

FCC / ISED UNII REPORT

Certification

Applicant Name:

LG Electronics Inc.

Date of Issue:

September 28, 2017

Test Site/Location:

HCT CO., LTD., 74,Seoicheon-ro 578beon-gil,Majang-myeo,Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Address:

222 LG-ro Jinwi-myeon, Pyeongtaek-si,
Gyeonggi-do, Korea

Report No.: HCT-R-1709-F011-2

ISED Registration Number: 5944A-5

FCC ID	: BEJLGSWFAC81
IC	: 2703H-LGSWFAC81
APPLICANT	: LG Electronics Inc.

Model: LGSWFAC81

EUT Type: RF Module

Modulation type OFDM

FCC Classification: Unlicensed National Information Infrastructure(UNII)

FCC Rule Part(s): Part 15.407

ISED Rule Part(s): RSS-247 Issue 2(February 2017), RSS-Gen Issue 4(November 2014)

Band	Mode	Channel Bandwidth (MHz)	Frequency Range (MHz)	Ant.0 Power (dBm)	Ant.1 Power (dBm)	Ant. 0 & 1 Power (dBm)
UNII1	802.11a	20	5180 – 5240	10.25	9.78	13.03
	802.11n	20	5180 – 5240	10.38	9.58	13.00
	802.11n	40	5190 – 5230	10.75	10.23	13.50
	802.11ac	20	5180 – 5240	10.33	9.33	12.83
	802.11ac	40	5190 – 5230	10.61	10.65	13.64
	802.11ac	80	5210	8.79	8.87	11.84
UNII2A	802.11a	20	5260 – 5320	11.92	11.18	14.57
	802.11n	20	5260 – 5320	12.05	11.42	14.75
	802.11n	40	5270 – 5310	11.10	12.02	14.07
	802.11ac	20	5260 – 5320	12.05	10.83	14.47
	802.11ac	40	5270 – 5310	10.99	10.88	13.95
	802.11ac	80	5290	8.69	8.16	11.44
UNII2C	802.11a	20	5500 – 5720	12.42	12.12	15.20
	802.11n	20	5500 – 5720	14.14	13.62	16.89
	802.11n	40	5510 – 5710	14.97	14.61	17.80
	802.11ac	20	5500 – 5720	13.83	13.36	16.61
	802.11ac	40	5510 – 5710	14.88	14.65	17.78
	802.11ac	80	5530 – 5690	14.49	13.92	17.22
UNII3	802.11a	20	5745 – 5825	11.63	8.90	13.38
	802.11n	20	5745 – 5825	12.51	9.81	14.27
	802.11n	40	5755 – 5795	14.21	12.38	16.34
	802.11ac	20	5745 – 5825	12.37	9.79	14.19
	802.11ac	40	5755 – 5795	14.47	12.36	16.36
	802.11ac	80	5775	13.91	11.43	15.77

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC / IC Rules under normal use and maintenance.



Report prepared by : Kyung Soo Kang
Engineer of Telecommunication testing center



Approved by : Jong Seok Lee
Manager of Telecommunication testing center

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1709-F011	September 26, 2017	- First Approval Report
HCT-R-1709-F011-1	September 27, 2017	- Revised the 802.11a MIMO power and PSD value. - Revised the worst case note for MIMO.
HCT-R-1709-F011-2	September 28, 2017	- Revised Applicant informaiton

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1. GENERAL INFORMATION

Applicant: LG Electronics Inc.
Address: 222 LG-ro Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, Korea
FCC ID: BEJLGSWFAC81
IC: 2703H-LGSWFAC81
EUT Type: RF Module
Model: LGSWFAC81
Date(s) of Tests: July 24, 2017 ~ September 25, 2017
Place of Tests: HCT Co., Ltd.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

2. EUT DESCRIPTION

Model	LGSWFAC81	
EUT Type	RF Module	
Power Supply	3.3 V	
Frequency Range	TX_20 MHz BW:	5180 MHz - 5240 MHz (UNII 1) / 5260 MHz - 5320 MHz (UNII 2A)/ 5500 MHz - 5720 MHz (UNII 2C) / 5745 MHz - 5825 MHz (UNII 3)
	40 MHz BW:	5190 MHz - 5230 MHz (UNII 1) / 5270 MHz - 5310 MHz (UNII 2A)/ 5510 MHz - 5710 MHz (UNII 2C) / 5755 MHz - 5795 MHz (UNII 3)
	80 MHz BW:	5210 MHz (UNII 1) / 5290 MHz (UNII 2A)/ 5530 - 5690 MHz (UNII 2C) / 5775 MHz (UNII 3)
	RX_20 MHz BW:	5180 MHz - 5240 MHz (UNII 1) / 5260 MHz - 5320 MHz (UNII 2A)/ 5500 MHz - 5720 MHz (UNII 2C) / 5745 MHz - 5825 MHz (UNII 3)
	40 MHz BW:	5190 MHz - 5230 MHz (UNII 1) / 5270 MHz - 5310 MHz (UNII 2A)/ 5510 MHz - 5710 MHz (UNII 2C) / 5755 MHz - 5795 MHz (UNII 3)
	80 MHz BW:	5210 MHz (UNII 1) / 5290 MHz (UNII 2A)/ 5530 - 5690 MHz (UNII 2C) / 5775 MHz (UNII 3)
Modulation Type	OFDM(802.11a, 802.11n, 802.11ac)	
Antenna Specification	Manufacturer: Liteconn Co., Ltd.	
	Antenna type: Internal Antenna	
	Peak Gain : cf. Section 6	

2.1 EUT OPERATING MODE

■ Operating mode

Mode	Operating Mode	Operating Ant.
802.11a/n/ac	SISO	Ant 0
		Ant 1
	MIMO	Ant 0 & 1

Note : We have done all test case. Worst case is MIMO(CDD) for 802.11a/n/ac mode. So, we attached the result of MIMO(CDD) for 802.11a/n/ac mode

3. TEST METHODOLOGY

The measurement procedure described in FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04 dated May 2, 2017 entitled "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part15, Subpart E" and ANSI C63.10 (Version : 2013) 'the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices' were used in the measurement. For 802.11ac, KDB644545 D03 v01 dated August 14, 2014

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E / RSS-Gen issue 4, RSS-247 issue 2.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2013) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz. Above 1GHz with 1.5m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 8 of ANSI C63.10. (Version: 2013)

Conducted Antenna Terminal

See Section from 8.1 to 8.4.(KDB 789033 D02 v01r04)

3.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low, mid and high with highest data rate (worst case) is chosen for full testing.

4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2006).

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated July 07, 2015 (Registration Number: 90661)

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203, §15.407

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

* The antennas of this E.U.T are permanently attached.

* The E.U.T Complies with the requirement of §15.203, §15.407 / RSS-Gen

Directional Gain Calculations

If any transmit signals are correlated with each other (CDD)

$$\text{Directional gain} = 10 \cdot \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N] \text{ dBi}$$

Antenna Gain

5GHz Band (UNII 1)

Antenna Gain	Ant 0	3.9 dBi
	Ant 1	4.1 dBi
Directional Antenna Gain	Ant 0 & 1	7.01 dBi

5GHz Band (UNII 2A)

Antenna Gain	Ant 0	4.1 dBi
	Ant 1	4.1 dBi
Directional Antenna Gain	Ant 0 & 1	7.11 dBi

5GHz Band (UNII 2C)

Antenna Gain	Ant 0	4.6 dBi
	Ant 1	3.9 dBi
Directional Antenna Gain	Ant 0 & 1	7.27 dBi

5GHz Band (UNII 3)

Antenna Gain	Ant 0	4.0 dBi
	Ant 1	3.8 dBi
Directional Antenna Gain	Ant 0 & 1	6.91 dBi

7. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014.

All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence.

Parameter	Expanded Uncertainty ($\pm$ dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70

8. SUMMARY OF TEST RESULTS

8.1 FCC Part

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
26dB Bandwidth	§15.407 (for Power Measurement)	N/A	CONDUCTED	PASS
6 dB Bandwidth	§15.407(e)	>500 kHz (5725-5850 MHz)		PASS
Maximum Conducted Output Power	§15.407(a)	< 250 mW (5150-5250 MHz) < 250 mW or 11+10 log log ₁₀ (BW) dBm (5250-5350 MHz) < 250 mW or 11+10 log log ₁₀ (BW) dBm (5470-5725 MHz) <1 W (5725-5850 MHz)		PASS
Peak Power Spectral Density	§15.407(a)	<11 dBm/ MHz (5150-5250 MHz) <11 dBm/ MHz (5250-5350 MHz) <11 dBm/ MHz (5470-5725 MHz) <30 dBm/500 kHz(5725-5850 MHz)		PASS
Frequency Stability	§15.407(g)	NA		PASS
AC Conducted Emissions 150 kHz-30 MHz	15.207	<FCC 15.207 limits		PASS
Undesirable Emissions	§15.407(b)	<-27 dBm/MHz EIRP (UNII1, 2A, 2C) cf. Section 9.7.1 (UNII 3)	RADIATED	PASS
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	15.205, 15.407(b)(5), (6)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		PASS

8.2 IC Part

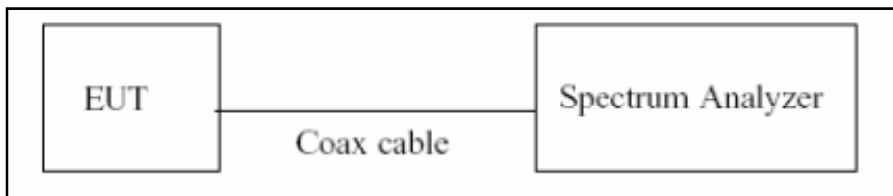
Test Description	IC Part Section(s)	Test Limit	Test Condition	Test Result
99% Bandwidth(IC)	RSS-Gen, 6.6	N/A	CONDUCTED	PASS
6 dB Bandwidth	RSS-247, 6.2.4.1	> 500 kHz (5725~5850 MHz)		PASS
Maximum Conducted Output Power,	RSS-247, 6.2	< 250 mW or $11+10 \log_{10}$ (BW) dBm (5250-5350 MHz) < 250 mW or $11+10 \log_{10}$ (BW) dBm (5470-5600, 5650-5725 MHz) Whichever power is less		PASS
	RSS-247, 6.2.4.1	<1 W (5725-5850 MHz)		
Maximum e.i.r.p	RSS-247, 6.2	< 200 mW or $10+10 \log_{10}$ (BW) dBm (5150-5250 MHz) < 1 W or $17+10 \log_{10}$ (BW) dBm (5250-5350 MHz) < 1 W or $17+10 \log_{10}$ (BW) dBm (5470-5725 MHz) Whichever power is less		
Power Spectral Density	RSS-247 6.2	<10 dBm/ MHz(e.i.r.p.) (5150-5250 MHz) <11 dBm/MHz(Conducted) (5250-5350 MHz, 5470-5600 MHz, 5650-5725 MHz)		PASS
	RSS-247, 6.2.4.1	<30 dBm/500 kHz(Conducted) (5725-5850 MHz)		
AC Conducted Emissions 150 kHz-30 MHz	RSS-Gen, 8.8	RSS-Gen section 8.8 table 3		NA
Undesirable Emissions	RSS-247, 6.2.1.2	26 dBc at 5250~5350 MHz (5150~5350 MHz)		PASS
	RSS-247, 6.2	<-27 dBm/ MHz EIRP (5150-5350 MHz, 5470-5725 MHz)	RADIATED	PASS
	RSS-247, 6.2.4.2	cf. Section 9.7.1 (UNII 3)		
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	RSS-Gen, 8.9 RSS-Gen, 8.10	RSS-Gen section 8.9 table 4, 5 section 8.10 table 6		PASS
Receiver Spurious Emissions	RSS-Gen, 5 RSS-Gen, 7.1.2	RSS-Gen section 7.1.2 table 2		PASS

9. TEST RESULT

9.1 DUTY CYCLE

The zero-span mode on a spectrum analyzer or EMI receiver ,if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set $RBW \geq EBW$ if possible; otherwise, set RBW to the largest available value. Set $VBW \geq RBW$. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$, where T is defined in section B)1)a), and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if $T \leq 16.7$ microseconds.)

■ TEST CONFIGURATION



■ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer. We tested according to the zero-span measurement method, (B.2 in KDB 789033 D02 v01r04)

The largest available value of RBW is 8 MHz and VBW is 50 MHz. The zero-span method of measuring duty cycle shall not be used if $T \leq 6.25$ microseconds. ($50/6.25 = 8$)

The zero-span method was used because all measured T data are > 6.25 microseconds and both RBW and VBW are $> 50/T$.

1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz ($\geq$ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on} / T_{total} and Duty Cycle Factor = $10 \cdot \log(1/\text{Duty Cycle})$

■ Duty Cycle Factor

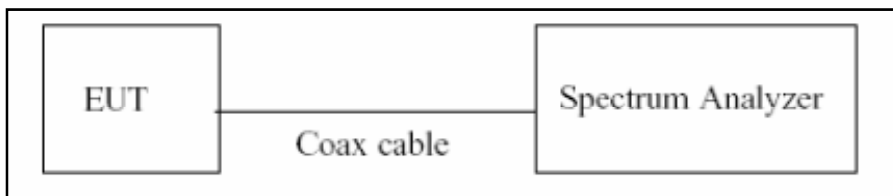
Mode	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11a	-	-	-	-
802.11n_HT20	-	-	-	-
802.11n_HT40	-	-	-	-
802.11ac_VHT20	-	-	-	-
802.11ac_VHT40	-	-	-	-
802.11ac_VHT80	-	-	-	-

9.2 EMISSION BANDWIDTH AND MINIMUM EMISSION BANDWIDTH MEASUREMENT

The bandwidth at 26 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum power control level, as defined in KDB 789033 D02 v01r04, at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26 dB bandwidth.

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

■ TEST CONFIGURATION



■ TEST PROCEDURE (26dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to (C.1 in KDB 789033 D02 v01r04)

1. RBW = approximately 1 % of the emission bandwidth
2. VBW > RBW
3. Detector = Peak
4. Trace mode = max hold
5. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

Note : We tested 26 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 26 dB.

1. In order to simplify the report, attached plots were only the most wide channel.
2. DFS test channels should be defined. So, We performed the OBW test to prove that no part of the fundamental emissions of any channels belong to UNII1 and UNII3 band for DFS.

■ TEST PROCEDURE (for the band 5.725-5.85 GHz, 6 dB Bandwidth)

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to(C.2 in KDB 789033 D02 v01r04)

1. RBW = 100 kHz
2. VBW $\geq$ 3*RBW
3. Detector = Peak
4. Trace mode = max hold
5. Allow the trace to stabilize
6. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points(upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note : We tested 6 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 6 dB.

■ TEST RESULTS for Ant.0_802.11a
Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	20.58	N/A	Pass
5200	40	20.47	N/A	Pass
5240	48	20.58	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	20.84	N/A	Pass
5300	60	20.59	N/A	Pass
5320	64	20.42	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

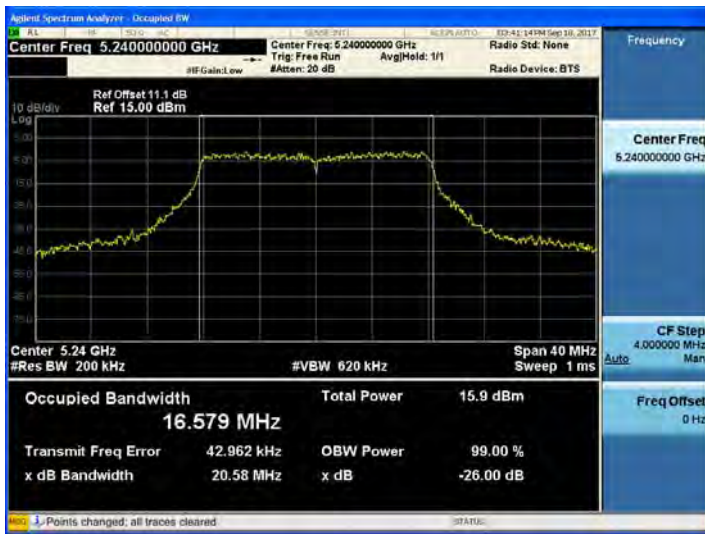
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	20.41	N/A	Pass
5580	116	20.32	N/A	Pass
5720	144	20.23	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

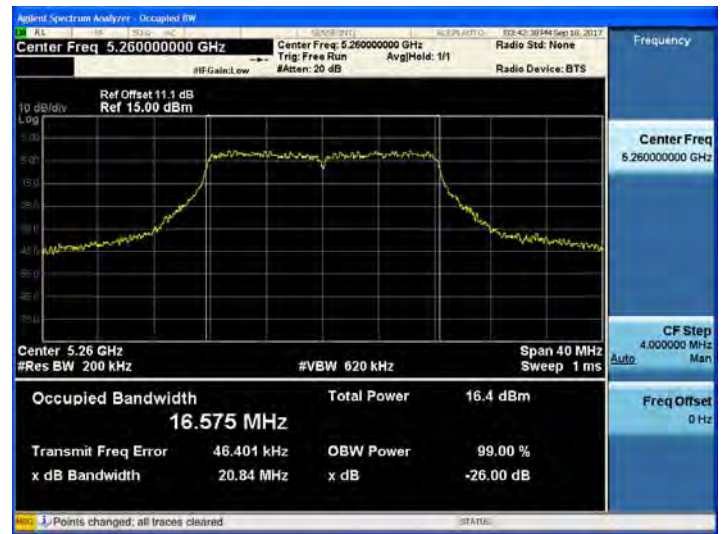
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	20.51	N/A	Pass
5785	157	21.06	N/A	Pass
5825	165	20.46	N/A	Pass

■ TEST Plot for Ant.0_802.11a

802.11a UNII 1 BAND 26dB Bandwidth (CH 48)



802.11a UNII 2A BAND 26dB Bandwidth (CH 52)



802.11a UNII 2C BAND 26dB Bandwidth (CH 100)



802.11a UNII 3 BAND 26dB Bandwidth (CH 157)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.1_802.11a
Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	20.51	N/A	Pass
5200	40	20.40	N/A	Pass
5240	48	20.30	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	20.41	N/A	Pass
5300	60	20.42	N/A	Pass
5320	64	20.54	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

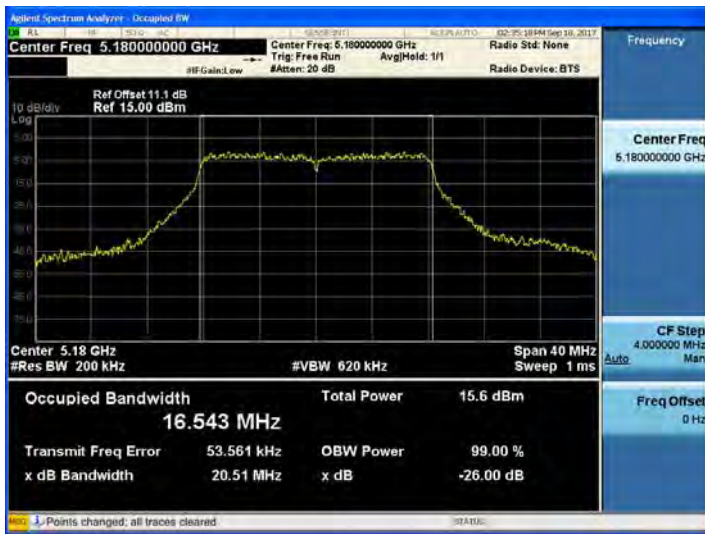
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	20.47	N/A	Pass
5580	116	20.72	N/A	Pass
5720	144	20.58	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

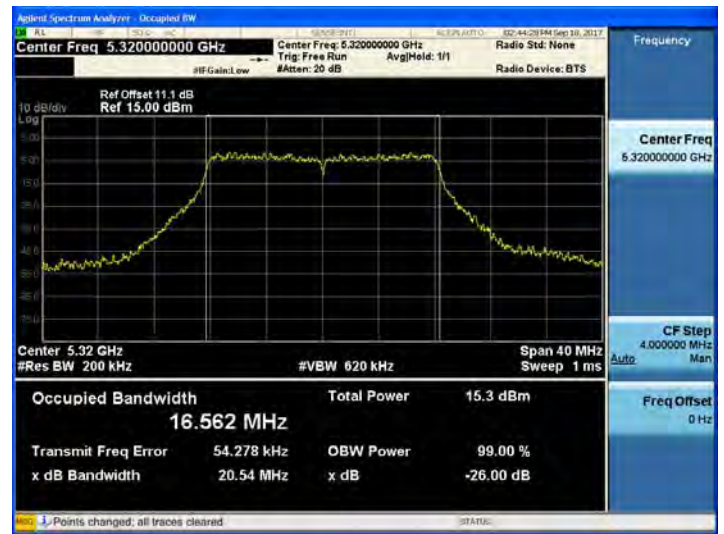
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	20.39	N/A	Pass
5785	157	20.77	N/A	Pass
5825	165	20.56	N/A	Pass

■ TEST Plot for Ant.1_802.11a

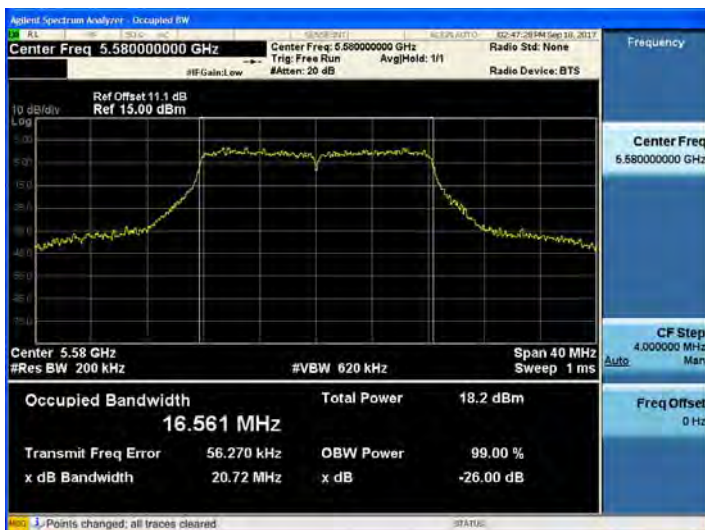
802.11a UNII 1 BAND 26dB Bandwidth (CH 36)



802.11a UNII 2A BAND 26dB Bandwidth (CH 64)



802.11a UNII 2C BAND 26dB Bandwidth (CH 116)



802.11a UNII 3 BAND 26dB Bandwidth (CH 157)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.0_802.11n_HT20
Conducted 26 dB Bandwidth Measurements for 802.11n_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	20.91	N/A	Pass
5200	40	20.81	N/A	Pass
5240	48	20.72	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	20.96	N/A	Pass
5300	60	20.92	N/A	Pass
5320	64	20.67	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT20

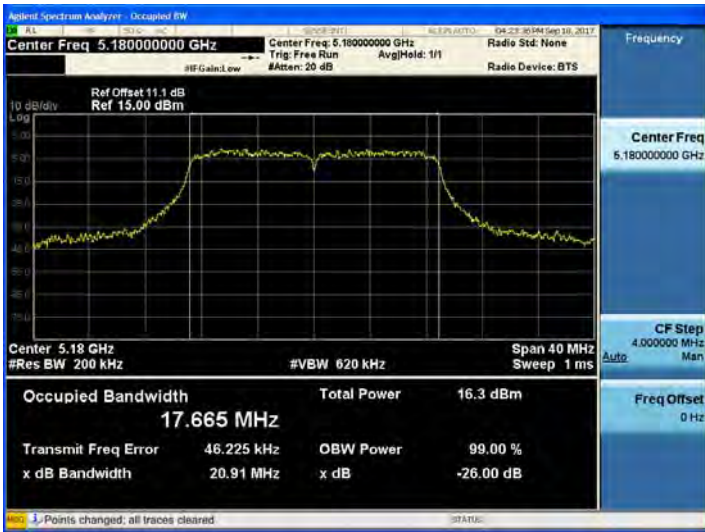
802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	21.19	N/A	Pass
5580	116	20.61	N/A	Pass
5720	144	20.79	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT20

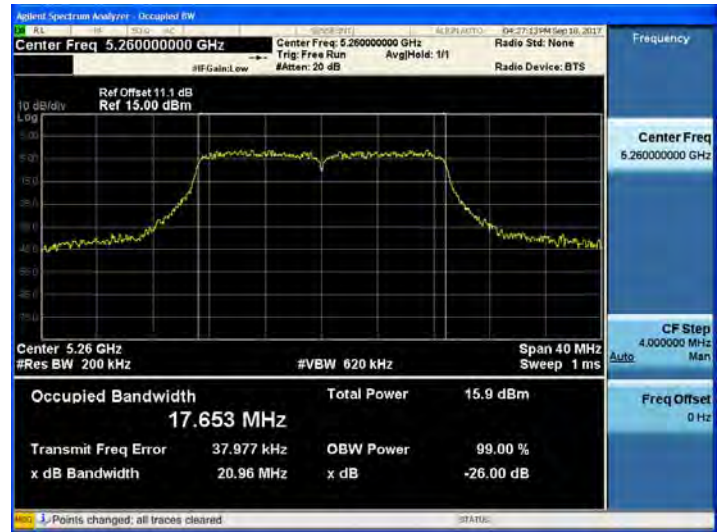
802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	21.06	N/A	Pass
5785	157	20.87	N/A	Pass
5825	165	20.93	N/A	Pass

TEST Plot for Ant.0_802.11n_HT20

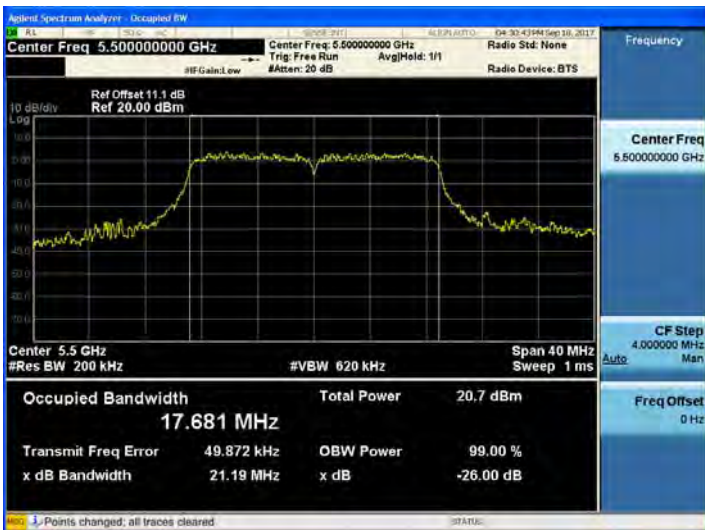
802.11n_HT20 UNII 1 BAND 26dB Bandwidth(CH 36)



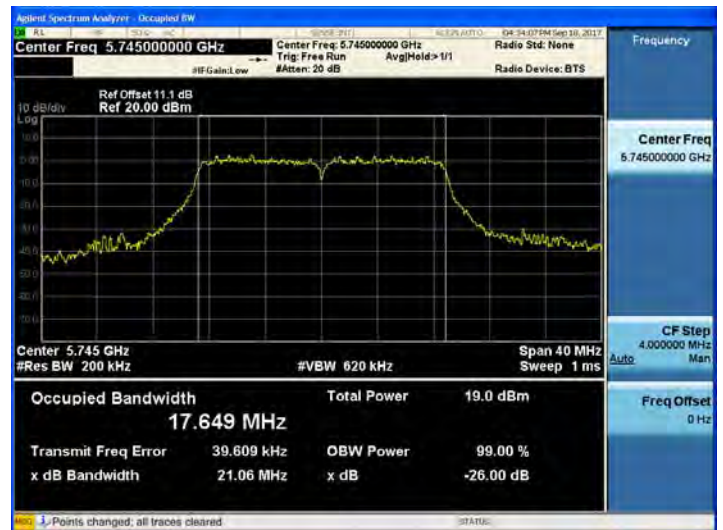
802.11n_HT20 UNII 2A BAND 26dB Bandwidth(CH 52)



802.11n_HT20 UNII 2C BAND 26dB Bandwidth(CH 100)



802.11n_HT20 UNII 3 BAND 26dB Bandwidth(CH 149)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.1_802.11n_HT20
Conducted 26 dB Bandwidth Measurements for 802.11n_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	20.80	N/A	Pass
5200	40	20.88	N/A	Pass
5240	48	20.79	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	20.78	N/A	Pass
5300	60	20.72	N/A	Pass
5320	64	20.80	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT20

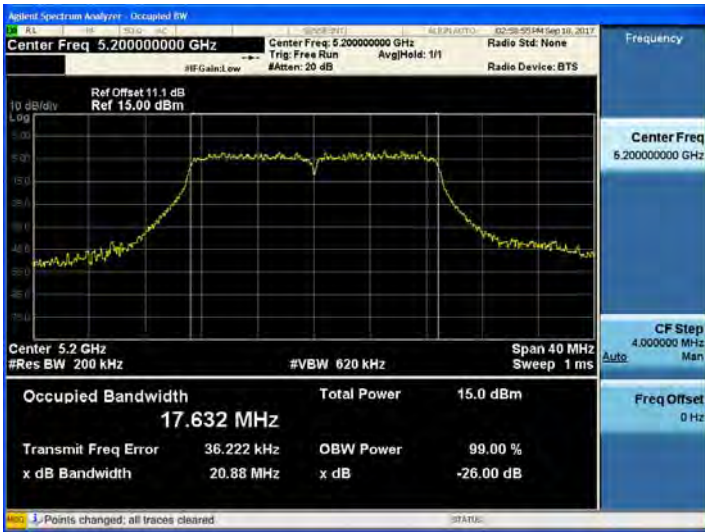
802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	21.22	N/A	Pass
5580	116	20.97	N/A	Pass
5720	144	20.63	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT20

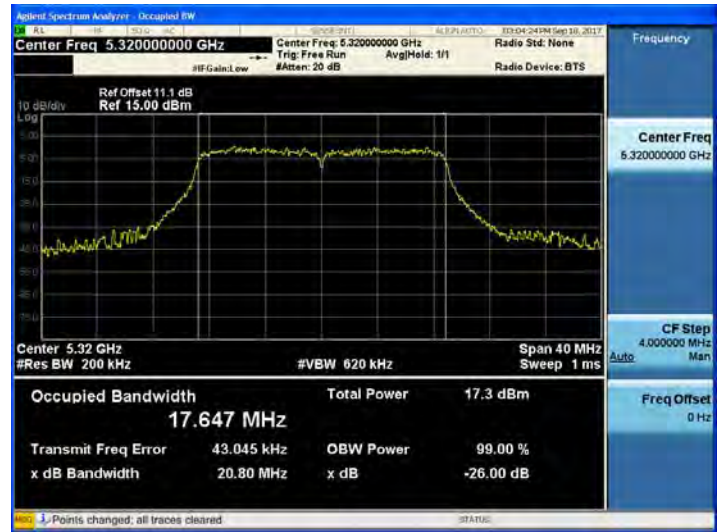
802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	20.68	N/A	Pass
5785	157	20.75	N/A	Pass
5825	165	20.77	N/A	Pass

TEST Plot for Ant.1_802.11n_HT20

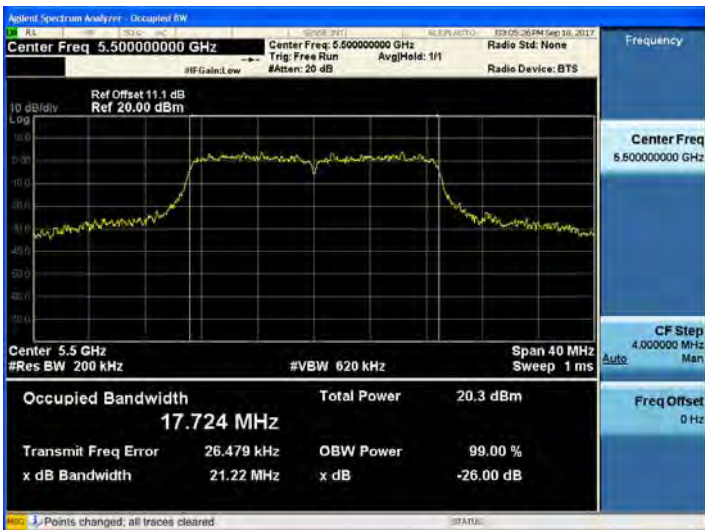
802.11n_HT20 UNII 1 BAND 26dB Bandwidth(CH 40)



802.11n_HT20 UNII 2A BAND 26dB Bandwidth(CH 64)



802.11n_HT20 UNII 2C BAND 26dB Bandwidth(CH 100)



802.11n_HT20 UNII 3 BAND 26dB Bandwidth(CH 165)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.0_ 802.11ac_VHT20
Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	21.19	N/A	Pass
5200	40	21.01	N/A	Pass
5240	48	20.92	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	21.25	N/A	Pass
5300	60	20.80	N/A	Pass
5320	64	20.94	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT20

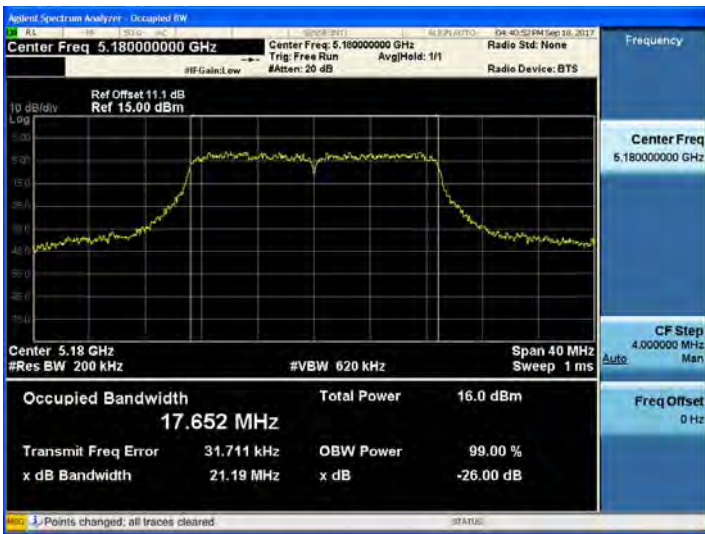
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	20.96	N/A	Pass
5580	116	21.03	N/A	Pass
5720	144	21.02	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT20

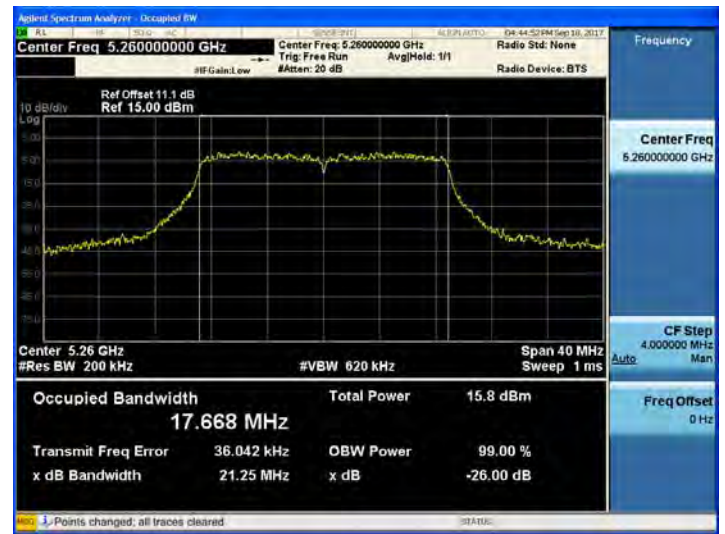
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	20.99	N/A	Pass
5785	157	20.80	N/A	Pass
5825	165	20.85	N/A	Pass

■ TEST Plot for Ant.0_ 802.11ac_VHT20

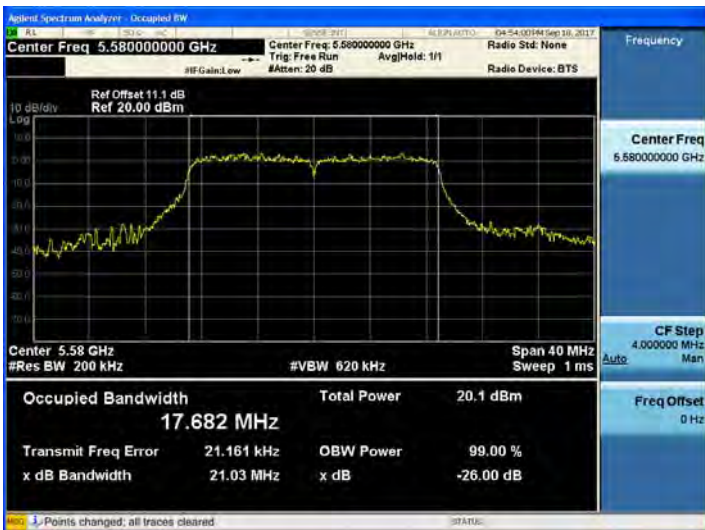
802.11ac_VHT20 UNII 1 BAND 26dB Bandwidth(CH 36)



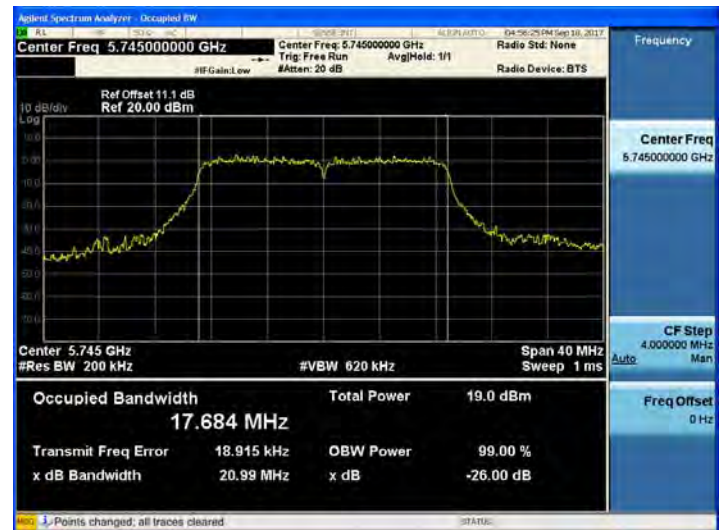
802.11ac_VHT20 UNII 2A BAND 26dB Bandwidth(CH 52)



802.11ac_VHT20 UNII 2C BAND 26dB Bandwidth(CH 116)



802.11ac_VHT20 UNII 3 BAND 26dB Bandwidth(CH 149)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.1_ 802.11ac_VHT20
Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	20.83	N/A	Pass
5200	40	20.92	N/A	Pass
5240	48	20.72	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	20.84	N/A	Pass
5300	60	20.84	N/A	Pass
5320	64	20.93	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT20

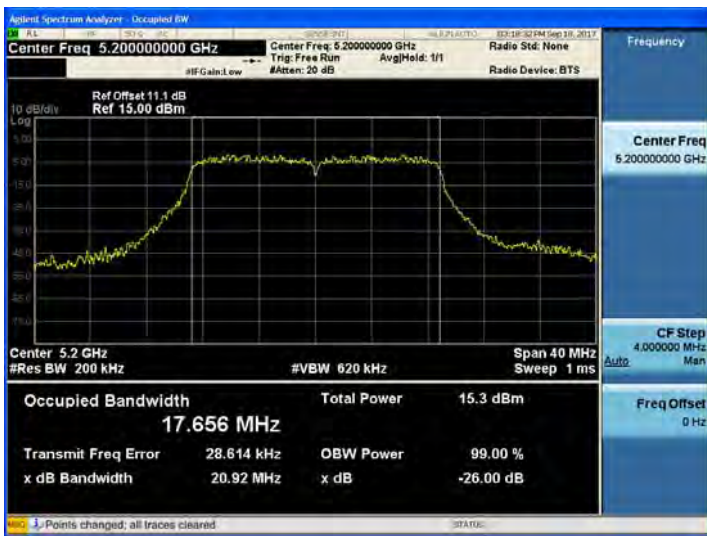
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	21.69	N/A	Pass
5580	116	21.17	N/A	Pass
5720	144	20.91	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT20

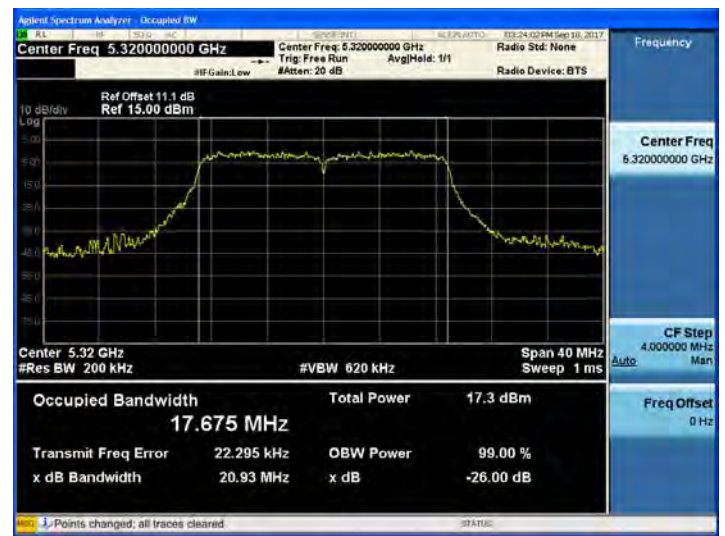
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	20.65	N/A	Pass
5785	157	20.89	N/A	Pass
5825	165	21.04	N/A	Pass

■ TEST Plot for Ant.1_ 802.11ac_VHT20

802.11ac_VHT20 UNII 1 BAND 26dB Bandwidth(CH 40)



802.11ac_VHT20 UNII 2A BAND 26dB Bandwidth(CH 64)



802.11ac_VHT20 UNII 2C BAND 26dB Bandwidth(CH 100)



802.11ac_VHT20 UNII 3 BAND 26dB Bandwidth(CH 165)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.0_802.11n_HT40
Conducted 26 dB Bandwidth Measurements for 802.11n_HT40

802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5190	38	43.71	N/A	Pass
5230	46	43.17	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT40

802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5270	54	43.64	N/A	Pass
5310	62	43.65	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT40

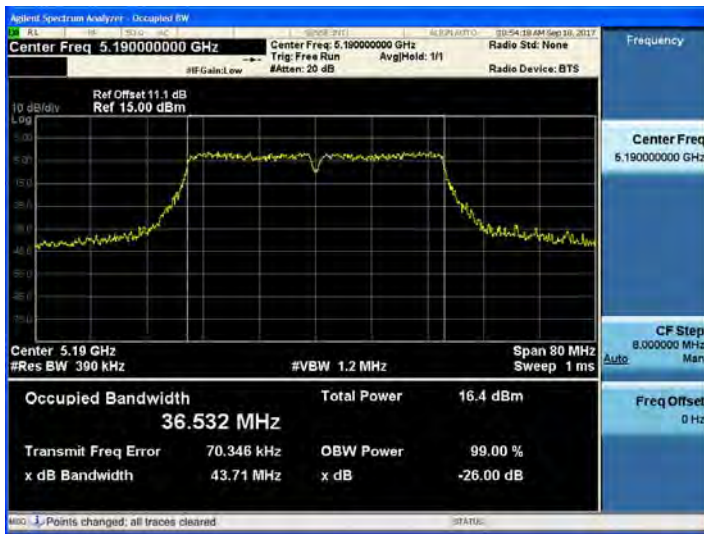
802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	43.27	N/A	Pass
5550	110	53.18	N/A	Pass
5710	142	42.94	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT40

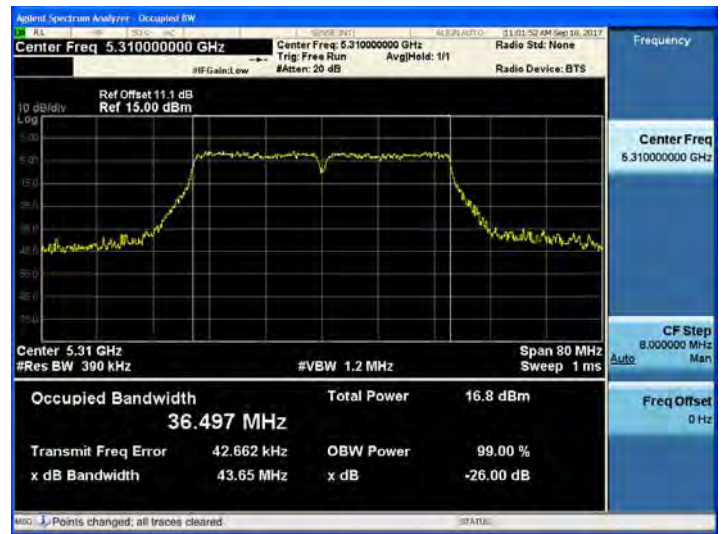
802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	43.93	N/A	Pass
5795	159	43.69	N/A	Pass

■ TEST Plot for Ant.0_802.11n_HT40

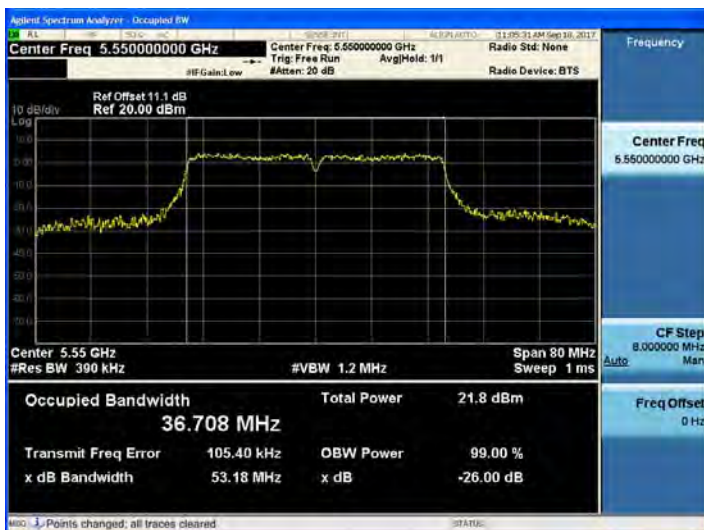
802.11n_HT40 UNII 1 BAND 26dB Bandwidth(CH 38)



802.11n_HT40 UNII 2A BAND 26dB Bandwidth (CH 62)



802.11n_HT40 UNII 2C BAND 26dB Bandwidth(CH 110)



802.11n_HT40 UNII 3 BAND 26dB Bandwidth (CH 151)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.1_802.11n_HT40
Conducted 26 dB Bandwidth Measurements for 802.11n_HT40

802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5190	38	43.40	N/A	Pass
5230	46	43.11	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT40

802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5270	54	43.36	N/A	Pass
5310	62	43.42	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT40

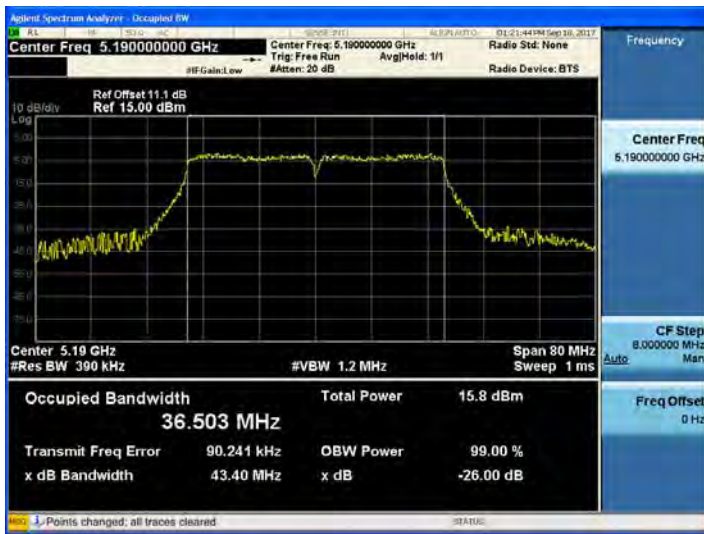
802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	43.11	N/A	Pass
5550	110	43.82	N/A	Pass
5710	142	43.56	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT40

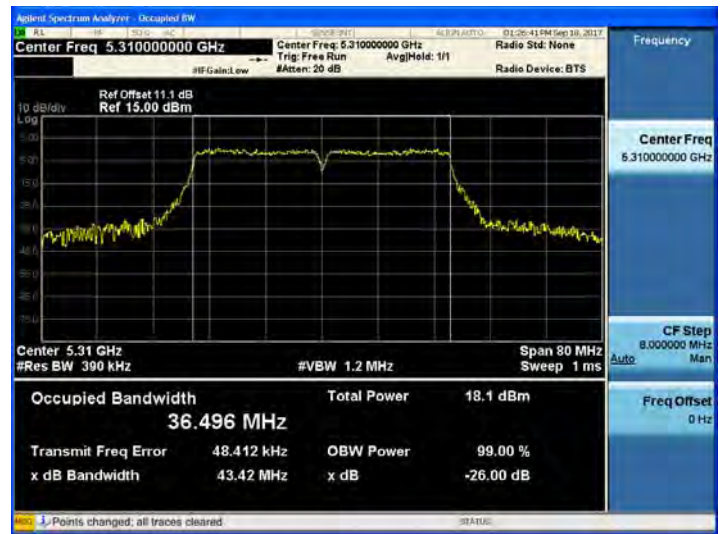
802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	43.32	N/A	Pass
5795	159	43.57	N/A	Pass

■ TEST Plot for Ant.1_802.11n_HT40

802.11n_HT40 UNII 1 BAND 26dB Bandwidth(CH 38)



802.11n_HT40 UNII 2A BAND 26dB Bandwidth (CH 62)



802.11n_HT40 UNII 2C BAND 26dB Bandwidth(CH 110)



802.11n_HT40 UNII 3 BAND 26dB Bandwidth (CH 159)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.0_802.11ac_VHT40
Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT40

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5190	38	43.23	N/A	Pass
5230	46	43.28	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT40

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5270	54	43.02	N/A	Pass
5310	62	42.82	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT40

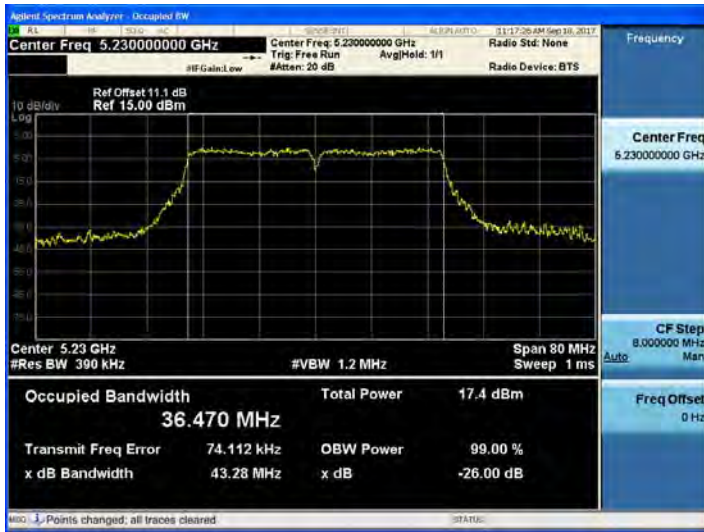
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	43.14	N/A	Pass
5550	110	47.55	N/A	Pass
5710	142	44.20	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT40

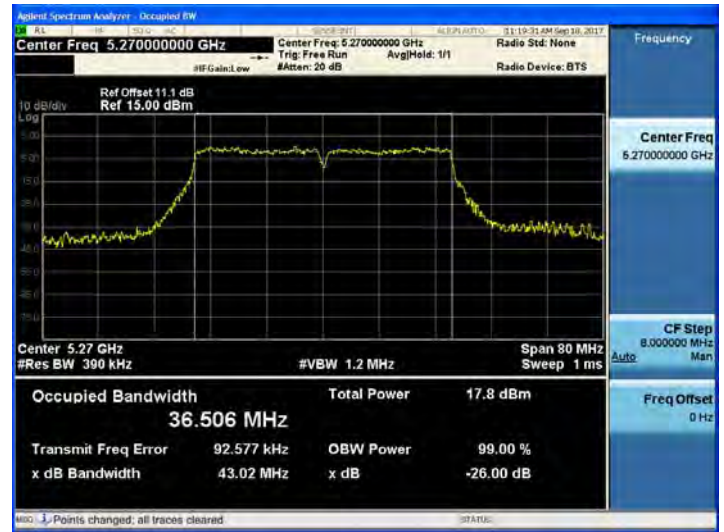
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	46.38	N/A	Pass
5795	159	46.43	N/A	Pass

■ TEST Plot for Ant.0_802.11ac_VHT40

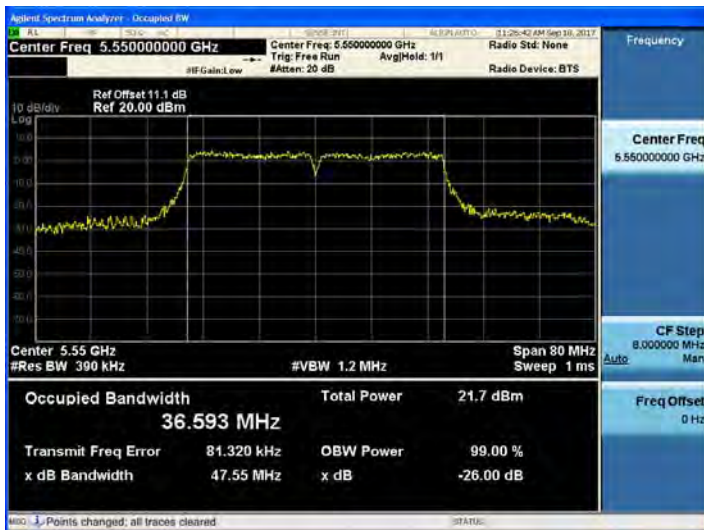
802.11ac_VHT40 UNII 1 BAND 26dB Bandwidth(CH 46)



802.11ac_VHT40 UNII 2A BAND 26dB Bandwidth (CH 54)



802.11ac_VHT40 UNII 2C BAND 26dB Bandwidth(CH 110)



802.11ac_VHT40 UNII 3 BAND 26dB Bandwidth (CH 159)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.1_802.11ac_VHT40
Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT40

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5190	38	43.51	N/A	Pass
5230	46	42.95	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT40

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5270	54	43.68	N/A	Pass
5310	62	43.00	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT40

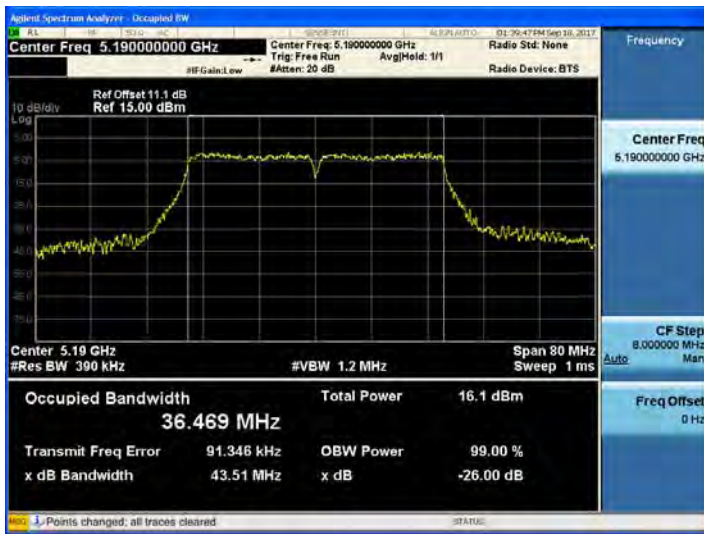
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	43.67	N/A	Pass
5550	110	44.32	N/A	Pass
5710	142	43.06	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT40

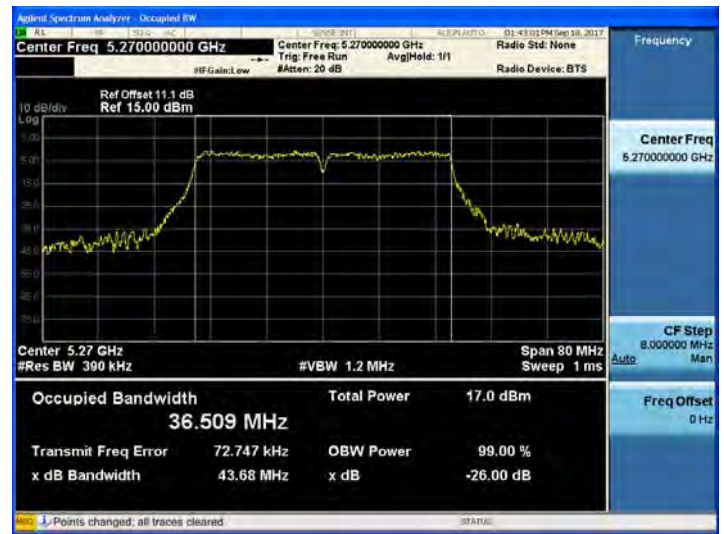
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	43.27	N/A	Pass
5795	159	43.37	N/A	Pass

■ TEST Plot for Ant.1_802.11ac_VHT40

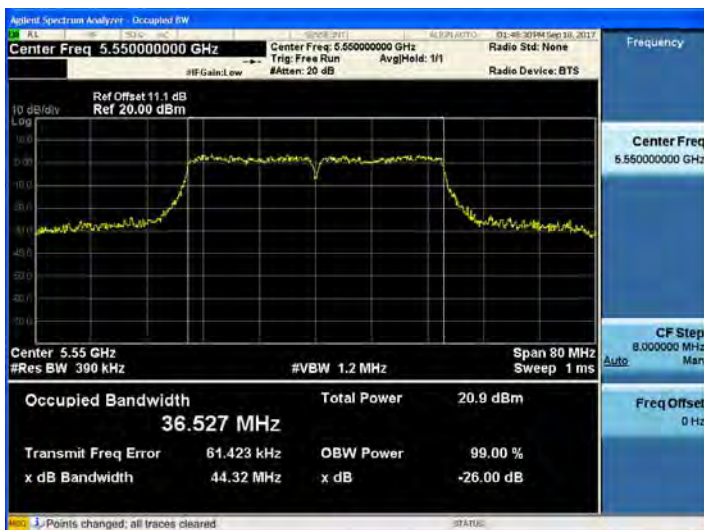
802.11ac_VHT40 UNII 1 BAND 26dB Bandwidth(CH 38)



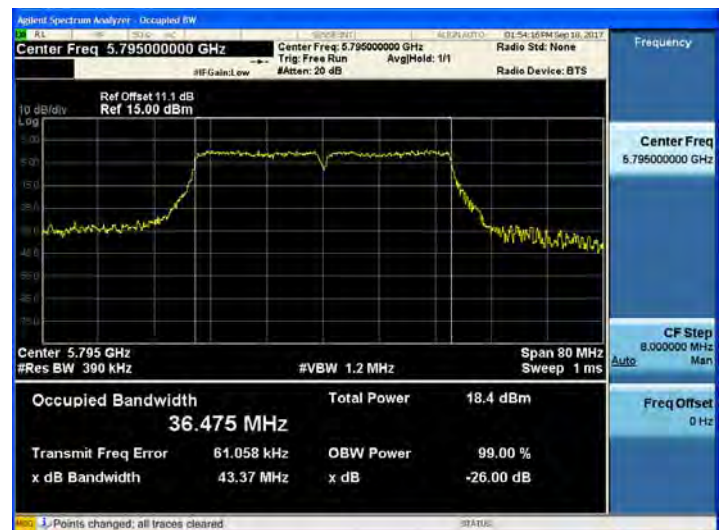
802.11ac_VHT40 UNII 2A BAND 26dB Bandwidth (CH 54)



802.11ac_VHT40 UNII 2C BAND 26dB Bandwidth(CH 110)



802.11ac_VHT40 UNII 3 BAND 26dB Bandwidth (CH 159)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.0_802.11ac_VHT80
Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5210	42	83.29	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5290	58	82.95	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5530	106	83.10	N/A	Pass
5690	138	83.15	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	82.26	N/A	Pass

Note :

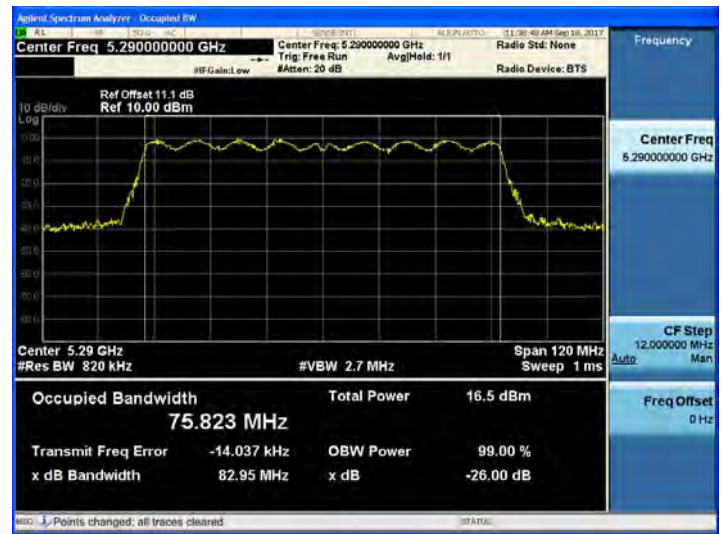
1. In order to simplify the report, attached plots were only the most wide channel.
2. DFS test channels should be defined. So, We performed the OBW test to prove that no part of the fundamental emissions of any channels belong to UNII1 and UNII3 band for DFS.

■ TEST Plot for Ant.0_802.11ac_VHT80

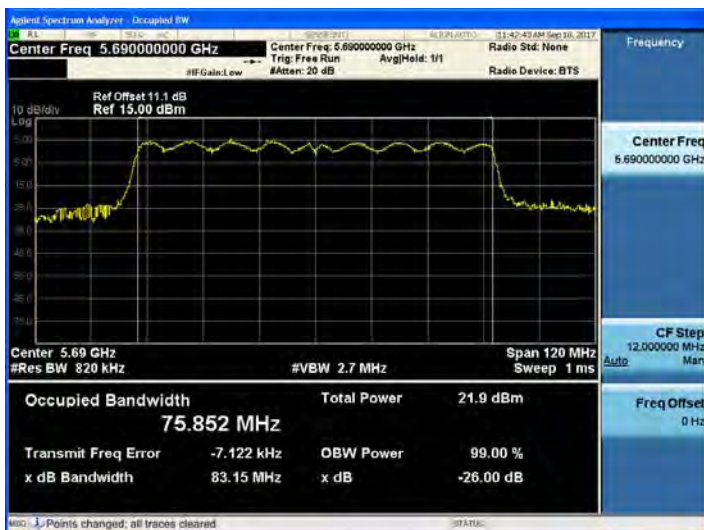
802.11ac_VHT80 UNII 1 BAND 26dB Bandwidth(CH 42)



802.11ac_VHT80 UNII 2A BAND 26dB Bandwidth(CH 58)



802.11ac_VHT80 UNII 2C BAND 26dB Bandwidth(CH 138)



802.11ac_VHT80 UNII 3 BAND 26dB Bandwidth(CH 155)



Note : In order to simplify the report, attached plots were only the most wide channel.

TEST RESULTS for Ant.1_802.11ac_VHT80

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5210	42	82.39	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5290	58	82.66	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5530	106	82.12	N/A	Pass
5690	138	81.99	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT80

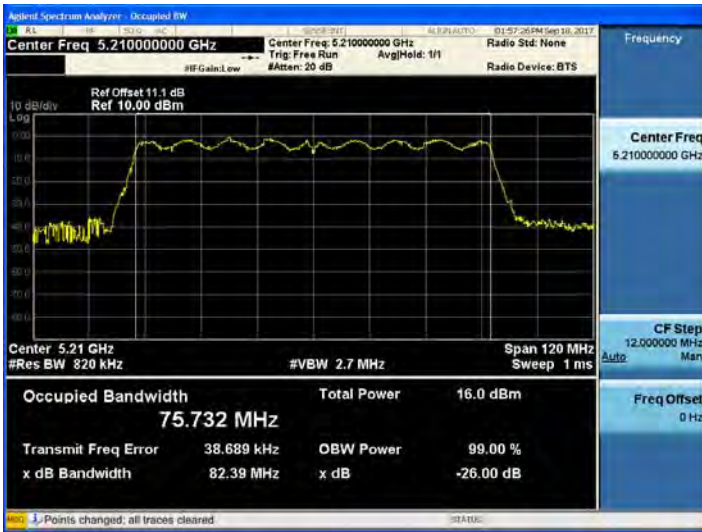
802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	82.72	N/A	Pass

Note :

1. In order to simplify the report, attached plots were only the most wide channel.
2. DFS test channels should be defined. So, We performed the OBW test to prove that no part of the fundamental emissions of any channels belong to UNII1 and UNII3 band for DFS.

■ TEST Plot for Ant.1_802.11ac_VHT80

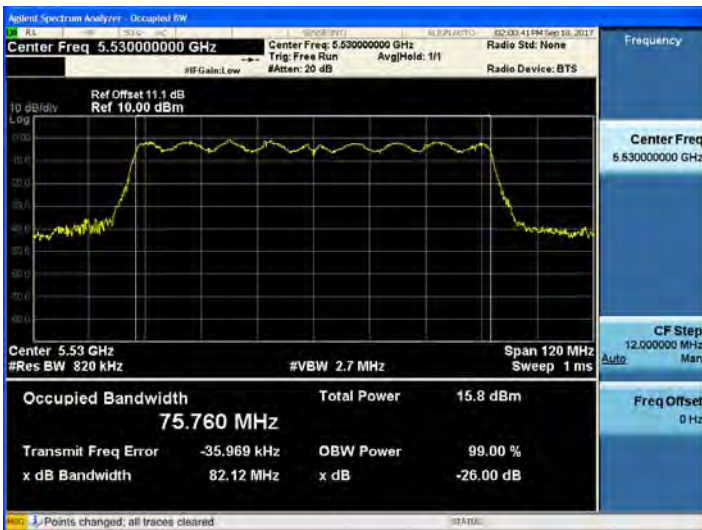
802.11ac_VHT80 UNII 1 BAND 26dB Bandwidth(CH 42)



802.11ac_VHT80 UNII 2A BAND 26dB Bandwidth(CH 58)



802.11ac_VHT80 UNII 2C BAND 26dB Bandwidth(CH 106)



802.11ac_VHT80 UNII 3 BAND 26dB Bandwidth(CH 155)



Note : In order to simplify the report, attached plots were only the most wide channel.

Conducted 6 dB Bandwidth

■ TEST RESULTS for Ant.0_802.11a/n_HT20/ac_VHT20

Conducted 6 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.35	0.5	Pass
5785	157	16.35	0.5	Pass
5825	165	16.35	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11n_HT20

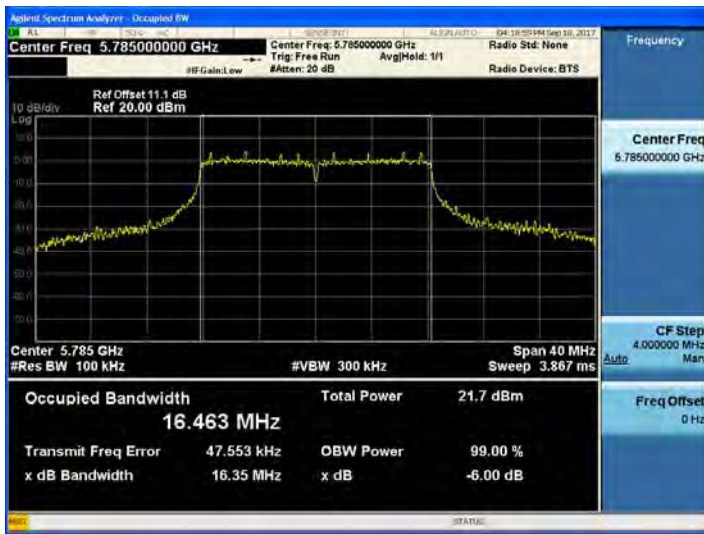
802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.94	0.5	Pass
5785	157	17.08	0.5	Pass
5825	165	17.16	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac_VHT20

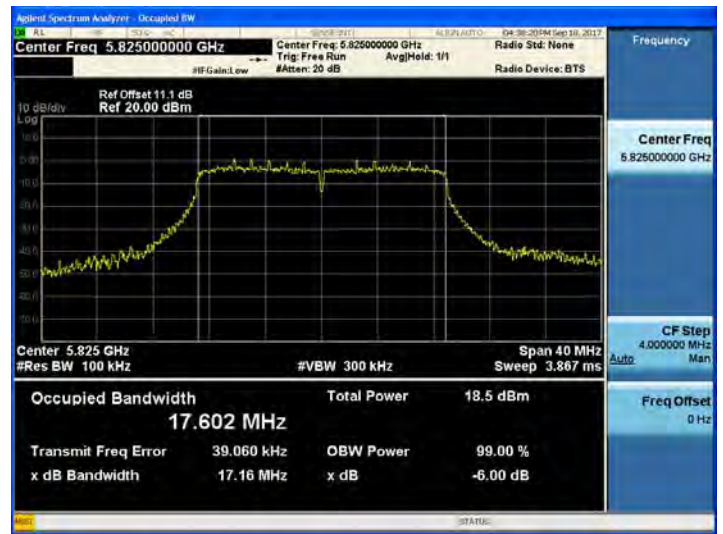
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.04	0.5	Pass
5785	157	16.98	0.5	Pass
5825	165	17.15	0.5	Pass

■ TEST PlotS for 802.11a/n_HT20/ac_VHT20

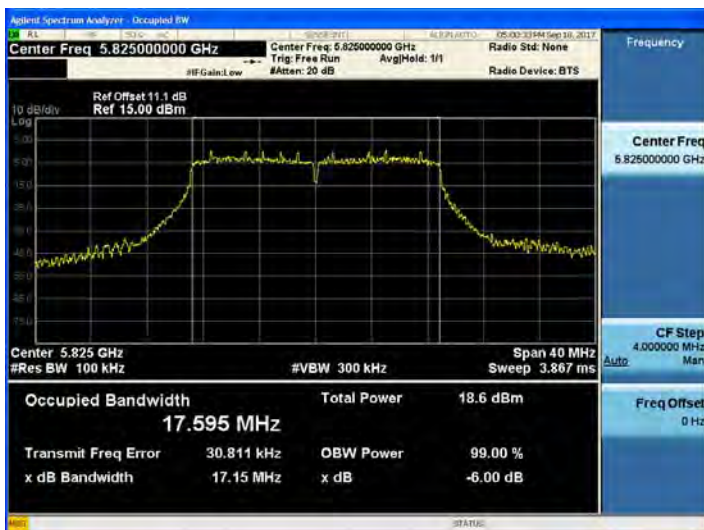
802.11a UNII 3 BAND 6dB Bandwidth (CH.157)



802.11n_HT20 UNII 3 BAND 6dB Bandwidth(CH.165)



802.11ac_VHT20 UNII 3 BAND 6dB Bandwidth(CH.165)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.1_802.11a/n_HT20/ac_VHT20
Conducted 6 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.35	0.5	Pass
5785	157	16.36	0.5	Pass
5825	165	16.36	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11n_HT20

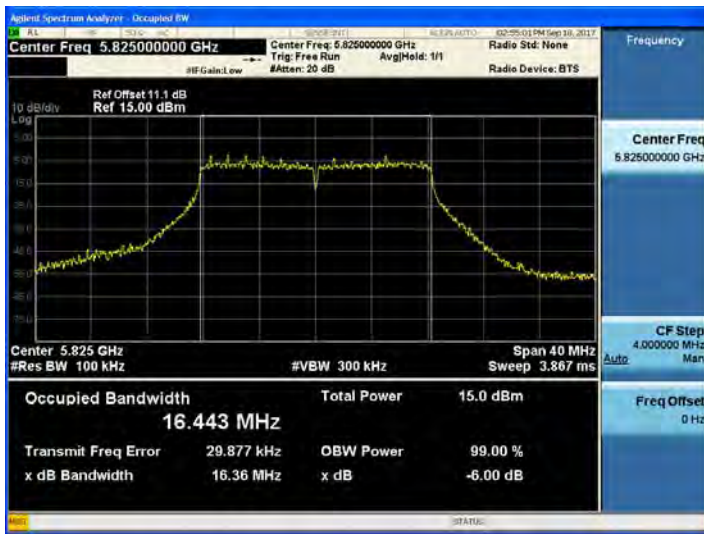
802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.41	0.5	Pass
5785	157	17.15	0.5	Pass
5825	165	17.08	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac_VHT20

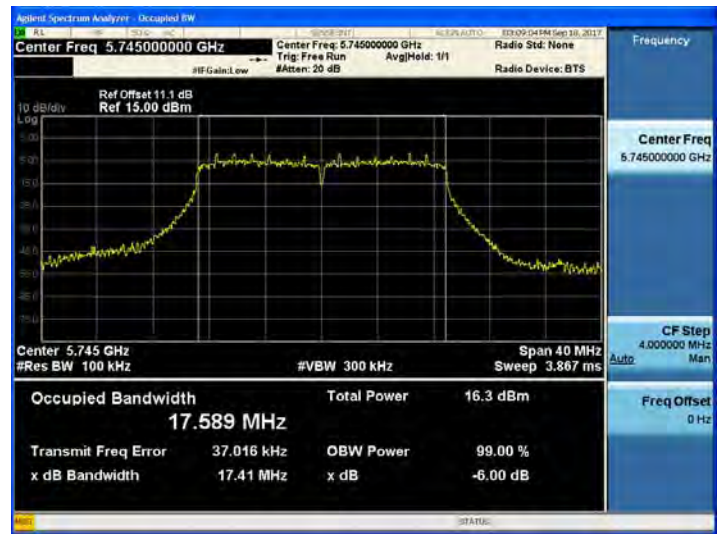
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.01	0.5	Pass
5785	157	17.13	0.5	Pass
5825	165	17.16	0.5	Pass

■ TEST PlotS for Ant.1_802.11a/n_HT20/ac_VHT20

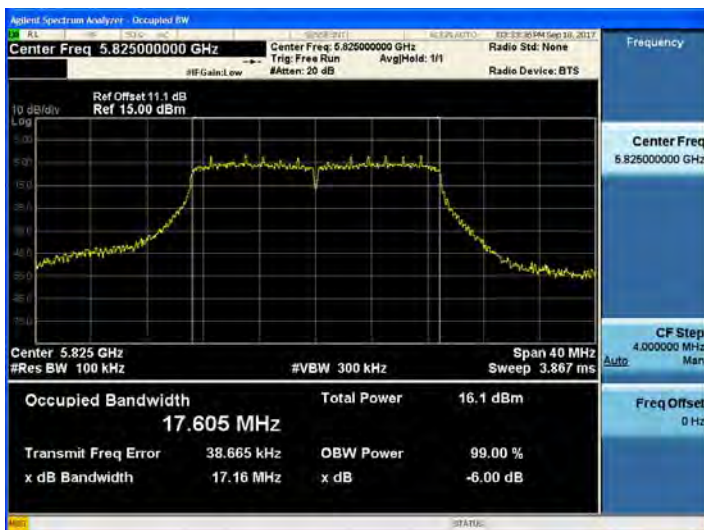
802.11a UNII 3 BAND 6dB Bandwidth (CH.165)



802.11n_HT20 UNII 3 BAND 6dB Bandwidth(CH.149)



802.11ac_VHT20 UNII 3 BAND 6dB Bandwidth(CH.165)



Note : In order to simplify the report, attached plots were only the most wide channel.

TEST RESULTS for Ant.0_802.11n_HT40/ac_VHT40

Conducted 6 dB Bandwidth Measurements for 802.11n_HT40

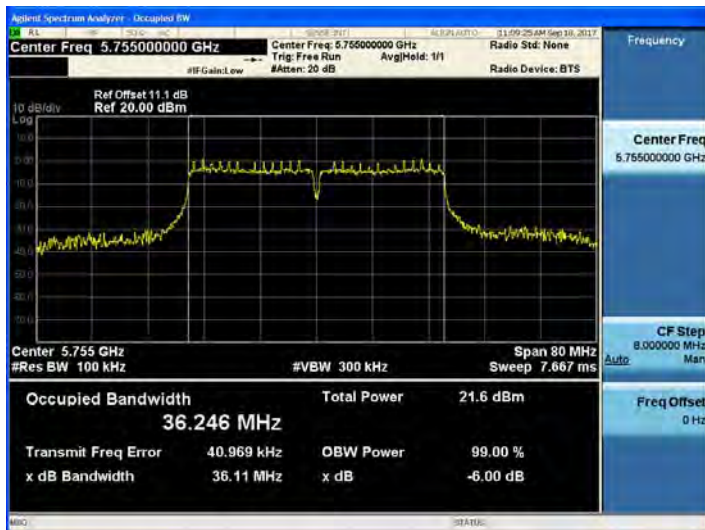
802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.11	0.5	Pass
5795	159	35.88	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac_VHT40

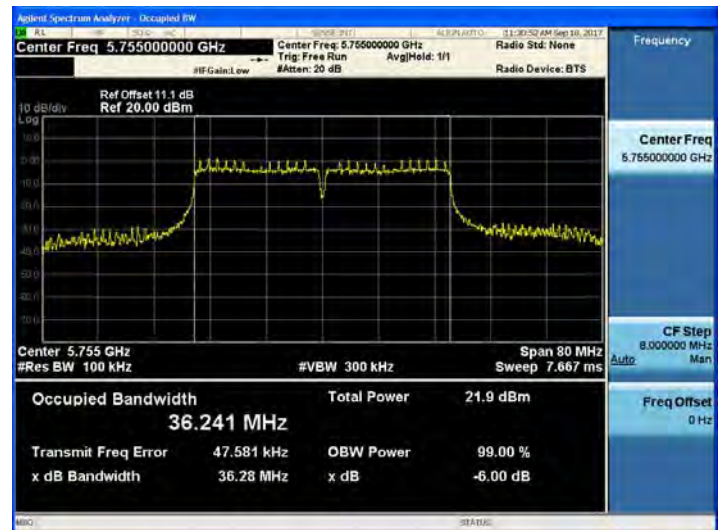
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.28	0.5	Pass
5795	159	36.08	0.5	Pass

TEST Plots for Ant.0_802.11n_HT40/ac_VHT40

802.11n_40 MHz UNII 3 BAND 6dB Bandwidth (CH.151)



802.11ac_VHT40 UNII 3 BAND 6dB Bandwidth(CH.151)



TEST RESULTS for Ant.1_802.11n_HT40/ac_VHT40

Conducted 6 dB Bandwidth Measurements for 802.11n_HT40

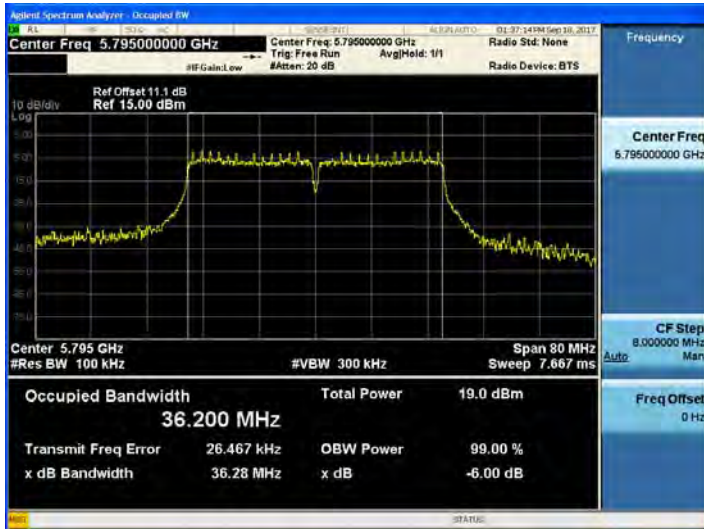
802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.25	0.5	Pass
5795	159	36.28	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac_VHT40

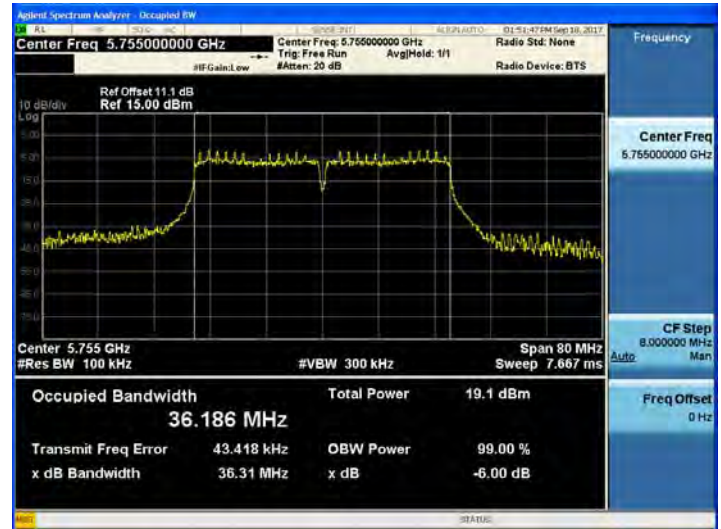
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	36.31	0.5	Pass
5795	159	36.29	0.5	Pass

TEST Plots for Ant.1_802.11n_HT40/ac_VHT40

802.11n_40 MHz UNII 3 BAND 6dB Bandwidth (CH.159)



802.11ac_VHT40 UNII 3 BAND 6dB Bandwidth(CH.151)

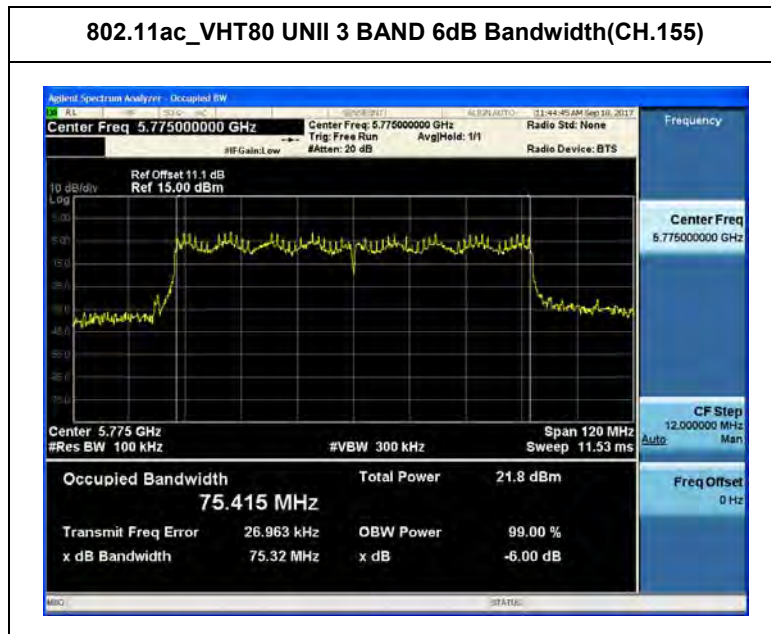


■ **TEST RESULTS Ant.0_for 802.11ac_VHT80**

Conducted 6 dB Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.32	0.5	Pass

■ **TEST Plots for Ant.0_802.11ac_VHT80**



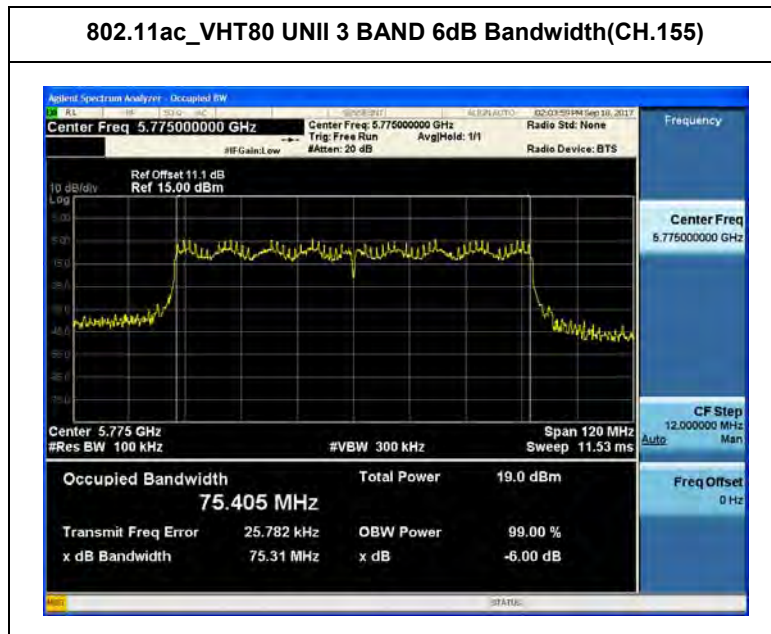
Note : In order to simplify the report, attached plots were only the most wide channel.

■ **TEST RESULTS Ant.1_for 802.11ac_VHT80**

Conducted 6 dB Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.31	0.5	Pass

■ **TEST Plots for Ant.1_802.11ac_VHT80**



Note : In order to simplify the report, attached plots were only the most wide channel.

Straddle channels TEST RESULTS_Ant 0

Conducted Bandwidth Measurements for 802.11a/n_HT20/ac_VHT20 (UNII 2C Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11a	5720	144	15.20	N/A	Pass
802.11n			15.24	N/A	Pass
802.11ac			15.24	N/A	Pass

Conducted Bandwidth Measurements for 802.11a/n_HT20/ac_VHT20 (UNII 3 Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11a	5720	144	5.32	N/A	Pass
802.11n			5.36	N/A	Pass
802.11ac			5.40	N/A	Pass

Straddle channels TEST Plot for 802.11a/n_HT20/ac_VHT20_Ant 0

802.11a CH.144 Bandwidth



802.11n_HT20 CH.144 Bandwidth



802.11ac_VHT20 CH.144 Bandwidth



Straddle channels TEST RESULTS_Ant 1

Conducted Bandwidth Measurements for 802.11a/n_HT20/ac_VHT20 (UNII 2C Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11a	5720	144	15.32	N/A	Pass
802.11n			15.40	N/A	Pass
802.11ac			15.36	N/A	Pass

Conducted Bandwidth Measurements for 802.11a/n_HT20/ac_VHT20 (UNII 3 Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11a	5720	144	5.28	N/A	Pass
802.11n			5.24	N/A	Pass
802.11ac			5.40	N/A	Pass

Straddle channels TEST Plot for 802.11a/n_HT20/ac_VHT20_Ant 1

802.11a CH.144 Bandwidth



802.11n_HT20 CH.144 Bandwidth



802.11ac_VHT20 CH.144 Bandwidth



Straddle channels TEST RESULTS_Ant 0

Conducted Bandwidth Measurements for 802.11n_HT40/ac_VHT40 (UNII 2C Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11n	5710	142	36.28	N/A	Pass
802.11ac			36.28	N/A	Pass

Conducted Bandwidth Measurements for 802.11n_HT40/ac_VHT40 (UNII 3 Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11n	5710	142	6.44	N/A	Pass
802.11ac			6.36	N/A	Pass

Straddle channels TEST Plot for 802.11n_HT40/ac_VHT40_Ant 0

802.11n_HT40 CH.142 Bandwidth



802.11ac_VHT40 CH.142 Bandwidth



Straddle channels TEST RESULTS_Ant 1

Conducted Bandwidth Measurements for 802.11n_HT40/ac_VHT40 (UNII 2C Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11n	5710	142	36.28	N/A	Pass
802.11ac			36.12	N/A	Pass

Conducted Bandwidth Measurements for 802.11n_HT40/ac_VHT40 (UNII 3 Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11n	5710	142	6.28	N/A	Pass
802.11ac			5.96	N/A	Pass

Straddle channels TEST Plot for 802.11n_HT40/ac_VHT40_Ant 1

802.11n_HT40 CH.142 Bandwidth



802.11ac_VHT40 CH.142 Bandwidth



■ **Straddle channels TEST RESULTS_Ant 0**

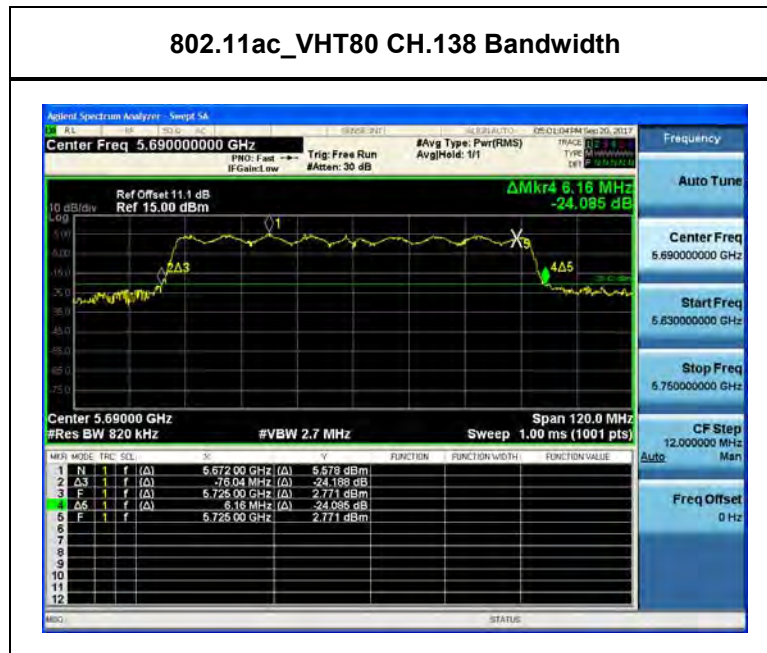
Conducted Bandwidth Measurements for 802.11ac_VHT80 (UNII 2C Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11ac	5690	138	76.04	N/A	Pass

Conducted Bandwidth Measurements for 802.11ac_VHT80 (UNII 3 Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11ac	5690	138	6.16	N/A	Pass

■ **Straddle channels TEST Plot for 802.11ac_VHT80_Ant 0**



■ **Straddle channels TEST RESULTS_Ant 1**

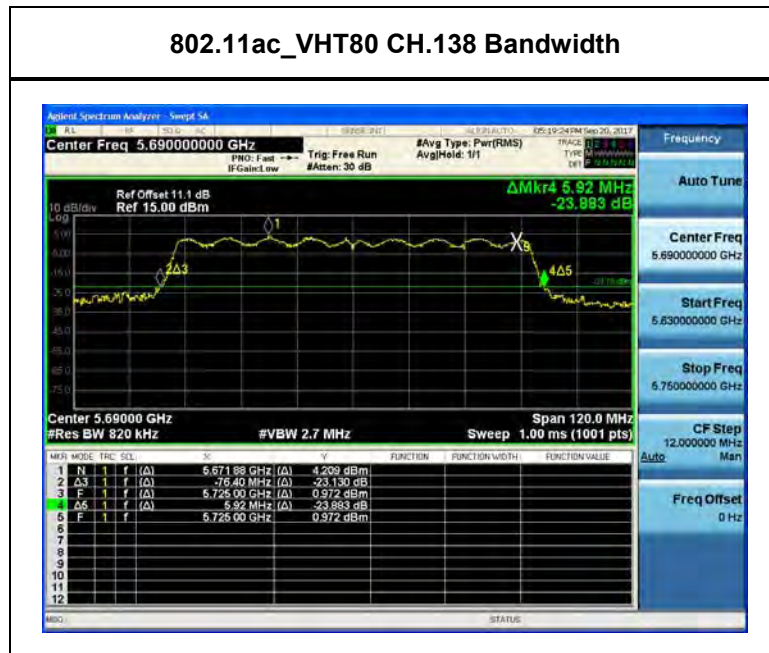
Conducted Bandwidth Measurements for 802.11ac_VHT80 (UNII 2C Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11ac	5690	138	76.40	N/A	Pass

Conducted Bandwidth Measurements for 802.11ac_VHT80 (UNII 3 Band)

Mode	Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
802.11ac	5690	138	5.92	N/A	Pass

■ **Straddle channels TEST Plot for 802.11ac_VHT80_Ant 1**

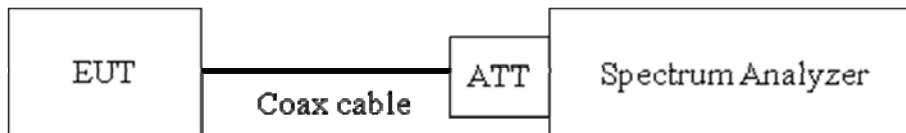


9.3 99% BANDWIDTH MEASUREMENT

None; for IC reporting purposes only

The 99 % bandwidth is used to determine the conducted power limits(for IC).

■ TEST CONFIGURATION



■ TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to as close to 1% of the selected span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RBW = 1% of the total span

VBW $\geq 3 \times$ RBW

Detector = Peak

Trace mode = max hold

Sweep = auto couple

Allow the trace to stabilize

■ TEST RESULTS for Ant.0_802.11a**99% Bandwidth Measurements for 802.11a**

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	16.578
5200	40	16.582
5240	48	16.579

99% Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	16.575
5300	60	16.579
5320	64	16.573

99% Bandwidth Measurements for 802.11a

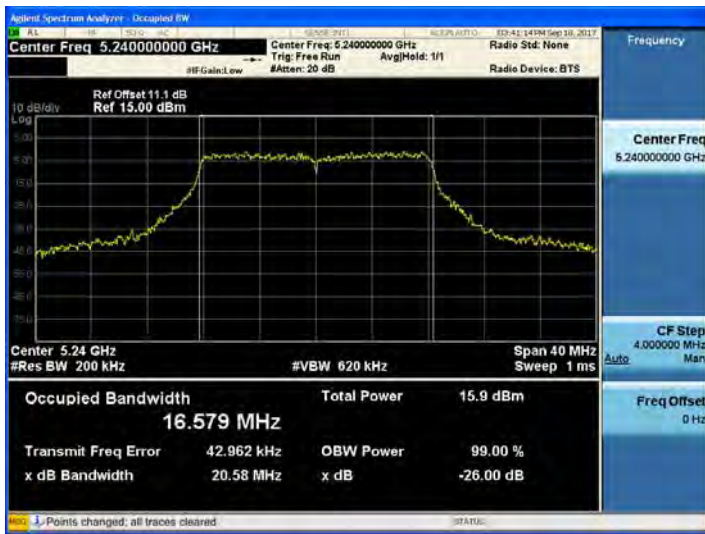
802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	16.542
5580	116	16.568
5720	144	16.569

99% Bandwidth Measurements for 802.11a

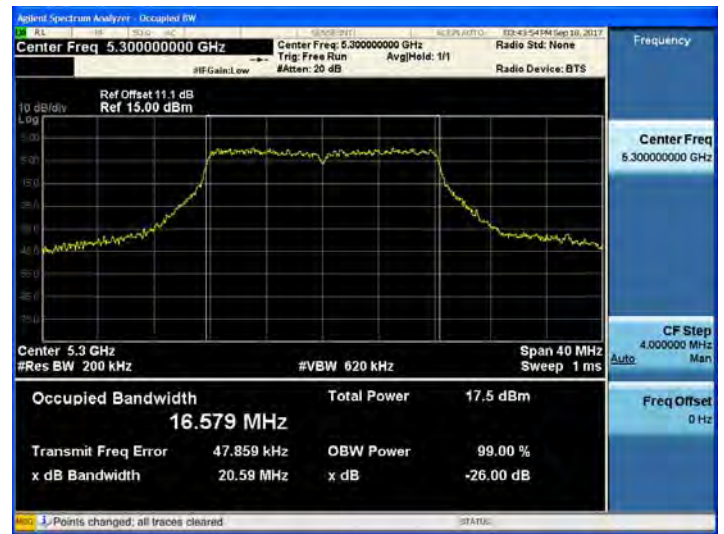
802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	16.564
5785	157	16.607
5825	165	16.564

■ TEST Plot for Ant.0_802.11a

802.11a UNII 1 BAND 99% Bandwidth (CH 48)



802.11a UNII 2A BAND 99% Bandwidth (CH 60)



802.11a UNII 2C BAND 99% Bandwidth (CH 144)



802.11a UNII 3 BAND 99% Bandwidth (CH 157)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.1_802.11a**99% Bandwidth Measurements for 802.11a**

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	16.543
5200	40	16.557
5240	48	16.560

99% Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	16.569
5300	60	16.575
5320	64	16.562

99% Bandwidth Measurements for 802.11a

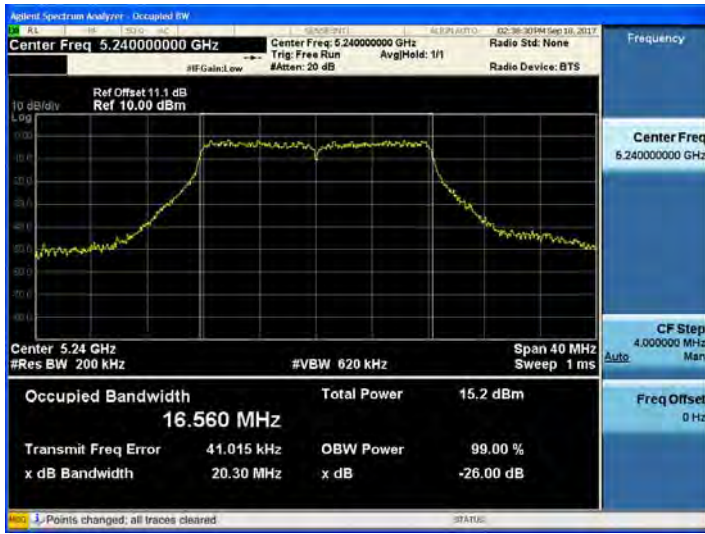
802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	16.589
5580	116	16.561
5720	144	16.578

99% Bandwidth Measurements for 802.11a

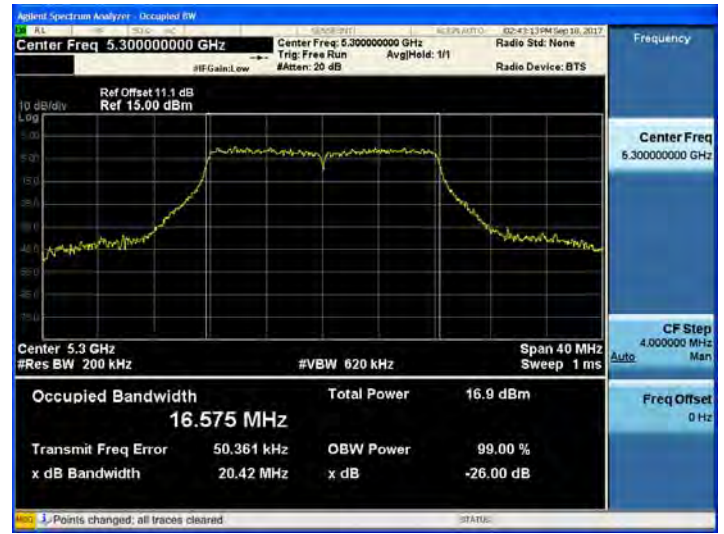
802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	16.565
5785	157	16.551
5825	165	16.574

■ TEST Plot for Ant.1_802.11a

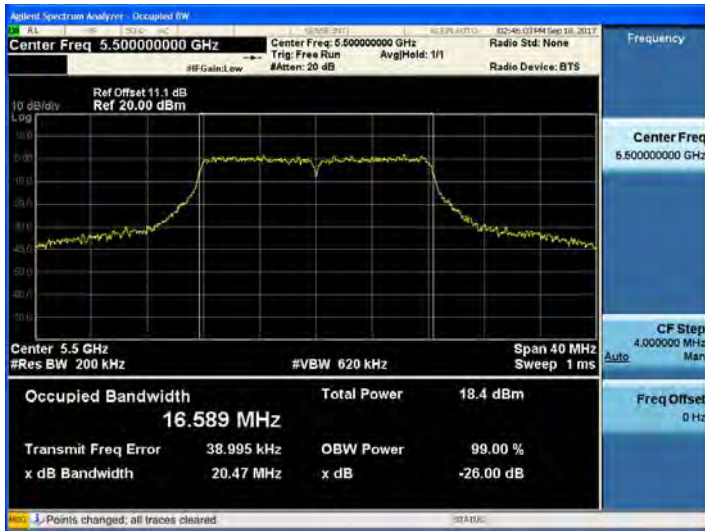
802.11a UNII 1 BAND 99% Bandwidth (CH 48)



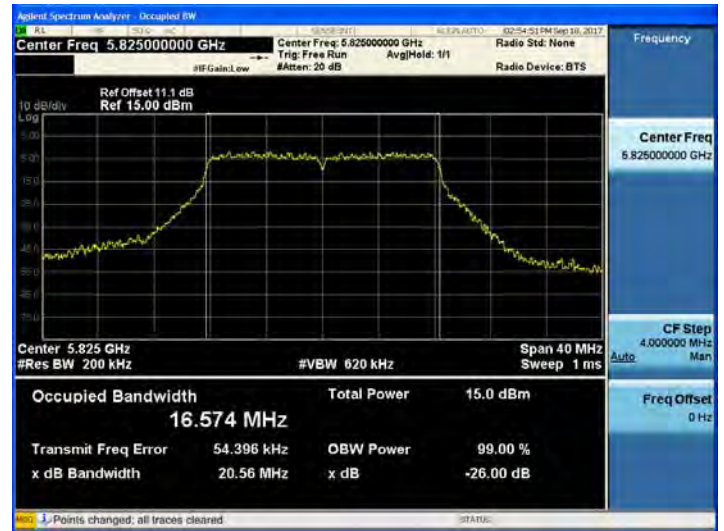
802.11a UNII 2A BAND 99% Bandwidth (CH 60)



802.11a UNII 2C BAND 99% Bandwidth (CH 100)



802.11a UNII 3 BAND 99% Bandwidth (CH 165)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.0_802.11n_HT20**99% Bandwidth Measurements for 802.11n_HT20**

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	17.665
5200	40	17.633
5240	48	17.661

99% Bandwidth Measurements for 802.11n_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	17.653
5300	60	17.660
5320	64	17.665

99% Bandwidth Measurements for 802.11n_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	17.681
5580	116	17.662
5720	144	17.666

99% Bandwidth Measurements for 802.11n_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.649
5785	157	17.677
5825	165	17.649

TEST Plot for Ant.0_802.11n_HT20

802.11n_HT20 UNII 1 BAND 99% Bandwidth(CH 36)



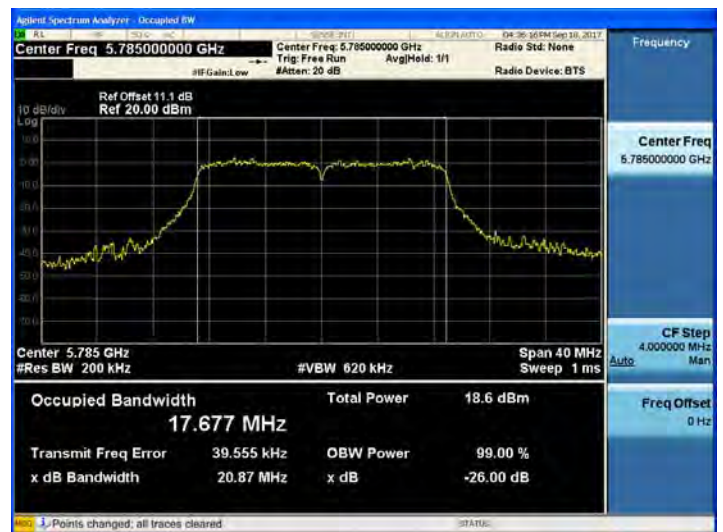
802.11n_HT20 UNII 2A BAND 99% Bandwidth(CH 64)



802.11n_HT20 UNII 2C BAND 99% Bandwidth(CH 100)



802.11n_HT20 UNII 3 BAND 99% Bandwidth(CH 157)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.1_802.11n_HT20**99% Bandwidth Measurements for 802.11n_HT20**

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	17.628
5200	40	17.632
5240	48	17.627

99% Bandwidth Measurements for 802.11n_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	17.629
5300	60	17.633
5320	64	17.647

99% Bandwidth Measurements for 802.11n_HT20

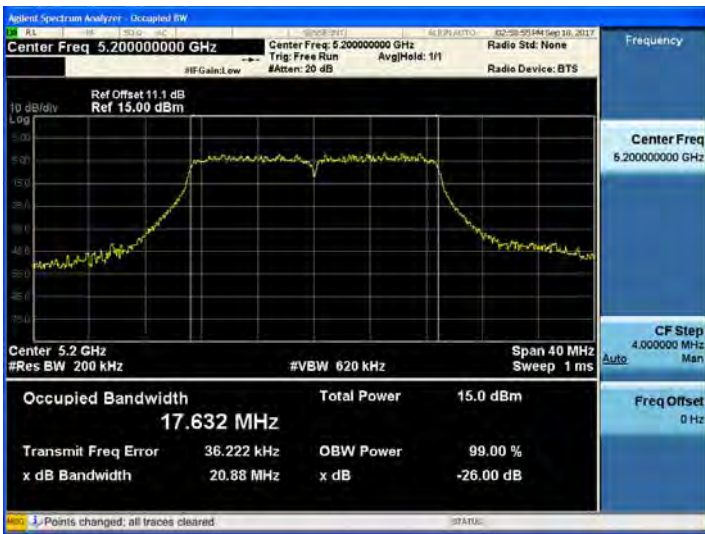
802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	17.724
5580	116	17.644
5720	144	17.625

99% Bandwidth Measurements for 802.11n_HT20

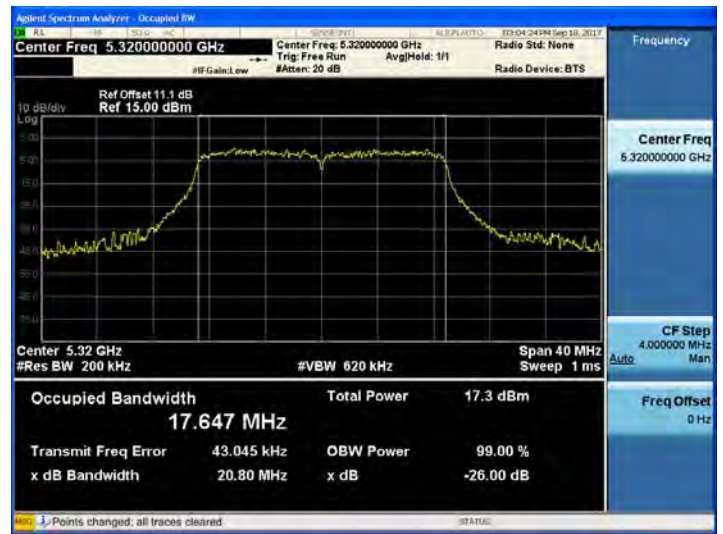
802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.629
5785	157	17.626
5825	165	17.623

TEST Plot for Ant.1_802.11n_HT20

802.11n_HT20 UNII 1 BAND 99% Bandwidth(CH 40)



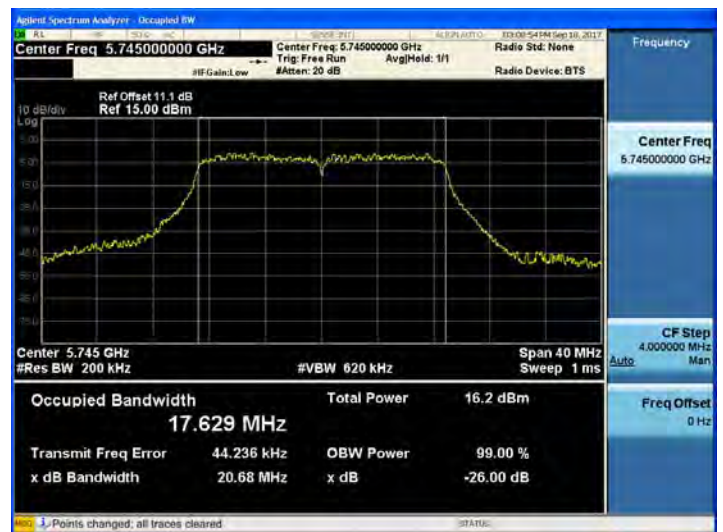
802.11n_HT20 UNII 2A BAND 99% Bandwidth(CH 64)



802.11n_HT20 UNII 2C BAND 99% Bandwidth(CH 116)



802.11n_HT20 UNII 3 BAND 99% Bandwidth(CH 149)



Note : In order to simplify the report, attached plots were only the most wide channel.

TEST RESULTS for Ant.0_ 802.11ac_VHT20

99% Bandwidth Measurements for 802.11ac_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	17.652
5200	40	17.644
5240	48	17.666

99% Bandwidth Measurements for 802.11ac_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	17.668
5300	60	17.670
5320	64	17.649

99% Bandwidth Measurements for 802.11ac_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	17.693
5580	116	17.682
5720	144	17.647

99% Bandwidth Measurements for 802.11ac_VHT20

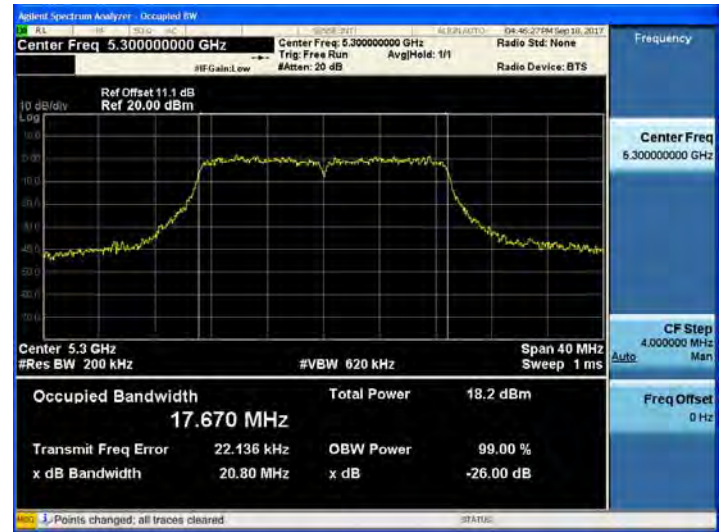
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.684
5785	157	17.661
5825	165	17.660

TEST Plot for Ant.0_ 802.11ac_VHT20

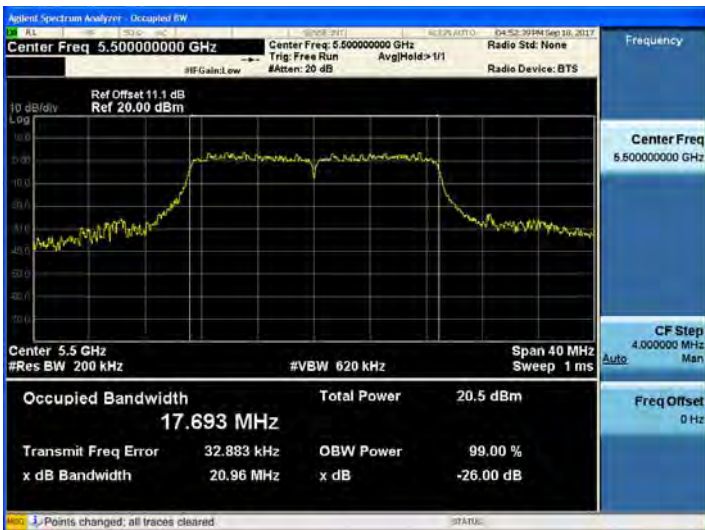
802.11ac_VHT20 UNII 1 BAND 99% Bandwidth(CH 48)



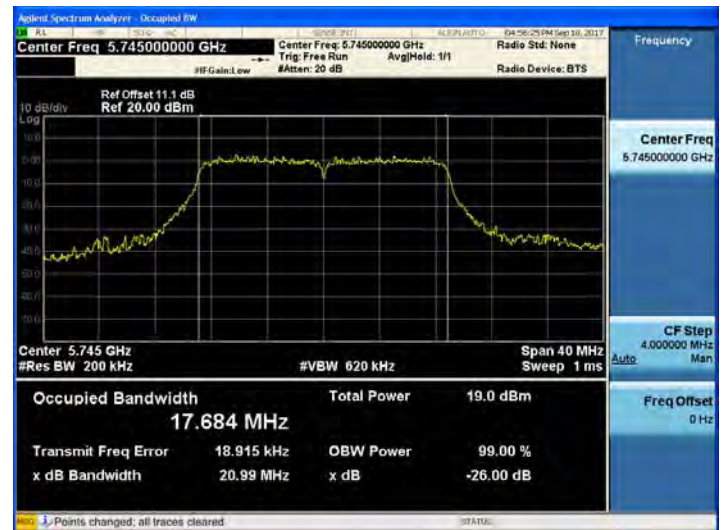
802.11ac_VHT20 UNII 2A BAND 99% Bandwidth(CH 60)



802.11ac_VHT20 UNII 2C BAND 99% Bandwidth(CH 100)



802.11ac_VHT20 UNII 3 BAND 99% Bandwidth(CH 149)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.1_ 802.11ac_VHT20**99% Bandwidth Measurements for 802.11ac_VHT20**

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	17.666
5200	40	17.656
5240	48	17.654

99% Bandwidth Measurements for 802.11ac_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	17.663
5300	60	17.656
5320	64	17.675

99% Bandwidth Measurements for 802.11ac_VHT20

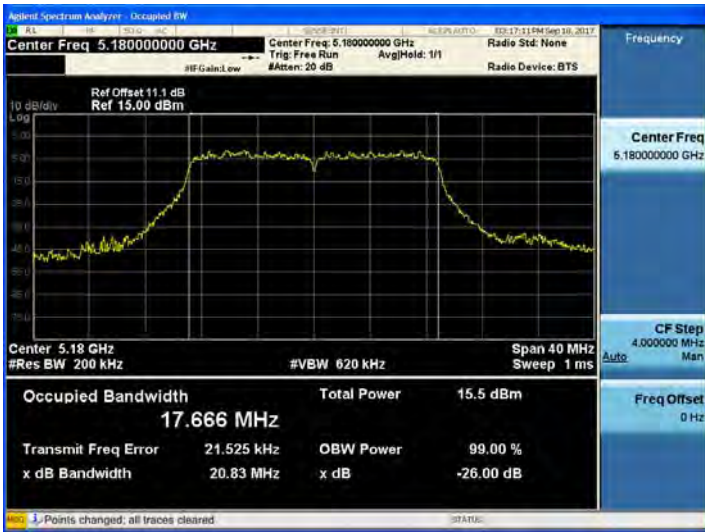
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	17.716
5580	116	17.665
5720	144	17.638

99% Bandwidth Measurements for 802.11ac_VHT20

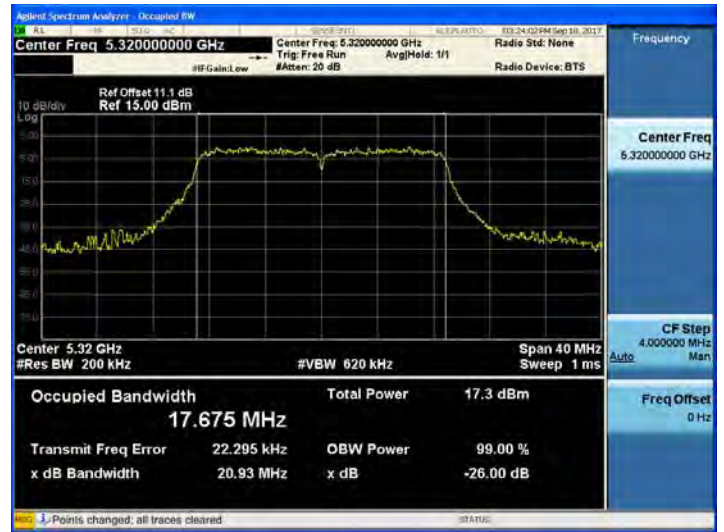
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.632
5785	157	17.655
5825	165	17.646

TEST Plot for Ant.1_ 802.11ac_VHT20

802.11ac_VHT20 UNII 1 BAND 99% Bandwidth(CH 36)



802.11ac_VHT20 UNII 2A BAND 99% Bandwidth(CH 64)



802.11ac_VHT20 UNII 2C BAND 99% Bandwidth(CH 100)



802.11ac_VHT20 UNII 3 BAND 99% Bandwidth(CH 157)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.0_802.11n_HT40**99% Bandwidth Measurements for 802.11n_HT40**

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	36.532
5230	46	36.481

99% Bandwidth Measurements for 802.11n_HT40

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5270	54	36.516
5310	62	36.497

99% Bandwidth Measurements for 802.11n_HT40

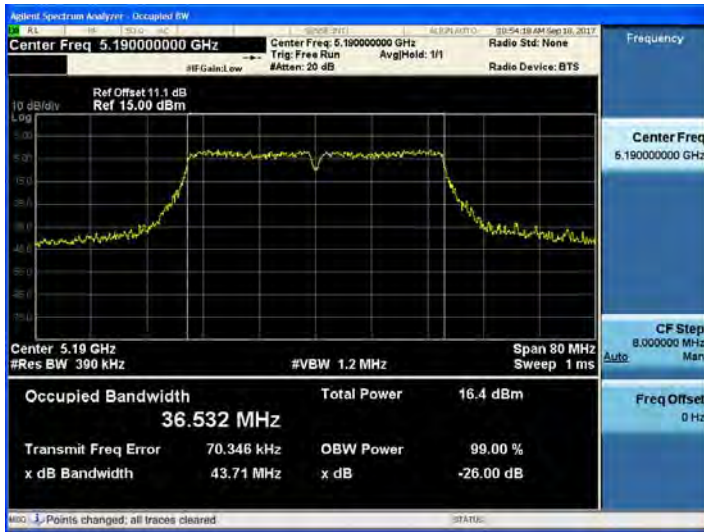
802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5510	102	36.476
5550	110	36.708
5710	142	36.586

99% Bandwidth Measurements for 802.11n_HT40

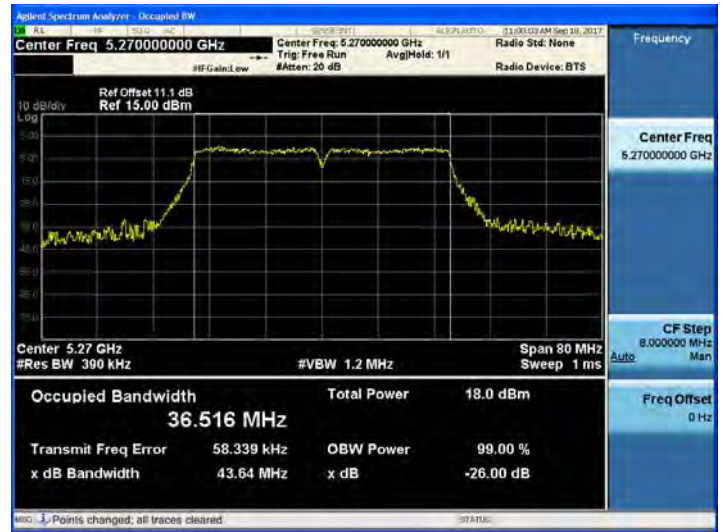
802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	36.645
5795	159	36.598

■ TEST Plot for Ant.0_802.11n_HT40

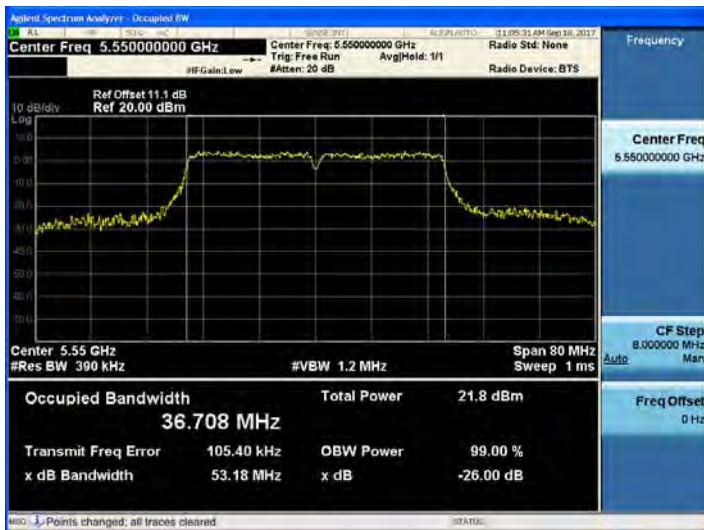
802.11n_HT40 UNII 1 BAND 99% Bandwidth(CH 38)



802.11n_HT40 UNII 2A BAND 99% Bandwidth (CH 54)



802.11n_HT40 UNII 2C BAND 99% Bandwidth(CH 110)



802.11n_HT40 UNII 3 BAND 99% Bandwidth (CH 151)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.1_802.11n_HT40**99% Bandwidth Measurements for 802.11n_HT40**

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	36.503
5230	46	36.484

99% Bandwidth Measurements for 802.11n_HT40

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5270	54	36.553
5310	62	36.496

99% Bandwidth Measurements for 802.11n_HT40

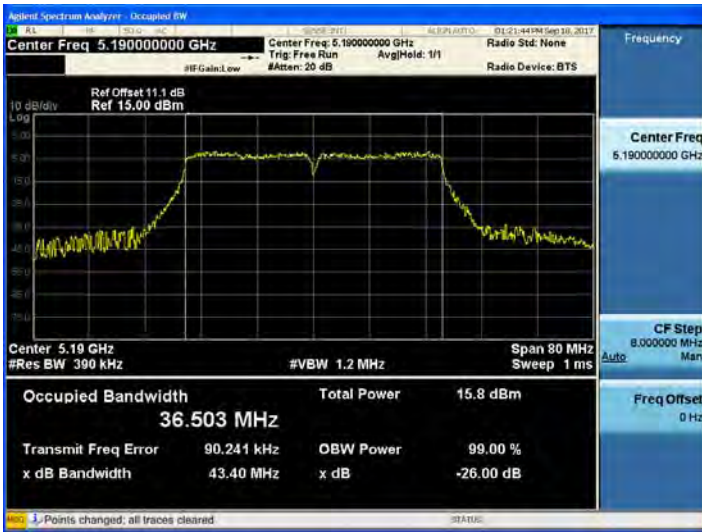
802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5510	102	36.525
5550	110	36.610
5710	142	36.518

99% Bandwidth Measurements for 802.11n_HT40

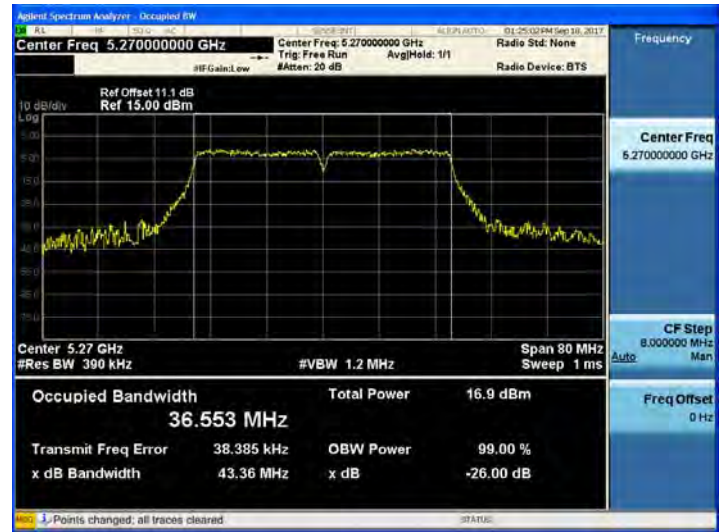
802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	36.517
5795	159	36.550

■ TEST Plot for Ant.1_802.11n_HT40

802.11n_HT40 UNII 1 BAND 99% Bandwidth(CH 38)



802.11n_HT40 UNII 2A BAND 99% Bandwidth (CH 54)



802.11n_HT40 UNII 2C BAND 99% Bandwidth(CH 110)



802.11n_HT40 UNII 3 BAND 99% Bandwidth (CH 159)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.0_802.11ac_VHT40**99% Bandwidth Measurements for 802.11ac_VHT40**

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	36.495
5230	46	36.470

99% Bandwidth Measurements for 802.11ac_VHT40

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5270	54	36.506
5310	62	36.492

99% Bandwidth Measurements for 802.11ac_VHT40

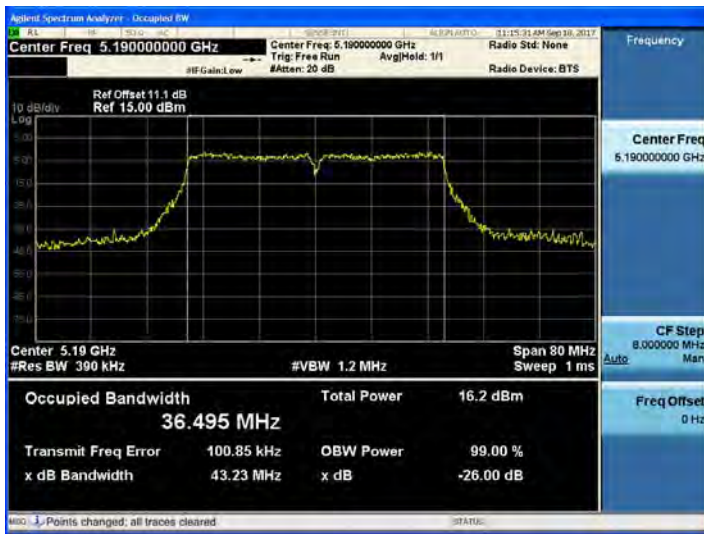
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5510	102	36.490
5550	110	36.593
5710	142	36.582

99% Bandwidth Measurements for 802.11ac_VHT40

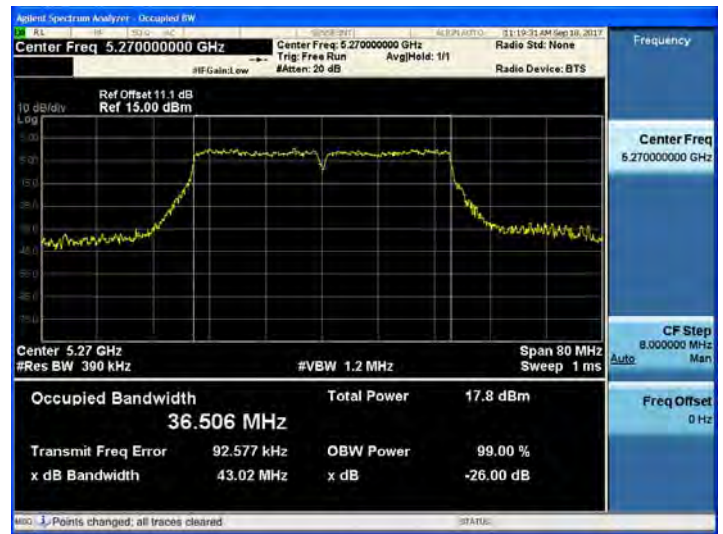
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	36.603
5795	159	36.582

■ TEST Plot for Ant.0_802.11ac_VHT40

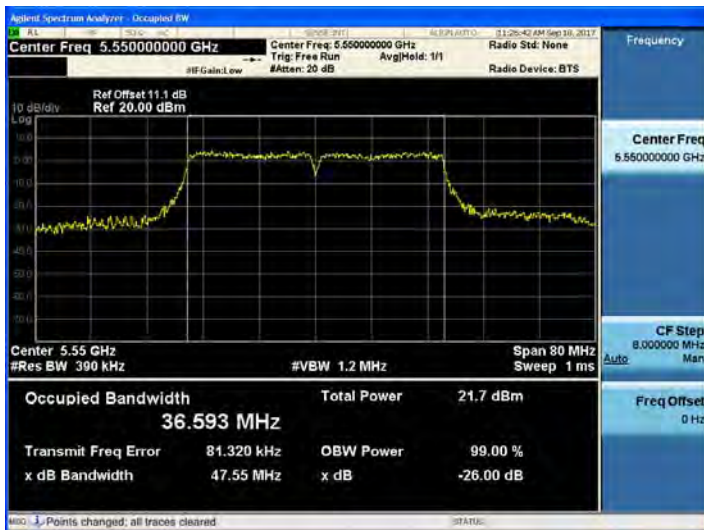
802.11ac_VHT40 UNII 1 BAND 99% Bandwidth(CH 38)



802.11ac_VHT40 UNII 2A BAND 99% Bandwidth (CH 54)



802.11ac_VHT40 UNII 2C BAND 99% Bandwidth(CH 110)



802.11ac_VHT40 UNII 3 BAND 99% Bandwidth (CH 151)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.1_802.11ac_VHT40**99% Bandwidth Measurements for 802.11ac_VHT40**

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	36.469
5230	46	36.449

99% Bandwidth Measurements for 802.11ac_VHT40

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5270	54	36.509
5310	62	36.424

99% Bandwidth Measurements for 802.11ac_VHT40

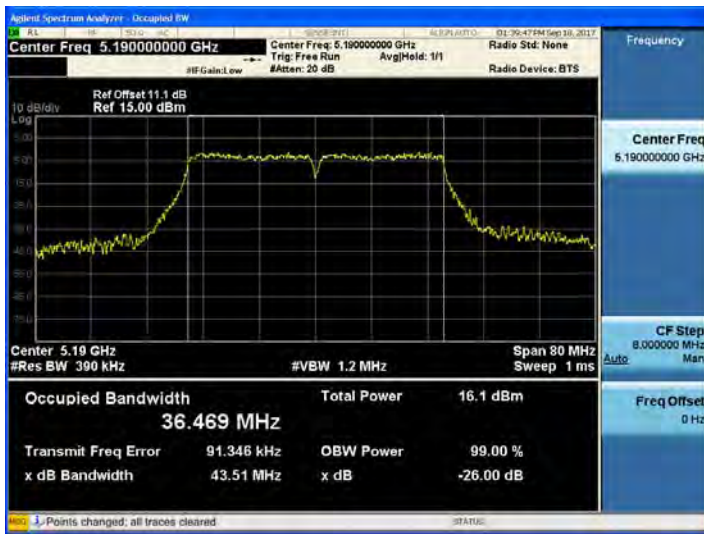
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5510	102	36.492
5550	110	36.527
5710	142	36.498

99% Bandwidth Measurements for 802.11ac_VHT40

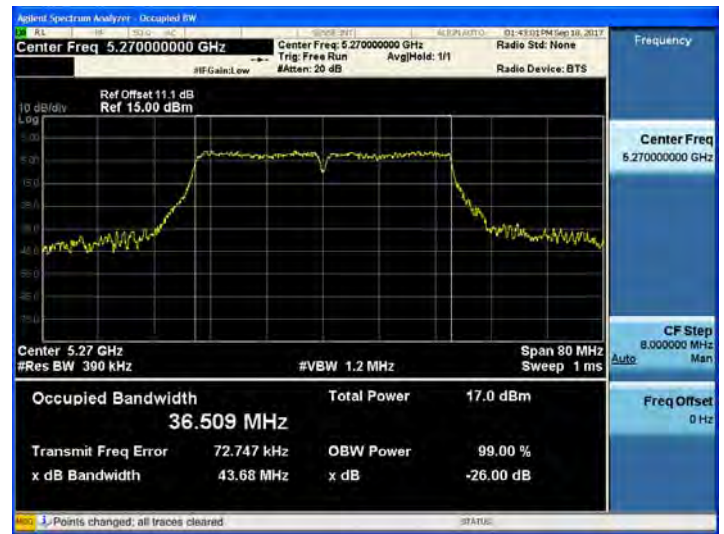
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	36.515
5795	159	36.475

■ TEST Plot for Ant.1_802.11ac_VHT40

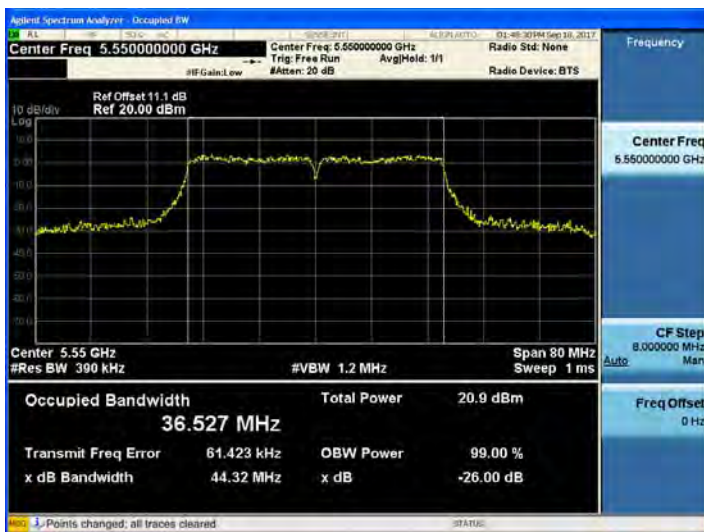
802.11ac_VHT40 UNII 1 BAND 99% Bandwidth(CH 38)



802.11ac_VHT40 UNII 2A BAND 99% Bandwidth (CH 54)



802.11ac_VHT40 UNII 2C BAND 99% Bandwidth(CH 110)



802.11ac_VHT40 UNII 3 BAND 99% Bandwidth (CH 151)



Note : In order to simplify the report, attached plots were only the most wide channel.

■ TEST RESULTS for Ant.0_802.11ac_VHT80

99% Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5210	42	75.858

99% Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5290	58	75.823

99% Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5530	106	75.771
5690	138	75.852

99% Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5775	155	75.782

■ TEST RESULTS for Ant.1_802.11ac_VHT80

99% Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5210	42	75.732

99% Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5290	58	75.681

99% Bandwidth Measurements for 802.11ac_VHT80

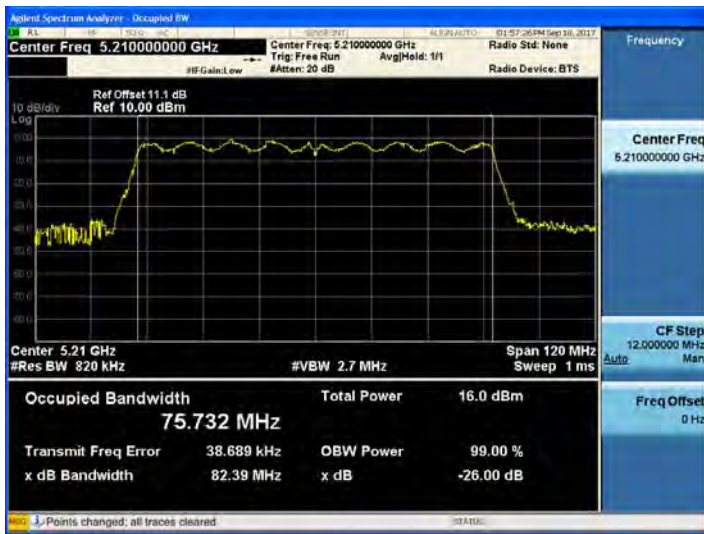
802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5530	106	75.760
5690	138	75.713

99% Bandwidth Measurements for 802.11ac_VHT80

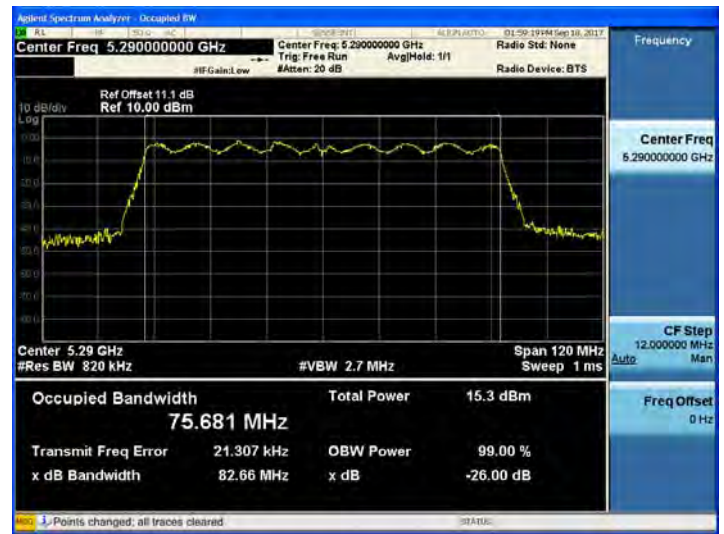
802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5775	155	75.725

■ TEST Plot for Ant.1_802.11ac_VHT80

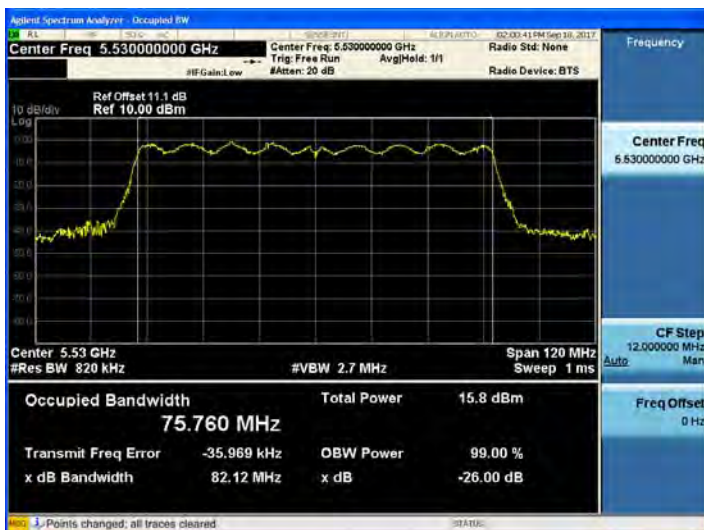
802.11ac_VHT80 UNII 1 BAND 99% Bandwidth(CH 42)



802.11ac_VHT80 UNII 2A BAND 99% Bandwidth(CH 58)



802.11ac_VHT80 UNII 2C BAND 99% Bandwidth(CH 106)



802.11ac_VHT80 UNII 3 BAND 99% Bandwidth(CH 155)



Note : In order to simplify the report, attached plots were only the most wide channel.

9.4 OUTPUT POWER MEASUREMENT

A transmitter antenna terminal of EUT is connected to the input of a Power meter or Spectrum Analyzer .Measurement is made while the EUT is operating in transmission mode at the appropriate frequencies.

■ LIMIT

Band	Mode	Limit (dBm)
UNII 1	802.11a,n,ac	23.98
UNII 2A	802.11a,n,ac	23.98
UNII 2C	802.11a,n,ac	23.98
UNII 3	802.11a,n,ac	30.00

Maximum Conducted Output Power:

Operating Mode	Band	Mode	Operating Ant.	Ant. Gain (dBi)	Limit (dBm)
SISO	UNII 1	802.11a/n/ac	Ant 0	3.9	23.98
			Ant 1	4.1	23.98
	UNII 2A		Ant 0	4.1	23.98
			Ant 1	4.1	23.98
	UNII 2C		Ant 0	4.6	23.98
			Ant 1	3.9	23.98
	UNII 3		Ant 0	4.0	30.00
			Ant 1	3.8	30.00
MIMO	UNII 1	Ant 0 & 1	7.01	22.97	
	UNII 2A		4.10	23.98	
	UNII 2C		7.27	22.71	
	UNII 3		6.91	29.09	

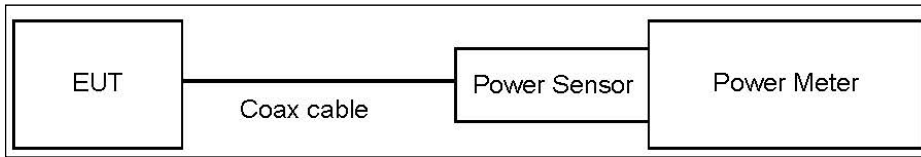
Note : 1. If all antenna gains are not equal,

$$\text{Directional gain} = 10 \cdot \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N] \text{ dBi}$$

(according to KDB662911 D01 v02r01)

2. Limit is calculated by antenna gain.

3. The limits of maximum conducted power were applied the antenna gain. Therefore, if conducted power is pass, e.i.r.p. is also pass. So, we attached only conducted power table.

■ TEST CONFIGURATION(20 MHz BW)**■ TEST PROCEDURE(20 MHz BW)**

- Average Power (Procedure E.3.a in KDB 789033 D02 v01r04).
 1. Measure the duty cycle.
 2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
 3. Add $10 \log (1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

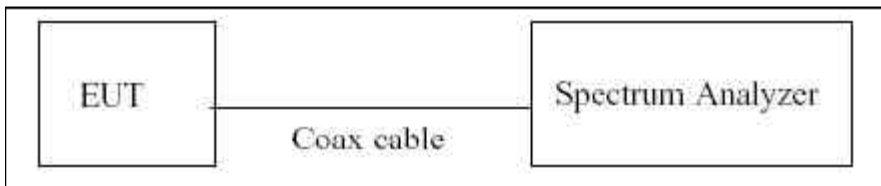
Note :

Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1, 2A, 2C, 3	11.1

(Actual value of loss for the attenuator and cable combination)

■ **TEST CONFIGURATION(40 MHz BW & 80 MHz BW)**



■ **TEST PROCEDURE(40 MHz BW & 80 MHz BW)**

▪ Average Power

The transmitter output is connected to the Spectrum Analyzer. We use the spectrum analyzer's integrated band power measurement function. We tested according to Method SA-2 in KDB 789033 D02 v01r04.

The Spectrum Analyzer is set to

1. Measure the duty cycle.
2. Set span to encompass the 26 dB EBW of the signal.
3. RBW = 1 MHz.
4. VBW ≥ 3 MHz.
5. Number of points in sweep ≥ 2*span/RBW.
6. Sweep time = auto.
7. Detector = RMS.
8. Do not use sweep triggering. Allow the sweep to "free run".
9. Trace average at least 100 traces in power averaging(RMS) mode
10. Integrated bandwidth = OBW
11. Add $10\log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

■ **Sample Calculation (Conducted)**

Output Power = Reading Value + ATT loss + Cable loss(1 ea) + Duty Cycle Factor

■ **Sample Calculation (EIRP)**

Output Power = Reading Value + ATT loss + Cable loss(1 ea) + Duty Cycle Factor + Ant gain

Note: 1. Spectrum reading values are not plot data. The power results in plot is already including the actual values of loss for the attenuator and cable combination.

2. Spectrum offset = Attenuator loss + Cable loss

3. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1, 2A, 2C, 3	11.1

(Actual value of loss for the attenuator and cable combination)

Ant.0
802.11a (UNII 1)
■ TEST RESULTS
Conducted Output Power Measurements (802.11a Mode: 5180~5240)

802.11a(20MHz) Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	10.25	-	10.25	23.98
5200	40	10.15	-	10.15	23.98
5240	48	10.04	-	10.04	23.98

Ant.1
802.11a (UNII 1)
■ TEST RESULTS
Conducted Output Power Measurements (802.11a Mode: 5180~5240)

802.11a(20MHz) Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	9.78	-	9.78	23.98
5200	40	9.68	-	9.68	23.98
5240	48	9.00	-	9.00	23.98

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 1)
Conducted Output Power Measurements (802.11a Mode: 5180~5240)

802.11a Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5180	36	13.03	22.97
5200	40	12.93	22.97
5240	48	12.55	22.97

Ant.0
802.11a (UNII 2A)
■ TEST RESULTS
Conducted Output Power Measurements (802.11a Mode: 5260~5320)

802.11a Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5260	52	10.10	-	10.10	23.98
5300	60	11.92	-	11.92	23.98
5320	64	11.65	-	11.65	23.98

Ant.1
802.11a (UNII 2A)
■ TEST RESULTS
Conducted Output Power Measurements (802.11a Mode: 5260~5320)

802.11a Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5260	52	9.27	-	9.27	23.98
5300	60	11.18	-	11.18	23.98
5320	64	10.95	-	10.95	23.98

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 2A)
Conducted Output Power Measurements (802.11a Mode: 5260~5320)

802.11a Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5260	52	12.71	23.98
5300	60	14.57	23.98
5320	64	14.32	23.98

Ant.0
802.11a (UNII 2C)
■ TEST RESULTS
Conducted Output Power Measurements (802.11a Mode: 5500~5720)

802.11a Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5500	100	12.18	-	12.18	23.98
5580	116	12.42	-	12.42	23.98
5720	144	10.33	-	10.33	23.98

Ant.1
802.11a (UNII 2C)
■ TEST RESULTS
Conducted Output Power Measurements (802.11a Mode: 5500~5720)

802.11a Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5500	100	12.12	-	12.12	23.98
5580	116	11.96	-	11.96	23.98
5720	144	8.68	-	8.68	23.98

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 2C)
Conducted Output Power Measurements (802.11a Mode: 5500~5720)

802.11a Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5500	100	15.16	22.71
5580	116	15.20	22.71
5720	144	12.55	22.71

Ant.0

802.11a (UNII 3)

■ TEST RESULTS

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5745	149	11.63	-	11.63	30
5785	157	11.38	-	11.38	30
5825	165	11.04	-	11.04	30

Ant.1

802.11a (UNII 3)

■ TEST RESULTS

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5745	149	8.90	-	8.90	30
5785	157	8.68	-	8.68	30
5825	165	8.57	-	8.57	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 3)

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5745	149	13.38	29.09
5785	157	13.14	29.09
5825	165	12.90	29.09

Ant.0
802.11n_HT20 (UNII 1)
■ TEST RESULTS
Conducted Output Power Measurements (802.11n_HT20 Mode: 5180~5240)

802.11n_HT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	10.38	-	10.38	23.98
5200	40	10.37	-	10.37	23.98
5240	48	10.29	-	10.29	23.98

Ant.1
802.11n_HT20 (UNII 1)
■ TEST RESULTS
Conducted Output Power Measurements (802.11n_HT20 Mode: 5180~5240)

802.11n_HT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	9.58	-	9.58	23.98
5200	40	9.56	-	9.56	23.98
5240	48	9.35	-	9.35	23.98

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 1)
Conducted Output Power Measurements (802.11n_HT20 Mode: 5180~5240)

802.11n_HT20 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5180	36	13.00	22.97
5200	40	12.98	22.97
5240	48	12.84	22.97

Ant.0

802.11n_HT20 (UNII 2A)

■ TEST RESULTS

Conducted Output Power Measurements (802.11n_HT20 Mode: 5260~5320)

802.11n_HT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5260	52	10.25	-	10.25	23.98
5300	60	11.85	-	11.85	23.98
5320	64	12.05	-	12.05	23.98

Ant.1

802.11n_HT20 (UNII 2A)

■ TEST RESULTS

Conducted Output Power Measurements (802.11n_HT20 Mode: 5260~5320)

802.11n_HT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5260	52	9.23	-	9.23	23.98
5300	60	10.73	-	10.73	23.98
5320	64	11.42	-	11.42	23.98

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 2A)

Conducted Output Power Measurements 802.11n_HT20 Mode: 5260~5320)

802.11n_HT20 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5260	52	12.77	23.98
5300	60	14.32	23.98
5320	64	14.75	23.98

Ant.0

802.11n_HT20 (UNII 2C)

■ TEST RESULTS

Conducted Output Power Measurements (802.11n_HT20 Mode: 5500~5720)

802.11n_HT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5500	100	14.14	-	14.14	23.98
5600	120	13.50	-	13.50	23.98
5720	144	10.20	-	10.20	23.98

Ant.1

802.11n_HT20 (UNII 2C)

■ TEST RESULTS

Conducted Output Power Measurements (802.11n_HT20 Mode: 5500~5720)

802.11n_HT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5500	100	13.62	-	13.62	23.98
5600	120	12.69	-	12.69	23.98
5720	144	8.71	-	8.71	23.98

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 2C)

Conducted Output Power Measurements (802.11n_HT20 Mode: 5500~5720)

802.11n_HT20 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5500	100	16.89	22.71
5600	120	16.11	22.71
5720	144	12.50	22.71

Ant.0

802.11n_HT20 (UNII 3)

■ TEST RESULTS

Conducted Output Power Measurements (802.11n_HT20 Mode: 5745~5825)

802.11n_HT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5745	149	12.51	-	12.51	30
5785	157	12.23	-	12.23	30
5825	165	11.88	-	11.88	30

Ant.1

802.11n_HT20 (UNII 3)

■ TEST RESULTS

Conducted Output Power Measurements (802.11n_HT20 Mode: 5745~5825)

802.11n_HT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5745	149	9.81	-	9.81	30
5785	157	9.62	-	9.62	30
5825	165	9.49	-	9.49	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 3)

Conducted Output Power Measurements (802.11n_HT20 Mode: 5745~5825)

802.11n_HT20 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5745	149	14.27	29.09
5785	157	14.03	29.09
5825	165	13.78	29.09

Ant.0

802.11ac_VHT20 (UNII 1)

■ TEST RESULTS

Conducted Output Power Measurements (802.11ac_VHT20 Mode: 5180~5240)

802.11ac_VHT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	10.28	-	10.28	23.98
5200	40	10.33	-	10.33	23.98
5240	48	10.20	-	10.20	23.98

Ant.1

802.11ac_VHT20 (UNII 1)

■ TEST RESULTS

Conducted Output Power Measurements (802.11ac_VHT20 Mode: 5180~5240)

802.11ac_VHT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5180	36	9.33	-	9.33	23.98
5200	40	9.24	-	9.24	23.98
5240	48	8.87	-	8.87	23.98

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 1)

Conducted Output Power Measurements (802.11ac_VHT20 Mode: 5180~5240)

802.11ac_VHT20 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5180	36	12.83	22.97
5200	40	12.81	22.97
5240	48	12.57	22.97

Ant.0

802.11ac_VHT20 (UNII 2A)

■ TEST RESULTS

Conducted Output Power Measurements (802.11ac_VHT20 Mode: 5260~5320)

802.11ac_VHT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5260	52	10.11	-	10.11	23.98
5300	60	11.75	-	11.75	23.98
5320	64	12.05	-	12.05	23.98

Ant.1

802.11ac_VHT20 (UNII 2A)

■ TEST RESULTS

Conducted Output Power Measurements (802.11ac_VHT20 Mode: 5260~5320)

802.11ac_VHT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5260	52	8.65	-	8.65	23.98
5300	60	10.56	-	10.56	23.98
5320	64	10.83	-	10.83	23.98

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 2A)

Conducted Output Power Measurements (802.11ac_VHT20 Mode: 5260~5320)

802.11ac_VHT20 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5260	52	12.42	23.98
5300	60	14.19	23.98
5320	64	14.47	23.98

Ant.0

802.11ac_VHT20 (UNII 2C)

■ TEST RESULTS

Conducted Output Power Measurements (802.11ac_VHT20 Mode: 5500~5720)

802.11ac_VHT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5500	100	13.83	-	13.83	23.98
5600	120	13.59	-	13.59	23.98
5720	144	10.17	-	10.17	23.98

Ant.1

802.11ac_VHT20 (UNII 2C)

■ TEST RESULTS

Conducted Output Power Measurements (802.11ac_VHT20 Mode: 5500~5720)

802.11ac_VHT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5500	100	13.36	-	13.36	23.98
5600	120	12.26	-	12.26	23.98
5720	144	8.07	-	8.07	23.98

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 2C)

Conducted Output Power Measurements (802.11ac_VHT20 Mode: 5500~5720)

802.11ac_VHT20 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5500	100	16.61	22.71
5600	120	15.96	22.71
5720	144	12.19	22.71

Ant.0
802.11ac_VHT20 (UNII 3)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT20 Mode: 5745~5825)

802.11ac_VHT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5745	149	12.37	-	12.37	30
5785	157	12.18	-	12.18	30
5825	165	11.88	-	11.88	30

Ant.1
802.11ac_VHT20 (UNII 3)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT20 Mode: 5745~5825)

802.11ac_VHT20 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5745	149	9.79	-	9.79	30
5785	157	9.65	-	9.65	30
5825	165	9.48	-	9.48	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 3)
Conducted Output Power Measurements (802.11ac_VHT20 Mode: 5745~5825)

802.11ac_VHT20 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5745	149	14.19	29.09
5785	157	14.02	29.09
5825	165	13.77	29.09

Ant.0
802.11n_HT40 (UNII 1)
■ TEST RESULTS
Conducted Output Power Measurements (802.11n_HT40 Mode: 5190~5230)

802.11n_HT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5190	38	9.62	-	9.62	23.98
5230	46	10.75	-	10.75	23.98

Ant.1
802.11n_HT40 (UNII 1)
■ TEST RESULTS
Conducted Output Power Measurements (802.11n_HT40 Mode: 5190~5230)

802.11n_HT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5190	38	9.29	-	9.29	23.98
5230	46	10.23	-	10.23	23.98

■ TEST RESULTS _ Sum Data of Ant.0 and Ant.1 (UNII 1)
Conducted Output Power Measurements (802.11n_HT40 Mode: 5190~5230)

802.11n_HT40 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5190	38	12.47	22.97
5230	46	13.50	22.97

Ant.0
802.11n_HT40 (UNII 2A)
■ TEST RESULTS
Conducted Output Power Measurements (802.11n_HT40 Mode: 5270~5310)

802.11n_HT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5270	54	11.10	-	11.10	23.98
5310	62	9.99	-	9.99	23.98

Ant.1
802.11n_HT40 (UNII 2A)
■ TEST RESULTS
Conducted Output Power Measurements (802.11n_HT40 Mode: 5270~5310)

802.11n_HT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5270	54	10.82	-	10.82	23.98
5310	62	12.02	-	12.02	23.98

■ TEST RESULTS _ Sum Data of Ant.0 and Ant.1 (UNII 2A)
Conducted Output Power Measurements (802.11n_HT40 Mode: 5270~5310)

802.11n_HT40 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5270	54	13.97	23.98
5310	62	14.07	23.98

Ant.0

802.11n_HT40 (UNII 2C)

■ TEST RESULTS

Conducted Output Power Measurements (802.11n_HT40 Mode: 5510~5710)

802.11n_HT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5510	102	7.63	-	7.63	23.98
5550	110	14.97	-	14.97	23.98
5710	142	13.89	-	13.89	23.98

Ant.1

802.11n_HT40 (UNII 2C)

■ TEST RESULTS

Conducted Output Power Measurements (802.11n_HT40 Mode: 5510~5710)

802.11n_HT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5510	102	8.46	-	8.46	23.98
5550	110	14.61	-	14.61	23.98
5710	142	12.82	-	12.82	23.98

■ TEST RESULTS _ Sum Data of Ant.0 and Ant.1 (UNII 2C)

Conducted Output Power Measurements (802.11n_HT40 Mode: 5510~5710)

802.11n_HT40 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5510	102	11.07	22.71
5590	118	17.80	22.71
5710	142	16.38	22.71

Ant.0
802.11n_HT40 (UNII 3)
■ TEST RESULTS
Conducted Output Power Measurements (802.11n_HT40 Mode: 5755~5795)

802.11n_HT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5755	151	14.21	-	14.21	30
5795	159	14.18	-	14.18	30

Ant.1
802.11n_HT40 (UNII 3)
■ TEST RESULTS
Conducted Output Power Measurements (802.11n_HT40 Mode: 5755~5795)

802.11n_HT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5755	151	12.08	-	12.08	30
5795	159	12.38	-	12.38	30

■ TEST RESULTS_ Sum Data of Ant.0 and Ant.1 (UNII 3)
Conducted Output Power Measurements (802.11n_HT40 Mode: 5755~5795)

802.11n_HT40 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5755	151	16.22	29.09
5795	159	16.34	29.09

TEST Plots for Ant.0_802.11n_HT40

802.11n_HT40 UNII 1 BAND Average Power (5190 MHz ~5230 MHz) CH 46



802.11n_HT40 UNII 2A BAND Average Power (5270 MHz ~5310 MHz) CH 54



802.11n_HT40 UNII 2C BAND Average Power (5510 MHz ~5670 MHz) CH 110

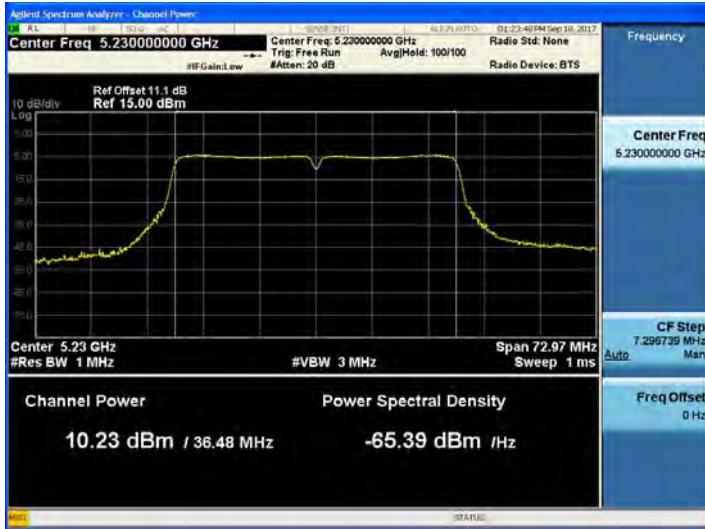


802.11n_HT40 UNII 3 BAND Average Power (5755 MHz ~5795 MHz) CH 151



TEST Plots for Ant.1_802.11n_HT40

802.11n_HT40 UNII 1 BAND Average Power (5190 MHz ~5230 MHz) CH 46



802.11n_HT40 UNII 2A BAND Average Power (5270 MHz ~5310 MHz) CH 62



802.11n_HT40 UNII 2C BAND Average Power (5510 MHz ~5670 MHz) CH 110



802.11n_HT40 UNII 3 BAND Average Power (5755 MHz ~5795 MHz) CH 159



Ant.0
802.11ac_VHT40 (UNII 1)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT40 Mode: 5190~5230)

802.11ac_VHT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5190	38	10.05	-	10.05	23.98
5230	46	10.61	-	10.61	23.98

Ant.1
802.11ac_VHT40 (UNII 1)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT40 Mode: 5190~5230)

802.11ac_VHT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5190	38	9.62	-	9.62	23.98
5230	46	10.65	-	10.65	23.98

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 1)
Conducted Output Power Measurements (802.11ac_VHT40 Mode: 5190~5230)

802.11ac_VHT40 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5190	38	12.85	22.97
5230	46	13.64	22.97

Ant.0
802.11ac_VHT40 (UNII 2A)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT40 Mode: 5270~5310)

802.11ac_VHT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5270	54	10.99	-	10.99	23.98
5310	62	9.83	-	9.83	23.98

Ant.1
802.11ac_VHT40 (UNII 2A)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT40 Mode: 5270~5310)

802.11ac_VHT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5270	54	10.88	-	10.88	23.98
5310	62	9.74	-	9.74	23.98

■ TEST RESULTS_ Sum Data of Ant.0 and Ant.1 (UNII 2A)
Conducted Output Power Measurements (802.11ac_VHT40 Mode: 5270~5310)

802.11ac_VHT40 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5270	54	13.95	23.98
5310	62	12.80	23.98

Ant.0
802.11ac_VHT40 (UNII 2C)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT40 Mode: 5510~5710)

802.11ac_VHT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5510	102	7.53	-	7.53	23.98
5590	118	14.88	-	14.88	23.98
5710	142	13.94	-	13.94	23.98

Ant.1
802.11ac_VHT40 (UNII 2C)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT40 Mode: 5510~5710)

802.11ac_VHT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5510	102	8.45	-	8.45	23.98
5590	118	14.65	-	14.65	23.98
5710	142	12.76	-	12.76	23.98

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 2C)
Conducted Output Power Measurements (802.11ac_VHT40 Mode: 5510~5710)

802.11ac_VHT40 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5510	102	11.01	22.71
5590	118	17.78	22.71
5710	142	16.38	22.71

Ant.0
802.11ac_VHT40 (UNII 3)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT40 Mode: 5755~5795)

802.11ac_VHT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5755	151	14.47	-	14.47	30
5795	159	14.24	-	14.24	30

Ant.1
802.11ac_VHT40 (UNII 3)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT40 Mode: 5755~5795)

802.11ac_VHT40 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5755	151	12.03	-	12.03	30
5795	159	12.36	-	12.36	30

■ TEST RESULTS_ Sum Data of Ant.0 and Ant.1 (UNII 3)
Conducted Output Power Measurements (802.11ac_VHT40 Mode: 5755~5795)

802.11ac_VHT40 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5755	151	16.35	29.09
5795	159	16.36	29.09

TEST Plots for Ant.0_802.11ac_VHT40

802.11ac_VHT40 UNII 1 BAND Average Power (5190 MHz ~5230 MHz) CH 46



802.11ac_VHT40 UNII 2A BAND Average Power (5270 MHz ~5310 MHz) CH 54



802.11ac_VHT40 UNII 2C BAND Average Power (5510 MHz ~5670 MHz) CH 110



802.11ac_VHT40 UNII 3 BAND Average Power (5755 MHz ~5795 MHz) CH 151



TEST Plots for Ant.1_802.11ac_VHT40

802.11ac_VHT40 UNII 1 BAND Average Power (5190 MHz ~5230 MHz) CH 46



802.11ac_VHT40 UNII 2A BAND Average Power (5270 MHz ~5310 MHz) CH 54



802.11ac_VHT40 UNII 2C BAND Average Power (5510 MHz ~5670 MHz) CH 110



802.11ac_VHT40 UNII 3 BAND Average Power (5755 MHz ~5795 MHz) CH 159



Ant.0
802.11ac_VHT80 (UNII 1)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT80 Mode: 5210)

802.11ac_VHT80 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5210	42	8.79	-	8.79	23.98

Ant.1
802.11ac_VHT80 (UNII 1)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT80 Mode: 5210)

802.11ac_VHT80 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5210	42	8.87	-	8.87	23.98

■ TEST RESULTS_ Sum Data of Ant.0 and Ant.1 (UNII 1)
Conducted Output Power Measurements (802.11ac_VHT80 Mode: 5210)

802.11ac_VHT80 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5210	42	11.84	22.97

Ant.0
802.11ac_VHT80 (UNII 2A)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT80 Mode: 5290)

802.11ac_VHT80 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5290	58	8.69	-	8.69	23.98

Ant.1
802.11ac_VHT80 (UNII 2A)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT80 Mode: 5290)

802.11ac_VHT80 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5290	58	8.16	-	8.16	23.98

■ TEST RESULTS_ Sum Data of Ant.0 and Ant.1 (UNII 2A)
Conducted Output Power Measurements (802.11ac_VHT80 Mode: 5290)

802.11ac_VHT80 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5290	58	11.44	23.98

Ant.0
802.11ac_VHT80 (UNII 2C)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT80 Mode: 5530 ~ 5690 MHz)

802.11ac_VHT80 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5530	106	7.73	-	7.73	23.98
5690	138	14.49	-	14.49	23.98

Ant.1
802.11ac_VHT80 (UNII 2C)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT80 Mode: 5530 ~ 5690 MHz)

802.11ac_VHT80 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5530	106	8.95	-	8.95	23.98
5690	138	13.92	-	13.92	23.98

■ TEST RESULTS_ Sum Data of Ant.0 and Ant.1 (UNII 2C)
Conducted Output Power Measurements (802.11ac_VHT80 Mode: 5530 ~ 5690 MHz)

802.11ac_VHT80 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5530	106	11.37	22.71
5690	138	17.22	22.71

Ant.0
802.11ac_VHT80 (UNII 3)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT80 Mode: 5775)

802.11ac_VHT80 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5775	155	13.91	-	13.91	30

Ant.1
802.11ac_VHT80 (UNII 3)
■ TEST RESULTS
Conducted Output Power Measurements (802.11ac_VHT80 Mode: 5775)

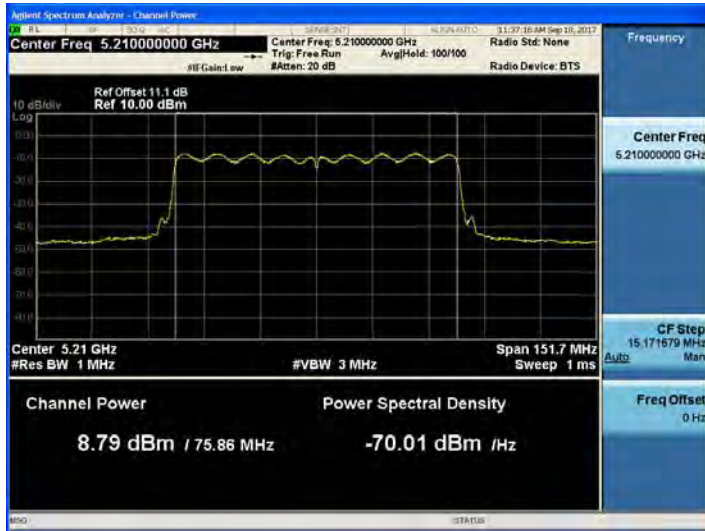
802.11ac_VHT80 Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.				
5775	155	11.43	-	11.43	30

■ TEST RESULTS_Sum Data of Ant.0 and Ant.1 (UNII 3)
Conducted Output Power Measurements (802.11ac_VHT80 Mode: 5775)

802.11ac_VHT80 Mode		Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.		
5775	155	15.77	29.09

TEST Plots Ant.0 for 802.11ac_VHT80

802.11ac_VHT80 UNII 1 BAND Average Power (5210 MHz) CH 42



802.11ac_VHT80 UNII 2A BAND Average Power (5290 MHz) CH 58



802.11ac_VHT80 UNII 2C BAND Average Power (5530 ~ 5690 MHz) CH 138

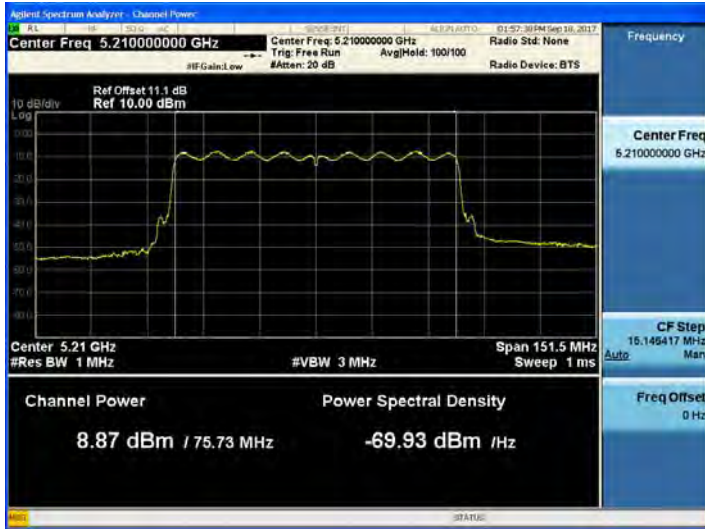


802.11ac_VHT80 UNII 3 BAND Average Power (5775 MHz) CH 155



TEST Plots Ant.1 for 802.11ac_VHT80

802.11ac_VHT80 UNII 1 BAND Average Power (5210 MHz) CH 42



802.11ac_VHT80 UNII 2A BAND Average Power (5290 MHz) CH 58



802.11ac_VHT80 UNII 2C BAND Average Power (5530 ~ 5690 MHz) CH 138



802.11ac_VHT80 UNII 3 BAND Average Power (5775 MHz) CH 155



■ Straddle channels TEST RESULTS_Ant 0

Conducted Output Power Measurements (802.11a/n_HT20/ac_VHT20 Mode: UNII 2C Band 5720MHz)

Mode	Frequency [MHz]	Channel No.	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
802.11a	5720	144	8.15	-	8.15	23.98
802.11n			8.85	-	8.85	23.98
802.11ac			8.63	-	8.63	23.98

Conducted Output Power Measurements (802.11a/n_HT20/ac_VHT20 Mode: UNII 3 Band 5720MHz)

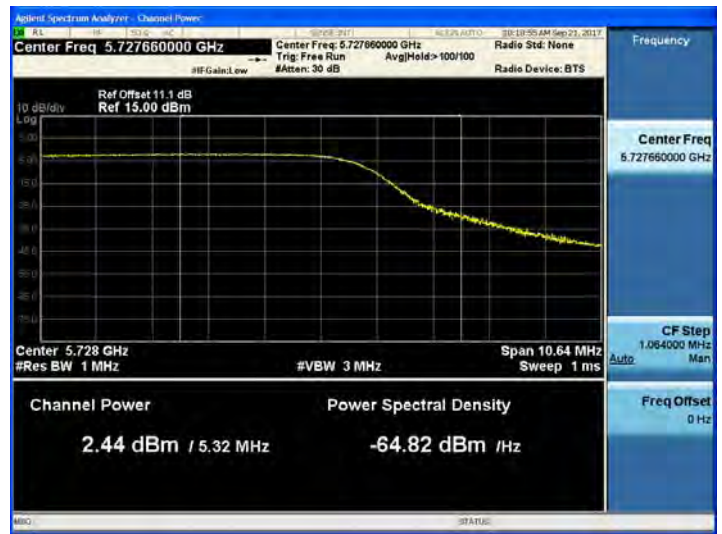
Mode	Frequency [MHz]	Channel No.	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
802.11a	5720	144	2.44	-	2.44	30.00
802.11n			3.50	-	3.50	30.00
802.11ac			3.32	-	3.32	30.00

☐ Straddle channels TEST Plot for 802.11a/n_HT20_Ant 0

802.11a UNII 2C Band Average Power CH.144



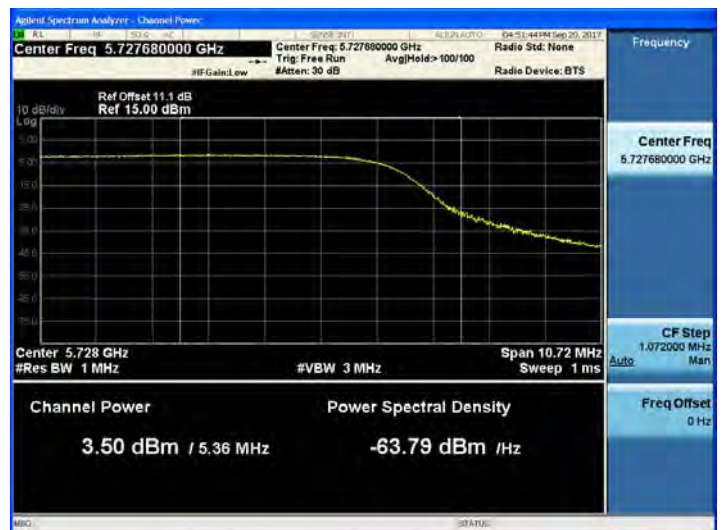
802.11a UNII 3 Band Average Power CH.144



802.11n_HT20 UNII 2C Band Average Power CH.144

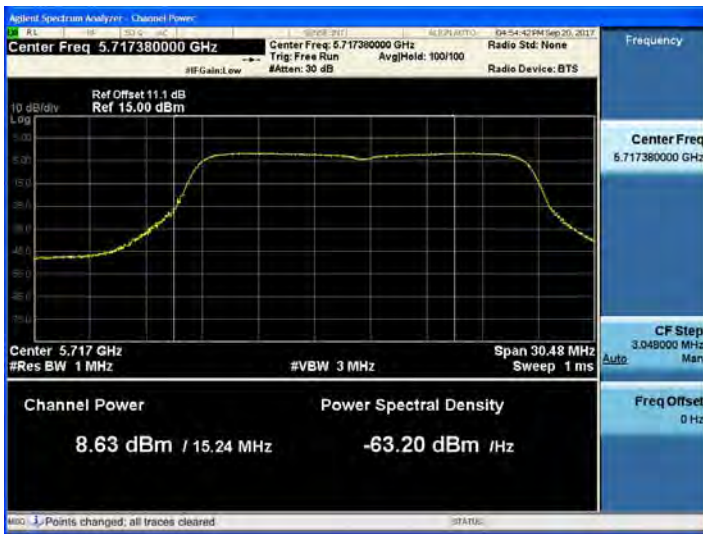


802.11n_HT20 UNII 3 Band Average Power CH.144



▣ Straddle channels TEST Plot for 802.11ac_VHT20_Ant 0

802.11ac_VHT20 UNII 2C Band Average Power CH.144



802.11ac_VHT20 UNII 3 Band Average Power CH.144



Straddle channels TEST RESULTS_Ant 1

Conducted Output Power Measurements (802.11a/n_HT20/ac_VHT20 Mode: UNII 2C Band 5720MHz)

Mode	Frequency [MHz]	Channel No.	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
802.11a	5720	144	6.66	-	6.66	23.98
802.11n			6.55	-	6.55	23.98
802.11ac			6.47	-	6.47	23.98

Conducted Output Power Measurements (802.11a/n_HT20/ac_VHT20 Mode: UNII 3 Band 5720MHz)

Mode	Frequency [MHz]	Channel No.	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
802.11a	5720	144	0.93	-	0.93	30.00
802.11n			1.17	-	1.17	30.00
802.11ac			1.05	-	1.05	30.00

☐ Straddle channels TEST Plot for 802.11a/n_HT20_Ant 1

802.11a UNII 2C Band Average Power CH.144



802.11a UNII 3 Band Average Power CH.144



802.11n_HT20 UNII 2C Band Average Power CH.144



802.11n_HT20 UNII 3 Band Average Power CH.144



▣ Straddle channels TEST Plot for 802.11ac_VHT20_Ant 1

802.11ac_VHT20 UNII 2C Band Average Power CH.144



802.11ac_VHT20 UNII 3 Band Average Power CH.144



▣Straddle channels TEST RESULTS_ Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11a/n_HT20/ac_VHT20 Mode: UNII 2C Band 5720MHz)

Mode (MIMO)	Frequency [MHz]	Channel No.	Sum Power of Ant.0 & 1	Limit (dBm)
802.11a	5720	144	7.47	23.98
802.11n			10.79	22.71
802.11ac			10.63	22.71

Conducted Output Power Measurements (802.11a/n_HT20/ac_VHT20 Mode: UNII 3 Band 5720MHz)

Mode (MIMO)	Frequency [MHz]	Channel No.	Sum Power of Ant.0 & 1	Limit (dBm)
802.11a	5720	144	1.75	30.00
802.11n			5.42	29.09
802.11ac			5.27	29.09

Straddle channels TEST RESULTS_Ant 0

Conducted Output Power Measurements (802.11n_HT40/ac_VHT40 Mode: UNII 2C Band 5710MHz)

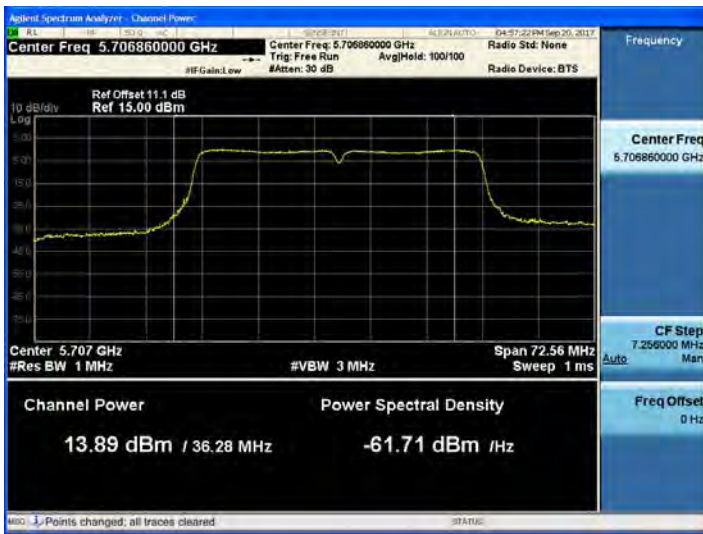
Mode	Frequency [MHz]	Channel No.	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
802.11n	5710	142	13.89	-	13.89	23.98
802.11ac			13.90	-	13.90	23.98

Conducted Output Power Measurements (802.11n_HT40/ac_VHT40 Mode: UNII 3 Band 5710MHz)

Mode	Frequency [MHz]	Channel No.	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
802.11n	5710	142	4.02	-	4.02	30.00
802.11ac			4.02	-	4.02	30.00

■ Straddle channels TEST Plot for 802.11n_HT40/ac_VHT40_Ant 0

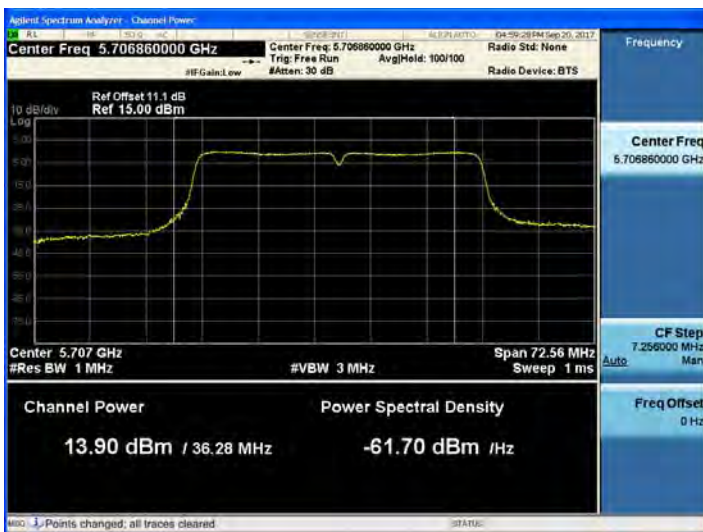
802.11n_HT40 UNII 2C Band Average Power CH.142



802.11n_HT40 UNII 3 Band Average Power CH.142



802.11ac_VHT40 UNII 2C Band Average Power CH.142



802.11ac_VHT40 UNII 3 Band Average Power CH.142



Straddle channels TEST RESULTS_Ant 1

Conducted Output Power Measurements (802.11n_HT40/ac_VHT40 Mode: UNII 2C Band 5710MHz)

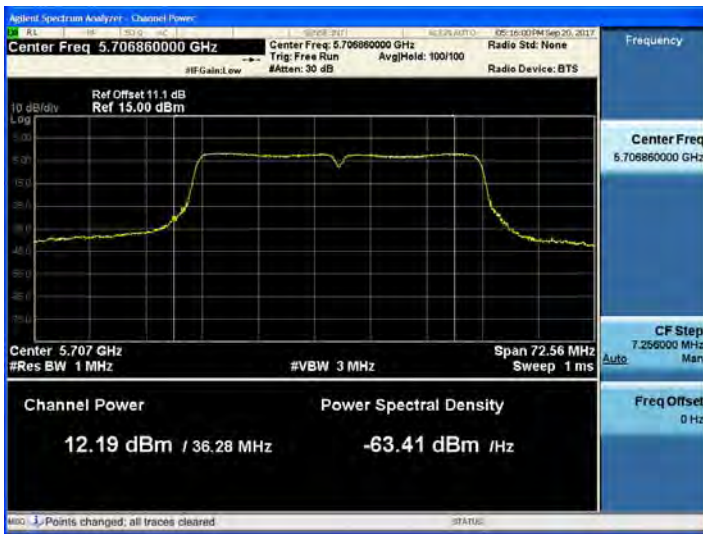
Mode	Frequency [MHz]	Channel No.	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
802.11n	5710	142	12.19	-	12.19	23.98
802.11ac			12.18	-	12.18	23.98

Conducted Output Power Measurements (802.11n_HT40/ac_VHT40 Mode: UNII 3 Band 5710MHz)

Mode	Frequency [MHz]	Channel No.	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
802.11n	5710	142	2.26	-	2.26	30.00
802.11ac			2.25	-	2.25	30.00

☐ Straddle channels TEST Plot for 802.11n_HT40/ac_VHT40_Ant 1

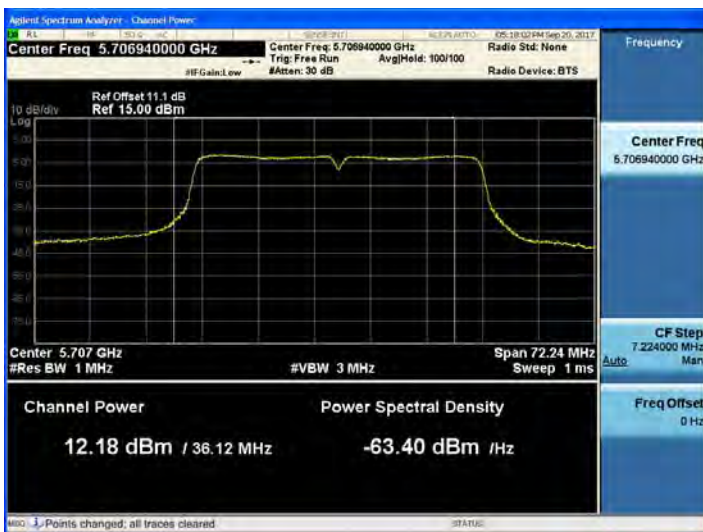
802.11n_HT40 UNII 2C Band Average Power CH.142



802.11n_HT40 UNII 3 Band Average Power CH.142



802.11ac_VHT40 UNII 2C Band Average Power CH.142



802.11ac_VHT40 UNII 3 Band Average Power CH.142



Straddle channels TEST RESULTS_ Sum Data of Ant.0 and Ant.1

Conducted Output Power Measurements (802.11n_HT40/ac_VHT40 Mode: UNII 2C Band 5710MHz)

Mode (MIMO)	Frequency [MHz]	Channel No.	Sum Power of Ant.0 & 1	Limit (dBm)
802.11n	5710	142	16.09	22.71
802.11ac			16.09	22.71

Conducted Output Power Measurements (802.11n_HT40/ac_VHT40 Mode: UNII 3 Band 5710MHz)

Mode (MIMO)	Frequency [MHz]	Channel No.	Sum Power of Ant.0 & 1	Limit (dBm)
802.11n	5710	142	6.19	29.09
802.11ac			6.19	29.09

■ Straddle channels TEST RESULTS_Ant 0

Conducted Output Power Measurements (802.11ac_VHT80 Mode: UNII 2C Band 5690MHz)

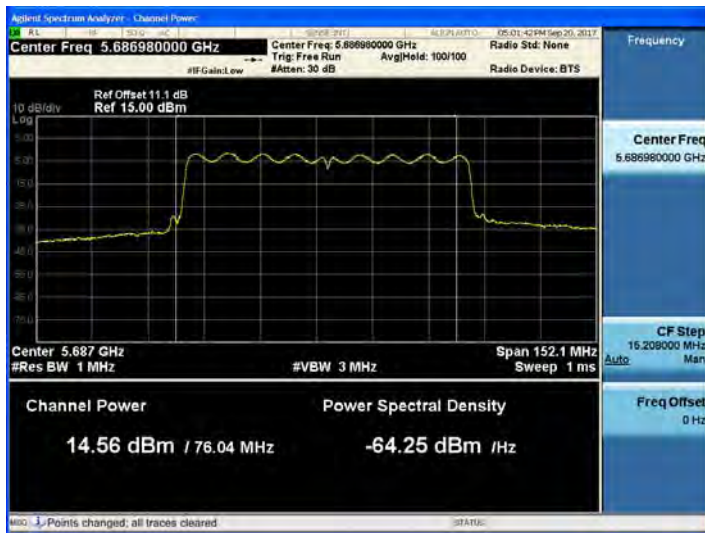
Mode	Frequency [MHz]	Channel No.	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
802.11ac	5690	138	14.56	-	14.56	23.98

Conducted Output Power Measurements (802.11ac_VHT80 Mode: UNII 3 Band 5690MHz)

Mode	Frequency [MHz]	Channel No.	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
802.11ac	5690	138	1.24	-	1.24	30.00

■ Straddle channels TEST Plot for 802.11ac_VHT80_Ant 0

802.11ac_VHT80 UNII 2C Band Average Power CH.138



802.11ac_VHT80 UNII 3 Band Average Power CH.138



Straddle channels TEST RESULTS_Ant 1

Conducted Output Power Measurements (802.11ac_VHT80 Mode: UNII 2C Band 5690MHz)

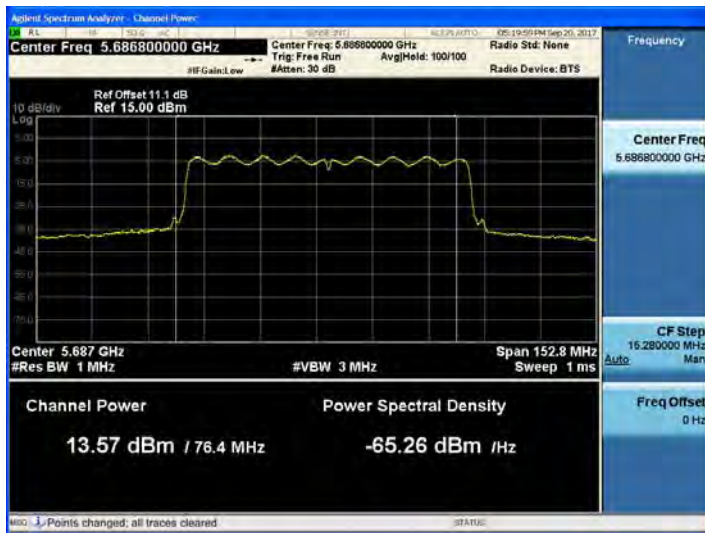
Mode	Frequency [MHz]	Channel No.	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
802.11ac	5690	138	13.57	-	13.57	23.98

Conducted Output Power Measurements (802.11ac_VHT80 Mode: UNII 3 Band 5690MHz)

Mode	Frequency [MHz]	Channel No.	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
802.11ac	5690	138	0.66	-	0.66	30.00

Straddle channels TEST Plot for 802.11ac_VHT80_Ant 1

802.11ac_VHT80 UNII 2C Band Average Power CH.138



802.11ac_VHT80 UNII 3 Band Average Power CH.138



■ Straddle channels TEST RESULTS_ Sum Data of Ant.0 and Ant.1**Conducted Output Power Measurements (802.11ac_VHT80 Mode: UNII 2C Band 5690MHz)**

Mode (MIMO)	Frequency [MHz]	Channel No.	Sum Power of Ant.0 & 1	Limit (dBm)
802.11ac	5690	138	17.09	22.71

Conducted Output Power Measurements (802.11ac_VHT80 Mode: UNII 3 Band 5690MHz)

Mode (MIMO)	Frequency [MHz]	Channel No.	Sum Power of Ant.0 & 1	Limit (dBm)
802.11ac	5690	138	3.97	29.09

9.5 POWER SPECTRAL DENSITY

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

■ Limit

Power Spectral Density

Band	Mode	Limit
UNII 1	802.11a,n,ac	11 dBm/MHz
UNII 2A	802.11a,n,ac	11 dBm/MHz
UNII 2C	802.11a,n,ac	11 dBm/MHz
UNII 3	802.11a,n,ac	30 dBm/500 kHz

Note : According to KDB644545 D03 v01, emission for straddle channels in each band shall comply with the PSD limits applicable to that band under the appropriate rule section.

Power Spectral Density

Operating Mode	Band	Mode	Operating Ant.	Ant. Gain (dBi)	Limit
SISO	UNII 1	802.11a/n/ac	Ant 0	3.9	11 dBm/MHz
			Ant 1	4.1	11 dBm/MHz
	UNII 2A		Ant 0	4.1	11 dBm/MHz
			Ant 1	4.1	11 dBm/MHz
	UNII 2C		Ant 0	4.6	11 dBm/MHz
			Ant 1	3.9	11 dBm/MHz
	UNII 3		Ant 0	4.0	30 dBm/500 kHz
			Ant 1	3.8	30 dBm/500 kHz
MIMO	UNII 1	Ant 0 & 1	7.01	9.99 dBm/MHz	
	UNII 2A		7.11	9.89 dBm/MHz	
	UNII 2C		7.27	9.73 dBm/MHz	
	UNII 3		6.91	29.09 dBm/500 kHz	

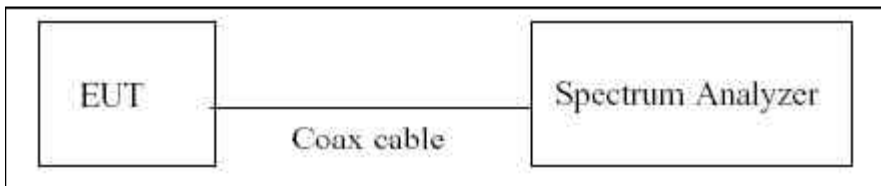
Note : 1. If all antenna gains are not equal,

$$\text{Directional gain} = 10 \cdot \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N] \text{ dBi}$$

(according to KDB662911 D01 v02r01)

2. Limit is calculated by antenna gain.

3. The limits of maximum conducted power were applied the antenna gain. Therefore, if conducted power is pass, e.i.r.p. is also pass. So, we attached only conducted power table.

■ TEST CONFIGURATION**■ TEST PROCEDURE**

We tested according to Method in KDB 789033 D02 v01r04.

The spectrum analyzer is set to :

1. Set span to encompass the entire emission bandwidth(EBW) of the signal.
2. RBW = 1 MHz(510 kHz for UNII 3)
3. VBW $\geq$ 3 MHz
4. Number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$.
5. Sweep time = auto.
6. Detector = RMS(i.e., power averaging), if available. Otherwise, use sample detector mode.
7. Do not use sweep triggering. Allow the sweep to "free run".
8. Trace average at least 100 traces in power averaging(RMS) mode
9. Use the peak search function on the spectrum analyzer to find the peak of the spectrum.
10. If Method SA-2 was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum.

■ SAMPLE CALCULATION

PSD = Reading Value + ATT loss + Cable loss(1 ea) + Duty Cycle Factor

Ex) PSD = -3 dBm + 10 dB + 0.8 dB + 0.2 dB = 8.0 dBm

Note :

1. Spectrum reading values are not plot data. The PSD results in plot is already including the actual values of loss for the attenuator and cable combination.
2. Spectrum offset = Attenuator loss + Cable loss
3. We apply to the offset in the 5.2 GHz, 5.3 GHz and 5.6 GHz range that was rounded off to the closest tenth dB. Actual value of loss for the attenuator and cable combination is below table.

Band	Loss(dB)
UNII 1, 3	11.1

(Actual value of loss for the attenuator and cable combination)

Ant.0

■ TEST RESULTS

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5180	36	802.11a (SISO)	-1.138	-	-1.138	11	Pass
5200	40		-1.012	-	-1.012		Pass
5240	48		-0.889	-	-0.889		Pass
5260	52		-1.187	-	-1.187	11	Pass
5300	60		0.280	-	0.280		Pass
5320	64		0.397	-	0.397		Pass
5500	100		1.569	-	1.569	11	Pass
5580	116		1.746	-	1.746		Pass
5720	144		-0.861	-	-0.861		Pass
5745	149		-2.397	-	-2.397	30	Pass
5785	157		1.717	-	1.717		Pass
5825	165		-2.836	-	-2.836		Pass

Ant.1
■ TEST RESULTS
Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5180	36	802.11a (SISO)	-1.991	-	-1.991	11	Pass
5200	40		-2.307	-	-2.307		Pass
5240	48		-2.345	-	-2.345		Pass
5260	52		-2.010	-	-2.010	11	Pass
5300	60		-0.513	-	-0.513		Pass
5320	64		-2.017	-	-2.017		Pass
5500	100		1.247	-	1.247	11	Pass
5580	116		1.087	-	1.087		Pass
5720	144		-2.615	-	-2.615		Pass
5745	149		-5.062	-	-5.062	30	Pass
5785	157		-5.217	-	-5.217		Pass
5825	165		-5.412	-	-5.412		Pass

☒ Sum Data of Ant.0 and Ant.1

☒ TEST RESULTS

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result		
			Measured Power Density (dBm)	Limit (dBm)	Pass/Fail
5180	36	802.11a (MIMO)	1.46	9.99	Pass
5200	40		1.37		Pass
5240	48		1.42		Pass
5260	52		1.42	9.89	Pass
5300	60		2.90		Pass
5320	64		2.28		Pass
5500	100		4.42	9.73	Pass
5580	116		4.43		Pass
5720	144		1.32		Pass
5745	149		-0.62	29.09	Pass
5785	157		1.93		Pass
5825	165		-1.02		Pass

■ TEST Plot for 802.11a 20MHz BW_Ant.0

802.11a UNII 1 BAND PSD CH 48



802.11a UNII 2A BAND PSD CH 64



802.11a UNII 2C BAND PSD CH 116

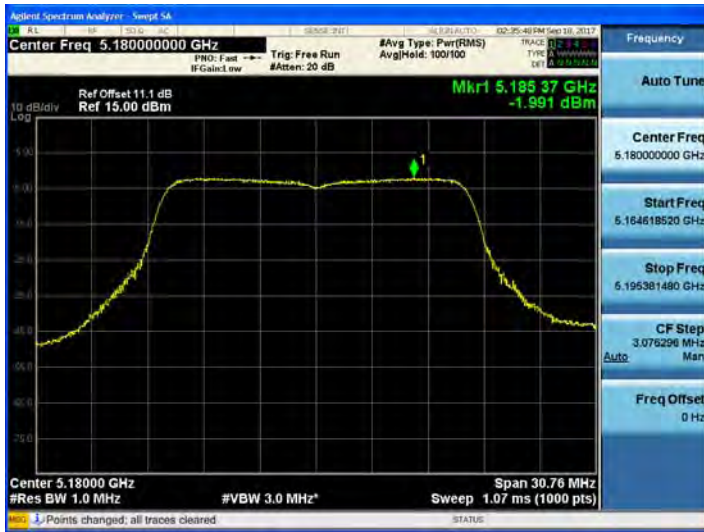


802.11a UNII 3 BAND PSD CH 157



■ TEST Plot for 802.11a 20MHz BW_Ant.1

802.11a UNII 1 BAND PSD CH 36



802.11a UNII 2A BAND PSD CH 60



802.11a UNII 2C BAND PSD CH 100



802.11a UNII 3 BAND PSD CH 149



Ant.0

■ TEST RESULTS

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5180	36	802.11n_ HT20 (SISO)	-1.458	-	-1.458	11	Pass
5200	40		-1.281	-	-1.281		Pass
5240	48		-1.178	-	-1.178		Pass
5260	52		-1.380	-	-1.380	11	Pass
5300	60		0.438	-	0.438		Pass
5320	64		0.715	-	0.715		Pass
5500	100		3.184	-	3.184	11	Pass
5580	116		2.409	-	2.409		Pass
5720	144		-1.211	-	-1.211		Pass
5745	149		-1.623	-	-1.623	30	Pass
5785	157		-2.005	-	-2.005		Pass
5825	165		-2.053	-	-2.053		Pass

Ant.1
■ TEST RESULTS
Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5180	36	802.11n_ HT20 (SISO)	-2.419	-	-2.419	11	Pass
5200	40		-2.308	-	-2.308		Pass
5240	48		-2.341	-	-2.341		Pass
5260	52		-2.413	-	-2.413	11	Pass
5300	60		-0.834	-	-0.834		Pass
5320	64		0.065	-	0.065		Pass
5500	100		2.755	-	2.755	11	Pass
5580	116		1.698	-	1.698		Pass
5720	144		-2.836	-	-2.836		Pass
5745	149		-4.577	-	-4.577	30	Pass
5785	157		-4.625	-	-4.625		Pass
5825	165		-4.679	-	-4.679		Pass

☒ Sum Data of Ant.0 and Ant.1

☒ TEST RESULTS

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result		
			Measured Power Density (dBm)	Limit (dBm)	Pass/Fail
5180	36	802.11n_ HT20 (MIMO)	1.09	9.99	Pass
5200	40		1.23		Pass
5240	48		1.27		Pass
5260	52		1.13	9.89	Pass
5300	60		2.84		Pass
5320	64		3.41		Pass
5500	100		5.98	9.73	Pass
5580	116		5.07		Pass
5720	144		1.02		Pass
5745	149		0.04	29.09	Pass
5785	157		-0.21		Pass
5825	165		-0.26		Pass

■ TEST Plot for 802.11n_HT20_Ant.0

802.11n_HT20 UNII 1 BAND PSD CH 48



802.11n_HT20 UNII 2A BAND PSD CH 64



802.11n_HT20 UNII 2C BAND PSD CH 100



802.11n_HT20 UNII 3 BAND PSD CH 149



■ TEST Plot for 802.11n_HT20_Ant.1

802.11n_HT20 UNII 1 BAND PSD CH 40



802.11n_HT20 UNII 2A BAND PSD CH 64



802.11n_HT20 UNII 2C BAND PSD CH 100



802.11n_HT20 UNII 3 BAND PSD CH 149



Ant.0
■ TEST RESULTS
Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5180	36	802.11ac _VHT20 (SISO)	-1.549	-	-1.549	11	Pass
5200	40		-1.335	-	-1.335		Pass
5240	48		-1.340	-	-1.340		Pass
5260	52		-1.386	-	-1.386	11	Pass
5300	60		0.195	-	0.195		Pass
5320	64		0.563	-	0.563		Pass
5500	100		3.130	-	3.130	11	Pass
5580	116		2.301	-	2.301		Pass
5720	144		-1.196	-	-1.196		Pass
5745	149		-1.636	-	-1.636	30	Pass
5785	157		-1.837	-	-1.837		Pass
5825	165		-2.104	-	-2.104		Pass

Ant.1
■ TEST RESULTS
Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5180	36	802.11ac _VHT20 (SISO)	-2.329	-	-2.329	11	Pass
5200	40		-2.275	-	-2.275		Pass
5240	48		-2.430	-	-2.430		Pass
5260	52		-2.502	-	-2.502	11	Pass
5300	60		-0.812	-	-0.812		Pass
5320	64		0.002	-	0.002		Pass
5500	100		2.812	-	2.812	11	Pass
5580	116		1.853	-	1.853		Pass
5720	144		-2.784	-	-2.784		Pass
5745	149		-4.550	-	-4.550	30	Pass
5785	157		-4.480	-	-4.480		Pass
5825	165		-4.689	-	-4.689		Pass

☒ Sum Data of Ant.0 and Ant.1

☒ TEST RESULTS

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result		
			Measured Power Density (dBm)	Limit (dBm)	Pass/Fail
5180	36	802.11ac _VHT20 (MIMO)	1.08	9.99	Pass
5200	40		1.22		Pass
5240	48		1.14		Pass
5260	52		1.08	9.89	Pass
5300	60		2.72		Pass
5320	64		3.30		Pass
5500	100		5.98	9.73	Pass
5580	116		5.09		Pass
5720	144		1.06		Pass
5745	149		0.04	29.09	Pass
5785	157		-0.05		Pass
5825	165		-0.29		Pass

■ TEST Plot for 802.11ac_VHT20_Ant.0

802.11ac_VHT20 UNII 1 BAND PSD CH 40



802.11ac_VHT20 UNII 2A BAND PSD CH 64



802.11ac_VHT20 UNII 2C BAND PSD CH 100



802.11ac_VHT20 UNII 3 BAND PSD CH 149



■ TEST Plot for 802.11ac_VHT20_Ant.1

802.11ac_VHT20 UNII 1 BAND PSD CH 40



802.11ac_VHT20 UNII 2A BAND PSD CH 64



802.11ac_VHT20 UNII 2C BAND PSD CH 100



802.11ac_VHT20 UNII 3 BAND PSD CH 157



Ant.0
■ TEST RESULTS
Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5190	38	802.11n _HT40 (SISO)	-4.712	-	-4.712	11	Pass
5230	46		-3.421	-	-3.421	11	Pass
5270	54		-3.024	-	-3.024	11	Pass
5310	62		-4.268	-	-4.268	11	Pass
5510	102		-6.340	-	-6.340	11	Pass
5550	110		0.653	-	0.653	11	Pass
5710	142		-0.238	-	-0.238	11	Pass
5755	151		-2.555	-	-2.555	30	Pass
5795	159		-2.890	-	-2.890	30	Pass

Ant.1
■ TEST RESULTS
Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5190	38	802.11n _HT40 (SISO)	-4.911	-	-4.911	11	Pass
5230	46		-3.455	-	-3.455	11	Pass
5270	54		-3.236	-	-3.236	11	Pass
5310	62		-2.085	-	-2.085	11	Pass
5510	102		-5.933	-	-5.933	11	Pass
5550	110		0.427	-	0.427	11	Pass
5710	142		-1.132	-	-1.132	11	Pass
5755	151		-4.902	-	-4.902	30	Pass
5795	159		-4.823	-	-4.823	30	Pass

■ Sum Data of Ant.0 and Ant.1

■ TEST RESULTS

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result		
			Measured Power Density (dBm)	Limit (dBm)	Pass/Fail
5190	38	802.11n _HT40 (MIMO)	-1.80	9.99	Pass
5230	46		-0.43		Pass
5270	54		-0.12	9.89	Pass
5310	62		-0.10		Pass
5510	102		-3.12	9.73	Pass
5550	110		3.55		Pass
5710	142		2.34		Pass
5755	151		-0.64	29.09	Pass
5795	159		-0.79		Pass

■ TEST Plot for 802.11n_HT40_Ant.0

802.11n_HT40 UNII 1 BAND PSD CH 46



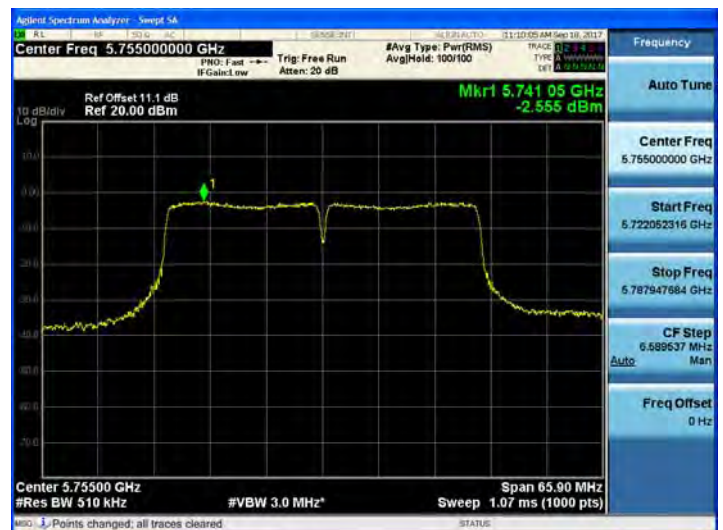
802.11n_HT40 UNII 2A BAND PSD CH 54



802.11n_HT40 UNII 2C BAND PSD CH 110



802.11n_HT40 UNII 3 BAND PSD CH 151



■ TEST Plot for 802.11n_HT40_Ant.1

802.11n_HT40 UNII 1 BAND PSD CH 46



802.11n_HT40 UNII 2A BAND PSD CH 62



802.11n_HT40 UNII 2C BAND PSD CH 110



802.11n_HT40 UNII 3 BAND PSD CH 159



Ant.0
■ TEST RESULTS
Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5190	38	802.11ac _VHT40	-4.743	-	-4.743	11	Pass
5230	46		-2.968	-	-2.968	11	Pass
5270	54		-2.800	-	-2.800	11	Pass
5310	62		-3.634	-	-3.634	11	Pass
5510	102		-6.509	-	-6.509	11	Pass
5550	110		0.837	-	0.837	11	Pass
5710	142		-0.204	-	-0.204	11	Pass
5755	151		-2.875	-	-2.875	30	Pass
5795	159		-2.823	-	-2.823	30	Pass

Ant.1
■ TEST RESULTS
Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5190	38	802.11ac _VHT40	-4.625	-	-4.625	11	Pass
5230	46		-3.586	-	-3.586	11	Pass
5270	54		-3.334	-	-3.334	11	Pass
5310	62		-4.314	-	-4.314	11	Pass
5510	102		-5.637	-	-5.637	11	Pass
5550	110		0.446	-	0.446	11	Pass
5710	142		-1.340	-	-1.340	11	Pass
5755	151		-4.431	-	-4.431	30	Pass
5795	159		-4.563	-	-4.563	30	Pass

■ Sum Data of Ant.0 and Ant.1

■ TEST RESULTS

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result		
			Measured Power Density (dBm)	Limit (dBm)	Pass/Fail
5190	38	802.11ac _VHT40	-1.67	9.99	Pass
5230	46		-0.26		Pass
5270	54		-0.05	9.89	Pass
5310	62		-0.96		Pass
5510	102		-3.05	9.73	Pass
5550	110		3.65		Pass
5710	142		2.26		Pass
5755	151		-0.61	29.09	Pass
5795	159		-0.64		Pass

■ TEST Plot for 802.11ac_VHT40_Ant.0

802.11ac_VHT40 UNII 1 BAND PSD CH 46



802.11ac_VHT40 UNII 2A BAND PSD CH 54



802.11ac_VHT40 UNII 2C BAND PSD CH 110



802.11ac_VHT40 UNII 3 BAND PSD CH 159



■ TEST Plot for 802.11ac_VHT40_Ant.1

802.11ac_VHT40 UNII 1 BAND PSD CH 46



802.11ac_VHT40 UNII 2A BAND PSD CH 54



802.11ac_VHT40 UNII 2C BAND PSD CH 110



802.11ac_VHT40 UNII 3 BAND PSD CH 151



Ant.0
■ TEST RESULTS
Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5210	42	802.11ac _VHT80	-7.480	-	-7.480	11	Pass
5290	58		-7.700	-	-7.700	11	Pass
5530	106		-8.396	-	-8.396	11	Pass
5690	138		-1.419	-	-1.419		Pass
5775	155		-5.487	-	-5.487	30	Pass

Ant.1
■ TEST RESULTS
Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5210	42	802.11ac _VHT80	-7.570	-	-7.570	11	Pass
5290	58		-7.762	-	-7.762	11	Pass
5530	106		-7.183	-	-7.183	11	Pass
5690	138		-2.484	-	-2.484		Pass
5775	155		-6.967	-	-6.967	30	Pass

☒ Sum Data of Ant.0 and Ant.1

☒ TEST RESULTS

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result		
			Measured Power Density (dBm)	Limit (dBm)	Pass/Fail
5210	42	802.11ac _VHT80	-4.51	9.99	Pass
5290	58		-4.72	9.89	Pass
5530	106		-4.76	9.73	Pass
5690	138		1.08		Pass
5775	155		-3.19	29.09	Pass

■ TEST Plot for 802.11ac_VHT80_Ant.0

802.11ac_VHT80 UNII 1 BAND PSD CH 42



802.11ac_VHT80 UNII 2A BAND PSD CH 58



802.11ac_VHT80 UNII 2C BAND PSD CH 138



802.11ac_VHT80 UNII 3 BAND PSD CH 155



■ TEST Plot for 802.11ac_VHT80_Ant.1

802.11ac_VHT80 UNII 1 BAND PSD CH 42



802.11ac_VHT80 UNII 2A BAND PSD CH 58



802.11ac_VHT80 UNII 2C BAND PSD CH 138



802.11ac_VHT80 UNII 3 BAND PSD CH 155



■ Straddle channels TEST RESULTS for 802.11a/n_HT20/ac_VHT20_Ant 0
Conducted Power Density Measurements (UNII 2C Band 5720MHz)

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5720	144	802.11a	-1.745	-	-1.745	11.00	Pass
		802.11n	-1.425	-	-1.425	11.00	Pass
		802.11ac	-1.272	-	-1.272	11.00	Pass

Conducted Power Density Measurements (UNII 3 Band 5720MHz)

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5720	144	802.11a	-4.867	-	-4.867	30.00	Pass
		802.11n	-4.638	-	-4.638	30.00	Pass
		802.11ac	-4.237	-	-4.237	30.00	Pass

☐ Straddle channels TEST Plot for 802.11a/n_HT20/ac_VHT20_Ant 0

802.11a UNII 2C Band PSD CH.144



802.11a UNII 3 Band PSD CH.144



802.11n_HT20 UNII 2C Band PSD CH.144



802.11n_HT20 UNII 3 Band PSD CH.144



802.11ac_VHT20 UNII 2C Band PSD CH.144



802.11ac_VHT20 UNII 3 Band PSD CH.144



■ Straddle channels TEST RESULTS for 802.11a/n_HT20/ac_VHT20_Ant 1
Conducted Power Density Measurements (UNII 2C Band 5720MHz)

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5720	144	802.11a	-3.135	-	-3.135	11.00	Pass
		802.11n	-3.430	-	-3.430	11.00	Pass
		802.11ac	-3.396	-	-3.396	11.00	Pass

Conducted Power Density Measurements (UNII 3 Band 5720MHz)

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5720	144	802.11a	-6.199	-	-6.199	30.00	Pass
		802.11n	-6.421	-	-6.421	30.00	Pass
		802.11ac	-6.592	-	-6.592	30.00	Pass

■ Straddle channels TEST Plot for 802.11a/n_HT20/ac_VHT20_Ant 1

802.11a UNII 2C Band PSD CH.144



802.11a UNII 3 Band PSD CH.144



802.11n_HT20 UNII 2C Band PSD CH.144



802.11n_HT20 UNII 3 Band PSD CH.144



802.11ac_VHT20 UNII 2C Band PSD CH.144



802.11ac_VHT20 UNII 3 Band PSD CH.144



☒ **Straddle channels**

TEST RESULTS for 802.11a/n_HT20/ac_VHT20_Sum Data of Ant.0 and Ant.1 (UNII 2C)

Conducted Power Density Measurements (UNII 2C Band 5720MHz)

Frequency (MHz)	Channel No.	Mode	Test Result		
			Measured Power Density (dBm)	Limit (dBm)	Pass/Fail
5720	144	802.11a	-2.38	11.00	Pass
		802.11n	0.64	9.73	Pass
		802.11ac	0.74	9.73	Pass

TEST RESULTS for 802.11a/n_HT20/ac_VHT20_Sum Data of Ant.0 and Ant.1 (UNII 3)

Conducted Power Density Measurements (UNII 3 Band 5720MHz)

Frequency (MHz)	Channel No.	Mode	Test Result		
			Measured Power Density (dBm)	Limit (dBm)	Pass/Fail
5720	144	802.11a	-5.48	30.00	Pass
		802.11n	-2.47	29.09	Pass
		802.11ac	-2.32	29.09	Pass

■ Straddle channels TEST RESULTS for 802.11n_HT40/ac_VHT40_Ant 0
Conducted Power Density Measurements (UNII 2C Band 5710MHz)

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5710	142	802.11n	-0.208	-	-0.208	11.00	Pass
		802.11ac	0.155	-	0.155	11.00	Pass

Conducted Power Density Measurements (UNII 3 Band 5710MHz)

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5710	142	802.11n	-3.409	-	-3.409	30.00	Pass
		802.11ac	-3.549	-	-3.549	30.00	Pass

■ Straddle channels TEST Plot for 802.11n_HT40/ac_VHT40_Ant 0

802.11n_HT40 UNII 2C Band PSD CH.142



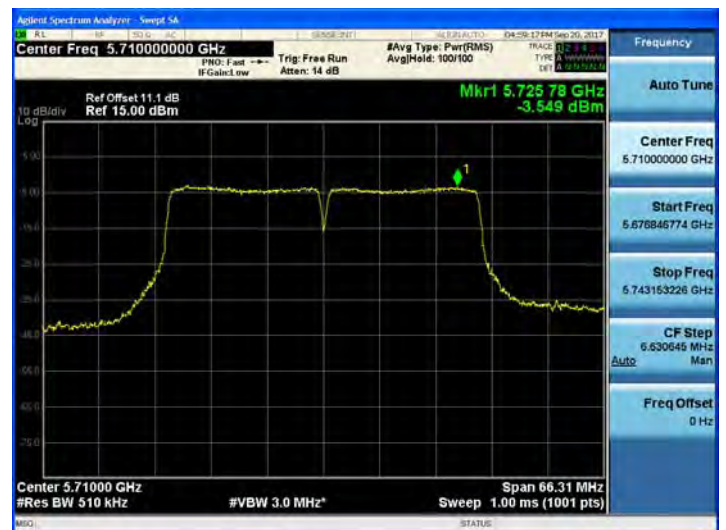
802.11n_HT40 UNII 3 Band PSD CH.142



802.11ac_VHT40 UNII 2C Band PSD CH.142



802.11ac_VHT40 UNII 3 Band PSD CH.142



■ Straddle channels TEST RESULTS for 802.11n_HT40/ac_VHT40_Ant 1
Conducted Power Density Measurements (UNII 2C Band 5710MHz)

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5710	142	802.11n	-1.354	-	-1.354	11.00	Pass
		802.11ac	-1.493	-	-1.493	11.00	Pass

Conducted Power Density Measurements (UNII 3 Band 5710MHz)

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5710	142	802.11n	-4.778	-	-4.778	30.00	Pass
		802.11ac	-4.770	-	-4.770	30.00	Pass

■ Straddle channels TEST Plot for 802.11n_HT40/ac_VHT40_Ant 1

802.11n_HT40 UNII 2C Band PSD CH.142



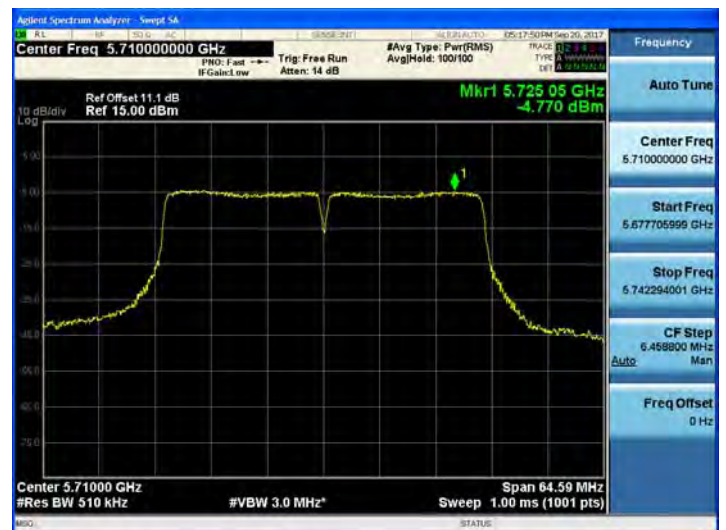
802.11n_HT40 UNII 3 Band PSD CH.142



802.11ac_VHT40 UNII 2C Band PSD CH.142



802.11ac_VHT40 UNII 3 Band PSD CH.142



■ Straddle channels

TEST RESULTS for 802.11n_HT40/ac_VHT40_Sum Data of Ant.0 and Ant.1 (UNII 2C)

Conducted Power Density Measurements (UNII 2C Band 5710MHz)

Frequency (MHz)	Channel No.	Mode	Test Result		
			Measured Power Density (dBm)	Limit (dBm)	Pass/Fail
5710	142	802.11n	2.25	9.73	Pass
		802.11ac	2.38	29.09	Pass

TEST RESULTS for 802.11n_HT40/ac_VHT40_Sum Data of Ant.0 and Ant.1 (UNII 3)

Conducted Power Density Measurements (UNII 3 Band 5710MHz)

Frequency (MHz)	Channel No.	Mode	Test Result		
			Measured Power Density (dBm)	Limit (dBm)	Pass/Fail
5710	142	802.11n	-1.06	9.73	Pass
		802.11ac	-1.13	29.09	Pass

Straddle channels TEST RESULTS_Ant 0

Conducted Power Density Measurements (UNII 2C Band 5690MHz)

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5690	138	802.11ac	-1.631	-	-1.631	11.00	Pass

Conducted Power Density Measurements (UNII 3 Band 5690MHz)

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5690	138	802.11ac	-5.236	-	-5.236	30.00	Pass

Straddle channels TEST Plot for 802.11ac_VHT80_Ant 0

802.11ac_VHT80 UNII 2C Band PSD CH.138



802.11ac_VHT80 UNII 3 Band PSD CH.138



Straddle channels TEST RESULTS_Ant 1

Conducted Power Density Measurements (UNII 2C Band 5690MHz)

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5690	138	802.11ac	-2.433	-	-2.433	11.00	Pass

Conducted Power Density Measurements (UNII 3 Band 5690MHz)

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5690	138	802.11ac	-6.715	-	-6.715	30.00	Pass

Straddle channels TEST Plot for 802.11ac_VHT80_Ant 1

802.11ac_VHT80 UNII 2C Band PSD CH.138



802.11ac_VHT80 UNII 3 Band PSD CH.138



■ Straddle channels

TEST RESULTS for 802.11ac_VHT80_Sum Data of Ant.0 and Ant.1 (UNII 2C)

Conducted Power Density Measurements (UNII 2C Band 5690MHz)

Frequency (MHz)	Channel No.	Mode	Test Result		
			Measured Power Density (dBm)	Limit (dBm)	Pass/Fail
5690	138	802.11ac	0.99	9.73	Pass

TEST RESULTS for 802.11ac_VHT80_Sum Data of Ant.0 and Ant.1 (UNII 3)

Conducted Power Density Measurements (UNII 3 Band 5690MHz)

Frequency (MHz)	Channel No.	Mode	Test Result		
			Measured Power Density (dBm)	Limit (dBm)	Pass/Fail
5690	138	802.11ac	-2.93	29.09	Pass

9.6 FREQUENCY STABILITY

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

[Ant.0]

20 MHz BW

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,180,000,000 Hz
CHANNEL:	36
REFERENCE VOLTAGE:	3.3 VDC

Voltage	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.300	+20(Ref)	5180024.21	24.21
100%		-30	5180011.27	11.27
100%		-20	5180018.64	18.64
100%		-10	5180026.33	26.33
100%		0	5180032.60	32.60
100%		+10	5180039.27	39.27
100%		+30	5180050.59	50.59
100%		+40	5180056.73	56.73
100%		+50	5180062.38	62.38
Max.	3.600	+20	5180036.34	36.34
Min.	3.135	+20	5180021.24	21.24

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.