PCTEST ENGINEERING LABORATORY, INC.
6660-B Dobbin Road, Columbia, MD 21045 USA
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http://www.pctestlab.com

# MEASUREMENT REPORT
## FCC PART 15.407 / IC RSS-210 802.11a/n (UNII)

**Applicant Name:**
Pantech Co Ltd
Pantech Building, I-2, DMC
Sangam-dong, Mapo-gu,
Seoul, KOREA 121-792

**Date of Testing:**
Feb. 20 - Mar. 5, 2012
**Test Site/Location:**
PCTEST Lab, Columbia, MD, USA
**Test Report Serial No.:**
0Y1202100190.JYC

| | |
|---|---|
| **FCC ID:** | **JYCP8010** |
| **APPLICANT:** | **Pantech Co Ltd** |

| | |
|---|---|
| **Application Type:** | Certification |
| **Model(s):** | P8010 |
| **EUT Type:** | Portable Handset |
| **FCC Classification:** | Unlicensed National Information Infrastructure (UNII) |
| **FCC Rule Part(s):** | Part 15.407 |
| **IC Specification(s):** | RSS-210 Issue 8 |
| **Test Procedure(s):** | ANSI C63.4-2003, ANSI C63.10-2009, KDB 789033 |

| Mode | UNII Band | Tx Frequency (MHz) | Conducted Power | |
|---|---|---|---|---|
| | | | Max. Power (mW) | Max. Power (dBm) |
| 802.11a | 1 | 5180 - 5240 | 9.977 | 9.99 |
| | 2 | 5260 - 5320 | 9.333 | 9.70 |
| | 3 | 5500 - 5700 | 9.333 | 9.70 |
| 802.11n | 1 | 5180 - 5240 | 6.486 | 8.12 |
| | 2 | 5260 - 5320 | 7.516 | 8.76 |
| | 3 | 5500 - 5700 | 5.333 | 7.27 |

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C-63.4-2003. Test results reported herein relate only to the item(s) tested.

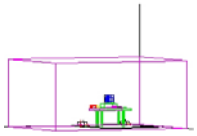
I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

*PCTEST certifies that no party to this application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.*

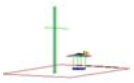
Randy Ortanez
President

ACCREDITED
TESTING LABORATORY
CERTIFICATE #2041.01

# TABLE OF CONTENTS



# MEASUREMENT REPORT
## FCC Part 15.407



## § 2.1033 General Information

| | |
|---|---|
| **APPLICANT:** | Pantech Co Ltd |
| **APPLICANT ADDRESS:** | Pantech Building, I-2, DMC |
| | Sangam-dong, Mapo-gu,, Seoul, KOREA 121-792 |
| **TEST SITE:** | PCTEST ENGINEERING LABORATORY, INC. |
| **TEST SITE ADDRESS:** | 6660-B Dobbin Road, Columbia, MD 21045 USA |
| **FCC RULE PART(S):** | Part 15.407 |
| **IC SPECIFICATION(S):** | RSS-210 Issue 8 |
| **MODEL NAME:** | P8010 |
| **FCC ID:** | JYCP8010 |
| **Test Device Serial No.:** | EMC ☐ Production ☒ Pre-Production ☐ Engineering |
| **FCC CLASSIFICATION:** | Unlicensed National Information Infrastructure (UNII) |
| **DATE(S) OF TEST:** | Feb. 20 - Mar. 5, 2012 |
| **TEST REPORT S/N:** | 0Y1202100190.JYC |

## Test Facility / Accreditations

**Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21045, U.S.A.**

- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451A-1).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.


- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (2451A-1) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

# 1.0 INTRODUCTION

## 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

## 1.2 PCTEST Test Location

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, the Baltimore-Washington Internt'l (BWI) airport, the city of Baltimore and the Washington, DC area. (*See Figure 1-1*).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility in New Concept Business Park, Guilford Industrial Park, Columbia, Maryland. The site address is 6660-B Dobbin Road, Columbia, MD 21045. The test site is one of the highest points in the Columbia area with an elevation of 390 feet above mean sea level. The site coordinates are 39° 11'15" N latitude and 76° 49'38" W longitude. The facility is 1.5 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. There are no FM or TV transmitters within 15 miles of the site. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2003 on January 10, 2012.

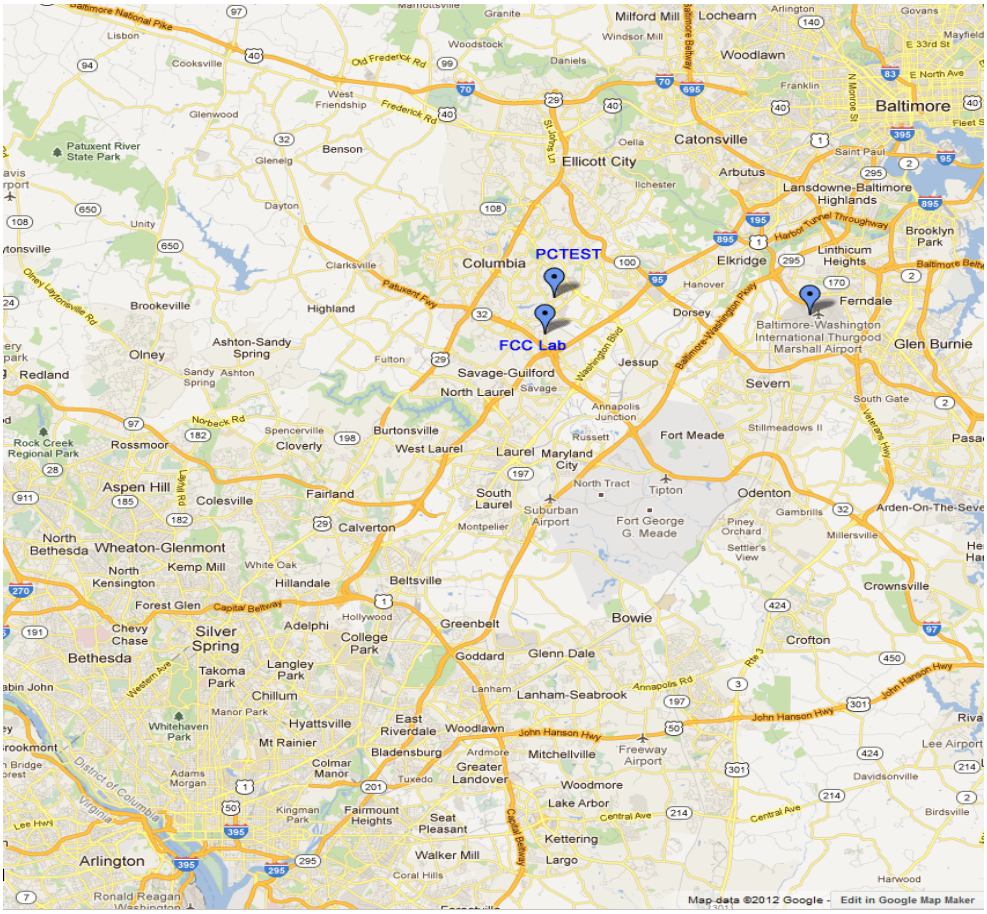



**Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area**

# 2.0 PRODUCT INFORMATION

## 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Pantech Portable Handset FCC ID: JYCP8010**. The test data contained in this report pertains only to the emissions due to the EUT's WLAN transmitter.

## 2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1900 WCDMA/HSPA, Band 2, 4, 5, 17 LTE with 5 and 10MHz BW, 802.11a/b/g/n WLAN, 802.11a/n UNII, Bluetooth (EDR)

## 2.3 Test Configuration

The Pantech Portable Handset FCC ID: JYCP8010 was tested per the guidance of ANSI C63.10-2009 and KDB 789033. See Sections 3.0 of this test report for a description of the AC line conducted emissions, radiated emissions, and antenna port conducted emissions test setups, respectively.

## 2.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

## 2.5 Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(b)(2).

Please see attachment for FCC ID label and label location.

# 3.0 DESCRIPTION OF TEST

## 3.1 Evaluation Procedure

The measurement procedures described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C63.4-2003) and the guidance provided in KDB 789033 were used in the measurement of **Pantech Portable Handset FCC ID: JYCP8010.**

**Deviation from measurement procedure……..……None**

## 3.2 AC Line Conducted Emissions

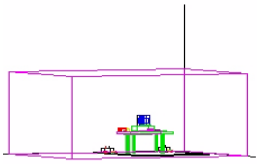


**Figure 3-1. Shielded Enclosure Line-Conducted Test Facility**

The line-conducted facility is located inside a 16'x20'x10' shielded enclosure, manufactured by Ray Proof Series 81 (*see Figure 3-1*). The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 65-5. A 1m x 1.5m wooden table 80cm high is placed 40cm away from the vertical wall and 1.5m away from the sidewall of the shielded room (*see Figure 3-2*). Two 10kHz-30MHz, 50Ω/50μH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room (*see Figure 3-3*). Power to the LISNs are filtered by a high-current high-insertion loss Ray Proof power line filter (100dB 14Hz-10GHz). The purpose of the filter is to attenuate ambient signal interference and this filter is also bonded to the shielded enclosure. All electrical cables are shielded by braided tinned copper zipper tubing with an inner diameter of ½".

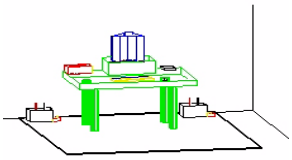


**Figure 3-2. Line Conducted Emission Test Set-Up**

The EUT is powered from one LISN and the support equipment is powered from the second LISN. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply line(s) will be connected to the Solar LISN. The LISN schematic diagram is shown (*see Figure 3-4*). All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference groundplane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

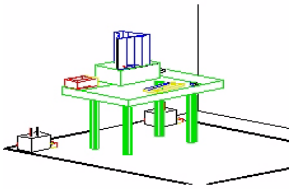


**Figure 3-3. Wooden Table & Bonded LISNs**

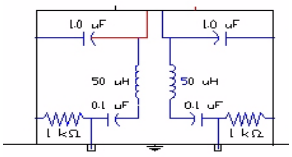



**Figure 3-4. LISN Schematic Diagram**

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The spectrum was scanned from 150kHz to 30MHz with a spectrum analyzer. The detector function was set to peak mode for exploratory measurements. The bandwidth of the analyzer was set to 10kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission emission. Each emission was maximized by varying: power lines, the mode of operation or resolution, clock or data exchange speed, scrolling H pattern to the EUT and/or support equipment, and powering the monitor from the floor mounted outlet box and the computer aux AC outlet, if applicable; whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions is used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz bandwidth for final measurements. Each emission reported was calibrated using a signal generator.

## 3.3 Radiated Emissions

The radiated test facilities consisted of an indoor semi-anechoic chamber used for exploratory measurements and an open area test site (OATS) used for final measurements. For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies higher than the upper frequency range of the broadband antenna used for testing, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used.

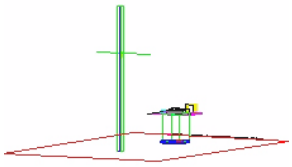


**Figure 3-5. 3-Meter Test Site**

Exploratory measurements were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of a 0.8 meter high non-metallic 1 x 1.5 meter table (*see Figure 3-7*). The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, turntable azimuth, and receive antenna height was noted for each frequency found. To record the exploratory measurements, the analyzers' detector function was set to peak mode and the bandwidth was set to 100kHz.

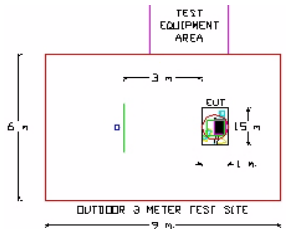



**Figure 3-6. Dimensions of Outdoor Test Site**

Final measurements were made on the OATS at 3 meter test range using calibrated, linearly polarized broadband or horn antennas (*see Figure 3-5*). The measurement area is situated on an 18 meter x 20 meter galvanized 1/2" hardware cloth as the conducting ground plane. This material is sewn together in sections 4 feet wide and 60 feet long. A total of eighteen sections are required to cover the entire measurement area. Sections are laid across the width of the pad, overlapped 1" and sewn and soldered together at intervals of 3" (7.6 cm.) The terrain of the test site is reasonably flat and level. Power and cable to the test site are buried 18" deep into the ground outside the perimeter of the site. An all-weather non-metallic housing is situated on a 2 x 3 meter area adjacent to the measurement area to house the test equipment (*see Figure 3-6*). The test set-up was again placed on top of the same a 0.8 meter high non-metallic 1 x 1.5 meter table on the OATS as used for exploratory measurements in the indoor chamber. The test set-up was re-configured to the same setup that was previously determined through exploratory measurements to have produced the worst case emissions. The spectrum analyzer was set to the frequencies found to have caused the highest radiated disturbances with respect to the limit during preliminary radiated measurements. The turntable containing the system was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was re-maximized by varying: the mode of operation or resolution, clock or data exchange speed, scrolling H pattern to the EUT and/or support equipment, powering the monitor from the floor mounted outlet box and the computer aux AC outlet, if applicable, and changing the polarity of the receive antenna, whichever produced the worst-case emissions. To record the final measurements, the analyzer detector function was set to CISPR quasi-peak mode and the bandwidth of the spectrum analyzer was set to 100kHz for frequencies below 1GHz or 1MHz for frequencies above 1GHz. For average measurements above 1GHz, the analyzer was set to peak detector with a reduced VBW setting (RBW = 1MHz, VBW = 10Hz). Each emission reported was calibrated using a signal generator. The Theoretical Normalized Site Attenuation Curves for both horizontal and vertical polarization are shown in Figure 3-8.




**Figure 3-7. Turntable and System Setup**

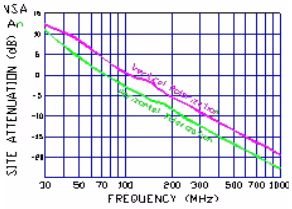



**Figure 3-8. Normalized Site Attenuation Curves (H&V)**

# 4.0 ANTENNA REQUIREMENTS

**Excerpt from §15.203 of the FCC Rules/Regulations:**
"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antennas of the Portable Handset are **permanently attached.**
- There are no provisions for connection to an external antenna.

**Conclusion:**

The **Pantech Portable Handset FCC ID: JYCP8010** unit complies with the requirement of §15.203.

| Band 1 | | Band 2 | | Band 3 | |
|---|---|---|---|---|---|
| **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** |
| 36 | 5180 | 52 | 5260 | 100 | 5500 |
| : | : | : | : | : | : |
| 42 | 5210 | 56 | 5280 | 116 | 5580 |
| : | : | : | : | : | : |
| 48 | 5240 | 64 | 5320 | 140 | 5700 |

**Table 4-1. 802.11a Frequency / Channel Operations**

| Band 1 | | Band 2 | | Band 3 | |
|---|---|---|---|---|---|
| **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** |
| 36 | 5180 | 52 | 5260 | 100 | 5500 |
| : | : | : | : | : | : |
| 42 | 5210 | 56 | 5280 | 116 | 5580 |
| : | : | : | : | : | : |
| 48 | 5240 | 64 | 5320 | 140 | 5700 |

**Table 4-2. 802.11n Frequency / Channel Operations**

# 5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

| Manufacturer | Model | Description | Cal Date | Cal Interval | Cal Due | Serial Number |
|---|---|---|---|---|---|---|
| - | RE1 | Radiated Emissions Cable Set (UHF/EHF) | 6/7/2011 | Annual | 6/7/2012 | N/A |
| - | WL25-1 | WLAN Cable Set (25GHz) | 2/13/2012 | Annual | 2/13/2013 | N/A |
| - | RE2 | Radiated Emissions Cable Set (VHF/UHF) | 2/13/2012 | Annual | 2/13/2013 | N/A |
| - | 40G-1R | 40GHz Radiated Cable Set | 2/23/2012 | Annual | 2/23/2013 | N/A |
| - | WL40-1 | WLAN Cable Set (40GHz) | 2/24/2012 | Annual | 2/24/2013 | N/A |
| Agilent | 8447D | Broadband Amplifier | 3/17/2011 | Annual | 3/17/2012 | 2443A01900 |
| Agilent | 8449B | (1-26.5GHz) Pre-Amplifier | 2/15/2012 | Annual | 2/15/2013 | 3008A00985 |
| Agilent | 85650A | Quasi-Peak Adapter | 4/7/2011 | Annual | 4/7/2012 | 2043A00301 |
| Agilent | 8566B | (100Hz-22GHz) Spectrum Analyzer | 4/7/2011 | Annual | 4/7/2012 | 2542A11898 |
| Agilent | E4407B | ESA Spectrum Analyzer | 4/5/2011 | Annual | 4/5/2012 | US39210313 |
| Agilent | E4448A | PSA (3Hz-50GHz) Spectrum Analyzer | 2/15/2012 | Annual | 2/15/2013 | US42510244 |
| Agilent | E8257D | (250kHz-20GHz) Signal Generator | 4/8/2011 | Annual | 4/8/2012 | MY45470194 |
| Agilent | N9020A | MXA Signal Analyzer | 10/10/2011 | Annual | 10/10/2012 | US46470561 |
| Agilent | N9038A | MXE EMI Receiver | 8/5/2011 | Annual | 8/5/2012 | MY51210133 |
| Anritsu | MA2411B | Pulse Sensor | 10/13/2011 | Annual | 10/13/2012 | 1027293 |
| Anritsu | ML2495A | Power Meter | 10/13/2011 | Annual | 10/13/2012 | 1039008 |
| Mini-Circuits | VHF-3100+ | High Pass Filter | 2/7/2012 | Annual | 2/7/2013 | 31144 |
| Mini-Circuits | VHF-8400+ | 3.4GHz - 9.9GHz High Pass Filter | 2/28/2012 | Annual | 2/28/2013 | 31048 |
| Solar Electronics | 8012-50-R-24-BNC | LISN | 6/23/2011 | Biennial | 6/23/2013 | 310233 |
| Sunol | DRH-118 | Horn Antenna (1 - 18GHz) | 7/5/2011 | Biennial | 7/5/2013 | A050307 |
| Sunol | JB5 | Bi-Log Antenna (30M - 5GHz) | 1/26/2012 | Biennial | 1/26/2014 | A051107 |

**Table 5-1. Annual Test Equipment Calibration Schedule**

# 6.0 TEST RESULTS

## 6.1 Summary

Company Name: Pantech Co Ltd
FCC ID: JYCP8010
Method/System: Unlicensed National Information Infrastructure (UNII)
Data Rate(s) Tested: 6, 9, 12, 18, 24, 36, 48, 54Mbps (802.11a)
6.5/7.2, 13/14.4, 19.5/21.7, 26/28.9, 39/43.3, 52/57.8, 58.5/65, 65/72.2 (n – 20MHz)

| FCC Part Section(s) | RSS Section(s) | Test Description | Test Limit | Test Condition | Test Result | Reference |
|---|---|---|---|---|---|---|
| **TRANSMITTER MODE (TX)** | | | | | | |
| N/A | RSS-210 [A9.2] | 26dB Bandwidth [FCC] Occupied Bandwidth [IC] | N/A | CONDUCTED | PASS | Section 6.2 |
| 15.407 (a)(1) | RSS-210 [A9.2] | Maximum Conducted Output Power | < 4 + 10log$_{10}$(BW) dBm (5150-5250MHz) [FCC]<br>< 10 + 10log$_{10}$(BW) dBm (5150-5250MHz) [IC]<br>< 11 + 10log$_{10}$(B) dBm (5250-5350MHz)<br>< 11 + 10log$_{10}$(B) dBm (5470 – 5725MHz) | | PASS | Section 6.3 |
| 15.407 (a)(1), (5) | RSS-210 [A9.2] | Peak Power Spectral Density | < 4 dBm/MHz (5150-5250) [FCC]<br>< 10dBm/MHz (5150-5250) [IC]<br>< 11dBm/MHz (5250-5350)<br>< 11dBm/MHz (5470-5725) | | PASS | Section 6.4 |
| 15.407(a)(6) | N/A | Peak Excursion | < 13 dB/MHz maximum difference | | PASS | Section 6.5 |
| 15.407(g) | N/A | Frequency Stability | N/A | | PASS | Section 6.6 |
| 15.407(b)(1), (2),(3) | RSS-210 [A9.2] | Undesirable Emissions | < -27 dBm/MHz EIRP (5150-5350MHz, 5470-5725MHz) | RADIATED | PASS | Section 6.7 |
| 15.407(h) | RSS-210 [A9.3] | Dynamic Frequency Selection | See DFS Test Report | | PASS | See DFS Test Report |
| 15.205, 15.407(b)(1), (5), (6) | RSS-Gen [7.2.3.2] | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-210 table 3 limits) | | PASS | Section 6.8 |
| 15.207 | RSS-Gen [7.2.2] | AC Conducted Emissions 150kHz – 30MHz | < FCC 15.207 limits or<br>< RSS-Gen table 2 limits | LINE CONDUCTED | PASS | Section 6.9 |
| **RECEIVER MODE (RX) / DIGITAL EMISSIONS** | | | | | | |
| 15.107 | RSS-Gen [7.2.2] | AC Conducted Emissions 150kHz – 30MHz | < FCC 15.107 limits or<br>< RSS-Gen table 2 limits | LINE CONDUCTED | PASS | Part 15B Test Report |
| 15.109 | RSS-Gen [7.2.3.2] | General Field Strength Limits (Restricted Bands and Radiated Emissions Limits) | < FCC 15.109 limits or<br>< RSS-210 table 3 limits | RADIATED (30MHz-1GHz) (1-25 GHz) | PASS | Part 15B Test Report |

**Table 6-1. Summary of Test Results**

**Notes:**

1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.

## 6.2 26dB Bandwidth Measurement – 802.11a/n

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum power control level, as defined in KDB 789033, at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

***The 26dB bandwidth is used to determine the conducted power limits.***

| | Frequency [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured 26dB Bandwidth [MHz] |
|---|---|---|---|---|---|
| Band I | 5180 | 36 | a | 6 | 21.93 |
| | 5200 | 40 | a | 6 | 21.61 |
| | 5240 | 48 | a | 6 | 21.43 |
| | 5180 | 36 | n | 6.5/7.2 (MCS0) | 22.28 |
| | 5200 | 40 | n | 6.5/7.2 (MCS0) | 22.22 |
| | 5240 | 48 | n | 6.5/7.2 (MCS0) | 22.86 |
| Band II | 5260 | 52 | a | 6 | 21.74 |
| | 5280 | 56 | a | 6 | 22.00 |
| | 5320 | 64 | a | 6 | 21.86 |
| | 5260 | 52 | n | 6.5/7.2 (MCS0) | 22.01 |
| | 5280 | 56 | n | 6.5/7.2 (MCS0) | 22.39 |
| | 5320 | 64 | n | 6.5/7.2 (MCS0) | 22.17 |
| Band III | 5500 | 100 | a | 6 | 22.04 |
| | 5580 | 116 | a | 6 | 22.10 |
| | 5700 | 140 | a | 6 | 21.77 |
| | 5500 | 100 | n | 6.5/7.2 (MCS0) | 22.49 |
| | 5580 | 116 | n | 6.5/7.2 (MCS0) | 22.24 |
| | 5700 | 140 | n | 6.5/7.2 (MCS0) | 22.13 |

**Table 6-2. Conducted Bandwidth Measurements**

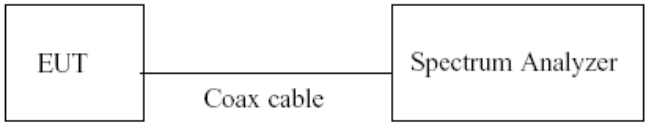
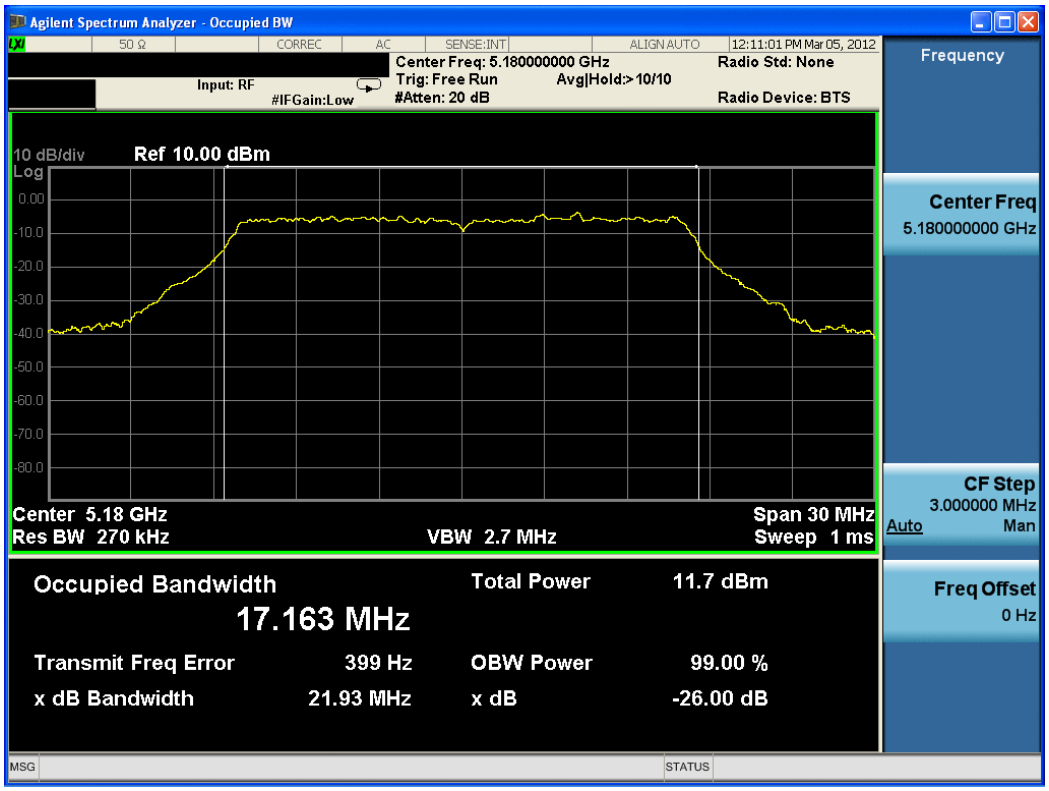
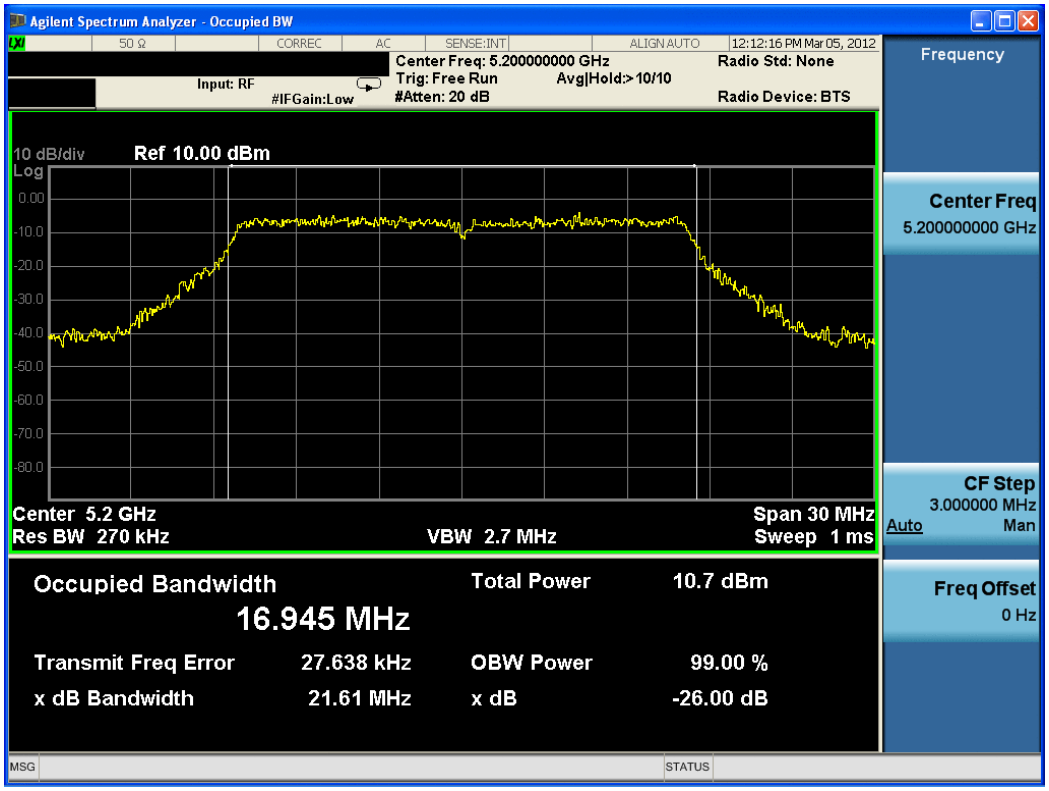


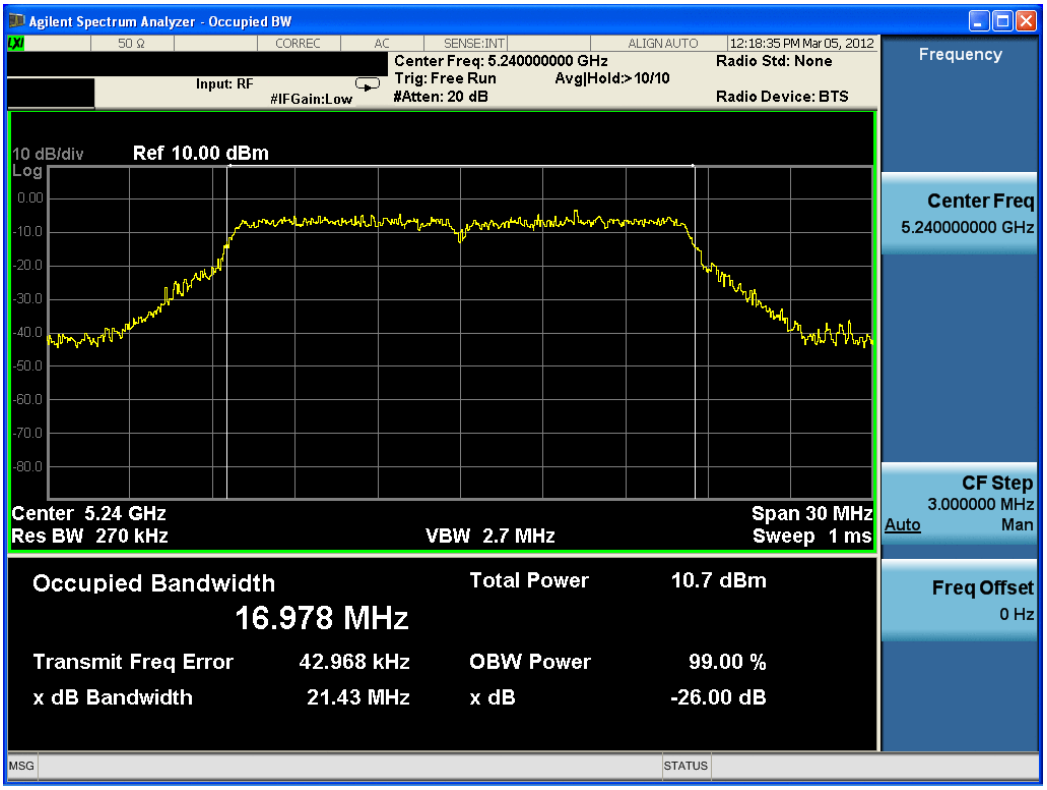

**Figure 6-1. Test Instrument & Measurement Setup**




**Plot 6-1. 26dB Bandwidth Plot (802.11a (UNII Band 1) – Ch. 36)**



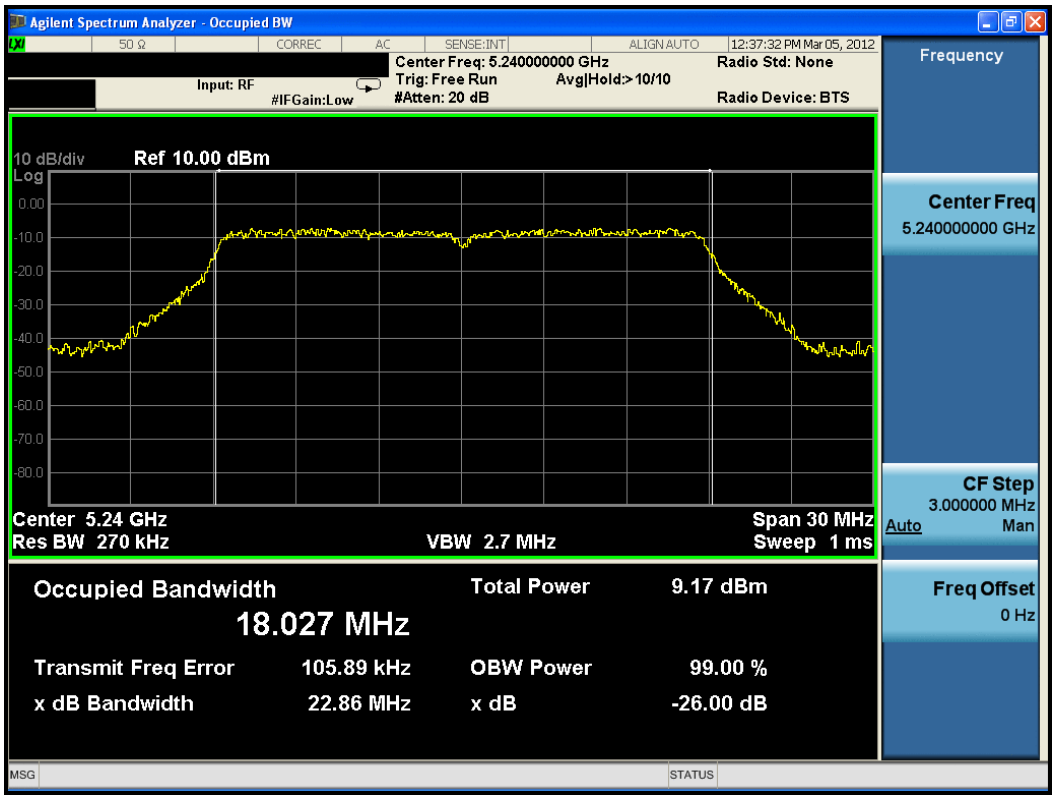

**Plot 6-2. 26dB Bandwidth Plot (802.11a (UNII Band 1) – Ch. 40)**



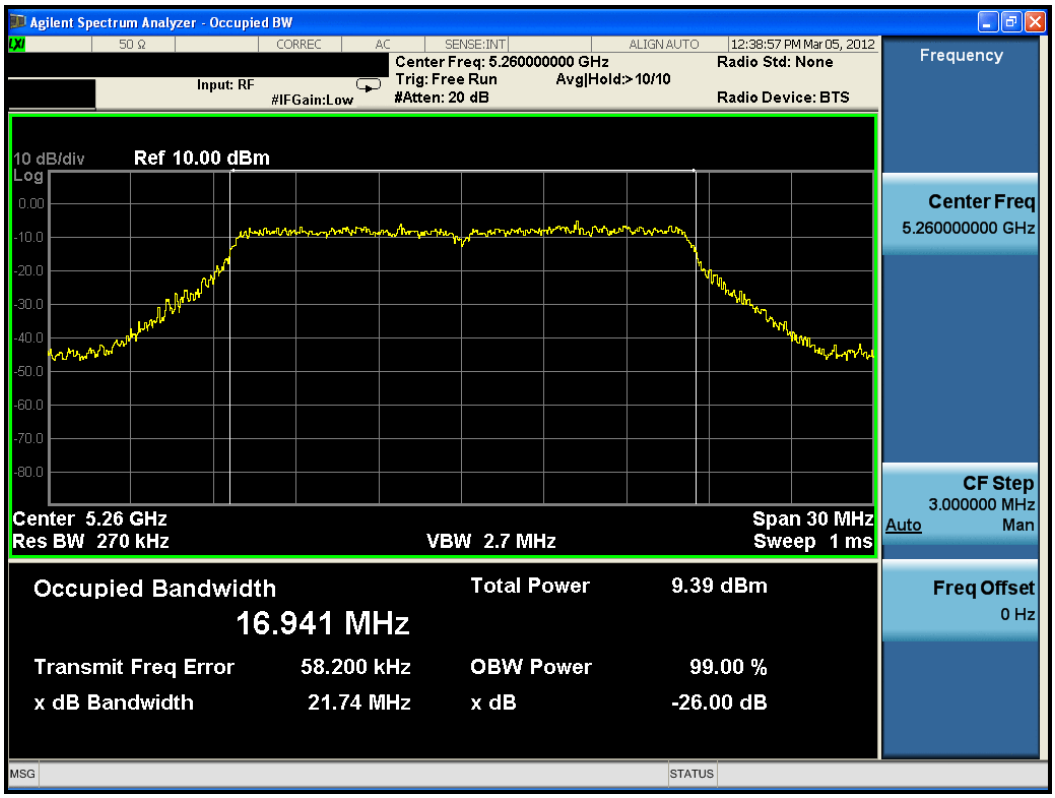

**Plot 6-3. 26dB Bandwidth Plot (802.11a (UNII Band 1) – Ch. 48)**


**Plot 6-4. 26dB Bandwidth Plot (802.11n (UNII Band 1) – Ch. 36)**

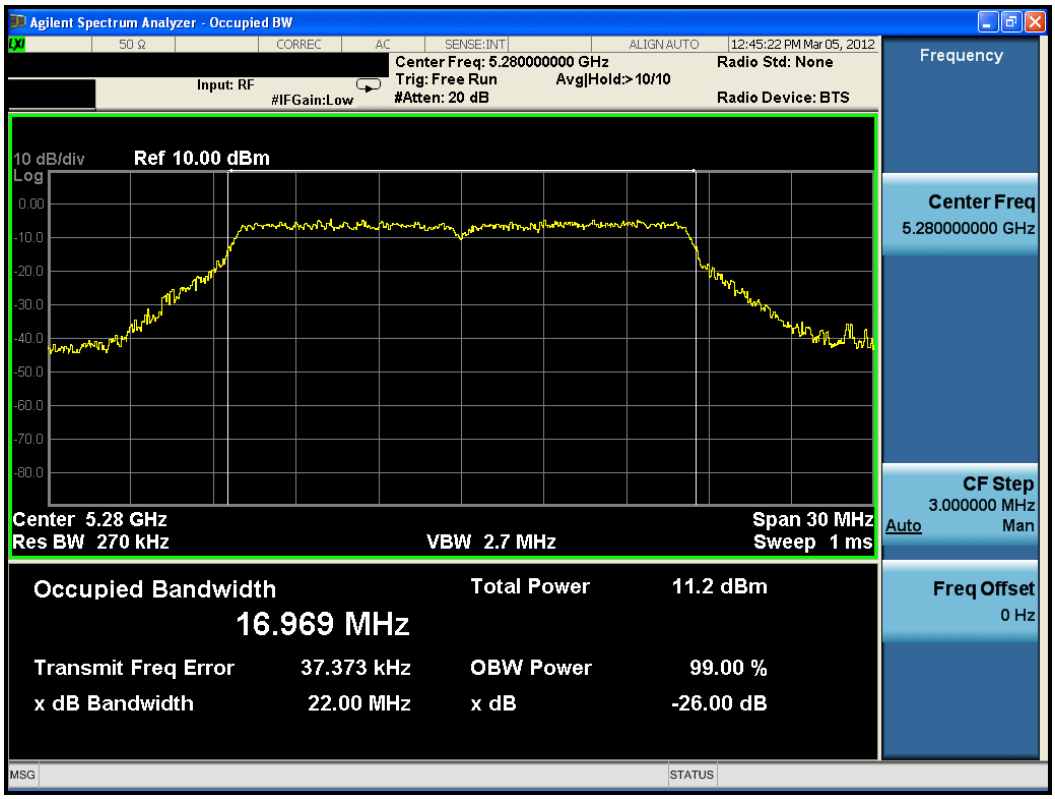

**Plot 6-5. 26dB Bandwidth Plot (802.11n (UNII Band 1) – Ch. 40)**



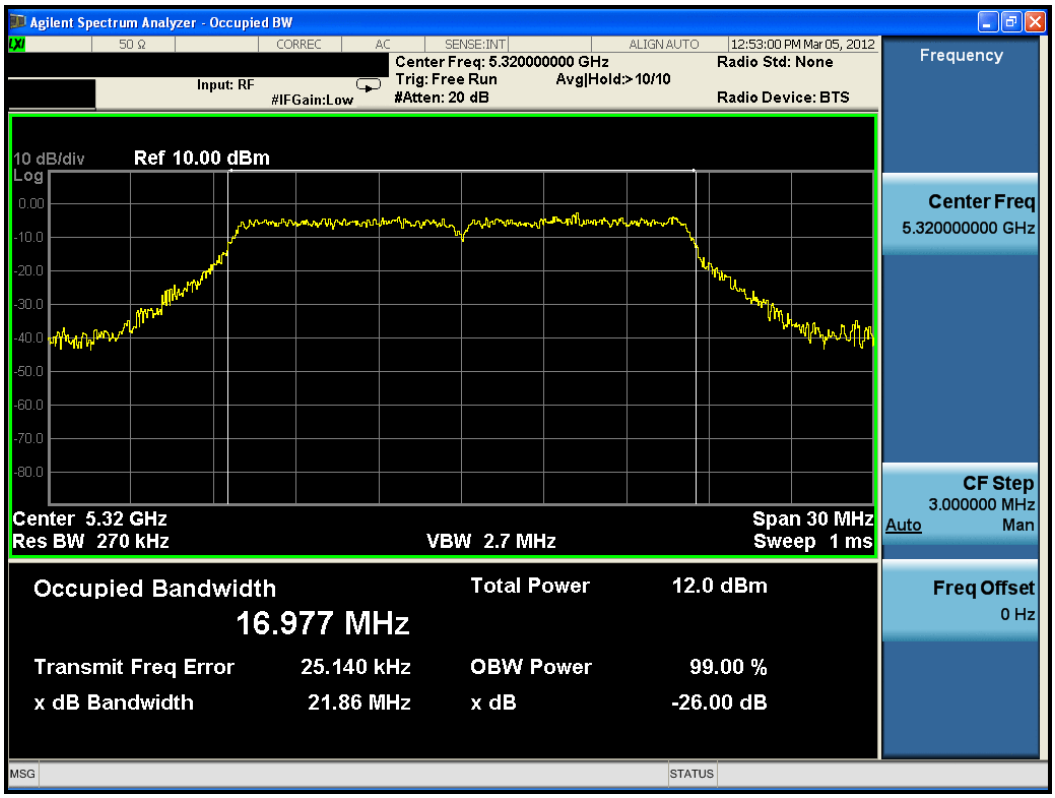

**Plot 6-6. 26dB Bandwidth Plot (802.11n (UNII Band 1) – Ch. 48)**



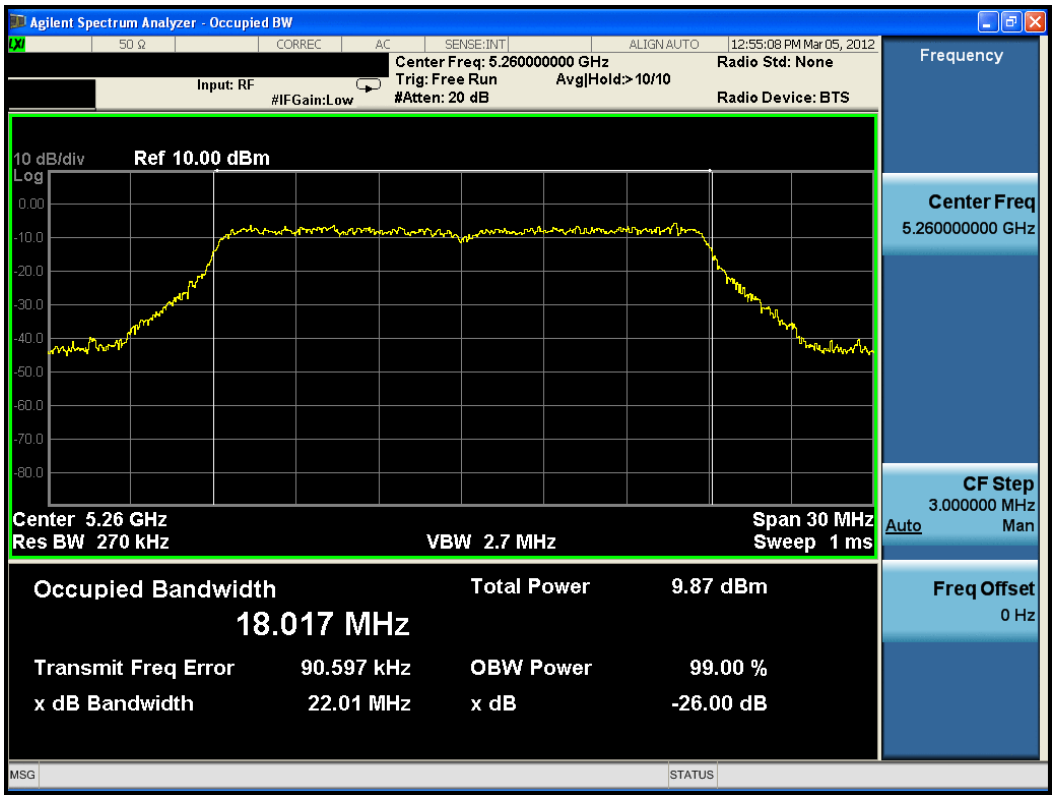

**Plot 6-7. 26dB Bandwidth Plot (802.11a (UNII Band 2) – Ch. 52)**



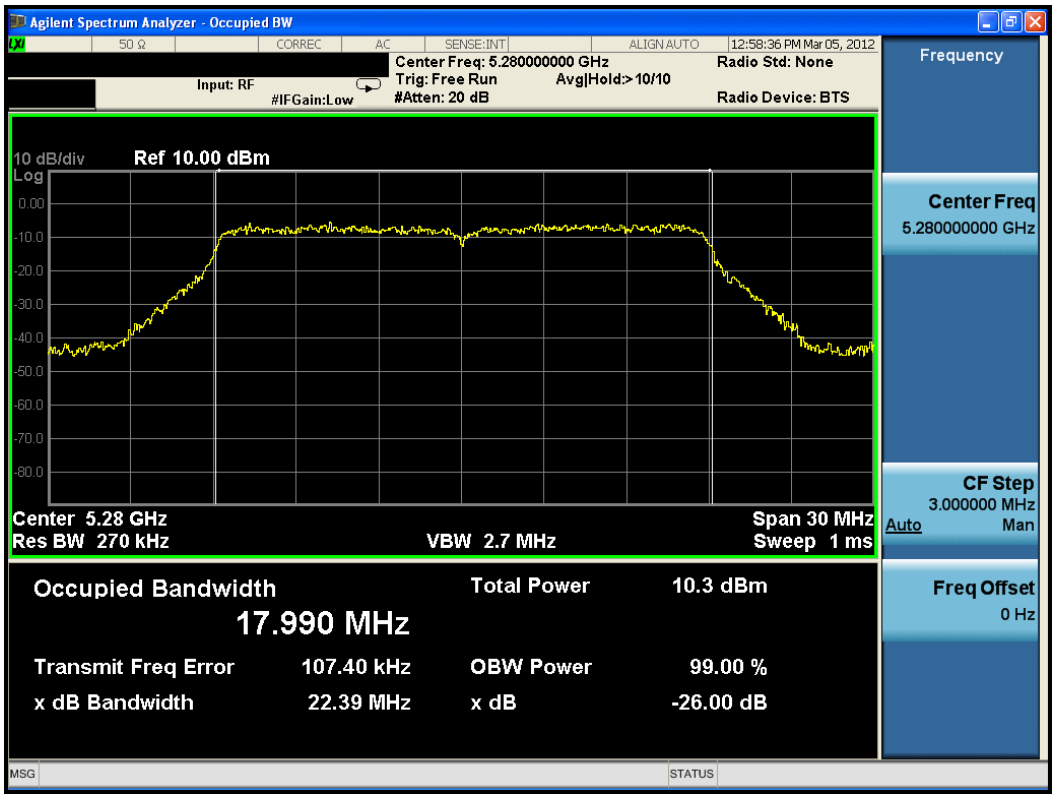

**Plot 6-8. 26dB Bandwidth Plot (802.11a (UNII Band 2) – Ch. 56)**



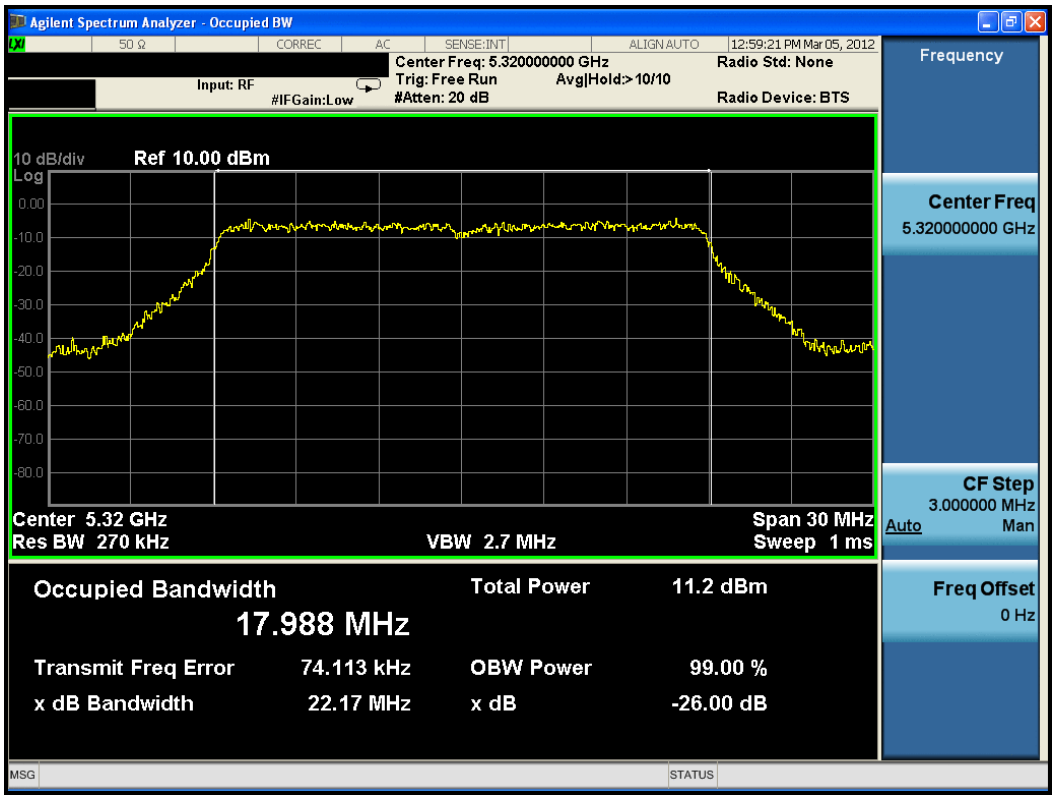

**Plot 6-9. 26dB Bandwidth Plot (802.11a (UNII Band 2) – Ch. 64)**



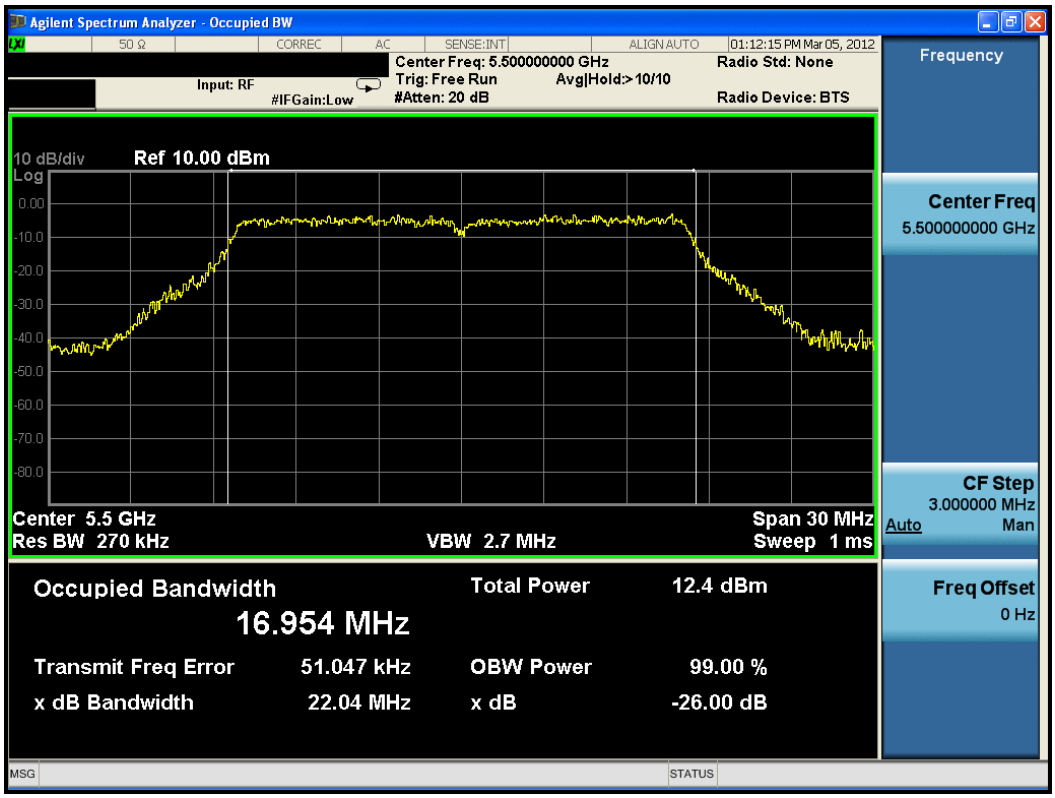

**Plot 6-10. 26dB Bandwidth Plot (802.11n (UNII Band 2) – Ch. 52)**



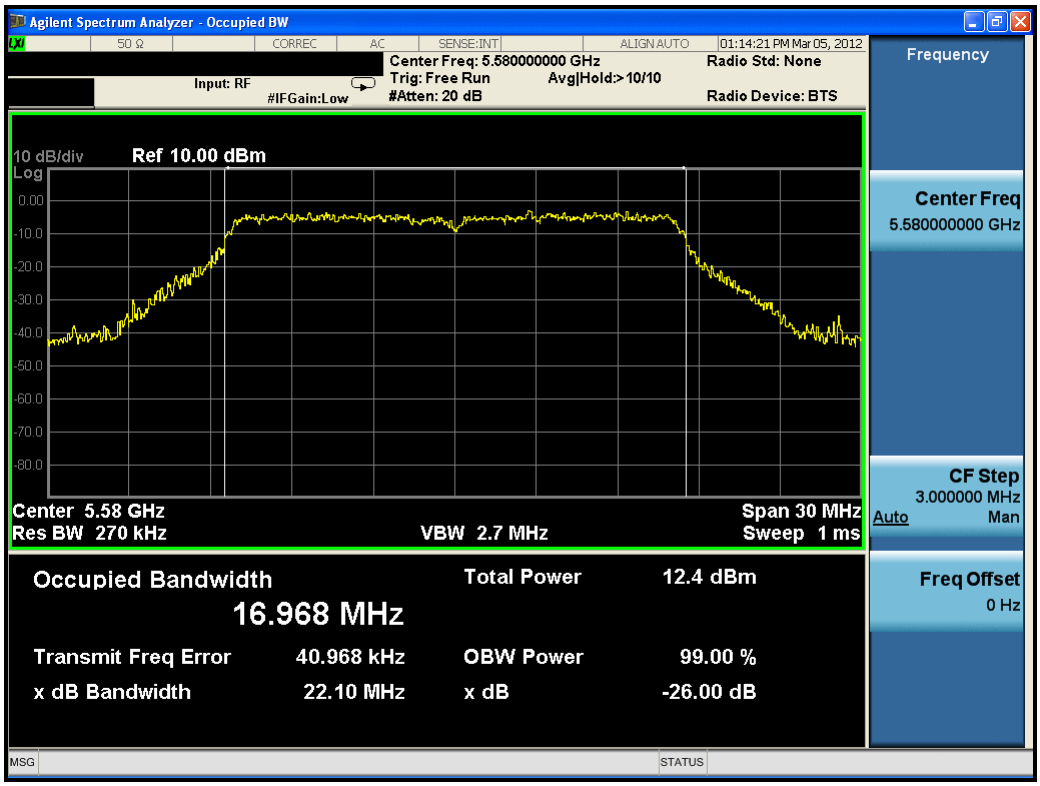

**Plot 6-11. 26dB Bandwidth Plot (802.11n (UNII Band 2) – Ch. 56)**



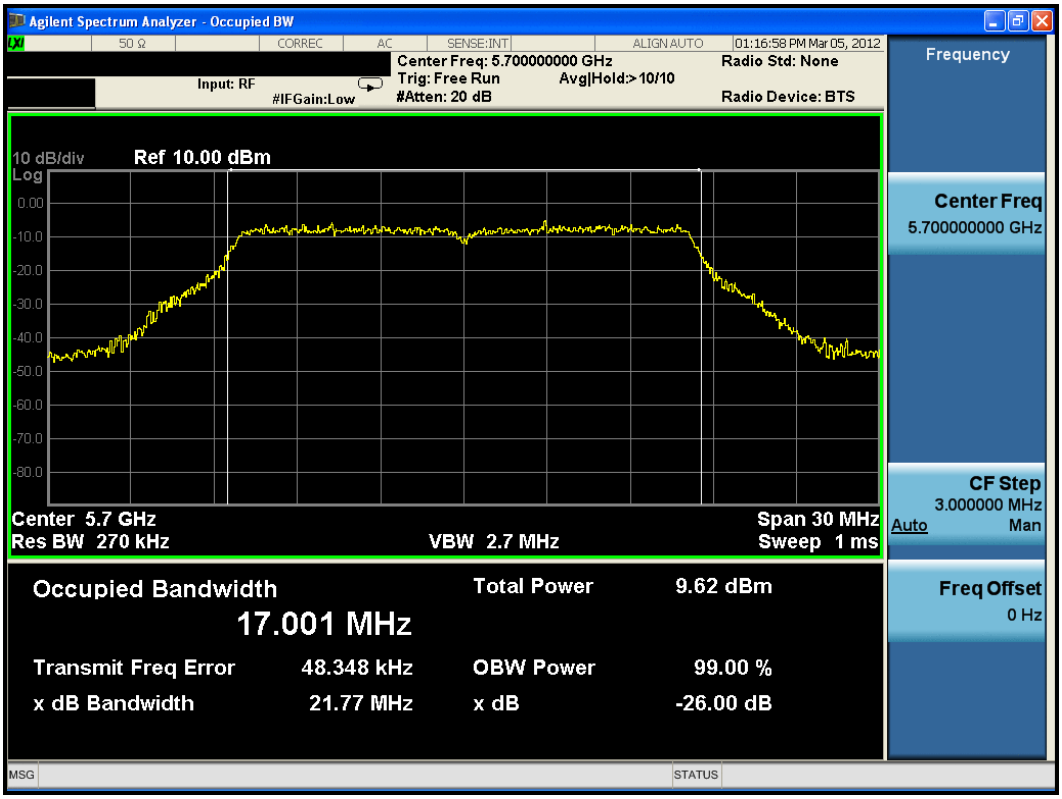

**Plot 6-12. 26dB Bandwidth Plot (802.11n (UNII Band 2) – Ch. 64)**



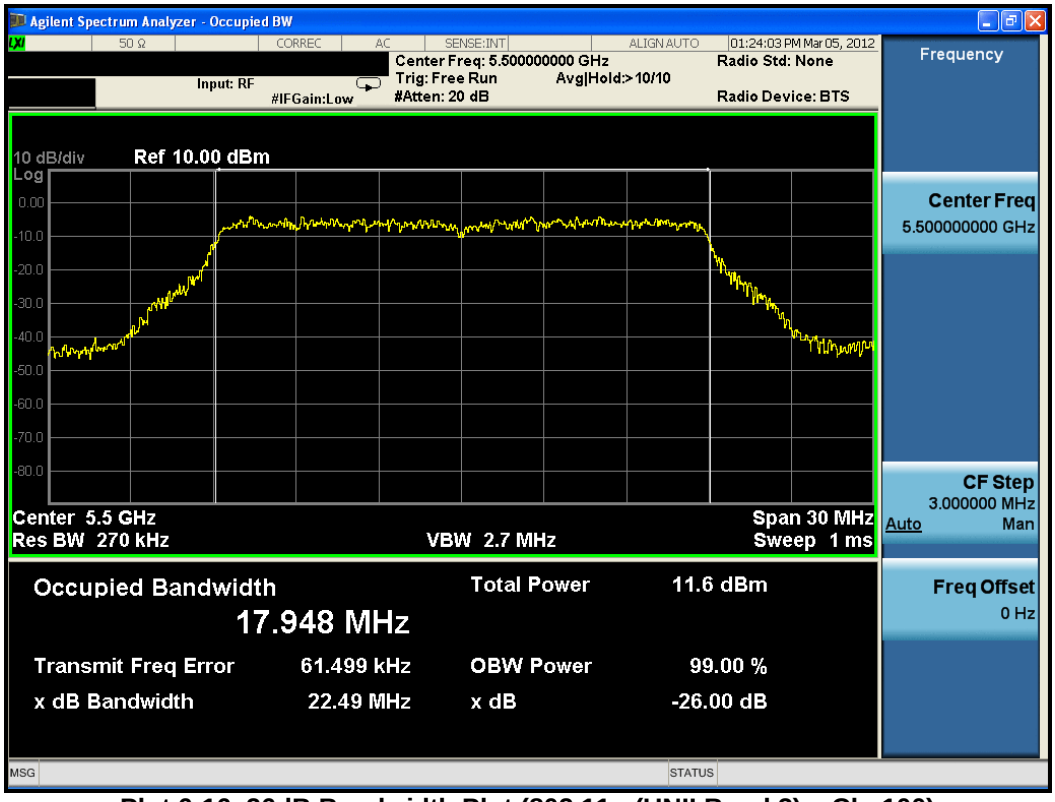

**Plot 6-13. 26dB Bandwidth Plot (802.11a (UNII Band 3) – Ch. 100)**



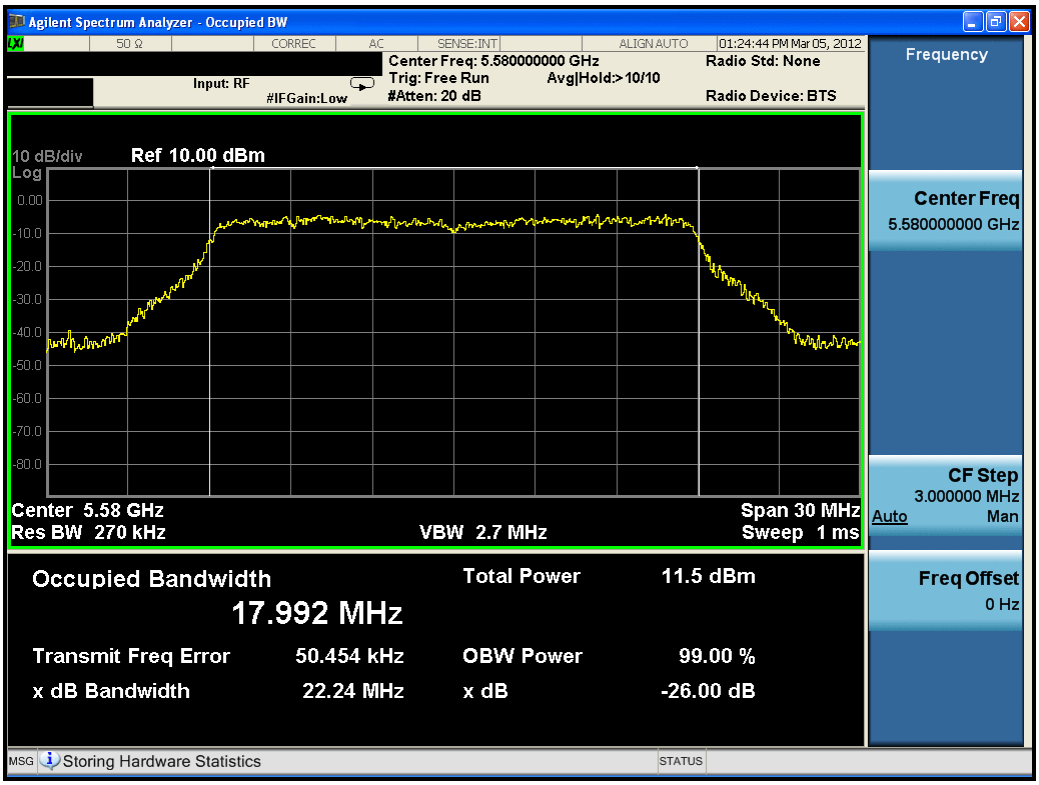

**Plot 6-14. 26dB Bandwidth Plot (802.11a (UNII Band 3) – Ch. 116)**



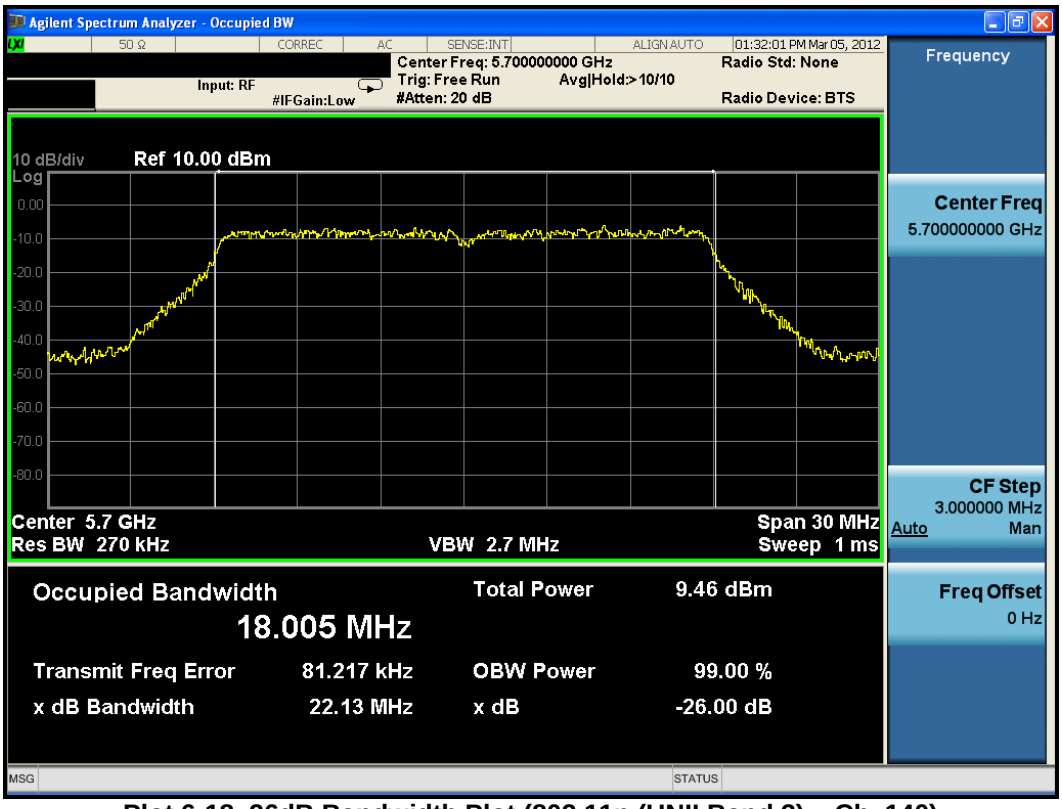

**Plot 6-15. 26dB Bandwidth Plot (802.11a (UNII Band 3) – Ch. 140)**




**Plot 6-16. 26dB Bandwidth Plot (802.11n (UNII Band 3) – Ch. 100)**




**Plot 6-17. 26dB Bandwidth Plot (802.11n (UNII Band 3) – Ch. 116)**




**Plot 6-18. 26dB Bandwidth Plot (802.11n (UNII Band 3) – Ch. 140)**

## 6.3 UNII Output Power Measurement – 802.11a/n

**§15.407 (a)(1); RSS-210 [A9.2]**

A transmitter antenna terminal of EUT is connected to the input of a RF power sensor. Measurement is made using a broadband average power meter while the EUT is operating continuously at its maximum power control level, as defined in KDB 789033, at the appropriate frequencies.

***In the 5.15 – 5.25GHz band, the maximum permissible conducted output power is the lesser of 50mW (16.99dBm) and 4 dBm + 10log$_{10}$(26dB BW) = 4 dBm + 10log$_{10}$(21.43) = 17.31dBm.***

***In the 5.25 – 5.35GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) and 11 dBm + 10log$_{10}$(26dB BW) = 11 dBm + 10log$_{10}$(21.74) = 24.37dBm.***

***In the 5.47 – 5.725GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) and 11 dBm + 10log$_{10}$(26dB BW) = 11 dBm + 10log$_{10}$(21.77) = 24.38dBm.***

| Mode | Freq | Channel | Detector | 802.11a Conducted Power [dBm] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Data Rate [Mbps] | | | | | | | |
| | [MHz] | | | 6 | 9 | 12 | 18 | 24 | 36 | 48 | 54 |
| 802.11a | **5180** | **36** | AVG | 9.98 | 9.85 | 9.89 | 9.95 | 9.97 | 9.97 | 9.96 | 9.97 |
| 802.11a | 5200 | 40 | AVG | 9.75 | 9.97 | 9.88 | 9.85 | 9.90 | 9.99 | 9.95 | 9.92 |
| 802.11a | 5220 | 44 | AVG | 9.89 | 9.77 | 9.72 | 9.76 | 9.83 | 9.99 | 9.91 | 9.99 |
| 802.11a | **5240** | **48** | AVG | 9.68 | 9.80 | 9.70 | 9.77 | 9.80 | 9.92 | 9.96 | 9.98 |
| 802.11a | **5260** | **52** | AVG | 9.25 | 9.16 | 8.95 | 9.07 | 9.00 | 9.15 | 8.75 | 9.29 |
| 802.11a | 5280 | 56 | AVG | 9.26 | 9.21 | 8.92 | 9.10 | 9.35 | 9.45 | 9.05 | 9.37 |
| 802.11a | 5300 | 60 | AVG | 9.40 | 9.51 | 9.50 | 9.53 | 9.36 | 9.62 | 9.38 | 9.42 |
| 802.11a | **5320** | **64** | AVG | 9.45 | 9.67 | 9.35 | 9.54 | 9.70 | 9.70 | 9.54 | 9.68 |
| 802.11a | 5500 | 100 | AVG | 9.40 | 9.64 | 9.50 | 9.53 | 9.63 | 9.50 | 9.51 | 9.60 |
| 802.11a | **5520** | **104** | AVG | 9.45 | 9.61 | 9.53 | 9.66 | 9.61 | 9.45 | 9.44 | 9.70 |
| 802.11a | 5540 | 108 | AVG | 8.99 | 8.57 | 9.01 | 8.97 | 8.99 | 8.86 | 8.87 | 9.15 |
| 802.11a | 5560 | 112 | AVG | 8.72 | 8.82 | 8.97 | 8.91 | 8.88 | 8.78 | 8.95 | 8.95 |
| 802.11a | **5580** | **116** | AVG | 8.67 | 8.85 | 8.90 | 8.80 | 8.78 | 8.60 | 8.90 | 8.92 |
| 802.11a | 5660 | 132 | AVG | 8.78 | 8.90 | 8.91 | 8.85 | 8.91 | 8.95 | 8.92 | 8.95 |
| 802.11a | **5680** | **136** | AVG | 8.81 | 8.98 | 9.05 | 9.00 | 9.00 | 9.00 | 9.00 | 9.03 |
| 802.11a | 5700 | 140 | AVG | 8.75 | 8.95 | 9.00 | 8.99 | 8.95 | 8.91 | 8.97 | 9.00 |

**Table 6-3. UNII (802.11a) Maximum Conducted Output Power**

| Mode | Freq | Channel | Detector | 802.11n (5GHz) Conducted Power [dBm] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Data Rate [Mbps] | | | | | | | |
| | [MHz] | | | 6.5/7.2 | 13/14.4 | 19.5/21.7 | 26/28.9 | 39/43.4 | 52/57.8 | 58.5/65 | 65/72.2 |
| 802.11n | **5180** | **36** | AVG | 7.85 | 7.84 | 7.91 | 7.94 | 8.01 | 7.70 | 7.88 | 7.75 |
| 802.11n | 5200 | 40 | AVG | 7.78 | 7.67 | 7.80 | 7.81 | 7.83 | 7.84 | 7.73 | 7.70 |
| 802.11n | 5220 | 44 | AVG | 7.71 | 7.80 | 7.84 | 7.66 | 7.70 | 7.76 | 7.81 | 7.76 |
| 802.11n | **5240** | **48** | AVG | 7.46 | 7.76 | 8.12 | 7.84 | 7.67 | 8.11 | 7.78 | 8.05 |
| 802.11n | **5260** | **52** | AVG | 8.00 | 7.95 | 8.18 | 8.05 | 8.08 | 7.95 | 7.90 | 7.99 |
| 802.11n | 5280 | 56 | AVG | 8.68 | 8.63 | 8.50 | 8.04 | 8.73 | 8.57 | 8.60 | 8.42 |
| 802.11n | 5300 | 60 | AVG | 8.58 | 8.08 | 8.47 | 8.17 | 8.64 | 8.02 | 8.63 | 8.06 |
| 802.11n | **5320** | **64** | AVG | 8.11 | 8.34 | 8.55 | 8.61 | 8.29 | 8.34 | 8.41 | 8.76 |
| 802.11n | 5500 | 100 | AVG | 7.20 | 6.99 | 7.01 | 6.97 | 7.01 | 7.07 | 6.99 | 7.03 |
| 802.11n | **5520** | **104** | AVG | 7.22 | 7.27 | 7.12 | 7.14 | 7.01 | 7.10 | 6.96 | 7.08 |
| 802.11n | 5540 | 108 | AVG | 7.18 | 6.64 | 6.94 | 6.64 | 6.97 | 7.18 | 6.96 | 6.75 |
| 802.11n | 5560 | 112 | AVG | 7.13 | 7.19 | 7.11 | 6.89 | 7.18 | 6.72 | 6.71 | 7.15 |
| 802.11n | **5580** | **116** | AVG | 6.55 | 6.77 | 6.83 | 6.74 | 6.84 | 6.67 | 6.80 | 6.85 |
| 802.11n | 5660 | 132 | AVG | 6.84 | 6.63 | 6.82 | 6.85 | 6.62 | 6.60 | 6.65 | 6.87 |
| 802.11n | **5680** | **136** | AVG | 6.57 | 6.80 | 6.62 | 6.61 | 6.89 | 6.66 | 6.59 | 6.90 |
| 802.11n | 5700 | 140 | AVG | 6.80 | 6.70 | 6.86 | 6.83 | 6.70 | 6.91 | 6.87 | 6.92 |

**Table 6-4. UNII (802.11n) Maximum Conducted Output Power**

## 6.4 Peak Power Spectral Density – 802.11a/n

**§15.407 (a)(1),(5) / RSS-210 [A9.2]**

The spectrum analyzer was connected to the antenna terminal while the EUT was operating in a continuous transmission mode at the appropriate center frequencies. **Method SA-2,** as defined in KDB 789033, was used to measure the power spectral density. Please reference Section 7.0 regarding the duty cycle correction factor.

***The maximum permissible peak power spectral density is 4dBm/MHz in the 5.15GHz – 5.25GHz band and 11dBm/MHz in the 5.25GHz – 5.35 GHz and 5.47 – 5.725GHz bands.***

| | Freq [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured Power Density [dBm] | Duty Cycle Correction Factor [dB] | Corrected Power Density [dBm] | Max Permissible Power Density [dBm/MHz] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| Band I | 5180 | 36 | a | 6 | -6.630 | 0.581 | -6.049 | 4.0 | -10.05 |
| | 5200 | 40 | a | 6 | -6.230 | 0.581 | -5.649 | 4.0 | -9.65 |
| | 5240 | 48 | a | 6 | -6.520 | 0.581 | -5.939 | 4.0 | -9.94 |
| | 5180 | 36 | n | 6.5/7.2 (MCS0) | -8.850 | 0.608 | -8.242 | 4.0 | -12.24 |
| | 5200 | 40 | n | 6.5/7.2 (MCS0) | -8.530 | 0.608 | -7.922 | 4.0 | -11.92 |
| | 5240 | 48 | n | 6.5/7.2 (MCS0) | -8.630 | 0.608 | -8.022 | 4.0 | -12.02 |
| Band II | 5260 | 52 | a | 6 | -6.890 | 0.581 | -6.309 | 11.0 | -17.31 |
| | 5280 | 56 | a | 6 | -6.380 | 0.581 | -5.799 | 11.0 | -16.80 |
| | 5320 | 64 | a | 6 | -5.500 | 0.581 | -4.919 | 11.0 | -15.92 |
| | 5260 | 52 | n | 6.5/7.2 (MCS0) | -7.970 | 0.608 | -7.362 | 11.0 | -18.36 |
| | 5280 | 56 | n | 6.5/7.2 (MCS0) | -7.290 | 0.608 | -6.682 | 11.0 | -17.68 |
| | 5320 | 64 | n | 6.5/7.2 (MCS0) | -6.640 | 0.608 | -6.032 | 11.0 | -17.03 |
| Band III | 5500 | 100 | a | 6 | -4.880 | 0.581 | -4.299 | 11.0 | -15.30 |
| | 5580 | 116 | a | 6 | -5.080 | 0.581 | -4.499 | 11.0 | -15.50 |
| | 5700 | 140 | a | 6 | -7.580 | 0.581 | -6.999 | 11.0 | -18.00 |
| | 5500 | 100 | n | 6.5/7.2 (MCS0) | -5.830 | 0.608 | -5.222 | 11.0 | -16.22 |
| | 5580 | 116 | n | 6.5/7.2 (MCS0) | -6.170 | 0.608 | -5.562 | 11.0 | -16.56 |
| | 5700 | 140 | n | 6.5/7.2 (MCS0) | -7.230 | 0.608 | -6.622 | 11.0 | -17.62 |

**Table 6-5. Conducted Power Spectral Density Measurements**

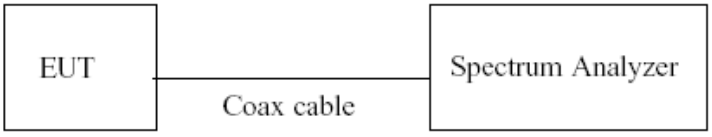
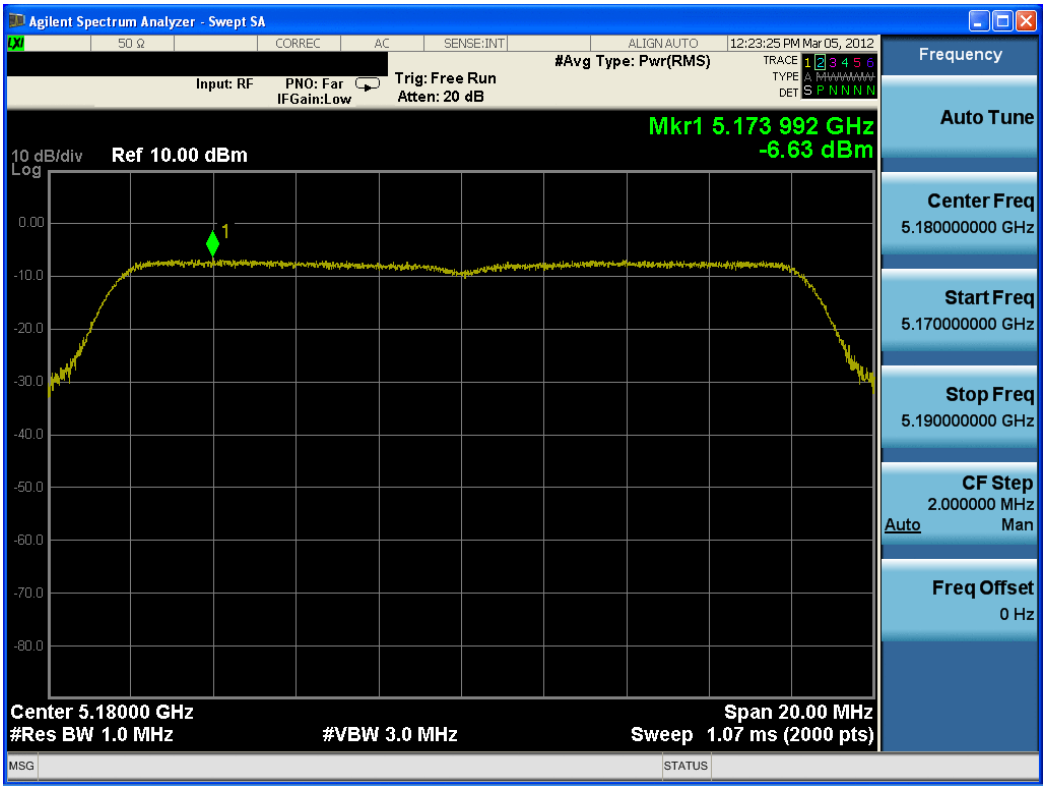
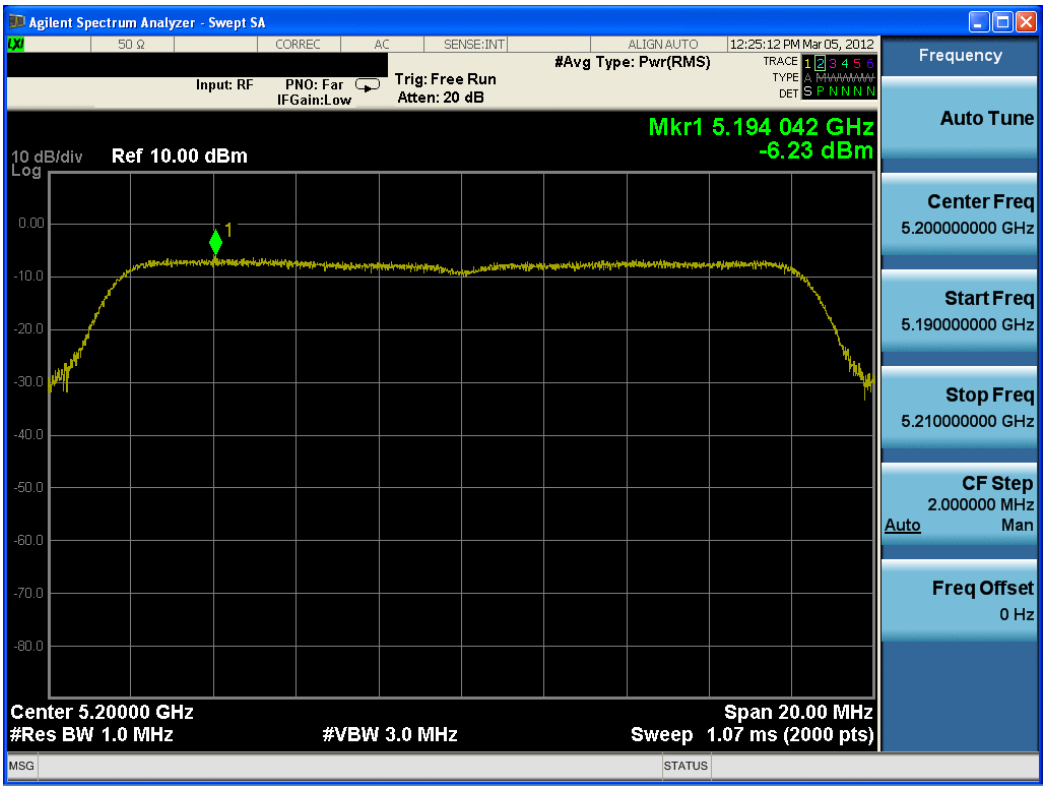


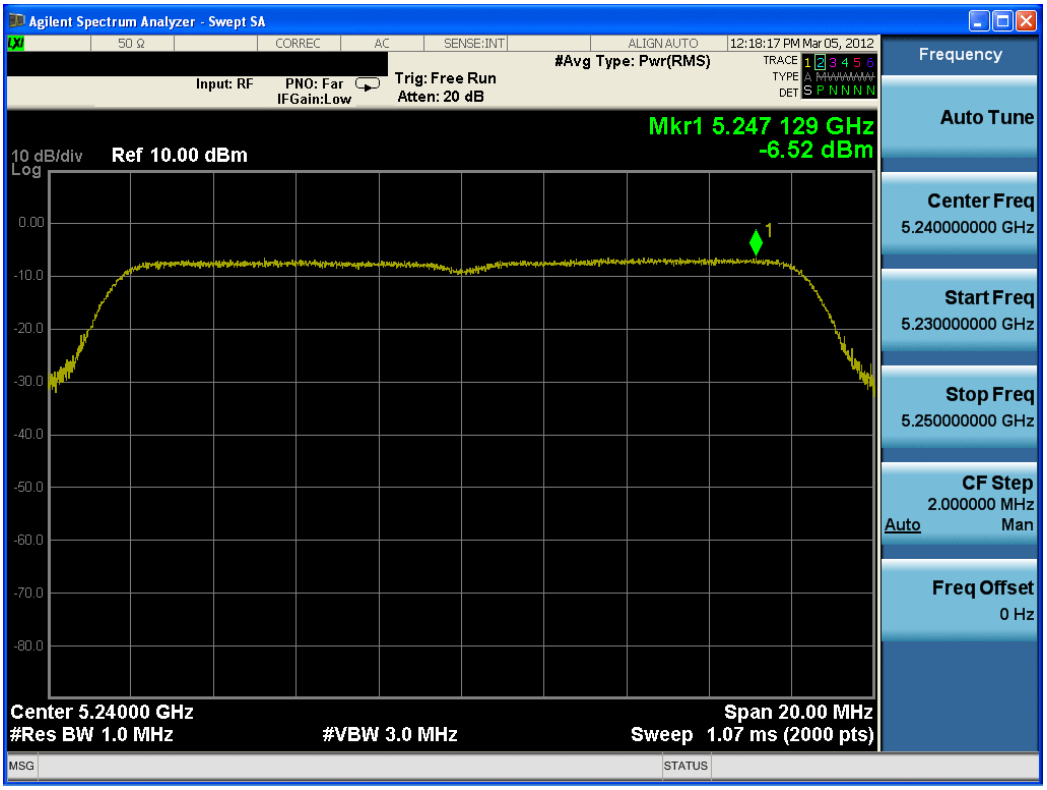

**Figure 6-2. Test Instrument & Measurement Setup**



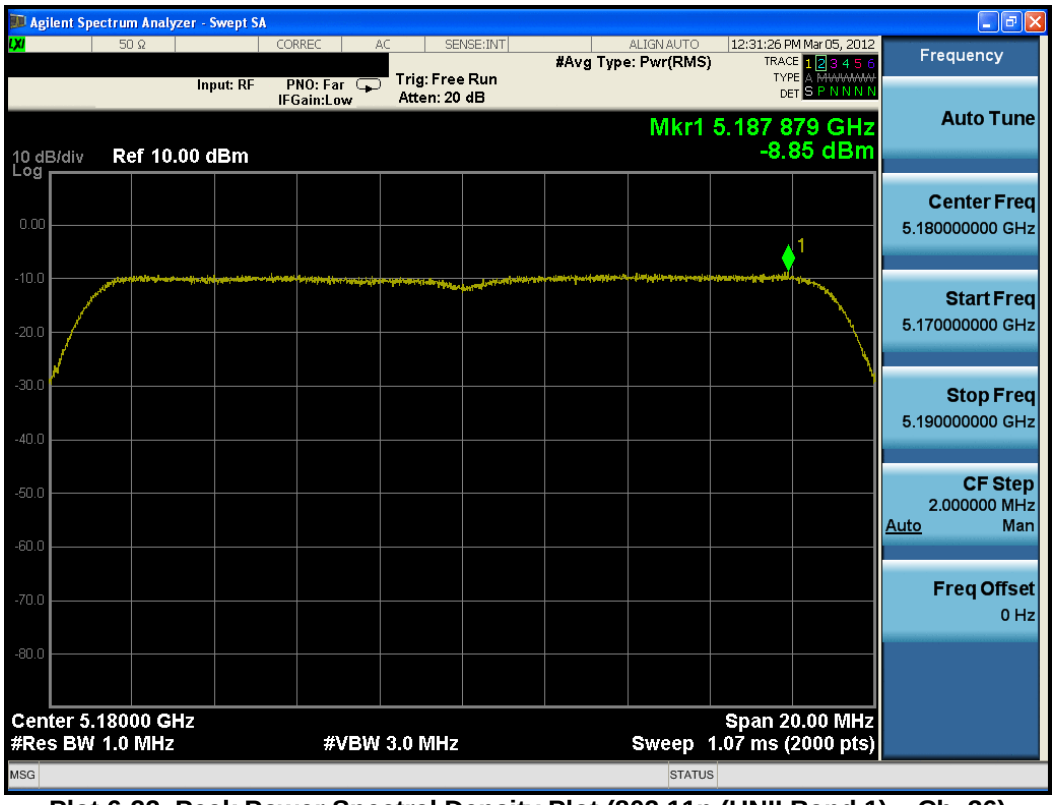

**Plot 6-19. Peak Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 36)**



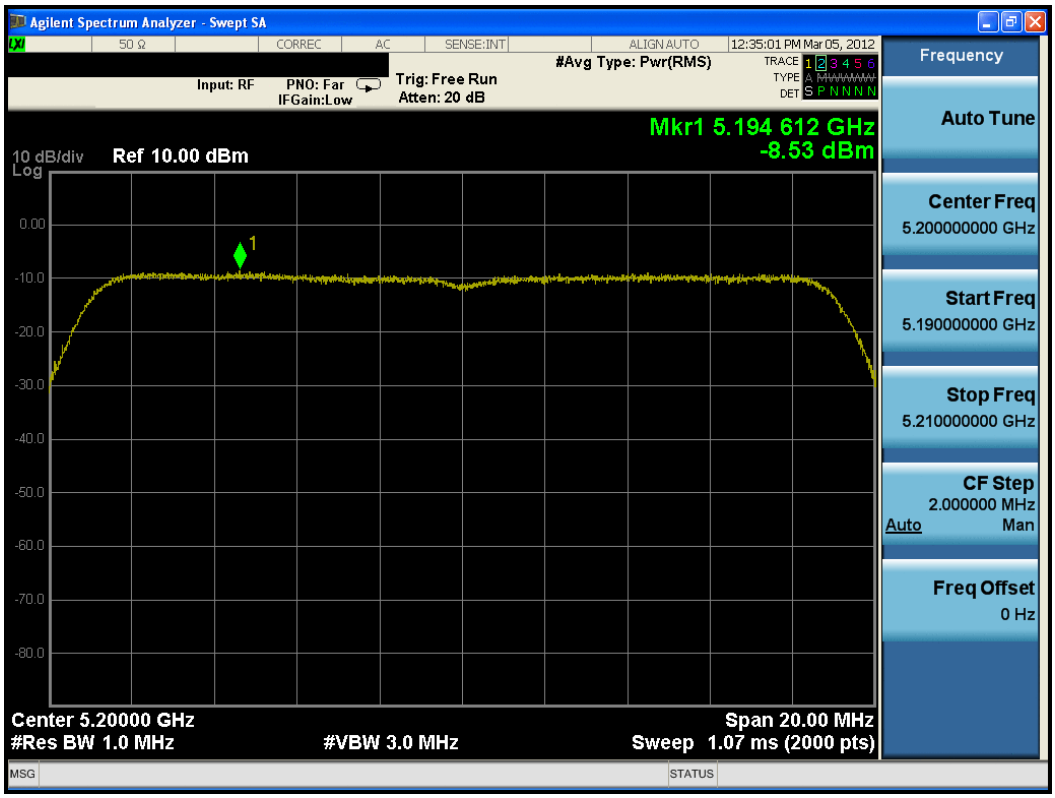

**Plot 6-20. Peak Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 40)**



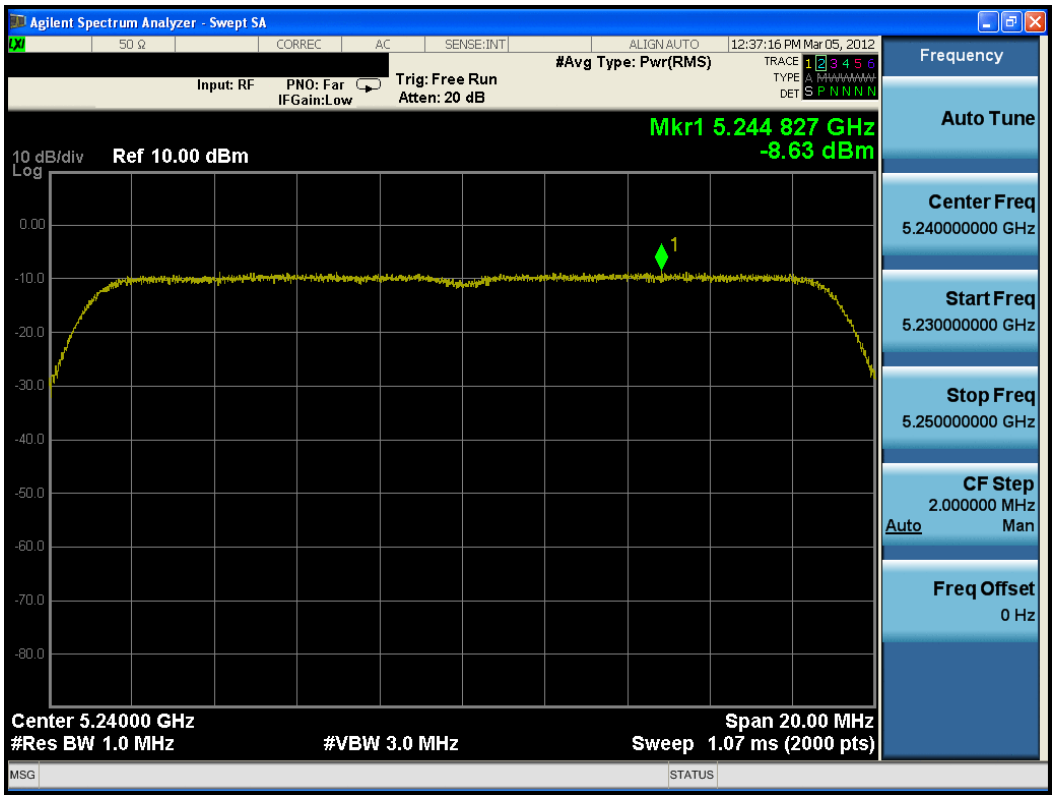

**Plot 6-21. Peak Power Spectral Density Plot (802.11a (UNII Band 1) – Ch. 48)**



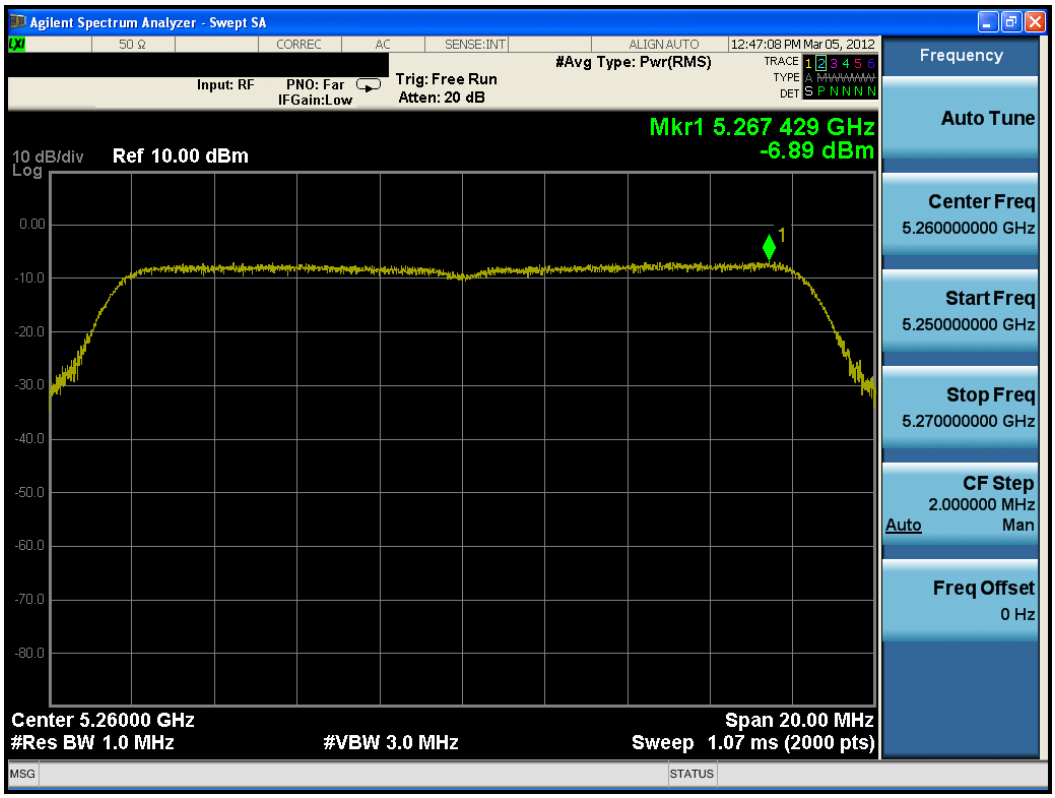

**Plot 6-22. Peak Power Spectral Density Plot (802.11n (UNII Band 1) – Ch. 36)**



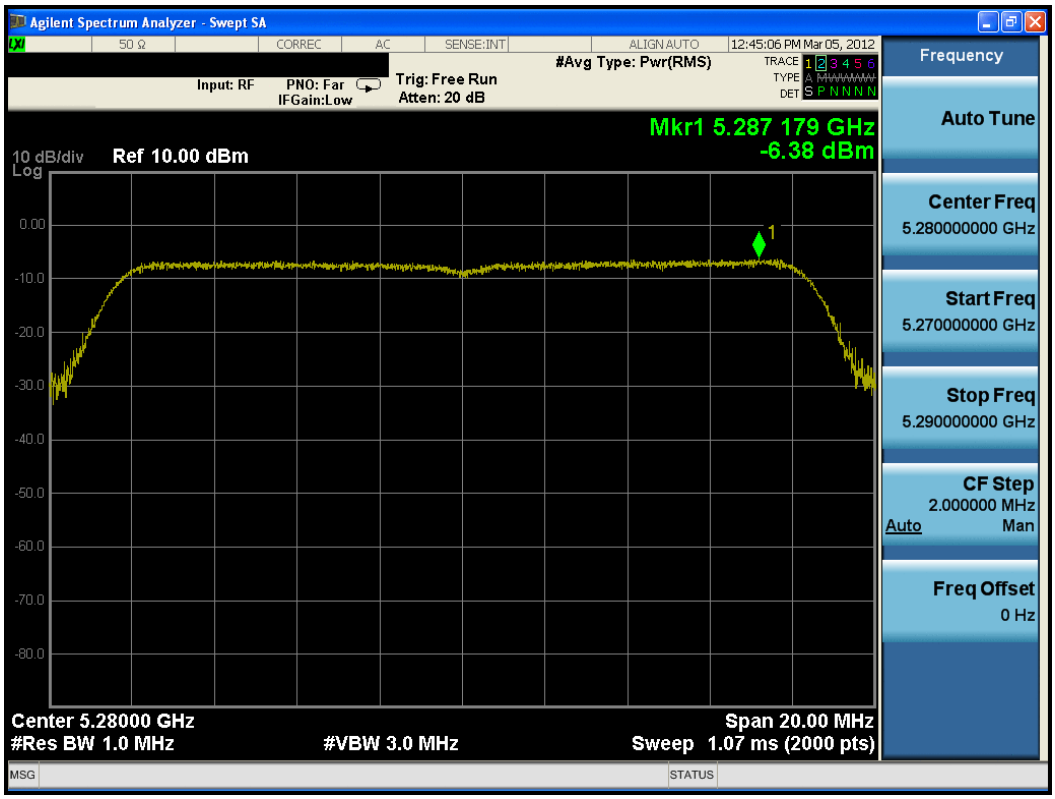

**Plot 6-23. Peak Power Spectral Density Plot (802.11n (UNII Band 1) – Ch. 40)**



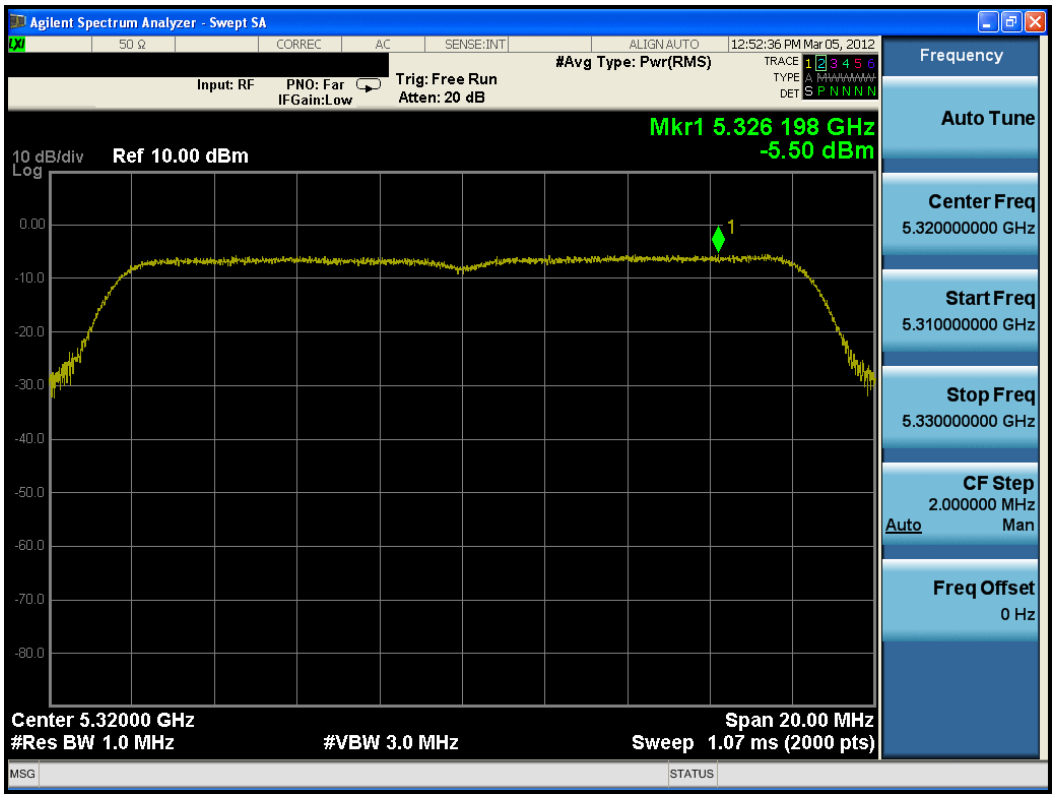

**Plot 6-24. Peak Power Spectral Density Plot (802.11n (UNII Band 1) – Ch. 48)**



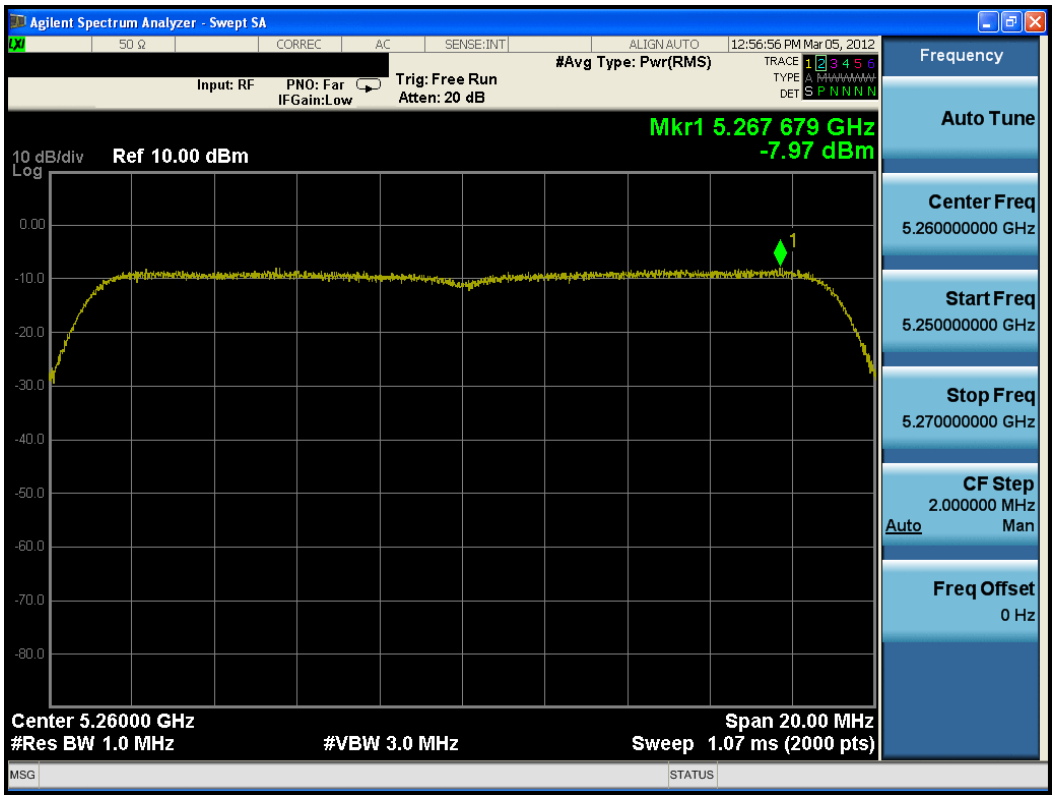

**Plot 6-25. Peak Power Spectral Density Plot (802.11a (UNII Band 2) – Ch. 52)**



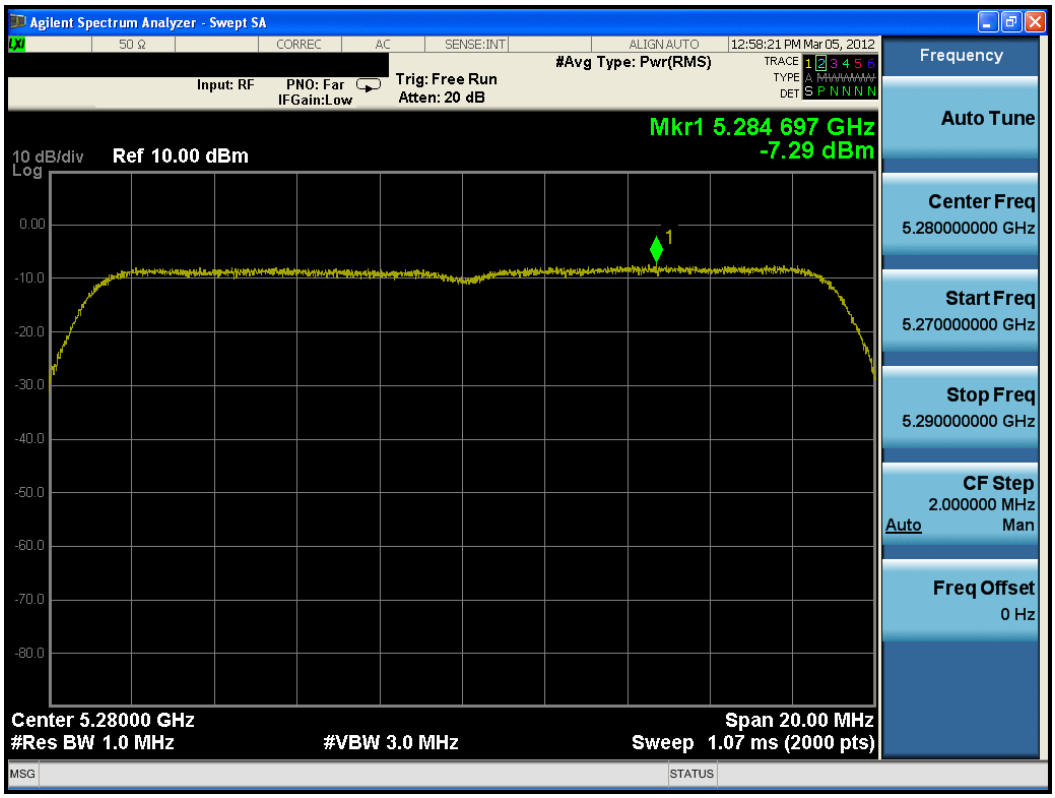

**Plot 6-26. Peak Power Spectral Density Plot (802.11a (UNII Band 2) – Ch. 56)**



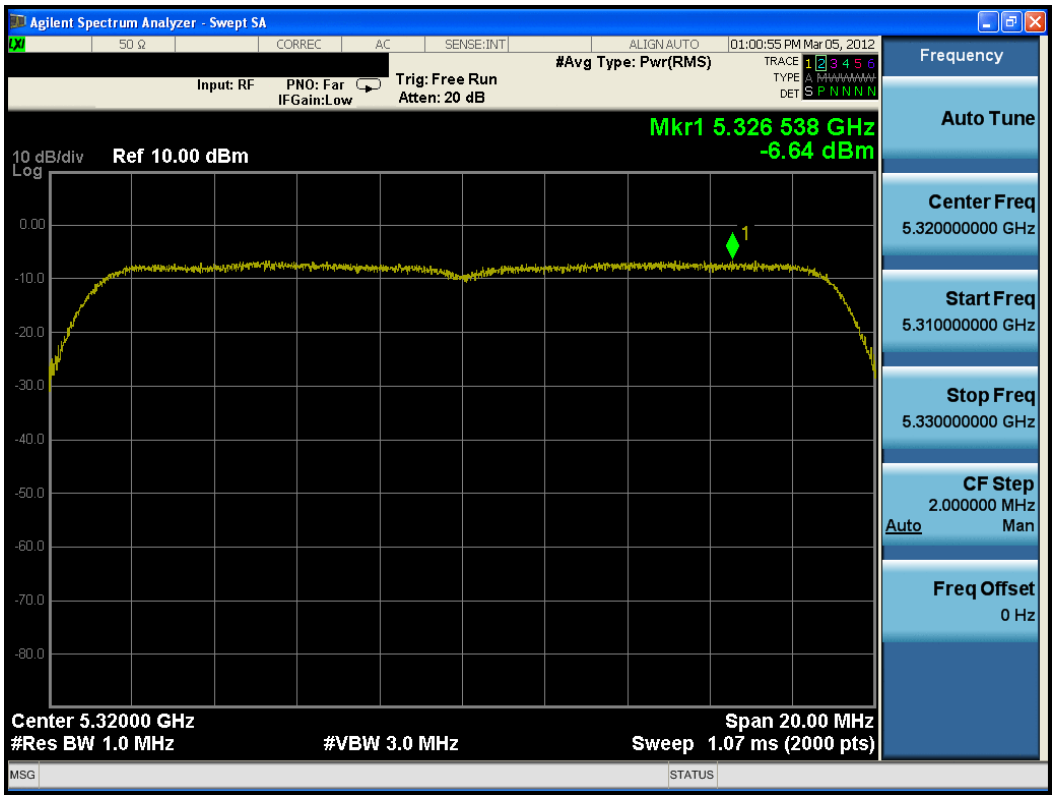

**Plot 6-27. Peak Power Spectral Density Plot (802.11a (UNII Band 2) – Ch. 64)**



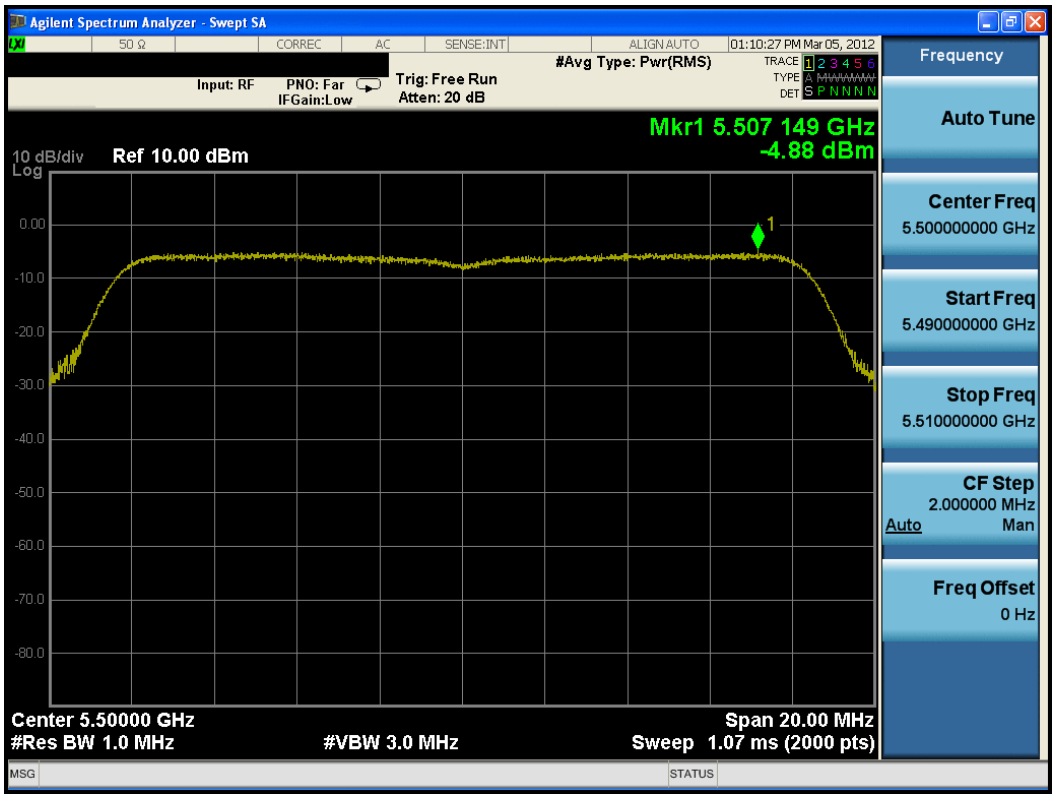

**Plot 6-28. Peak Power Spectral Density Plot (802.11n (UNII Band 2) – Ch. 52)**



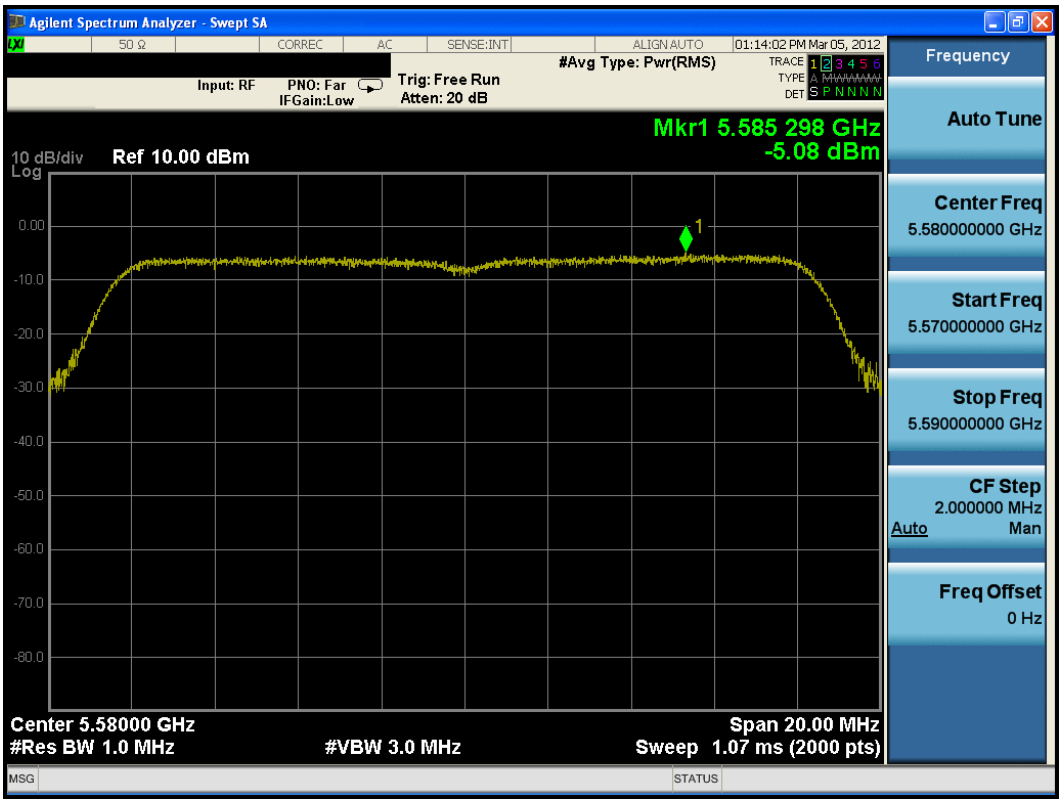

**Plot 6-29. Peak Power Spectral Density Plot (802.11n (UNII Band 2) – Ch. 56)**



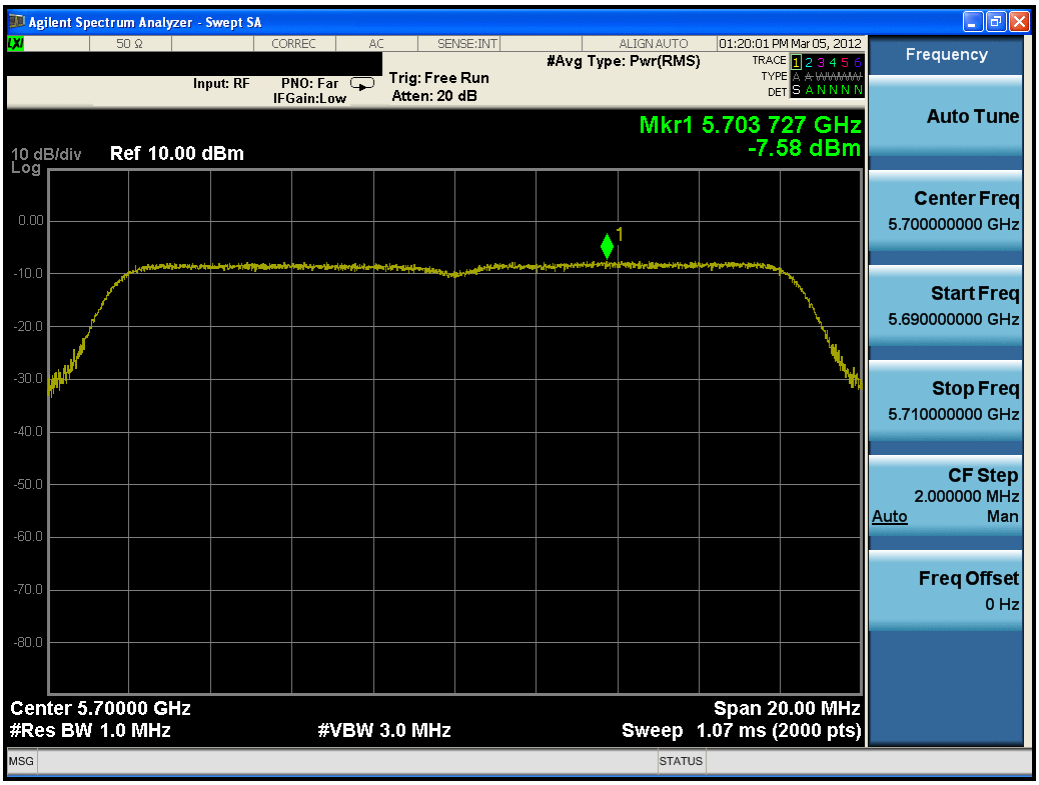

**Plot 6-30. Peak Power Spectral Density Plot (802.11n (UNII Band 2) – Ch. 64)**



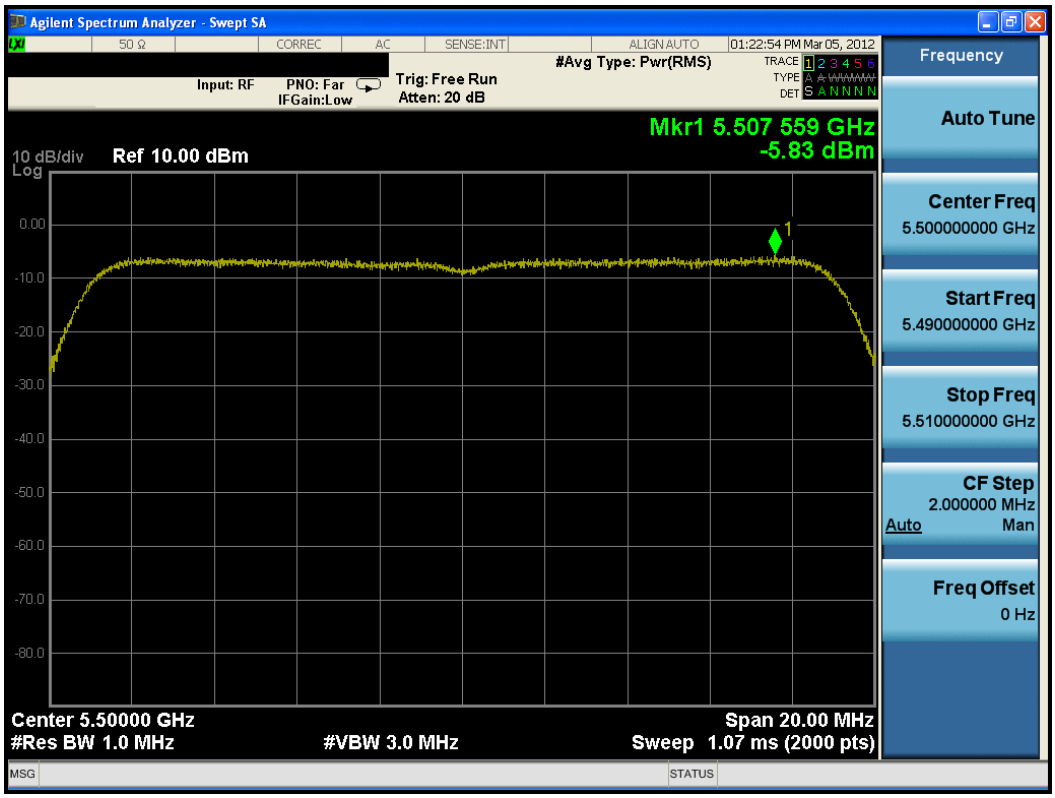

**Plot 6-31. Peak Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 100)**



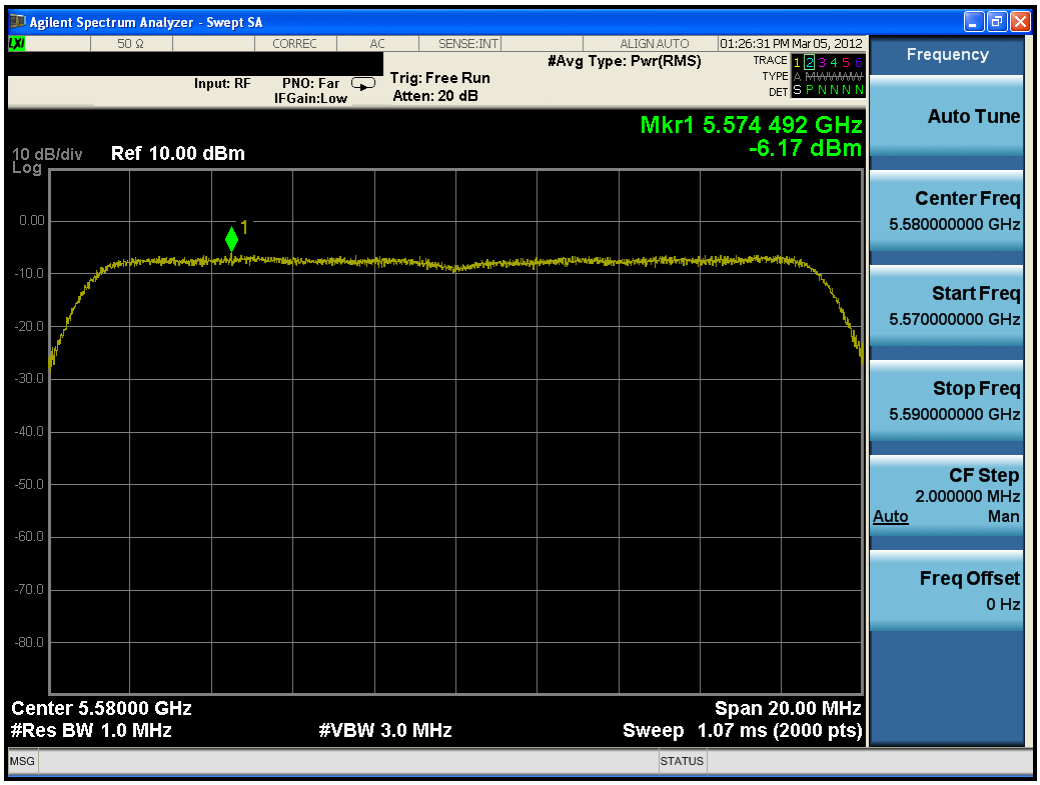

**Plot 6-32. Peak Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 116)**



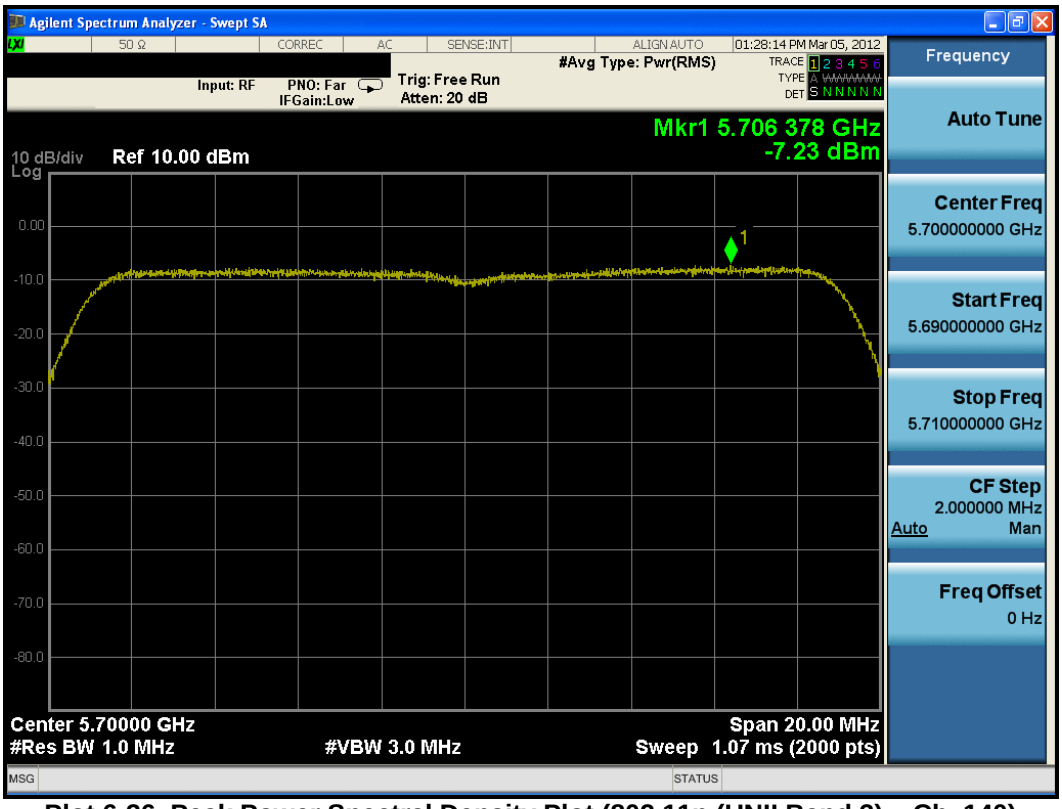

**Plot 6-33. Peak Power Spectral Density Plot (802.11a (UNII Band 3) – Ch. 140)**




**Plot 6-34. Peak Power Spectral Density Plot (802.11n (UNII Band 3) – Ch. 100)**




**Plot 6-35. Peak Power Spectral Density Plot (802.11n (UNII Band 3) – Ch. 116)**




**Plot 6-36. Peak Power Spectral Density Plot (802.11n (UNII Band 3) – Ch. 140)**

## 6.5 Peak Excursion Ratio – 802.11a/n

**§15.407(a)(6)**

The spectrum analyzer was connected to the antenna terminal while the EUT was operating in the continuous transmission mode at the appropriate center frequencies. Method SA-2, as defined in KDB 789033, was used to generate the corrected average signal trace and the procedure outlined in section F) was used to generate the peak signal trace. To account for the duty cycle correction factor that was used to calculate the PPSD, the same duty cycle correction factor is subtracted from the measured peak excursion ratio. Please reference Section 7.0 regarding duty cycle correction factor.

***The largest permissible difference between the modulation envelope (measured using a peak hold function) and the maximum conducted output power is 13 dBm/MHz.***

| | Freq [MHz] | Channel No. | 802.11 Mode | Data Rate [Mbps] | Measured Peak Excursion Ratio [dBm] | Duty Cycle Correction Factor [dB] | Corrected Peak Excursion Ratio [dBm] | Max Permissible Peak Excursion Ratio [dBm/MHz] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| Band I | 5180 | 36 | a | 6 | 11.58 | 0.58 | 11.00 | 13.0 | -2.00 |
| | 5200 | 40 | a | 6 | 10.77 | 0.58 | 10.19 | 13.0 | -2.81 |
| | 5240 | 48 | a | 6 | 11.14 | 0.58 | 10.56 | 13.0 | -2.44 |
| | 5180 | 36 | n | 6.5/7.2 (MCS0) | 11.24 | 0.61 | 10.63 | 13.0 | -2.37 |
| | 5200 | 40 | n | 6.5/7.2 (MCS0) | 11.22 | 0.61 | 10.61 | 13.0 | -2.39 |
| | 5240 | 48 | n | 6.5/7.2 (MCS0) | 10.62 | 0.61 | 10.01 | 13.0 | -2.99 |
| Band II | 5260 | 52 | a | 6 | 10.95 | 0.58 | 10.37 | 13.0 | -2.63 |
| | 5280 | 56 | a | 6 | 11.18 | 0.58 | 10.60 | 13.0 | -2.40 |
| | 5320 | 64 | a | 6 | 10.93 | 0.58 | 10.35 | 13.0 | -2.65 |
| | 5260 | 52 | n | 6.5/7.2 (MCS0) | 12.08 | 0.61 | 11.47 | 13.0 | -1.53 |
| | 5280 | 56 | n | 6.5/7.2 (MCS0) | 11.37 | 0.61 | 10.76 | 13.0 | -2.24 |
| | 5320 | 64 | n | 6.5/7.2 (MCS0) | 12.24 | 0.61 | 11.63 | 13.0 | -1.37 |
| Band III | 5500 | 100 | a | 6 | 11.60 | 0.58 | 11.02 | 13.0 | -1.98 |
| | 5580 | 116 | a | 6 | 11.87 | 0.58 | 11.29 | 13.0 | -1.71 |
| | 5700 | 140 | a | 6 | 12.01 | 0.58 | 11.43 | 13.0 | -1.57 |
| | 5500 | 100 | n | 6.5/7.2 (MCS0) | 12.05 | 0.61 | 11.44 | 13.0 | -1.56 |
| | 5580 | 116 | n | 6.5/7.2 (MCS0) | 11.58 | 0.61 | 10.97 | 13.0 | -2.03 |
| | 5700 | 140 | n | 6.5/7.2 (MCS0) | 11.84 | 0.61 | 11.23 | 13.0 | -1.77 |

**Table 6-6. Conducted Peak Excursion Ratio Measurements**

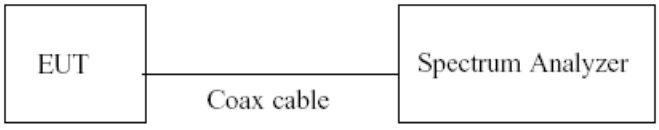
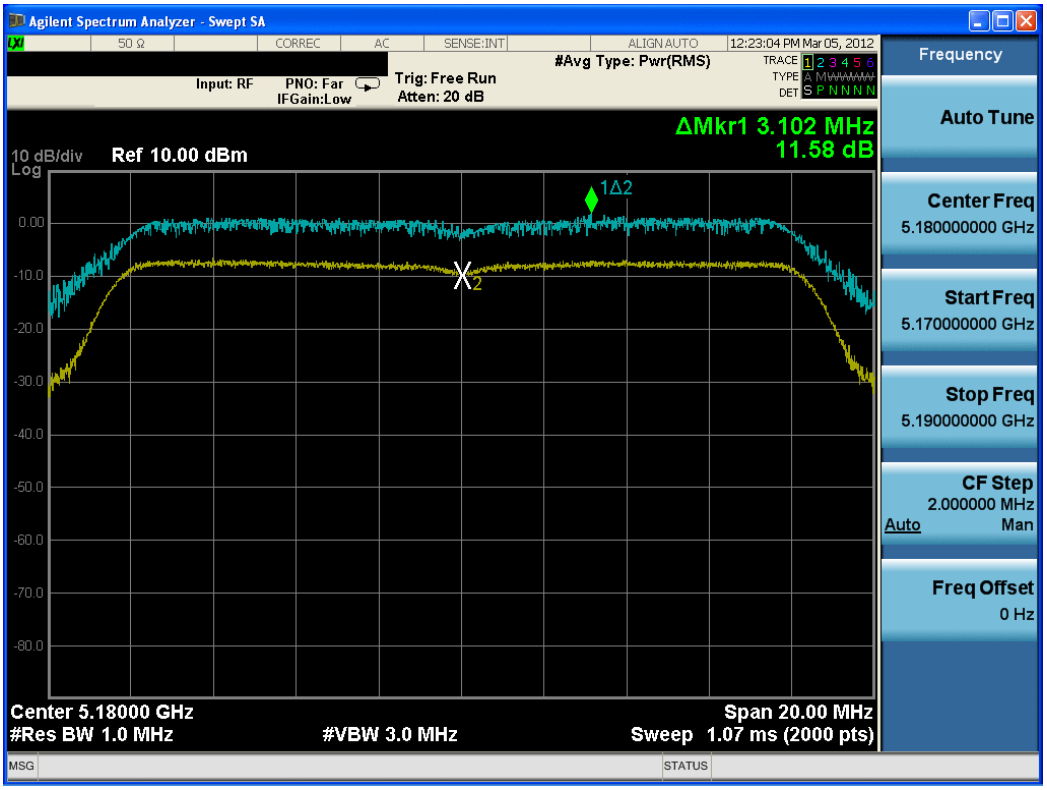
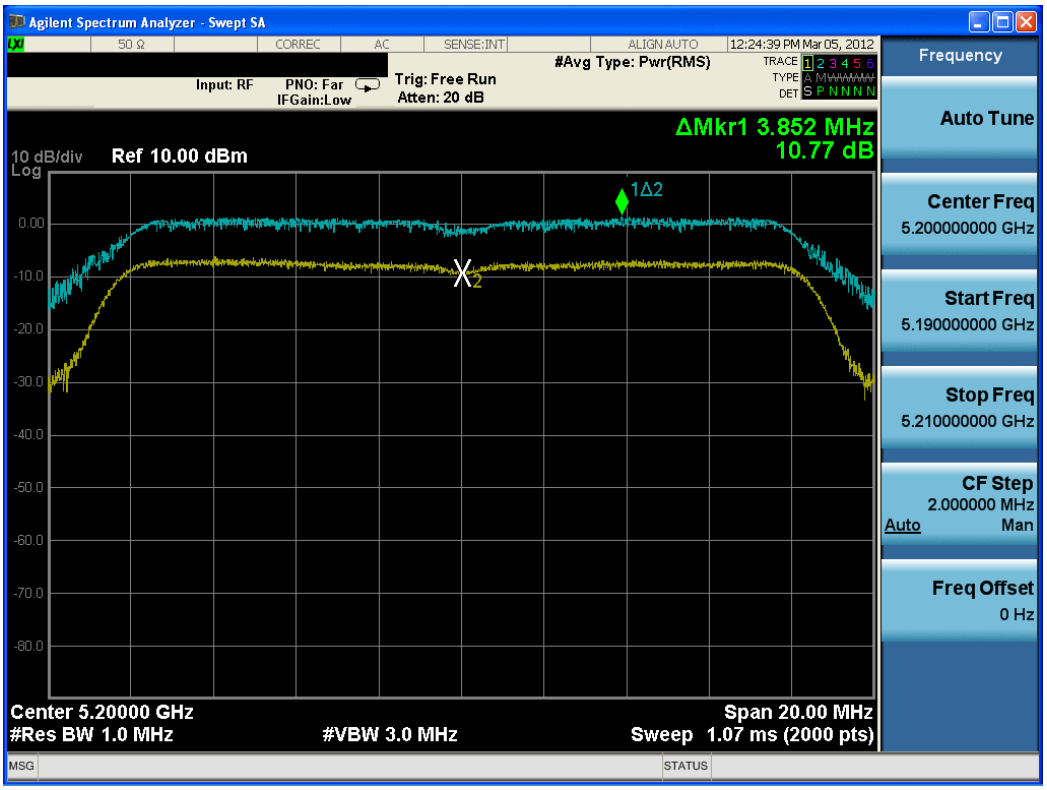


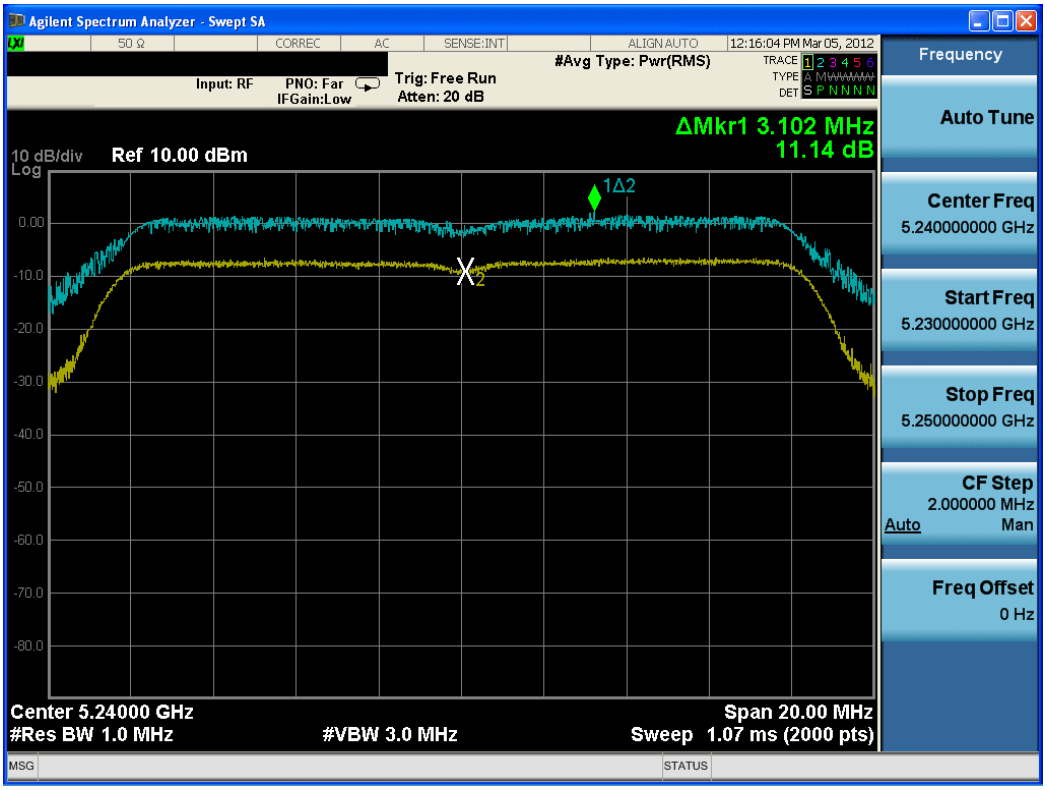

**Figure 6-3. Test Instrument & Measurement Setup**



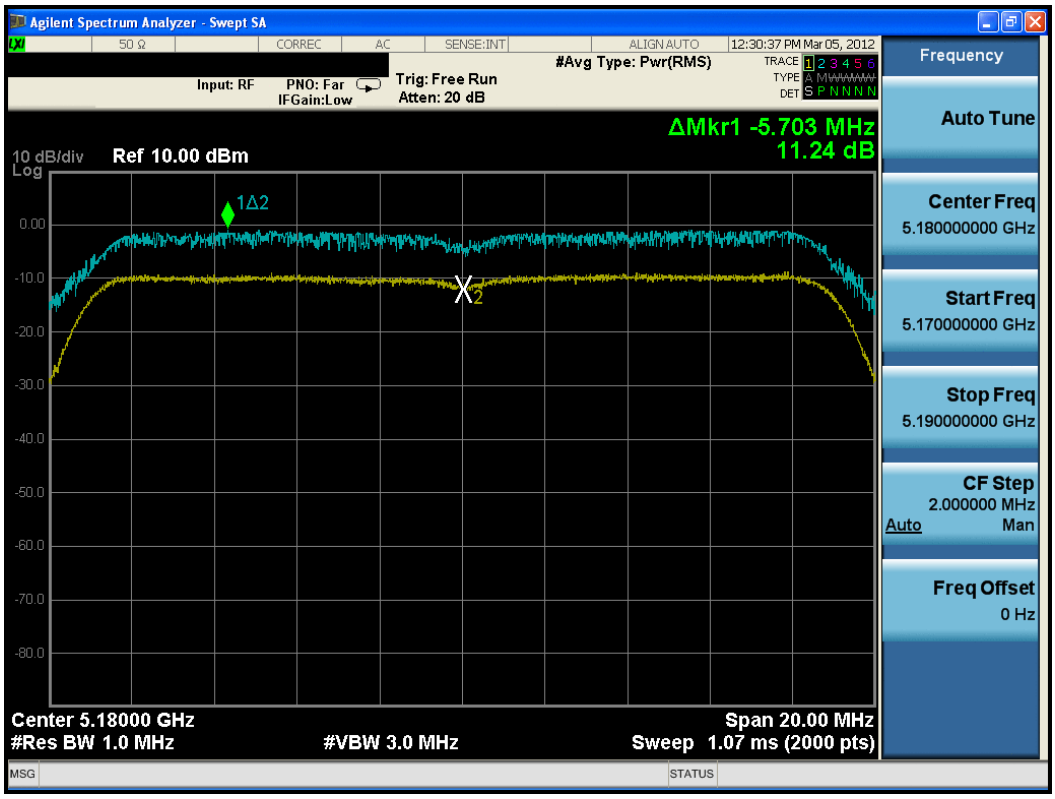

**Plot 6-37. Peak Excursion Ratio Plot (802.11a (UNII Band 1) – Ch. 36)**



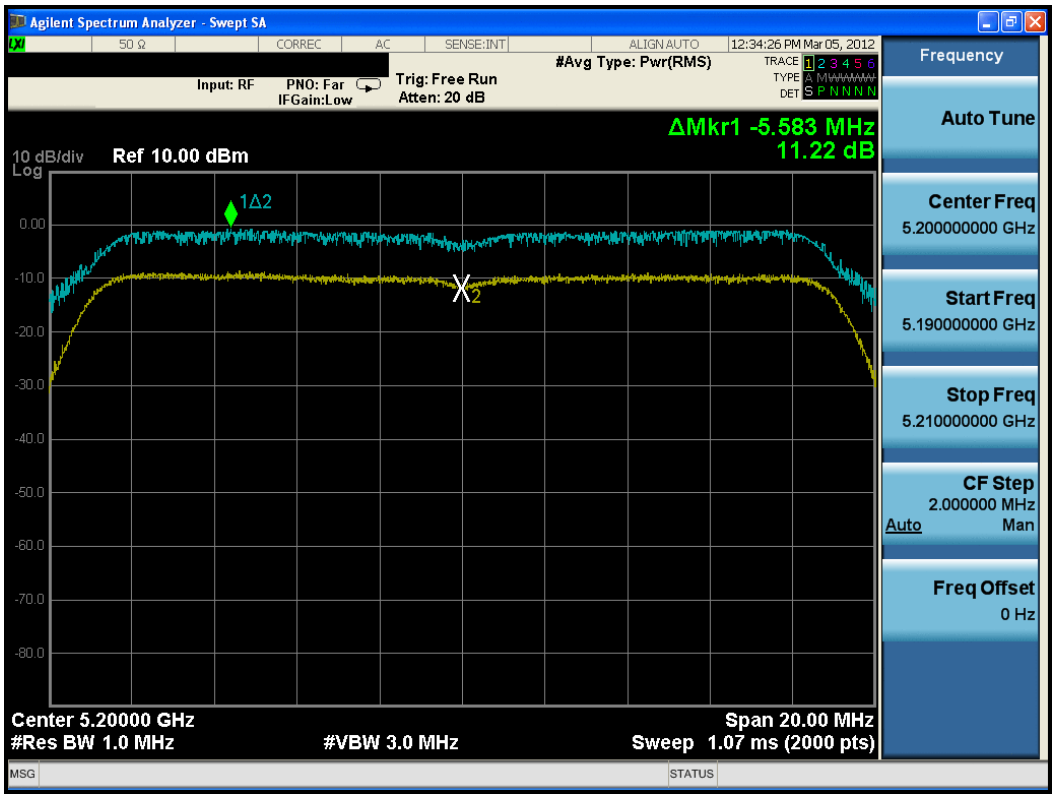

**Plot 6-38. Peak Excursion Ratio Plot (802.11a (UNII Band 1) – Ch. 40)**



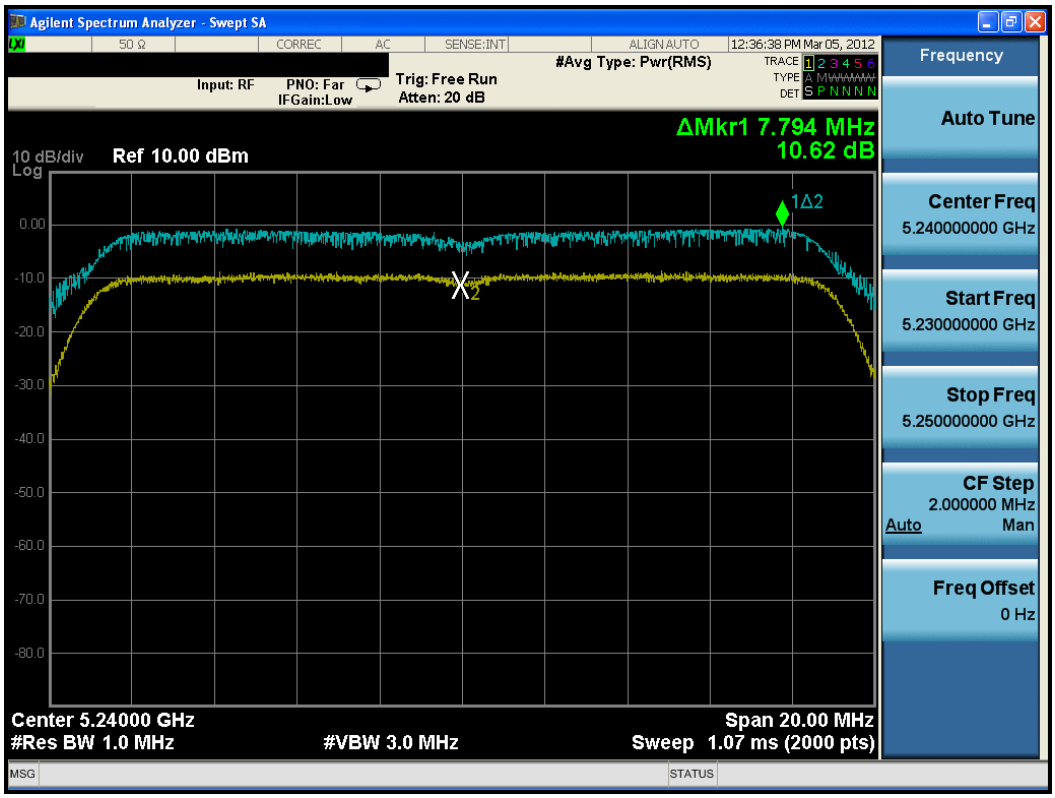

**Plot 6-39. Peak Excursion Ratio Plot (802.11a (UNII Band 1) – Ch. 48)**



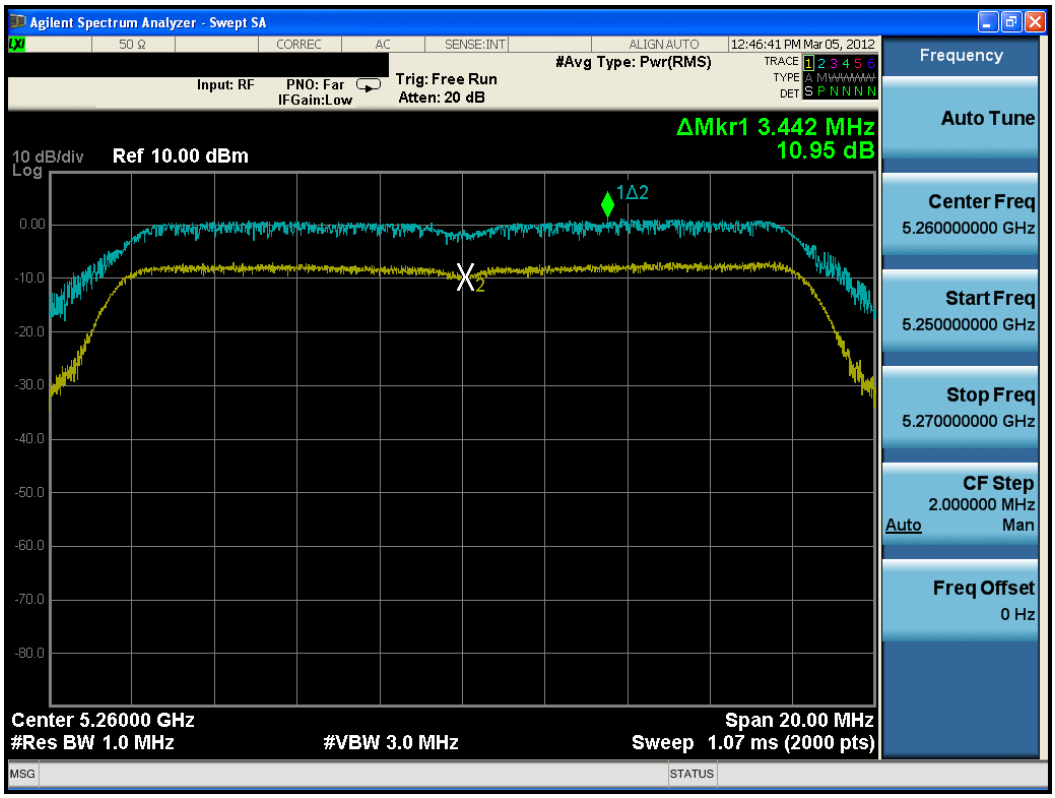

**Plot 6-40. Peak Excursion Ratio Plot (802.11n (UNII Band 1) – Ch. 36)**



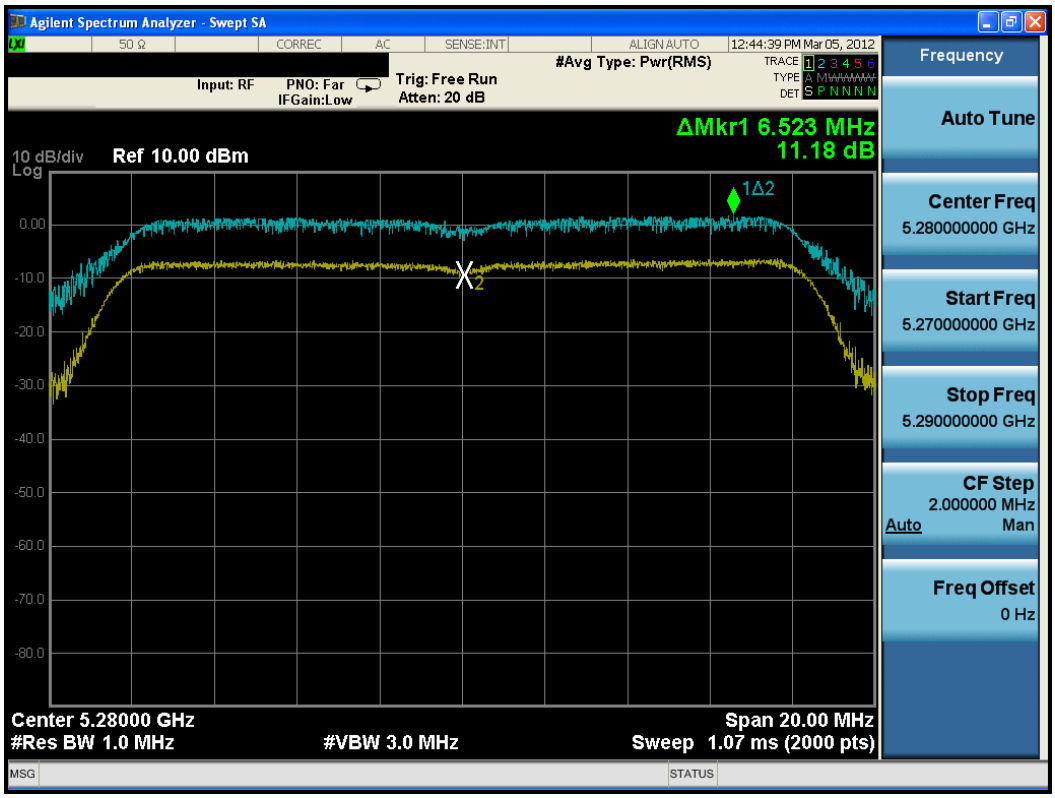

**Plot 6-41. Peak Excursion Ratio Plot (802.11n (UNII Band 1) – Ch. 40)**



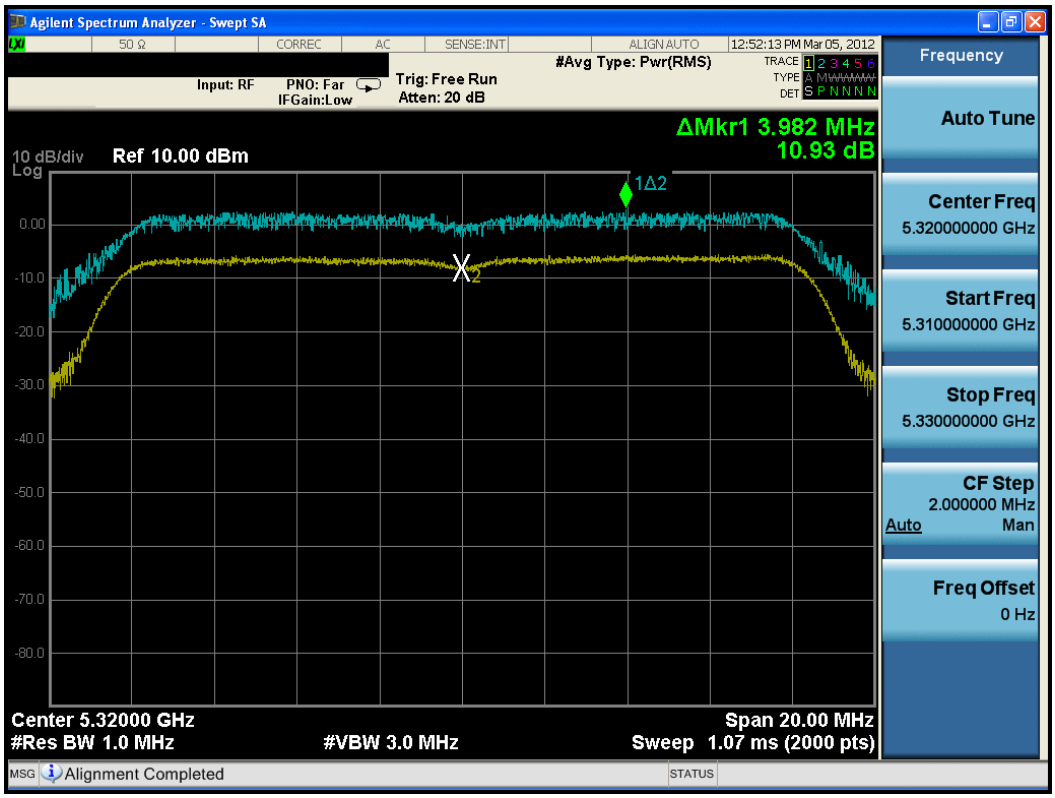

**Plot 6-42. Peak Excursion Ratio Plot (802.11n (UNII Band 1) – Ch. 48)**



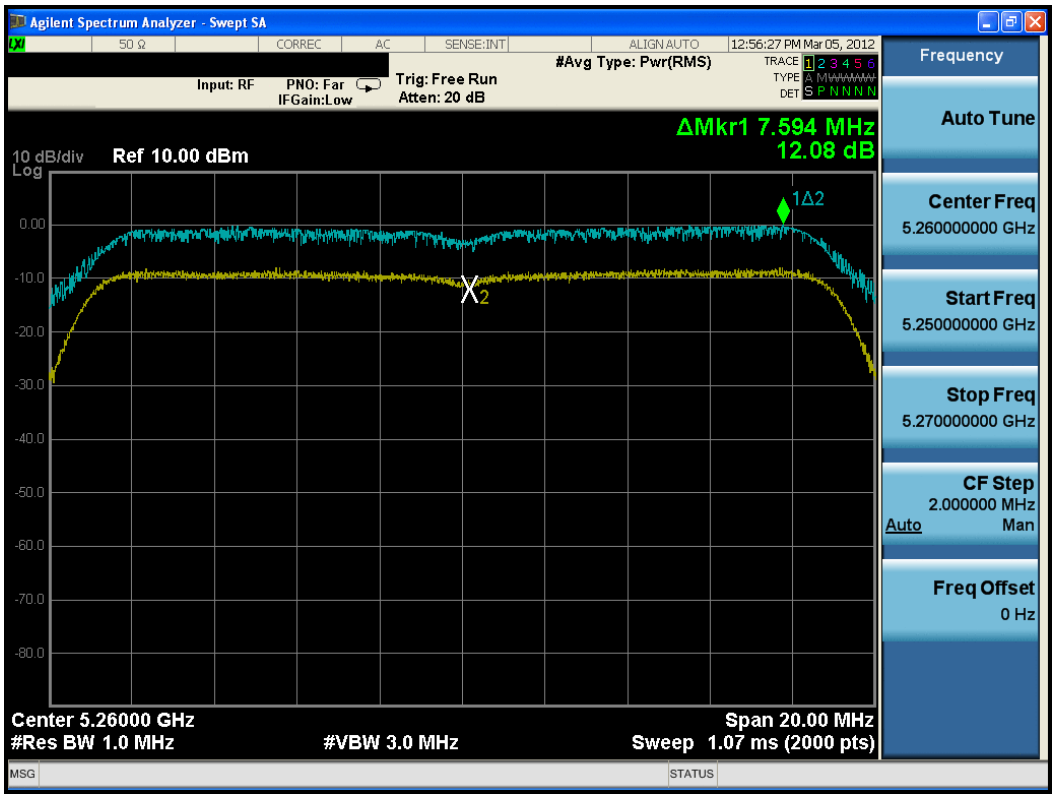

**Plot 6-43. Peak Excursion Ratio Plot (802.11a (UNII Band 2) – Ch. 52)**



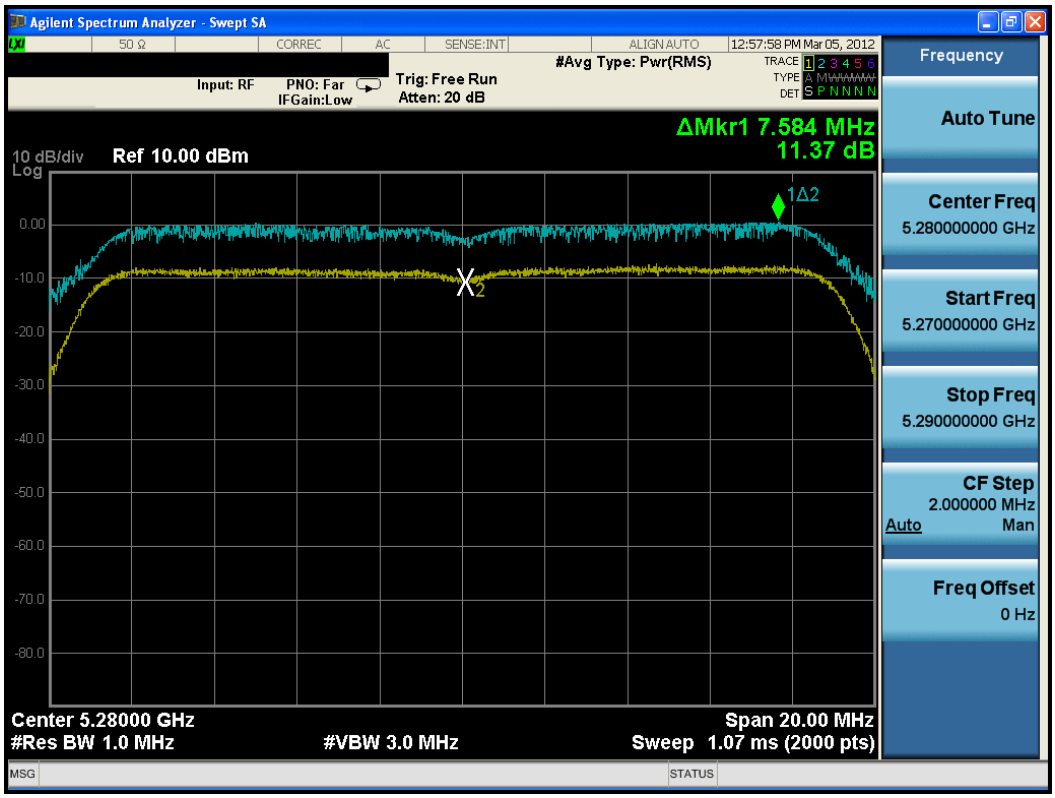

**Plot 6-44. Peak Excursion Ratio Plot (802.11a (UNII Band 2) – Ch. 56)**



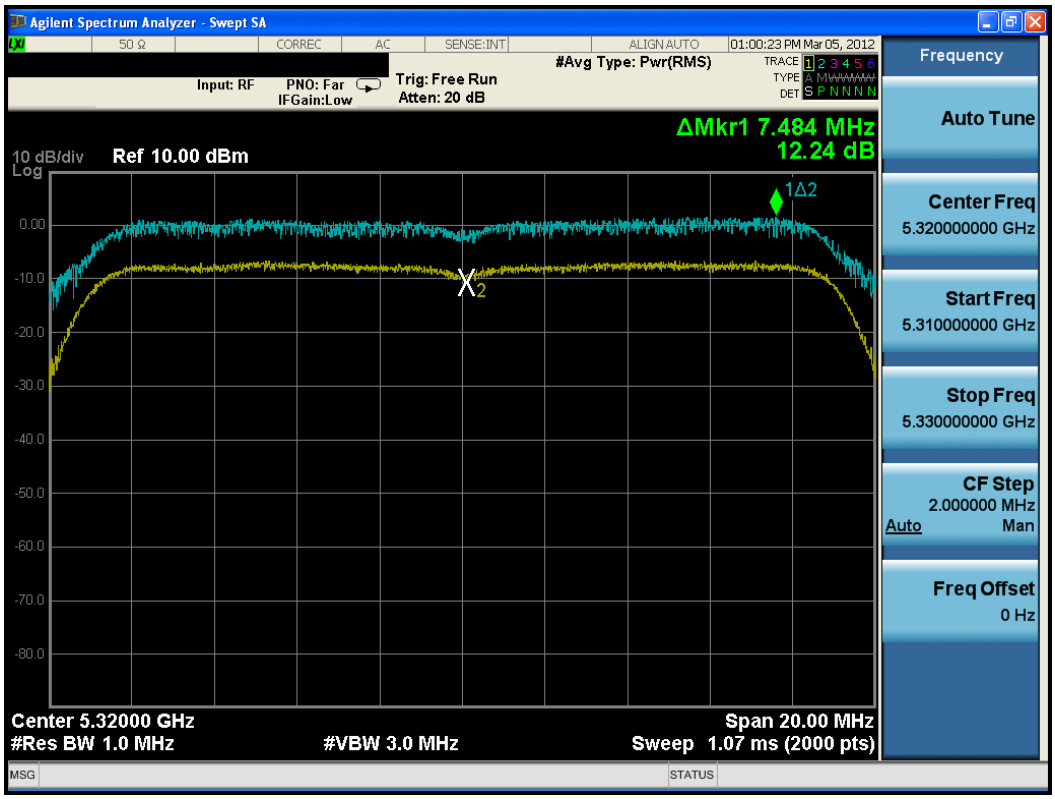

**Plot 6-45. Peak Excursion Ratio Plot (802.11a (UNII Band 2) – Ch. 64)**



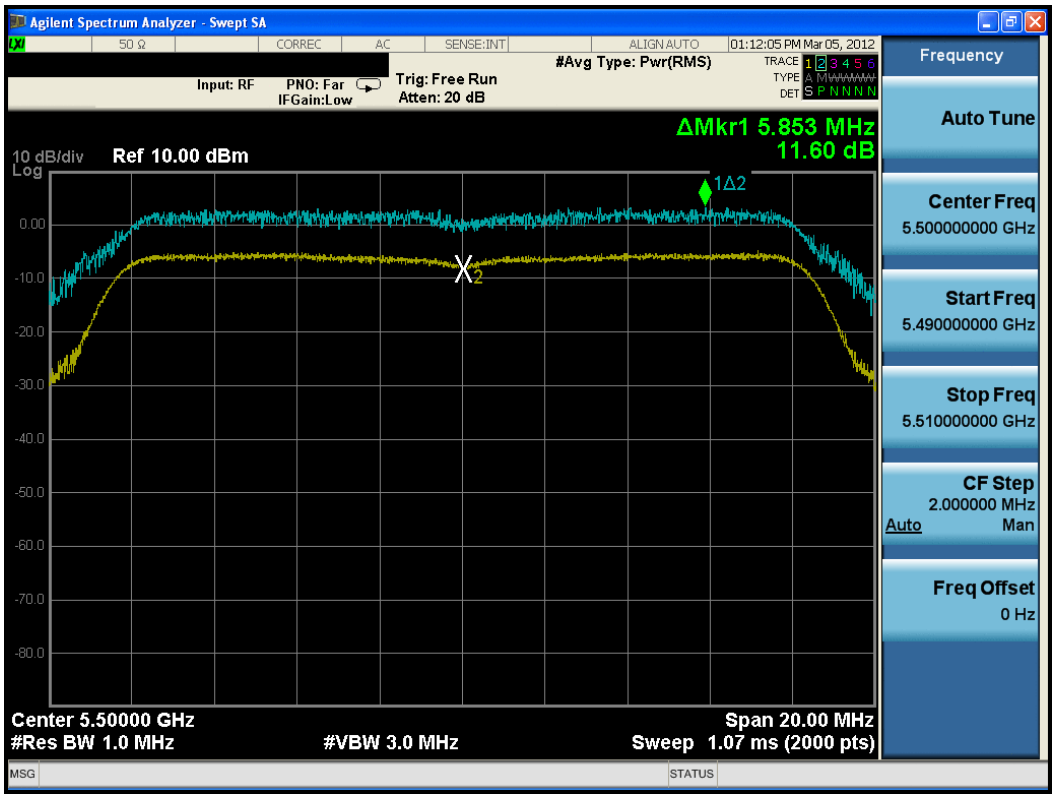

**Plot 6-46. Peak Excursion Ratio Plot (802.11n (UNII Band 2) – Ch. 52)**



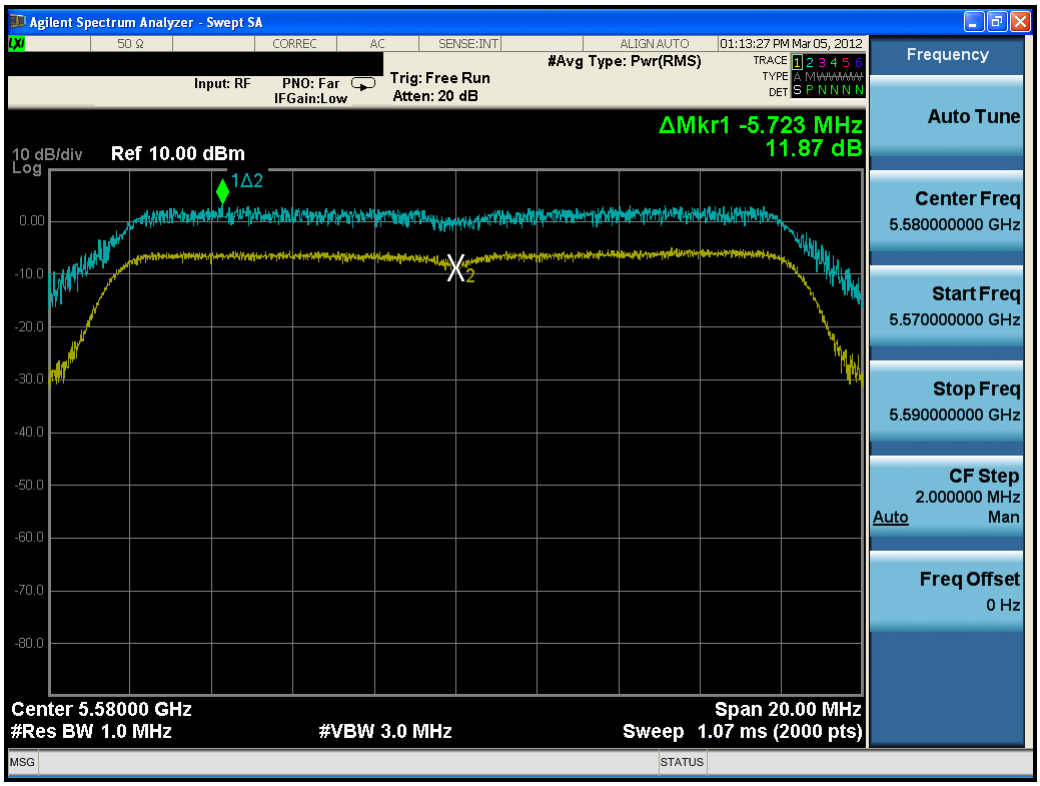

**Plot 6-47. Peak Excursion Ratio Plot (802.11n (UNII Band 2) – Ch. 56)**



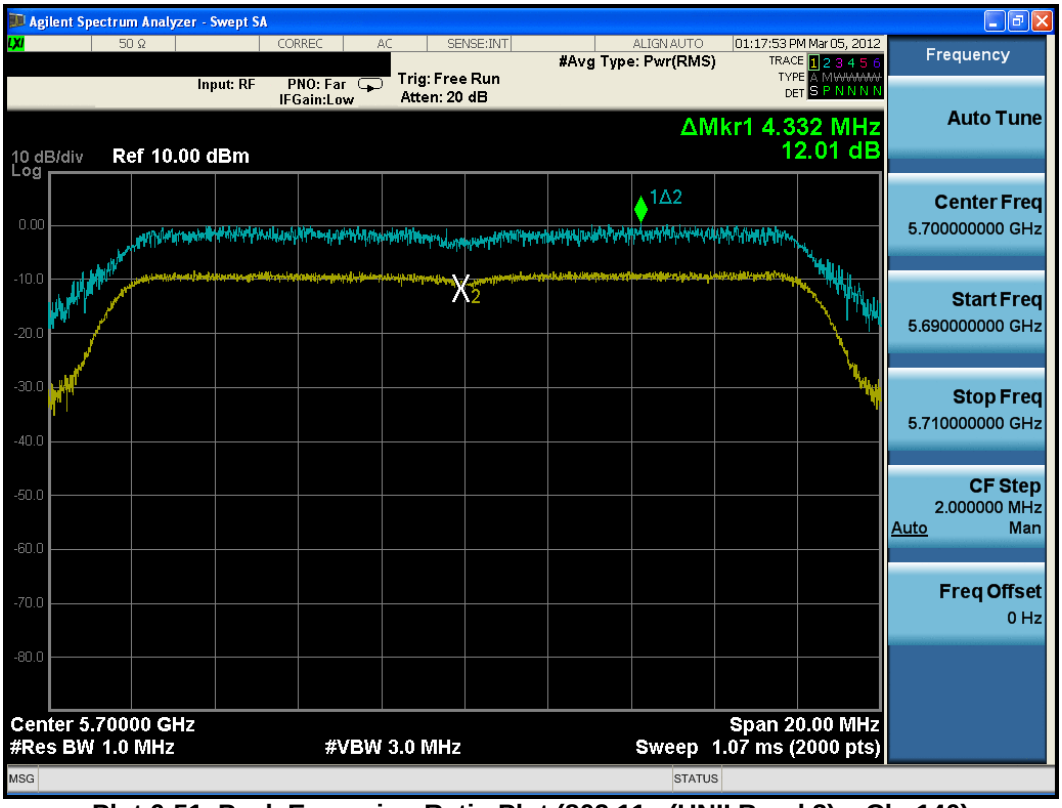

**Plot 6-48. Peak Excursion Ratio Plot (802.11n (UNII Band 2) – Ch. 64)**



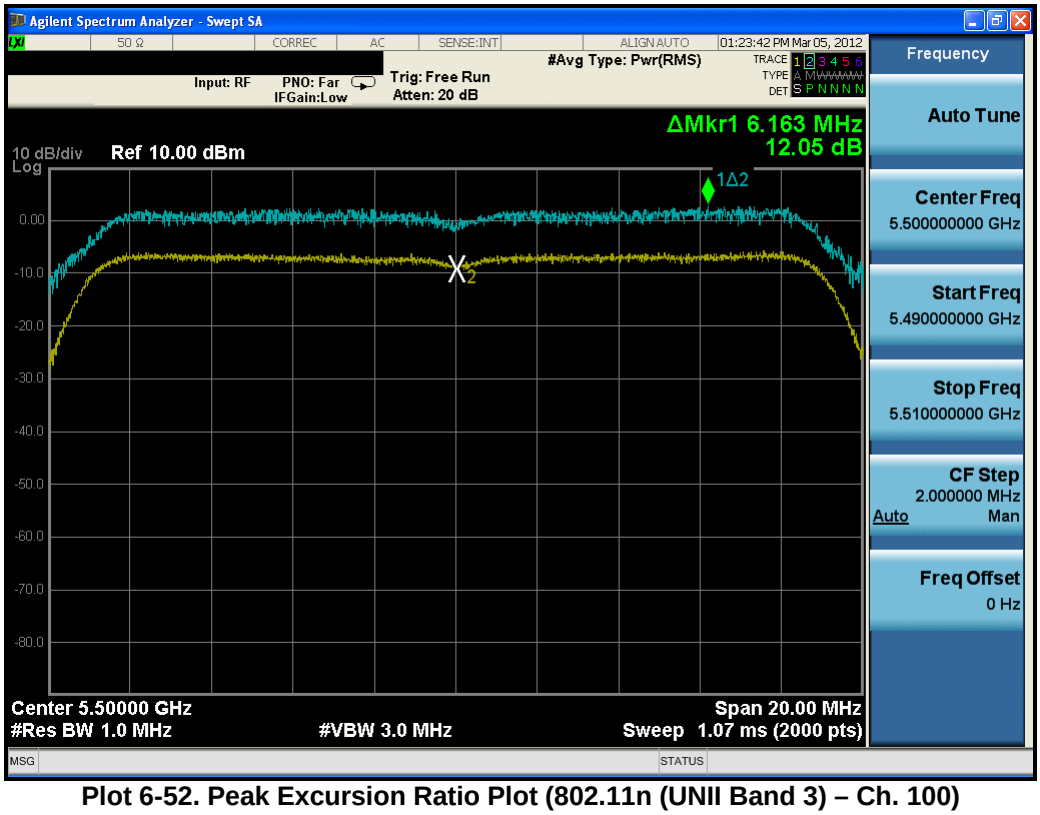

**Plot 6-49. Peak Excursion Ratio Plot (802.11a (UNII Band 3) – Ch. 100)**



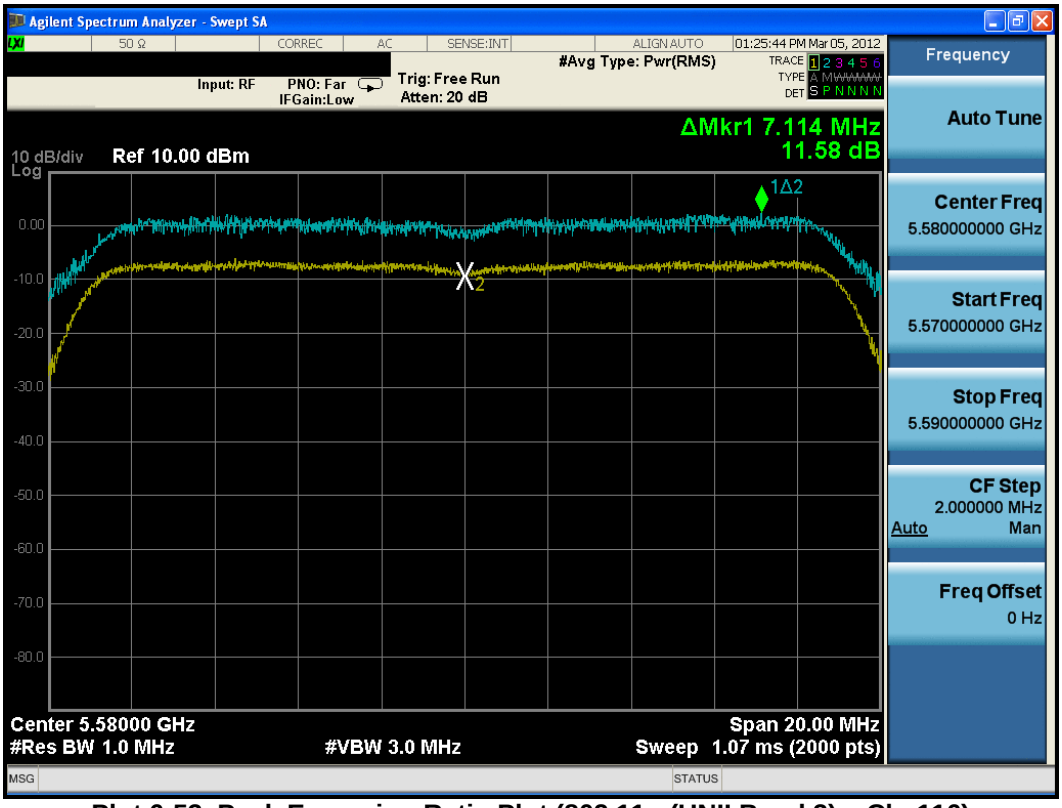

**Plot 6-50. Peak Excursion Ratio Plot (802.11a (UNII Band 3) – Ch. 116)**



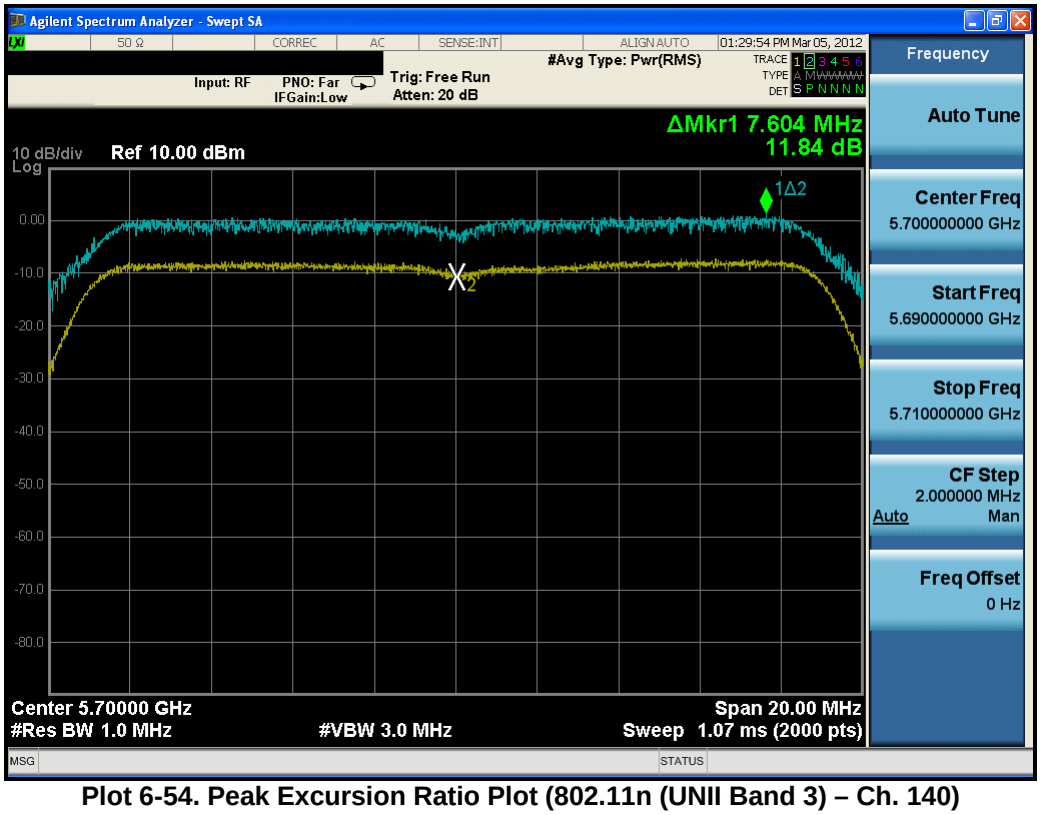

**Plot 6-51. Peak Excursion Ratio Plot (802.11a (UNII Band 3) – Ch. 140)**




**Plot 6-52. Peak Excursion Ratio Plot (802.11n (UNII Band 3) – Ch. 100)**




**Plot 6-53. Peak Excursion Ratio Plot (802.11n (UNII Band 3) – Ch. 116)**




**Plot 6-54. Peak Excursion Ratio Plot (802.11n (UNII Band 3) – Ch. 140)**

## 6.6 Frequency Stability

**§15.407(g)**

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY: 5,180,000,000 Hz

CHANNEL: 36

REFERENCE VOLTAGE: 3.8 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|---|---|---|---|---|---|
| 100 % | 3.80 | + 20 (Ref) | 5,180,000,004 | 4 | 0.0000001 |
| 100 % | | - 30 | 5,180,000,006 | 6 | 0.0000001 |
| 100 % | | - 20 | 5,180,000,002 | 2 | 0.0000000 |
| 100 % | | - 10 | 5,180,000,007 | 7 | 0.0000001 |
| 100 % | | 0 | 5,180,000,004 | 4 | 0.0000001 |
| 100 % | | + 10 | 5,180,000,008 | 8 | 0.0000002 |
| 100 % | | + 20 | 5,180,000,001 | 1 | 0.0000000 |
| 100 % | | + 30 | 5,180,000,007 | 7 | 0.0000001 |
| 100 % | | + 40 | 5,180,000,015 | 15 | 0.0000003 |
| 100 % | | + 50 | 5,180,000,013 | 13 | 0.0000003 |
| 115 % | 4.37 | + 20 | 5,180,000,003 | 3 | 0.0000001 |
| BATT. ENDPOINT | 3.40 | + 20 | 5,180,000,002 | 2 | 0.0000000 |

**Table 6-7. Frequency Stability Measurements for UNII Band 1 (Ch. 36)**

## Frequency Stability (Cont'd)

**§15.407(g)**

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY: 5,260,000,000 Hz

CHANNEL: 52

REFERENCE VOLTAGE: 3.8 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|---|---|---|---|---|---|
| 100 % | 3.80 | + 20 (Ref) | 5,260,000,008 | 8 | 0.0000002 |
| 100 % | | - 30 | 5,260,000,004 | 4 | 0.0000001 |
| 100 % | | - 20 | 5,260,000,021 | 21 | 0.0000004 |
| 100 % | | - 10 | 5,260,000,007 | 7 | 0.0000001 |
| 100 % | | 0 | 5,260,000,004 | 4 | 0.0000001 |
| 100 % | | + 10 | 5,260,000,008 | 8 | 0.0000002 |
| 100 % | | + 20 | 5,260,000,003 | 3 | 0.0000001 |
| 100 % | | + 30 | 5,260,000,007 | 7 | 0.0000001 |
| 100 % | | + 40 | 5,260,000,005 | 5 | 0.0000001 |
| 100 % | | + 50 | 5,260,000,003 | 3 | 0.0000001 |
| 115 % | 4.37 | + 20 | 5,260,000,007 | 7 | 0.0000001 |
| BATT. ENDPOINT | 3.40 | + 20 | 5,260,000,005 | 5 | 0.0000001 |

**Table 6-8. Frequency Stability Measurements for UNII Band 2 (Ch. 52)**

## Frequency Stability (Cont'd)

**§15.407(g)**

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10° intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

OPERATING FREQUENCY: 5,500,000,000 Hz

CHANNEL: 100

REFERENCE VOLTAGE: 3.8 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|---|---|---|---|---|---|
| 100 % | 3.80 | + 20 (Ref) | 5,500,000,008 | 8 | 0.0000001 |
| 100 % | | - 30 | 5,500,000,004 | 4 | 0.0000001 |
| 100 % | | - 20 | 5,500,000,008 | 8 | 0.0000001 |
| 100 % | | - 10 | 5,500,000,004 | 4 | 0.0000001 |
| 100 % | | 0 | 5,500,000,006 | 6 | 0.0000001 |
| 100 % | | + 10 | 5,500,000,007 | 7 | 0.0000001 |
| 100 % | | + 20 | 5,500,000,003 | 3 | 0.0000001 |
| 100 % | | + 30 | 5,500,000,006 | 6 | 0.0000001 |
| 100 % | | + 40 | 5,500,000,008 | 8 | 0.0000001 |
| 100 % | | + 50 | 5,500,000,003 | 3 | 0.0000001 |
| 115 % | 4.37 | + 20 | 5,500,000,005 | 5 | 0.0000001 |
| BATT. ENDPOINT | 3.40 | + 20 | 5,500,000,007 | 7 | 0.0000001 |

**Table 6-9. Frequency Stability Measurements for UNII Band 3 (Ch. 100)**

## 6.7 Radiated Spurious Emission Measurements

**§15.407(b)(1), (6), §15.205, §15.209; RSS-210 [A9.2]**

The EUT was tested from 9kHz and up to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHZ. Above 1 GHz, average measurements were taken using RBW = 1MHz and VBW = 10Hz. Peak measurements were taken using RBW = 1MHz, VBW = 3MHz, and linearly polarized horn antennas. All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table 6-10 per Section 15.209.

All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section. All measurements shown in this section were obtained using traditional radiated test methods as defined in C63.10-2009. The optional test procedures for antenna port conducted measurements of unwanted emissions per the guidance of KDB 789033 were not used to evaluate this device.

| Frequency | Field Strength [µV/m] | Measured Distance [Meters] |
|---|---|---|
| 0.009 – 0.490 MHz | 2400/F (kHz) | 300 |
| 0.490 – 1.705 MHz | 24000/F (kHz) | 30 |
| 1.705 – 30.00 MHz | 30 | 30 |
| 30.00 – 88.00 MHz | 100 | 3 |
| 88.00 – 216.0 MHz | 150 | 3 |
| 216.0 – 960.0 MHz | 200 | 3 |
| Above 960.0 MHz | 500 | 3 |

**Table 6-10. Radiated Limits**

**Sample Calculation**

- Field Strength Level $_{[dB\mu V/m]}$ = Analyzer Level $_{[dBm]}$ + 107 + AFCL $_{[dB/m]}$
- AFCL $_{[dB/m]}$ = Antenna Factor $_{[dB/m]}$ + Cable Loss $_{[dB]}$
- Margin $_{[dB]}$ = Field Strength Level $_{[dB\mu V/m]}$ – Limit $_{[dB\mu V/m]}$

## Radiated Spurious Emission Measurements (Cont'd)

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5180MHz

Channel: 36

| | Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| | 10360.00 | -96.16 | Peak | H | 52.58 | -9.54 | 53.88 | 68.20 | -14.32 |
| * | 15540.00 | -135.00 | Average | H | 59.16 | 0.00 | 31.16 | 53.98 | -22.82 |
| * | 15540.00 | -125.00 | Peak | H | 59.16 | 0.00 | 41.16 | 73.98 | -32.82 |
| * | 20720.00 | -135.00 | Average | H | 58.41 | 0.00 | 30.41 | 53.98 | -23.57 |
| * | 20720.00 | -125.00 | Peak | H | 58.41 | 0.00 | 40.41 | 73.98 | -33.57 |
| | 25900.00 | -125.00 | Peak | H | 60.26 | 0.00 | 42.26 | 68.20 | -25.94 |

**Table 6-11. Radiated Measurements @ 1 meter**

**NOTES:**

1. All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBµV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBµV/m.

2. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-10.

3. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

5. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

6. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

7. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

8. Above 960MHz the limit is 500 µV/m (54dBµ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

## Radiated Spurious Emission Measurements (Cont'd)

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5200MHz

Channel: 40

| | Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| | 10400.00 | -95.39 | Peak | H | 52.63 | -9.54 | 54.70 | 68.20 | -13.50 |
| * | 15600.00 | -135.00 | Average | H | 59.09 | 0.00 | 31.09 | 53.98 | -22.89 |
| * | 15600.00 | -125.00 | Peak | H | 59.09 | 0.00 | 41.09 | 73.98 | -32.89 |
| * | 20800.00 | -135.00 | Average | H | 58.47 | 0.00 | 30.47 | 53.98 | -23.51 |
| * | 20800.00 | -125.00 | Peak | H | 58.47 | 0.00 | 40.47 | 73.98 | -33.51 |
| | 26000.00 | -125.00 | Peak | H | 60.28 | 0.00 | 42.28 | 68.20 | -25.92 |

**Table 6-12. Radiated Measurements @ 1 meter**

**NOTES:**

1. All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBµV/m).

2. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-10.

3. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

5. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

6. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

7. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

8. Above 960MHz the limit is 500 µV/m (54dBµ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

## Radiated Spurious Emission Measurements (Cont'd)

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

| | |
|---|---|
| Worst Case Mode: | 802.11a |
| Worst Case Transfer Rate: | 6 Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5240MHz |
| Channel: | 48 |

| | Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| | 10480.00 | -93.55 | Peak | H | 52.72 | -9.54 | 56.63 | 68.20 | -11.57 |
| * | 15720.00 | -135.00 | Average | H | 58.94 | 0.00 | 30.94 | 53.98 | -23.04 |
| * | 15720.00 | -125.00 | Peak | H | 58.94 | 0.00 | 40.94 | 73.98 | -33.04 |
| * | 20960.00 | -135.00 | Average | H | 58.60 | 0.00 | 30.60 | 53.98 | -23.38 |
| * | 20960.00 | -125.00 | Peak | H | 58.60 | 0.00 | 40.60 | 73.98 | -33.38 |
| | 26200.00 | -125.00 | Peak | H | 60.24 | 0.00 | 42.24 | 68.20 | -25.96 |

**Table 6-13. Radiated Measurements @ 1 meter**

**NOTES:**

1. All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBµV/m).

2. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-10.

3. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

5. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

6. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

7. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

8. Above 960MHz the limit is 500 µV/m (54dBµ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

## Radiated Spurious Emission Measurements (Cont'd)

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5260MHz

Channel: 52

| | Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| | 10520.00 | -91.86 | Peak | H | 52.76 | -9.54 | 58.36 | 68.20 | -9.84 |
| * | 15780.00 | -135.00 | Average | H | 58.86 | 0.00 | 30.86 | 53.98 | -23.12 |
| * | 15780.00 | -125.00 | Peak | H | 58.86 | 0.00 | 40.86 | 73.98 | -33.12 |
| * | 21040.00 | -135.00 | Average | H | 58.65 | 0.00 | 30.65 | 53.98 | -23.33 |
| * | 21040.00 | -125.00 | Peak | H | 58.65 | 0.00 | 40.65 | 73.98 | -33.33 |
| | 26300.00 | -125.00 | Peak | H | 60.22 | 0.00 | 42.22 | 68.20 | -25.98 |

**Table 6-14. Radiated Measurements @ 1 meter**

**NOTES:**

1. All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBμV/m).

2. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-10.

3. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

5. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

6. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

7. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

8. Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

## Radiated Spurious Emission Measurements (Cont'd)

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5280MHz

Channel: 56

| | Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| | 10560.00 | -92.16 | Peak | H | 52.80 | -9.54 | 58.10 | 68.20 | -10.10 |
| * | 15840.00 | -135.00 | Average | H | 58.79 | 0.00 | 30.79 | 53.98 | -23.19 |
| * | 15840.00 | -125.00 | Peak | H | 58.79 | 0.00 | 40.79 | 73.98 | -33.19 |
| * | 21120.00 | -135.00 | Average | H | 58.70 | 0.00 | 30.70 | 53.98 | -23.28 |
| * | 21120.00 | -125.00 | Peak | H | 58.70 | 0.00 | 40.70 | 73.98 | -33.28 |
| | 26400.00 | -125.00 | Peak | H | 60.20 | 0.00 | 42.20 | 68.20 | -26.00 |

**Table 6-15. Radiated Measurements @ 1 meter**

**NOTES:**

1. All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBµV/m).

2. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-10.

3. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

5. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

6. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

7. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

8. Above 960MHz the limit is 500 µV/m (54dBµ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

## Radiated Spurious Emission Measurements (Cont'd)

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

| | |
|---|---|
| Worst Case Mode: | 802.11a |
| Worst Case Transfer Rate: | 6 Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5320MHz |
| Channel: | 64 |

| | Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| * | 10640.00 | -103.07 | Average | H | 52.88 | -9.54 | 47.27 | 53.98 | -6.71 |
| * | 10640.00 | -92.87 | Peak | H | 52.88 | -9.54 | 57.47 | 73.98 | -16.51 |
| * | 15960.00 | -135.00 | Average | H | 58.64 | 0.00 | 30.64 | 53.98 | -23.34 |
| * | 15960.00 | -125.00 | Peak | H | 58.64 | 0.00 | 40.64 | 73.98 | -33.34 |
| * | 21280.00 | -135.00 | Average | H | 58.80 | 0.00 | 30.80 | 53.98 | -23.18 |
| * | 21280.00 | -125.00 | Peak | H | 58.80 | 0.00 | 40.80 | 73.98 | -33.18 |
| | 26600.00 | -125.00 | Peak | H | 60.20 | 0.00 | 42.20 | 68.20 | -26.00 |

**Table 6-16. Radiated Measurements @ 1 meter**

**NOTES:**

1. All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBµV/m).

2. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-10.

3. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

5. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

6. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

7. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

8. Above 960MHz the limit is 500 µV/m (54dBµ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

## Radiated Spurious Emission Measurements (Cont'd)

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

| | |
|---|---|
| Worst Case Mode: | 802.11a |
| Worst Case Transfer Rate: | 6 Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5500MHz |
| Channel: | 100 |

| | Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| * | 11000.00 | -105.09 | Average | H | 53.22 | -9.54 | 45.58 | 53.98 | -8.40 |
| * | 11000.00 | -92.49 | Peak | H | 53.22 | -9.54 | 58.18 | 73.98 | -15.80 |
| | 16500.00 | -125.00 | Peak | H | 58.48 | 0.00 | 40.48 | 68.20 | -27.72 |
| | 22000.00 | -125.00 | Peak | H | 58.82 | 0.00 | 40.82 | 68.20 | -27.38 |
| | 27500.00 | -125.00 | Peak | H | 60.47 | 0.00 | 42.47 | 68.20 | -25.73 |

**Table 6-17. Radiated Measurements @ 1 meter**

**NOTES:**

1. All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBµV/m).

2. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-10.

3. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

5. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

6. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

7. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

8. Above 960MHz the limit is 500 µV/m (54dBµ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

## Radiated Spurious Emission Measurements (Cont'd)

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

| | |
|---|---|
| Worst Case Mode: | 802.11a |
| Worst Case Transfer Rate: | 6 Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5580MHz |
| Channel: | 116 |

| | Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| * | 11160.00 | -105.44 | Average | H | 53.52 | -9.54 | 45.54 | 53.98 | -8.44 |
| * | 11160.00 | -92.94 | Peak | H | 53.52 | -9.54 | 58.04 | 73.98 | -15.94 |
| | 16740.00 | -125.00 | Peak | H | 59.35 | 0.00 | 41.35 | 68.20 | -26.85 |
| * | 22320.00 | -135.00 | Average | H | 59.06 | 0.00 | 31.06 | 53.98 | -22.92 |
| * | 22320.00 | -125.00 | Peak | H | 59.06 | 0.00 | 41.06 | 73.98 | -32.92 |
| | 27900.00 | -125.00 | Peak | H | 60.46 | 0.00 | 42.46 | 68.20 | -25.74 |

**Table 6-18. Radiated Measurements @ 1 meter**

**NOTES:**

1. All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBµV/m).

2. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-10.

3. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

5. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

6. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

7. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

8. Above 960MHz the limit is 500 µV/m (54dBµ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

## Radiated Spurious Emission Measurements (Cont'd)

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

| | |
|---|---|
| Worst Case Mode: | 802.11a |
| Worst Case Transfer Rate: | 6 Mbps |
| Distance of Measurements: | 1 Meter |
| Operating Frequency: | 5700MHz |
| Channel: | 140 |

| | Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| * | 11400.00 | -105.49 | Average | H | 53.83 | -9.54 | 45.80 | 53.98 | -8.18 |
| * | 11400.00 | -92.89 | Peak | H | 53.83 | -9.54 | 58.40 | 73.98 | -15.58 |
| | 17100.00 | -125.00 | Peak | H | 61.20 | 0.00 | 43.20 | 68.20 | -25.00 |
| * | 22800.00 | -135.00 | Average | H | 59.29 | 0.00 | 31.29 | 53.98 | -22.69 |
| * | 22800.00 | -125.00 | Peak | H | 59.29 | 0.00 | 41.29 | 73.98 | -32.69 |
| | 28500.00 | -125.00 | Peak | H | 60.26 | 0.00 | 42.26 | 68.20 | -25.94 |

**Table 6-19. Radiated Measurements @ 1 meter**

**NOTES:**

1. All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBµV/m).

2. All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-10.

3. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

5. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

6. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

7. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

8. Above 960MHz the limit is 500 µV/m (54dBµ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

## 6.8 Radiated Band Edge Measurements

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5180MHz

Channel: 36

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|
| 4987.50 | -102.50 | Average | H | 42.21 | -9.54 | 37.18 | 53.98 | -16.80 |
| 4987.50 | -94.40 | Peak | H | 42.21 | -9.54 | 45.28 | 73.98 | -28.70 |
| 5119.40 | -102.00 | Average | H | 42.21 | -9.54 | 37.68 | 53.98 | -16.30 |
| 5119.40 | -91.80 | Peak | H | 42.21 | -9.54 | 47.88 | 73.98 | -26.10 |
| 5150.00 | -101.44 | Average | H | 42.71 | -9.54 | 38.72 | 53.98 | -15.26 |
| 5150.00 | -89.84 | Peak | H | 42.71 | -9.54 | 50.32 | 73.98 | -23.66 |

**Table 6-20. Radiated Restricted Band Measurements at 1-meter (4.5 – 5.15GHz)**

**NOTES:**

1. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

2. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

3. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

4. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

5. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

6. Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

## Radiated Band Edge Measurements (Cont'd)

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5320MHz

Channel: 64

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|
| 5351.00 | -103.05 | Average | H | 44.05 | -9.54 | 38.45 | 53.98 | -15.52 |
| 5351.00 | -82.15 | Peak | H | 44.05 | -9.54 | 59.35 | 73.98 | -14.62 |
| 5353.70 | -105.96 | Average | H | 44.08 | -9.54 | 35.58 | 53.98 | -18.40 |
| 5353.70 | -84.06 | Peak | H | 44.08 | -9.54 | 57.48 | 73.98 | -16.50 |
| 5373.60 | -104.86 | Average | H | 44.08 | -9.54 | 36.68 | 53.98 | -17.30 |
| 5373.60 | -83.76 | Peak | H | 44.08 | -9.54 | 57.78 | 73.98 | -16.20 |

**Table 6-21. Radiated Restricted Band Measurements at 1-meter (5.35 – 5.46GHz, 5.46 – 5.47GHz)**

**NOTES:**

1. Emissions within 5.35 – 5.46GHz lie in a restricted band and are subject to the radiated emissions limits specified in §15.209. Emission within 5.46 – 5.47GHz are at the lower band edge of UNII Band 3 transmission and are subject to the -27dBm/MHz (68.2dBμV/m) EIRP limit specified in §15.407.

2. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

5. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

7. Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated for emissions that lie in restricteds band specified in §15.205.

## Radiated Band Edge Measurements (Cont'd)

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5500MHz

Channel: 100

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|
| 5446.20 | -105.19 | Average | H | 44.24 | -9.54 | 36.51 | 53.98 | -17.47 |
| 5446.20 | -96.79 | Peak | H | 44.24 | -9.54 | 44.91 | 73.98 | -29.07 |
| 5459.90 | -105.99 | Average | H | 44.28 | -9.54 | 35.75 | 53.98 | -18.23 |
| 5459.90 | -87.59 | Peak | H | 44.28 | -9.54 | 54.15 | 73.98 | -19.83 |
| 5468.90 | -83.50 | Peak | H | 44.31 | -9.54 | 58.27 | 68.20 | -9.93 |

**Table 6-22. Radiated Restricted Band Measurements at 1-meter (5.35 – 5.46GHz, 5.46 – 5.47GHz)**

**NOTES:**

1. Emissions within 5.35 – 5.46GHz lie in a restricted band and are subject to the radiated emissions limits specified in §15.209. Emission within 5.46 – 5.47GHz are at the lower band edge of UNII Band 3 transmission and are subject to the -27dBm/MHz (68.2dBμV/m) EIRP limit specified in §15.407.

2. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

5. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

7. Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

## Radiated Band Edge Measurements (Cont'd)

**§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]**

Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 1 Meter

Operating Frequency: 5700MHz

Channel: 140

| Frequency [MHz] | Analyzer Level [dBm] | Detector | Pol. [H/V] | AFCL [dB/m] | Distance Correction Factor [dB] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|
| 5725.40 | -78.65 | Peak | H | 44.42 | -9.54 | 63.23 | 68.20 | -4.97 |
| 5726.90 | -74.95 | Peak | H | 44.43 | -9.54 | 66.94 | 68.20 | -1.26 |
| 5728.30 | -79.45 | Peak | H | 44.43 | -9.54 | 62.44 | 68.20 | -5.76 |

**Table 6-23. Radiated Restricted Band Measurements at 1-meter**

**NOTES:**

1. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz and VBW = 10Hz ("Method VB") per KDB 789033.

2. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.

3. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.

4. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.

5. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.

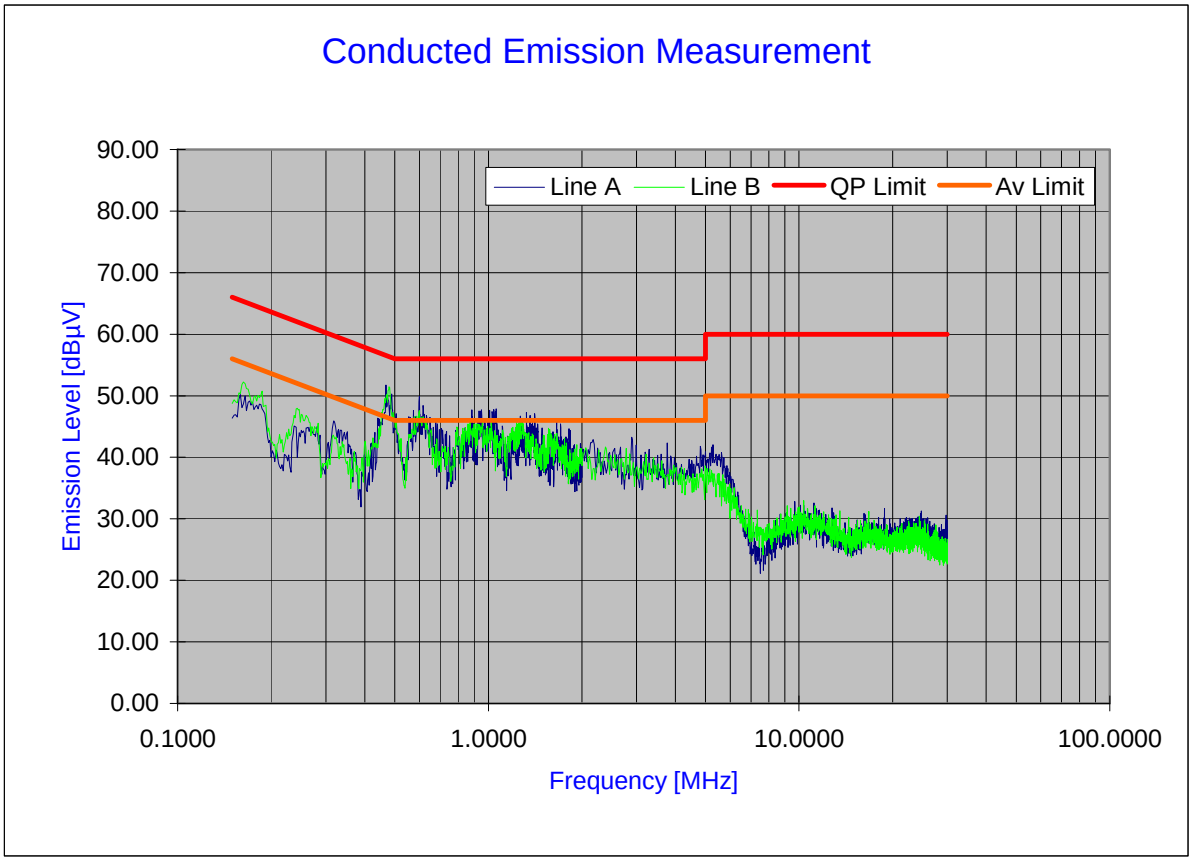
6. Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

## 6.9 Line-Conducted Test Data

**§15.207; RSS-Gen [7.2.2]**

# PCTEST Engineering Laboratory Inc.

| | | | |
|---|---|---|---|
| Company : | Pantech Co Ltd | Power Source : | AC120V/60Hz |
| Model Number : | P8010 | Tested Date : | 02/29/2012 |
| FCC ID Code : | JYCP8010 | Note : | Tested with 802.11a UNII Band 1 ON |
| Standard : | FCC Part 15C, 15.207 | | |

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**Plot 6-55. Line Conducted Plot with 802.11a (UNII Band 1)**

**Notes:**

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 36. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Traces shown in plot made using a peak detector.
5. Deviations to the Specifications: None.

## Line-Conducted Test Data (Cont'd)

**§15.207; RSS-Gen [7.2.2]**

| No. | Line | Frequency [MHz] | Factor [dB] | QP [dBµV] | Limit [dBµV] | Margin [dB] | Average [dBµV] | Limit [dBµV] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 0.475 | 6.96 | 42.69 | 56.42 | -13.73 | 31.21 | 46.42 | -15.21 |
| 2 | A | 0.595 | 6.99 | 37.29 | 56.00 | -18.71 | 24.85 | 46.00 | -21.15 |
| 3 | A | 0.608 | 6.99 | 36.91 | 56.00 | -19.09 | 25.49 | 46.00 | -20.51 |
| 4 | A | 0.873 | 7.03 | 34.73 | 56.00 | -21.27 | 23.74 | 46.00 | -22.26 |
| 5 | A | 0.947 | 7.03 | 36.56 | 56.00 | -19.44 | 25.50 | 46.00 | -20.50 |
| 6 | A | 1.026 | 7.04 | 36.30 | 56.00 | -19.70 | 24.16 | 46.00 | -21.84 |
| 7 | A | 1.027 | 7.04 | 36.94 | 56.00 | -19.06 | 24.52 | 46.00 | -21.48 |
| 8 | A | 1.030 | 7.04 | 36.54 | 56.00 | -19.46 | 24.54 | 46.00 | -21.46 |
| 9 | A | 1.058 | 7.05 | 34.58 | 56.00 | -21.42 | 22.77 | 46.00 | -23.23 |
| 10 | A | 1.323 | 7.08 | 34.24 | 56.00 | -21.76 | 23.70 | 46.00 | -22.30 |
| 11 | B | 0.474 | 6.96 | 43.93 | 56.44 | -12.51 | 30.94 | 46.44 | -15.50 |
| 12 | B | 0.597 | 6.99 | 37.26 | 56.00 | -18.74 | 25.55 | 46.00 | -20.45 |
| 13 | B | 0.599 | 6.99 | 37.17 | 56.00 | -18.83 | 26.06 | 46.00 | -19.94 |
| 14 | B | 0.613 | 6.99 | 37.52 | 56.00 | -18.48 | 25.98 | 46.00 | -20.02 |
| 15 | B | 0.614 | 6.99 | 37.42 | 56.00 | -18.58 | 26.12 | 46.00 | -19.88 |
| 16 | B | 0.869 | 7.03 | 37.12 | 56.00 | -18.88 | 25.11 | 46.00 | -20.89 |
| 17 | B | 0.948 | 7.03 | 36.05 | 56.00 | -19.95 | 26.30 | 46.00 | -19.70 |
| 18 | B | 1.023 | 7.04 | 35.35 | 56.00 | -20.65 | 25.87 | 46.00 | -20.13 |
| 19 | B | 1.252 | 7.08 | 34.79 | 56.00 | -21.21 | 24.02 | 46.00 | -21.98 |
| 20 | B | 1.280 | 7.08 | 35.55 | 56.00 | -20.45 | 25.36 | 46.00 | -20.64 |

**able 6-24. Line Conducted Data with 802.11a (UNII Band 1)**

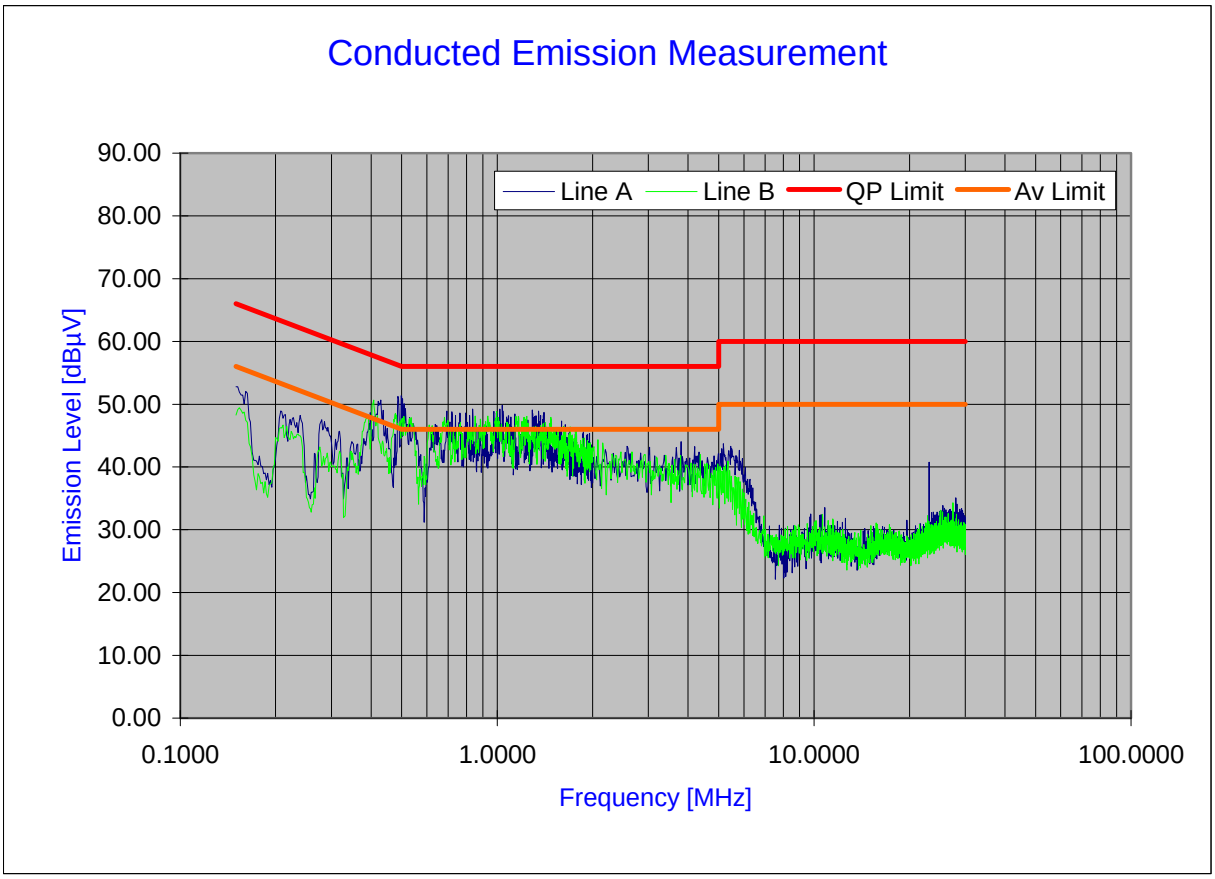
**Notes:**

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 36. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Factor (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Factor (dB)
6. Margin (dB) = QP/AV Level (dBµV) – Limit (dBµV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

## Line-Conducted Test Data (Cont'd)
**§15.207; RSS-Gen [7.2.2]**

# PCTEST Engineering Laboratory Inc.

| | | | |
|---|---|---|---|
| Company : | Pantech Co Ltd | Power Source : | AC120V/60Hz |
| Model Number : | P8010 | Tested Date : | 02/29/2012 |
| FCC ID Code : | JYCP8010 | Note : | Tested with 802.11a UNII Band 2 ON |
| Standard : | FCC Part 15C, 15.207 | | |

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**Plot 6-56. Line Conducted Plot with 802.11a (UNII Band 2)**

**Notes:**

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 52. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Traces shown in plot made using a peak detector.
5. Deviations to the Specifications: None.

## Line-Conducted Test Data (Cont'd)

**§15.207; RSS-Gen [7.2.2]**

| No. | Line | Frequency [MHz] | Factor [dB] | QP [dBµV] | Limit [dBµV] | Margin [dB] | Average [dBµV] | Limit [dBµV] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 0.416 | 6.95 | 41.39 | 57.53 | -16.14 | 27.47 | 47.53 | -20.06 |
| 2 | A | 0.485 | 6.96 | 40.43 | 56.26 | -15.83 | 26.68 | 46.26 | -19.58 |
| 3 | A | 0.497 | 6.97 | 40.84 | 56.05 | -15.21 | 26.02 | 46.05 | -20.03 |
| 4 | A | 0.689 | 7.00 | 38.59 | 56.00 | -17.41 | 27.07 | 46.00 | -18.93 |
| 5 | A | 0.828 | 7.02 | 37.85 | 56.00 | -18.15 | 25.55 | 46.00 | -20.45 |
| 6 | A | 0.980 | 7.04 | 37.07 | 56.00 | -18.93 | 25.01 | 46.00 | -20.99 |
| 7 | A | 1.033 | 7.05 | 39.44 | 56.00 | -16.56 | 27.29 | 46.00 | -18.71 |
| 8 | A | 1.034 | 7.05 | 38.98 | 56.00 | -17.02 | 26.48 | 46.00 | -19.52 |
| 9 | A | 1.279 | 7.08 | 35.91 | 56.00 | -20.09 | 26.31 | 46.00 | -19.69 |
| 10 | A | 1.346 | 7.09 | 37.31 | 56.00 | -18.69 | 25.60 | 46.00 | -20.40 |
| 11 | B | 0.406 | 6.95 | 42.30 | 57.72 | -15.42 | 26.02 | 47.72 | -21.70 |
| 12 | B | 0.474 | 6.96 | 40.43 | 56.44 | -16.01 | 28.98 | 46.44 | -17.46 |
| 13 | B | 0.675 | 7.00 | 39.49 | 56.00 | -16.51 | 27.25 | 46.00 | -18.75 |
| 14 | B | 0.853 | 7.02 | 38.45 | 56.00 | -17.55 | 25.87 | 46.00 | -20.13 |
| 15 | B | 0.932 | 7.03 | 38.76 | 56.00 | -17.24 | 26.17 | 46.00 | -19.83 |
| 16 | B | 0.995 | 7.04 | 38.89 | 56.00 | -17.11 | 27.34 | 46.00 | -18.66 |
| 17 | B | 1.148 | 7.06 | 39.09 | 56.00 | -16.91 | 27.22 | 46.00 | -18.78 |
| 18 | B | 1.165 | 7.06 | 38.92 | 56.00 | -17.08 | 26.82 | 46.00 | -19.18 |
| 19 | B | 1.225 | 7.07 | 38.17 | 56.00 | -17.83 | 25.60 | 46.00 | -20.40 |
| 20 | B | 1.476 | 7.10 | 37.19 | 56.00 | -18.81 | 24.97 | 46.00 | -21.03 |

**Table 6-25. Line Conducted Data with 802.11a (UNII Band 2)**

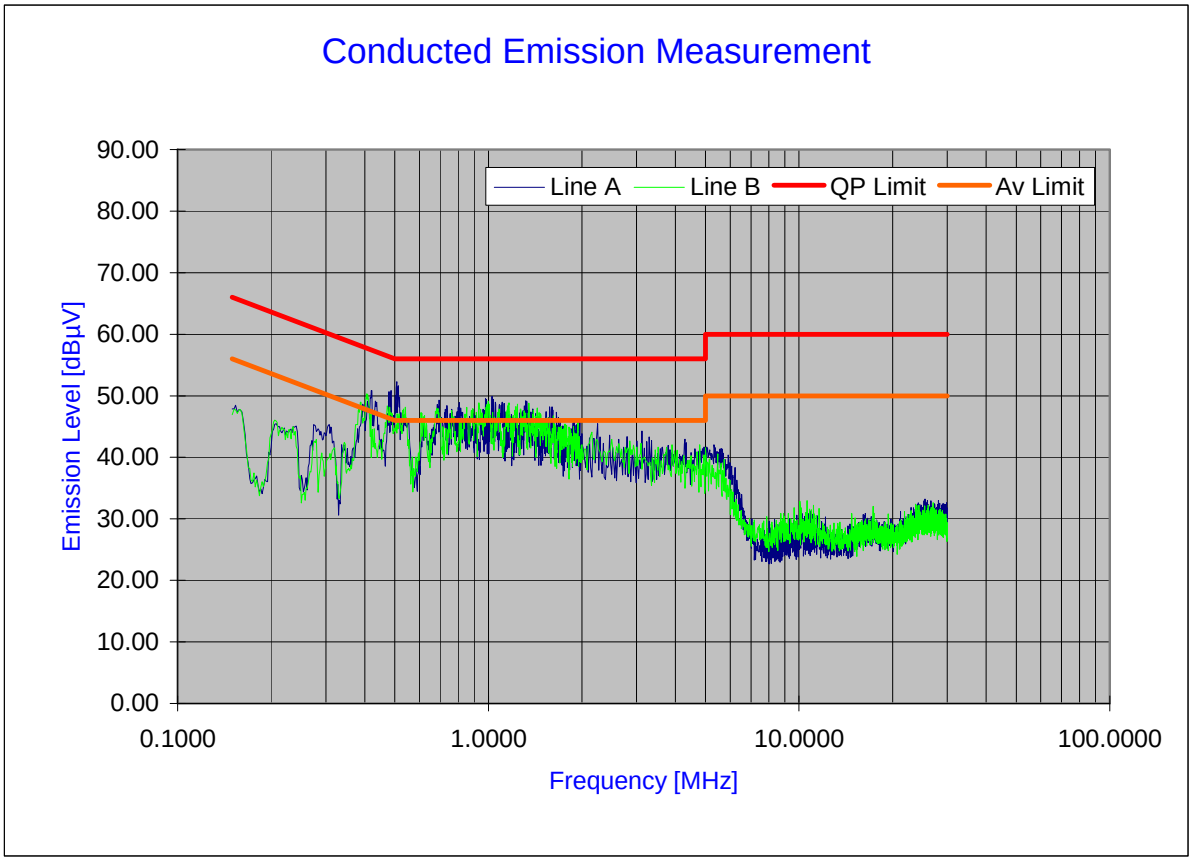
**Notes:**

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 52. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Factor (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Factor (dB)
6. Margin (dB) = QP/AV Level (dBµV) – Limit (dBµV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

## Line-Conducted Test Data (Cont'd)
**§15.207; RSS-Gen [7.2.2]**

# PCTEST Engineering Laboratory Inc.

| | | | |
|---|---|---|---|
| Company : | Pantech Co Ltd | Power Source : | AC120V/60Hz |
| Model Number : | P8010 | Tested Date : | 02/29/2012 |
| FCC ID Code : | JYCP8010 | Note : | Tested with 802.11a UNII Band 3 ON |
| Standard : | FCC Part 15C, 15.207 | | |

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**Plot 6-57. Line Conducted Plot with 802.11a (UNII Band 3)**

**Notes:**

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 100. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Traces shown in plot made using a peak detector.
5. Deviations to the Specifications: None.

## Line-Conducted Test Data (Cont'd)

**§15.207; RSS-Gen [7.2.2]**

| No. | Line | Frequency [MHz] | Factor [dB] | QP [dBµV] | Limit [dBµV] | Margin [dB] | Average [dBµV] | Limit [dBµV] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 0.412 | 6.95 | 41.80 | 57.62 | -15.82 | 28.65 | 47.62 | -18.97 |
| 2 | A | 0.507 | 6.97 | 39.10 | 56.00 | -16.90 | 25.70 | 46.00 | -20.30 |
| 3 | A | 0.687 | 7.00 | 38.56 | 56.00 | -17.44 | 27.77 | 46.00 | -18.23 |
| 4 | A | 0.964 | 7.04 | 36.55 | 56.00 | -19.45 | 24.99 | 46.00 | -21.01 |
| 5 | A | 0.992 | 7.04 | 36.22 | 56.00 | -19.78 | 25.20 | 46.00 | -20.80 |
| 6 | A | 1.025 | 7.04 | 39.87 | 56.00 | -16.13 | 27.24 | 46.00 | -18.76 |
| 7 | A | 1.028 | 7.04 | 39.92 | 56.00 | -16.08 | 26.80 | 46.00 | -19.20 |
| 8 | A | 1.036 | 7.05 | 37.46 | 56.00 | -18.54 | 24.46 | 46.00 | -21.54 |
| 9 | A | 1.098 | 7.05 | 37.64 | 56.00 | -18.36 | 25.91 | 46.00 | -20.09 |
| 10 | A | 1.331 | 7.09 | 37.13 | 56.00 | -18.87 | 25.50 | 46.00 | -20.50 |
| 11 | B | 0.406 | 6.94 | 42.33 | 57.73 | -15.40 | 26.25 | 47.73 | -21.48 |
| 12 | B | 0.534 | 6.97 | 39.70 | 56.00 | -16.30 | 28.05 | 46.00 | -17.95 |
| 13 | B | 0.850 | 7.02 | 38.88 | 56.00 | -17.12 | 25.86 | 46.00 | -20.14 |
| 14 | B | 0.927 | 7.03 | 38.63 | 56.00 | -17.37 | 25.86 | 46.00 | -20.14 |
| 15 | B | 0.996 | 7.04 | 39.24 | 56.00 | -16.76 | 27.11 | 46.00 | -18.89 |
| 16 | B | 0.998 | 7.04 | 39.07 | 56.00 | -16.93 | 26.87 | 46.00 | -19.13 |
| 17 | B | 1.160 | 7.06 | 39.18 | 56.00 | -16.82 | 27.54 | 46.00 | -18.46 |
| 18 | B | 1.221 | 7.07 | 38.70 | 56.00 | -17.30 | 26.85 | 46.00 | -19.15 |
| 19 | B | 1.227 | 7.07 | 38.14 | 56.00 | -17.86 | 26.49 | 46.00 | -19.51 |
| 20 | B | 1.347 | 7.09 | 36.80 | 56.00 | -19.20 | 25.22 | 46.00 | -20.78 |

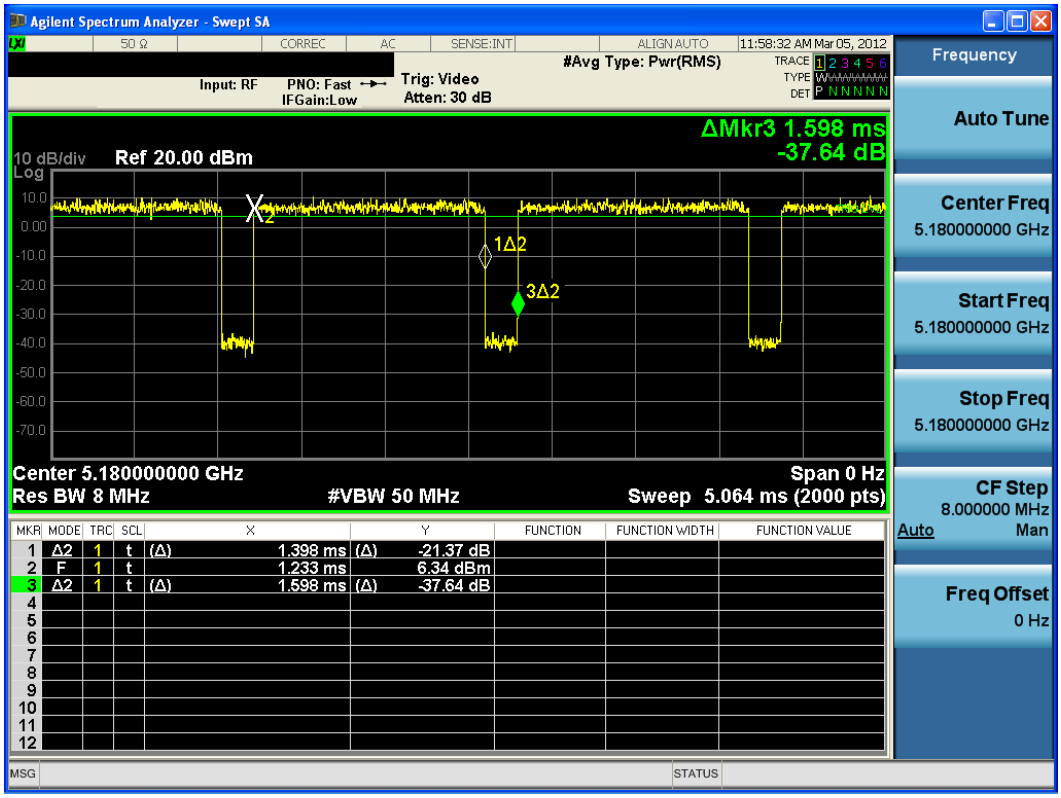
**Table 6-26. Line Conducted Data with 802.11a (UNII Band 3)**

**Notes:**

1. All modes of operation, data rates, and test channels were investigated and the worst-case emissions are reported in 802.11a mode using 6Mbps on Channel 100. The emissions found were not affected by the choice of channel used during testing.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Factor (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Factor (dB)
6. Margin (dB) = QP/AV Level (dBµV) – Limit (dBµV)
7. Traces shown in plot are made using a peak detector.
8. Deviations to the Specifications: None.

# 7.0 ADDENDUM – DUTY CYCLE CORRECTION FACTOR

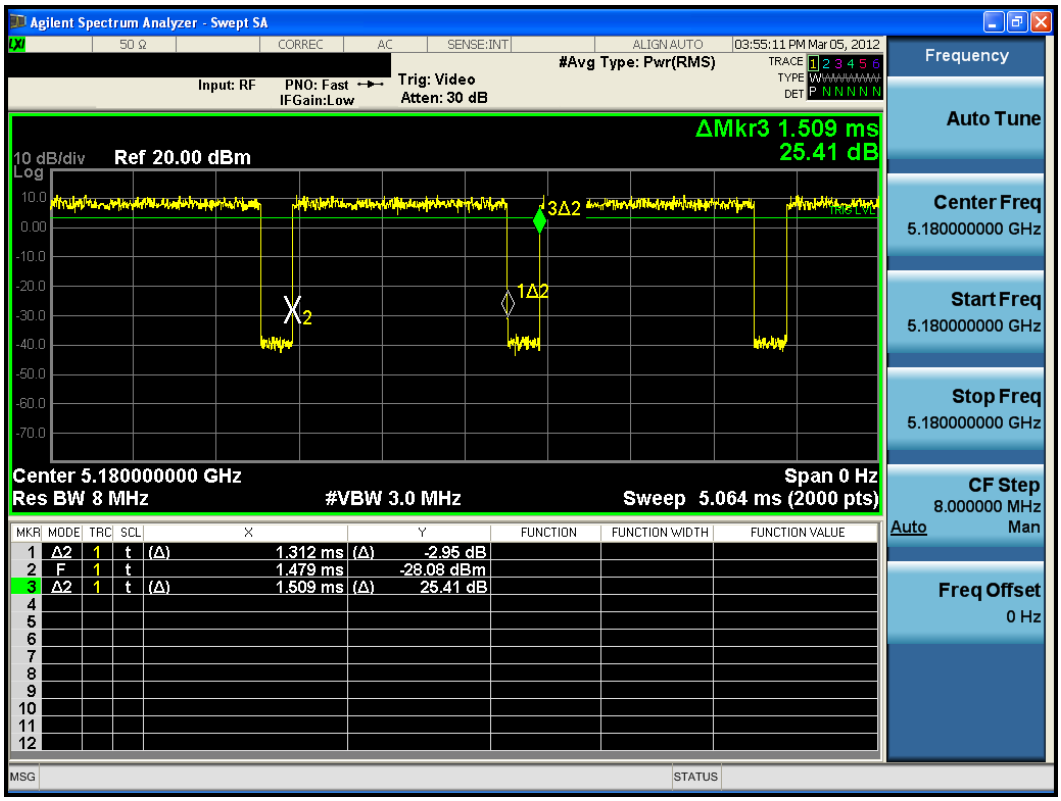
The duty cycle correction factor was calculated for 802.11a (6Mbps) and 802.11n (MCS0) per guidance of KDB 789033 Section B.2.b. In the zero-span spectrum analyzer plots below, sweep time and sweep points were set to ensure accurate measurements of on and off times of the transmitted signal. Note that duty cycle refers to the fraction of time over which the transmitter is on and is transmitting at its maximum power control level.




**Plot 7-1. Zero-span plot of 802.11a (6Mbps)**

Calculations of duty cycle correction factor for 802.11a (6Mbps) per KDB 789033 SA-2:

Duty cycle = 1.398 ms / 1.589 ms = 0.875 = 87.5%
Duty cycle correction factor = 10*log(1/0.875) = 0.581 dB




**Plot 7-2. Zero-span plot of 802.11n (MCS0)**

Calculations of duty cycle correction factor for 802.11n (MCS0) per KDB 789033 SA-2:

Duty cycle = 1.312 ms / 1.509 ms = 0.869 = 86.9%
Duty cycle correction factor = 10*log(1/0.869) = 0.608 dB

# 8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Pantech Portable Handset FCC ID: JYCP8010** is in compliance with Part 15E of the FCC Rules and RSS-210 of the Industry Canada Rules..