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# Report On

FCC and Industry Canada Testing of the  
Frontier Silicon Ltd Minuet/FS5332

In accordance with FCC 47 CFR Part 15E, Industry Canada RSS-247  
and Industry Canada RSS-GEN

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FCC ID: YYX-FS5332

IC: 11458A-FS5332

Document 75934517 Report 05 Issue 1

August 2016



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COMMERCIAL-IN-CONFIDENCE

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and Industry Canada RSS-GEN

Document 75934517 Report 05 Issue 1

August 2016

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**DATED**

02 August 2016

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**ENGINEERING STATEMENT**

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15E, Industry Canada RSS-247 and Industry Canada RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

G Lawler

M Choudhury



J Tuckwell



## CONTENTS

| Section  | Page No                                                   |
|----------|-----------------------------------------------------------|
| <b>1</b> | <b>REPORT SUMMARY ..... 3</b>                             |
| 1.1      | Introduction ..... 4                                      |
| 1.2      | Brief Summary of Results ..... 5                          |
| 1.3      | Application Form ..... 9                                  |
| 1.4      | Product Information ..... 12                              |
| 1.5      | Test Conditions ..... 12                                  |
| 1.6      | Deviations from the Standard ..... 12                     |
| 1.7      | Modification Record ..... 12                              |
| <b>2</b> | <b>TEST DETAILS ..... 13</b>                              |
| 2.1      | AC Line Conducted Emissions ..... 14                      |
| 2.2      | 26 dB Bandwidth ..... 18                                  |
| 2.3      | Maximum Conducted Output Power ..... 67                   |
| 2.4      | Peak Power Spectral Density ..... 74                      |
| 2.5      | Spurious Radiated Emissions ..... 123                     |
| 2.6      | Frequency Stability ..... 418                             |
| 2.7      | Restricted Band Edges ..... 473                           |
| 2.8      | Authorised Band Edges ..... 514                           |
| <b>3</b> | <b>TEST EQUIPMENT USED ..... 555</b>                      |
| 3.1      | Test Equipment Used ..... 556                             |
| 3.2      | Measurement Uncertainty ..... 559                         |
| <b>4</b> | <b>ACCREDITATION, DISCLAIMERS AND COPYRIGHT ..... 560</b> |
| 4.1      | Accreditation, Disclaimers and Copyright ..... 561        |



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## **SECTION 1**

### **REPORT SUMMARY**

FCC and Industry Canada Testing of the  
Frontier Silicon Ltd Minuet/FS5332  
In accordance with FCC 47 CFR Part 15E, Industry Canada RSS-247  
and Industry Canada RSS-GEN



## 1.1 INTRODUCTION

The information contained in this report is intended to show the verification of FCC and Industry Canada Testing of the Frontier Silicon Ltd Minuet/FS5332 to the requirements of FCC 47 CFR Part 15E, Industry Canada RSS-247 and Industry Canada RSS-GEN.

|                                |                                                                                                                                                                                                                                        |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective                      | To perform FCC and Industry Canada Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.                                                                |
| Manufacturer                   | Frontier Silicon Ltd                                                                                                                                                                                                                   |
| Model Number(s)                | Minuet/FS5332                                                                                                                                                                                                                          |
| Serial Number(s)               | RAD108621 (Module) and RAD108181 (Platform) - Conducted<br>RAD108620 (Module) and RAD108704 (Platform) - Conducted<br>RAD108624 (Module) and RAD108700 (Platform) - Radiated<br>RAD108616 (Module) and RAD108700 (Platform) - Radiated |
| Number of Samples Tested       | 4                                                                                                                                                                                                                                      |
| Test Specification/Issue/Date  | FCC 47 CFR Part 15E (2015)<br>Industry Canada RSS-247 (Issue 1, 2015)<br>Industry Canada RSS-GEN (Issue 4, 2014)                                                                                                                       |
| Incoming Release Date          | Application Form<br>11 July 2016                                                                                                                                                                                                       |
| Disposal Reference Number Date | Held Pending Disposal<br>Not Applicable<br>Not Applicable                                                                                                                                                                              |
| Order Number Date              | FD160438<br>08 April 2016                                                                                                                                                                                                              |
| Start of Test                  | 10 May 2016                                                                                                                                                                                                                            |
| Finish of Test                 | 5 July 2016                                                                                                                                                                                                                            |
| Name of Engineer(s)            | G Lawler<br>M Choudhury<br>J Tuckwell                                                                                                                                                                                                  |
| Related Document(s)            | KDB 789033 D02 General UNII Test Procedures New Rules v01r02; ETSI TR 100 028 (2001) and ANCI C63.10 (2013)                                                                                                                            |



## 1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15E, Industry Canada RSS-247 and Industry Canada RSS-GEN is shown below.

| Section | Specification Clause          |         |         | Test Description               | Result | Comments/Base Standard |
|---------|-------------------------------|---------|---------|--------------------------------|--------|------------------------|
|         | Part 15E                      | RSS-247 | RSS-GEN |                                |        |                        |
| 802.11a |                               |         |         |                                |        |                        |
| 2.1     | 15.207                        | -       | 8.8     | AC Line Conducted Emissions    | Pass   |                        |
| 2.2     | 15.407 (a)                    | 6.2     | -       | 26 dB Bandwidth                | Pass   |                        |
| 2.3     | 15.407 (a)(1)(2)              | 6.2     | -       | Maximum Conducted Output Power | Pass   |                        |
| 2.4     | 15.407 (a)(5)                 | 6.2     | -       | Peak Power Spectral Density    | Pass   |                        |
| 2.5     | 15.407 (b), 15.205 and 15.209 | 6.2     | -       | Spurious Radiated Emissions    | Pass   |                        |
| 2.6     | 15.407 (g)                    | -       |         | Frequency Stability            | Pass   |                        |
| 2.7     | 15.205                        | -       | 8.10    | Restricted Band Edges          | Pass   |                        |
| 2.8     | 15.407 (b)(1)(2)(3)(4)        | 6.2     | -       | Authorised Band Edges          | Pass   |                        |



| Section                  | Specification Clause          |         |         | Test Description               | Result | Comments/Base Standard |
|--------------------------|-------------------------------|---------|---------|--------------------------------|--------|------------------------|
|                          | Part 15E                      | RSS-247 | RSS-GEN |                                |        |                        |
| 802.11n 20 MHz Bandwidth |                               |         |         |                                |        |                        |
| 2.2                      | 15.407 (a)                    | 6.2     | -       | 26 dB Bandwidth                | Pass   |                        |
| 2.3                      | 15.407 (a)(1)(2)              | 6.2     | -       | Maximum Conducted Output Power | Pass   |                        |
| 2.4                      | 15.407 (a)(5)                 | 6.2     | -       | Peak Power Spectral Density    | Pass   |                        |
| 2.5                      | 15.407 (b), 15.205 and 15.209 | 6.2     | -       | Spurious Radiated Emissions    | Pass   |                        |
| 2.6                      | 15.407 (g)                    | -       |         | Frequency Stability            | Pass   |                        |
| 2.7                      | 15.205                        | -       | 8.10    | Restricted Band Edges          | Pass   |                        |
| 2.8                      | 15.407 (b)(1)(2)(3)(4)        | 6.2     | -       | Authorised Band Edges          | Pass   |                        |
| 802.11n 40 MHz Bandwidth |                               |         |         |                                |        |                        |
| 2.2                      | 15.407 (a)                    | 6.2     | -       | 26 dB Bandwidth                | Pass   |                        |
| 2.3                      | 15.407 (a)(1)(2)              | 6.2     | -       | Maximum Conducted Output Power | Pass   |                        |
| 2.4                      | 15.407 (a)(5)                 | 6.2     | -       | Peak Power Spectral Density    | Pass   |                        |
| 2.6                      | 15.407 (g)                    | -       |         | Frequency Stability            | Pass   |                        |
| 2.7                      | 15.205                        | -       | 8.10    | Restricted Band Edges          | Pass   |                        |
| 2.8                      | 15.407 (b)(1)(2)(3)(4)        | 6.2     | -       | Authorised Band Edges          | Pass   |                        |



| Section                   | Specification Clause          |         |         | Test Description               | Result | Comments/Base Standard |
|---------------------------|-------------------------------|---------|---------|--------------------------------|--------|------------------------|
|                           | Part 15E                      | RSS-247 | RSS-GEN |                                |        |                        |
| 802.11ac 20 MHz Bandwidth |                               |         |         |                                |        |                        |
| 2.2                       | 15.407 (a)                    | 6.2     | -       | 26 dB Bandwidth                | Pass   |                        |
| 2.3                       | 15.407 (a)(1)(2)              | 6.2     | -       | Maximum Conducted Output Power | Pass   |                        |
| 2.4                       | 15.407 (a)(5)                 | 6.2     | -       | Peak Power Spectral Density    | Pass   |                        |
| 2.5                       | 15.407 (b), 15.205 and 15.209 | 6.2     | -       | Spurious Radiated Emissions    | Pass   |                        |
| 2.6                       | 15.407 (g)                    | -       |         | Frequency Stability            | Pass   |                        |
| 2.7                       | 15.205                        | -       | 8.10    | Restricted Band Edges          | Pass   |                        |
| 2.8                       | 15.407 (b)(1)(2)(3)(4)        | 6.2     | -       | Authorised Band Edges          | Pass   |                        |
| 802.11ac 40 MHz Bandwidth |                               |         |         |                                |        |                        |
| 2.2                       | 15.407 (a)                    | 6.2     | -       | 26 dB Bandwidth                | Pass   |                        |
| 2.3                       | 15.407 (a)(1)(2)              | 6.2     | -       | Maximum Conducted Output Power | Pass   |                        |
| 2.4                       | 15.407 (a)(5)                 | 6.2     | -       | Peak Power Spectral Density    | Pass   |                        |
| 2.6                       | 15.407 (g)                    | -       |         | Frequency Stability            | Pass   |                        |
| 2.7                       | 15.205                        | -       | 8.10    | Restricted Band Edges          | Pass   |                        |
| 2.8                       | 15.407 (b)(1)(2)(3)(4)        | 6.2     | -       | Authorised Band Edges          | Pass   |                        |



| Section                                           | Specification Clause          |         |         | Test Description               | Result | Comments/Base Standard |
|---------------------------------------------------|-------------------------------|---------|---------|--------------------------------|--------|------------------------|
|                                                   | Part 15E                      | RSS-247 | RSS-GEN |                                |        |                        |
| 802.11ac 80 MHz Bandwidth                         |                               |         |         |                                |        |                        |
| 2.2                                               | 15.407 (a)                    | 6.2     | -       | 26 dB Bandwidth                | Pass   |                        |
| 2.3                                               | 15.407 (a)(1)(2)              | 6.2     | -       | Maximum Conducted Output Power | Pass   |                        |
| 2.4                                               | 15.407 (a)(5)                 | 6.2     | -       | Peak Power Spectral Density    | Pass   |                        |
| 2.6                                               | 15.407 (g)                    | -       |         | Frequency Stability            | Pass   |                        |
| 2.7                                               | 15.205                        | -       | 8.10    | Restricted Band Edges          | Pass   |                        |
| 2.8                                               | 15.407 (b)(1)(2)(3)(4)        | 6.2     | -       | Authorised Band Edges          | Pass   |                        |
| 802.11a (2nd Diversity Antenna)                   |                               |         |         |                                |        |                        |
| 2.5                                               | 15.407 (b), 15.205 and 15.209 | 6.2     | -       | Spurious Radiated Emissions    | Pass   |                        |
| 802.11n 20 MHz Bandwidth (2nd Diversity Antenna)  |                               |         |         |                                |        |                        |
| 2.5                                               | 15.407 (b), 15.205 and 15.209 | 6.2     | -       | Spurious Radiated Emissions    | Pass   |                        |
| 802.11ac 20 MHz Bandwidth (2nd Diversity Antenna) |                               |         |         |                                |        |                        |
| 2.5                                               | 15.407 (b), 15.205 and 15.209 | 6.2     | -       | Spurious Radiated Emissions    | Pass   |                        |



### 1.3 APPLICATION FORM

| EQUIPMENT DESCRIPTION                                                                           |                                                                                                                                               |
|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Model Name/Number                                                                               | Minuet/FS5332                                                                                                                                 |
| Part Number                                                                                     | HA-FS5332-xxxxxx (where xxxxxx denotes the customer variant eg HA-FS5332-000001)                                                              |
| Hardware Version                                                                                | Rev6                                                                                                                                          |
| Software Version                                                                                | NS1.0.13                                                                                                                                      |
| FCC ID (if applicable)                                                                          | YYX-FS5332                                                                                                                                    |
| Industry Canada ID (if applicable)                                                              | 11458A-FS5332                                                                                                                                 |
| Technical Description (Please provide a brief description of the intended use of the equipment) | Minuet is a module, which when installed in a consumer audio product enables high-quality audio streaming over Wi-Fi, Bluetooth and Ethernet. |

| INFORMATION REQUIRED                                                                                                                                                                                                                                                                                                        |                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Modes:                                                                                                                                                                                                                                                                                                                      |                                                |
| <input checked="" type="checkbox"/> 802.11(a)                                                                                                                                                                                                                                                                               | <input checked="" type="checkbox"/> 802.11(ac) |
| <input checked="" type="checkbox"/> 802.11(n)                                                                                                                                                                                                                                                                               |                                                |
| a) The occupied channel bandwidth(s):<br><input checked="" type="checkbox"/> Channel Bandwidth 1: 20MHz <input checked="" type="checkbox"/> Channel Bandwidth 2:40MHz<br><input checked="" type="checkbox"/> Channel Bandwidth 3: 80MHz<br>NOTE: Add more lines if the equipment has more channel Bandwidths.               |                                                |
| b) The DFS related operating mode(s) of the equipment:<br><input type="checkbox"/> Master<br><input type="checkbox"/> Slave with radar detection<br><input checked="" type="checkbox"/> Slave without radar detection<br>NOTE: If the equipment has more than 1 operating mode, tick all that apply.                        |                                                |
| c) The equipment can operate in ad-hoc mode:<br><input checked="" type="checkbox"/> no ad-hoc operation<br><input type="checkbox"/> ad-hoc operation in the frequency range 5150MHz to 5250MHz without DFS<br><input type="checkbox"/> ad-hoc operation with DFS<br>NOTE: If more than 1 is applicable, tick all that apply |                                                |
| d) Operating Frequency Range(s):                                                                                                                                                                                                                                                                                            |                                                |
| <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                         | Range 1: 5150MHz to 5250MHz                    |
| <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                         | Range 2: 5250MHz to 5350MHz                    |
| <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                         | Range 3: 5470MHz to 5725MHz                    |
| <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                         | Range 4: 5725MHz to 5825MHz                    |
| NOTE: If the equipment has more than 1 Operating Frequency Range, tick all that apply.                                                                                                                                                                                                                                      |                                                |
| e) TPC feature available: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                                                                                                               |                                                |



| INFORMATION REQUIRED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                 |                                                  |                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|
| f) If the equipment has a TPC range, the lowest and highest power level (or lowest and highest EIRP level in case of integrated antenna equipment), intended antenna assemblies and corresponding operating frequency range for the TPC range (or for each of the TPC ranges if more than one is implemented).                                                                                                                                                                                                                                                        |                                                                                 |                                                  |                                                  |
| TPC range:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                 |                                                  |                                                  |
| Applicable Frequency Range:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                 |                                                  |                                                  |
| <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5250MHz to 5350MHz                                                              |                                                  |                                                  |
| <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5470 MHz to 5725 MHz                                                            |                                                  |                                                  |
| <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | A TPC mechanism is not required for systems with an e.i.r.p of less than 500 mW |                                                  |                                                  |
| DFS Threshold level:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                 | N/A as EUT is slave without radar detection. dBm |                                                  |
| <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | at the antenna connector                                                        |                                                  | <input type="checkbox"/> in front of the antenna |
| <p>NOTE: For equipment with a maximum EIRP below 200 mW, the DFS threshold level shall be -62 dBm or less, for equipment with an EIRP of 200 mW or above, the DFS threshold level shall be -64 dBm or less.</p> <p>These levels assume a 0 dBi antenna gain. To define the applicable threshold level at the (temporary) antenna connector, the gain of the antenna (in dBi) shall be added to the threshold level. If more than one antenna is intended for this TPC range or power setting, the antenna gain of the antenna with the lowest gain shall be used.</p> |                                                                                 |                                                  |                                                  |
| Power Setting 1:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                 |                                                  |                                                  |
| Applicable Frequency Range: 5150 MHz to 5250 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                 |                                                  |                                                  |
| Conducted Average Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 13 dBm                                                                          | Average EIRP                                     | 17.7 dBm                                         |
| Power Setting 2:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                 |                                                  |                                                  |
| Applicable Frequency Range: 5250 MHz to 5350 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                 |                                                  |                                                  |
| Conducted Average Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 13 dBm                                                                          | Average EIRP                                     | 17.7 dBm                                         |
| Power Setting 3:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                 |                                                  |                                                  |
| Applicable Frequency Range: 5470 MHz to 5725MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                 |                                                  |                                                  |
| Conducted Average Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 13 dBm                                                                          | Average EIRP                                     | 17.7 dBm                                         |
| Power Setting 4:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                 |                                                  |                                                  |
| Applicable Frequency Range: 5725 MHz to 5825MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                 |                                                  |                                                  |
| Conducted Average Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 13 dBm                                                                          | Average EIRP                                     | 17.7 dBm                                         |
| Table 3: Intended Antenna Assemblies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                 |                                                  |                                                  |
| Antenna Assembly name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                 | Antenna Gain (dBi)                               |                                                  |
| SW700M (SW750M)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                 | 4.7                                              |                                                  |
| RFPCA431223IMLB301                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                 | 4.3                                              |                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                 |                                                  |                                                  |



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| INFORMATION REQUIRED                                                                        |                                        |
|---------------------------------------------------------------------------------------------|----------------------------------------|
| h) The extreme operating temperature range that apply to the equipment:                     |                                        |
| Please state conditions of normal operation as specified in the users manual: 0 °C to 70 °C |                                        |
| Supply Voltage:                                                                             |                                        |
| <input type="checkbox"/>                                                                    | AC mains. State AC voltage             |
| <input checked="" type="checkbox"/>                                                         | DC. State DC voltage                   |
| <input type="checkbox"/>                                                                    | State DC current                       |
| In case of DC, indicate the type of power source:                                           |                                        |
| <input type="checkbox"/>                                                                    | Internal Power Supply                  |
| <input checked="" type="checkbox"/>                                                         | External Power Supply or AC/DC adapter |
| <input type="checkbox"/>                                                                    | Battery Nickel Cadmium                 |
| <input type="checkbox"/>                                                                    | Alkaline                               |
| <input type="checkbox"/>                                                                    | Nickel-Metal Hydride                   |
| <input type="checkbox"/>                                                                    | Lithium-Ion                            |
| <input type="checkbox"/>                                                                    | Lead acid (Vehicle regulated)          |
| <input type="checkbox"/>                                                                    | Other (please specify):                |

| ADDITIONAL INFORMATION PROVIDED BY THE SUBMITTER                            |                                     |                 |                                        |
|-----------------------------------------------------------------------------|-------------------------------------|-----------------|----------------------------------------|
| a) Modulation:                                                              |                                     |                 |                                        |
| Continuous duty                                                             | <input type="checkbox"/>            | Yes             | <input checked="" type="checkbox"/> No |
| Can the transmitter operate un-modulated?                                   | <input type="checkbox"/>            | Yes             | <input checked="" type="checkbox"/> No |
| b) Duty Cycle                                                               |                                     |                 |                                        |
| Is transmitter intended for :                                               |                                     |                 |                                        |
| Continuous duty                                                             | <input type="checkbox"/>            | Yes             | <input checked="" type="checkbox"/> No |
| Intermittent duty only                                                      | <input checked="" type="checkbox"/> | Yes             | <input type="checkbox"/> No            |
| If intermittent duty state DUTY CYCLE                                       |                                     |                 |                                        |
| Transmitter ON                                                              | Seconds                             | Transmitter OFF | Seconds                                |
| <input type="checkbox"/> Continuous operation possible for testing purposes |                                     |                 |                                        |
| Details:                                                                    |                                     |                 |                                        |

I hereby declare that that the information supplied is correct and complete.

Name: Abdul Wahed Dewan

Position held:

RF Principal Engineer

Date: 11/07/2016



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## **1.4 PRODUCT INFORMATION**

### **1.4.1 Technical Description**

The Equipment Under Test (EUT) was a Frontier Silicon Ltd Minuet/FS5332. A full technical description can be found in the manufacturer's documentation.

## **1.5 TEST CONDITIONS**

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure.

The EUT was powered from a 5.00 V DC supply.

FCC Measurement Facility Registration Number  
90987 Octagon House, Fareham Test Laboratory

Industry Canada Company Address Code  
IC2932B-1 Octagon House, Fareham Test Laboratory

## **1.6 DEVIATIONS FROM THE STANDARD**

No deviations from the applicable test standard were made during testing.

## **1.7 MODIFICATION RECORD**

Modification 0 - No modifications were made to the test sample during testing.



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## **SECTION 2**

### **TEST DETAILS**

FCC and Industry Canada Testing of the  
Frontier Silicon Ltd Minuet/FS5332  
In accordance with FCC 47 CFR Part 15E, Industry Canada RSS-247  
and Industry Canada RSS-GEN



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## **2.1 AC LINE CONDUCTED EMISSIONS**

### **2.1.1 Specification Reference**

FCC 47 CFR Part 15E, Clause 15.207  
Industry Canada RSS-GEN, Clause 8.8

### **2.1.2 Equipment Under Test and Modification State**

Minuet/FS5332 S/N: RAD108621 (Module) and RAD108181 (Platform) - Modification State 0

### **2.1.3 Date of Test**

5 July 2016

### **2.1.4 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.1.5 Test Procedure**

The test was performed in accordance with ANSI C63.10, Clause 6.2.

#### Remarks

A mains supply cable of 1 m length was used to supply mains power to the EUT from the LISN.

All final measurements were assessed against the emission limits in FCC 47 CFR Part 15, Clause 15.207 and Industry Canada RSS-GEN, Clause 8.8.

### **2.1.6 Environmental Conditions**

|                     |        |
|---------------------|--------|
| Ambient Temperature | 22.1°C |
| Relative Humidity   | 45.0%  |

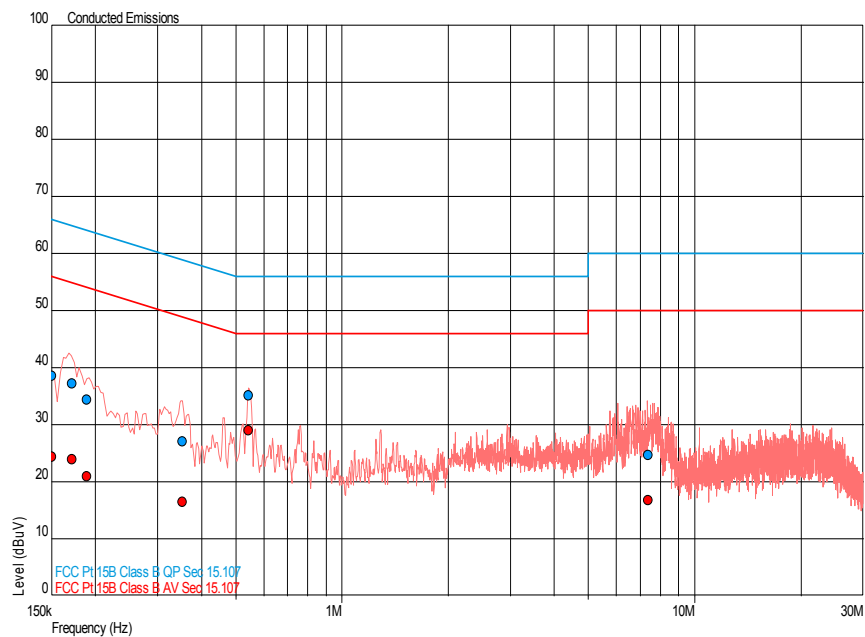


## 2.1.7 Test Results

### 802.11a, Live Line, AC Line Conducted Emissions Result

| Frequency (MHz) | QP Level (dBuV) | QP Limit (dBuV) | QP Margin (dBuV) | AV Level (dBuV) | AV Limit (dBuV) | AV Margin (dBuV) |
|-----------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
| 0.150           | 38.5            | 66.0            | -27.5            | 24.4            | 56.0            | -31.6            |
| 0.171           | 37.2            | 64.9            | -27.7            | 24.0            | 54.9            | -30.9            |
| 0.189           | 34.4            | 64.1            | -29.7            | 21.0            | 54.1            | -33.1            |
| 0.353           | 27.0            | 58.9            | -31.8            | 16.6            | 48.9            | -32.3            |
| 0.543           | 35.2            | 56.0            | -20.8            | 29.1            | 46.0            | -16.9            |
| 7.380           | 24.8            | 60.0            | -35.2            | 16.9            | 50.0            | -33.1            |

### 802.11a, Live Line, AC Line Conducted Emissions Plot

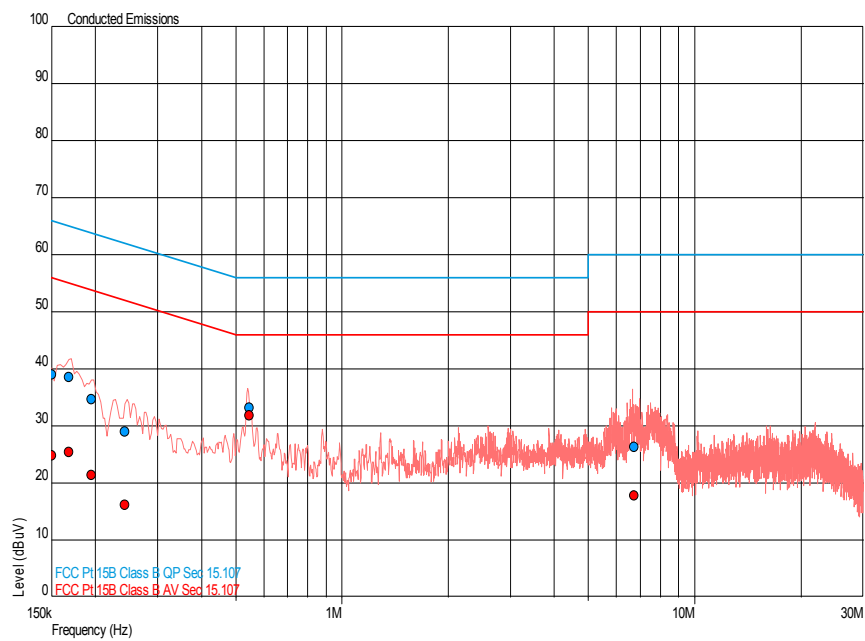




### 802.11a, Neutral Line, AC Line Conducted Emissions Result

| Frequency (MHz) | QP Level (dBuV) | QP Limit (dBuV) | QP Margin (dBuV) | AV Level (dBuV) | AV Limit (dBuV) | AV Margin (dBuV) |
|-----------------|-----------------|-----------------|------------------|-----------------|-----------------|------------------|
| 0.150           | 39.0            | 66.0            | -27.0            | 24.8            | 56.0            | -31.2            |
| 0.168           | 38.5            | 65.1            | -26.5            | 25.5            | 55.1            | -29.6            |
| 0.195           | 34.7            | 63.8            | -29.1            | 21.4            | 53.8            | -32.4            |
| 0.243           | 29.1            | 62.0            | -32.9            | 16.2            | 52.0            | -35.8            |
| 0.546           | 33.2            | 56.0            | -22.8            | 31.9            | 46.0            | -14.1            |
| 6.721           | 26.4            | 60.0            | -33.6            | 17.9            | 50.0            | -32.1            |

### 802.11a, Neutral Line, AC Line Conducted Emissions Plot





Product Service

FCC 47 CFR Part 15, Limit Clause 15.207

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

\*Decreases with the logarithm of the frequency.

Industry Canada RSS-GEN, Limit Clause 8.8

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

\*Decreases with the logarithm of the frequency.



Product Service

## **2.2 26 dB BANDWIDTH**

### **2.2.1 Specification Reference**

FCC 47 CFR Part 15E, Clause 15.407 (a)  
Industry Canada RSS-247, Clause 6.2

### **2.2.2 Equipment Under Test and Modification State**

Minuet/FS5332 S/N: RAD108620 (Module) and RAD108704 (Platform) - Modification State 0

### **2.2.3 Date of Test**

18 May 2016

### **2.2.4 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.2.5 Test Procedure**

This test was performed in accordance with KDB 789033 D02 v01r02, Section II clause C.1.

### **2.2.6 Environmental Conditions**

|                     |        |
|---------------------|--------|
| Ambient Temperature | 20.5°C |
| Relative Humidity   | 50.3%  |



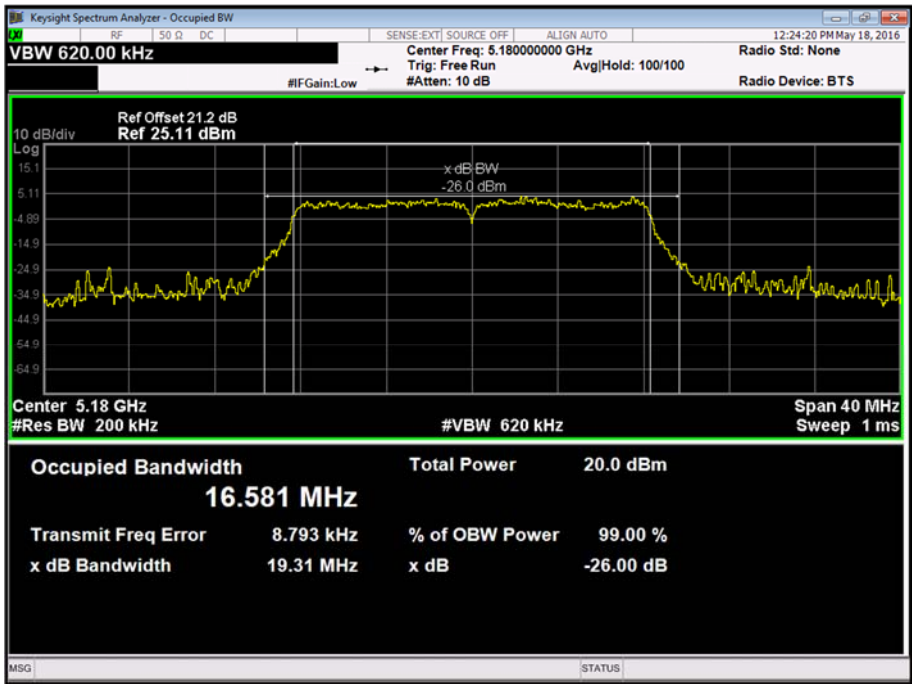
Product Service

2.2.7 Test Results

802.11a, OFDM, 9 Mbps, Frequency Band 1, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5180 MHz | 5200 MHz | 5240 MHz |
| MHz      | MHz      | MHz      |
| 19.31    | 19.16    | 19.52    |

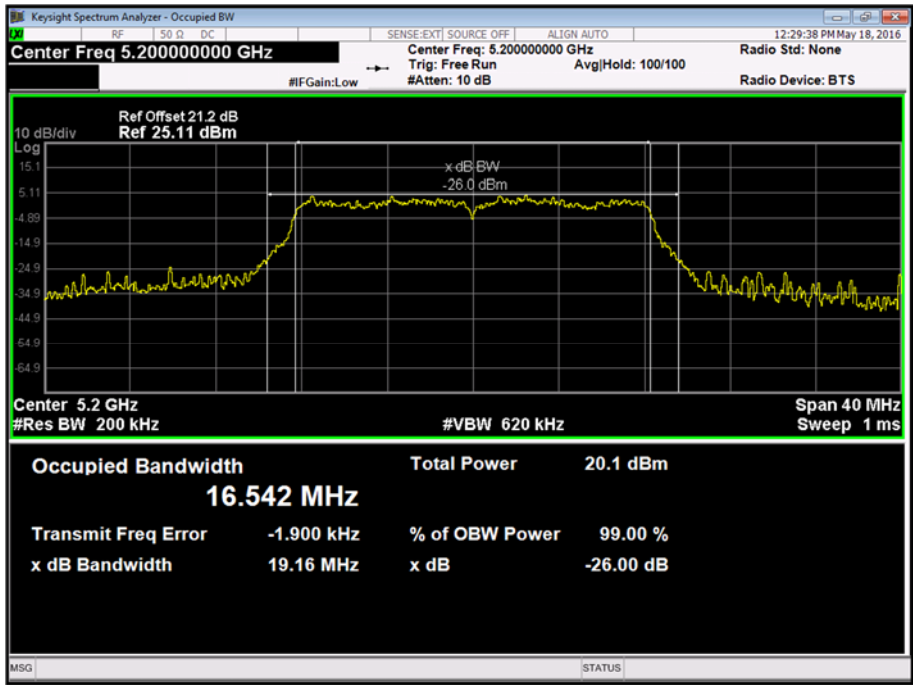
802.11a, 5180 MHz, OFDM, 9 Mbps, Frequency Band 1, 26 dB Bandwidth Plot



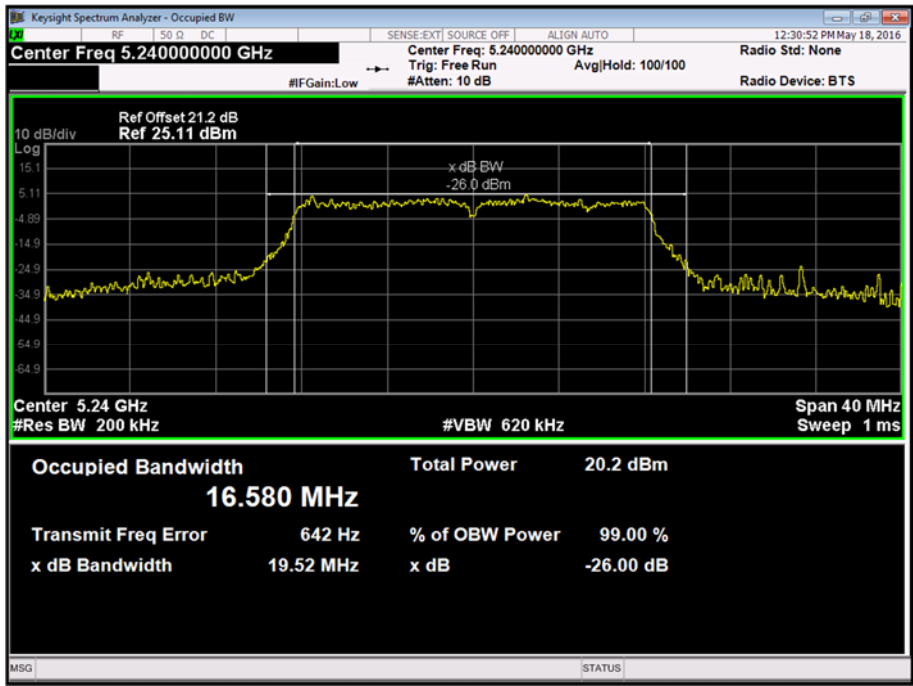


Product Service

802.11a, 5200 MHz, OFDM, 9 Mbps, Frequency Band 1, 26 dB Bandwidth Plot



802.11a, 5240 MHz, OFDM, 9 Mbps, Frequency Band 1, 26 dB Bandwidth Plot



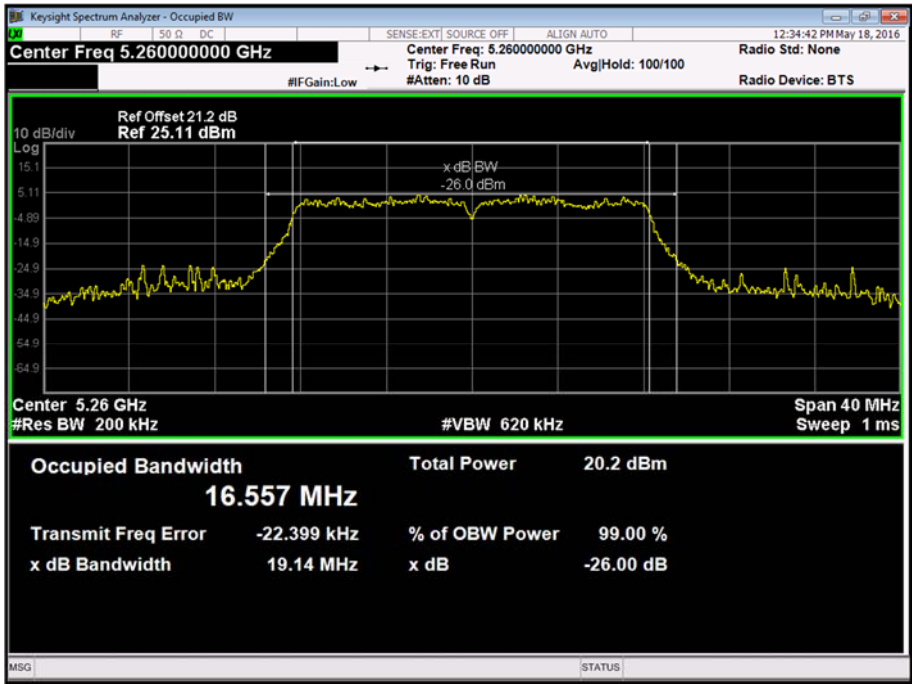


Product Service

802.11a, OFDM, 9 Mbps, Frequency Band 2, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5260 MHz | 5300 MHz | 5320 MHz |
| MHz      | MHz      | MHz      |
| 19.14    | 19.49    | 19.27    |

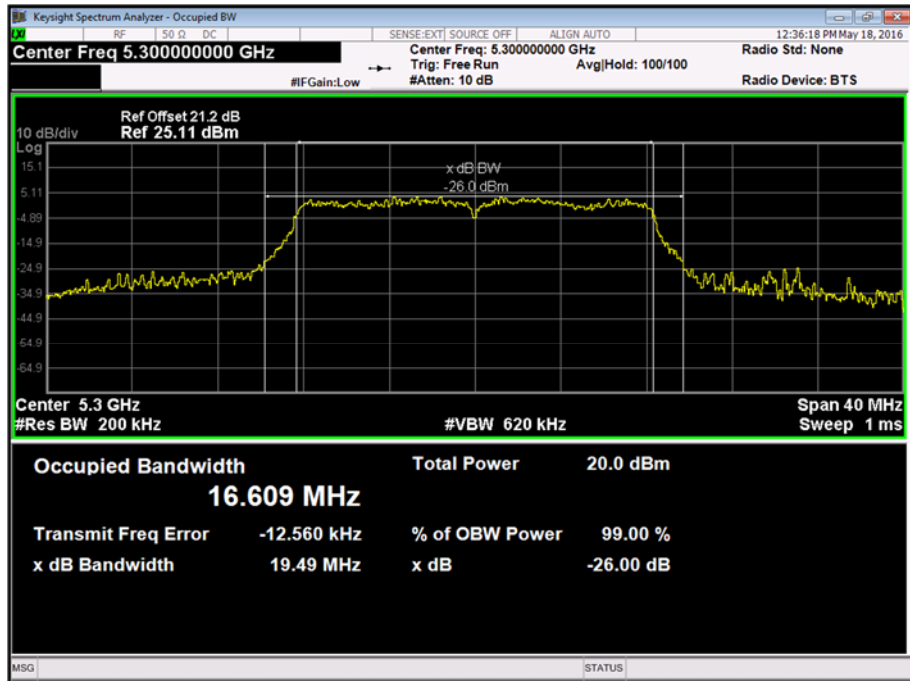
802.11a, 5260 MHz, OFDM, 9 Mbps, Frequency Band 2, 26 dB Bandwidth Plot



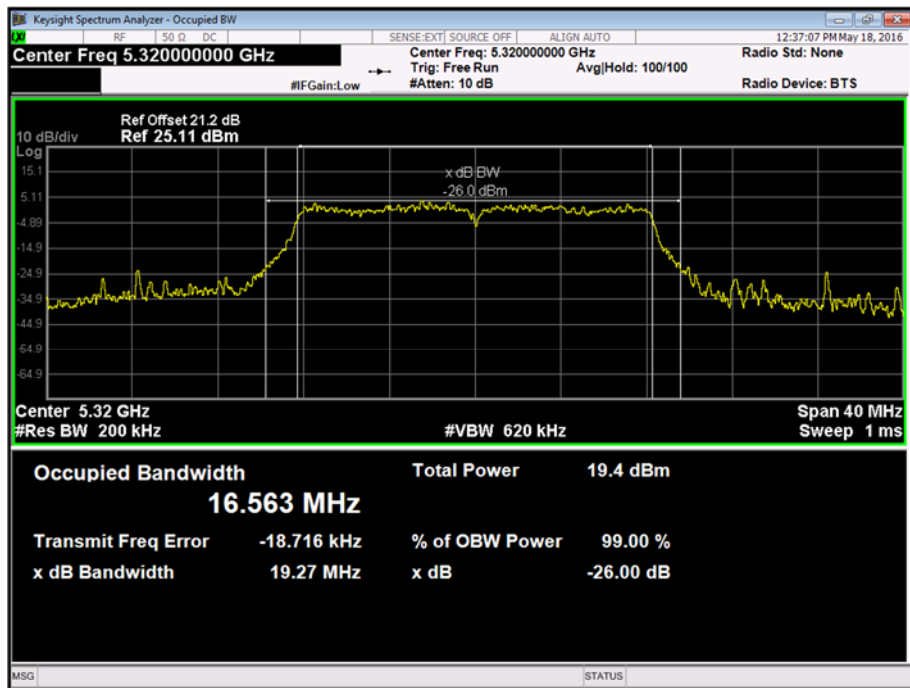


Product Service

### 802.11a, 5300 MHz, OFDM, 9 Mbps, Frequency Band 2, 26 dB Bandwidth Plot



### 802.11a, 5320 MHz, OFDM, 9 Mbps, Frequency Band 2, 26 dB Bandwidth Plot



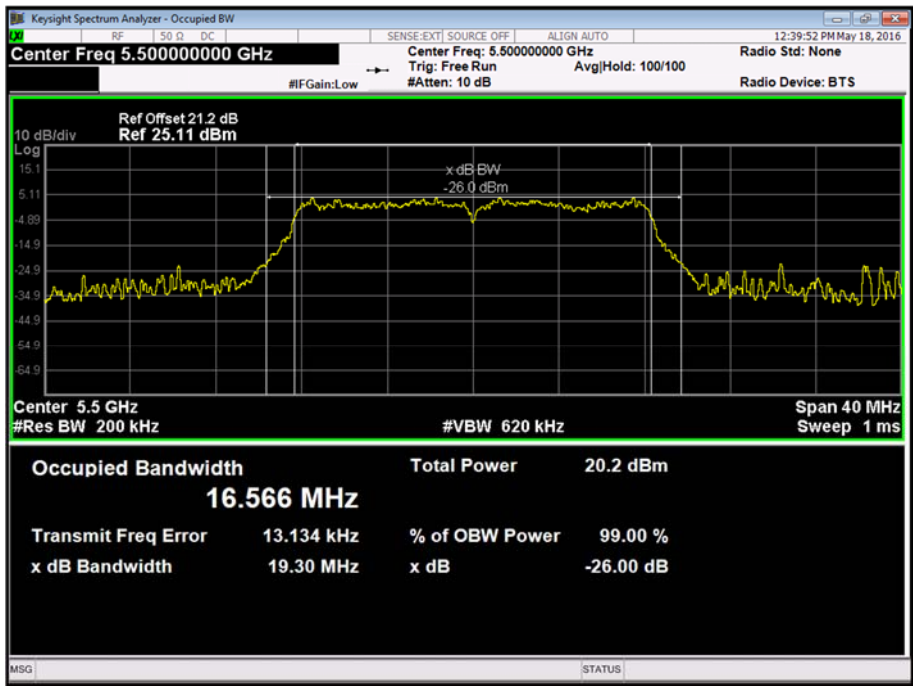


Product Service

802.11a, OFDM, 9 Mbps, Frequency Band 3, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5500 MHz | 5600 MHz | 5700 MHz |
| MHz      | MHz      | MHz      |
| 19.30    | 19.45    | 19.25    |

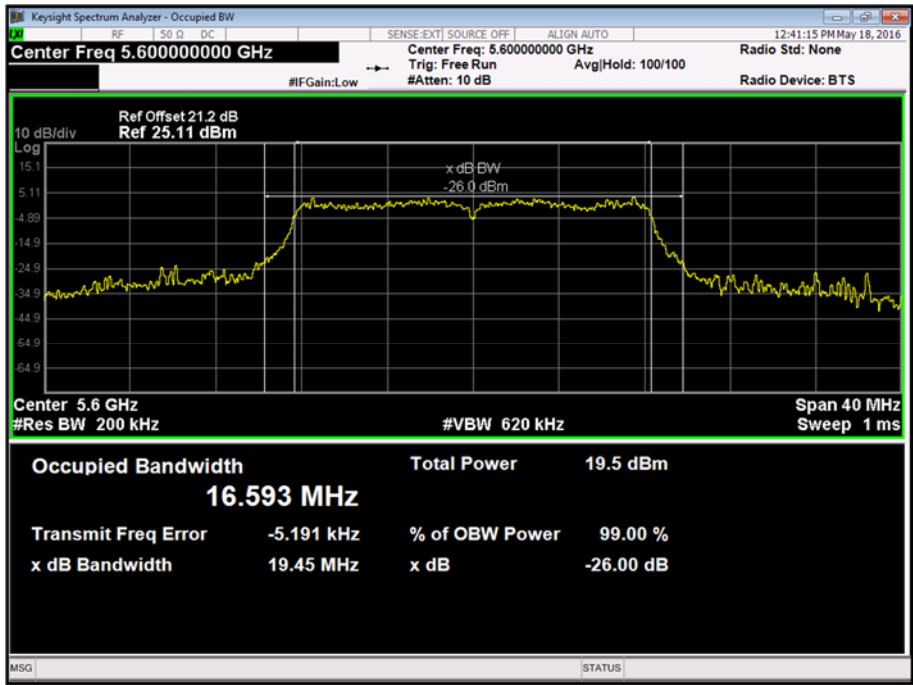
802.11a, 5500 MHz, OFDM, 9 Mbps, Frequency Band 3, 26 dB Bandwidth Plot



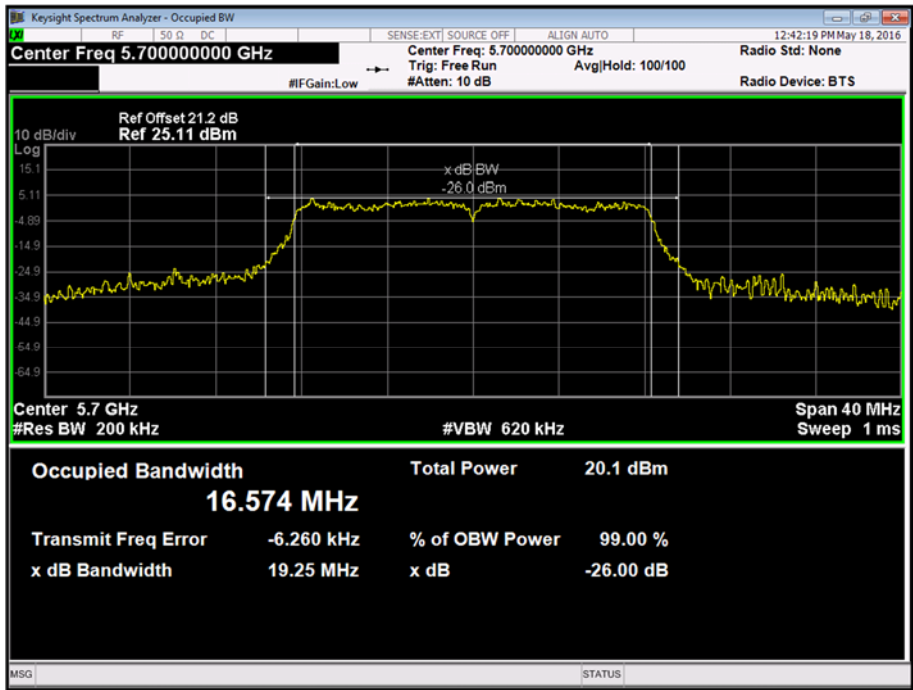


Product Service

802.11a, 5600 MHz, OFDM, 9 Mbps, Frequency Band 3, 26 dB Bandwidth Plot



802.11a, 5700 MHz, OFDM, 9 Mbps, Frequency Band 3, 26 dB Bandwidth 3 Plot



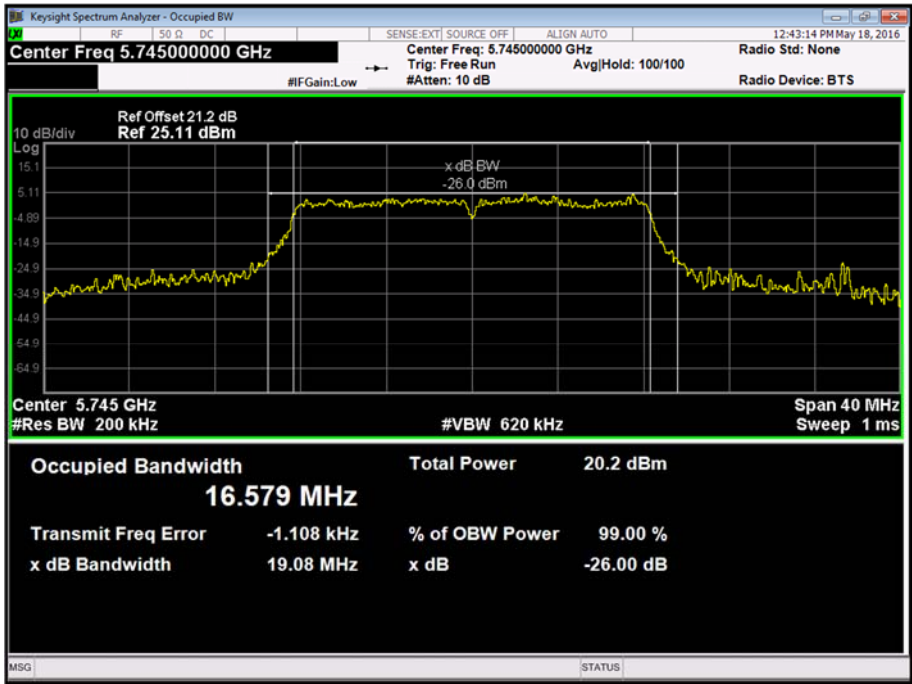


Product Service

802.11a, OFDM, 9 Mbps, Frequency Band 4, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5745 MHz | 5785 MHz | 5825 MHz |
| MHz      | MHz      | MHz      |
| 19.08    | 19.45    | 19.26    |

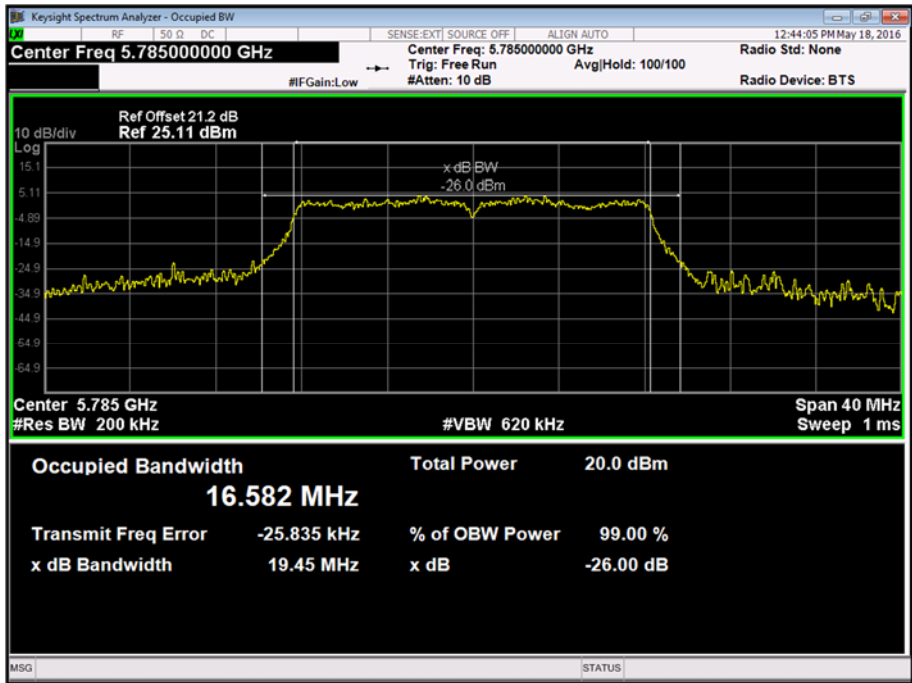
802.11a, 5745 MHz, OFDM, 9 Mbps, Frequency Band 4, 26 dB Bandwidth Plot



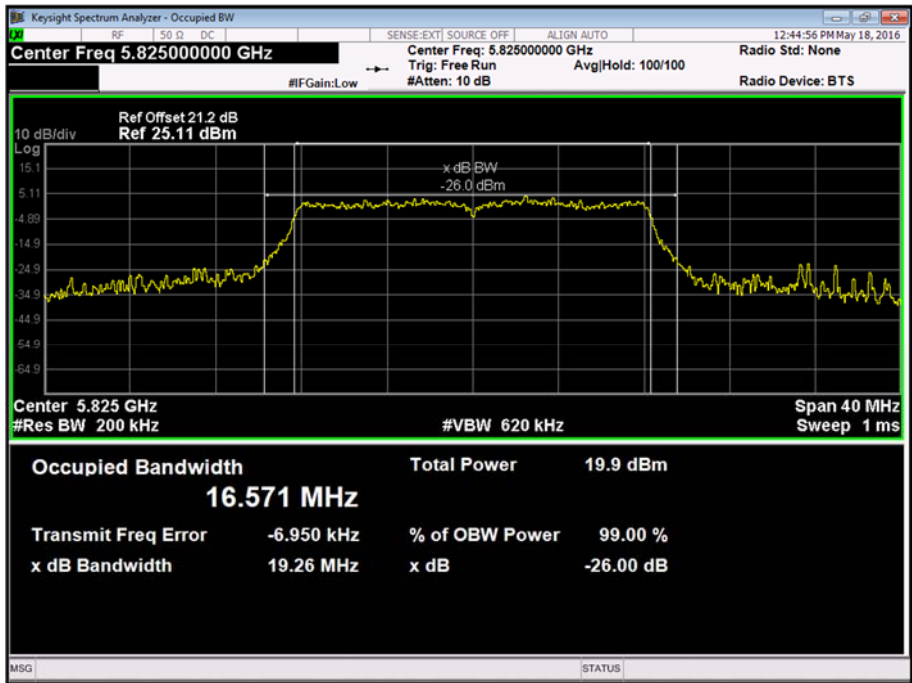


Product Service

802.11a, 5785 MHz, OFDM, 9 Mbps, Frequency Band 4, 26 dB Bandwidth Plot



802.11a, 5825 MHz, OFDM, 9 Mbps, Frequency Band 4, 26 dB Bandwidth Plot





Product Service

FCC 47 CFR Part 15, Limit Clause 15.407 (a)

No limit specified.

Industry Canada RSS-247, Limit Clause 6.2

No limit specified.

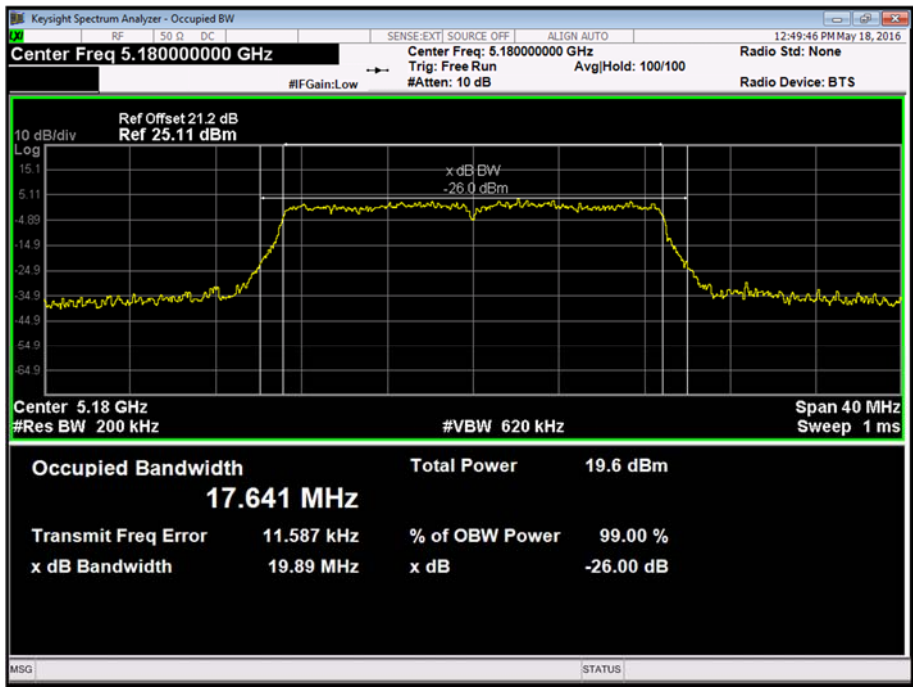


Product Service

802.11ac 20 MHz Bandwidth, OFDM, MCS7, Frequency Band 1, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5180 MHz | 5200 MHz | 5240 MHz |
| MHz      | MHz      | MHz      |
| 19.89    | 19.88    | 19.61    |

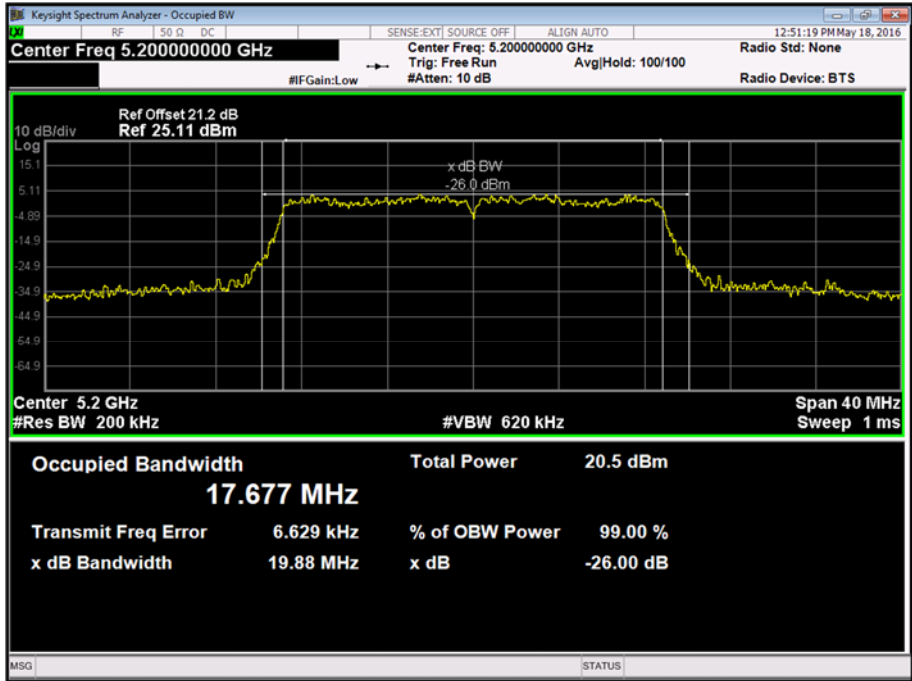
802.11ac 20 MHz Bandwidth, 5180 MHz, OFDM, MCS7, Frequency Band 1, 26 dB Bandwidth Plot



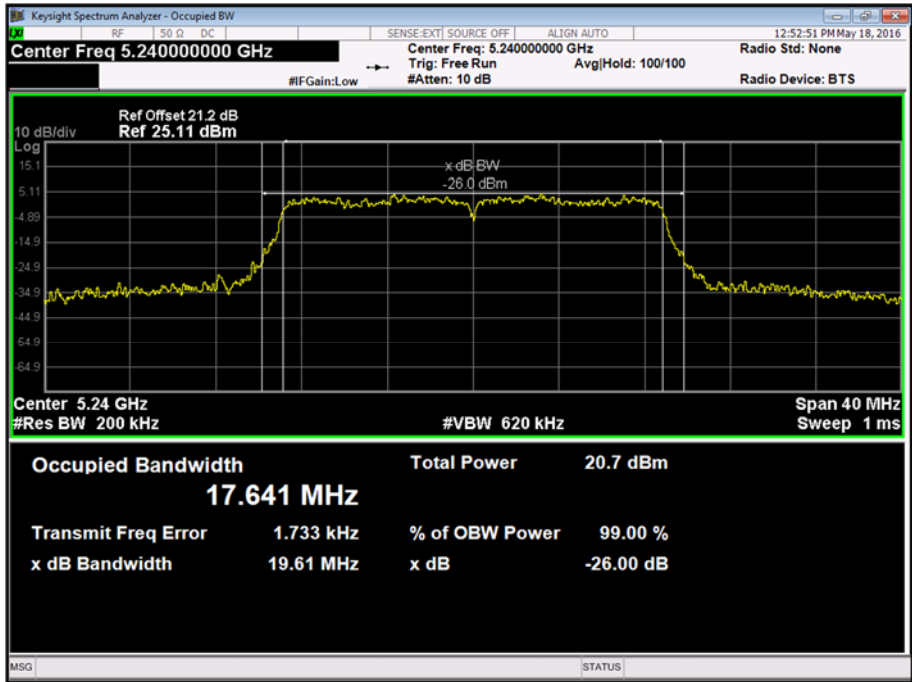


Product Service

802.11ac 20 MHz Bandwidth, 5200 MHz, OFDM, MCS7, Frequency Band 1, 26 dB Bandwidth Plot



802.11ac 20 MHz Bandwidth, 5240 MHz, OFDM, MCS7, Frequency Band 1, 26 dB Bandwidth Plot



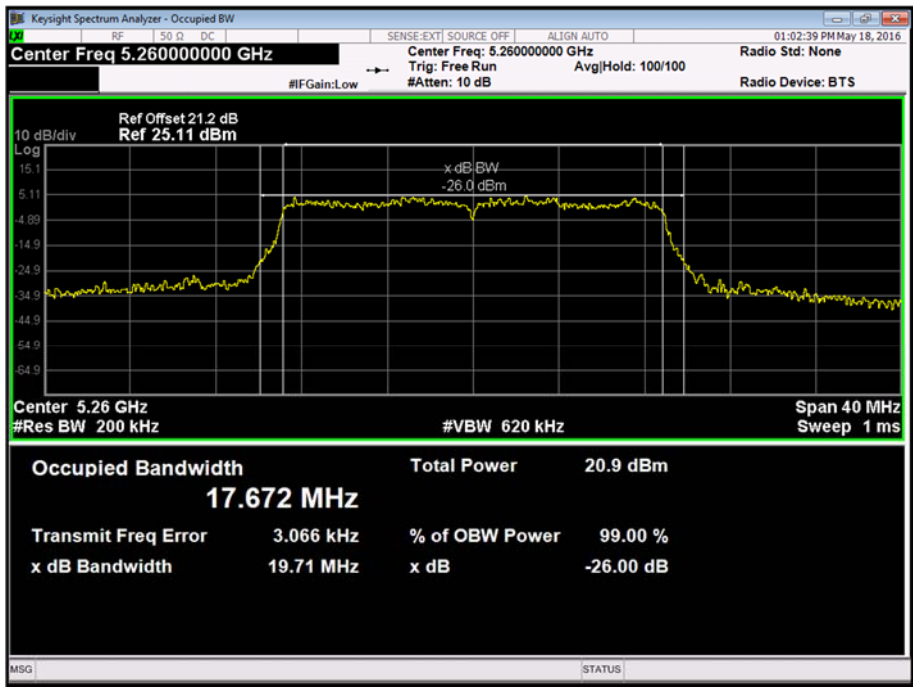


Product Service

802.11ac 20 MHz Bandwidth, OFDM, MCS7, Frequency Band 2, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5260 MHz | 5300 MHz | 5320 MHz |
| MHz      | MHz      | MHz      |
| 19.71    | 19.83    | 19.63    |

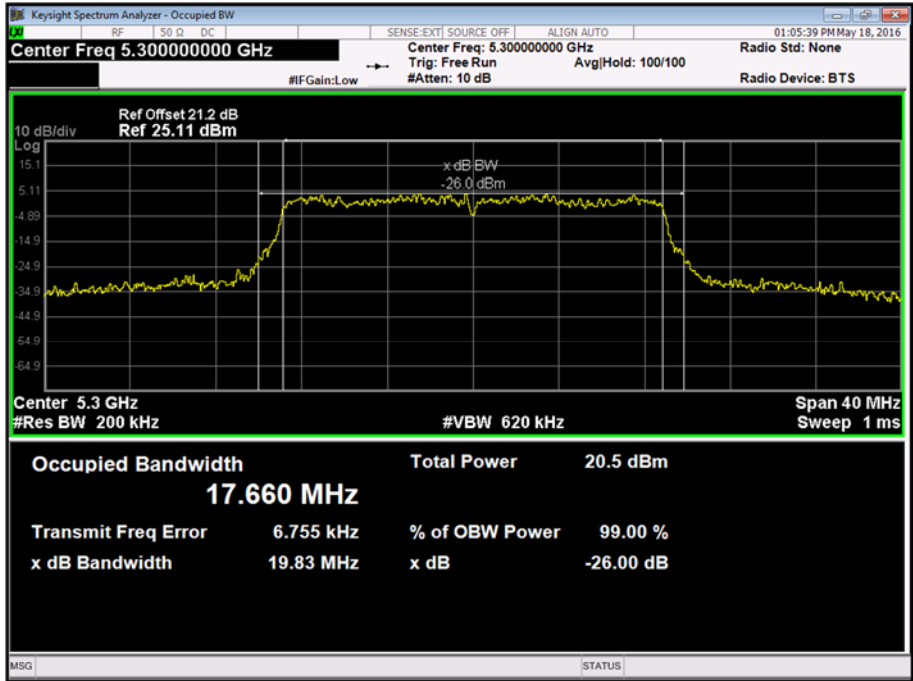
802.11ac 20 MHz Bandwidth, 5260 MHz, OFDM, MCS7, Frequency Band 2, 26 dB Bandwidth Plot



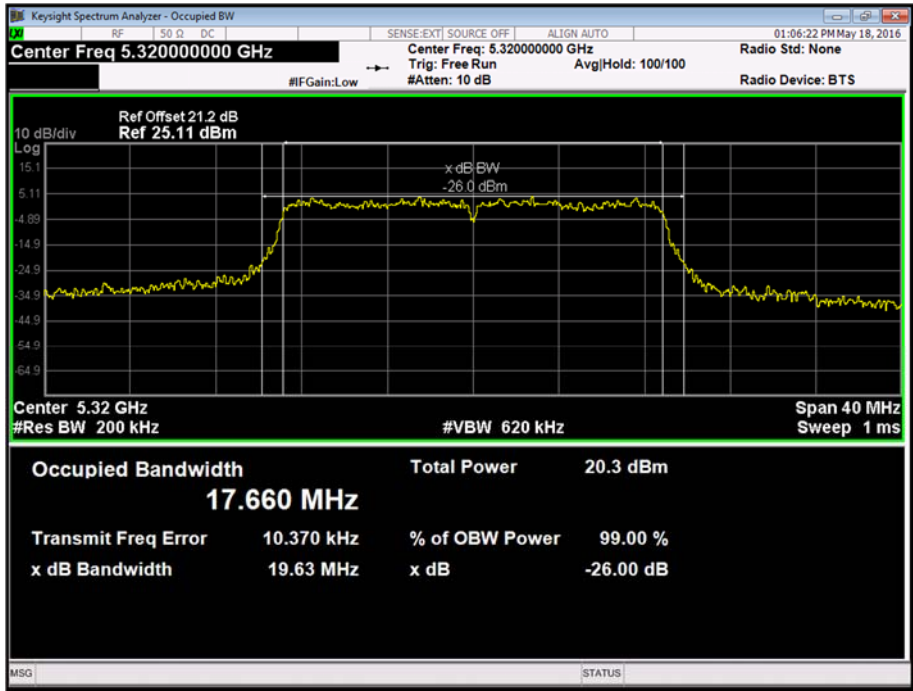


Product Service

802.11ac 20 MHz Bandwidth, 5300 MHz, OFDM, MCS7, Frequency Band 2, 26 dB Bandwidth Plot



802.11ac 20 MHz Bandwidth, 5320 MHz, OFDM, MCS7, Frequency Band 2, 26 dB Bandwidth Plot



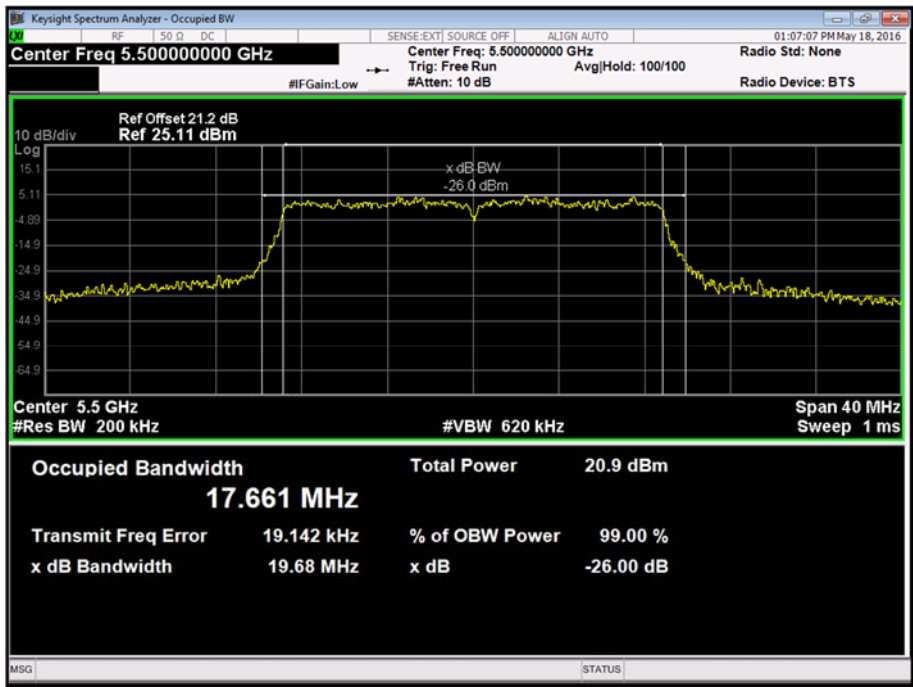


Product Service

802.11ac 20 MHz Bandwidth, OFDM, MCS7, Frequency Band 3, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5500 MHz | 5600 MHz | 5700 MHz |
| MHz      | MHz      | MHz      |
| 19.68    | 19.89    | 19.89    |

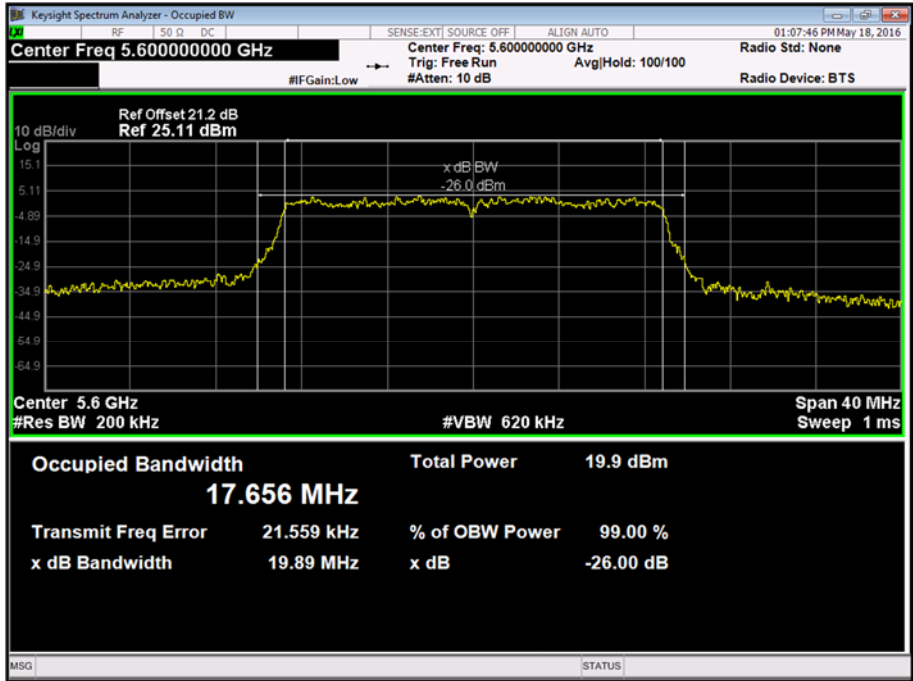
802.11ac 20 MHz Bandwidth, 5500 MHz, OFDM, MCS7, Frequency Band 3, 26 dB Bandwidth Plot



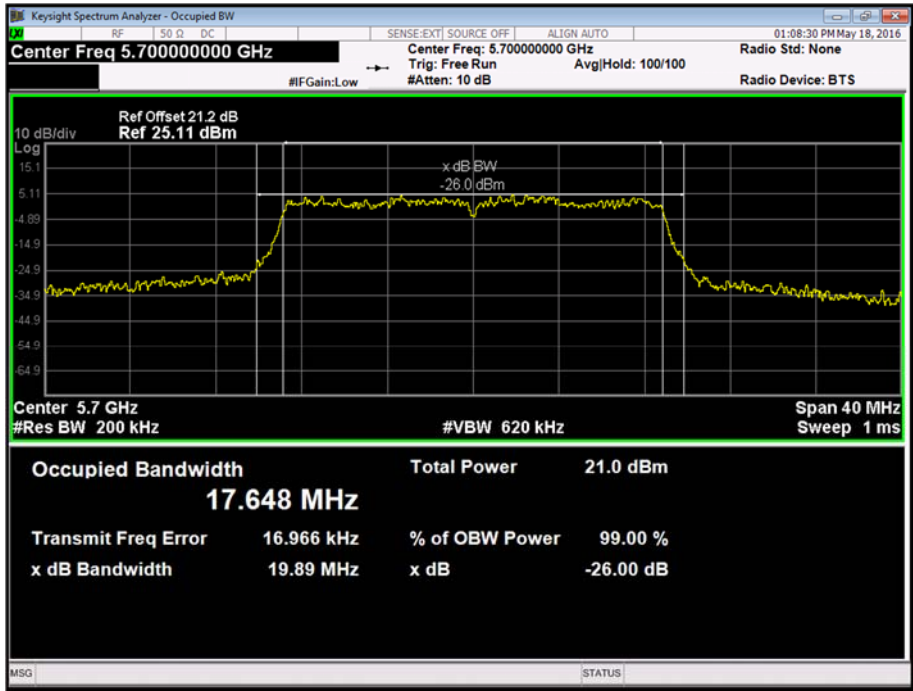


Product Service

802.11ac 20 MHz Bandwidth, 5600 MHz, OFDM, MCS7, Frequency Band 3, 26 dB Bandwidth Plot



802.11ac 20 MHz Bandwidth, 5700 MHz, OFDM, MCS7, Frequency Band 3, 26 dB Bandwidth 3 Plot



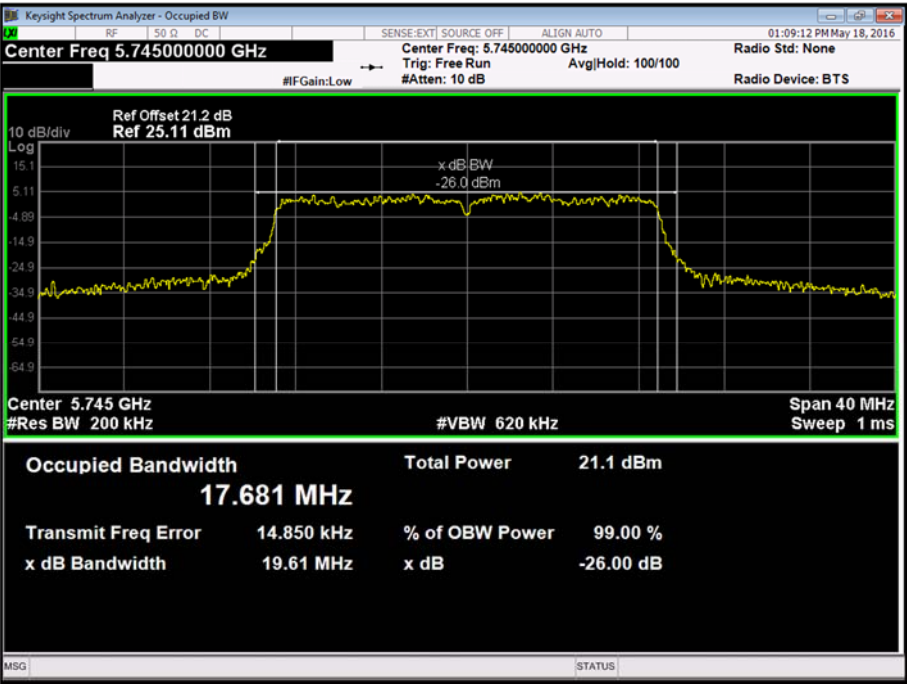


Product Service

802.11ac 20 MHz Bandwidth, OFDM, MCS7, Frequency Band 4, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5745 MHz | 5785 MHz | 5825 MHz |
| MHz      | MHz      | MHz      |
| 19.61    | 19.62    | 19.64    |

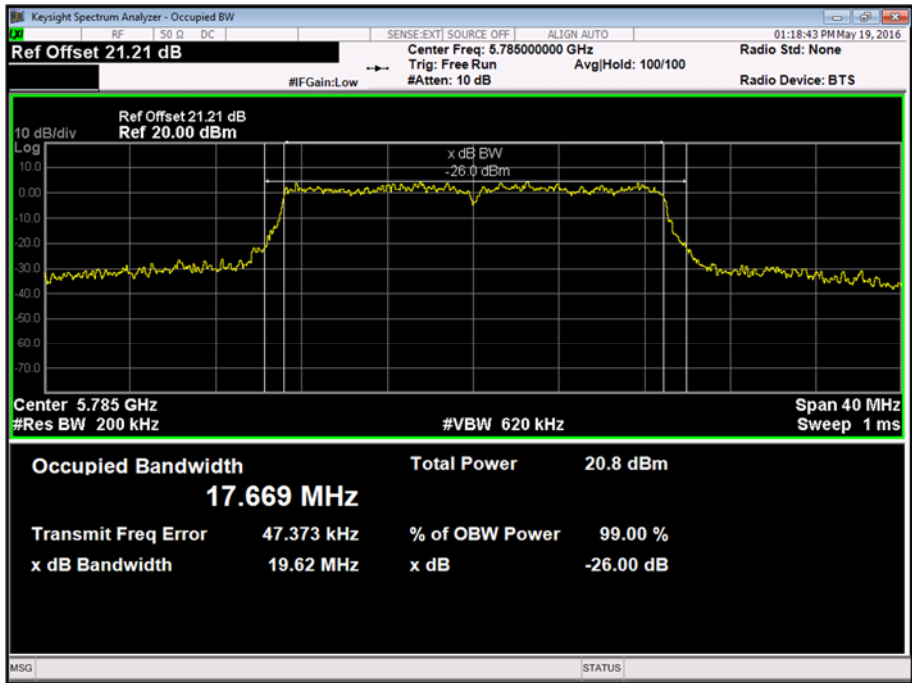
802.11ac 20 MHz Bandwidth, 5745 MHz, OFDM, MCS7, Frequency Band 4, 26 dB Bandwidth Plot



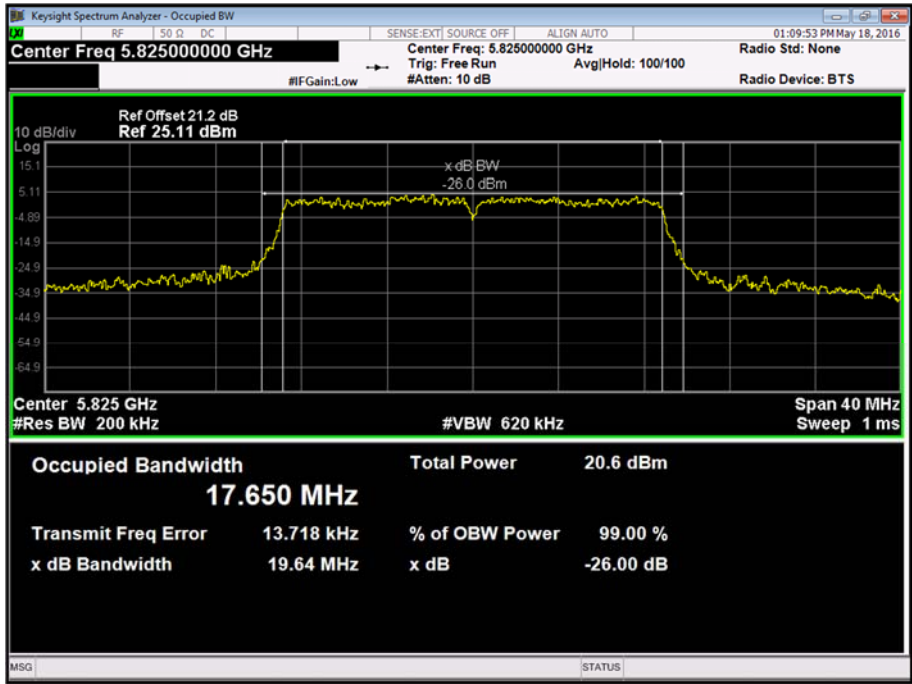


Product Service

802.11ac 20 MHz Bandwidth, 5785 MHz, OFDM, MCS7, Frequency Band 4, 26 dB Bandwidth Plot



802.11ac 20 MHz Bandwidth, 5825 MHz, OFDM, MCS7, Frequency Band 4, 26 dB Bandwidth Plot





Product Service

FCC 47 CFR Part 15, Limit Clause 15.407 (a)

No limit specified.

Industry Canada RSS-247, Limit Clause 6.2

No limit specified.

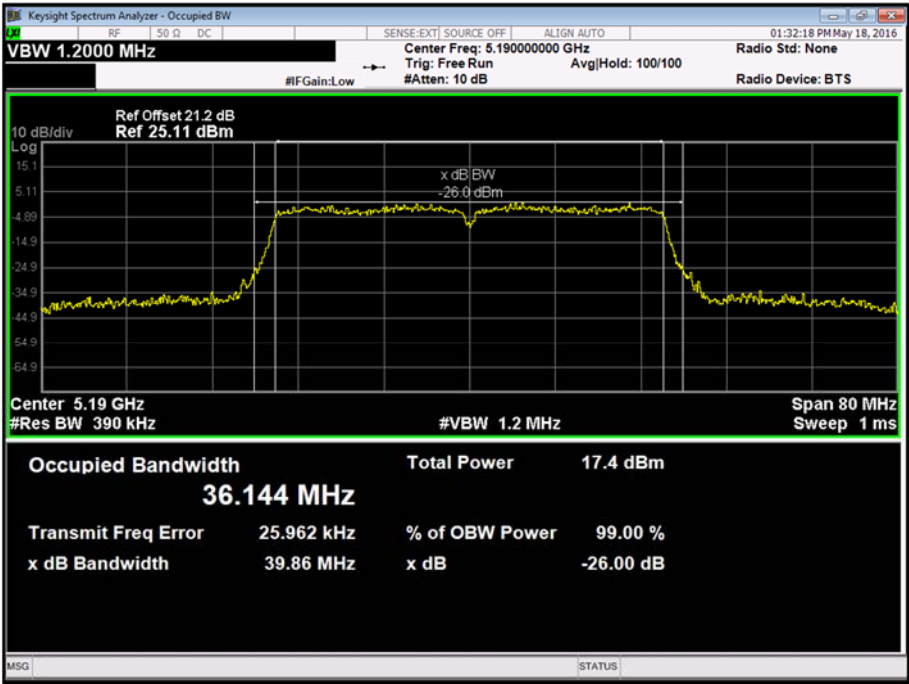


Product Service

802.11ac 40 MHz Bandwidth, OFDM, MCS7, Frequency Band 1, 26 dB Bandwidth Results

|          |          |
|----------|----------|
| 5190 MHz | 5230 MHz |
| MHz      | MHz      |
| 39.86    | 39.15    |

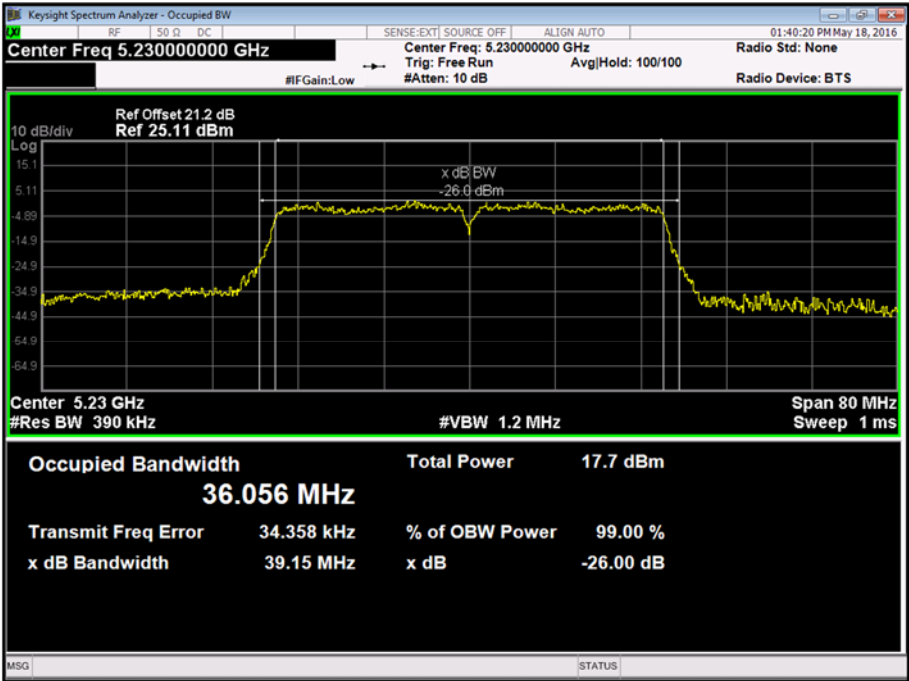
802.11ac 40 MHz Bandwidth, 5190 MHz, OFDM, MCS7, Frequency Band 1, 26 dB Bandwidth Plot





Product Service

802.11ac 40 MHz Bandwidth, 5230 MHz, OFDM, MCS7, Frequency Band 1, 26 dB Bandwidth Plot



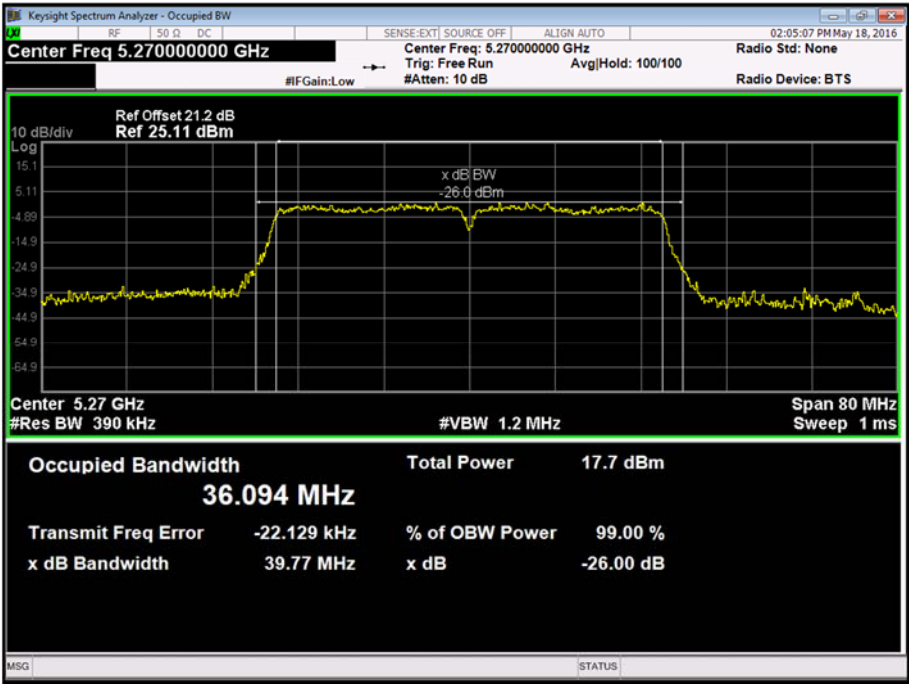


Product Service

802.11ac 40 MHz Bandwidth, OFDM, MCS7, Frequency Band 2, 26 dB Bandwidth Results

|          |          |
|----------|----------|
| 5270 MHz | 5310 MHz |
| MHz      | MHz      |
| 39.77    | 39.52    |

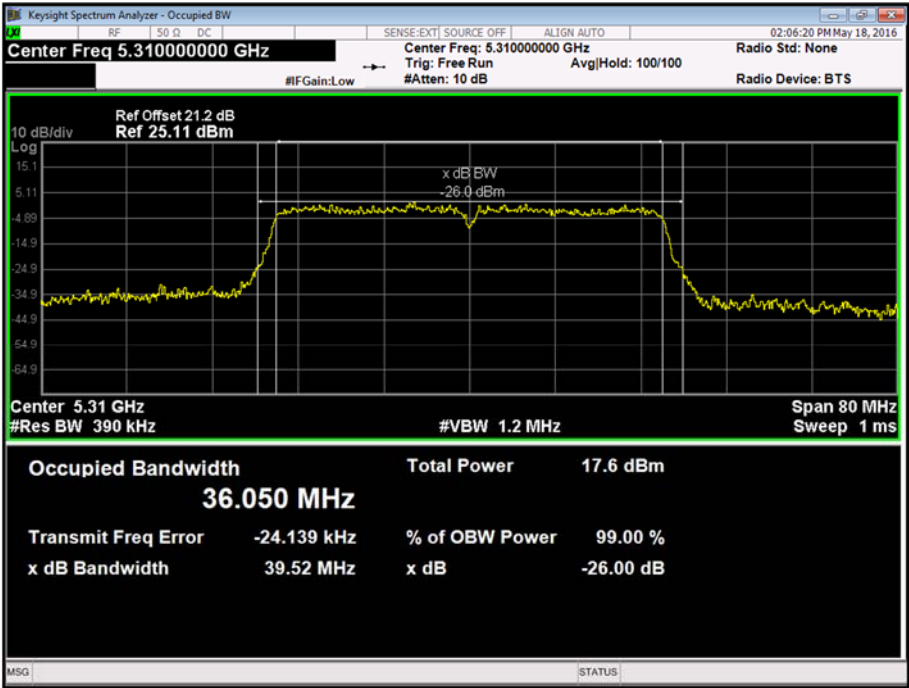
802.11ac 40 MHz Bandwidth, 5270 MHz, OFDM, MCS7, Frequency Band 2, 26 dB Bandwidth Plot





Product Service

802.11ac 40 MHz Bandwidth, 5310 MHz, OFDM, MCS7, Frequency Band 2, 26 dB Bandwidth Plot



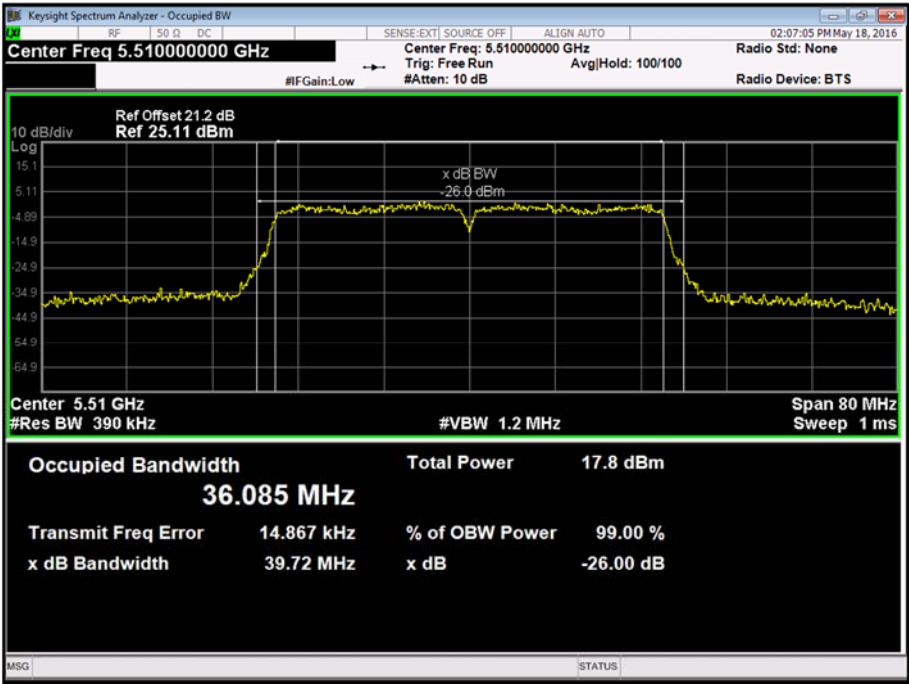


Product Service

802.11ac 40 MHz Bandwidth, OFDM, MCS7, Frequency Band 3, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5510 MHz | 5590 MHz | 5670 MHz |
| MHz      | MHz      | MHz      |
| 39.72    | 39.59    | 39.61    |

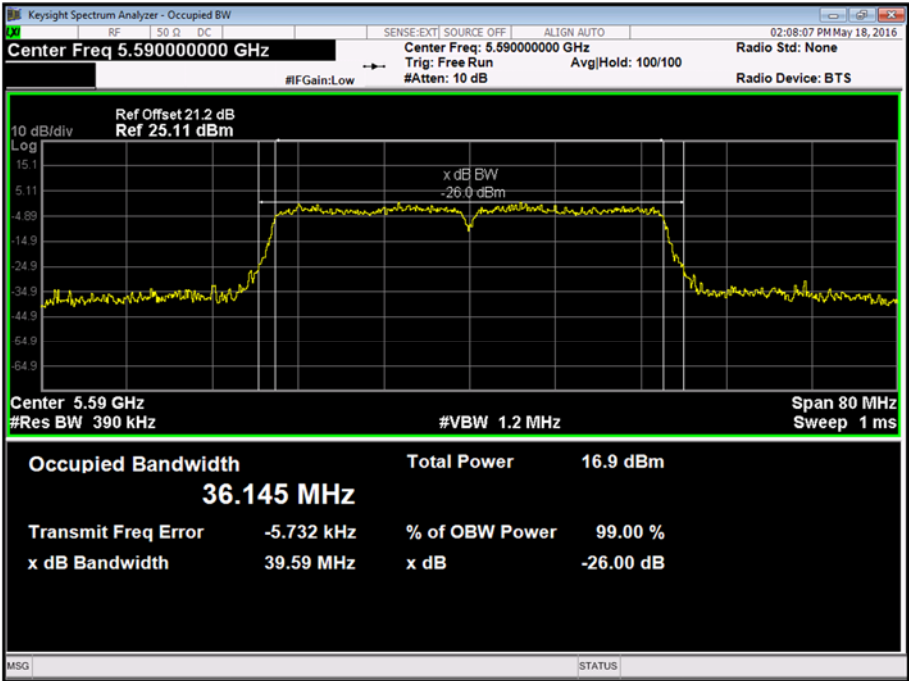
802.11ac 40 MHz Bandwidth, 5510 MHz, OFDM, MCS7, Frequency Band 3, 26 dB Bandwidth Plot



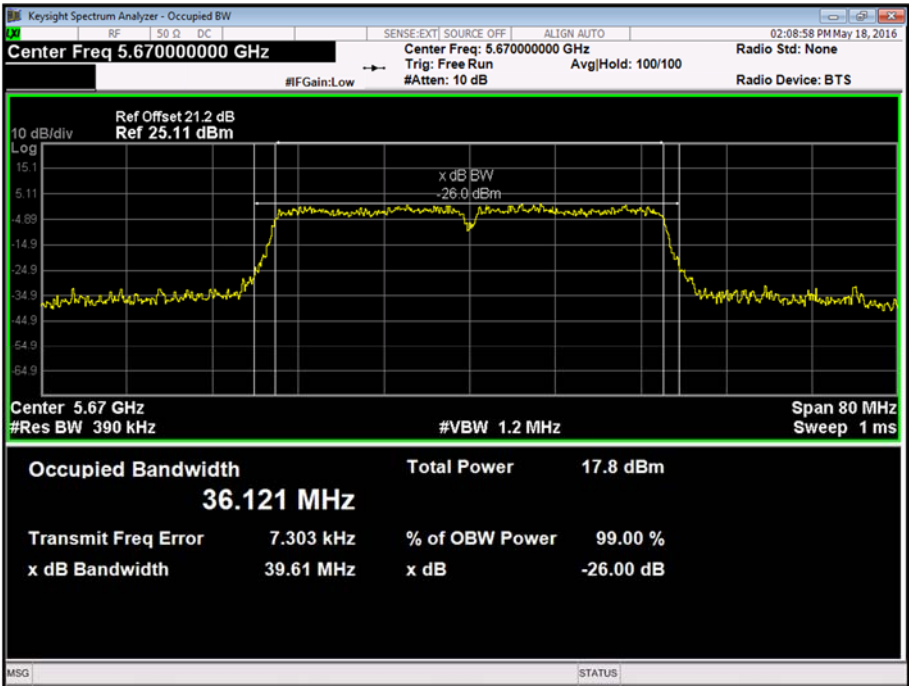


Product Service

802.11ac 40 MHz Bandwidth, 5590 MHz, OFDM, MCS7, Frequency Band 3, 26 dB Bandwidth Plot



802.11ac 40 MHz Bandwidth, 5670 MHz, OFDM, MCS7, Frequency Band 3, 26 dB Bandwidth 3 Plot



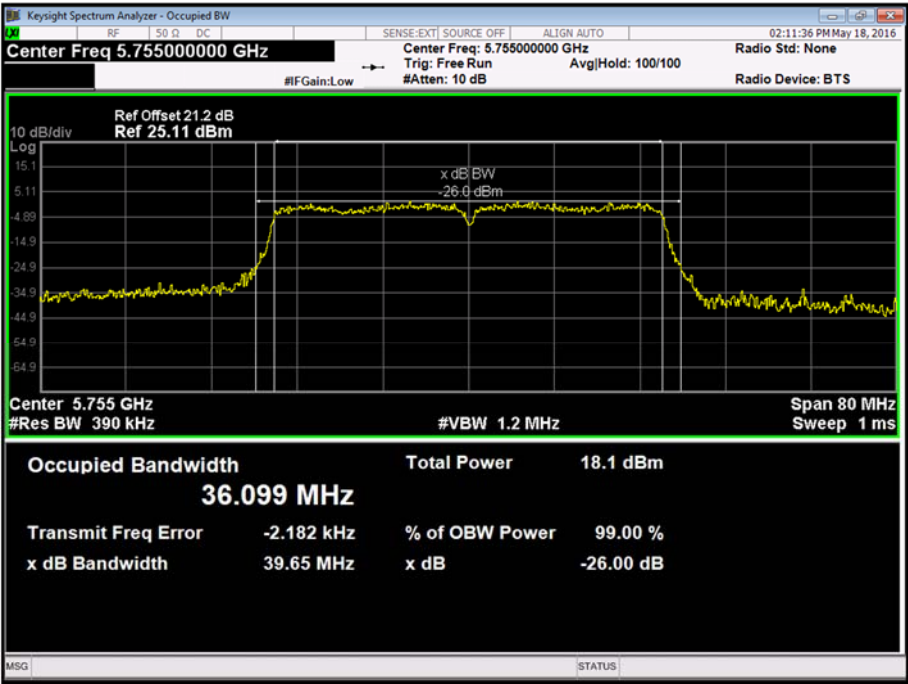


Product Service

802.11ac 40 MHz Bandwidth, OFDM, MCS7, Frequency Band 4, 26 dB Bandwidth Results

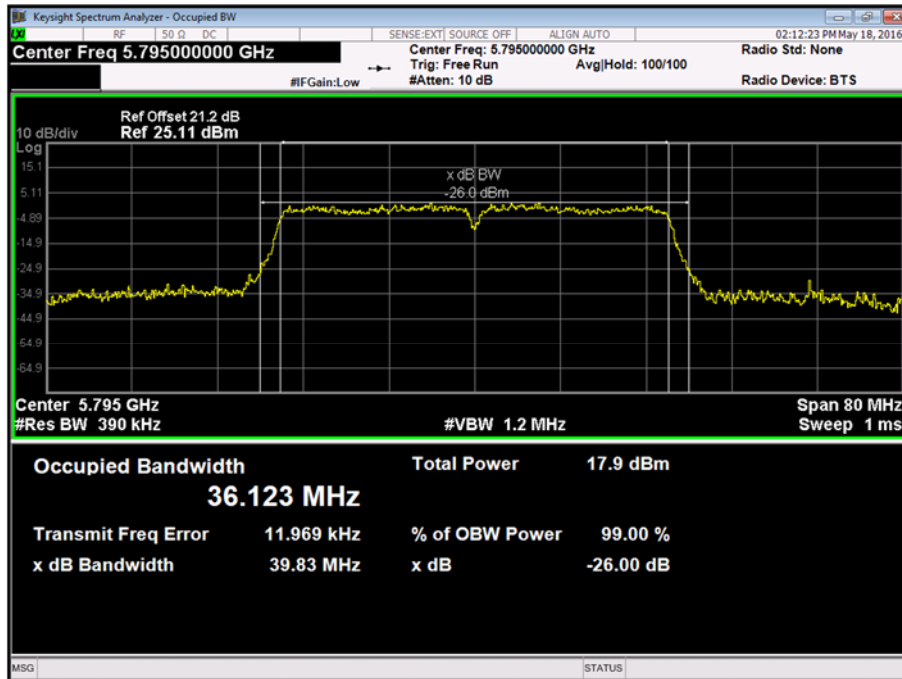
|          |          |
|----------|----------|
| 5755 MHz | 5795 MHz |
| MHz      | MHz      |
| 39.65    | 39.83    |

802.11ac 40 MHz Bandwidth, 5755 MHz, OFDM, MCS7, Frequency Band 4, 26 dB Bandwidth Plot



Product Service

802.11ac 40 MHz Bandwidth, 5795 MHz, OFDM, MCS7, Frequency Band 4, 26 dB Bandwidth Plot



FCC 47 CFR Part 15, Limit Clause 15.407 (a)

No limit specified.

Industry Canada RSS-247, Limit Clause 6.2

No limit specified.

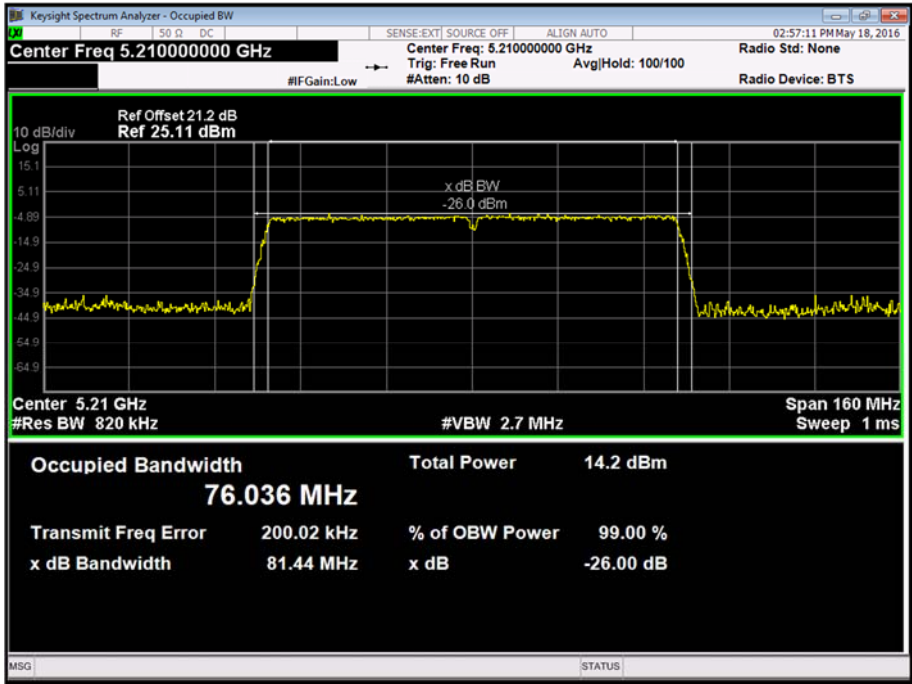


Product Service

802.11ac 80 MHz Bandwidth, OFDM, MCS0, Frequency Band 1, 26 dB Bandwidth Results

|          |
|----------|
| 5210 MHz |
| MHz      |
| 81.44    |

802.11ac 80 MHz Bandwidth, 5210 MHz, OFDM, MCS0, Frequency Band 1, 26 dB Bandwidth Plot



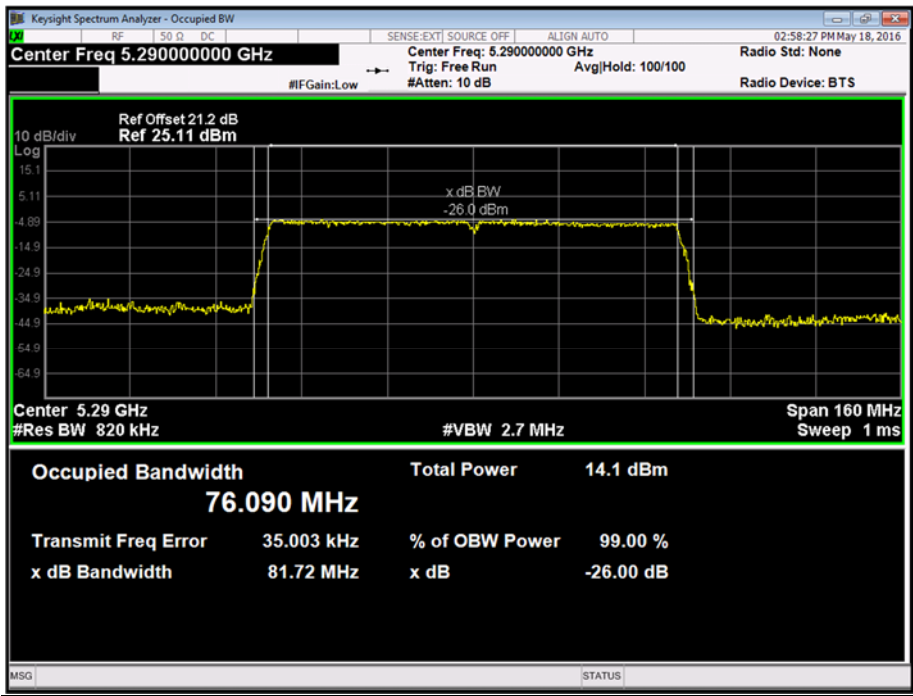


Product Service

802.11ac 80 MHz Bandwidth, OFDM, MCS0, Frequency Band 2, 26 dB Bandwidth Results

|          |
|----------|
| 5290 MHz |
| MHz      |
| 81.72    |

802.11ac 80 MHz Bandwidth, 5290 MHz, OFDM, MCS0, Frequency Band 2, 26 dB Bandwidth Plot



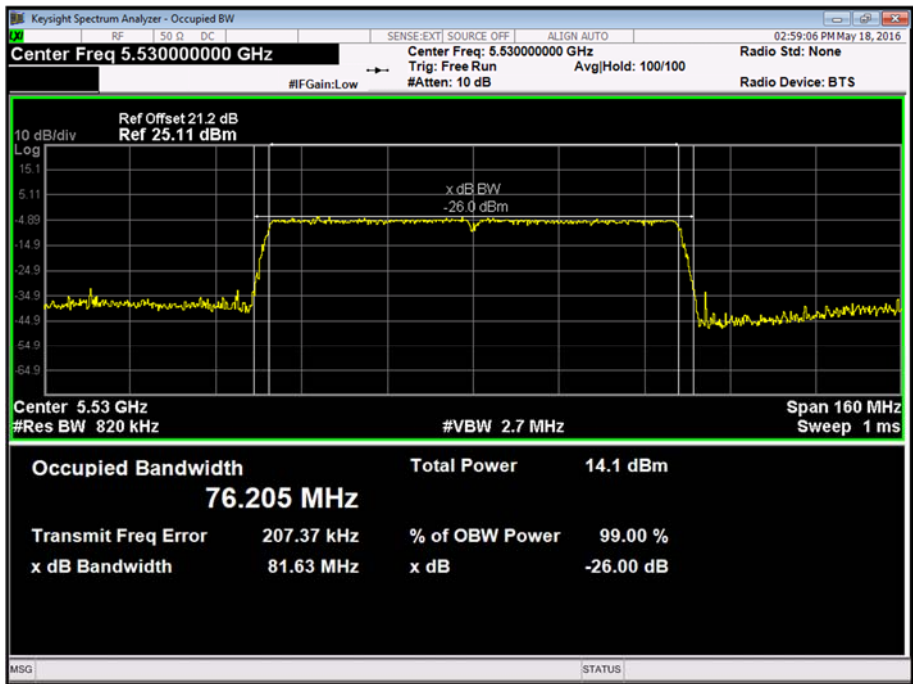


Product Service

802.11ac 80 MHz Bandwidth, OFDM, MCS0, Frequency Band 3, 26 dB Bandwidth Results

|          |          |
|----------|----------|
| 5530 MHz | 5610 MHz |
| MHz      | MHz      |
| 81.63    | 81.78    |

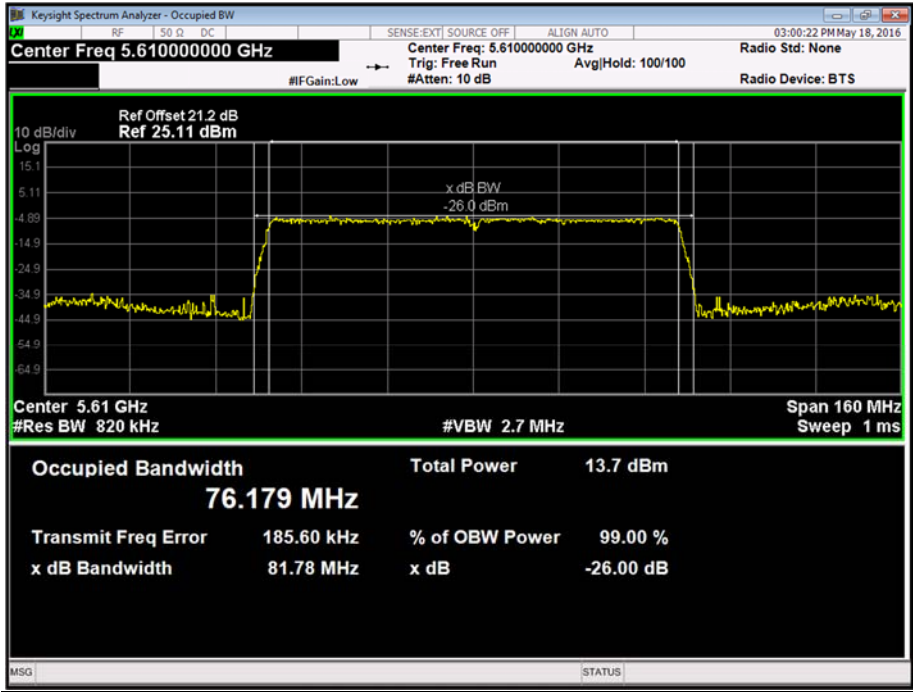
802.11ac 80 MHz Bandwidth, 5530 MHz, OFDM, MCS0, Frequency Band 3, 26 dB Bandwidth Plot





Product Service

802.11ac 80 MHz Bandwidth, 5610 MHz, OFDM, MCS0, Frequency Band 3, 26 dB Bandwidth Plot



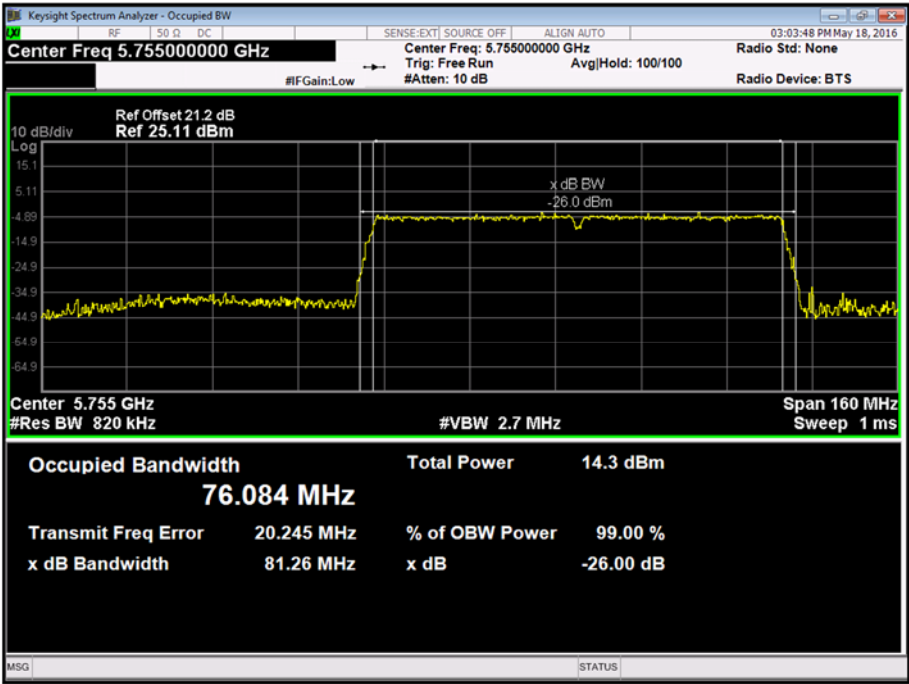


Product Service

802.11ac 80 MHz Bandwidth, OFDM, MCS0, Frequency Band 4, 26 dB Bandwidth Results

|          |
|----------|
| 5775 MHz |
| MHz      |
| 81.26    |

802.11ac 80 MHz Bandwidth, 5775 MHz, OFDM, MCS0, Frequency Band 4, 26 dB Bandwidth Plot



FCC 47 CFR Part 15, Limit Clause 15.407 (a)

No limit specified.

Industry Canada RSS-247, Limit Clause 6.2

No limit specified.

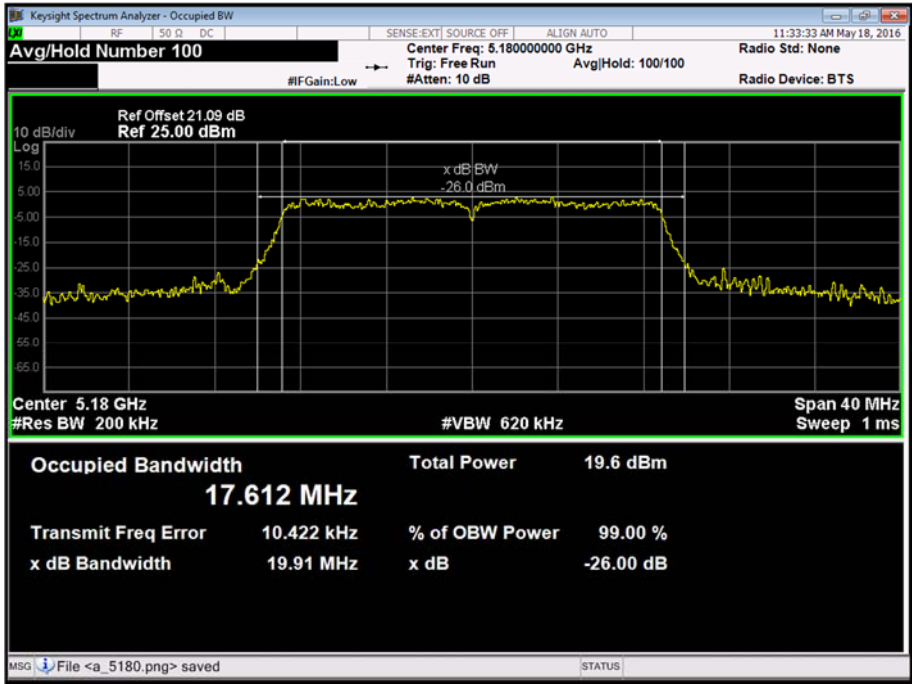


Product Service

802.11n 20 MHz Bandwidth, OFDM, MCS0, Frequency Band 1, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5180 MHz | 5200 MHz | 5240 MHz |
| MHz      | MHz      | MHz      |
| 19.91    | 19.88    | 19.92    |

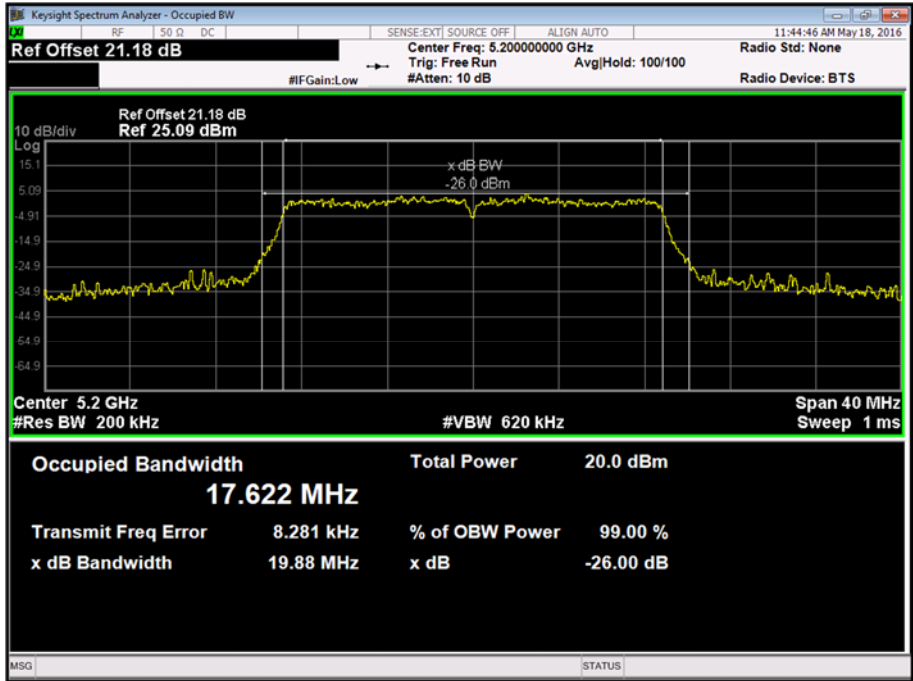
802.11n 20 MHz Bandwidth, 5180 MHz, OFDM, MCS0, Frequency Band 1, 26 dB Bandwidth Plot



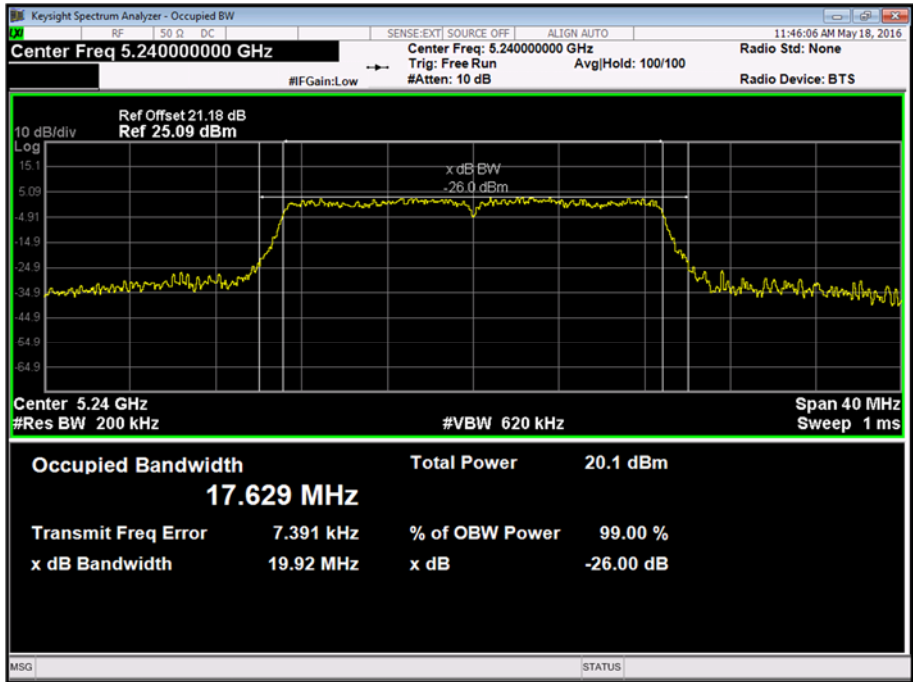


Product Service

802.11n 20 MHz Bandwidth, 5200 MHz, OFDM, MCS0, Frequency Band 1, 26 dB Bandwidth Plot



802.11n 20 MHz Bandwidth, 5240 MHz, OFDM, MCS0, Frequency Band 1, 26 dB Bandwidth Plot



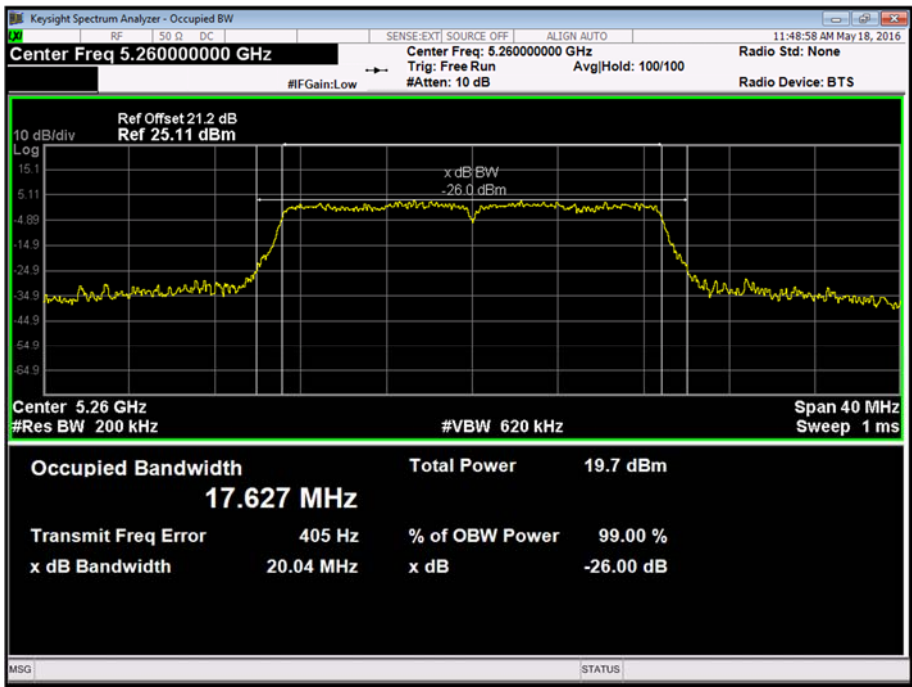


Product Service

802.11n 20 MHz Bandwidth, OFDM, MCS0, Frequency Band 2, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5260 MHz | 5300 MHz | 5320 MHz |
| MHz      | MHz      | MHz      |
| 20.04    | 19.74    | 19.87    |

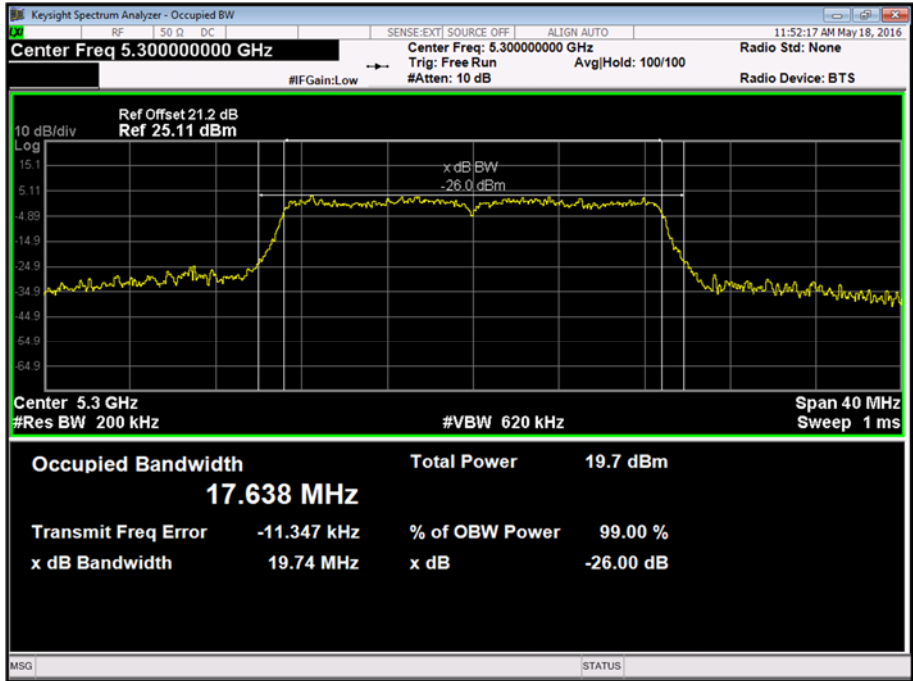
802.11n 20 MHz Bandwidth, 5260 MHz, OFDM, MCS0, Frequency Band 2, 26 dB Bandwidth Plot



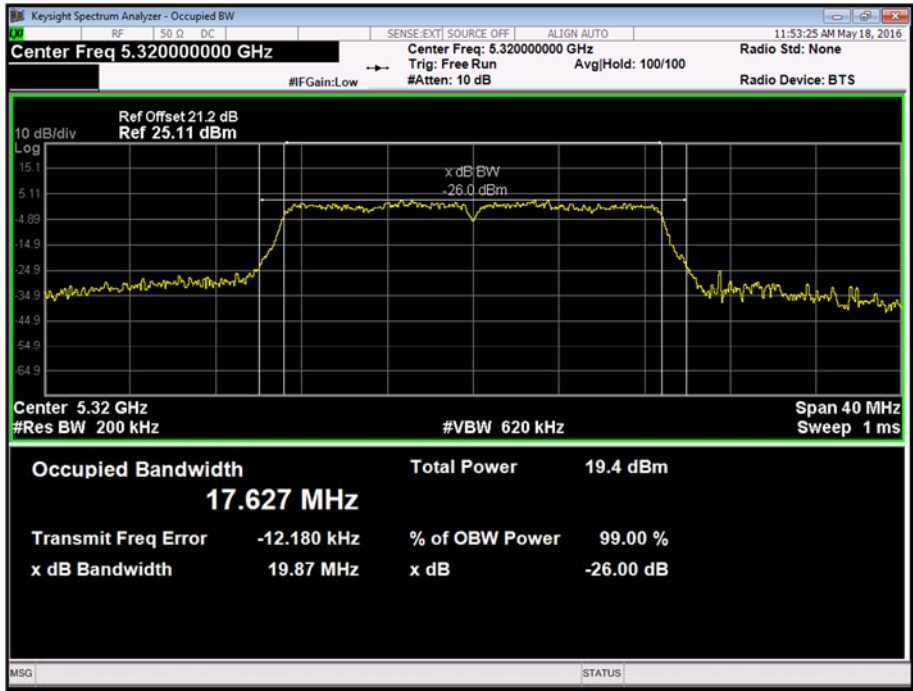


Product Service

802.11n 20 MHz Bandwidth, 5300 MHz, OFDM, MCS0, Frequency Band 2, 26 dB Bandwidth Plot



802.11n 20 MHz Bandwidth, 5320 MHz, OFDM, MCS0, Frequency Band 2, 26 dB Bandwidth Plot



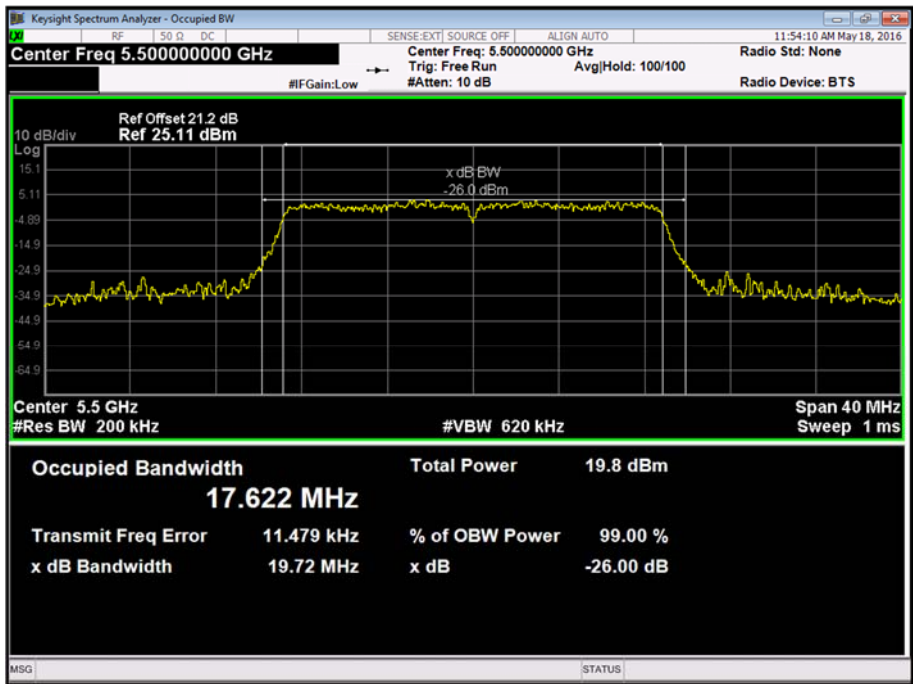


Product Service

802.11n 20 MHz Bandwidth, OFDM, MCS0, Frequency Band 3, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5500 MHz | 5600 MHz | 5700 MHz |
| MHz      | MHz      | MHz      |
| 19.72    | 20.06    | 19.89    |

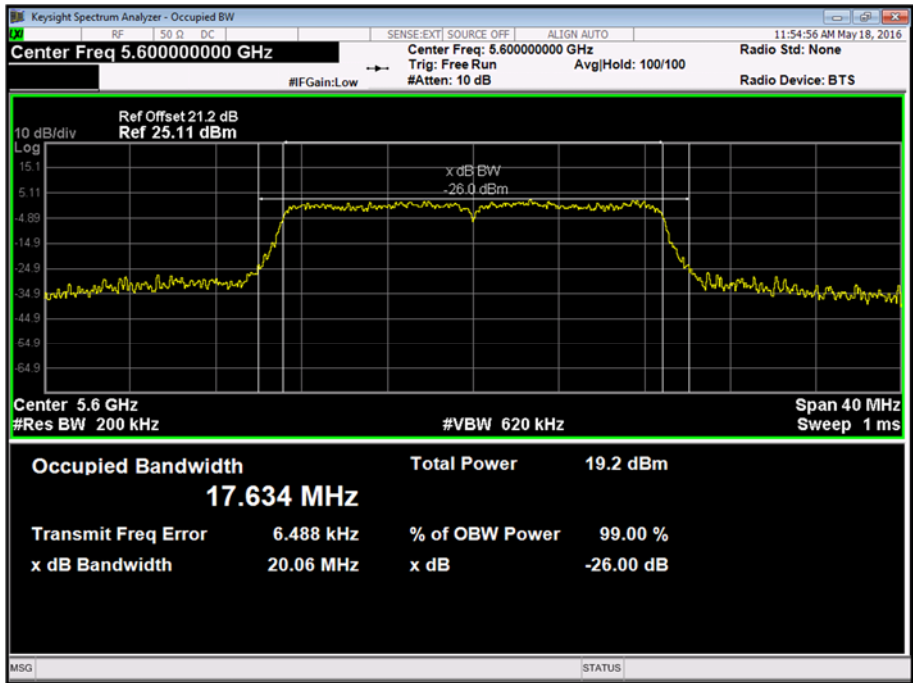
802.11n 20 MHz Bandwidth, 5500 MHz, OFDM, MCS0, Frequency Band 3, 26 dB Bandwidth Plot



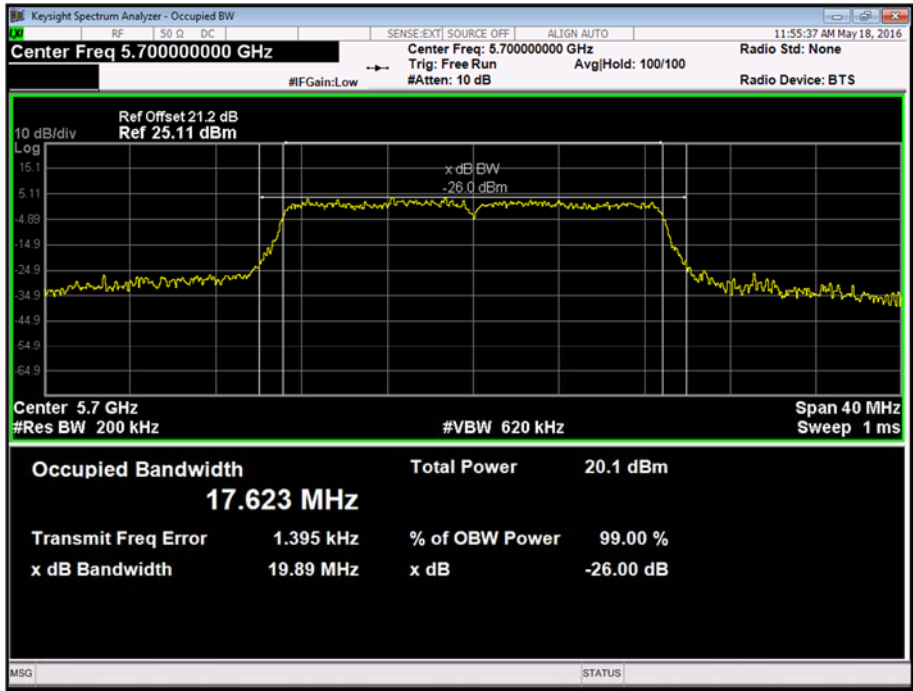


Product Service

802.11n 20 MHz Bandwidth, 5600 MHz, OFDM, MCS0, Frequency Band 3, 26 dB Bandwidth Plot



802.11n 20 MHz Bandwidth, 5700 MHz, OFDM, MCS0, Frequency Band 3, 26 dB Bandwidth 3 Plot



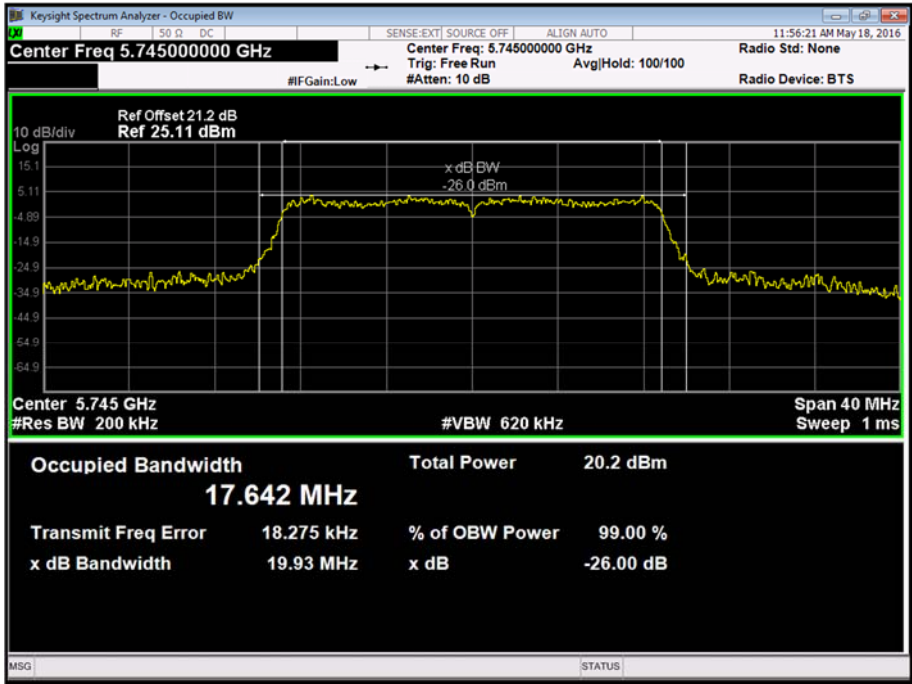


Product Service

802.11n 20 MHz Bandwidth, OFDM, MCS0, Frequency Band 4, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5745 MHz | 5785 MHz | 5825 MHz |
| MHz      | MHz      | MHz      |
| 19.93    | 20.02    | 19.92    |

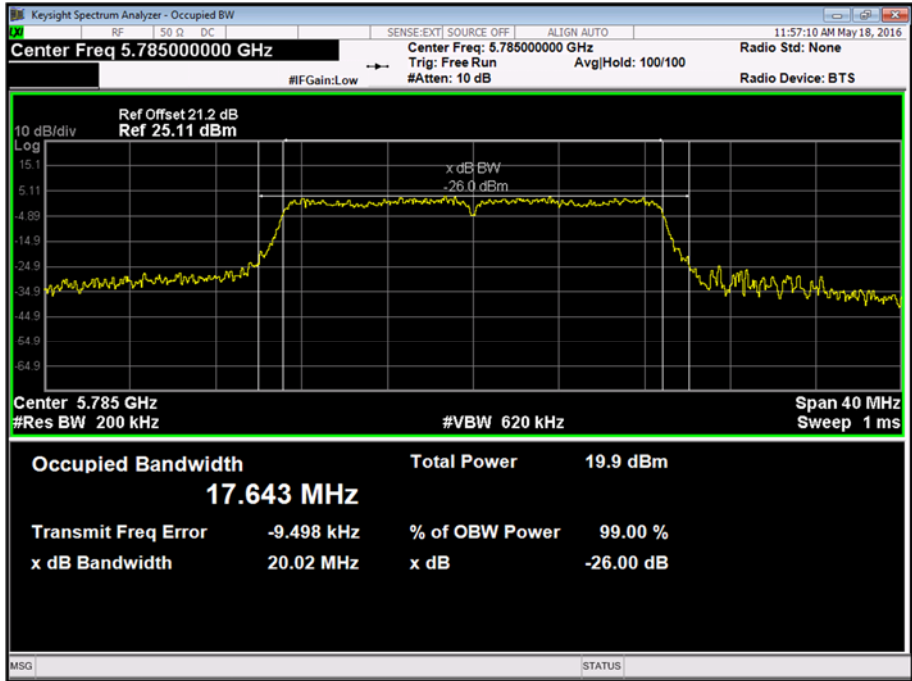
802.11n 20 MHz Bandwidth, 5745 MHz, OFDM, MCS0, Frequency Band 4, 26 dB Bandwidth Plot



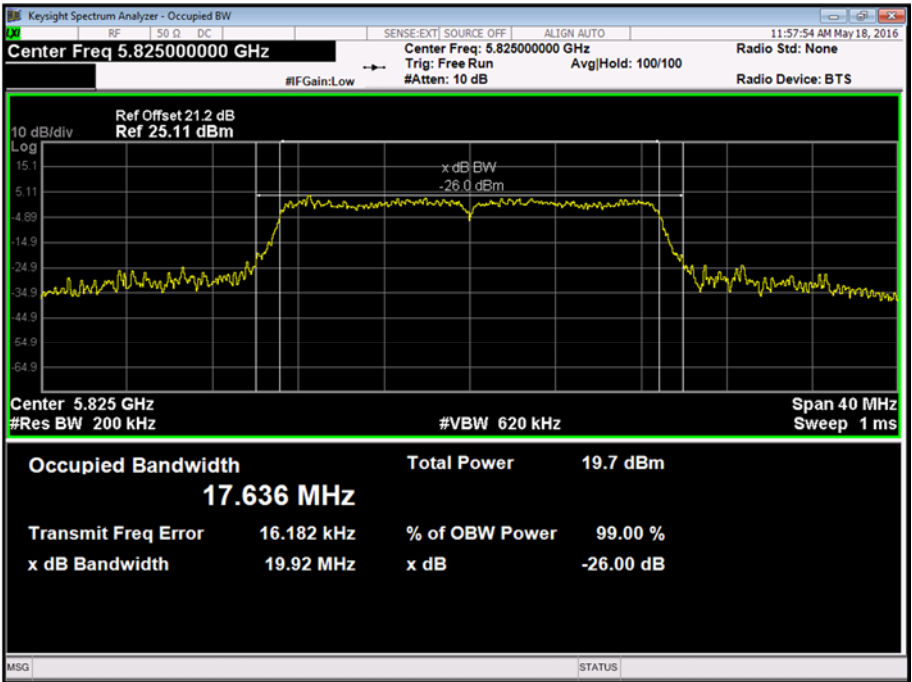


Product Service

802.11n 20 MHz Bandwidth, 5785 MHz, OFDM, MCS0, Frequency Band 4, 26 dB Bandwidth Plot



802.11n 20 MHz Bandwidth, 5825 MHz, OFDM, MCS0, Frequency Band 4, 26 dB Bandwidth Plot





Product Service

FCC 47 CFR Part 15, Limit Clause 15.407 (a)

No limit specified.

Industry Canada RSS-247, Limit Clause 6.2

No limit specified.

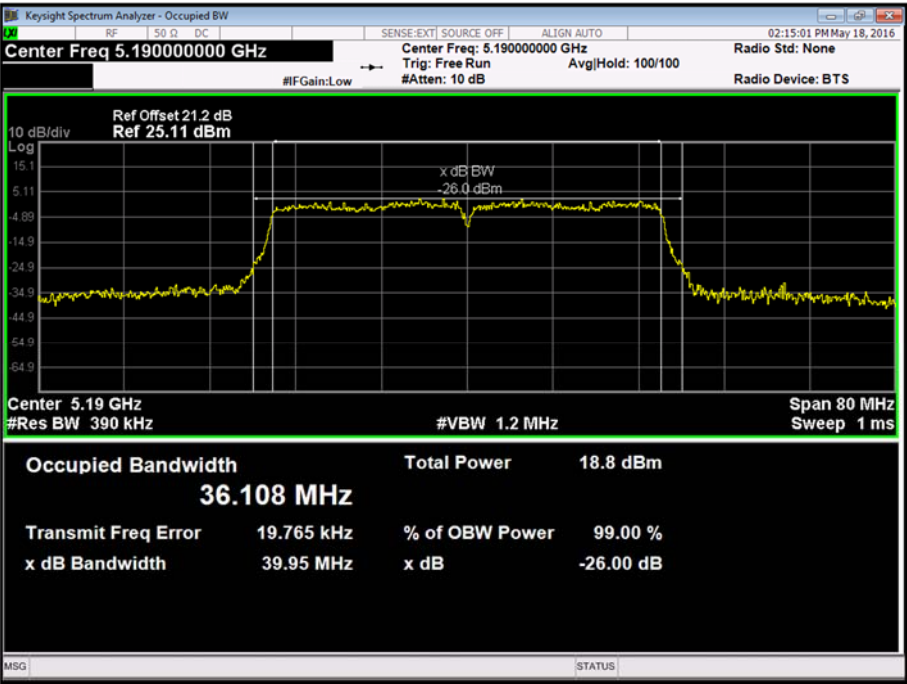


Product Service

802.11n 40 MHz Bandwidth, OFDM, MCS7, Frequency Band 1, 26 dB Bandwidth Results

|          |          |
|----------|----------|
| 5190 MHz | 5230 MHz |
| MHz      | MHz      |
| 39.95    | 39.70    |

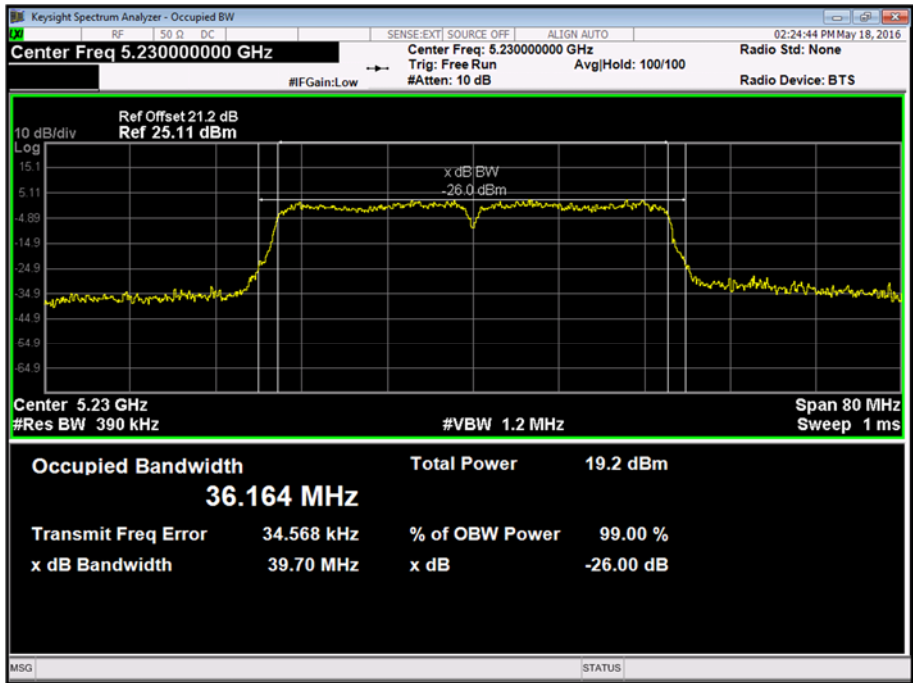
802.11n 40 MHz Bandwidth, 5190 MHz, OFDM, MCS7, Frequency Band 1, 26 dB Bandwidth Plot





Product Service

802.11n 40 MHz Bandwidth, 5230 MHz, OFDM, MCS7, Frequency Band 1, 26 dB Bandwidth Plot



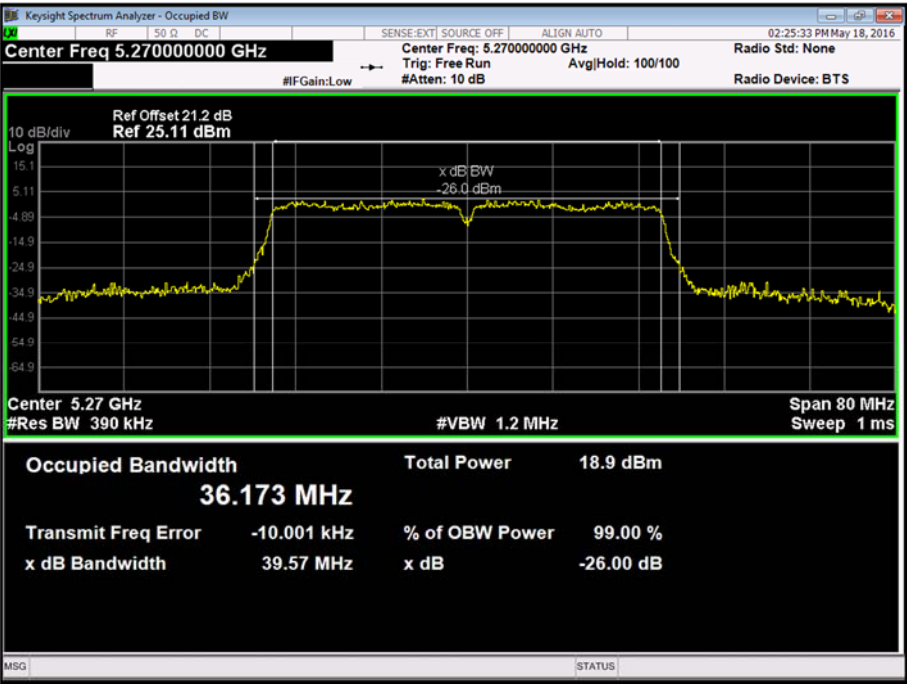


Product Service

802.11n 40 MHz Bandwidth, OFDM, MCS7, Frequency Band 2, 26 dB Bandwidth Results

|          |          |
|----------|----------|
| 5270 MHz | 5310 MHz |
| MHz      | MHz      |
| 39.57    | 39.71    |

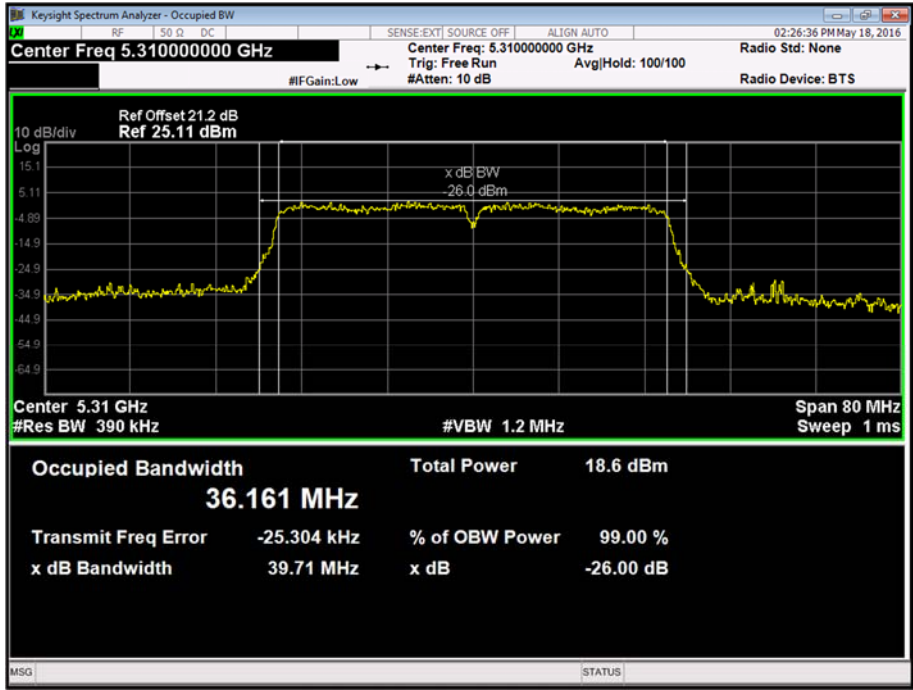
802.11n 40 MHz Bandwidth, 5270 MHz, OFDM, MCS7, Frequency Band 2, 26 dB Bandwidth Plot





Product Service

802.11n 40 MHz Bandwidth, 5310 MHz, OFDM, MCS7, Frequency Band 2, 26 dB Bandwidth Plot



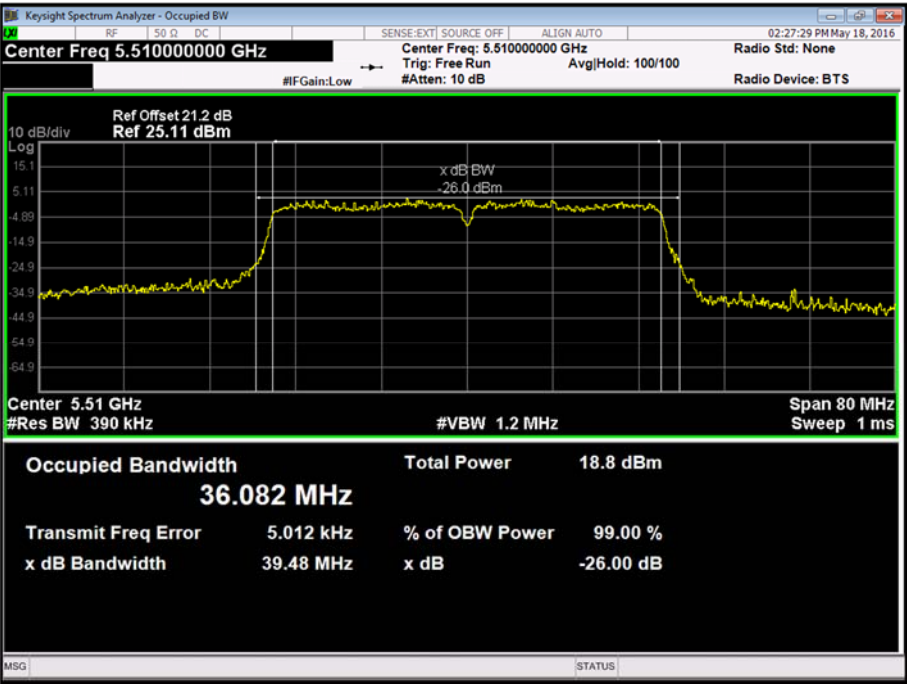


Product Service

802.11n 40 MHz Bandwidth, OFDM, MCS7, Frequency Band 3, 26 dB Bandwidth Results

|          |          |          |
|----------|----------|----------|
| 5510 MHz | 5590 MHz | 5670 MHz |
| MHz      | MHz      | MHz      |
| 39.48    | 39.61    | 39.18    |

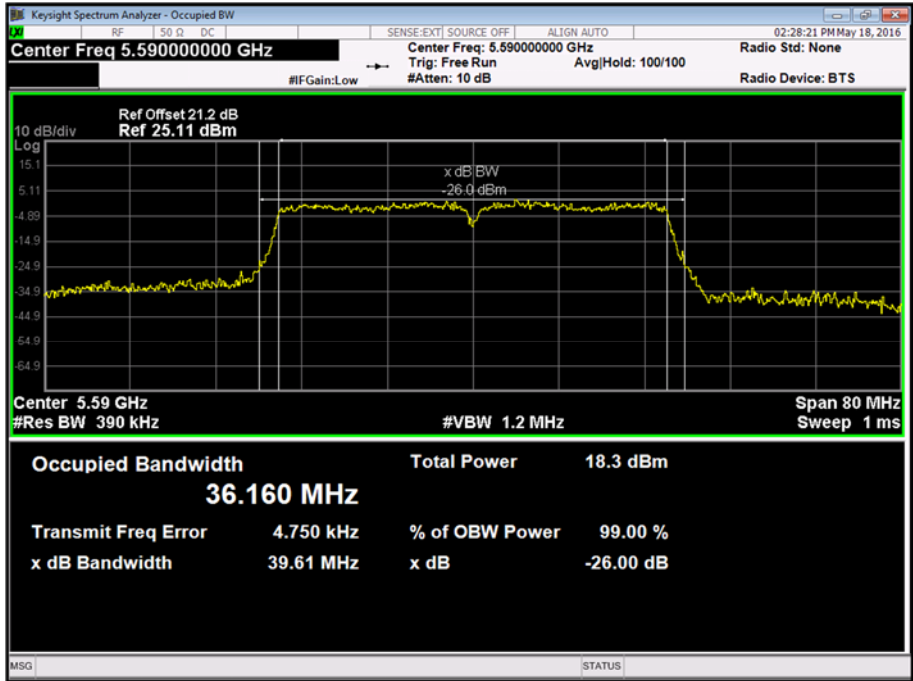
802.11n 40 MHz Bandwidth, 5510 MHz, OFDM, MCS7, Frequency Band 3, 26 dB Bandwidth Plot





Product Service

802.11n 40 MHz Bandwidth, 5590 MHz, OFDM, MCS7, Frequency Band 3, 26 dB Bandwidth Plot



802.11n 40 MHz Bandwidth, 5670 MHz, OFDM, MCS7, Frequency Band 3, 26 dB Bandwidth 3 Plot

