# Application for FCC Certification
On behalf of

Hisense Electric Co., Ltd.

Product Name: Sero 7 Pro

Model No.: M470BSA

FCC ID: W9HPADP0001

Prepared For : Hisense Electric Co., Ltd.
No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China

Prepared By :Audix Technology (Shanghai) Co., Ltd.
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Report No. : ACI-F13037
Date of Test : Feb. 28 – Mar. 30, 2013
Date of Report : Mar. 31, 2013

# TABLE OF CONTENTS

Page

# TEST REPORT FOR FCC CERTIFICATE

| | | |
|---|---|---|
| Applicant | : | Hisense Electric Co., Ltd. |
| Manufacturer | : | Hisense Electric Co., Ltd. |
| EUT Description | : | Sero 7 Pro |
| | | (A) Model No. : M470BSA |
| | | (B) Test Voltage : AC 120V/60Hz, DC 5V (USB Power) |

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART C OCTOBER 2012 AND ANSI C63.4-2003*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: M470BSA), which was tested on Feb. 28 – Mar. 30, 2013 is technically compliance with the FCC limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

***The test results for EUT's other function are contained in No. EM-F1020201, a FCC Doc report; for EUT's Bluetooth function are contained in No. F12035, a Certification report; for EUT's DTS function are contained in No. F12036, a Certification report.***

Date of Test : Feb. 28 – Mar. 30, 2013 Date of Report : Mar. 31, 2013

Producer : Kathy Wang
KATHY WANG / Assistant

Review : Dio Yang
DIO YANG / Assistant Manager

AUDIX® For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : Sammy Chen
Authorized Signature EMC SAMMY CHEN/ Deputy Manager

# 1 SUMMARY OF STANDARDS AND RESULTS

## 1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

| Description / Test Item | Test Standard | Results | Meets Limit |
|---|---|---|---|
| **EMISSION** | | | |
| Conducted Emission | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND ANSI C63.4:2003 AND KDB789033 D01 v01r02 | Pass | 15.207 |
| Radiated Emission | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND ANSI C63.4:2003 AND KDB789033 D01 v01r02 | Pass | 15.209(a) 15.205(a)(c) |
| 26 dB Bandwidth Measurement | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND ANSI C63.4:2003 AND KDB789033 D01 v01r02 | Pass | 15.407 (a)(1), (a)(2) |
| Maximum Conducted Output Power Measurement | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND ANSI C63.4:2003 AND KDB789033 D01 v01r02 | Pass | 15.407 (a)(1), (a)(2) |
| Power Spectral Density Measurement | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND ANSI C63.4:2003 AND KDB789033 D01 v01r02 | Pass | 15.407 (a)(1), (a)(2) |
| Peak Excursion | FCC RULES AND REGULATIONS PART 15 SUBPART C October 2012 AND ANSI C63.4:2003 AND KDB789033 D01 v01r02 | Pass | 15.407 (a)(6) |

# 2 GENERAL INFORMATION

## 2.1 Description of Equipment Under Test

| | | |
|---|---|---|
| Description | : | Sero 7 Pro |
| Type of EUT | : | ☑ Production ☐ Pre-product ☐ Pro-type |
| Model Number | : | M470BSA |
| Radio Tech | : | IEEE 802.11a/n HT20 |
| Freq. Band | : | for 5.2GHz band:<br>5180MHz (Ch36), 5200MHz (Ch40),<br>5220MHz (Ch44), 5240MHz (Ch48)<br>for 5.3GHz band:<br>5260MHz (Ch52), 5280MHz (Ch56),<br>5300MHz (Ch60), 5320MHz (Ch64) |
| Tested Freq. | : | for 5.2GHz band:<br>5180MHz (Ch36), 5200MHz (Ch40),<br>5240MHz (Ch48)<br>for 5.3GHz band:<br>5260MHz (Ch52), 5300MHz (Ch60),<br>5320MHz (Ch64) |
| Modulation | : | OFDM |
| Transmit data rate | : | 802.11a:<br>6, 9, 12, 24, 36, 48, 54 Mbps<br>802.11n HT20:<br>(MCS0-MCS7) 6.5, 13, 19.5, 26, 39, 52, 58.5, 65Mbps<br><br>After testing, the highest peak output power of the EUT was at **6 Mbps** in 802.11a mode, **6.5 Mbps (MCS0)** in 802.11n HT20 mode.<br>So data rate mentioned above were representative selected to test in this report. |
| Antenna Gain | : | 3.19 dBi |
| Adapter | : | Manufacturer : Meic<br>Model Number : MN-A110-L120<br>Input : 100-240V~, 50/60Hz 0.3A max<br>Output : 5V ⎓ 2A |
| USB cable | : | Shielded, Detachable, 1.2m |

| | | |
|---|---|---|
| Applicant | : | Hisense Electric Co., Ltd.<br>No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China |
| Manufacturer | : | Hisense Electric Co., Ltd.<br>No.218 Qianwangang Road, Economy & Technology Development Zone, Qingdao, China |

## 2.2 Description of Test Facility

Site Description : Sept. 17, 1998 file on
(Semi-Anechoic Chamber) Mar 16, 2012 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3 F 34 Bldg 680 Guiping Rd.,
Caohejing Hi-Tech Park,
Shanghai 200233, China

FCC registration Number : 91789

Accredited by NVLAP, Lab Code : 200371-0

## 2.3 Measurement Uncertainty

Conducted Emission Expanded Uncertainty : U = 3.42 dB
Radiated Emission Expanded Uncertainty (30-200MHz):
U = 4.14dB (Horizontal)
U = 4.28dB (Vertical)
Radiated Emission Expanded Uncertainty (200M-1GHz):
U = 4.18dB (Horizontal)
U = 4.26dB (Vertical)
Radiated Emission Expanded Uncertainty (Above 1GHz):
U= 4.50 dB (Horizontal)
U= 4.16 dB (Vertical)
26 dB Bandwidth Expanded Uncertainty : U = 0.05 kHz
Maximum Conducted Output Power Expanded Uncertainty : U = 0.30 dB
Power Spectral Density Expanded Uncertainty : U = 0.15 dB
Peak Excursion Expanded Uncertainty : U = 0.15 dB

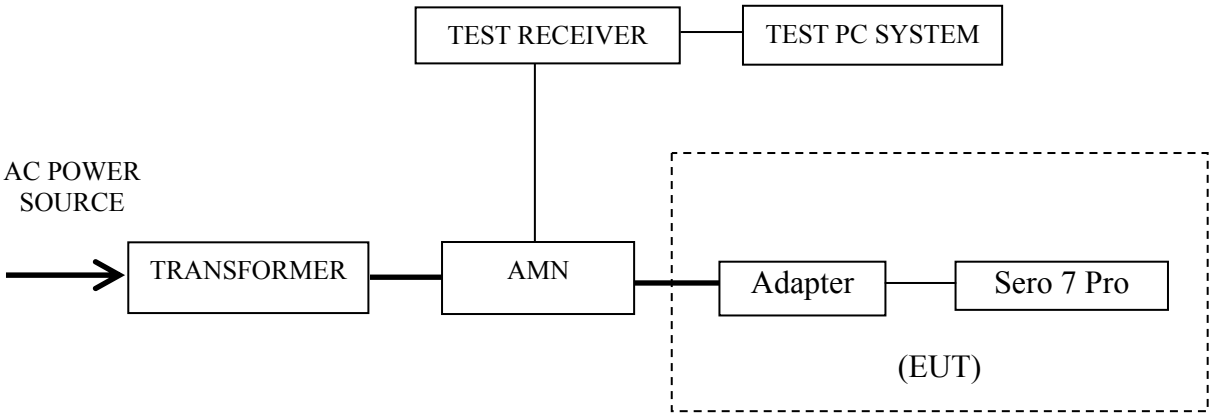
# 3 CONDUCTED EMISSION TEST

## 3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Test Receiver | R&S | ESCI | 100841 | Mar 22, 2012 | Mar 22, 2013 |
| 2. | Artificial Mains Network (AMN) | R&S | ESH2-Z5 | 843890/011 | Feb 25, 2013 | Feb 25, 2014 |
| 3. | 50Ω Coaxial Switch | Anritsu | MP59B | 6200426389 | Sep 18, 2012 | Mar 18, 2013 |
| 4. | Software | Audix | E3 | SET00200 9804M592 | -- | -- |

## 3.2 Block Diagram of Test Setup




—— : Signal Line
▬ : Power Line

## 3.3 Conducted Emission Limits [FCC Part 15 Subpart C 15.207]

| Frequency Range (MHz) | Conducted Limit (dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 ~ 0.5 | 66~56* | 56~46* |
| 0.5 ~ 5 | 56 | 46 |
| 5 ~ 30 | 60 | 50 |
| NOTE – *Decreases with the logarithm of the frequency. | | |

## 3.4 Test Configuration

The EUT (listed in Sec.2.1) was installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

## 3.5 Operating Condition of EUT

3.5.1 Setup the EUT as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 Set the EUT on the test mode (Transmitting), and then test.

## 3.6 Test Procedures

The EUT was connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

## 3.7 Test Results

**< PASS >**

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

NOTE 1 – Factor = Cable Loss + AMN Factor.
NOTE 2 – Emission Level = Meter Reading + Factor.
NOTE 3 – "QP" means "Quasi-Peak" values, "AV" means "Average" values.
NOTE 4 – The worst emission is detected at 0.329 MHz (QP Value) with corrected signal level of 35.38 dB (μV) (limit is 59.49 dB (μV)), when the Neutral of the EUT is connected to AMN.

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Sero 7 Pro | Temperature : | 25℃ | |
| Model No. | : | M470BSA | Humidity | : | 44%RH |
| Test Mode | : | Transmitting | Date of Test | : | Mar. 13, 2013 |

| Test Line | Frequency (MHz) | Meter Reading dB(μV) | Factor (dB) | Emission Level dB(μV) | Limits dB(μV) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|
| Line | 0.178 | 31.47 | 0.25 | 31.72 | 64.59 | 32.87 | QP |
| | 0.329 | 34.65 | 0.30 | 34.95 | 59.49 | 24.54 | |
| | 0.796 | 30.92 | 0.23 | 31.15 | 56.00 | 24.85 | |
| | 2.178 | 28.50 | 0.39 | 28.89 | 56.00 | 27.11 | |
| | 5.112 | 22.95 | 0.50 | 23.45 | 60.00 | 36.55 | |
| | 16.398 | 23.26 | 0.86 | 24.12 | 60.00 | 35.88 | |
| | 0.178 | 21.39 | 0.25 | 21.64 | 54.59 | 32.95 | AV |
| | 0.329 | 24.50 | 0.30 | 24.80 | 49.49 | 24.69 | |
| | 0.796 | 20.10 | 0.23 | 20.33 | 46.00 | 25.67 | |
| | 2.178 | 18.20 | 0.39 | 18.59 | 46.00 | 27.41 | |
| | 5.112 | 12.80 | 0.50 | 13.30 | 50.00 | 36.70 | |
| | 16.398 | 13.90 | 0.86 | 14.76 | 50.00 | 35.24 | |
| Neutral | 0.151 | 34.46 | 0.13 | 34.59 | 65.96 | 31.37 | QP |
| | **0.329** | **35.24** | **0.14** | **35.38** | **59.49** | **24.11** | |
| | 1.094 | 30.34 | 0.22 | 30.56 | 56.00 | 25.44 | |
| | 3.759 | 27.92 | 0.38 | 28.30 | 56.00 | 27.70 | |
| | 5.362 | 23.52 | 0.44 | 23.96 | 60.00 | 36.04 | |
| | 21.373 | 27.44 | 0.86 | 28.30 | 60.00 | 31.70 | |
| | 0.151 | 24.20 | 0.13 | 24.33 | 55.96 | 31.63 | AV |
| | 0.329 | 25.20 | 0.14 | 25.34 | 49.49 | 24.15 | |
| | 1.094 | 20.30 | 0.22 | 20.52 | 46.00 | 25.48 | |
| | 3.759 | 17.20 | 0.38 | 17.58 | 46.00 | 28.42 | |
| | 5.362 | 13.20 | 0.44 | 13.64 | 50.00 | 36.36 | |
| | 21.373 | 17.50 | 0.86 | 18.36 | 50.00 | 31.64 | |

TEST ENGINEER: JOE YE

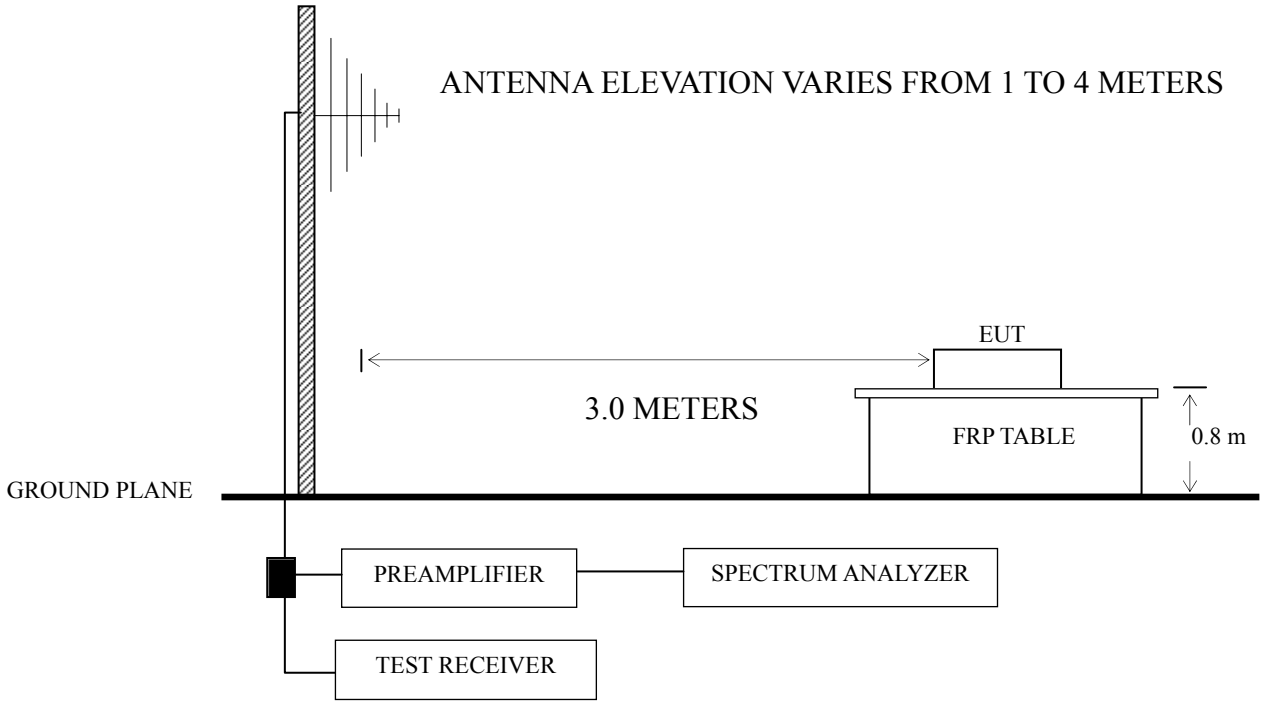
# 4 RADIATED EMISSION TEST

## 4.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Preamplifier | Agilent | 8447D | 2944A10548 | Mar 18, 2013 | Sep 18, 2013 |
| 2. | Preamplifier | HP | 8449B | 3008A00864 | Apr 29, 2012 | Apr 29, 2013 |
| 3. | Spectrum Analyzer | Agilent | E4447A | MY45300136 | Jan 05, 2013 | Jan 05, 2014 |
| 4. | Test Receiver | R&S | ESVS10 | 844594/001 | Mar 22, 2013 | Mar 22, 2014 |
| 5. | Bi-log Antenna | TESEQ | CBL6112D | 23193 | May 03, 2012 | May 03, 2013 |
| 6. | Horn Antenna | EMCO | 3115 | 9607-4878 | May 03, 2012 | May 03, 2013 |
| 7. | Horn Antenna | EMCO | 3116 | 00062643 | Jul 21, 2012 | Jul 21, 2013 |
| 8. | 50Ω Coaxial Switch | Anritsu | MP59B | 6200426390 | Mar 18, 2013 | Sep 18, 2013 |
| 9. | Software | Audix | E3 | SET00200 9912M295-2 | -- | -- |

## 4.2 Block Diagram of Test Setup




■ : 50 ohm Coaxial Switch

## 4.3 Radiated Emission Limit [FCC Part 15 Subpart C 15.209]

| Frequency (MHz) | Distance (m) | Field strength limits (μV/m) | |
|---|---|---|---|
| | | (μV/m) | dB(μV/m) |
| 30 ~ 88 | 3 | 100 | 40.0 |
| 88 ~ 216 | 3 | 150 | 43.5 |
| 216 ~ 960 | 3 | 200 | 46.0 |
| Above 960 | 3 | 500 | 54.0 |

NOTE 1 - Emission Level dB (μV/m) = 20 log Emission Level (μV/m)
NOTE 2 - The tighter limit applies at the band edges.
NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
NOTE 4 - The limits shown are based on Quasi-peak value detector below or equal to 1GHz and Average value detector above 1GHz.
NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT

## 4.4 Test Configuration

The EUT (listed in Sec.2.1) and the simulators (listed in Sec.2.2) were installed as shown on Sec.3.2 to meet FCC requirements and operating in a manner that tends to maximize its emission level in a normal application.

## 4.5 Operating Condition of EUT

4.5.1 Setup the EUT as shown in Sec. 3.2.

4.5.2 Turn on the power of all equipment.

4.5.3 Turn the EUT on the test mode, and then test.

## 4.6 Test Procedures

Radiated emission test applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.

The EUT was placed on a turntable that is 0.8 meter above ground. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna) or Horn antenna was used as receiving antenna. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The bandwidth of Test Receiver R&S ESVS10 was set at 120 kHz from 30MHz to 1000MHz.

The bandwidth of the VBW was set at 1MHz and RBW was set at 1MHz for peak emission measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emission above 1GHz for Spectrum Agilent E7405A.

The frequency range from 30 MHz to 40 GHz was checked.

The EUT was tested under the following test modes:

| Mode | Operation | Channel |
|---|---|---|
| 1. | Transmitting | 36 |
| 2. | | 40 |
| 3. | | 48 |
| 4. | | 52 |
| 5. | | 60 |
| 6. | | 64 |
| 7. | Receiving | -- |

All the test results are listed in Sec.4.7.

## 4.7 Test Results

**<PASS>**

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

| No. | Operation | Modulation | Channel | Frequency | Data Page | |
|---|---|---|---|---|---|---|
| 1. | Worst case emission < 1GHz | | | | P15 | |
| 2. | Transmitting | 802.11a | 36 | 5180 MHz | P16 | |
| 3. | | | 40 | 5200 MHz | | |
| 4. | | | 48 | 5240 MHz | | |
| 5. | | 802.11n HT20 | 36 | 5180 MHz | P17 | |
| 6. | | | 40 | 5200 MHz | | |
| 7. | | | 48 | 5240 MHz | | |
| 8. | | 802.11a | 52 | 5260 MHz | P18 | |
| 9. | | | 60 | 5300 MHz | | |
| 10. | | | 64 | 5320 MHz | | |
| 11. | | 802.11n HT20 | 52 | 5260 MHz | P19 | |
| 12. | | | 60 | 5300 MHz | | |
| 13. | | | 64 | 5320 MHz | | |
| 14. | Receiving | -- | -- | | P20 | |
| 15. | Transmitting | 802.11a | 36 | 5180 MHz | Restricted Bandedge | P21-24 |
| 16. | | 802.11n HT20 | | | | P25-28 |
| 17. | | 802.11a | 64 | 5320 MHz | | P29-32 |
| 18. | | 802.11n HT20 | | | | P33-36 |

NOTE 1 – Level = Read Level + Antenna Factor + Cable Loss (<1GHz)
NOTE 2 – Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor (>1GHz)
NOTE 3 – EUT configured in Lying, Side & Stand direction were all evaluated. The emission levels recorded below is data of EUT configured in **Lying** direction, for Lying direction was the maximum emission direction during the test.
NOTE 4 – All reading are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz.
For above 1GHz test, if the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.
NOTE 5 – For emission > 1GHz, except the reported emissions, no other emissions were detected above the system noise floor.

## Worst case emission < 1GHz

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Sero 7 Pro | Temperature : | 25℃ | |
| Model No. | : | M470BSA | Humidity : | 45%RH | |
| Test Mode | : | Transmitting | Date of Test : | Mar. 30, 2013 | |

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|
| Horizontal | 100.81 | 14.21 | 10.58 | 1.35 | 26.14 | 43.50 | 17.36 | QP |
| | 166.77 | 18.61 | 8.40 | 1.75 | 28.76 | 43.50 | 14.74 | |
| | 294.81 | 16.24 | 12.60 | 2.52 | 31.36 | 46.00 | 14.64 | |
| | **365.62** | **16.69** | **14.90** | **2.64** | **34.23** | **46.00** | **11.77** | |
| | 476.20 | 11.91 | 17.80 | 2.92 | 32.63 | 46.00 | 13.37 | |
| | 713.85 | 6.75 | 19.55 | 3.56 | 29.86 | 46.00 | 16.14 | |
| Vertical | 55.22 | 19.14 | 6.08 | 0.87 | 26.09 | 40.00 | 13.91 | QP |
| | **100.81** | **18.48** | **10.58** | **1.35** | **30.41** | **43.50** | **13.09** | |
| | 127.97 | 14.96 | 11.74 | 1.52 | 28.22 | 43.50 | 15.28 | |
| | 221.09 | 15.24 | 8.37 | 2.06 | 25.67 | 46.00 | 20.33 | |
| | 294.81 | 13.06 | 12.60 | 2.52 | 28.18 | 46.00 | 17.82 | |
| | 714.82 | 6.93 | 19.55 | 3.56 | 30.04 | 46.00 | 15.96 | |

TEST ENGINEER: RAVEN JIN

## Radiated Emission > 1GHz

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Sero 7 Pro | Temperature : | 25℃ |
| Model No. | : | M470BSA | Humidity : | 45%RH |
| Test Mode | : | 802.11a Transmitting | Date of Test : | Mar. 30, 2013 |

Ch36

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 10360.00 | 47.14 | 37.96 | 12.96 | 35.24 | 62.82 | 74.00 | 11.18 | Peak |
| | 10360.00 | 34.45 | 37.96 | 12.96 | 35.24 | 50.13 | 54.00 | 3.87 | Average |
| Vertical | 10360.00 | 47.78 | 37.96 | 12.96 | 35.24 | 63.46 | 74.00 | 10.54 | Peak |
| | 10360.00 | 35.31 | 37.96 | 12.96 | 35.24 | 50.99 | 54.00 | 3.01 | Average |

Ch40

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 10400.00 | 45.23 | 37.95 | 12.96 | 35.24 | 60.90 | 74.00 | 13.10 | Peak |
| | 10400.00 | 33.24 | 37.95 | 12.96 | 35.24 | 48.91 | 54.00 | 5.09 | Average |
| Vertical | 10400.00 | 45.50 | 37.95 | 12.96 | 35.24 | 61.17 | 74.00 | 12.83 | Peak |
| | 10400.00 | 33.37 | 37.95 | 12.96 | 35.24 | 49.04 | 54.00 | 4.96 | Average |

Ch48

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 10480.00 | 45.68 | 37.91 | 12.98 | 35.25 | 61.32 | 74.00 | 12.68 | Peak |
| | 10480.00 | 33.85 | 37.91 | 12.98 | 35.25 | 49.49 | 54.00 | 4.51 | Average |
| Vertical | 10480.00 | 48.33 | 37.91 | 12.98 | 35.25 | 63.97 | 74.00 | 10.03 | Peak |
| | 10480.00 | 35.40 | 37.91 | 12.98 | 35.25 | 51.04 | 54.00 | 2.96 | Average |

TEST ENGINEER: RAVEN JIN

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Sero 7 Pro | Temperature : | 25℃ |
| Model No. | : | M470BSA | Humidity : | 45%RH |
| Test Mode | : | 802.11n Transmitting | Date of Test : | Mar. 30, 2013 |

Ch36

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 10360.00 | 45.31 | 37.96 | 12.96 | 35.24 | 60.99 | 74.00 | 13.01 | Peak |
| | 10360.00 | 33.69 | 37.96 | 12.96 | 35.24 | 49.37 | 54.00 | 4.63 | Average |
| Vertical | 10360.00 | 47.08 | 37.96 | 12.96 | 35.23 | 62.77 | 74.00 | 11.23 | Peak |
| | 10360.00 | 34.28 | 37.96 | 12.96 | 35.23 | 49.97 | 54.00 | 4.03 | Average |

Ch40

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 10400.00 | 45.66 | 37.95 | 12.96 | 35.24 | 61.33 | 74.00 | 12.67 | Peak |
| | 10400.00 | 33.68 | 37.95 | 12.96 | 35.24 | 49.35 | 54.00 | 4.65 | Average |
| Vertical | 10400.00 | 46.53 | 37.95 | 12.96 | 35.24 | 62.20 | 74.00 | 11.80 | Peak |
| | 10400.00 | 33.82 | 37.95 | 12.96 | 35.24 | 49.49 | 54.00 | 4.51 | Average |

Ch48

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 10480.00 | 45.37 | 37.91 | 12.98 | 35.25 | 61.01 | 74.00 | 12.99 | Peak |
| | 10480.00 | 33.10 | 37.91 | 12.98 | 35.25 | 48.74 | 54.00 | 5.26 | Average |
| Vertical | 10480.00 | 48.55 | 37.91 | 12.98 | 35.25 | 64.19 | 74.00 | 9.81 | Peak |
| | 10480.00 | 34.39 | 37.91 | 12.98 | 35.25 | 50.03 | 54.00 | 3.97 | Average |

TEST ENGINEER: RAVEN JIN

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Sero 7 Pro | Temperature : | 25℃ |
| Model No. | : | M470BSA | Humidity : | 45%RH |
| Test Mode | : | 802.11a Transmitting | Date of Test : | Mar. 30, 2013 |

Ch52

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 10520.00 | 44.37 | 37.90 | 12.98 | 35.25 | 60.00 | 74.00 | 14.00 | Peak |
| | 10520.00 | 32.79 | 37.90 | 12.98 | 35.25 | 48.42 | 54.00 | 5.58 | Average |
| Vertical | 10520.00 | 46.11 | 37.90 | 12.98 | 35.25 | 61.74 | 74.00 | 12.26 | Peak |
| | 10520.00 | 33.92 | 37.90 | 12.98 | 35.25 | 49.55 | 54.00 | 4.45 | Average |

Ch60

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 10600.00 | 44.68 | 37.30 | 13.02 | 35.26 | 59.74 | 74.00 | 14.26 | Peak |
| | 10600.00 | 32.50 | 37.30 | 13.02 | 35.26 | 47.56 | 54.00 | 6.44 | Average |
| Vertical | 10600.00 | 46.86 | 37.30 | 13.02 | 35.26 | 61.92 | 74.00 | 12.08 | Peak |
| | 10600.00 | 34.07 | 37.30 | 13.02 | 35.26 | 49.13 | 54.00 | 4.87 | Average |

Ch64

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 10640.00 | 44.74 | 37.09 | 13.02 | 35.27 | 59.58 | 74.00 | 14.42 | Peak |
| | 10640.00 | 33.15 | 37.09 | 13.02 | 35.27 | 47.99 | 54.00 | 6.01 | Average |
| Vertical | 10640.00 | 47.26 | 37.09 | 13.02 | 35.27 | 62.10 | 74.00 | 11.90 | Peak |
| | 10640.00 | 35.48 | 37.09 | 13.02 | 35.27 | 50.32 | 54.00 | 3.68 | Average |

TEST ENGINEER: RAVEN JIN

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Sero 7 Pro | Temperature : | 25℃ |
| Model No. | : | M470BSA | Humidity : | 45%RH |
| Test Mode | : | 802.11n Transmitting | Date of Test : | Mar. 30, 2013 |

Ch52

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 10520.00 | 43.99 | 37.90 | 12.98 | 35.25 | 59.62 | 74.00 | 14.38 | Peak |
| | 10520.00 | 31.81 | 37.90 | 12.98 | 35.25 | 47.44 | 54.00 | 6.56 | Average |
| Vertical | 10520.00 | 47.91 | 37.90 | 12.98 | 35.25 | 63.54 | 74.00 | 10.46 | Peak |
| | 10520.00 | 35.55 | 37.90 | 12.98 | 35.25 | 51.18 | 54.00 | 2.82 | Average |

Ch60

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 10600.00 | 45.33 | 37.30 | 13.02 | 35.26 | 60.39 | 74.00 | 13.61 | Peak |
| | 10600.00 | 33.40 | 37.30 | 13.02 | 35.26 | 48.46 | 54.00 | 5.54 | Average |
| Vertical | 10600.00 | 46.85 | 37.30 | 13.02 | 35.26 | 61.91 | 74.00 | 12.09 | Peak |
| | 10600.00 | 34.21 | 37.30 | 13.02 | 35.26 | 49.27 | 54.00 | 4.73 | Average |

Ch64

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 10640.00 | 47.03 | 37.09 | 13.02 | 35.27 | 61.87 | 74.00 | 12.13 | Peak |
| | 10640.00 | 34.47 | 37.09 | 13.02 | 35.27 | 49.31 | 54.00 | 4.69 | Average |
| Vertical | 10640.00 | 46.39 | 37.09 | 13.02 | 35.27 | 61.23 | 74.00 | 12.77 | Peak |
| | 10640.00 | 34.30 | 37.09 | 13.02 | 35.27 | 49.14 | 54.00 | 4.86 | Average |

TEST ENGINEER: RAVEN JIN

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Sero 7 Pro | Temperature : | 25℃ |
| Model No. | : | M470BSA | Humidity : | 45%RH |
| Test Mode | : | Receiving | Date of Test : | Mar. 30, 2013 |

| Polarization | Frequency (MHz) | Meter Reading dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1663.00 | 48.50 | 27.43 | 5.89 | 36.56 | 45.26 | 74.00 | 28.74 | Peak |
| | 3686.00 | 44.78 | 31.53 | 8.32 | 35.46 | 49.17 | 74.00 | 24.83 | |
| | 5658.00 | 43.76 | 33.21 | 8.75 | 34.70 | 51.02 | 74.00 | 22.98 | |
| Vertical | 1731.00 | 53.58 | 28.30 | 6.06 | 36.45 | 51.49 | 74.00 | 22.51 | Peak |
| | 3618.00 | 44.88 | 31.27 | 8.27 | 35.48 | 48.94 | 74.00 | 25.06 | |
| | 5284.00 | 44.27 | 31.81 | 8.81 | 34.83 | 50.06 | 74.00 | 23.94 | |

TEST ENGINEER: RAVEN JIN

# Radiated Band Edge measurement:

## For 802.11a Ch36:

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
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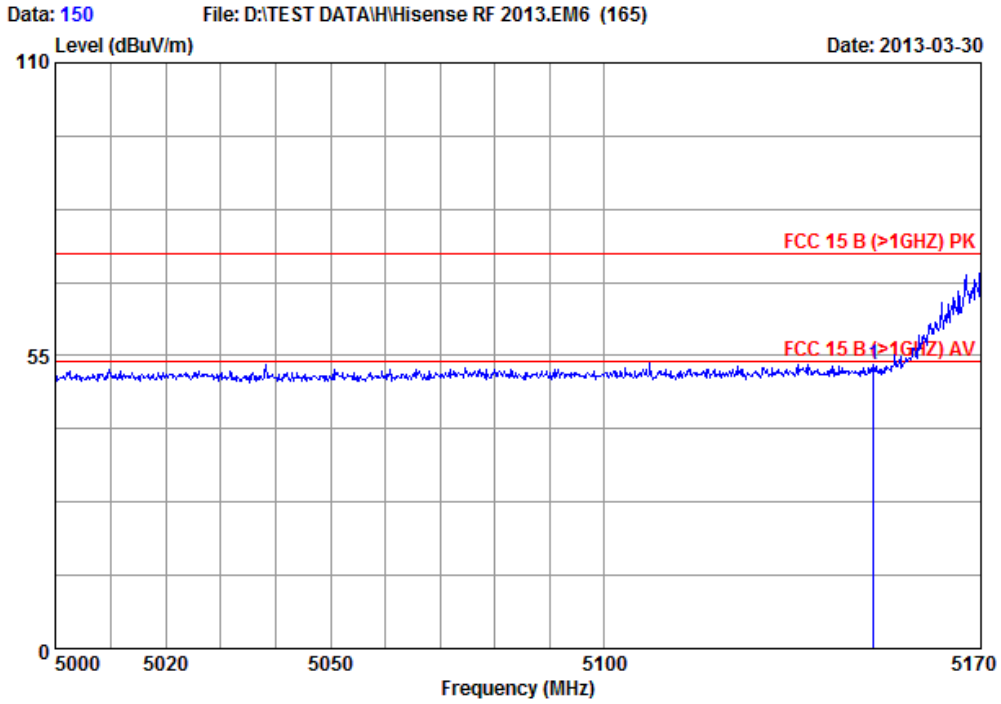
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 150
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI A CH36

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5150.000 | 30.71 | 34.88 | 9.00 | 48.47 | 53.30 | 74.00 | 20.70 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
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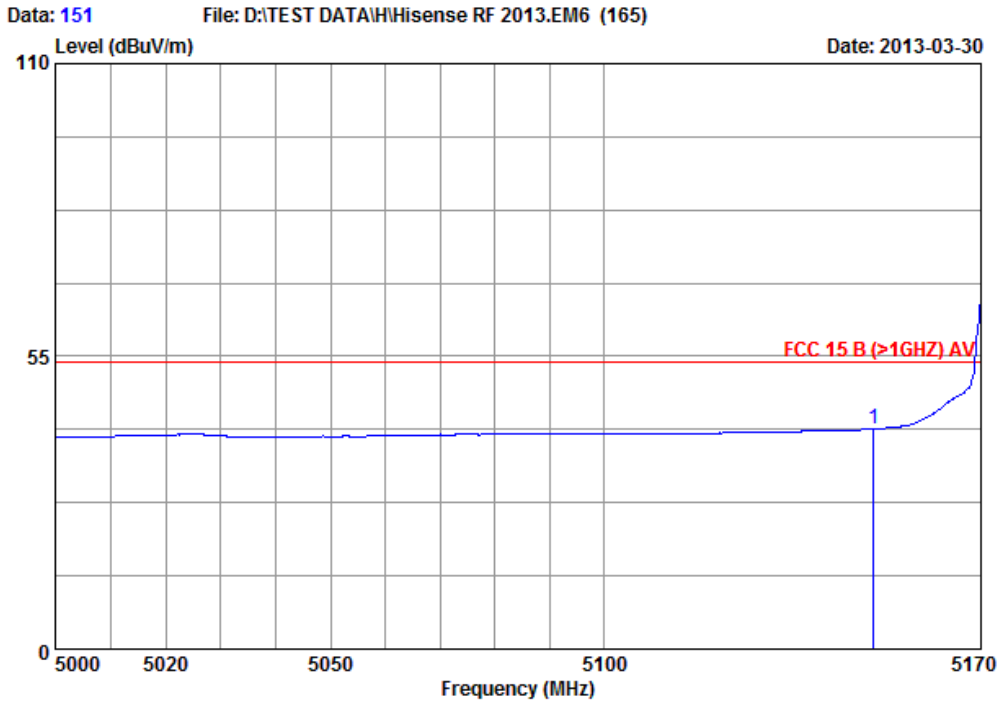
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 151
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI A CH36

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5150.000 | 30.71 | 34.88 | 9.00 | 36.47 | 41.30 | 54.00 | 12.70 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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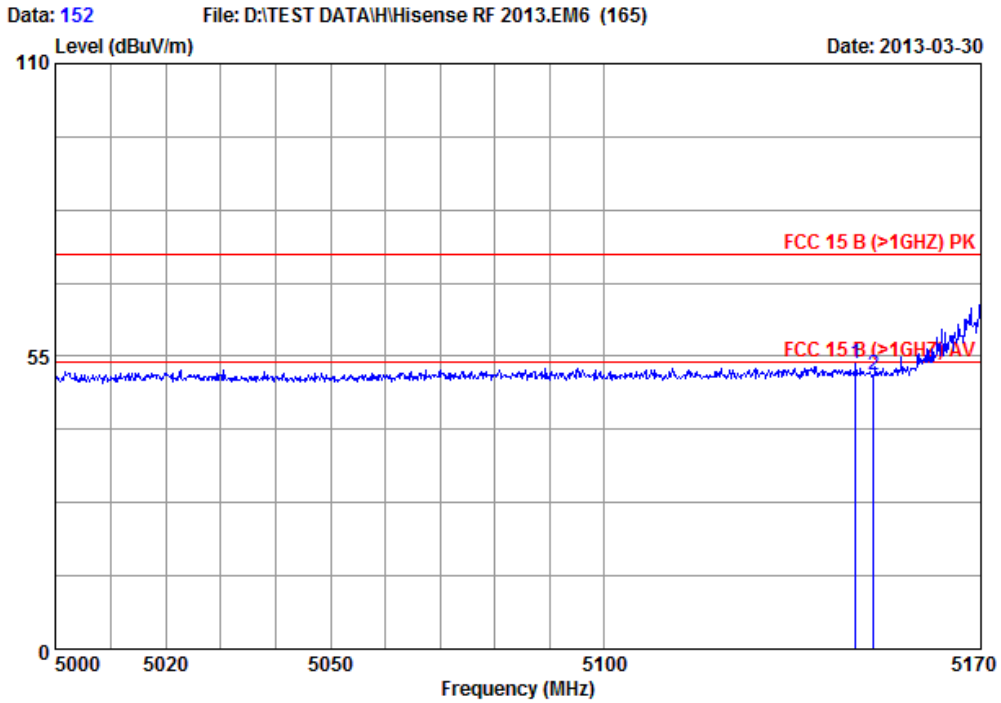
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 152
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI A CH36

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5146.700 | 30.71 | 34.88 | 9.00 | 48.68 | 53.51 | 74.00 | 20.49 | Peak |
| 2 | 5150.000 | 30.71 | 34.88 | 9.00 | 46.78 | 51.61 | 74.00 | 22.39 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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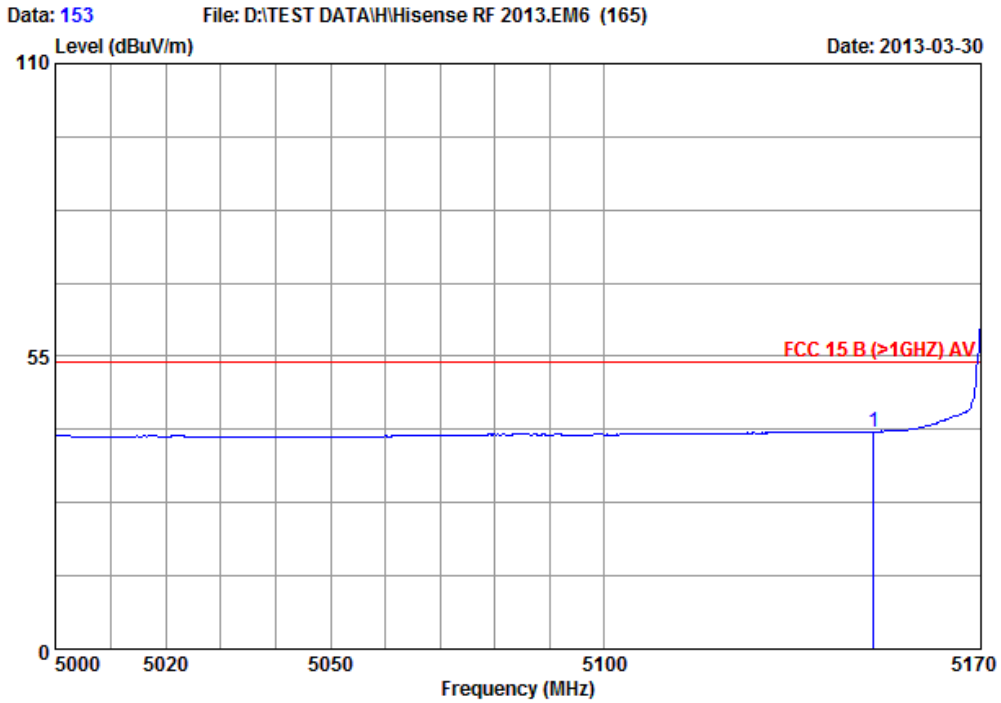
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 153
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI A CH36

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5150.000 | 30.71 | 34.88 | 9.00 | 36.04 | 40.87 | 54.00 | 13.13 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

**For 802.11n Ch36:**

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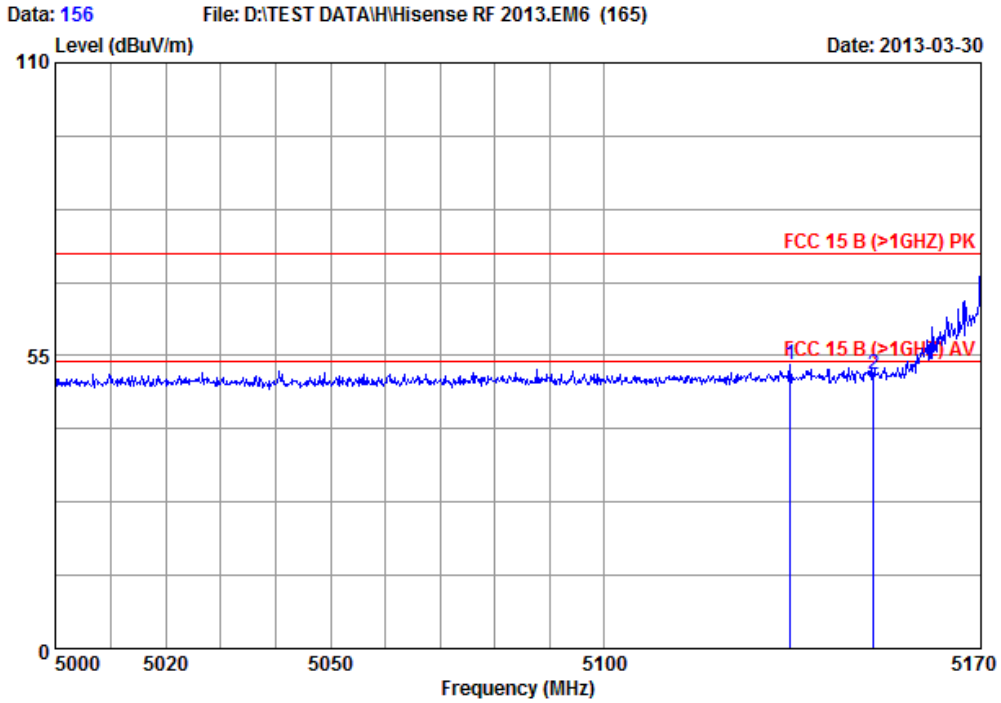
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 156
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI N CH36

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5134.460 | 30.59 | 34.89 | 9.00 | 48.48 | 53.18 | 74.00 | 20.82 | Peak |
| 2 | 5150.000 | 30.71 | 34.88 | 9.00 | 46.53 | 51.36 | 74.00 | 22.64 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
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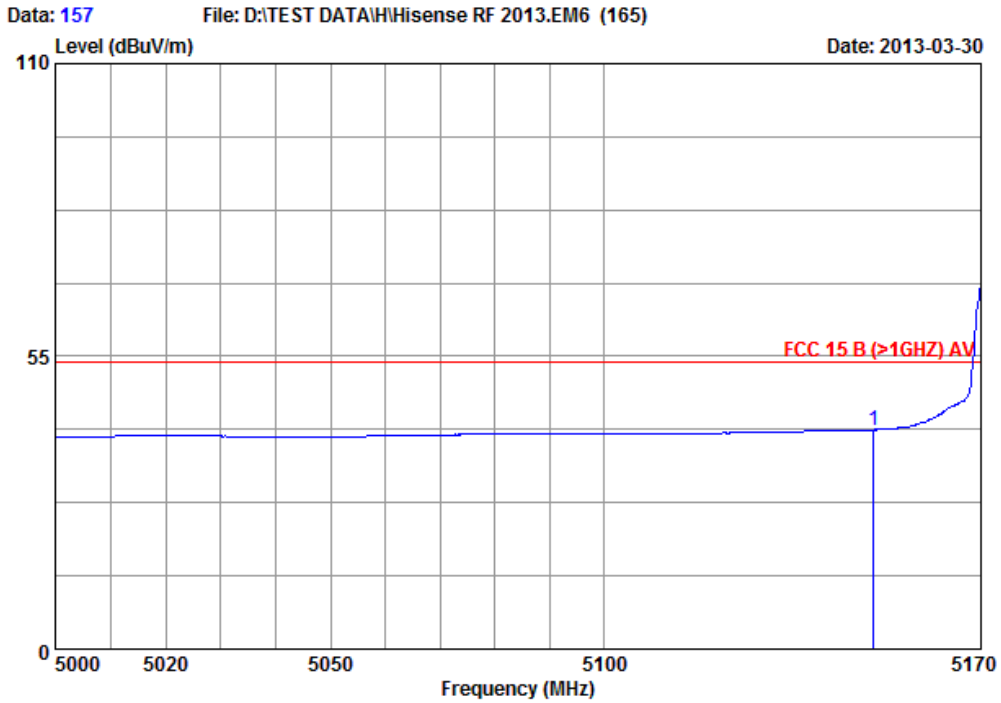
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 157
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI N CH36

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5150.000 | 30.71 | 34.88 | 9.00 | 36.33 | 41.16 | 54.00 | 12.84 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
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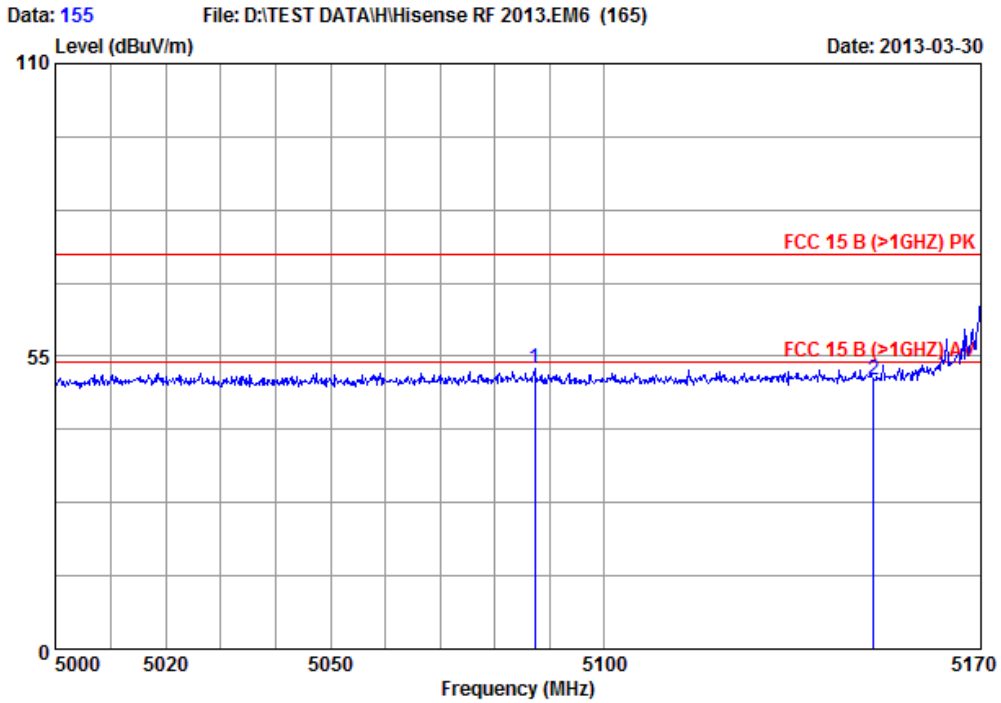


Site no : Audix ACI (3m Chamber) Data no. : 155
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI N CH36

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5087.300 | 30.25 | 34.91 | 9.10 | 48.28 | 52.72 | 74.00 | 21.28 | Peak |
| 2 | 5150.000 | 30.71 | 34.88 | 9.00 | 45.86 | 50.69 | 74.00 | 23.31 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

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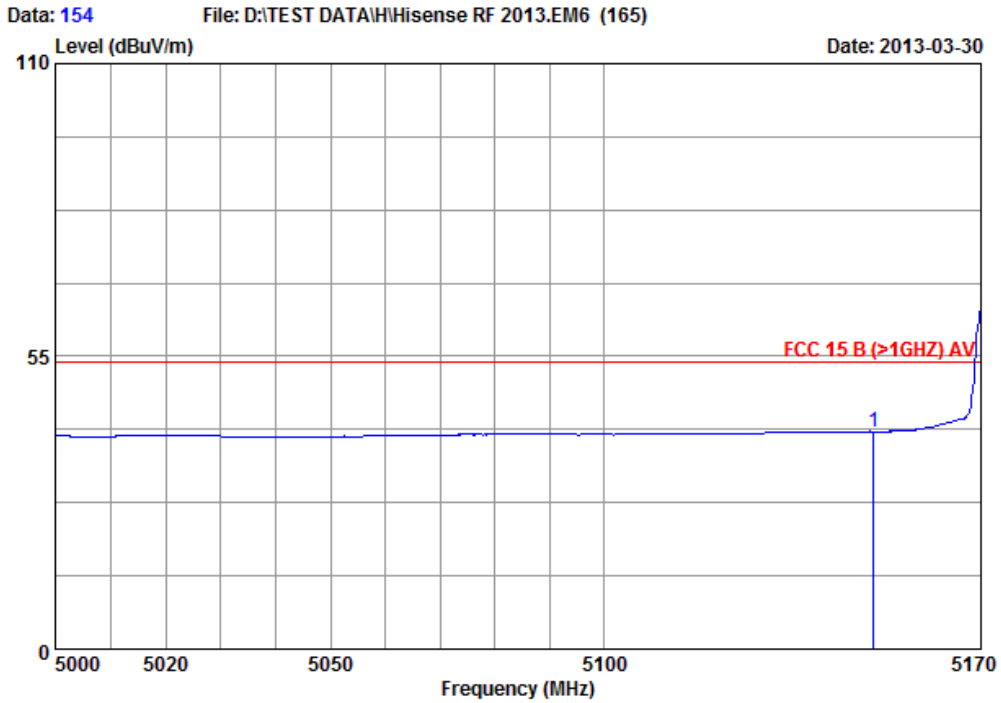


Site no : Audix ACI (3m Chamber) Data no. : 154
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI N CH36

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5150.000 | 30.71 | 34.88 | 9.00 | 36.04 | 40.87 | 54.00 | 13.13 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

**For 802.11a Ch64:**

Audix Technology (Shanghai) Co., Ltd.
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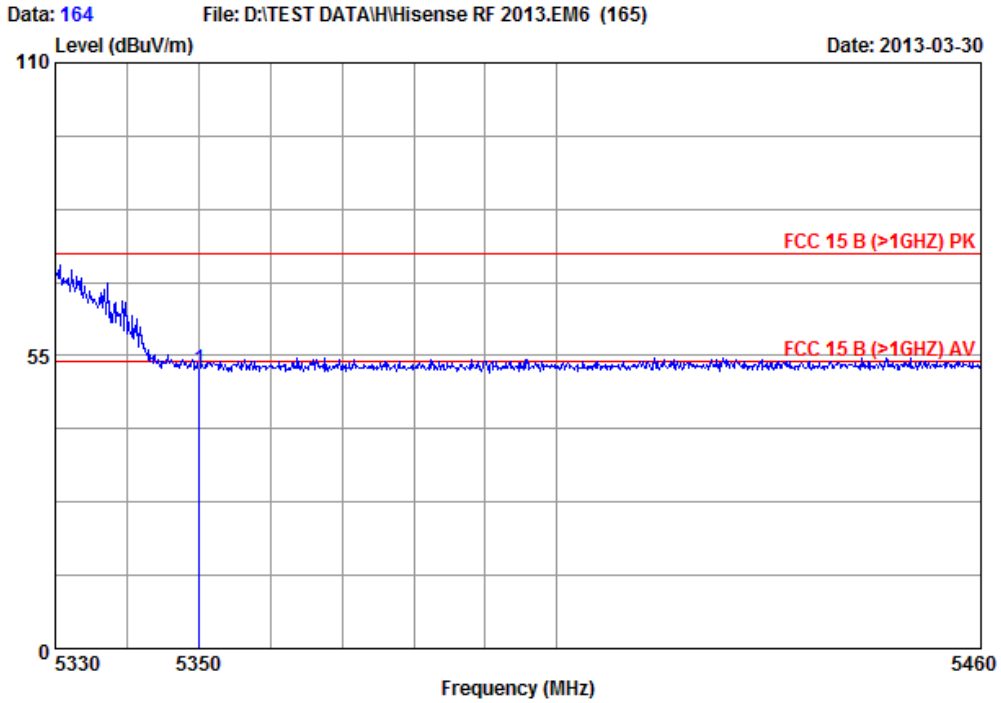
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 164
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI A CH64

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5350.000 | 32.32 | 34.80 | 8.81 | 46.07 | 52.40 | 74.00 | 21.60 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
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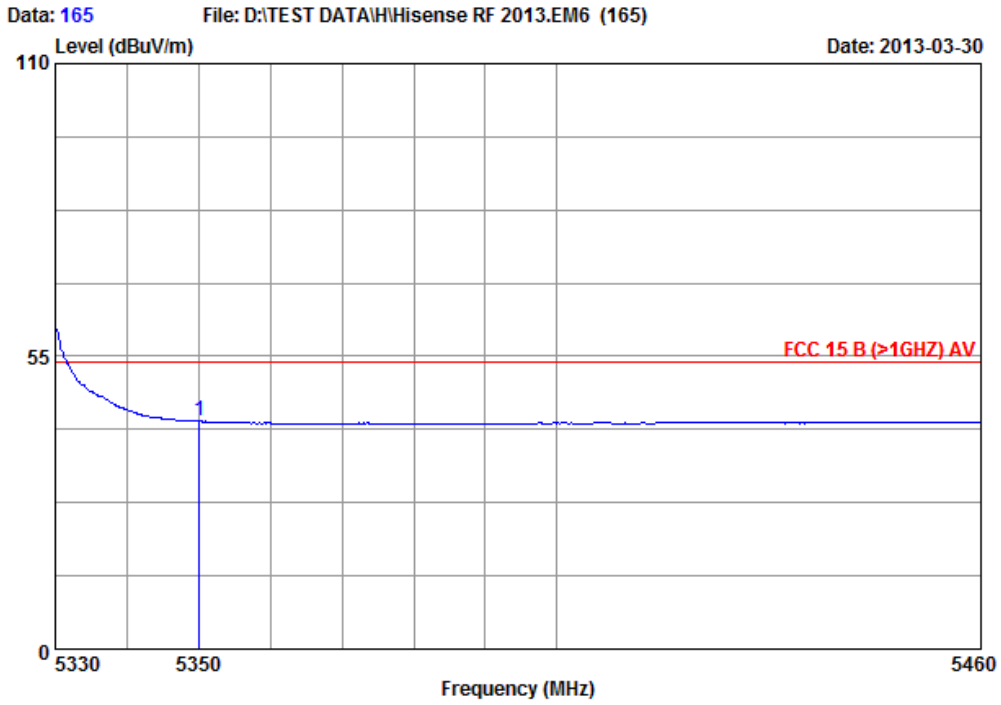
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 165
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI A CH64

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5350.000 | 32.32 | 34.80 | 8.81 | 36.44 | 42.77 | 54.00 | 11.23 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
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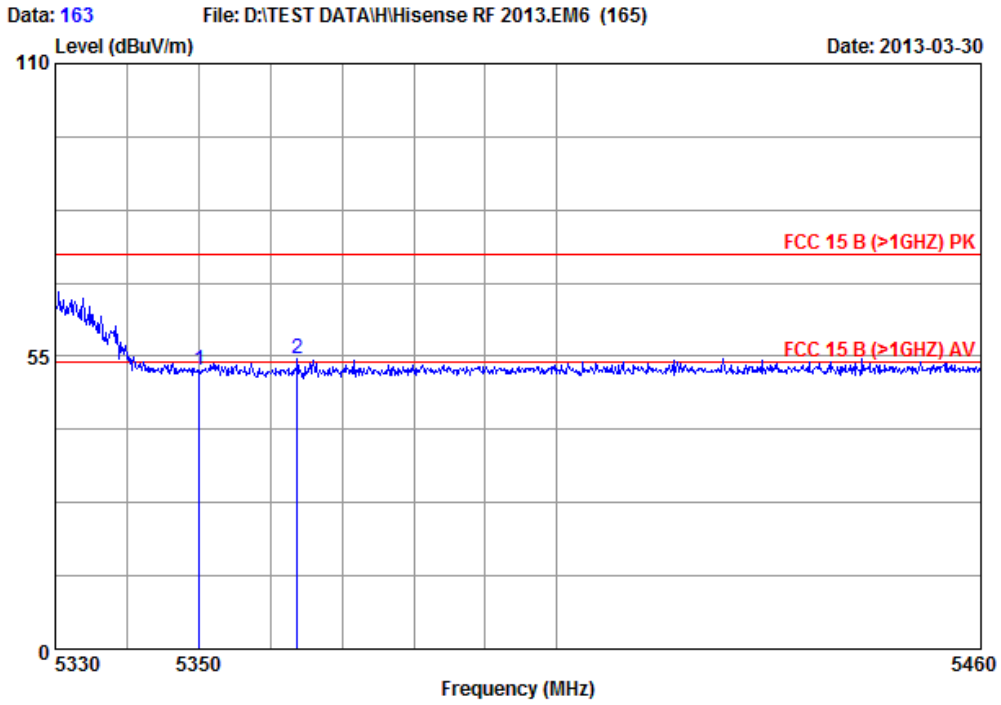
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 163
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI A CH64

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5350.000 | 32.32 | 34.80 | 8.81 | 46.07 | 52.40 | 74.00 | 21.60 | Peak |
| 2 | 5363.680 | 32.44 | 34.80 | 8.71 | 48.05 | 54.40 | 74.00 | 19.60 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
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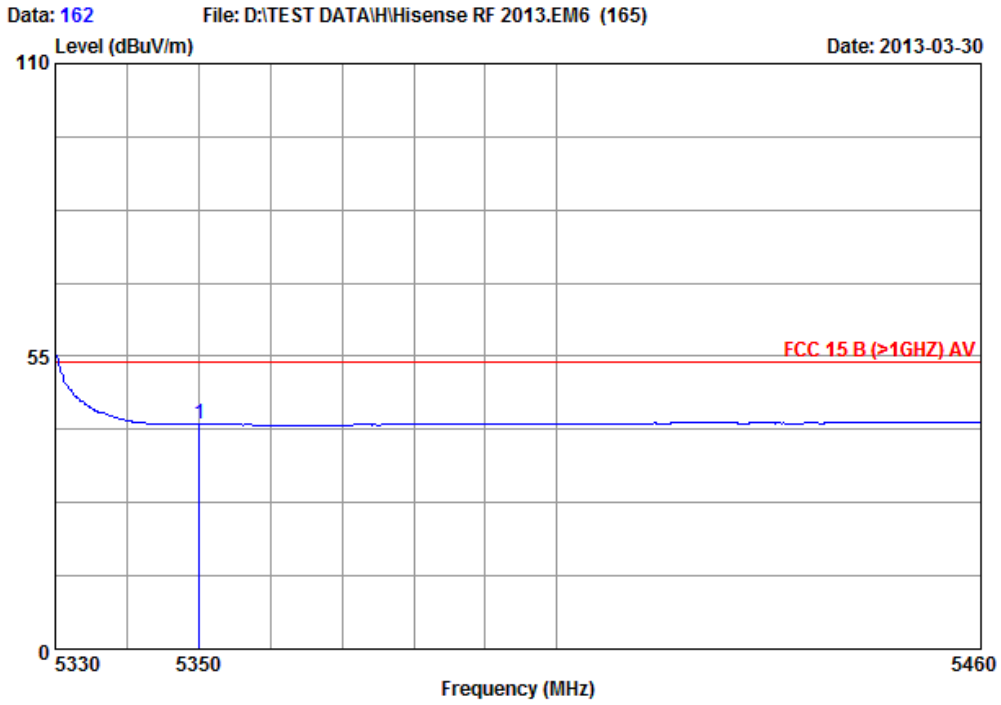
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 162
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI A CH64

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5350.000 | 32.32 | 34.80 | 8.81 | 35.87 | 42.20 | 54.00 | 11.80 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

**For 802.11n Ch64:**

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
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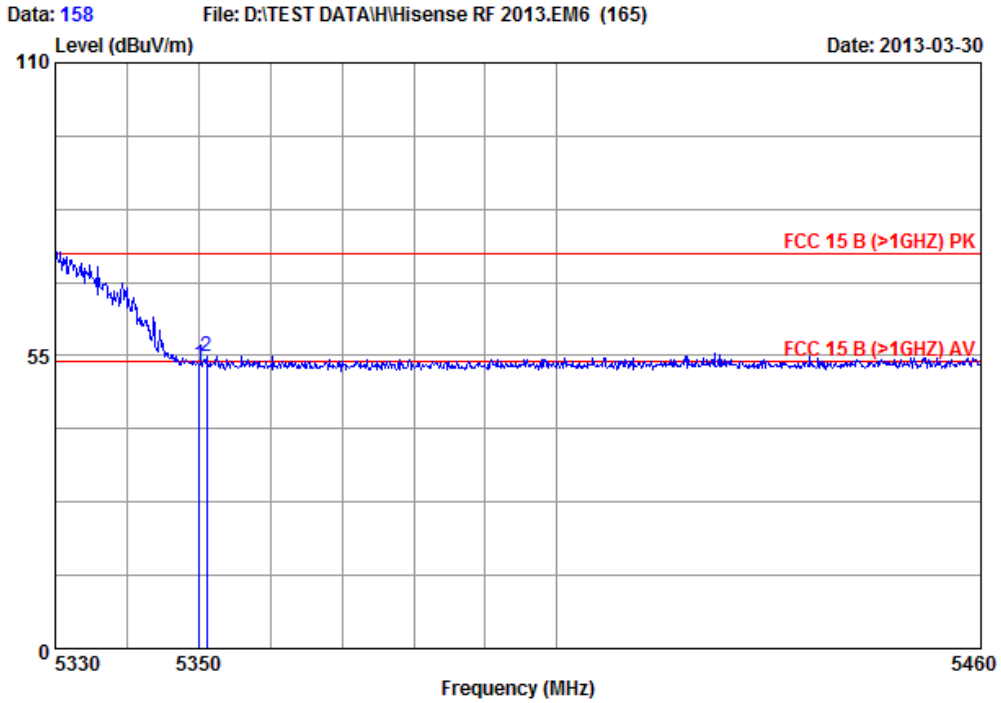
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

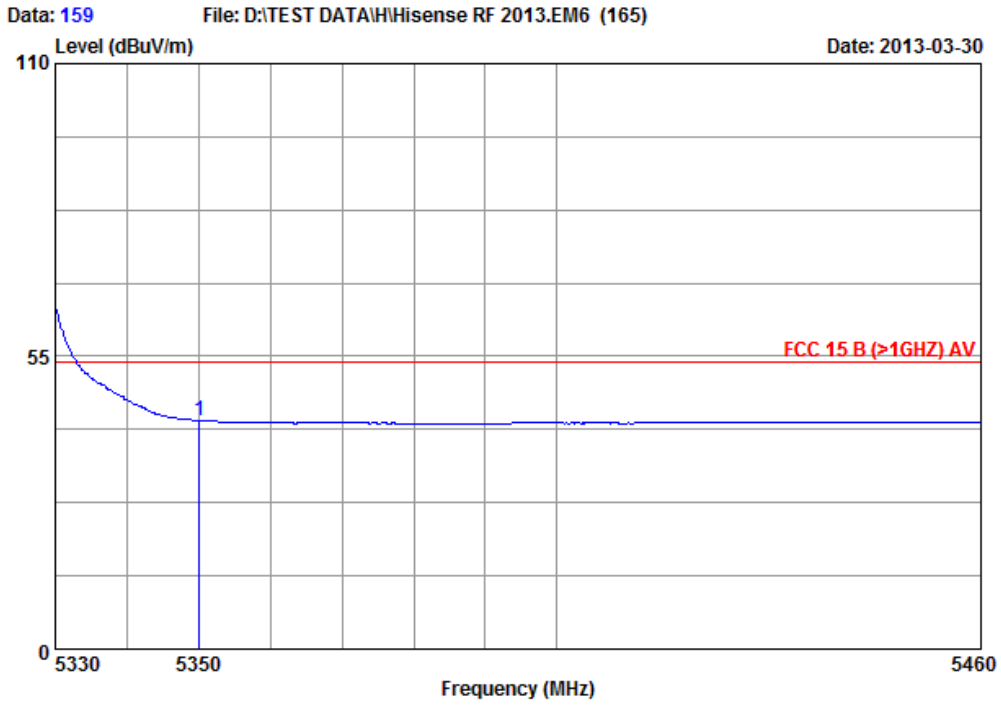



Site no : Audix ACI (3m Chamber) Data no. : 158
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI N CH64

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5350.000 | 32.32 | 34.80 | 8.81 | 47.04 | 53.37 | 74.00 | 20.63 | Peak |
| 2 | 5351.080 | 32.32 | 34.80 | 8.81 | 48.63 | 54.96 | 74.00 | 19.04 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

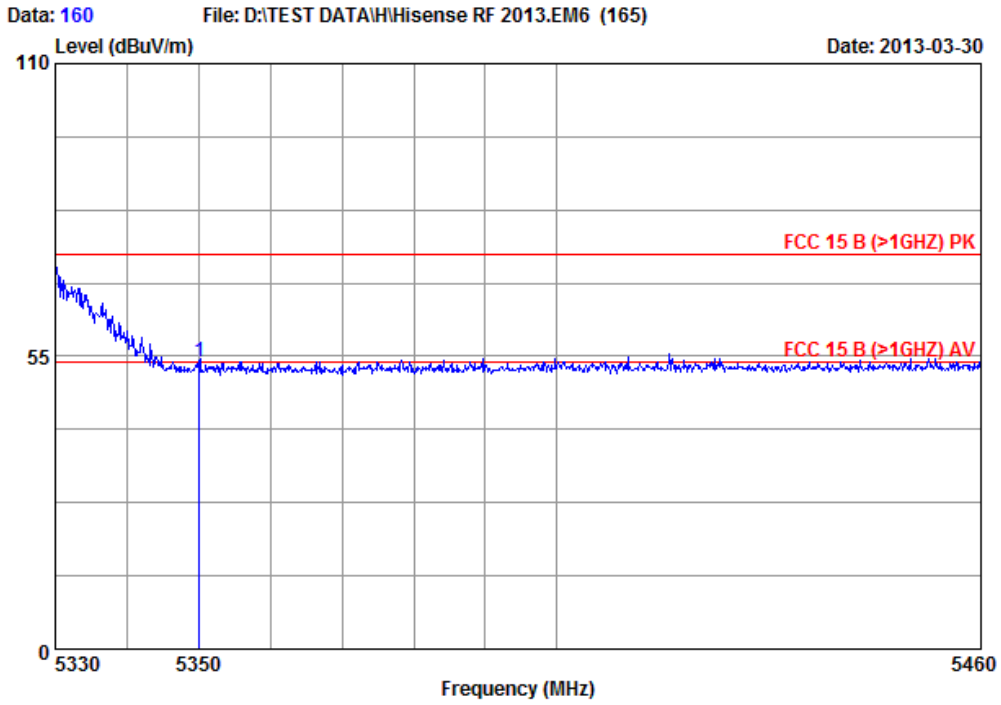



Site no : Audix ACI (3m Chamber) Data no. : 159
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : HORIZONTAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI N CH64

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5350.000 | 32.32 | 34.80 | 8.81 | 36.65 | 42.98 | 54.00 | 11.02 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com

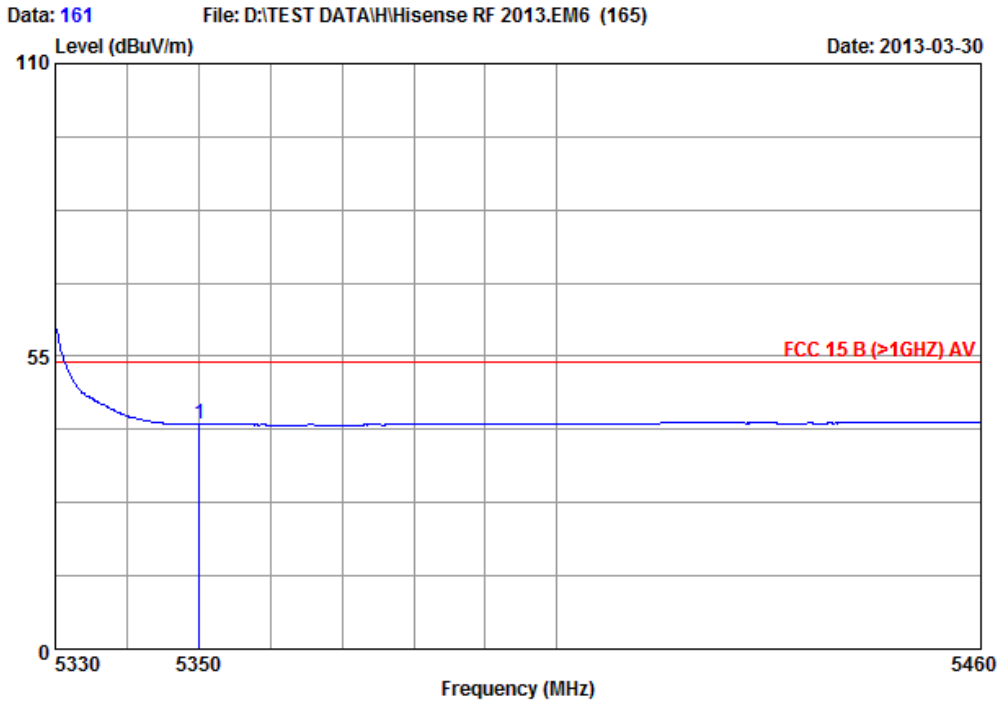



Site no : Audix ACI (3m Chamber) Data no. : 160
Dis. / Ant. : 3m /EMCO 3115
Limit : FCC 15 B (>1GHZ) PK Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI N CH64

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5350.000 | 32.32 | 34.80 | 8.81 | 47.72 | 54.05 | 74.00 | 19.95 | Peak |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

Audix Technology (Shanghai) Co., Ltd.
3F #34Bldg. No.680 GuiPing Rd.,
CaoHeJing Hi-Tech Park,
Shanghai 200233, China
Tel:+86-21-64955500 Fax:+86-21-64955491
audixaci@audix.com




Site no : Audix ACI (3m Chamber) Data no. : 161
Dis. / Ant. : 3m /EMCO3115 2012-05-03
Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
Env. / Ins. : 22'C 60%RH/ E7405A Engineer : Dio
Test Mode : WIFI N CH64

| | Freq. (MHz) | Antenna Factor (dB/m) | Preamp Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5350.000 | 32.32 | 34.80 | 8.81 | 35.99 | 42.32 | 54.00 | 11.68 | Average |

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

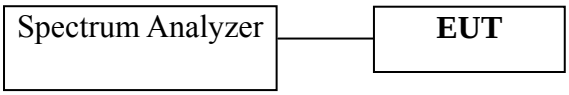
# 5 26 dB BANDWIDTH MEASUREMENT

## 5.1 Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Spectrum Analyzer | Agilent | E4447A | MY45300136 | Jan 05, 2013 | Jan 05, 2014 |

## 5.2 Block Diagram of Test Setup




## 5.3 Specification Limits (§15.407(a))

None specification limits, for reporting purposes only.

## 5.4 Operating Condition of EUT

The test program "adb shell" was used to enable the EUT to transmit data at different channel frequency individually.

## 5.5 Test Procedure

The transmitter output was connected to the spectrum analyzer.
Set RBW = approximately 1% of the emission bandwidth, VBW > RBW.
Measure the maximum width of the emission that is 26 dB down from the peak of the emission.
The test procedure is defined in KDB789033 D) Emission bandwidth.

## 5.6 Test Results

**PASSED.**

All the test results are attached in next pages.

(Test Date: Mar. 06, 2013 Temperature: 24℃ Humidity: 45 %)

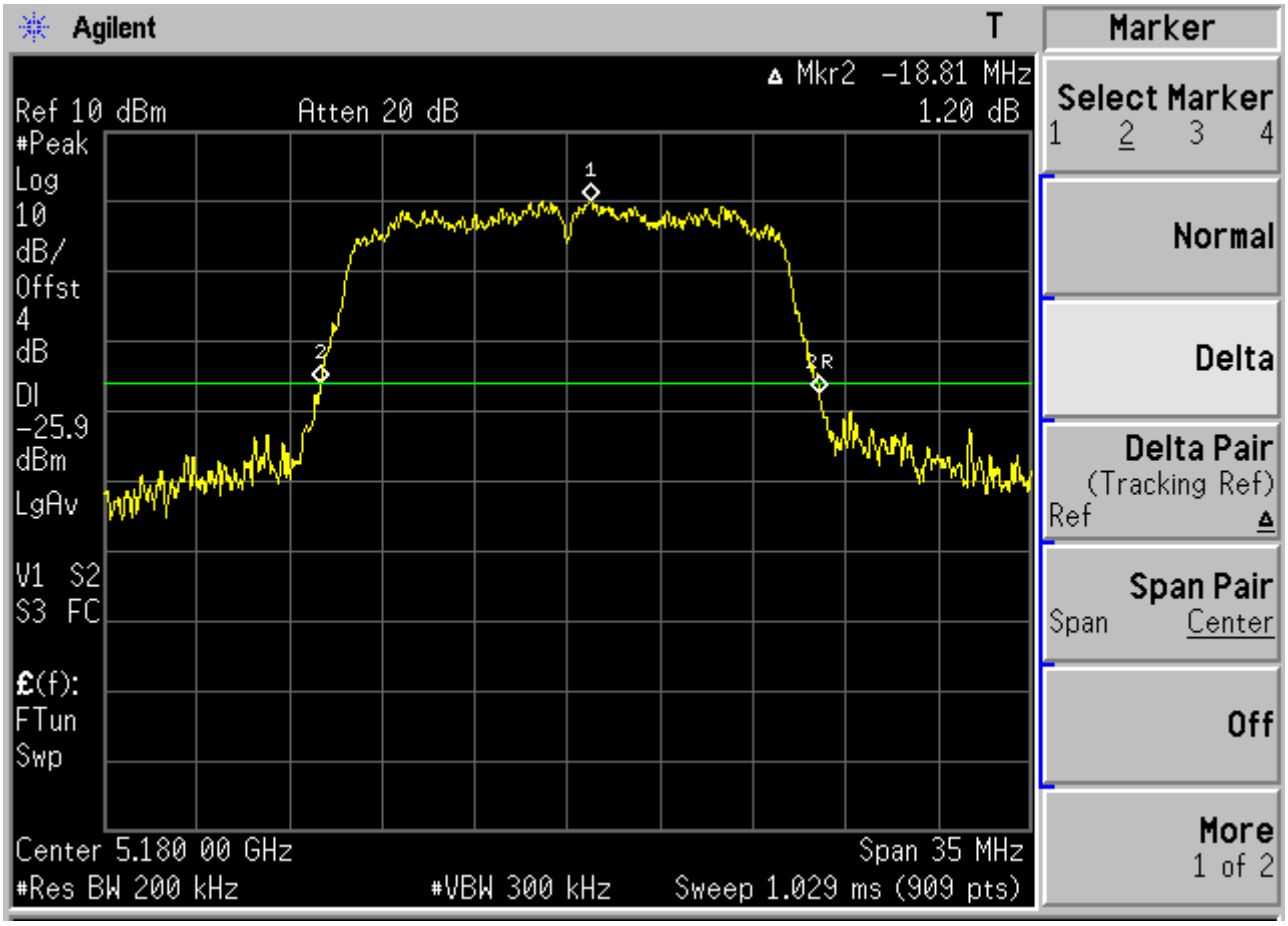
5.2GHz Band:

| Modulation | Channel | Frequency | **26dB Bandwidth** |
|---|---|---|---|
| 802.11a | 36 | 5180 MHz | **18.81 MHz** |
| | 40 | 5200 MHz | **18.81 MHz** |
| | 48 | 5240 MHz | **18.73 MHz** |
| 802.11n HT20 | 36 | 5180 MHz | **19.16 MHz** |
| | 40 | 5200 MHz | **19.16 MHz** |
| | 48 | 5240 MHz | **19.16 MHz** |

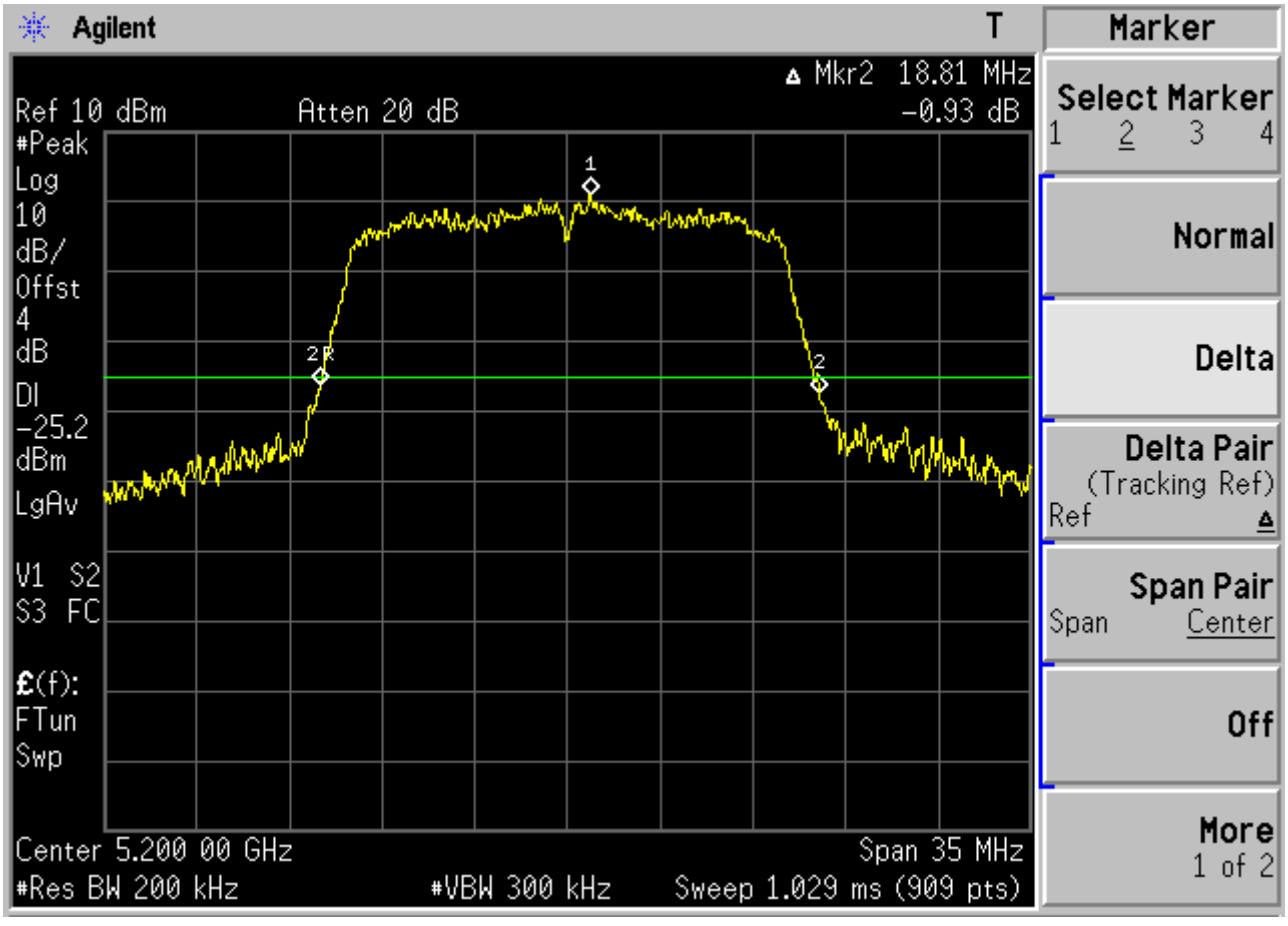
5.3GHz Band:

| Modulation | Channel | Frequency | **26dB Bandwidth** |
|---|---|---|---|
| 802.11a | 52 | 5260 MHz | **18.81 MHz** |
| | 60 | 5300 MHz | **18.66 MHz** |
| | 64 | 5320 MHz | **18.58 MHz** |
| 802.11n HT20 | 52 | 5260 MHz | **19.12 MHz** |
| | 60 | 5300 MHz | **19.12 MHz** |
| | 64 | 5320 MHz | **19.00 MHz** |

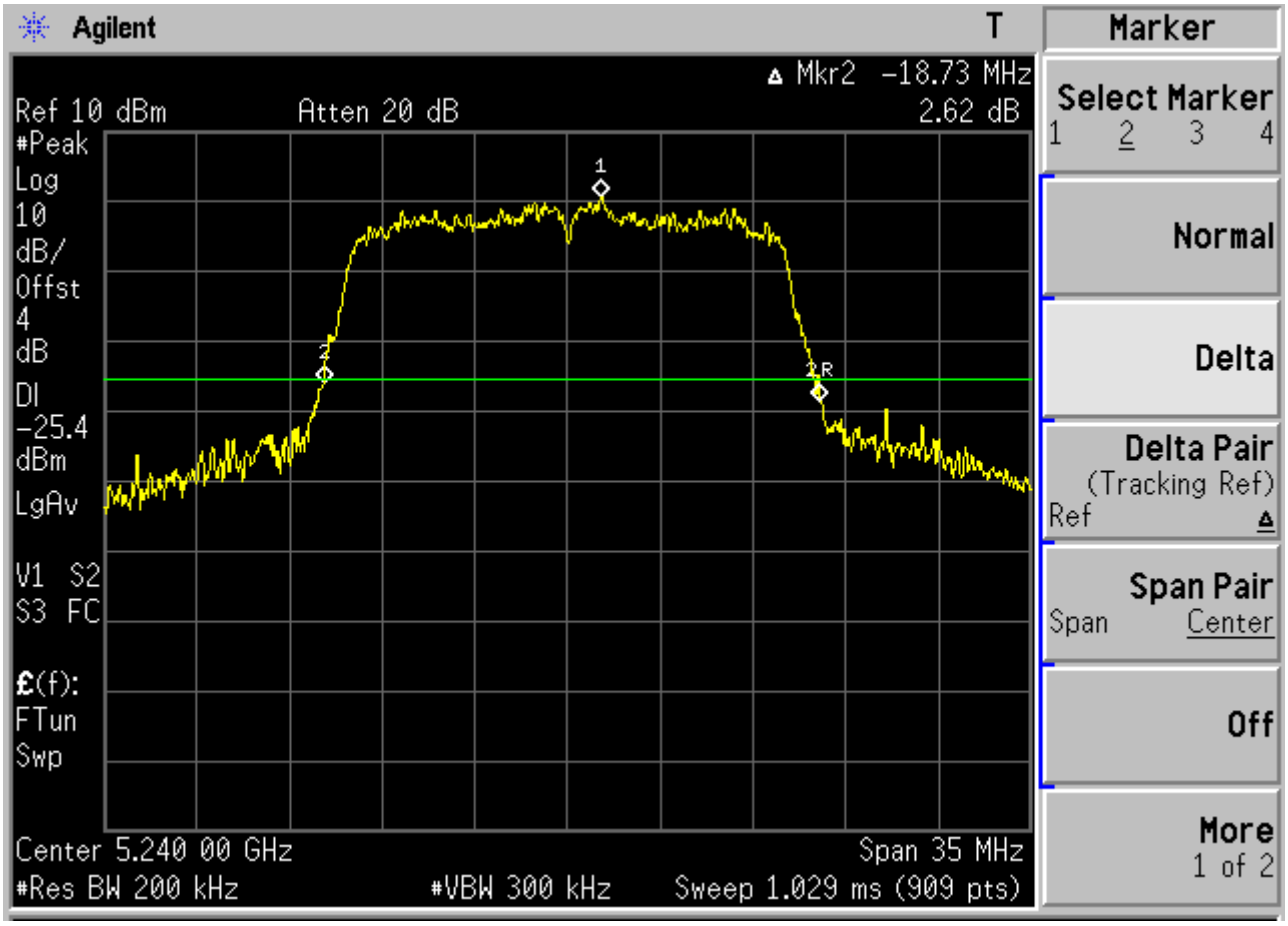
**5.2GHz Band 802.11a Ch 36**



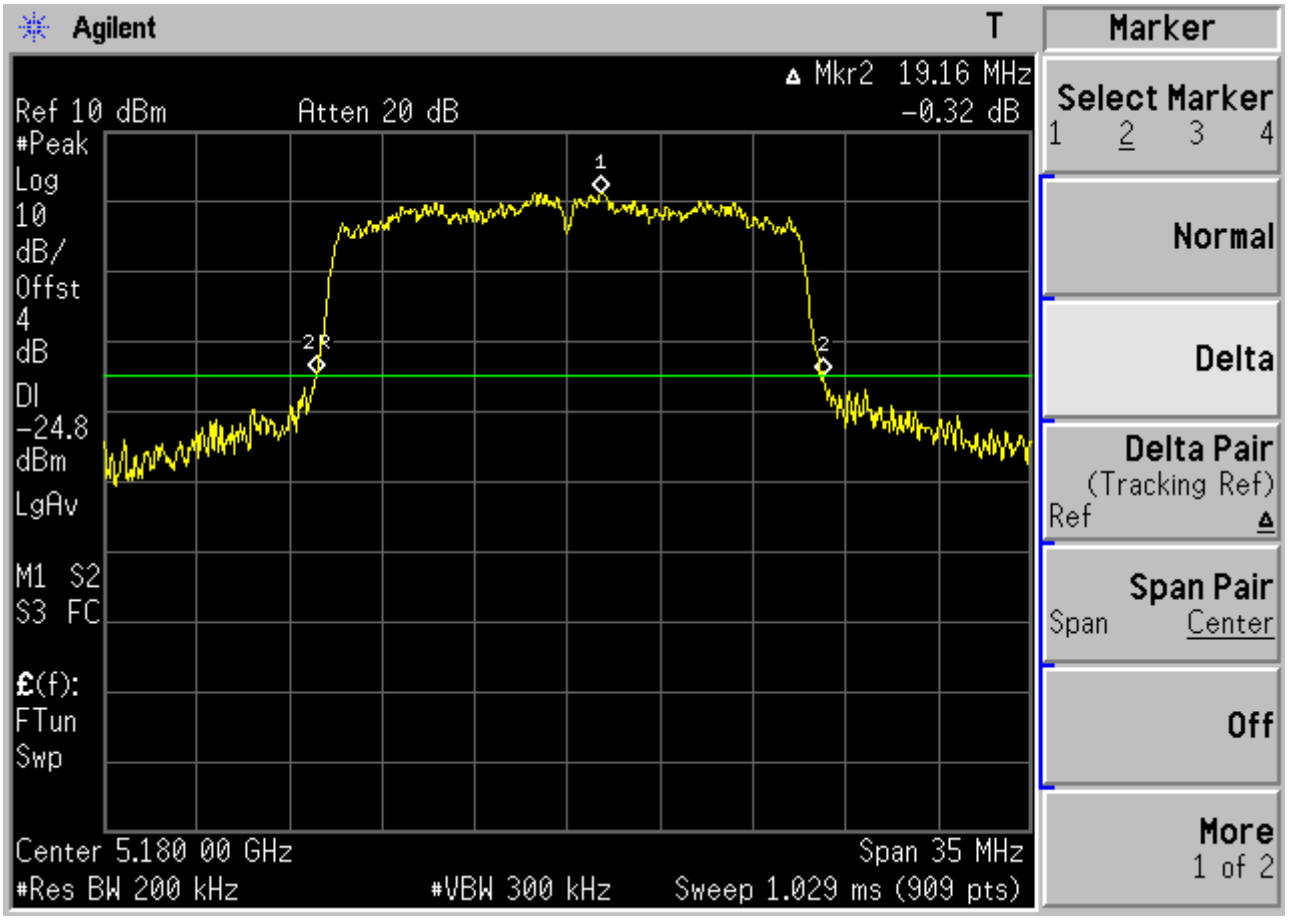

**5.2GHz Band 802.11a Ch 40**



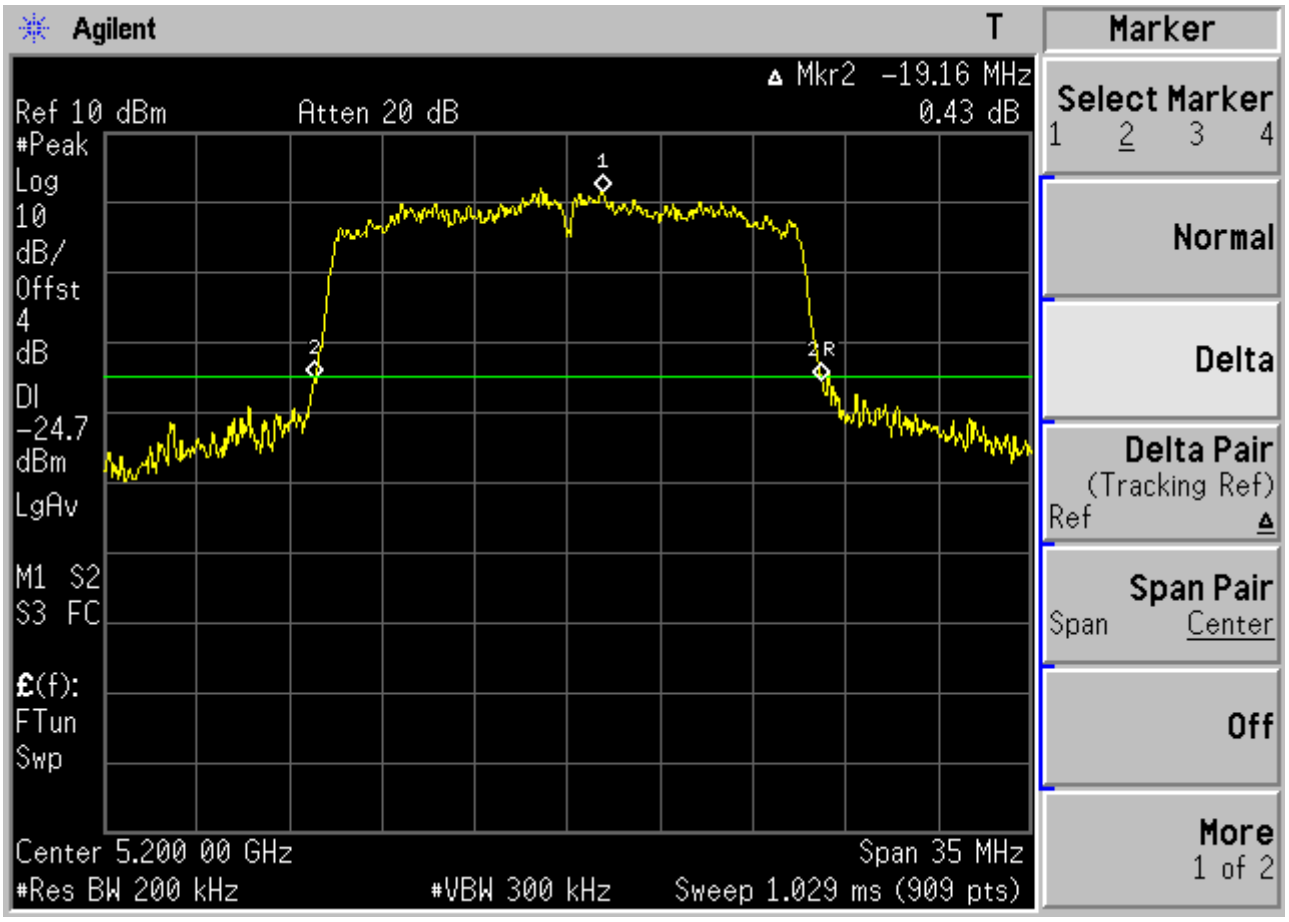
**5.2GHz Band 802.11a Ch 48**



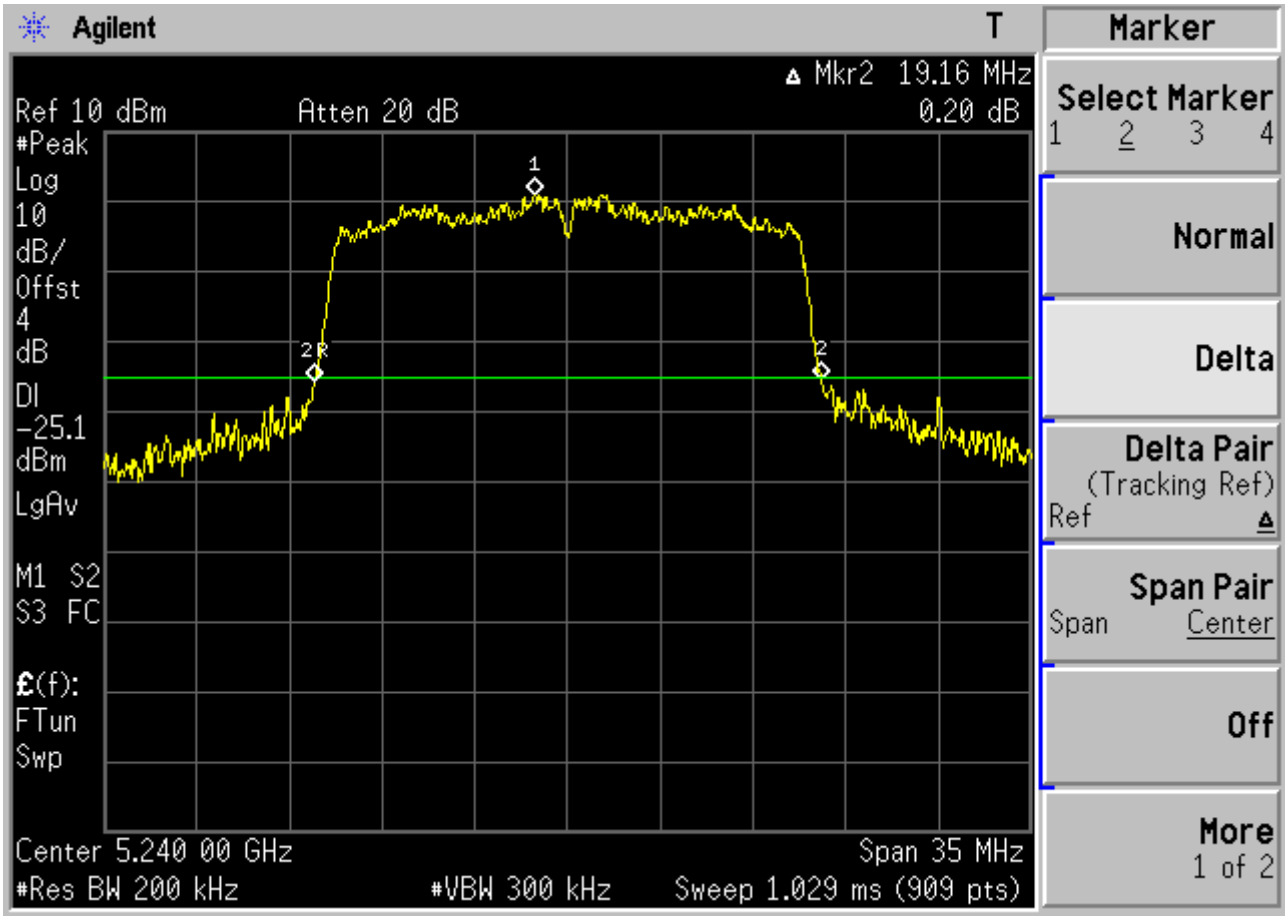
**5.2GHz Band 802.11n Ch 36**



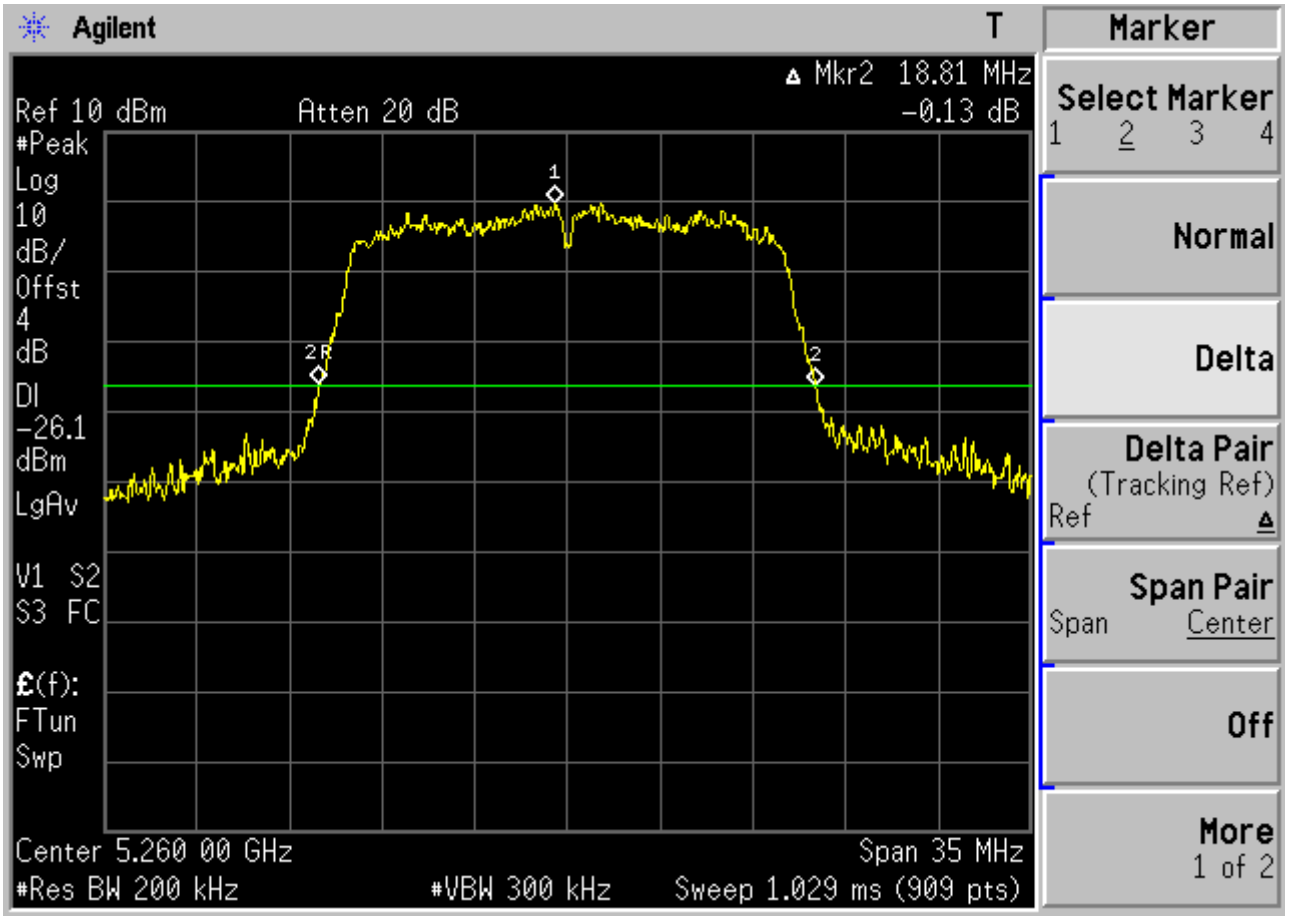

**5.2GHz Band 802.11n Ch 40**



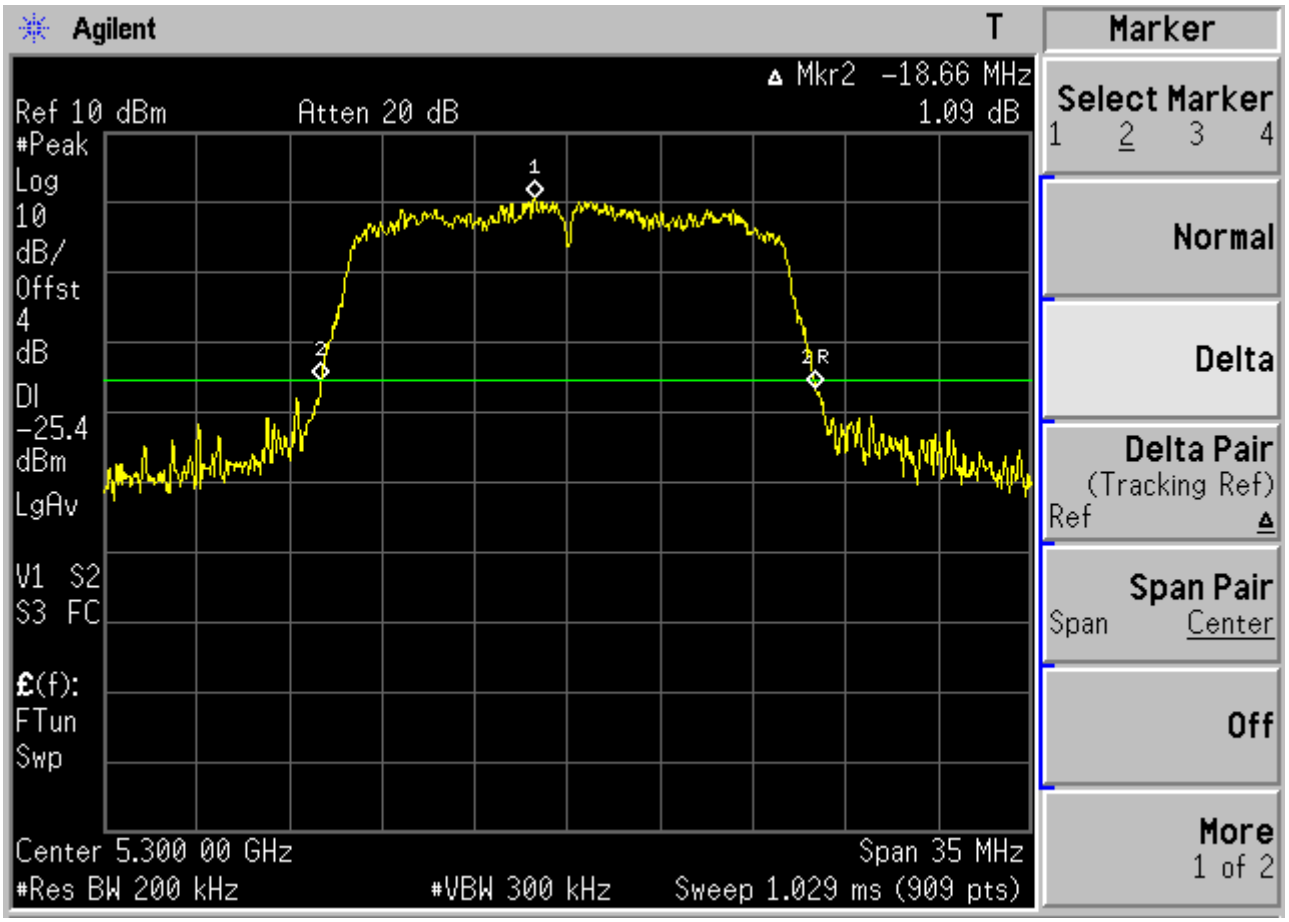
**5.2GHz Band 802.11n Ch 48**



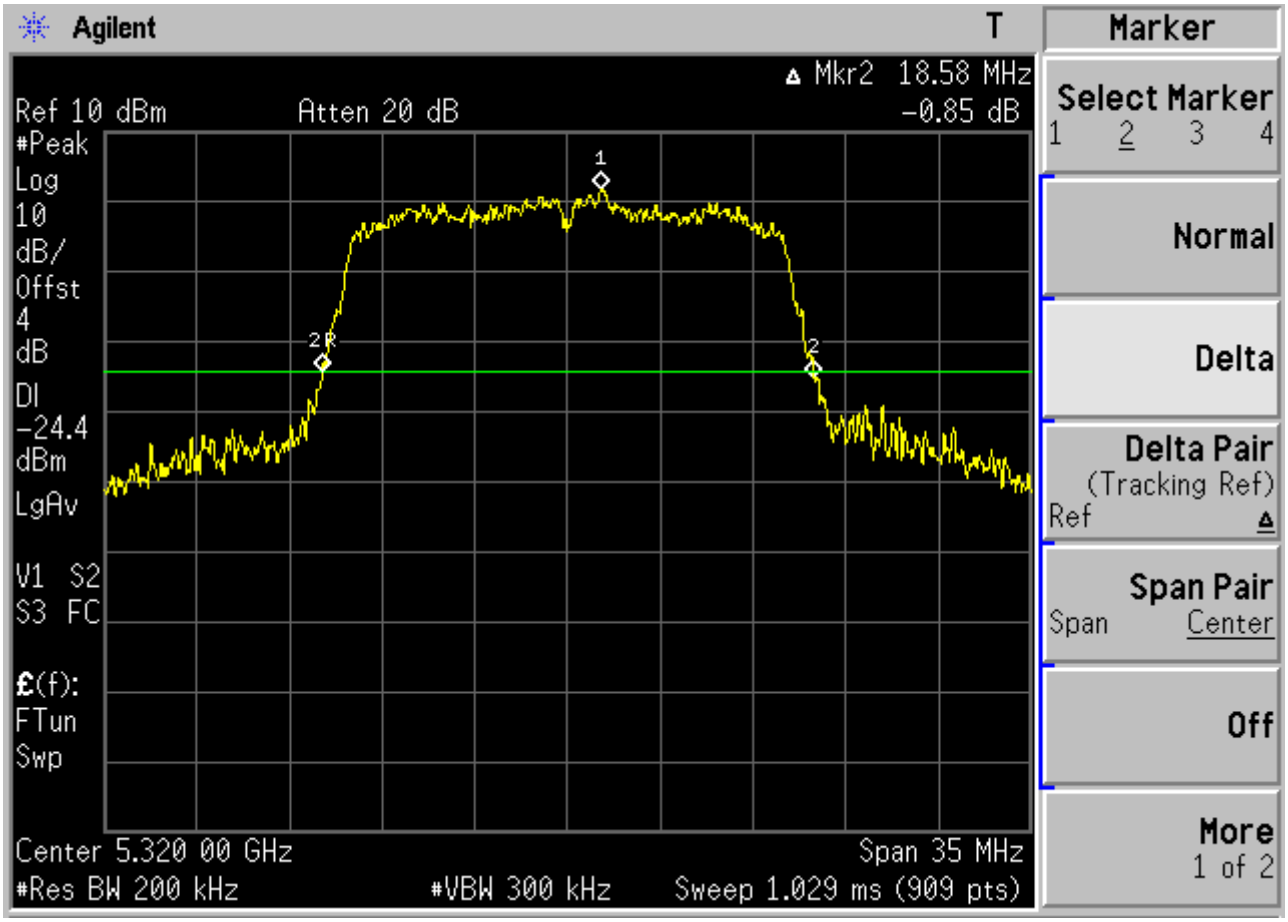
**5.3GHz Band 802.11a Ch 52**



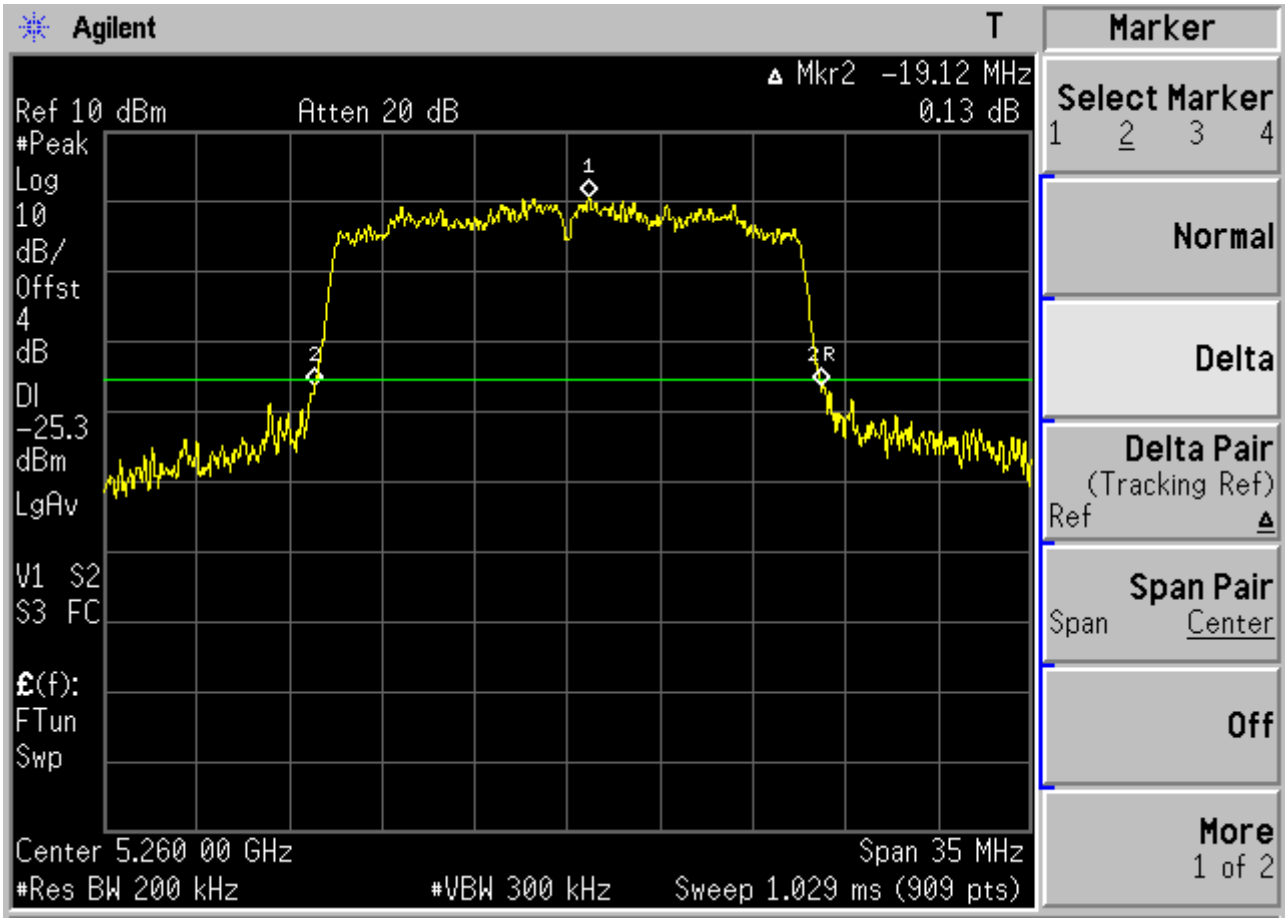

**5.3GHz Band 802.11a Ch 60**



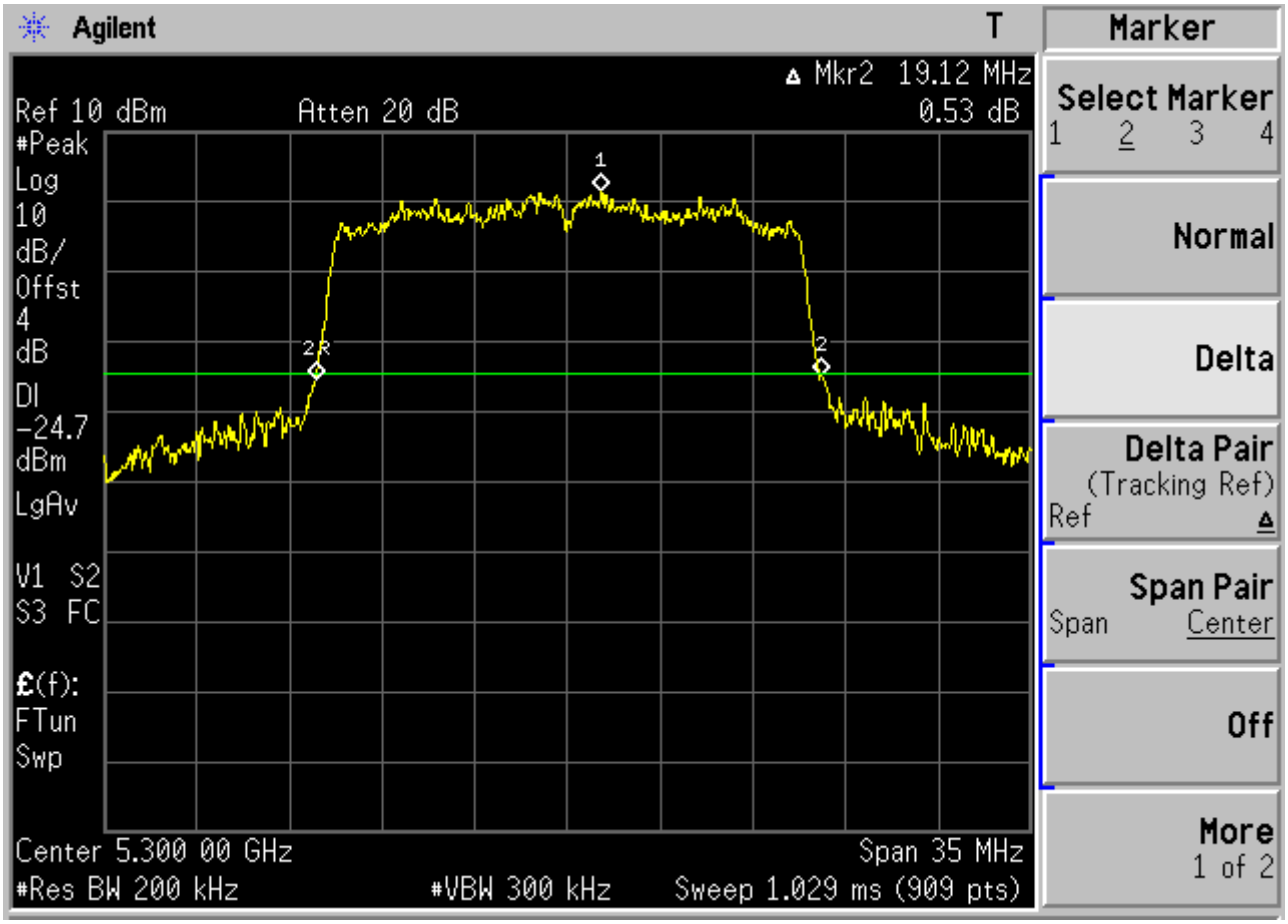
**5.3GHz Band 802.11a Ch 64**



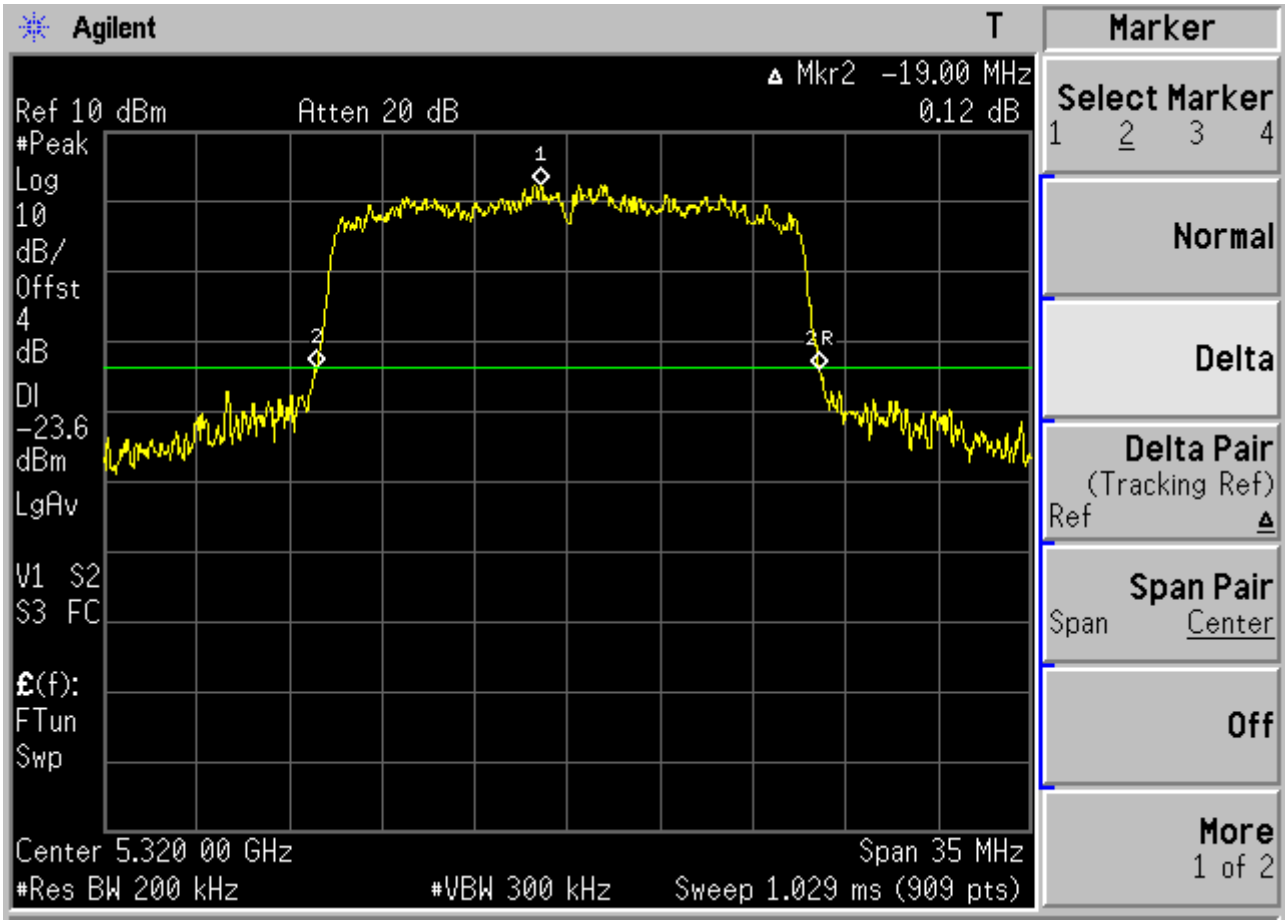
**5.3GHz Band 802.11n Ch 52**




**5.3GHz Band 802.11n Ch 60**



**5.3GHz Band 802.11n Ch 64**



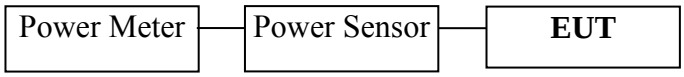
# 6 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

## 6.1 Test Equipment

The following test equipment was used during the maximum peak output power measurement:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Power Meter | Anritsu | ML2487A | 6K00003245 | Mar 22, 2012 | Mar 22, 2013 |
| 2. | Power Sensor | Anritsu | MA2491A | 32489 | Mar 22, 2012 | Mar 22, 2013 |

## 6.2 Block Diagram of Test Setup




## 6.3 Specification Limits ((§15.407(a)(1), (a)(2))

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz.

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

## 6.4 Operating Condition of EUT

The test program “adb shell” was used to enable the EUT to transmit data at different channel frequency individually.

## 6.5 Test Procedure

This is an RF conducted test.

Use a direct connection between the antenna port of the transmitter and the power meter, through suitable attenuation. We use Method PM (Measurement using an RF average power meter) which defined in KDB789033 to measure the power output. The transmitter output was connected to the power meter that was designed to detect peak value automatically.

Note: The bandwidth of the power meter is 20MHz.

## 6.6 Test Results

**PASSED.** All the test results are listed below.

(Test Date: Mar. 04, 2013 Temperature: 24℃ Humidity: 45 %)

5.2GHz Band:

| Modulation | Channel | Frequency | **Peak Power (dBm)** | **Average Power (dBm)** | Limit (dBm) |
|---|---|---|---|---|---|
| 802.11a | 36 | 5180 MHz | **15.33** | **9.05** | 16.73 |
| | 40 | 5200 MHz | **15.18** | **8.89** | 16.73 |
| | 48 | 5240 MHz | **14.89** | **8.78** | 16.73 |

Note: The 50mW limit (17dBm) is greater than the 4 dBm + 10 log B (16.73dBm) limit, so 16.73dBm is used as limit.

| Modulation | Channel | Frequency | **Peak Power (dBm)** | **Average Power (dBm)** | Limit (dBm) |
|---|---|---|---|---|---|
| 802.11n HT20 | 36 | 5180 MHz | **15.64** | **9.87** | 16.82 |
| | 40 | 5200 MHz | **15.45** | **9.68** | 16.82 |
| | 48 | 5240 MHz | **15.17** | **9.49** | 16.82 |

Note: The 50mW limit (17dBm) is greater than the 4 dBm + 10 log B (16.82dBm) limit, so 16.82dBm is used as limit.

5.3GHz Band:

| Modulation | Channel | Frequency | **Peak Power (dBm)** | **Average Power (dBm)** | Limit (dBm) |
|---|---|---|---|---|---|
| 802.11a | 52 | 5260 MHz | **14.78** | **8.76** | 23.69 |
| | 60 | 5300 MHz | **14.73** | **8.96** | 23.69 |
| | 64 | 5320 MHz | **14.92** | **9.20** | 23.69 |

Note: The 250mW limit (24dBm) is greater than the 11 dBm + 10 log B (23.69dBm) limit, so 23.69dBm is used as limit.

| Modulation | Channel | Frequency | **Peak Power (dBm)** | **Average Power (dBm)** | Limit (dBm) |
|---|---|---|---|---|---|
| 802.11n HT20 | 52 | 5260 MHz | **15.06** | **9.53** | 23.79 |
| | 60 | 5300 MHz | **15.04** | **9.71** | 23.79 |
| | 64 | 5320 MHz | **15.23** | **9.96** | 23.79 |

Note: The 250mW limit (24dBm) is greater than the 11 dBm + 10 log B (23.79dBm) limit, so 23.79dBm is used as limit.

# 7 POWER SPECTRAL DENSITY MEASUREMENT

## 7.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Spectrum Analyzer | Agilent | E7405A | MY45106600 | Mar 22, 2012 | Mar 22, 2013 |

## 7.2 Block Diagram of Test Setup

The same as section.5.2.

## 7.3 Specification Limits (§15.407(a)(1), (a)(2))

For the band 5.15–5.25 GHz, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band.

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band.

## 7.4 Operating Condition of EUT

The test program "adb shelll" was used to enable the EUT to transmit data at different channel frequency individually.

## 7.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The spectrum analyzer was set as RBW = 1MHz, VBW ≥ 3 x RBW, detector = Average (RMS). Use the peak search function on the spectrum analyzer to find the peak of the spectrum. The result is the PPSD.
The test procedure is defined in KDB789033 E) Peak power spectral density (PPSD). (for step E) 1), the SA-3 test method was used).

## 7.6 Test Results

**PASSED**. All the test results are attached in next pages.

(Test Date: Mar. 05, 2013 Temperature: 24℃ Humidity: 46 %)

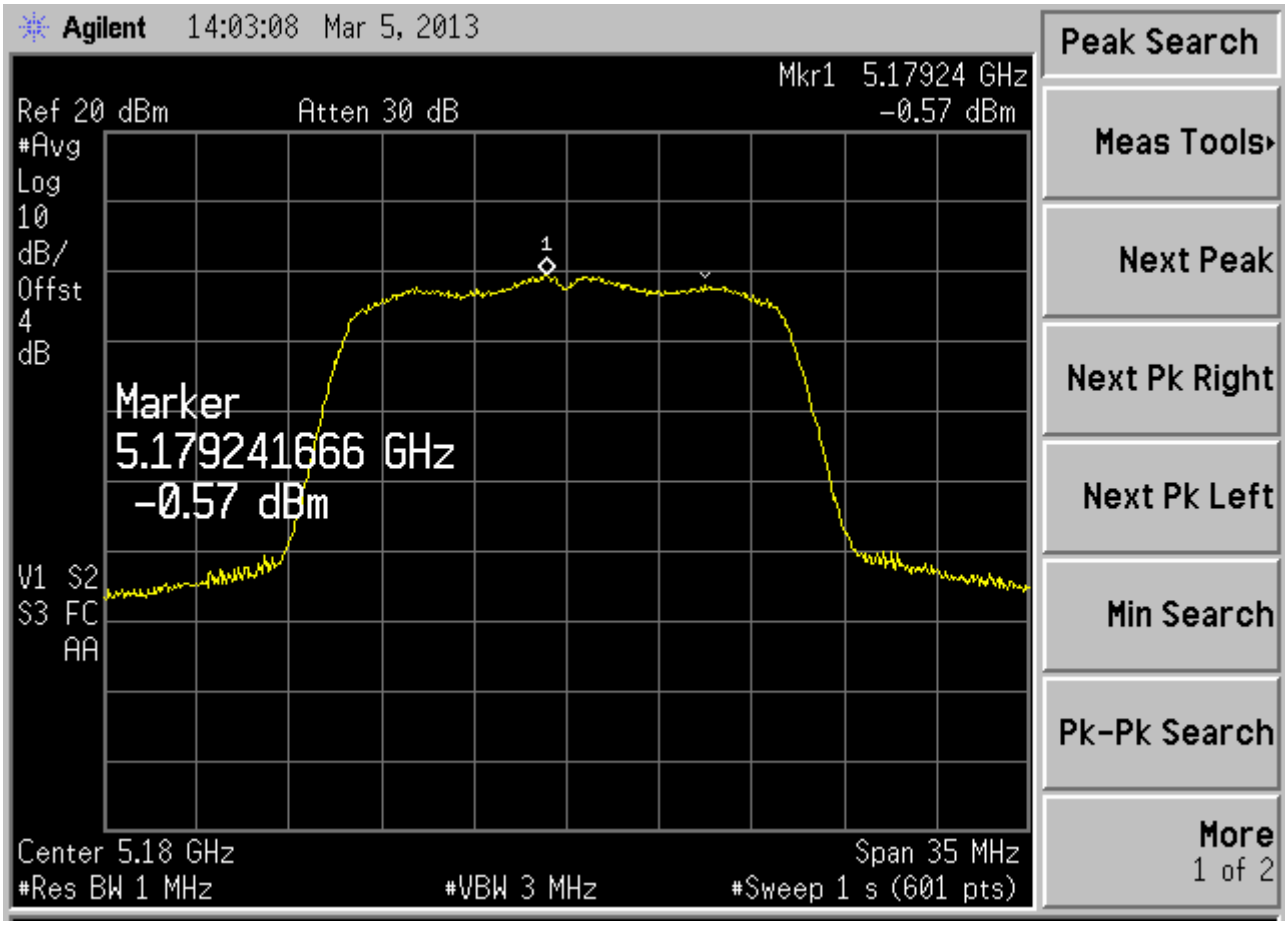
5.2GHz Band:

| Modulation | Channel | Frequency | Peak Power Spectral Density (dBm) | Limit (dBm) |
|---|---|---|---|---|
| 802.11a | 36 | 5180 MHz | -0.570 | 4 |
| | 40 | 5200 MHz | -0.011 | 4 |
| | 48 | 5240 MHz | -1.907 | 4 |
| 802.11n HT20 | 36 | 5180 MHz | 0.020 | 4 |
| | 40 | 5200 MHz | 0.110 | 4 |
| | 48 | 5240 MHz | -1.029 | 4 |

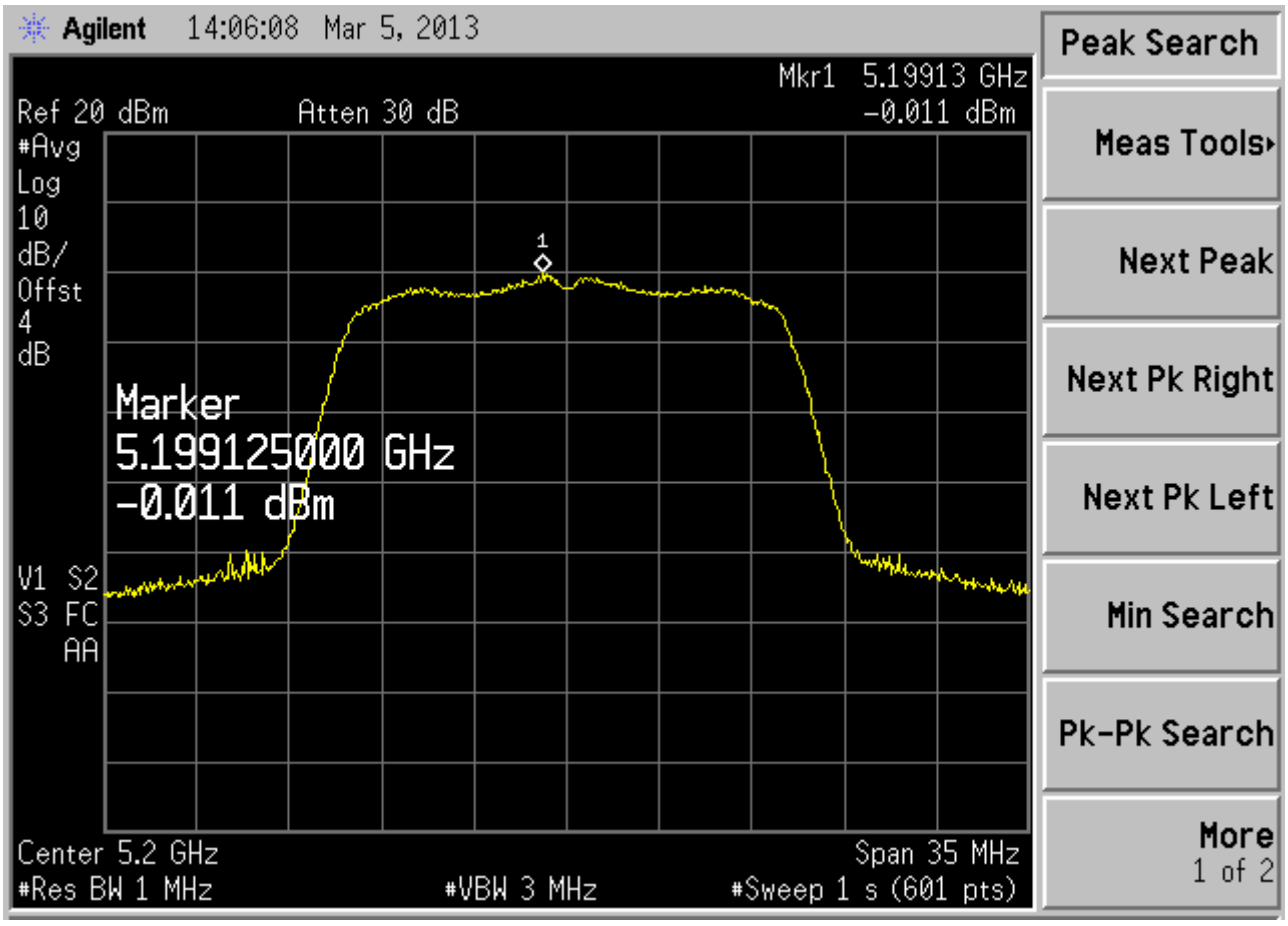
5.3GHz Band:

| Modulation | Channel | Frequency | Peak Power Spectral Density (dBm) | Limit (dBm) |
|---|---|---|---|---|
| 802.11a | 52 | 5260 MHz | -1.400 | 11 |
| | 60 | 5300 MHz | 0.049 | 11 |
| | 64 | 5320 MHz | 0.645 | 11 |
| 802.11n HT20 | 52 | 5260 MHz | -0.774 | 11 |
| | 60 | 5300 MHz | 0.667 | 11 |
| | 64 | 5320 MHz | 1.565 | 11 |

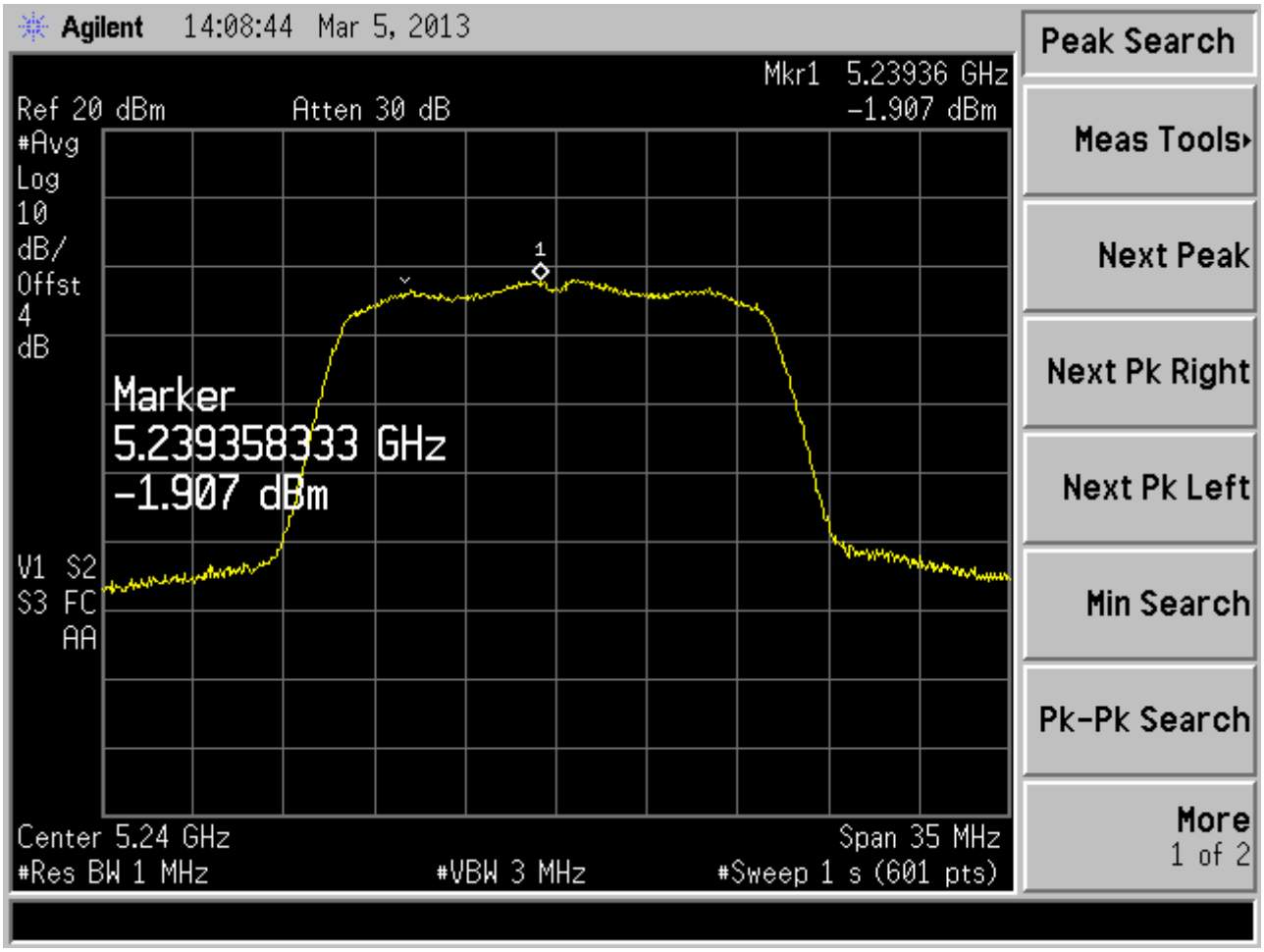
**5.2GHz Band 802.11a Ch36**



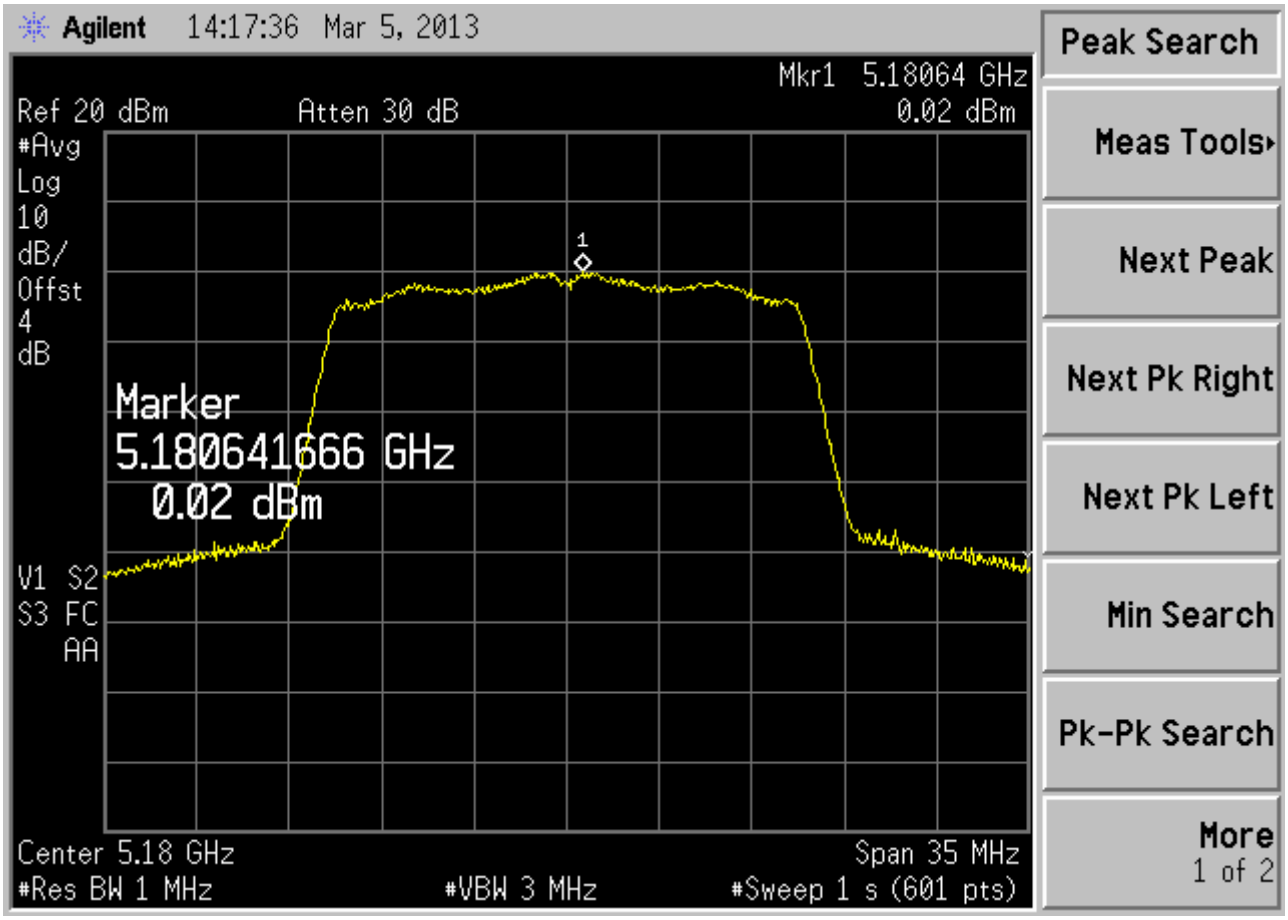

**5.2GHz Band 802.11a Ch40**



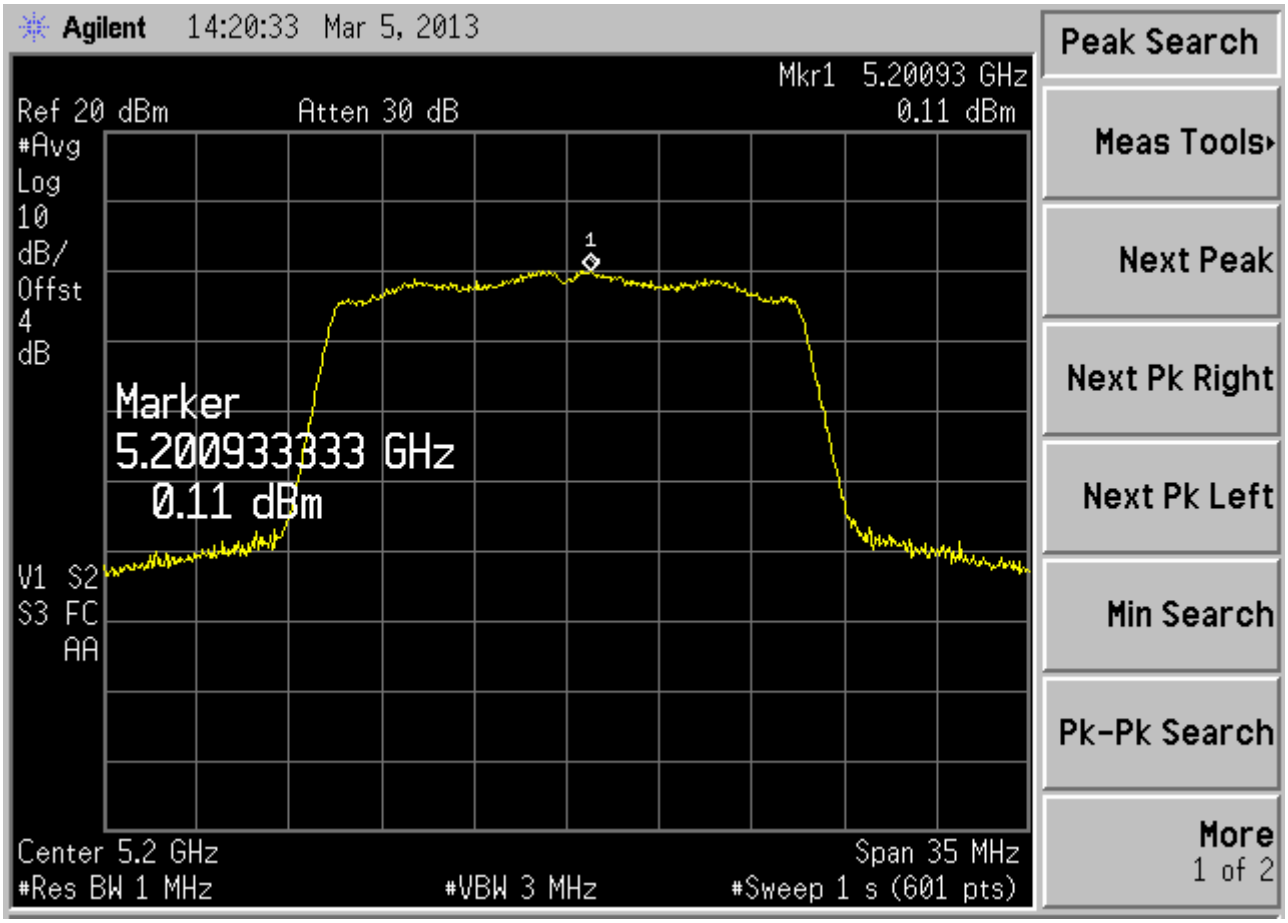
**5.2GHz Band 802.11a Ch48**



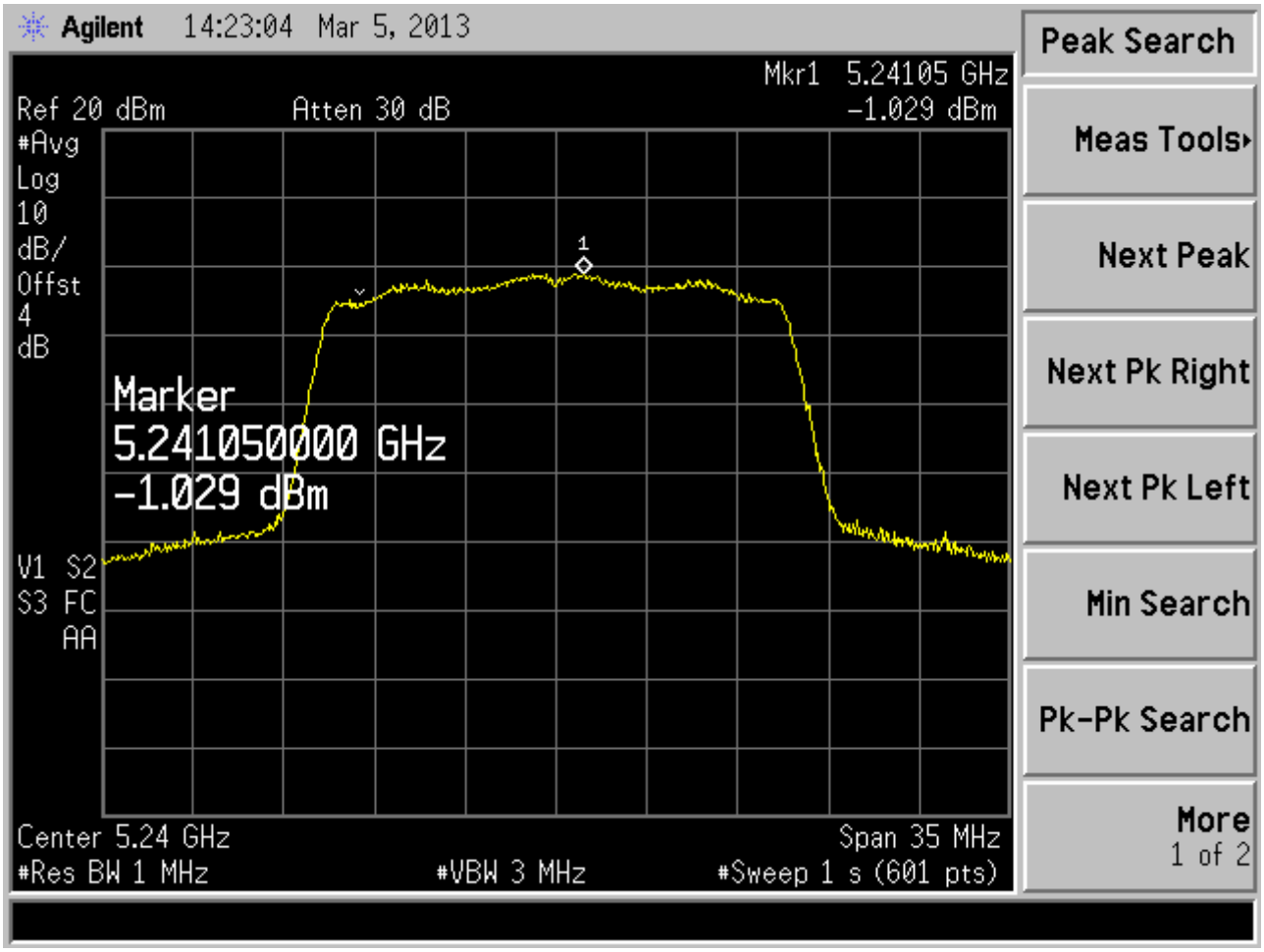
**5.2GHz Band 802.11n Ch36**



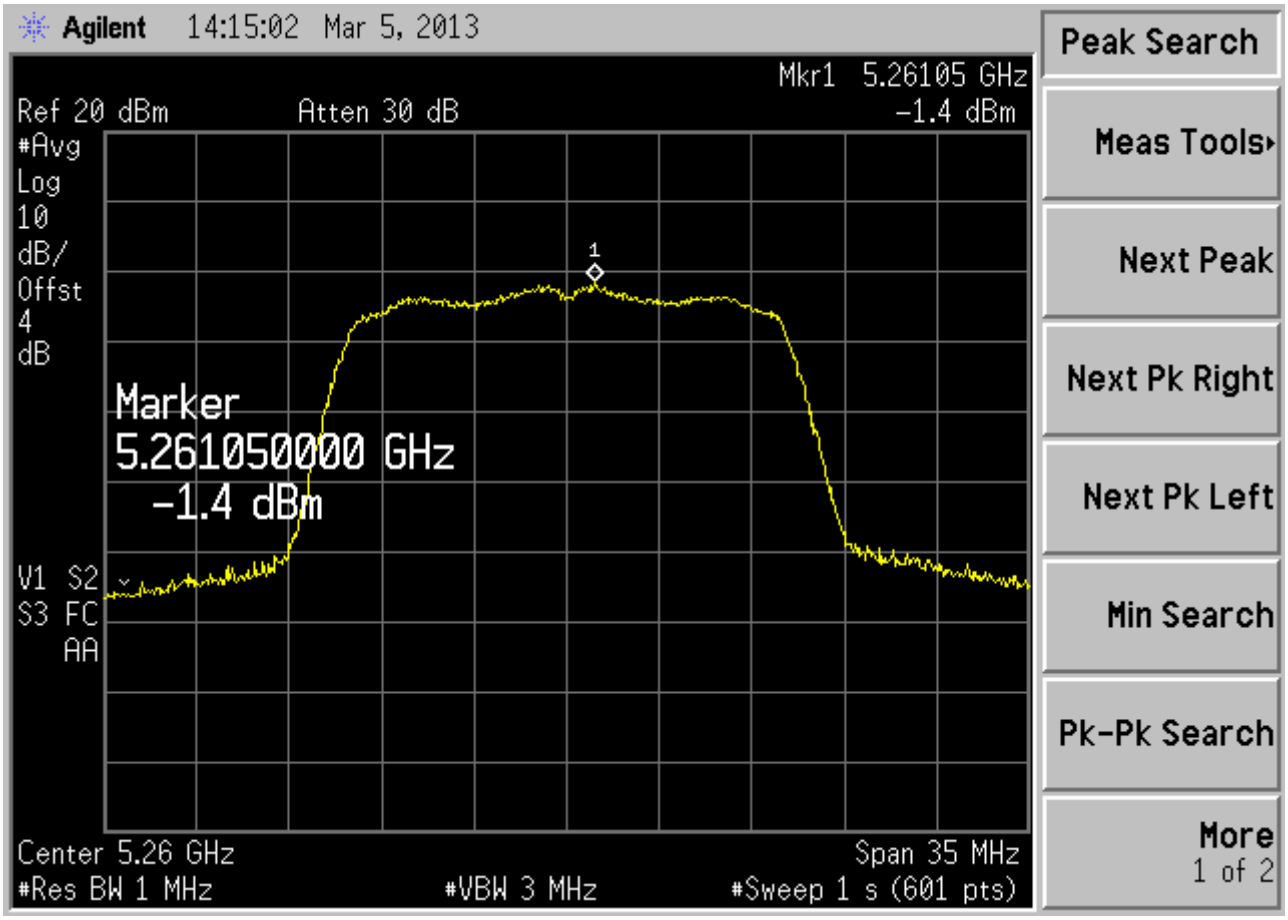

**5.2GHz Band 802.11n Ch40**



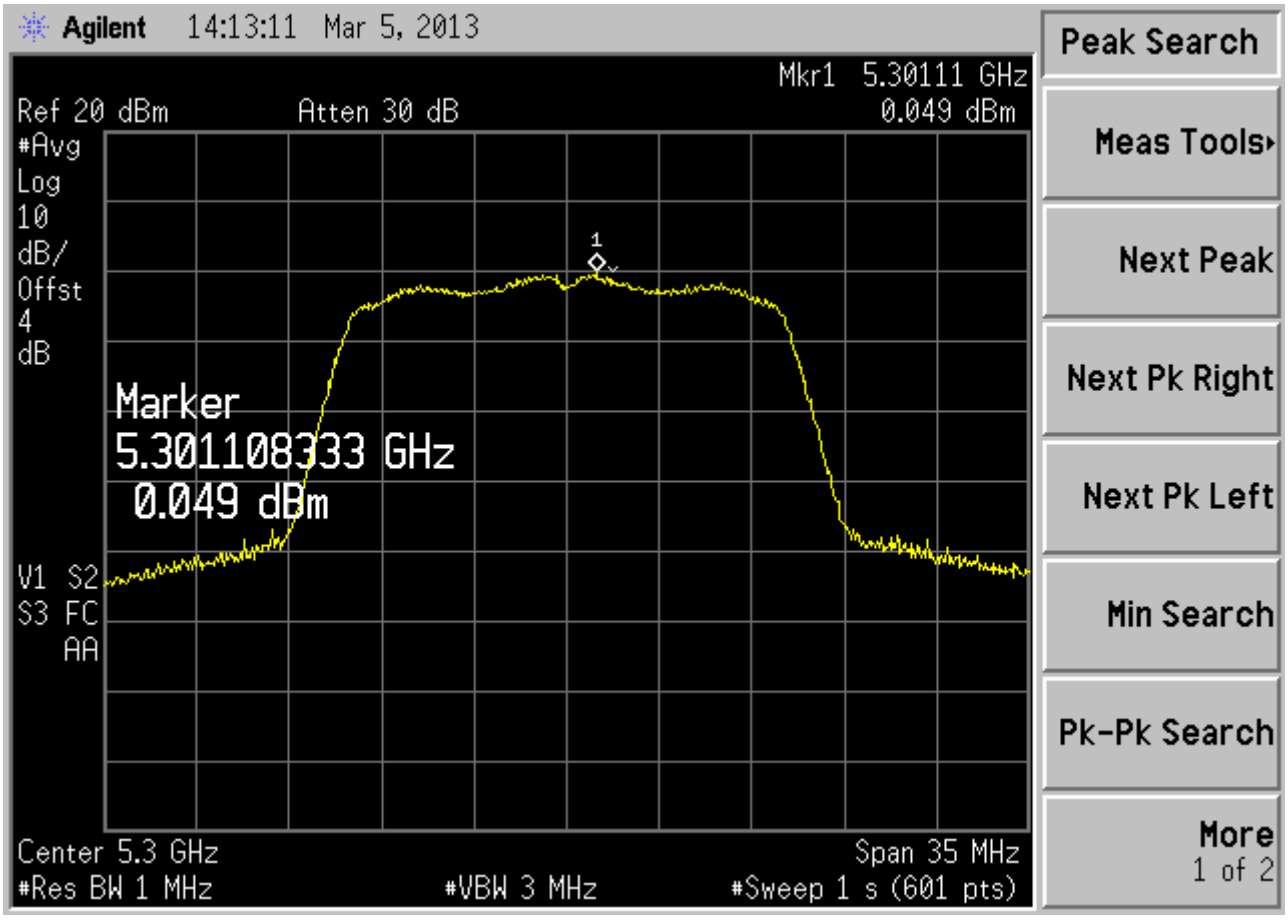
**5.2GHz Band 802.11n Ch48**



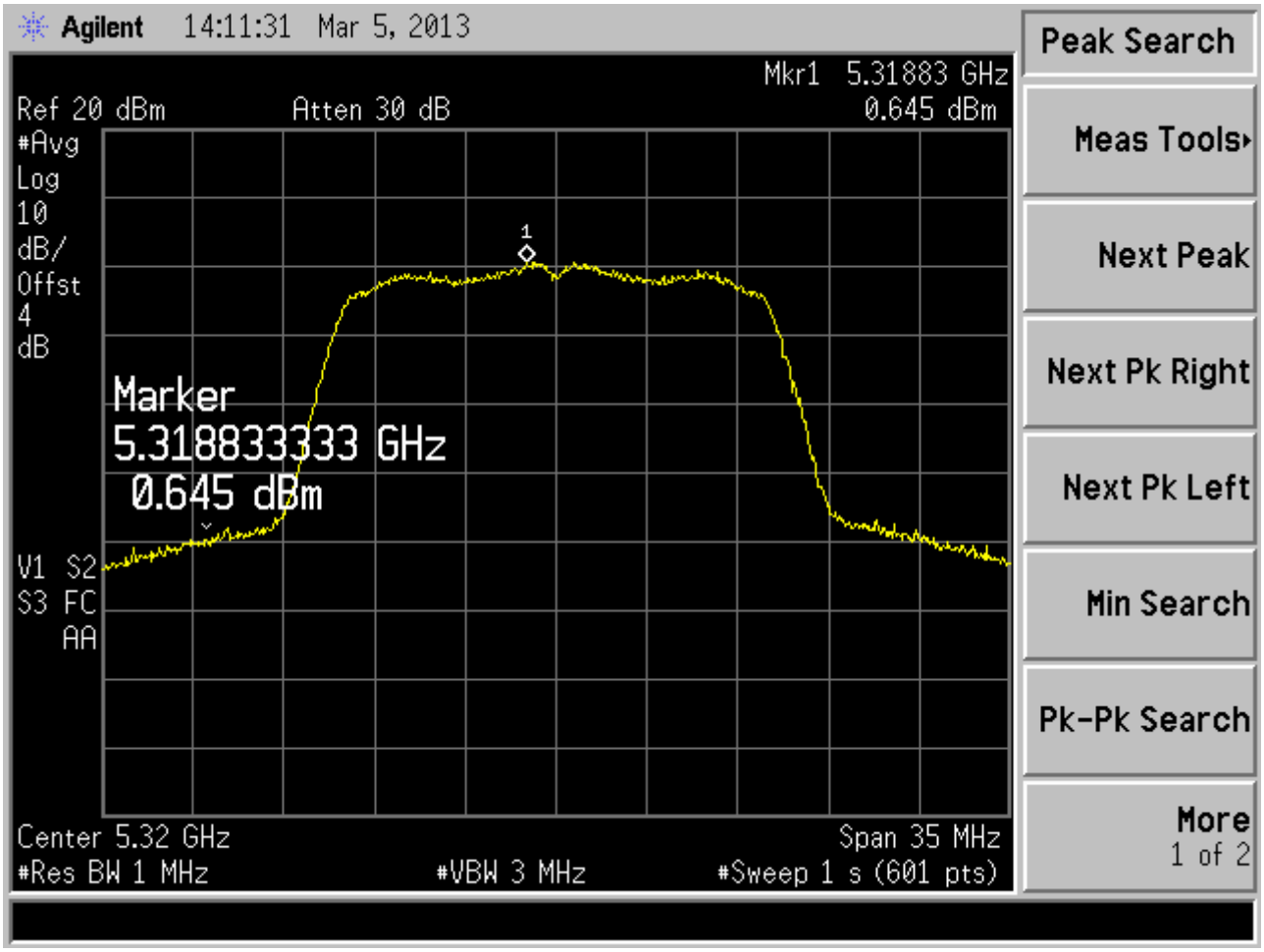
**5.3GHz Band 802.11a Ch52**



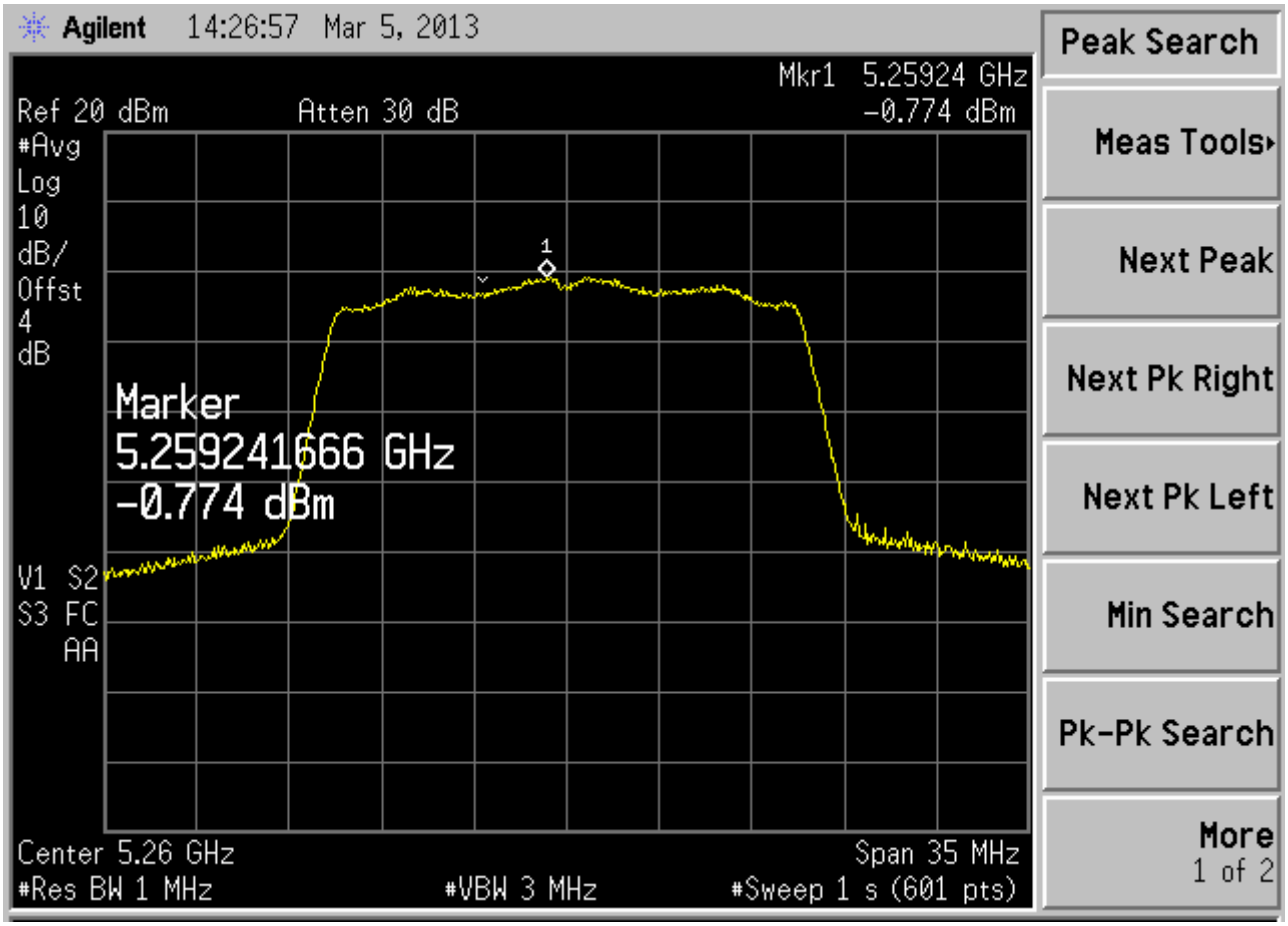

**5.3GHz Band 802.11a Ch60**



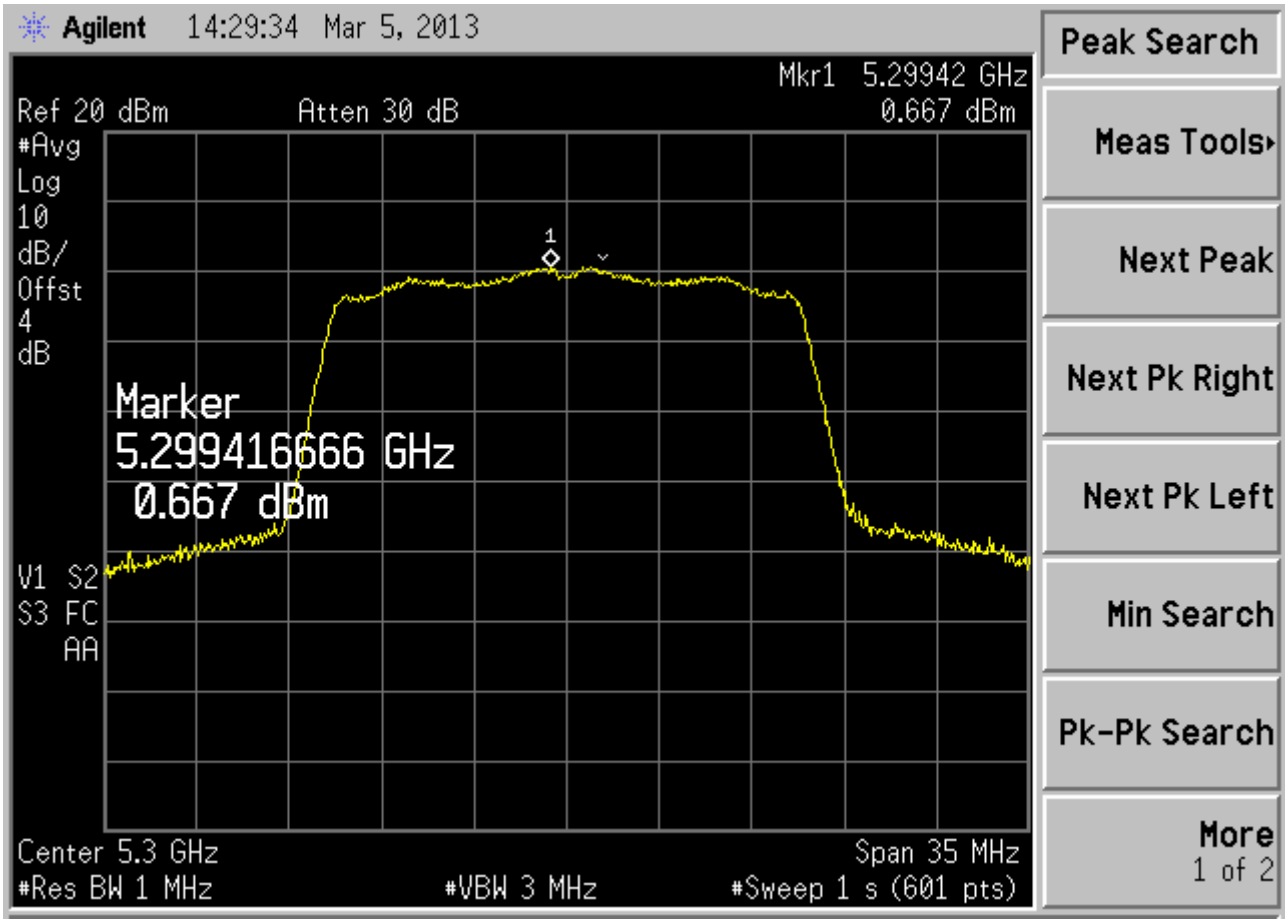
**5.3GHz Band 802.11a Ch64**



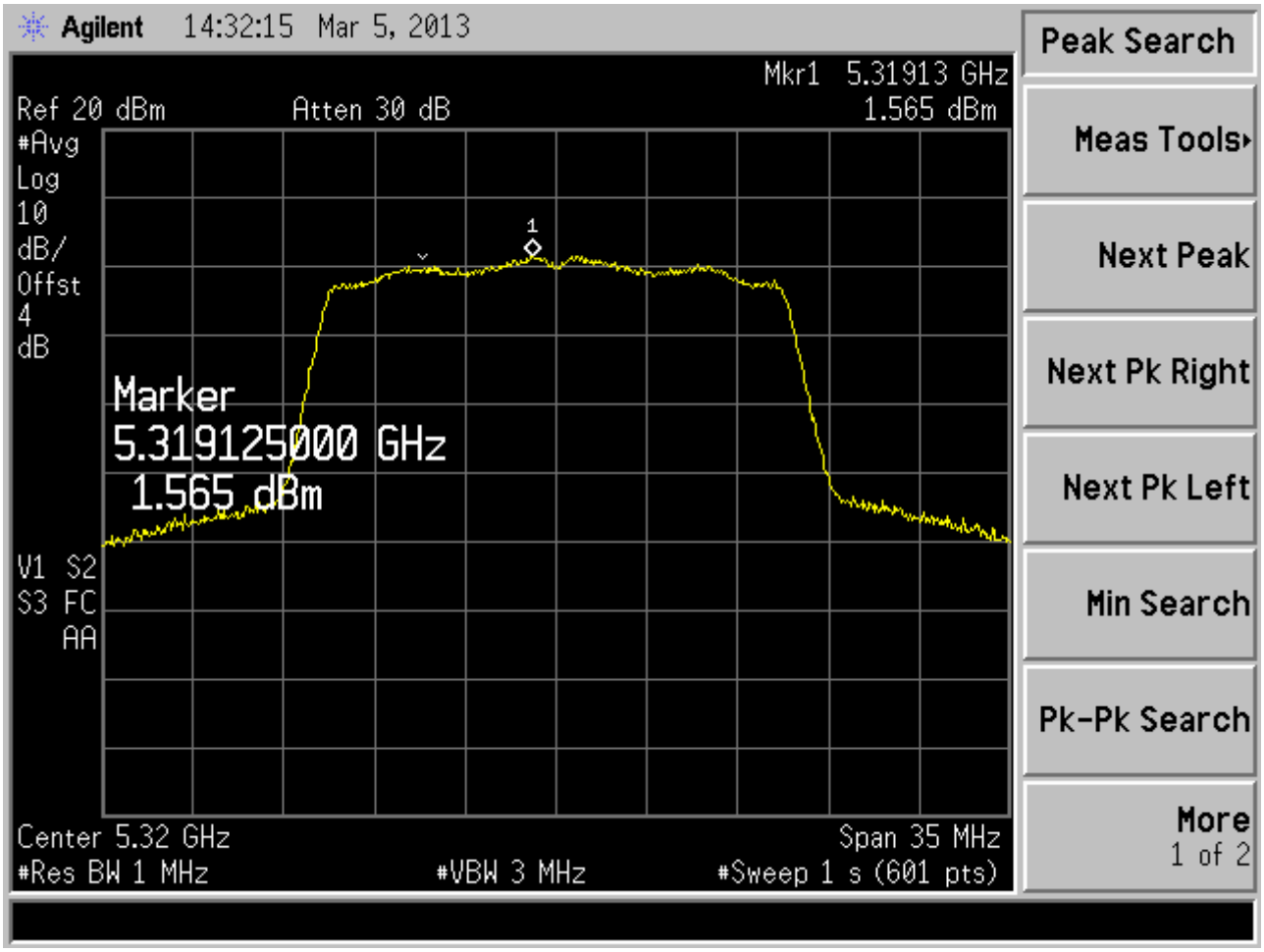
**5.3GHz Band 802.11n Ch52**




**5.3GHz Band 802.11n Ch60**



**5.3GHz Band 802.11n Ch64**



# 8 PEAK EXCURSION MEASUREMENT

## 8.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Spectrum Analyzer | Agilent | E7405A | MY45106600 | Mar 22, 2012 | Mar 22, 2013 |

## 8.2 Block Diagram of Test Setup

The same as section.5.2.

## 8.3 Specification Limits (§15.407(a)(6))

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

## 8.4 Operating Condition of EUT

The test program "adb shelll" was used to enable the EUT to transmit data at different channel frequency individually.

## 8.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The spectrum analyzer was set as RBW = 1MHz, VBW ≥ 3 x RBW, detector = peak.
Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.
The test procedure is defined in KDB789033 F) Peak excursion measurement.

## 8.6 Test Results

**PASSED**. All the test results are attached in next pages.

(Test Date: Mar. 05, 2013 Temperature: 24℃ Humidity: 46 %)

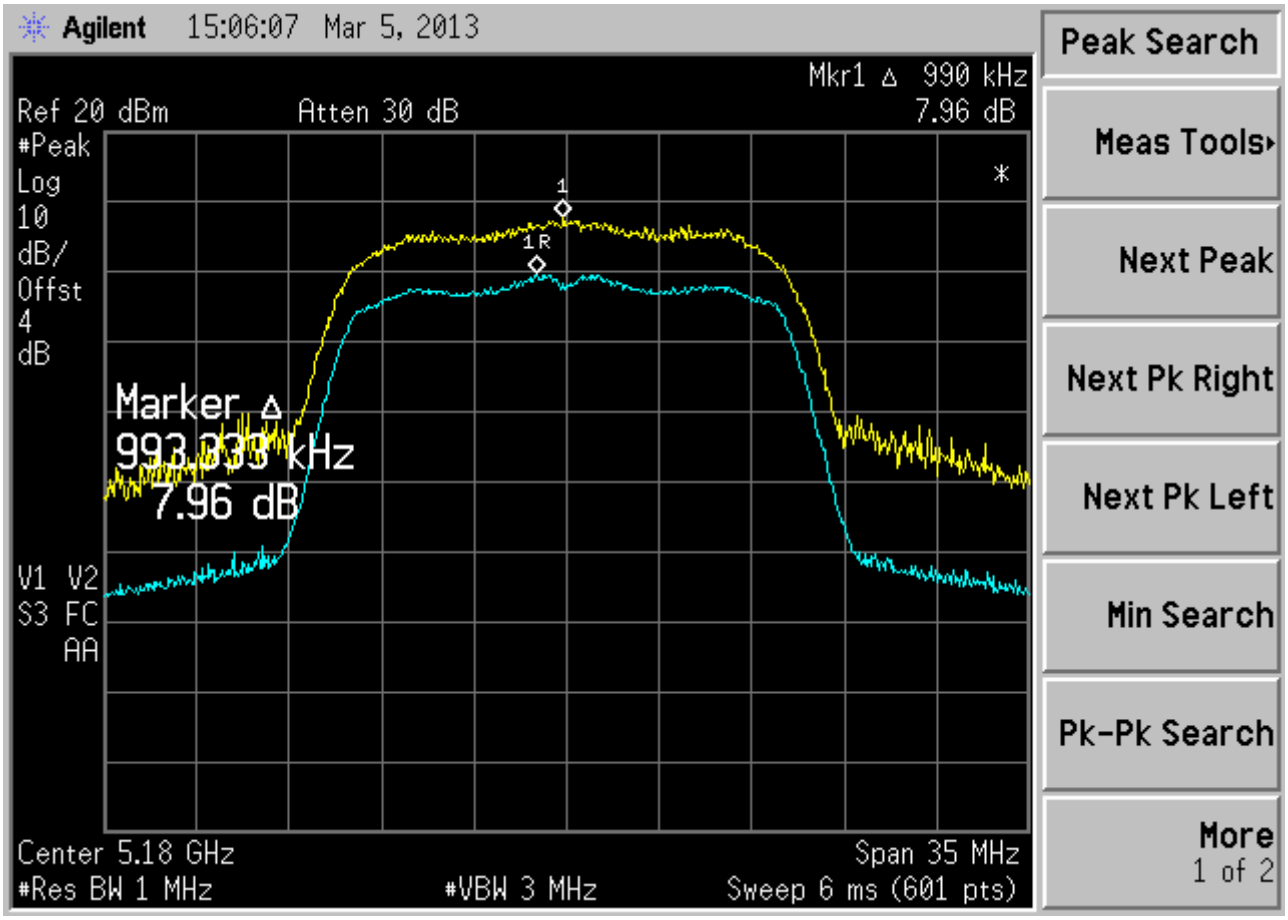
5.2GHz Band:

| Modulation | Channel | Frequency | Peak Excursion (dB) | Limit (dB) |
|---|---|---|---|---|
| 802.11a | 36 | 5180 MHz | 7.960 | 13 |
| | 40 | 5200 MHz | 8.207 | 13 |
| | 48 | 5240 MHz | 7.527 | 13 |
| 802.11n HT20 | 36 | 5180 MHz | 8.672 | 13 |
| | 40 | 5200 MHz | 8.613 | 13 |
| | 48 | 5240 MHz | 7.935 | 13 |

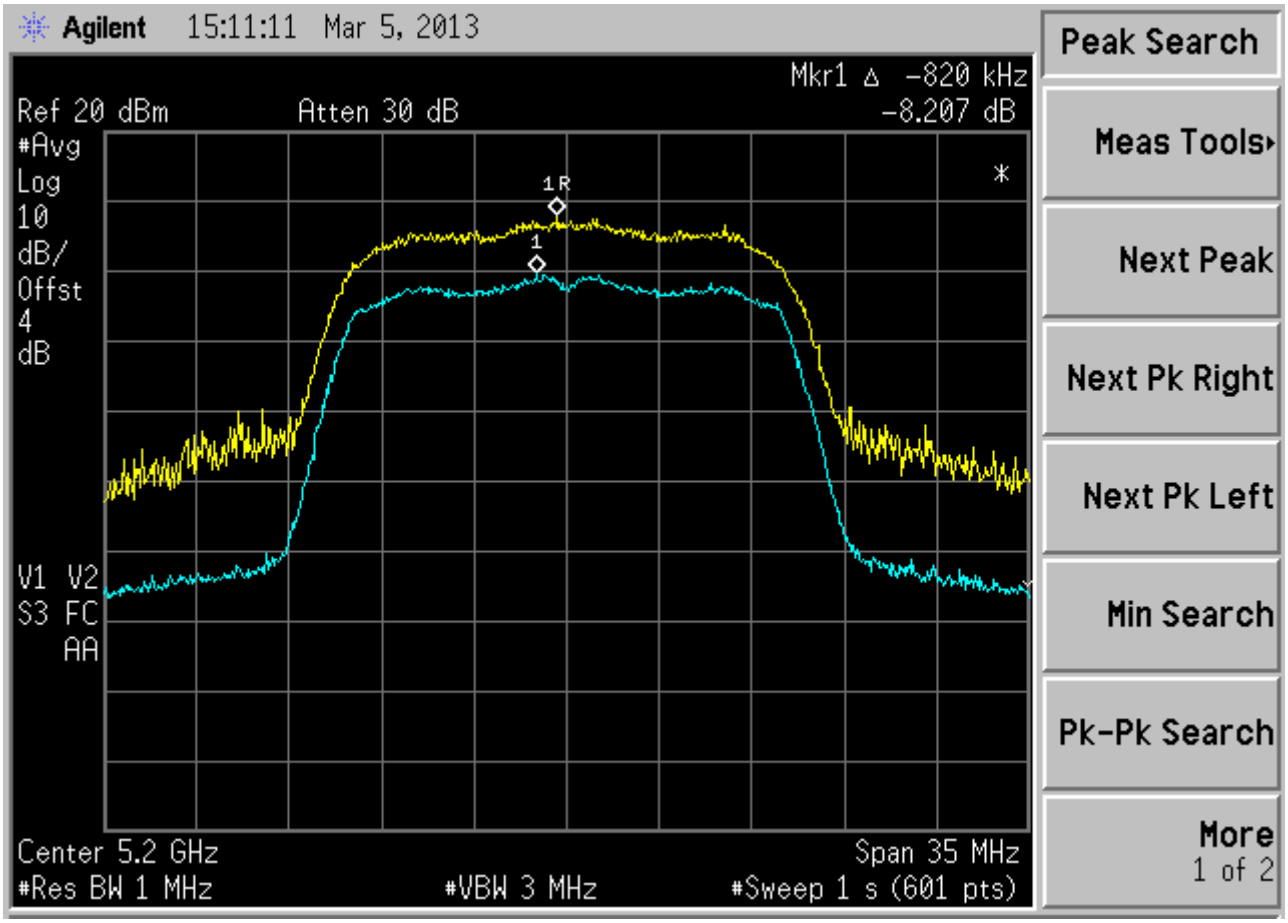
5.3GHz Band:

| Modulation | Channel | Frequency | Peak Excursion (dB) | Limit (dB) |
|---|---|---|---|---|
| 802.11a | 52 | 5260 MHz | 7.894 | 13 |
| | 60 | 5300 MHz | 8.386 | 13 |
| | 64 | 5320 MHz | 9.158 | 13 |
| 802.11n HT20 | 52 | 5260 MHz | 7.836 | 13 |
| | 60 | 5300 MHz | 7.698 | 13 |
| | 64 | 5320 MHz | 8.343 | 13 |

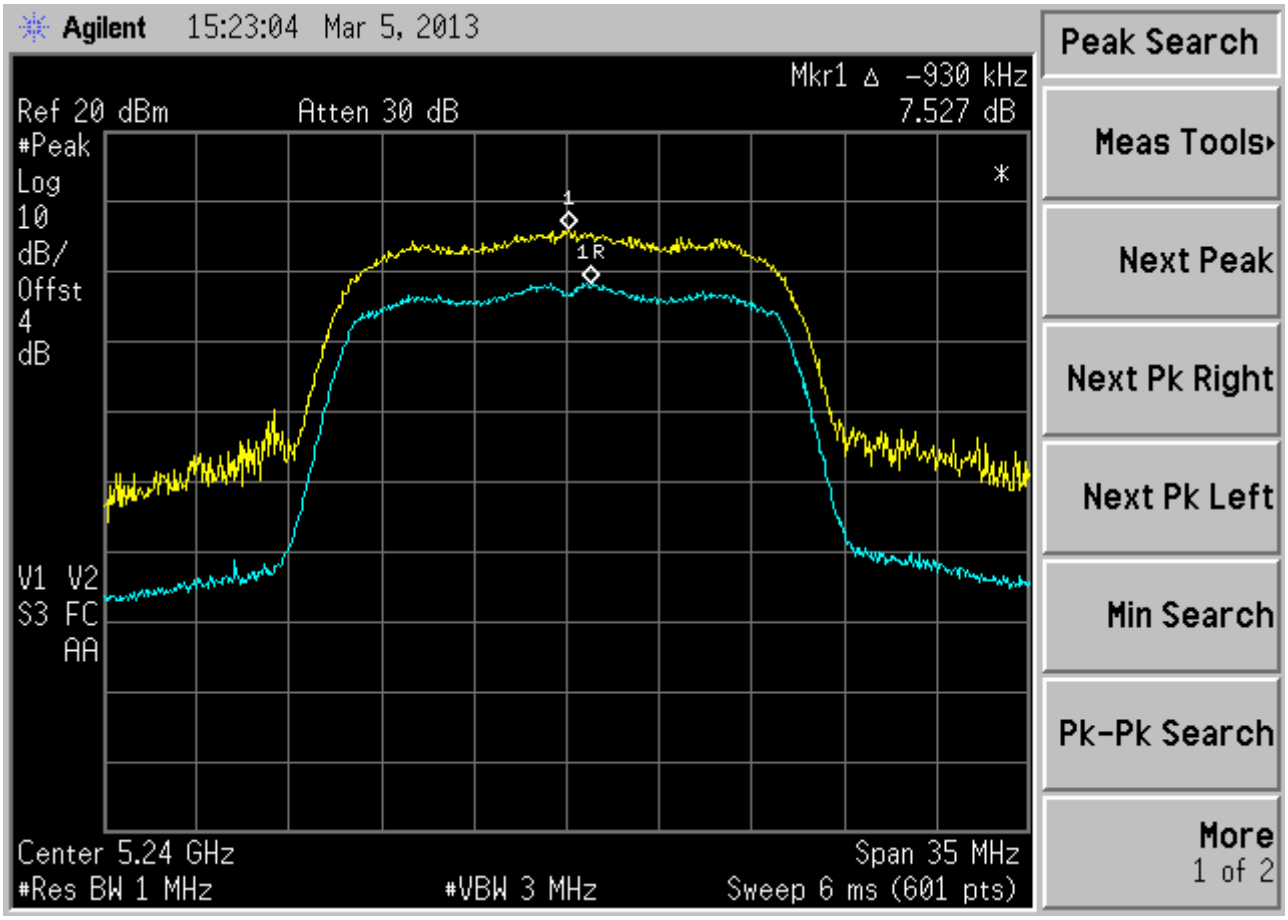
**5.2GHz Band 802.11a Ch36**



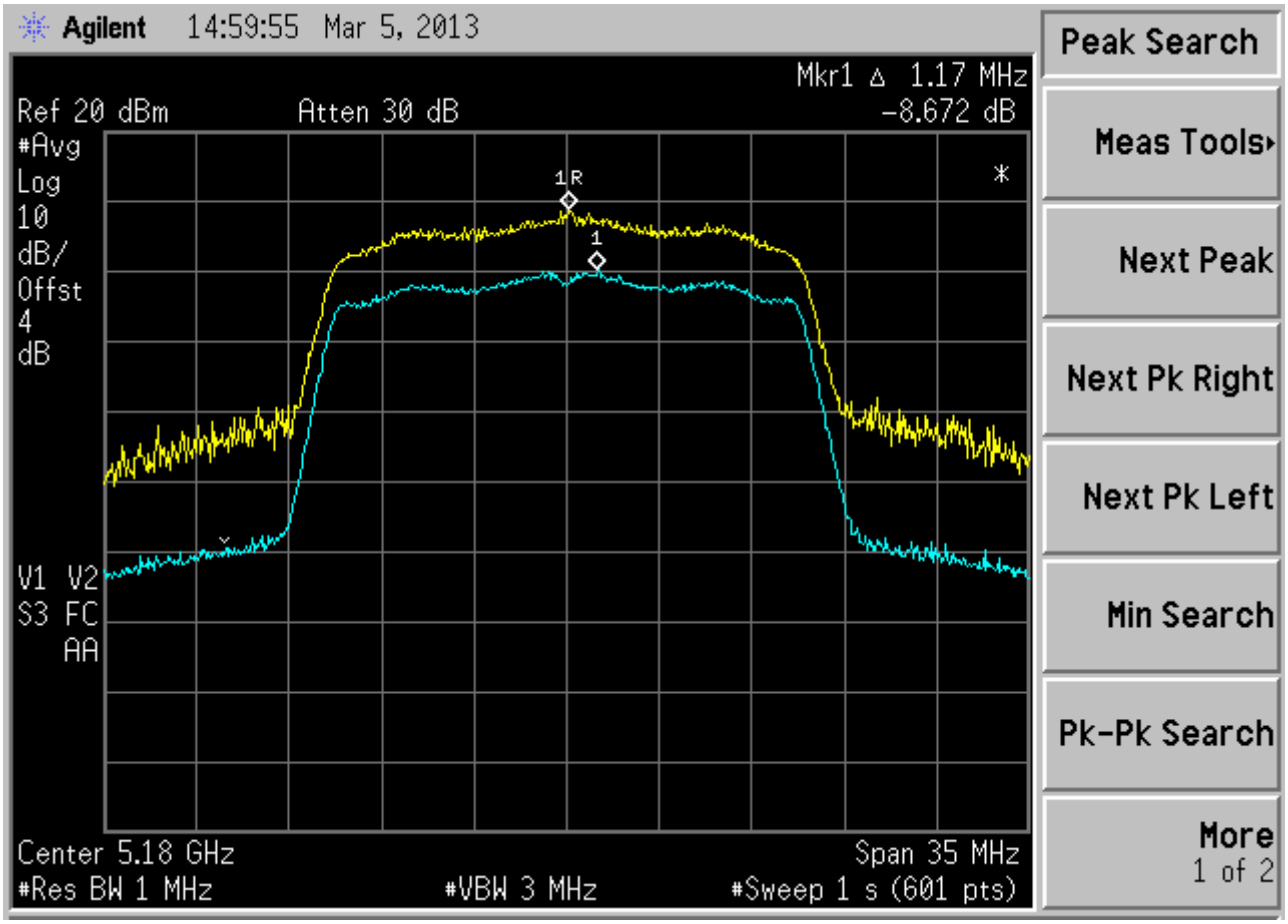

**5.2GHz Band 802.11a Ch40**



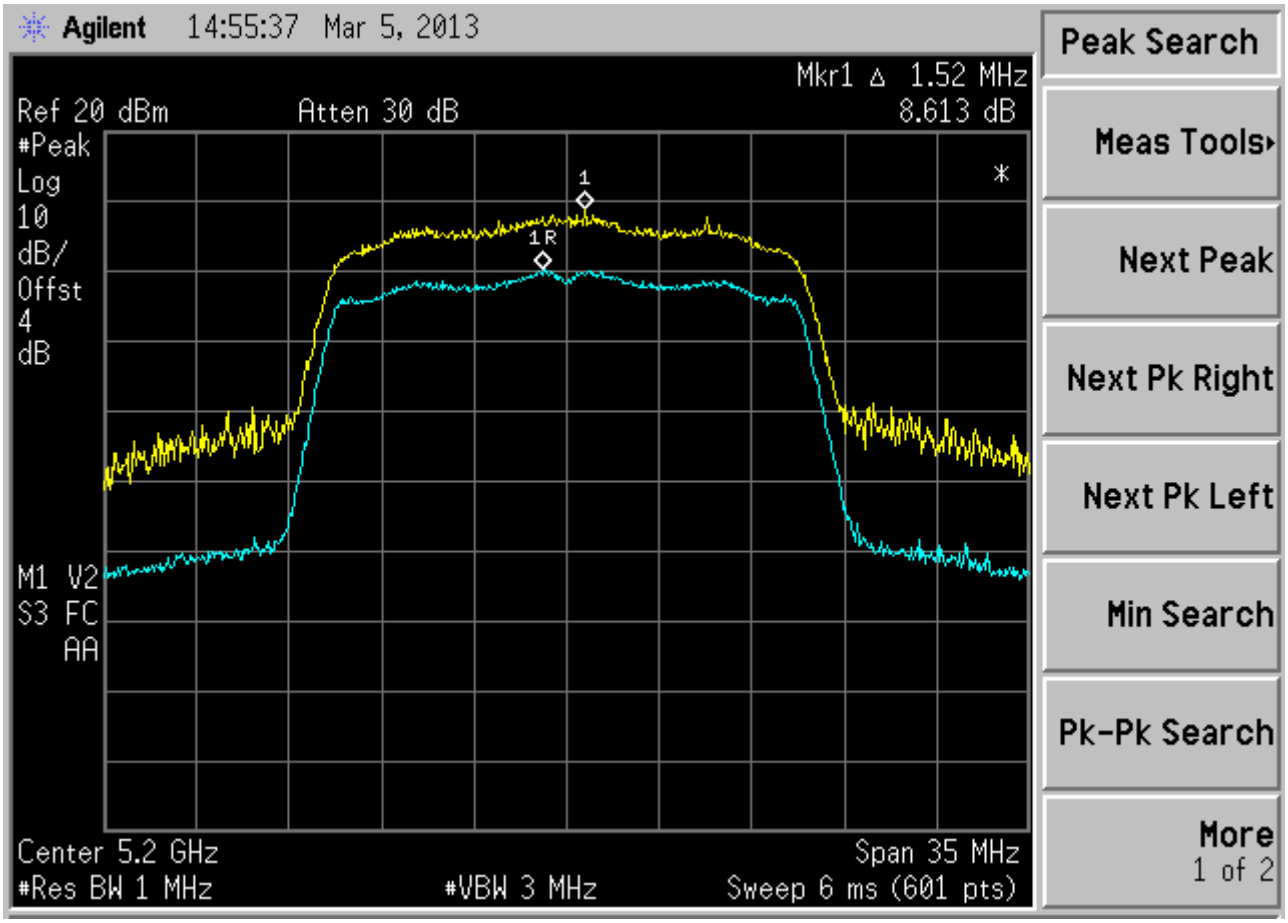
**5.2GHz Band 802.11a Ch48**



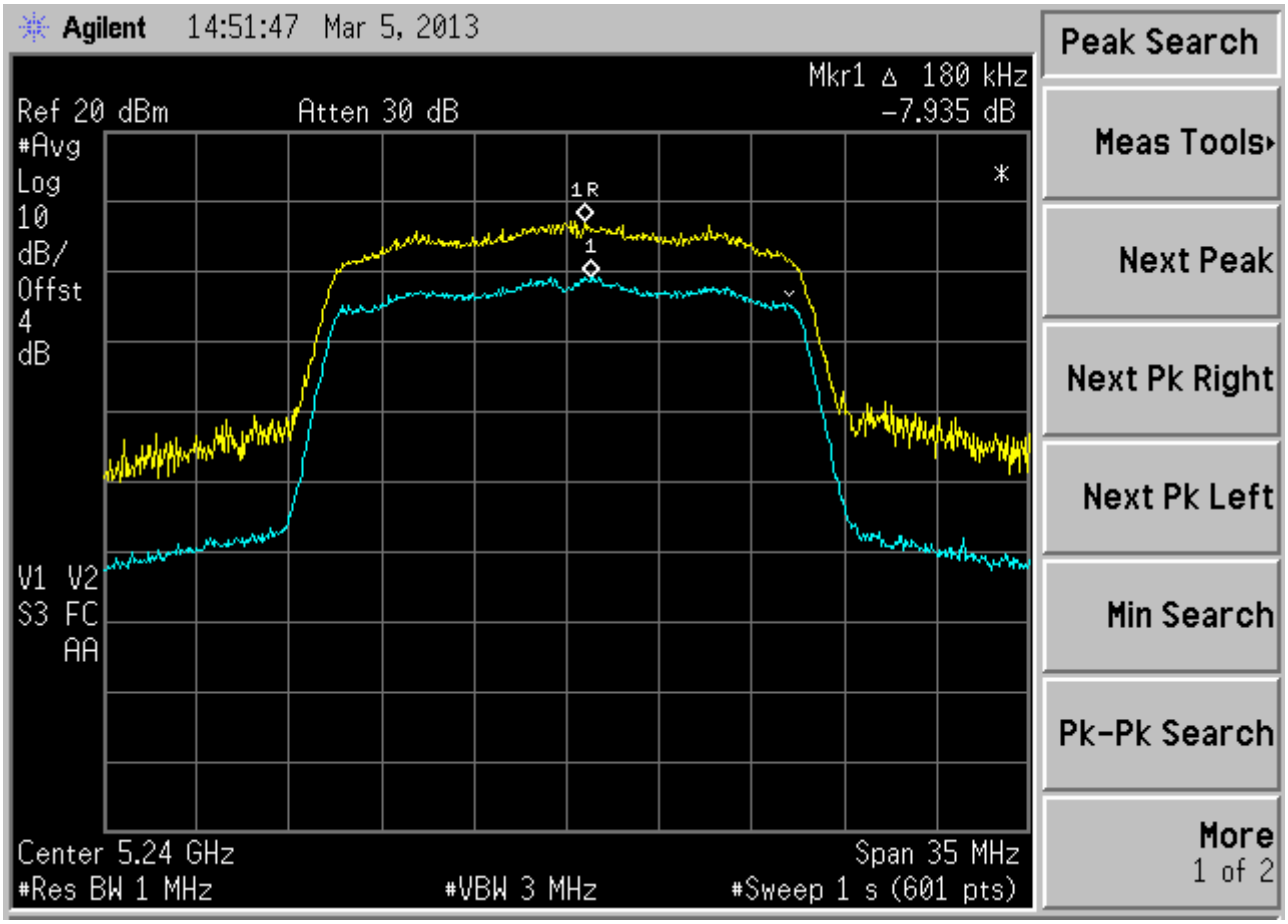
**5.2GHz Band 802.11n Ch36**



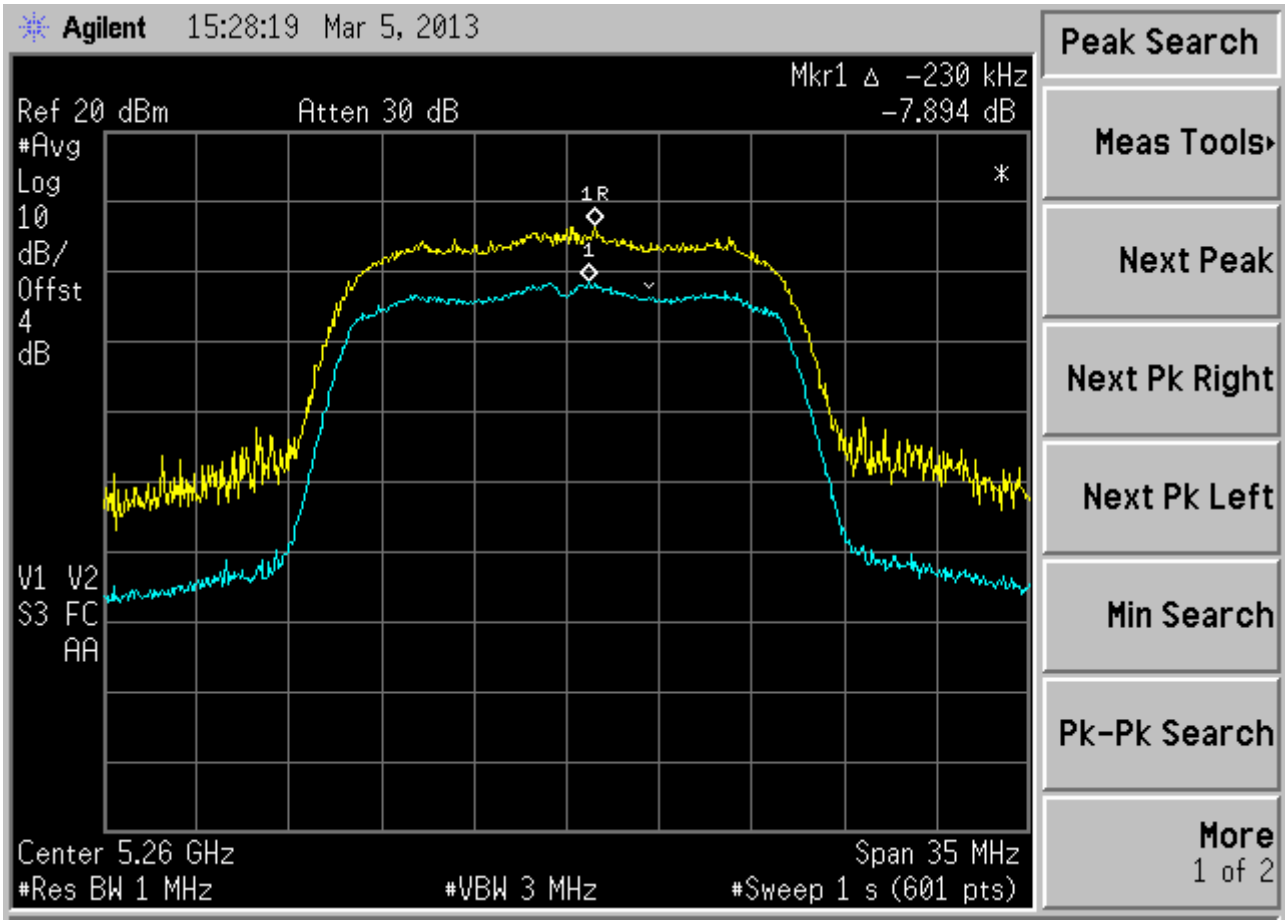

**5.2GHz Band 802.11n Ch40**



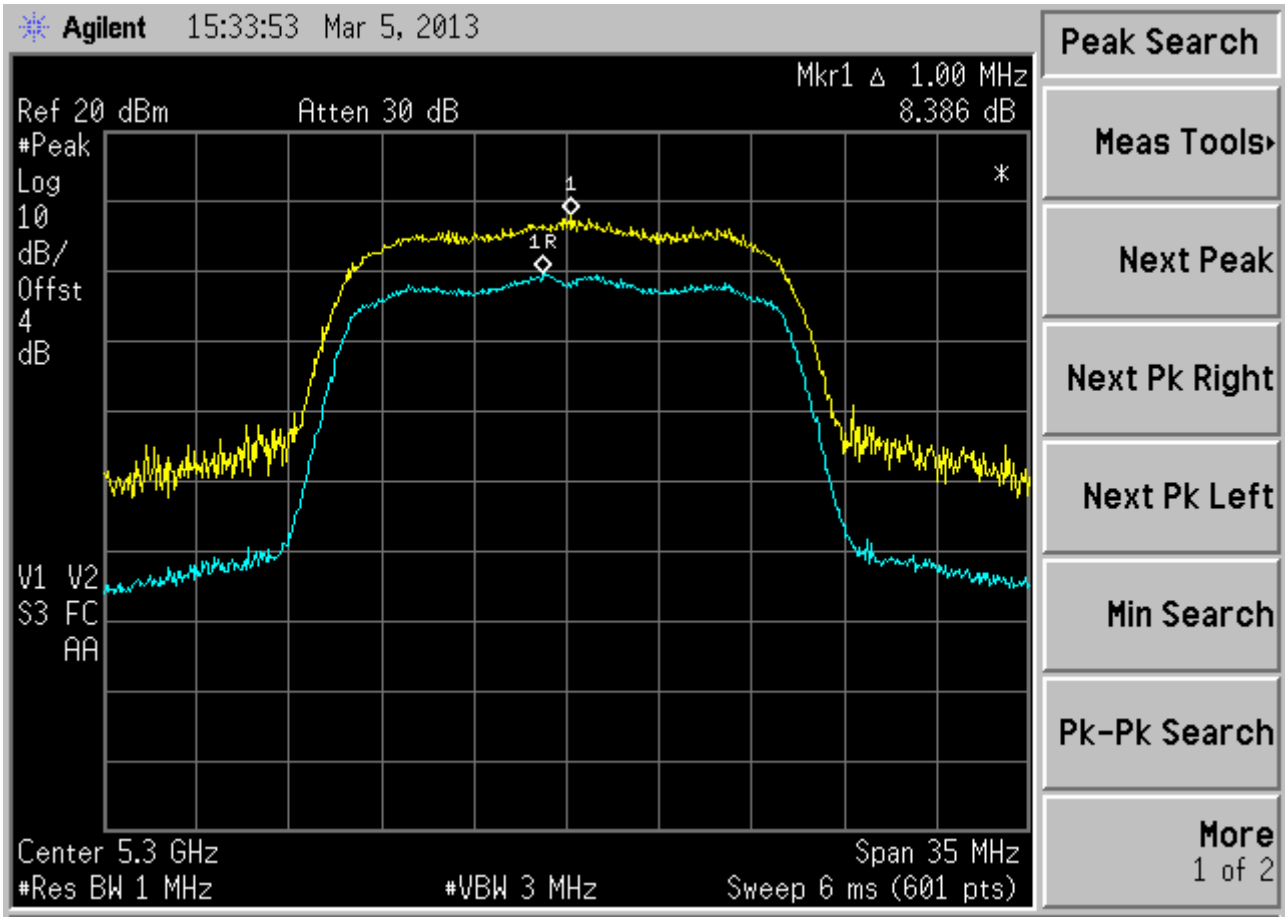
**5.2GHz Band 802.11n Ch48**



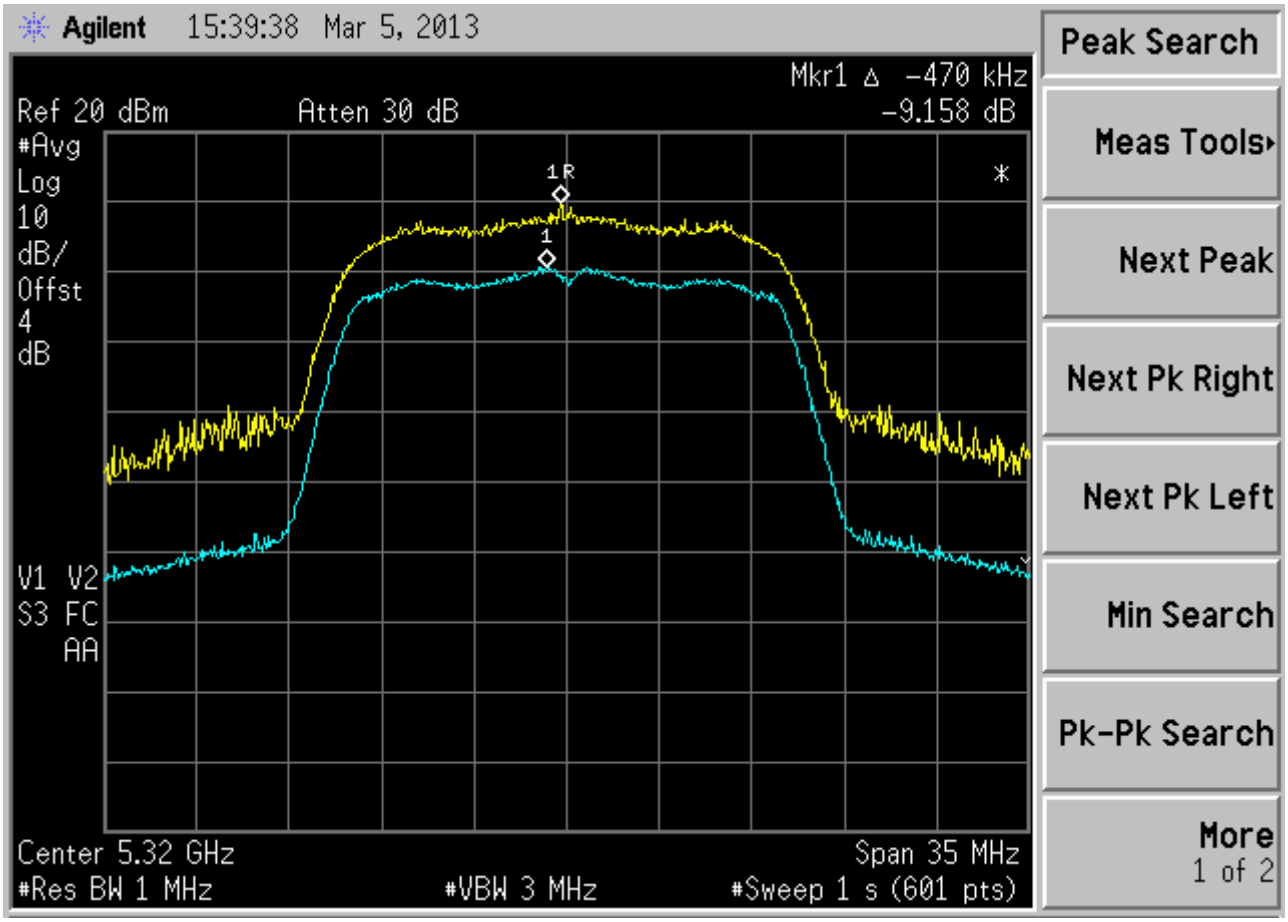
**5.3GHz Band 802.11a Ch52**



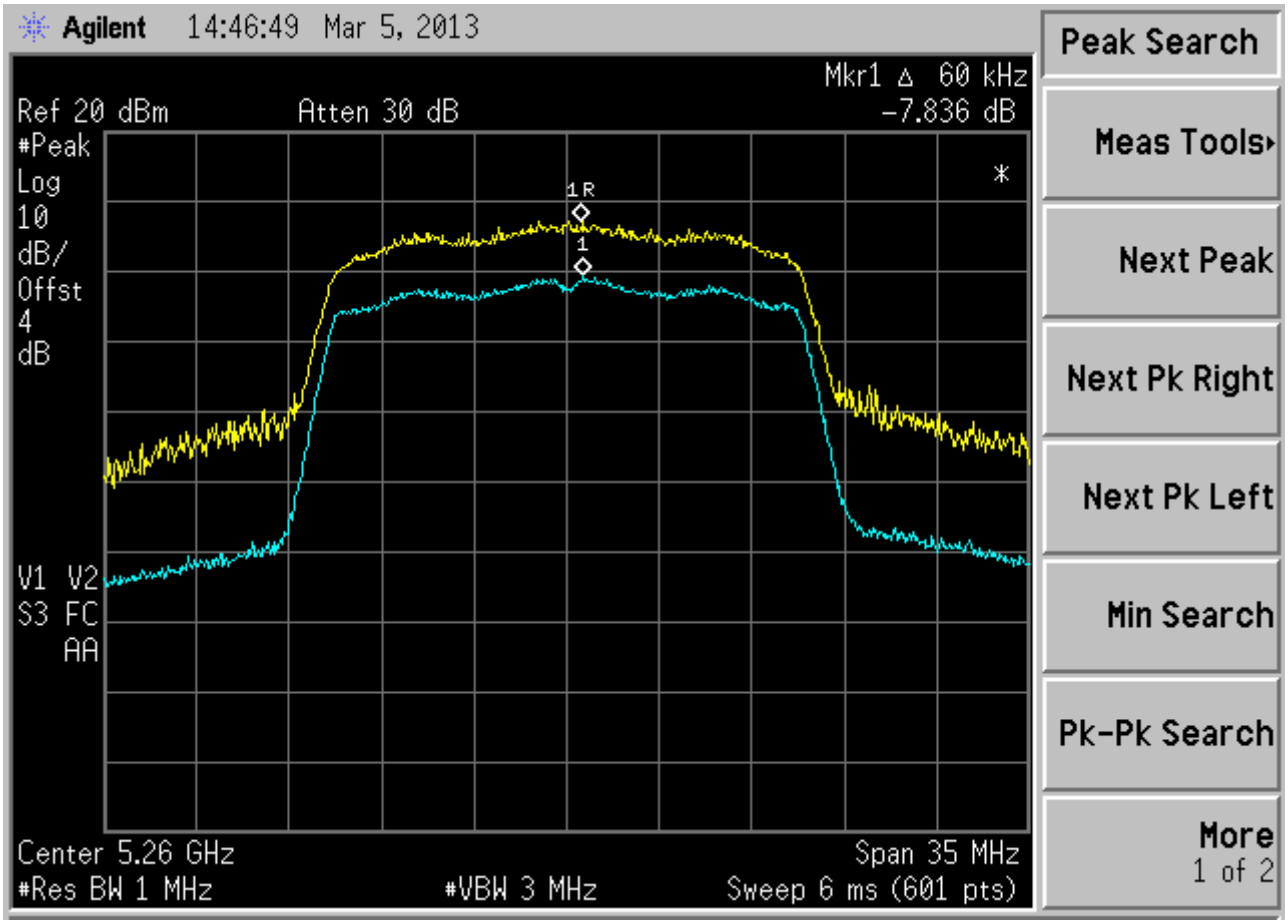

**5.3GHz Band 802.11a Ch60**



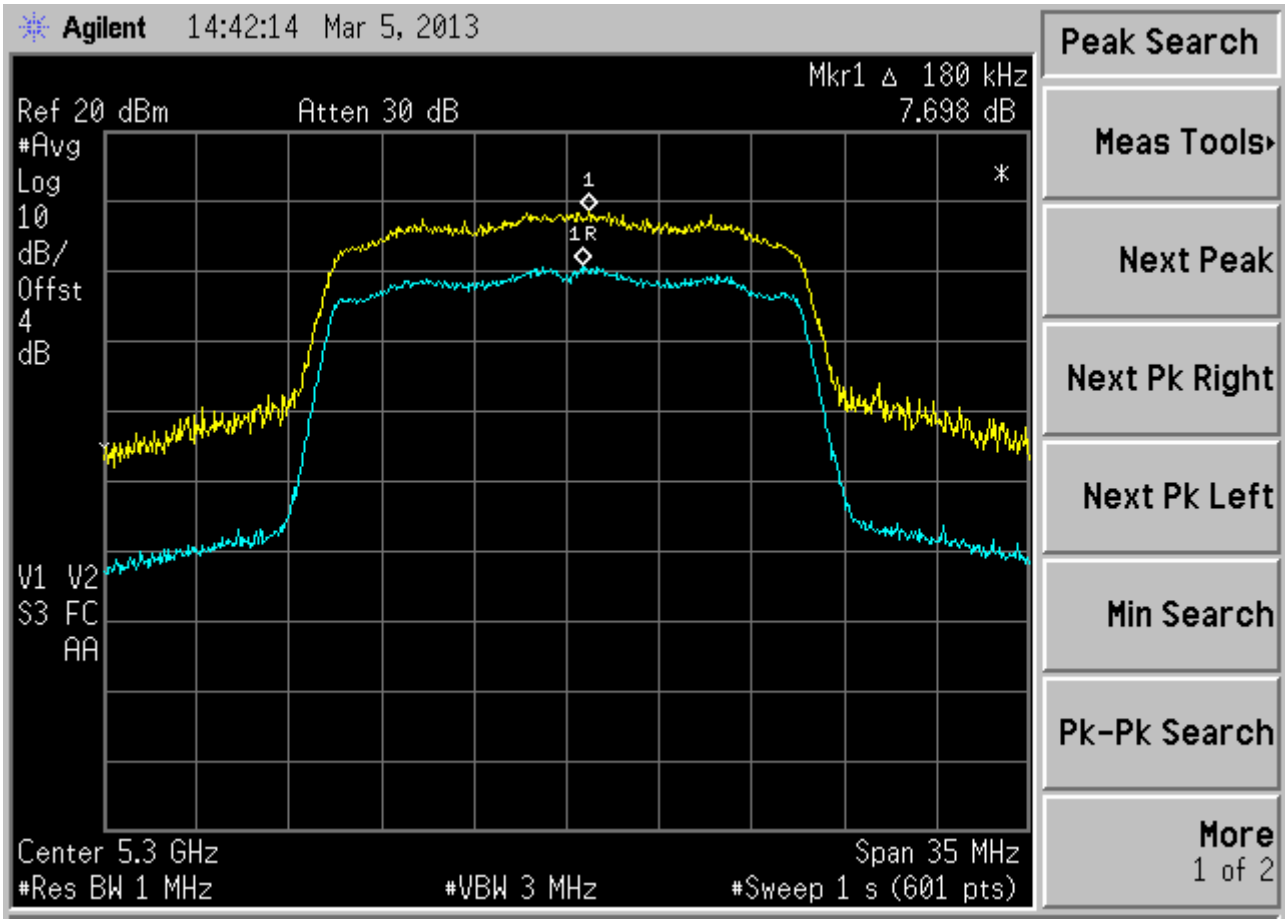
**5.3GHz Band 802.11a Ch64**



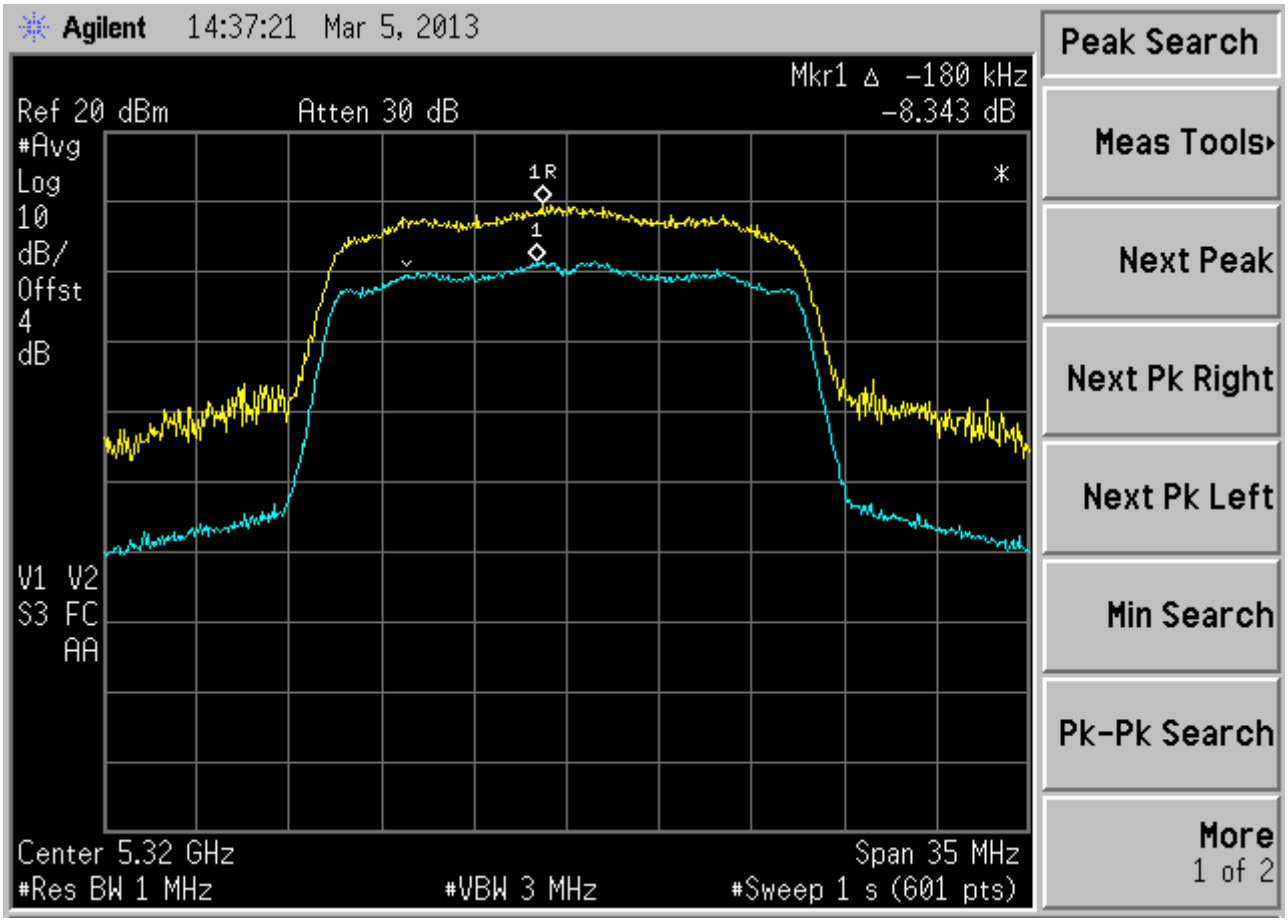
**5.3GHz Band 802.11n Ch52**




**5.3GHz Band 802.11n Ch60**



**5.3GHz Band 802.11n Ch64**



# 9 DEVIATION TO TEST SPECIFICATIONS

None.