31.04 | 54 | -22.96 | - | - | - | - | 218 | 259 | н |
| 2 | * 1.497 | 51.85 | PK-U | 28.7 | -35.5 | 0 | 45.05 | - | | 74 | -28.95 | - | - | 216 | 184 | V |
| | * 1.499 | 38.19 | ADR | 28.6 | -35.5 | .41 | 31.7 | 54 | -22.3 | - | - | - | - | 216 | 184 | V |
| 4 | * 11.51 | 39.87 | PK-U | 38.3 | -25.3 | 0 | 52.87 | - | - | 74 | -21.13 | - | - | 2 | 196 | V |
| | * 11.51 | 28.01 | ADR | 38.3 | -25.3 | .41 | 41.42 | 54 | -12.58 | - | - | - | - | 2 | 196 | V |
| 3 | 2.125 | 50.68 | PK-U | 31.6 | -35 | 0 | 47.28 | - | - | - | - | 68.2 | -20.92 | 243 | 137 | V |
| 6 | 5.917 | 47.29 | PK-U | 35.5 | -20.7 | 0 | 62.09 | - | - | - | - | 68.2 | -6.11 | 309 | 279 | V |
| 5 | 17.268 | 37.2 | PK-U | 41 | -21.6 | 0 | 56.6 | - | - | - | - | 68.2 | -11.6 | 291 | 186 | V |

* - indicates frequency in CFR15.205 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

Page 114 of 136

9.9. TX ABOVE 1 GHz 802.11ac HT80 MODE 1Tx IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW EDGE)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AF T345 (dB/m) | Bypass (dB) | Conversio n Factor (dB) | DC Corr (dB) | Corrected Reading EIRP | Peak Limit (dBm) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|---------------------------|-----|-------------------|----------------|-------------------------------|-----------------|------------------------------|---------------------|-------------------|-------------------|----------------|----------|
| 2 | 5.715 | -81.89 | Pk | 35 | 7.3 | 11.8 | 0 | -27.79 | -27 | 79 | 0 | 382 | н |
| 1 | 5.725 | -85.37 | Pk | 35 | 7.4 | 11.8 | 0 | -31.17 | -17 | -14.17 | 0 | 382 | н |

Pk - Peak detector

Page 115 of 136

AUTHORIZED BANDEDGE (HIGH EDGE)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AF T345 (dB/m) | Bypass (dB) | Conversio n Factor (dB) | DC Corr (dB) | Corrected Reading EIRP | Peak Limit (dBm) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|---------------------------|-----|-------------------|----------------|-------------------------------|-----------------|------------------------------|---------------------|-------------------|-------------------|----------------|----------|
| 1 | 5.85 | -85.95 | Pk | 35.4 | 7.5 | 11.8 | 0 | -31.25 | -17 | -14.25 | 20 | 371 | Н |
| 2 | 5.86 | -84.08 | Pk | 35.4 | 7.5 | 11.8 | 0 | -29.38 | -27 | -2.38 | 20 | 371 | н |

Pk - Peak detector

Page 116 of 136

9.10. TX ABOVE 1 GHz 802.11ac HT80 MODE 3Tx IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW EDGE)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AF T345 (dB/m) | Bypass (dB) | Conversio n Factor (dB) | DC Corr (dB) | Corrected Reading EIRP | Peak Limit (dBm) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|---------------------------|-----|-------------------|----------------|-------------------------------|-----------------|------------------------------|---------------------|-------------------|-------------------|----------------|----------|
| 2 | 5.714 | -81.92 | Pk | 35 | 7.3 | 11.8 | 0 | -27.82 | -27 | 82 | 282 | 299 | V |
| 1 | 5.725 | -85.68 | Pk | 35 | 7.4 | 11.8 | 0 | -31.48 | -17 | -14.48 | 282 | 299 | V |

Pk - Peak detector

Page 117 of 136

AUTHORIZED BANDEDGE (HIGH EDGE)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AF T345 (dB/m) | Bypass (dB) | Conversion Factor (dB) | Corrected Reading EIRP | Peak Limit (dBm) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|---------------------------|-----|-------------------|----------------|---------------------------|------------------------------|---------------------|-------------------|-------------------|----------------|----------|
| 1 | 5.85 | -86.27 | Pk | 35.4 | 7.5 | 11.8 | -31.57 | -17 | -14.57 | 185 | 271 | V |
| 2 | 5.861 | -82.96 | Pk | 35.4 | 7.5 | 11.8 | -28.26 | -27 | -1.26 | 185 | 271 | V |

Pk - Peak detector

Page 118 of 136

HARMONICS AND SPURIOUS EMISSIONS





Page 119 of 136

DATA

Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | AF T345 (dB/m) | Amp/Cbl/ Fitr/Pad (dB) | DC Corr (dB) | Corrected Reading (dBuV/m) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) | UNII Non- Restricted (dBuV/m) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|------|-------------------|------------------------------|-----------------|----------------------------------|-----------------------|----------------|------------------------|-------------------|-------------------------------------|-------------------|-------------------|----------------|----------|
| 1 | * 1.245 | 52.52 | PK-U | 28.9 | -35.9 | 0 | 45.52 | - | - | 74 | -28.48 | - | - | 325 | 175 | н |
| | * 1.244 | 31.72 | ADR | 28.9 | -35.9 | .84 | 25.56 | 54 | -28.44 | - | - | - | - | 325 | 175 | н |
| 5 | * 1.154 | 45.92 | PK-U | 28.1 | -35.5 | 0 | 38.52 | - | - | 74 | -35.48 | - | - | 0 | 103 | V |
| | * 1.154 | 34.46 | ADR | 28.1 | -35.5 | .84 | 27.90 | 54 | -26.10 | - | - | - | - | 0 | 103 | V |
| 6 | * 1.443 | 46.7 | PK-U | 29 | -35 | 0 | 40.7 | - | - | 74 | -33.3 | - | - | 225 | 261 | V |
| | * 1.443 | 35.08 | ADR | 29 | -35 | .84 | 29.92 | 54 | -24.08 | - | - | - | - | 225 | 261 | V |
| 7 | * 1.682 | 50.83 | PK-U | 29.6 | -34.2 | 0 | 46.23 | - | - | 74 | -27.77 | - | - | 70 | 246 | V |
| | * 1.682 | 31.64 | ADR | 29.6 | -34.2 | .84 | 27.88 | 54 | -26.12 | - | - | - | - | 70 | 246 | V |
| 10 | * 3.759 | 42.41 | PK-U | 33.4 | -32.6 | 0 | 43.21 | - | - | 74 | -30.79 | - | - | 70 | 200 | V |
| | * 3.759 | 30.53 | ADR | 33.4 | -32.6 | .84 | 32.17 | 54 | -21.83 | - | - | - | - | 70 | 200 | V |
| 4 | * 11.565 | 41.83 | PK-U | 38.4 | -24.6 | 0 | 55.63 | - | - | 74 | -18.37 | - | - | 3 | 379 | Н |
| | * 11.568 | 28.38 | ADR | 38.4 | -24.6 | .84 | 43.02 | 54 | -10.98 | - | - | - | - | 3 | 379 | Н |
| 13 | * 11.569 | 41.21 | PK-U | 38.4 | -24.6 | 0 | 55.01 | - | - | 74 | -18.99 | - | - | 353 | 283 | V |
| | * 11.568 | 28.33 | ADR | 38.4 | -24.6 | .84 | 42.97 | 54 | -11.03 | - | - | - | - | 353 | 283 | V |
| 8 | 2.124 | 45.69 | PK-U | 31.6 | -35 | 0 | 42.29 | - | - | - | - | 68.2 | -25.91 | 70 | 201 | V |
| 2 | 2.125 | 43.47 | PK-U | 31.6 | -35 | 0 | 40.07 | - | - | - | - | 68.2 | -28.13 | 0 | 103 | Н |
| 9 | 2.654 | 47.34 | PK-U | 32.7 | -33.5 | 0 | 46.54 | - | - | - | - | 68.2 | -21.66 | 70 | 102 | V |
| 11 | 4.492 | 44.25 | PK-U | 34 | -31.7 | 0 | 46.55 | - | - | - | - | 68.2 | -21.65 | 70 | 102 | V |
| 3 | 6.417 | 45.95 | PK-U | 35.7 | -29.9 | 0 | 51.75 | - | - | - | - | 68.2 | -16.45 | 3 | 200 | V |
| 12 | 6.418 | 40.98 | PK-U | 35.7 | -30 | 0 | 46.68 | - | - | - | - | 68.2 | -21.52 | 70 | 198 | Н |

* - indicates frequency in CFR15.205 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

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Page 120 of 136

9.11. TX ABOVE 1 GHz 802.11ac HT80 MODE TxBF 3Tx IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE (LOW EDGE)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AF T345 (dB/m) | Bypass (dB) | Conversion Factor (dB) | Corrected Reading EIRP | Peak Limit (dBm) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|---------------------------|-----|-------------------|----------------|---------------------------|------------------------------|---------------------|-------------------|-------------------|----------------|----------|
| 2 | 5.712 | -81.31 | Pk | 35 | 7.4 | 11.8 | -27.11 | -27 | 11 | 309 | 382 | V |
| 1 | 5.725 | -84.2 | Pk | 35 | 7.4 | 11.8 | -30 | -17 | -13 | 309 | 382 | V |

Pk - Peak detector

Page 121 of 136

AUTHORIZED BANDEDGE (HIGH EDGE)



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBm) | Det | AF T345 (dB/m) | Bypass (dB) | Conversio n Factor (dB) | DC Corr (dB) | Corrected Reading EIRP | Peak Limit (dBm) | PK Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|---------------------------|-----|-------------------|----------------|-------------------------------|-----------------|------------------------------|---------------------|-------------------|-------------------|----------------|----------|
| 1 | 5.85 | -86.28 | Pk | 35.4 | 7.5 | 11.8 | 0 | -31.58 | -17 | -14.58 | 323 | 305 | V |
| 2 | 5.861 | -83.04 | Pk | 35.4 | 7.5 | 11.8 | 0 | -28.34 | -27 | -1.34 | 323 | 305 | V |

Pk - Peak detector

Page 122 of 136

HARMONICS AND SPURIOUS EMISSIONS





Page 123 of 136

DATA

Trace Markers

| Marker | Frequency | Meter | Det | AF T345 | Amp/Cbl/ | DC Corr | Corrected | Avg Limit | Margin | Peak Limit | PK Margin | UNII Non- | PK Margin | Azimuth | Height | Polarity |
|--------|-----------|--------|------|---------|----------|---------|-----------|-----------|--------|------------|-----------|-----------|-----------|---------|--------|----------|
| | (GHZ) | (dBuV) | | (dB/m) | (dB) | (dB) | (dBuV/m) | (dBUV/m) | (dB) | (asuv/m) | (08) | (dBuV/m) | (dB) | (Degs) | (cm) | |
| 1 | * 1.105 | 44.53 | PK-U | 27.7 | -35.5 | 0 | 36.73 | - | - | 74 | -37.27 | - | - | 150 | 255 | V |
| | * 1.103 | 32.78 | ADR | 27.6 | -35.5 | 4.03 | 28.91 | 54 | -25.09 | - | - | - | - | 150 | 255 | V |
| 2 | * 1.493 | 50.3 | PK-U | 28.7 | -35.5 | 0 | 43.5 | - | - | 74 | -30.5 | - | - | 0 | 184 | V |
| | * 1.493 | 37.39 | ADR | 28.7 | -35.5 | 4.03 | 34.62 | 54 | -19.38 | - | - | - | - | 0 | 184 | V |
| 6 | * 11.573 | 39.83 | PK-U | 38.4 | -24.5 | 0 | 53.73 | - | - | 74 | -20.27 | - | - | 296 | 201 | V |
| | * 11.572 | 25.52 | ADR | 38.4 | -24.6 | 4.03 | 43.35 | 54 | -10.65 | - | - | - | - | 296 | 201 | V |
| 3 | 2.132 | 49.34 | PK-U | 31.6 | -34.9 | 0 | 46.04 | - | - | - | - | 68.2 | -22.16 | 249 | 107 | V |
| 4 | 6.209 | 41.76 | PK-U | 35.5 | -31.2 | 0 | 46.06 | - | - | - | - | 68.2 | -22.14 | 249 | 199 | V |
| 5 | 6.417 | 42.64 | PK-U | 35.7 | -29.9 | 0 | 48.44 | - | - | - | - | 68.2 | -19.76 | 249 | 199 | V |

* - indicates frequency in CFR15.205 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

Page 124 of 136

9.12. WORST-CASE BELOW 1 GHz

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

| Marker | Frequency (MHz) | Meter Reading (dBuV) | Det | AF T477 (dB/m) | Amp/Cbl (dB/m) | Corrected Reading (dBuV/m) | QPk Limit (dBuV/m) | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|--------|--------------------|----------------------------|-----|-------------------|-------------------|----------------------------------|-----------------------|----------------|-------------------|----------------|----------|
| 4 | 158.69 | 40.64 | Pk | 16.3 | -30.2 | 26.74 | 43.52 | -16.78 | 0-360 | 101 | V |
| 5 | 221.2 | 42.13 | Pk | 14.6 | -29.8 | 26.93 | 46.02 | -19.09 | 0-360 | 101 | V |
| 1 | 372.3 | 49.67 | Pk | 18.9 | -29.1 | 39.47 | 46.02 | -6.55 | 0-360 | 101 | Н |
| 6 | 499.6816 | 46.71 | Qp | 21.7 | -28.7 | 39.71 | 46.02 | -6.31 | 335 | 182 | V |
| 2 | *499.6 | 54.16 | Pk | 21.7 | -28.7 | 47.16 | - | - | 0-360 | 199 | Н |
| 3 | 898.8434 | 37.45 | Qp | 26.1 | -27.4 | 36.15 | 46.02 | -9.87 | 55 | 105 | Н |

Pk - Peak detector

Qp - Quasi-Peak detector

* - frequency determined to be coming from the support equipment

Page 125 of 136

9.13. WORST-CASE ABOVE 18GHz

SPURIOUS EMISSIONS 18 – 26GHz

| | 24 Nov 2015 10:07:14 |
|--|--|
| | RF Emissions |
| | Order Number:15U22131 Client:Broadcom Configuration:EUT with Laptop Made:18-26GHz worst case Tested to ENU icon Neuron |
| | Tested by 7 SN:Lieu Nguyen |
| Peak Limit (dBuV/m) | |
| | |
| Avg Limit (dBuU/m) | |
| | 34 |
| 1 | 2 |
| miles and he was a shipping and a sh | |
| | |
| | |
| | |
| | |
| | |
| E | 26 |
| Revine (Eth) RBU/JBU Ref/Otto Det/OverTun Susen Ptic #Sunc/Made Label | guency (GHz) Revine (GHz) RBU/IBU Ref/2010 Det/Ave Tun Susan Pts #Susc/Mede Lebel |
| 1:18-25 1H(-348)/3H 97/8 PERK/ - 168hsee(Auto) 1282 MAXH Horizo | ntal |
| | |
| 5 14 Aug 2014 | Rev 9.5 16 M |
| | |
| | |



Page 126 of 136

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Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | T89 AF (dB/m) | Amp/Cbl (dB) | Dist Corr (dB) | Corrected Reading (dBuVolts) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) |
|--------|--------------------|----------------------------|-----|------------------|-----------------|-------------------|------------------------------------|-----------------------|----------------|------------------------|-------------------|
| 1 | 18.693 | 41.2 | Pk | 32.5 | -24.2 | -9.5 | 40 | 54 | -14 | 74 | -34 |
| 2 | 21.704 | 40.97 | Pk | 33.3 | -24.6 | -9.5 | 40.16 | 54 | -13.83 | 74 | -33.83 |
| 3 | 24.801 | 43.7 | Pk | 33.9 | -24.6 | -9.5 | 43.5 | 54 | -10.5 | 74 | -30.5 |
| 4 | 24.928 | 44.03 | Pk | 34.1 | -24.3 | -9.5 | 44.33 | 54 | -9.66 | 74 | -29.66 |
| 5 | 18.739 | 41.17 | Pk | 32.6 | -24.6 | -9.5 | 39.66 | 54 | -14.33 | 74 | -34.33 |
| 6 | 23.149 | 42.67 | Pk | 33.5 | -25 | -9.5 | 41.66 | 54 | -12.33 | 74 | -32.33 |
| 7 | 25,134 | 44.57 | Pk | 33.8 | -24.7 | -9.5 | 44.16 | 54 | -9.83 | 74 | -29.83 |

Pk - Peak detector

Page 127 of 136

SPURIOUS EMISSIONS 26 – 40GHz

| 35 UL | _MC 24 Nov 2815 12:45 | 1:08 |
|------------------|--|---------|
| 95 | RF Emissions Order Number:15U22131 ClientBroadcom Configuration:EUT with Laptop Mode:26-408/th: worst cose Tested by / SN:Lieu Ngugen | |
| 75 <mark></mark> | ak Limit (dBuV/m) | |
| 55 | | |
| 55 A | g Limit (dBuV/m) | |
| 45 | | www |
| 35 | anale year a harman dae eera yeeratu aanta ayaa ahaa ka ahaa ahaa ka harman ahaa ahaa ahaa ahaa ahaa ahaa ahaa Ahaa ahaa a | |
| 25 | | |
| 5 | | |
| 26 | | 40 |
| | Frequency (GHz) | |
| 1:2 | snge (GHz) RBV/RBU Ref/Attn Det/Avg Typ Sweep Pts 55pes/Node Label -46 INI-3481/38 S7/8 PERK/-9 2820aees(Avta) 1883 MiXH Horizontal | |
| 26-4 | | 5 16 Mc |
| | | |
| | | |
| | | |

Page 128 of 136



Trace Markers

| Marker | Frequency (GHz) | Meter Reading (dBuV) | Det | T90 AF (dB/m) | Amp/Cbl (dB) | Dist Corr (dB) | Corrected Reading (dBuVolts) | Avg Limit (dBuV/m) | Margin (dB) | Peak Limit (dBuV/m) | PK Margin (dB) |
|--------|--------------------|----------------------------|-----|------------------|-----------------|-------------------|------------------------------------|-----------------------|----------------|------------------------|-------------------|
| 1 | 27.841 | 45.63 | Pk | 35.8 | -31.6 | -9.5 | 40.33 | 54 | -13.66 | 74 | -33.66 |
| 2 | 31.547 | 47.2 | Pk | 36.3 | -33 | -9.5 | 41 | 54 | -13 | 74 | -33 |
| 3 | 39.262 | 49.1 | Pk | 38.6 | -32.2 | -9.5 | 46 | 54 | -8 | 74 | -28 |
| 4 | 28.028 | 45.33 | Pk | 35.8 | -31.8 | -9.5 | 39.83 | 54 | -14.16 | 74 | -34.16 |
| 5 | 32.751 | 48.03 | Pk | 36.6 | -32.8 | -9.5 | 42.33 | 54 | -11.66 | 74 | -31.66 |
| 6 | 35.362 | 49.1 | Pk | 37.8 | -33.4 | -9.5 | 44 | 54 | -10 | 74 | -30 |
| 7 | 37.576 | 50.23 | Pk | 37.2 | -33.1 | -9.5 | 44.83 | 54 | -9.16 | 74 | -29.16 |

Pk - Peak detector

Page 129 of 136

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

| Frequency of Emission (MHz) | Conducted Limit (dBuV) | | | | |
|-----------------------------|------------------------|------------|--|--|--|
| | Quasi-peak | Average | | | |
| 0.15-0.5 | 66 to 56 ° | 56 to 46 * | | | |
| 0.5-5 | 56 | 46 | | | |
| 5-30 | 60 | 50 | | | |

Decreases with the logarithm of the frequency.

TEST PROCEDURE

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

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

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

Page 130 of 136

RESULTS

<u>6 WORST EMISSIONS</u>

| Company Namo | | Broadcom | | | | | | | | | |
|---------------------------|-----------|----------------------------------|------|--------|-----------|------------|--------|----------------|--------|--|--|
| Project: | 12111/660 | | | | | | | | | | |
| Flojeci. Medel/Device: | | BCM94360CS | | | | | | | | | |
| | | BUINI34300US | | | | | | | | | |
| Date: | | 12/21/2012 TX WLAN Worst case | | | | | | | | | |
| | | | | | | | | | | | |
| Test voltage/Fre | quency: | 120VAC 60H | Z | | | | | | | | |
| lested by: | | Steve Aguila | ſ | | | | | | | | |
| ling 1 1 15 2014 | 1- | | | | | | | | | | |
| LINE-LT. 15 - 30IVIF | Meter | | | | | | | | Δv | | |
| Test Frequency | Reading | Detector | LISN | Cables | Corrected | Class B QP | QP | Class B Av | Margin | | |
| [MHz] | [dBuV] | Туре | [dB] | [dB] | [dB(uV)] | Limit | Margin | Limit [dB(uV)] | [dB] | | |
| 0.1545 | 55.11 | РК | 0.1 | 0 | 55.21 | 65.8 | -10.59 | - | - | | |
| 0.1545 | 39.99 | Av | 0.1 | 0 | 40.09 | - | - | 55.8 | -15.71 | | |
| 0.1815 | 53.37 | PK | 0.1 | 0 | 53.47 | 64.4 | -10.93 | - | - | | |
| 0.1815 | 22.05 | Av | 0.1 | 0 | 22.15 | - | - | 54.4 | -32.25 | | |
| 0.2085 | 48.17 | РК | 0.1 | 0 | 48.27 | 63.3 | -15.03 | - | - | | |
| 0.2085 | 31.45 | Av | 0.1 | 0 | 31.55 | - | - | 53.3 | -21.75 | | |
| | | | | | | | | | | | |
| Line-L2 .15 - 30MH | Ηz | | | | | | | | | | |
| | Meter | | | | | | | | Av | | |
| Test Frequency | Reading | Detector | LISN | Cables | Corrected | Class B QP | QP | Class B Av | Margin | | |
| [MHz] | [dBuV] | Туре | [dB] | [dB] | [dB(uV)] | Limit | Margin | Limit [dB(uV)] | [dB] | | |
| 0.1545 | 52.78 | РК | 0.1 | 0 | 52.88 | 65.8 | -12.92 | - | - | | |
| 0.1545 | 34.68 | Av | 0.1 | 0 | 34.78 | - | - | 55.8 | -21.02 | | |
| 0.168 | 50.95 | РК | 0.1 | 0 | 51.05 | 65.1 | -14.05 | - | - | | |
| 0.168 | 22.76 | Av | 0.1 | 0 | 22.86 | - | - | 55.1 | -32.24 | | |
| 0.204 | 47.04 | РК | 0.1 | 0 | 47.14 | 63.4 | -16.26 | - | - | | |
| 0.204 | 30.88 | Av | 0.1 | 0 | 30.98 | - | - | 53.4 | -22.42 | | |
| | | | | | | | | | | | |
| PK - Peak detecto | or | | | | | | | | | | |
| QP - Quasi-Peak | detector | | | | | | | | | | |
| Av - Average dete | ctor | | | | | | | | | | |
| | | | | | | | | | | | |

Page 131 of 136

LINE 1 RESULTS



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Page 132 of 136

LINE 2 RESULTS



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Page 133 of 136