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FCC/ IC UNII REPORT

FCC/IC Certification

Applicant Name:
SAMSUNG Electronics Co.,Ltd.

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

Date of Issue:
March 23, 2016
Test Site/Location:
HCT CO., LTD., 74,Seoicheon-ro 578beon-gil,Majang-
myeo,Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
Report No.: HCT-R-1603-F044-1
HCT FRN: 0005866421
IC Recognition No.: 5944A-5

FCC ID	: A3LWEA403SI
IC	: 649E-WEA403SI
APPLICANT	: SAMSUNG Electronics Co.,Ltd.

FCC/IC Model(s): WEA403Si

Modulation type: OFDM

FCC Classification: Unlicensed National Information Infrastructure(UNII)

FCC Rule Part(s): Part 15.407

IC Rule Part(s) : RSS-247 Issue 1(May 2015) , RSS-GEN Issue 4(November 2014)

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)

Port	Band	Mode	Frequency Range (MHz)	Ant.0 (SISO) (dBm)	Ant.1 (SISO) (dBm)	Ant.2 (SISO) (dBm)	Ant. 0 & 1&2 (MIMO) (dBm)
Monitoring	UNII1	802.11a_20MHz	5180 – 5240	3.60	3.69	1.85	7.84
	UNII2A	802.11a_20MHz	5260 – 5320	10.73	10.98	12.09	16.04
	UNII2C	802.11a_20MHz	5500 – 5720	11.28	11.41	12.07	16.37
	UNII3	802.11a_20MHz	5745 – 5825	8.61	8.81	9.08	13.54
Service	UNII1	802.11a_20MHz	5180 – 5240	4.84	4.50	4.89	9.52
		802.11n_20MHz	5180 – 5240	3.64	3.23	3.51	8.23
		802.11n_40MHz	5190 – 5230	6.17	5.58	5.93	10.62
		802.11ac_20MHz	5180 – 5240	3.92	3.51	3.84	8.45
		802.11ac_40MHz	5190 – 5230	5.24	4.67	4.95	9.65
		802.11ac_80MHz	5210	4.30	3.74	4.09	8.77
	UNII2A	802.11a_20MHz	5260 – 5320	9.60	9.50	9.89	14.43
		802.11n_20MHz	5260 – 5320	9.93	9.29	9.78	14.41
		802.11n_40MHz	5270 – 5310	6.10	5.84	6.35	10.85
		802.11ac_20MHz	5260 – 5320	10.28	9.87	10.33	14.92
		802.11ac_40MHz	5270 – 5310	5.86	5.90	6.30	10.74
		802.11ac_80MHz	5290	4.40	4.00	4.74	9.16
	UNII2C	802.11a_20MHz	5500 – 5720	11.13	10.62	11.00	15.66
		802.11n_20MHz	5500 – 5720	11.72	11.48	11.59	16.33
		802.11n_40MHz	5510 – 5710	13.33	13.32	13.31	18.08
		802.11ac_20MHz	5500 – 5720	11.49	11.02	11.52	16.12
		802.11ac_40MHz	5510 – 5710	13.22	13.32	13.35	18.06
		802.11ac_80MHz	5530 – 5690	13.37	13.06	13.53	18.09
	UNII3	802.11a_20MHz	5745 – 5825	11.04	10.42	10.86	15.51
		802.11n_20MHz	5745 – 5825	10.64	10.06	10.48	15.15
802.11n_40MHz		5755 – 5795	10.41	9.63	10.24	14.80	
802.11ac_20MHz		5745 – 5825	10.34	9.88	10.40	14.98	
802.11ac_40MHz		5755 – 5795	11.93	11.14	11.73	16.32	
802.11ac_80MHz		5775	6.95	6.04	6.65	11.32	



Report prepared by
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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1603-F044	March 09, 2016	- First Approval Report
HCT-R-1603-F044-1	March 23, 2016	- Revised the requirement in section 8.8.2 on Page 455

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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: A3LWEA403SI
IC: 649E-WEA403SI
EUT Type: WLAN Access Point
FCC/IC Model name(s): WEA403Si
Date(s) of Tests: January 18, 2016 ~ February 22, 2016
Place of Tests: HCT Co., Ltd.
 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea
 (IC Recognition No. : 5944A-5)

2. EUT DESCRIPTION

FCC/IC Model Name	WEA403Si	
EUT Type	WLAN Access Point	
Power Supply	AC adaptor : 100 V ~ 240 V, POE : DC 48 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)
	TX_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)
	TX_80 MHz BW:	5210 MHz(UNII 1)/ 5290 MHz(UNII 2A)/ 5530 MHz - 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)
	RX_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)
	RX_80 MHz BW:	5210 MHz(UNII 1)/ 5290 MHz(UNII 2A)/ 5530 MHz - 5690 MHz(UNII 2C)/ 5775 MHz (UNII 3)
Modulation Type	OFDM(802.11a, 802.11n, 802.11ac)	
Antenna Specification	Manufacturer: ACE Technology Antenna type: Internal Antenna Peak Gain : cf. Section 6	

2.1 EUT OPERATING MODE

▣ Operating mode

Port	Mode	Operating Mode	Operating Ant.
Monitoring	802.11a	MIMO	Ant 0 & 1 & 2
Service	802.11a,n,ac	SISO	Ant 0
			Ant 1
			Ant 2
		MIMO	Ant 0 & 1
			Ant 0 & 1 & 2

Note :

1. This EUT is supported the AC adaptor and POE. Because worst case is AC adaptor, so we attached only the results for AC adaptor.
2. In case of radiation test, we have done all test case. Worst case is Ant 0 & 1 & 2 for monitoring and Ant 0 & 1 & 2 for service. 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 v01r01 dated January 08, 2016 entitled “ Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part15, Subpart E” and the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) 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.

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)

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 7.1.2

“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 7.1.2

▣ Directional Gain Calculations

▪ If any transmit signals are correlated with each other(802.11a,n,ac),

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

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

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

▣ Antenna Gain

CDD mode(UNII 1)

Service	Antenna Gain	Ant 0	6.49 dBi
		Ant 1	6.36 dBi
		Ant 2	5.95 dBi
	Directional Antenna Gain	Ant 0 & 1	9.44 dBi(802.11a,n,ac)
		Ant 0 & 1 & 2	11.04 dBi(802.11a,n,ac)
Monitor	Antenna Gain	Ant 0	7.8 dBi
		Ant 1	6.7 dBi
		Ant 2	6.72 dBi
	Directional Antenna Gain	Ant 0 & 1 & 2	11.86 dBi(802.11a)

CDD mode(UNII 2A)

Service	Antenna Gain	Ant 0	6.76 dBi
		Ant 1	6.24 dBi
		Ant 2	5.90 dBi
	Directional Antenna Gain	Ant 0 & 1	9.51 dBi(802.11a,n,ac)
		Ant 0 & 1 & 2	11.08 dBi(802.11a,n,ac)
Monitor	Antenna Gain	Ant 0	7.80 dBi
		Ant 1	6.84 dBi
		Ant 2	6.43 dBi
	Directional Antenna Gain	Ant 0 & 1 & 2	11.81 dBi(802.11a)

CDD mode(UNII 2C)

Service	Antenna Gain	Ant 0	6.34 dBi
		Ant 1	5.71 dBi
		Ant 2	5.69 dBi
	Directional Antenna Gain	Ant 0 & 1	9.04 dBi(802.11a,n,ac)
		Ant 0 & 1 & 2	10.69 dBi(802.11a,n,ac)
Monitor	Antenna Gain	Ant 0	7.54 dBi
		Ant 1	6.98 dBi
		Ant 2	7.68 dBi
	Directional Antenna Gain	Ant 0 & 1 & 2	12.18 dBi(802.11a)

CDD mode(UNII 3)

Service	Antenna Gain	Ant 0	6.17 dBi
		Ant 1	5.46 dBi
		Ant 2	4.78 dBi
	Directional Antenna Gain	Ant 0 & 1	8.83 dBi(802.11a,n,ac)
		Ant 0 & 1 & 2	10.26 dBi(802.11a,n,ac)
Monitor	Antenna Gain	Ant 0	7 dBi
		Ant 1	6.53 dBi
		Ant 2	5.82 dBi
	Directional Antenna Gain	Ant 0 & 1 & 2	11.23 dBi(802.11a)

Note : This EUT is supported CDD and SDM for 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. SUMMARY OF TEST RESULTS

7.1 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)(1)	< 250 mW (5150-5250 MHz) < 250 mW (5250-5350 MHz) < 250 mW (5470-5725 MHz) <1 W (5725-5850 MHz)		PASS
Peak Power Spectral Density	§15.407(a)(1), (5)	<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)	N/A		N/A
AC Conducted Emissions 150 kHz-30 MHz	§15.207	<FCC 15.207 limits		N/A
Undesirable Emissions	§15.407(b)(1), (2), (3)	<-27 dBm/ MHz EIRP (UNII1, 2A, 2C) <-17 dBm/MHz EIRP within 5715-5725 MHz and 5850-5860 MHz, <-27 dBm/MHz EIRP outside 5715-5850 MHz(UNII3)	RADIATED	PASS
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	§15.205, 5.407(b)(1), (5), (6)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		PASS

7.2 IC Part

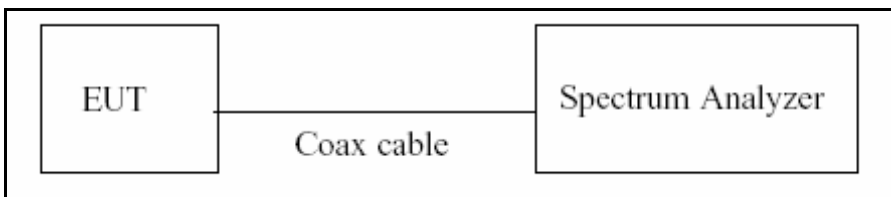
Test Description	IC Part Section(s)	Test Limit	Test Condition	Test Result
99% Bandwidth(IC)	RSS-GEN, 6.6	N/A	CONDUCTED	PASS
6 dB Bandwidth	RSS-247, 6.2.4.1)	> 500 kHz (5725-5850 MHz)		PASS
Maximum Conducted Output Power,	RSS-247, 6.2	< 250 mW or 11+10 log ₁₀ (BW) dBm (5250-5350 MHz) < 250 mW or 11+10 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		PASS
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)		
	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)	OBW does not fall within 5250-5350 MHz (5150-5350 MHz)		PASS
	RSS-247, 6.2	<-27 dBm/ MHz EIRP (5150-5350 MHz, 5470-5725 MHz)		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	RADIATED	PASS

8. TEST RESULT

8.1 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, issued 01/08/2016)

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

Monitoring Port

Mode	Data Rate (Mbps)	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11a	6	2.065	2.170	0.95161290	0.215
	9	1.385	1.455	0.95189003	0.214
	12	1.045	1.095	0.95433790	0.203
	18	0.705	0.740	0.95270270	0.210
	24	0.530	0.560	0.94642857	0.239
	36	0.366	0.390	0.93846154	0.276
	48	0.276	0.299	0.92307692	0.348
	54	0.248	0.271	0.91512915	0.385

Duty Cycle Factor

Service Port

Mode	Data Rate (Mbps)	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11a	6	2.064	2.170	0.95115207	0.218
	9	1.386	1.454	0.95323246	0.208
	12	1.047	1.100	0.95181818	0.214
	18	0.700	0.738	0.94850949	0.230
	24	0.532	0.558	0.95340502	0.207
	36	0.364	0.387	0.94056848	0.266
	48	0.276	0.299	0.92307692	0.348
	54	0.248	0.271	0.91512915	0.385
802.11n_20 MHz BW	MCS 0	1.913	2.011	0.95126803	0.217
	MCS 1	0.979	1.025	0.95512195	0.199
	MCS 2	0.665	0.695	0.95683453	0.192
	MCS 3	0.508	0.532	0.95488722	0.200
	MCS 4	0.352	0.376	0.93617021	0.286
	MCS 5	0.272	0.296	0.91891892	0.367
	MCS 6	0.248	0.272	0.91176471	0.401
	MCS 7	0.228	0.250	0.91200000	0.400
802.11n_40 MHz BW	MCS 0	0.944	1.042	0.90595010	0.429
	MCS 1	0.492	0.540	0.91111111	0.404
	MCS 2	0.340	0.374	0.90909091	0.414
	MCS 3	0.264	0.286	0.92307692	0.348
	MCS 4	0.188	0.211	0.89099526	0.501
	MCS 5	0.152	0.175	0.86857143	0.612
	MCS 6	0.140	0.163	0.85889571	0.661
	MCS 7	0.128	0.151	0.84768212	0.718

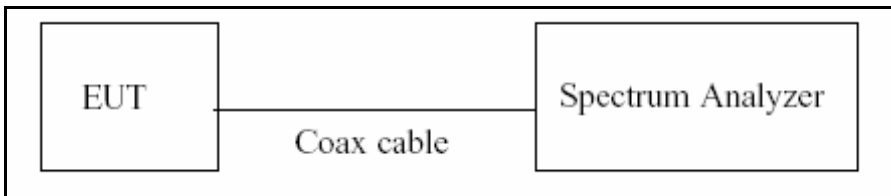
Mode	Data Rate (Mbps)	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11ac_20 MHz BW	MCS 0	1.930	1.960	0.98469388	0.067
	MCS 1	0.985	1.010	0.97524752	0.109
	MCS 2	0.675	0.700	0.96428571	0.158
	MCS 3	0.512	0.539	0.94990724	0.223
	MCS 4	0.355	0.383	0.92689295	0.330
	MCS 5	0.276	0.303	0.91089109	0.405
	MCS 6	0.251	0.280	0.89642857	0.475
	MCS 7	0.231	0.260	0.88846154	0.514
	MCS 8	0.199	0.228	0.87280702	0.591
802.11ac_40 MHz BW	MCS 0	0.954	0.981	0.97247706	0.121
	MCS 1	0.498	0.525	0.94857143	0.229
	MCS 2	0.345	0.372	0.92741935	0.327
	MCS 3	0.268	0.297	0.90235690	0.446
	MCS 4	0.191	0.220	0.86818182	0.614
	MCS 5	0.154	0.184	0.83695652	0.773
	MCS 6	0.144	0.172	0.83720930	0.772
	MCS 7	0.132	0.160	0.82500000	0.835
	MCS 8	0.116	0.144	0.80555556	0.939
	MCS 9	0.112	0.140	0.80000000	0.969
802.11ac_80 MHz BW	MCS 0	0.460	0.489	0.94069530	0.266
	MCS 1	0.253	0.280	0.90357143	0.440
	MCS 2	0.179	0.207	0.86473430	0.631
	MCS 3	0.148	0.176	0.84090909	0.753
	MCS 4	0.112	0.140	0.80000000	0.969
	MCS 5	0.096	0.124	0.77419355	1.112
	MCS 6	0.088	0.116	0.75862069	1.200
	MCS 7	0.084	0.112	0.75000000	1.249
	MCS 8	0.076	0.104	0.73076923	1.362
	MCS 9	0.072	0.100	0.72000000	1.427

8.2 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(issued 01/08/2016), 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, issued 01/08/2016)

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.
3. In case of UNII channels 142 and 144, this device is satisfied with KDB644545 D03.

■ 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, issued 01/08/2016)

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.

Conducted 26 dB Bandwidth _Monitoring Port Ant.0

■ TEST RESULTS for 802.11a_20MHz BW

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	20.007	N/A	Pass
5200	40	19.784	N/A	Pass
5240	48	20.129	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	19.909	N/A	Pass
5300	60	20.081	N/A	Pass
5320	64	20.006	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

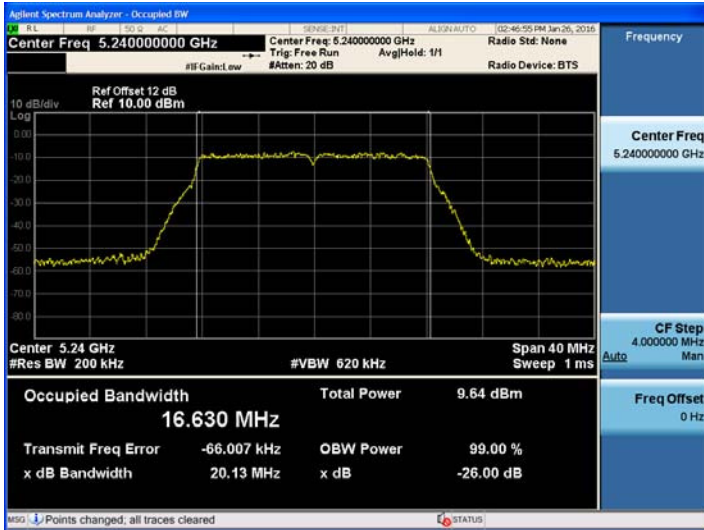
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	19.944	N/A	Pass
5580	116	20.162	N/A	Pass
5720	144	20.038	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

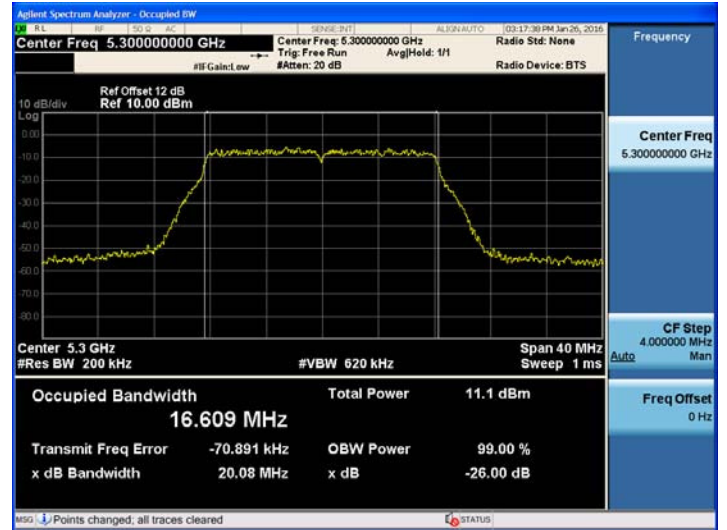
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	19.948	N/A	Pass
5785	157	20.082	N/A	Pass
5825	165	19.939	N/A	Pass

TEST Plot for 802.11a _20MHz BW_Monitoring Port Ant.0

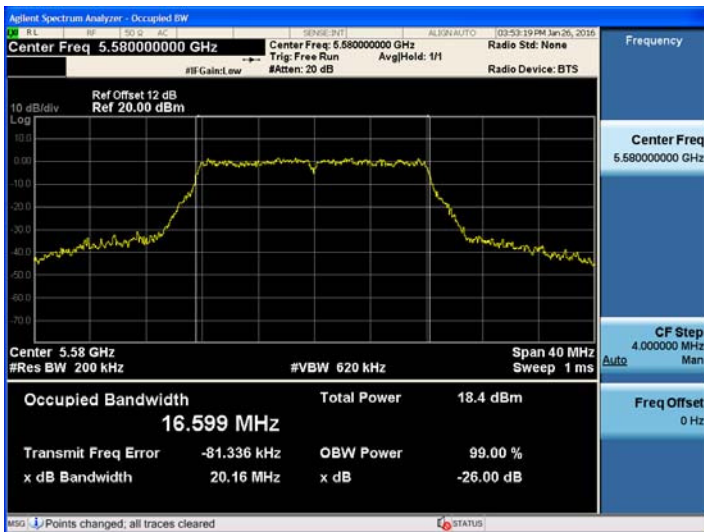
802.11a UNII 1 BAND 26dB Bandwidth



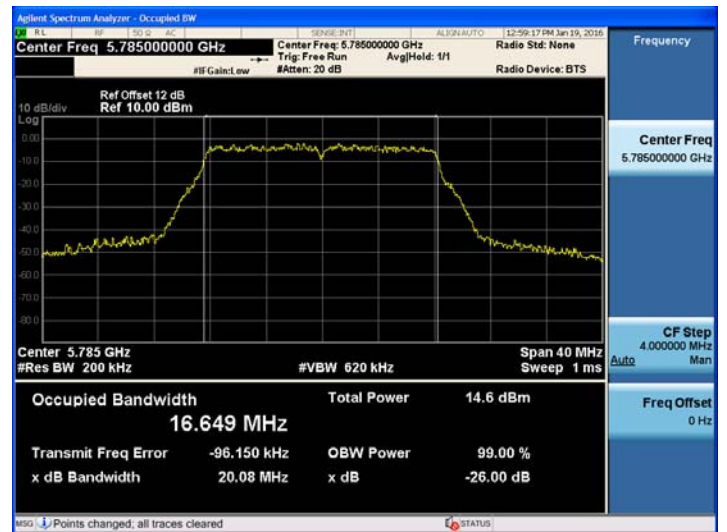
802.11a UNII 2A BAND 26dB Bandwidth



802.11a UNII 2C BAND 26dB Bandwidth



802.11a UNII 3 BAND 26dB Bandwidth



Note :

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

Conducted 26 dB Bandwidth _Monitoring Port Ant.1

■ TEST RESULTS for 802.11a_20MHz BW

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	20.010	N/A	Pass
5200	40	19.958	N/A	Pass
5240	48	19.989	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	20.049	N/A	Pass
5300	60	20.090	N/A	Pass
5320	64	19.872	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

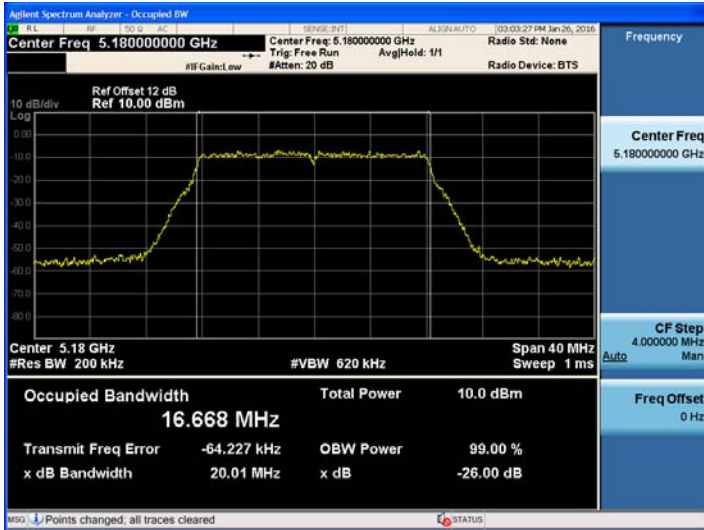
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	19.880	N/A	Pass
5580	116	20.098	N/A	Pass
5720	144	20.005	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

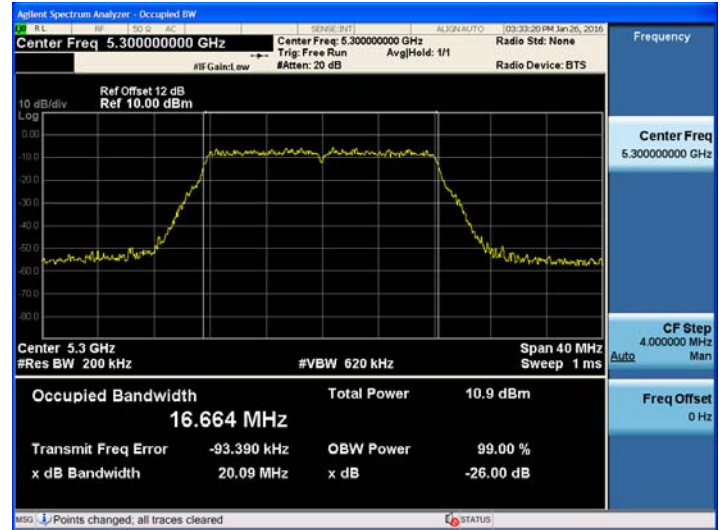
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	19.828	N/A	Pass
5785	157	20.120	N/A	Pass
5825	165	19.975	N/A	Pass

☐ TEST Plot for 802.11a _20MHz BW_Monitoring Port Ant.1

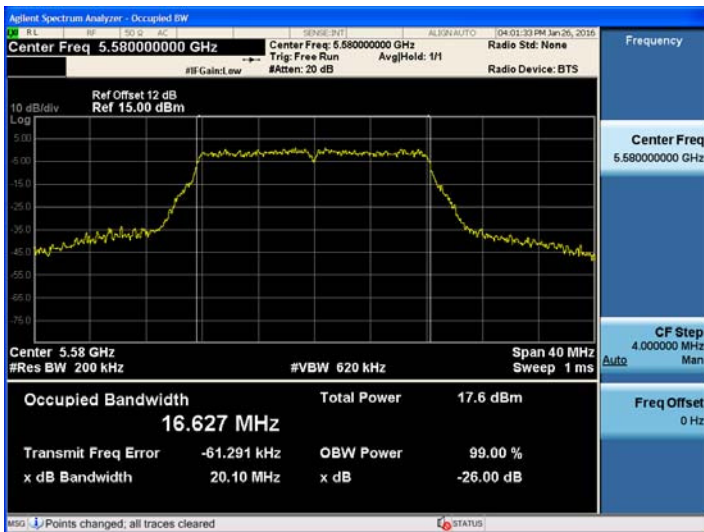
802.11a UNII 1 BAND 26dB Bandwidth



802.11a UNII 2A BAND 26dB Bandwidth



802.11a UNII 2C BAND 26dB Bandwidth



802.11a UNII 3 BAND 26dB Bandwidth



Note :

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

Conducted 26 dB Bandwidth _Monitoring Port Ant.2

■ TEST RESULTS for 802.11a_20MHz BW

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	19.859	N/A	Pass
5200	40	19.844	N/A	Pass
5240	48	19.890	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	19.973	N/A	Pass
5300	60	20.055	N/A	Pass
5320	64	19.921	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

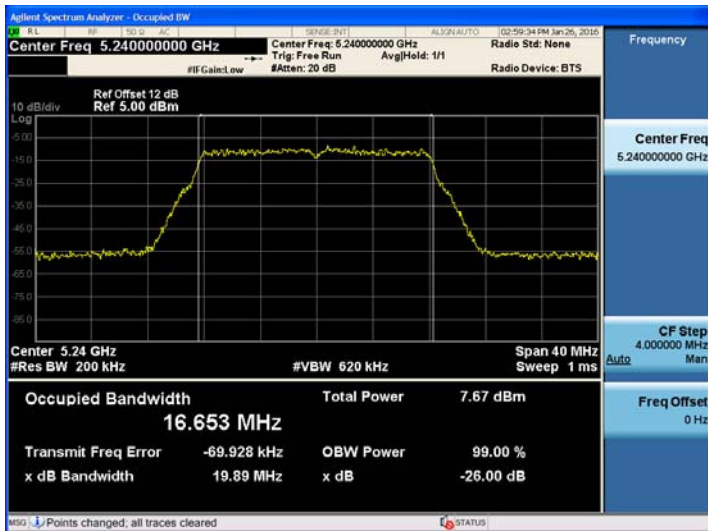
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	19.878	N/A	Pass
5580	116	19.916	N/A	Pass
5720	144	20.001	N/A	Pass

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	20.116	N/A	Pass
5785	157	20.103	N/A	Pass
5825	165	19.882	N/A	Pass

TEST Plot for 802.11a _20MHz BW_Monitoring Port Ant.2

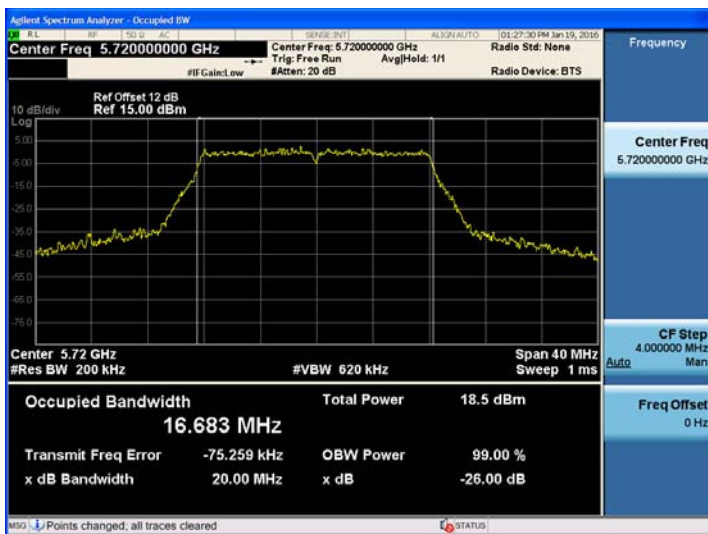
802.11a UNII 1 BAND 26dB Bandwidth



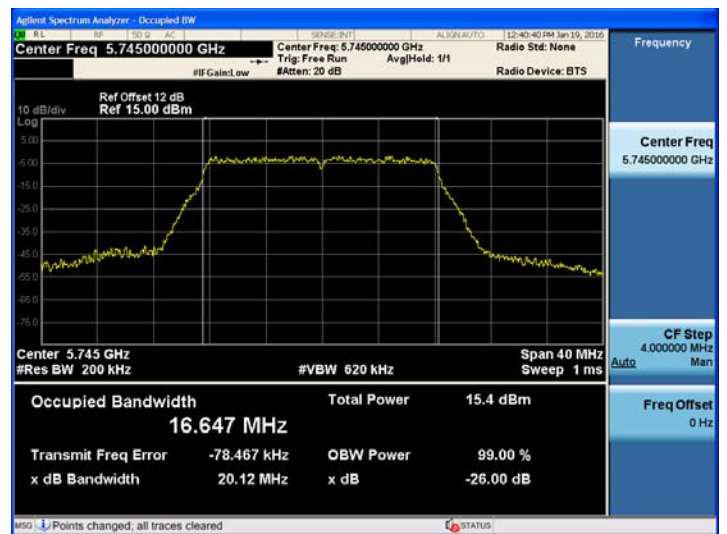
802.11a UNII 2A BAND 26dB Bandwidth



802.11a UNII 2C BAND 26dB Bandwidth



802.11a UNII 3 BAND 26dB Bandwidth



Note :

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

Conducted 26 dB Bandwidth _Service Port_Ant.0

■ TEST RESULTS for 802.11a_20MHz BW

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	20.080	N/A	Pass
5200	40	19.998	N/A	Pass
5240	48	20.089	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	19.948	N/A	Pass
5300	60	19.987	N/A	Pass
5320	64	19.964	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

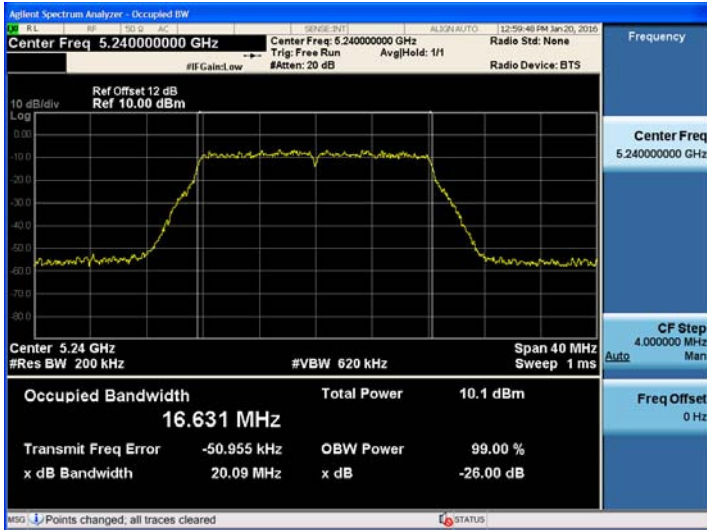
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	20.067	N/A	Pass
5580	116	20.061	N/A	Pass
5720	144	20.035	N/A	Pass

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	19.929	N/A	Pass
5785	157	19.956	N/A	Pass
5825	165	19.912	N/A	Pass

TEST Plot for 802.11a _20MHz BW_Service Port_Ant.0

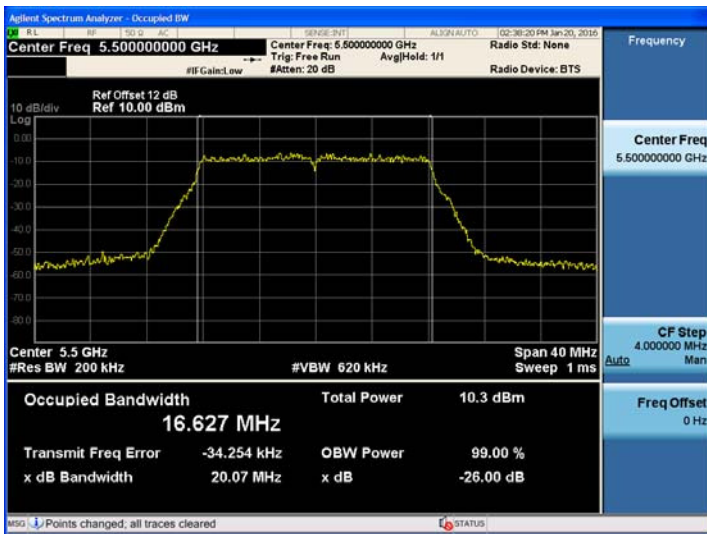
802.11a UNII 1 BAND 26dB Bandwidth



802.11a UNII 2A BAND 26dB Bandwidth



802.11a UNII 2C BAND 26dB Bandwidth



802.11a UNII 3 BAND 26dB Bandwidth



Note :

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

Conducted 26 dB Bandwidth_Service Port_Ant.1

■ TEST RESULTS for 802.11a_20MHz BW

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	20.162	N/A	Pass
5200	40	19.961	N/A	Pass
5240	48	19.938	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	19.892	N/A	Pass
5300	60	20.004	N/A	Pass
5320	64	19.986	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

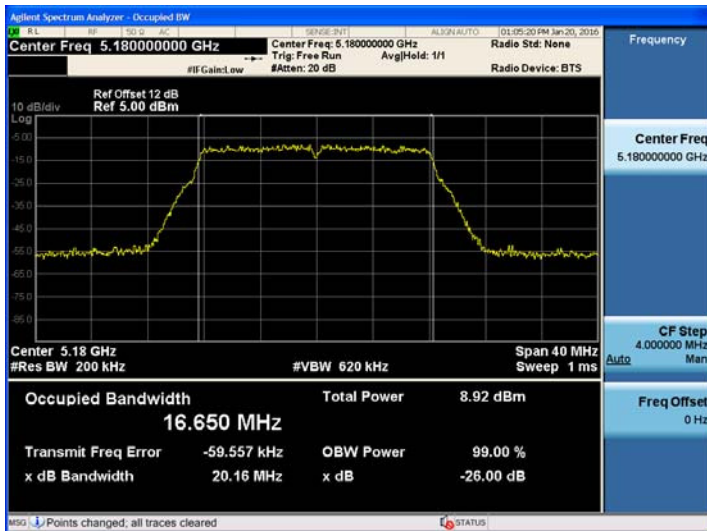
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	20.011	N/A	Pass
5580	116	20.008	N/A	Pass
5720	144	20.018	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

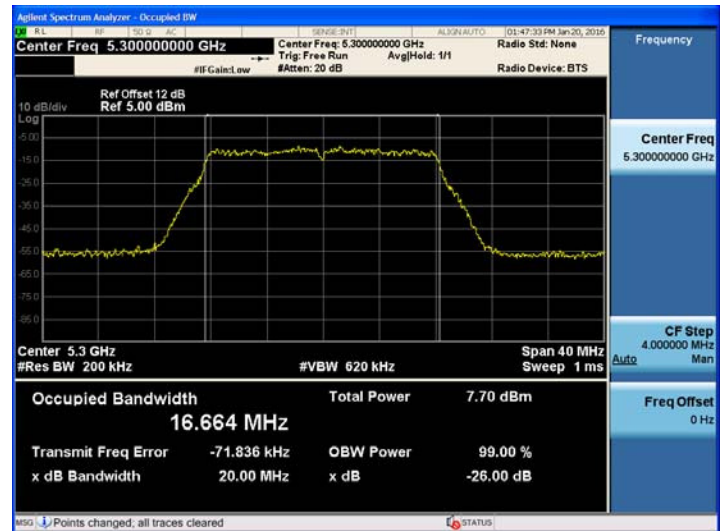
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	20.056	N/A	Pass
5785	157	20.064	N/A	Pass
5825	165	20.132	N/A	Pass

TEST Plot for 802.11a _20MHz BW_Service Port_Ant.1

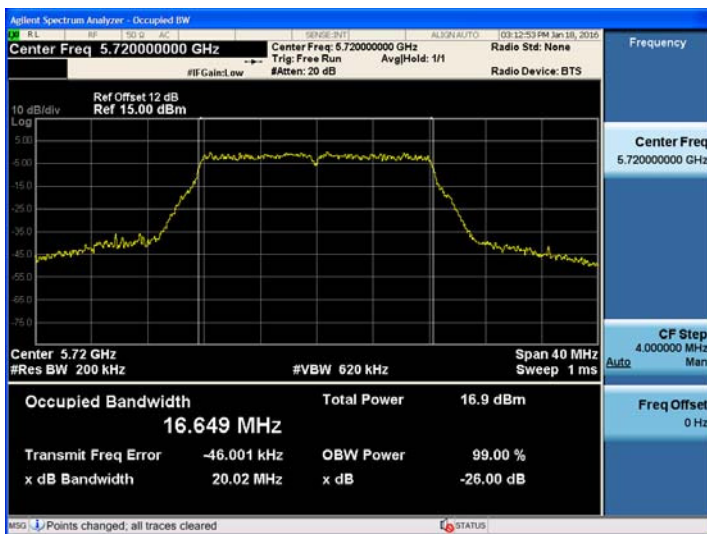
802.11a UNII 1 BAND 26dB Bandwidth



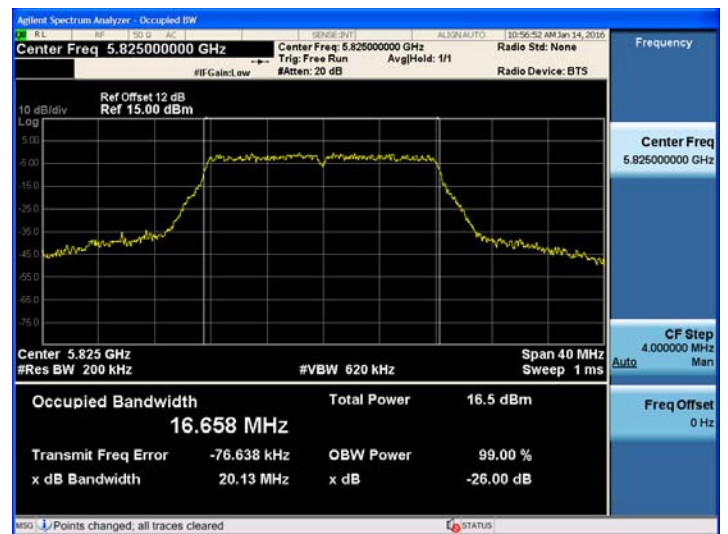
802.11a UNII 2A BAND 26dB Bandwidth



802.11a UNII 2C BAND 26dB Bandwidth



802.11a UNII 3 BAND 26dB Bandwidth



Note :

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

Conducted 26 dB Bandwidth _Service Port_Ant.2

■ TEST RESULTS for 802.11a_20MHz BW

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	19.988	N/A	Pass
5200	40	20.052	N/A	Pass
5240	48	19.880	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	20.002	N/A	Pass
5300	60	20.053	N/A	Pass
5320	64	20.026	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

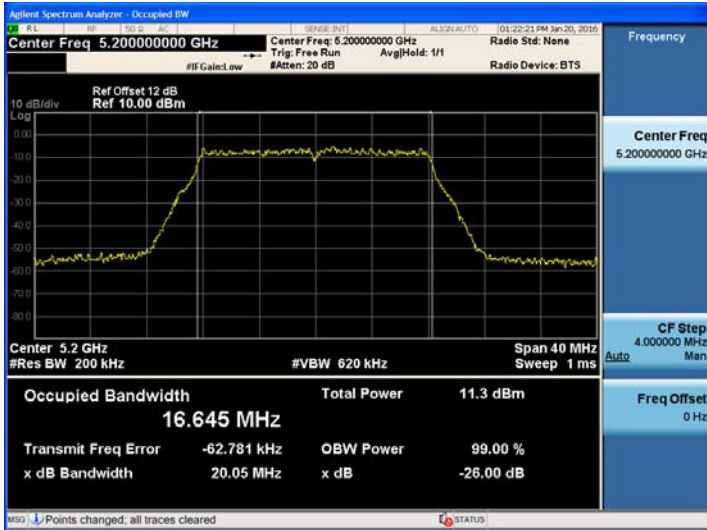
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	20.084	N/A	Pass
5580	116	20.036	N/A	Pass
5720	144	19.872	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

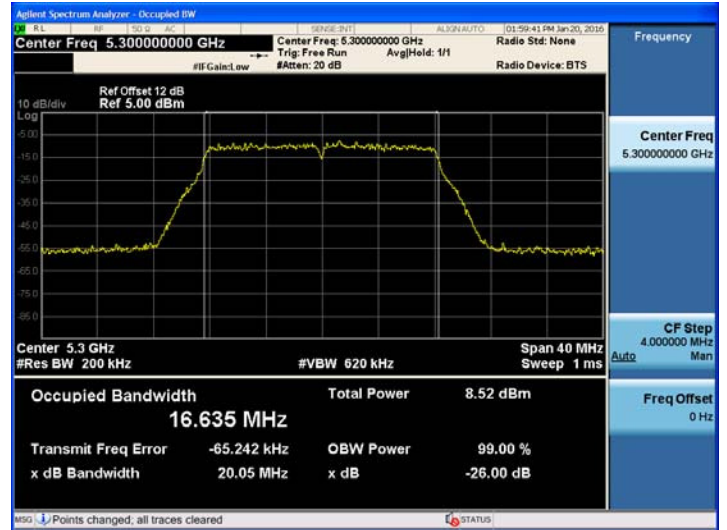
802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	19.966	N/A	Pass
5785	157	20.061	N/A	Pass
5825	165	20.074	N/A	Pass

TEST Plot for 802.11a _20MHz BW_Service Port_Ant.2

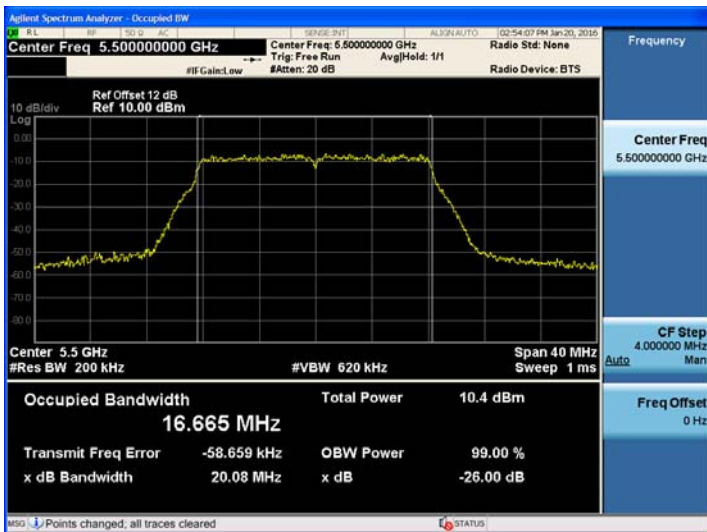
802.11a UNII 1 BAND 26dB Bandwidth



802.11a UNII 2A BAND 26dB Bandwidth



802.11a UNII 2C BAND 26dB Bandwidth



802.11a UNII 3 BAND 26dB Bandwidth



Note :

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

Conducted 26 dB Bandwidth _Service Port_Ant.0

■ TEST RESULTS for 802.11n

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	20.474	N/A	Pass
5200	40	20.602	N/A	Pass
5240	48	20.294	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	20.247	N/A	Pass
5300	60	20.252	N/A	Pass
5320	64	20.296	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

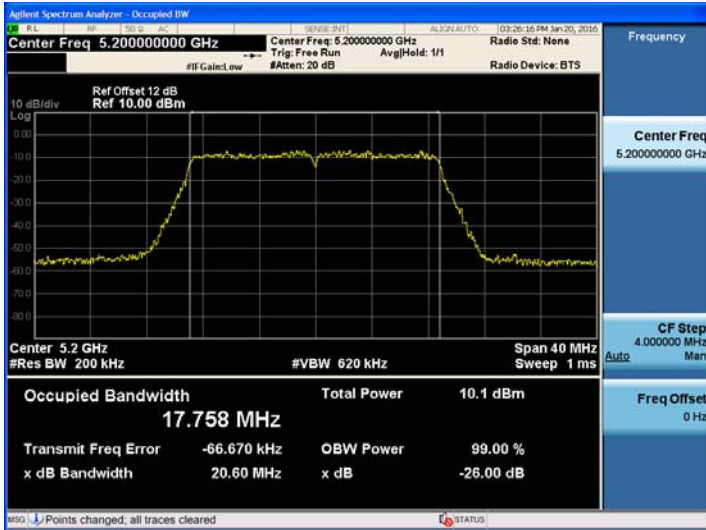
802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	20.101	N/A	Pass
5580	116	20.220	N/A	Pass
5720	144	20.273	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

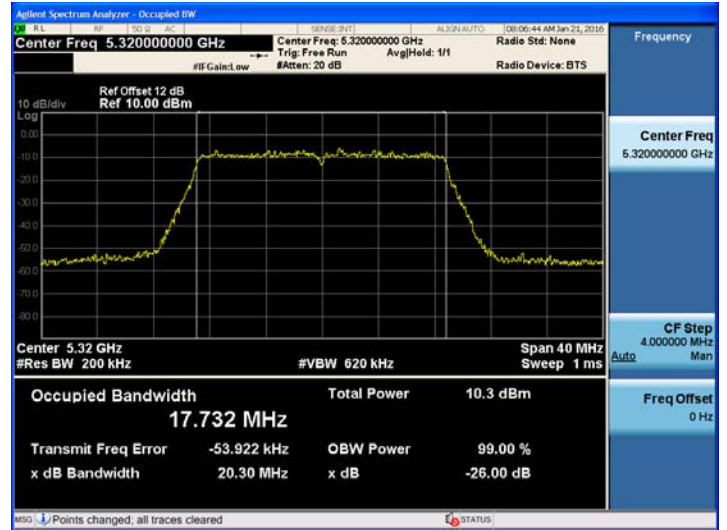
802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	20.286	N/A	Pass
5785	157	20.322	N/A	Pass
5825	165	20.190	N/A	Pass

TEST Plot for 802.11n_20MHz BW _Service Port_Ant.0

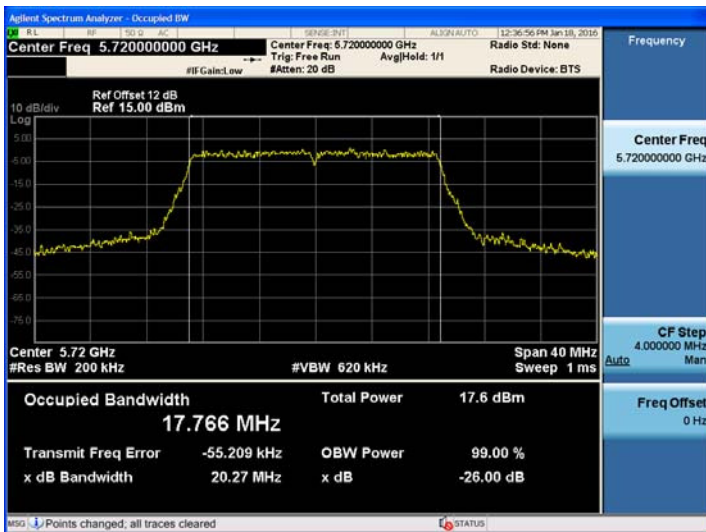
802.11n_20 MHz BW UNII 1 BAND 26dB Bandwidth



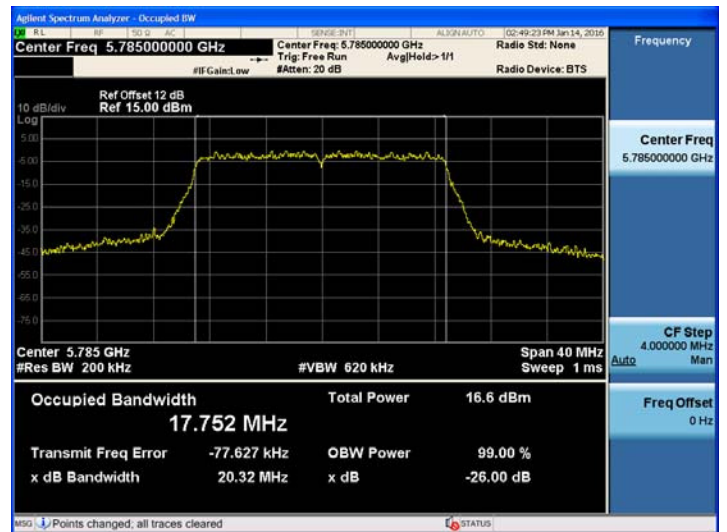
802.11n_20 MHz BW UNII 2A BAND 26dB Bandwidth



802.11n_20 MHz BW UNII 2C BAND 26dB Bandwidth



802.11n_20 MHz BW UNII 3 BAND 26dB Bandwidth



Note :

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

Conducted 26 dB Bandwidth _Service Port_Ant.1

■ TEST RESULTS for 802.11n

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	20.212	N/A	Pass
5200	40	20.251	N/A	Pass
5240	48	20.478	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	20.456	N/A	Pass
5300	60	20.381	N/A	Pass
5320	64	20.321	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

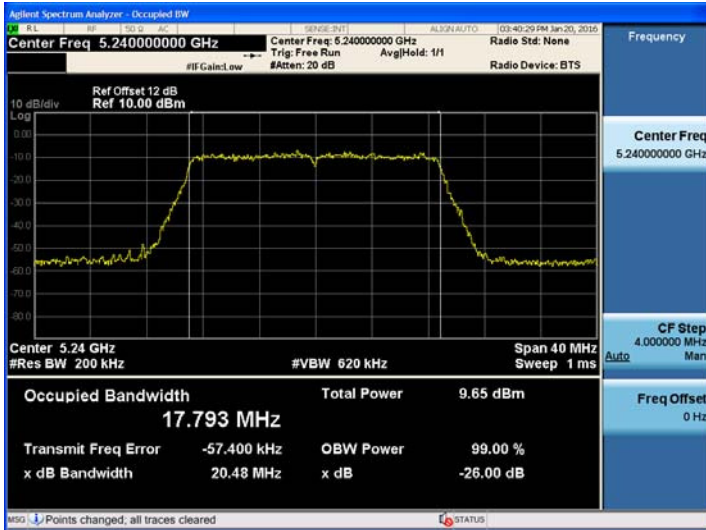
802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	20.331	N/A	Pass
5580	116	20.313	N/A	Pass
5720	144	20.351	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

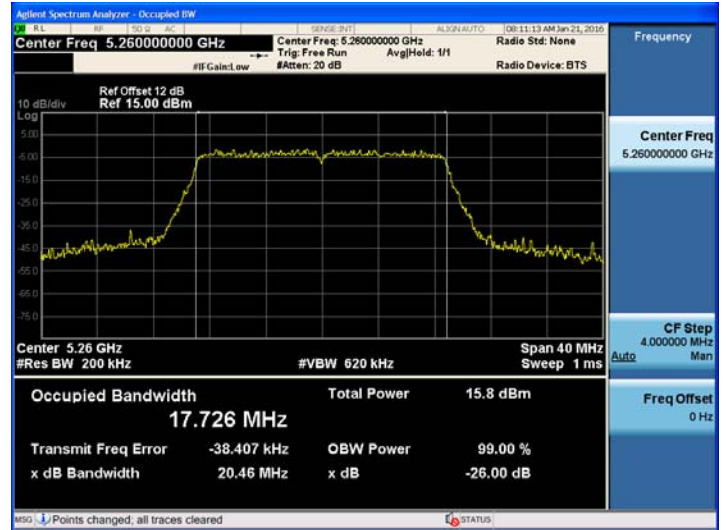
802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	20.583	N/A	Pass
5785	157	20.343	N/A	Pass
5825	165	20.388	N/A	Pass

TEST Plot for 802.11n_20MHz BW _Service Port_Ant.1

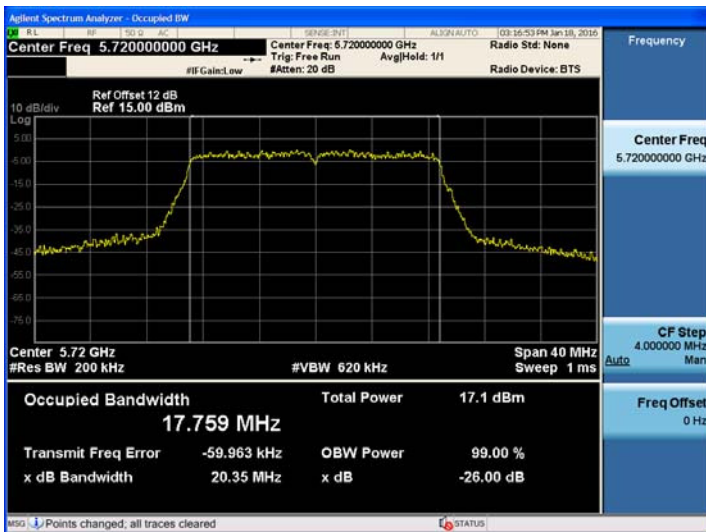
802.11n_20 MHz BW UNII 1 BAND 26dB Bandwidth



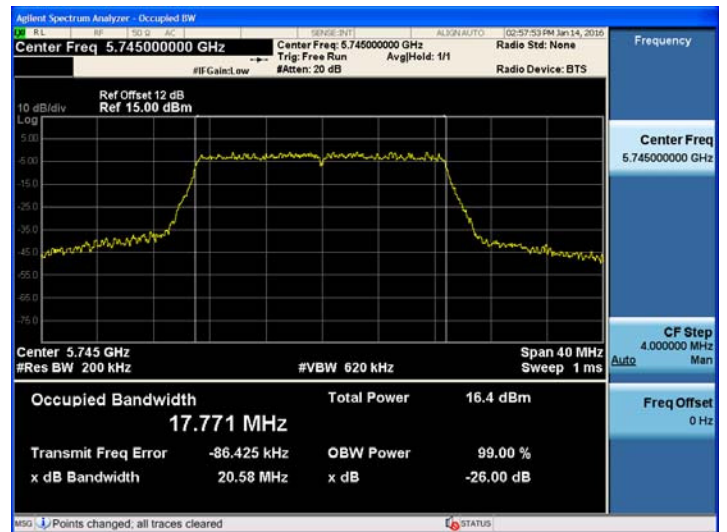
802.11n_20 MHz BW UNII 2A BAND 26dB Bandwidth



802.11n_20 MHz BW UNII 2C BAND 26dB Bandwidth



802.11n_20 MHz BW UNII 3 BAND 26dB Bandwidth



Note :

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

Conducted 26 dB Bandwidth _Service Port_Ant.2

■ TEST RESULTS for 802.11n

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	20.326	N/A	Pass
5200	40	20.333	N/A	Pass
5240	48	20.197	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	20.069	N/A	Pass
5300	60	20.382	N/A	Pass
5320	64	20.303	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

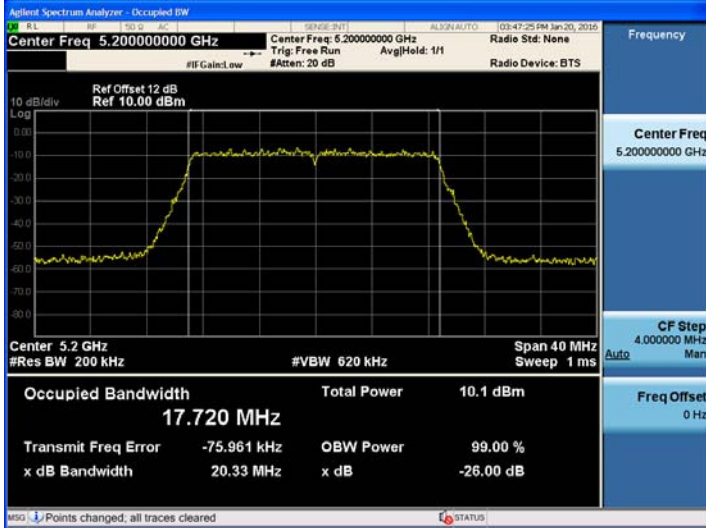
802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	20.228	N/A	Pass
5580	116	20.308	N/A	Pass
5720	144	20.308	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_20 MHz BW

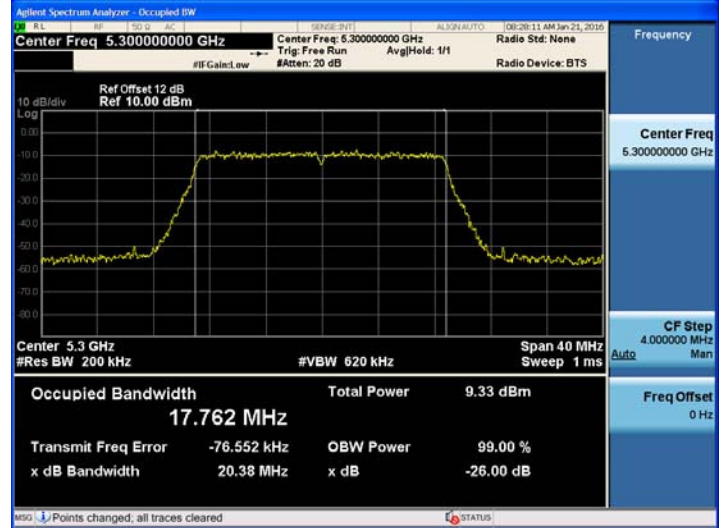
802.11n(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	20.340	N/A	Pass
5785	157	20.363	N/A	Pass
5825	165	20.515	N/A	Pass

TEST Plot for 802.11n_20MHz BW _Service Port_Ant.2

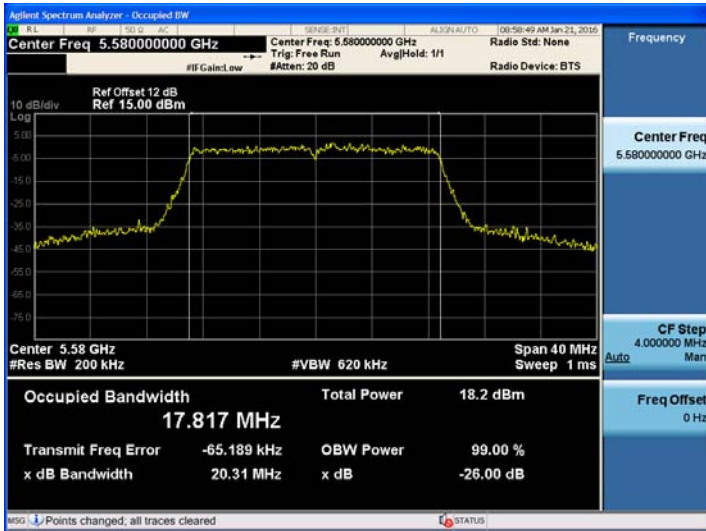
802.11n_20 MHz BW UNII 1 BAND 26dB Bandwidth



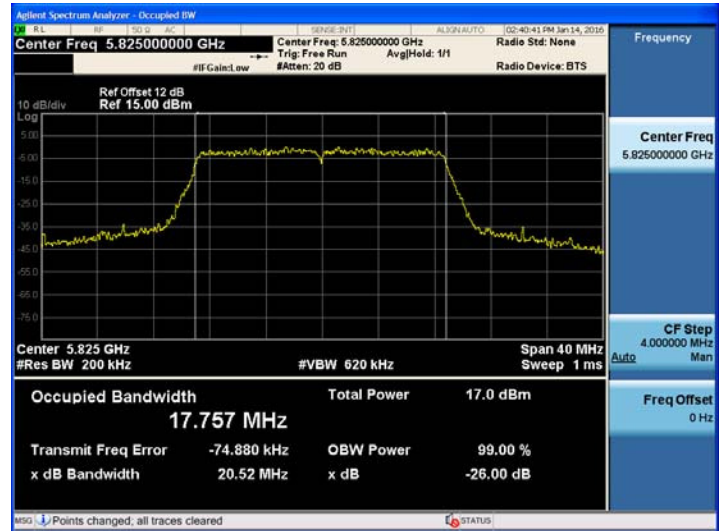
802.11n_20 MHz BW UNII 2A BAND 26dB Bandwidth



802.11n_20 MHz BW UNII 2C BAND 26dB Bandwidth



802.11n_20 MHz BW UNII 3 BAND 26dB Bandwidth



Note :

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

■ TEST RESULTS for 802.11ac_20MHz BW_Service Port_Ant.0

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	20.343	N/A	Pass
5200	40	20.240	N/A	Pass
5240	48	20.263	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	20.385	N/A	Pass
5300	60	20.282	N/A	Pass
5320	64	20.293	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

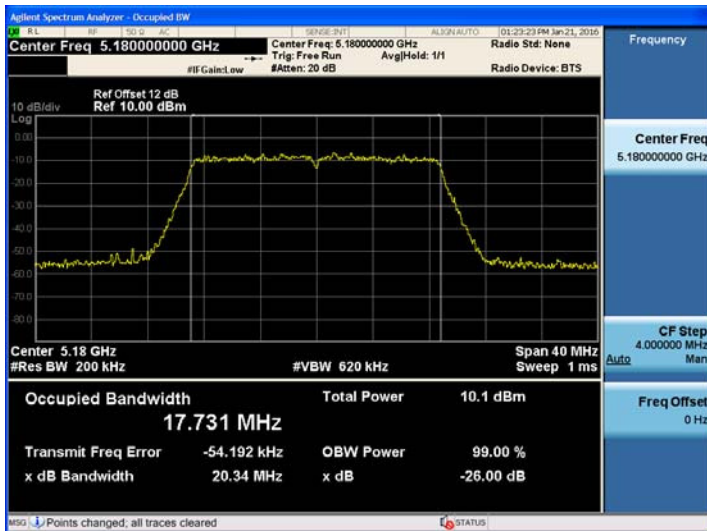
802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	20.250	N/A	Pass
5580	116	20.300	N/A	Pass
5720	144	20.158	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

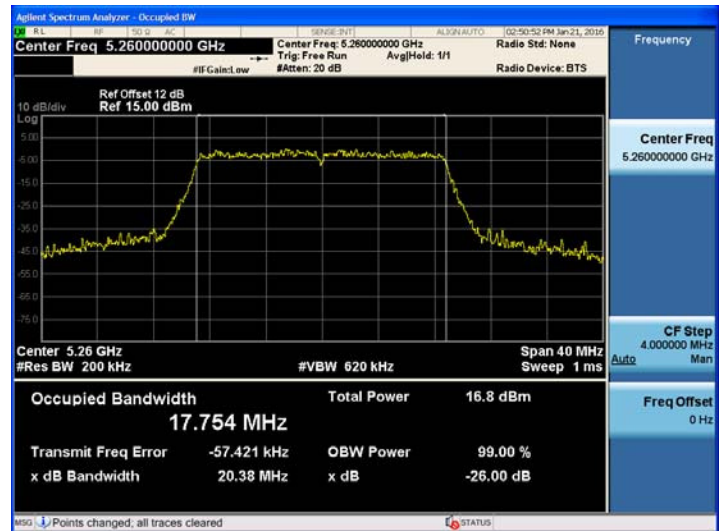
802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	20.294	N/A	Pass
5785	157	20.445	N/A	Pass
5825	165	20.263	N/A	Pass

TEST Plot for 802.11ac _20MHz BW_Service Port_Ant.0

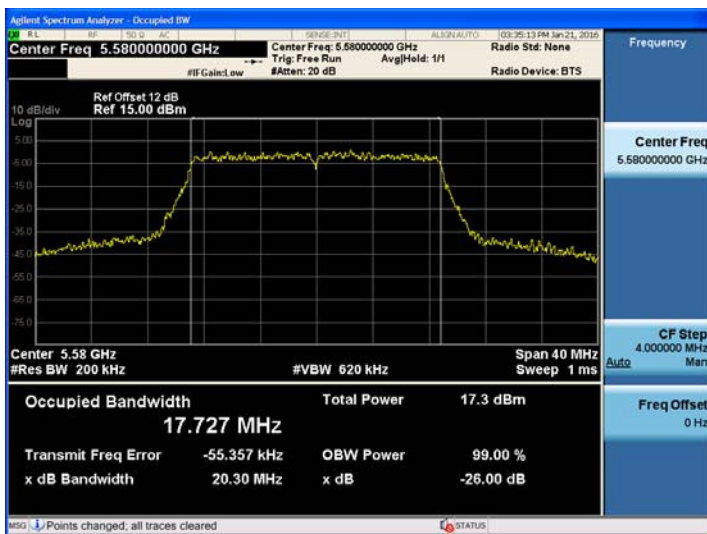
802.11ac_20 MHz BW UNII 1 BAND 26dB Bandwidth



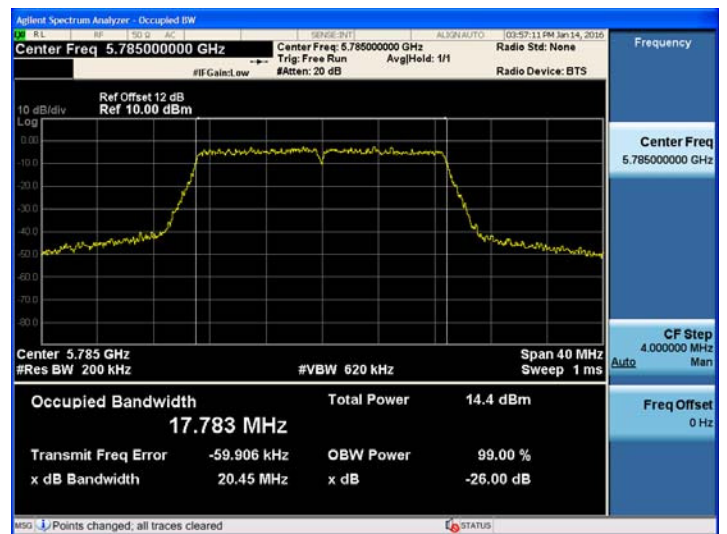
802.11ac_20 MHz BW UNII 2A BAND 26dB Bandwidth



802.11ac_20 MHz BW UNII 2C BAND 26dB Bandwidth



802.11ac_20 MHz BW UNII 3 BAND 26dB Bandwidth



Note :

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

■ TEST RESULTS for 802.11ac_20MHz BW_Service Port_Ant.1

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	20.290	N/A	Pass
5200	40	20.309	N/A	Pass
5240	48	20.264	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	20.357	N/A	Pass
5300	60	20.420	N/A	Pass
5320	64	20.293	N/A	Pass

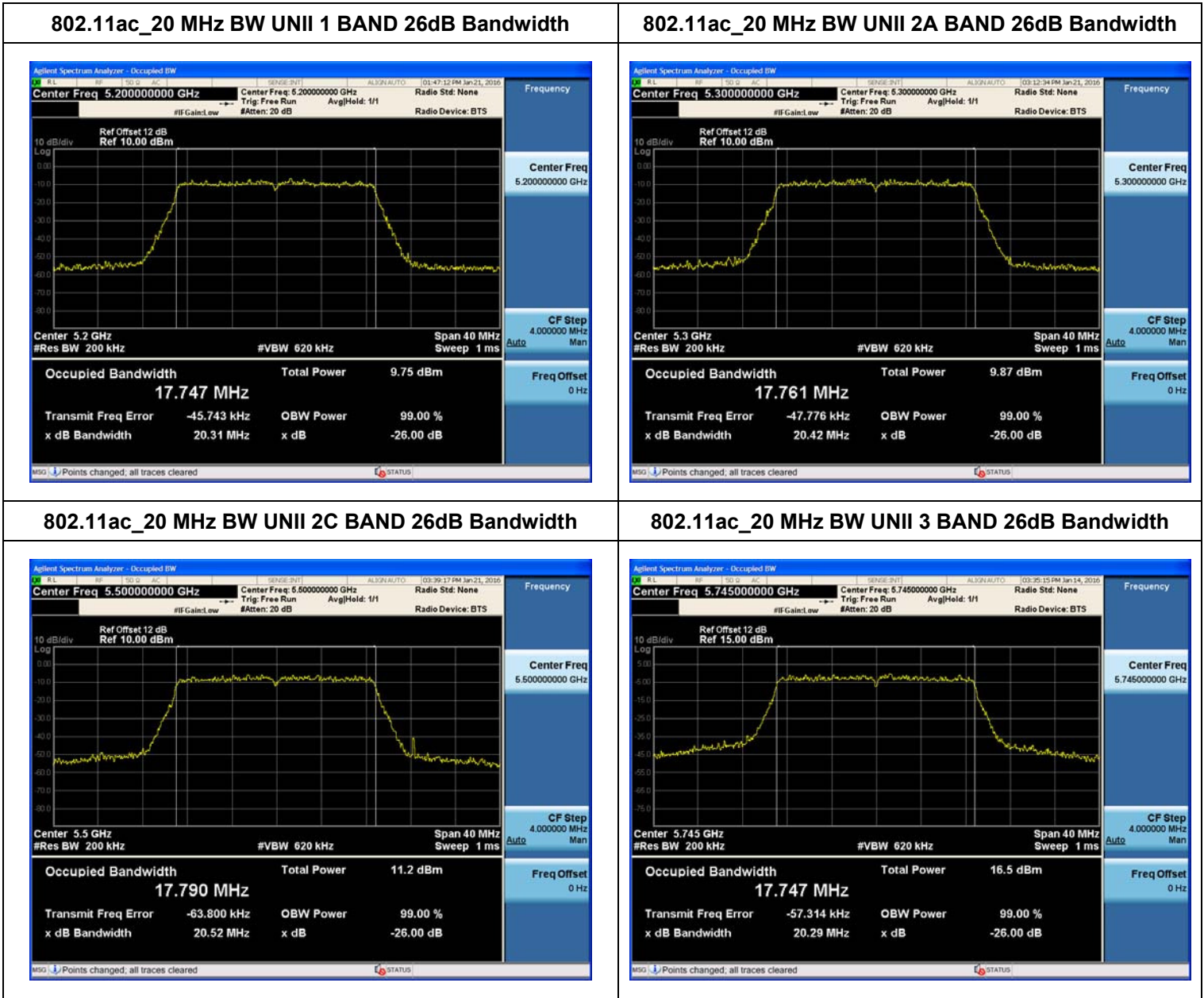
Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	20.521	N/A	Pass
5580	116	20.216	N/A	Pass
5720	144	20.135	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	20.583	N/A	Pass
5785	157	20.343	N/A	Pass
5825	165	20.388	N/A	Pass

TEST Plot for 802.11ac _20MHz BW_Service Port_Ant.1



Note :

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

■ TEST RESULTS for 802.11ac_20MHz BW_Service Port_Ant.2

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	20.187	N/A	Pass
5200	40	20.195	N/A	Pass
5240	48	20.393	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	20.200	N/A	Pass
5300	60	20.178	N/A	Pass
5320	64	20.361	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

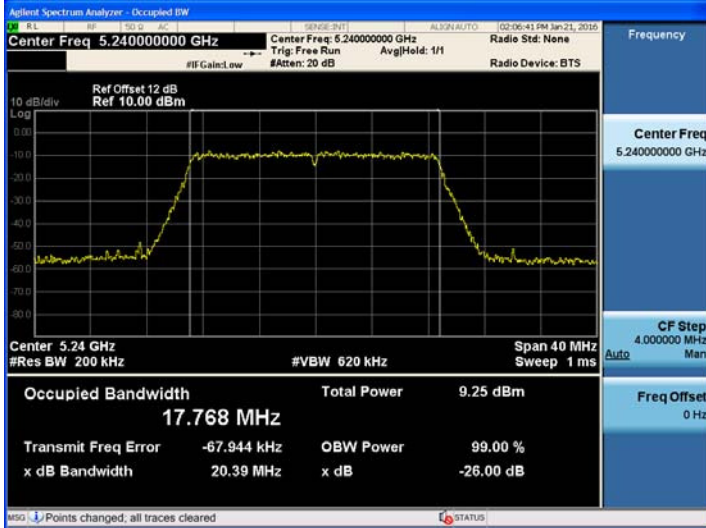
802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	20.387	N/A	Pass
5580	116	20.346	N/A	Pass
5720	144	20.327	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11ac_20 MHz BW

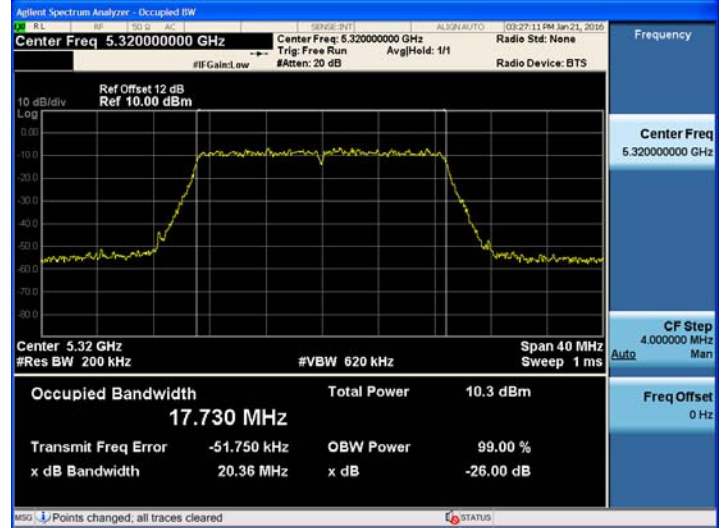
802.11ac(20MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	20.445	N/A	Pass
5785	157	20.273	N/A	Pass
5825	165	20.414	N/A	Pass

TEST Plot for 802.11ac _20MHz BW_Service Port_Ant.2

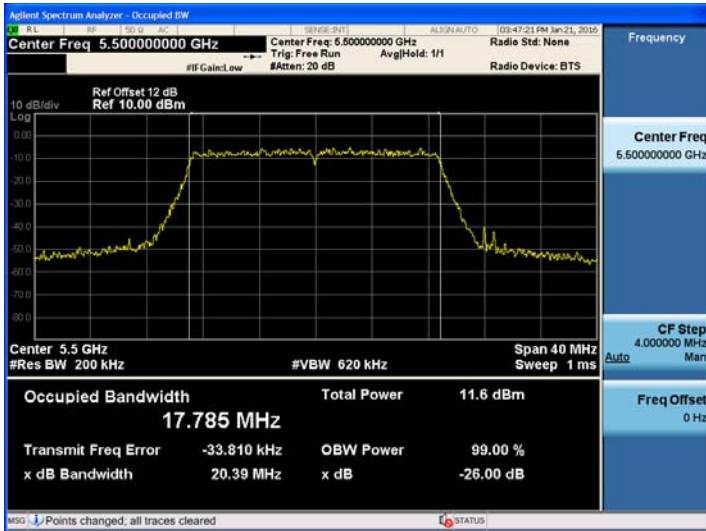
802.11ac_20 MHz BW UNII 1 BAND 26dB Bandwidth



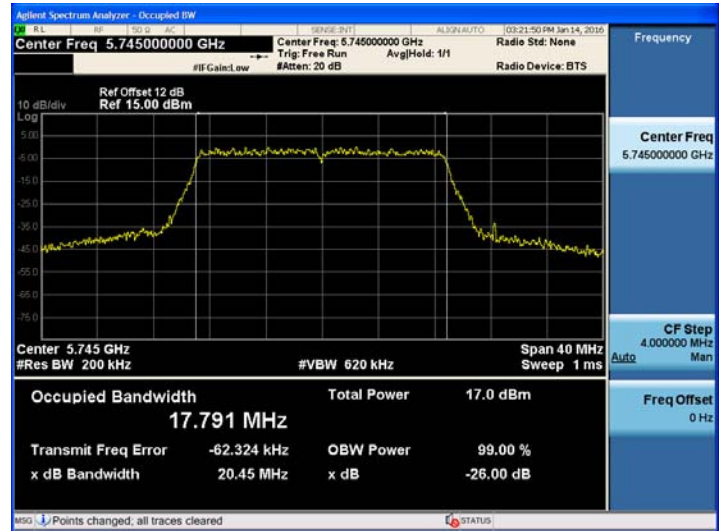
802.11ac_20 MHz BW UNII 2A BAND 26dB Bandwidth



802.11ac_20 MHz BW UNII 2C BAND 26dB Bandwidth



802.11ac_20 MHz BW UNII 3 BAND 26dB Bandwidth



Note :

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

■ TEST RESULTS for 802.11n_40MHz BW _Service Port_Ant.0

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5190	38	39.594	N/A	Pass
5230	46	39.338	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5270	54	39.674	N/A	Pass
5310	62	39.434	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

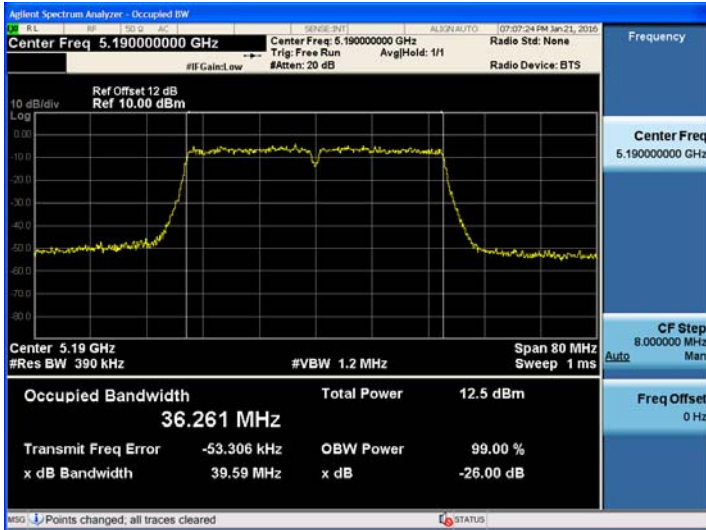
802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	39.386	N/A	Pass
5550	110	39.746	N/A	Pass
5710	142	39.780	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

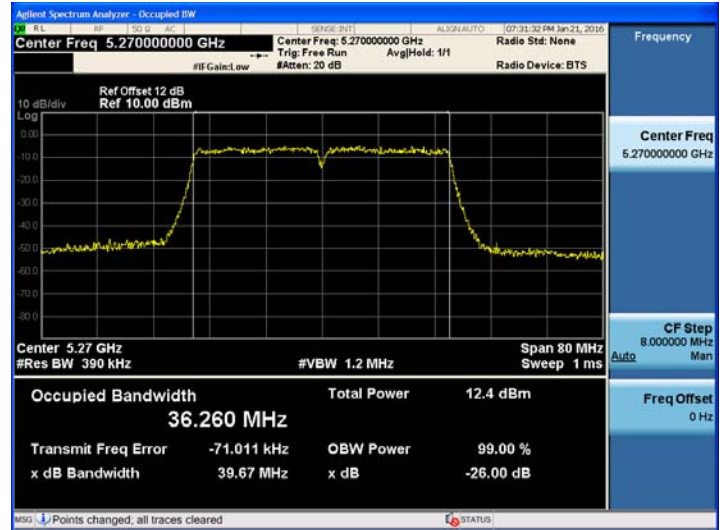
802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	39.740	N/A	Pass
5795	159	39.920	N/A	Pass

TEST Plot for 802.11n_40MHz BW_Service Port_Ant.0

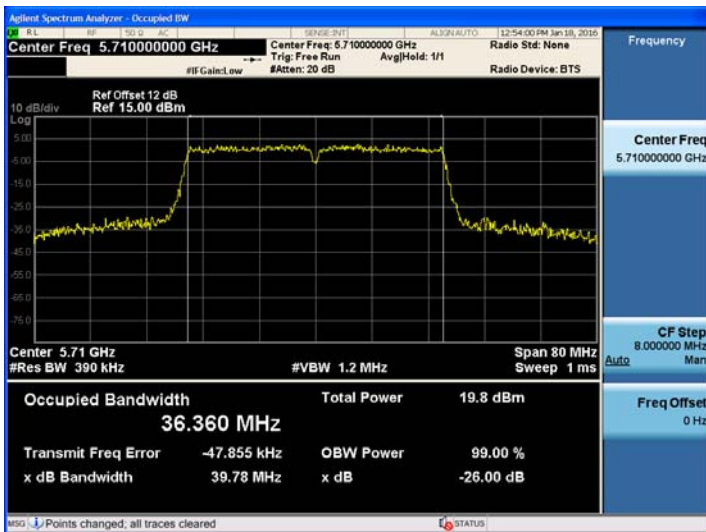
802.11n_40 MHz BW UNII 1 BAND 26dB Bandwidth



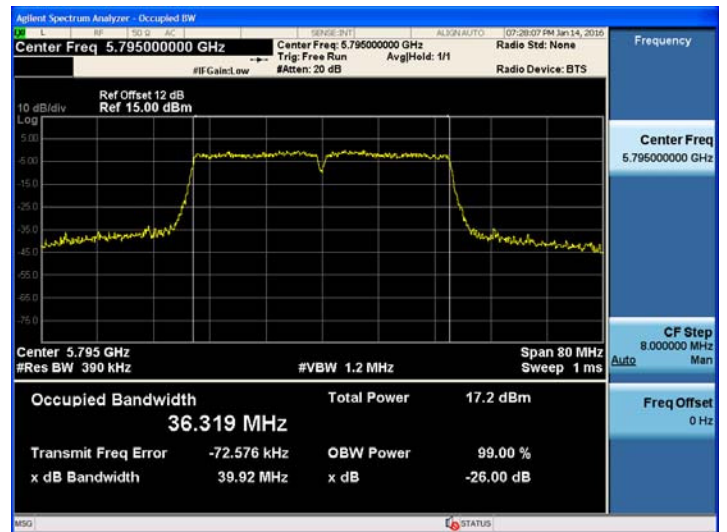
802.11n_40 MHz BW UNII 2A BAND 26dB Bandwidth



802.11n_40 MHz BW UNII 2C BAND 26dB Bandwidth



802.11n_40 MHz BW UNII 3 BAND 26dB Bandwidth



Note :

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

■ TEST RESULTS for 802.11n_40MHz BW _Service Port_Ant.1

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5190	38	39.605	N/A	Pass
5230	46	39.784	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5270	54	39.742	N/A	Pass
5310	62	39.646	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

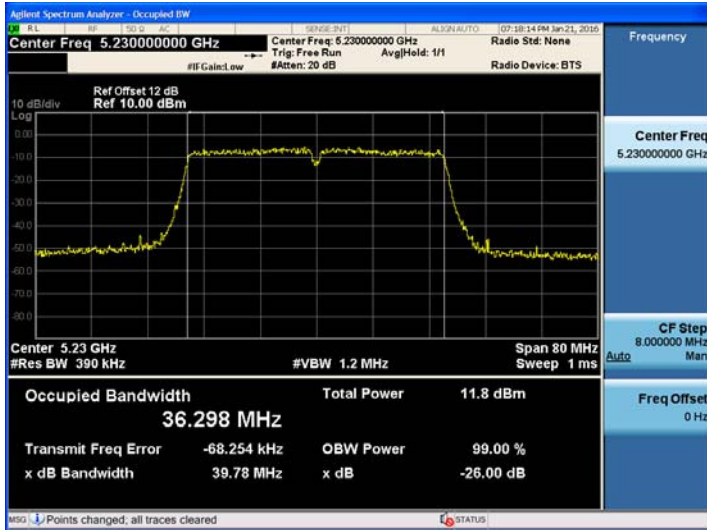
802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	39.773	N/A	Pass
5550	110	39.526	N/A	Pass
5710	142	39.558	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

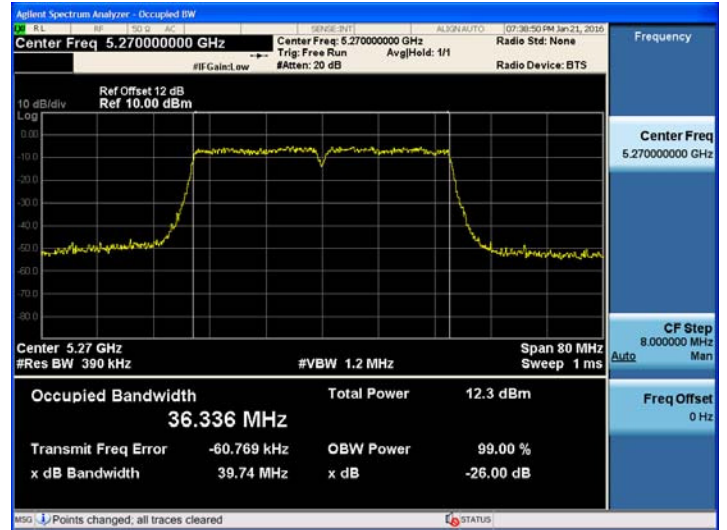
802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	39.671	N/A	Pass
5795	159	39.896	N/A	Pass

TEST Plot for 802.11n_40MHz BW_Service Port_Ant.1

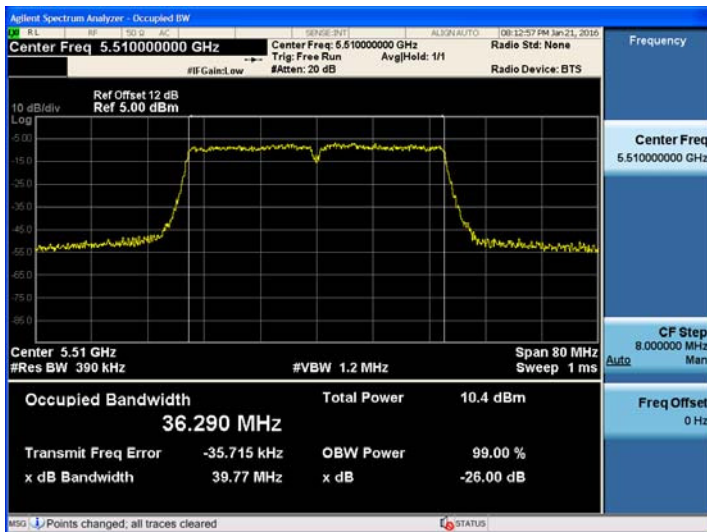
802.11n_40 MHz BW UNII 1 BAND 26dB Bandwidth



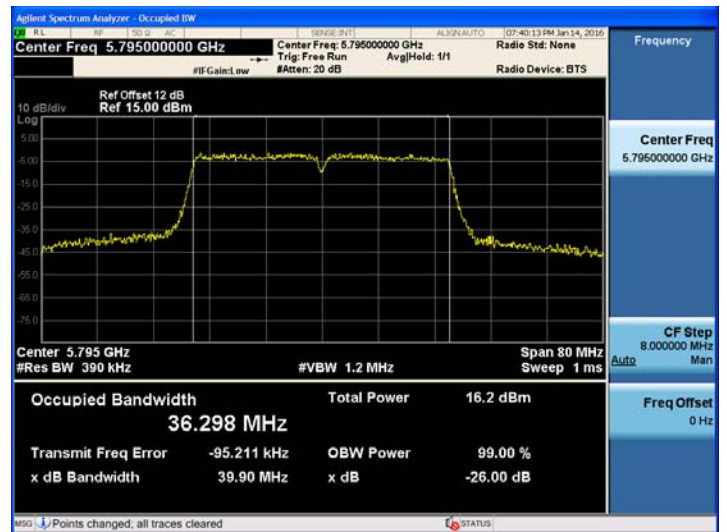
802.11n_40 MHz BW UNII 2A BAND 26dB Bandwidth



802.11n_40 MHz BW UNII 2C BAND 26dB Bandwidth



802.11n_40 MHz BW UNII 3 BAND 26dB Bandwidth



Note :

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

■ TEST RESULTS for 802.11n_40MHz BW _Service Port_Ant.2

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5190	38	39.645	N/A	Pass
5230	46	39.521	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5270	54	39.472	N/A	Pass
5310	62	39.631	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

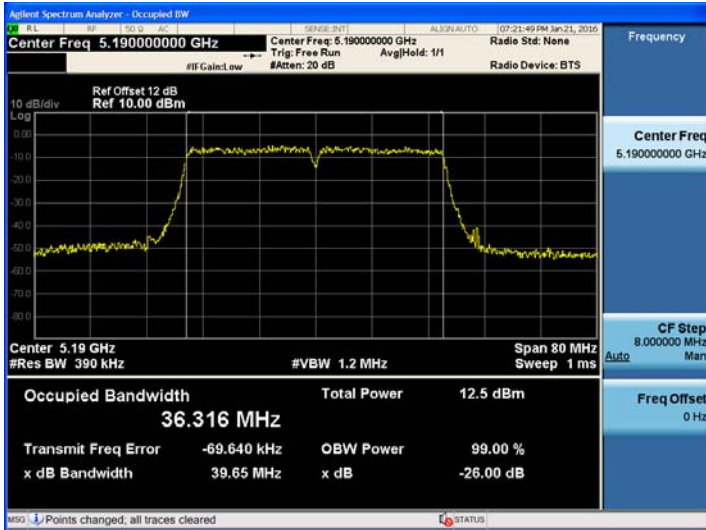
802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	39.474	N/A	Pass
5550	110	39.623	N/A	Pass
5710	142	40.001	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n_40 MHz BW

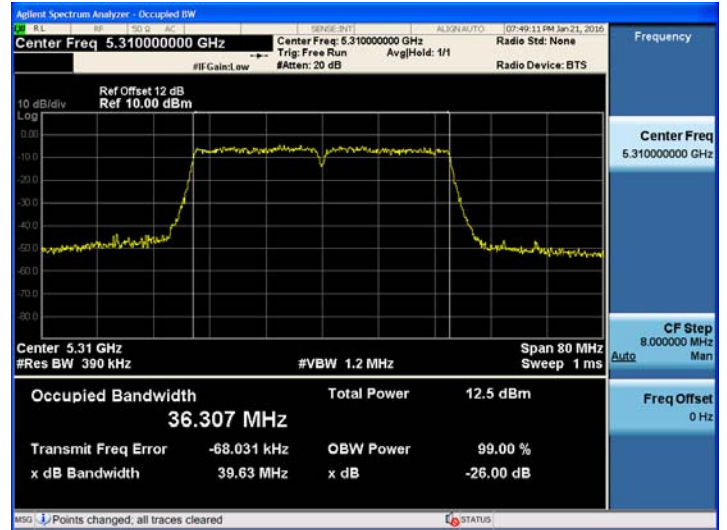
802.11n(40MHz) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	39.681	N/A	Pass
5795	159	39.650	N/A	Pass

TEST Plot for 802.11n_40MHz BW_Service Port_Ant.2

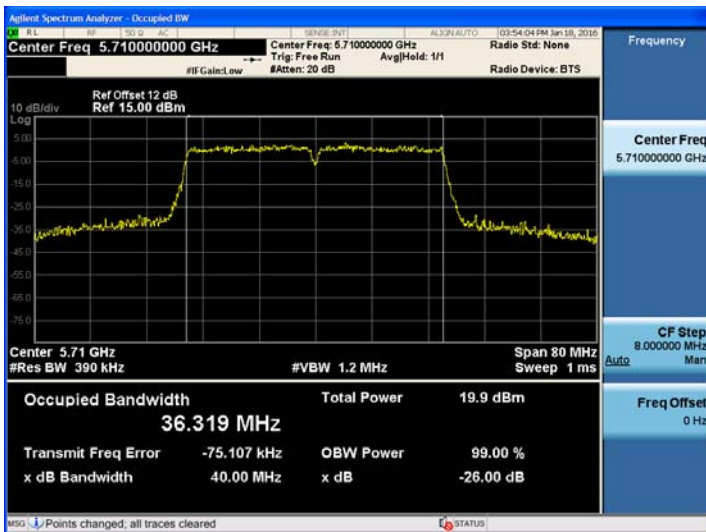
802.11n_40 MHz BW UNII 1 BAND 26dB Bandwidth



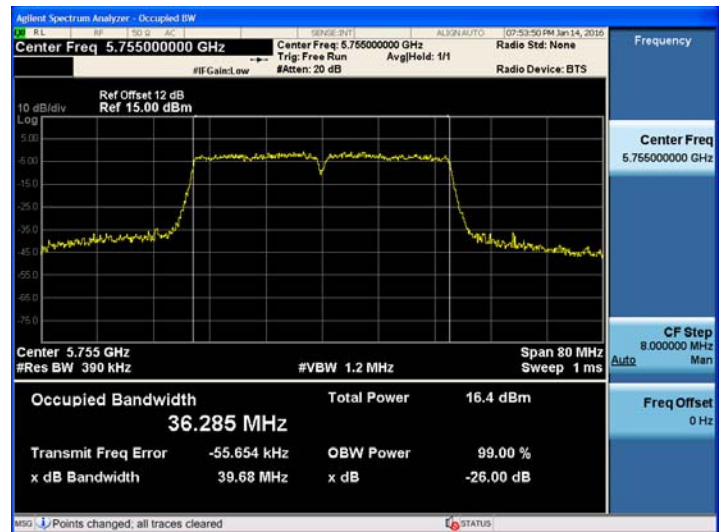
802.11n_40 MHz BW UNII 2A BAND 26dB Bandwidth



802.11n_40 MHz BW UNII 2C BAND 26dB Bandwidth



802.11n_40 MHz BW UNII 3 BAND 26dB Bandwidth



Note :

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