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Report On

FCC Testing of the Sharp Hep-band LTE (B1 / B3 / B5 / B13 / B17 / B26 / B38), Dual-band WCDMA (FDD I / V), Quad-band GSM (850 / 900 / 1800 / 1900) & WiMAX2+ (TDD41) multi mode Smart phone with Bluetooth, WLAN, SRD(NFC, FeliCa) and GPS in accordance with FCC 47 CFR Part 15E

COMMERCIAL-IN-CONFIDENCE

FCC ID: APYHRO00234

Document 75933606 Report 23 Issue 1

May 2016



Product Service

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COMMERCIAL-IN-CONFIDENCE

REPORT ON

FCC Testing of the Sharp Hep-band LTE (B1 / B3 / B5 / B13 / B17 / B26 / B38), Dual-band WCDMA (FDD I / V), Quad-band GSM (850 / 900 / 1800 / 1900) & WiMAX2+ (TDD41) multi mode Smart phone with Bluetooth, WLAN, SRD(NFC, FeliCa) and GPS
In accordance with FCC 47 CFR Part 15E

Document 75933606 Report 23 Issue 1

May 2016

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DATED

05 May 2016

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. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

M Russell

G Lawler



N Rousell



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SECTION 1

REPORT SUMMARY

FCC Testing of the
Sharp Hep-band LTE (B1 / B3 / B5 / B13 / B17 / B26 / B38), Dual-band WCDMA (FDD I / V),
Quad-band GSM (850 / 900 / 1800 / 1900) & WiMAX2+ (TDD41) multi mode Smart phone with
Bluetooth, WLAN, SRD(NFC, FeliCa) and GPS
In accordance with FCC 47 CFR Part 15E



Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show the verification of FCC Testing of the Sharp Hep-band LTE (B1 / B3 / B5 / B13 / B17 / B26 / B38), Dual-band WCDMA (FDD I / V), Quad-band GSM (850 / 900 / 1800 / 1900) & WiMAX2+ (TDD41) multi mode Smart phone with Bluetooth, WLAN, SRD(NFC, FeliCa) and GPS to the requirements of FCC 47 CFR Part 15E.

Objective	To perform FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Sharp Corporation
Serial Number(s)	IMEI 004401115723831 IMEI 004401115723435 IMEI 004401115723443 IMEI 004401115722627
Number of Samples Tested	4
Test Specification/Issue/Date	FCC 47 CFR Part 15E (2015)
Disposal	Held Pending Disposal
Reference Number	Not Applicable
Date	Not Applicable
Order Number	10749
Date	15 February 2016
Start of Test	31 March 2016
Finish of Test	20 April 2016
Name of Engineer(s)	M Russell G Lawler N Rousell
Related Document(s)	KDB 789033 D02 General UNII Test Procedures New Rules v01 ETSI TR 100 028 (2001) ANSI 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 is shown below.

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



Product Service

Section	Specification Clause	Test Description	Result	Comments/Base Standard
802.11n - 5 GHz 40 MHz Bandwidth				
2.1	15.207	AC Line Conducted Emissions	Pass	
2.2	15.407 (a)	26 dB Bandwidth	Pass	
2.3	15.407 (a)(1)(2)	Maximum Conducted Output Power	Pass	
2.4	15.407 (a)(5)	Peak Power Spectral Density	Pass	
2.5	15.407 (b), 15.205 and 15.209	Spurious Radiated Emissions	Pass	
2.6	15.407 (g)	Frequency Stability	Pass	
2.7	15.205	Restricted Band Edges	Pass	
2.8	15.407 (b)(1)(2)(3)(4)	Authorised Band Edges	Pass	
802.11ac - 5 GHz 20 MHz Bandwidth				
2.2	15.407 (a)	26 dB Bandwidth	Pass	
2.3	15.407 (a)(1)(2)	Maximum Conducted Output Power	Pass	
2.4	15.407 (a)(5)	Peak Power Spectral Density	Pass	
2.6	15.407 (g)	Frequency Stability	Pass	
2.7	15.205	Restricted Band Edges	Pass	
2.8	15.407 (b)(1)(2)(3)(4)	Authorised Band Edges	Pass	



Section	Specification Clause	Test Description	Result	Comments/Base Standard
802.11ac - 5 GHz 40 MHz Bandwidth				
2.2	15.407 (a)	26 dB Bandwidth	Pass	
2.3	15.407 (a)(1)(2)	Maximum Conducted Output Power	Pass	
2.4	15.407 (a)(5)	Peak Power Spectral Density	Pass	
2.5	15.407 (b), 15.205 and 15.209	Spurious Radiated Emissions	Pass	
2.6	15.407 (g)	Frequency Stability	Pass	
2.7	15.205	Restricted Band Edges	Pass	
2.8	15.407 (b)(1)(2)(3)(4)	Authorised Band Edges	Pass	
802.11ac - 5 GHz 80 MHz Bandwidth				
2.2	15.407 (a)	26 dB Bandwidth	Pass	
2.3	15.407 (a)(1)(2)	Maximum Conducted Output Power	Pass	
2.4	15.407 (a)(5)	Peak Power Spectral Density	Pass	
2.6	15.407 (g)	Frequency Stability	Pass	
2.7	15.205	Restricted Band Edges	Pass	
2.8	15.407 (b)(1)(2)(3)(4)	Authorised Band Edges	Pass	



Product Service

1.3 PRODUCT TECHNICAL DESCRIPTION

Refer to Model Description APYHRO00234 Rev 4.0 document.

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Sharp Hep-band LTE (B1 / B3 / B5 / B13 / B17 / B26 / B38), Dual-band WCDMA (FDD I / V), Quad-band GSM (850 / 900 / 1800 / 1900) & WiMAX2+ (TDD41) multi mode Smart phone with Bluetooth, WLAN, SRD(NFC, FeliCa) and GPS. 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 4.0 V DC supply.

FCC Measurement Facility Registration Number
90987 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 Testing of the
Sharp Hep-band LTE (B1 / B3 / B5 / B13 / B17 / B26 / B38), Dual-band WCDMA (FDD I / V),
Quad-band GSM (850 / 900 / 1800 / 1900) & WiMAX2+ (TDD41) multi mode Smart phone with
Bluetooth, WLAN, SRD(NFC, FeliCa) and GPS
In accordance with FCC 47 CFR Part 15E



Product Service

2.1 AC LINE CONDUCTED EMISSIONS

2.1.1 Specification Reference

FCC 47 CFR Part 15E, Clause 15.207

2.1.2 Equipment Under Test and Modification State

S/N: IMEI 004401115723831 - Modification State 0

2.1.3 Date of Test

18 April 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 Class B emission limits in Clause 15.207 of FCC 47 CFR Part 15.

2.1.6 Environmental Conditions

Ambient Temperature	18.6°C
Relative Humidity	30.0%



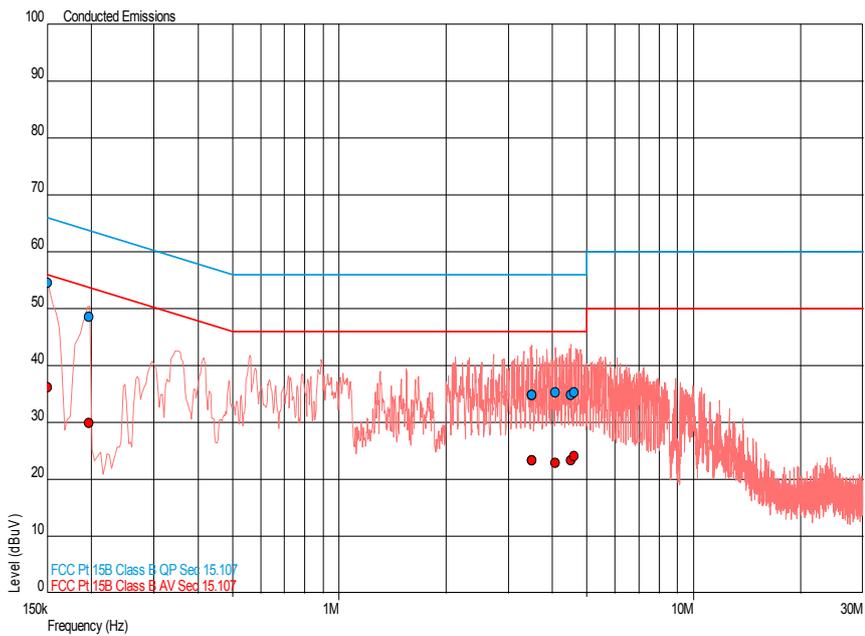
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2.1.7 Test Results

802.11n - 5 GHz 40 MHz Bandwidth, Live Line, AC Line Conducted Emissions Result

Frequency (MHz)	QP Level (dBμV)	QP Limit (dBμV)	QP Margin (dBμV)	AV Level (dBμV)	AV Limit (dBμV)	AV Margin (dBμV)
0.150	54.6	66.0	-11.4	36.2	56.0	-19.8
0.197	48.6	63.8	-15.2	30.0	53.8	-23.8
3.496	34.9	56.0	-21.1	23.3	46.0	-22.7
3.497	34.8	56.0	-21.2	23.4	46.0	-22.6
4.066	35.3	56.0	-20.7	22.9	46.0	-23.1
4.513	34.9	56.0	-21.1	23.4	46.0	-22.6
4.598	35.3	56.0	-20.7	24.1	46.0	-21.9

802.11n - 5 GHz 40 MHz Bandwidth, Live Line, AC Line Conducted Emissions Plot

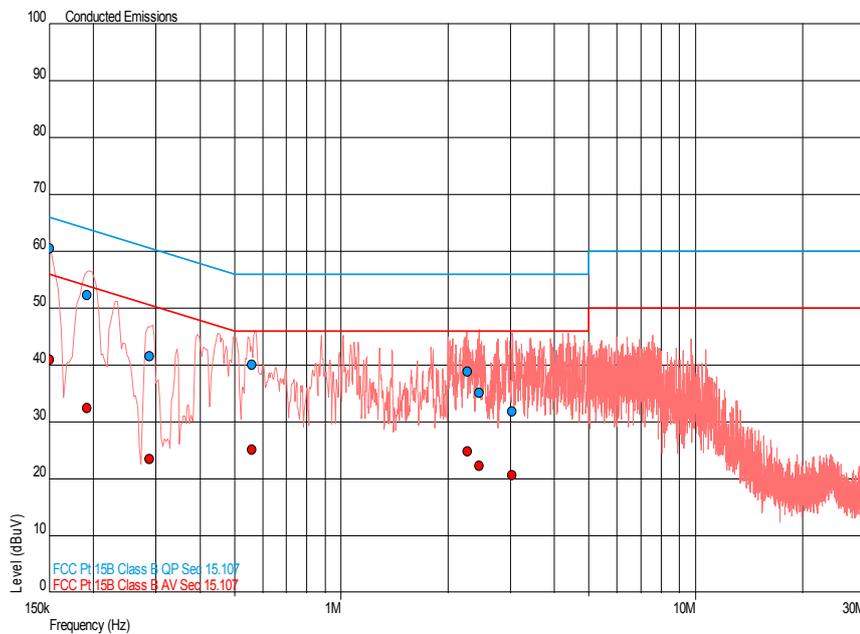




802.11n - 5 GHz 40 MHz Bandwidth, Neutral Line, AC Line Conducted Emissions Result

Frequency (MHz)	QP Level (dBμV)	QP Limit (dBμV)	QP Margin (dBμV)	AV Level (dBμV)	AV Limit (dBμV)	AV Margin (dBμV)
0.150	60.4	66.0	-5.6	41.0	56.0	-15.0
0.192	52.2	63.9	-11.7	32.4	53.9	-21.5
0.288	41.6	60.6	-19.0	23.5	50.6	-27.1
0.560	40.1	56.0	-15.9	25.2	46.0	-20.8
2.266	38.8	56.0	-17.2	24.9	46.0	-21.1
2.454	35.1	56.0	-20.9	22.3	46.0	-23.7
3.036	31.8	56.0	-24.2	20.6	46.0	-25.4

802.11n - 5 GHz 40 MHz Bandwidth, Neutral Line, AC Line Conducted Emissions Plot



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.



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2.2 26 dB BANDWIDTH**2.2.1 Specification Reference**

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

2.2.2 Equipment Under Test and Modification State

S/N: IMEI 004401115723435 - Modification State 0

2.2.3 Date of Test

12 April 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	23.8°C
Relative Humidity	36.2%



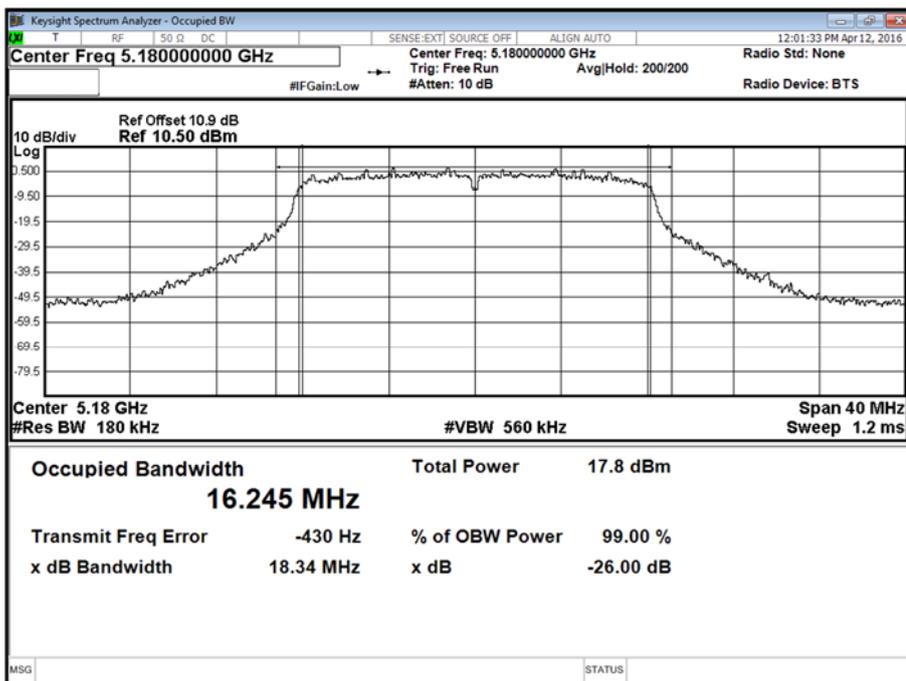
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2.2.7 Test Results

802.11a, OFDM, 36 Mbps, Frequency Band 1, 26 dB Bandwidth Results

5180 MHz	5200 MHz	5240 MHz
MHz	MHz	MHz
18.34	18.61	18.71

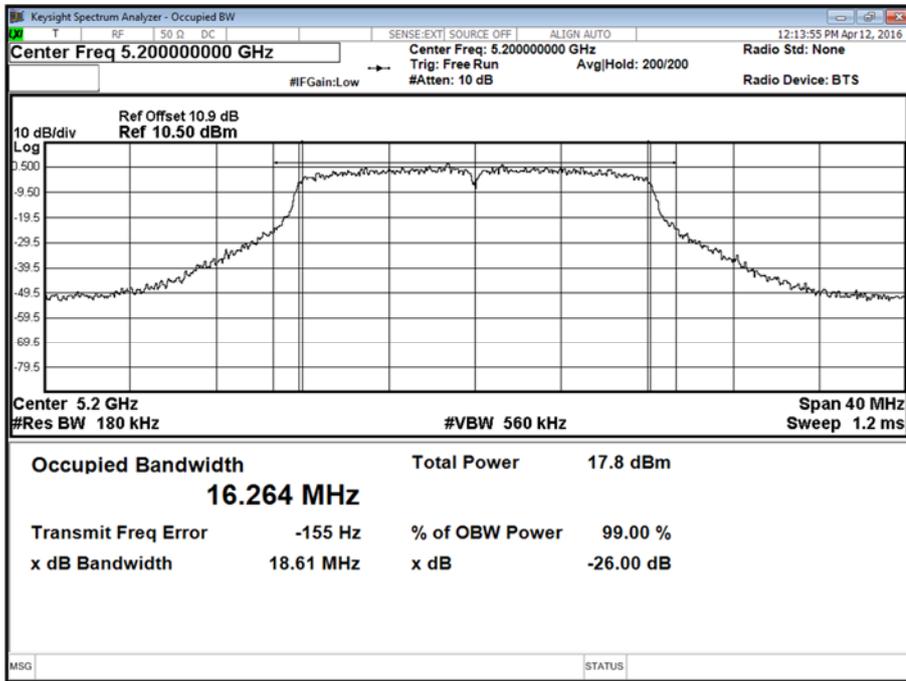
802.11a, 5180 MHz, OFDM, 36 Mbps, Frequency Band 1, 26 dB Bandwidth Plot



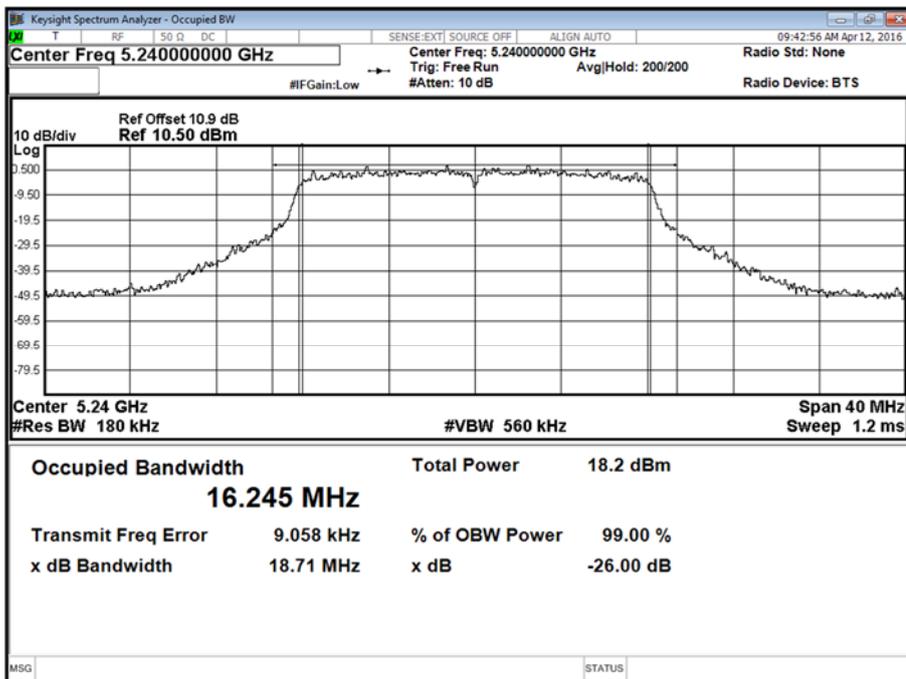


Product Service

802.11a, 5200 MHz, OFDM, 36 Mbps, Frequency Band 1, 26 dB Bandwidth Plot



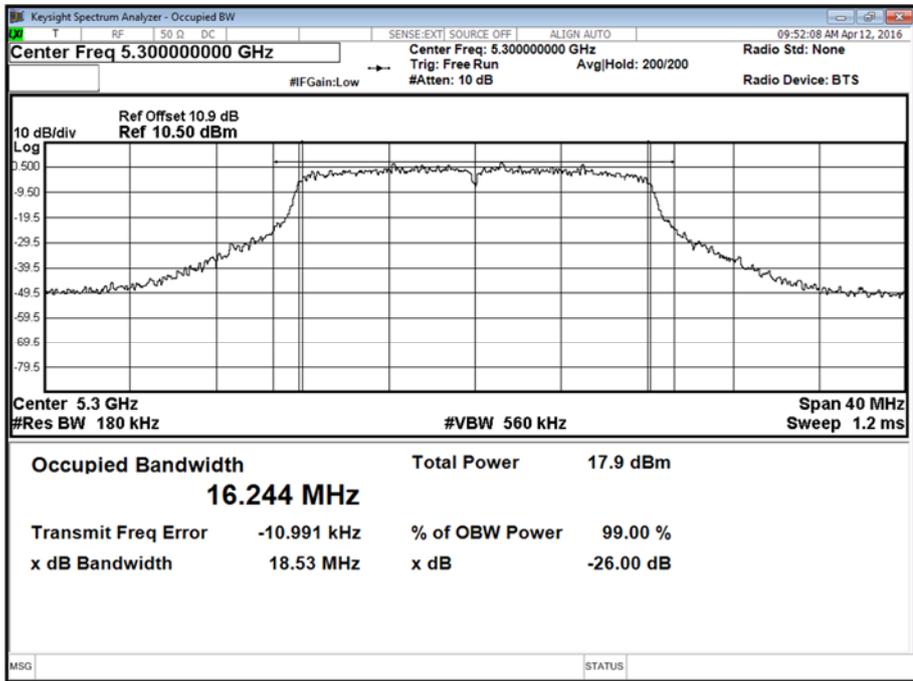
802.11a, 5240 MHz, OFDM, 36 Mbps, Frequency Band 1, 26 dB Bandwidth Plot



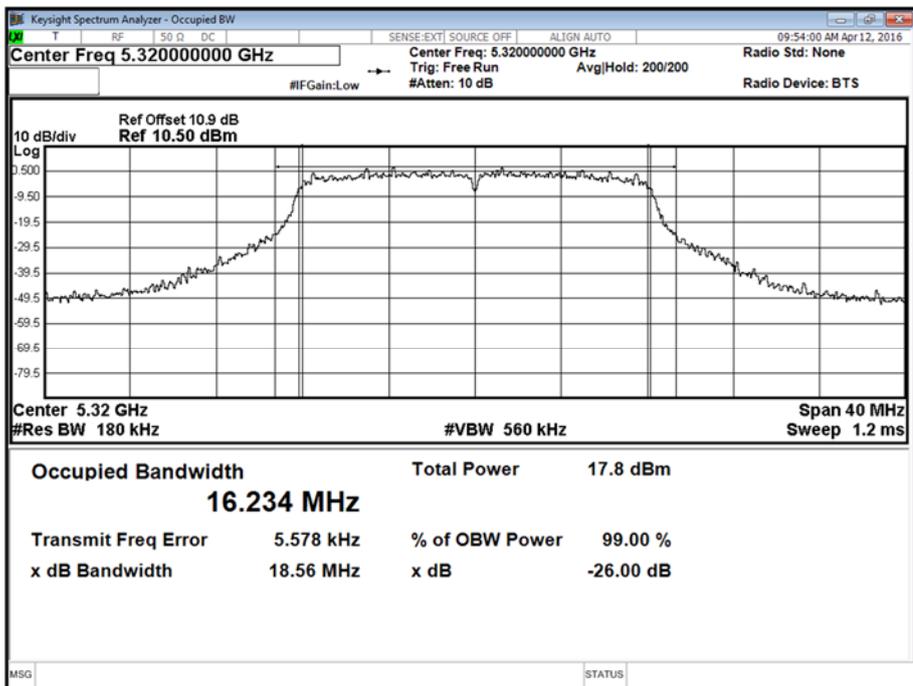


Product Service

802.11a, 5300 MHz, OFDM, 36 Mbps, Frequency Band 2, 26 dB Bandwidth Plot



802.11a, 5320 MHz, OFDM, 36 Mbps, Frequency Band 2, 26 dB Bandwidth Plot



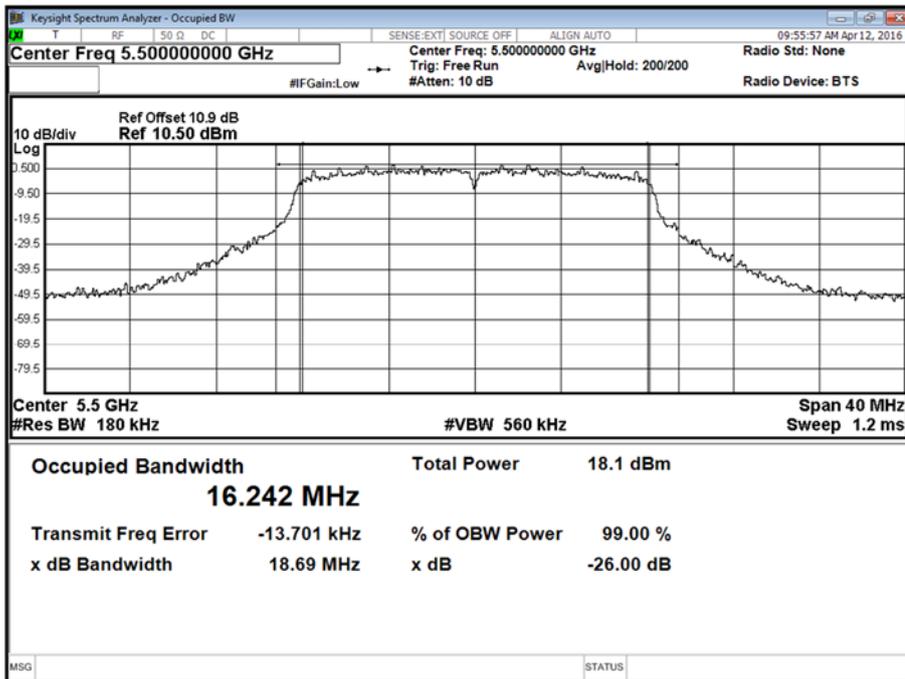


Product Service

802.11a, OFDM, 36 Mbps, Frequency Band 3, 26 dB Bandwidth Results

5500 MHz	5600 MHz	5700 MHz
MHz	MHz	MHz
18.69	18.64	18.66

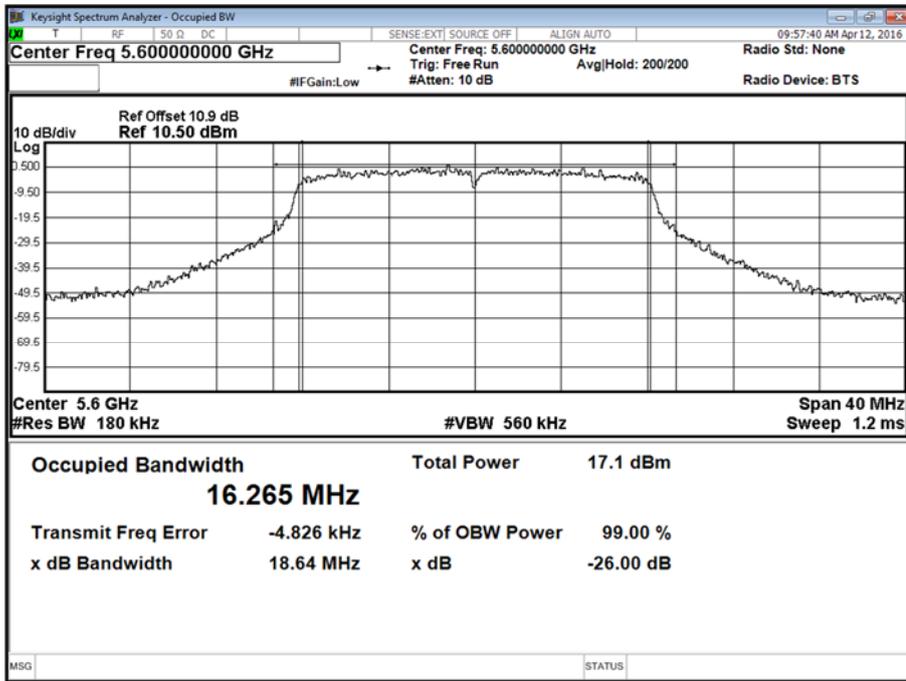
802.11a, 5500 MHz, OFDM, 36 Mbps, Frequency Band 3, 26 dB Bandwidth Plot



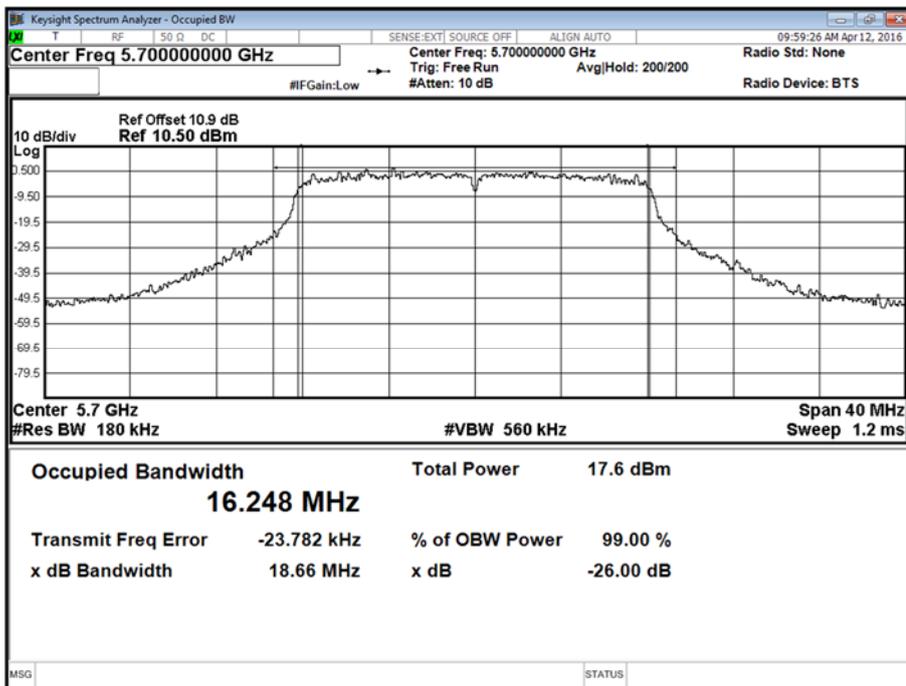


Product Service

802.11a, 5600 MHz, OFDM, 36 Mbps, Frequency Band 3, 26 dB Bandwidth Plot



802.11a, 5700 MHz, OFDM, 36 Mbps, Frequency Band 3, 26 dB Bandwidth 3 Plot



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

No limit specified.

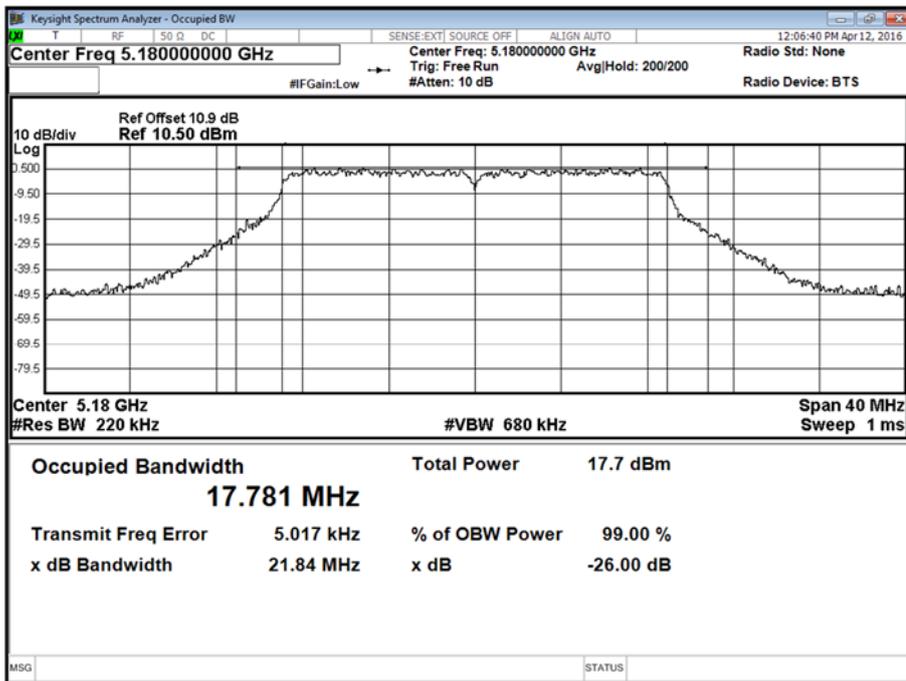


Product Service

802.11ac - 5 GHz 20 MHz Bandwidth, 64-QAM, MCS5, Frequency Band 1, 26 dB Bandwidth Results

5180 MHz	5200 MHz	5240 MHz
MHz	MHz	MHz
21.84	21.87	21.97

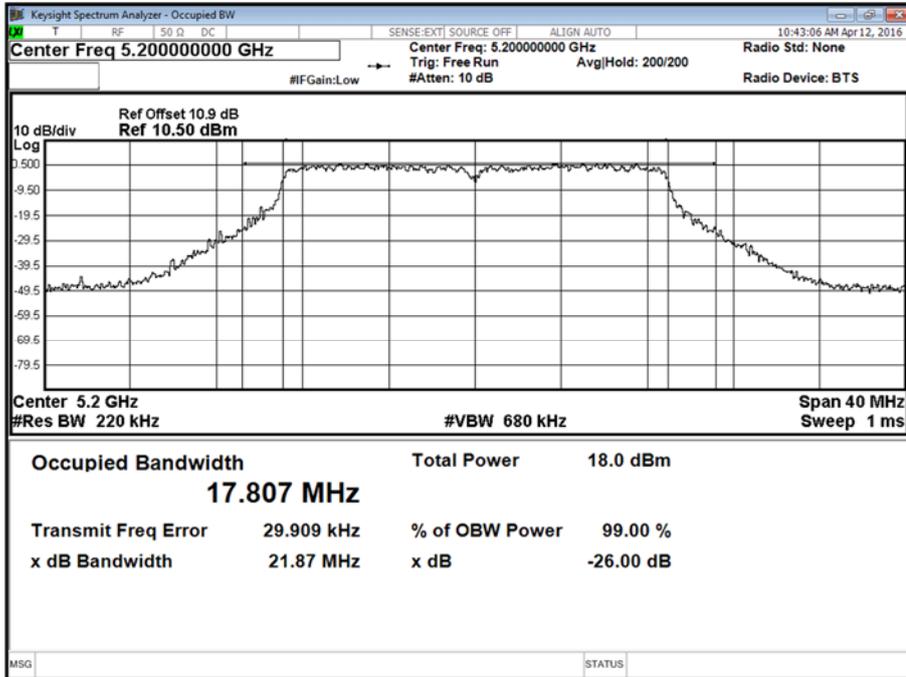
802.11ac - 5 GHz 20 MHz Bandwidth, 5180 MHz, 64-QAM, MCS5, Frequency Band 1, 26 dB Bandwidth Plot



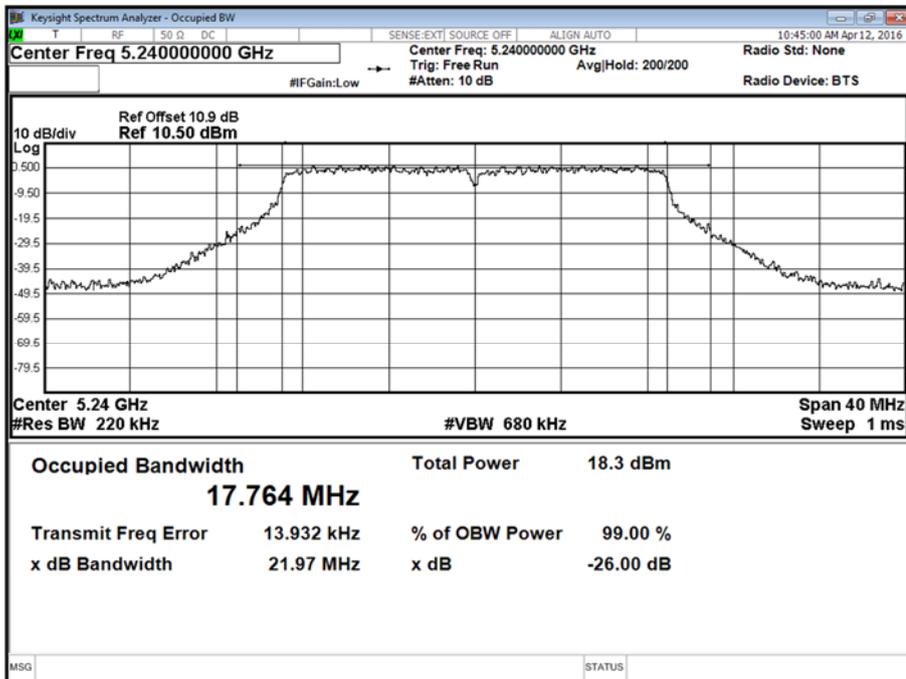


Product Service

802.11ac - 5 GHz 20 MHz Bandwidth, 5200 MHz, 64-QAM, MCS5, Frequency Band 1, 26 dB Bandwidth Plot



802.11ac - 5 GHz 20 MHz Bandwidth, 5240 MHz, 64-QAM, MCS5, Frequency Band 1, 26 dB Bandwidth Plot



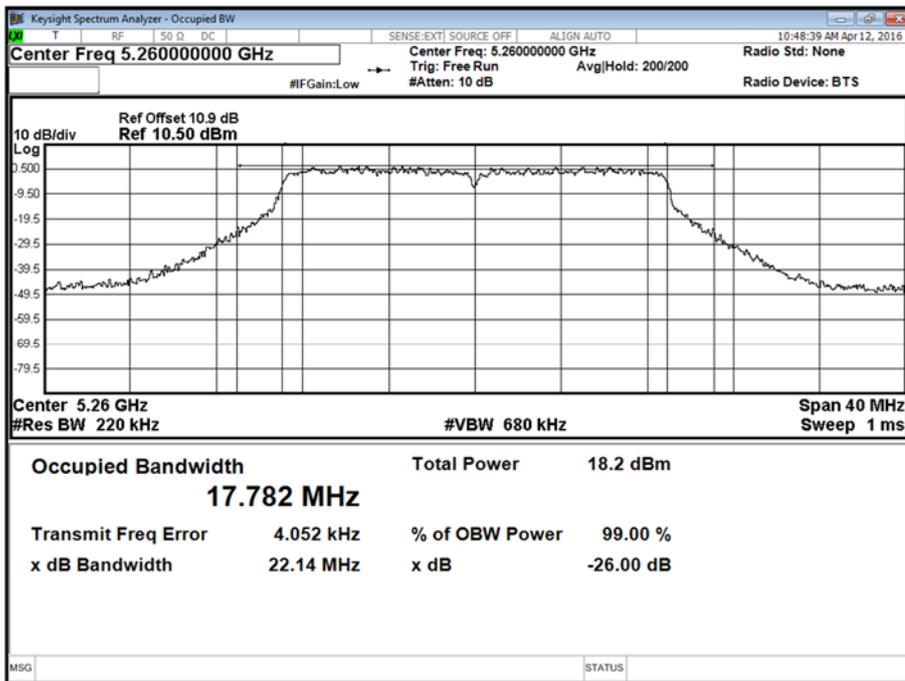


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802.11ac - 5 GHz 20 MHz Bandwidth, 64-QAM, MCS5, Frequency Band 2, 26 dB Bandwidth Results

5260 MHz	5300 MHz	5320 MHz
MHz	MHz	MHz
22.14	21.80	21.90

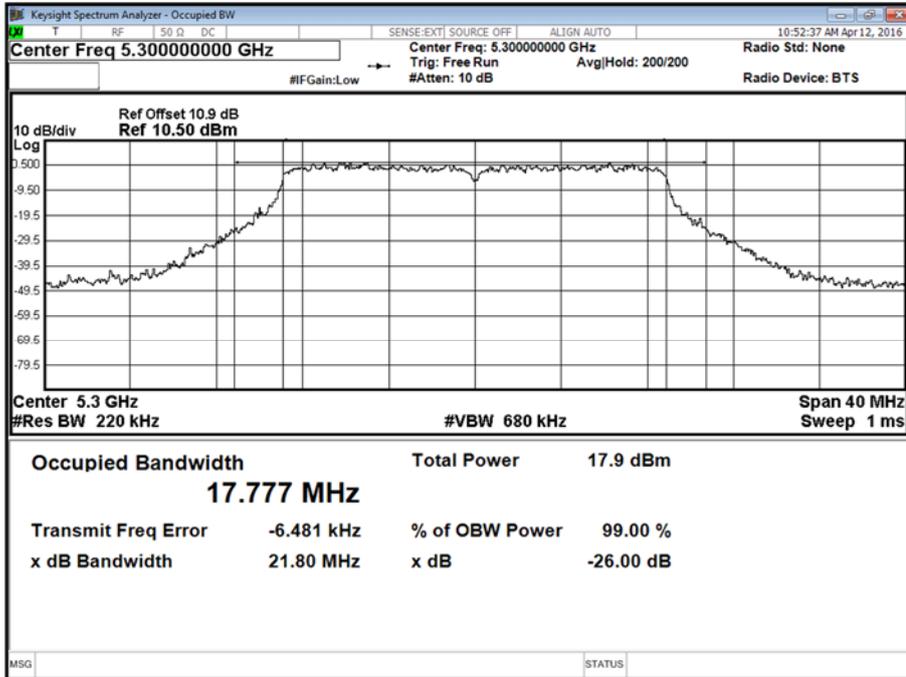
802.11ac - 5 GHz 20 MHz Bandwidth, 5260 MHz, 64-QAM, MCS5, Frequency Band 2, 26 dB Bandwidth Plot



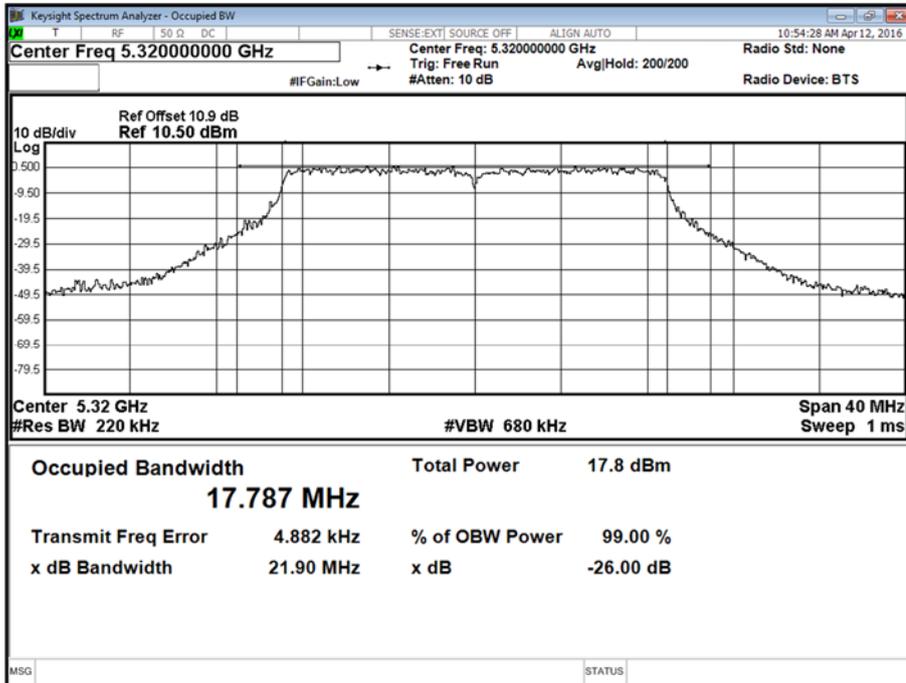


Product Service

802.11ac - 5 GHz 20 MHz Bandwidth, 5300 MHz, 64-QAM, MCS5, Frequency Band 2, 26 dB Bandwidth Plot



802.11ac - 5 GHz 20 MHz Bandwidth, 5320 MHz, 64-QAM, MCS5, Frequency Band 2, 26 dB Bandwidth Plot



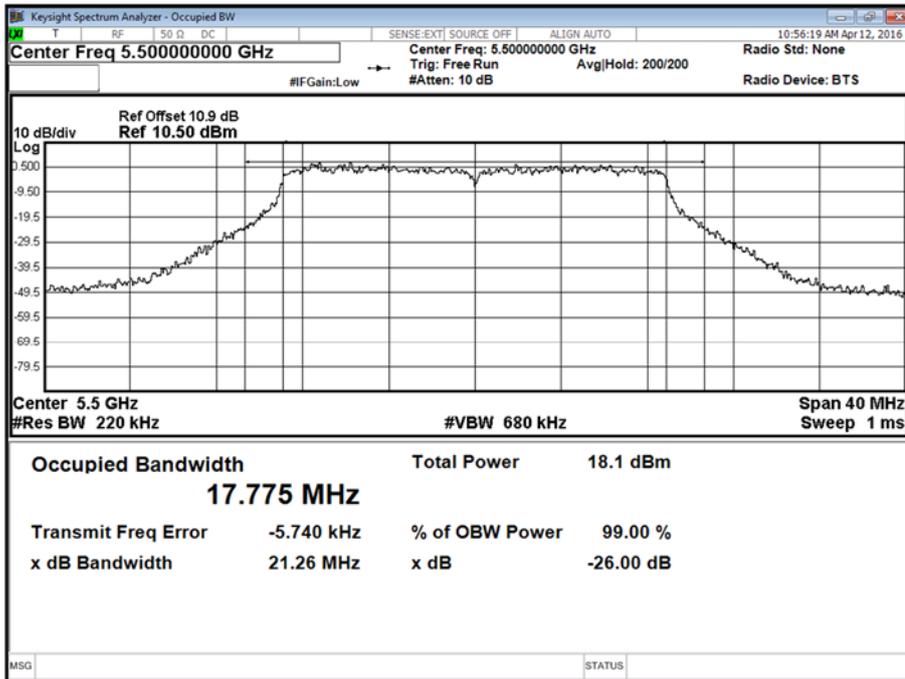


Product Service

802.11ac - 5 GHz 20 MHz Bandwidth, 64-QAM, MCS5, Frequency Band 3, 26 dB Bandwidth Results

5500 MHz	5600 MHz	5700 MHz
MHz	MHz	MHz
21.26	21.45	22.22

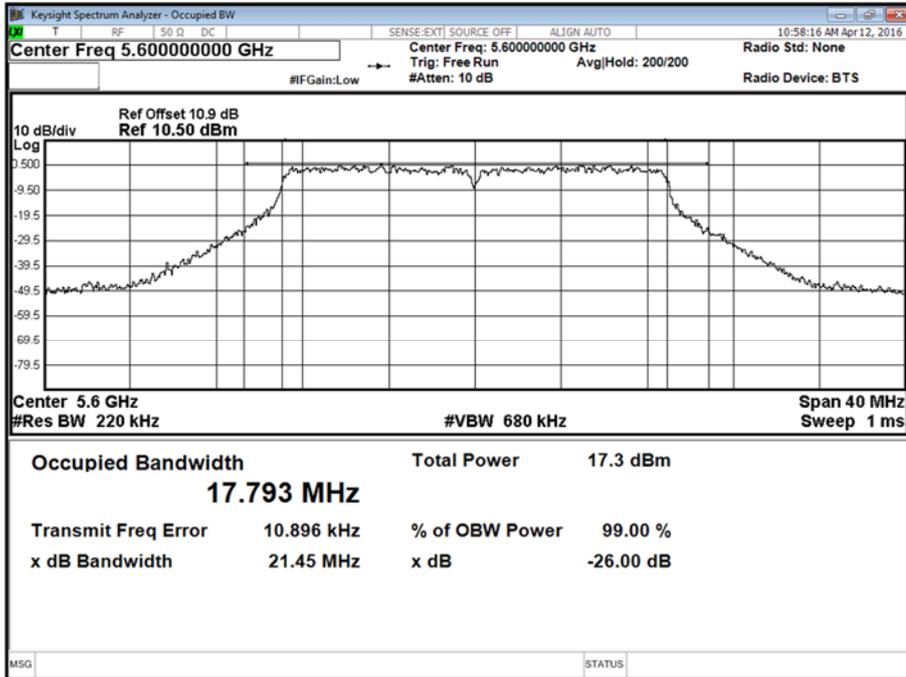
802.11ac - 5 GHz 20 MHz Bandwidth, 5500 MHz, 64-QAM, MCS5, Frequency Band 3, 26 dB Bandwidth Plot



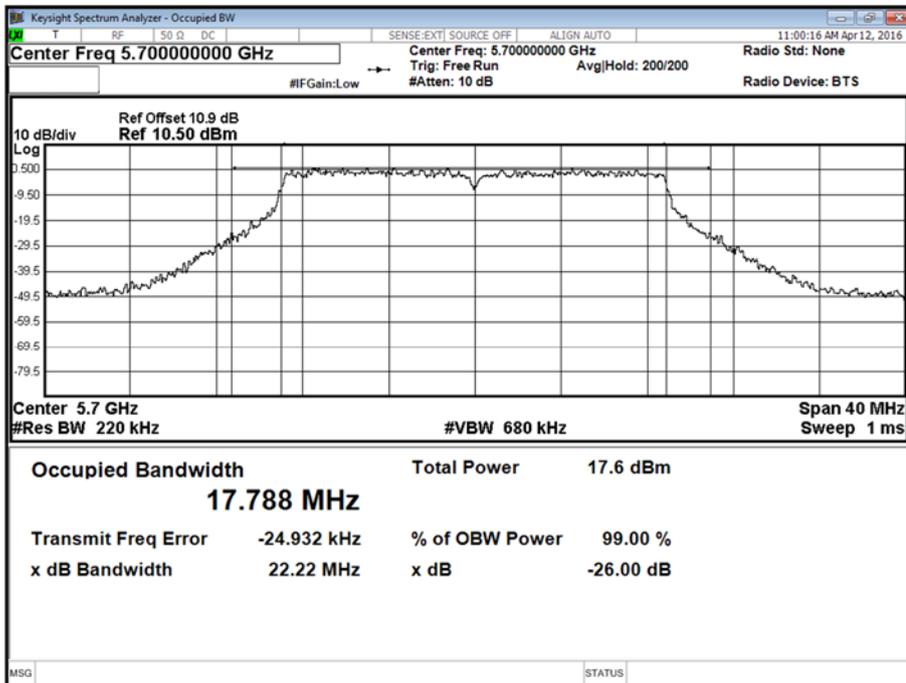


Product Service

802.11ac - 5 GHz 20 MHz Bandwidth, 5600 MHz, 64-QAM, MCS5, Frequency Band 3, 26 dB Bandwidth Plot



802.11ac - 5 GHz 20 MHz Bandwidth, 5700 MHz, 64-QAM, MCS5, Frequency Band 3, 26 dB Bandwidth 3 Plot



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

No limit specified.

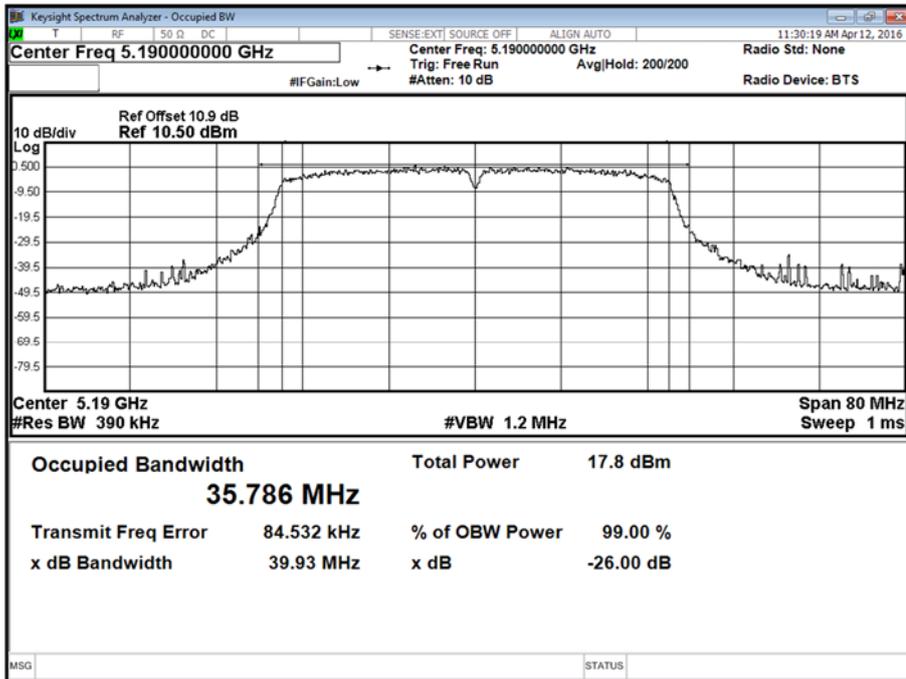


Product Service

802.11ac - 5 GHz 40 MHz Bandwidth, 16-QAM, MCS3, Frequency Band 1, 26 dB Bandwidth Results

5190 MHz	5230 MHz
MHz	MHz
39.93	39.93

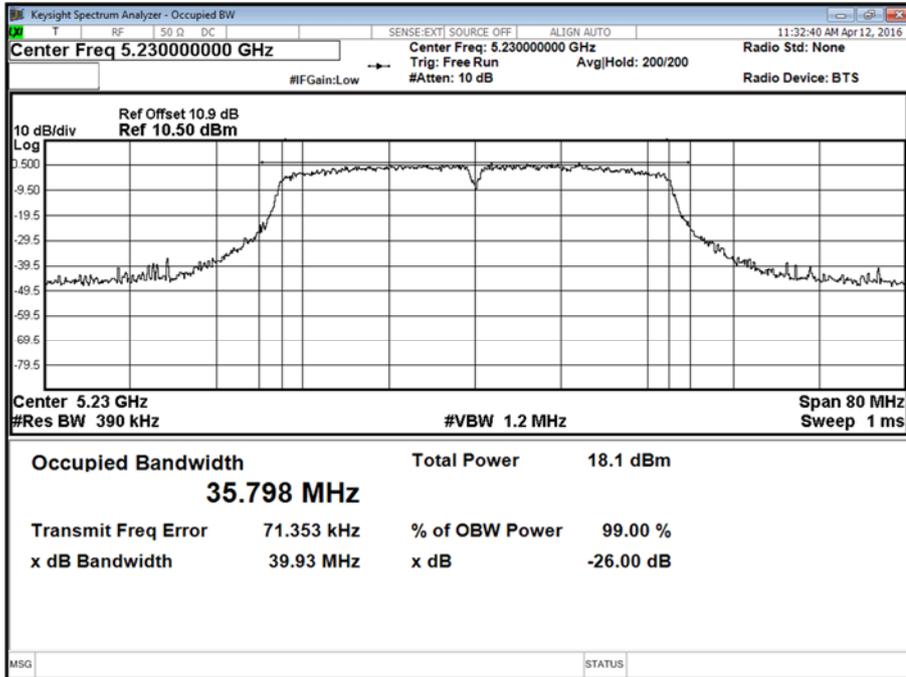
802.11ac - 5 GHz 40 MHz Bandwidth, 5190 MHz, 16-QAM, MCS3, Frequency Band 1, 26 dB Bandwidth Plot





Product Service

802.11ac - 5 GHz 40 MHz Bandwidth, 5230 MHz, 16-QAM, MCS3, Frequency Band 1, 26 dB Bandwidth Plot



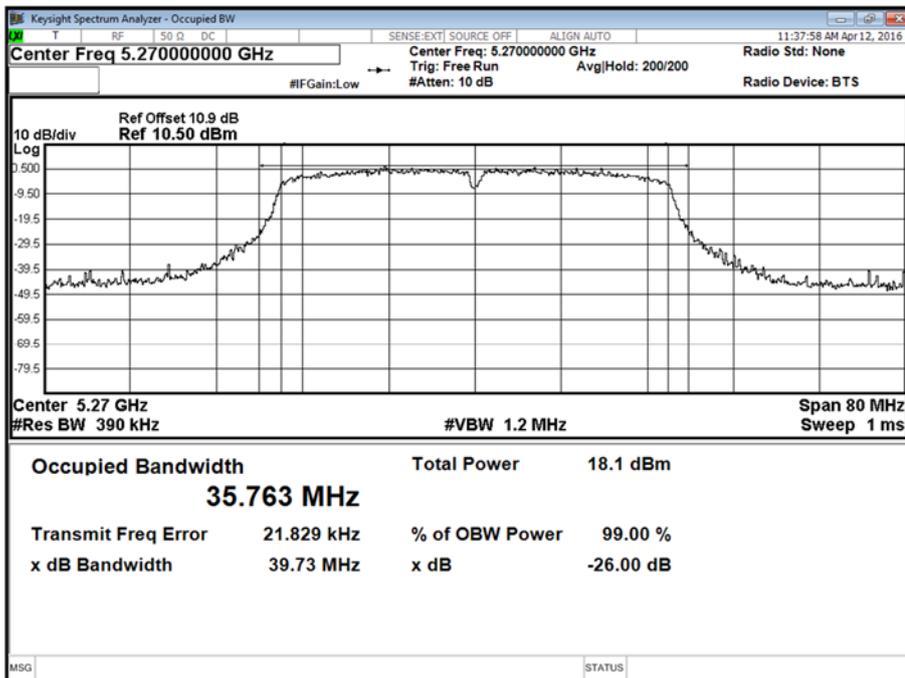


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802.11ac - 5 GHz 40 MHz Bandwidth, 16-QAM, MCS3, Frequency Band 2, 26 dB Bandwidth Results

5270 MHz	5310 MHz
MHz	MHz
39.73	40.50

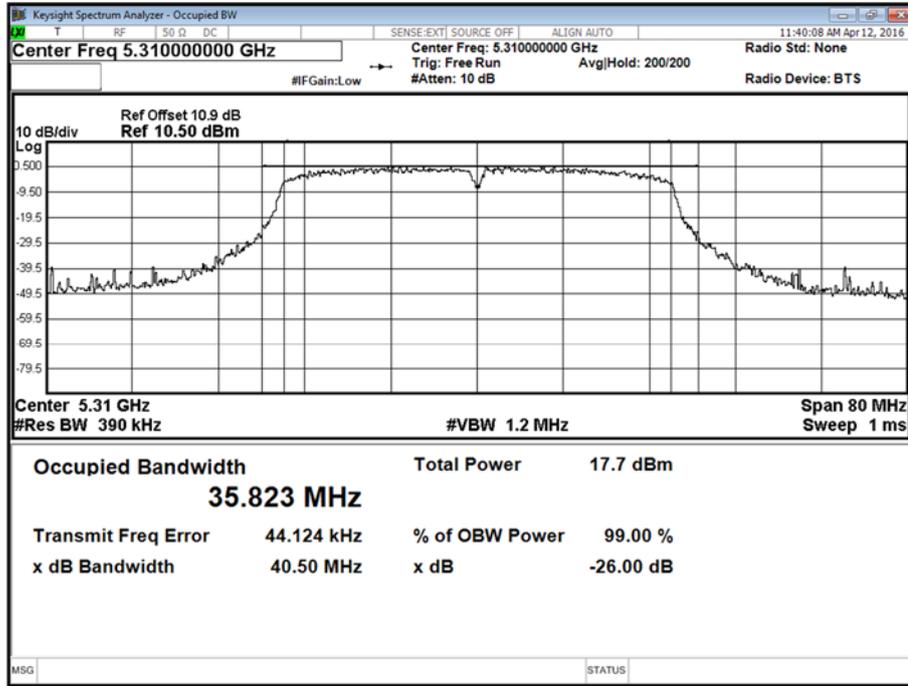
802.11ac - 5 GHz 40 MHz Bandwidth, 5270 MHz, 16-QAM, MCS3, Frequency Band 2, 26 dB Bandwidth Plot





Product Service

802.11ac - 5 GHz 40 MHz Bandwidth, 5310 MHz, 16-QAM, MCS3, Frequency Band 2, 26 dB Bandwidth Plot



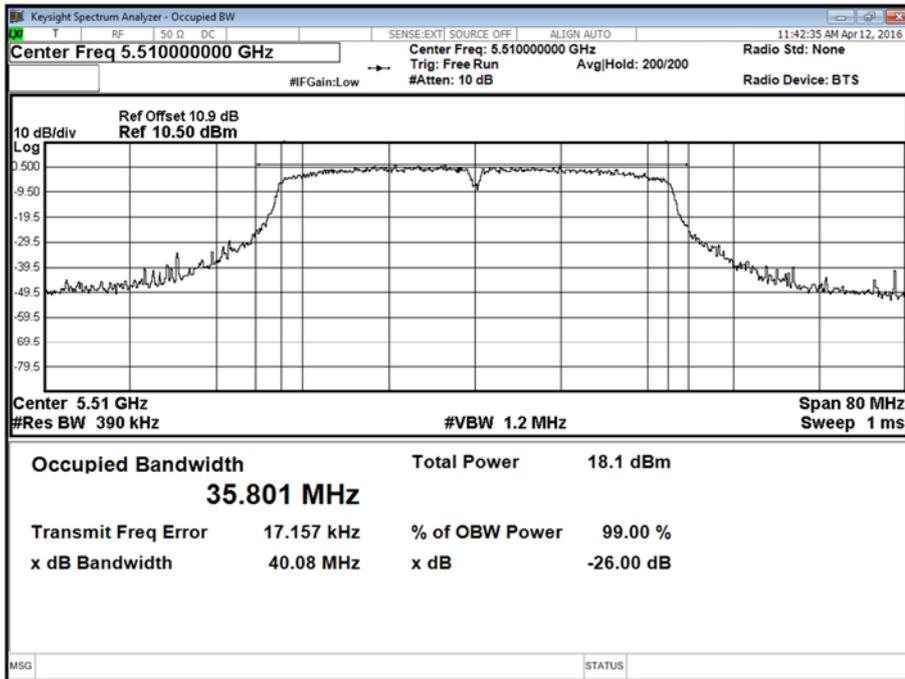


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802.11ac - 5 GHz 40 MHz Bandwidth, 16-QAM, MCS3, Frequency Band 3, 26 dB Bandwidth Results

5510 MHz	5590 MHz	5670 MHz
MHz	MHz	MHz
40.08	40.66	39.68

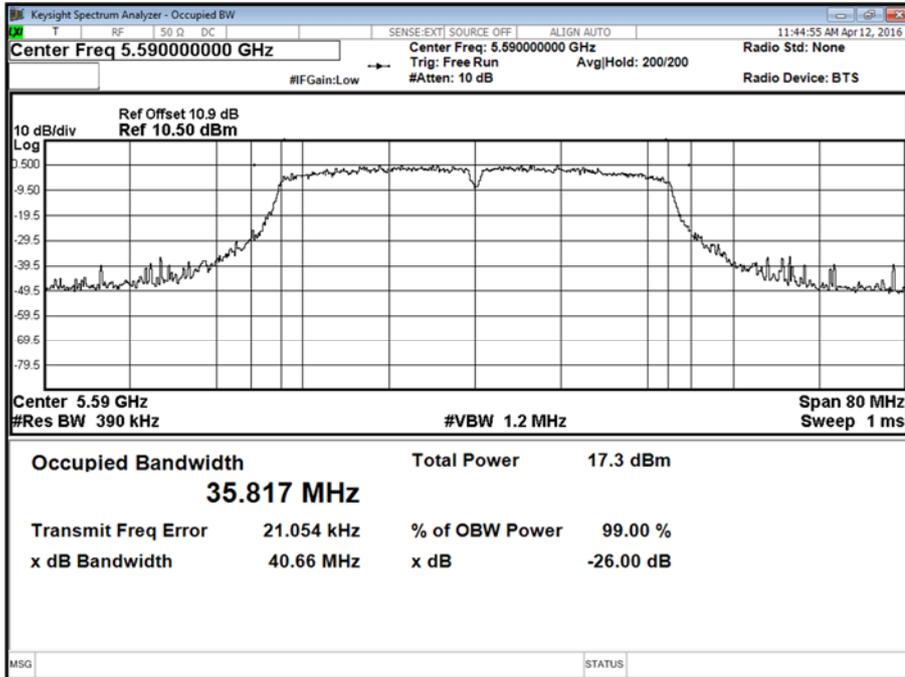
802.11ac - 5 GHz 40 MHz Bandwidth, 5510 MHz, 16-QAM, MCS3, Frequency Band 3, 26 dB Bandwidth Plot



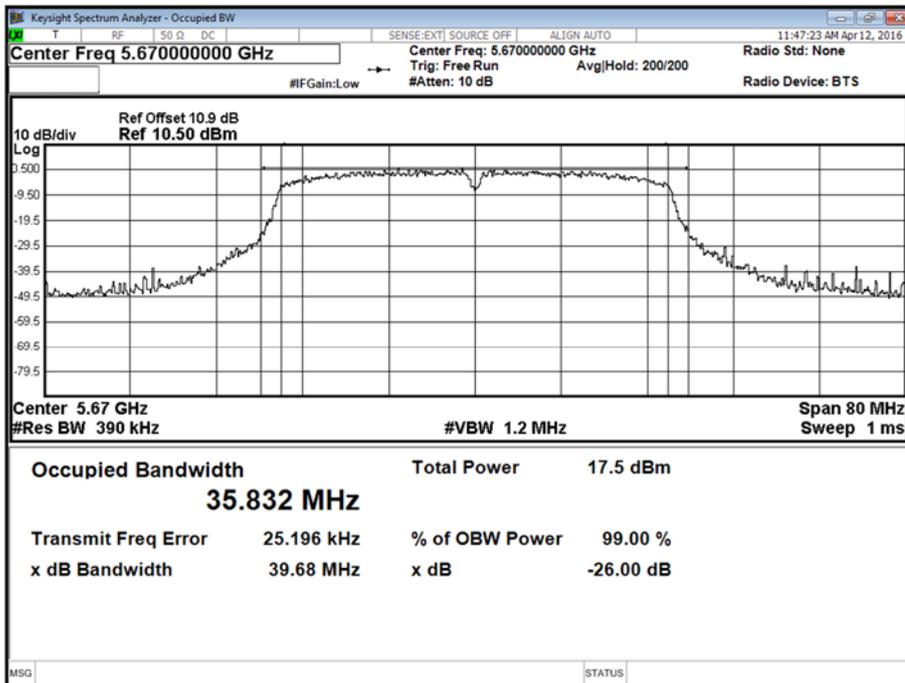


Product Service

802.11ac - 5 GHz 40 MHz Bandwidth, 5590 MHz, 16-QAM, MCS3, Frequency Band 3, 26 dB Bandwidth Plot



802.11ac - 5 GHz 40 MHz Bandwidth, 5670 MHz, 16-QAM, MCS3, Frequency Band 3, 26 dB Bandwidth 3 Plot



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

No limit specified.

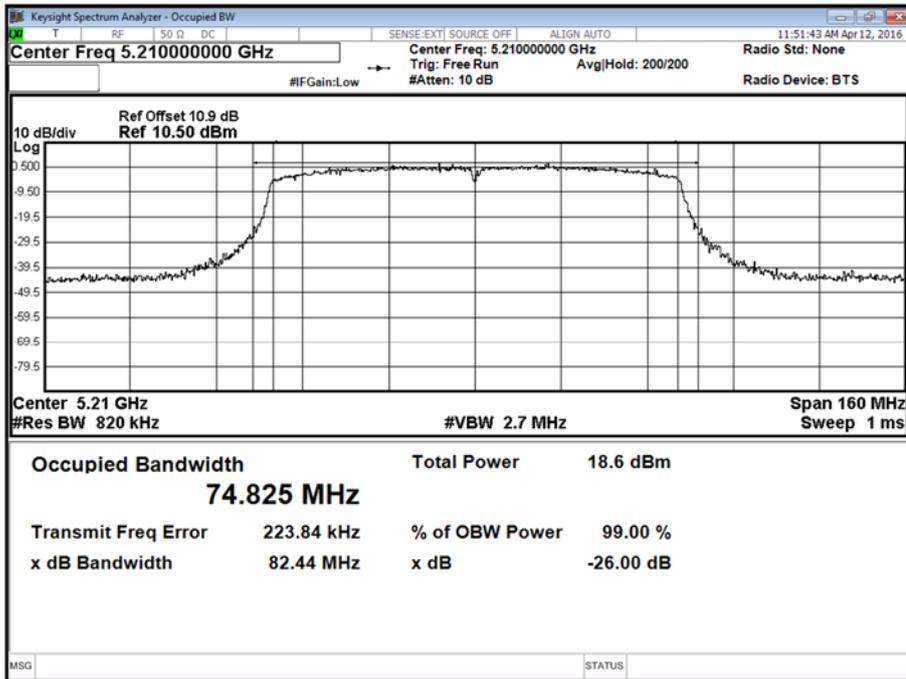


Product Service

802.11ac - 5 GHz 80 MHz Bandwidth, 256-QAM, MCS6, Frequency Band 1, 26 dB Bandwidth Results

5210 MHz
MHz
82.44

802.11ac - 5 GHz 80 MHz Bandwidth, 5210 MHz, 256-QAM, MCS6, Frequency Band 1, 26 dB Bandwidth Plot



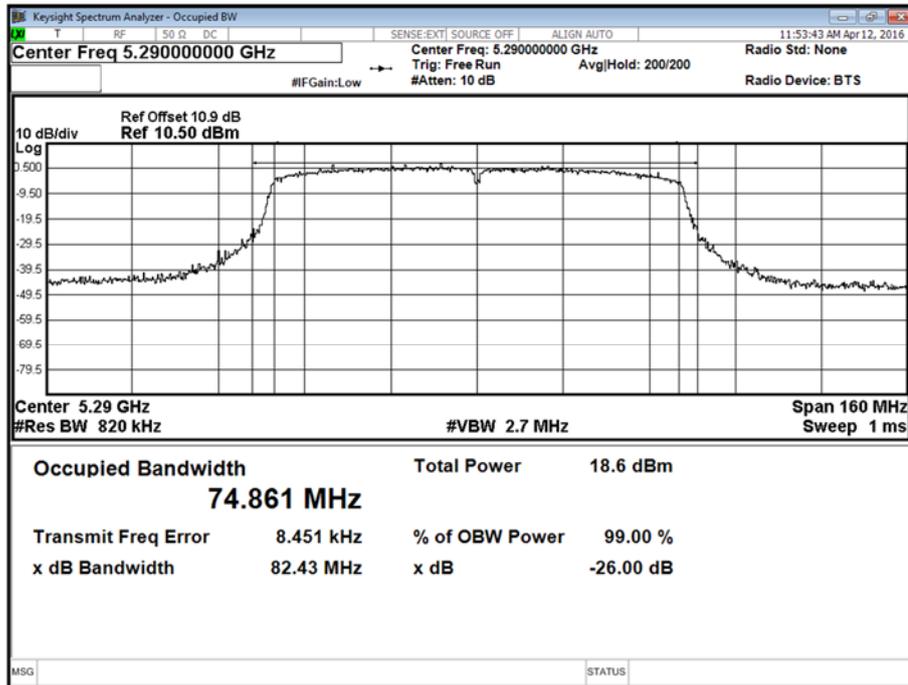


Product Service

802.11ac - 5 GHz 80 MHz Bandwidth, 256-QAM, MCS6, Frequency Band 2, 26 dB Bandwidth Results

5290 MHz
MHz
82.43

802.11ac - 5 GHz 80 MHz Bandwidth, 5290 MHz, 256-QAM, MCS6, Frequency Band 2, 26 dB Bandwidth Plot



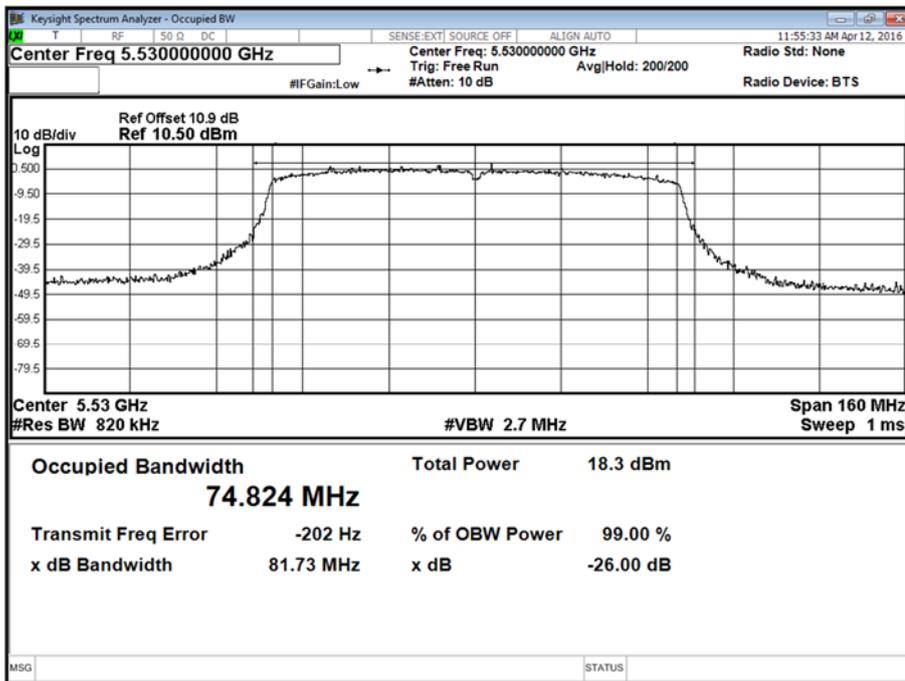


Product Service

802.11ac - 5 GHz 80 MHz Bandwidth, 256-QAM, MCS6, Frequency Band 3, 26 dB Bandwidth Results

5530 MHz	5610 MHz
MHz	MHz
81.73	81.86

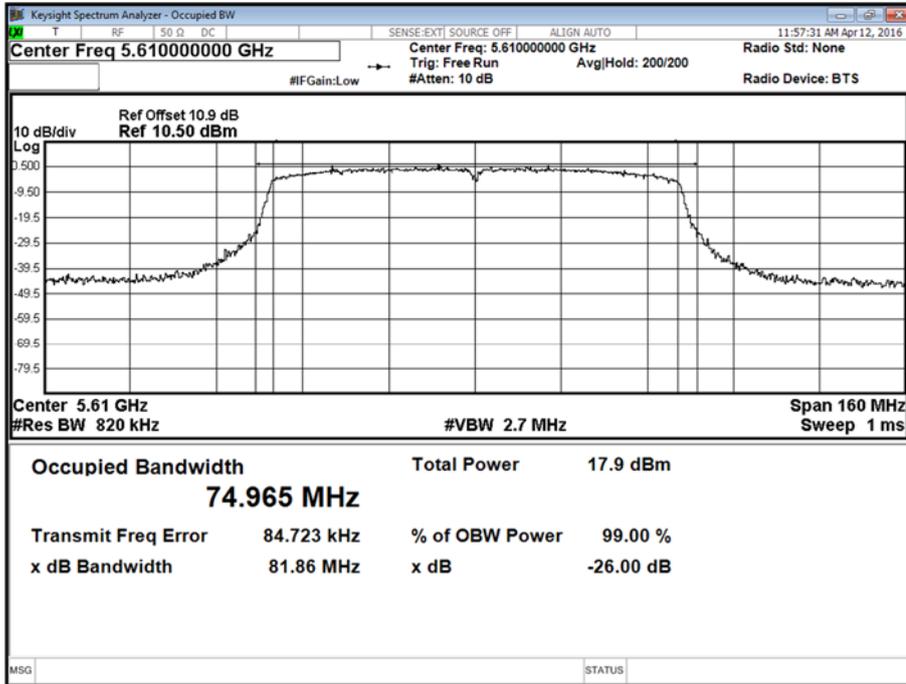
802.11ac - 5 GHz 80 MHz Bandwidth, 5530 MHz, 256-QAM, MCS6, Frequency Band 3, 26 dB Bandwidth Plot





Product Service

802.11ac - 5 GHz 80 MHz Bandwidth, 5610 MHz, 256-QAM, MCS6, Frequency Band 3, 26 dB Bandwidth 3 Plot



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

No limit specified.

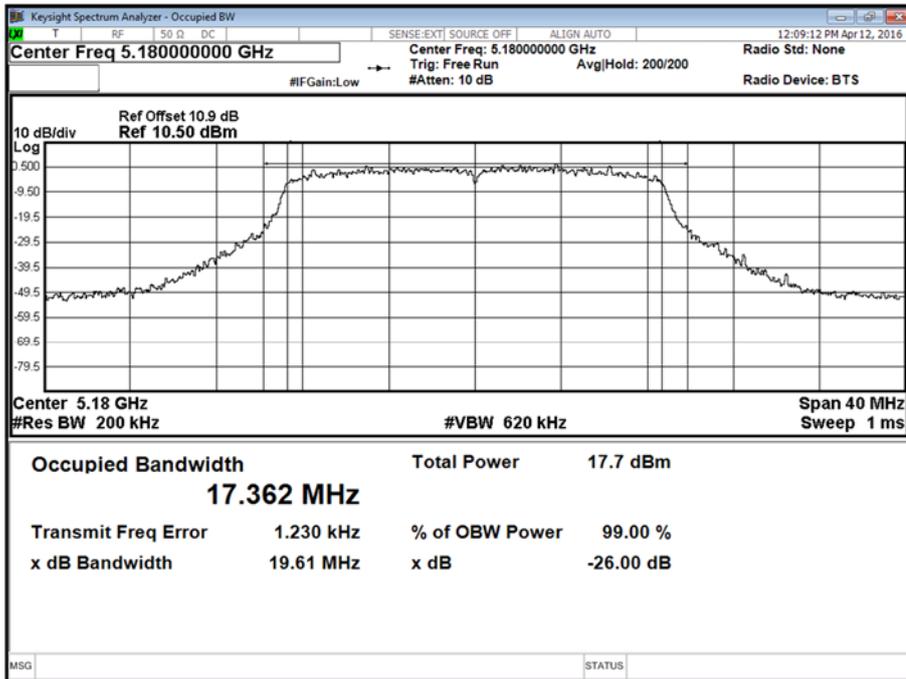


Product Service

802.11n - 5 GHz 20 MHz Bandwidth, 64-QAM, MCS4, Frequency Band 1, 26 dB Bandwidth Results

5180 MHz	5200 MHz	5240 MHz
MHz	MHz	MHz
19.61	19.98	19.58

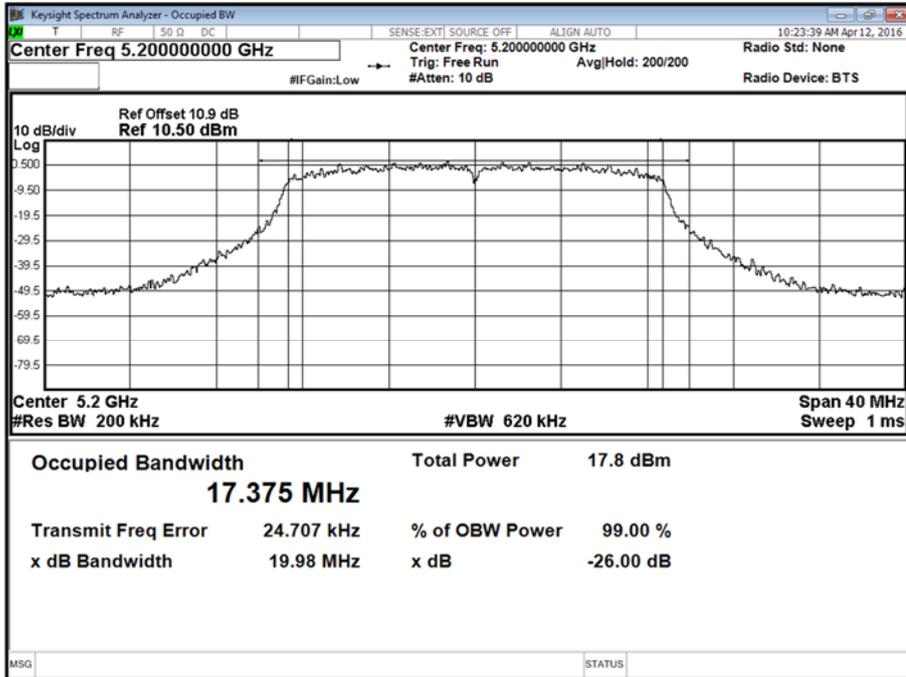
802.11n - 5 GHz 20 MHz Bandwidth, 5180 MHz, 64-QAM, MCS4, Frequency Band 1, 26 dB Bandwidth Plot



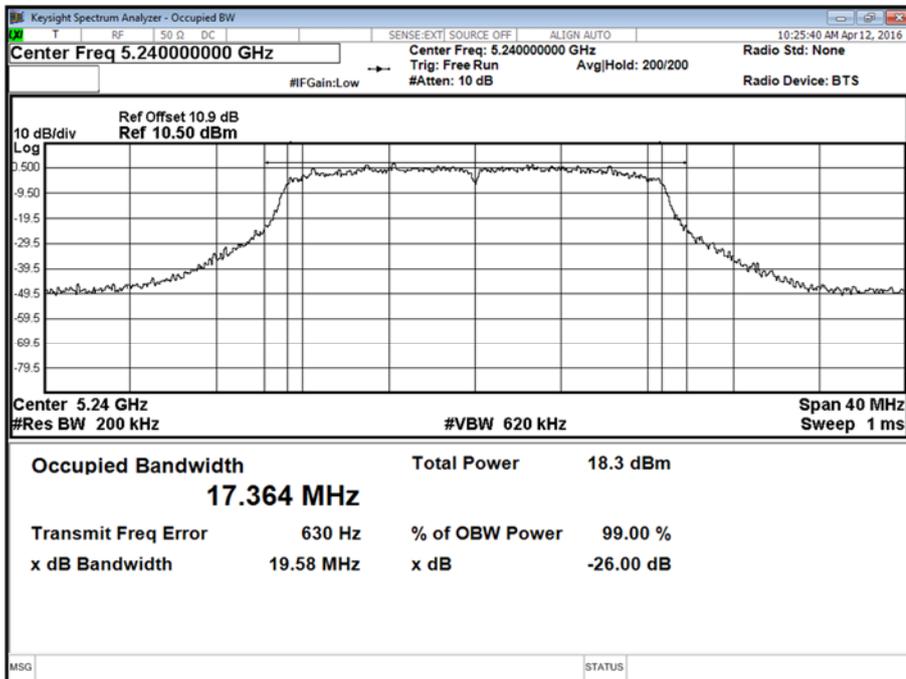


Product Service

802.11n - 5 GHz 20 MHz Bandwidth, 5200 MHz, 64-QAM, MCS4, Frequency Band 1, 26 dB Bandwidth Plot



802.11n - 5 GHz 20 MHz Bandwidth, 5240 MHz, 64-QAM, MCS4, Frequency Band 1, 26 dB Bandwidth Plot



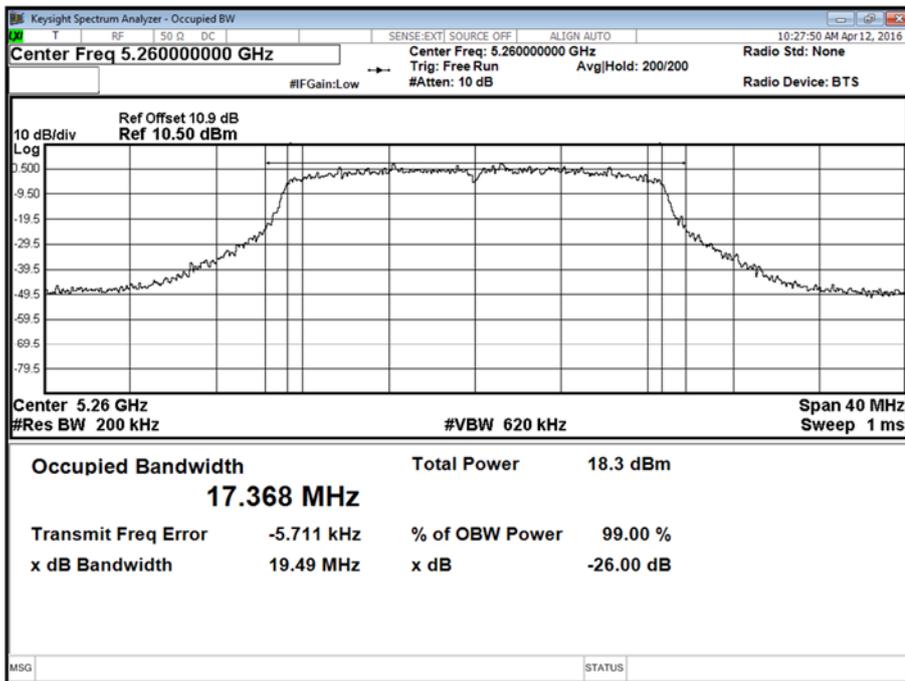


Product Service

802.11n - 5 GHz 20 MHz Bandwidth, 64-QAM, MCS4, Frequency Band 2, 26 dB Bandwidth Results

5260 MHz	5300 MHz	5320 MHz
MHz	MHz	MHz
19.49	19.77	19.72

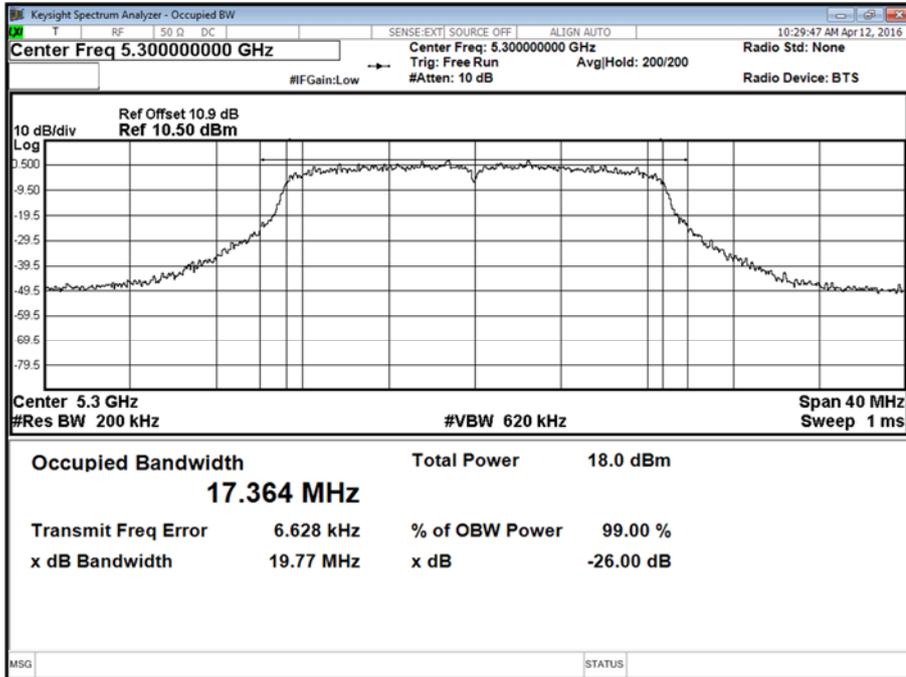
802.11n - 5 GHz 20 MHz Bandwidth, 5260 MHz, 64-QAM, MCS4, Frequency Band 2, 26 dB Bandwidth Plot



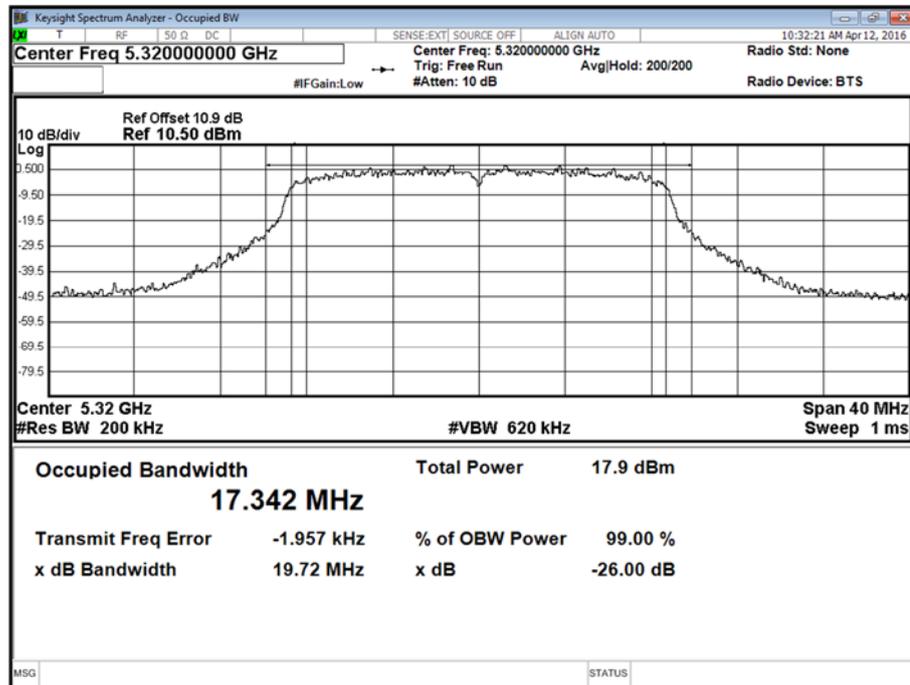


Product Service

802.11n - 5 GHz 20 MHz Bandwidth, 5300 MHz, 64-QAM, MCS4, Frequency Band 2, 26 dB Bandwidth Plot



802.11n - 5 GHz 20 MHz Bandwidth, 5320 MHz, 64-QAM, MCS4, Frequency Band 2, 26 dB Bandwidth Plot



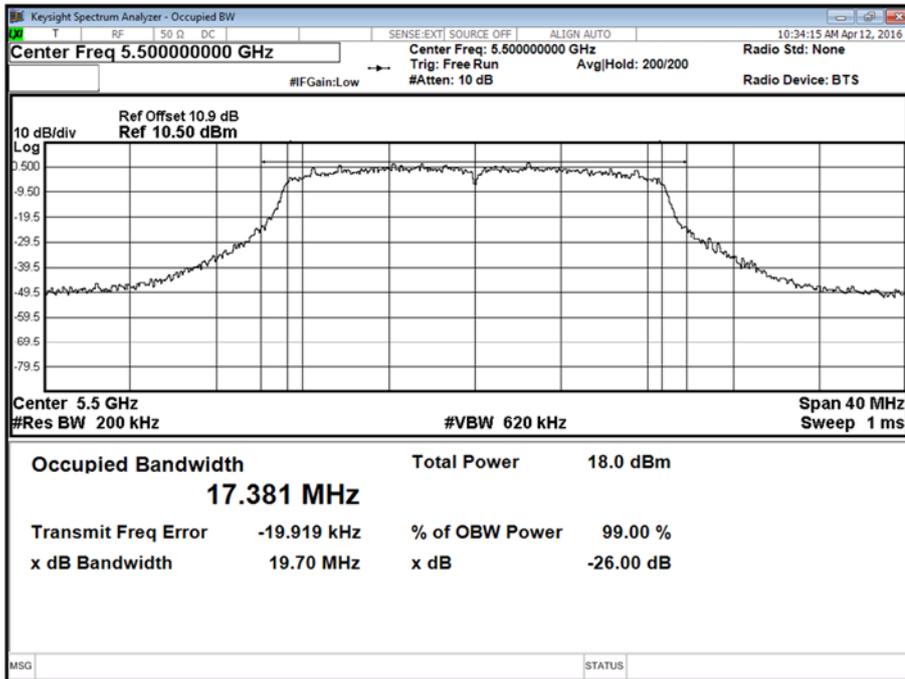


Product Service

802.11n - 5 GHz 20 MHz Bandwidth, 64-QAM, MCS4, Frequency Band 3, 26 dB Bandwidth Results

5500 MHz	5600 MHz	5700 MHz
MHz	MHz	MHz
19.70	19.67	19.68

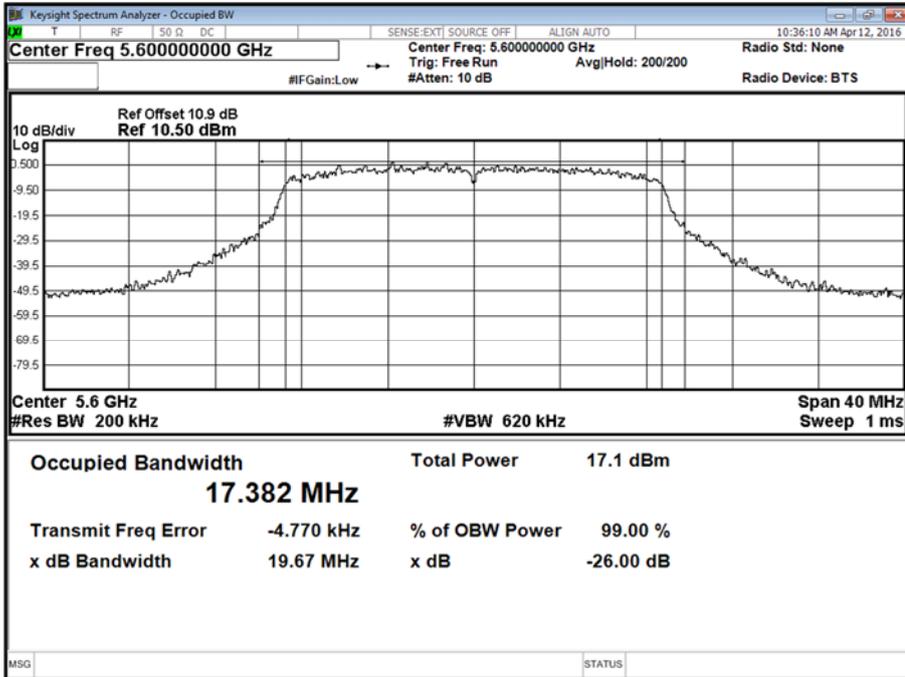
802.11n - 5 GHz 20 MHz Bandwidth, 5500 MHz, 64-QAM, MCS4, Frequency Band 3, 26 dB Bandwidth Plot



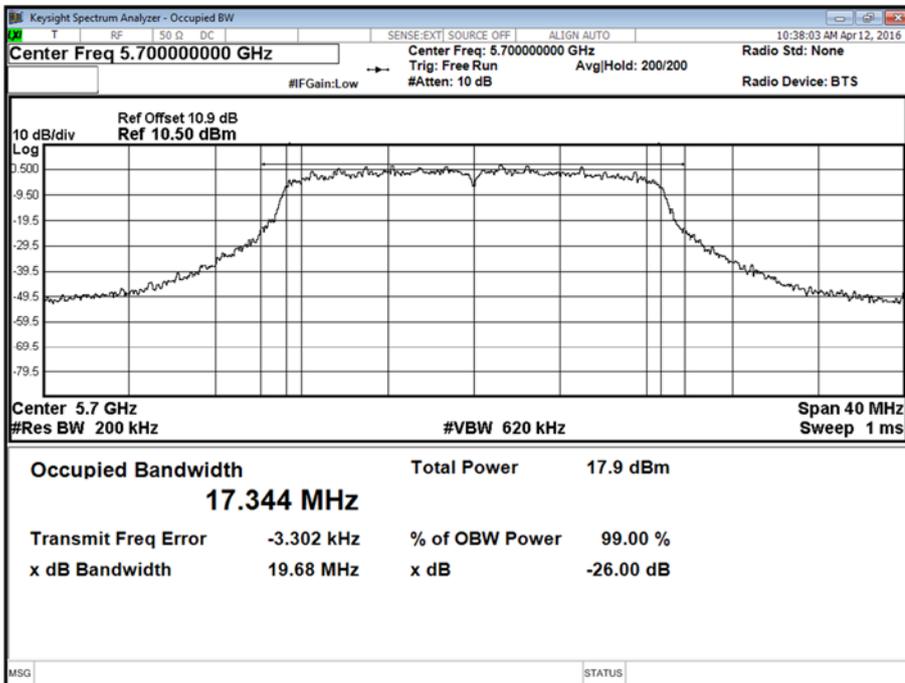


Product Service

802.11n - 5 GHz 20 MHz Bandwidth, 5600 MHz, 64-QAM, MCS4, Frequency Band 3, 26 dB Bandwidth Plot



802.11n - 5 GHz 20 MHz Bandwidth, 5700 MHz, 64-QAM, MCS4, Frequency Band 3, 26 dB Bandwidth 3 Plot



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

No limit specified.

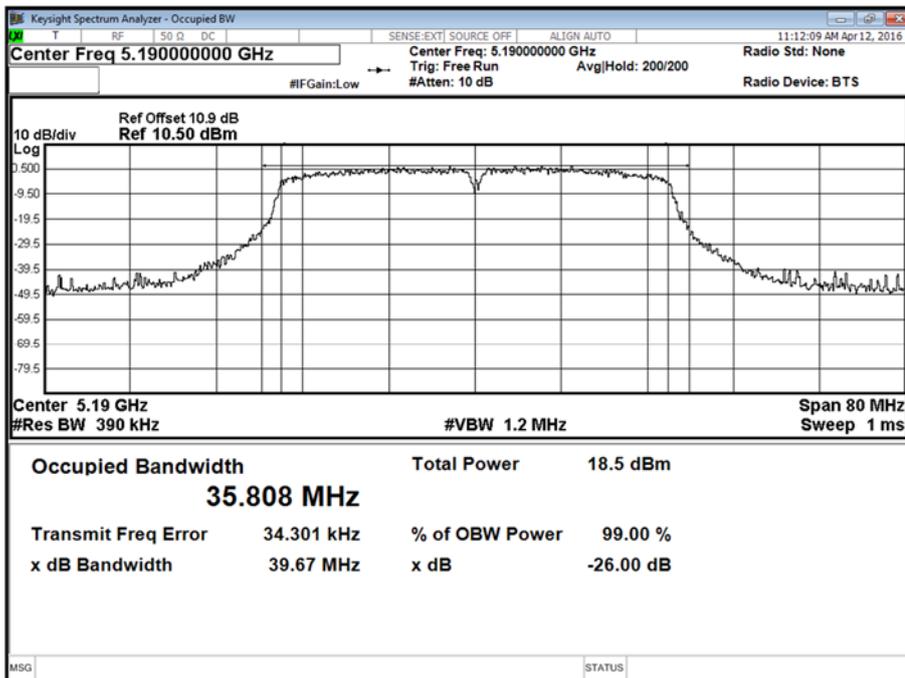


Product Service

802.11n - 5 GHz 40 MHz Bandwidth, 64-QAM, MCS7, Frequency Band 1, 26 dB Bandwidth Results

5190 MHz	5230 MHz
MHz	MHz
39.67	39.61

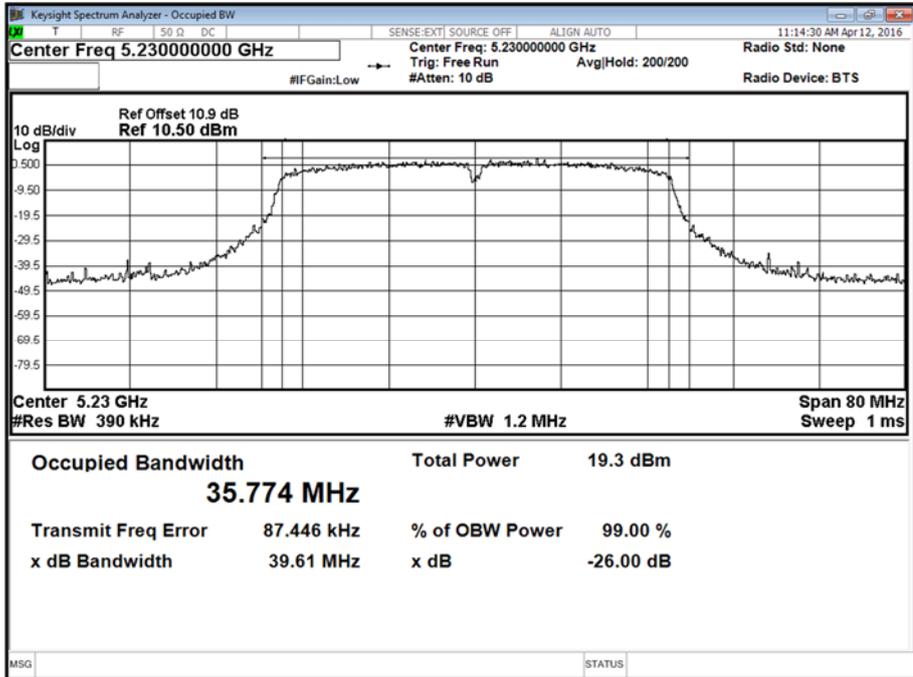
802.11n - 5 GHz 40 MHz Bandwidth, 5190 MHz, 64-QAM, MCS7, Frequency Band 1, 26 dB Bandwidth Plot





Product Service

802.11n - 5 GHz 40 MHz Bandwidth, 5230 MHz, 64-QAM, MCS7, Frequency Band 1, 26 dB Bandwidth Plot



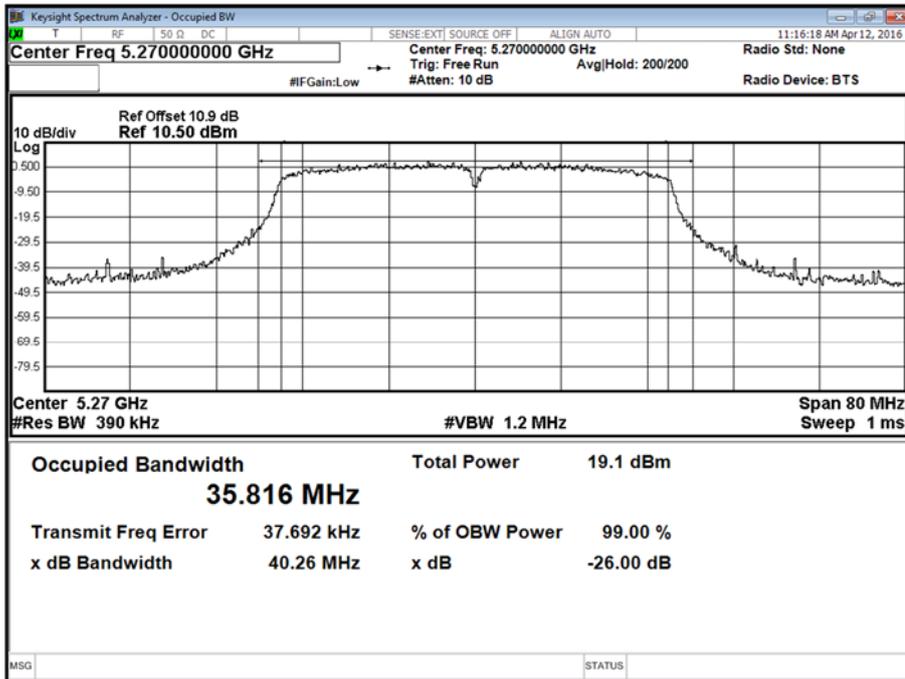


Product Service

802.11n - 5 GHz 40 MHz Bandwidth, 64-QAM, MCS7, Frequency Band 2, 26 dB Bandwidth Results

5270 MHz	5310 MHz
MHz	MHz
40.26	40.32

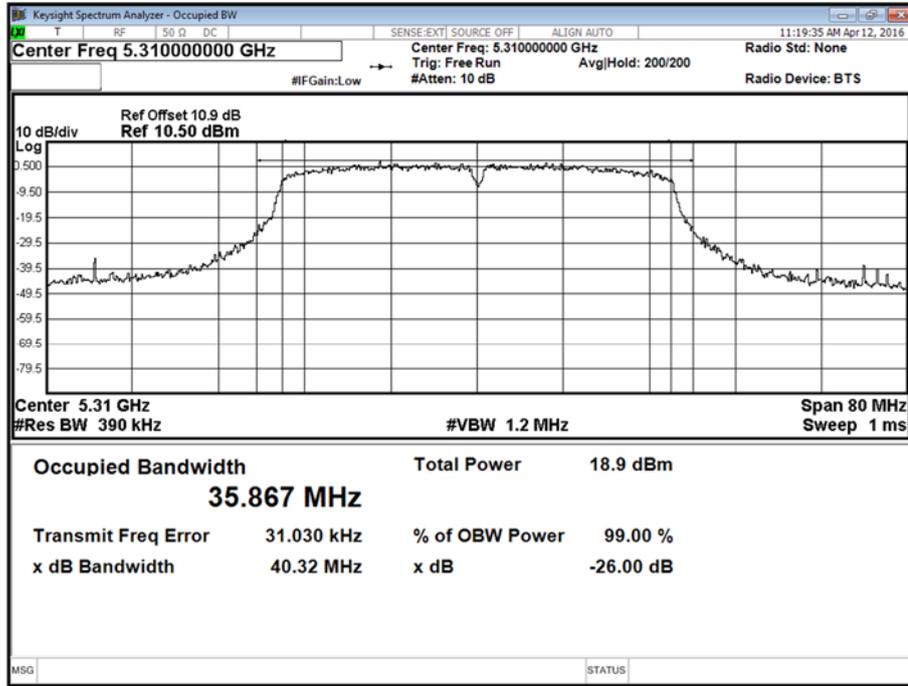
802.11n - 5 GHz 40 MHz Bandwidth, 5270 MHz, 64-QAM, MCS7, Frequency Band 2, 26 dB Bandwidth Plot





Product Service

802.11n - 5 GHz 40 MHz Bandwidth, 5310 MHz, 64-QAM, MCS7, Frequency Band 2, 26 dB Bandwidth Plot



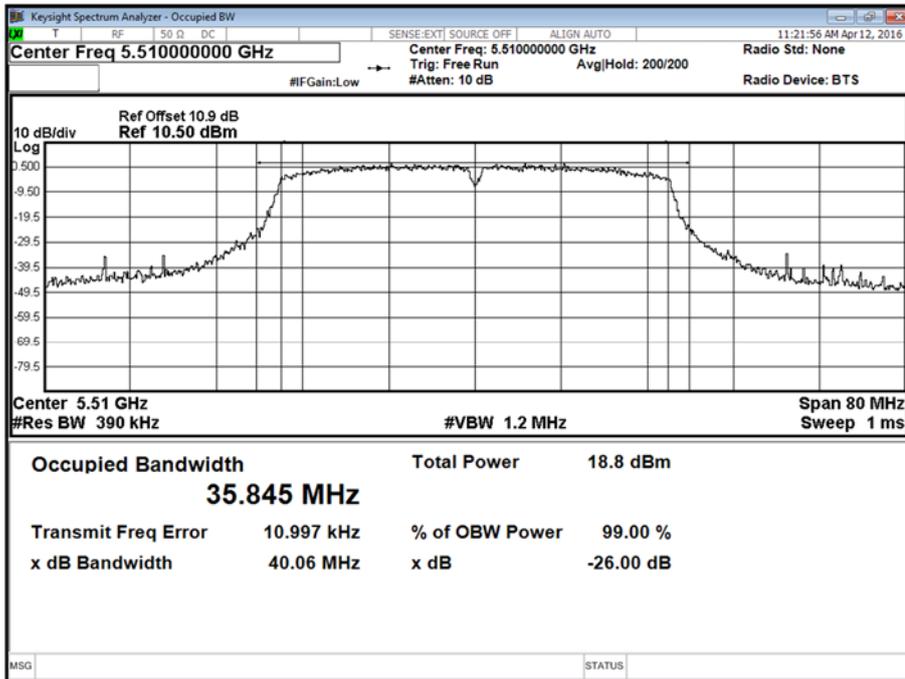


Product Service

802.11n - 5 GHz 40 MHz Bandwidth, 64-QAM, MCS7, Frequency Band 3, 26 dB Bandwidth Results

5510 MHz	5590 MHz	5670 MHz
MHz	MHz	MHz
40.06	40.29	40.36

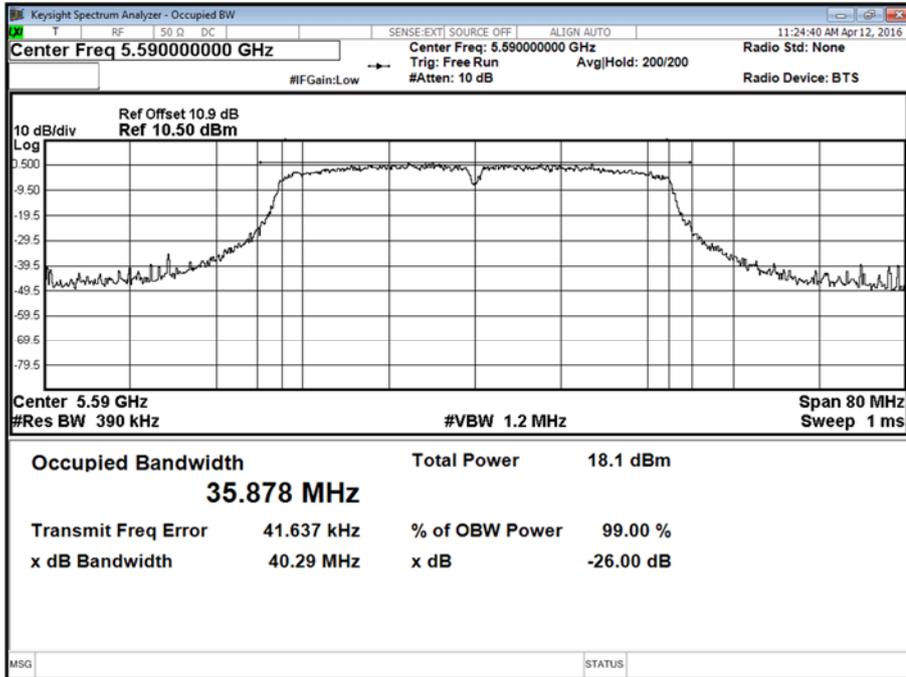
802.11n - 5 GHz 40 MHz Bandwidth, 5510 MHz, 64-QAM, MCS7, Frequency Band 3, 26 dB Bandwidth Plot



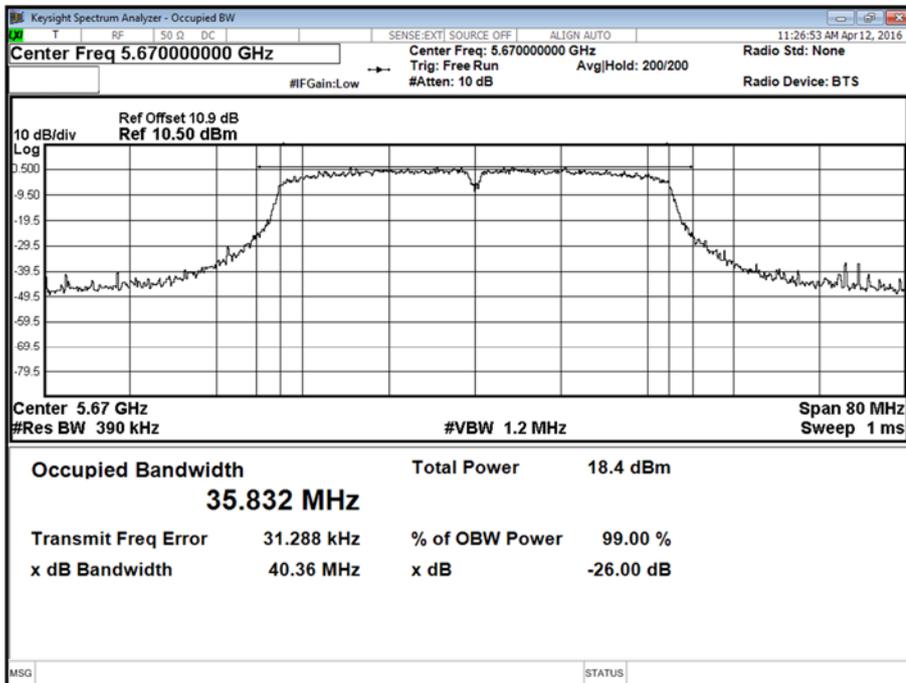


Product Service

802.11n - 5 GHz 40 MHz Bandwidth, 5590 MHz, 64-QAM, MCS7, Frequency Band 3, 26 dB Bandwidth Plot



802.11n - 5 GHz 40 MHz Bandwidth, 5670 MHz, 64-QAM, MCS7, Frequency Band 3, 26 dB Bandwidth 3 Plot



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

No limit specified.



Product Service

2.3 MAXIMUM CONDUCTED OUTPUT POWER

2.3.1 Specification Reference

FCC 47 CFR Part 15E, Clause 15.407 (a)(1)(2)

2.3.2 Equipment Under Test and Modification State

S/N: IMEI 004401115723443 - Modification State 0

2.3.3 Date of Test

4 April 2016 & 11 April 2016

2.3.4 Test Equipment Used

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

2.3.5 Test Procedure

The test procedure was in accordance with KDB 789033 D02 (New Rules) v01r02, clause 3 (a).

Remarks

The measure-and-sum technique described in KDB 662911 D01 was used to sum the conducted power levels from both antenna ports.

2.3.6 Environmental Conditions

Ambient Temperature	23.8°C
Relative Humidity	37.6%



2.3.7 Test Results

802.11a, 5180 MHz, OFDM, 6 Mbps, Frequency Band 1, Maximum Conducted Output Power Results

5180 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.47	11.34	N/A	11.15	13.62	N/A

802.11a, 5200 MHz, OFDM, 6 Mbps, Frequency Band 1, Maximum Conducted Output Power Results

5200 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.55	11.27	N/A	11.36	13.41	N/A

802.11a, 5240 MHz, OFDM, 6 Mbps, Frequency Band 1, Maximum Conducted Output Power Results

5240 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.73	11.00	N/A	11.84	12.60	N/A

802.11a, 5260 MHz, OFDM, 6 Mbps, Frequency Band 2, Maximum Conducted Output Power Results

5260 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.64	10.98	N/A	11.60	12.54	N/A

802.11a, 5300 MHz, OFDM, 6 Mbps, Frequency Band 12 Maximum Conducted Output Power Results

5200 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.51	11.13	N/A	11.25	12.98	N/A



Product Service

802.11a, 5320 MHz, OFDM, 6 Mbps, Frequency Band 2, Maximum Conducted Output Power Results

5320 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.52	11.04	N/A	11.28	12.71	N/A

802.11a, 5500 MHz, OFDM, 6 Mbps, Frequency Band 3, Maximum Conducted Output Power Results

5500 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.30	11.05	N/A	10.72	12.74	N/A

802.11a, 5600 MHz, OFDM, 6 Mbps, Frequency Band 3, Maximum Conducted Output Power Results

5600 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.27	10.80	N/A	10.65	12.03	N/A

802.11a, 5700 MHz, OFDM, 6 Mbps, Frequency Band 3, Maximum Conducted Output Power Results

5700 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.94	10.80	N/A	9.87	12.03	N/A

FCC 47 CFR Part 15, Limit Clause 15.407 (a)(1)(2)(3)

Frequency Band (MHz)	Limit
5150 to 5250	250 mW
5250 to 5350	Lesser of 250 mW or 11 dBm + 10 log B
5470 to 5725	Lesser of 250 mW or 11 dBm + 10 log B
5725 to 5825	1 W

Note: "B" = 26 dB Bandwidth (MHz).



Product Service

802.11ac - 5 GHz 20 MHz Bandwidth, 5180 MHz, 64-QAM, MCS3, Frequency Band 1, Maximum Conducted Output Power Results

5180 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.35	10.18	12.80	8.62	10.43	19.05

802.11ac - 5 GHz 20 MHz Bandwidth, 5200 MHz, 64-QAM, MCS3, Frequency Band 1, Maximum Conducted Output Power Results

5200 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.32	10.19	12.79	8.56	10.45	19.01

802.11ac - 5 GHz 20 MHz Bandwidth, 5240 MHz, 64-QAM, MCS3, Frequency Band 1, Maximum Conducted Output Power Results

5240 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.53	9.90	12.73	8.98	9.78	18.76

802.11ac - 5 GHz 20 MHz Bandwidth, 5260 MHz, 64-QAM, MCS3, Frequency Band 2, Maximum Conducted Output Power Results

5260 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.45	9.84	12.66	8.82	9.64	18.46

802.11ac - 5 GHz 20 MHz Bandwidth, 5300 MHz, 64-QAM, MCS3, Frequency Band 12 Maximum Conducted Output Power Results

5200 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.30	9.97	12.66	8.52	9.94	18.45



Product Service

802.11ac - 5 GHz 20 MHz Bandwidth, 5320 MHz, 64-QAM, MCS3, Frequency Band 2, Maximum Conducted Output Power Results

5320 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.40	9.88	12.66	8.72	9.73	18.45

802.11ac - 5 GHz 20 MHz Bandwidth, 5500 MHz, 64-QAM, MCS3, Frequency Band 3, Maximum Conducted Output Power Results

5500 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.11	9.90	12.54	8.15	9.78	17.93

802.11ac - 5 GHz 20 MHz Bandwidth, 5600 MHz, 64-QAM, MCS3, Frequency Band 3, Maximum Conducted Output Power Results

5600 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.08	9.73	12.43	8.10	9.40	17.50

802.11ac - 5 GHz 20 MHz Bandwidth, 5700 MHz, 64-QAM, MCS3, Frequency Band 3, Maximum Conducted Output Power Results

5700 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
8.76	9.62	12.22	7.52	9.17	16.69

FCC 47 CFR Part 15, Limit Clause 15.407 (a)(1)(2)(3)

Frequency Band (MHz)	Limit
5150 to 5250	250 mW
5250 to 5350	Lesser of 250 mW or 11 dBm + 10 log B
5470 to 5725	Lesser of 250 mW or 11 dBm + 10 log B
5725 to 5825	1 W

Note: "B" = 26 dB Bandwidth (MHz).



Product Service

802.11ac - 5 GHz 40 MHz Bandwidth, 5190 MHz, 16-QAM, MCS0, Frequency Band 1, Maximum Conducted Output Power Results

5190 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.33	11.12	13.75	10.79	12.94	23.73

802.11ac - 5 GHz 40 MHz Bandwidth, 5230 MHz, 16-QAM, MCS0, Frequency Band 1, Maximum Conducted Output Power Results

5230 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.53	10.90	13.73	11.30	12.30	23.60

802.11ac - 5 GHz 40 MHz Bandwidth, 5270 MHz, 16-QAM, MCS0, Frequency Band 2, Maximum Conducted Output Power Results

5270 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.37	10.82	13.61	10.89	12.08	22.96

802.11ac - 5 GHz 40 MHz Bandwidth, 5310 MHz, 16-QAM, MCS0, Frequency Band 2, Maximum Conducted Output Power Results

5310 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.34	10.87	13.62	10.81	12.22	23.03

802.11ac - 5 GHz 40 MHz Bandwidth, 5510 MHz, 16-QAM, MCS0, Frequency Band 3, Maximum Conducted Output Power Results

5510 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.14	10.86	13.52	10.33	12.19	22.51



Product Service

802.11ac - 5 GHz 40 MHz Bandwidth, 5590 MHz, 16-QAM, MCS0, Frequency Band 3, Maximum Conducted Output Power Results

5590 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.18	10.66	13.44	10.42	11.64	22.06

802.11ac - 5 GHz 40 MHz Bandwidth, 5670 MHz, 16-QAM, MCS0, Frequency Band 3, Maximum Conducted Output Power Results

5670 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.02	10.53	13.29	10.04	11.30	21.34

FCC 47 CFR Part 15, Limit Clause 15.407 (a)(1)(2)(3)

Frequency Band (MHz)	Limit
5150 to 5250	250 mW
5250 to 5350	Lesser of 250 mW or $11 \text{ dBm} + 10 \log B$
5470 to 5725	Lesser of 250 mW or $11 \text{ dBm} + 10 \log B$
5725 to 5825	1 W

Note: "B" = 26 dB Bandwidth (MHz).



Product Service

802.11ac - 5 GHz 80 MHz Bandwidth, 5210 MHz, 256-QAM, MCS0, Frequency Band 1, Maximum Conducted Output Power Results

5210 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.90	10.47	13.21	9.78	11.15	20.92

802.11ac - 5 GHz 80 MHz Bandwidth, 5290 MHz, 256-QAM, MCS0, Frequency Band 2, Maximum Conducted Output Power Results

5290 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.82	10.32	13.09	9.60	10.77	20.37

802.11ac - 5 GHz 80 MHz Bandwidth, 5530 MHz, 256-QAM, MCS0, Frequency Band 3, Maximum Conducted Output Power Results

5530 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.64	10.25	12.97	9.21	10.60	19.81

802.11ac - 5 GHz 80 MHz Bandwidth, 5610 MHz, 256-QAM, MCS0, Frequency Band 3, Maximum Conducted Output Power Results

5610 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.57	10.17	12.89	9.06	10.40	19.46

FCC 47 CFR Part 15, Limit Clause 15.407 (a)(1)(2)(3)

Frequency Band (MHz)	Limit
5150 to 5250	250 mW
5250 to 5350	Lesser of 250 mW or 11 dBm + 10 log B
5470 to 5725	Lesser of 250 mW or 11 dBm + 10 log B
5725 to 5825	1 W

Note: "B" = 26 dB Bandwidth (MHz).



Product Service

802.11n - 5 GHz 20 MHz Bandwidth, 5180 MHz, 64-QAM, MCS0, Frequency Band 1, Maximum Conducted Output Power Results

5180 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.29	11.01	13.68	10.70	12.63	23.33

802.11n - 5 GHz 20 MHz Bandwidth, 5200 MHz, 64-QAM, MCS0, Frequency Band 1, Maximum Conducted Output Power Results

5200 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.24	11.03	13.67	10.57	12.68	23.25

802.11n - 5 GHz 20 MHz Bandwidth, 5240 MHz, 64-QAM, MCS0, Frequency Band 1, Maximum Conducted Output Power Results

5240 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.48	10.76	13.64	11.18	11.92	23.10

802.11n - 5 GHz 20 MHz Bandwidth, 5260 MHz, 64-QAM, MCS0, Frequency Band 2, Maximum Conducted Output Power Results

5260 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.38	10.74	13.58	10.92	11.87	22.79

802.11n - 5 GHz 20 MHz Bandwidth, 5300 MHz, 64-QAM, MCS0, Frequency Band 12 Maximum Conducted Output Power Results

5200 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.23	10.90	13.58	10.55	12.31	22.86



Product Service

802.11n - 5 GHz 20 MHz Bandwidth, 5320 MHz, 64-QAM, MCS0, Frequency Band 2, Maximum Conducted Output Power Results

5320 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.34	10.79	13.59	10.82	12.00	22.82

802.11n - 5 GHz 20 MHz Bandwidth, 5500 MHz, 64-QAM, MCS0, Frequency Band 3, Maximum Conducted Output Power Results

5500 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.03	10.82	13.46	10.08	12.09	22.17

802.11n - 5 GHz 20 MHz Bandwidth, 5600 MHz, 64-QAM, MCS0, Frequency Band 3, Maximum Conducted Output Power Results

5600 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.98	10.65	13.34	9.96	11.62	21.58

802.11n - 5 GHz 20 MHz Bandwidth, 5700 MHz, 64-QAM, MCS0, Frequency Band 3, Maximum Conducted Output Power Results

5700 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
9.71	10.58	13.18	9.36	11.44	20.80

FCC 47 CFR Part 15, Limit Clause 15.407 (a)(1)(2)(3)

Frequency Band (MHz)	Limit
5150 to 5250	250 mW
5250 to 5350	Lesser of 250 mW or 11 dBm + 10 log B
5470 to 5725	Lesser of 250 mW or 11 dBm + 10 log B
5725 to 5825	1 W

Note: "B" = 26 dB Bandwidth (MHz).



Product Service

802.11n - 5 GHz 40 MHz Bandwidth, 5190 MHz, 64-QAM, MCS0, Frequency Band 1, Maximum Conducted Output Power Results

5190 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.91	11.65	14.30	12.32	14.61	26.93

802.11n - 5 GHz 40 MHz Bandwidth, 5230 MHz, 64-QAM, MCS0, Frequency Band 1, Maximum Conducted Output Power Results

5230 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
11.11	11.44	14.29	12.90	13.92	26.82

802.11n - 5 GHz 40 MHz Bandwidth, 5270 MHz, 64-QAM, MCS0, Frequency Band 2, Maximum Conducted Output Power Results

5270 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.96	11.39	14.19	12.47	13.76	26.23

802.11n - 5 GHz 40 MHz Bandwidth, 5310 MHz, 64-QAM, MCS0, Frequency Band 2, Maximum Conducted Output Power Results

5310 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.93	11.47	14.22	12.38	14.02	26.40

802.11n - 5 GHz 40 MHz Bandwidth, 5510 MHz, 64-QAM, MCS0, Frequency Band 3, Maximum Conducted Output Power Results

5510 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.69	11.48	14.11	11.72	14.05	25.77



Product Service

802.11n - 5 GHz 40 MHz Bandwidth, 5590 MHz, 64-QAM, MCS0, Frequency Band 3, Maximum Conducted Output Power Results

5590 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.73	11.24	14.00	11.82	13.30	25.12

802.11n - 5 GHz 40 MHz Bandwidth, 5670 MHz, 64-QAM, MCS0, Frequency Band 3, Maximum Conducted Output Power Results

5670 MHz					
dBm			mW		
Port A	Port B	Total Power	Port A	Port B	Total Power
10.61	11.13	13.89	11.50	12.96	24.46

FCC 47 CFR Part 15, Limit Clause 15.407 (a)(1)(2)(3)

Frequency Band (MHz)	Limit
5150 to 5250	250 mW
5250 to 5350	Lesser of 250 mW or $11 \text{ dBm} + 10 \log B$
5470 to 5725	Lesser of 250 mW or $11 \text{ dBm} + 10 \log B$
5725 to 5825	1 W

Note: "B" = 26 dB Bandwidth (MHz).



Product Service

2.4 PEAK POWER SPECTRAL DENSITY

2.4.1 Specification Reference

FCC 47 CFR Part 15E, Clause 15.407 (a)(5)

2.4.2 Equipment Under Test and Modification State

S/N: IMEI 004401115723435 - Modification State 0

2.4.3 Date of Test

13 April 2016 & 14 April 2016

2.4.4 Test Equipment Used

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

2.4.5 Test Procedure

This test was performed in accordance with KDB 789033 D02 v01, Section II clause F, (SA-2 Alternative).

Remarks

For modes which support simultaneous transmission KDB 662911 D01 v02r01, clause E.2 c was used to calculate the total power density using the port with the highest measured power..

2.4.6 Environmental Conditions

Ambient Temperature	23.1 - 25.0°C
Relative Humidity	34.7 - 35.4%



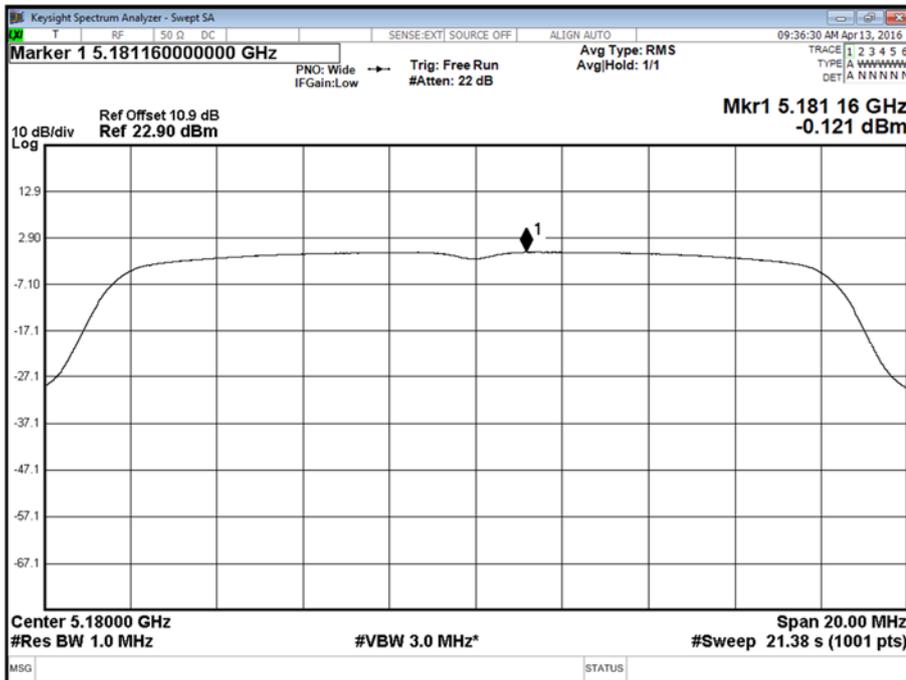
Product Service

2.4.7 Test Results

802.11a, 5180 MHz, OFDM, 6 Mbps, Frequency Band 1, Peak Power Spectral Density Results

5180 MHz		
dBm		
Port A	Port B	Total Power
0.076	0.173	N/A

802.11a, 5180 MHz, OFDM, 6 Mbps, Frequency Band 1, Port A, Peak Power Spectral Density Plot



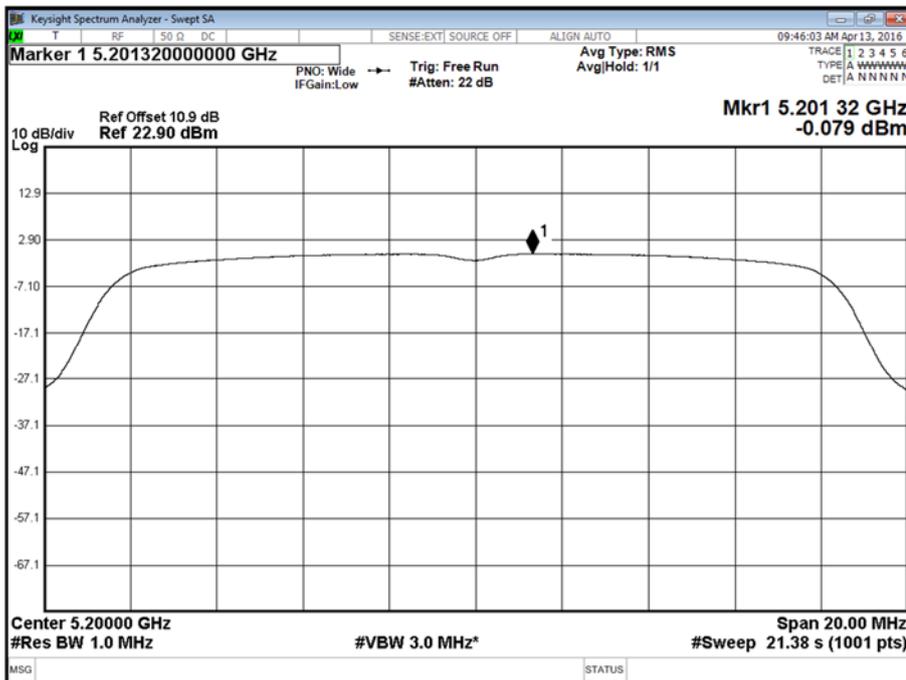


Product Service

802.11a, 5200 MHz, OFDM, 6 Mbps, Frequency Band 1, Peak Power Spectral Density Results

5200 MHz		
dBm		
Port A	Port B	Total Power
0.118	0.071	N/A

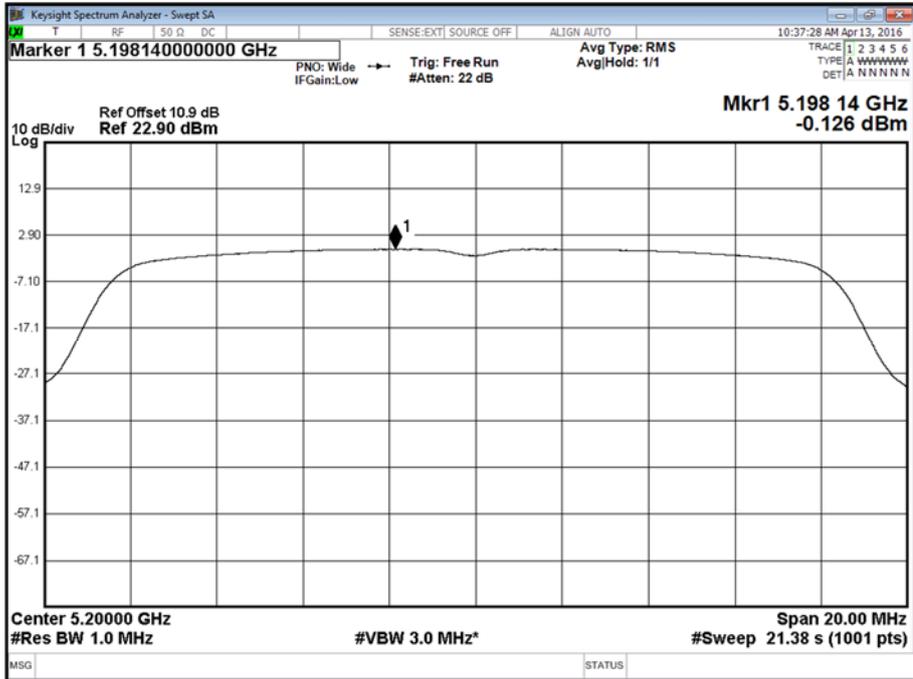
802.11a, 5200 MHz, OFDM, 6 Mbps, Frequency Band 1, Port A, Peak Power Spectral Density Plot





Product Service

802.11a, 5200 MHz, OFDM, 6 Mbps, Frequency Band 1, Port B, Peak Power Spectral Density Plot



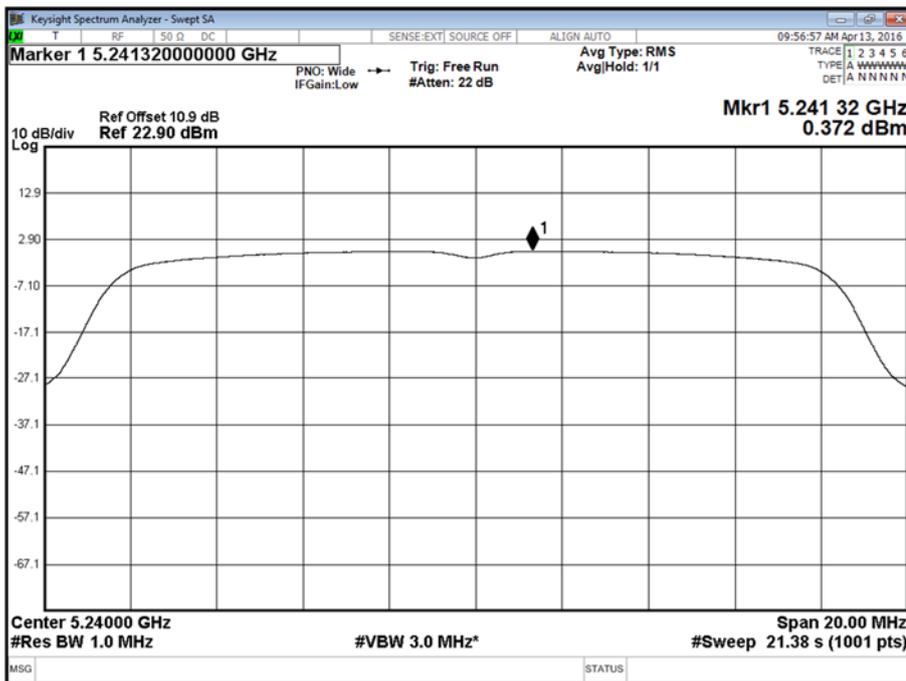


Product Service

802.11a, 5240 MHz, OFDM, 6 Mbps, Frequency Band 1, Peak Power Spectral Density Results

5240 MHz		
dBm		
Port A	Port B	Total Power
0.569	0.188	N/A

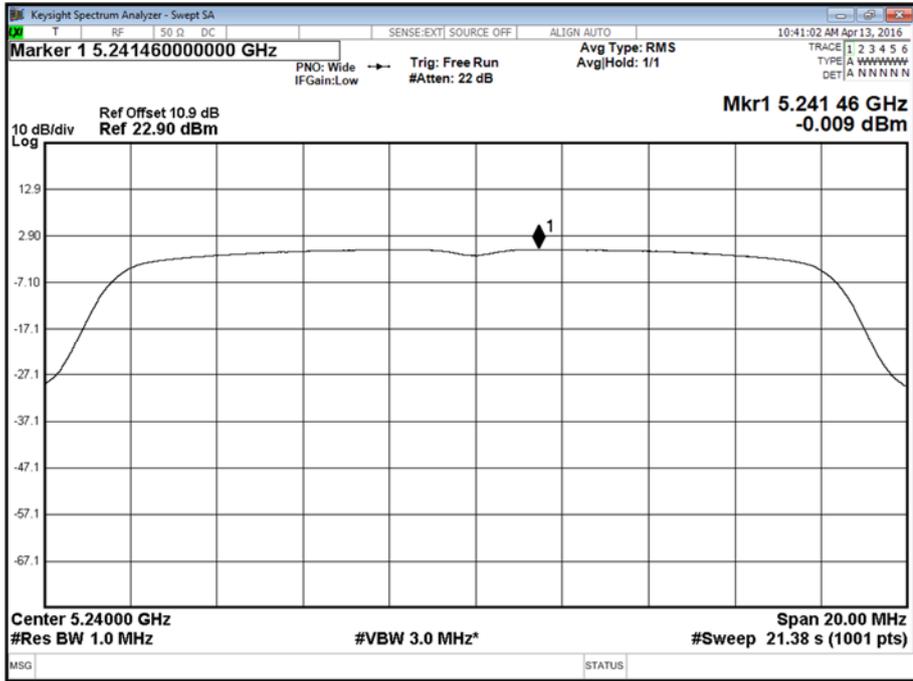
802.11a, 5240 MHz, OFDM, 6 Mbps, Frequency Band 1, Peak Power Spectral Density Plot





Product Service

802.11a, 5240 MHz, OFDM, 6 Mbps, Frequency Band 1, Peak Power Spectral Density Plot





Product Service

802.11a, 5260 MHz, OFDM, 6 Mbps, Frequency Band 2, Peak Power Spectral Density Results

5260 MHz		
dBm		
Port A	Port B	Total Power
0.657	0.438	N/A

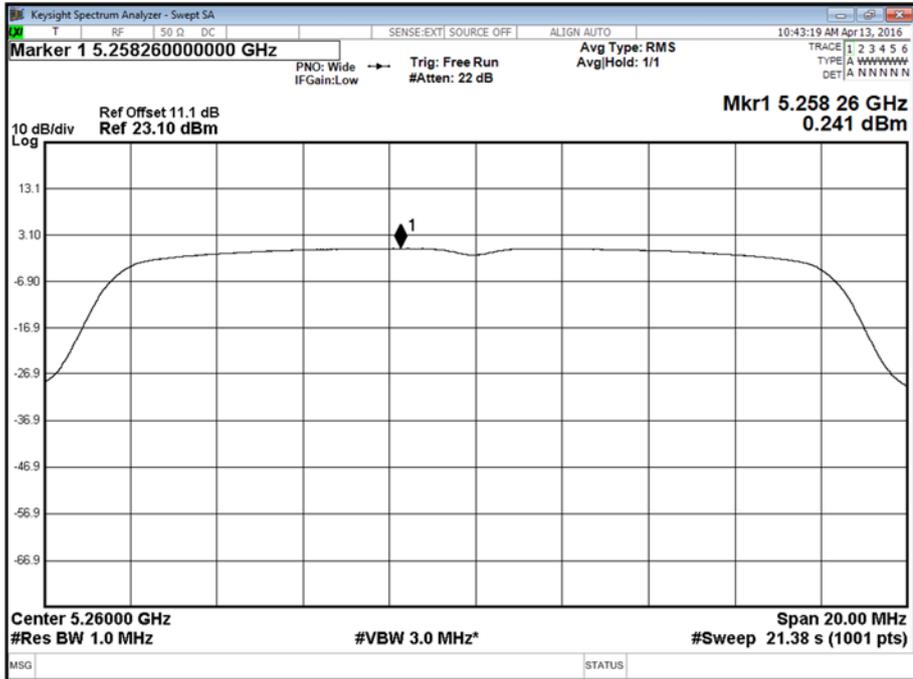
802.11a, 5260 MHz, OFDM, 6 Mbps, Frequency Band 2, Port A, Peak Power Spectral Density Plot





Product Service

802.11a, 5260 MHz, OFDM, 6 Mbps, Frequency Band 2, Port B, Peak Power Spectral Density Plot



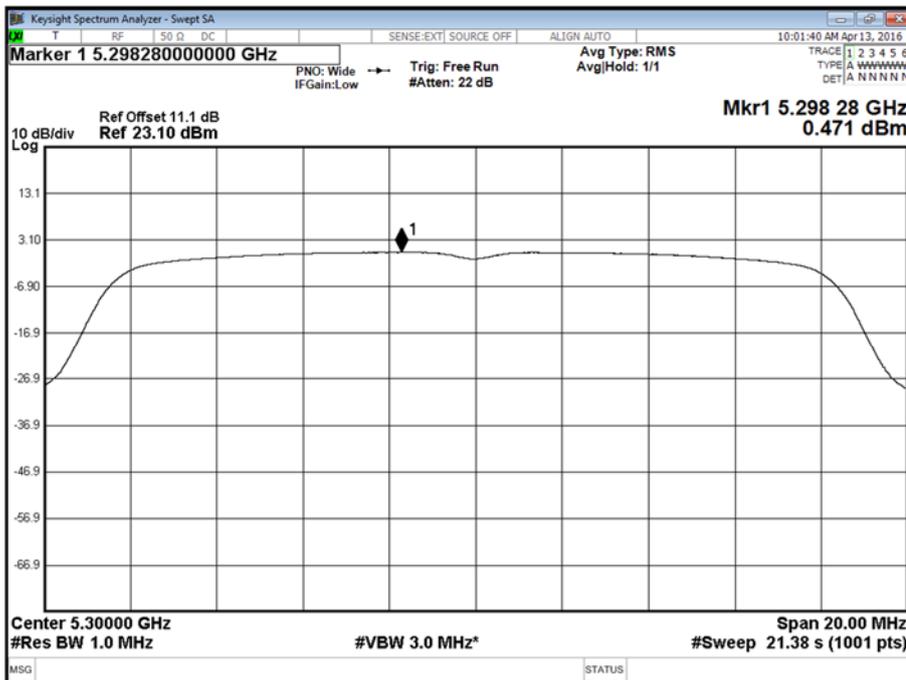


Product Service

802.11a, 5300 MHz, OFDM, 6 Mbps, Frequency Band 2, Peak Power Spectral Density Results

5300 MHz		
dBm		
Port A	Port B	Total Power
0.668	0.362	N/A

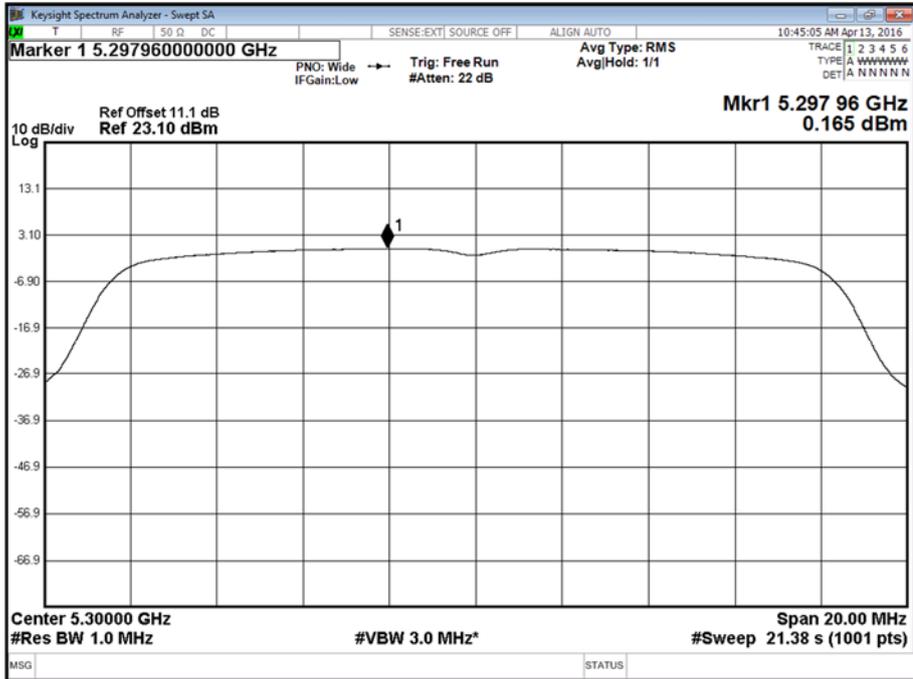
802.11a, 5300 MHz, OFDM, 6 Mbps, Frequency Band 2, Port A, Peak Power Spectral Density Plot





Product Service

802.11a, 5300 MHz, OFDM, 6 Mbps, Frequency Band 2, Port B, Peak Power Spectral Density Plot



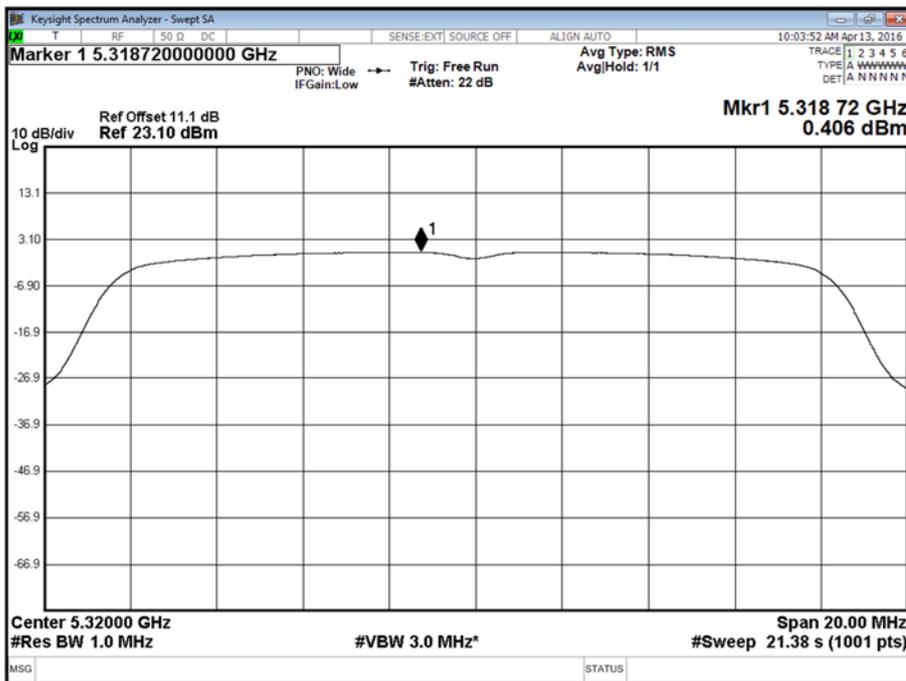


Product Service

802.11a, 5320 MHz, OFDM, 6 Mbps, Frequency Band 2, Peak Power Spectral Density Results

5320 MHz		
dBm		
Port A	Port B	Total Power
0.603	0.141	N/A

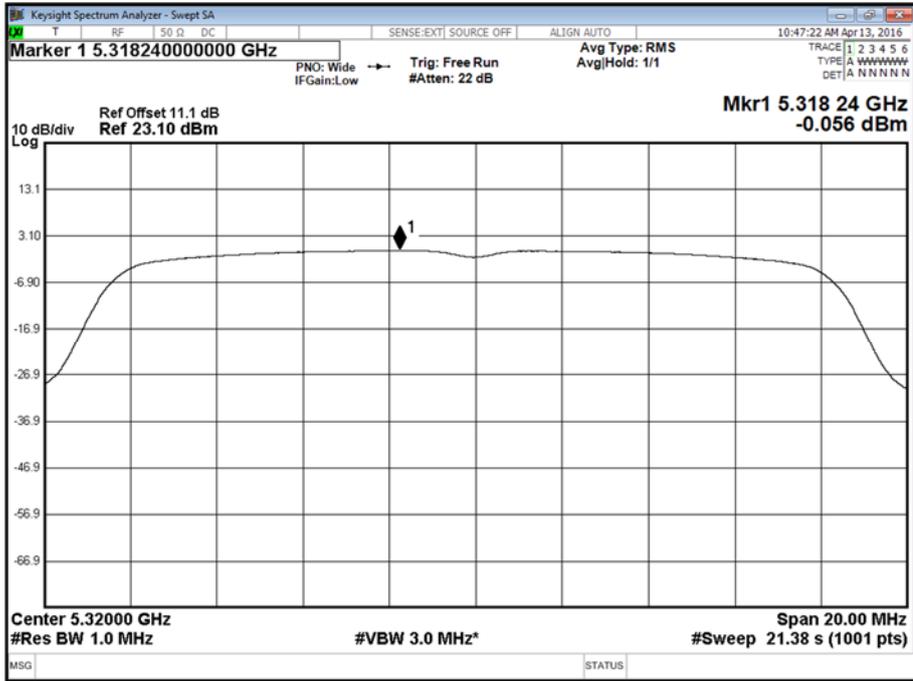
802.11a, 5320 MHz, OFDM, 6 Mbps, Frequency Band 2, Peak Power Spectral Density Plot





Product Service

802.11a, 5320 MHz, OFDM, 6 Mbps, Frequency Band 2, Peak Power Spectral Density Plot



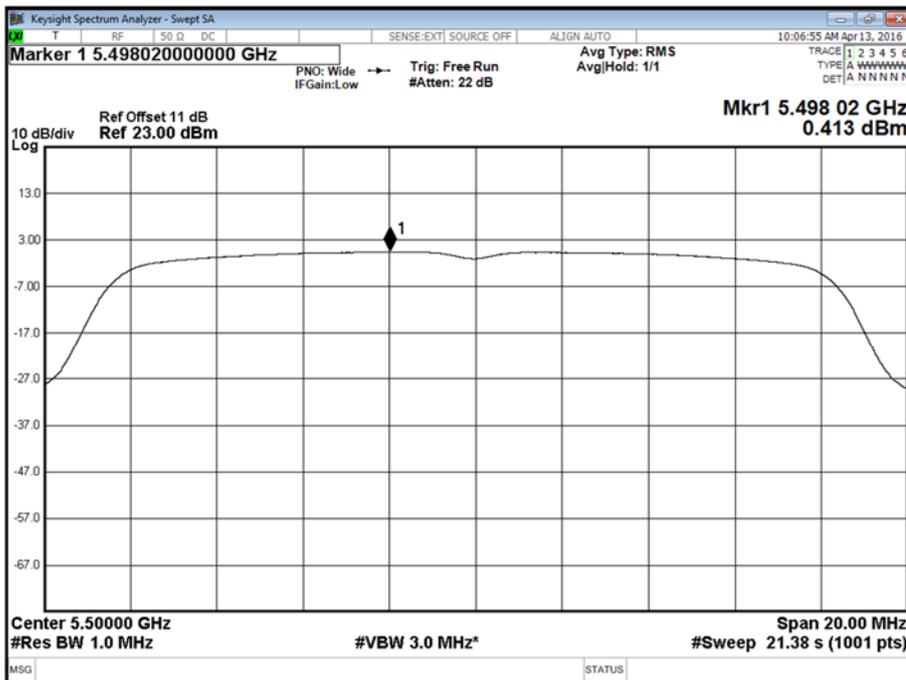


Product Service

802.11a, 5500 MHz, OFDM, 6 Mbps, Frequency Band 3, Peak Power Spectral Density Results

5500 MHz		
dBm		
Port A	Port B	Total Power
0.610	0.142	N/A

802.11a, 5500 MHz, OFDM, 6 Mbps, Frequency Band 3, Port A, Peak Power Spectral Density Plot





Product Service

802.11a, 5500 MHz, OFDM, 6 Mbps, Frequency Band 3, Port B, Peak Power Spectral Density Plot

