

FCC/ISED UNII REPORT

Certification

Applicant Name:

SAMSUNG Electronics Co., Ltd.

Date of Issue:

February 24, 2017

Test Site/Location:

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

Address:

129, Samsung-ro, Yeongtong-gu, Suwon-si,
Gyeonggi-do, 16677, Rep. of Korea

Report No.: HCT-R-1702-F031

HCT FRN: 0005866421

ISED Registration Number: 5944A-6

FCC ID	: A3LSMW723
IC	: 649E-SMW723
APPLICANT	: SAMSUNG Electronics Co., Ltd.

According to the Evaluation report, all of the data contained herein is reused from the reference FCC ID : A3LSMW727V report.

FCC /IC Model: SM-W723

FCC Additional model(s): SM-W720, SM-W720X

EUT Type: Tablet

Modulation type OFDM

FCC Classification: Unlicensed National Information Infrastructure(UNII)

FCC Rule Part(s): Part 15.407

ISED Rule Part(s): RSS-247 Issue 1(May 2015) , 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	11.82	11.76	14.80
	802.11n	20	5180 – 5240	10.94	10.91	13.94
	802.11n	40	5190 - 5230	9.46	9.54	12.51
	802.11ac	20	5180 – 5240	10.80	10.79	13.81
	802.11ac	40	5190 - 5230	9.51	9.44	12.49
	802.11ac	80	5210	9.84	10.11	12.99
UNII2A	802.11a	20	5260 – 5320	11.81	11.80	14.82
	802.11n	20	5260 – 5320	10.93	11.03	13.99
	802.11n	40	5270 – 5310	9.64	9.74	12.70
	802.11ac	20	5260 – 5320	10.82	10.72	13.78
	802.11ac	40	5270 – 5310	9.66	9.69	12.69
	802.11ac	80	5290	9.88	10.13	13.02
UNII2C	802.11a	20	5500 – 5700	11.81	12.14	14.99
	802.11n	20	5500 – 5700	10.99	11.26	14.14
	802.11n	40	5510 – 5670	9.84	10.03	12.95
	802.11ac	20	5500 – 5700	10.76	11.07	13.93
	802.11ac	40	5510 – 5670	9.75	9.99	12.88
	802.11ac	80	5530	9.88	9.95	12.93
UNII3	802.11a	20	5745 – 5825	11.89	12.11	15.01
	802.11n	20	5745 – 5825	10.94	11.01	13.99
	802.11n	40	5755 – 5795	10.01	9.82	12.93
	802.11ac	20	5745 – 5825	10.85	10.97	13.92
	802.11ac	40	5755 – 5795	10.00	9.77	12.90
	802.11ac	80	5775	9.49	10.00	12.76

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.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S. C.853(a)



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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-1702-F031	February 24, 2017	- First Approval Report

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1. GENERAL INFORMATION

Applicant: SAMSUNG Electronics Co.,Ltd.
Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
FCC ID: A3LSMW723
IC: 649E-SMW723
EUT Type: Tablet
FCC/IC Model: SM-W723
FCC Additional model(s): SM-W720, SM-W720X
Date(s) of Tests: December 22, 2016 ~ February 3, 2017
Place of Tests: HCT Co., Ltd.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

2. EUT DESCRIPTION

FCC/IC Model	SM-W723	
FCC Additional model(s)	SM-W720, SM-W720X	
EUT Type	Tablet	
Power Supply	DC 7.7 V	
Battery Information	Model: EB-BW720ABA Type: Li-ion Battery	
Frequency Range	TX_20 MHz BW:	5180 MHz - 5240 MHz (UNII 1) / 5260 MHz - 5320 MHz (UNII 2A)/ 5500 MHz - 5700 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 - 5670 MHz (UNII 2C) / 5755 MHz - 5795 MHz (UNII 3)
	80 MHz BW:	5210 MHz (UNII 1) / 5290 MHz (UNII 2A)/ 5530 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 - 5700 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 - 5670 MHz (UNII 2C) / 5755 MHz - 5795 MHz (UNII 3)
	80 MHz BW:	5210 MHz (UNII 1)/ 5290 MHz (UNII 2A)/ 5530 MHz (UNII 2C)/ 5775 MHz (UNII 3)
Modulation Type	OFDM(802.11a, 802.11n, 802.11ac)	
Antenna Specification	Manufacturer: Ethertronics, Inc. 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(CDD,SDM)	Ant 0 & 1

Note : In case of radiation test, we have done all test case. Worst case is MIMO(CDD, Ant 0 & 1).

So, we attached the results of only worst case.

3. TEST METHODOLOGY

The measurement procedure described in FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03 dated August 22, 2016 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 1.

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 v01r03)

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 / RSS-Gen(Issue 4) Section 8.3

“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, 802.11a/n/ac)

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

▪ If all transmit signals are completely uncorrelated with each other (SDM, 802.11n/ac)

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

■ Antenna Gain

5GHz Band (UNII 1)

Antenna Gain	Ant 0	-0.51 dBi
	Ant 1	-2.61 dBi
Directional Antenna Gain	Ant 0 & 1	1.51 dBi

5GHz Band (UNII 2A)

Antenna Gain	Ant 0	-0.81 dBi
	Ant 1	-2.85 dBi
Directional Antenna Gain	Ant 0 & 1	1.24 dBi

5GHz Band (UNII 2C)

Antenna Gain	Ant 0	-2.49 dBi
	Ant 1	-2.53 dBi
Directional Antenna Gain	Ant 0 & 1	0.50 dBi

5GHz Band (UNII 3)

Antenna Gain	Ant 0	-1.93 dBi
	Ant 1	-2.26 dBi
Directional Antenna Gain	Ant 0 & 1	0.92 dBi

Note : This EUT is supported CDD (802.11a/n/ac) and SDM (802.11n/ac). So, we applied the CDD mode for antenna gain. Because highest gain is CDD mode and worst case is CDD mode.

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)	6.07

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) <-17 dBm/MHz EIRP within 5715-5725 MHz and 5850-5860 MHz (UNII3) <-27 dBm/MHz EIRP outside 5715-5860 MHz (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

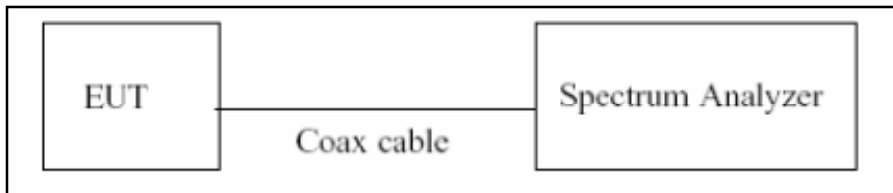
Test Description	IC Part Section(s)	Test Limit	Test Condition	Test Result
99% Bandwidth(IC)	RSS-Gen, 6.6	N/A	CONDUCTED	PASS
6 dB Bandwidth	RSS-247, 6.2.4.1)	> 500 kHz (5725~5850 MHz)		PASS
Maximum Conducted Output Power,	RSS-247, 6.2	< 250 mW or $11+10 \log_{10}$ (BW) dBm (5250-5350 MHz) < 250 mW or $11+10 \log_{10}$ (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)	<-17 dBm/MHz EIRP within 5715-5725 MHz and 5850-5860 MHz, <-27 dBm/MHz EIRP outside 5715-5860 MHz (5725~5850 MHz)		
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 v01r03)

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	Data Rate (Mbps)	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11a	6	2.064	2.181	0.94620185	0.240
	9	1.383	1.495	0.92542137	0.337
	12	1.043	1.160	0.89985340	0.458
	18	0.704	0.820	0.85865969	0.662
	24	0.532	0.643	0.82726559	0.824
	36	0.364	0.475	0.76641104	1.155
	48	0.275	0.388	0.70876289	1.495
	54	0.248	0.360	0.68888889	1.619
Mode	MCS INDEX	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11n_HT20	0	1.925	2.040	0.94371997	0.252
	1	0.980	1.090	0.89875275	0.464
	2	0.668	0.779	0.85723615	0.669
	3	0.508	0.624	0.81477514	0.890
	4	0.352	0.471	0.74766333	1.263
	5	0.272	0.383	0.71061961	1.484
	6	0.248	0.359	0.69056790	1.608
	7	0.228	0.349	0.65349582	1.848
802.11n_HT40 [ANT 0]	0	0.947	1.052	0.90061137	0.455
	1	0.492	0.601	0.81836327	0.871
	2	0.340	0.450	0.75622776	1.213
	3	0.264	0.370	0.71428571	1.461
	4	0.188	0.298	0.63250958	1.989
	5	0.153	0.257	0.59304518	2.269
	6	0.140	0.245	0.57296027	2.419
	7	0.128	0.238	0.53863297	2.687
802.11n_HT40 [ANT 1]	0	0.947	1.056	0.89696970	0.472
	1	0.493	0.596	0.82629108	0.829
	2	0.341	0.445	0.76519991	1.162
	3	0.264	0.371	0.71105374	1.481
	4	0.188	0.293	0.64360826	1.914
	5	0.152	0.257	0.59188690	2.278
	6	0.141	0.245	0.57393513	2.411
	7	0.128	0.238	0.53866153	2.687

[ANT 0]

Mode	MCS INDEX	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11ac_VHT20	MCS 0	1.933	2.045	0.94491842	0.246
	MCS 1	0.988	1.093	0.90342052	0.441
	MCS 2	0.672	0.777	0.86486486	0.631
	MCS 3	0.516	0.622	0.82892048	0.815
	MCS 4	0.356	0.461	0.77197674	1.124
	MCS 5	0.280	0.386	0.72584120	1.392
	MCS 6	0.252	0.357	0.70631002	1.510
	MCS 7	0.232	0.337	0.68894769	1.618
	MCS 8	0.200	0.310	0.64525070	1.903
802.11ac_VHT40	MCS 0	0.954	1.062	0.89759036	0.469
	MCS 1	0.496	0.601	0.82517483	0.835
	MCS 2	0.343	0.454	0.75720238	1.208
	MCS 3	0.268	0.373	0.71750153	1.442
	MCS 4	0.192	0.297	0.64669261	1.893
	MCS 5	0.156	0.266	0.58755632	2.310
	MCS 6	0.144	0.249	0.57881977	2.375
	MCS 7	0.132	0.238	0.55593795	2.550
	MCS 8	0.116	0.221	0.52495482	2.799
	MCS 9	0.112	0.217	0.51600845	2.873
802.11ac_VHT80	MCS 0	0.600	0.705	0.85031192	0.704
	MCS 1	0.320	0.424	0.75471698	1.222
	MCS 2	0.228	0.333	0.68511640	1.642
	MCS 3	0.180	0.286	0.62888811	2.014
	MCS 4	0.136	0.240	0.56613803	2.471
	MCS 5	0.112	0.217	0.51657159	2.869
	MCS 6	0.104	0.211	0.49397408	3.063
	MCS 7	0.096	0.203	0.47291644	3.252
	MCS 8	0.088	0.183	0.48036945	3.184
	MCS 9	0.084	0.180	0.46588291	3.317

[ANT 1]

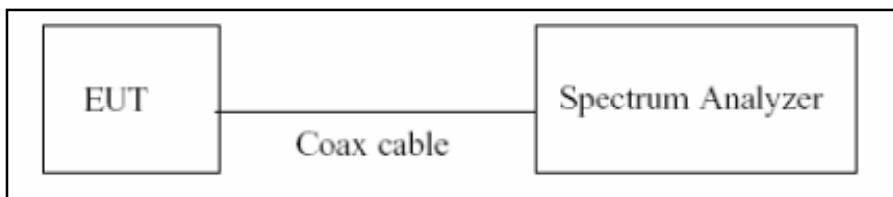
Mode	MCS INDEX	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11ac_VHT20	MCS 0	1.932	2.033	0.95000320	0.223
	MCS 1	0.988	1.091	0.90530334	0.432
	MCS 2	0.672	0.777	0.86486486	0.631
	MCS 3	0.517	0.626	0.82550336	0.833
	MCS 4	0.356	0.461	0.77125450	1.128
	MCS 5	0.280	0.385	0.72815597	1.378
	MCS 6	0.252	0.359	0.70248024	1.534
	MCS 7	0.232	0.337	0.68838038	1.622
	MCS 8	0.200	0.305	0.65573770	1.833
802.11ac_VHT40	MCS 0	0.953	1.056	0.90208333	0.448
	MCS 1	0.496	0.601	0.82641464	0.828
	MCS 2	0.344	0.453	0.75889894	1.198
	MCS 3	0.268	0.382	0.70249459	1.534
	MCS 4	0.192	0.297	0.64691246	1.892
	MCS 5	0.156	0.261	0.59780545	2.234
	MCS 6	0.144	0.249	0.57743575	2.385
	MCS 7	0.132	0.237	0.55622630	2.547
	MCS 8	0.116	0.222	0.52258065	2.818
	MCS 9	0.112	0.217	0.51535241	2.879
802.11ac_VHT80	MCS 0	0.599	0.703	0.85258964	0.693
	MCS 1	0.320	0.425	0.75329567	1.230
	MCS 2	0.228	0.333	0.68509615	1.642
	MCS 3	0.180	0.286	0.63025210	2.005
	MCS 4	0.136	0.241	0.56512251	2.479
	MCS 5	0.112	0.217	0.51470791	2.884
	MCS 6	0.104	0.211	0.49494801	3.054
	MCS 7	0.096	0.203	0.47382121	3.244
	MCS 8	0.088	0.195	0.45082004	3.460
	MCS 9	0.084	0.189	0.44360891	3.530

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 v01r03, 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 v01r03)

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 v01r03)

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	18.68	N/A	Pass
5200	40	18.35	N/A	Pass
5240	48	18.50	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	18.45	N/A	Pass
5300	60	18.58	N/A	Pass
5320	64	18.54	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

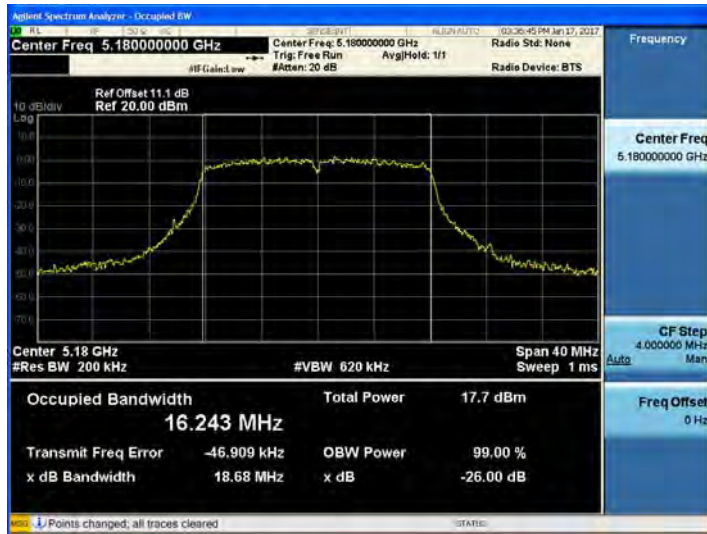
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	18.79	N/A	Pass
5580	116	18.47	N/A	Pass
5700	140	18.69	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

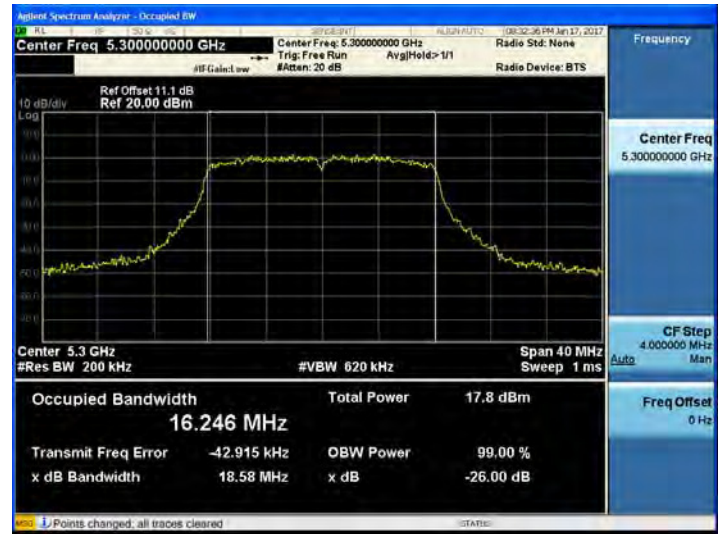
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	18.54	N/A	Pass
5785	157	18.40	N/A	Pass
5825	165	18.73	N/A	Pass

TEST Plot for Ant.0_802.11a

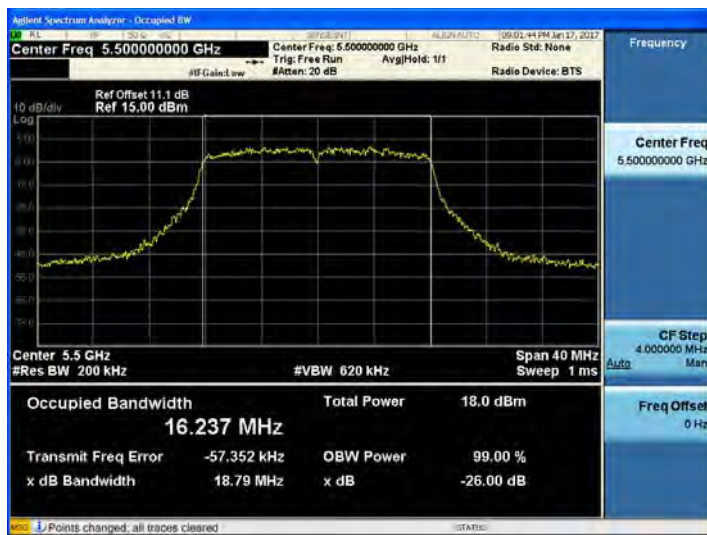
802.11a UNII 1 BAND 26dB Bandwidth (CH 36)



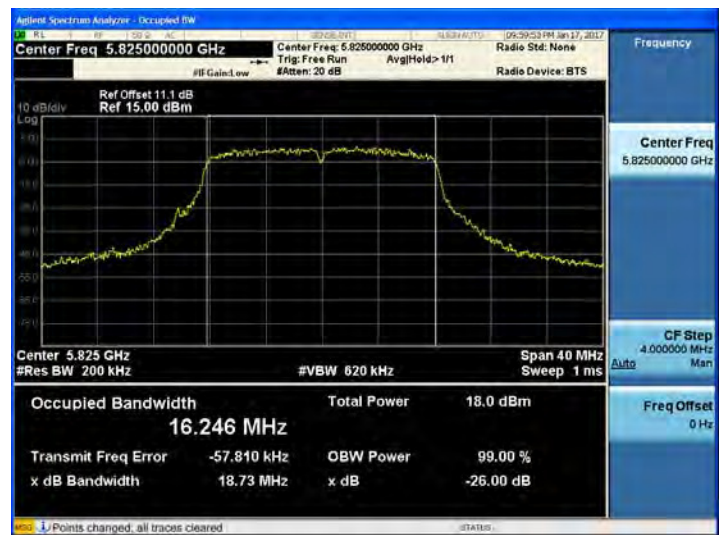
802.11a UNII 2A BAND 26dB Bandwidth (CH 60)



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



802.11a 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.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	18.73	N/A	Pass
5200	40	18.28	N/A	Pass
5240	48	18.46	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	18.60	N/A	Pass
5300	60	18.60	N/A	Pass
5320	64	18.71	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

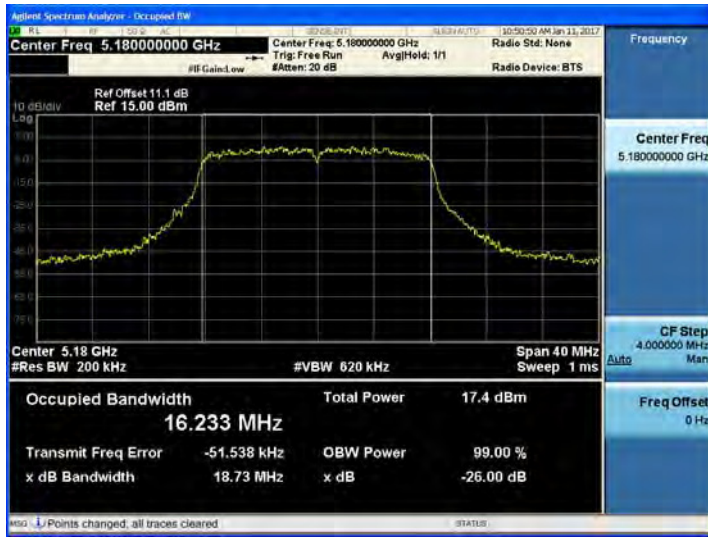
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	18.53	N/A	Pass
5580	116	18.76	N/A	Pass
5700	140	18.54	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

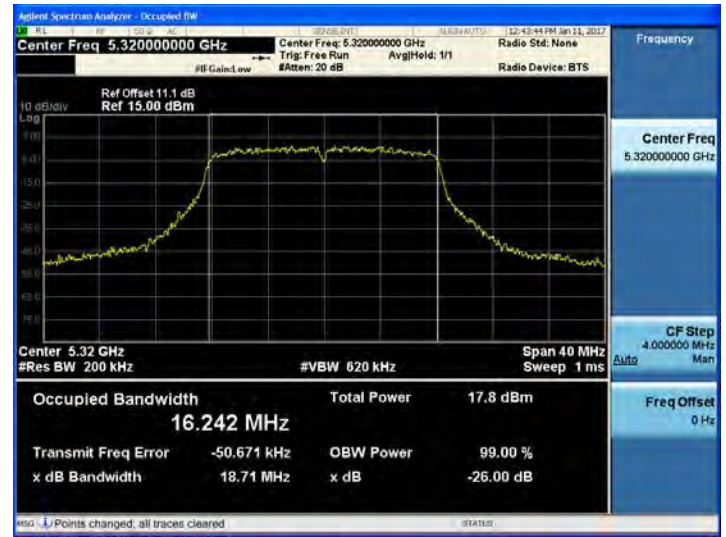
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	18.70	N/A	Pass
5785	157	18.61	N/A	Pass
5825	165	18.64	N/A	Pass

TEST Plot for Ant.1_802.11a

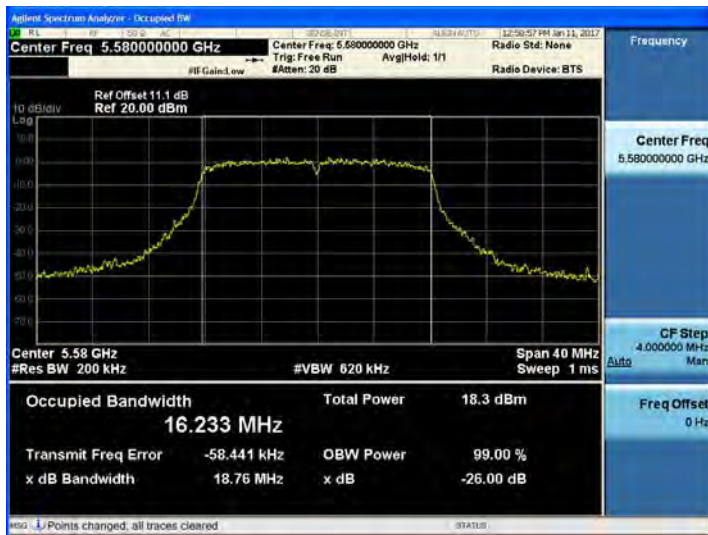
802.11a UNII 1 BAND 26dB Bandwidth (CH36)



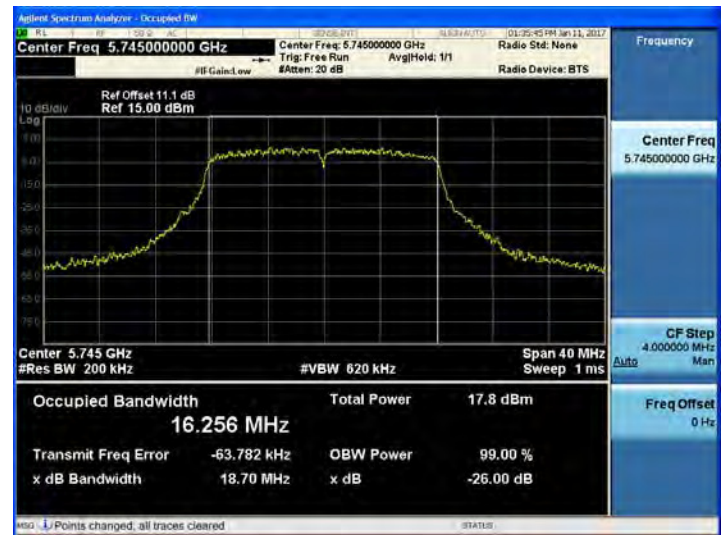
802.11a UNII 2A BAND 26dB Bandwidth (CH 64)



802.11a UNII 2C BAND 26dB Bandwidth (CH116)



802.11a 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.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	19.67	N/A	Pass
5200	40	19.50	N/A	Pass
5240	48	19.58	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	19.59	N/A	Pass
5300	60	19.41	N/A	Pass
5320	64	19.78	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT20

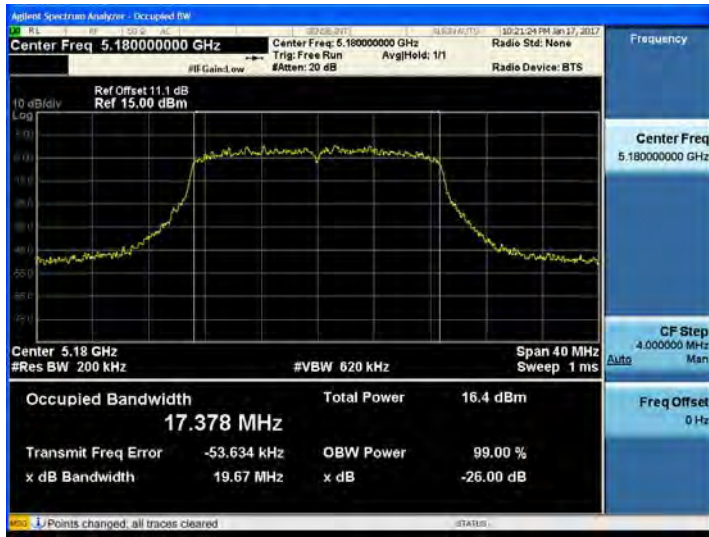
802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	19.60	N/A	Pass
5580	116	19.48	N/A	Pass
5700	140	19.45	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT20

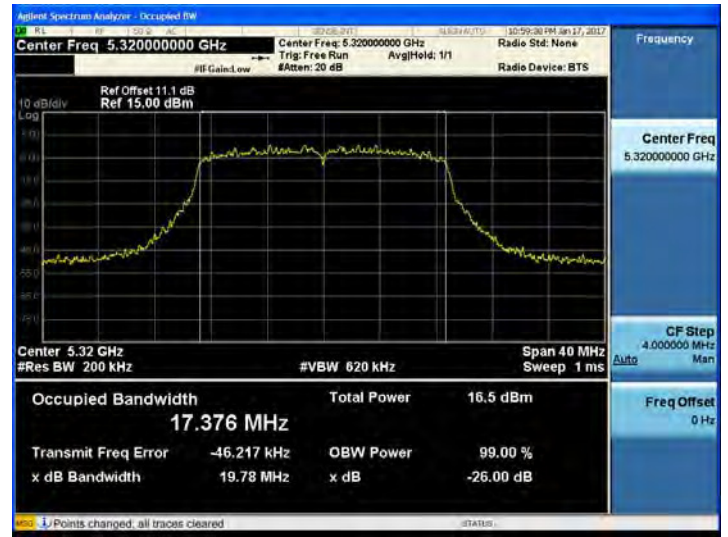
802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	19.60	N/A	Pass
5785	157	19.52	N/A	Pass
5825	165	19.55	N/A	Pass

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 64)



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	19.74	N/A	Pass
5200	40	19.49	N/A	Pass
5240	48	19.49	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	19.53	N/A	Pass
5300	60	19.50	N/A	Pass
5320	64	19.73	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT20

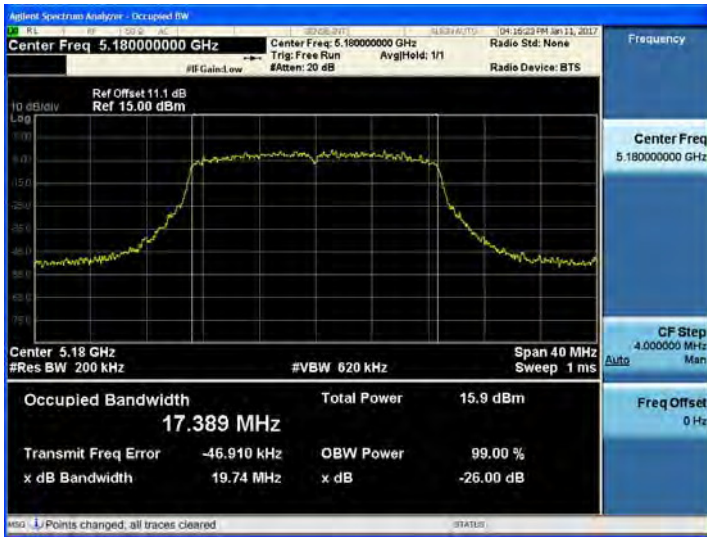
802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	19.75	N/A	Pass
5580	116	19.73	N/A	Pass
5700	140	19.49	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT20

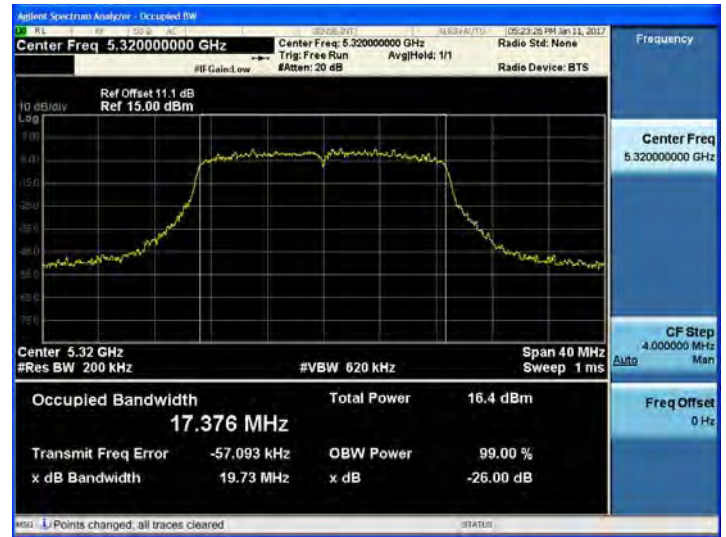
802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	19.72	N/A	Pass
5785	157	19.72	N/A	Pass
5825	165	19.67	N/A	Pass

■ TEST Plot for Ant.1_802.11n_HT20

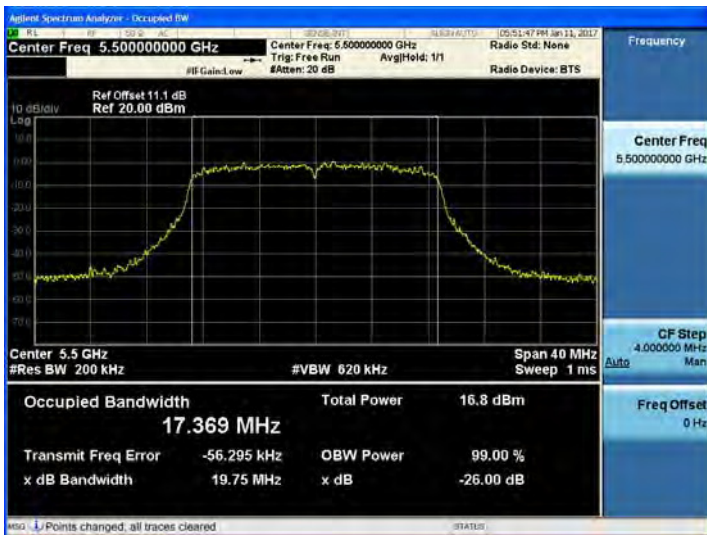
802.11n_HT20 UNII 1 BAND 26dB Bandwidth(CH 36)



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 149)



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	19.63	N/A	Pass
5200	40	19.69	N/A	Pass
5240	48	19.69	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	19.53	N/A	Pass
5300	60	19.61	N/A	Pass
5320	64	19.75	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT20

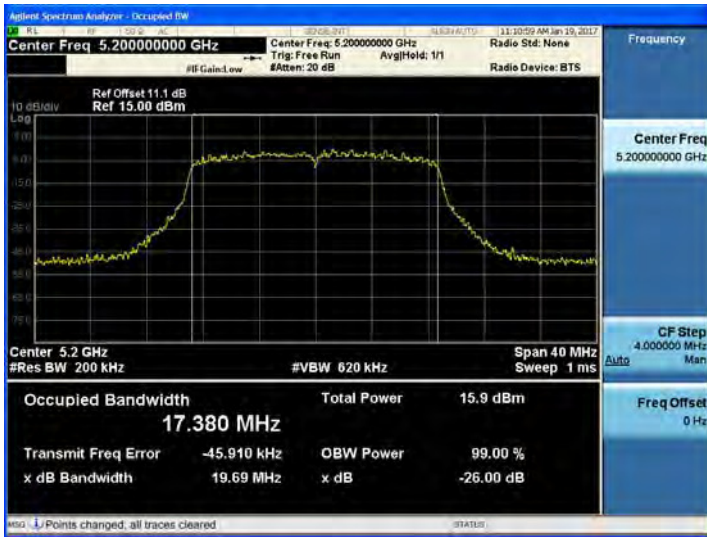
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	19.51	N/A	Pass
5580	116	19.68	N/A	Pass
5700	140	19.55	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT20

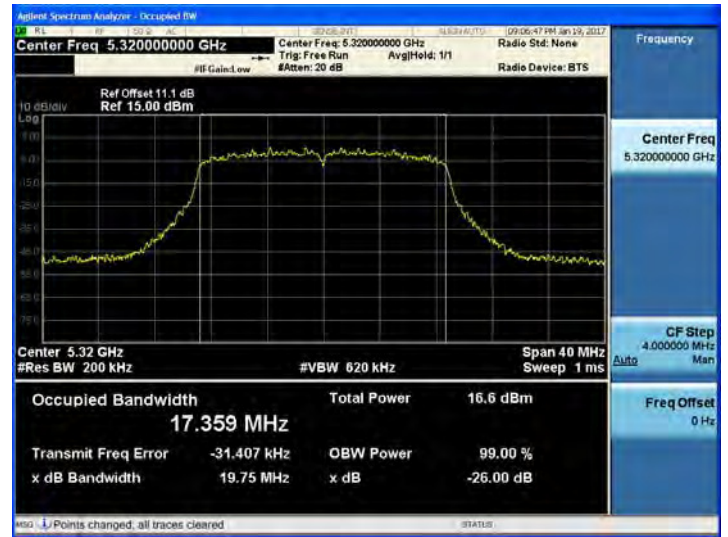
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	19.60	N/A	Pass
5785	157	19.65	N/A	Pass
5825	165	19.53	N/A	Pass

TEST Plot for Ant.0_ 802.11ac_VHT20

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



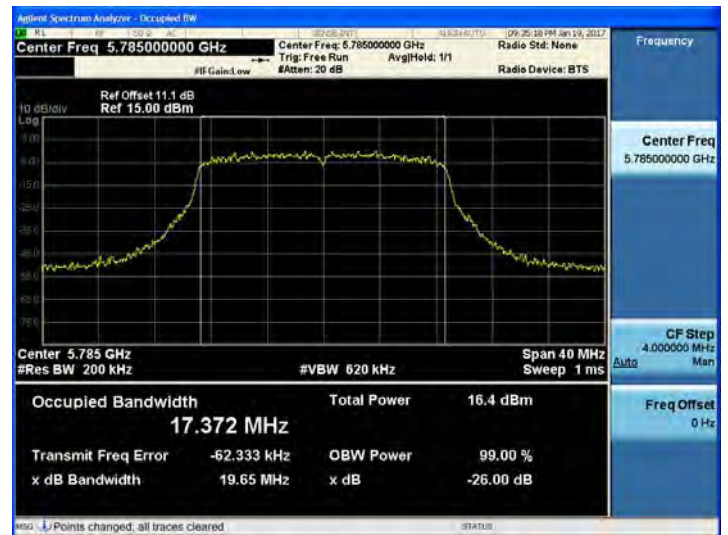
802.11ac_VHT20 UNII 2A BAND 26dB Bandwidth(CH 64)



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



802.11ac_VHT20 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_ 802.11ac_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	19.55	N/A	Pass
5200	40	19.68	N/A	Pass
5240	48	19.65	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	19.78	N/A	Pass
5300	60	19.75	N/A	Pass
5320	64	19.56	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT20

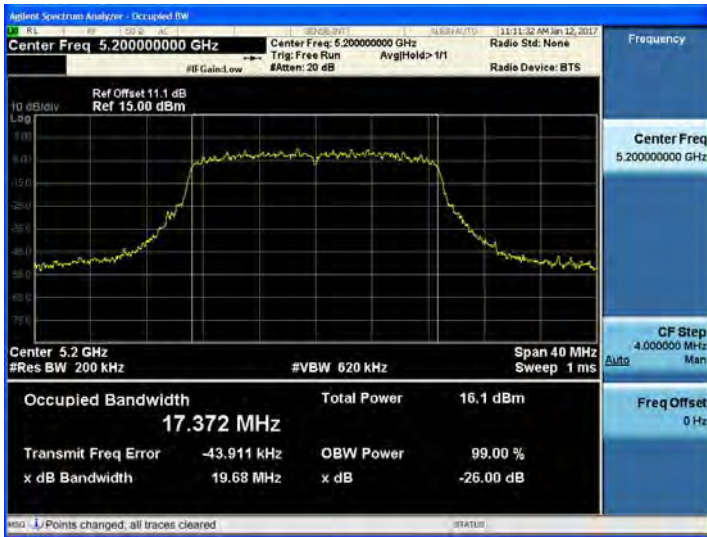
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	19.51	N/A	Pass
5580	116	19.63	N/A	Pass
5700	140	19.62	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT20

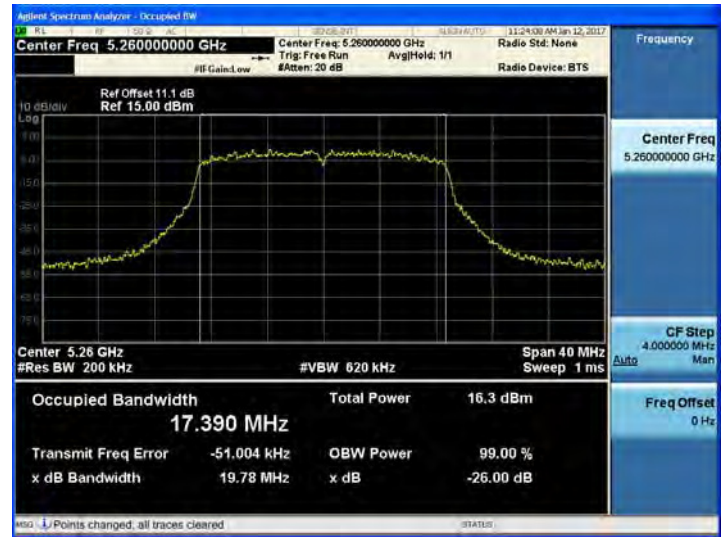
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	19.61	N/A	Pass
5785	157	19.61	N/A	Pass
5825	165	19.62	N/A	Pass

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 52)



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



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	40.04	N/A	Pass
5230	46	39.86	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	39.90	N/A	Pass
5310	62	39.83	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT40

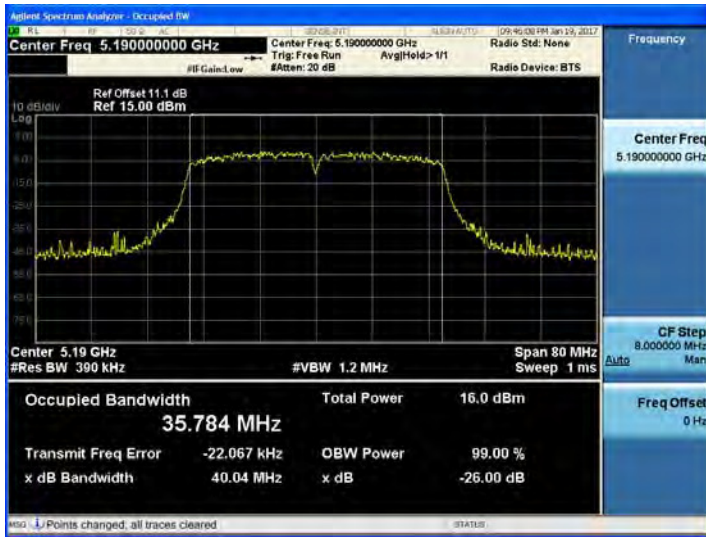
802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	40.20	N/A	Pass
5550	110	39.80	N/A	Pass
5670	134	39.85	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT40

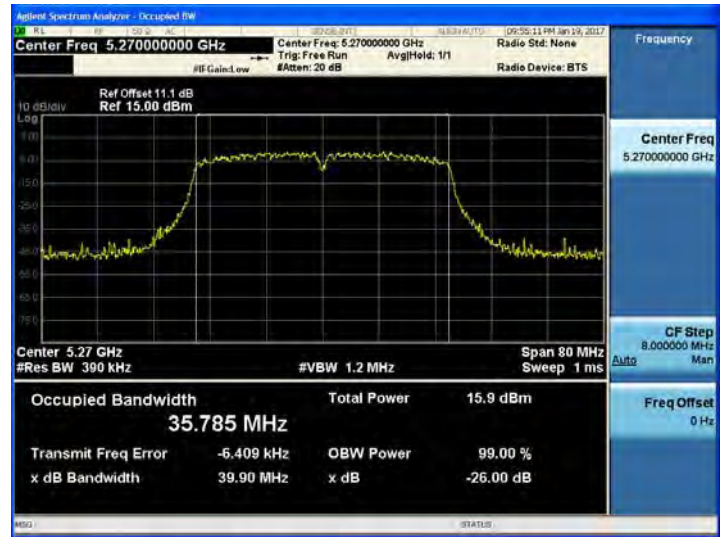
802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	39.78	N/A	Pass
5795	159	40.28	N/A	Pass

■ TEST Plot for Ant.0_802.11n_HT40

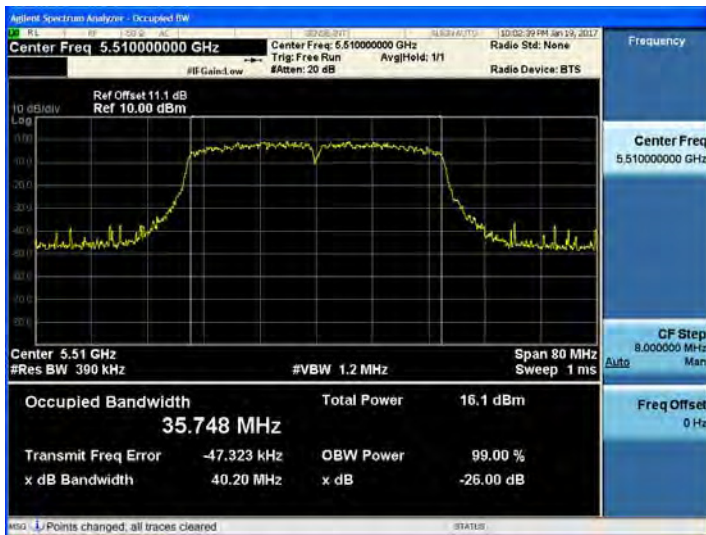
802.11n_HT40 UNII 1 BAND 26dB Bandwidth(CH 38)



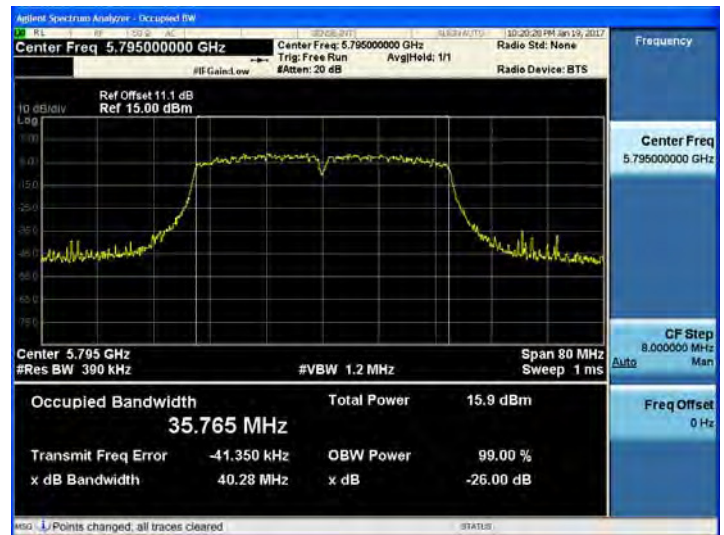
802.11n_HT40 UNII 2A BAND 26dB Bandwidth (CH 54)



802.11n_HT40 UNII 2C BAND 26dB Bandwidth(CH 102)



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.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	39.95	N/A	Pass
5230	46	40.06	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	40.25	N/A	Pass
5310	62	40.04	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_HT40

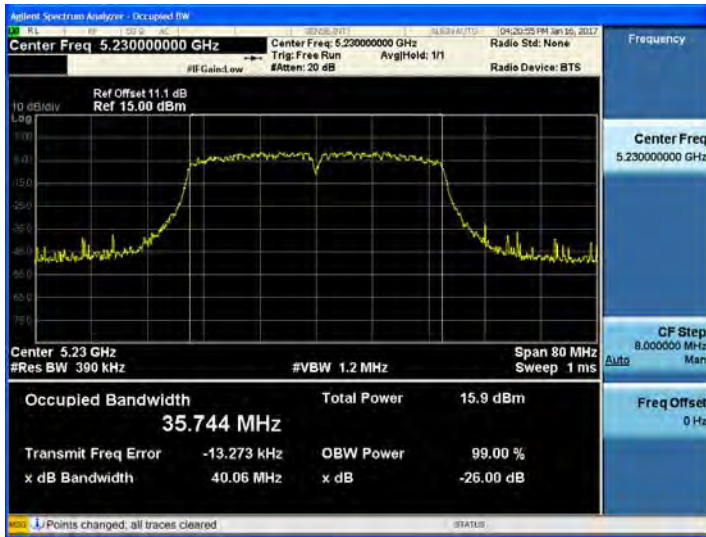
802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	40.31	N/A	Pass
5550	110	40.04	N/A	Pass
5670	134	39.82	N/A	Pass

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	39.69	N/A	Pass
5795	159	39.54	N/A	Pass

TEST Plot for Ant.1_802.11n_HT40

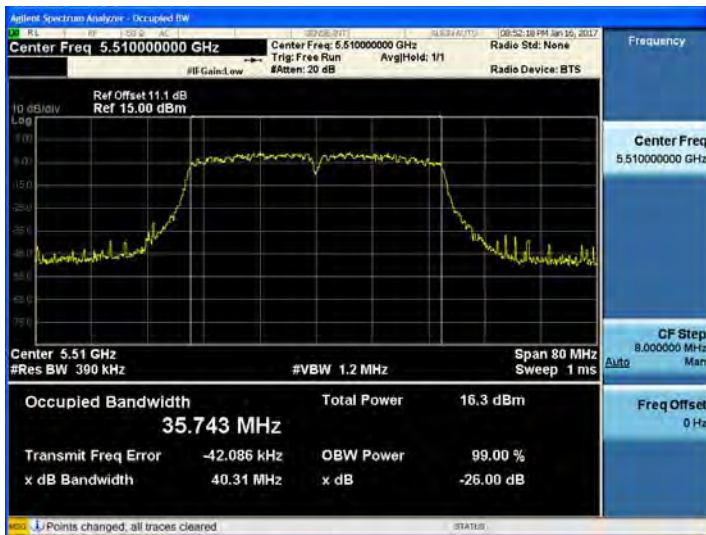
802.11n_HT40 UNII 1 BAND 26dB Bandwidth(CH 46)



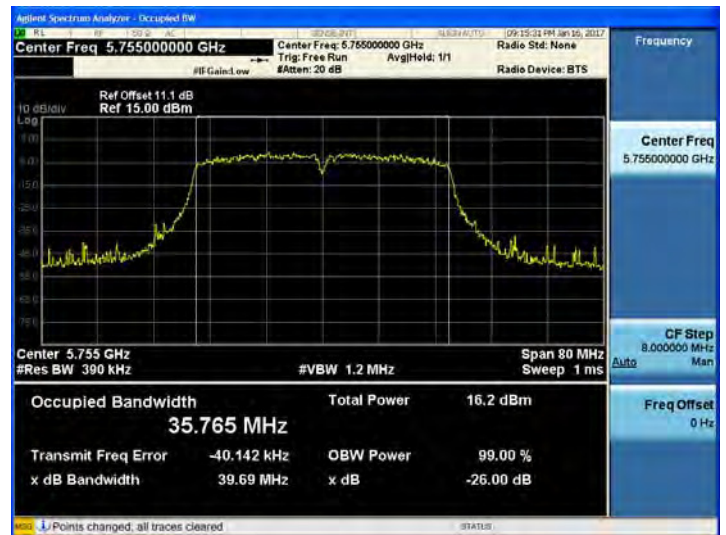
802.11n_HT40 UNII 2A BAND 26dB Bandwidth (CH 54)



802.11n_HT40 UNII 2C BAND 26dB Bandwidth(CH 102)



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.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	39.70	N/A	Pass
5230	46	39.77	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	39.90	N/A	Pass
5310	62	39.80	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT40

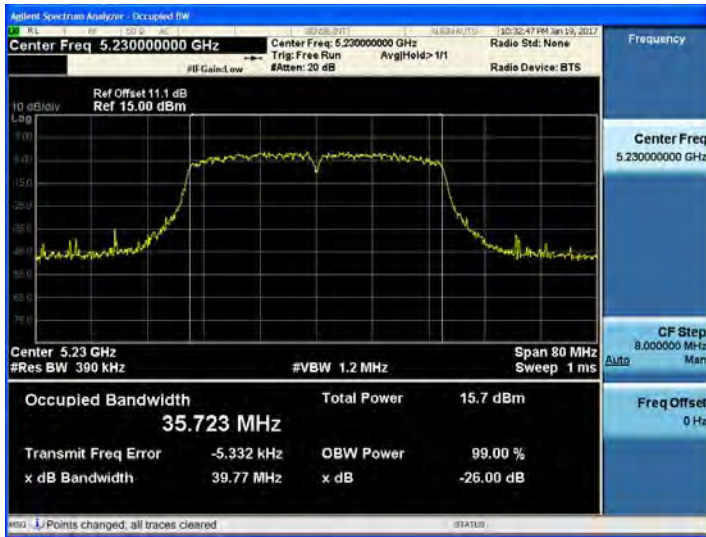
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	40.12	N/A	Pass
5550	110	39.49	N/A	Pass
5670	134	39.66	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT40

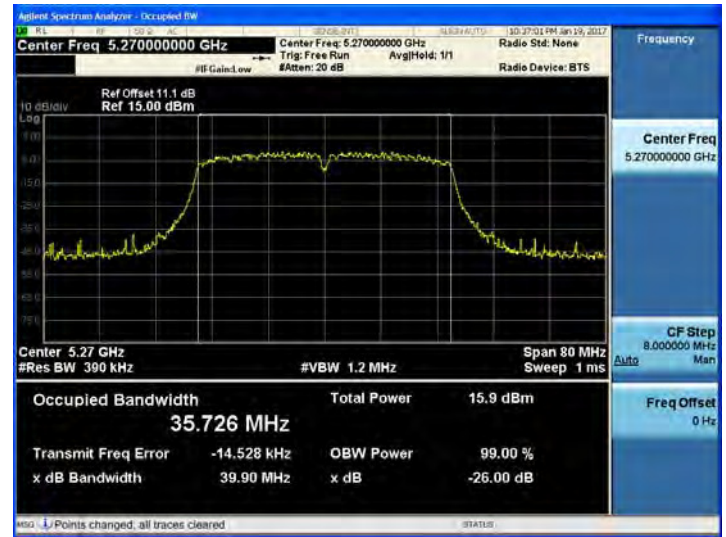
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	39.87	N/A	Pass
5795	159	39.86	N/A	Pass

■ TEST Plot for Ant.0_802.11ac_VHT40

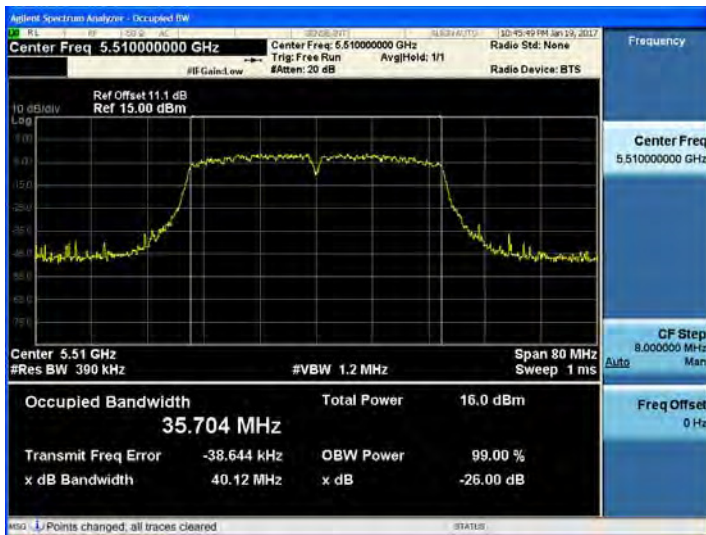
802.11ac_VHT40 UNII 1 BAND 26dB Bandwidth(CH 46)



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



802.11ac_VHT40 UNII 2C BAND 26dB Bandwidth(CH 102)



802.11ac_VHT40 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_802.11ac_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	39.98	N/A	Pass
5230	46	40.19	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	40.18	N/A	Pass
5310	62	40.05	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT40

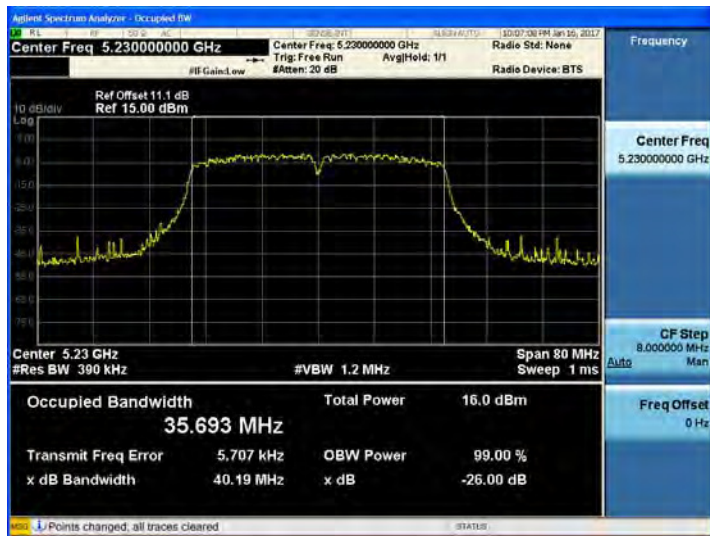
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	40.13	N/A	Pass
5550	110	39.94	N/A	Pass
5670	134	39.84	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT40

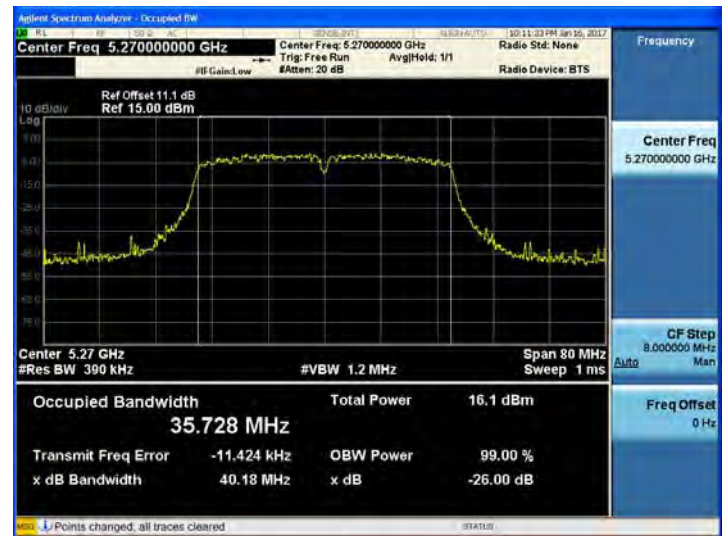
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	39.84	N/A	Pass
5795	159	40.12	N/A	Pass

■ TEST Plot for Ant.1_802.11ac_VHT40

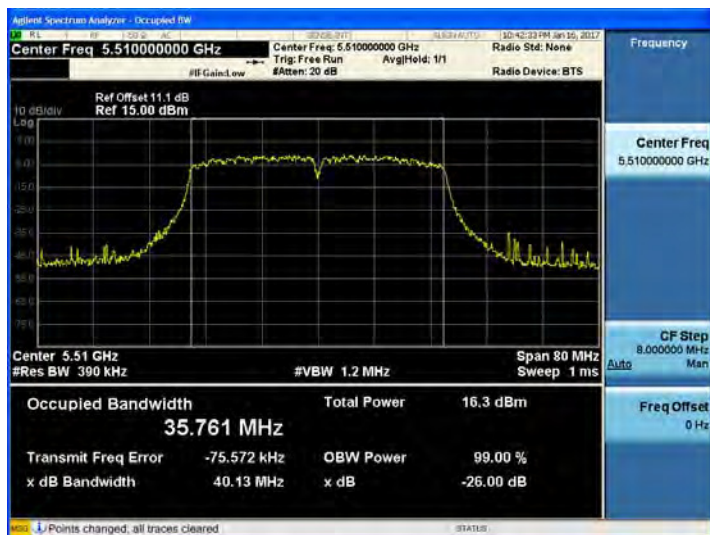
802.11ac_VHT40 UNII 1 BAND 26dB Bandwidth(CH 46)



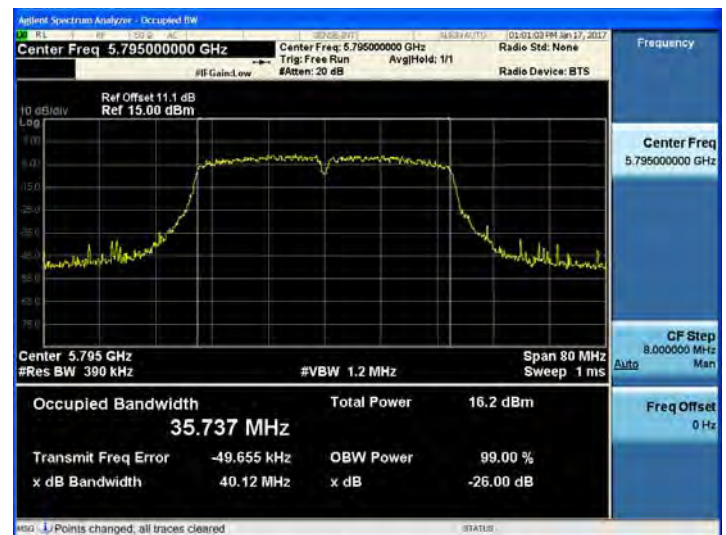
802.11ac_VHT40 UNII 2A BAND 26dB Bandwidth (CH 54)



802.11ac_VHT40 UNII 2C BAND 26dB Bandwidth(CH 102)



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	82.33	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	81.88	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	81.32	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT80

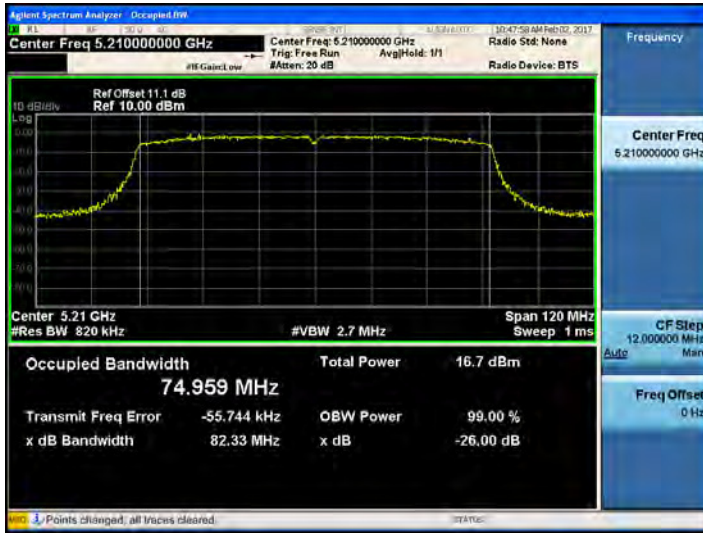
802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	81.84	N/A	Pass

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

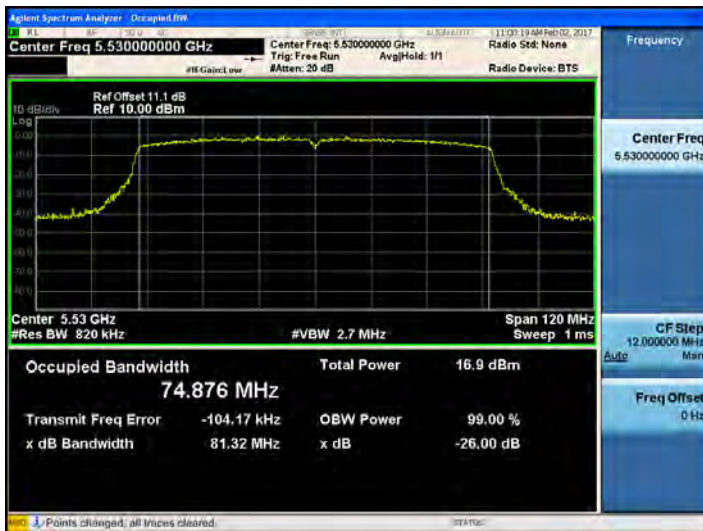
802.11ac_VHT80 UNII 1 BAND 26dB Bandwidth(CH 42)



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



802.11ac_VHT80 UNII 2C BAND 26dB Bandwidth(CH 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.

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	81.65	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	81.59	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	81.94	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_VHT80

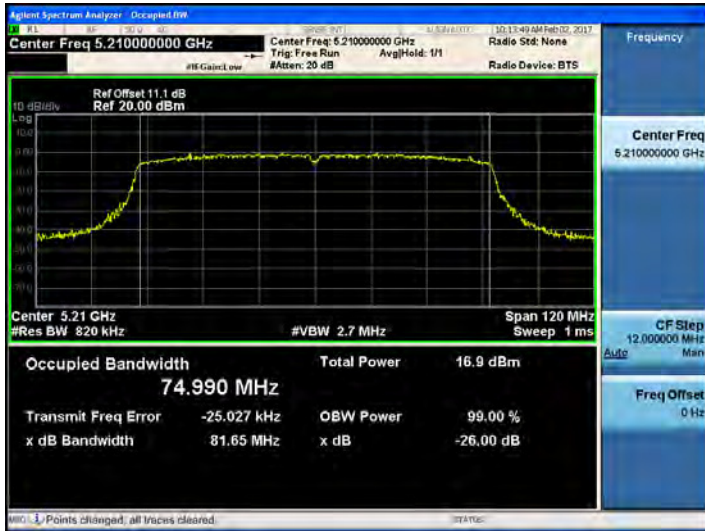
802.11ac_VHT80 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	82.54	N/A	Pass

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	15.36	0.5	Pass
5785	157	15.49	0.5	Pass
5825	165	15.20	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11n_HT20

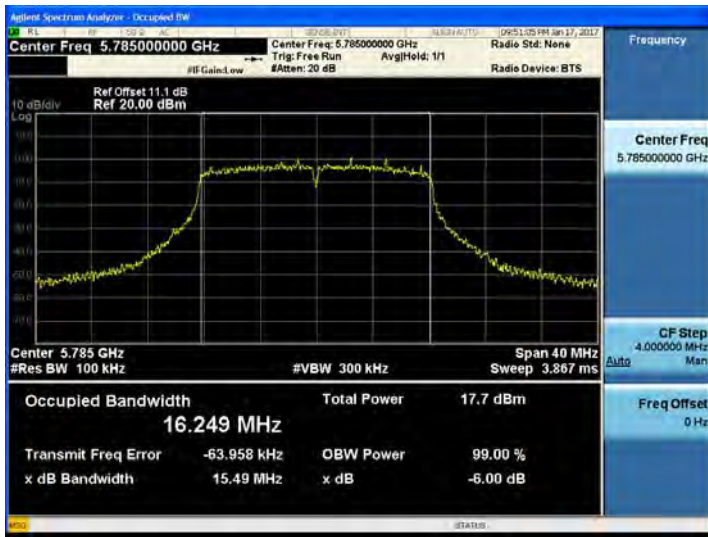
802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.46	0.5	Pass
5785	157	15.14	0.5	Pass
5825	165	15.43	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac_VHT20

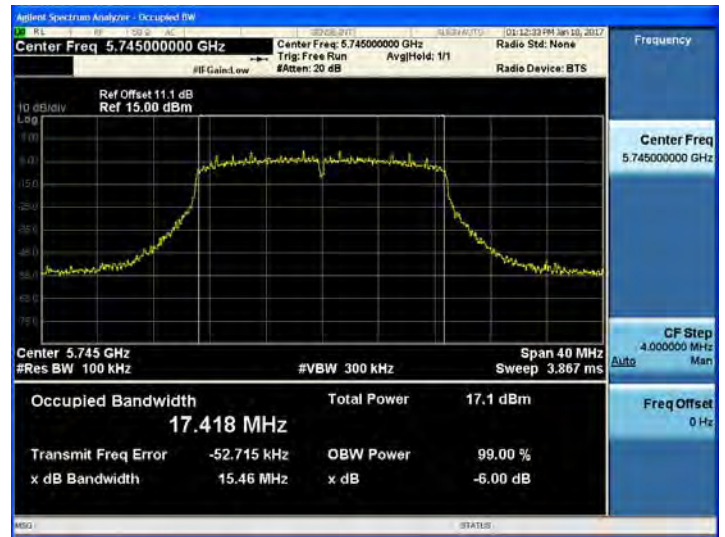
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.48	0.5	Pass
5785	157	15.14	0.5	Pass
5825	165	15.15	0.5	Pass

TEST PlotS for 802.11a/n_HT20/ac_VHT20

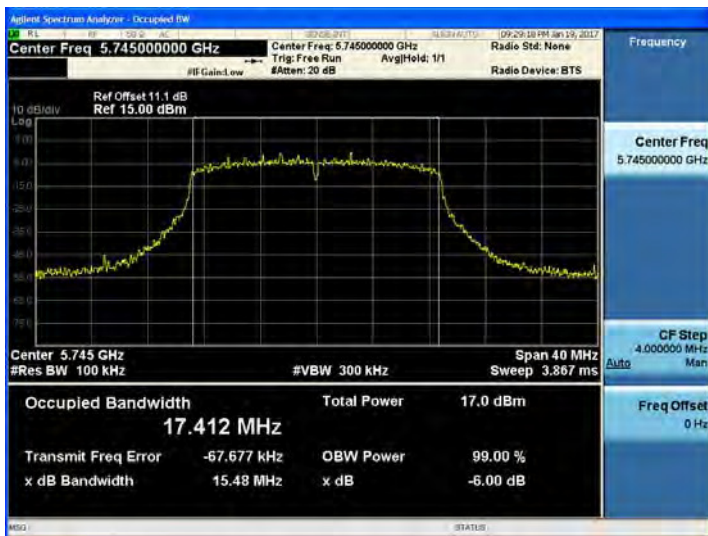
802.11a UNII 3 BAND 6dB Bandwidth (CH.157)



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



802.11ac_VHT20 UNII 3 BAND 6dB Bandwidth(CH.149)



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	15.59	0.5	Pass
5785	157	15.37	0.5	Pass
5825	165	14.50	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11n_HT20

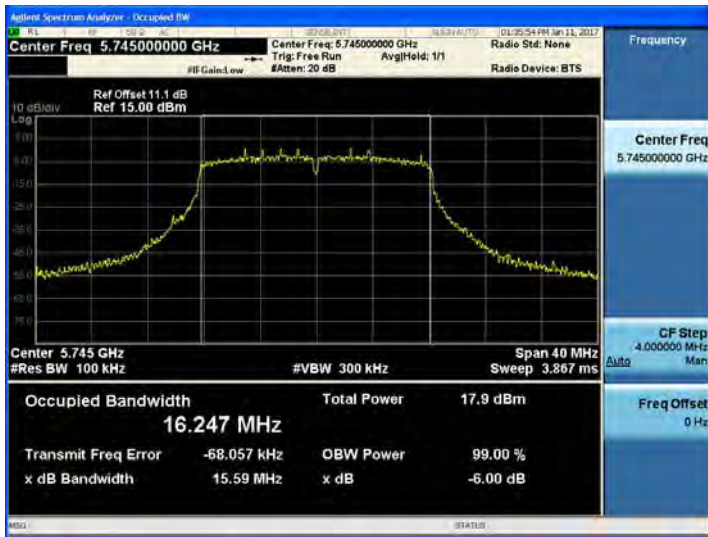
802.11n_HT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.19	0.5	Pass
5785	157	15.10	0.5	Pass
5825	165	15.08	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac_VHT20

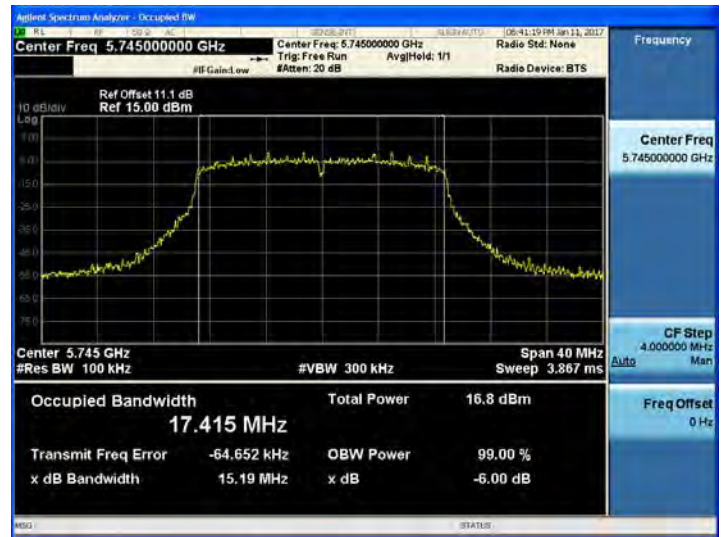
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	15.13	0.5	Pass
5785	157	15.44	0.5	Pass
5825	165	15.13	0.5	Pass

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

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



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



802.11ac_VHT20 UNII 3 BAND 6dB 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/ac_VHT40

Conducted 6 dB Bandwidth Measurements for 802.11n_HT40

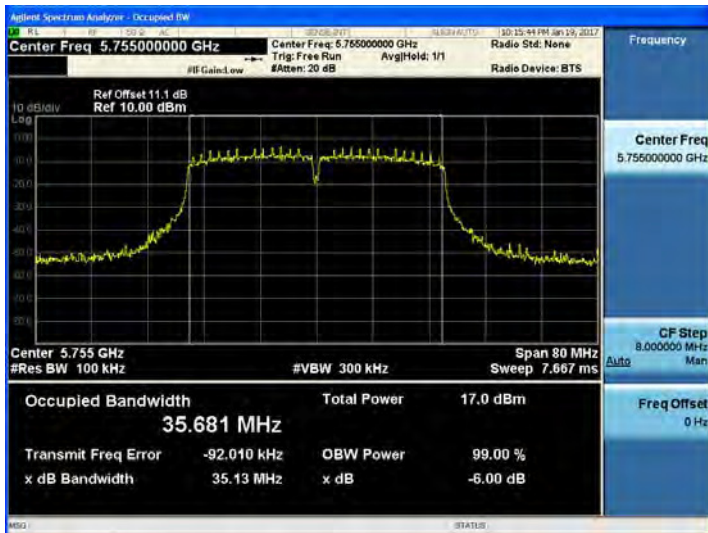
802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.13	0.5	Pass
5795	159	33.95	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac_VHT40

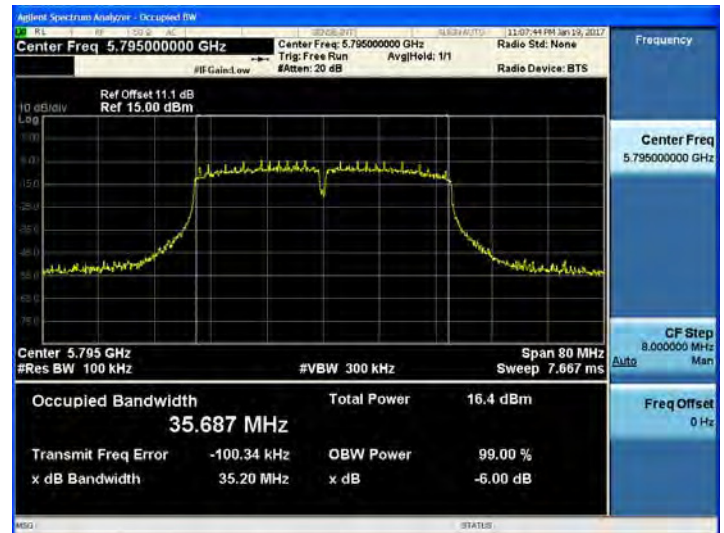
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	34.23	0.5	Pass
5795	159	35.20	0.5	Pass

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.159)



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

Conducted 6 dB Bandwidth Measurements for 802.11n_HT40

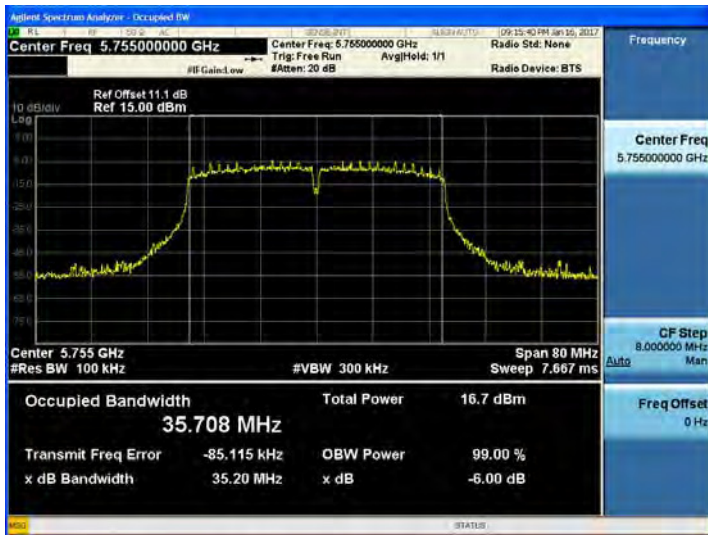
802.11n_HT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.20	0.5	Pass
5795	159	35.18	0.5	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac_VHT40

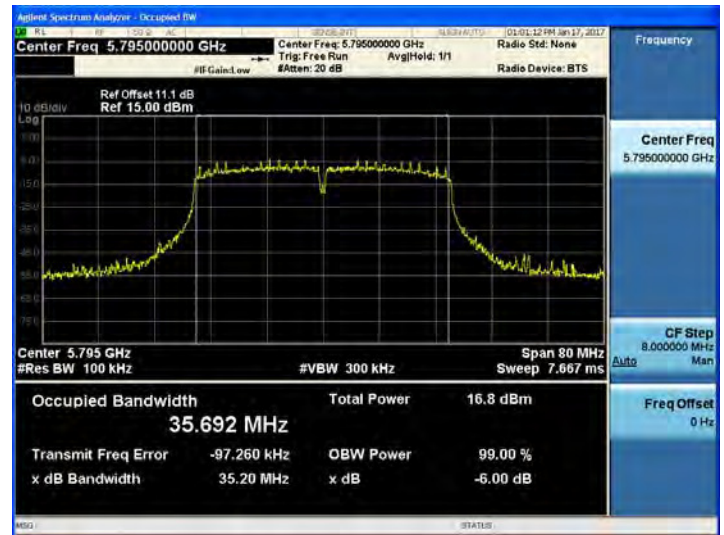
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	34.28	0.5	Pass
5795	159	35.20	0.5	Pass

TEST Plots for Ant.1_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.159)

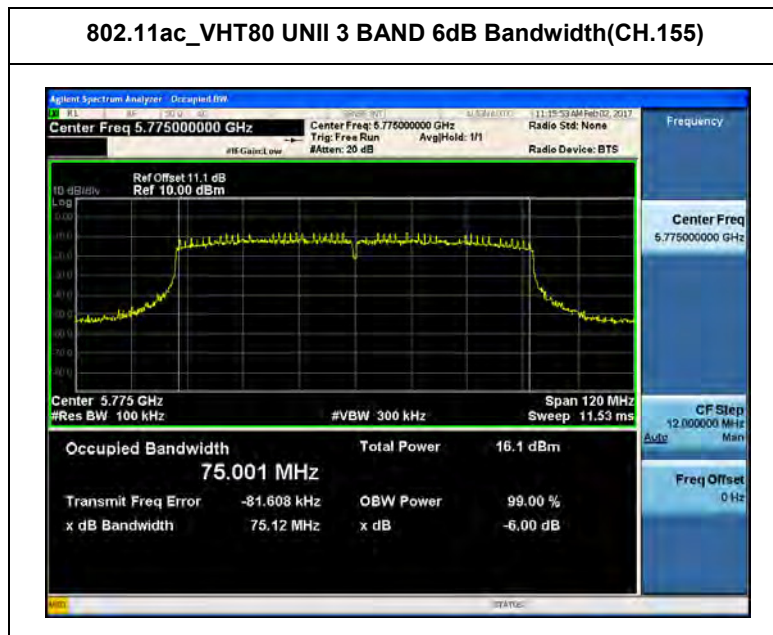


TEST RESULTS Ant.0_for 802.11ac_VHT80

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	75.12	0.5	Pass

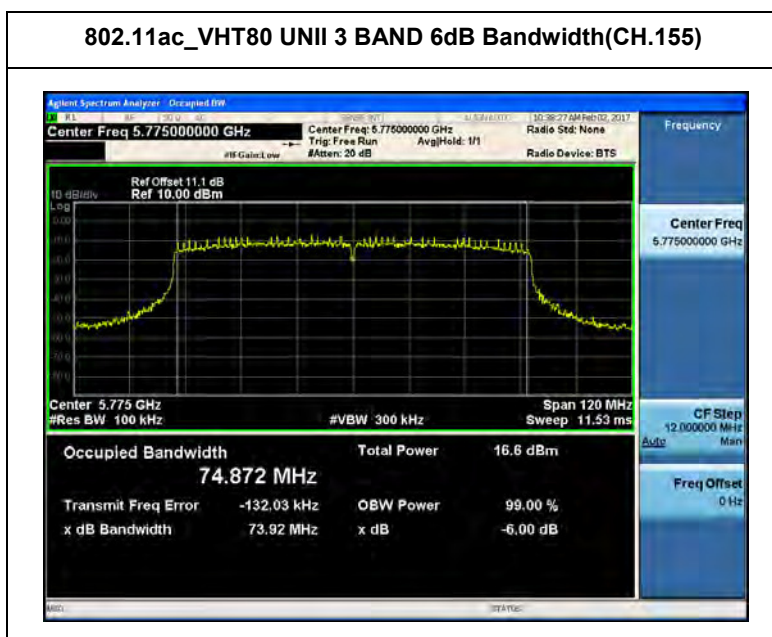
TEST Plots for Ant.0_802.11ac_VHT80



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

Conducted 6 dB Bandwidth Measurements for 802.11ac_VHT80

■ TEST Plots for Ant.1_802.11ac_VHT80



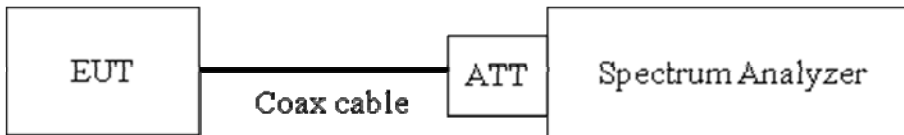
Note : In order to simplify the report, attached plots were only the most wide channel.

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	16.243
5200	40	16.224
5240	48	16.226

99% Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	16.225
5300	60	16.246
5320	64	16.235

99% Bandwidth Measurements for 802.11a

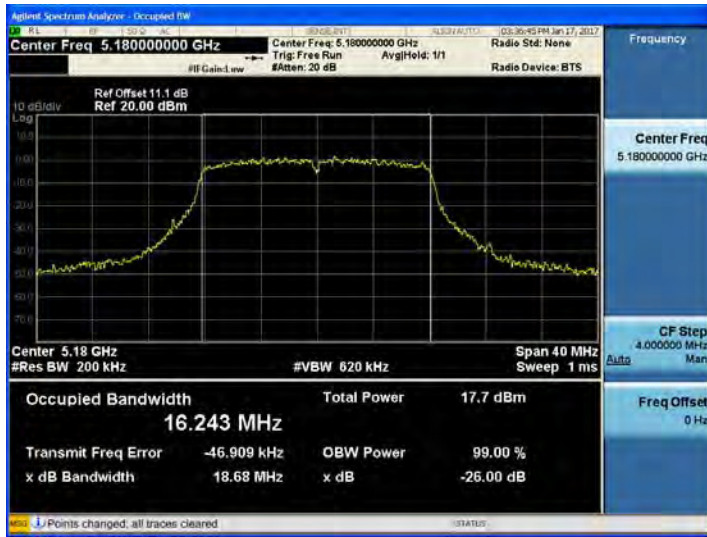
802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	16.237
5580	116	16.252
5700	140	16.251

99% Bandwidth Measurements for 802.11a

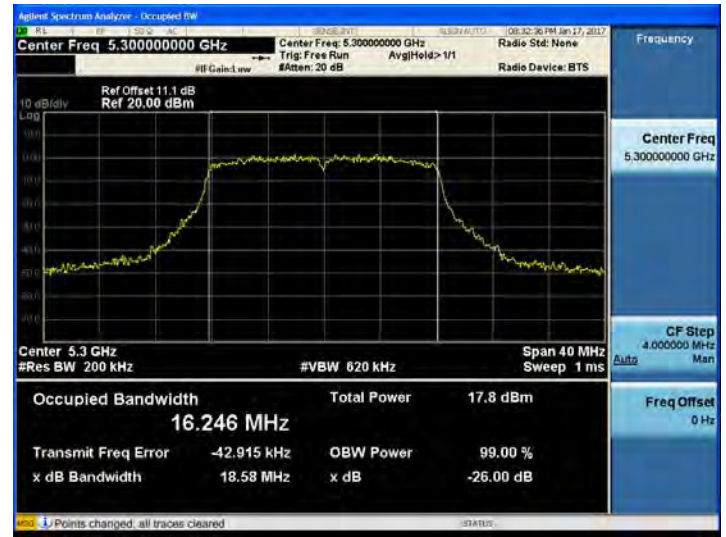
802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	16.230
5785	157	16.242
5825	165	16.246

■ TEST Plot for Ant.0_802.11a

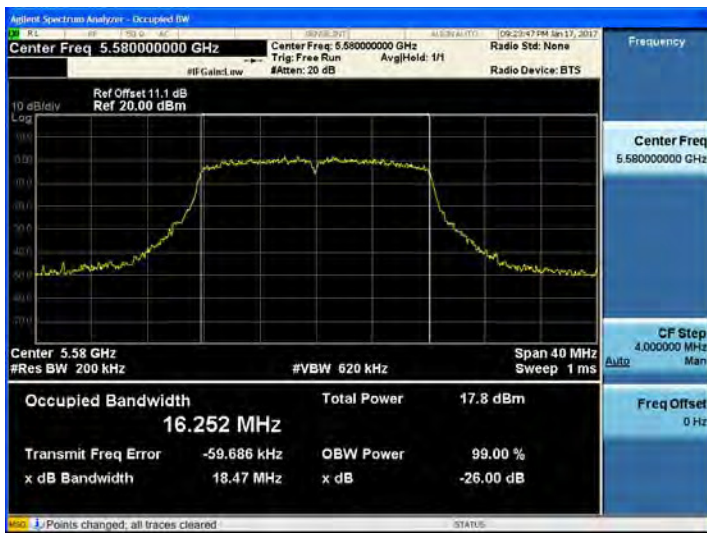
802.11a UNII 1 BAND 99% Bandwidth (CH 36)



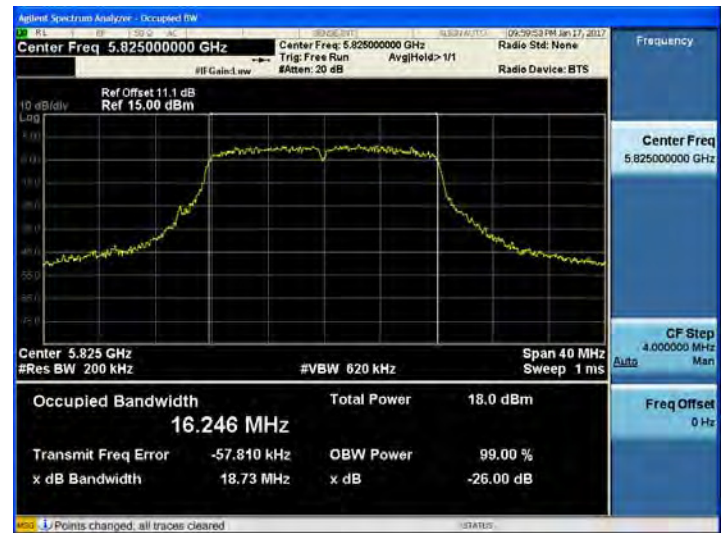
802.11a UNII 2A BAND 99% Bandwidth (CH 60)



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



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.1_802.11a

99% Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	16.233
5200	40	16.259
5240	48	16.241

99% Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	16.232
5300	60	16.210
5320	64	16.242

99% Bandwidth Measurements for 802.11a

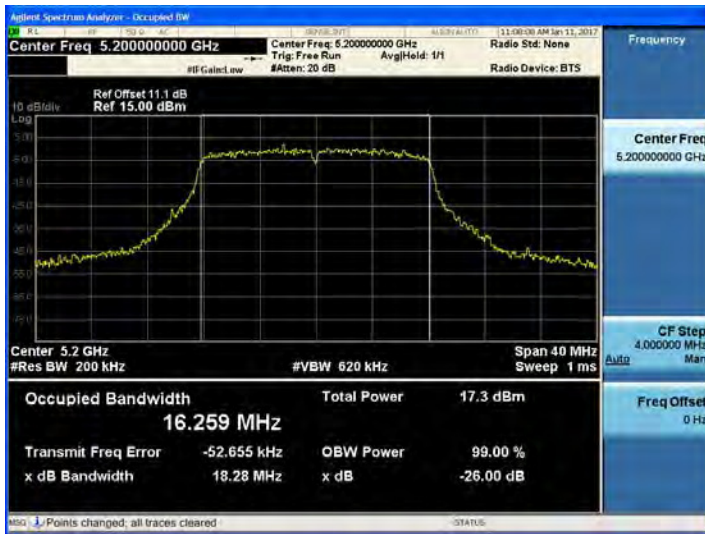
802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	16.231
5580	116	16.233
5700	140	16.223

99% Bandwidth Measurements for 802.11a

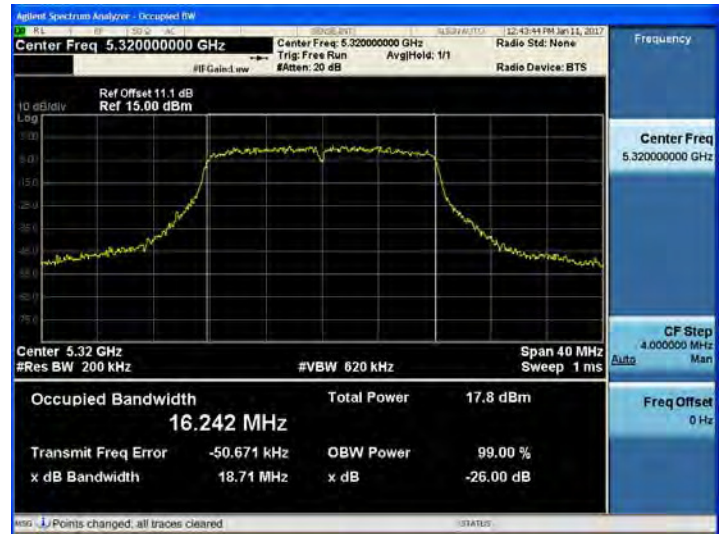
802.11a Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	16.256
5785	157	16.236
5825	165	16.240

TEST Plot for Ant.1_802.11a

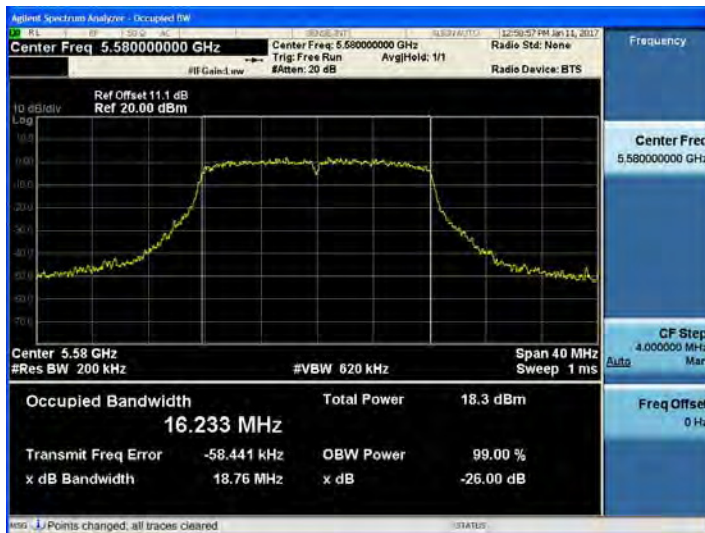
802.11a UNII 1 BAND 99% Bandwidth (CH40)



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



802.11a UNII 2C BAND 99% Bandwidth (CH116)



802.11a 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_802.11n_HT20

99% Bandwidth Measurements for 802.11n_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	17.378
5200	40	17.383
5240	48	17.378

99% Bandwidth Measurements for 802.11n_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	17.384
5300	60	17.389
5320	64	17.376

99% Bandwidth Measurements for 802.11n_HT20

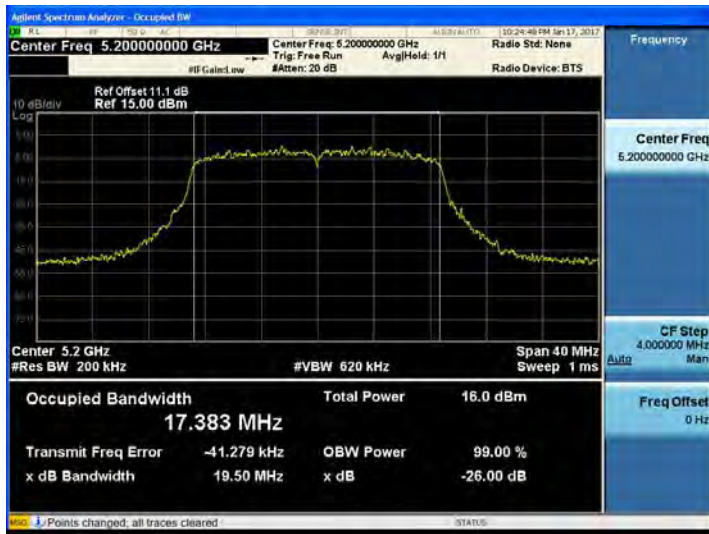
802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	17.385
5580	116	17.379
5700	140	17.379

99% Bandwidth Measurements for 802.11n_HT20

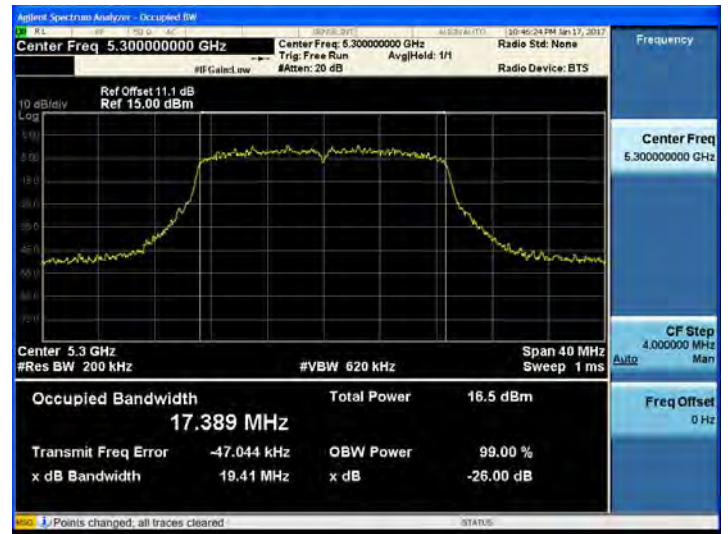
802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.365
5785	157	17.382
5825	165	17.368

TEST Plot for Ant.0_802.11n_HT20

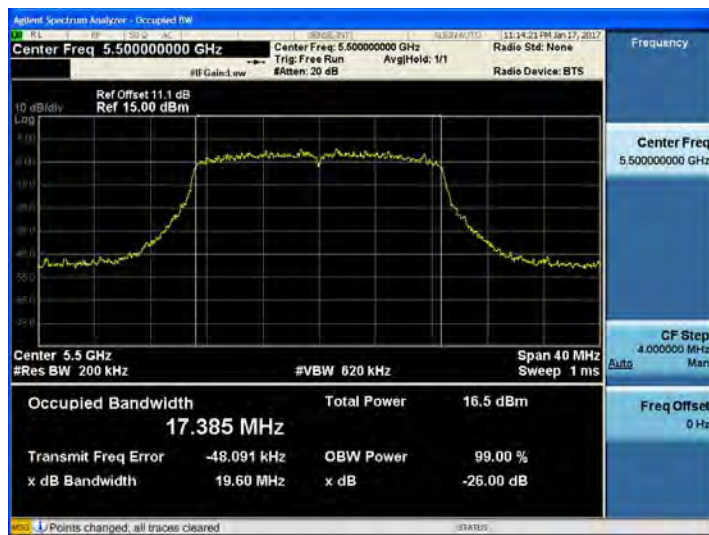
802.11n_HT20 UNII 1 BAND 99% Bandwidth(CH 40)



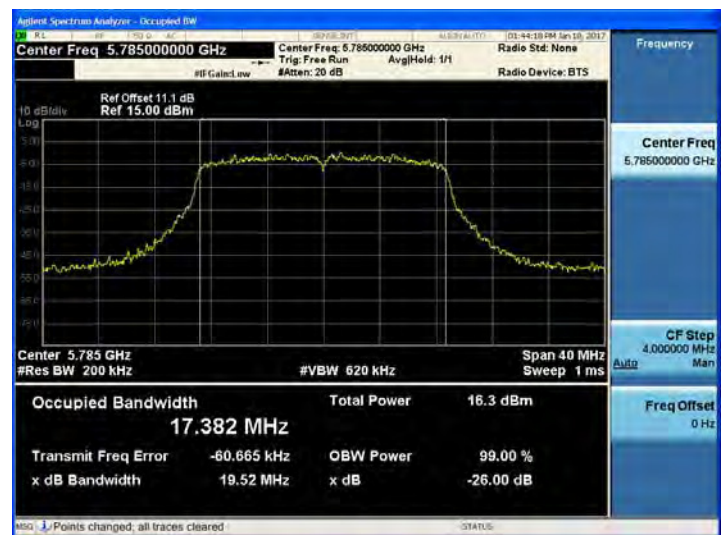
802.11n_HT20 UNII 2A BAND 99% Bandwidth(CH 60)



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	17.389
5200	40	17.381
5240	48	17.390

99% Bandwidth Measurements for 802.11n_HT20

802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	17.377
5300	60	17.376
5320	64	17.376

99% Bandwidth Measurements for 802.11n_HT20

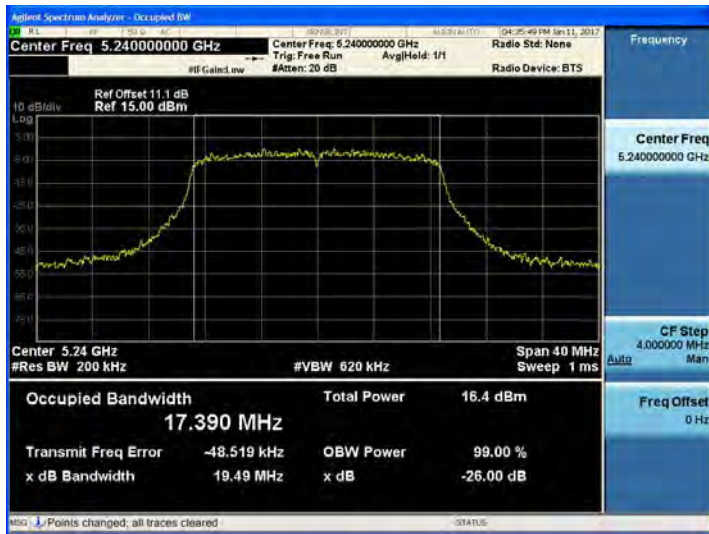
802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	17.369
5580	116	17.376
5700	140	17.383

99% Bandwidth Measurements for 802.11n_HT20

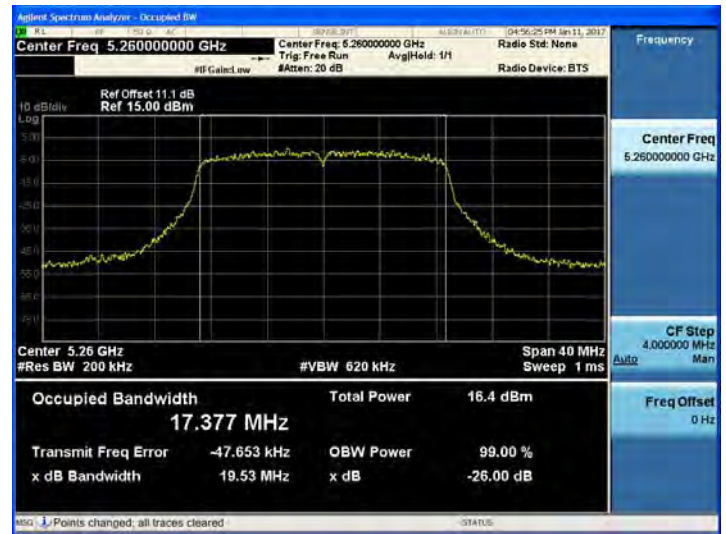
802.11n_HT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.393
5785	157	17.372
5825	165	17.382

■ TEST Plot for Ant.1_802.11n_HT20

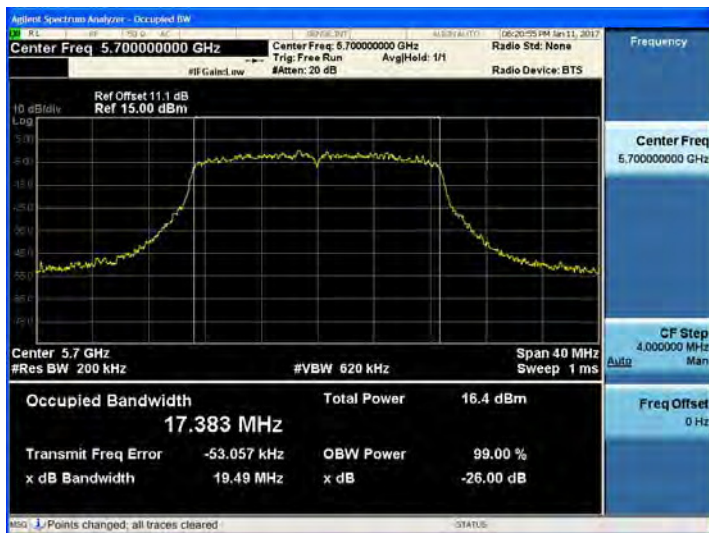
802.11n_HT20 UNII 1 BAND 99% Bandwidth(CH 48)



802.11n_HT20 UNII 2A BAND 99% Bandwidth(CH 52)



802.11n_HT20 UNII 2C BAND 99% Bandwidth(CH 140)



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	17.389
5200	40	17.380
5240	48	17.376

99% Bandwidth Measurements for 802.11ac_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	17.371
5300	60	17.371
5320	64	17.359

99% Bandwidth Measurements for 802.11ac_VHT20

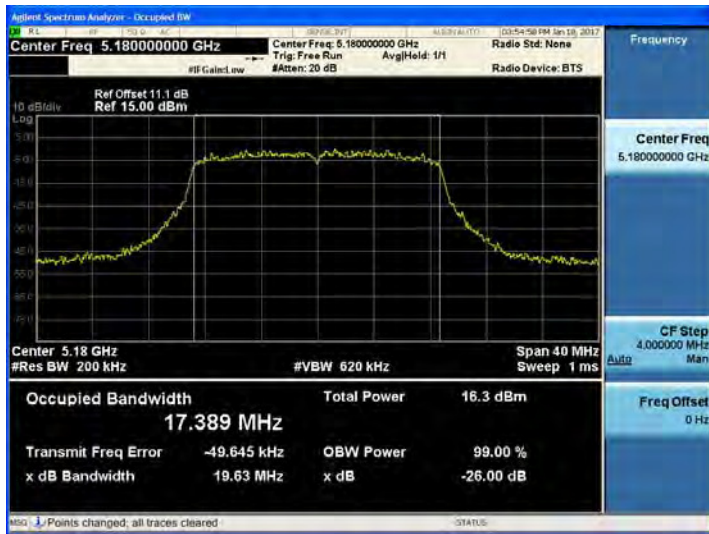
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	17.380
5580	116	17.360
5700	140	17.387

99% Bandwidth Measurements for 802.11ac_VHT20

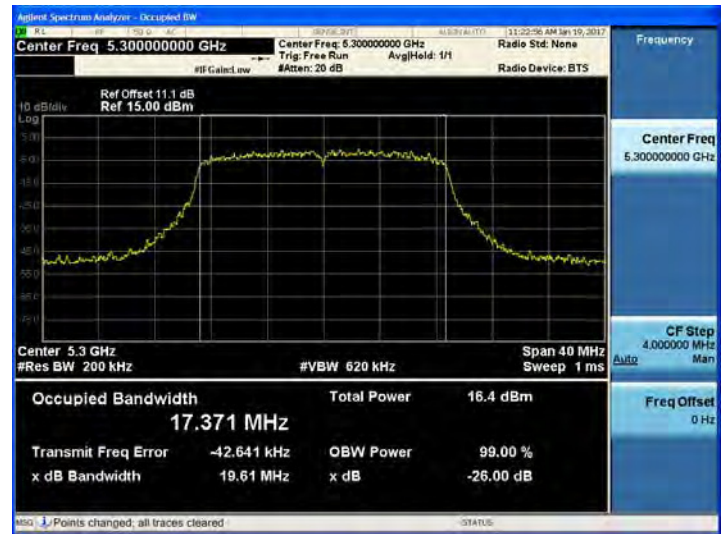
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.383
5785	157	17.372
5825	165	17.388

TEST Plot for Ant.0_ 802.11ac_VHT20

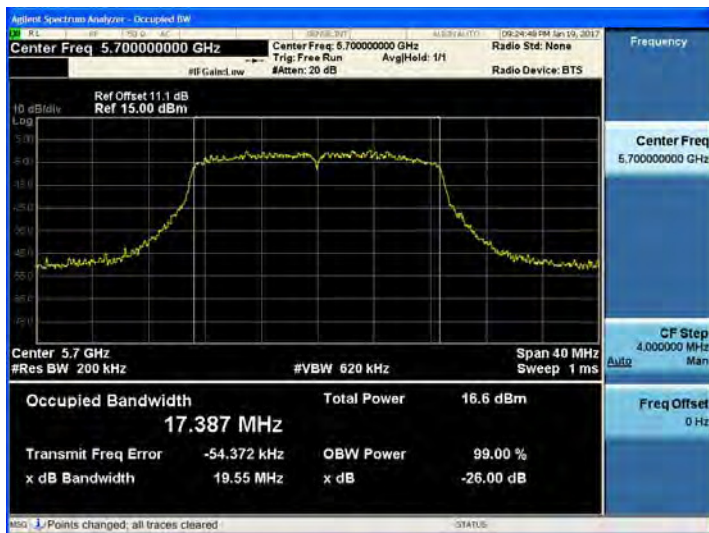
802.11ac_VHT20 UNII 1 BAND 99% Bandwidth(CH 36)



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



802.11ac_VHT20 UNII 2C BAND 99% Bandwidth(CH 140)



802.11ac_VHT20 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.1_ 802.11ac_VHT20**99% Bandwidth Measurements for 802.11ac_VHT20**

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5180	36	17.377
5200	40	17.372
5240	48	17.374

99% Bandwidth Measurements for 802.11ac_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5260	52	17.390
5300	60	17.405
5320	64	17.388

99% Bandwidth Measurements for 802.11ac_VHT20

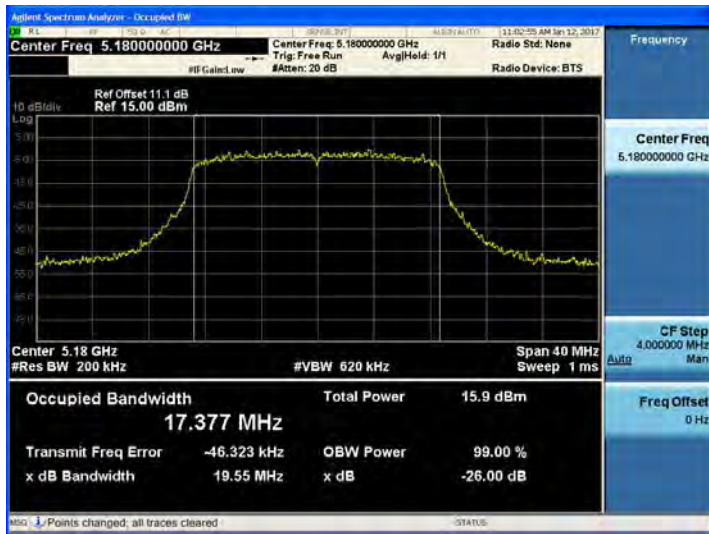
802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5500	100	17.375
5580	116	17.368
5700	140	17.386

99% Bandwidth Measurements for 802.11ac_VHT20

802.11ac_VHT20 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5745	149	17.380
5785	157	17.378
5825	165	17.382

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 60)



802.11ac_VHT20 UNII 2C BAND 99% Bandwidth(CH 140)



802.11ac_VHT20 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_HT40

99% Bandwidth Measurements for 802.11n_HT40

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	35.784
5230	46	35.776

99% Bandwidth Measurements for 802.11n_HT40

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5270	54	35.785
5310	62	35.787

99% Bandwidth Measurements for 802.11n_HT40

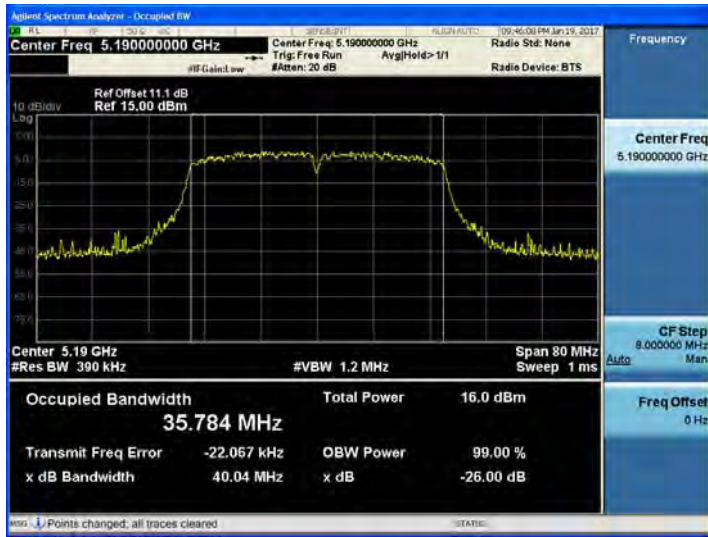
802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5510	102	35.748
5550	110	35.750
5670	134	35.823

99% Bandwidth Measurements for 802.11n_HT40

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	35.826
5795	159	35.765

TEST Plot for Ant.0_802.11n_HT40

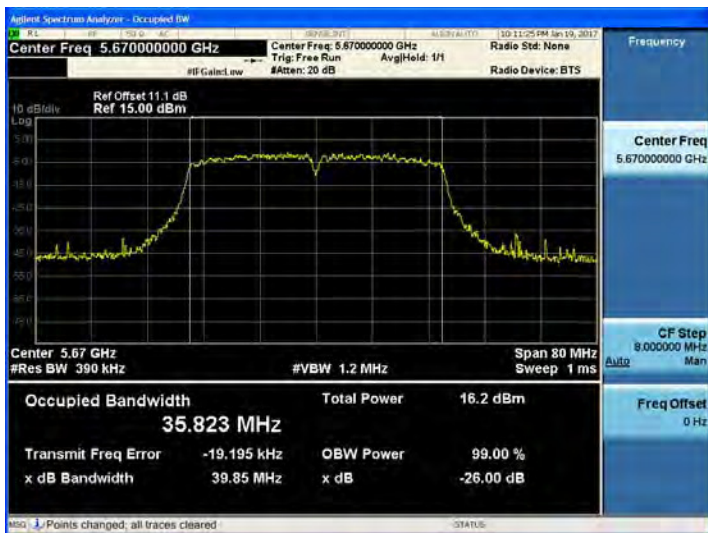
802.11n_HT40 UNII 1 BAND 99% Bandwidth(CH 38)



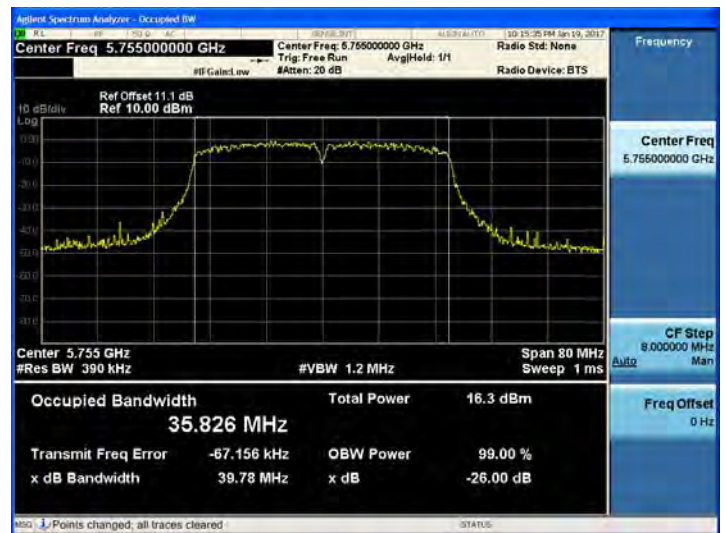
802.11n_HT40 UNII 2A BAND 99% Bandwidth (CH 62)



802.11n_HT40 UNII 2C BAND 99% Bandwidth(CH 134)



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	35.745
5230	46	35.744

99% Bandwidth Measurements for 802.11n_HT40

802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5270	54	35.749
5310	62	35.757

99% Bandwidth Measurements for 802.11n_HT40

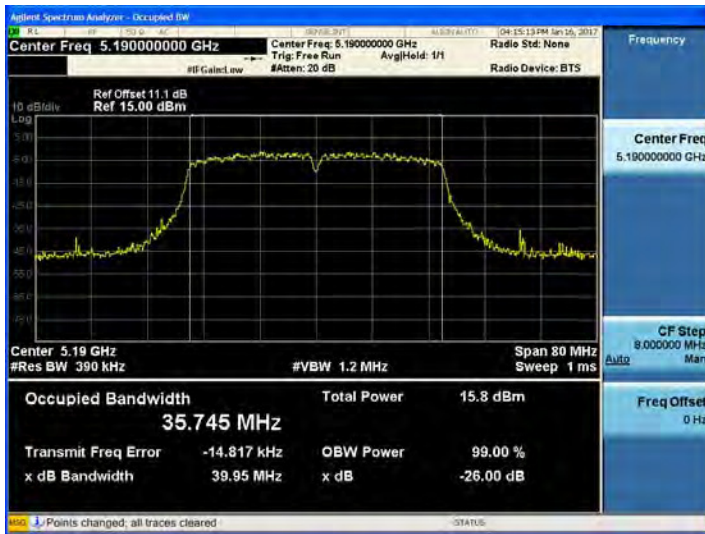
802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5510	102	35.743
5550	110	35.718
5670	134	35.787

99% Bandwidth Measurements for 802.11n_HT40

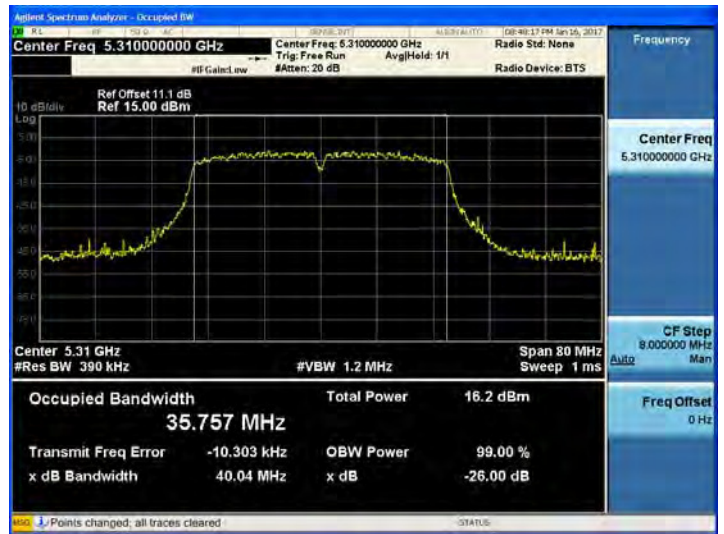
802.11n_HT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	35.765
5795	159	35.744

TEST Plot for Ant.1_802.11n_HT40

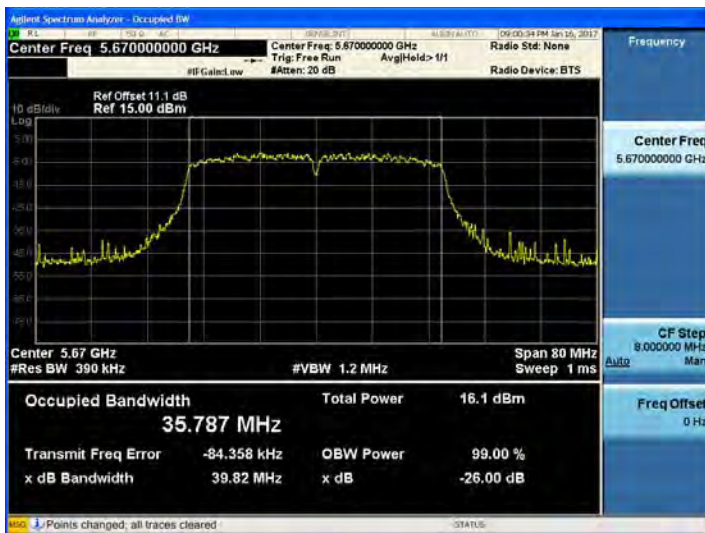
802.11n_HT40 UNII 1 BAND 99% Bandwidth(CH 38)



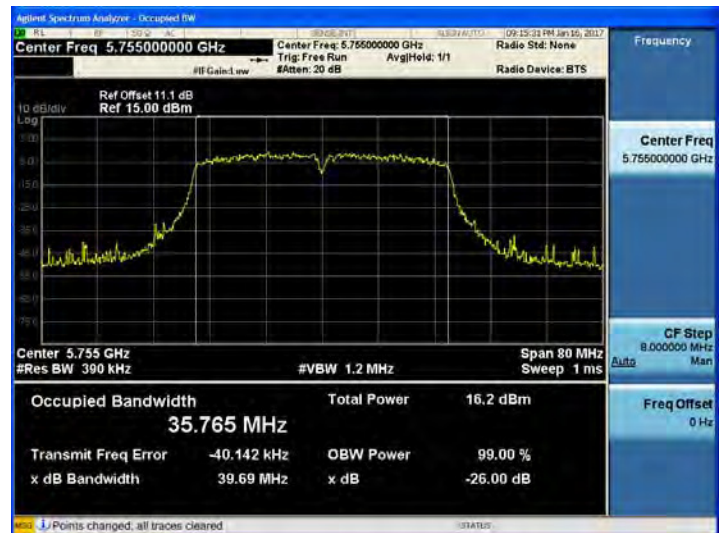
802.11n_HT40 UNII 2A BAND 99% Bandwidth (CH 62)



802.11n_HT40 UNII 2C BAND 99% Bandwidth(CH 134)



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.0_802.11ac_VHT40

99% Bandwidth Measurements for 802.11ac_VHT40

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	35.729
5230	46	35.723

99% Bandwidth Measurements for 802.11ac_VHT40

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5270	54	35.726
5310	62	35.729

99% Bandwidth Measurements for 802.11ac_VHT40

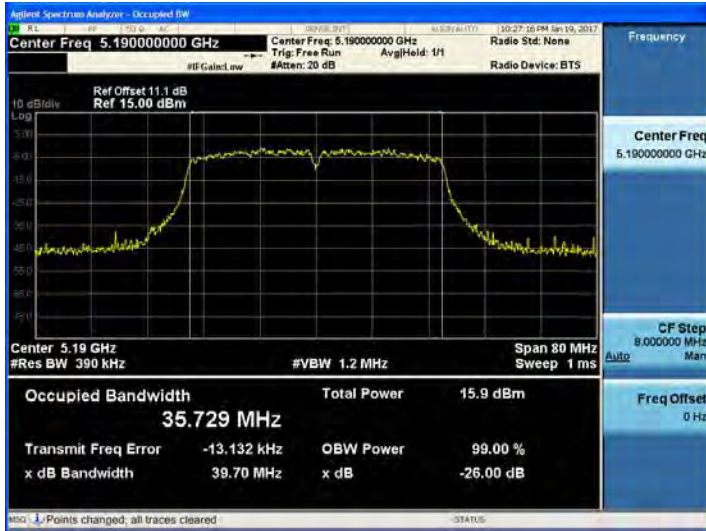
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5510	102	35.704
5550	110	35.730
5670	134	35.765

99% Bandwidth Measurements for 802.11ac_VHT40

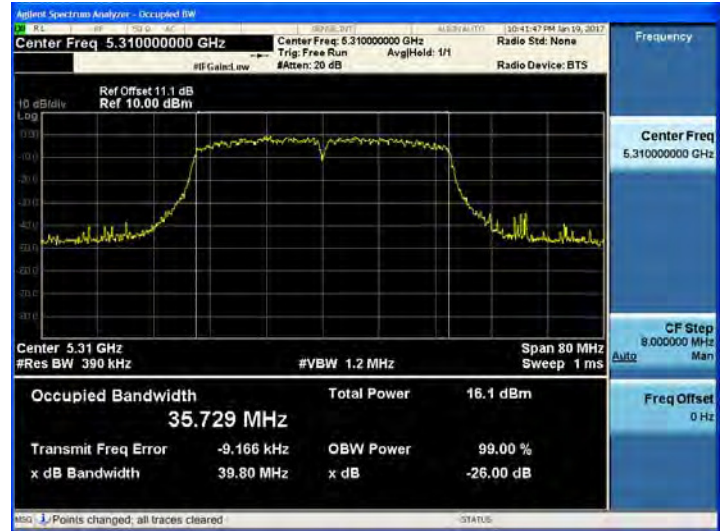
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	35.758
5795	159	35.773

■ TEST Plot for Ant.0_802.11ac_VHT40

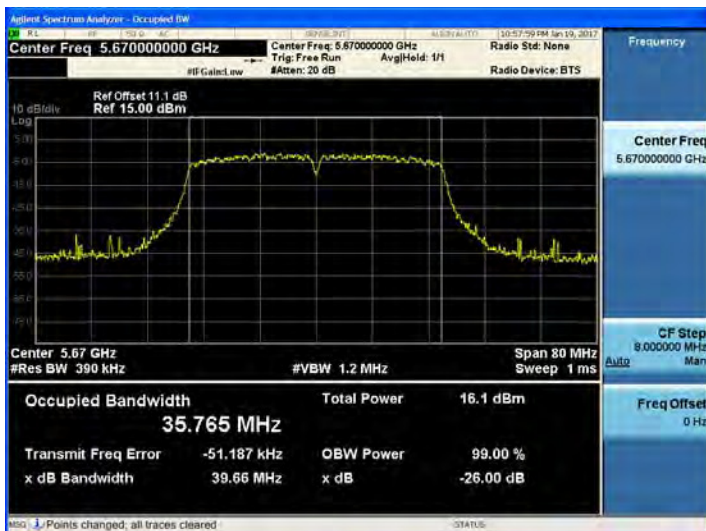
802.11ac_VHT40 UNII 1 BAND 99% Bandwidth(CH 38)



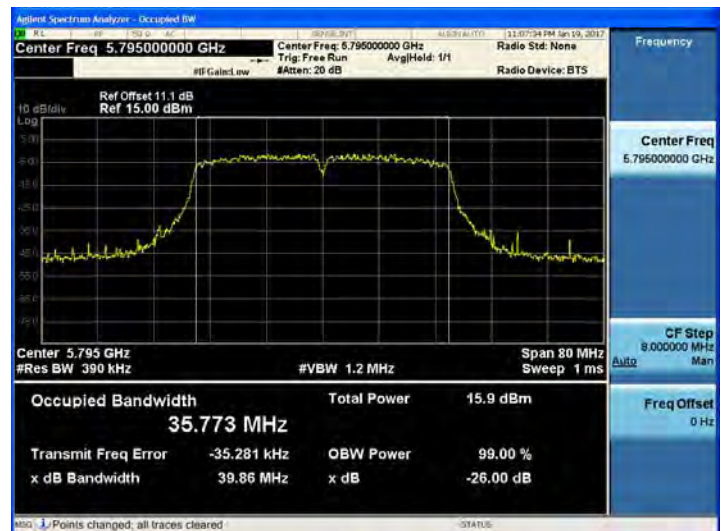
802.11ac_VHT40 UNII 2A BAND 99% Bandwidth (CH 62)



802.11ac_VHT40 UNII 2C BAND 99% Bandwidth(CH 134)



802.11ac_VHT40 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.1_802.11ac_VHT40

99% Bandwidth Measurements for 802.11ac_VHT40

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5190	38	35.734
5230	46	35.693

99% Bandwidth Measurements for 802.11ac_VHT40

802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5270	54	35.728
5310	62	35.757

99% Bandwidth Measurements for 802.11ac_VHT40

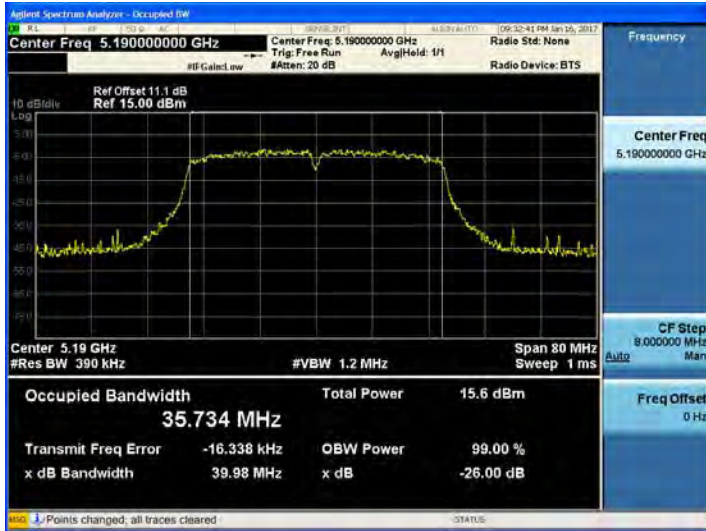
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5510	102	35.761
5550	110	35.744
5670	134	35.721

99% Bandwidth Measurements for 802.11ac_VHT40

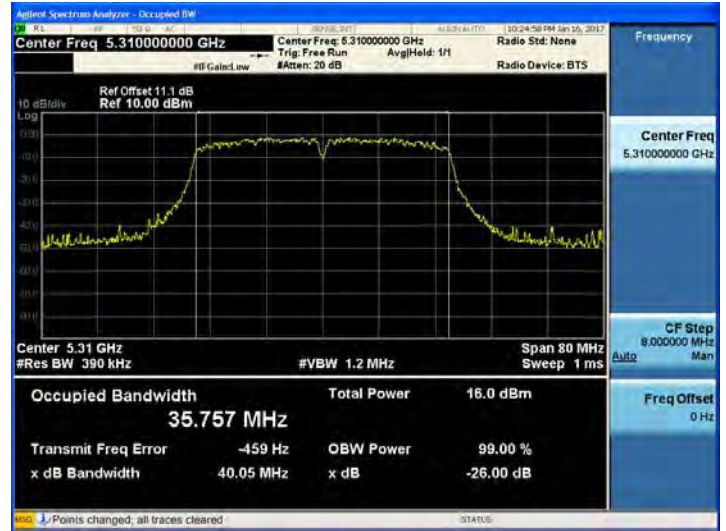
802.11ac_VHT40 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5755	151	35.763
5795	159	35.737

TEST Plot for Ant.1_802.11ac_VHT40

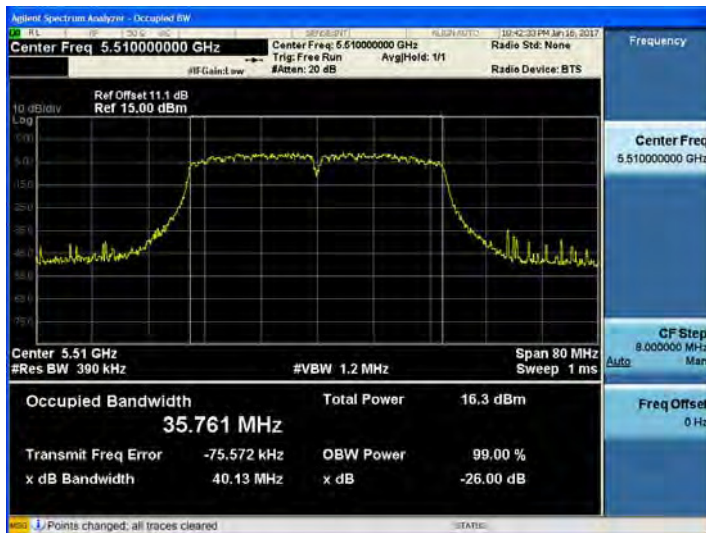
802.11ac_VHT40 UNII 1 BAND 99% Bandwidth(CH 38)



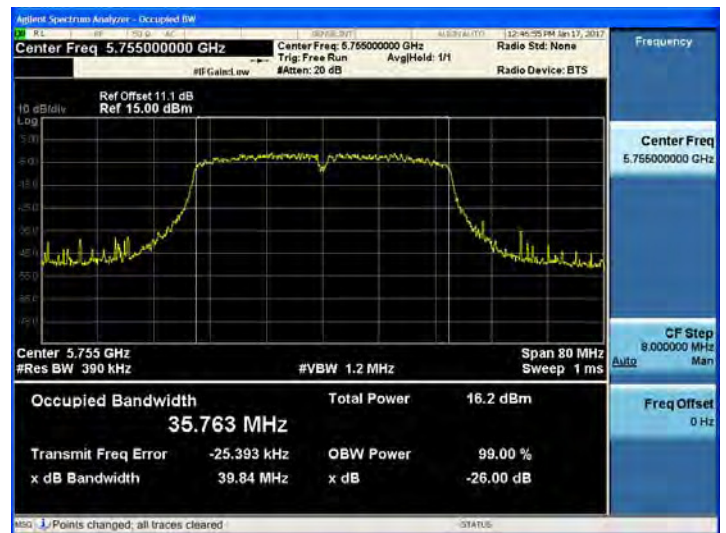
802.11ac_VHT40 UNII 2A BAND 99% Bandwidth (CH 62)



802.11ac_VHT40 UNII 2C BAND 99% Bandwidth(CH 102)



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	74.959

99% Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5290	58	74.929

99% Bandwidth Measurements for 802.11ac_VHT80

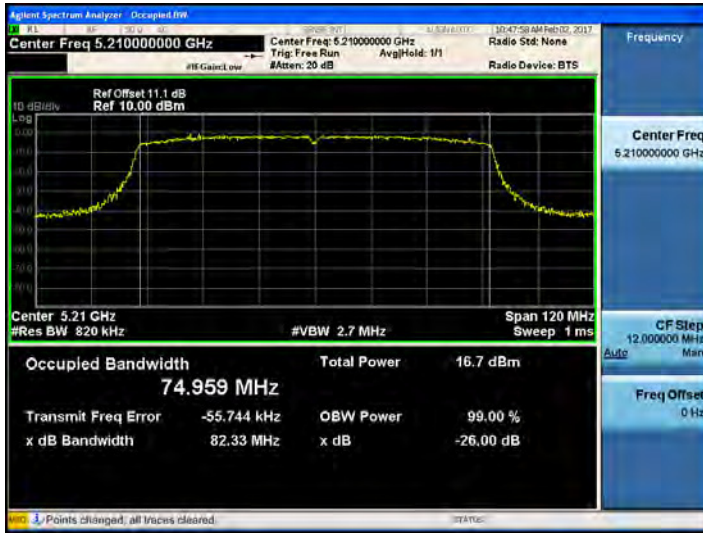
802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5530	106	74.876

99% Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5775	155	75.063

TEST Plot for Ant.0_802.11ac_VHT80

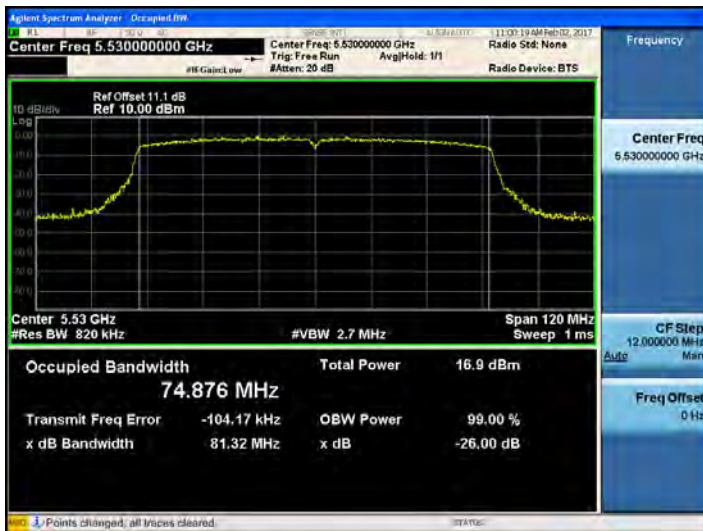
802.11ac_VHT80 UNII 1 BAND 99% Bandwidth(CH 42)



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.

■ 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	74.990

99% Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5290	58	74.940

99% Bandwidth Measurements for 802.11ac_VHT80

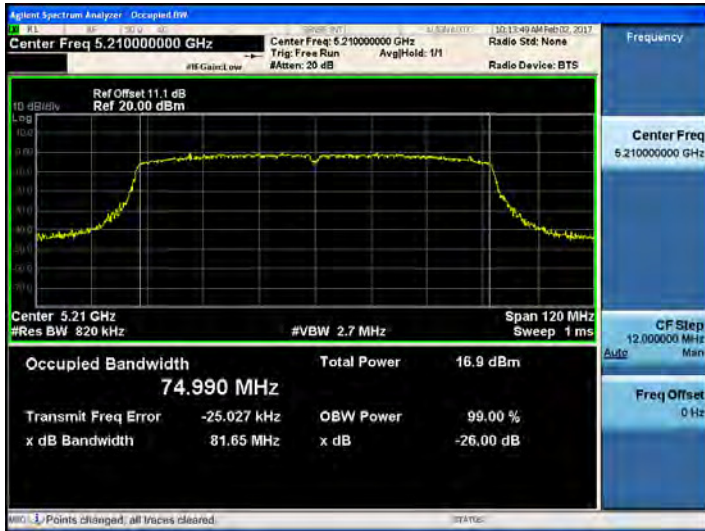
802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5530	106	74.936

99% Bandwidth Measurements for 802.11ac_VHT80

802.11ac_VHT80 Mode		Measured Bandwidth [MHz]
Frequency [MHz]	Channel No.	
5775	155	74.949

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	-0.51	23.98
			Ant 1	-2.61	23.98
	UNII 2A		Ant 0	-0.81	23.98
			Ant 1	-2.85	23.98
	UNII 2C		Ant 0	-2.49	23.98
			Ant 1	-2.53	23.98
	UNII 3		Ant 0	-1.93	30.00
			Ant 1	-2.26	30.00
MIMO(CDD)	UNII 1	802.11a/n/ac	Ant 0 & 1	1.51	23.98
	UNII 2A			1.24	23.98
	UNII 2C			0.50	23.98
	UNII 3			0.92	30.00

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

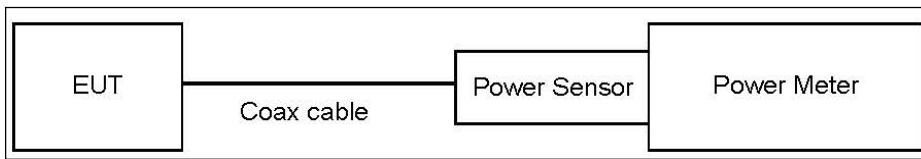
$$\text{Directional gain} = 10 \cdot \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N] \text{ dBi (CDD, 802.11a/n/ac)}$$

$$\text{Directional gain} = 10 \cdot \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N] \text{ dBi (SDM, 802.11n/ac)}$$

(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)**

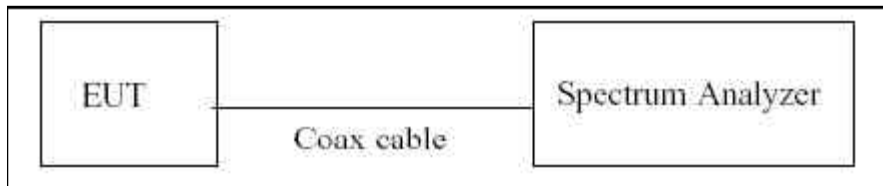
- Average Power (Procedure E.3.a in KDB 789033 D02 v01r03).
 1. Measure the duty cycle.
 2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
 3. Add $10 \log (1/x)$, where x is the duty cycle, to the measured power in order 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 v01r03.

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 $\geq$ 3 MHz.
5. Number of points in sweep $\geq 2 \times \text{span} / \text{RBW}$.
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		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	6	11.37	0.24	11.61	23.98
		9	11.24	0.34	11.58	23.98
		12	11.11	0.46	11.57	23.98
		18	11.12	0.66	11.78	23.98
		24	11.00	0.82	11.82	23.98
		36	10.58	1.16	11.74	23.98
		48	10.33	1.49	11.82	23.98
		54	10.16	1.62	11.78	23.98
5200	40	6	10.90	0.24	11.14	23.98
		9	10.77	0.34	11.11	23.98
		12	10.66	0.46	11.12	23.98
		18	10.65	0.66	11.31	23.98
		24	10.53	0.82	11.35	23.98
		36	10.13	1.16	11.29	23.98
		48	9.82	1.49	11.31	23.98
		54	9.69	1.62	11.31	23.98
5240	48	6	11.14	0.24	11.38	23.98
		9	10.99	0.34	11.33	23.98
		12	10.97	0.46	11.43	23.98
		18	10.86	0.66	11.52	23.98
		24	10.76	0.82	11.58	23.98
		36	10.38	1.16	11.54	23.98
		48	10.11	1.49	11.60	23.98
		54	9.95	1.62	11.57	23.98

Ant.1

802.11a (UNII 1)

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

802.11a(20MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	6	11.13	0.24	11.37	23.98
		9	11.03	0.34	11.37	23.98
		12	10.93	0.46	11.39	23.98
		18	10.89	0.66	11.55	23.98
		24	10.75	0.82	11.57	23.98
		36	10.43	1.16	11.59	23.98
		48	10.07	1.49	11.56	23.98
		54	9.89	1.62	11.51	23.98
5200	40	6	11.07	0.24	11.31	23.98
		9	10.97	0.34	11.31	23.98
		12	10.89	0.46	11.35	23.98
		18	10.85	0.66	11.51	23.98
		24	10.72	0.82	11.54	23.98
		36	10.30	1.16	11.46	23.98
		48	10.12	1.49	11.61	23.98
		54	9.91	1.62	11.53	23.98
5240	48	6	11.33	0.24	11.57	23.98
		9	11.08	0.34	11.42	23.98
		12	11.13	0.46	11.59	23.98
		18	11.04	0.66	11.70	23.98
		24	10.94	0.82	11.76	23.98
		36	10.50	1.16	11.66	23.98
		48	10.25	1.49	11.74	23.98
		54	10.07	1.62	11.69	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		Rate (Mbps)	Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.			
5180	36	6	14.50	23.98
		9	14.49	23.98
		12	14.49	23.98
		18	14.68	23.98
		24	14.71	23.98
		36	14.68	23.98
		48	14.70	23.98
		54	14.66	23.98
5200	40	6	14.24	23.98
		9	14.22	23.98
		12	14.25	23.98
		18	14.42	23.98
		24	14.46	23.98
		36	14.39	23.98
		48	14.47	23.98
		54	14.43	23.98
5240	48	6	14.49	23.98
		9	14.39	23.98
		12	14.52	23.98
		18	14.62	23.98
		24	14.68	23.98
		36	14.61	23.98
		48	14.68	23.98
		54	14.64	23.98

Ant.0

802.11a (UNII 2A)

TEST RESULTS

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

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5260	52	6	11.03	0.24	11.27	23.98
		9	10.96	0.34	11.30	23.98
		12	10.85	0.46	11.31	23.98
		18	10.87	0.66	11.53	23.98
		24	10.73	0.82	11.55	23.98
		36	10.31	1.16	11.47	23.98
		48	10.05	1.49	11.54	23.98
		54	9.98	1.62	11.60	23.98
5300	60	6	11.35	0.24	11.59	23.98
		9	11.18	0.34	11.52	23.98
		12	11.13	0.46	11.59	23.98
		18	11.15	0.66	11.81	23.98
		24	10.95	0.82	11.77	23.98
		36	10.59	1.16	11.75	23.98
		48	10.32	1.49	11.81	23.98
		54	10.13	1.62	11.75	23.98
5320	64	6	11.11	0.24	11.35	23.98
		9	10.99	0.34	11.33	23.98
		12	10.93	0.46	11.39	23.98
		18	10.87	0.66	11.53	23.98
		24	10.76	0.82	11.58	23.98
		36	10.40	1.16	11.56	23.98
		48	10.06	1.49	11.55	23.98
		54	9.94	1.62	11.56	23.98

Ant.1

802.11a (UNII 2A)

■ TEST RESULTS
Conducted Output Power Measurements (802.11a Mode: 5260~5320)

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5260	52	6	11.31	0.24	11.55	23.98
		9	11.39	0.34	11.73	23.98
		12	11.06	0.46	11.52	23.98
		18	11.08	0.66	11.74	23.98
		24	10.98	0.82	11.80	23.98
		36	10.59	1.16	11.75	23.98
		48	10.27	1.49	11.76	23.98
		54	10.09	1.62	11.71	23.98
5300	60	6	11.21	0.24	11.45	23.98
		9	11.17	0.34	11.51	23.98
		12	11.04	0.46	11.50	23.98
		18	11.08	0.66	11.74	23.98
		24	10.90	0.82	11.72	23.98
		36	10.52	1.16	11.68	23.98
		48	10.28	1.49	11.77	23.98
		54	10.08	1.62	11.70	23.98
5320	64	6	11.26	0.24	11.50	23.98
		9	11.11	0.34	11.45	23.98
		12	11.05	0.46	11.51	23.98
		18	10.97	0.66	11.63	23.98
		24	10.81	0.82	11.63	23.98
		36	10.47	1.16	11.63	23.98
		48	10.30	1.49	11.79	23.98
		54	10.07	1.62	11.69	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		Rate (Mbps)	Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.			
5260	52	6	14.42	23.98
		9	14.53	23.98
		12	14.43	23.98
		18	14.65	23.98
		24	14.69	23.98
		36	14.62	23.98
		48	14.66	23.98
		54	14.67	23.98
5300	60	6	14.53	23.98
		9	14.53	23.98
		12	14.56	23.98
		18	14.79	23.98
		24	14.76	23.98
		36	14.73	23.98
		48	14.80	23.98
		54	14.74	23.98
5320	64	6	14.44	23.98
		9	14.40	23.98
		12	14.46	23.98
		18	14.59	23.98
		24	14.62	23.98
		36	14.61	23.98
		48	14.68	23.98
		54	14.64	23.98

Ant.0

802.11a (UNII 2C)

■ TEST RESULTS
Conducted Output Power Measurements (802.11a Mode: 5500~5700)

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5500	100	6	11.26	0.24	11.50	23.98
		9	11.18	0.34	11.52	23.98
		12	11.14	0.46	11.60	23.98
		18	11.08	0.66	11.74	23.98
		24	10.98	0.82	11.80	23.98
		36	10.57	1.16	11.73	23.98
		48	10.32	1.49	11.81	23.98
		54	10.18	1.62	11.80	23.98
5580	116	6	11.23	0.24	11.47	23.98
		9	11.17	0.34	11.51	23.98
		12	11.14	0.46	11.60	23.98
		18	11.04	0.66	11.70	23.98
		24	10.97	0.82	11.79	23.98
		36	10.60	1.16	11.76	23.98
		48	10.31	1.49	11.80	23.98
		54	10.14	1.62	11.76	23.98
5700	140	6	11.17	0.24	11.41	23.98
		9	11.10	0.34	11.44	23.98
		12	11.02	0.46	11.48	23.98
		18	11.02	0.66	11.68	23.98
		24	10.88	0.82	11.70	23.98
		36	10.47	1.16	11.63	23.98
		48	10.25	1.49	11.74	23.98
		54	9.98	1.62	11.60	23.98

Ant.1

802.11a (UNII 2C)

TEST RESULTS

Conducted Output Power Measurements (802.11a Mode: 5500~5700)

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5500	100	6	11.23	0.24	11.47	23.98
		9	11.17	0.34	11.50	23.98
		12	11.03	0.46	11.49	23.98
		18	11.10	0.66	11.76	23.98
		24	10.98	0.82	11.80	23.98
		36	10.57	1.16	11.72	23.98
		48	10.24	1.49	11.74	23.98
		54	10.07	1.62	11.69	23.98
5580	116	6	11.57	0.24	11.81	23.98
		9	11.49	0.34	11.82	23.98
		12	11.42	0.46	11.87	23.98
		18	11.38	0.66	12.05	23.98
		24	11.27	0.82	12.09	23.98
		36	10.88	1.16	12.04	23.98
		48	10.65	1.49	12.14	23.98
		54	10.46	1.62	12.08	23.98
5700	140	6	10.96	0.24	11.20	23.98
		9	10.89	0.34	11.22	23.98
		12	10.80	0.46	11.25	23.98
		18	10.75	0.66	11.41	23.98
		24	10.64	0.82	11.46	23.98
		36	10.28	1.16	11.43	23.98
		48	10.03	1.49	11.53	23.98
		54	9.88	1.62	11.50	23.98

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

Conducted Output Power Measurements (802.11a Mode: 5500~5700)

802.11a Mode		Rate (Mbps)	Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.			
5500	100	6	14.50	23.98
		9	14.52	23.98
		12	14.56	23.98
		18	14.76	23.98
		24	14.81	23.98
		36	14.74	23.98
		48	14.79	23.98
		54	14.76	23.98
5580	116	6	14.65	23.98
		9	14.68	23.98
		12	14.75	23.98
		18	14.89	23.98
		24	14.95	23.98
		36	14.91	23.98
		48	14.98	23.98
		54	14.93	23.98
5700	140	6	14.32	23.98
		9	14.34	23.98
		12	14.38	23.98
		18	14.56	23.98
		24	14.59	23.98
		36	14.54	23.98
		48	14.65	23.98
		54	14.56	23.98

Ant.0

802.11a (UNII 3)

TEST RESULTS

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

802.11a (20MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5745	149	6	11.39	0.24	11.63	30
		9	11.28	0.34	11.62	30
		12	11.22	0.46	11.68	30
		18	11.17	0.66	11.83	30
		24	11.06	0.82	11.88	30
		36	10.67	1.16	11.82	30
		48	10.39	1.49	11.89	30
		54	10.21	1.62	11.83	30
5785	157	6	10.93	0.24	11.17	30
		9	10.78	0.34	11.12	30
		12	10.75	0.46	11.21	30
		18	10.76	0.66	11.42	30
		24	10.59	0.82	11.41	30
		36	10.21	1.16	11.36	30
		48	9.94	1.49	11.43	30
		54	9.76	1.62	11.38	30
5825	165	6	11.23	0.24	11.47	30
		9	11.08	0.34	11.41	30
		12	11.02	0.46	11.47	30
		18	11.04	0.66	11.70	30
		24	10.82	0.82	11.64	30
		36	10.46	1.16	11.62	30
		48	10.21	1.49	11.70	30
		54	10.03	1.62	11.65	30

Ant.1

802.11a (UNII 3)

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

802.11a (20MHz) Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5745	149	6	11.11	0.24	11.35	30
		9	11.15	0.34	11.49	30
		12	11.08	0.46	11.54	30
		18	11.09	0.66	11.75	30
		24	10.86	0.82	11.68	30
		36	10.52	1.16	11.67	30
		48	10.29	1.49	11.78	30
		54	10.07	1.62	11.69	30
5785	157	6	11.28	0.24	11.52	30
		9	11.12	0.34	11.45	30
		12	11.07	0.46	11.53	30
		18	11.04	0.66	11.70	30
		24	10.96	0.82	11.78	30
		36	10.51	1.16	11.66	30
		48	10.21	1.49	11.70	30
		54	10.13	1.62	11.75	30
5825	165	6	11.48	0.24	11.72	30
		9	11.34	0.34	11.67	30
		12	11.31	0.46	11.77	30
		18	11.28	0.66	11.94	30
		24	11.24	0.82	12.07	30
		36	10.84	1.16	12.00	30
		48	10.62	1.49	12.11	30
		54	10.42	1.62	12.04	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		Rate (Mbps)	Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.			
5745	149	6	14.50	30
		9	14.57	30
		12	14.62	30
		18	14.80	30
		24	14.79	30
		36	14.76	30
		48	14.85	30
		54	14.77	30
5785	157	6	14.36	30
		9	14.30	30
		12	14.38	30
		18	14.57	30
		24	14.61	30
		36	14.52	30
		48	14.58	30
		54	14.58	30
5825	165	6	14.61	30
		9	14.55	30
		12	14.63	30
		18	14.83	30
		24	14.87	30
		36	14.82	30
		48	14.92	30
		54	14.86	30

Ant.0

802.11n_HT20 (UNII 1)

TEST RESULTS

Conducted Output Power Measurements (802.11n_HT20 Mode: 5180~5240)

802.11n_HT20 Mode		MCS Index	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	0	10.09	0.25	10.34	23.98
		1	9.80	0.46	10.26	23.98
		2	9.84	0.67	10.51	23.98
		3	9.92	0.89	10.81	23.98
		4	9.64	1.26	10.90	23.98
		5	9.30	1.48	10.78	23.98
		6	9.26	1.61	10.87	23.98
		7	9.09	1.85	10.94	23.98
5200	40	0	9.70	0.25	9.95	23.98
		1	9.42	0.46	9.88	23.98
		2	9.40	0.67	10.07	23.98
		3	9.54	0.89	10.43	23.98
		4	9.22	1.26	10.48	23.98
		5	8.92	1.48	10.40	23.98
		6	8.91	1.61	10.52	23.98
		7	8.69	1.85	10.54	23.98
5240	48	0	9.99	0.25	10.24	23.98
		1	9.72	0.46	10.18	23.98
		2	9.71	0.67	10.38	23.98
		3	9.83	0.89	10.72	23.98
		4	9.54	1.26	10.80	23.98
		5	9.27	1.48	10.75	23.98
		6	9.14	1.61	10.75	23.98
		7	8.96	1.85	10.81	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		MCS Index	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	0	9.86	0.25	10.11	23.98
		1	9.53	0.46	9.99	23.98
		2	9.60	0.67	10.27	23.98
		3	9.71	0.89	10.60	23.98
		4	9.44	1.26	10.70	23.98
		5	9.00	1.48	10.48	23.98
		6	8.97	1.61	10.58	23.98
		7	8.86	1.85	10.71	23.98
5200	40	0	9.90	0.25	10.15	23.98
		1	9.63	0.46	10.09	23.98
		2	9.50	0.67	10.17	23.98
		3	9.77	0.89	10.66	23.98
		4	9.42	1.26	10.68	23.98
		5	9.21	1.48	10.69	23.98
		6	9.04	1.61	10.65	23.98
		7	8.89	1.85	10.74	23.98
5240	48	0	10.07	0.25	10.32	23.98
		1	9.73	0.46	10.19	23.98
		2	9.72	0.67	10.39	23.98
		3	9.87	0.89	10.76	23.98
		4	9.56	1.26	10.82	23.98
		5	9.25	1.48	10.73	23.98
		6	9.18	1.61	10.79	23.98
		7	9.06	1.85	10.91	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		MCS Index	Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.			
5180	36	0	13.24	23.98
		1	13.14	23.98
		2	13.40	23.98
		3	13.72	23.98
		4	13.81	23.98
		5	13.64	23.98
		6	13.74	23.98
		7	13.84	23.98
5200	40	0	13.06	23.98
		1	13.00	23.98
		2	13.13	23.98
		3	13.56	23.98
		4	13.59	23.98
		5	13.56	23.98
		6	13.60	23.98
		7	13.65	23.98
5240	48	0	13.29	23.98
		1	13.20	23.98
		2	13.40	23.98
		3	13.75	23.98
		4	13.82	23.98
		5	13.75	23.98
		6	13.78	23.98
		7	14.39	23.98

Ant.0

802.11n_HT20 (UNII 2A)

TEST RESULTS

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

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5260	52	6	9.86	0.25	10.11	23.98
		9	9.62	0.46	10.08	23.98
		12	9.70	0.67	10.37	23.98
		18	9.76	0.89	10.65	23.98
		24	9.44	1.26	10.70	23.98
		36	9.14	1.48	10.62	23.98
		48	9.03	1.61	10.64	23.98
		54	8.88	1.85	10.73	23.98
5300	60	6	10.07	0.25	10.32	23.98
		9	9.75	0.46	10.21	23.98
		12	9.78	0.67	10.45	23.98
		18	9.92	0.89	10.81	23.98
		24	9.59	1.26	10.85	23.98
		36	9.23	1.48	10.71	23.98
		48	9.26	1.61	10.87	23.98
		54	9.08	1.85	10.93	23.98
5320	64	6	9.94	0.25	10.19	23.98
		9	9.64	0.46	10.10	23.98
		12	9.73	0.67	10.40	23.98
		18	9.78	0.89	10.67	23.98
		24	9.44	1.26	10.70	23.98
		36	9.09	1.48	10.57	23.98
		48	8.98	1.61	10.59	23.98
		54	8.85	1.85	10.70	23.98

Ant.1

802.11n_HT20 (UNII 2A)

TEST RESULTS

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

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5260	52	6	9.96	0.25	10.21	23.98
		9	9.63	0.46	10.09	23.98
		12	9.67	0.67	10.34	23.98
		18	9.71	0.89	10.60	23.98
		24	9.77	1.26	11.03	23.98
		36	9.22	1.48	10.70	23.98
		48	9.12	1.61	10.73	23.98
		54	8.90	1.85	10.75	23.98
5300	60	6	9.92	0.25	10.17	23.98
		9	9.59	0.46	10.05	23.98
		12	9.64	0.67	10.31	23.98
		18	9.77	0.89	10.66	23.98
		24	9.39	1.26	10.65	23.98
		36	9.16	1.48	10.64	23.98
		48	9.01	1.61	10.62	23.98
		54	8.84	1.85	10.69	23.98
5320	64	6	9.94	0.25	10.19	23.98
		9	9.69	0.46	10.15	23.98
		12	9.57	0.67	10.24	23.98
		18	9.81	0.89	10.70	23.98
		24	9.47	1.26	10.73	23.98
		36	9.24	1.48	10.72	23.98
		48	9.11	1.61	10.72	23.98
		54	8.92	1.85	10.77	23.98

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

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

802.11a Mode		Rate (Mbps)	Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.			
5260	52	6	13.17	23.98
		9	13.10	23.98
		12	13.37	23.98
		18	13.64	23.98
		24	13.88	23.98
		36	13.67	23.98
		48	13.70	23.98
		54	13.75	23.98
5300	60	6	13.26	23.98
		9	13.14	23.98
		12	13.39	23.98
		18	13.75	23.98
		24	13.76	23.98
		36	13.69	23.98
		48	13.76	23.98
		54	13.82	23.98
5320	64	6	13.20	23.98
		9	13.14	23.98
		12	13.33	23.98
		18	13.70	23.98
		24	13.73	23.98
		36	13.66	23.98
		48	13.67	23.98
		54	13.75	23.98

Ant.0

802.11n_HT20 (UNII 2C)

TEST RESULTS

Conducted Output Power Measurements (802.11n_HT20 Mode: 5500~5700)

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5500	100	6	10.03	0.25	10.28	23.98
		9	9.72	0.46	10.18	23.98
		12	9.73	0.67	10.40	23.98
		18	9.90	0.89	10.79	23.98
		24	9.61	1.26	10.87	23.98
		36	9.27	1.48	10.75	23.98
		48	9.21	1.61	10.82	23.98
		54	9.02	1.85	10.87	23.98
5580	116	6	10.14	0.25	10.39	23.98
		9	9.89	0.46	10.35	23.98
		12	9.92	0.67	10.59	23.98
		18	10.04	0.89	10.93	23.98
		24	9.67	1.26	10.93	23.98
		36	9.35	1.48	10.83	23.98
		48	9.30	1.61	10.91	23.98
		54	9.14	1.85	10.99	23.98
5700	140	6	9.96	0.25	10.21	23.98
		9	9.69	0.46	10.15	23.98
		12	9.74	0.67	10.41	23.98
		18	9.82	0.89	10.71	23.98
		24	9.49	1.26	10.75	23.98
		36	9.18	1.48	10.66	23.98
		48	9.10	1.61	10.71	23.98
		54	8.84	1.85	10.69	23.98

Ant.1

802.11n_HT20 (UNII 2C)

TEST RESULTS

Conducted Output Power Measurements (802.11n_HT20 Mode: 5500~5700)

802.11a Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5500	100	6	9.96	0.25	10.21	23.98
		9	9.65	0.46	10.11	23.98
		12	9.74	0.67	10.40	23.98
		18	9.94	0.89	10.83	23.98
		24	9.64	1.26	10.90	23.98
		36	9.35	1.48	10.83	23.98
		48	9.31	1.61	10.92	23.98
		54	9.06	1.85	10.91	23.98
5580	116	6	10.35	0.25	10.60	23.98
		9	10.09	0.46	10.56	23.98
		12	10.05	0.67	10.71	23.98
		18	10.23	0.89	11.12	23.98
		24	9.91	1.26	11.17	23.98
		36	9.68	1.48	11.16	23.98
		48	9.59	1.61	11.19	23.98
		54	9.41	1.85	11.26	23.98
5700	140	6	9.68	0.25	9.93	23.98
		9	9.43	0.46	9.89	23.98
		12	9.56	0.67	10.23	23.98
		18	9.68	0.89	10.57	23.98
		24	9.31	1.26	10.57	23.98
		36	9.00	1.48	10.48	23.98
		48	8.96	1.61	10.56	23.98
		54	8.79	1.85	10.64	23.98

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

Conducted Output Power Measurements (802.11n_HT20 Mode: 5500~5700)

802.11a Mode		Rate (Mbps)	Sum Power of Ant.0 & 1	Limit (dBm)
Frequency [MHz]	Channel No.			
5500	100	6	13.26	23.98
		9	13.16	23.98
		12	13.41	23.98
		18	13.82	23.98
		24	13.90	23.98
		36	13.80	23.98
		48	13.88	23.98
		54	13.90	23.98
5580	116	6	13.51	23.98
		9	13.47	23.98
		12	13.66	23.98
		18	14.04	23.98
		24	14.06	23.98
		36	14.01	23.98
		48	14.06	23.98
		54	14.14	23.98
5700	140	6	13.08	23.98
		9	13.03	23.98
		12	13.33	23.98
		18	13.65	23.98
		24	13.67	23.98
		36	13.58	23.98
		48	13.65	23.98
		54	13.68	23.98

Ant.0

802.11n_HT20 (UNII 3)

TEST RESULTS

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

802.11n_HT20 Mode		MCS Index	Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
Frequency [MHz]	Channel No.					
5745	149	0	10.19	0.25	10.44	30
		1	9.43	0.46	9.89	30
		2	9.84	0.67	10.51	30
		3	9.87	0.89	10.76	30
		4	9.59	1.26	10.85	30
		5	9.32	1.48	10.81	30
		6	9.22	1.61	10.83	30
		7	9.09	1.85	10.94	30
5785	157	0	9.58	0.25	9.84	30
		1	9.34	0.46	9.80	30
		2	9.40	0.67	10.07	30
		3	9.45	0.89	10.34	30
		4	9.11	1.26	10.37	30
		5	8.88	1.48	10.36	30
		6	8.75	1.61	10.36	30
		7	8.71	1.85	10.56	30
5825	165	0	9.86	0.25	10.12	30
		1	9.55	0.46	10.01	30
		2	9.63	0.67	10.30	30
		3	9.73	0.89	10.62	30
		4	9.39	1.26	10.66	30
		5	9.13	1.48	10.61	30
		6	8.99	1.61	10.59	30
		7	8.83	1.85	10.67	30