

# RF TEST REPORT



Report No.: FCC\_RF\_SL16032801-RUC-016\_UNII\_Rev 1.0  
Supersede Report No.: None

|  |   |   |
|--|---|---|
| Applicant  | : | Ruckus Wireless, Inc.   |
| Product Name   | : | ZoneFlex T610s Access Point   |
| Model No.  | : | T610s   |
| Test Standard  | : | 47 CFR 15.407   |
| Test Method  | : | ANSI C63.4: 2014<br>789033 D02 General UNII Test Procedures New Rules v01 |
| FCC ID   | : | S9GT610   |
| IC ID  | : | 5912A-T610  |
| Dates of test  | : | 07/13/2016 – 07/20/2016   |
| Issue Date   | : | 09/12/2016  |
| Test Result  | : | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail    |
| Equipment complied with the specification [X]<br>Equipment did not comply with the specification [ ] |   |   |

|  |                   |
|--|-------------------|
| This Test Report is Issued Under the Authority of:   |                   |
|  |                   |
| Rachana Khanduri   | Chen Ge           |
| Test Engineer  | Engineer Reviewer |
| This test report may be reproduced in full only<br>Test result presented in this test report is applicable to the tested sample only |                   |

Issued By:  
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# Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

## Accreditations for Conformity Assessment

| Country/Region | Accreditation Body     | Scope                             |
|----------------|------------------------|-----------------------------------|
| USA            | FCC, A2LA              | EMC, RF/Wireless, Telecom         |
| Canada         | IC, A2LA, NIST         | EMC, RF/Wireless, Telecom         |
| Taiwan         | BSMI, NCC, NIST        | EMC, RF, Telecom, Safety          |
| Hong Kong      | OFTA, NIST             | RF/Wireless, Telecom              |
| Australia      | NATA, NIST             | EMC, RF, Telecom, Safety          |
| Korea          | KCC/RRA, NIST          | EMI, EMS, RF, Telecom, Safety     |
| Japan          | VCCI, JATE, TELEC, RFT | EMI, RF/Wireless, Telecom         |
| Mexico         | NOM, COFETEL, Caniety  | Safety, EMC, RF/Wireless, Telecom |
| Europe         | A2LA, NIST             | EMC, RF, Telecom, Safety          |
| Israel         | MOC, NIST              | EMC, RF, Telecom, Safety          |

## Accreditations for Product Certifications

| Country   | Accreditation Body | Scope                 |
|-----------|--------------------|-----------------------|
| USA       | FCC TCB, NIST      | EMC, RF, Telecom      |
| Canada    | IC FCB, NIST       | EMC, RF, Telecom      |
| Singapore | iDA, NIST          | EMC, RF, Telecom      |
| EU        | NB                 | EMC & R&TTE Directive |
| Japan     | MIC (RCB 208)      | RF, Telecom           |
| Hong Kong | OFTA (US002)       | RF, Telecom           |

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## 1 Report Revision History

| Report No.                             | Report Version | Description               | Issue Date |
|--|----------------|---------------------------|------------|
| FCC_RF_SL16032801-RUC-016_UNII         | None           | Original                  | 09/06/2016 |
| FCC_RF_SL16032801-RUC-016_UNII_Rev 1.0 | Rev 1.0        | Updated Radio Description | 09/12/2016 |
|  |                |                           |            |
|  |                |                           |            |
|  |                |                           |            |

## 2 Executive Summary

The purpose of this test program was to demonstrate compliance of following product

Company: Ruckus Wireless, Inc.  
Product: ZoneFlex T610s Access Point  
Model: T610s

against the current Stipulated Standards. The specified model product stated above has demonstrated compliance with the Stipulated Standard listed on 1<sup>st</sup> page.

## 3 Customer information

|                      |   |  |
|----------------------|---|--|
| Applicant Name       | : | Ruckus Wireless, Inc.                                  |
| Applicant Address    | : | 350 West Java Drive, Sunnyvale, California 94089 U.S.A |
| Manufacturer Name    | : | Ruckus Wireless, Inc.                                  |
| Manufacturer Address | : | 350 West Java Drive, Sunnyvale, California 94089 U.S.A |

## 4 Test site information

|                      |   |
|----------------------|---|
| Lab performing tests | SIEMIC Laboratories                         |
| Lab Address          | 775 Montague Expressway, Milpitas, CA 95035 |
| FCC Test Site No.    | 881796                                      |
| IC Test Site No.     | 4842D-2                                     |
| VCCI Test Site No.   | A0133                                       |

## 5 Modification

| Index | Item | Description | Note |
|-------|------|-------------|------|
| -     | -    | -           | -    |
|       |      |             |      |
|       |      |             |      |
|       |      |             |      |
|       |      |             |      |

## 6 EUT Information

### 6.1 EUT Description

|                              |  |
|------------------------------|--|
| Product Name                 | ZoneFlex T610s Access Point                        |
| Model No.                    | T610s  |
| Trade Name                   | Ruckus   |
| Serial No.                   | 271604504842                                       |
| Host Model No.               | N/A  |
| Input Power                  | 100Vac-240Vac 50-60Hz / 48VDC 1.0A (PoE)           |
| Poe Power Adapter Manu/Model | Ruckus Wireless, Inc. / GRT-480125A(740-64216-001) |
| AC/DC Power Adapter SN       | N/A  |
| PoE Power Adapter SN         | 20150129   |
| Product Hardware version     | 705-60425-001                                      |
| Product Software version     | 812-72410-002                                      |
| Radio Hardware version       | 705-60425-001                                      |
| Radio Software version       | 812-72410-002                                      |
| Test Software version        | 117-11325-001                                      |
| Date of EUT received         | 11/05/2015   |
| Equipment Class/ Category    | DTS, UNII  |
| Clock Frequencies            | N/A  |
| Port/Connectors              | PoE, Ethernet                                      |

### 6.2 Radio Description

| Radio Type             | 802.11a   | 802.11n-20M                     | 802.11n-40M                     | 802.11ac-80M                            |
|------------------------|---|---------------------------------|---------------------------------|---|
| Operating Frequency    | 5180-5240MHz<br>5745-5825MHz  | 5180-5240MHz<br>5745-5825MHz    | 5190-5230MHz<br>5755-5795MHz    | 5210MHz<br>5775MHz                      |
| Modulation             | OFDM (BPSK, QPSK, 16QAM, 64QAM)   | OFDM (BPSK, QPSK, 16QAM, 64QAM) | OFDM (BPSK, QPSK, 16QAM, 64QAM) | OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) |
| Channel Spacing        | 20MHz   | 20MHz                           | 40MHz                           | 80MHz                                   |
| Number of Channels     | 9   | 9                               | 4                               | 2                                       |
| Antenna Type           | Internal Sector Antenna   |                                 |                                 |   |
| Antenna Gain (Peak)    | 2.4GHz: 6 dBi<br>5GHz: 8 dBi  |                                 |                                 |   |
| Antenna Connector Type | U.FL  |                                 |                                 |   |
| Note                   | <p>EUT has 4 antennas, 2 antennas are in horizontal polarity, and 2 antennas in vertical polarity. The 802.11b/g/a is in CDD mode with all 4 antenna transmit simultaneously.</p> <p>Since they're in 90 deg phase shift between the horizontal and vertical antennas, for radiated limit, the result from different polarization antenna will not be combined. So only the result for 2 vertical poparity antennas and 2 horizontal poparity antennas will be combined for MIMO mode separately. For cross-polarized antenna, the total gain—including array gain—is computed separately for each of polarizations using the procedures presented in this document. The highest of the total gains shall apply. For this case, the highest of the total gain will be the directional gain of 2 antennas.</p> <p>For conducted limit like power and psd, the result from all 4 chains will be summed.</p> <p>For 802.11b/g/a mode under CDD mode, the array gain for power will be 0 and for PSD will be 10 log (Nant/Nss) dB to be calculated separately for horizontal and vertical polarity. Reference to the following KDB for clarification.</p> <p><a href="#">662911 D01 Multiple Transmitter Output v02r01</a></p> <p><a href="#">662911 D02 MIMO with Cross-Polarized Antennas v01</a></p> |                                 |                                 |   |

EUT Power level setting

| Mode         | Frequency | Power Setting |
|--------------|-----------|---------------|
| 802.11-a     | 5180      | 19            |
| 802.11-a     | 5200      | 19            |
| 802.11-a     | 5240      | 19            |
| 802.11-n-20  | 5180      | 19            |
| 802.11-n-20  | 5200      | 19            |
| 802.11-n-20  | 5240      | 19            |
| 802.11-n-40  | 5190      | 18            |
| 802.11-n-40  | 5230      | 19            |
| 802.11-ac-80 | 5210      | 18            |
|              |           |               |
| 802.11-a     | 5745      | 21            |
| 802.11-a     | 5785      | 21            |
| 802.11-a     | 5825      | 21            |
| 802.11-n-20  | 5745      | 21            |
| 802.11-n-20  | 5785      | 21            |
| 802.11-n-20  | 5825      | 21            |
| 802.11-n-40  | 5755      | 20            |
| 802.11-n-40  | 5795      | 20            |
| 802.11-ac-80 | 5775      | 21            |

## 7 Supporting Equipment/Software and cabling Description

### 7.1 Supporting Equipment

| Item | Supporting Equipment Description | Model                | Serial Number | Manufacturer | Note |
|------|----------------------------------|----------------------|---------------|--------------|------|
| 1    | Laptop                           | PP01L Latitude E5440 | F1WPF12       | Dell         | -    |
| 2    | POE Adapter                      | 740-64157-001        | 133279963     | Ruckus       | -    |
|      |                                  |                      |               |              |      |

### 7.2 Cabling Description

| Name | Connection Start |          | Connection Stop |          | Length / shielding Info |            | Note |
|------|------------------|----------|-----------------|----------|-------------------------|------------|------|
|      | From             | I/O Port | To              | I/O Port | Length (m)              | Shielding  |      |
| RJ45 | EUT              | RJ45     | POE             | RJ45     | 2                       | Unshielded | -    |
| RJ45 | POE              | RJ45     | Laptop          | RJ45     | 3                       | Unshielded | -    |

### 7.3 Test Software Description

| Test Item  | Software                | Description  |
|------------|-------------------------|--|
| RF Testing | Command Line in windows | Set the EUT to transmit continuously in diferent test mode |
|            |                         |  |
|            |                         |  |



## 8 Test Summary

| Test Item                      | Test standard | Test Method/Procedure  | Pass / Fail  |
|--------------------------------|---------------|--|--|
| Restricted Band of Operation   | FCC 15.205    | ANSI C63.4 – 2014<br>789033 D02 General UNII Test Procedures New Rules v01 | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> N/A |
| AC Conducted Emissions Voltage | FCC 15.207(a) | ANSI C63.4 – 2014  | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> N/A |

| Test Item                                 | Test standard                     | Test Method/Procedure  | Pass / Fail  |
|---|-----------------------------------|--|--|
| 26 & 6 dB Emission Bandwidth              | FCC 15.407 (a) (2)                | 789033 D02 General UNII Test Procedures New Rules v01                      | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> N/A |
| Maximum conducted Output Power            | FCC 15.407 (a) (2)                | 789033 D02 General UNII Test Procedures New Rules v01                      | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> N/A |
| Power reduction (Antenna Gain > 6 dBi)    | FCC 15.407 (a) (2)                | -  | <input type="checkbox"/> Pass<br><input checked="" type="checkbox"/> N/A |
| Band Edge and Radiated Spurious Emissions | FCC 15.407(b)(2),<br>15.407(b)(6) | ANSI C63.4 – 2014<br>789033 D02 General UNII Test Procedures New Rules v01 | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> N/A |
| Power Spectral Density                    | FCC 15.407 (a) (2)                | 789033 D02 General UNII Test Procedures New Rules v01                      | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> N/A |
| Frequency Stability                       | FCC 15.407 (g)                    | -  | <input type="checkbox"/> Pass<br><input checked="" type="checkbox"/> N/A |
| Transmit Power Control (TPC)              | FCC 15.407 (h)(1)                 | -  | <input type="checkbox"/> Pass<br><input checked="" type="checkbox"/> N/A |
| User Manual                               | FCC -                             | -  | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> N/A |

|        |   |
|--------|---|
| Remark | <ol style="list-style-type: none"> <li>All measurement uncertainties are not taken into consideration for all presented test result.</li> <li>The applicant shall ensure frequency stability by showing that an emission is maintained within the band of operation under all normal operating conditions as specified in the user's manual.</li> </ol> |
|--------|---|

## 9 Measurement Uncertainty

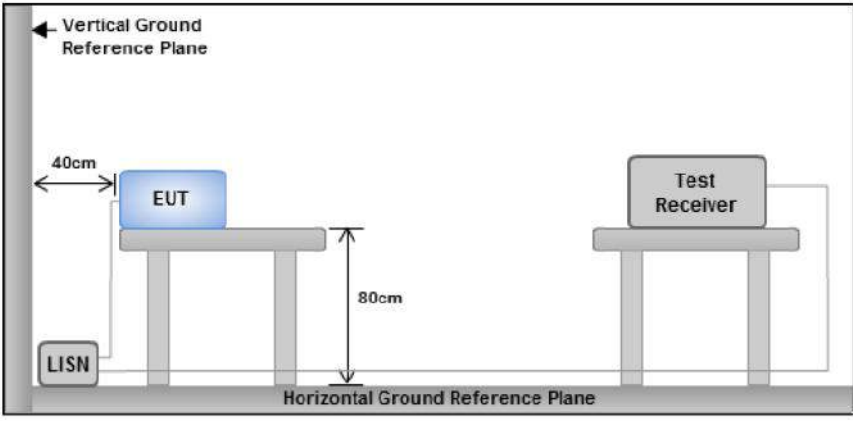
| Emissions                                 |                 |   |               |
|---|-----------------|---|---------------|
| Test Item                                 | Frequency Range | Description   | Uncertainty   |
| AC Conducted Emissions                    | 150KHz – 30MHz  | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2                                 | ±3.5dB        |
| Band Edge and Radiated Spurious Emissions | 30MHz – 1GHz    | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m) | +5.6dB/-4.5dB |
| Band Edge and Radiated Spurious Emissions | 1GHz – 40GHz    | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m) | +4.3dB/-4.1dB |

## 10 Measurements, Examination and Derived Results

### 10.1 Conducted Emissions

#### Conducted Emission Limit

| Frequency ranges (MHz) | Limit (dBuV) |         |
|------------------------|--------------|---------|
|                        | QP           | Average |
| 0.15 ~ 0.5             | 66 - 56      | 56 - 46 |
| 0.5 ~ 5                | 56           | 46      |
| 5 ~ 30                 | 60           | 50      |

| Spec         | Item | Requirement   | Applicable                          |
|--------------|------|---|-------------------------------------|
| 47CFR§15.207 | a)   | For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 $\mu$ H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequency ranges.   | <input checked="" type="checkbox"/> |
| Test Setup   |      |  <p>Note: 1. Support units were connected to second LISN.<br/>2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes</p>   |                                     |
| Procedure    |      | <ul style="list-style-type: none"> <li>- The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.</li> <li>- The power supply for the EUT was fed through a 50<math>\Omega</math>/50<math>\mu</math>H EUT LISN, connected to filtered mains.</li> <li>- The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.</li> <li>- All other supporting equipment was powered separately from another main supply.</li> </ul> |                                     |
| Remark       |      | EUT tested with AC 120V 60Hz  |                                     |
| Result       |      | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail  |                                     |

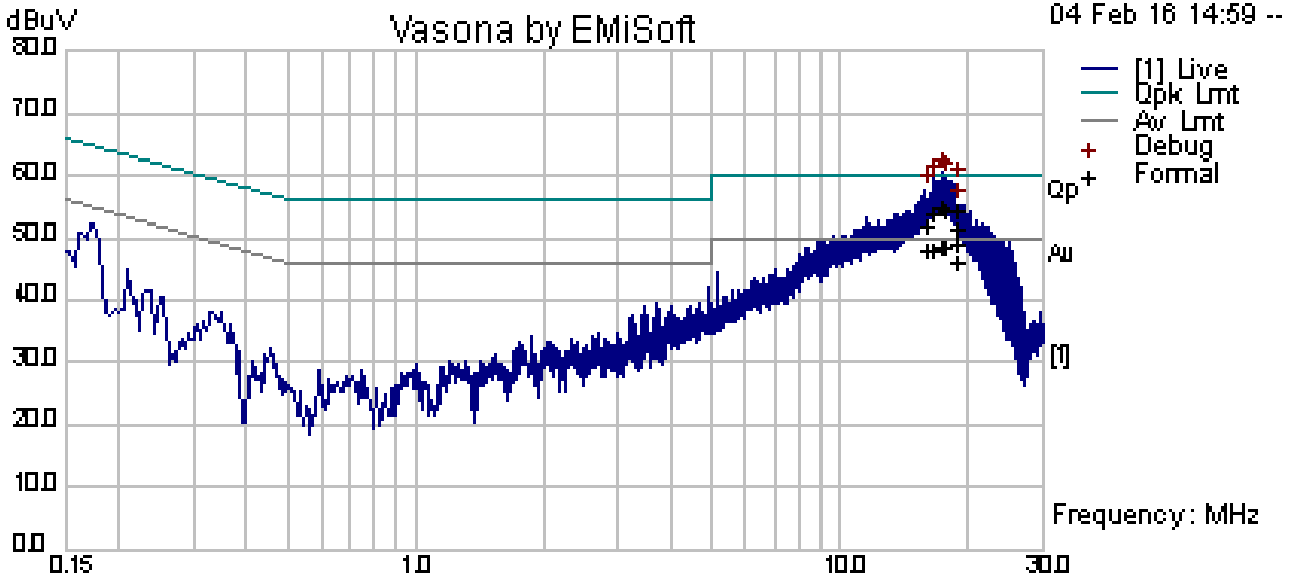
Test Data     Yes                       N/A

Test Plot     Yes (See below)               N/A

Test was done by Gary Chou at *Conducted Emission Test Site*.

### Conducted Emission Test Results (Line)

|                           |                                       |      |         |   |  |
|---------------------------|---------------------------------------|------|---------|---|--|
| Test specification:       | Conducted Emissions                   |      |         |   |  |
| Environmental Conditions: | Temp(°C):                             | 23   | Result: | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> Fail |  |
|                           | Humidity (%):                         | 41   |         |   |  |
|                           | Atmospheric(mbar):                    | 1015 |         |   |  |
| Mains Power:              | 120Vac, 60Hz                          |      |         |   |  |
| Tested by:                | Gary Chou                             |      |         |   |  |
| Test Date:                | 02/03/2016                            |      |         |   |  |
| Remarks:                  | Line - Tested with AC Line Power Cord |      |         |   |  |



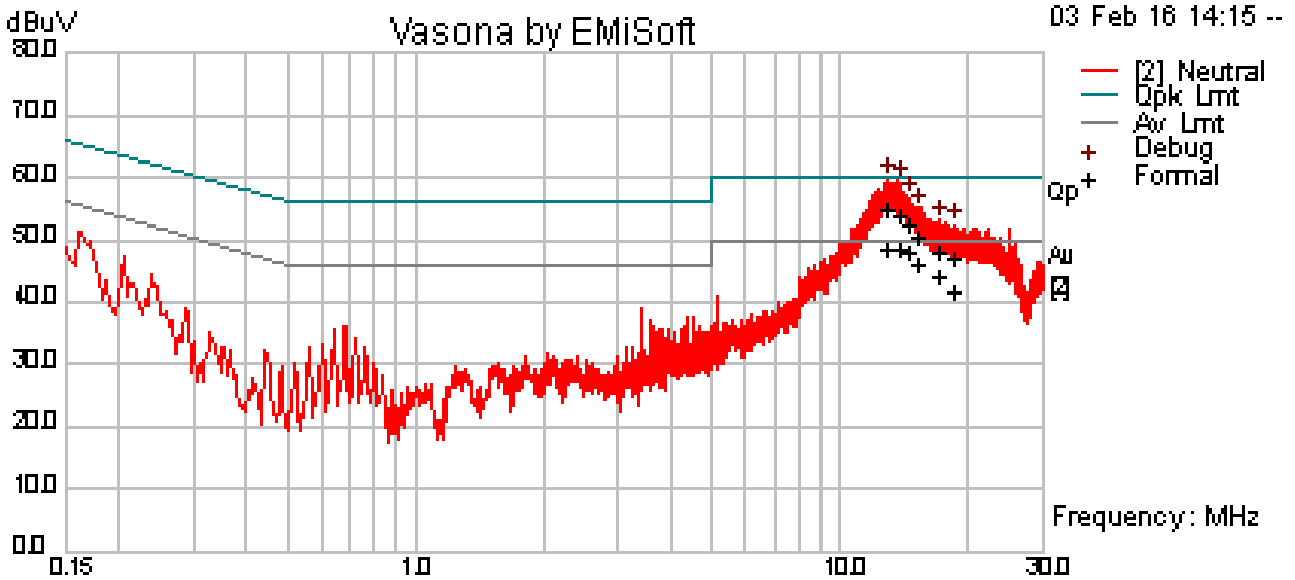
Line Plot at 120Vac, 60Hz

| Frequency (MHz) | Raw (dBuV) | Cable Loss (dB) | Factors (dB) | Level (dBuV) | Measurement Type | Line/Neutral | Limit (dBuV) | Margin (dB) | Pass/Fail |
|-----------------|------------|-----------------|--------------|--------------|------------------|--------------|--------------|-------------|-----------|
| 17.43           | 44.13      | 10.06           | 0.65         | 54.84        | Quasi Peak       | Live         | 60.00        | -5.16       | Pass      |
| 17.80           | 43.54      | 10.07           | 0.65         | 54.26        | Quasi Peak       | Live         | 60           | -5.74       | Pass      |
| 16.65           | 43.04      | 10.06           | 0.63         | 53.73        | Quasi Peak       | Live         | 60           | -6.27       | Pass      |
| 18.76           | 43.55      | 10.07           | 0.67         | 54.29        | Quasi Peak       | Live         | 60.00        | -5.71       | Pass      |
| 15.92           | 41.35      | 10.06           | 0.62         | 52.03        | Quasi Peak       | Live         | 60.00        | -7.97       | Pass      |
| 18.80           | 40.91      | 10.07           | 0.67         | 51.65        | Quasi Peak       | Live         | 60.00        | -8.35       | Pass      |
| 17.43           | 37.84      | 10.06           | 0.65         | 48.55        | Average          | Live         | 50.00        | -1.45       | Pass*     |
| 17.80           | 37.77      | 10.07           | 0.65         | 48.49        | Average          | Live         | 50           | -1.51       | Pass*     |
| 16.65           | 37.56      | 10.06           | 0.63         | 48.26        | Average          | Live         | 50           | -1.74       | Pass*     |
| 18.76           | 38.39      | 10.07           | 0.67         | 49.12        | Average          | Live         | 50.00        | -0.88       | Pass*     |
| 15.92           | 37.58      | 10.06           | 0.62         | 48.26        | Average          | Live         | 50.00        | -1.74       | Pass*     |
| 18.80           | 35.21      | 10.07           | 0.67         | 45.95        | Average          | Live         | 50.00        | -4.05       | Pass      |

Pass\*: The margin is within the measurement uncertainty.

### Conducted Emission Test Results (Neutral)

|                           |  |      |  |  |
|---------------------------|--|------|--|--|
| Test specification:       | Conducted Emissions                      |      |  | Result:<br><input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> Fail |
| Environmental Conditions: | Temp(°C):                                | 23   |  |  |
|                           | Humidity (%):                            | 41   |  |  |
|                           | Atmospheric(mbar):                       | 1015 |  |  |
| Mains Power:              | 120Vac, 60Hz                             |      |  |  |
| Tested by:                | Gary Chou                                |      |  |  |
| Test Date:                | 02/03/2016                               |      |  |  |
| Remarks:                  | Neutral – Tested with AC Line Power Cord |      |  |  |



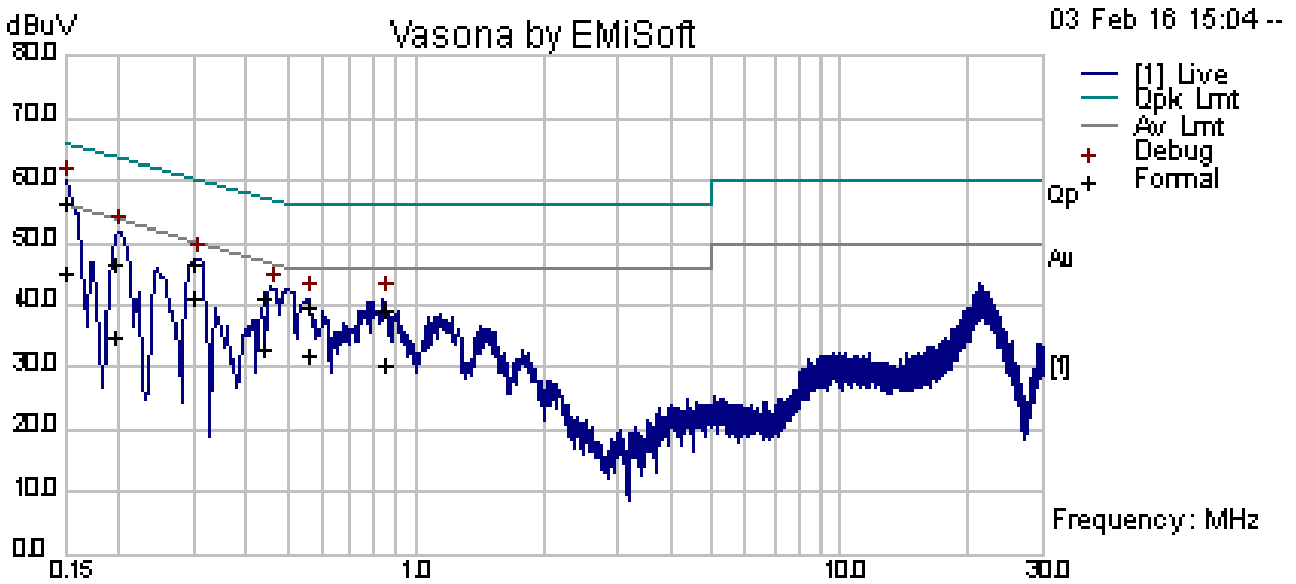
Neutral Plot at 120Vac, 60Hz

| Frequency (MHz) | Raw (dBuV) | Cable Loss (dB) | Factors (dB) | Level (dBuV) | Measurement Type | Line/Neutral | Limit (dBuV) | Margin (dB) | Pass /Fail |
|-----------------|------------|-----------------|--------------|--------------|------------------|--------------|--------------|-------------|------------|
| 12.99           | 44.14      | 10.06           | 0.58         | 54.78        | Quasi Peak       | Neutral      | 60.00        | -5.22       | Pass       |
| 13.75           | 43.37      | 10.06           | 0.59         | 54.02        | Quasi Peak       | Neutral      | 60.00        | -5.98       | Pass       |
| 14.44           | 41.75      | 10.06           | 0.6          | 52.4         | Quasi Peak       | Neutral      | 60.00        | -7.60       | Pass       |
| 15.27           | 39.72      | 10.06           | 0.61         | 50.38        | Quasi Peak       | Neutral      | 60.00        | -9.62       | Pass       |
| 17.21           | 37.13      | 10.06           | 0.64         | 47.84        | Quasi Peak       | Neutral      | 60.00        | -12.16      | Pass       |
| 18.68           | 36.23      | 10.07           | 0.67         | 46.96        | Quasi Peak       | Neutral      | 60.00        | -13.04      | Pass       |
| 12.99           | 38.09      | 10.06           | 0.58         | 48.73        | Average          | Neutral      | 50.00        | -1.27       | Pass*      |
| 13.75           | 37.83      | 10.06           | 0.59         | 48.47        | Average          | Neutral      | 50.00        | -1.53       | Pass*      |
| 14.44           | 37.22      | 10.06           | 0.6          | 47.87        | Average          | Neutral      | 50.00        | -2.13       | Pass*      |
| 15.27           | 35.31      | 10.06           | 0.61         | 45.98        | Average          | Neutral      | 50.00        | -4.02       | Pass       |
| 17.21           | 33.26      | 10.06           | 0.64         | 43.97        | Average          | Neutral      | 50.00        | -6.03       | Pass       |
| 18.68           | 30.89      | 10.07           | 0.67         | 41.63        | Average          | Neutral      | 50.00        | -8.37       | Pass       |

Pass\*: The margin is within the measurement uncertainty.

### Conducted Emission Test Results (Line)

|                           |                        |      |  |         |   |
|---------------------------|------------------------|------|--|---------|---|
| Test specification:       | Conducted Emissions    |      |  | Result: | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> Fail |
| Environmental Conditions: | Temp(°C):              | 23   |  |         |   |
|                           | Humidity (%):          | 41   |  |         |   |
|                           | Atmospheric(mbar):     | 1015 |  |         |   |
| Mains Power:              | 120Vac, 60Hz           |      |  |         |   |
| Tested by:                | Gary Chou              |      |  |         |   |
| Test Date:                | 02/03/2016             |      |  |         |   |
| Remarks                   | Line - Tested with POE |      |  |         |   |

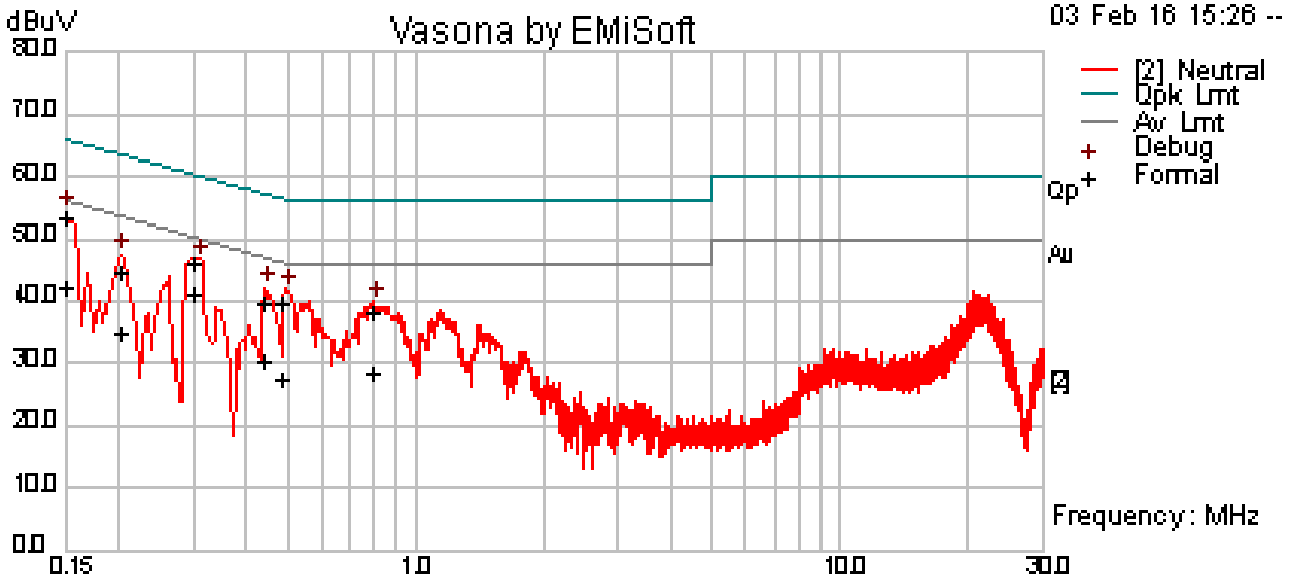


Line Plot at 120Vac, 60Hz

| Frequency (MHz) | Raw (dBuV) | Cable Loss (dB) | Factors (dB) | Level (dBuV) | Measurement Type | Line | Limit (dBuV) | Margin (dB) | Pass /Fail |
|-----------------|------------|-----------------|--------------|--------------|------------------|------|--------------|-------------|------------|
| 0.15            | 44.76      | 10.00           | 1.80         | 56.57        | Quasi Peak       | Live | 66.00        | -9.43       | Pass       |
| 0.19            | 35.34      | 10.00           | 1.35         | 46.69        | Quasi Peak       | Live | 63.83        | -17.13      | Pass       |
| 0.30            | 35.72      | 10.00           | 0.91         | 46.64        | Quasi Peak       | Live | 60.23        | -13.60      | Pass       |
| 0.44            | 30.69      | 10.01           | 0.72         | 41.42        | Quasi Peak       | Live | 57.04        | -15.62      | Pass       |
| 0.56            | 29.14      | 10.01           | 0.66         | 39.81        | Quasi Peak       | Live | 56.00        | -16.19      | Pass       |
| 0.84            | 28.38      | 10.01           | 0.59         | 38.99        | Quasi Peak       | Live | 56.00        | -17.01      | Pass       |
| 0.15            | 33.52      | 10.00           | 1.80         | 45.33        | Average          | Live | 56.00        | -10.67      | Pass       |
| 0.19            | 23.58      | 10.00           | 1.35         | 34.94        | Average          | Live | 53.83        | -18.89      | Pass       |
| 0.30            | 30.48      | 10.00           | 0.91         | 41.39        | Average          | Live | 50.23        | -8.84       | Pass       |
| 0.44            | 22.22      | 10.01           | 0.72         | 32.95        | Average          | Live | 47.04        | -14.09      | Pass       |
| 0.56            | 21.01      | 10.01           | 0.66         | 31.68        | Average          | Live | 46.00        | -14.32      | Pass       |
| 0.84            | 19.88      | 10.01           | 0.59         | 30.49        | Average          | Live | 46.00        | -15.51      | Pass       |

### Conducted Emission Test Results (Neutral)

|                           |                           |      |  |  |
|---------------------------|---------------------------|------|--|--|
| Test specification:       | Conducted Emissions       |      |  | Result:<br><input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> Fail |
| Environmental Conditions: | Temp(°C):                 | 23   |  |  |
|                           | Humidity (%):             | 41   |  |  |
|                           | Atmospheric(mbar):        | 1015 |  |  |
| Mains Power:              | 120Vac, 60Hz              |      |  |  |
| Tested by:                | Teody Manansala           |      |  |  |
| Test Date:                | 02/03/2016                |      |  |  |
| Remarks                   | Neutral - Tested with POE |      |  |  |



Neutral Plot at 120Vac, 60Hz

| Frequency (MHz) | Raw (dBuV) | Cable Loss (dB) | Factors (dB) | Level (dBuV) | Measurement Type | Line    | Limit (dBuV) | Margin (dB) | Pass /Fail |
|-----------------|------------|-----------------|--------------|--------------|------------------|---------|--------------|-------------|------------|
| 0.15            | 41.67      | 10.00           | 1.80         | 53.48        | Quasi Peak       | Neutral | 66.00        | -12.52      | Pass       |
| 0.30            | 35.10      | 10.00           | 0.91         | 46.02        | Quasi Peak       | Neutral | 60.27        | -14.25      | Pass       |
| 0.49            | 28.91      | 10.01           | 0.69         | 39.60        | Quasi Peak       | Neutral | 56.23        | -16.63      | Pass       |
| 0.44            | 28.99      | 10.01           | 0.72         | 39.72        | Quasi Peak       | Neutral | 57.04        | -17.32      | Pass       |
| 0.20            | 33.21      | 10.00           | 1.31         | 44.52        | Quasi Peak       | Neutral | 63.60        | -19.08      | Pass       |
| 0.79            | 27.56      | 10.01           | 0.60         | 38.18        | Quasi Peak       | Neutral | 56.00        | -17.82      | Pass       |
| 0.15            | 30.50      | 10.00           | 1.80         | 42.30        | Average          | Neutral | 56.00        | -13.70      | Pass       |
| 0.30            | 30.16      | 10.00           | 0.91         | 41.08        | Average          | Neutral | 50.27        | -9.19       | Pass       |
| 0.49            | 16.63      | 10.01           | 0.69         | 27.33        | Average          | Neutral | 46.23        | -18.90      | Pass       |
| 0.44            | 19.74      | 10.01           | 0.72         | 30.47        | Average          | Neutral | 47.04        | -16.57      | Pass       |
| 0.20            | 23.45      | 10.00           | 1.31         | 34.76        | Average          | Neutral | 53.60        | -18.84      | Pass       |
| 0.79            | 17.60      | 10.01           | 0.60         | 28.21        | Average          | Neutral | 46.00        | -17.79      | Pass       |

Note: The results above show only the worst case.

## 10.2 6dB & 26 dB Bandwidth

### Requirement(s):

| Spec     | Item   | Requirement  | Applicable                          |
|----------|--------|--|-------------------------------------|
| § 15.407 | -      | 26 dB Emission BW: Report only for reference.  | <input checked="" type="checkbox"/> |
|          | a) (2) | 26 dB Emission BW: Report only for power limit calculation.  | <input type="checkbox"/>            |
|          | e)     | Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz. | <input checked="" type="checkbox"/> |



|                |  |  |  |
|----------------|--|--|--|
| Test Procedure | <p>789033 D02 General UNII Test Procedures New Rules v01</p> <p><u>26dB Emission bandwidth measurement procedure (Other than 5.725-5.85 GHz)</u></p> <ul style="list-style-type: none"> <li>- Allow the trace to stabilize.</li> <li>- Use the spectrum analyzer built-in measurement function to determine the 26dB BW. <ul style="list-style-type: none"> <li>o Set RBW = around 1% of emission bandwidth</li> <li>o Set VBW &gt; RBW</li> <li>o Detector = Peak</li> <li>o Trace mode = max hold</li> </ul> </li> <li>- Capture the plot.</li> <li>- Repeat above steps for different test channel and other modulation type.</li> </ul> <p><u>6 dB Minimum emission bandwidth measurement procedure (for 5.725-5.85 GHz)</u></p> <ul style="list-style-type: none"> <li>- Allow the trace to stabilize.</li> <li>- Use the spectrum analyzer built-in measurement function to determine the 6dB BW. <ul style="list-style-type: none"> <li>o Set RBW = 100 KHz</li> <li>o Set VBW ≥ 3 x RBW</li> <li>o Detector = Peak</li> <li>o Trace mode = max hold</li> <li>o Sweep = auto couple</li> </ul> </li> <li>- Capture the plot.</li> <li>- Repeat above steps for different test channel and other modulation type.</li> </ul> |  |  |
|----------------|--|--|--|

|           |   |                         |  |
|-----------|---|-------------------------|--|
| Test Date | 11/01/2015 – 11/20/2015   | Environmental condition | Temperature 22°C<br>Relative Humidity 38%<br>Atmospheric Pressure 1020mbar |
| Remark    | 99% BW result is presented here to show the channels in 5.1GHz is not crossing to DFS channel since the 26 dB BW is too wide. |                         |  |
| Result    | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail  |                         |  |

Test Data     Yes       N/A  
Test Plot     Yes       N/A

Test was done by *Gary Chou* at *RF Test Site*.



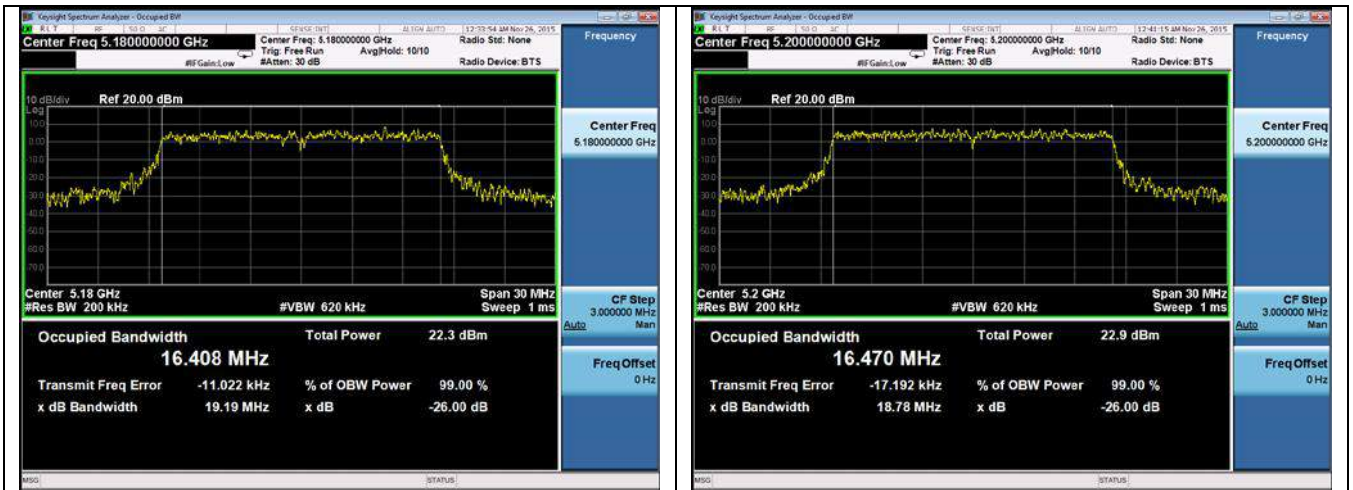
26dB Bandwidth measurement result for 5.2GHz

| Type    | Test mode   | Freq (MHz) | CH   | Result (MHz) |
|---------|-------------|------------|------|--------------|
| 26dB BW | 802.11a     | 5180       | Low  | 19.19        |
| 26dB BW | 802.11a     | 5200       | Mid  | 18.78        |
| 26dB BW | 802.11a     | 5240       | High | 18.81        |
| 26dB BW | 802.11n-20  | 5180       | Low  | 20.17        |
| 26dB BW | 802.11n-20  | 5200       | Mid  | 20.04        |
| 26dB BW | 802.11n-20  | 5240       | High | 20.19        |
| 26dB BW | 802.11n-40  | 5190       | Low  | 38.57        |
| 26dB BW | 802.11n-40  | 5230       | High | 38.49        |
| 26dB BW | 802.11ac-80 | 5210       | Mid  | 82.31        |

6dB Bandwidth measurement result for 5.8GHz

| Type   | Test mode   | Freq (MHz) | CH   | Result (MHz) |
|--------|-------------|------------|------|--------------|
| 6dB BW | 802.11a     | 5745       | Low  | 16.36        |
| 6dB BW | 802.11a     | 5785       | Mid  | 16.37        |
| 6dB BW | 802.11a     | 5825       | High | 16.33        |
| 6dB BW | 802.11n-20  | 5745       | Low  | 17.66        |
| 6dB BW | 802.11n-20  | 5785       | Mid  | 17.68        |
| 6dB BW | 802.11n-20  | 5825       | High | 17.62        |
| 6dB BW | 802.11n-40  | 5755       | Low  | 36.13        |
| 6dB BW | 802.11n-40  | 5795       | High | 36.40        |
| 6dB BW | 802.11ac-80 | 5775       | Low  | 75.84        |

### 26dB Bandwidth Test Plots

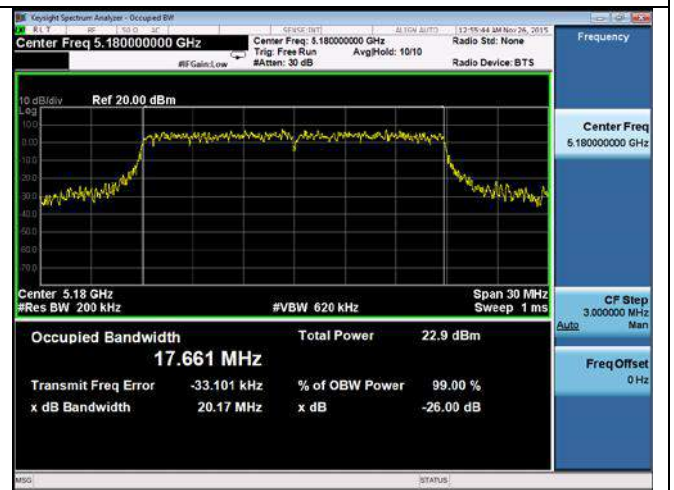


26dB BW - 802.11a 5180MHz

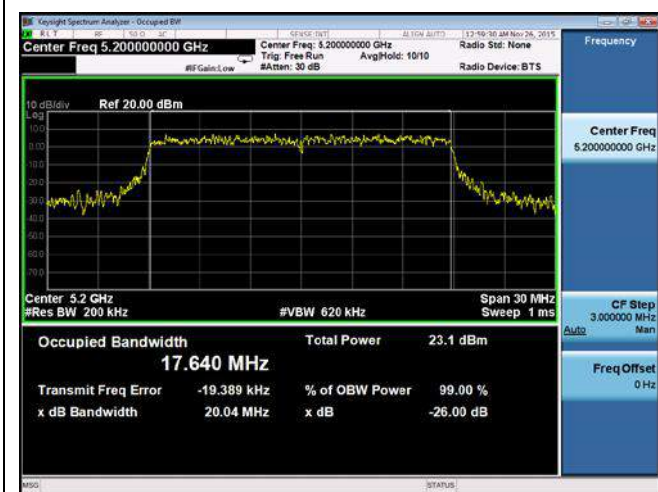
26dB BW - 802.11a 5200MHz



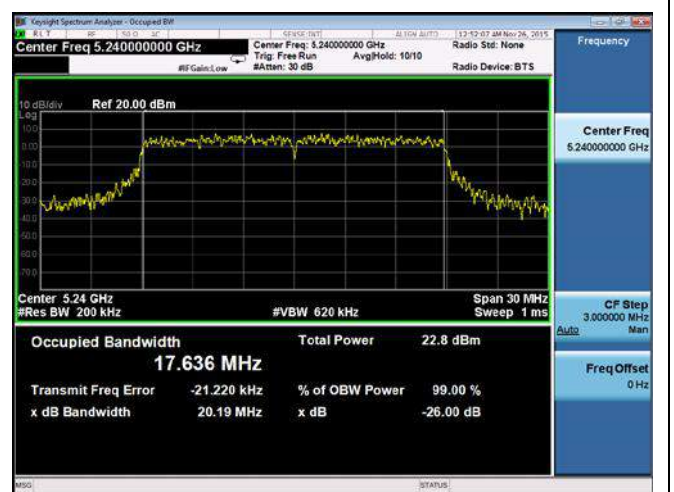
26dB BW - 802.11a 5240MHz



26dB BW - 802.11n-20M 5180MHz



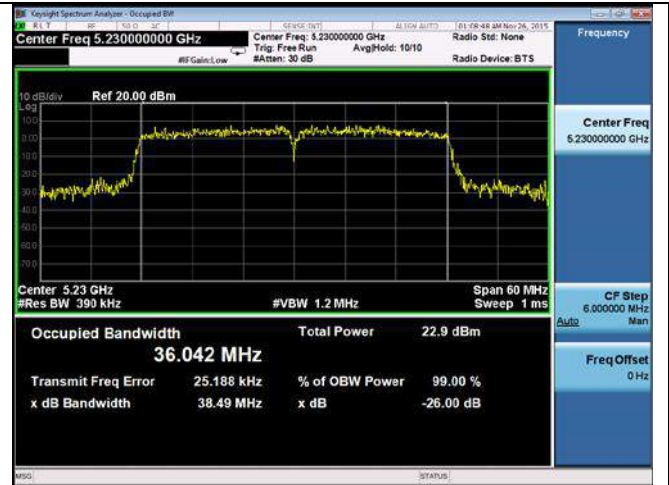
26dB BW - 802.11n-20M 5200MHz



26dB BW - 802.11n-20M 5240MHz



26dB BW - 802.11n-40M 5190MHz

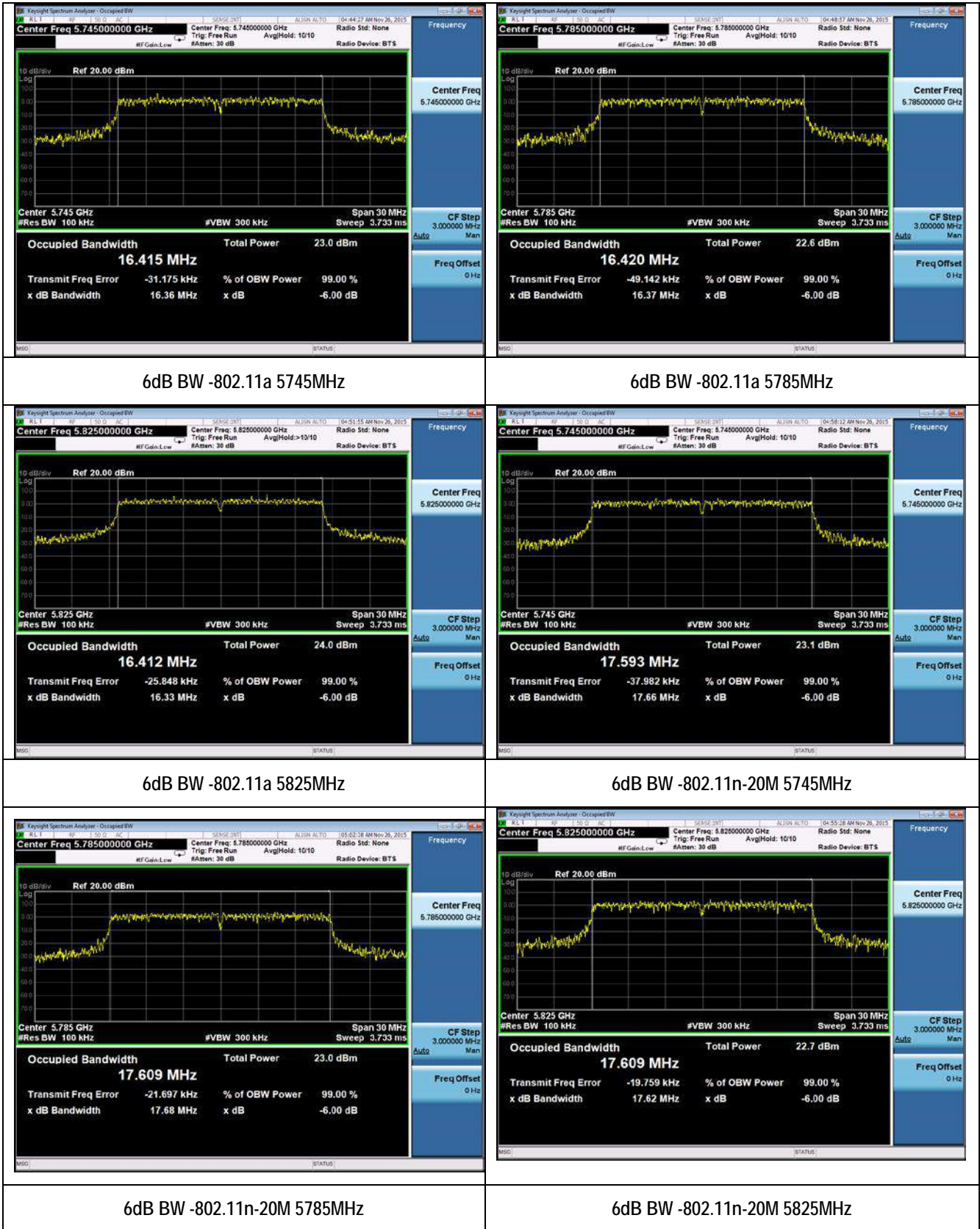


26dB BW - 802.11n-40M 5230MHz



26dB BW - 802.11ac-80M 5210MHz

### 6dB Bandwidth Test Plots





6dB BW -802.11n-40M 5755MHz



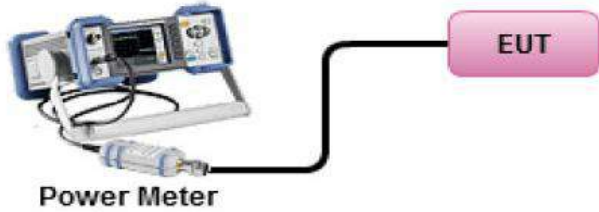
6dB BW -802.11n-40M 5795MHz



6dB BW -802.11ac-80M 5775MHz

### 10.3 Output Power

#### Requirement(s):

| Spec           | Item  | Requirement   | Applicable  |
|----------------|---|---|---|
| § 15.407       | a)(1)(i)  | For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).   | <input checked="" type="checkbox"/>   |
|                | a)(1)(ii)   | For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.   | <input type="checkbox"/>  |
|                | a)(1)(iii)  | For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. | <input type="checkbox"/>  |
|                | a)(1)(iv)   | For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.  | <input type="checkbox"/>  |
|                | a)(2)   | For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz.  | <input type="checkbox"/>  |
|                | a)(3)   | For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.  | <input checked="" type="checkbox"/>   |
|                | Test Setup  |  <p>The diagram illustrates a test setup. On the left, a blue and white power meter is connected via a black cable to a pink rectangular box labeled 'EUT' (Equipment Under Test). The power meter is also connected to a computer monitor and keyboard, suggesting it is being used for data logging or analysis.</p>   |   |
| Test Procedure | <p>789033 D02 General UNII Test Procedures New Rules v01<br/> <u>Measurement using a Power Meter (PM)</u><br/>           Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.</p> <ul style="list-style-type: none"> <li>- Connect EUT's RF output power to power meter</li> <li>- Set EUT to be continuous transmission mode</li> <li>- Measurement the average output power using power meter and record the result</li> <li>- Repeat above steps for different test channel and other modulation type.</li> </ul> |   |   |
| Test Date      | 07/14/2016 – 07/15/2016   | Environmental condition   | Temperature 22°C<br>Relative Humidity 44.6 %<br>Atmospheric Pressure 1011.4mbar |
| Remark         | Per KDB 662911 D01 Multiple Transmitter Output v02r01, the direction gain for horizontal polarization and vertical polarization is calculated separately. For 5GHz band, peak antenna gain = 8 dBi, array gain = 3 dB, directional gain = 11 dBi. Highest of total gain is 11 dBi. The power limit and PSD limit will be reduced by amount of 5 dB.   |   |   |
| Result         | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail  |   |   |

Test Data     Yes                       N/A

Test Plot     Yes (See below)       N/A

Test was done by *Rachana Khanduri* at *RF Test Site*.

Output Power measurement result for 5.2GHz

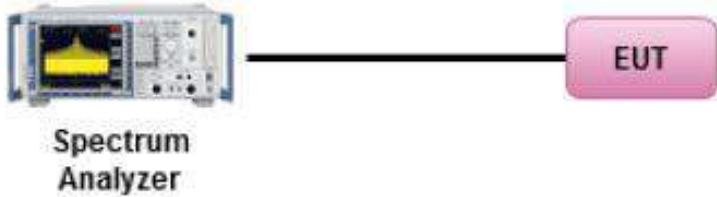
| Type         | Test mode   | Freq (MHz) | CH   | Conducted Power (dBm) |        |        |        |                | Limit (dBm) | Result |
|--------------|-------------|------------|------|-----------------------|--------|--------|--------|----------------|-------------|--------|
|              |             |            |      | Chain1                | Chain2 | Chain3 | Chain4 | Combined Power |             |        |
| Output Power | 802.11a     | 5180       | Low  | 16.24                 | 16.32  | 17.41  | 15.99  | 22.55          | 25          | Pass   |
|              |             | 5200       | Mid  | 16.35                 | 16.38  | 17.59  | 15.98  | 22.64          | 25          | Pass   |
|              |             | 5240       | High | 16.52                 | 16.33  | 17.70  | 16.06  | 22.72          | 25          | Pass   |
|              | 802.11n-20  | 5180       | Low  | 16.15                 | 16.36  | 17.51  | 15.92  | 22.55          | 25          | Pass   |
|              |             | 5200       | Mid  | 16.14                 | 16.56  | 17.60  | 16.13  | 22.67          | 25          | Pass   |
|              |             | 5240       | High | 16.27                 | 16.91  | 17.62  | 16.23  | 22.82          | 25          | Pass   |
|              | 802.11n-40  | 5190       | Low  | 15.94                 | 16.37  | 17.69  | 16.08  | 22.60          | 25          | Pass   |
|              |             | 5230       | Mid  | 16.92                 | 17.41  | 18.50  | 17.05  | 23.54          | 25          | Pass   |
|              | 802.11ac-80 | 5210       | High | 15.17                 | 15.20  | 16.73  | 15.30  | 21.67          | 25          | Pass   |

Output Power measurement result for 5.8GHz

| Type         | Test mode   | Freq (MHz) | CH   | Conducted Power (dBm) |        |        |        |                | Limit (dBm) | Result |
|--------------|-------------|------------|------|-----------------------|--------|--------|--------|----------------|-------------|--------|
|              |             |            |      | Chain1                | Chain2 | Chain3 | Chain4 | Combined Power |             |        |
| Output Power | 802.11a     | 5745       | Low  | 17.97                 | 17.57  | 17.99  | 17.31  | 23.74          | 25          | Pass   |
|              |             | 5785       | Mid  | 17.83                 | 17.53  | 17.78  | 17.15  | 23.60          | 25          | Pass   |
|              |             | 5825       | High | 17.66                 | 17.70  | 17.90  | 17.23  | 23.65          | 25          | Pass   |
|              | 802.11n-20  | 5745       | Low  | 17.69                 | 17.55  | 18.17  | 17.56  | 23.77          | 25          | Pass   |
|              |             | 5785       | Mid  | 17.39                 | 17.57  | 17.98  | 17.19  | 23.56          | 25          | Pass   |
|              |             | 5825       | High | 17.69                 | 17.82  | 18.02  | 17.48  | 23.78          | 25          | Pass   |
|              | 802.11n-40  | 5755       | Low  | 17.44                 | 17.61  | 17.55  | 17.23  | 23.48          | 25          | Pass   |
|              |             | 5795       | High | 17.60                 | 17.53  | 17.84  | 17.22  | 23.57          | 25          | Pass   |
|              | 802.11ac-80 | 5775       | Low  | 18.13                 | 18.02  | 18.61  | 17.57  | 24.12          | 25          | Pass   |

## 10.4 Peak Power Spectral Density

Requirement(s):

| Spec           | Item  | Requirement  | Applicable   |
|----------------|---|--|--|
| § 15.407       | a)(1)(i)  | For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. | <input checked="" type="checkbox"/>  |
|                | a)(1)(ii)   | For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.  | <input type="checkbox"/>   |
|                | a)(2)   | For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.                  | <input type="checkbox"/>   |
|                | a)(3)   | For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.   | <input checked="" type="checkbox"/>  |
| Test Setup     |   |  |  |
| Test Procedure | <p>789033 D02 General UNII Test Procedures New Rules v01, II.F. Method SA-1</p> <p><u>Maximum spectral density measurement procedure</u></p> <ul style="list-style-type: none"> <li>- Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.</li> <li>- Set RBW = 1 MHz</li> <li>- Set VBW <math>\geq</math> 3 MHz</li> <li>- Detector = RMS.</li> <li>- Sweep time = auto couple.</li> <li>- Trace mode = max hold.</li> <li>- Trace average at least 100 traces in power averaging</li> <li>- Use the peak marker function to determine the maximum amplitude level within the RBW.</li> </ul> <p>Apply correction to the result if different RBW is used.</p> |  |  |
| Test Date      | 07/14/2016 – 07/15/2016   | Environmental condition  | Temperature 22°C<br>Relative Humidity 46%<br>Atmospheric Pressure 1020mbar |
| Remark         | Per KDB 662911 D01 Multiple Transmitter Output v02r01, the direction gain for horizontal polarization and vertical polarization is calculated separately. For 5GHz band, peak antenna gain = 8 dBi, array gain = 3 dB, directional gain = 11 dBi. Highest of total gain is 11 dBi. The power limit and PSD limit will be reduced by amount of 5 dB.   |  |  |
| Result         | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail  |  |  |

Test Data  Yes       N/A

Test Plot  Yes (See below)       N/A

Test was done by *Rachana Khanduri* at *RF Test Site*.



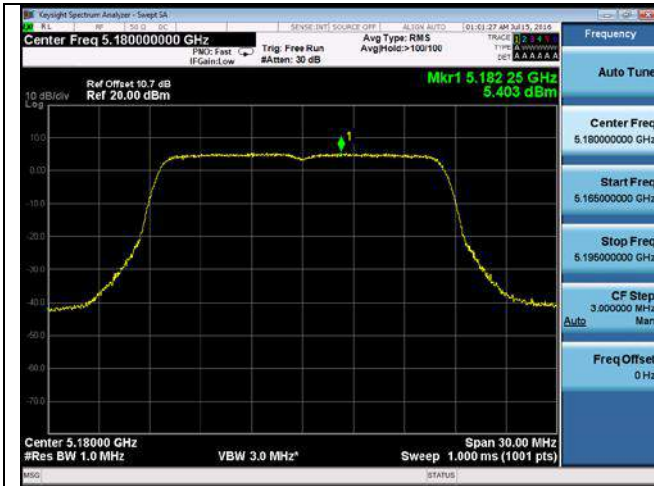
PSD measurement result for 5.2GHz

| Type | Test mode  | Freq (MHz) | CH   | Conducted PSD (dBm/MHz) |        |        |        |          | Limit (dBm/MHz) | Result |
|------|------------|------------|------|-------------------------|--------|--------|--------|----------|-----------------|--------|
|      |            |            |      | Chain1                  | Chain2 | Chain3 | Chain4 | Combined |                 |        |
| PSD  | 802.11a    | 5180       | Low  | 5.40                    | 5.21   | 6.56   | 5.11   | 11.63    | 12              | Pass   |
|      |            | 5200       | Mid  | 5.48                    | 5.25   | 6.62   | 4.91   | 11.63    | 12              | Pass   |
|      |            | 5240       | High | 5.69                    | 5.40   | 6.75   | 5.35   | 11.86    | 12              | Pass   |
|      | 802.11n-20 | 5180       | Low  | 4.89                    | 5.12   | 6.33   | 4.78   | 11.35    | 12              | Pass   |
|      |            | 5200       | Mid  | 5.09                    | 5.23   | 6.40   | 4.97   | 11.48    | 12              | Pass   |
|      |            | 5240       | High | 5.07                    | 5.54   | 6.43   | 5.33   | 11.64    | 12              | Pass   |
|      | 802.11n-40 | 5190       | Low  | 1.75                    | 2.06   | 3.64   | 1.96   | 8.44     | 12              | Pass   |
|      |            | 5230       | Mid  | 2.72                    | 3.36   | 4.37   | 2.91   | 9.41     | 12              | Pass   |
|      | 802.11ac-  | 5210       | High | -2.32                   | -2.20  | -0.94  | -2.14  | 4.16     | 12              | Pass   |

PSD measurement result for 5.8GHz

| Test mode   | Freq (MHz)   | CH   | Conducted PSD (dBm/100kHz) |        |        |        |          | Correction factor (dB) | PSD (dBm/500 kHz) | Limit (dBm/50 0kHz) | Result |
|-------------|--|------|----------------------------|--------|--------|--------|----------|------------------------|-------------------|---------------------|--------|
|             |  |      | Chain1                     | Chain2 | Chain3 | Chain4 | Combined |                        |                   |                     |        |
| 802.11a     | 5745   | Low  | -2.54                      | -2.42  | -2.21  | -2.93  | 3.50     | 6.99                   | 10.49             | 25                  | Pass   |
|             | 5785   | Mid  | -2.51                      | -2.61  | -2.53  | -2.53  | 3.48     | 6.99                   | 10.47             | 25                  | Pass   |
|             | 5825   | High | -2.06                      | -2.10  | -2.17  | -1.79  | 3.99     | 6.99                   | 10.98             | 25                  | Pass   |
| 802.11n-20  | 5745   | Low  | -2.55                      | -2.68  | -2.17  | -2.94  | 3.44     | 6.99                   | 10.43             | 25                  | Pass   |
|             | 5785   | Mid  | -2.40                      | -2.38  | -2.22  | -2.87  | 3.56     | 6.99                   | 10.55             | 25                  | Pass   |
|             | 5825   | High | -2.33                      | -2.14  | -2.05  | -1.97  | 3.90     | 6.99                   | 10.89             | 25                  | Pass   |
| 802.11n-40  | 5755   | Low  | -6.96                      | -6.50  | -6.47  | -6.90  | -0.68    | 6.99                   | 6.31              | 25                  | Pass   |
|             | 5795   | High | -6.48                      | -6.15  | -6.14  | -6.75  | -0.35    | 6.99                   | 6.64              | 25                  | Pass   |
| 802.11ac-80 | 5775   | Mid  | -9.29                      | -8.99  | -9.19  | -9.87  | -3.30    | 6.99                   | 3.69              | 25                  | Pass   |
| Note        | BW correction factor = 10log(500kHz/RBW), RBW was set to 100kHz during test. |      |                            |        |        |        |          |                        |                   |                     |        |

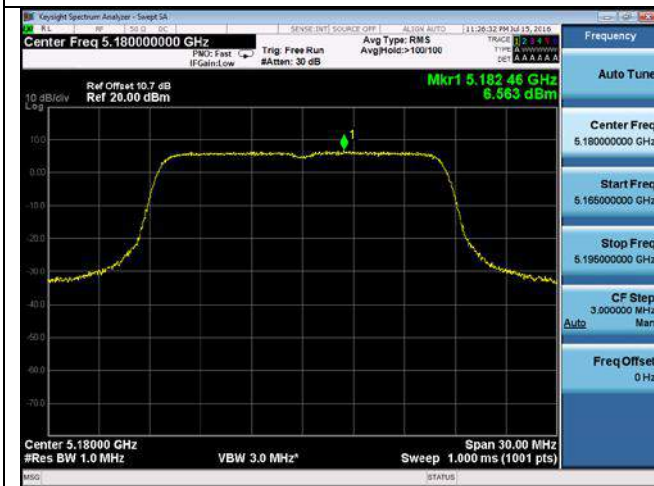
Test Plots



PSD-802.11a-5180M-chain1



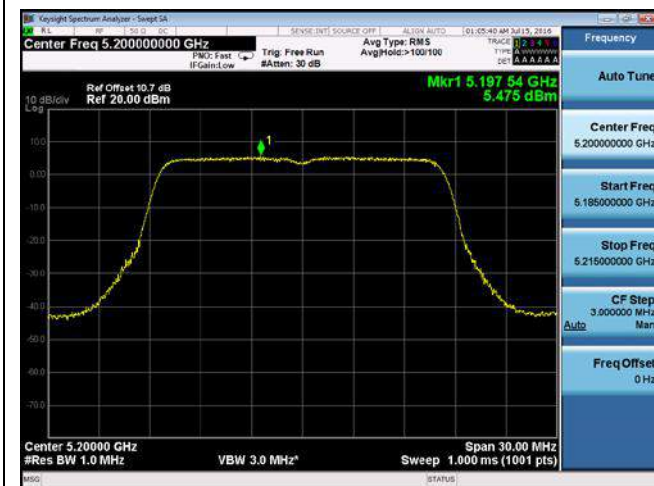
PSD-802.11a--5180M-chain2



PSD-802.11a--5180M-chain3



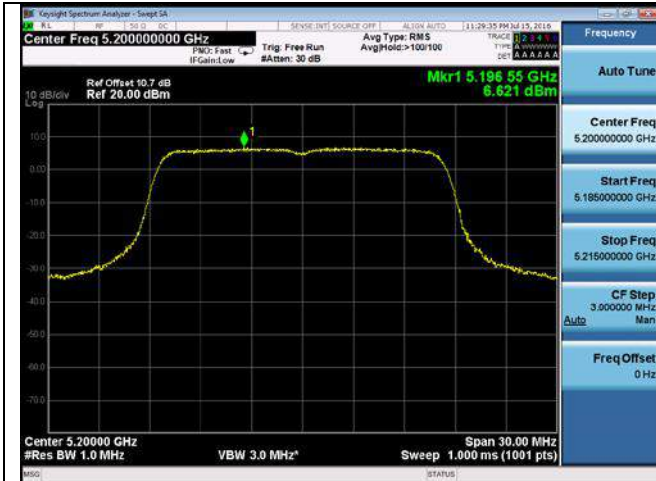
PSD-802.11a-5180M-chain4



PSD-802.11a-5200M-chain1



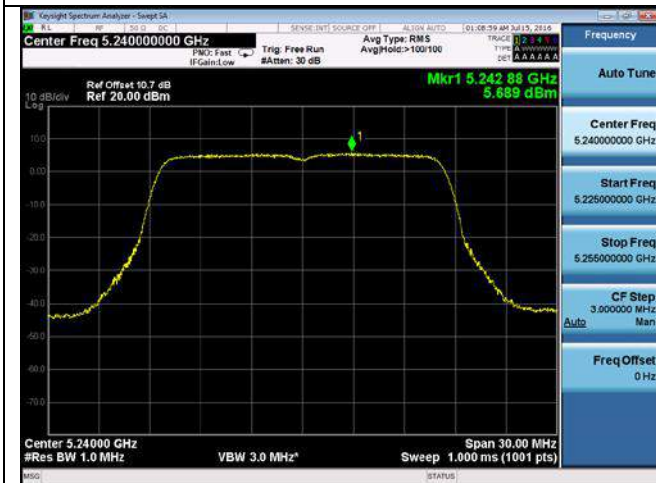
PSD-802.11a-5200M-chain2



PSD-802.11a-5200M-chain3



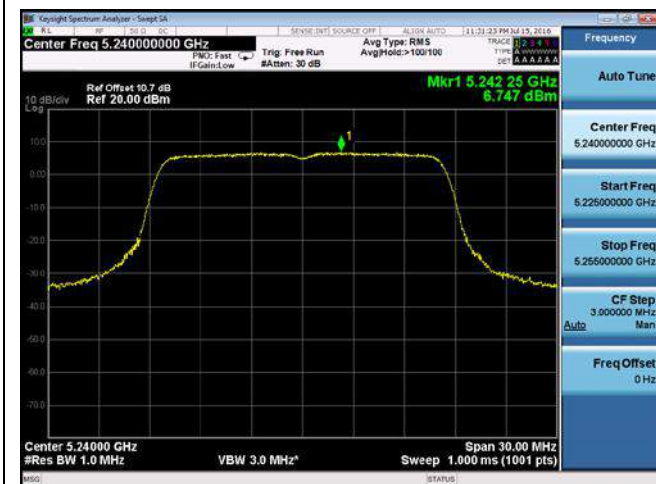
PSD-802.11a-5200M-chain4



PSD-802.11a-5240M-chain1



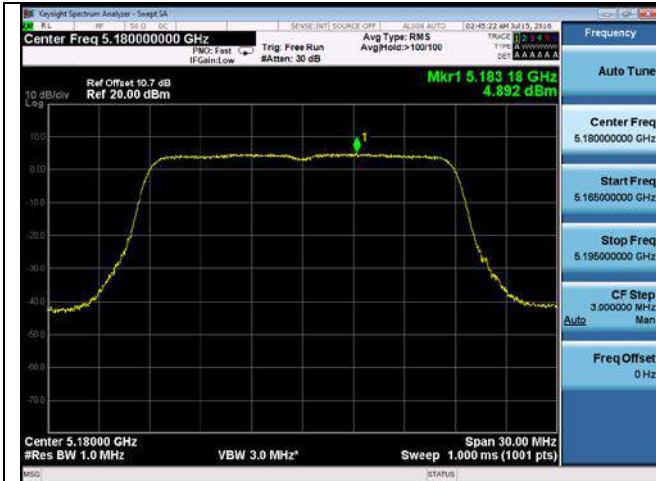
PSD-802.11a-5240M-chain2



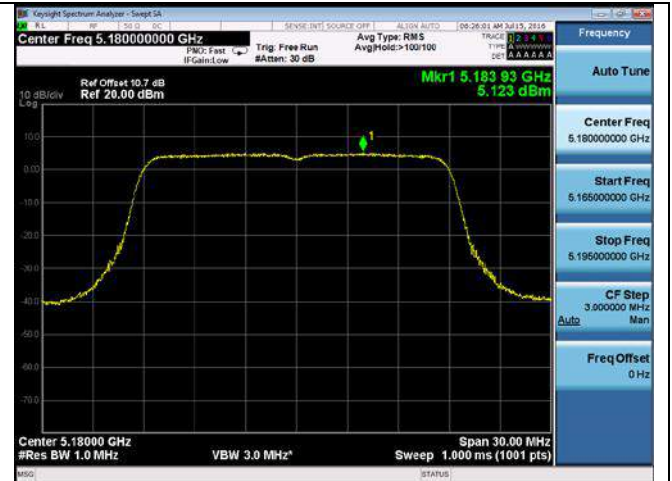
PSD-802.11a-5240M-chain3



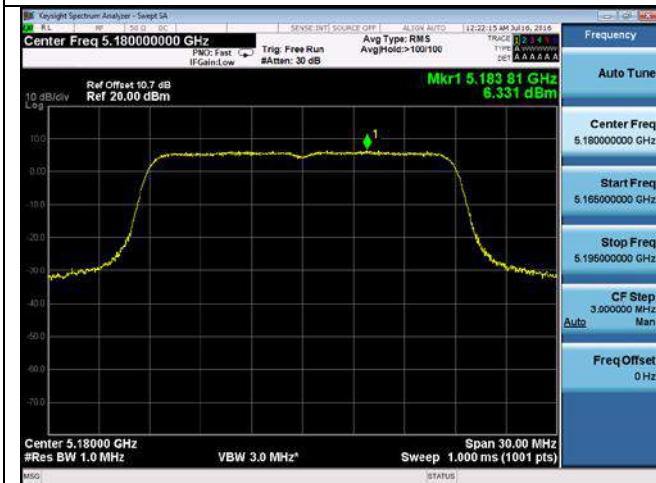
PSD-802.11a-5240M-chain4



PSD-802.11n-20M-5180M-chain1



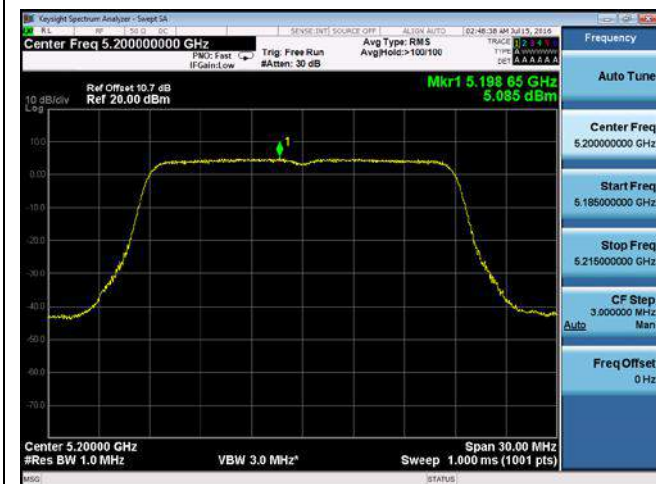
PSD-802.11n-20M-5180M-chain2



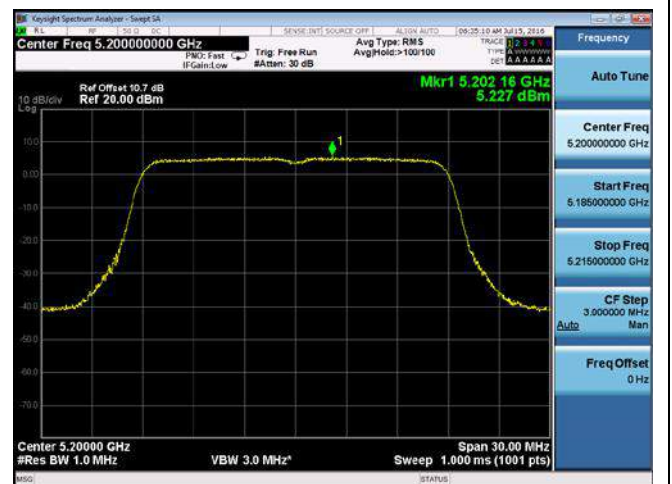
PSD-802.11n-20M-5180M-chain3



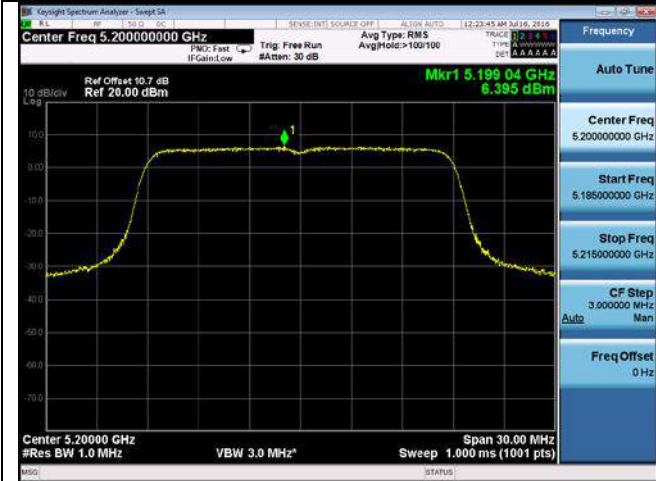
PSD-802.11n-20M-5180M-chain4



PSD-802.11n-20M-5200M-chain1



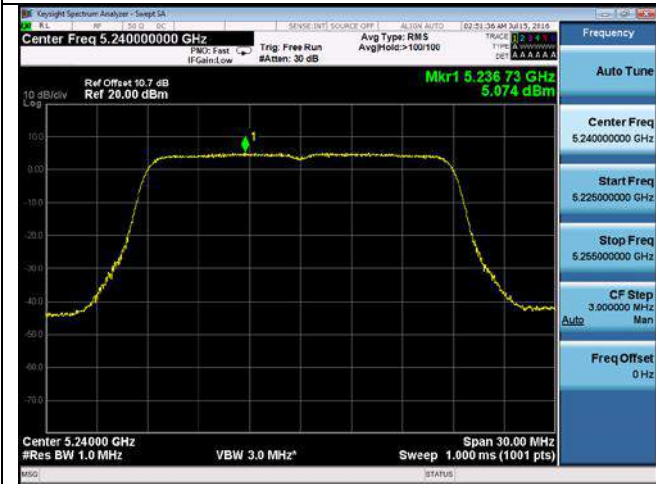
PSD-802.11n-20M-5200M-chain2



PSD-802.11n-20M-5200M-chain3



PSD-802.11n-20M-5200M-chain4



PSD-802.11n-20M-5240M-chain1



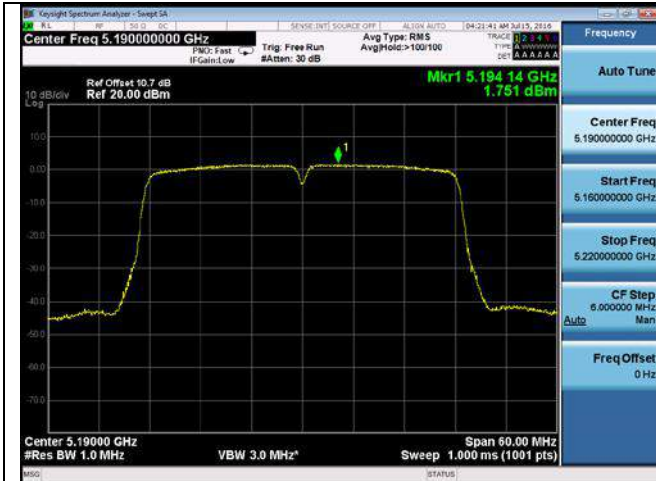
PSD-802.11n-20M-5240M-chain2



PSD-802.11n-20M-5240M-chain3



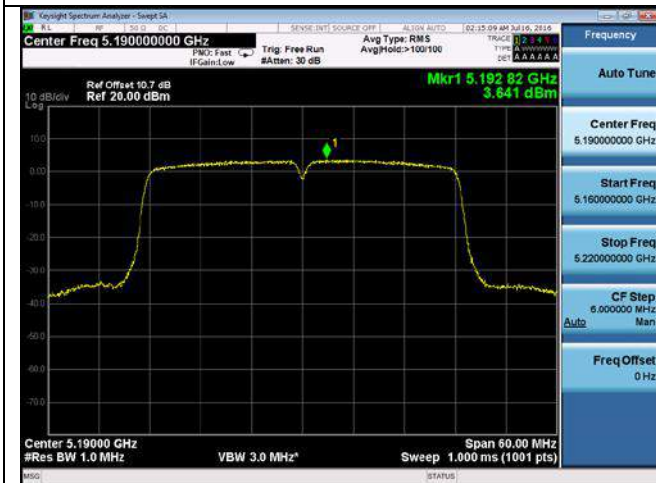
PSD-802.11n-20M-5240M-chain4



PSD-802.11n-40M-5190M-chain1



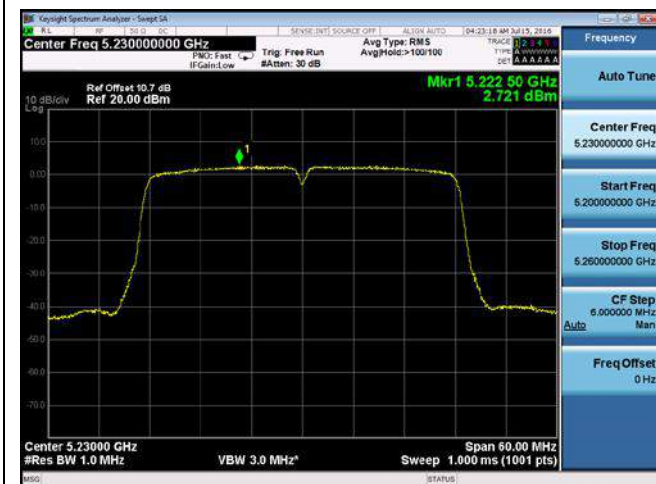
PSD-802.11n-40M-5190M-chain2



PSD-802.11n-40M-5190M-chain3



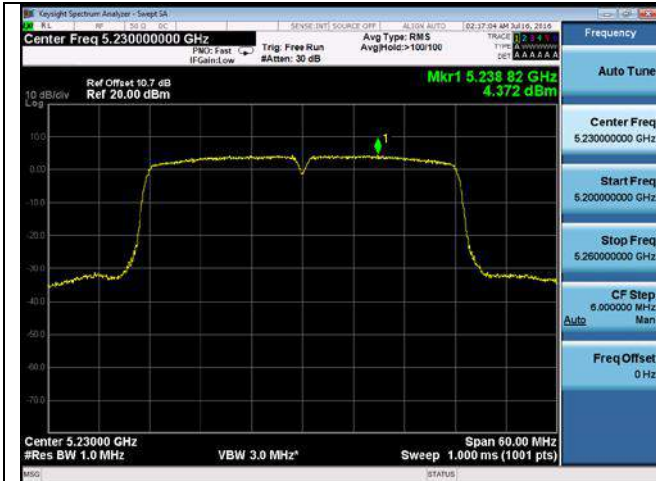
PSD-802.11n-40M-5190M-chain4



PSD-802.11n-40M-5230M-chain1



PSD-802.11n-40M-5230M-chain2



PSD-802.11n-40M-5230M-chain3



PSD-802.11n-40M-5230M-chain4



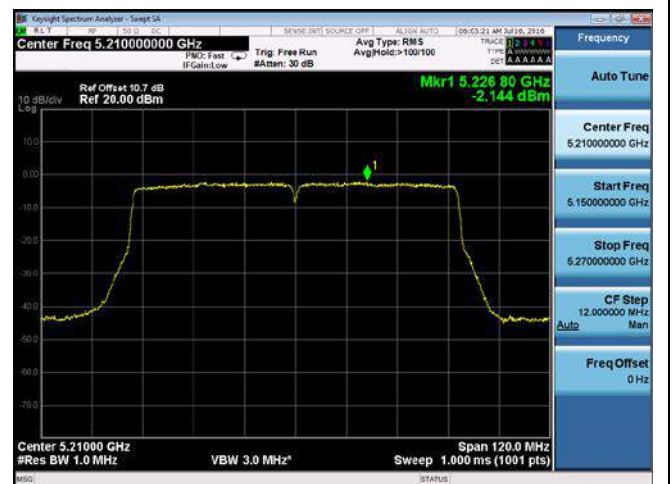
PSD-802.11ac-80M-5210M-chain1



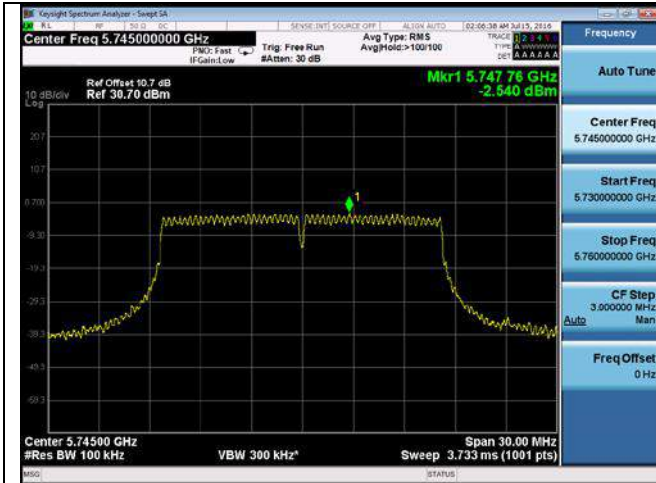
PSD-802.11ac-80M-5210M-chain2



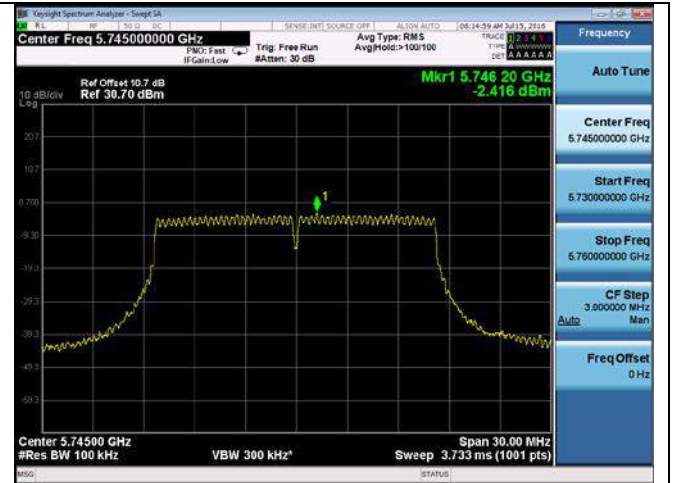
PSD-802.11ac-80M-5210M-chain3



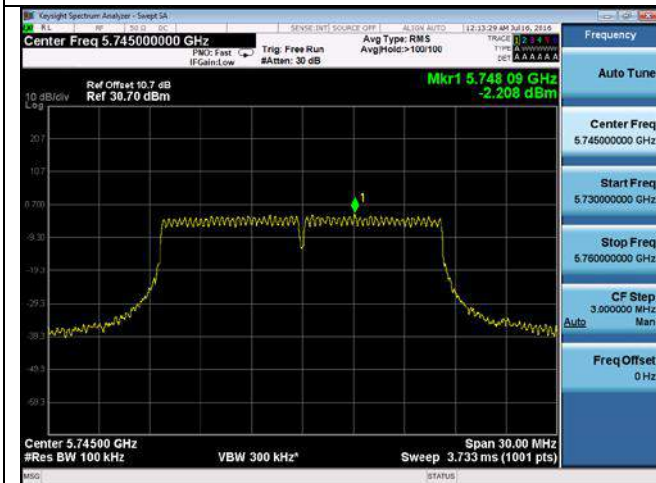
PSD-802.11ac-80M-5210M-chain4



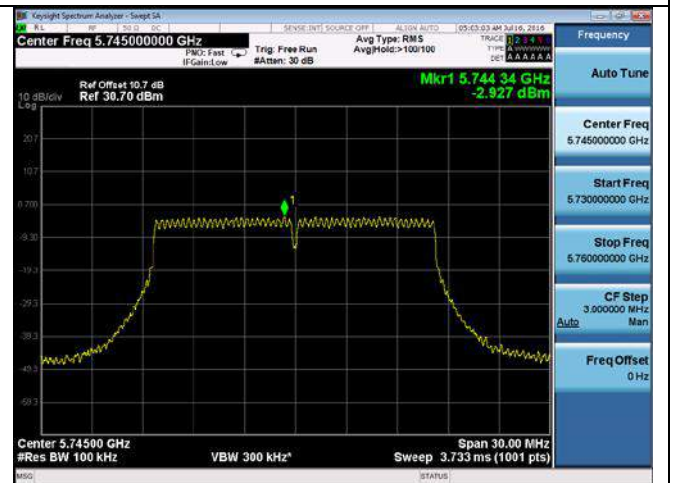
PSD-802.11a-5745M-chain1



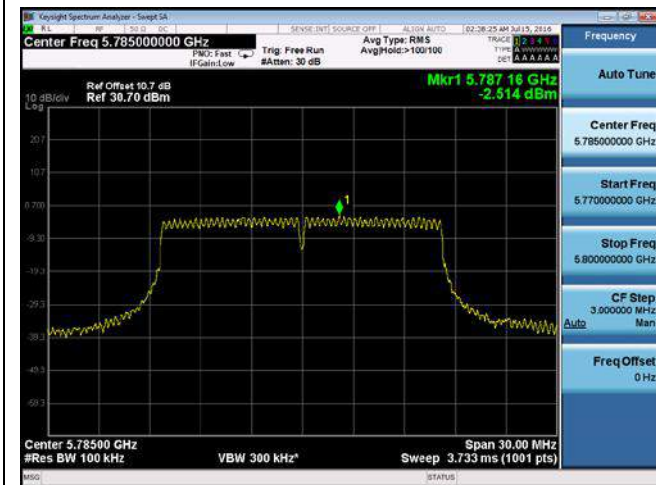
PSD-802.11a-5745M-chain2



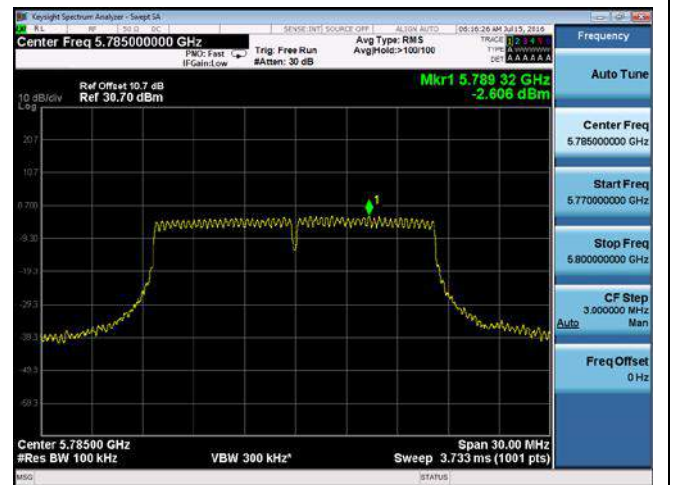
PSD-802.11a-5745M-chain3



PSD-802.11a-5745M-chain4

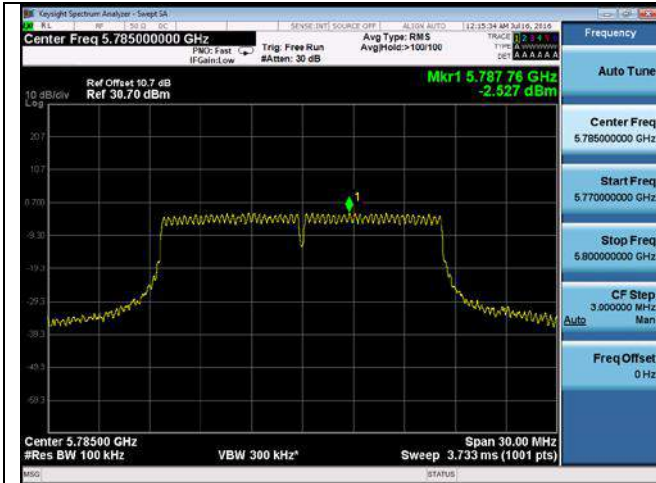


PSD-802.11a-5785M-chain1

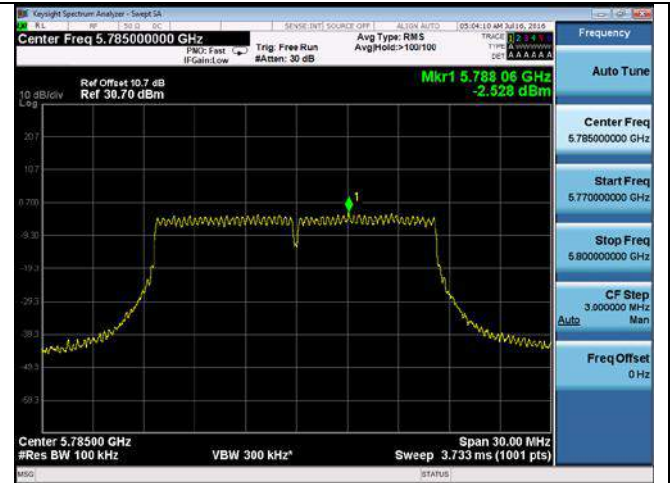


PSD-802.11a-5785M-chain2

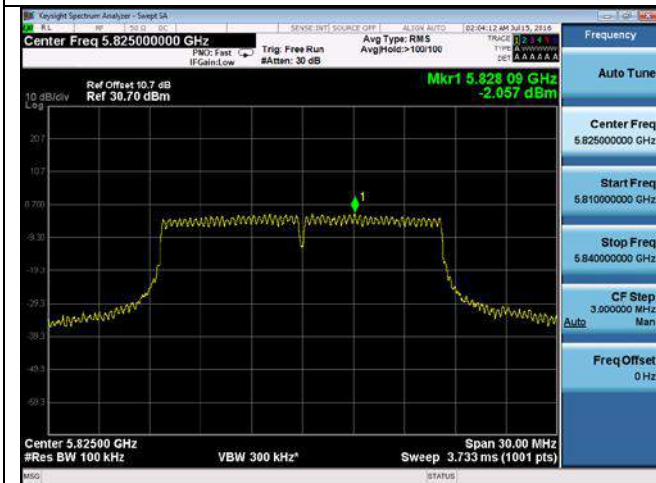




PSD-802.11a-5785M-chain3



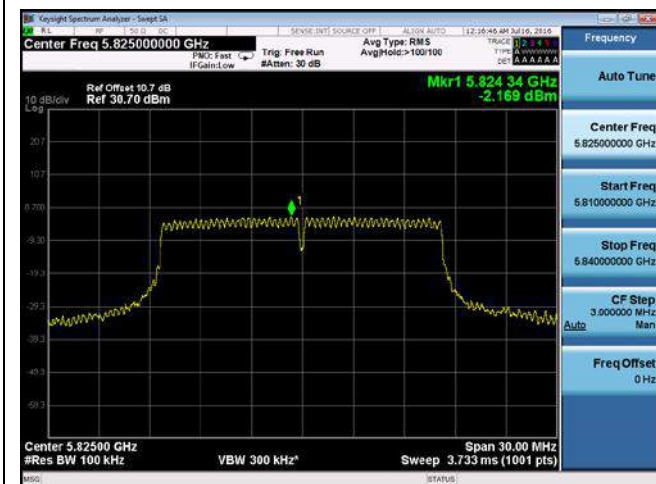
PSD-802.11a-5785M-chain4



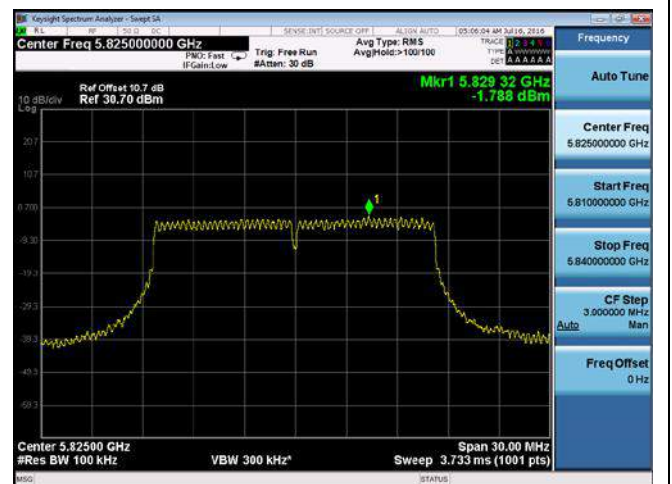
PSD-802.11a-5825M-chain1



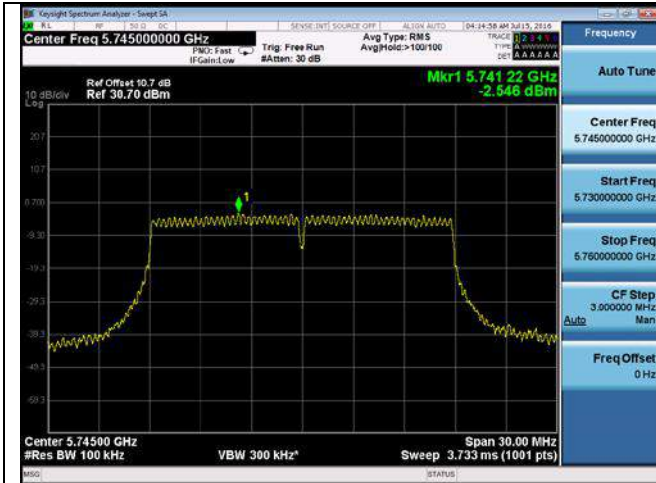
PSD-802.11a-5825M-chain2



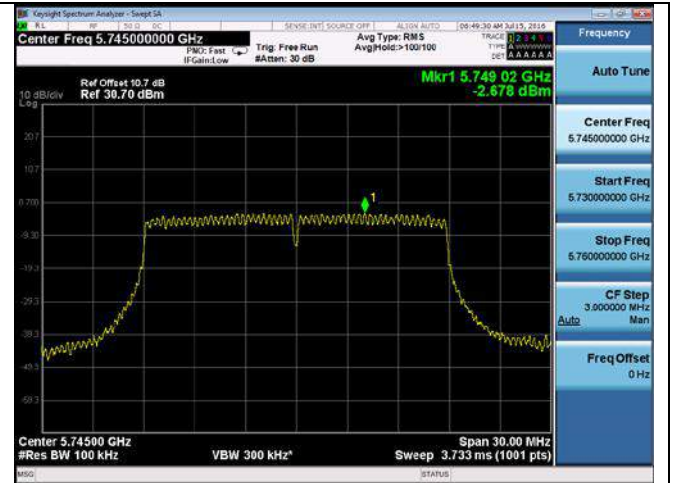
PSD-802.11a-5825M-chain3



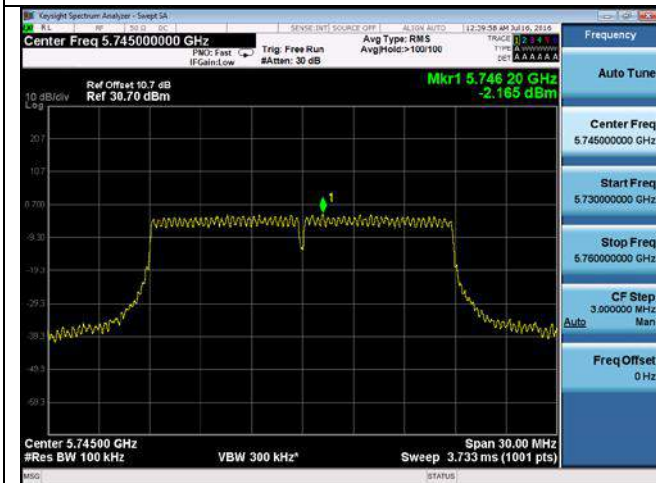
PSD-802.11a-5825M-chain4



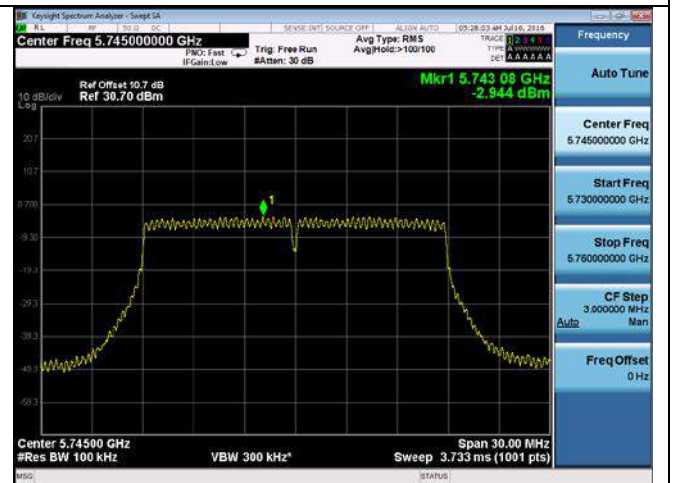
PSD-802.11n-20M-5745M-chain1



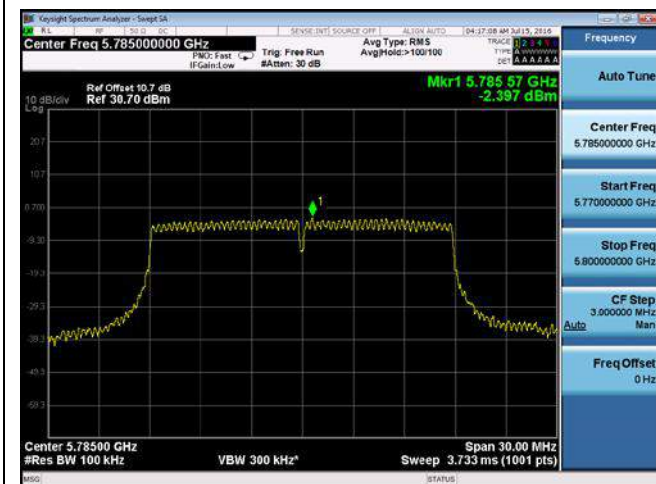
PSD-802.11n-20M-5745M-chain2



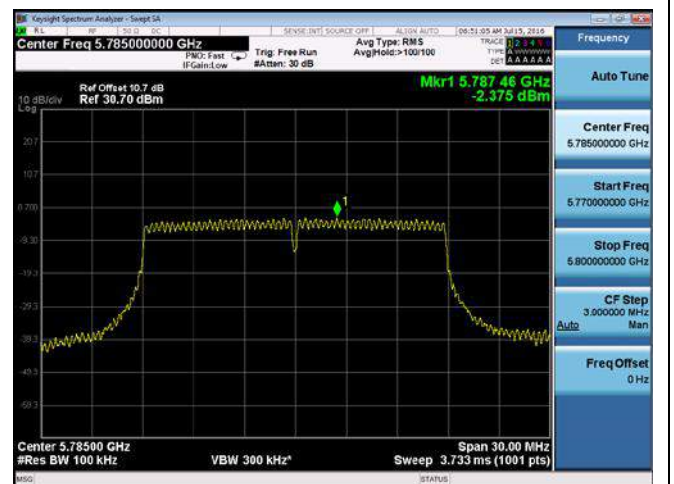
PSD-802.11n-20M-5745M-chain3



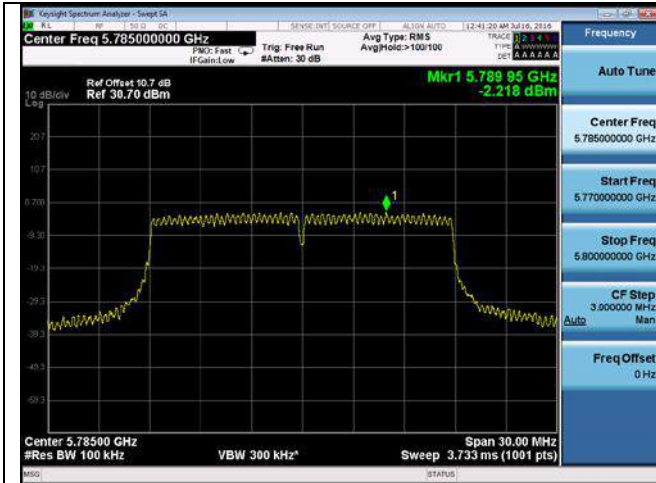
PSD-802.11n-20M-5745M-chain4



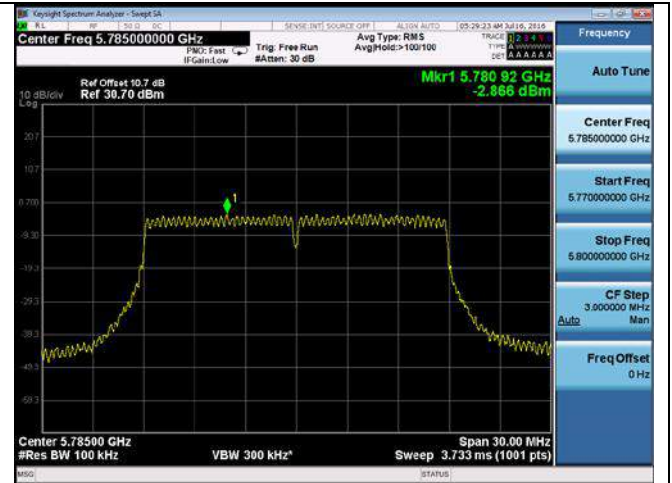
PSD-802.11n-20M-5785M-chain1



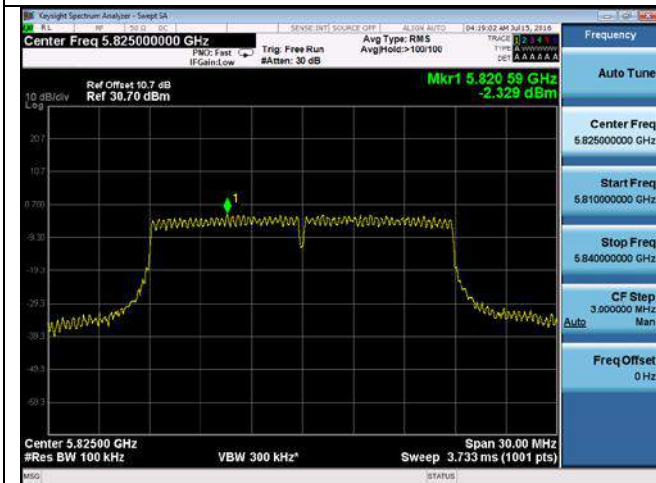
PSD-802.11n-20M-5785M-chain2



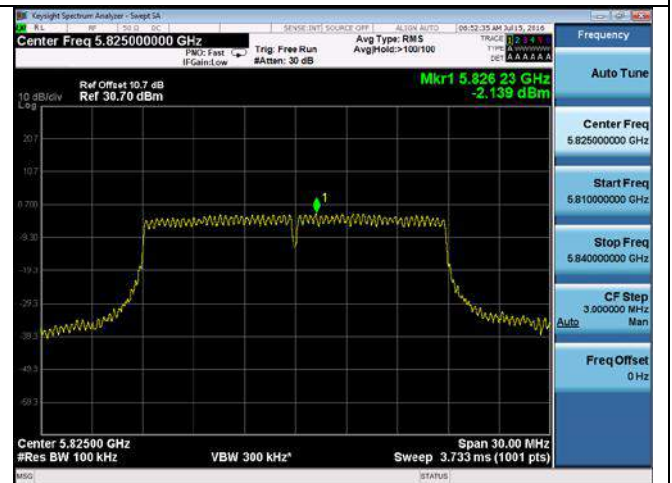
PSD-802.11n-20M-5785M-chain3



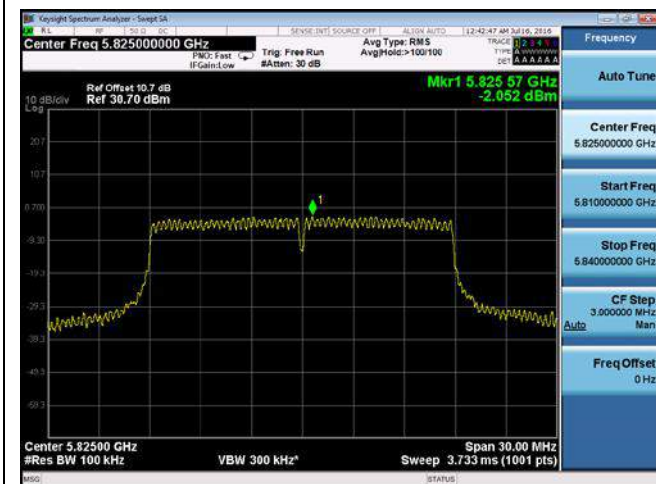
PSD-802.11n-20M-5785M-chain4



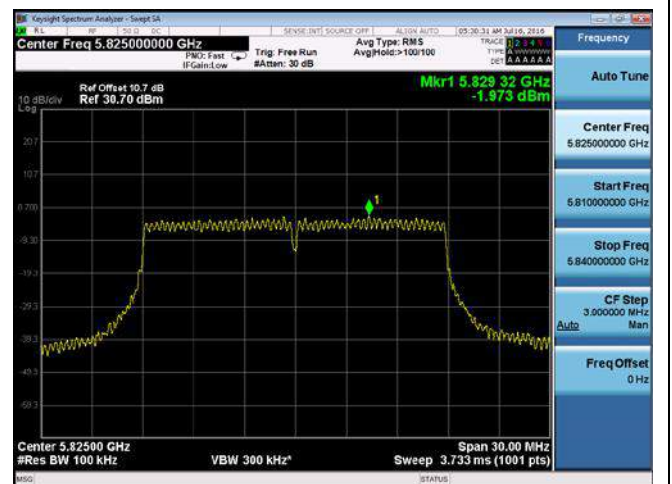
PSD-802.11n-20M-5825M-chain1



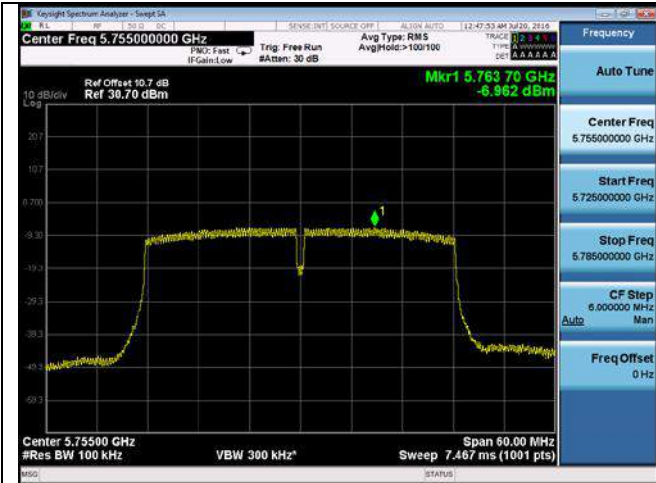
PSD-802.11n-20M-5825M-chain2



PSD-802.11n-20M-5825M-chain3



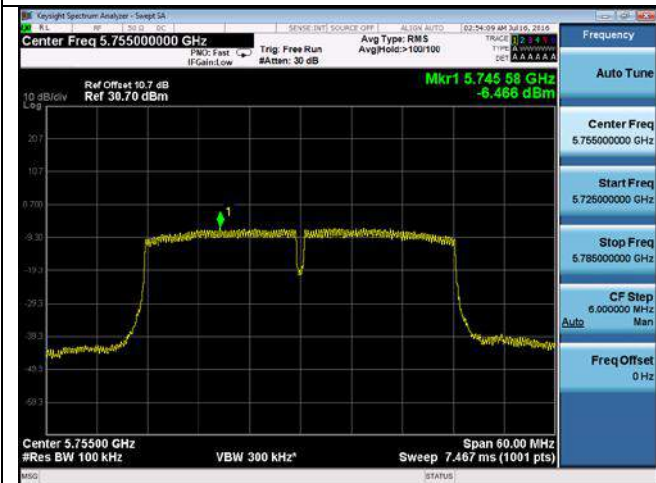
PSD-802.11n-20M-5825M-chain4



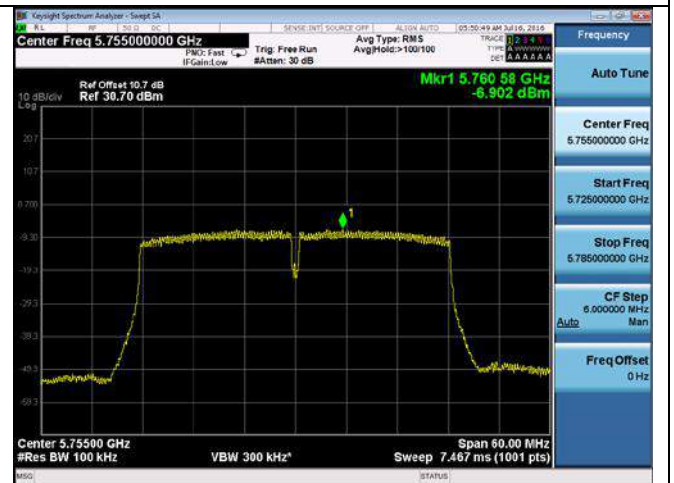
PSD-802.11n-40M-5755M-chain1



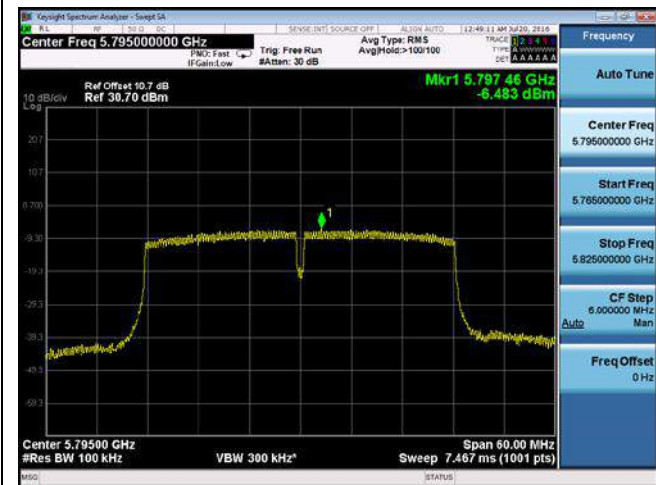
PSD-802.11n-40M-5755M-chain2



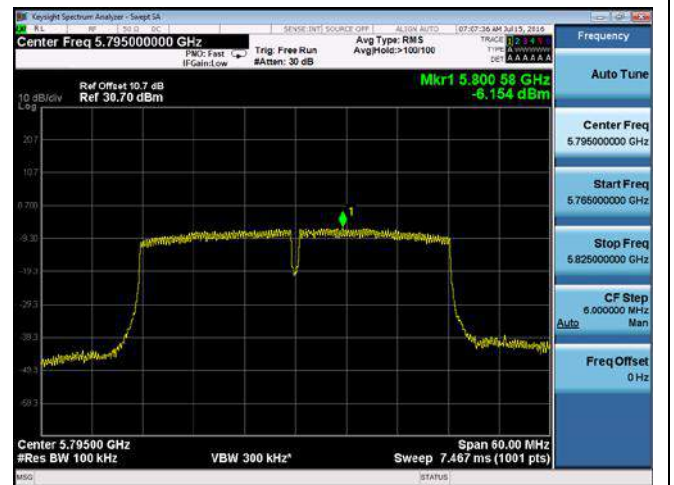
PSD-802.11n-40M-5755M-chain3



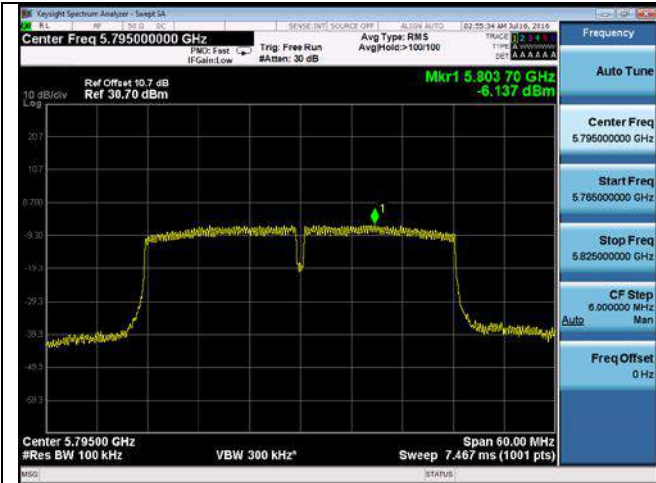
PSD-802.11n-40M-5755M-chain4



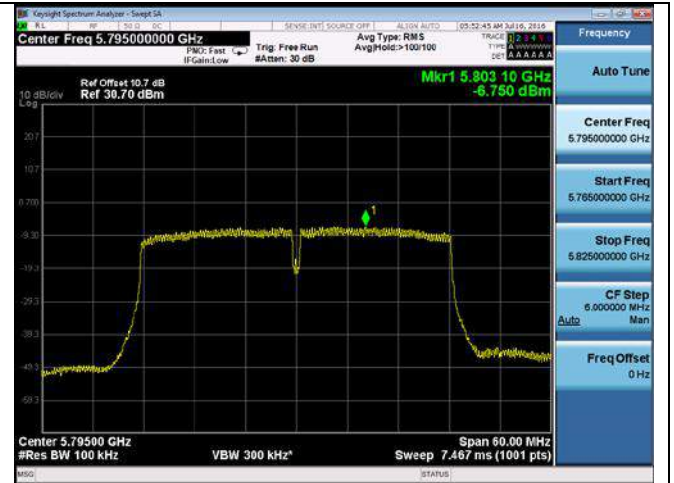
PSD-802.11n-40M-5795M-chain1



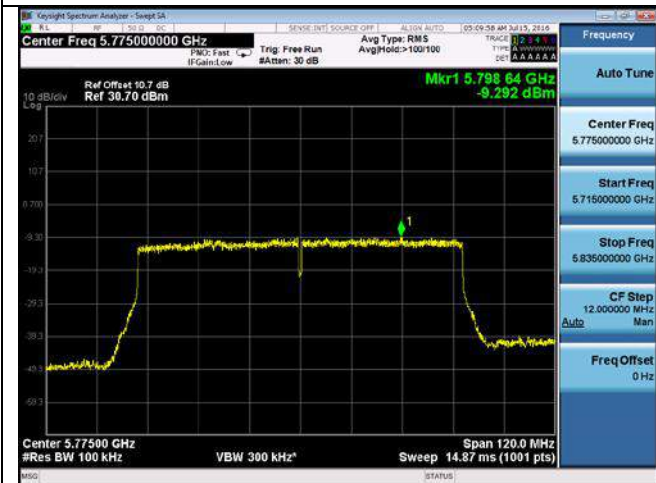
PSD-802.11n-40M-5795M-chain2



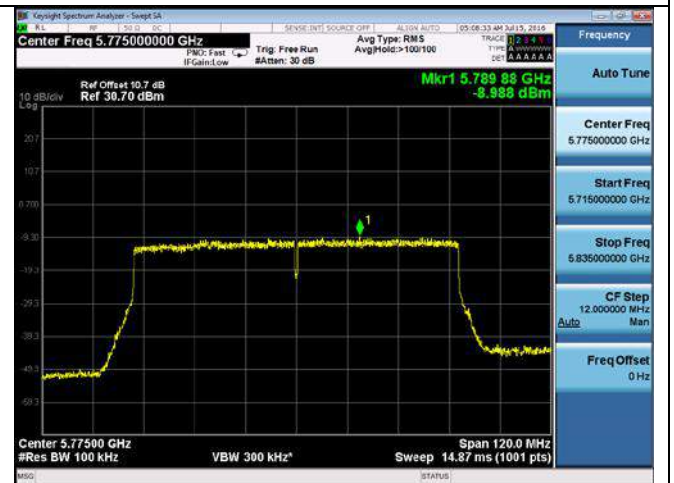
PSD-802.11n-40M-5795M-chain3



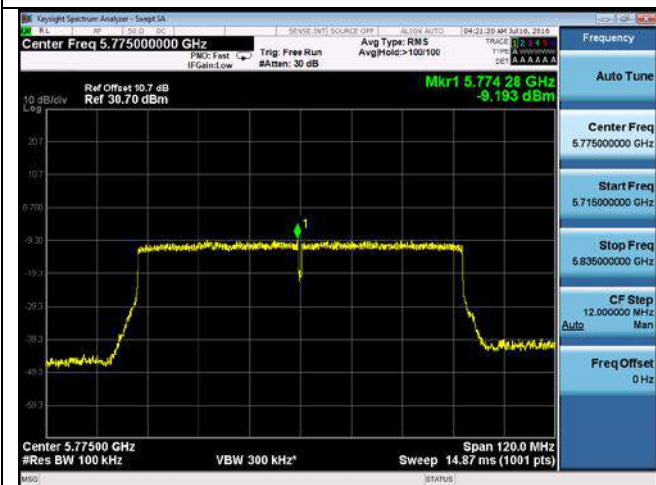
PSD-802.11n-40M-5795M-chain4



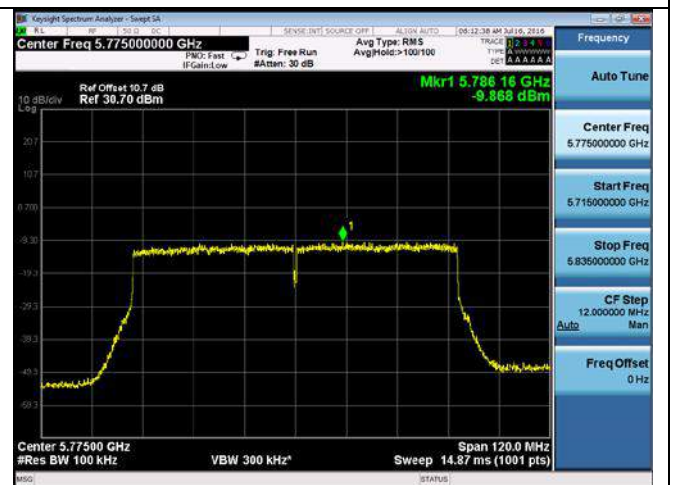
PSD-802.11ac-80M-5775M-chain1



PSD-802.11ac-80M-5775M-chain2



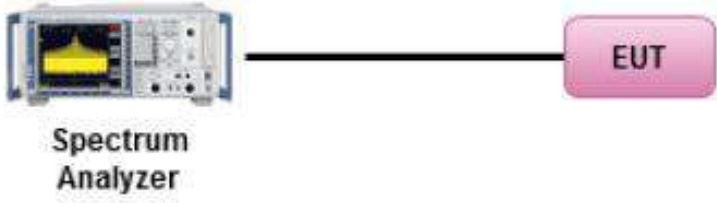
PSD-802.11ac-80M-5775M-chain3



PSD-802.11ac-80M-5775M-chain4

## 10.5 Band Edge Measurement

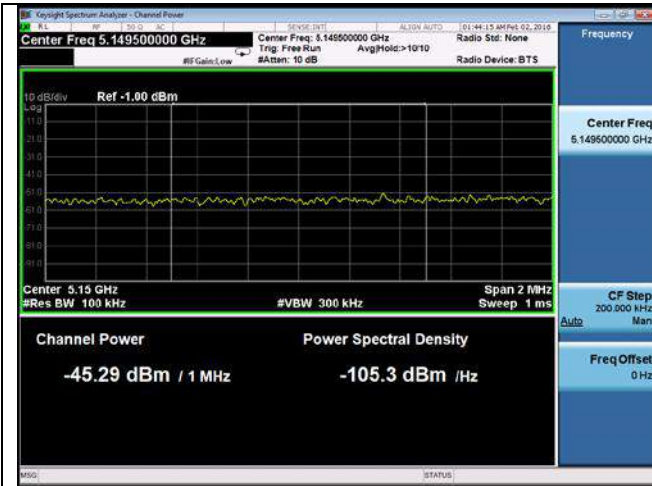
Requirement(s):

| Spec                                    | Item  | Requirement  | Applicable  |
|---|---|--|---|
| 47CFR§<br>15.407(b)(2),<br>15.407(b)(6) | (1)   | For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.   | <input checked="" type="checkbox"/>                                       |
|   | (2)   | For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band. | <input type="checkbox"/>  |
|   | (3)   | For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.   | <input type="checkbox"/>  |
|   | (4)   | For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.   | <input checked="" type="checkbox"/>                                       |
| Test Setup                              |    |  |   |
| Procedure                               | <p>789033 D02 General UNII Test Procedures New Rules v01, II.F. Method SA-1</p> <p><u>Band Edge measurement:</u></p> <ul style="list-style-type: none"> <li>- For average emissions measurements, follow the procedures described in section II.G.6., "Procedures for Average Unwanted Emissions Measurements above 1000 MHz", except for the following changes:</li> <li>- Set RBW=100kHz</li> <li>- Set VBW=100kHz</li> <li>- Perform a band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured.</li> </ul> |  |   |
| Test Date                               | 11/20/2015  | Environmental condition  | Temperature 22°C<br>Relative Humidity 38%<br>Atmospheric Pressure 1020mba |
| Remark                                  | Antenna gain was added to the offset.   |  |   |
| Result                                  | <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail  |  |   |

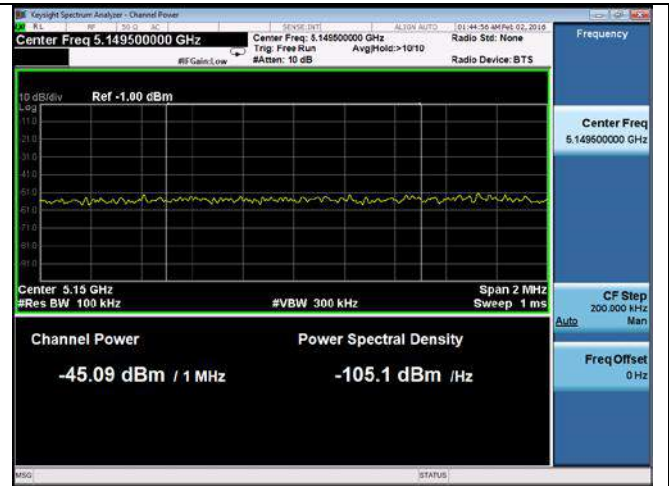
Test Data    Yes (See below)       N/A  
Test Plot    Yes (See below)       N/A

Test was done by Gary Chou at *RF Test Site*.

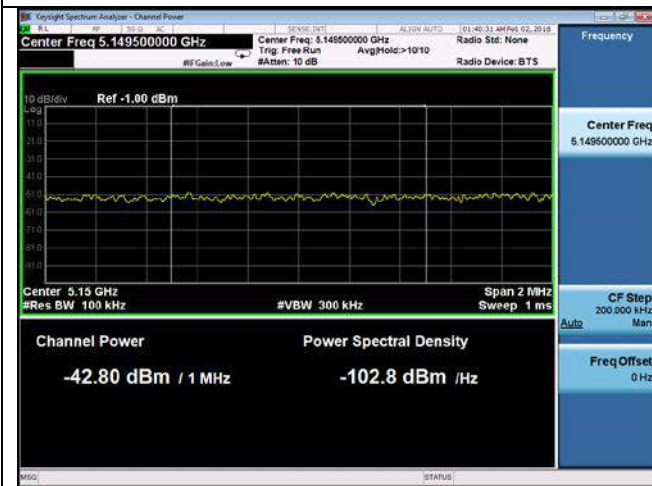
Test Plots



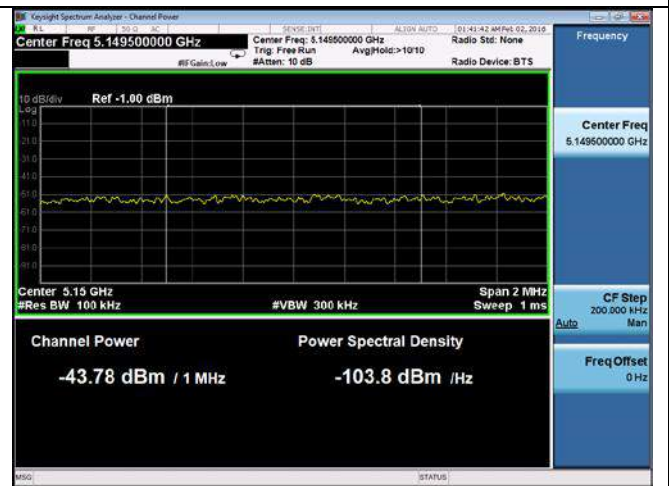
Band Edge-802.11a-5180M-chain1



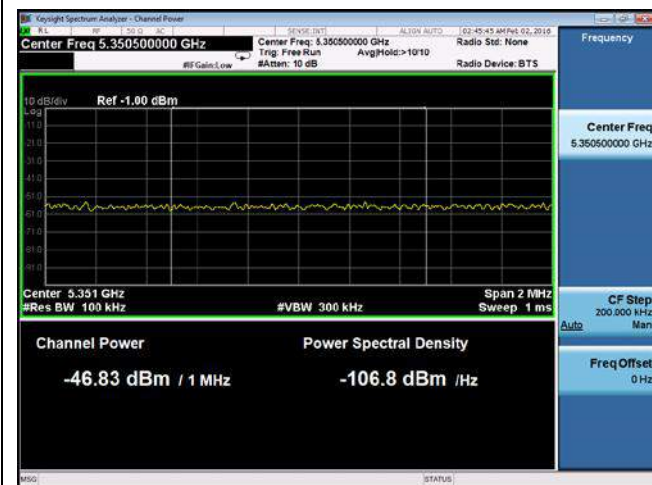
Band Edge-802.11a-5180M-chain2



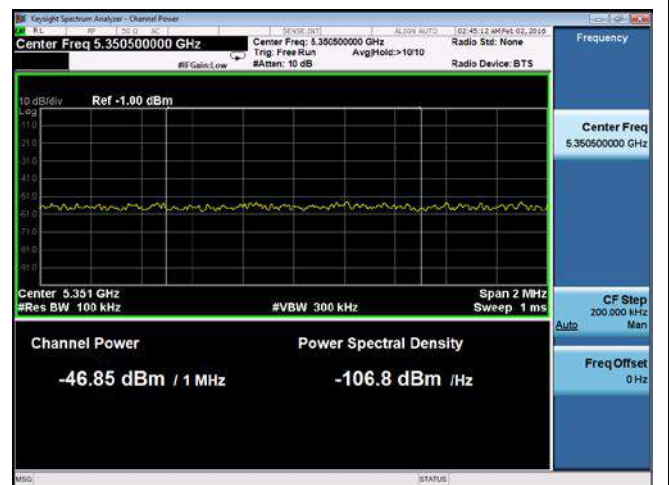
Band Edge -802.11a-5180M-chain3



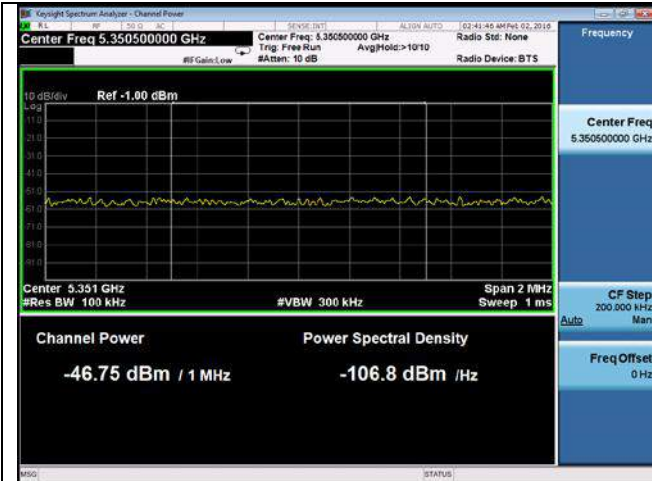
Band Edge -802.11a-5180M-chain4



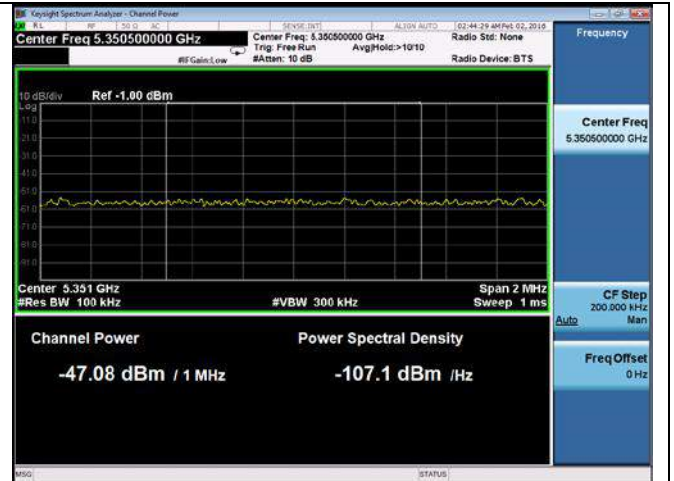
Band Edge -802.11a-5240M-chain1



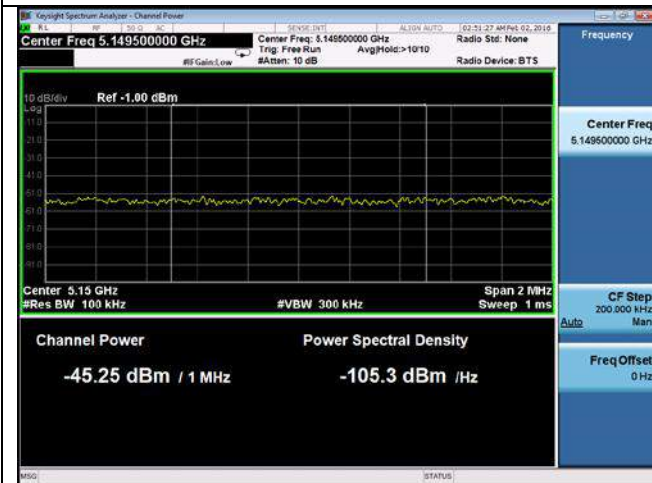
Band Edge -802.11a-5240M-chain2



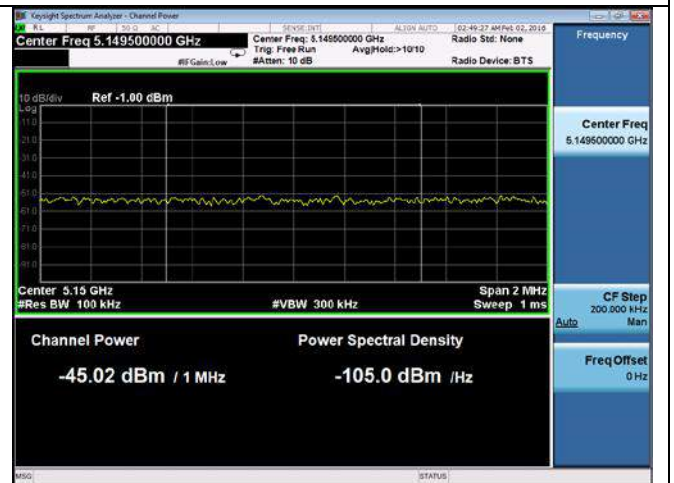
Band Edge -802.11a-5240M-chain3



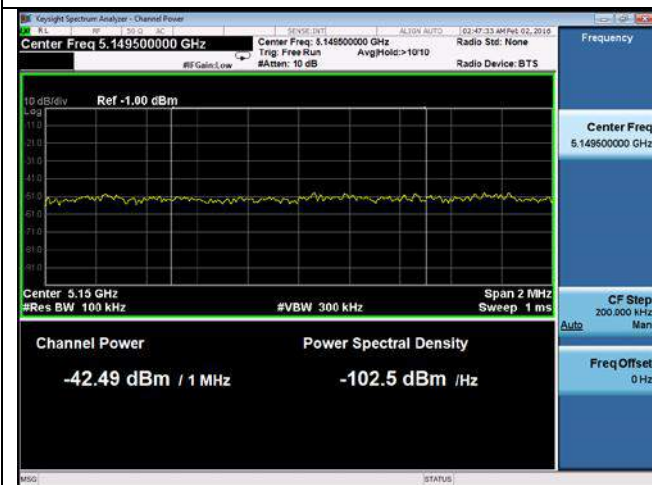
Band Edge -802.11a-5240M-chain4



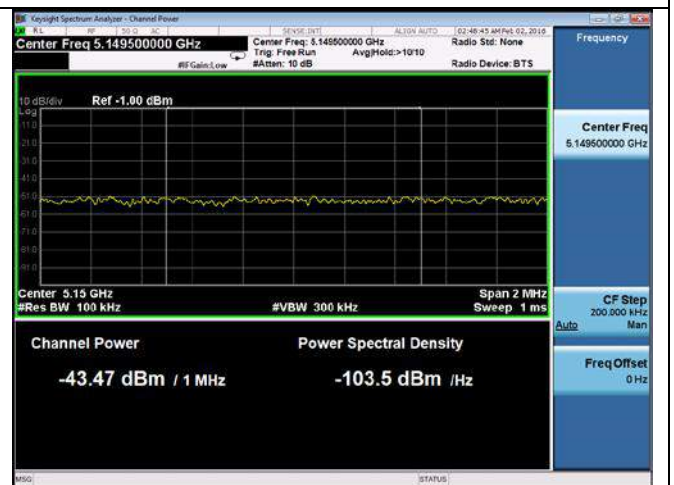
Band Edge -802.11n-20M-5180M-chain1



Band Edge -802.11n-20M-5180M-chain2

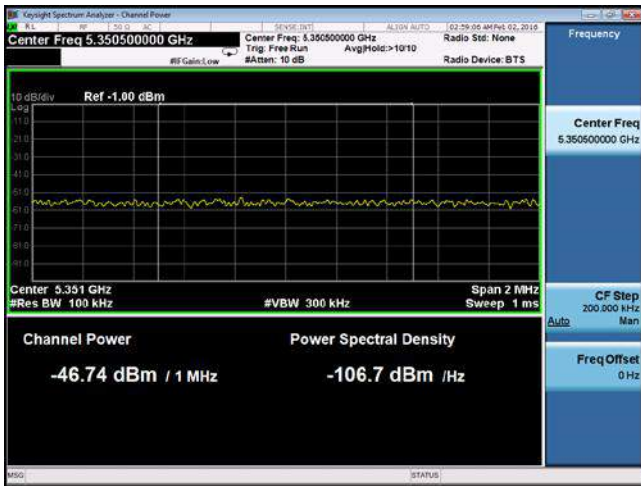


Band Edge -802.11n-20M-5180M-chain3

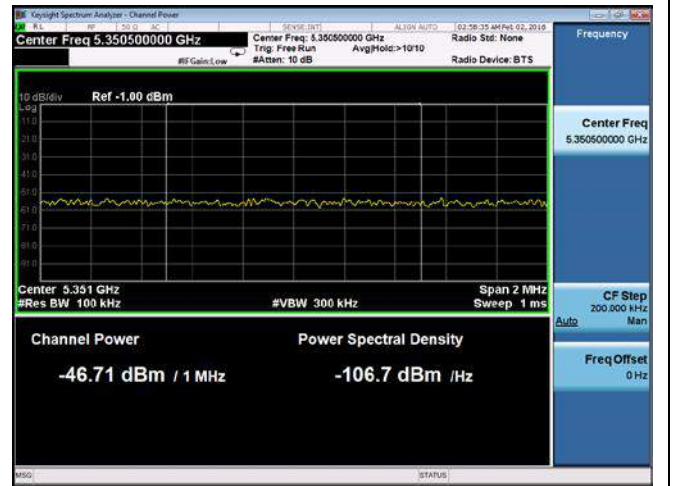


Band Edge -802.11n-20M-5180M-chain4

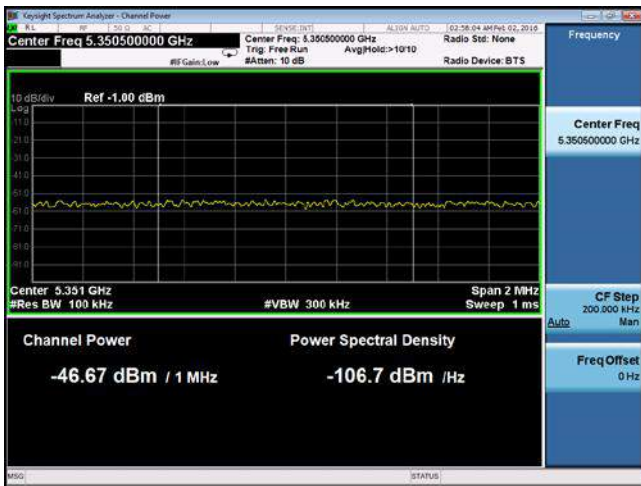




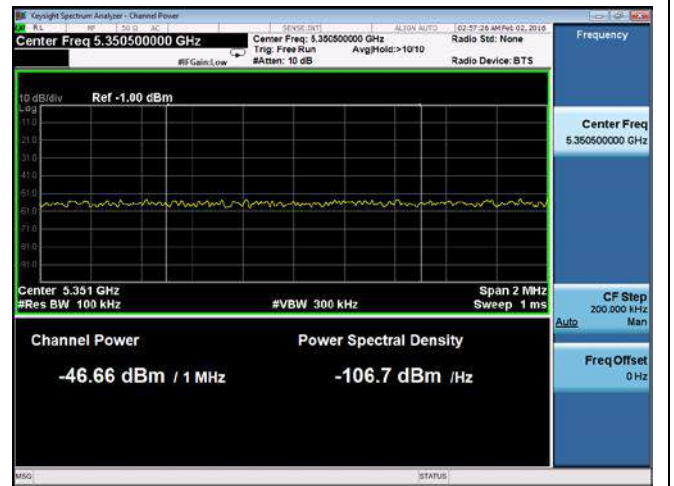
Band Edge -802.11n-20M-5240M-chain1



Band Edge -802.11n-20M-5240M-chain2



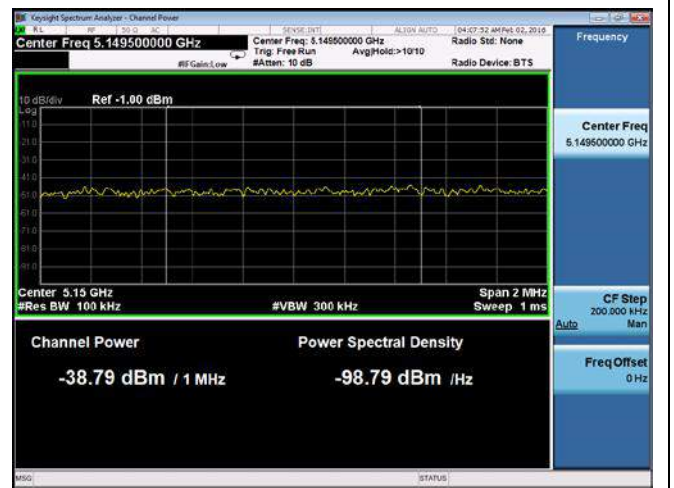
Band Edge -802.11n-20M-5240M-chain3



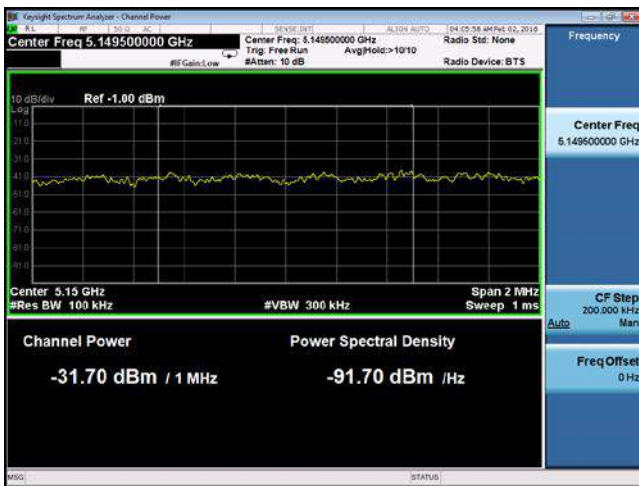
Band Edge -802.11n-20M-5240M-chain4



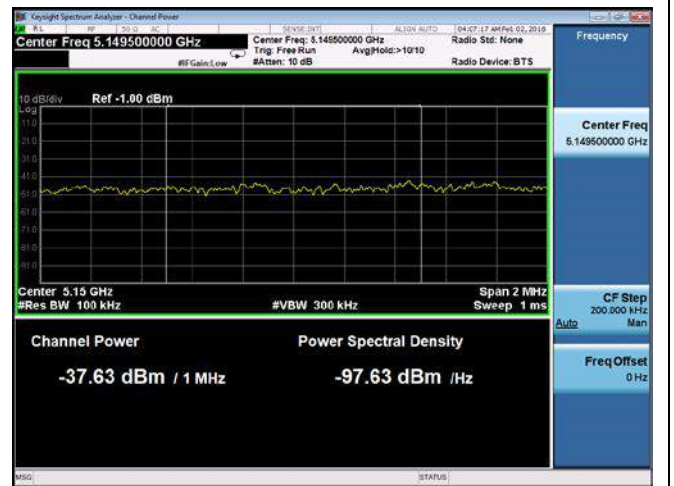
Band Edge -802.11n-40M-5190M-chain1



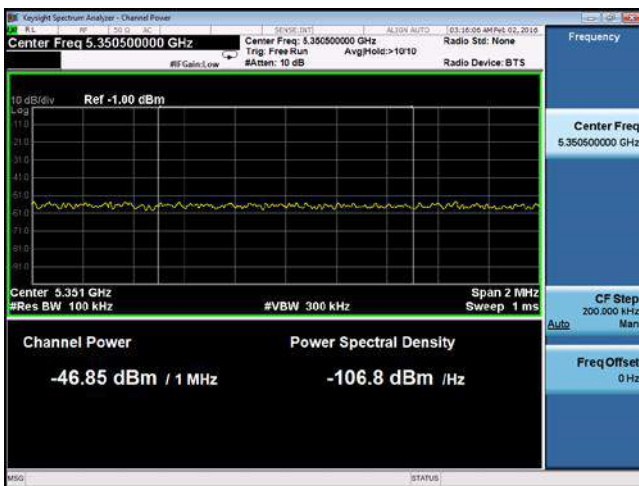
Band Edge -802.11n-40M-5190M-chain2



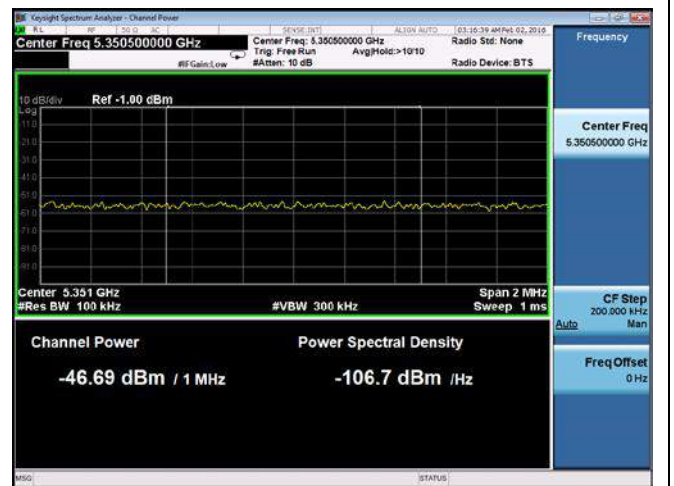
Band Edge -802.11n-40M-5190M-chain3



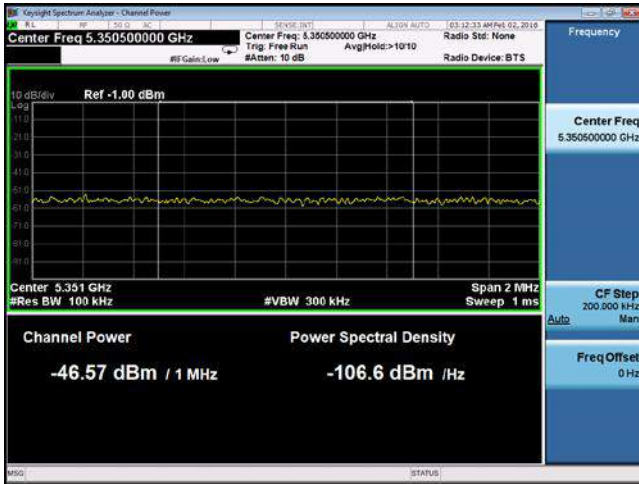
Band Edge -802.11n-40M-5190M-chain4



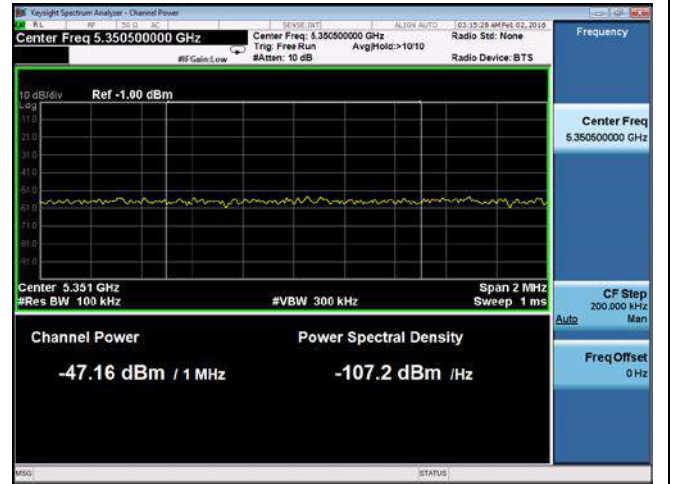
Band Edge -802.11n-40M-5230M-chain1



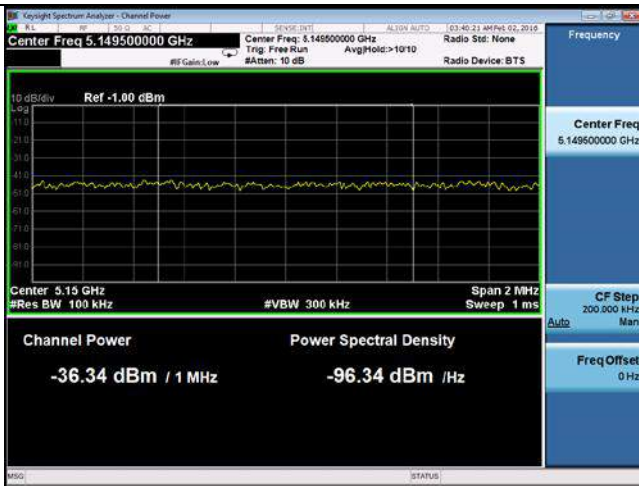
Band Edge -802.11n-40M-5230M-chain2



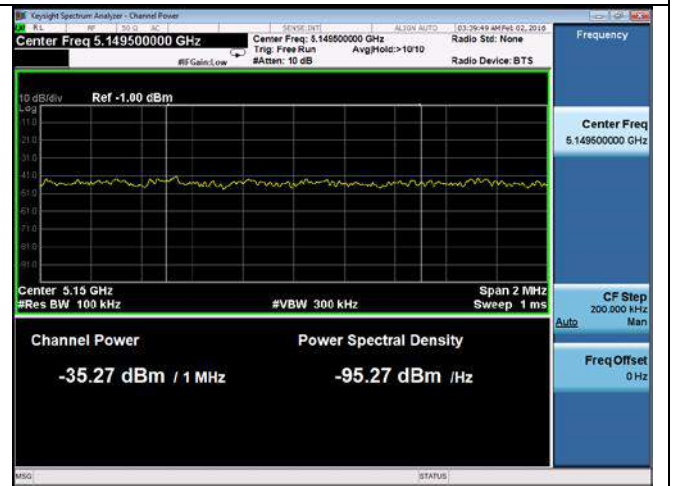
Band Edge -802.11n-40M-5230M-chain3



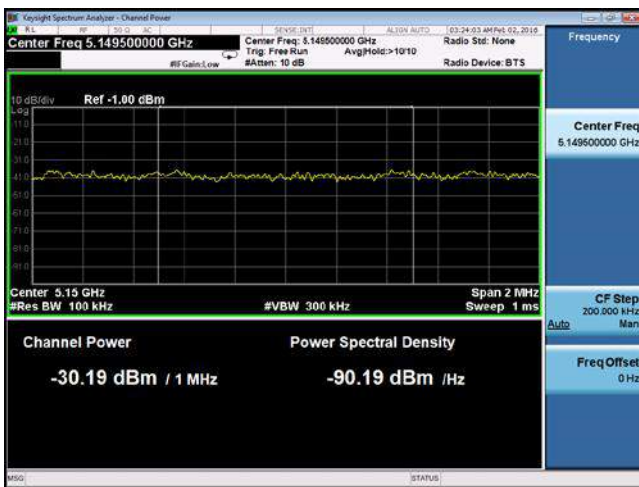
Band Edge -802.11n-40M-5230M-chain4



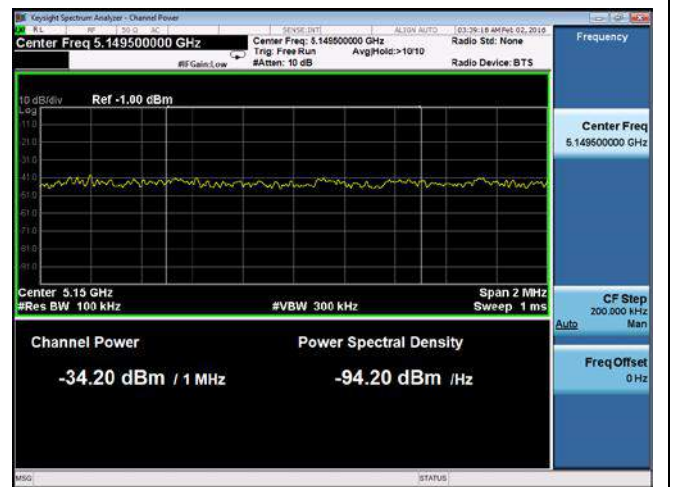
Band Edge -802.11ac-80M-5210M-chain1



Band Edge -802.11ac-80M-5210M-chain2

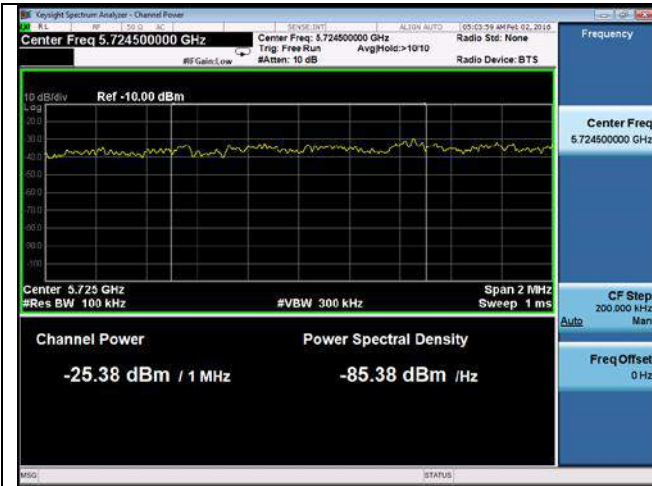


Band Edge -802.11ac-80M-5210M-chain3

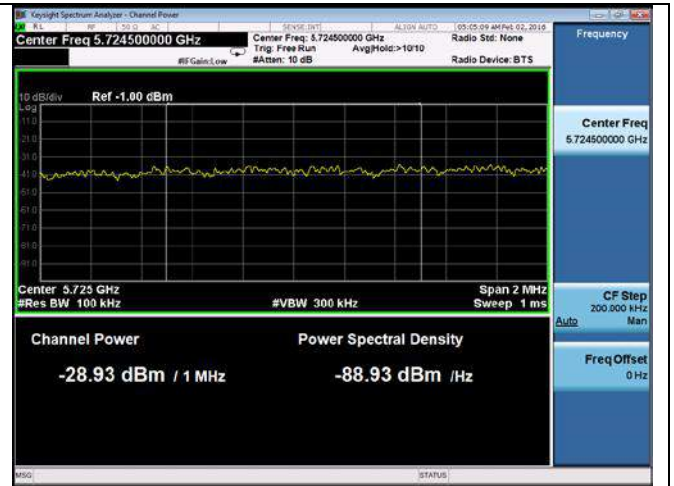


Band Edge -802.11ac-80M-5210M-chain4

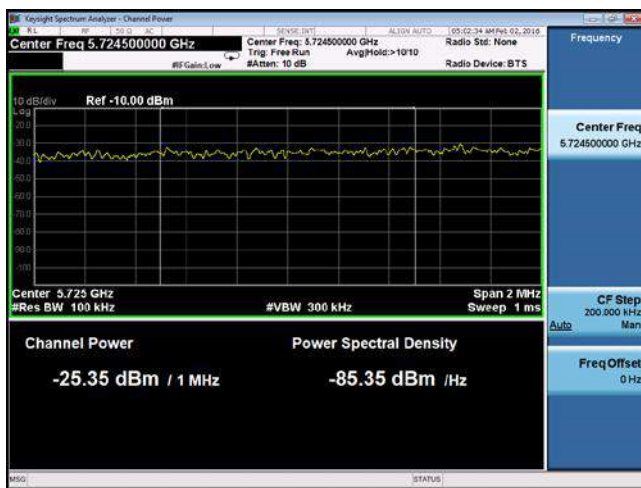
5.8GHz band: (10MHz offset)



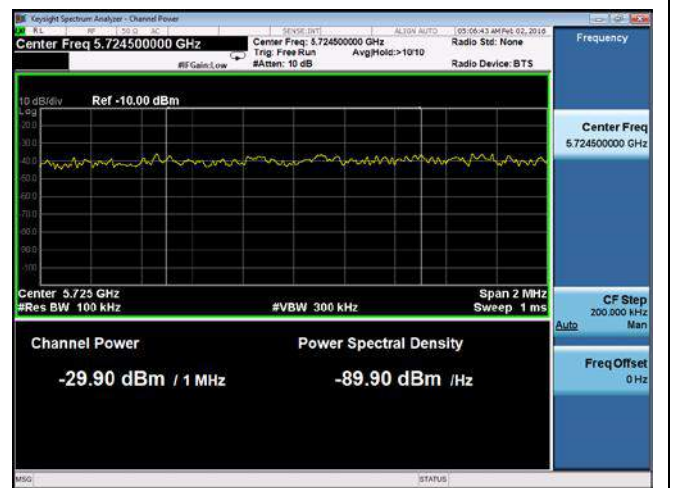
Band Edge -802.11a-5745M-chain1



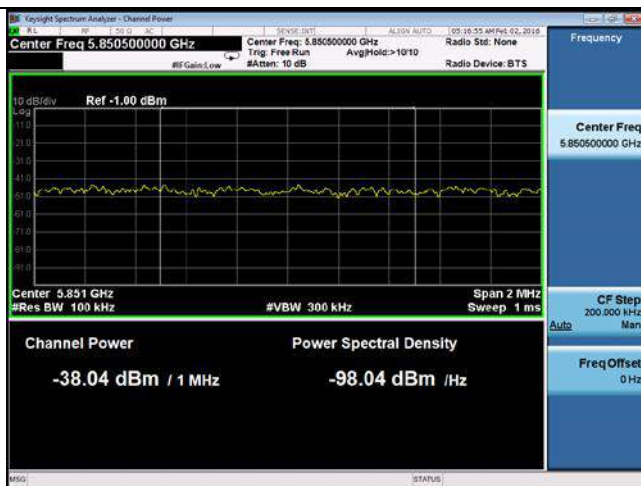
Band Edge -802.11a-5745M-chain2



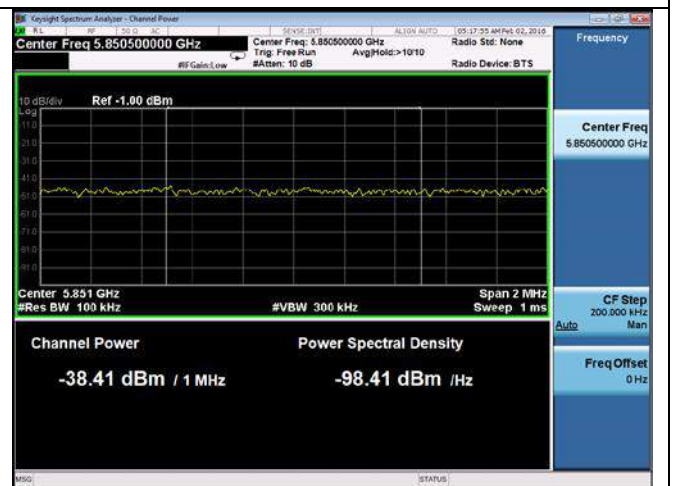
Band Edge -802.11a-5745M-chain3



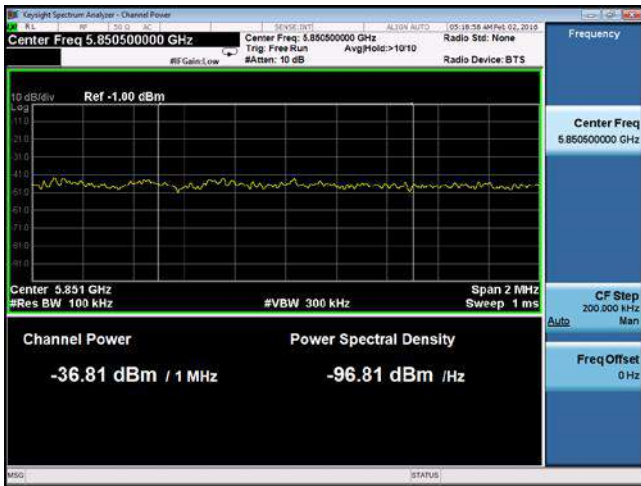
Band Edge -802.11a-5745M-chain4



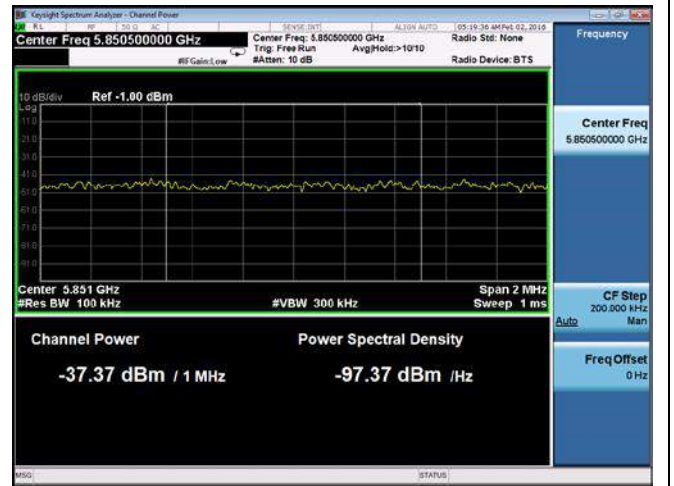
Band Edge -802.11a-5785M-chain1



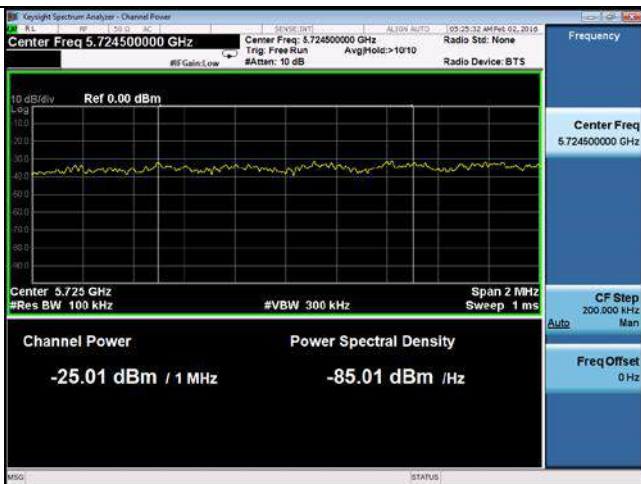
Band Edge -802.11a-5785M-chain2



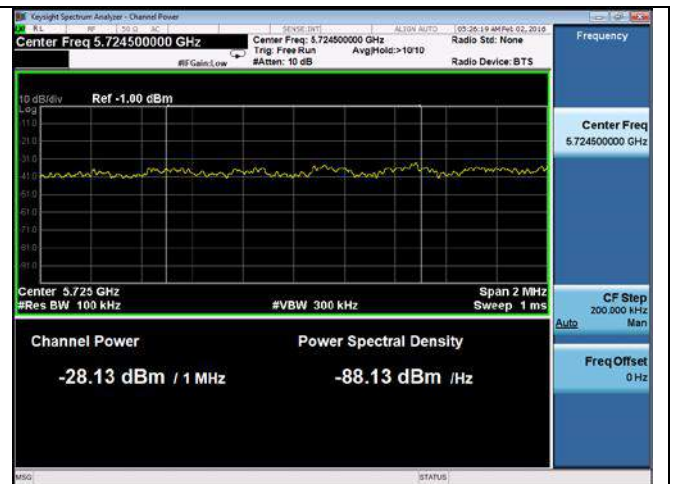
Band Edge -802.11a-5785M-chain3



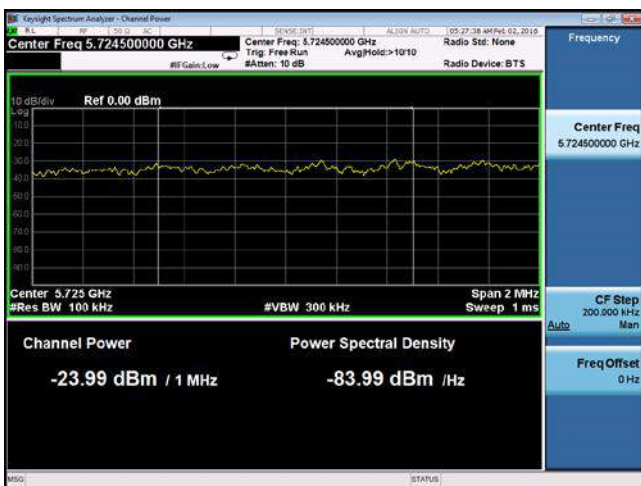
Band Edge -802.11a-5785M-chain4



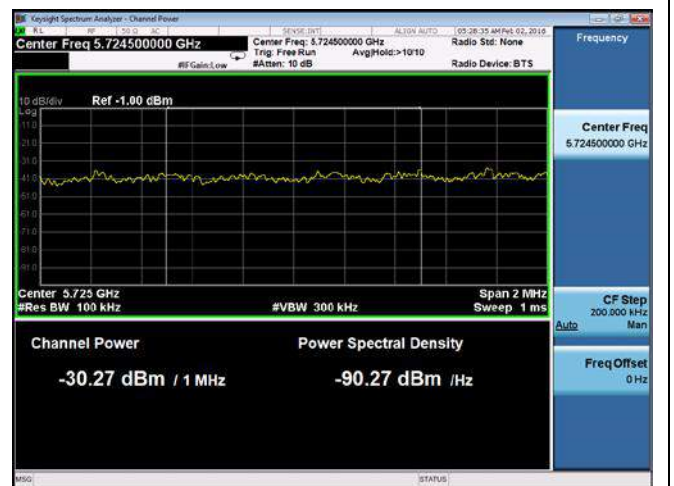
Band Edge -802.11n-20M -5745M-chain1



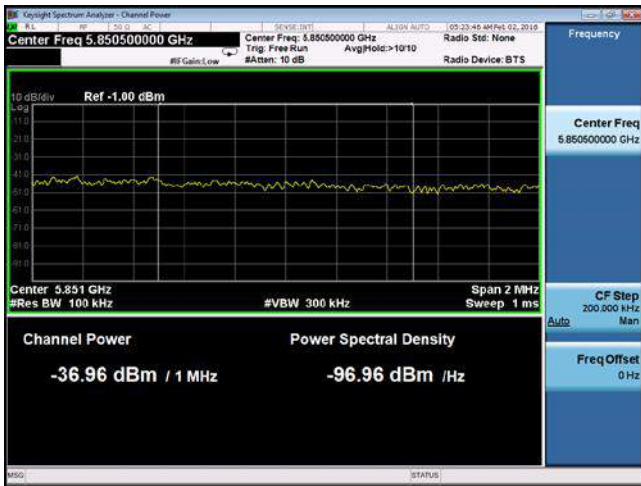
Band Edge -802.11n-20M -5745M-chain2



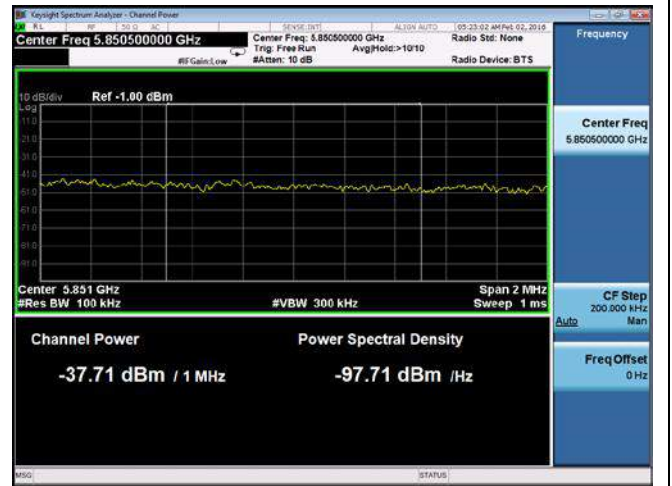
Band Edge -802.11n-20M -5745M-chain3



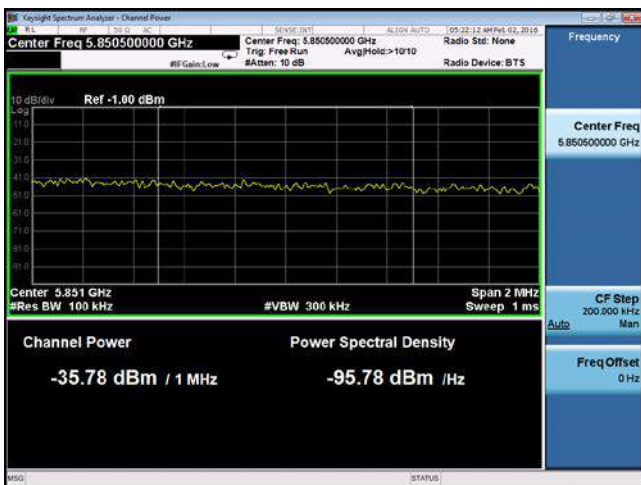
Band Edge -802.11n-20M -5745M-chain4



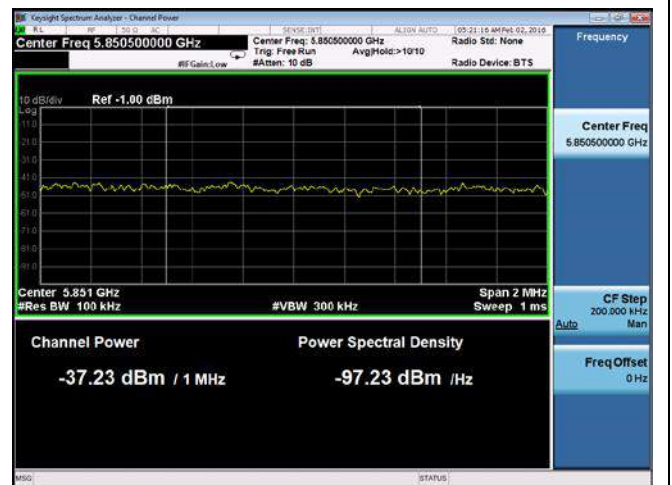
Band Edge -802.11n-20M-5825M-chain1



Band Edge -802.11n-20M-5825M-chain2



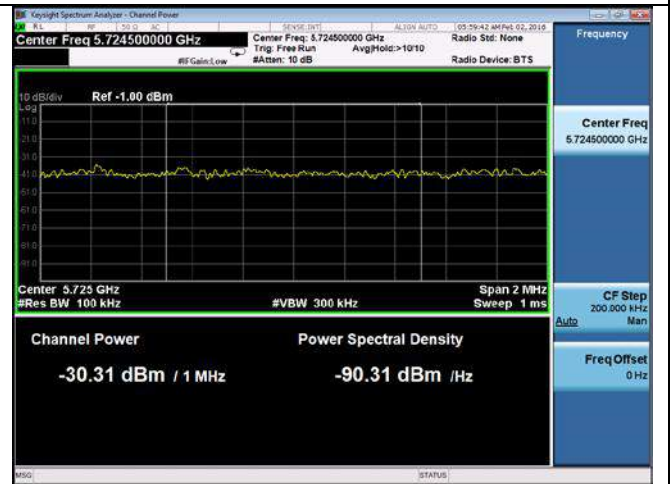
Band Edge -802.11n-20M-5825M-chain3



Band Edge -802.11n-20M-5825M-chain4



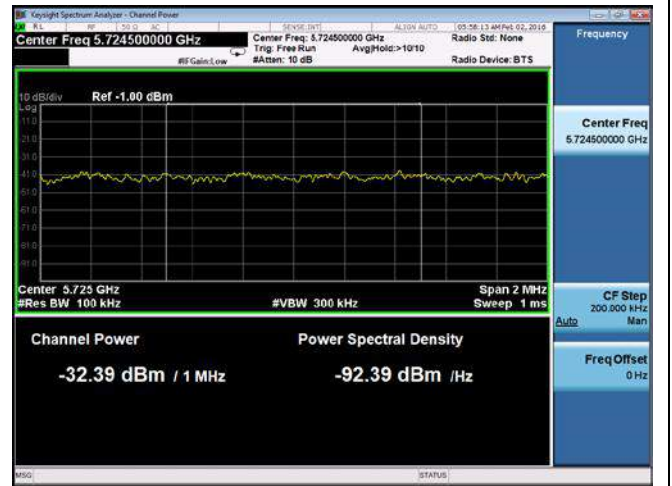
Band Edge -802.11n-40M-5755M-chain1



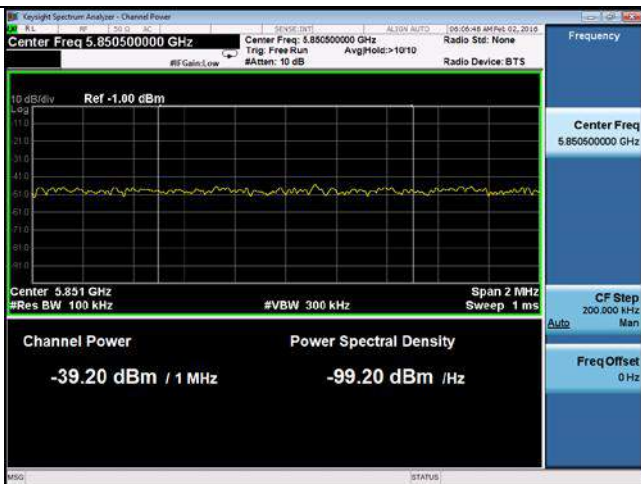
Band Edge -802.11n-40M-5755M-chain2



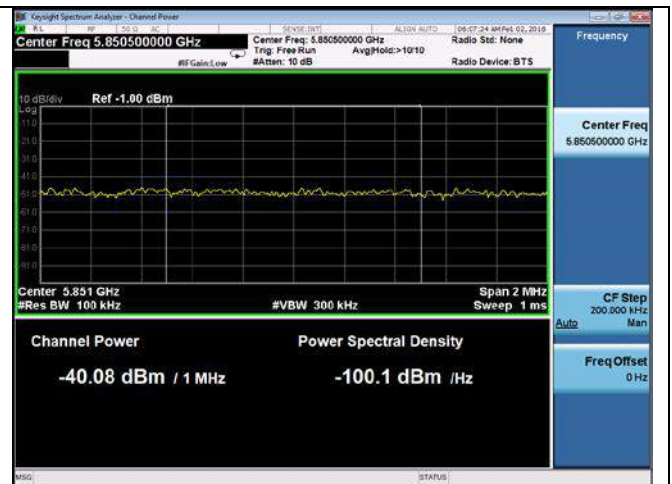
Band Edge -802.11n-40M-5755M-chain3



Band Edge -802.11n-40M-5755M-chain4



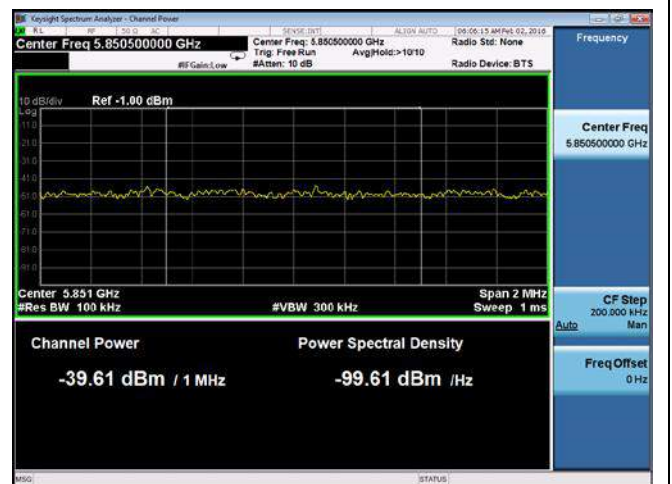
Band Edge -802.11n-40M-5795M-chain1



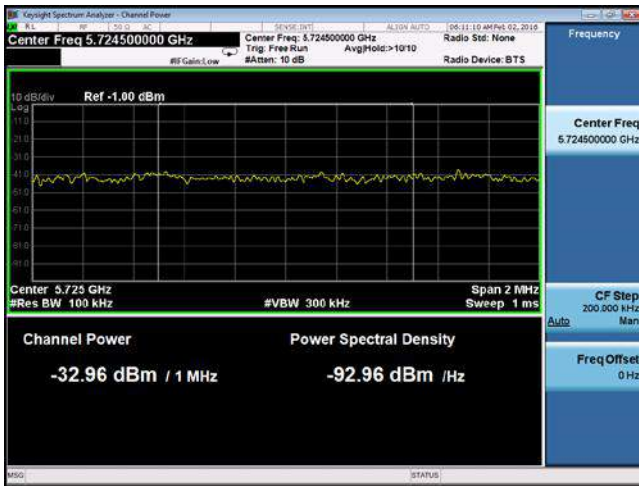
Band Edge -802.11n-40M-5795M-chain2



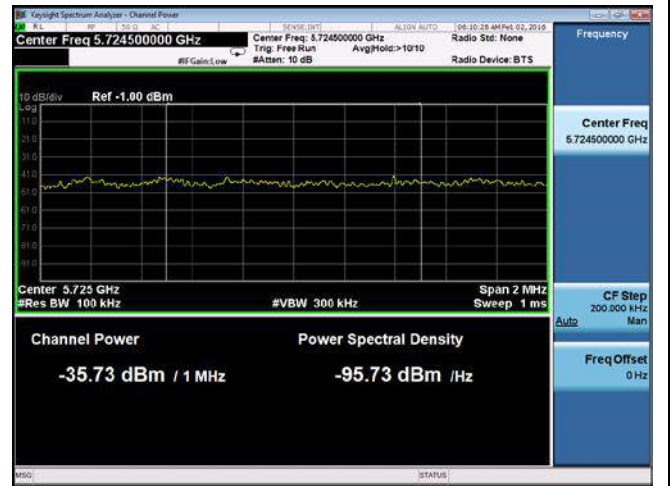
Band Edge -802.11n-40M-5795M-chain3



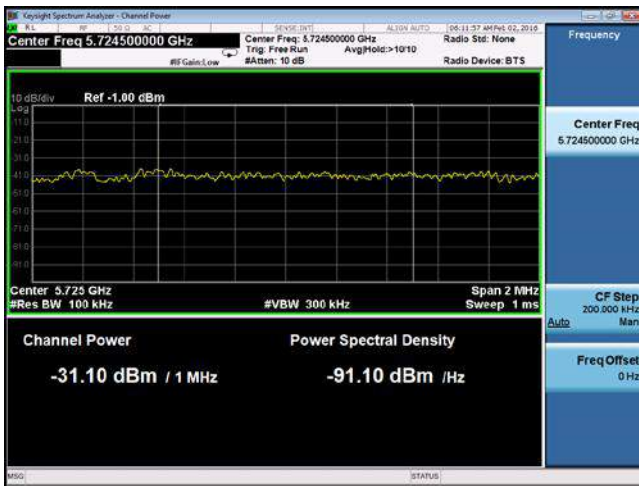
Band Edge -802.11n-40M-5795M-chain4



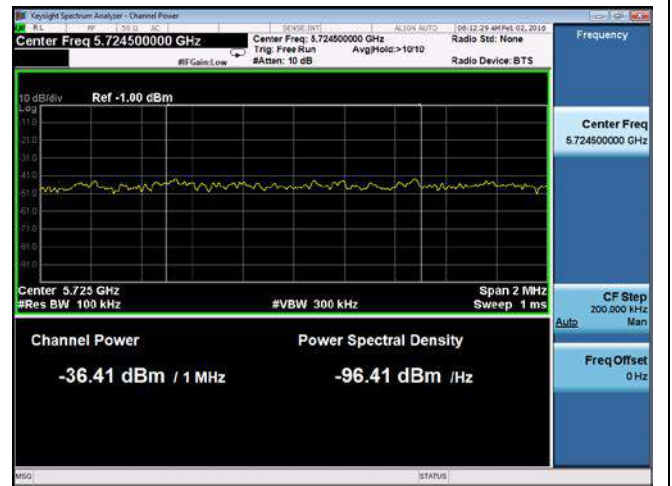
Band Edge -802.11ac-80M-5775M-chain1 (Left)



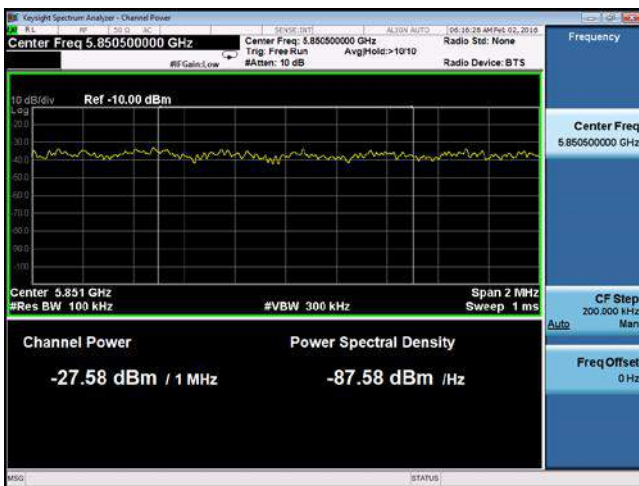
Band Edge -802.11ac-80M-5775M-chain2 (Left)



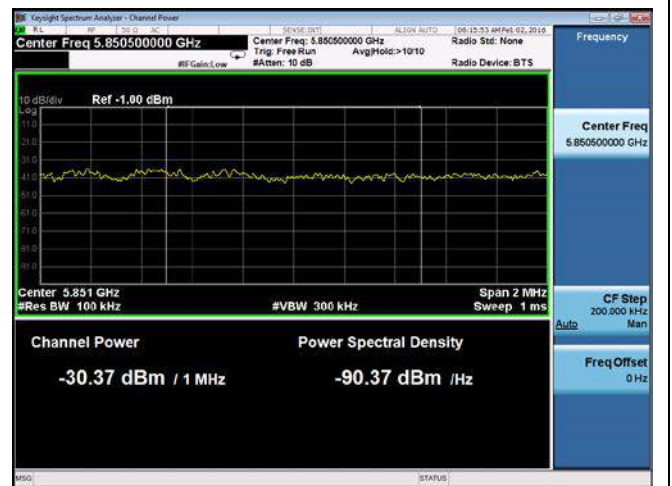
Band Edge -802.11ac-80M-5775M-chain3 (Left)



Band Edge -802.11ac-80M-5775M-chain4 (Left)

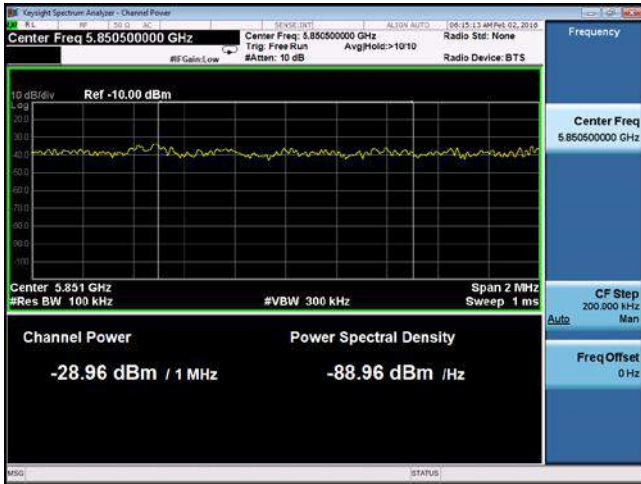


Band Edge -802.11ac-80M-5775M-chain1 (Right)

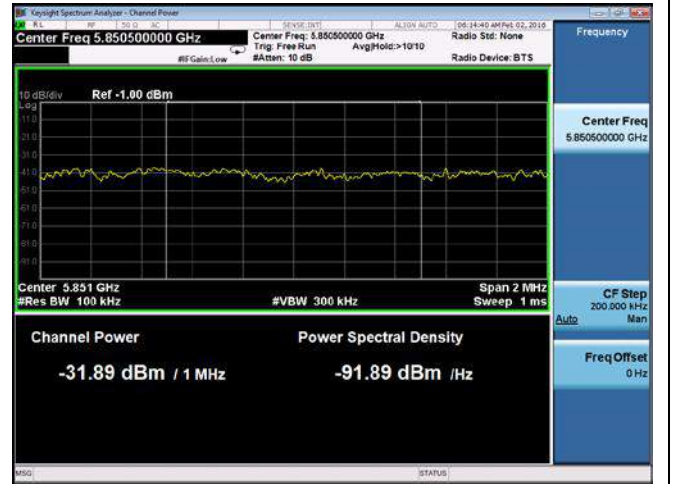


Band Edge -802.11ac-80M-5775M-chain2 (Right)



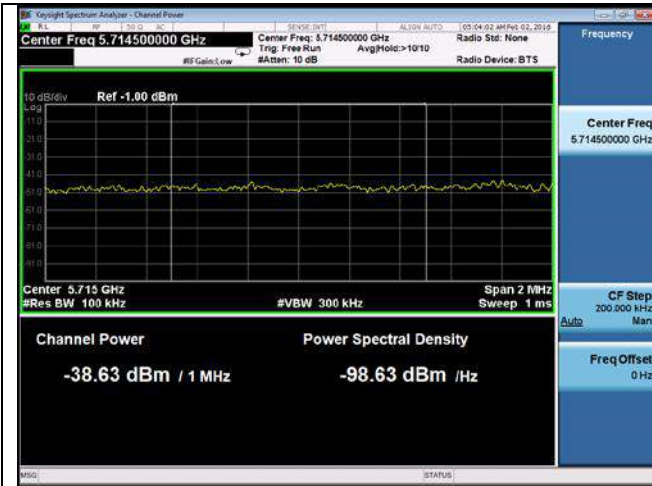


Band Edge -802.11ac-80M-5775M-chain3 (Right)

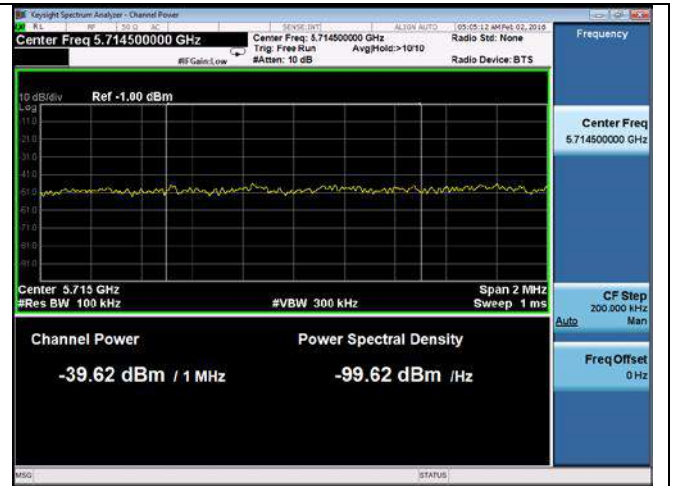


Band Edge -802.11ac-80M-5775M-chain4 (Right)

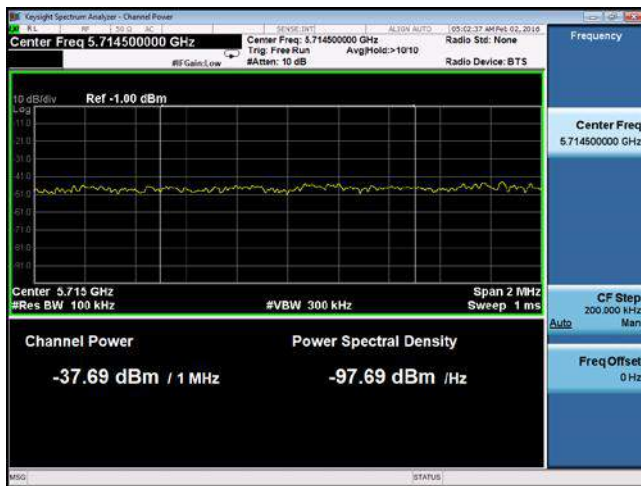
5.8GHz band: (20MHz offset)



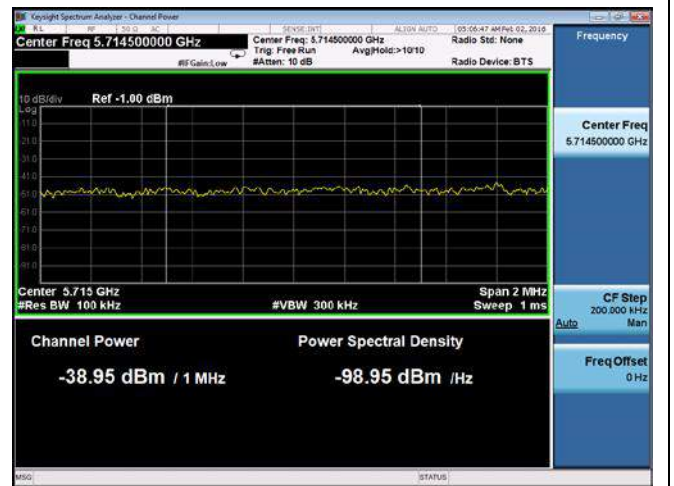
Band Edge -802.11a-5745M-chain1



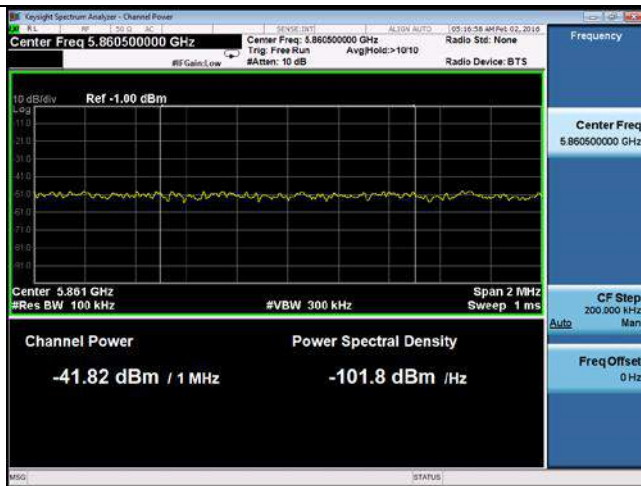
Band Edge -802.11a-5745M-chain2



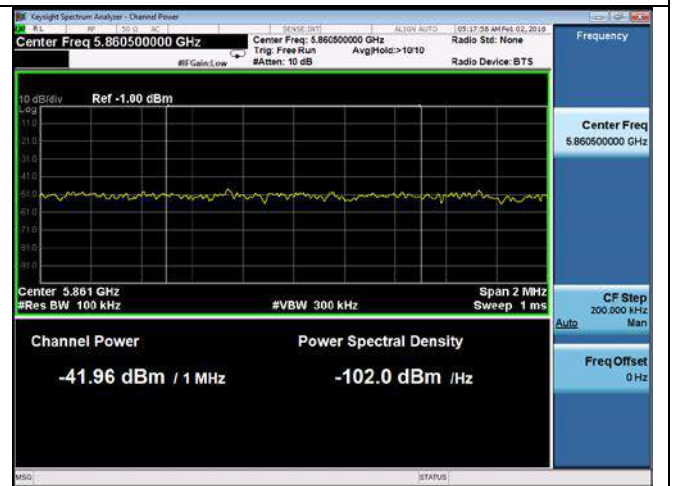
Band Edge -802.11a-5745M-chain3



Band Edge -802.11a-5745M-chain4



Band Edge -802.11a-5785M-chain1



Band Edge -802.11a-5785M-chain2