RF TEST REPORT

Applicant	Xiaomi Communications Co., Ltd.
FCC ID	2AFZZJ20CG
Product	Mobile Phone
Brand	POCO
Model	M2007J20CG, M2007J20CT
Report No.	R2007A0451-R9V1
Issue Date	August 18, 2020

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15E (2019)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Performed by: Peng Tao *Approved by: Kai Xu*

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Version	Revision description	Issue Date
Rev.0	/	August 14, 2020
Rev.1	Update information in Page 7 Update description in Page 45~52, 67~74	August 18, 2020
Note This revised report (Report No. R2007A0451-R9V1) supersedes and replaces the previously issued report (Report No. R2007A0451-R9). Please discard or destroy the previously issued report and dispose of it accordingly.		

Summary of measurement results

Number	Test Case	Clause in FCC rules	Verdict
1	Average conducted output power	15.407(a)	PASS
2	Occupied bandwidth	15.407(e)	PASS
3	Frequency stability	15.407(g)	PASS
4	Power spectral density	15.407(a)	PASS
5	Unwanted Emissions	15.407(b)	PASS
6	Conducted Emissions	15.207	PASS
Date of Testing: July 13, 2020~ August 10, 2020			
Note: All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

1.3. Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
Post code:	201201
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	http://www.ta-shanghai.com
E-mail:	xukai@ta-shanghai.com

2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	Xiaomi Communications Co., Ltd.
Applicant address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Manufacturer	Xiaomi Communications Co., Ltd.
Manufacturer address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

2.2. General information

EUT Description			
Model	M2007J20CG, M2007J20CT		
IMEI	IMEI 1: 869236050023423 IMEI 2: 869236050023431		
Hardware Version	P2		
Software Version	MIUI 12		
Power Supply	Battery/AC adapter		
Antenna Type	PIFA Antenna		
Antenna Gain(dBi)	Frequency	Antenna 1	Antenna 2
	5.15 - 5.25GHz	-2.3	1.44
	5.25 - 5.35GHz	-2.3	1.77
	5.47 - 5.725GHz	-2.98	2.04
	5.725 - 5.85GHz	-3.22	-0.5
Directional Gain	Without Beamforming Mode: 2.04 dBi Beamforming Mode for Power: 2.04 dBi Beamforming Mode for PSD: 2.04 dBi		
Test Mode(s)	U-NII-1(5150MHz-5250MHz) U-NII-2A(5250MHz-5350MHz) U-NII-2C(5470MHz-5725MHz) U-NII-3(5725MHz-5850MHz)		
Modulation Type	802.11a/n (HT20/HT40) : OFDM 802.11ac (VHT20/VHT40/VHT80): OFDM		
Max. Conducted Power	16.76 dBm		
Operating Frequency Range(s)	U-NII-1: 5150MHz-5250MHz U-NII-2A:5250MHz -5350MHz U-NII-2C:5470MHz-5725MHz U-NII-3: 5725MHz -5850MHz		
Operating temperature range:	0 ° C to 40° C		

Operating voltage range:	3.6 V to 4.4 V
State AC voltage:	3.87V
EUT Accessory	
Adapter	Manufacturer: Xiaomi Communications Co., Ltd. Model: MDY-12-EA
Battery	Manufacture: Dongguan NVT Technology Co., Ltd Model : BN57
Earphone	Manufacture: Tiinlab Acoustic Technology Model : EM023
USB Cable	Manufacture: LUXSHARE Precision Industry Co., Ltd. Model : L63312
Note:1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.	

Item	M2007J20CG	M2007J20CT
LTE Band 41	Support	Not Support
Note: Customer declaration, two models are the same, except for the model. There are more than one Model, each one should be applied throughout the compliance test respectively, however, only the worst case (M2007J20CG) will be recorded in this report.		

3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards:

FCC CFR47 Part 15E (2019) Unlicensed National Information Infrastructure Devices

ANSI C63.10 (2013)

Reference standard:

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

4. Test Configuration

Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

Band	Data Rate		
	Antenna 1	**Antenna 2**	**MIMO**
802.11a	6 Mbps	6 Mbps	MCS8
802.11n HT20	MCS0	MCS0	MCS8
802.11n HT40	MCS0	MCS0	MCS8
802.11ac VHT20	MCS0	MCS0	MCS8
802.11ac VHT40	MCS0	MCS0	MCS8
802.11ac VHT80	MCS0	MCS0	MCS8
The device supports non-beamforming and beamforming function in 802.11n/ac, after pre-testing, non-beamforming mode has the worst emission value, so the worst case was recorded.			

The worst case Antenna mode for each of the following tests for Wi-Fi:

Test Cases	Antenna 1	Antenna 2	MIMO
Average conducted output power	O	O	O
Occupied bandwidth	--	--	O
Frequency stability	--	--	O
Power Spectral Density	O	O	O
Unwanted Emissions	--	--	802.11a 802.11n HT20 802.11n HT40 802.11ac VHT80
Conducted Emissions	--	--	802.11n HT40
Note：“O”: test all bands			

According to RF Output power results in chapter 5.2, MIMO was selected as the worst antenna .

Wireless Technology and Frequency Range

Wireless Technology		Bandwidth	Channel	Frequency
Wi-Fi	U-NII-1	20 MHz	36	5180MHz
			40	5200MHz
			44	5220MHz
			48	5240MHz
		40 MHz	38	5190MHz
			46	5230MHz
		80 MHz	42	5210MHz
	U-NII-2A	20 MHz	52	5260MHz
			56	5280MHz
			60	5300MHz
			64	5320MHz
		40 MHz	54	5270MHz
			62	5310MHz
		80 MHz	58	5290MHz
	U-NII-2C	20 MHz	100	5500MHz
			104	5520MHz
			108	5540MHz
			112	5560MHz
			116	5580MHz
			120	5600MHz
			124	5620MHz
			128	5640MHz
			132	5660MHz
			136	5680MHz
			140	5700MHz
		40 MHz	102	5510MHz
			110	5550MHz
			118	5590MHz
			126	5630MHz
			134	5670MHz
			142	5710MHz
		80 MHz	106	5530MHz
			122	5610MHz
			138	5690MHz
	U-NII-3	20 MHz	149	5745MHz
			153	5765MHz
			157	5785MHz
			161	5805MHz

			165	5825MHz
		40 MHz	151	5755MHz
			159	5795MHz
		80 MHz	155	5775MHz
Does this device support TPC Function? ☐Yes ☒No				
Does this device support TDWR Band? ☒Yes ☐No				

5. Test Case Results

5.1. Occupied Bandwidth

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

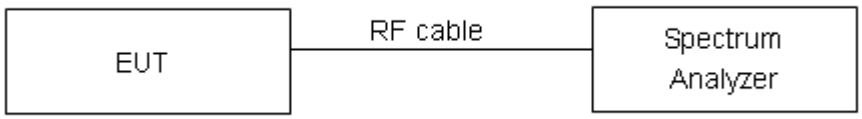
For U-NII-1/U-NII-2A/U-NII-2C, set RBW ≈1% OCB kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

For U-NII-3, Set RBW = 100 kHz, VBW ≥ 3 × RBW, 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: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

Use the 99 % power bandwidth function of the instrument

Test Setup



Limits

Rule FCC Part §15.407(e)

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936 Hz.

Test Results:

MIMO Antenna

U-NII-1

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5180	16.597	22.87	PASS
	5200	16.622	25.78	PASS
	5240	16.595	23.60	PASS
802.11n HT20	5180	17.755	23.57	PASS
	5200	17.758	23.45	PASS
	5240	17.788	22.55	PASS
802.11n HT40	5190	36.134	41.03	PASS
	5230	36.166	40.85	PASS
802.11ac VHT20	5180	17.766	22.13	PASS
	5200	17.769	23.99	PASS
	5240	17.778	22.16	PASS
802.11ac VHT40	5190	36.117	41.08	PASS
	5230	36.206	41.01	PASS
802.11ac VHT80	5210	75.600	82.84	PASS

U-NII-2A

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5260	16.556	22.45	PASS
	5300	16.591	22.39	PASS
	5320	16.609	24.03	PASS
802.11n HT20	5260	17.784	22.80	PASS
	5300	17.783	23.42	PASS
	5320	17.770	22.66	PASS
802.11n HT40	5270	36.164	41.01	PASS
	5310	36.201	41.21	PASS
802.11ac VHT20	5260	17.748	22.68	PASS
	5300	17.741	21.96	PASS
	5320	17.819	22.65	PASS
802.11ac VHT40	5270	36.136	41.02	PASS
	5310	36.139	40.93	PASS
802.11ac VHT80	5290	75.546	82.68	PASS

U-NII-2C

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5500	16.587	21.67	PASS
	5600	16.575	22.51	PASS
	5700	16.567	21.83	PASS
	5720	16.592	21.68	PASS
802.11n HT20	5500	17.766	23.05	PASS
	5600	17.769	22.60	PASS
	5700	17.758	23.78	PASS
	5720	17.768	23.00	PASS
802.11n HT40	5510	36.118	41.19	PASS
	5590	36.123	40.56	PASS
	5670	36.182	40.81	PASS
	5710	36.195	40.71	PASS
802.11ac VHT20	5500	17.770	23.12	PASS
	5600	17.731	23.13	PASS
	5700	17.686	22.16	PASS
	5720	17.755	22.55	PASS
802.11ac VHT40	5510	36.154	40.84	PASS
	5590	36.070	40.32	PASS
	5670	36.146	41.02	PASS
	5710	36.193	42.02	PASS
802.11ac VHT80	5530	75.490	82.02	PASS
	5610	75.503	83.05	PASS
	5690	75.402	81.88	PASS

U-NII-3

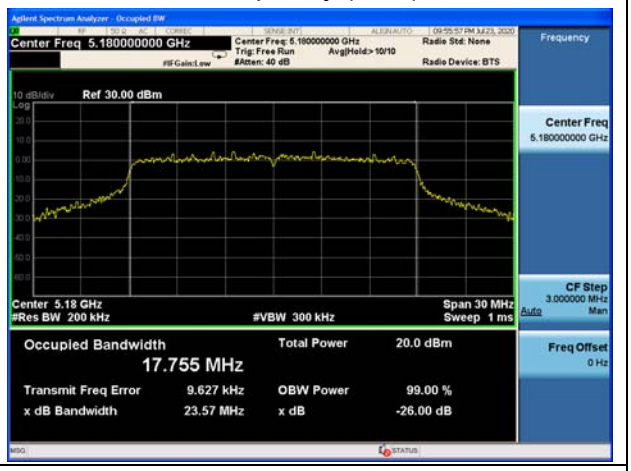
Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	16.539	13.56	500	PASS
	5785	16.534	15.04	500	PASS
	5825	16.543	16.35	500	PASS
802.11n HT20	5745	17.732	15.10	500	PASS
	5785	17.748	17.27	500	PASS
	5825	17.745	17.62	500	PASS
802.11n HT40	5755	36.110	35.15	500	PASS
	5795	36.211	35.09	500	PASS
802.11ac VHT20	5745	17.755	17.21	500	PASS
	5785	17.709	16.84	500	PASS
	5825	17.760	17.14	500	PASS
802.11ac VHT40	5755	36.094	35.12	500	PASS
	5795	36.159	35.59	500	PASS
802.11ac VHT80	5775	75.429	75.10	500	PASS

U-NII-1, 802.11a

Carrier frequency (MHz): 5180

U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5180

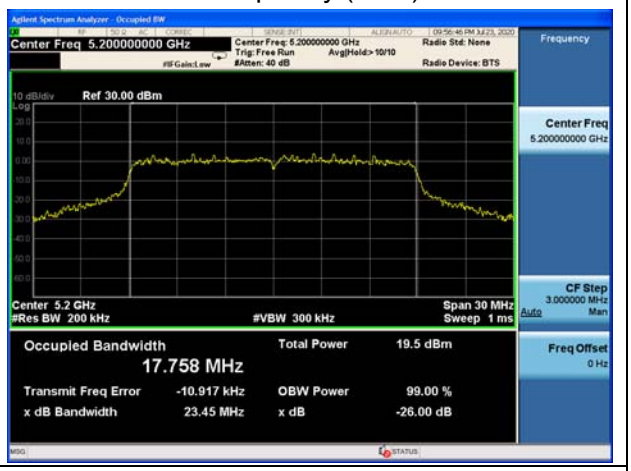


U-NII-1, 802.11a

Carrier frequency (MHz): 5200

U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5200

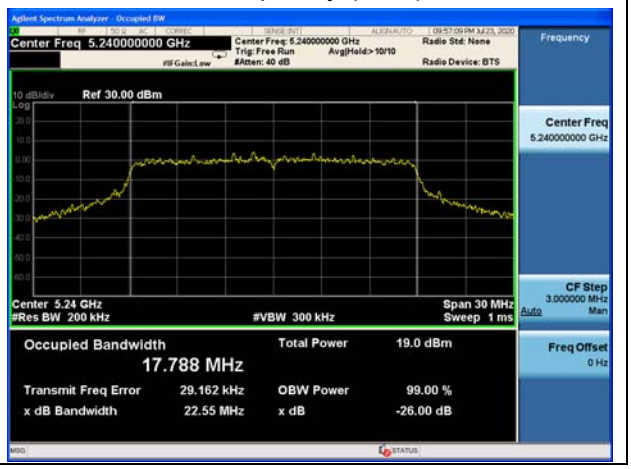


U-NII-1, 802.11a

Carrier frequency (MHz):5240

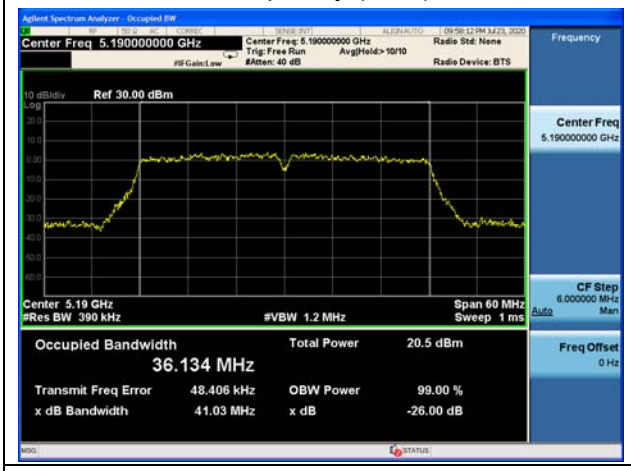
U-NII-1, 802.11n HT20

Carrier frequency (MHz):5240



U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5190

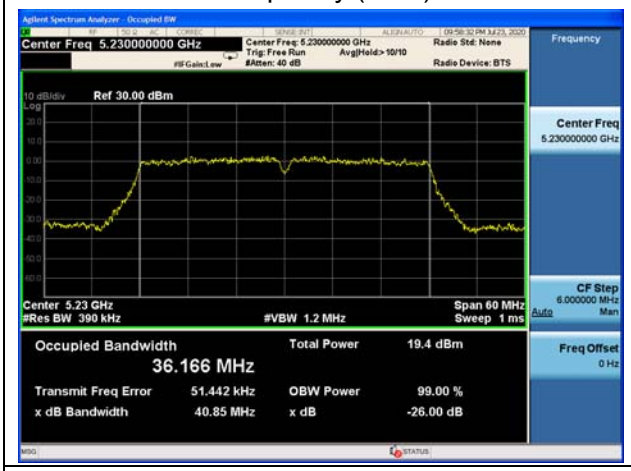


U-NII-1, 802.11ac VHT20

Carrier frequency (MHz): 5180

U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5230

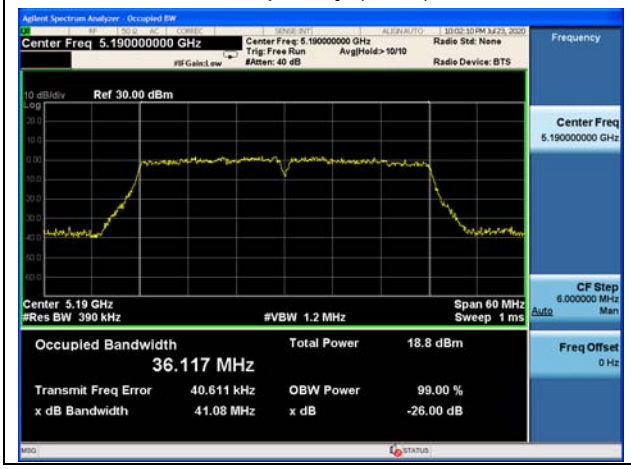


U-NII-1, 802.11ac VHT20

Carrier frequency (MHz): 5200

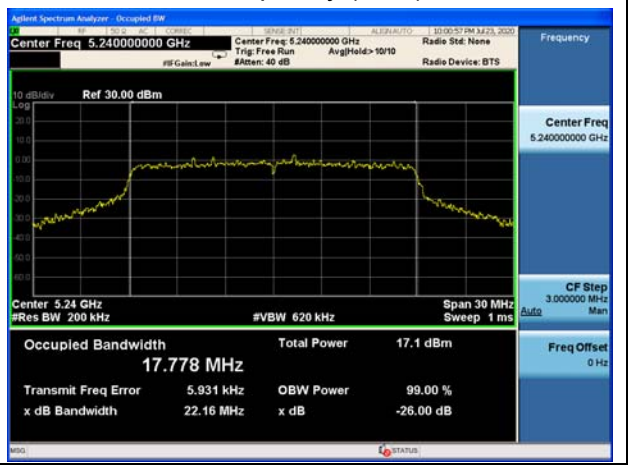
U-NII-1, 802.11ac VHT40

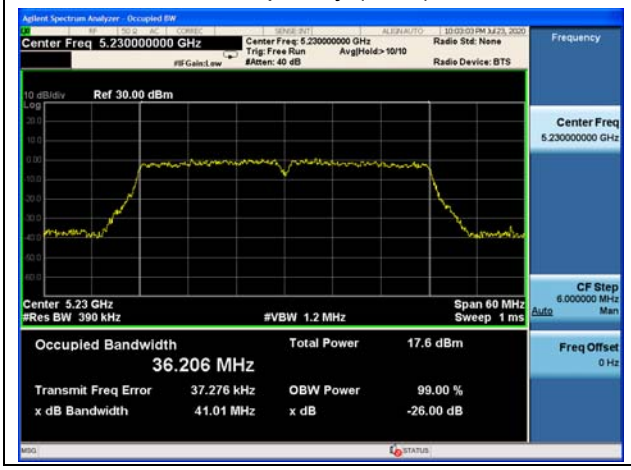
Carrier frequency (MHz): 5190



U-NII-1, 802.11ac VHT20

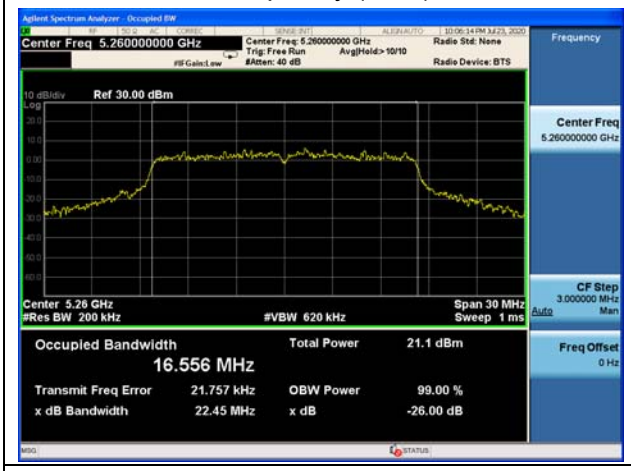
Carrier frequency (MHz):5240



U-NII-1, 802.11ac VHT40 Carrier frequency (MHz): 5230	U-NII-1, 802.11ac VHT80 Carrier frequency (MHz): 5210
	

U-NII-2A, 802.11a

Carrier frequency (MHz): 5260



U-NII-2A, 802.11n HT20

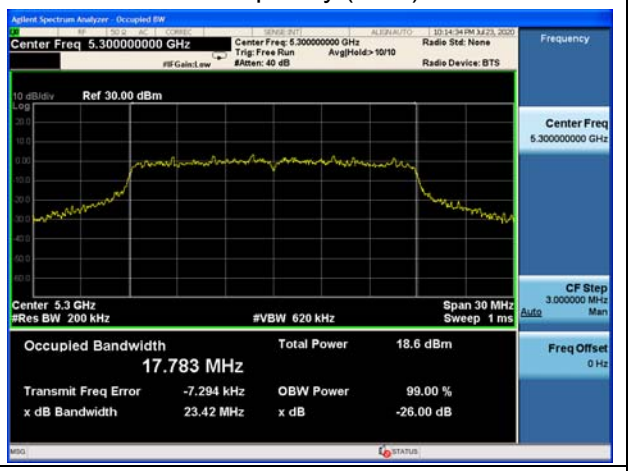
Carrier frequency (MHz): 5260

U-NII-2A, 802.11a

Carrier frequency (MHz): 5300

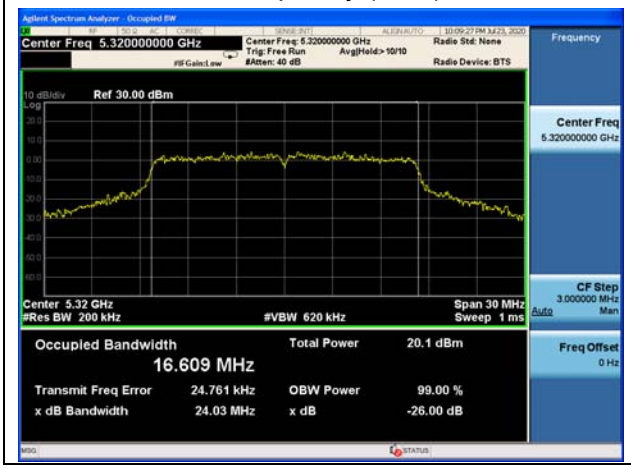
U-NII-2A, 802.11n HT20

Carrier frequency (MHz): 5300



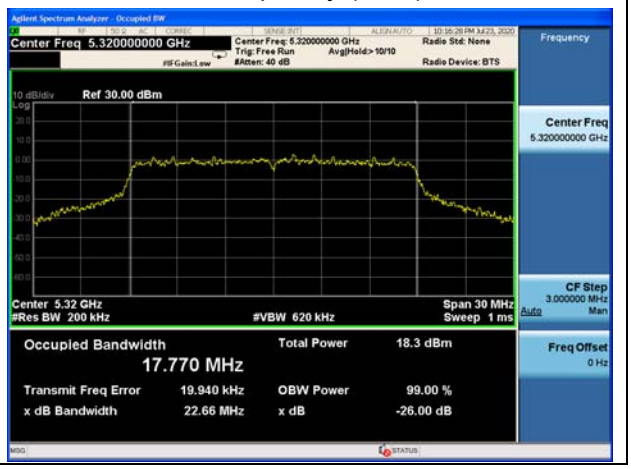
U-NII-2A, 802.11a

Carrier frequency (MHz):5320

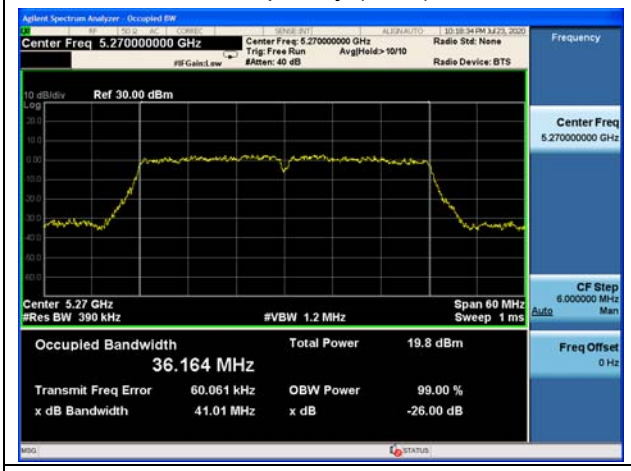


U-NII-2A, 802.11n HT20

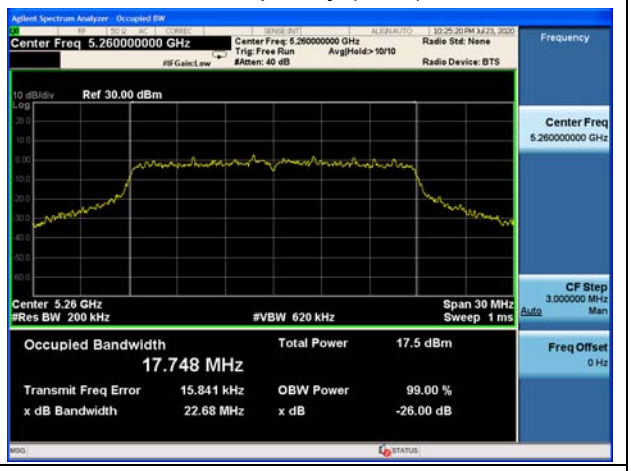
Carrier frequency (MHz):5320



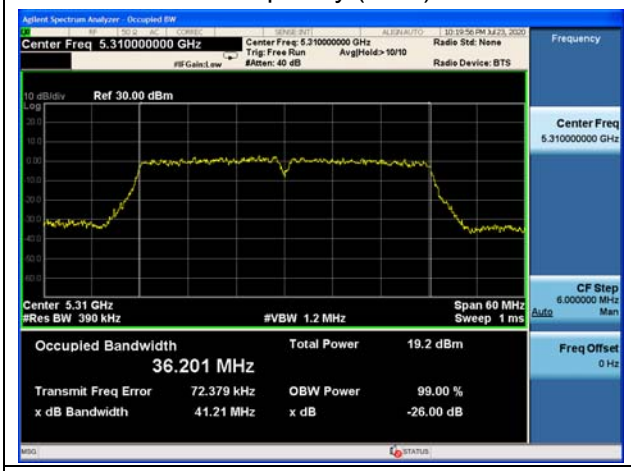
U-NII-2A, 802.11n HT40
Carrier frequency (MHz): 5270



U-NII-2A, 802.11ac VHT20
Carrier frequency (MHz):5260

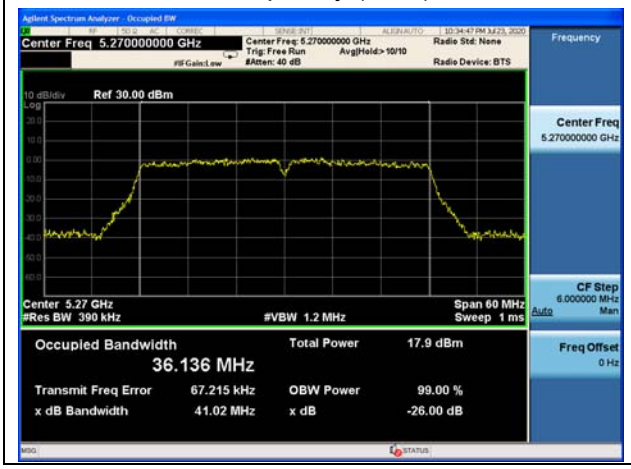


U-NII-2A, 802.11n HT40
Carrier frequency (MHz): 5310

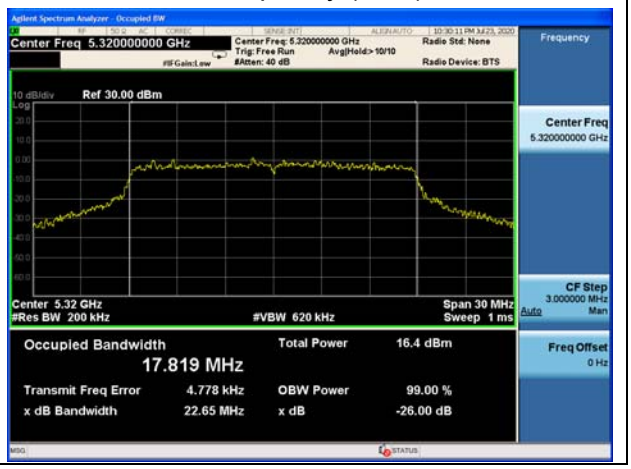


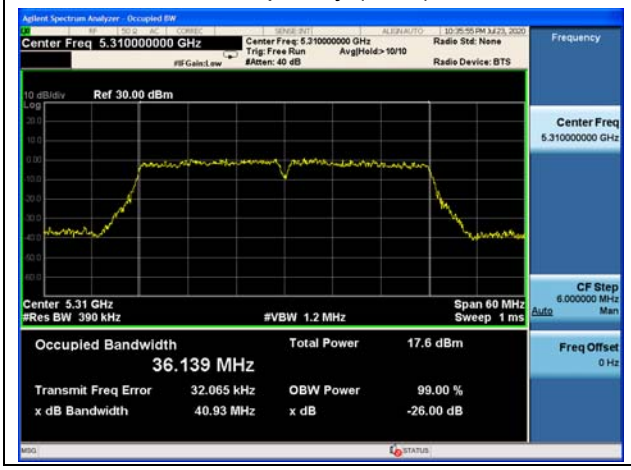
U-NII-2A, 802.11ac VHT20
Carrier frequency (MHz): 5300

U-NII-2A, 802.11ac VHT40
Carrier frequency (MHz): 5270



U-NII-2A, 802.11ac VHT20
Carrier frequency (MHz):5320



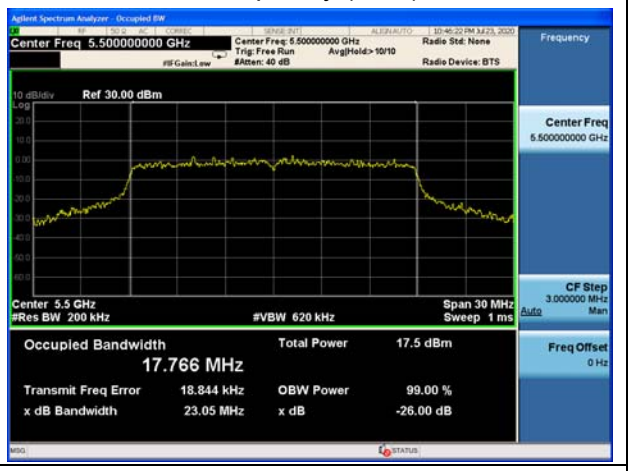
U-NII-2A, 802.11ac VHT40 Carrier frequency (MHz): 5310	U-NII-2A, 802.11ac VHT80 Carrier frequency (MHz): 5290
	

U-NII-2C, 802.11a

Carrier frequency (MHz): 5500

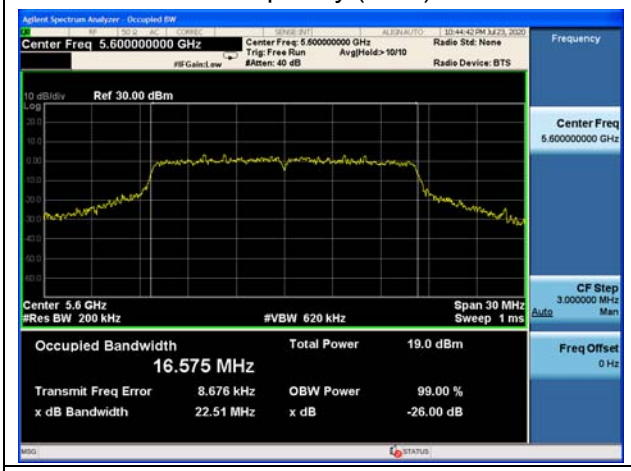
U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5500



U-NII-2C, 802.11a

Carrier frequency (MHz): 5600



U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5600

U-NII-2C, 802.11a

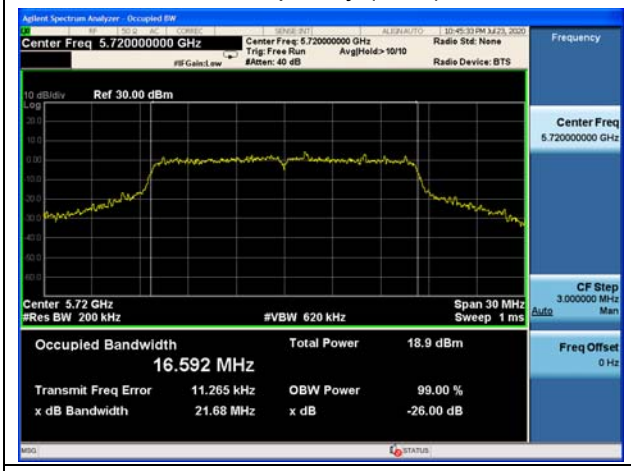
Carrier frequency (MHz):5700

U-NII-2C, 802.11n HT20

Carrier frequency (MHz):5700

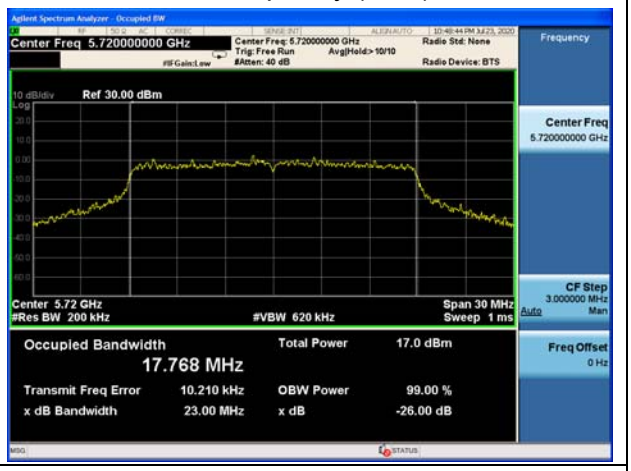
U-NII-2C, 802.11a

Carrier frequency (MHz):5720



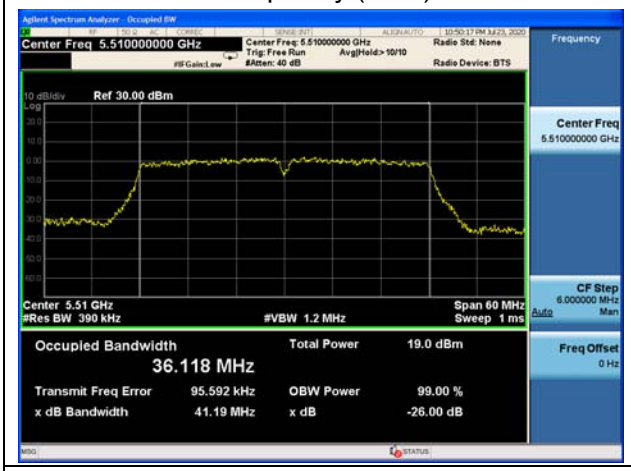
U-NII-2C, 802.11n HT20

Carrier frequency (MHz):5720



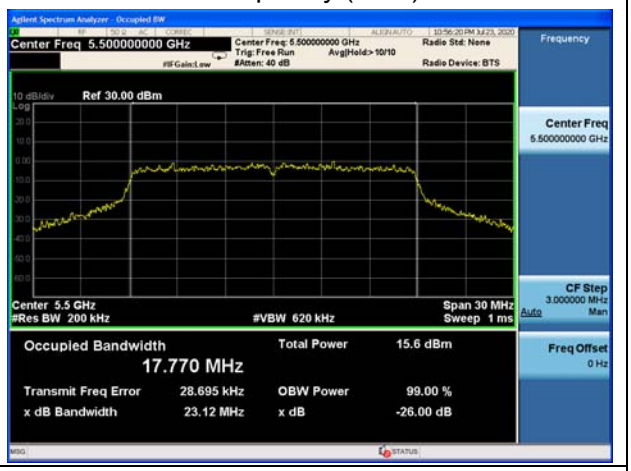
U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5510



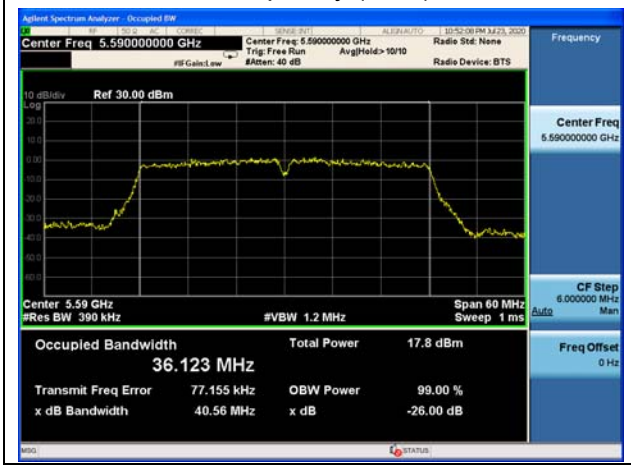
U-NII-2C, 802.11ac VHT20

Carrier frequency (MHz): 5500



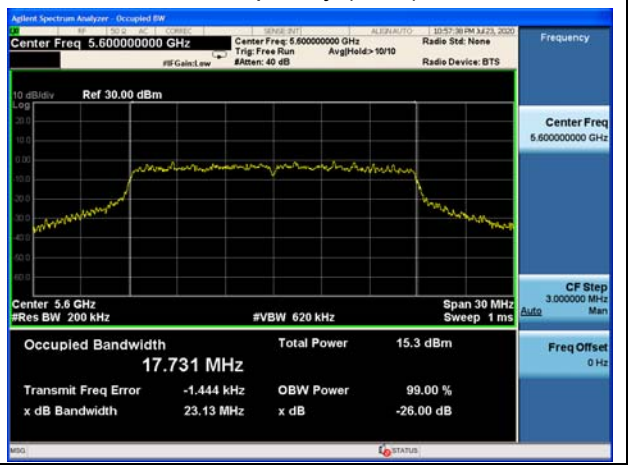
U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5590



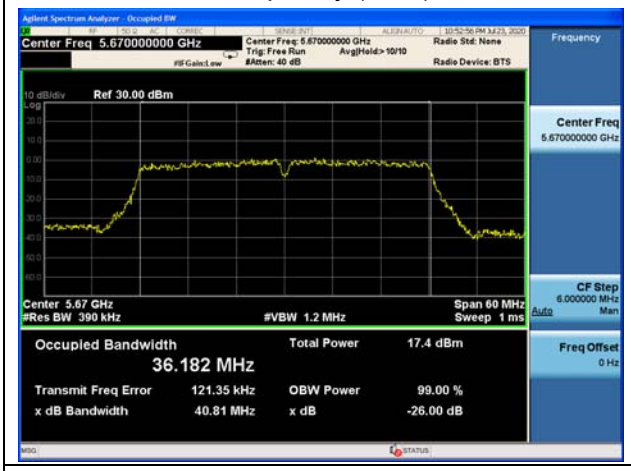
U-NII-2C, 802.11ac VHT20

Carrier frequency (MHz): 5600



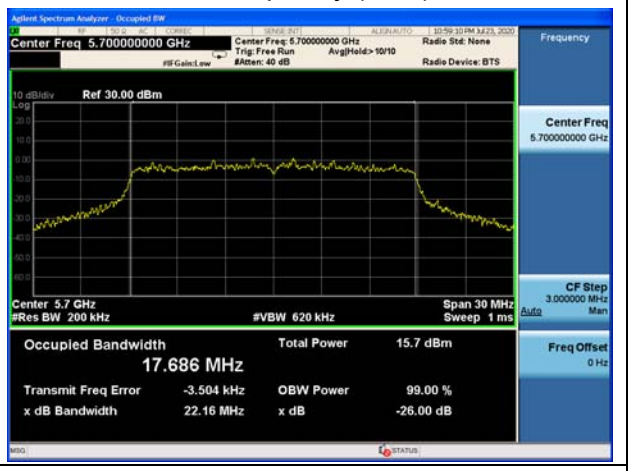
U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5670



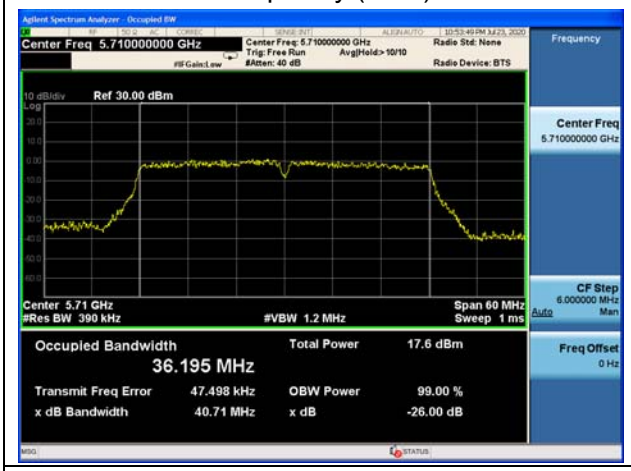
U-NII-2C, 802.11ac VHT20

Carrier frequency (MHz):5700



U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5710

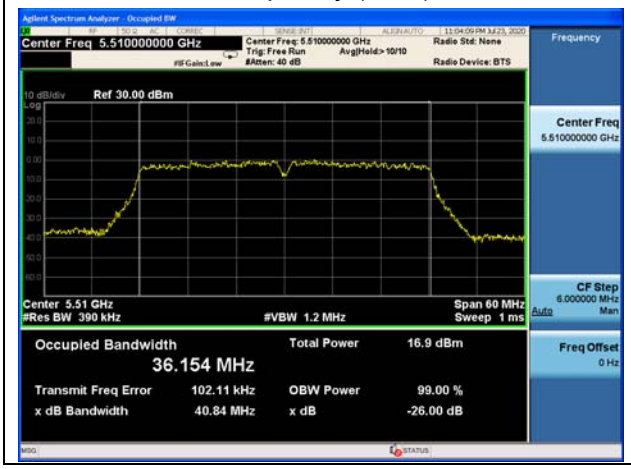


U-NII-2C, 802.11ac VHT20

Carrier frequency (MHz):5720

U-NII-2C, 802.11ac VHT40

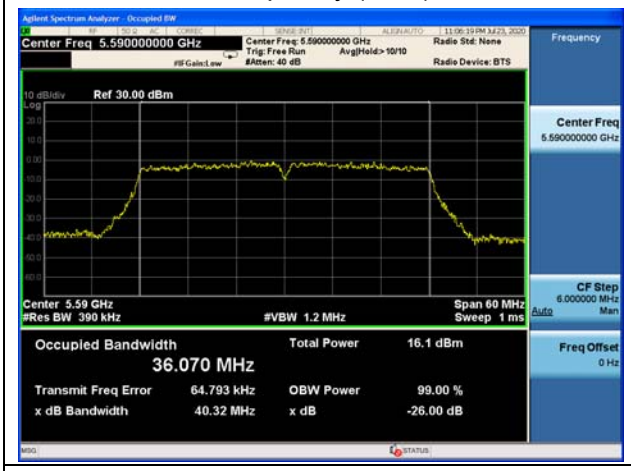
Carrier frequency (MHz): 5510



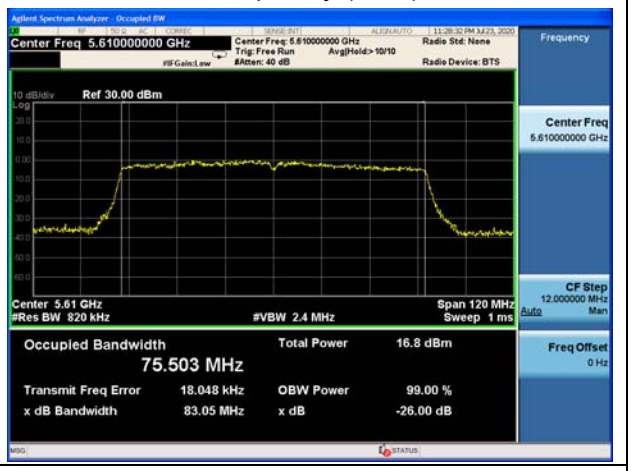
U-NII-2C, 802.11ac VHT80

Carrier frequency (MHz): 5530

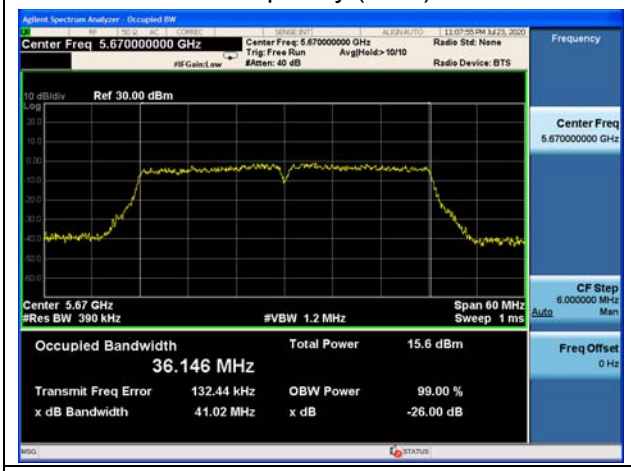
U-NII-2C, 802.11ac VHT40
Carrier frequency (MHz): 5590



U-NII-2C, 802.11ac VHT80
Carrier frequency (MHz): 5610

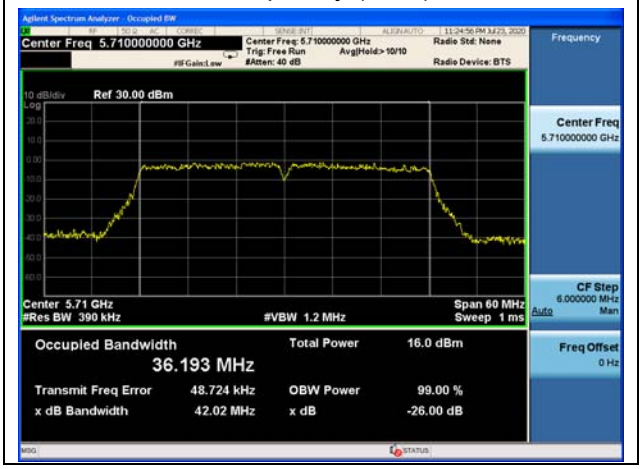


U-NII-2C, 802.11ac VHT40
Carrier frequency (MHz): 5670



U-NII-2C, 802.11ac VHT80
Carrier frequency (MHz): 5690

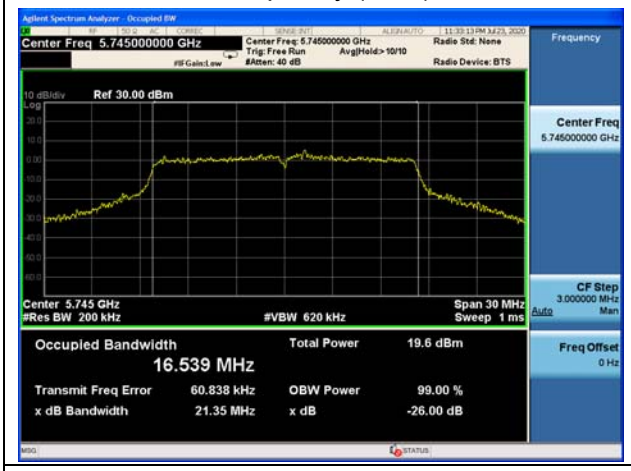
U-NII-2C, 802.11ac VHT40
Carrier frequency (MHz): 5710



99% bandwidth

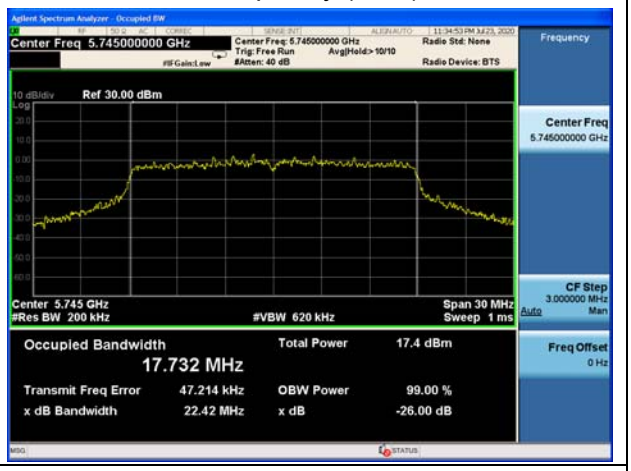
U-NII-3, 802.11a

Carrier frequency (MHz): 5745



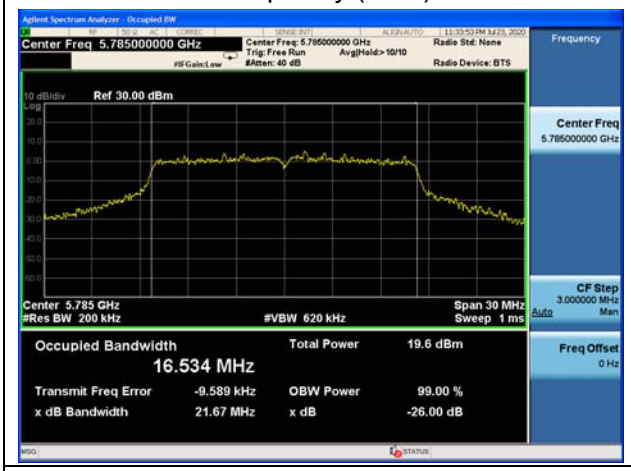
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745



U-NII-3, 802.11a

Carrier frequency (MHz): 5785

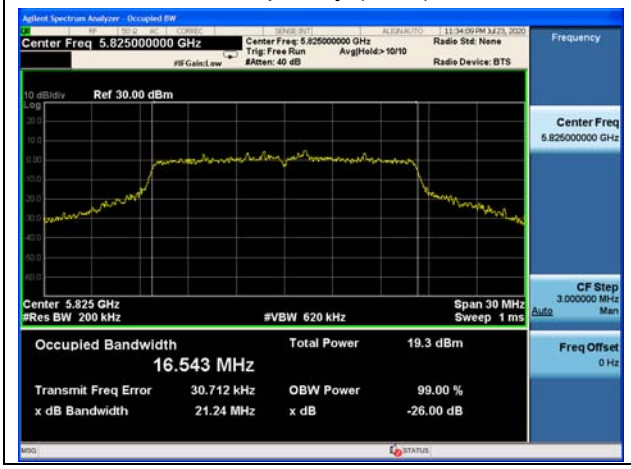


U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785

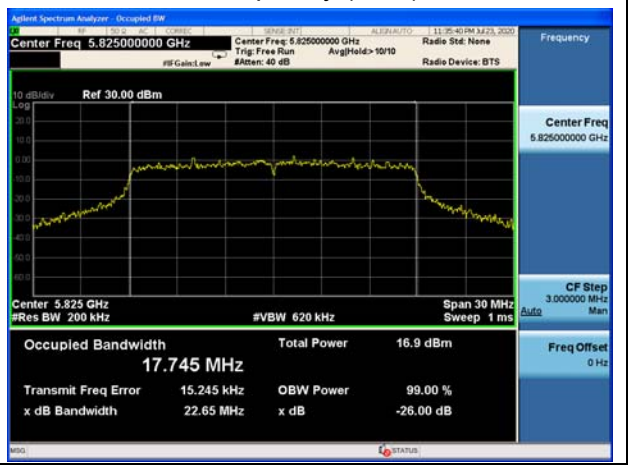
U-NII-3, 802.11a

Carrier frequency (MHz): 5825



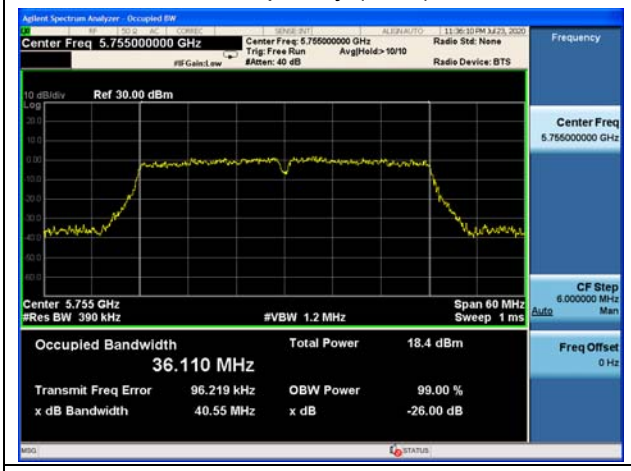
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825



U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755

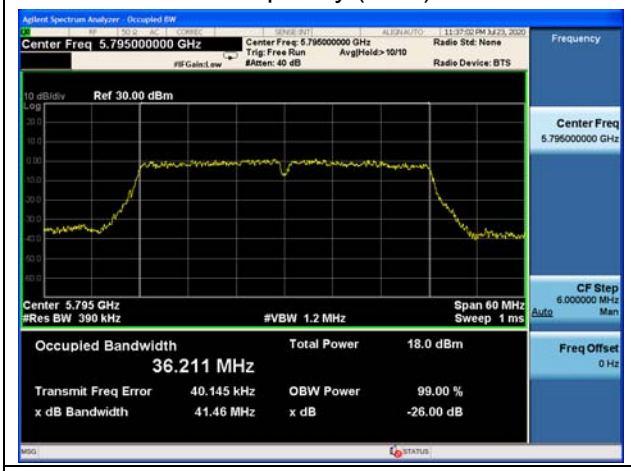


U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745

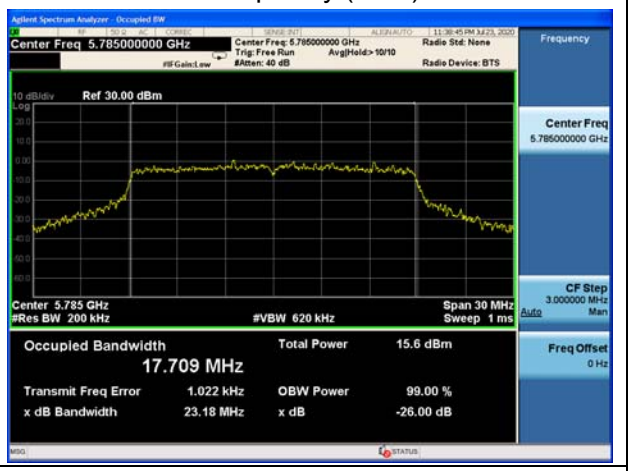
U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795



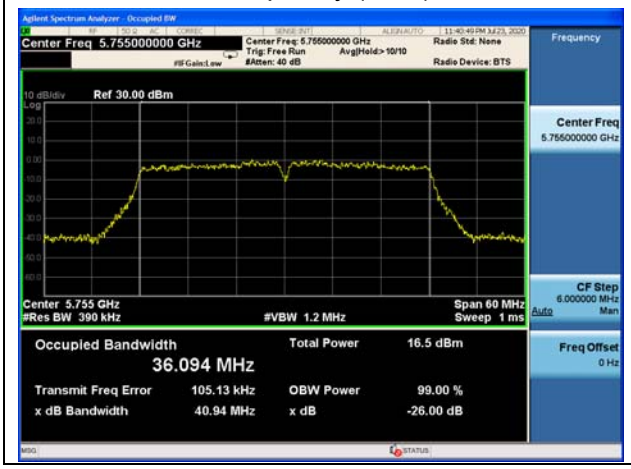
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5785



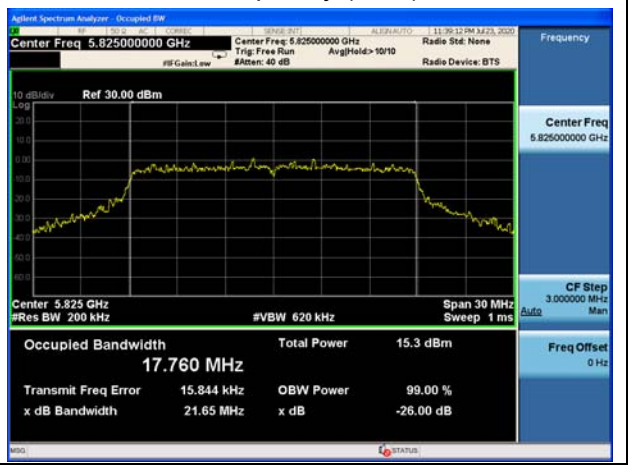
U-NII-3, 802.11ac VHT40

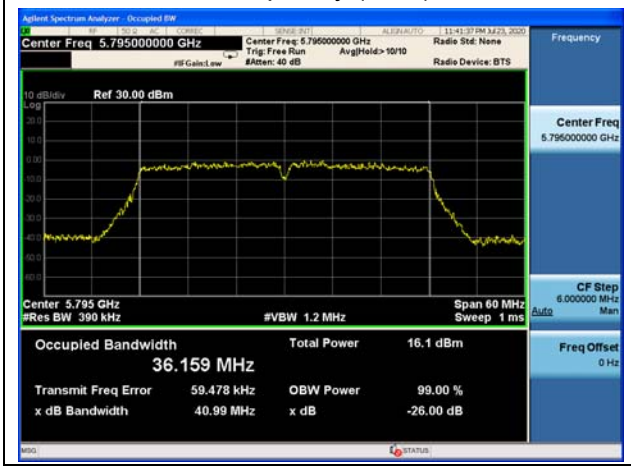
Carrier frequency (MHz): 5755



U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5825

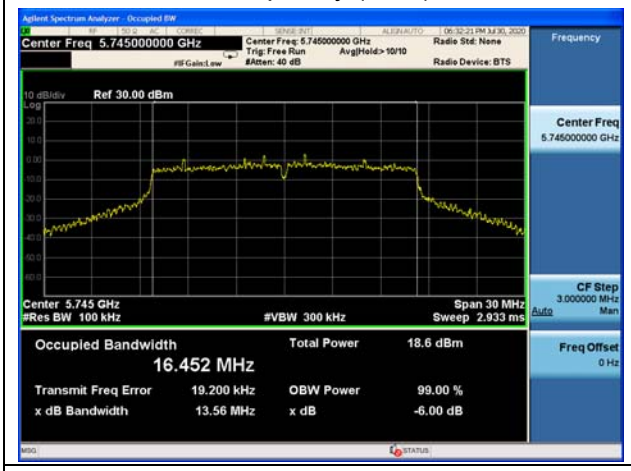


U-NII-3, 802.11ac VHT40 Carrier frequency (MHz): 5795	U-NII-3, 802.11ac VHT80 Carrier frequency (MHz): 5775
	

Minimum 6 dB bandwidth

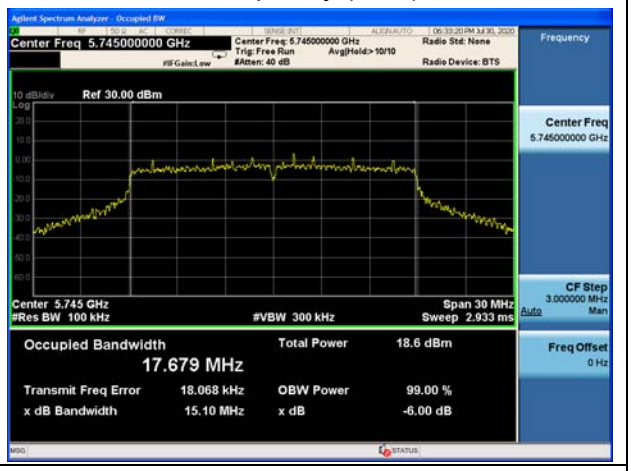
U-NII-3, 802.11a

Carrier frequency (MHz): 5745



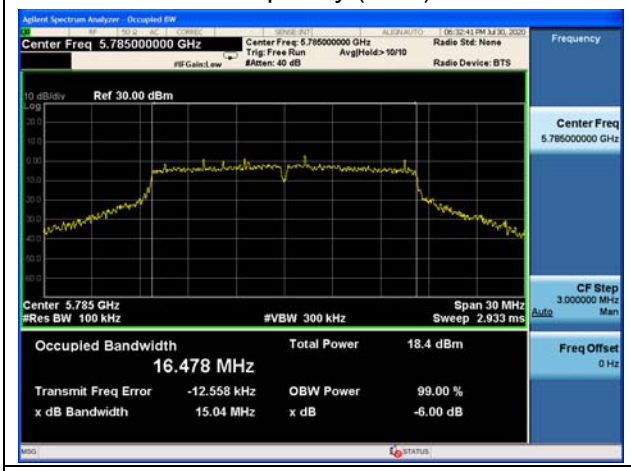
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745



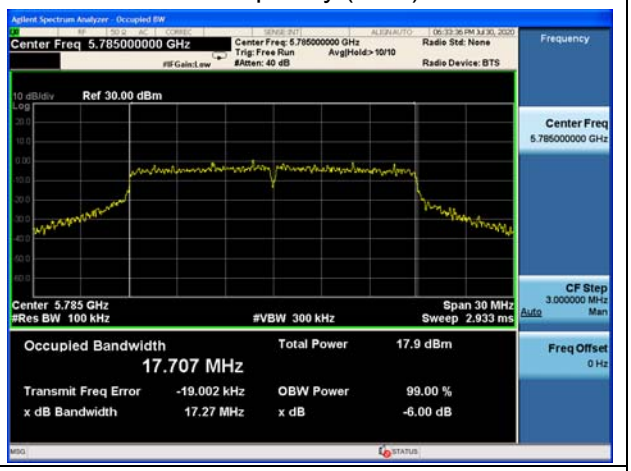
U-NII-3, 802.11a

Carrier frequency (MHz): 5785



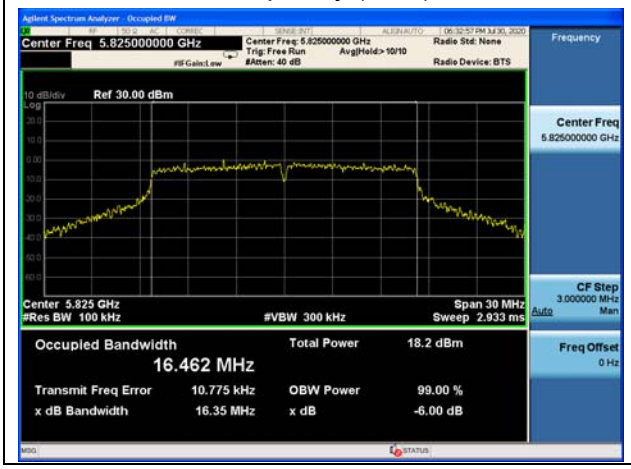
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785



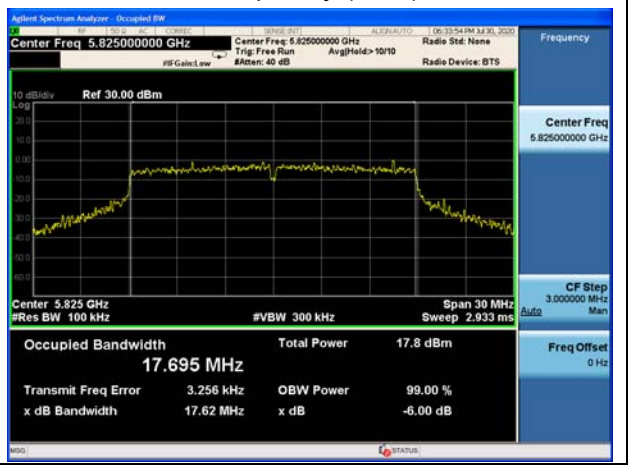
U-NII-3, 802.11a

Carrier frequency (MHz): 5825



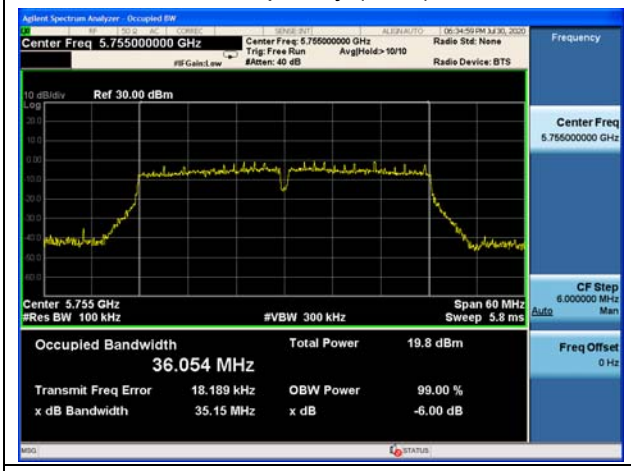
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825



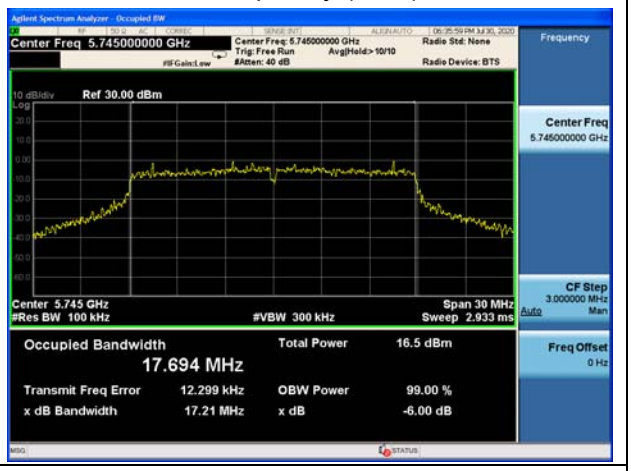
U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755



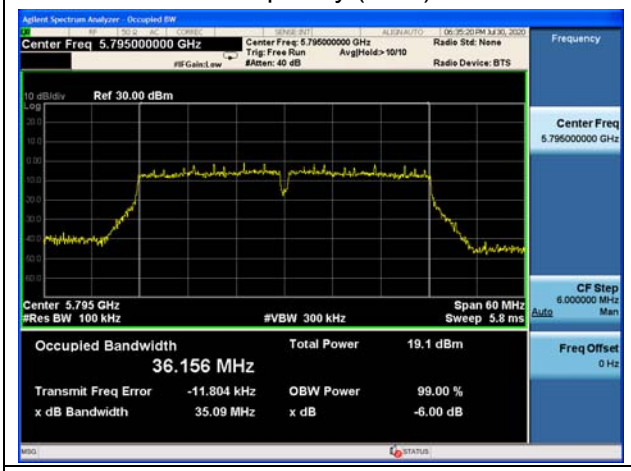
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745



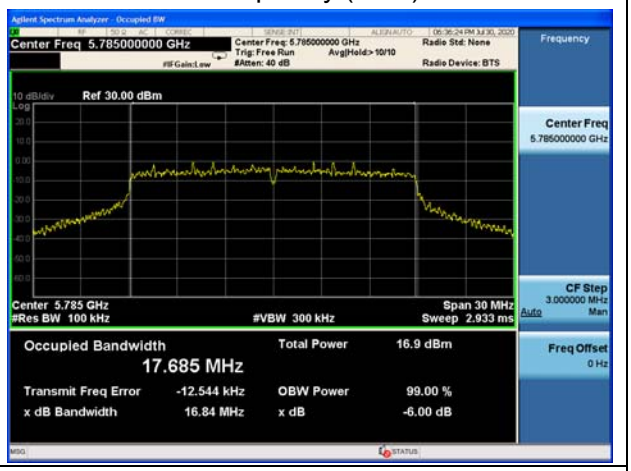
U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795



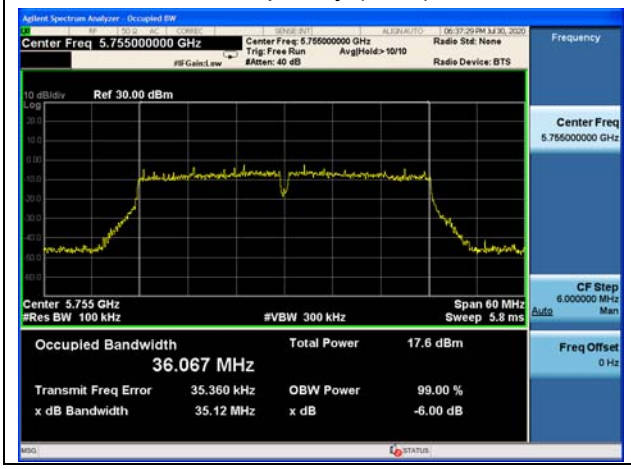
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5785



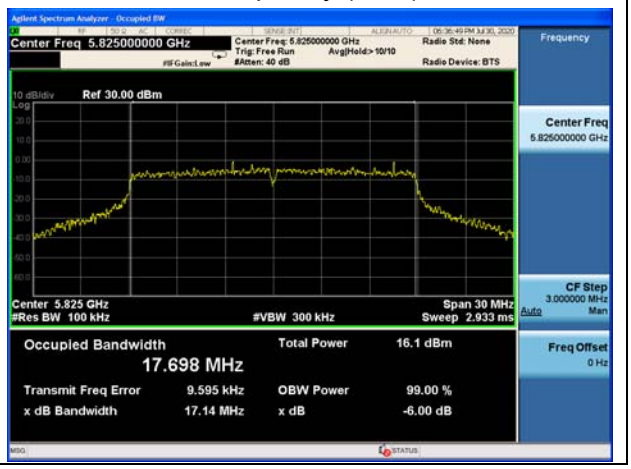
U-NII-3, 802.11ac VHT40

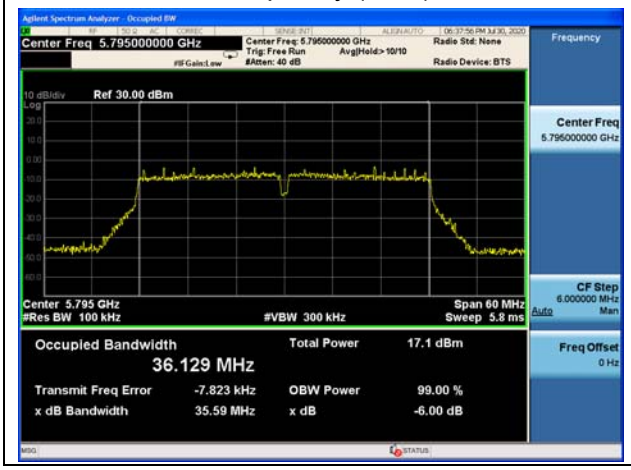
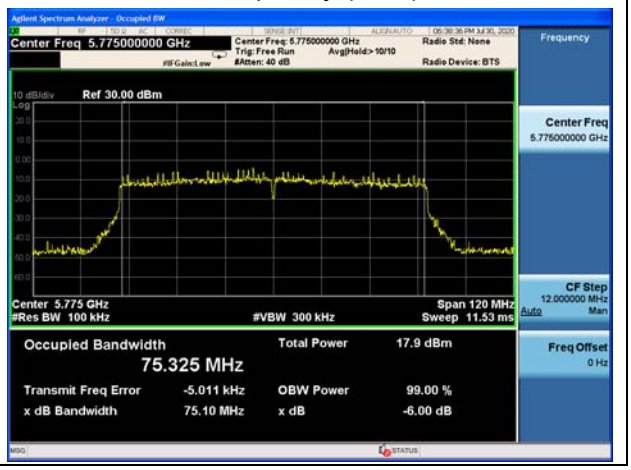
Carrier frequency (MHz): 5755



U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5825



U-NII-3, 802.11ac VHT40 Carrier frequency (MHz): 5795	U-NII-3, 802.11ac VHT80 Carrier frequency (MHz): 5775
	

5.2. Average Power Output –Conducted

Ambient condition

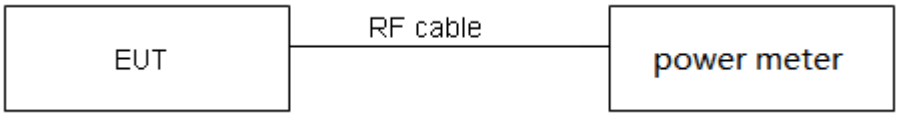
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the average power meter through an external attenuator and a known loss cable. The EUT is max power transmission with proper modulation. We use Maximum average Conducted Output Power Level Method in KDB789033 for this test

The conducted Power is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test Setup



Limits

Rule FCC Part 15.407(a)(1)(2)(3)
(1) For the band 5.15-5.25 GHz.
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23

dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3)For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.44 dB.

Test Results

Band	T_{on} (ms)	$T_{(on+off)}$ (ms)	Duty cycle	Duty cycle correction Factor(dB)
802.11a	2.06	2.10	0.98	NA
802.11n HT20	1.92	1.96	0.98	0.09
802.11n HT40	0.95	0.98	0.96	0.16
802.11ac VHT20	1.94	1.97	0.98	NA
802.11ac VHT40	0.95	1.00	0.95	0.20
802.11ac VHT80	0.46	0.50	0.93	0.33
Note: when Duty cycle>0.98, Duty cycle correction Factor not required.				

SISO Antenna 1 & Antenna 2:

	Single Antenna Power Index												
Packet Type	**CH36**	**CH40**	**CH48**	**CH52**	**CH60**	**CH64**	**CH100**	**CH120**	**CH140**	**CH144**	**CH149**	**CH157**	**CH165**
802.11a	14	14	14	14	14	14	14	14	14	14	14	14	14
802.11n HT20	14	14	14	14	14	14	14	14	14	14	14	14	14
802.11ac VHT20	12	12	12	12	12	12	12	12	12	12	12	12	12
Packet Type	**CH38**	**CH46**	**CH54**	**CH62**	**CH102**	**CH118**	**CH134**	**CH142**	**CH151**	**CH159**	/	/	/
802.11n HT40	14	14	14	14	14	14	14	14	14	14	/	/	/
802.11ac VHT40	12	12	12	12	12	12	12	12	12	12	/	/	/
Packet Type	**CH42**	**CH58**	**CH106**	**CH122**	**CH138**	**CH155**	/	/	/	/	/	/	/
802.11ac VHT80	12	12	12	12	12	12	/	/	/	/	/	/	/

MIMO Antenna 1:

	MIMO Antenna Power Index												
Packet Type	**CH36**	**CH40**	**CH48**	**CH52**	**CH60**	**CH64**	**CH100**	**CH120**	**CH140**	**CH144**	**CH149**	**CH157**	**CH165**
802.11a	14	14	14	14	14	14	14	14	14	14	14	14	14
802.11n HT20	14	14	14	14	14	14	14	14	14	14	14	14	14
802.11ac VHT20	12	12	12	12	12	12	12	12	12	12	12	12	12
Packet Type	**CH38**	**CH46**	**CH54**	**CH62**	**CH102**	**CH118**	**CH134**	**CH142**	**CH151**	**CH159**	/	/	/
802.11n HT40	13	14	14	13	13	14	14	14	14	14	/	/	/
802.11ac VHT40	12	12	12	12	12	12	12	12	12	12	/	/	/
Packet Type	**CH42**	**CH58**	**CH106**	**CH122**	**CH138**	**CH155**	/	/	/	/	/	/	/
802.11ac VHT80	12	12	12	12	12	12	/	/	/	/	/	/	/

MIMO Antenna 2:

	MIMO Antenna Power Index												
Packet Type	**CH36**	**CH40**	**CH48**	**CH52**	**CH60**	**CH64**	**CH100**	**CH120**	**CH140**	**CH144**	**CH149**	**CH157**	**CH165**
802.11a	14	14	14	14	14	14	14	14	14	14	16	16	14
802.11n HT20	14	14	14	14	14	14	14	14	14	14	14	14	14
802.11ac VHT20	12	12	12	12	12	12	12	12	12	12	12	12	12
Packet Type	**CH38**	**CH46**	**CH54**	**CH62**	**CH102**	**CH118**	**CH134**	**CH142**	**CH151**	**CH159**	/	/	/
802.11n HT40	13	14	14	13	13	14	14	14	14	14	/	/	/
802.11ac VHT40	12	12	12	12	12	12	12	12	12	12	/	/	/
Packet Type	**CH42**	**CH58**	**CH106**	**CH122**	**CH138**	**CH155**	/	/	/	/	/	/	/
802.11ac VHT80	12	12	12	12	12	12	/	/	/	/	/	/	/

Network Standards		**Channel/Frequency (MHz)**	**B=26 dB bandwidth (MHz)**	**Limit 11 dBm + 10 log B (dBm)**	**Final Limit(dBm)**
U-NII-2A	802.11a	52/5260	22.45	24.51 >24	24.00
		60/5300	22.39	24.50 >24	24.00
		64/5320	24.03	24.81 >24	24.00
	802.11n HT20	52/5260	22.80	24.58 >24	24.00
		60/5300	23.42	24.70 >24	24.00

		64/5320	22.66	24.55 >24	24.00
	802.11n HT40	54/5270	41.01	27.13 >24	24.00
		62/5310	41.21	27.15 >24	24.00
	802.11ac VHT20	52/5260	22.68	24.56 >24	24.00
		60/5300	21.96	24.42 >24	24.00
		64/5320	22.65	24.55 >24	24.00
	802.11ac VHT40	54/5270	41.02	27.13 >24	24.00
		62/5310	40.93	27.12 >24	24.00
	802.11ac VHT80	58/5290	82.68	30.17 >24	24.00
U-NII-2C	802.11a	100/5500	21.67	24.36 >24	24.00
		120/5600	22.51	24.52 >24	24.00
		140/5700	21.83	24.39 >24	24.00
		144/5720	21.68	24.36 >24	24.00
	802.11n HT20	100/5500	23.05	24.63 >24	24.00
		120/5600	22.60	24.54 >24	24.00
		140/5700	23.78	24.76 >24	24.00
		144/5720	23.00	24.62 >24	24.00
	802.11n HT40	102/5510	41.19	27.15 >24	24.00
		118/5590	40.56	27.08 >24	24.00
		134/5670	40.81	27.11 >24	24.00
		142/5710	40.71	27.10 >24	24.00
	802.11ac VHT20	100/5500	23.12	24.64 >24	24.00
		120/5600	23.13	24.64 >24	24.00
		140/5700	22.16	24.46 >24	24.00
		144/5720	22.55	24.53 >24	24.00
	802.11ac VHT40	102/5510	40.84	27.11 >24	24.00
		118/5590	40.32	27.06 >24	24.00
		134/5670	41.02	27.13 >24	24.00
		142/5710	42.02	27.23 >24	24.00
	802.11ac VHT80	106/5530	82.02	30.14 >24	24.00
		122/5610	83.05	30.19 >24	24.00
		138/5690	81.88	30.13 >24	24.00
Note: 250mW=24dBm					

SISO Antenna 1

U-NII-1

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	13.72	13.72	24	PASS
	40/5200	13.45	13.45	24	PASS
	48/5240	13.52	13.52	24	PASS
802.11n HT20	36/5180	13.76	13.85	24	PASS
	40/5200	13.54	13.63	24	PASS
	48/5240	13.28	13.37	24	PASS
802.11n HT40	38/5190	14.32	14.48	24	PASS
	46/5230	13.97	14.13	24	PASS
802.11ac VHT20	36/5180	12.18	12.18	24	PASS
	40/5200	12.09	12.09	24	PASS
	48/5240	11.30	11.30	24	PASS
802.11ac VHT40	38/5190	12.93	13.13	24	PASS
	46/5230	11.94	12.14	24	PASS
802.11ac VHT80	42/5210	12.35	12.68	24	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	52/5260	13.72	13.72	24.00	PASS
	60/5300	14.18	14.18	24.00	PASS
	64/5320	14.27	14.27	24.00	PASS
802.11n HT20	52/5260	13.32	13.41	24.00	PASS
	60/5300	13.92	14.01	24.00	PASS
	64/5320	14.12	14.21	24.00	PASS
802.11n HT40	54/5270	14.31	14.47	24.00	PASS
	62/5310	14.84	15.00	24.00	PASS
802.11ac VHT20	52/5260	11.77	11.77	24.00	PASS
	60/5300	11.19	11.19	24.00	PASS
	64/5320	10.95	10.95	24.00	PASS
802.11ac VHT40	54/5270	13.33	13.53	24.00	PASS
	62/5310	11.98	12.18	24.00	PASS
802.11ac VHT80	58/5290	12.12	12.45	24.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	100/5500	14.15	14.15	24.00	PASS
	120/5600	14.03	14.03	24.00	PASS
	140/5700	14.26	14.26	24.00	PASS
	144/5720	14.47	14.47	24.00	PASS
802.11n HT20	100/5500	14.08	14.17	24.00	PASS
	120/5600	13.82	13.91	24.00	PASS
	140/5700	14.16	14.25	24.00	PASS
	144/5720	14.33	14.42	24.00	PASS
802.11n HT40	102/5510	14.68	14.84	24.00	PASS
	118/5590	14.58	14.74	24.00	PASS
	134/5670	14.52	14.68	24.00	PASS
	142/5710	14.61	14.77	24.00	PASS
802.11ac VHT20	100/5500	11.96	11.96	24.00	PASS
	120/5600	12.01	12.01	24.00	PASS
	140/5700	12.09	12.09	24.00	PASS
	144/5720	12.32	12.32	24.00	PASS
802.11ac VHT40	102/5510	12.80	13.00	24.00	PASS
	118/5590	12.63	12.83	24.00	PASS
	134/5670	12.72	12.92	24.00	PASS
	142/5710	12.69	12.89	24.00	PASS
802.11ac VHT80	106/5530	12.84	13.17	24.00	PASS
	122/5610	12.34	12.67	24.00	PASS
	138/5690	12.74	13.07	24.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-3

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	14.12	14.12	30	PASS
	157/5785	14.05	14.05	30	PASS
	165/5825	13.96	13.96	30	PASS
802.11n HT20	149/5745	13.97	14.06	30	PASS
	157/5785	13.92	14.01	30	PASS
	165/5825	13.82	13.91	30	PASS
802.11n HT40	151/5755	14.73	14.89	30	PASS
	159/5795	14.72	14.88	30	PASS
802.11ac VHT20	149/5745	12.36	12.36	30	PASS
	157/5785	12.29	12.29	30	PASS
	165/5825	12.06	12.06	30	PASS
802.11ac VHT40	151/5755	12.98	13.18	30	PASS
	159/5795	12.87	13.07	30	PASS
802.11ac VHT80	155/5775	12.57	12.90	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

SISO Antenna 2

U-NII-1

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	14.30	14.30	24	PASS
	40/5200	14.32	14.32	24	PASS
	48/5240	14.33	14.33	24	PASS
802.11n HT20	36/5180	14.16	14.25	24	PASS
	40/5200	14.06	14.15	24	PASS
	48/5240	14.17	14.26	24	PASS
802.11n HT40	38/5190	14.87	15.03	24	PASS
	46/5230	14.93	15.09	24	PASS
802.11ac VHT20	36/5180	11.08	11.08	24	PASS
	40/5200	10.57	10.57	24	PASS
	48/5240	11.34	11.34	24	PASS
802.11ac VHT40	38/5190	11.39	11.59	24	PASS
	46/5230	11.65	11.85	24	PASS
802.11ac VHT80	42/5210	11.49	11.82	24	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	52/5260	14.38	14.38	24.00	PASS
	60/5300	14.56	14.56	24.00	PASS
	64/5320	14.68	14.68	24.00	PASS
802.11n HT20	52/5260	14.32	14.41	24.00	PASS
	60/5300	14.36	14.45	24.00	PASS
	64/5320	14.61	14.70	24.00	PASS
802.11n HT40	54/5270	14.98	15.14	24.00	PASS
	62/5310	15.13	15.29	24.00	PASS
802.11ac VHT20	52/5260	11.68	11.68	24.00	PASS
	60/5300	11.46	11.46	24.00	PASS
	64/5320	11.52	11.52	24.00	PASS
802.11ac VHT40	54/5270	12.27	12.47	24.00	PASS
	62/5310	12.02	12.22	24.00	PASS
802.11ac VHT80	58/5290	11.91	12.24	24.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	100/5500	15.07	15.07	24.00	PASS
	120/5600	14.87	14.87	24.00	PASS
	140/5700	14.71	14.71	24.00	PASS
	144/5720	14.60	14.60	24.00	PASS
802.11n HT20	100/5500	15.05	15.14	24.00	PASS
	120/5600	14.72	14.81	24.00	PASS
	140/5700	14.48	14.57	24.00	PASS
	144/5720	14.34	14.43	24.00	PASS
802.11n HT40	102/5510	15.70	15.86	24.00	PASS
	118/5590	15.37	15.53	24.00	PASS
	134/5670	15.17	15.33	24.00	PASS
	142/5710	15.05	15.21	24.00	PASS
802.11ac VHT20	100/5500	13.03	13.03	24.00	PASS
	120/5600	12.81	12.81	24.00	PASS
	140/5700	12.74	12.74	24.00	PASS
	144/5720	12.61	12.61	24.00	PASS
802.11ac VHT40	102/5510	13.58	13.78	24.00	PASS
	118/5590	13.45	13.65	24.00	PASS
	134/5670	13.31	13.51	24.00	PASS
	142/5710	13.12	13.32	24.00	PASS
802.11ac VHT80	106/5530	13.67	14.00	24.00	PASS
	122/5610	13.16	13.49	24.00	PASS
	138/5690	13.07	13.40	24.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-3

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	14.56	14.56	30	PASS
	157/5785	14.83	14.83	30	PASS
	165/5825	14.72	14.72	30	PASS
802.11n HT20	149/5745	14.43	14.52	30	PASS
	157/5785	14.79	14.88	30	PASS
	165/5825	14.58	14.67	30	PASS
802.11n HT40	151/5755	15.07	15.23	30	PASS
	159/5795	15.08	15.24	30	PASS
802.11ac VHT20	149/5745	12.67	12.67	30	PASS
	157/5785	12.93	12.93	30	PASS
	165/5825	12.92	12.92	30	PASS
802.11ac VHT40	151/5755	13.08	13.28	30	PASS
	159/5795	13.39	13.59	30	PASS
802.11ac VHT80	155/5775	12.89	13.22	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

MIMO without Beamforming

U-NII-1

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	36/5180	14.29	14.29	13.14	13.14	16.76	24.00	PASS
	44/5220	13.96	13.96	12.37	12.37	16.25	24.00	PASS
	48/5240	13.02	13.02	12.93	12.93	15.99	24.00	PASS
802.11n HT20	36/5180	13.53	13.62	13.01	13.10	16.38	24.00	PASS
	44/5220	13.21	13.30	12.63	12.72	16.03	24.00	PASS
	48/5240	12.43	12.52	12.75	12.84	15.69	24.00	PASS
802.11n HT40	38/5190	13.26	13.42	12.03	12.19	15.86	24.00	PASS
	46/5230	13.03	13.19	13.07	13.23	16.22	24.00	PASS
802.11ac VHT20	36/5180	11.92	11.92	10.92	10.92	14.46	24.00	PASS
	44/5220	11.58	11.58	10.28	10.28	13.99	24.00	PASS
	48/5240	10.85	10.85	10.85	10.85	13.86	24.00	PASS
802.11ac VHT40	38/5190	12.27	12.47	10.91	11.11	14.85	24.00	PASS
	46/5230	11.33	11.53	11.26	11.46	14.51	24.00	PASS
802.11ac VHT80	42/5210	11.77	12.10	11.06	11.39	14.77	24.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

2. The manufacturer declared the transmitter output signals is CDD mode And N_{ss}=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT $\leqslant$ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less, for 20-MHz channel widths with NANT $\geqslant$ 5.

3.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

So directional gain = GANT + Array Gain =2.04+0=2.04 dBi<6dBi. So the power limt is 24dBm.

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	52/5260	13.65	13.65	13.37	13.37	16.52	24.00	PASS
	60/5300	12.89	12.89	13.31	13.31	16.12	24.00	PASS
	64/5320	12.68	12.68	13.56	13.56	16.15	24.00	PASS
802.11n HT20	52/5260	13.03	13.12	12.96	13.05	16.09	24.00	PASS
	60/5300	12.39	12.48	12.76	12.85	15.68	24.00	PASS
	64/5320	11.98	12.07	13.04	13.13	15.64	24.00	PASS
802.11n HT40	54/5270	13.42	13.58	13.52	13.68	16.64	24.00	PASS
	62/5310	11.69	11.85	12.37	12.53	15.22	24.00	PASS
802.11ac VHT20	52/5260	11.05	11.05	11.25	11.25	14.16	24.00	PASS
	60/5300	10.34	10.34	11.16	11.16	13.78	24.00	PASS
	64/5320	10.14	10.14	10.82	10.82	13.50	24.00	PASS
802.11ac VHT40	54/5270	11.84	12.04	11.79	11.99	15.03	24.00	PASS
	62/5310	10.98	11.18	11.71	11.91	14.57	24.00	PASS
802.11ac VHT80	58/5290	11.37	11.70	11.97	12.30	15.02	24.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

2. The manufacturer declared the transmitter output signals is CDD mode And N_{ss}=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT $\leqslant$ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less, for 20-MHz channel widths with NANT $\geqslant$ 5.

3.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

So directional gain = GANT + Array Gain =2.04+0=2.04 dBi<6dBi. So the power limt is 24dBm.

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	100/5500	12.27	12.27	14.08	14.08	16.28	24.00	PASS
	120/5600	11.52	11.52	13.12	13.12	15.40	24.00	PASS
	140/5700	11.69	11.69	12.33	12.33	15.03	24.00	PASS
	144/5720	11.28	11.28	11.52	11.52	14.41	24.00	PASS
802.11n HT20	100/5500	11.62	11.71	13.99	14.08	16.06	24.00	PASS
	120/5600	11.01	11.10	13.25	13.34	15.37	24.00	PASS
	140/5700	11.33	11.42	12.68	12.77	15.16	24.00	PASS
	144/5720	10.94	11.03	11.94	12.03	14.57	24.00	PASS
802.11n HT40	102/5510	11.42	11.58	13.31	13.47	15.64	24.00	PASS
	118/5590	11.52	11.68	13.85	14.01	16.01	24.00	PASS
	134/5670	11.25	11.41	12.86	13.02	15.30	24.00	PASS
	142/5710	11.60	11.76	12.18	12.34	15.07	24.00	PASS
802.11ac VHT20	100/5500	9.62	9.62	11.83	11.83	13.87	24.00	PASS
	120/5600	9.06	9.06	11.19	11.19	13.26	24.00	PASS
	140/5700	9.43	9.43	10.96	10.96	13.27	24.00	PASS
	144/5720	8.97	8.97	10.15	10.15	12.61	24.00	PASS
802.11ac VHT40	102/5510	10.72	10.92	12.32	12.52	14.80	24.00	PASS
	118/5590	9.61	9.81	11.79	11.99	14.05	24.00	PASS
	134/5670	9.55	9.75	10.67	10.87	13.36	24.00	PASS
	142/5710	9.50	9.70	10.53	10.73	13.26	24.00	PASS
802.11ac VHT80	106/5530	10.23	10.56	12.08	12.41	14.59	24.00	PASS
	122/5610	9.14	9.47	11.37	11.70	13.73	24.00	PASS
	138/5690	9.56	9.89	10.56	10.89	13.42	24.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm/10})}+10^{(\text{Power antenna2 in dBm/10})})$.

2. The manufacturer declared the transmitter output signals is CDD mode And N_{ss}=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT $\leqslant$ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less, for 20-MHz channel widths with NANT $\geqslant$ 5.

3.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using

the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

So directional gain = GANT + Array Gain =2.04+0=2.04 dBi<6dBi. So the power limt is 24dBm.

U-NII-3

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	149/5745	11.93	11.93	11.97	11.97	14.96	30.00	PASS
	157/5785	11.70	11.70	12.27	12.27	15.00	30.00	PASS
	165/5825	11.72	11.72	11.64	11.64	14.69	30.00	PASS
802.11n HT20	149/5745	11.32	11.41	11.86	11.95	14.70	30.00	PASS
	157/5785	11.28	11.37	11.99	12.08	14.75	30.00	PASS
	165/5825	11.19	11.28	11.53	11.62	14.46	30.00	PASS
802.11n HT40	151/5755	12.02	12.18	12.43	12.59	15.40	30.00	PASS
	159/5795	11.71	11.87	12.26	12.42	15.17	30.00	PASS
802.11ac VHT20	149/5745	9.43	9.43	10.08	10.08	12.78	30.00	PASS
	157/5785	9.72	9.72	10.33	10.33	13.05	30.00	PASS
	165/5825	9.19	9.19	10.11	10.11	12.68	30.00	PASS
802.11ac VHT40	151/5755	10.39	10.59	10.56	10.76	13.69	30.00	PASS
	159/5795	9.96	10.16	10.61	10.81	13.51	30.00	PASS
802.11ac VHT80	155/5775	9.92	10.25	10.34	10.67	13.47	30.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

2. The manufacturer declared the transmitter output signals is CDD mode And N_{ss}=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT $\leqslant$ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less, for 20-MHz channel widths with NANT $\geqslant$ 5.

3.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

So directional gain = GANT + Array Gain =2.04+0=2.04 dBi<6dBi. So the power limt is 30dBm.

MIMO with Beamforming

U-NII-1

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	36/5180	12.56	12.65	13.02	13.11	15.90	24.00	PASS
	44/5220	12.19	12.28	12.56	12.65	15.48	24.00	PASS
	48/5240	12.51	12.60	12.69	12.78	15.70	24.00	PASS
802.11n HT40	38/5190	13.35	13.51	12.06	12.22	15.92	24.00	PASS
	46/5230	13.06	13.22	13.02	13.18	16.21	24.00	PASS
802.11ac VHT20	36/5180	11.87	11.87	10.86	10.86	14.40	24.00	PASS
	44/5220	11.52	11.52	10.33	10.33	13.98	24.00	PASS
	48/5240	10.91	10.91	10.86	10.86	13.90	24.00	PASS
802.11ac VHT40	38/5190	12.23	12.43	10.97	11.17	14.86	24.00	PASS
	46/5230	11.42	11.62	11.31	11.51	14.58	24.00	PASS
802.11ac VHT80	42/5210	11.65	11.98	11.09	11.42	14.72	24.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

2. The manufacturer declared the transmitter output signals is CDD mode And N_{ss}=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain+ Beamforming Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT $\leqslant$ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less, for 20-MHz channel widths with NANT $\geqslant$ 5.

3.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

So directional gain = G_{ANT} + Array Gain+ Beamforming Gain =2.04+0+0=2.04 dBi<6dBi. So the power limt is 24dBm.

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	52/5260	13.01	13.10	12.86	12.95	16.04	24.00	PASS
	60/5300	12.36	12.45	12.72	12.81	15.64	24.00	PASS
	64/5320	12.02	12.11	13.11	13.20	15.70	24.00	PASS
802.11n HT40	54/5270	13.38	13.54	13.59	13.75	16.66	24.00	PASS
	62/5310	11.96	12.12	12.48	12.64	15.40	24.00	PASS
802.11ac VHT20	52/5260	11.08	11.08	11.28	11.28	14.19	24.00	PASS
	60/5300	10.42	10.42	11.15	11.15	13.81	24.00	PASS
	64/5320	10.06	10.06	10.83	10.83	13.47	24.00	PASS
802.11ac VHT40	54/5270	10.81	11.01	11.76	11.96	14.52	24.00	PASS
	62/5310	10.96	11.16	11.68	11.88	14.55	24.00	PASS
802.11ac VHT80	58/5290	11.45	11.78	11.93	12.26	15.03	24.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

2. The manufacturer declared the transmitter output signals is CDD mode And N_{ss}=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain+ Beamforming Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT $\leqslant$ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less, for 20-MHz channel widths with NANT $\geqslant$ 5.

3.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

So directional gain = G_{ANT} + Array Gain+ Beamforming Gain =2.04+0+0=2.04 dBi<6dBi. So the power limt is 24dBm.

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	100/5500	11.65	11.74	13.98	14.07	16.07	24.00	PASS
	120/5600	11.03	11.12	13.26	13.35	15.39	24.00	PASS
	140/5700	11.36	11.45	12.61	12.70	15.13	24.00	PASS
	144/5720	10.82	10.91	11.98	12.07	14.54	24.00	PASS
802.11n HT40	102/5510	11.62	11.78	13.23	13.39	15.67	24.00	PASS
	118/5590	11.48	11.64	13.81	13.97	15.97	24.00	PASS
	134/5670	11.36	11.52	12.92	13.08	15.38	24.00	PASS
	142/5710	11.73	11.89	12.23	12.39	15.16	24.00	PASS
802.11ac VHT20	100/5500	9.72	9.72	11.86	11.86	13.93	24.00	PASS
	120/5600	9.09	9.09	11.23	11.23	13.30	24.00	PASS
	140/5700	9.56	9.56	10.91	10.91	13.30	24.00	PASS
	144/5720	9.01	9.01	10.18	10.18	12.64	24.00	PASS
802.11ac VHT40	102/5510	10.70	10.90	12.38	12.58	14.83	24.00	PASS
	118/5590	9.63	9.83	11.83	12.03	14.08	24.00	PASS
	134/5670	9.58	9.78	10.69	10.89	13.38	24.00	PASS
	142/5710	9.53	9.73	10.58	10.78	13.30	24.00	PASS
802.11ac VHT80	106/5530	10.27	10.60	12.16	12.49	14.65	24.00	PASS
	122/5610	9.19	9.52	11.41	11.74	13.78	24.00	PASS
	138/5690	9.62	9.95	10.58	10.91	13.46	24.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

2. The manufacturer declared the transmitter output signals is CDD mode And N_{ss}=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain+ Beamforming Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT $\leqslant$ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less, for 20-MHz channel widths with NANT $\geqslant$ 5.

3.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

So directional gain = G_{ANT} + Array Gain+ Beamforming Gain =2.04+0+0=2.04 dBi<6dBi. So the power limt is 24dBm.

U-NII-3

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	149/5745	11.36	11.45	11.93	12.02	14.75	30.00	PASS
	157/5785	11.31	11.40	11.92	12.01	14.73	30.00	PASS
	165/5825	11.12	11.21	11.60	11.69	14.47	30.00	PASS
802.11n HT40	151/5755	12.09	12.25	12.41	12.57	15.43	30.00	PASS
	159/5795	11.76	11.92	12.29	12.45	15.21	30.00	PASS
802.11ac VHT20	149/5745	9.52	9.52	10.12	10.12	12.84	30.00	PASS
	157/5785	9.73	9.73	10.36	10.36	13.07	30.00	PASS
	165/5825	9.23	9.23	10.16	10.16	12.73	30.00	PASS
802.11ac VHT40	151/5755	10.36	10.56	10.57	10.77	13.68	30.00	PASS
	159/5795	9.91	10.11	10.65	10.85	13.51	30.00	PASS
802.11ac VHT80	155/5775	9.95	10.28	10.32	10.65	13.48	30.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.

2. The manufacturer declared the transmitter output signals is CDD mode And N_{ss}=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain+ Beamforming Gain,

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT $\leqslant$ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less, for 20-MHz channel widths with NANT $\geqslant$ 5.

3.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

So directional gain = G_{ANT} + Array Gain+ Beamforming Gain =2.04+0+0=2.04 dBi<6dBi. So the power limt is 30dBm.

5.3. Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

1. Frequency stability with respect to ambient temperature

a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.

b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).

d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.

e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.

f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

g) Measure the frequency at each of frequencies specified in 5.6.

h) Switch OFF the EUT but do not switch OFF the oscillator heater.

i) Lower the chamber temperature by not more that 10°C, and allow the temperature inside the chamber to stabilize.

j) Repeat step f) through step i) down to the lowest specified temperature.

2. Frequency stability when varying supply voltage

Unless otherwise specified, these tests shall be made at ambient room temperature (+15°C to +25 °C). An antenna shall be connected to the antenna output terminals of the EUT if possible. If the EUT is equipped with or uses an adjustable-length antenna, then it shall be fully extended.

a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.

b) Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
c) Measure the frequency at each of the frequencies specified in 5.6.
d) Repeat the above procedure at 85% and 115% of the nominal supply voltage.

Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936Hz

Test Results

MIMO Antenna

Voltage (V)	Temperature (°C)	U-NII-1 Test Results			
		5200MHz			
		1min	2min	5min	10min
3.87	0	5199.997745	5199.993304	5199.986286	5199.977943
3.87	5	5199.998828	5199.988238	5199.981911	5199.976938
3.87	10	5199.997147	5199.984880	5199.973964	5199.973731
3.87	15	5199.991907	5199.975619	5199.964497	5199.965244
3.87	20	5199.984538	5199.965655	5199.957669	5199.956952
3.87	25	5199.983379	5199.958163	5199.952152	5199.948736
3.87	30	5199.977209	5199.950402	5199.950068	5199.938837
3.87	40	5199.973883	5199.950377	5199.941020	5199.930412
3.6	25	5199.963964	5199.945364	5199.933400	5199.923524
4.4	25	5199.956940	5199.937692	5199.925569	5199.914046
MHz		-0.043060	-0.062308	-0.074431	-0.085954
PPM		-8.280818	-11.982342	-14.313712	-16.529604

Voltage (V)	Temperature (°C)	U-NII-2A Test Results			
		5300MHz			
		1min	2min	5min	10min
3.87	0	5299.997861	5299.995708	5299.992909	5299.985943
3.87	5	5299.991138	5299.986717	5299.988629	5299.976179
3.87	10	5299.985676	5299.981366	5299.983542	5299.968565
3.87	15	5299.976503	5299.975161	5299.979121	5299.966787
3.87	20	5299.970621	5299.970968	5299.976772	5299.957569
3.87	25	5299.969001	5299.967896	5299.967401	5299.948548
3.87	30	5299.965497	5299.964945	5299.959664	5299.946888
3.87	40	5299.959444	5299.960818	5299.953619	5299.946009
3.6	25	5299.950666	5299.954925	5299.950233	5299.939714
4.4	25	5299.946801	5299.949510	5299.942623	5299.934953
MHz		-0.053199	-0.050490	-0.057377	-0.065047
PPM		-10.037525	-9.526395	-10.825772	-12.273025

Voltage (V)	Temperature (°C)	U-NII-2C Test Results			
		5580MHz			
		1min	2min	5min	10min
3.87	0	5580.000277	5579.991351	5579.989856	5579.988158
3.87	5	5579.998391	5579.987826	5579.985653	5579.986006
3.87	10	5579.997188	5579.983416	5579.977367	5579.984753
3.87	15	5579.996757	5579.975008	5579.975472	5579.980444
3.87	20	5579.996323	5579.965511	5579.972024	5579.972133
3.87	25	5579.995751	5579.961846	5579.967630	5579.966157
3.87	30	5579.987558	5579.960345	5579.959314	5579.965171
3.87	40	5579.983286	5579.955076	5579.951057	5579.964561
3.6	25	5579.982604	5579.949088	5579.946286	5579.963211
4.4	25	5579.975868	5579.946079	5579.942169	5579.961534
MHz		-0.024132	-0.053921	-0.057831	-0.038466
PPM		-4.324778	-9.663226	-10.364056	-6.893565

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
3.87	0	5784.995677	5784.989989	5784.988268	5784.985490
3.87	5	5784.991299	5784.989978	5784.987761	5784.977968
3.87	10	5784.990724	5784.983421	5784.979965	5784.968734
3.87	15	5784.980912	5784.975355	5784.978829	5784.958794
3.87	20	5784.975057	5784.973887	5784.970121	5784.955518
3.87	25	5784.966684	5784.972551	5784.961422	5784.954698
3.87	30	5784.965548	5784.964575	5784.953353	5784.952681
3.87	40	5784.960661	5784.956724	5784.950783	5784.951350
3.6	25	5784.954777	5784.956530	5784.945336	5784.942622
4.4	25	5784.944798	5784.952481	5784.938852	5784.941636
MHz		-0.055202	-0.047519	-0.061148	-0.058364
PPM		-9.542191	-8.214176	-10.570148	-10.088794

5.4. Power Spectral Density

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

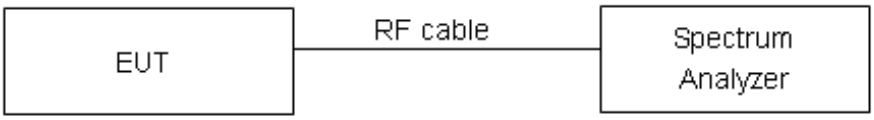
Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

Set RBW = 1MHz, VBW =3MHz for the band 5.150-5.250GHz, 5.250-5.350GHz, 5.470-5.725GHz.
Set RBW = 470kHz, VBW =1.5MHz for the band 5.725-5.850GHz

The conducted PSD is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test setup



Limits

Rule FCC Part 15.407(a)(1)/ Part 15.407(a)(2) / Part 15.407(a)(3)
For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmittingantennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the

amount in dB that the directional gain of the antenna exceeds 6 dBi.

Frequency Bands/MHz	Limits
5150-5250	11dBm/MHz
5.25-5.35 GHz and 5.47-5.725 GHz	11dBm/MHz
5725-5850	30dBm/500kHz

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.75dB.

Test Results:

SISO Antenna 1

U-NII-1

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36/5180	3.13	3.13	11	PASS
	40/5200	2.98	2.98	11	PASS
	48/5240	2.16	2.16	11	PASS
802.11n HT20	36/5180	2.56	2.64	11	PASS
	40/5200	2.67	2.76	11	PASS
	48/5240	1.53	1.62	11	PASS
802.11n HT40	38/5190	0.25	0.41	11	PASS
	46/5230	-0.93	-0.77	11	PASS
802.11ac VHT20	36/5180	0.81	0.81	11	PASS
	40/5200	0.62	0.62	11	PASS
	48/5240	-0.29	-0.29	11	PASS
802.11ac VHT40	38/5190	-1.33	-1.13	11	PASS
	46/5230	-2.50	-2.30	11	PASS
802.11ac VHT80	42/5210	-4.77	-4.45	11	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor.					

U-NII-2A

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52/5260	2.55	2.55	11	PASS
	60/5300	1.80	1.80	11	PASS
	64/5320	1.67	1.67	11	PASS
802.11n HT20	52/5260	2.07	2.16	11	PASS
	60/5300	1.49	1.58	11	PASS
	64/5320	1.11	1.20	11	PASS
802.11n HT40	54/5270	-0.27	-0.11	11	PASS
	62/5310	-0.82	-0.66	11	PASS
802.11ac VHT20	52/5260	0.34	0.34	11	PASS
	60/5300	-0.37	-0.37	11	PASS
	64/5320	-0.59	-0.59	11	PASS
802.11ac VHT40	54/5270	-2.35	0.20	11	PASS
	62/5310	-2.87	-2.67	11	PASS
802.11ac VHT80	58/5290	-5.47	-5.14	11	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor.					

U-NII-2C

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	100/5500	4.35	4.35	11	PASS
	120/5600	4.17	4.17	11	PASS
	140/5700	4.55	4.55	11	PASS
	144/5720	4.98	4.98	11	PASS
802.11n HT20	100/5500	3.79	3.87	11	PASS
	120/5600	3.77	3.86	11	PASS
	140/5700	4.38	4.47	11	PASS
	144/5720	4.58	4.67	11	PASS
802.11n HT40	102/5510	1.70	1.86	11	PASS
	118/5590	1.46	1.62	11	PASS
	134/5670	1.76	1.92	11	PASS
	142/5710	1.77	1.93	11	PASS
802.11ac VHT20	100/5500	1.48	1.48	11	PASS
	120/5600	1.51	1.51	11	PASS
	140/5700	1.53	1.53	11	PASS
	144/5720	2.12	2.12	11	PASS
802.11ac VHT40	102/5510	-0.48	-0.28	11	PASS
	118/5590	-0.48	-0.28	11	PASS
	134/5670	-0.51	-0.30	11	PASS
	142/5710	-0.42	-0.22	11	PASS
802.11ac VHT80	106/5530	-2.86	-2.53	11	PASS
	122/5610	-3.65	-3.33	11	PASS
	138/5690	-3.63	-3.30	11	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor.					

U-NII-3

Network Standards	Channel Number	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149/5745	0.57	0.84	30	PASS
	157/5785	0.85	1.12	30	PASS
	165/5825	0.36	0.63	30	PASS
802.11n HT20	149/5745	0.23	0.59	30	PASS
	157/5785	0.08	0.43	30	PASS
	165/5825	-0.04	0.32	30	PASS
802.11n HT40	151/5755	-2.02	-1.59	30	PASS
	159/5795	-2.19	-1.76	30	PASS
802.11ac VHT20	149/5745	-1.59	-1.32	30	PASS
	157/5785	-1.55	-1.28	30	PASS
	165/5825	-1.90	-1.63	30	PASS
802.11ac VHT40	151/5755	-4.02	-3.55	30	PASS
	159/5795	-4.22	-3.75	30	PASS
802.11ac VHT80	155/5775	-7.65	-7.06	30	PASS
Note:PSD=Read Value+Duty cycle+10*LOG(500/470) correction factor.					

SISO Antenna 2

U-NII-1

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36/5180	2.80	2.80	11	PASS
	40/5200	2.62	2.62	11	PASS
	48/5240	2.93	2.93	11	PASS
802.11n HT20	36/5180	2.55	2.64	11	PASS
	40/5200	1.99	2.08	11	PASS
	48/5240	2.34	2.42	11	PASS
802.11n HT40	38/5190	0.02	0.18	11	PASS
	46/5230	0.21	0.37	11	PASS
802.11ac VHT20	36/5180	0.47	0.47	11	PASS
	40/5200	0.08	0.08	11	PASS
	48/5240	0.50	0.50	11	PASS
802.11ac VHT40	38/5190	-2.56	-2.36	11	PASS
	46/5230	-2.04	-1.83	11	PASS
802.11ac VHT80	42/5210	-5.38	-5.06	11	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor.					

U-NII-2A

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52/5260	2.60	2.60	11	PASS
	60/5300	2.58	2.58	11	PASS
	64/5320	2.88	2.88	11	PASS
802.11n HT20	52/5260	2.85	2.94	11	PASS
	60/5300	2.67	2.76	11	PASS
	64/5320	2.80	2.89	11	PASS
802.11n HT40	54/5270	0.32	0.48	11	PASS
	62/5310	0.21	0.37	11	PASS
802.11ac VHT20	52/5260	1.00	1.00	11	PASS
	60/5300	0.81	0.81	11	PASS
	64/5320	0.75	0.75	11	PASS
802.11ac VHT40	54/5270	-1.49	0.20	11	PASS
	62/5310	-1.78	-1.58	11	PASS
802.11ac VHT80	58/5290	-4.54	-4.21	11	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor.					

U-NII-2C

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	100/5500	4.66	4.66	11	PASS
	120/5600	4.31	4.31	11	PASS
	140/5700	4.20	4.20	11	PASS
	144/5720	4.09	4.09	11	PASS
802.11n HT20	100/5500	4.17	4.26	11	PASS
	120/5600	3.82	3.91	11	PASS
	140/5700	3.50	3.58	11	PASS
	144/5720	3.55	3.64	11	PASS
802.11n HT40	102/5510	2.01	2.17	11	PASS
	118/5590	1.58	1.74	11	PASS
	134/5670	1.47	1.63	11	PASS
	142/5710	1.16	1.32	11	PASS
802.11ac VHT20	100/5500	2.33	2.33	11	PASS
	120/5600	1.91	1.91	11	PASS
	140/5700	1.72	1.72	11	PASS
	144/5720	1.96	1.96	11	PASS
802.11ac VHT40	102/5510	-0.28	-0.08	11	PASS
	118/5590	-0.58	-0.38	11	PASS
	134/5670	-0.35	-0.14	11	PASS
	142/5710	-0.78	-0.58	11	PASS
802.11ac VHT80	106/5530	-3.16	-2.83	11	PASS
	122/5610	-3.60	-3.28	11	PASS
	138/5690	-3.32	-2.99	11	PASS
Note: Power Spectral Density =Read Value+Duty cycle correction factor.					

U-NII-3

Network Standards	Channel Number	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149/5745	1.31	1.58	30	PASS
	157/5785	1.30	1.57	30	PASS
	165/5825	0.92	1.19	30	PASS
802.11n HT20	149/5745	0.69	1.05	30	PASS
	157/5785	0.77	1.13	30	PASS
	165/5825	0.95	1.30	30	PASS
802.11n HT40	151/5755	-2.34	-1.91	30	PASS
	159/5795	-1.86	-1.43	30	PASS
802.11ac VHT20	149/5745	-1.32	-1.05	30	PASS
	157/5785	-0.83	-0.56	30	PASS
	165/5825	-0.95	-0.68	30	PASS
802.11ac VHT40	151/5755	-4.02	-3.55	30	PASS
	159/5795	-3.57	-3.10	30	PASS
802.11ac VHT80	155/5775	-6.53	-5.93	30	PASS
Note:PSD=Read Value+Duty cycle+10*LOG(500/470) correction factor.					

MIMO without Beamforming

U-NII-1

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /MHz)		
		Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)			
802.11a	36/5180	3.59	3.59	2.42	2.42	6.06	11.00	PASS
	40/5200	3.55	3.55	2.22	2.22	5.94	11.00	PASS
	48/5240	2.70	2.70	2.56	2.56	5.64	11.00	PASS
802.11n HT20	36/5180	3.30	3.39	2.10	2.19	5.84	11.00	PASS
	40/5200	3.22	3.31	1.47	1.56	5.53	11.00	PASS
	48/5240	2.21	2.30	2.08	2.16	5.24	11.00	PASS
802.11n HT40	38/5190	0.85	1.01	-0.86	-0.69	3.25	11.00	PASS
	46/5230	-0.47	-0.31	-0.49	-0.33	2.69	11.00	PASS
802.11ac VHT20	36/5180	1.76	1.76	-0.30	-0.30	3.86	11.00	PASS
	40/5200	1.49	1.49	-0.37	-0.37	3.67	11.00	PASS
	48/5240	0.23	0.23	0.35	0.35	3.30	11.00	PASS
802.11ac VHT40	38/5190	-0.82	-0.61	-3.09	-2.89	1.41	11.00	PASS
	46/5230	-2.30	-2.09	-2.34	-2.14	0.89	11.00	PASS
802.11ac VHT80	42/5210	-4.13	-3.80	-5.79	-5.47	-1.54	11.00	PASS

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})})$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain, For PSD measurements on all devices,Array Gain=10log(Nant/Nss)dB,

4.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

so directional gain=GANT+Array Gain=2.04+10log（2/2)=2.04<6 dBi. So the PSD limt is 11 dBm.

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /MHz)		
		Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)			
802.11a	52/5260	2.44	2.44	2.43	2.43	5.44	11.00	PASS
	60/5300	2.18	2.18	2.58	2.58	5.39	11.00	PASS
	64/5320	1.10	1.10	2.65	2.65	4.95	11.00	PASS
802.11n HT20	52/5260	2.34	2.43	2.30	2.39	5.42	11.00	PASS
	60/5300	1.54	1.63	1.74	1.83	4.74	11.00	PASS
	64/5320	1.37	1.46	1.82	1.91	4.70	11.00	PASS
802.11n HT40	54/5270	-0.71	-0.54	-0.71	-0.55	2.46	11.00	PASS
	62/5310	-0.74	-0.58	-0.93	-0.77	2.34	11.00	PASS
802.11ac VHT20	52/5260	0.50	0.50	0.10	0.10	3.32	11.00	PASS
	60/5300	0.13	0.13	0.04	0.04	3.09	11.00	PASS
	64/5320	-0.49	-0.49	-0.15	-0.15	2.69	11.00	PASS
802.11ac VHT40	54/5270	-1.91	-1.71	-2.52	-2.32	1.00	11.00	PASS
	62/5310	-2.71	-2.51	-0.54	-0.34	1.72	11.00	PASS
802.11ac VHT80	58/5290	-5.32	-4.99	-5.26	-4.93	-1.95	11.00	PASS

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})})$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain, For PSD measurements on all devices,Array Gain=10log(Nant/Nss)dB,

4.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

so directional gain=GANT+Array Gain=2.04+10log（2/2)=2.04<6 dBi. So the PSD limt is 11 dBm.

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /MHz)		
		Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)			
802.11a	100/5500	1.82	1.82	2.96	2.96	5.44	11.00	PASS
	120/5600	0.86	0.86	2.38	2.38	4.70	11.00	PASS
	140/5700	1.13	1.13	1.67	1.67	4.42	11.00	PASS
	144/5720	0.69	0.69	1.01	1.01	3.86	11.00	PASS
802.11n HT20	100/5500	1.09	1.18	2.72	2.80	5.08	11.00	PASS
	120/5600	0.49	0.58	2.06	2.15	4.44	11.00	PASS
	140/5700	0.32	0.41	1.15	1.24	3.86	11.00	PASS
	144/5720	0.06	0.15	0.29	0.38	3.27	11.00	PASS
802.11n HT40	102/5510	-1.47	-1.30	0.38	0.54	2.73	11.00	PASS
	118/5590	-1.85	-1.68	-0.53	-0.36	2.04	11.00	PASS
	134/5670	-2.16	-2.00	-1.54	-1.38	1.33	11.00	PASS
	142/5710	-2.21	-2.05	-1.74	-1.58	1.20	11.00	PASS
802.11ac VHT20	100/5500	-0.88	-0.88	0.83	0.83	3.07	11.00	PASS
	120/5600	-1.30	-1.30	0.12	0.12	2.48	11.00	PASS
	140/5700	-1.47	-1.47	-0.64	-0.64	1.97	11.00	PASS
	144/5720	-2.20	-2.20	-1.62	-1.62	1.11	11.00	PASS
802.11ac VHT40	102/5510	-3.25	-3.05	-1.34	-1.14	1.02	11.00	PASS
	118/5590	-3.94	-3.73	-2.12	-1.92	0.28	11.00	PASS
	134/5670	-4.37	-4.17	-3.31	-3.11	-0.60	11.00	PASS
	142/5710	-4.51	-4.31	-3.29	-3.09	-0.64	11.00	PASS
802.11ac VHT80	106/5530	-6.20	-5.87	-4.30	-3.97	-1.81	11.00	PASS
	122/5610	-7.21	-6.88	-5.34	-5.01	-2.84	11.00	PASS
	138/5690	-6.78	-6.46	-5.93	-5.60	-3.00	11.00	PASS

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})})$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain, For PSD measurements on all devices,Array Gain=10log(Nant/Nss)dB,

4.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

so directional gain=GANT+Array Gain=2.04+10log（2/2)=2.04<6 dBi. So the PSD limt is 11 dBm.

U-NII-3

Network Standards	Channel /Frequency (MHz)	Power Spectral Density					Limit (dBm/ 500kHz)	Conclusion
		ANT1		ANT2		Total PSD (dBm/ 500kHz)		
		Read Value (dBm/470kHz)	PSD (dBm/500kHz)	Read Value (dBm/470kHz)	PSD (dBm/500kHz)			
802.11a	149/5745	-1.64	-1.37	-1.73	-1.46	1.60	30.00	PASS
	157/5785	-2.01	-1.74	-1.48	-1.21	1.54	30.00	PASS
	165/5825	-1.81	-1.54	-1.50	-1.23	1.63	30.00	PASS
802.11n HT20	149/5745	-2.25	-1.89	-1.90	-1.54	1.30	30.00	PASS
	157/5785	-1.95	-1.59	-1.79	-1.43	1.50	30.00	PASS
	165/5825	-2.45	-2.09	-2.20	-1.84	1.05	30.00	PASS
802.11n HT40	151/5755	-4.84	-4.41	-4.39	-3.96	-1.17	30.00	PASS
	159/5795	-5.31	-4.88	-4.55	-4.11	-1.47	30.00	PASS
802.11ac VHT20	149/5745	-4.21	-3.94	-3.94	-3.67	-0.79	30.00	PASS
	157/5785	-4.30	-4.03	-3.57	-3.30	-0.64	30.00	PASS
	165/5825	-4.57	-4.30	-4.15	-3.88	-1.08	30.00	PASS
802.11ac VHT40	151/5755	-6.35	-5.88	-6.12	-5.65	-2.75	30.00	PASS
	159/5795	-7.05	-6.58	-6.56	-6.09	-3.32	30.00	PASS
802.11ac VHT80	155/5775	-9.43	-8.84	-9.28	-8.68	-5.75	30.00	PASS

Note: 1. PSD=Read Value+Duty cycle+10*LOG(500/470) correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})})$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain, For PSD measurements on all devices,Array Gain=10log(Nant/Nss)dB,

4.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

so directional gain=GANT+Array Gain=2.04+10log（2/2)=2.04<6 dBi. So the PSD limt is 30 dBm.

MIMO with Beamforming

U-NII-1

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /MHz)		
		Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)			
802.11n HT20	36/5180	3.27	3.36	1.86	1.95	5.72	11.00	PASS
	40/5200	2.85	2.94	1.38	1.47	5.27	11.00	PASS
	48/5240	2.27	2.36	1.99	2.08	5.23	11.00	PASS
802.11n HT40	38/5190	0.85	1.01	-0.68	-0.52	3.32	11.00	PASS
	46/5230	-0.33	-0.16	-0.37	-0.21	2.82	11.00	PASS
802.11ac VHT20	36/5180	1.83	1.83	-0.12	-0.12	3.97	11.00	PASS
	40/5200	1.12	1.12	-0.84	-0.84	3.26	11.00	PASS
	48/5240	0.18	0.18	0.04	0.04	3.12	11.00	PASS
802.11ac VHT40	38/5190	-0.82	-0.62	-3.09	-2.89	1.40	11.00	PASS
	46/5230	-2.25	-2.05	-2.60	-2.40	0.79	11.00	PASS
802.11ac VHT80	42/5210	-4.22	-3.90	-6.06	-5.73	-1.71	11.00	PASS

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})})$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain+ Beamforming Gain, For PSD measurements on all devices,Array Gain=10log(Nant/Nss)dB,

4.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

so directional gain=GANT+Array Gain+ Beamforming Gain =2.04+10log（2/2) +0=2.04<6 dBi. So the PSD limt is 11 dBm.

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /MHz)		
		Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)			
802.11n HT20	52/5260	2.64	2.73	2.16	2.25	5.51	11.00	PASS
	60/5300	1.82	1.90	2.06	2.15	5.04	11.00	PASS
	64/5320	1.16	1.25	2.30	2.39	4.87	11.00	PASS
802.11n HT40	54/5270	0.06	0.22	-0.32	-0.16	3.04	11.00	PASS
	62/5310	-1.08	-0.92	-0.25	-0.09	2.53	11.00	PASS
802.11ac VHT20	52/5260	0.79	0.79	0.38	0.38	3.60	11.00	PASS
	60/5300	-0.44	-0.44	0.25	0.25	2.93	11.00	PASS
	64/5320	-0.42	-0.42	-0.15	-0.15	2.73	11.00	PASS
802.11ac VHT40	54/5270	-1.82	-1.62	-2.40	-2.19	1.11	11.00	PASS
	62/5310	-2.54	-2.34	-2.25	-2.05	0.82	11.00	PASS
802.11ac VHT80	58/5290	-5.22	-4.89	-4.97	-4.65	-1.76	11.00	PASS

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})})$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain+ Beamforming Gain, For PSD measurements on all devices,Array Gain=10log(Nant/Nss)dB,

4.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

so directional gain=GANT+Array Gain+ Beamforming Gain =2.04+10log（2/2) +0=2.04<6 dBi. So the PSD limt is 11 dBm.

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /MHz)		
		Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)			
802.11n HT20	100/5500	1.03	1.11	2.81	2.90	5.11	11.00	PASS
	120/5600	0.19	0.27	2.12	2.20	4.36	11.00	PASS
	140/5700	0.50	0.58	1.23	1.32	3.98	11.00	PASS
	144/5720	0.25	0.34	0.45	0.54	3.45	11.00	PASS
802.11n HT40	102/5510	-1.01	-0.85	0.40	0.56	2.92	11.00	PASS
	118/5590	-1.55	-1.39	-0.29	-0.13	2.29	11.00	PASS
	134/5670	-2.00	-1.84	-1.29	-1.12	1.54	11.00	PASS
	142/5710	-2.44	-2.28	-1.53	-1.37	1.21	11.00	PASS
802.11ac VHT20	100/5500	-0.59	-0.59	0.43	0.43	2.96	11.00	PASS
	120/5600	-1.25	-1.25	0.28	0.28	2.59	11.00	PASS
	140/5700	-1.39	-1.39	-0.59	-0.59	2.04	11.00	PASS
	144/5720	-1.49	-1.49	-1.48	-1.48	1.53	11.00	PASS
802.11ac VHT40	102/5510	-2.90	-2.70	-1.55	-1.35	1.04	11.00	PASS
	118/5590	-3.35	-3.15	-2.07	-1.87	0.54	11.00	PASS
	134/5670	-4.09	-3.89	-3.10	-2.90	-0.36	11.00	PASS
	142/5710	-4.34	-4.14	-3.42	-3.21	-0.64	11.00	PASS
802.11ac VHT80	106/5530	-5.88	-5.55	-4.19	-3.87	-1.62	11.00	PASS
	122/5610	-7.07	-6.74	-5.21	-4.89	-2.70	11.00	PASS
	138/5690	-6.20	-5.87	-5.85	-5.52	-2.68	11.00	PASS

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})})$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain+ Beamforming Gain, For PSD measurements on all devices,Array Gain=10log(Nant/Nss)dB,

4.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

so directional gain=GANT+Array Gain+ Beamforming Gain =2.04+10log（2/2) +0=2.04<6 dBi. So the PSD limt is 11 dBm.

U-NII-3

Network Standards	Channel /Frequency (MHz)	Power Spectral Density					Limit (dBm/ 500kHz)	Conclusion
		ANT1		ANT2		Total PSD (dBm/ 500kHz)		
		Read Value (dBm/470kHz)	PSD (dBm/500kHz)	Read Value (dBm/470kHz)	PSD (dBm/500kHz)			
802.11n HT20	149/5745	-2.30	-1.94	-2.07	-1.71	1.18	30.00	PASS
	157/5785	-2.29	-1.93	-1.83	-1.47	1.31	30.00	PASS
	165/5825	-2.65	-2.29	-2.37	-2.01	0.86	30.00	PASS
802.11n HT40	151/5755	-4.30	-3.87	-4.23	-3.80	-0.83	30.00	PASS
	159/5795	-5.22	-4.78	-4.42	-3.99	-1.36	30.00	PASS
802.11ac VHT20	149/5745	-4.20	-3.93	-4.36	-4.09	-1.00	30.00	PASS
	157/5785	-4.15	-3.88	-3.36	-3.09	-0.46	30.00	PASS
	165/5825	-4.35	-4.08	-3.73	-3.46	-0.75	30.00	PASS
802.11ac VHT40	151/5755	-6.00	-5.52	-5.96	-5.49	-2.50	30.00	PASS
	159/5795	-7.10	-6.63	-6.48	-6.01	-3.30	30.00	PASS
802.11ac VHT80	155/5775	-9.82	-9.22	-8.76	-8.16	-5.65	30.00	PASS

Note: 1. PSD=Read Value+Duty cycle+10*LOG(500/470) correction factor

2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})})$

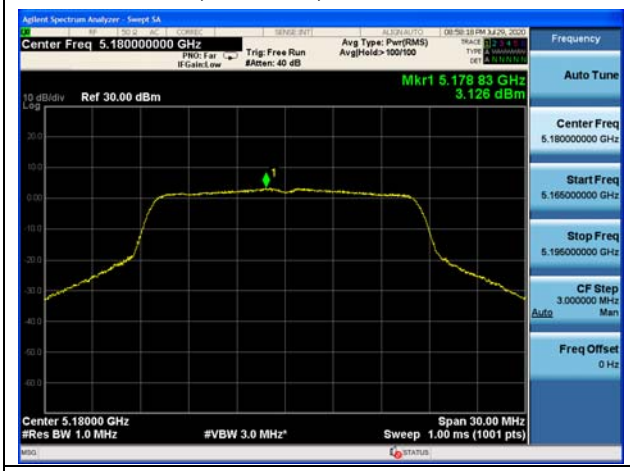
3. The manufacturer declared the transmitter output signals is CDD mode And Nss=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain+ Beamforming Gain, For PSD measurements on all devices,Array Gain=10log(Nant/Nss)dB,

4.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.

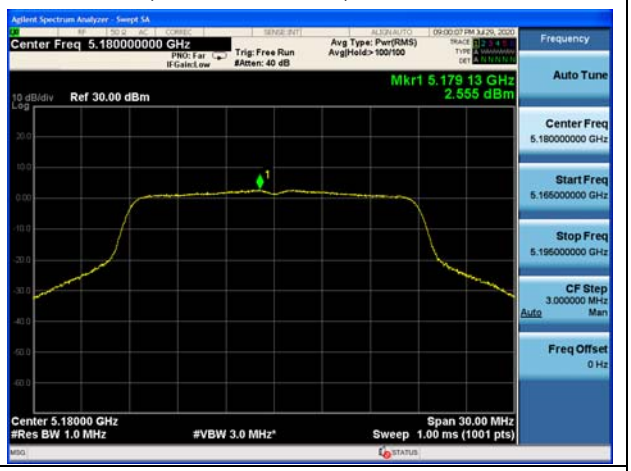
so directional gain=GANT+Array Gain+ Beamforming Gain =2.04+10log（2/2) +0=2.04<6 dBi. So the PSD limt is 30 dBm.

SISO Antenna 1

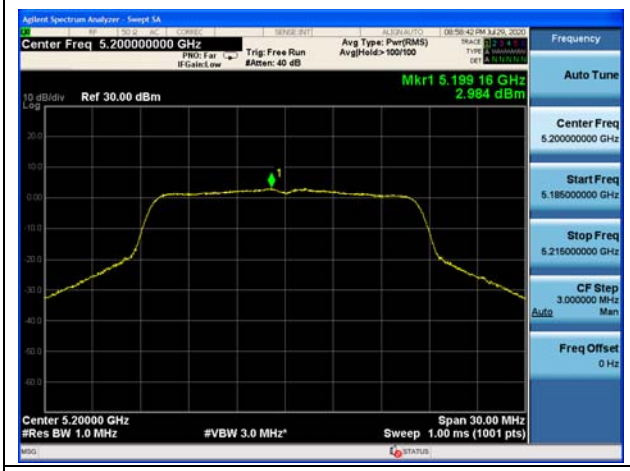
U-NII-1, 802.11a, Channel No.: 36



U-NII-1, 802.11n HT20, Channel No.: 36



U-NII-1, 802.11a, Channel No.: 40

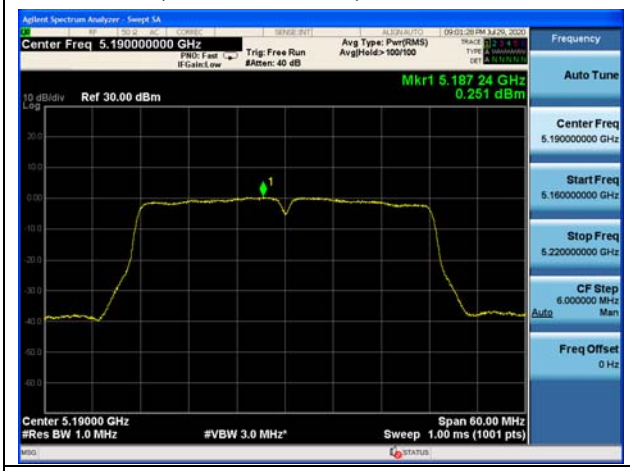


U-NII-1, 802.11n HT20, Channel No.: 40

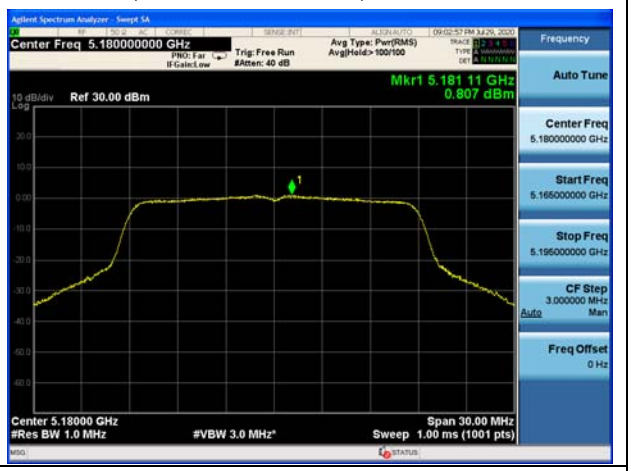
U-NII-1, 802.11a, Channel No.: 48

U-NII-1, 802.11n HT20, Channel No.: 48

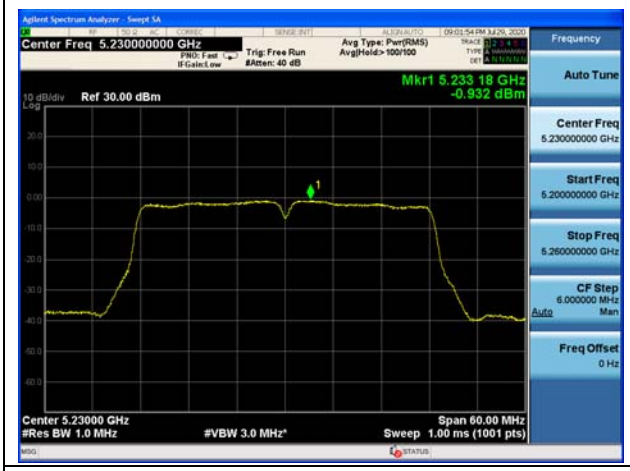
U-NII-1, 802.11n HT40, Channel No.: 38



U-NII-1, 802.11ac VHT20, Channel No.: 36



U-NII-1, 802.11n HT40, Channel No.: 46



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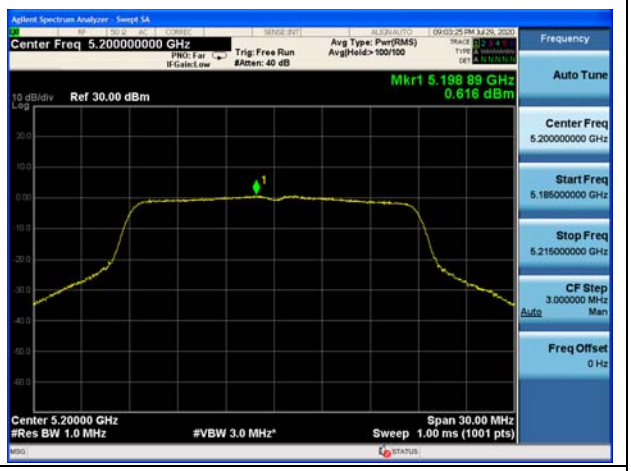

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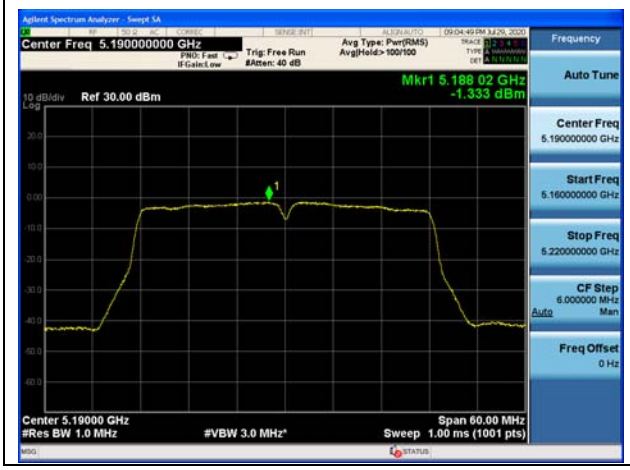

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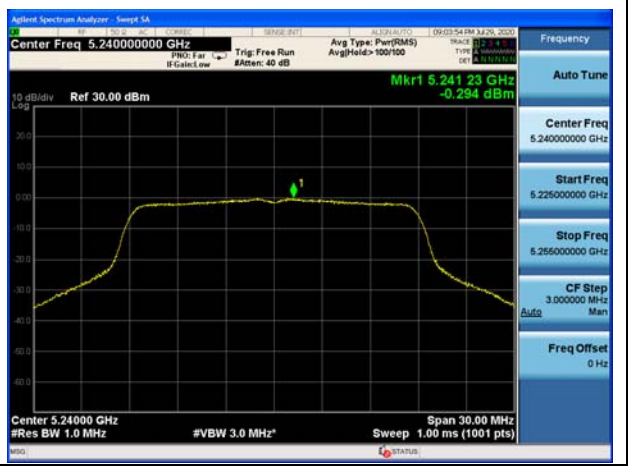

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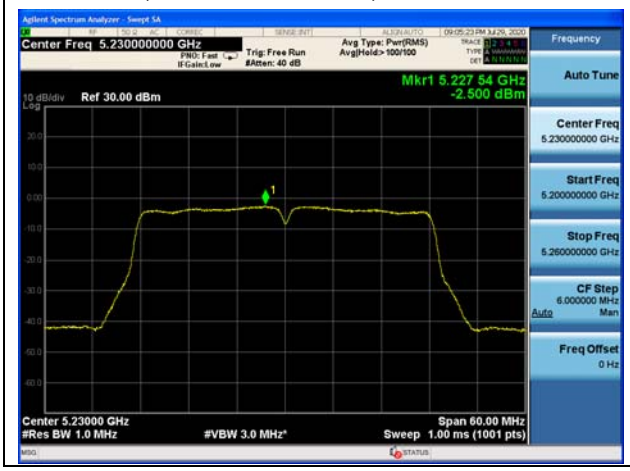
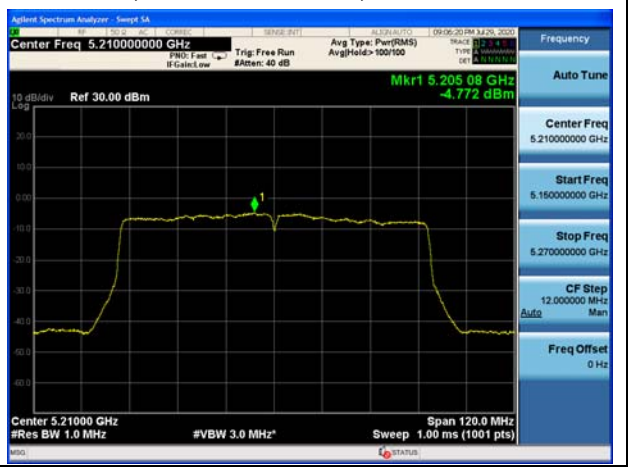
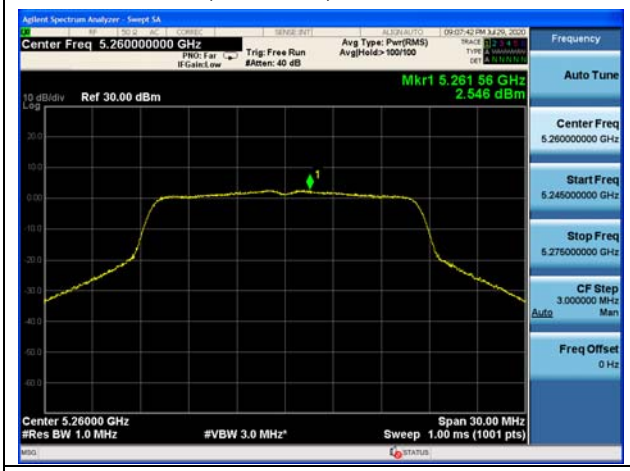


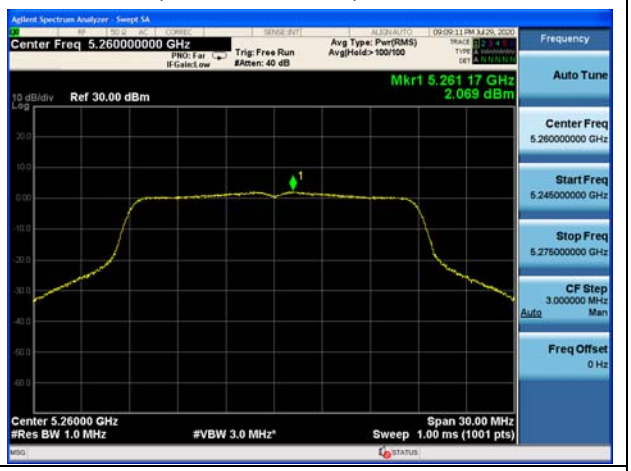
U-NII-1, 802.11ac VHT80, Channel No.: 42



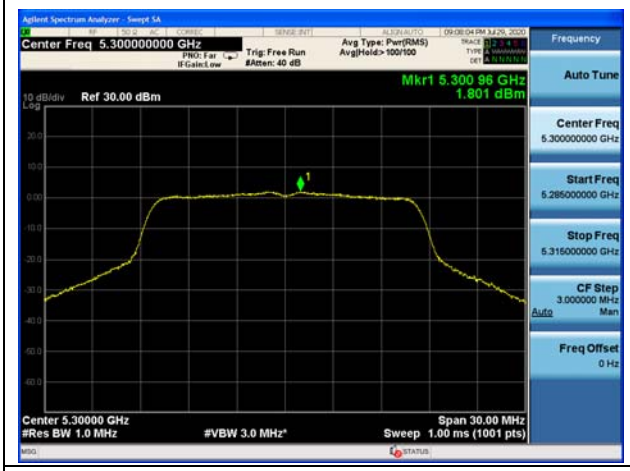
U-NII-2A, 802.11a, Channel No.: 52



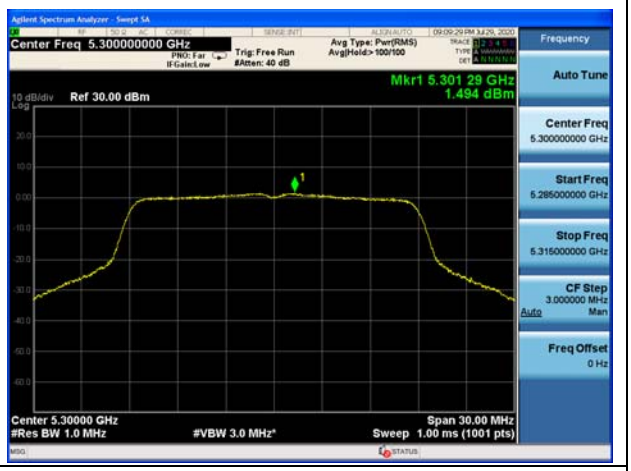
U-NII-2A, 802.11n HT20, Channel No.: 52



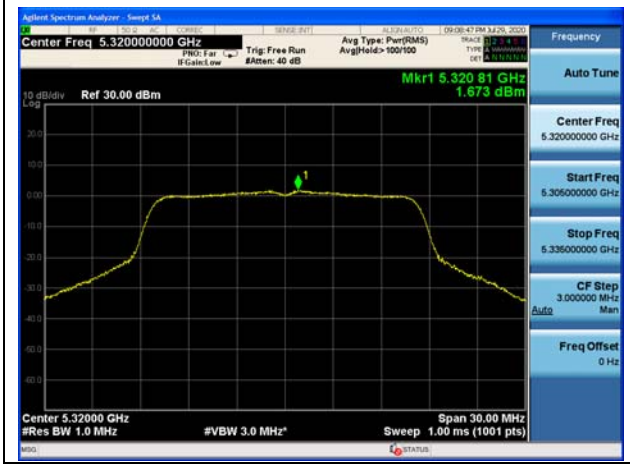
U-NII-2A, 802.11a, Channel No.: 60



U-NII-2A, 802.11n HT20, Channel No.: 60

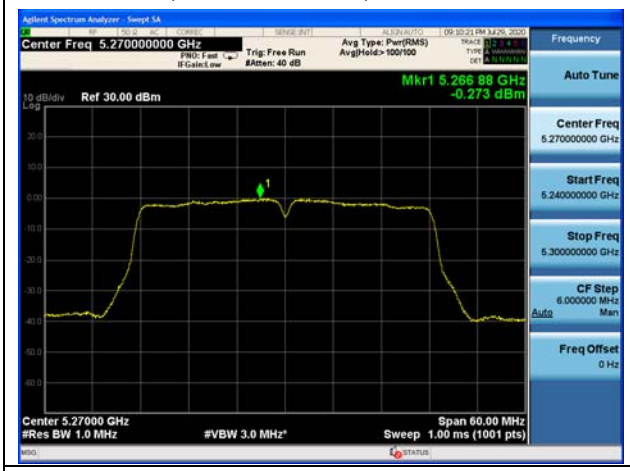


U-NII-2A, 802.11a, Channel No.: 64

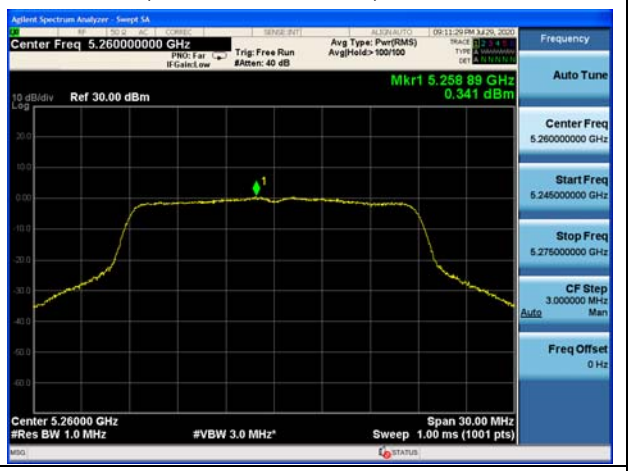


U-NII-2A, 802.11n HT20, Channel No.: 64

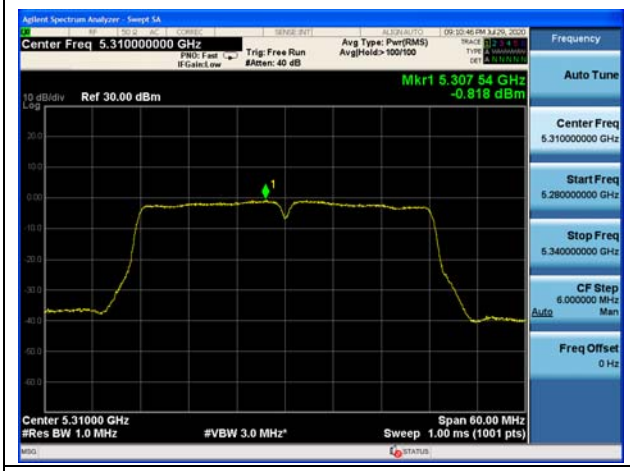
U-NII-2A, 802.11n HT40, Channel No.: 54



U-NII-2A, 802.11ac VHT20, Channel No.:52



U-NII-2A, 802.11n HT40, Channel No.: 62



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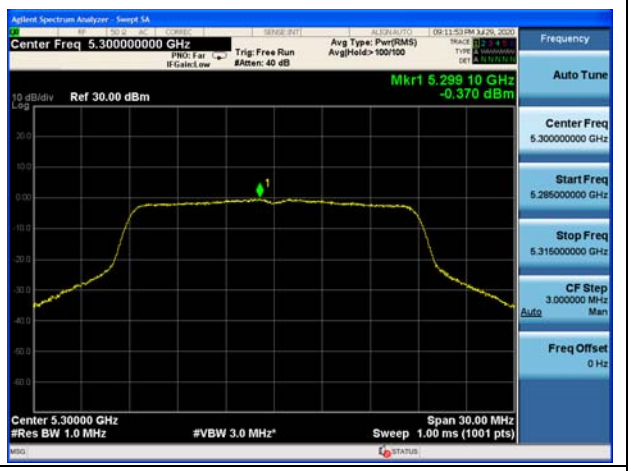
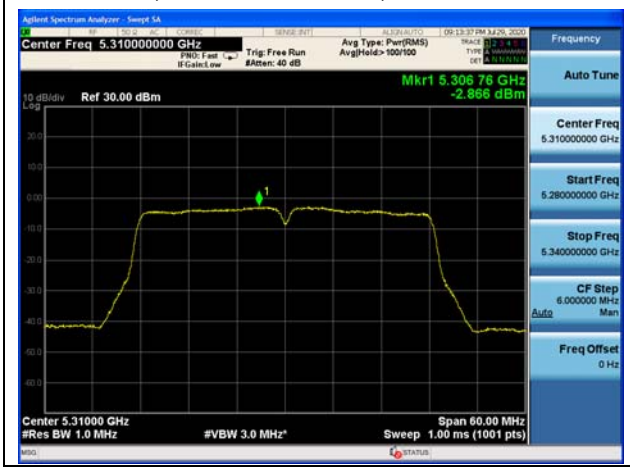
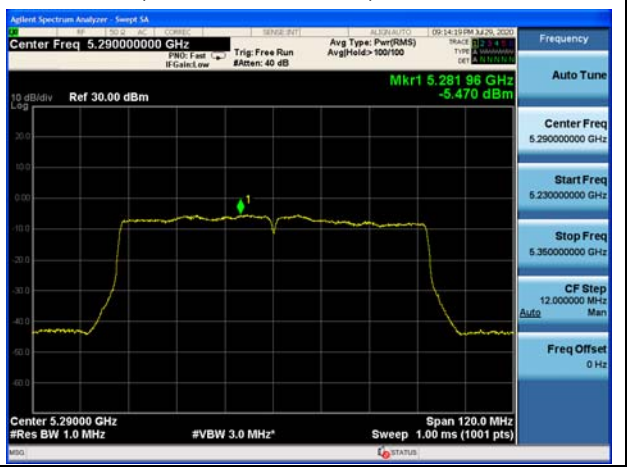
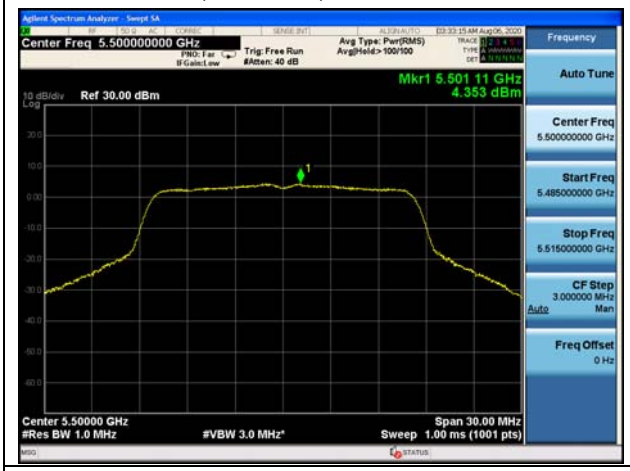


U-NII-2A, 802.11ac VHT40, Channel No.: 54

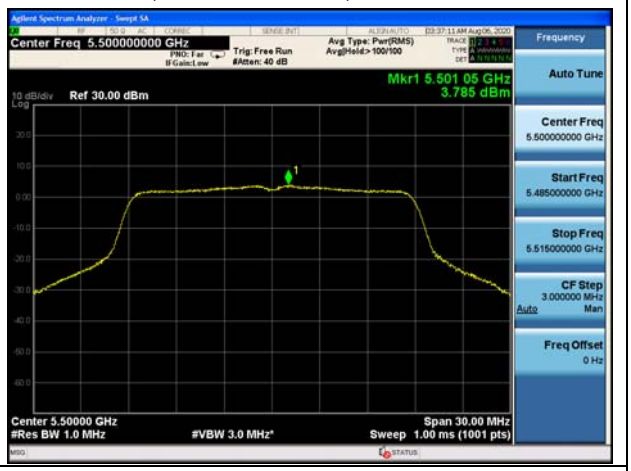
U-NII-2A, 802.11ac VHT20, Channel No.: 64

U-NII-2A, 802.11ac VHT40, Channel No.: 62	U-NII-2A, 802.11ac VHT80, Channel No.: 58
	

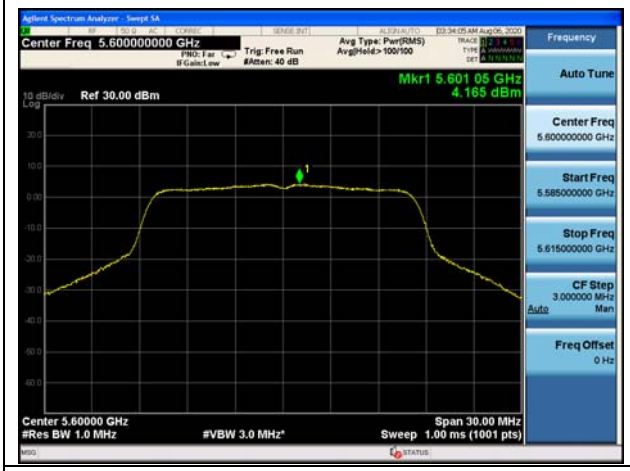
U-NII-2C, 802.11a, Channel No.: 100



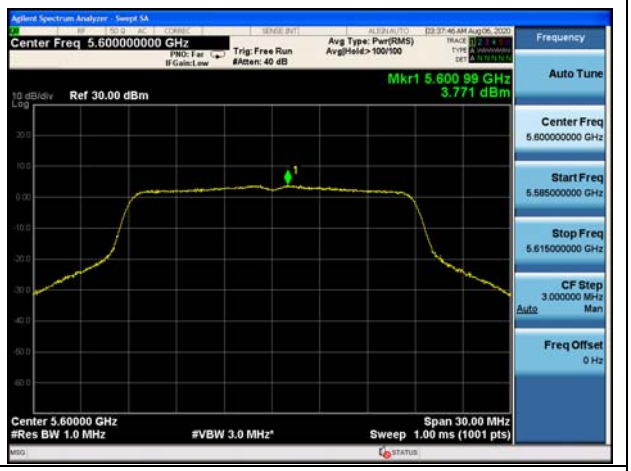
U-NII-2C, 802.11n HT20, Channel No.: 100



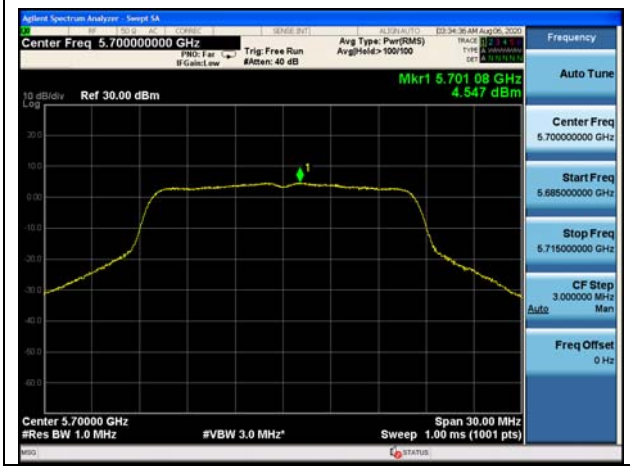
U-NII-2C, 802.11a, Channel No.: 120



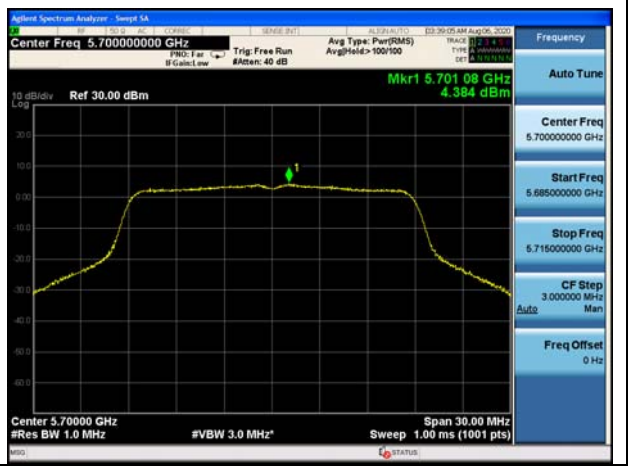
U-NII-2C, 802.11n HT20, Channel No.: 120



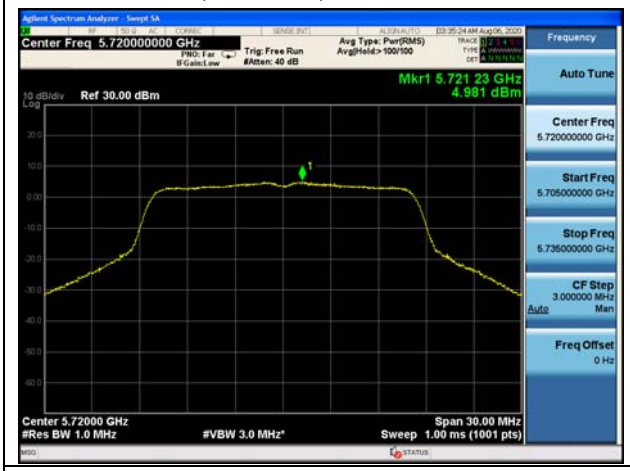
U-NII-2C, 802.11a, Channel No.: 140



U-NII-2C, 802.11n HT20, Channel No.: 140

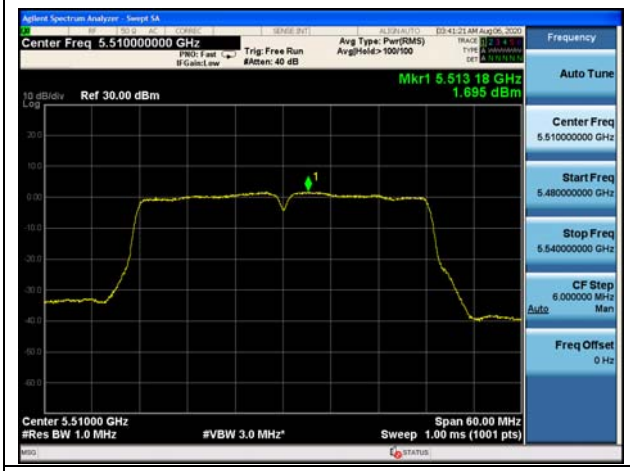


U-NII-2C, 802.11a, Channel No.: 144



U-NII-2C, 802.11n HT20, Channel No.: 144

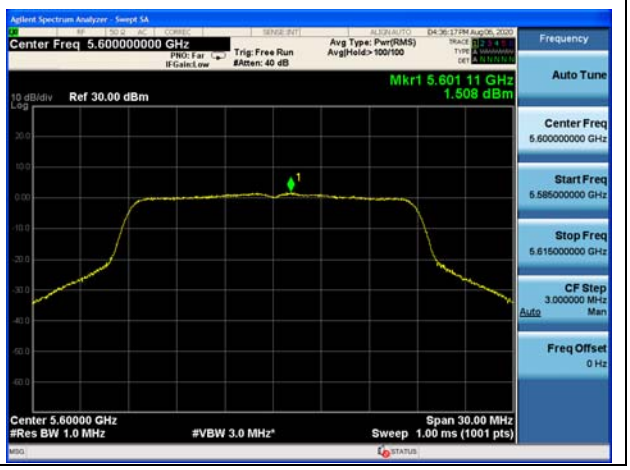
U-NII-2C, 802.11n HT40, Channel No.: 102



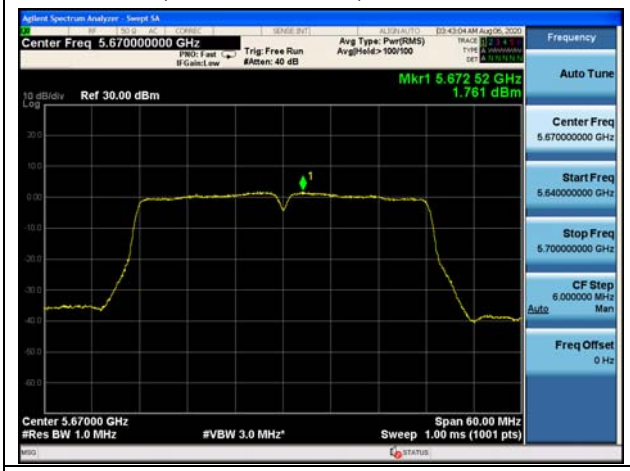
U-NII-2C, 802.11ac VHT20, Channel No.: 100

U-NII-2C, 802.11n HT40, Channel No.: 118

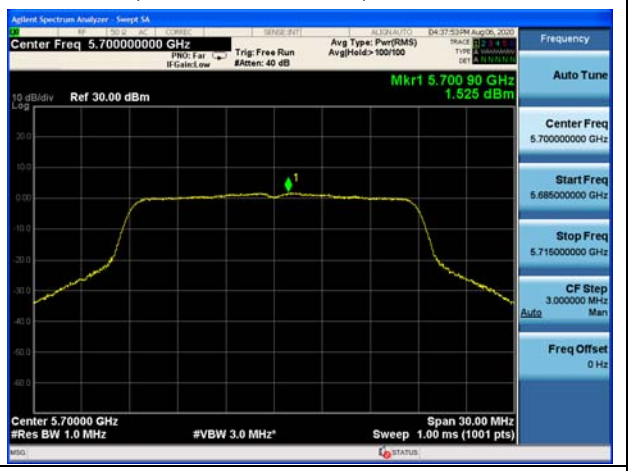
U-NII-2C, 802.11ac VHT20, Channel No.: 120



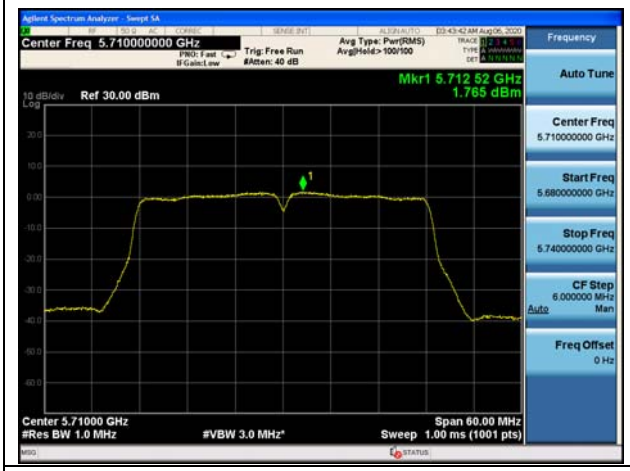
U-NII-2C, 802.11n HT40, Channel No.: 134



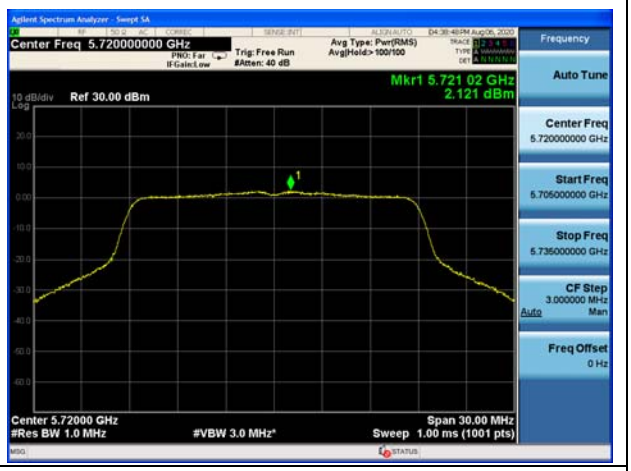
U-NII-2C, 802.11ac VHT20, Channel No.: 140



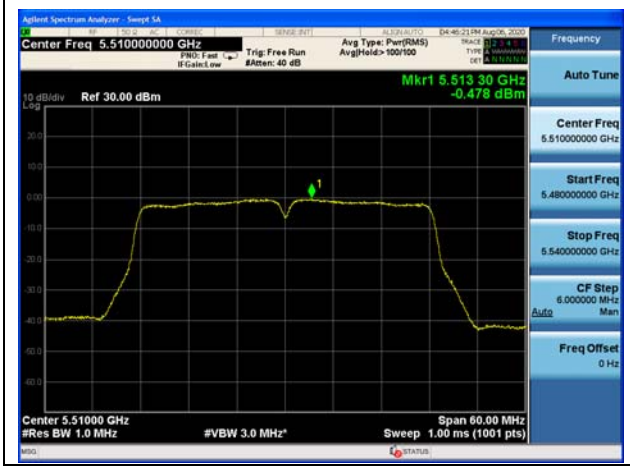
U-NII-2C, 802.11n HT40, Channel No.: 142



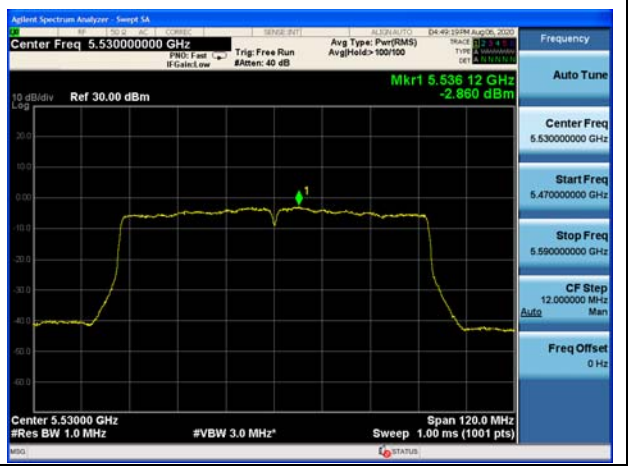
U-NII-2C, 802.11ac VHT20, Channel No.: 144



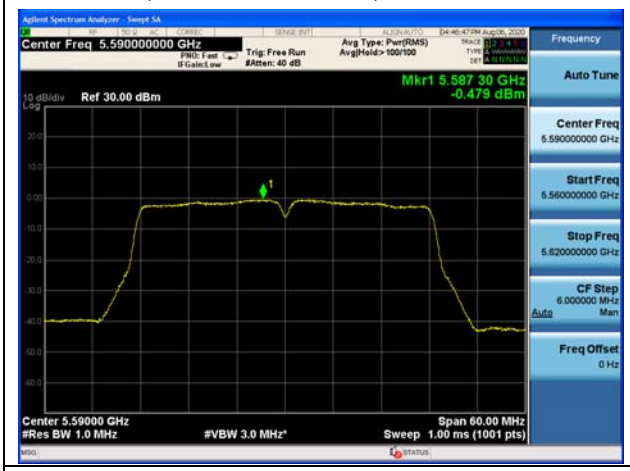
U-NII-2C, 802.11ac VHT40, Channel No.: 102



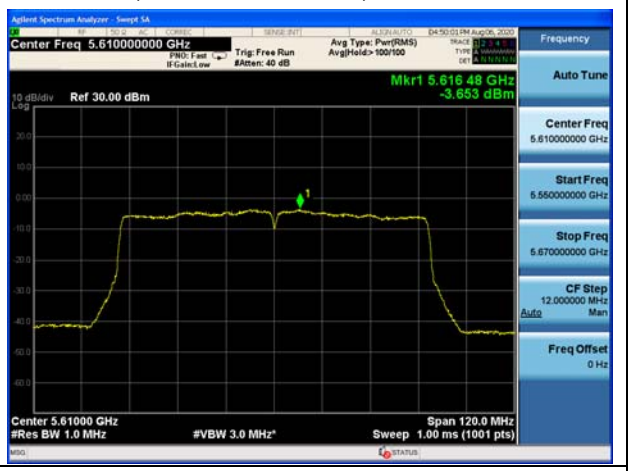
U-NII-2C, 802.11ac VHT80, Channel No.: 106



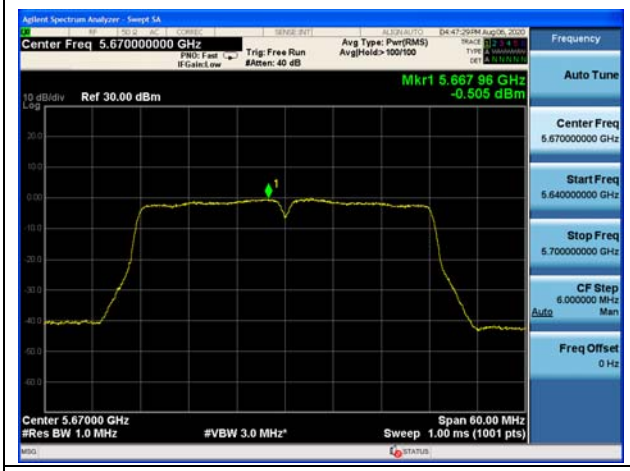
U-NII-2C, 802.11ac VHT40, Channel No.: 118



U-NII-2C, 802.11ac VHT80, Channel No.: 122



U-NII-2C, 802.11ac VHT40, Channel No.: 134



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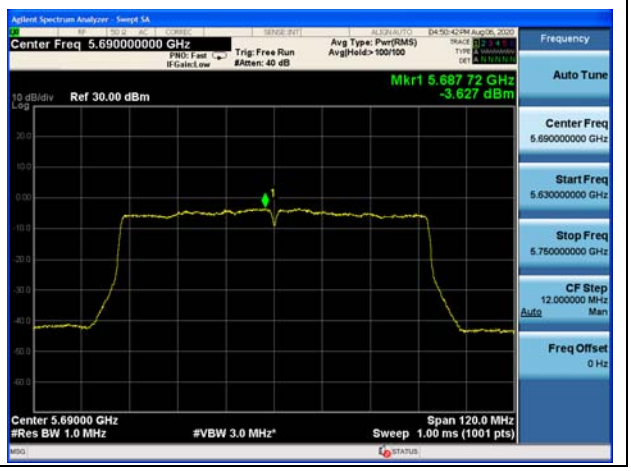
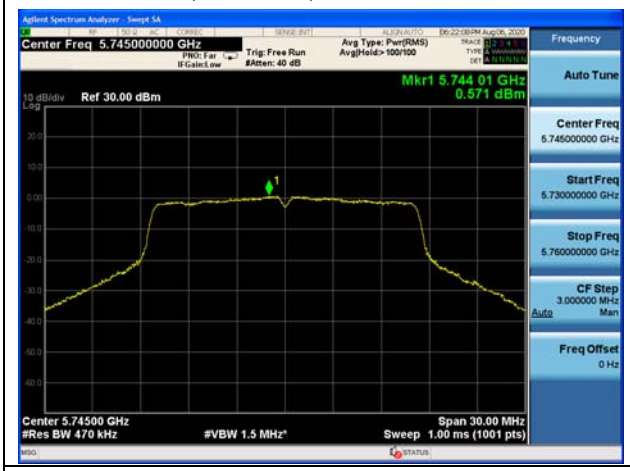


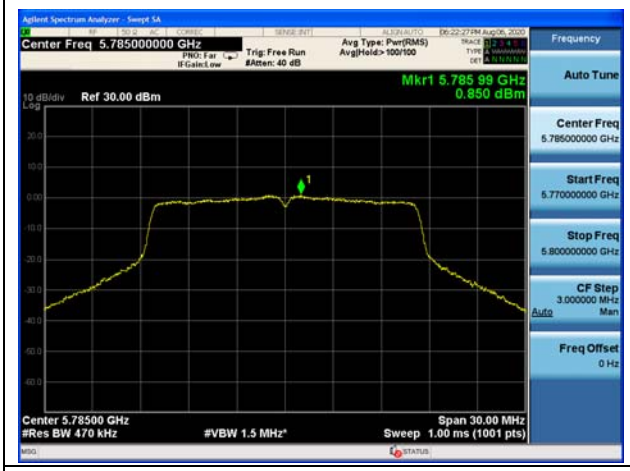
U-NII-2C, 802.11ac VHT40, Channel No.: 142

U-NII-3, 802.11a, Channel No.: 149

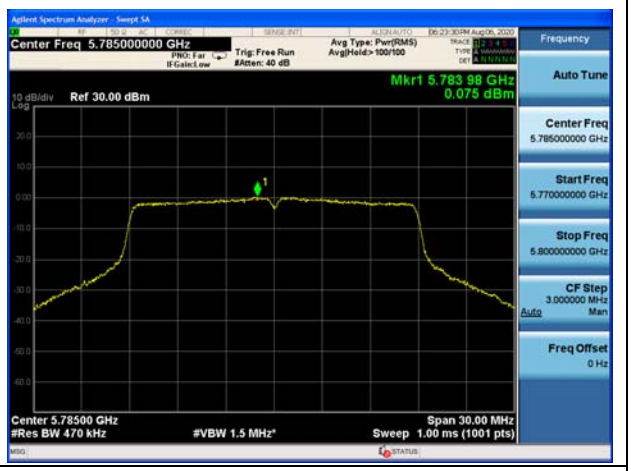


U-NII-3, 802.11n HT20, Channel No.: 149

U-NII-3, 802.11a, Channel No.: 157



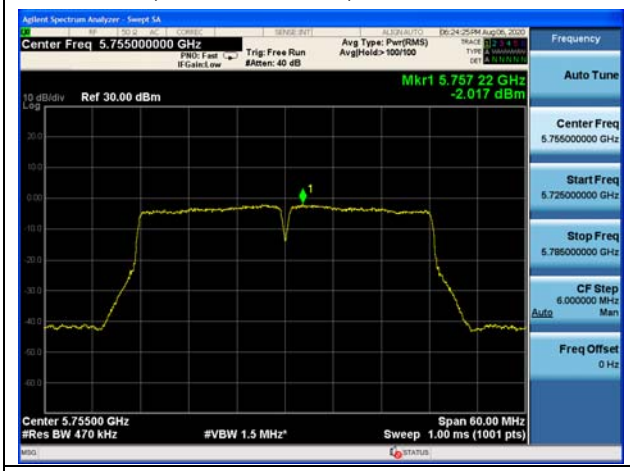
U-NII-3, 802.11n HT20, Channel No.: 157



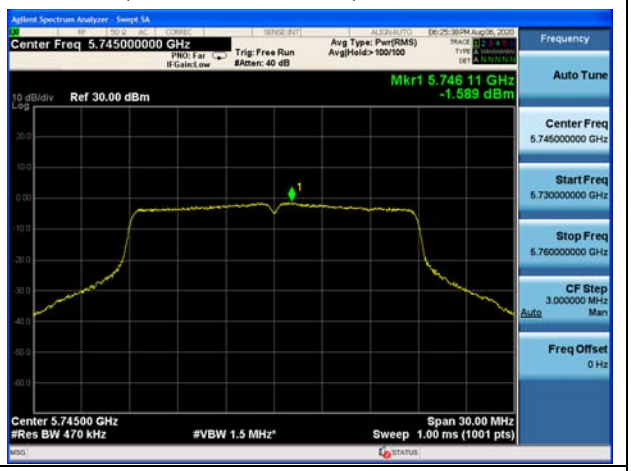
U-NII-3, 802.11a, Channel No.: 165

U-NII-3, 802.11n HT20, Channel No.: 165

U-NII-3, 802.11n HT40, Channel No.: 151

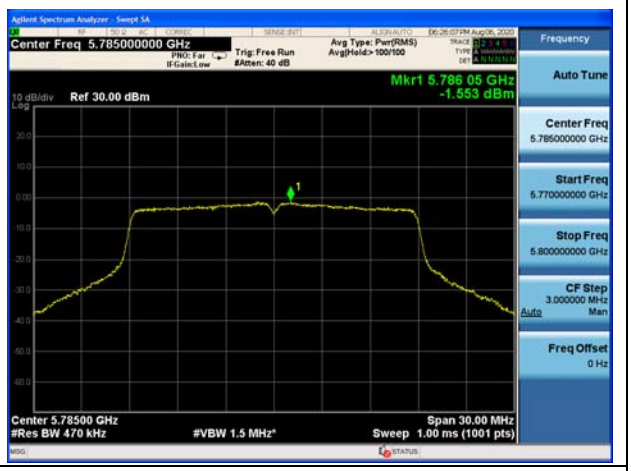


U-NII-3, 802.11ac VHT20, Channel No.: 149



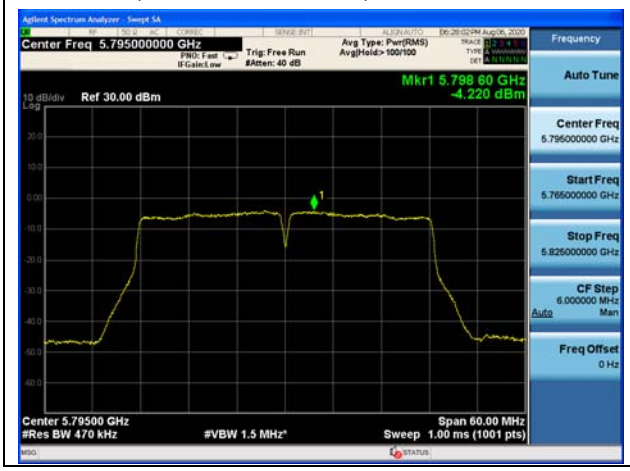
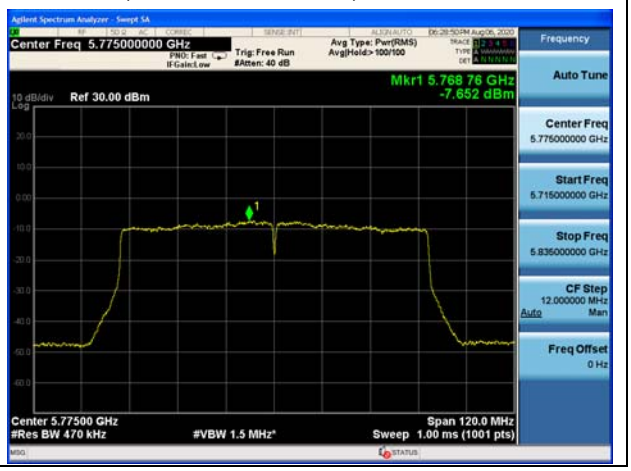
U-NII-3, 802.11n HT40, Channel No.: 159

U-NII-3, 802.11ac VHT20, Channel No.: 157



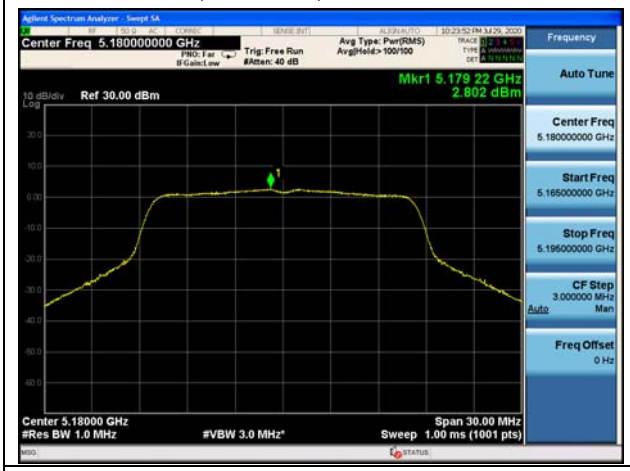
U-NII-3, 802.11ac VHT40, Channel No.: 151

U-NII-3, 802.11ac VHT20, Channel No.: 165

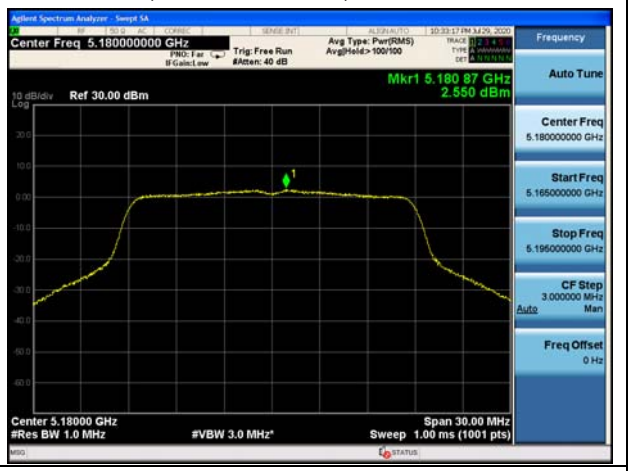
U-NII-3, 802.11ac VHT40, Channel No.: 159	U-NII-3, 802.11ac VHT80, Channel No.: 155
	

SISO Antenna 2

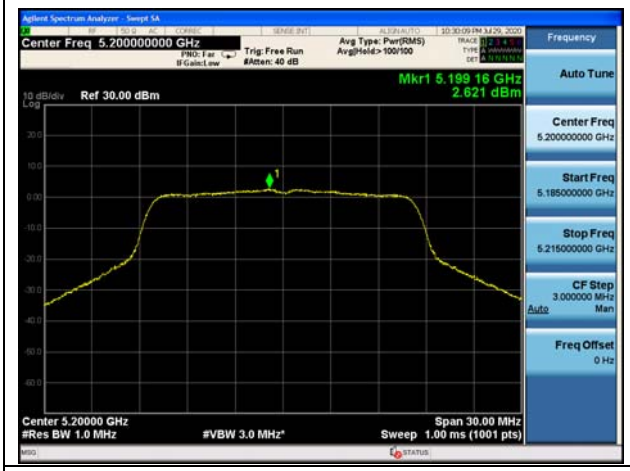
U-NII-1, 802.11a, Channel No.: 36



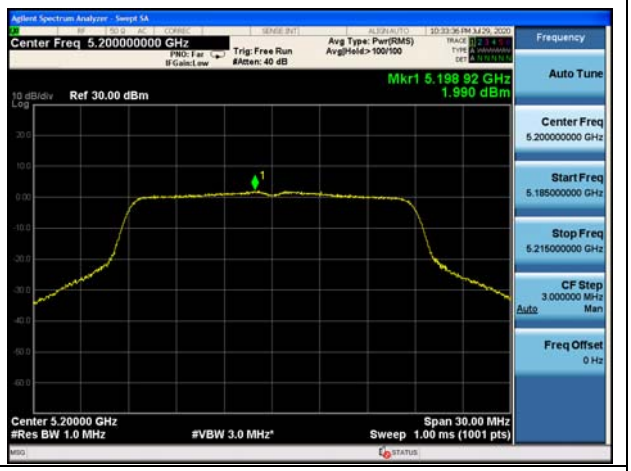
U-NII-1, 802.11n HT20, Channel No.: 36



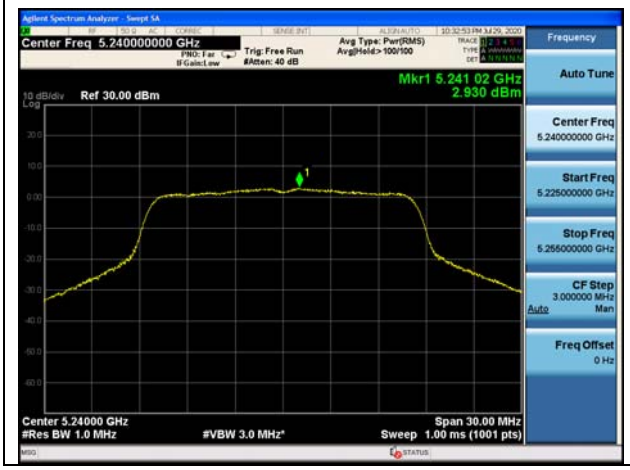
U-NII-1, 802.11a, Channel No.: 40



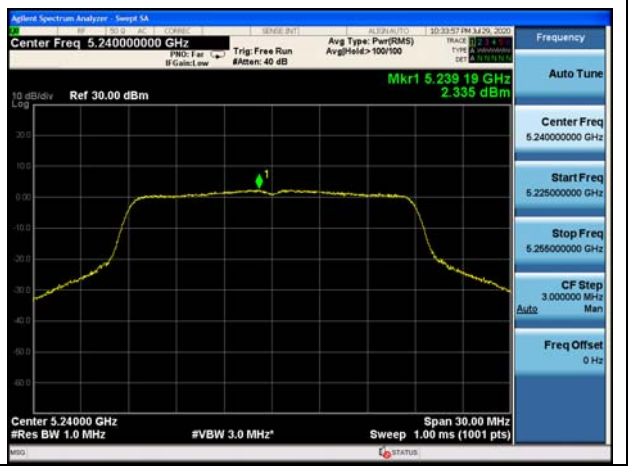
U-NII-1, 802.11n HT20, Channel No.: 40



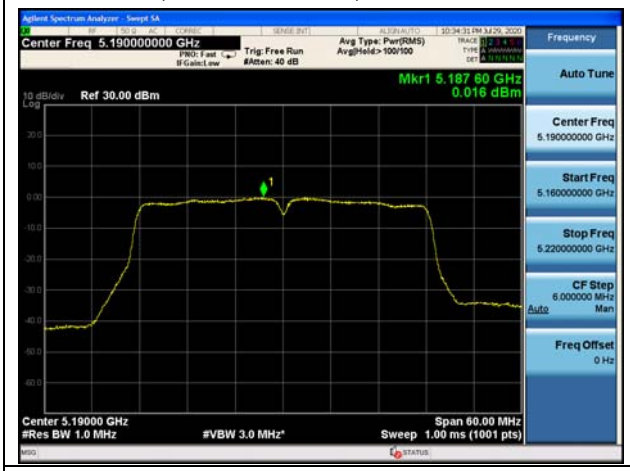
U-NII-1, 802.11a, Channel No.: 48



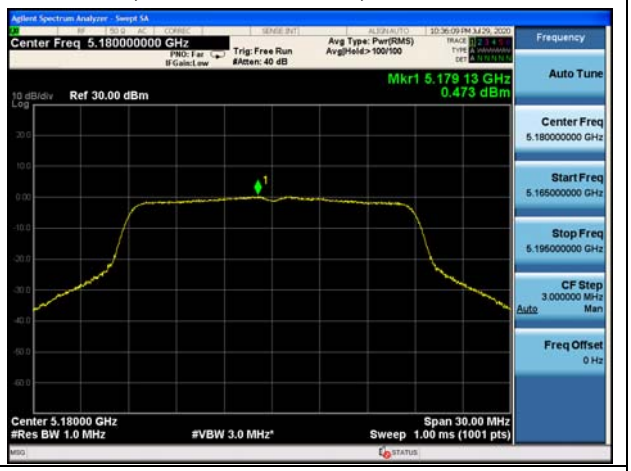
U-NII-1, 802.11n HT20, Channel No.: 48



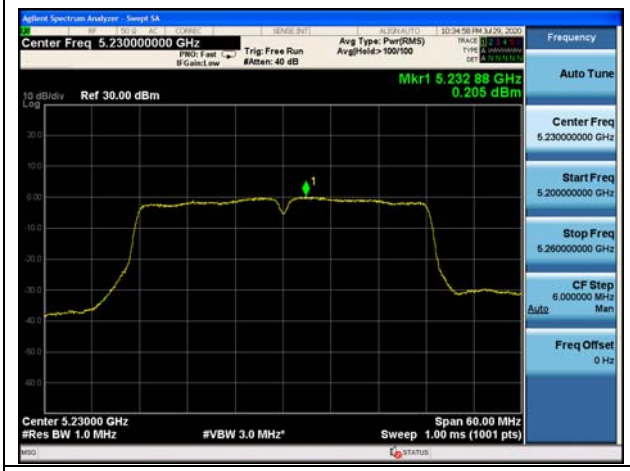
U-NII-1, 802.11n HT40, Channel No.: 38



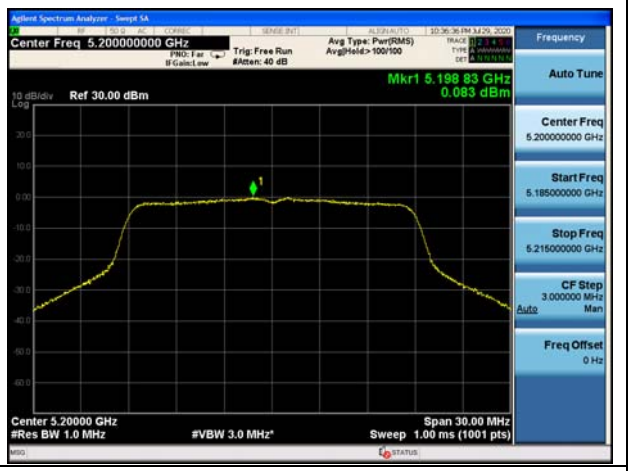
U-NII-1, 802.11ac VHT20, Channel No.: 36



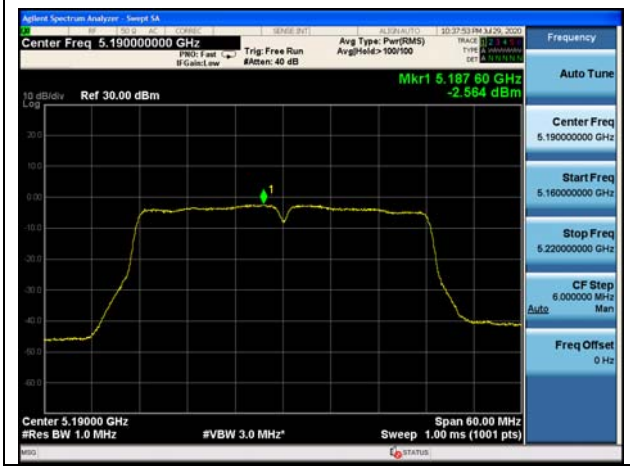
U-NII-1, 802.11n HT40, Channel No.: 46



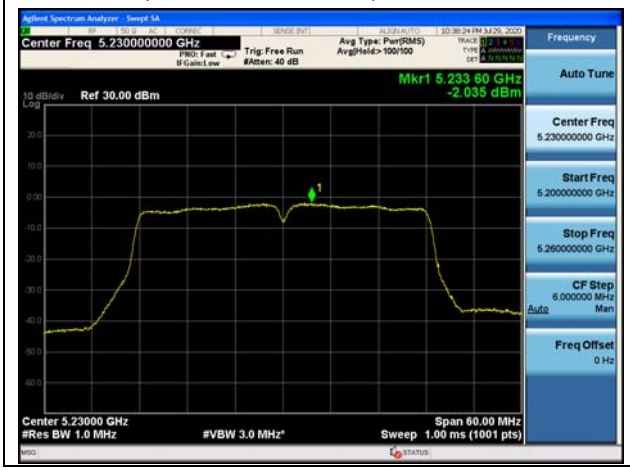
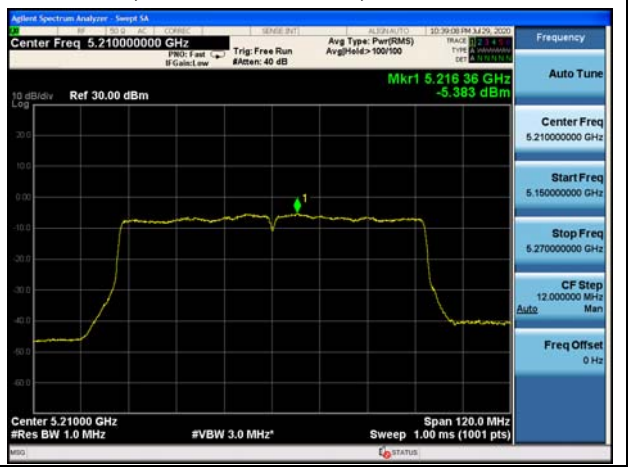
U-NII-1, 802.11ac VHT20, Channel No.: 40



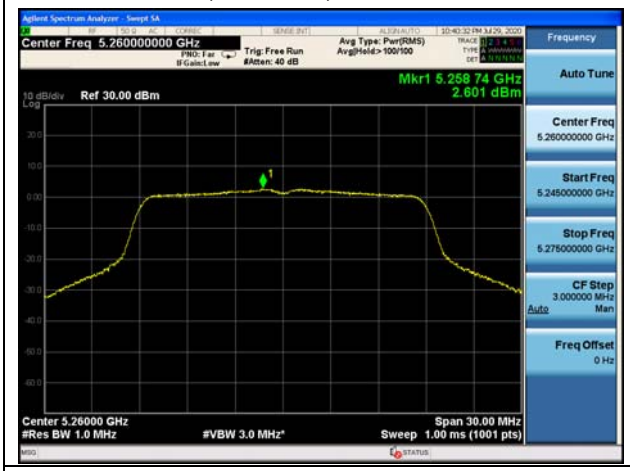
U-NII-1, 802.11ac VHT40, Channel No.: 38



U-NII-1, 802.11ac VHT20, Channel No.: 48

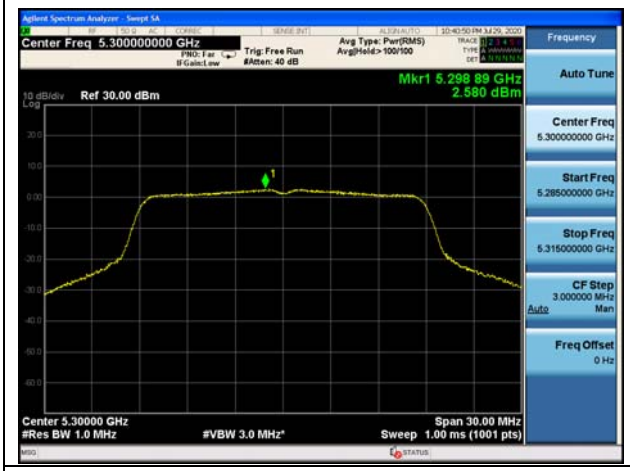
U-NII-1, 802.11ac VHT40, Channel No.: 46	U-NII-1, 802.11ac VHT80, Channel No.: 42
	

U-NII-2A, 802.11a, Channel No.: 52

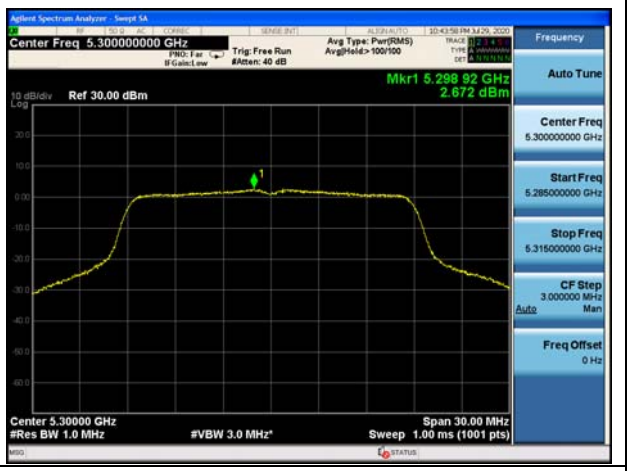


U-NII-2A, 802.11n HT20, Channel No.: 52

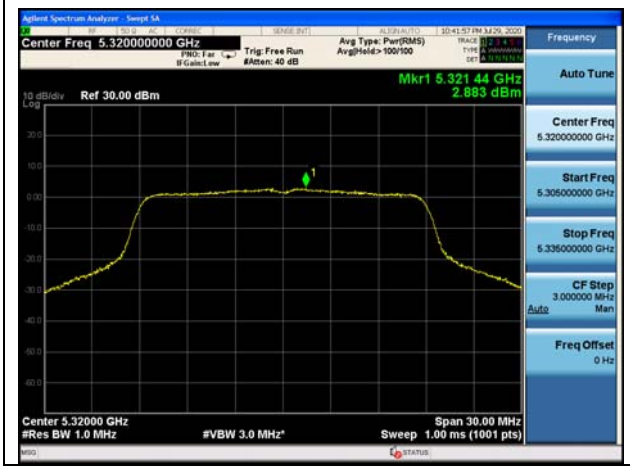
U-NII-2A, 802.11a, Channel No.: 60



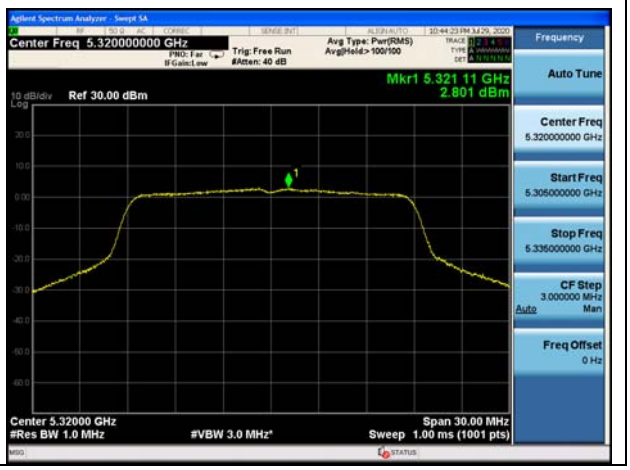
U-NII-2A, 802.11n HT20, Channel No.: 60



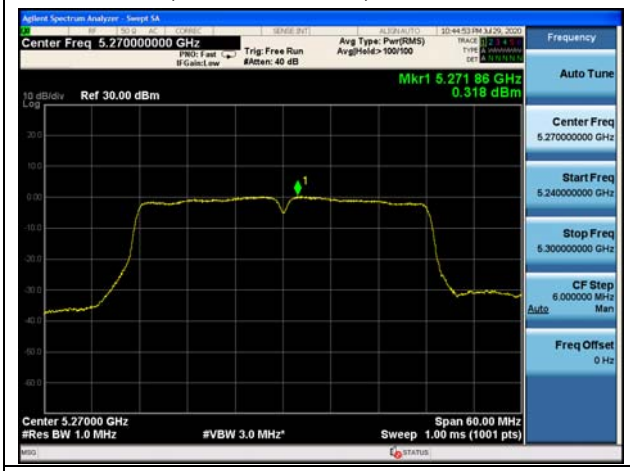
U-NII-2A, 802.11a, Channel No.: 64



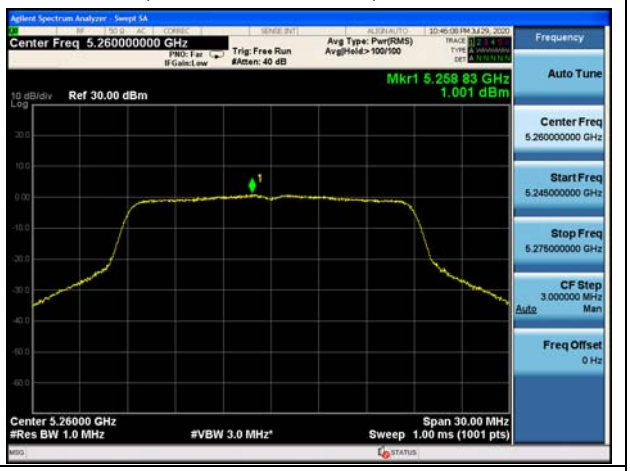
U-NII-2A, 802.11n HT20, Channel No.: 64



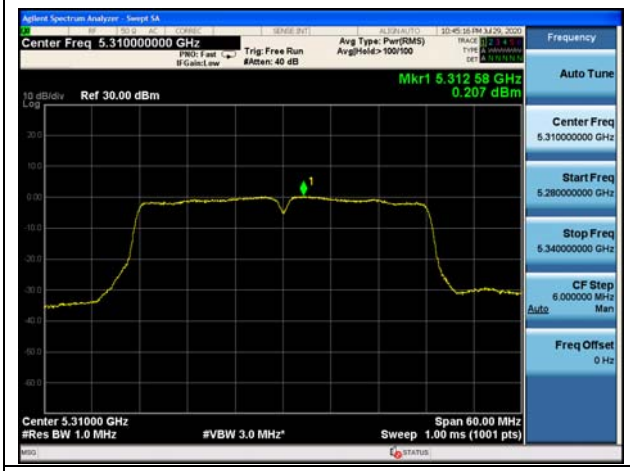
U-NII-2A, 802.11n HT40, Channel No.: 54



U-NII-2A, 802.11ac VHT20, Channel No.:52

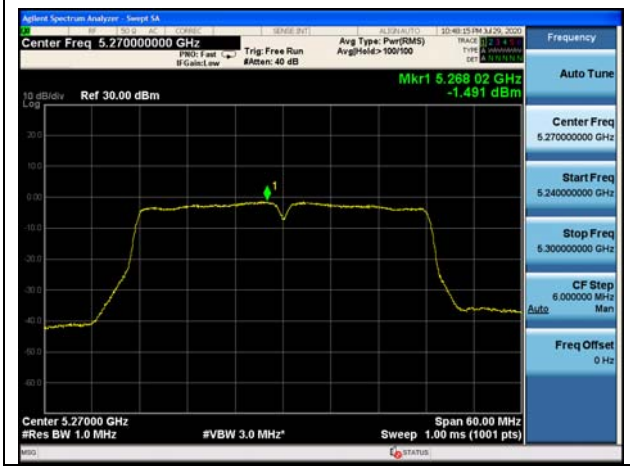


U-NII-2A, 802.11n HT40, Channel No.: 62



U-NII-2A, 802.11ac VHT20, Channel No.: 60

U-NII-2A, 802.11ac VHT40, Channel No.: 54



U-NII-2A, 802.11ac VHT20, Channel No.: 64