RF TEST REPORT

Applicant	Nokia Shanghai Bell CO., Ltd.
Product	WIFI Mesh
Brand	Nokia
Model	HA-020W-A
Report No.	R1809B0118-R1
Issue Date	November 28, 2018

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15E (2018)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Peng Tao

Performed by: Peng Tao

Kai Xu

Approved by: Kai Xu

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Summary of measurement results

Number	Summary of measurements of results	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	Maximum power spectral density	15.407(a)	PASS
5	Unwanted Emissions	15.407(b)	PASS
6	Conducted Emissions	15.207	PASS
Date of Testing: October 26, 2018 ~November 23, 2018			

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

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

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.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

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.
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2. General Description of Equipment under Test

Client Information

Applicant	Nokia Shanghai Bell CO., Ltd.
Applicant address	No. 388, Ningqiao Rd. Pilot Free Trade Zone, Shanghai, China
Manufacturer	Nokia Shanghai Bell CO., Ltd.
Manufacturer address	No. 388, Ningqiao Rd. Pilot Free Trade Zone, Shanghai, China

General information

EUT Description	
Model	HA-020W-A
IMEI	/
Hardware Version	PEM4
Software Version	3FE473360.00
Power Supply	Battery/AC adapter
Antenna Type	Internal Antenna
Antenna Gain	Antenna 1: 4dBi Antenna 2: 4dBi
Test Mode(s)	U-NII-1(5150MHz-5250MHz) U-NII-2A(5250MHz-5350MHz) U-NII-2C(5470MHz-5725MHz with 5600MHz -5650MHz) U-NII-3(5725MHz-5850MHz)
Modulation Type	802.11a/n (HT20/HT40) : OFDM 802.11ac (HT20/HT40/HT80): OFDM
Max. Conducted Power	27.69 dBm
Operating Frequency Range(s)	U-NII-1: 5150-5250MHz U-NII-2A:5250-5350MHz U-NII-2C:5470-5725MHz (with 5600MHz -5650MHz) U-NII-3: 5725-5850MHz
EUT Accessory	
Adapter 1	Manufacturer: Shenzhen Ruide Electronical Industrial CO., LTD Model: RD1201000- C55-26MG
Adapter 2	Manufacturer: Dongguan Shilong Fuhua Electronic CO., LTD Model: UES12W8-120100SPAU
Note: The information of the EUT is declared by the manufacturer. 2. There is more than one Adapter, each one should be applied throughout the compliance test respectively, and however, only the worst case (Adapter 1) will be recorded in this report.	

HA-020W-A (Report No: R1809B0118-R1) is a variant model of HA-020W-A (Report No: YBA1712-0139RF05).Tested band refer to the following table.
The detailed product change description please refers to the ANNEX B.

Band	Original (YBA1712-0139RF05)	Variant (R1809B0118-R1)
U-NII-1	Pass	Refer to the Original
U-NII-2A	Not support	Pass
U-NII-2C	Not support	Pass
U-NII-3	Pass	Refer to the Original

3. Applied Standards

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

FCC CFR47 Part 15E (2018) Unlicensed National Information Infrastructure Devices

ANSI C63.10 (2013)

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 stand-up position (Z 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**
802.11a	6 Mbps	6 Mbps
802.11n HT20	MCS8	MCS8
802.11n HT40	MCS8	MCS8
802.11ac VHT20	MCS0	MCS0
802.11ac VHT40	MCS0	MCS0
802.11ac VHT80	MCS0	MCS0

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

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

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.

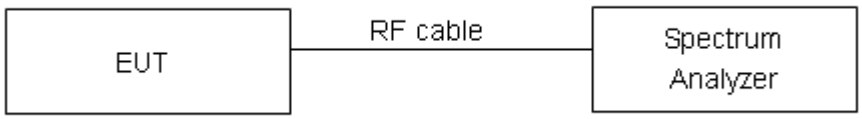
For U-NII-1, set RBW ≈1% OCB kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

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 2

U-NII-1

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5180	16.456	22.75	PASS
	5200	16.421	22.00	PASS
	5240	16.452	21.66	PASS
802.11n HT20	5180	17.586	20.10	PASS
	5200	17.576	20.19	PASS
	5240	17.601	20.01	PASS
802.11n HT40	5190	35.934	39.83	PASS
	5230	35.929	39.56	PASS
802.11ac VHT20	5180	17.584	20.24	PASS
	5200	17.600	19.94	PASS
	5240	17.617	21.31	PASS
802.11ac VHT40	5190	35.929	39.76	PASS
	5230	35.960	39.86	PASS
802.11ac VHT80	5210	74.975	79.67	PASS

U-NII-2A

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5260	16.363	19.45	PASS
	5300	16.351	19.51	PASS
	5320	16.353	19.52	PASS
802.11n HT20	5260	17.537	20.08	PASS
	5300	17.552	20.11	PASS
	5320	17.554	20.00	PASS
802.11n HT40	5270	35.951	39.79	PASS
	5310	35.992	40.07	PASS
802.11ac VHT20	5260	17.526	19.82	PASS
	5300	17.551	19.97	PASS
	5320	17.532	20.01	PASS
802.11ac VHT40	5270	35.950	39.63	PASS
	5310	36.003	39.84	PASS
802.11ac VHT80	5290	74.980	80.25	PASS

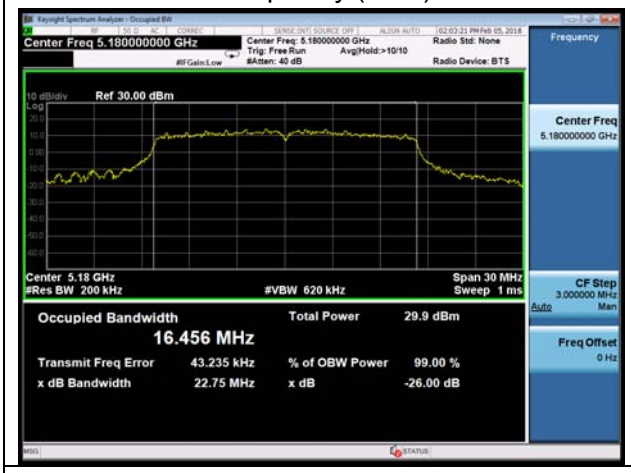
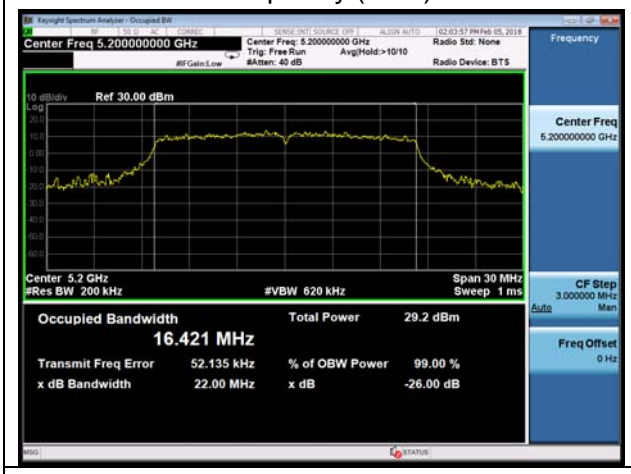
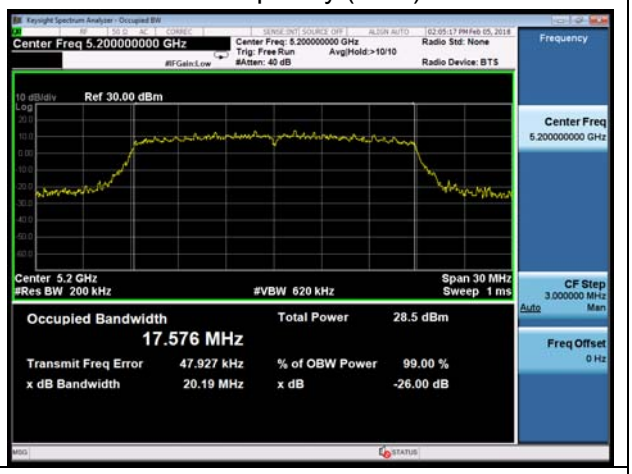
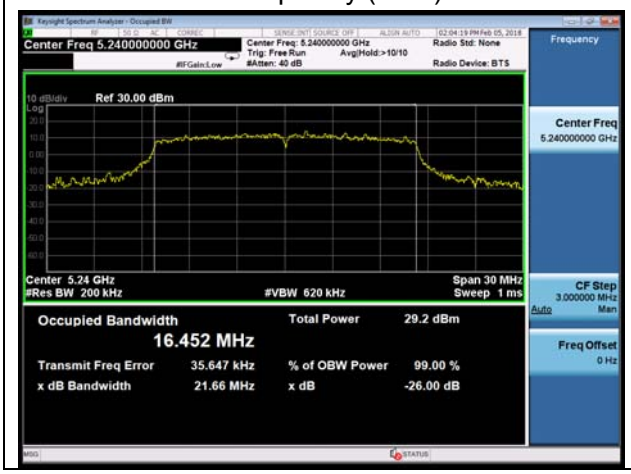
U-NII-2C

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5500	16.360	19.27	PASS
	5580	16.342	19.27	PASS
	5700	16.353	19.30	PASS
802.11n HT20	5500	17.545	19.98	PASS
	5580	17.536	20.09	PASS
	5700	17.554	20.09	PASS
802.11n HT40	5510	36.005	40.40	PASS
	5550	35.999	39.75	PASS
	5670	35.954	39.66	PASS
802.11ac VHT20	5500	16.380	19.43	PASS
	5580	16.356	19.38	PASS
	5700	17.547	20.00	PASS
802.11ac VHT40	5510	36.055	39.56	PASS
	5550	35.984	39.53	PASS
	5670	35.976	39.70	PASS
802.11ac VHT80	5610	74.939	80.23	PASS

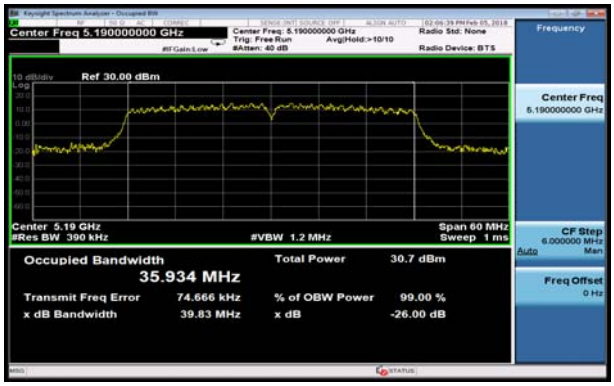
U-NII-3

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	16.552	13.84	500	PASS
	5785	16.414	15.13	500	PASS
	5825	16.401	16.06	500	PASS
802.11n HT20	5745	17.626	14.42	500	PASS
	5785	17.605	15.71	500	PASS
	5825	17.572	15.13	500	PASS
802.11n HT40	5755	36.006	35.15	500	PASS
	5795	36.008	35.14	500	PASS
802.11ac VHT20	5745	17.658	15.15	500	PASS
	5785	17.587	15.70	500	PASS
	5825	17.570	14.48	500	PASS
802.11ac VHT40	5755	35.987	33.91	500	PASS
	5795	35.929	35.15	500	PASS
802.11ac VHT80	5775	74.948	65.22	500	PASS

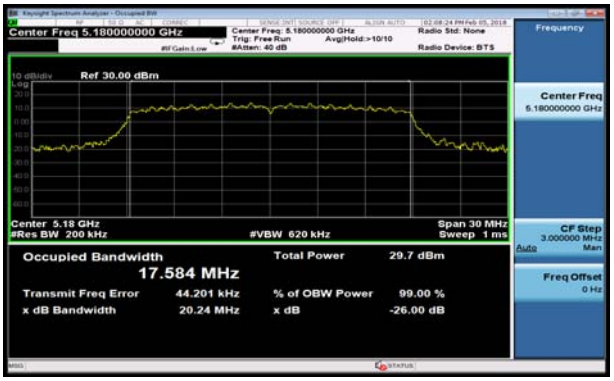
MIMO Antenna 2

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
	

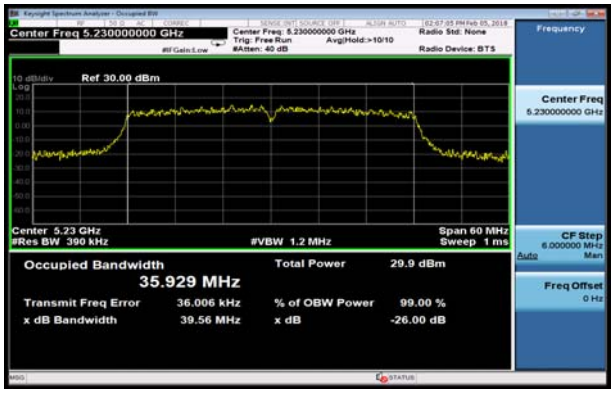
U-NII-1, 802.11n HT40
Carrier frequency (MHz): 5190



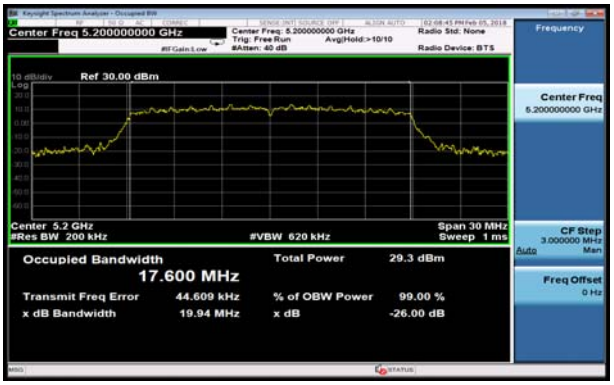
U-NII-1, 802.11ac VHT20
Carrier frequency (MHz): 5180



U-NII-1, 802.11n HT40
Carrier frequency (MHz): 5230



U-NII-1, 802.11ac VHT20
Carrier frequency (MHz): 5200



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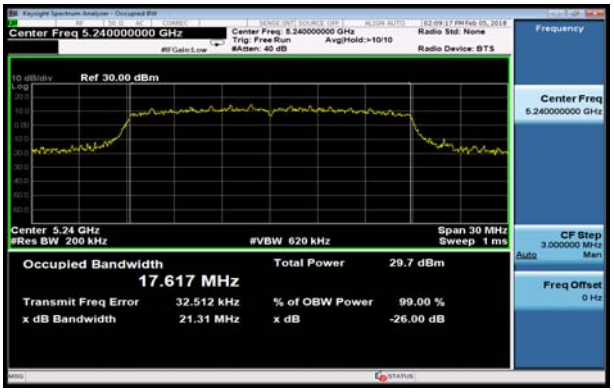
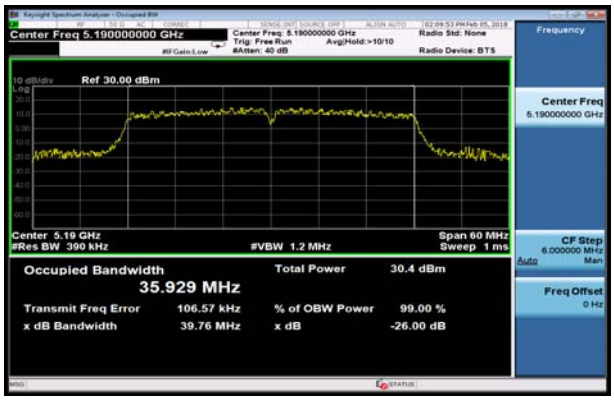
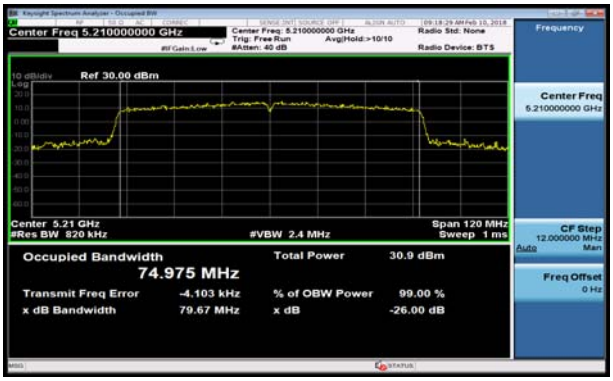
U-NII-1, 802.11ac VHT20
Carrier frequency (MHz):5240



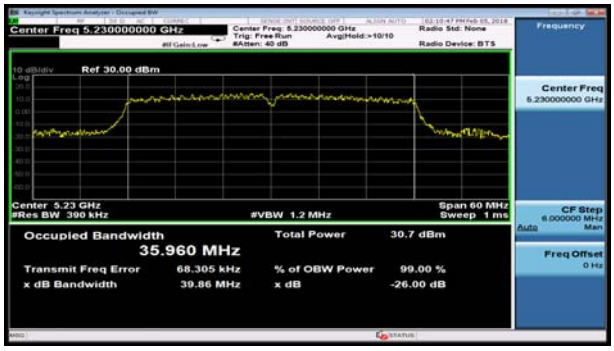
U-NII-1, 802.11ac VHT40
Carrier frequency (MHz): 5190



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

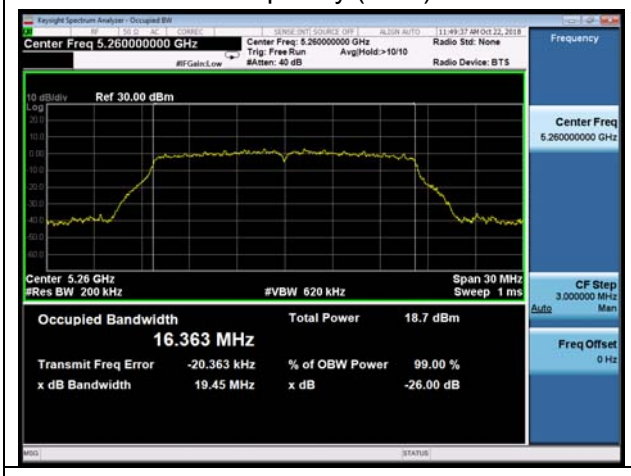


U-NII-1, 802.11ac VHT40
Carrier frequency (MHz): 5230



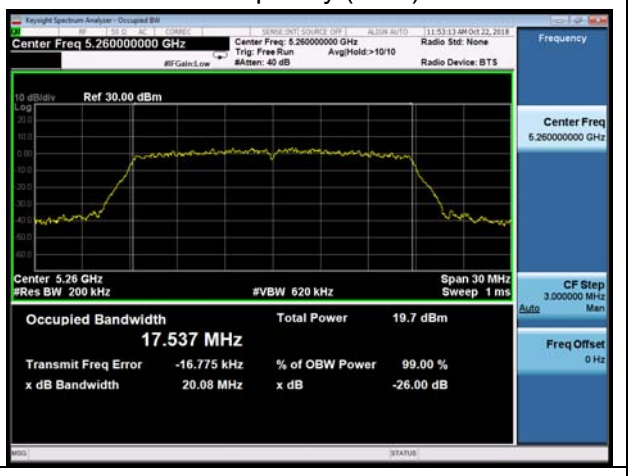
U-NII-2A, 802.11a

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

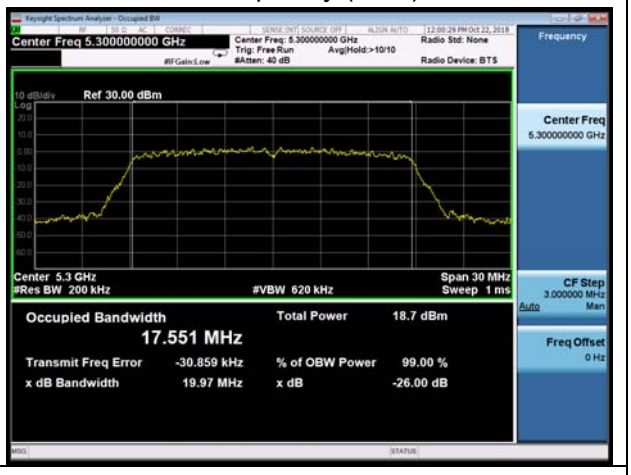
Carrier frequency (MHz):5320

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

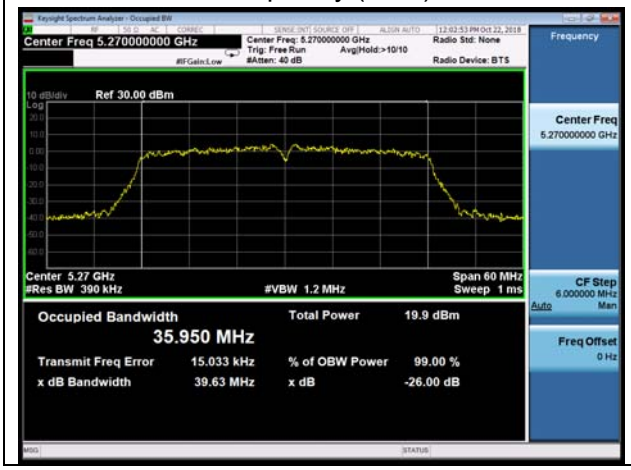
U-NII-2A, 802.11ac VHT20
Carrier frequency (MHz):5260

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

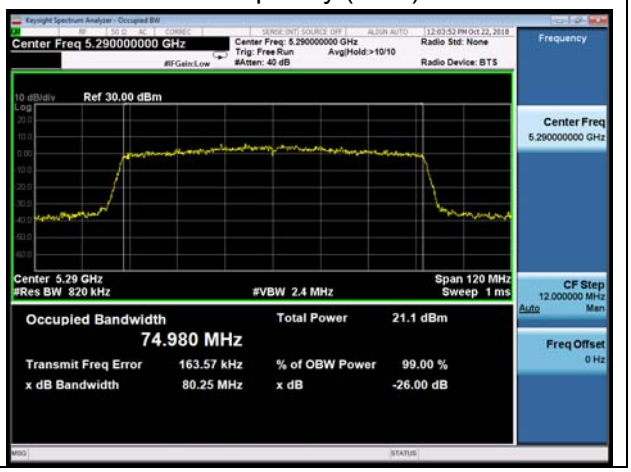
U-NII-2A, 802.11ac VHT20
Carrier frequency (MHz): 5300



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): 5580

U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5580

U-NII-2C, 802.11a

Carrier frequency (MHz):5700

U-NII-2C, 802.11n HT20

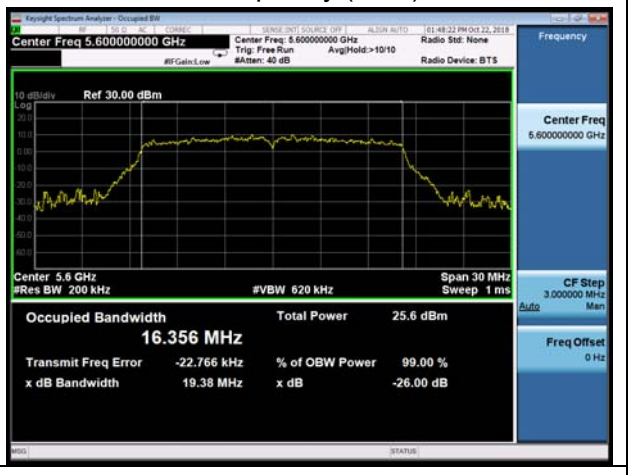
Carrier frequency (MHz):5700

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): 5550

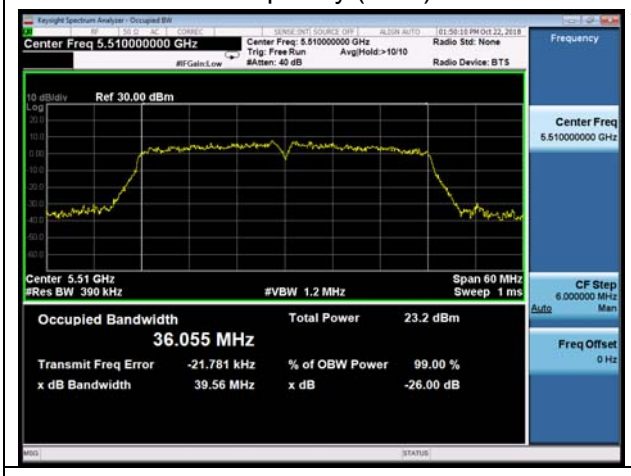
U-NII-2C, 802.11ac VHT20
Carrier frequency (MHz): 5580



U-NII-2C, 802.11n HT40
Carrier frequency (MHz): 5670

U-NII-2C, 802.11ac VHT20
Carrier frequency (MHz):5700

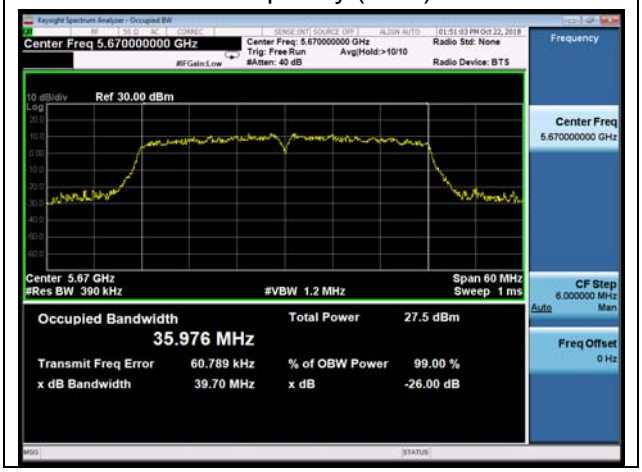
U-NII-2C, 802.11ac VHT40
Carrier frequency (MHz): 5510



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

U-NII-2C, 802.11ac VHT40
Carrier frequency (MHz): 5550

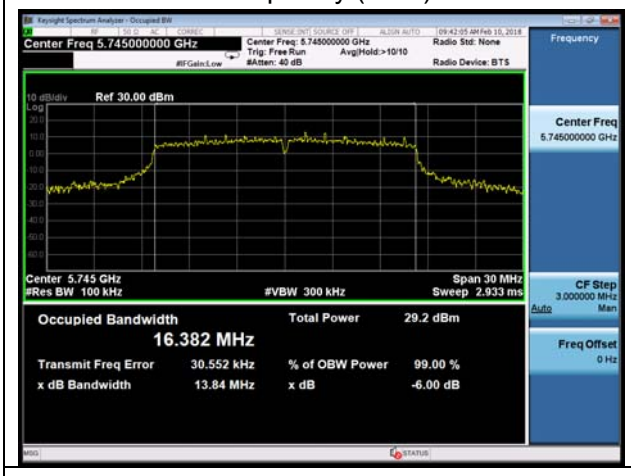
U-NII-2C, 802.11ac VHT40
Carrier frequency (MHz): 5670



Minimum 6 dB bandwidth

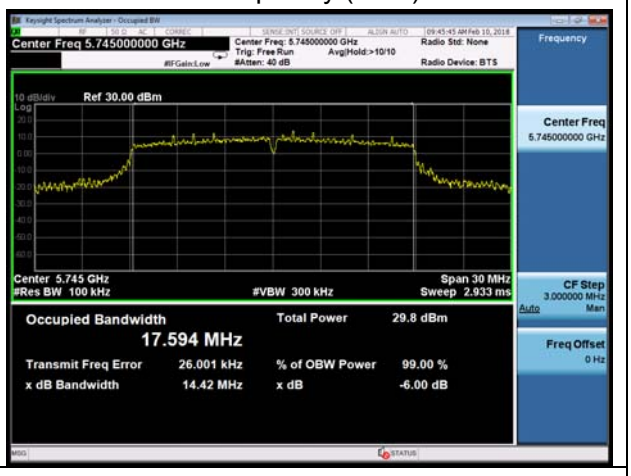
U-NII-3, 802.11a

Carrier frequency (MHz): 5745



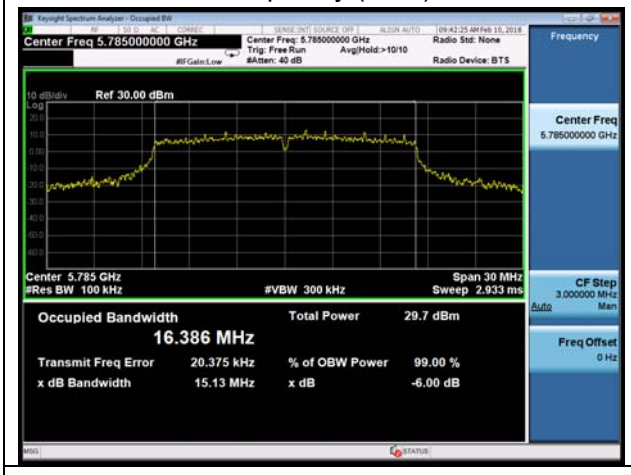
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745



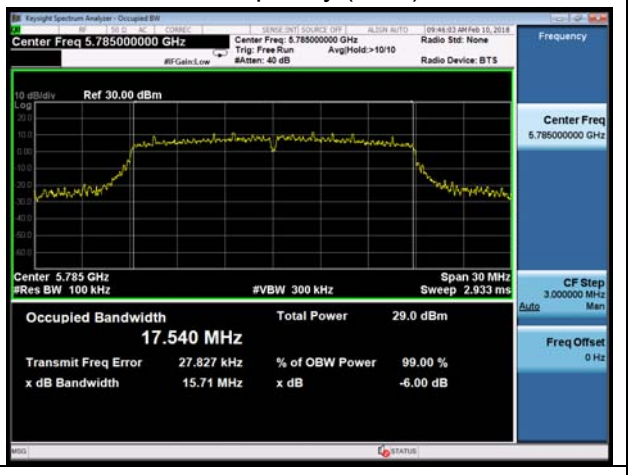
U-NII-3, 802.11a

Carrier frequency (MHz): 5785



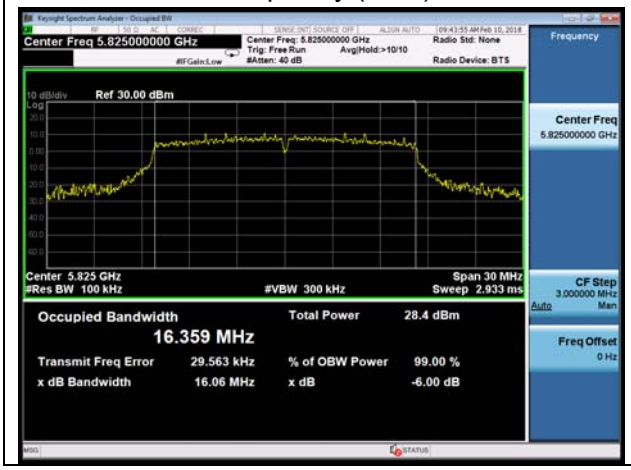
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785



U-NII-3, 802.11a

Carrier frequency (MHz): 5825

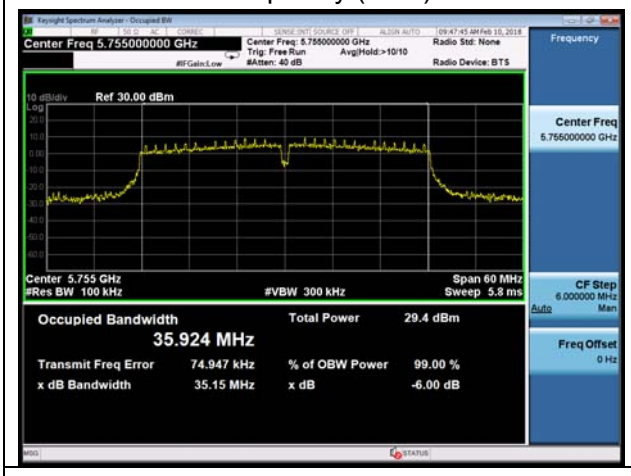


U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755



U-NII-3, 802.11ac VHT20

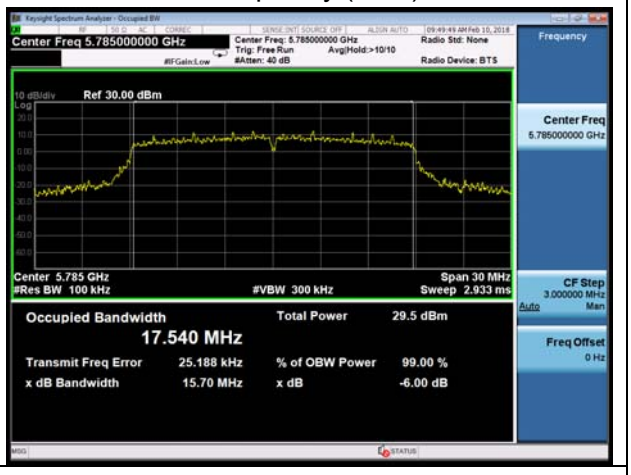
Carrier frequency (MHz): 5745

U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795

U-NII-3, 802.11ac VHT20

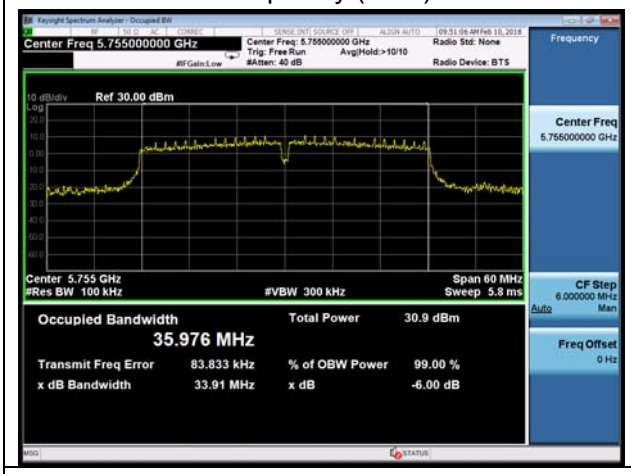
Carrier frequency (MHz): 5785



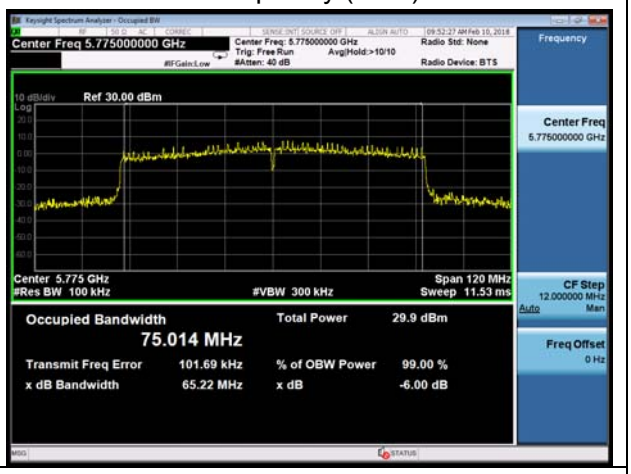
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5825

U-NII-3, 802.11ac VHT40
Carrier frequency (MHz): 5755



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

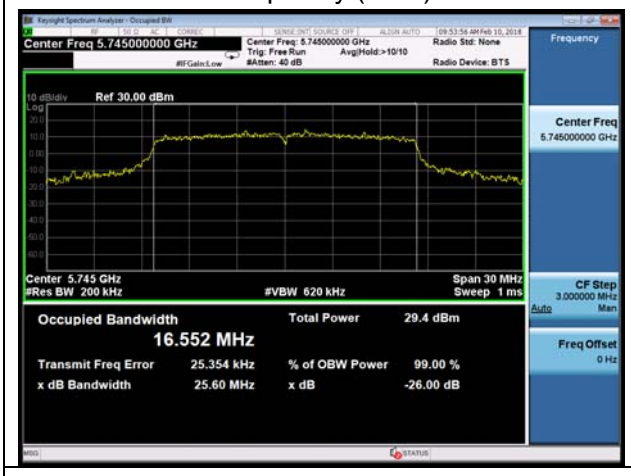


U-NII-3, 802.11ac VHT40
Carrier frequency (MHz): 5795

99% bandwidth

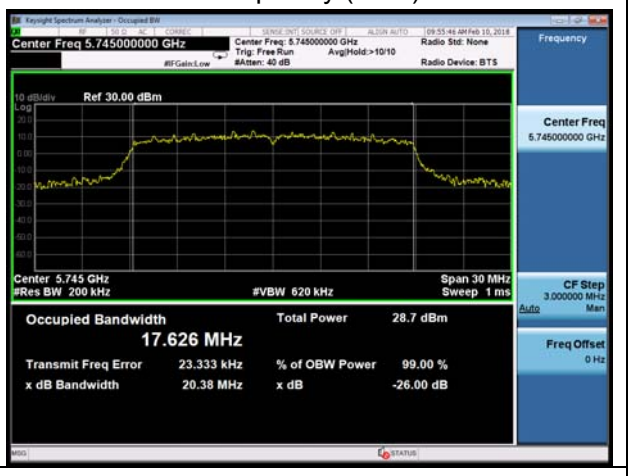
U-NII-3, 802.11a

Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745

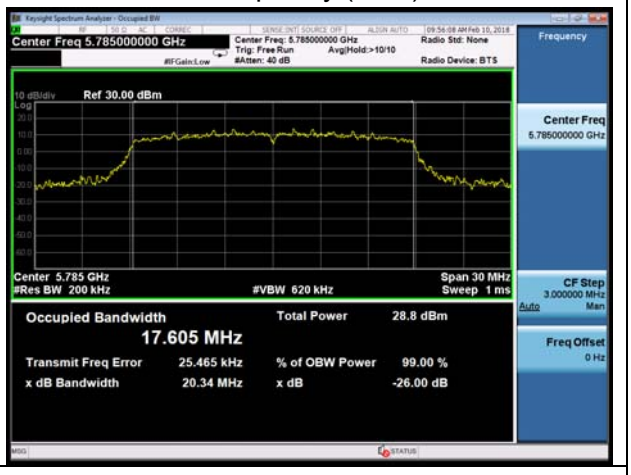


U-NII-3, 802.11a

Carrier frequency (MHz): 5785

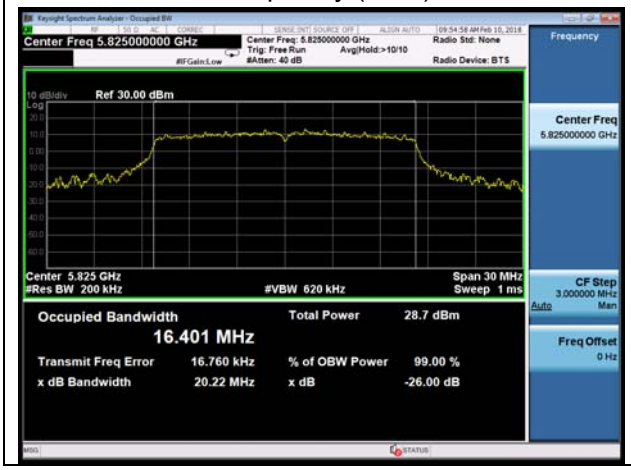
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785



U-NII-3, 802.11a

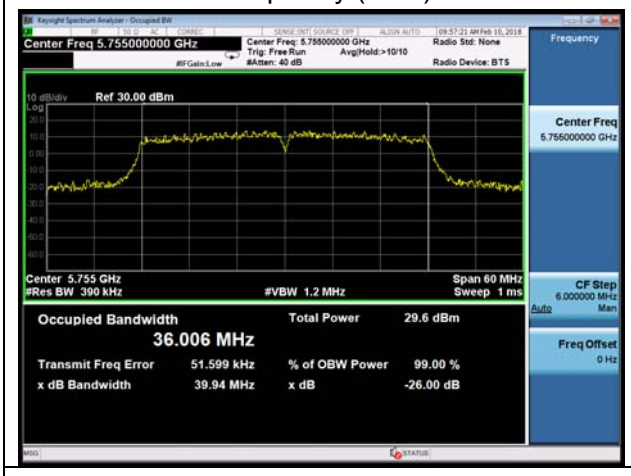
Carrier frequency (MHz): 5825



U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825

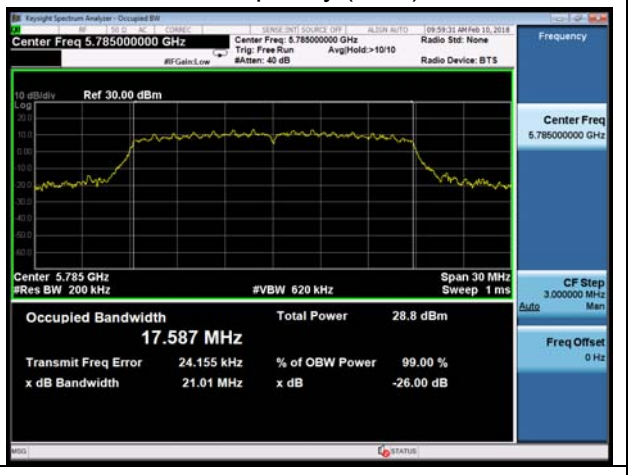
U-NII-3, 802.11n HT40
Carrier frequency (MHz): 5755



U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5745

U-NII-3, 802.11n HT40
Carrier frequency (MHz): 5795

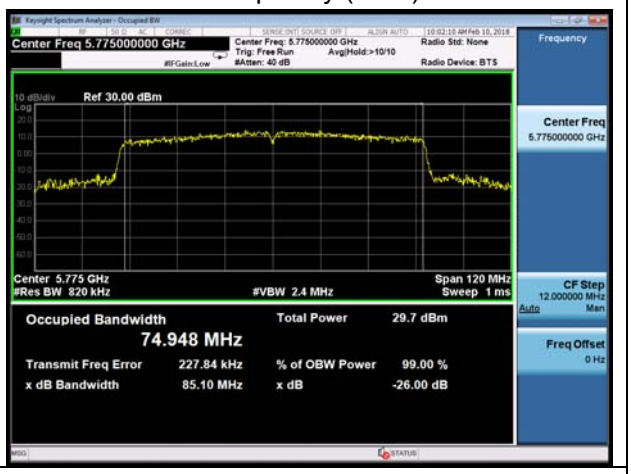
U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5785



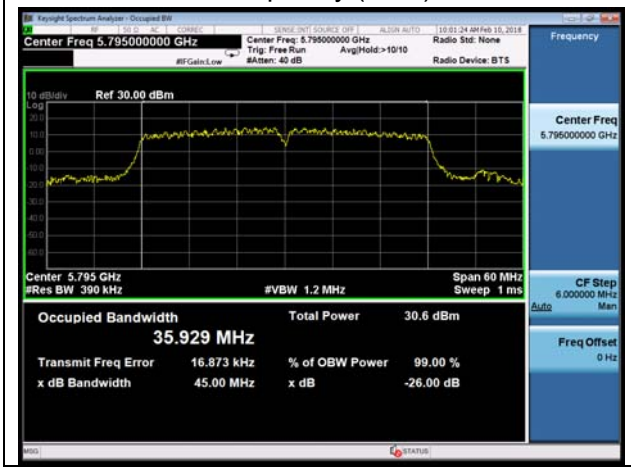
U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5825

U-NII-3, 802.11ac VHT40
Carrier frequency (MHz): 5755

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



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



5.2. Maximum Conducted Output Power

Ambient condition

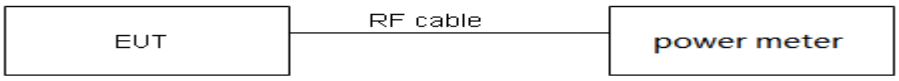
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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. Method PM in KDB789033 D02 was used 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	1.39	1.45	0.96	0.17
802.11n HT20	1.28	1.35	0.95	0.24
802.11n HT40	0.63	0.69	0.91	0.40
802.11ac VHT20	0.68	0.73	0.93	0.29
802.11ac VHT40	0.35	0.40	0.87	0.60
802.11ac VHT80	0.19	0.52	0.36	4.40
Note: when Duty cycle>0.98, Duty cycle correction Factor not required.				

With beamforming

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	19.45	23.89<24	23.89
		60/5300	19.51	23.90<24	23.90
		64/5320	19.52	23.90<24	23.90
	802.11n HT20	52/5260	20.08	24.03>24	24.00
		60/5300	20.11	24.03>24	24.00
		64/5320	20.00	24.01>24	24.00
	802.11n HT40	54/5270	39.79	27.00>24	24.00
		62/5310	40.07	27.03>24	24.00
	802.11ac VHT20	52/5260	19.82	23.97<24	23.97
		60/5300	19.97	24.00>24	24.00
		64/5320	20.01	24.01>24	24.00
	802.11ac VHT40	54/5270	39.63	26.98>24	24.00
		62/5310	39.84	27.00>24	24.00
	802.11ac VHT80	58/5290	80.25	30.04>24	24.00
U-NII-2C	802.11a	100/5500	19.27	23.85<24	23.80
		116/5580	19.27	23.85<24	23.85
		140/5700	19.30	23.86<24	23.86
	802.11n HT20	100/5500	19.98	24.01>24	24.00
		116/5580	20.09	24.03>24	24.00
		140/5700	20.09	24.03>24	24.00
	802.11n HT40	102/5510	40.40	27.06>24	24.00
		110/5550	39.75	26.99>24	24.00
		134/5670	39.66	26.98>24	24.00
	802.11ac VHT20	100/5500	19.43	23.88<24	23.88
		116/5580	19.38	23.87<24	23.87
		140/5700	20.00	24.01>24	24.00
	802.11ac VHT40	102/5510	39.56	26.97>24	24.00
		110/5550	39.53	26.97>24	24.00
		134/5670	39.70	26.99>24	24.00
	802.11ac VHT80	122/5610	80.23	30.04>24	24.00
Note: 250mW=24dBm					

Test results

Note: Output Power=Read Value+Duty cycle correction factor.

With beamforming U-NII-1

Network Standards	Channel/ Frequency (MHz)	Output Power					Limit (dBm)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm)		
		Read Value (dBm)	Output Power (dBm)	Read Value (dBm)	Output Power (dBm)			
802.11a	36/5180	22.63	22.80	22.64	22.81	25.82	28.99	PASS
	40/5200	22.57	22.74	22.33	22.50	25.63	28.99	PASS
	48/5240	23.38	23.55	22.80	22.97	26.28	28.99	PASS
802.11n HT20	36/5180	22.54	22.78	22.88	23.12	25.96	28.99	PASS
	40/5200	22.54	22.78	22.75	22.99	25.89	28.99	PASS
	48/5240	22.83	23.07	22.71	22.95	26.02	28.99	PASS
802.11n HT40	38/5190	22.55	22.95	21.87	22.27	25.63	28.99	PASS
	46/5230	23.50	23.90	23.12	23.52	26.72	28.99	PASS
802.11ac VHT20	36/5180	22.96	23.25	22.96	23.25	26.26	28.99	PASS
	40/5200	23.36	23.65	23.04	23.33	26.51	28.99	PASS
	48/5240	23.42	23.71	23.10	23.39	26.57	28.99	PASS
802.11ac VHT40	38/5190	22.01	22.61	22.13	22.73	25.68	28.99	PASS
	46/5230	22.91	23.51	22.99	23.59	26.56	28.99	PASS
802.11ac VHT80	42/5210	19.14	23.54	19.50	23.90	26.74	28.99	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. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F) 2) e）(i),If all antennas have the same gain, directional gain = GANT + 10 log(NANT/NSS)=4+10log（2/1）=7.01 dBi＞6dBi. So the limt is 30-7.01+6=28.99dBm.

With beamforming U-NII-2A

Network Standards	Channel/ Frequency (MHz)	Output Power					Limit (dBm)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm)		
		Read Value (dBm)	Output Power (dBm)	Read Value (dBm)	Output Power (dBm)			
802.11a	52/5260	17.22	17.39	17.03	17.20	20.31	22.88	PASS
	60/5300	17.03	17.20	16.80	16.97	20.10	22.89	PASS
	64/5320	17.02	17.19	16.89	17.06	20.14	22.89	PASS
802.11n HT20	52/5260	16.93	17.17	16.71	16.95	20.07	22.99	PASS
	60/5300	16.93	17.17	16.87	17.11	20.15	22.99	PASS
	64/5320	17.34	17.58	16.83	17.07	20.34	22.99	PASS
802.11n HT40	54/5270	19.48	19.88	19.19	19.59	22.74	22.99	PASS
	62/5310	15.14	15.54	15.21	15.61	18.58	22.99	PASS
802.11ac VHT20	52/5260	17.26	17.55	16.59	16.88	20.24	22.96	PASS
	60/5300	17.20	17.49	16.49	16.78	20.16	22.99	PASS
	64/5320	17.49	17.78	16.83	17.12	20.48	22.99	PASS
802.11ac VHT40	54/5270	19.48	20.08	18.97	19.57	22.84	22.99	PASS
	62/5310	19.58	20.18	18.79	19.39	22.81	22.99	PASS
802.11ac VHT80	58/5290	14.55	18.95	14.49	18.89	21.93	22.99	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. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F) 2) e）(i),If all antennas have the same gain, directional gain = GANT + 10 log(NANT/NSS)=4+10log（2/1）=7.01 dBi＞6dBi. So the limt =Final Limit -1.01 dBm.

With beamforming U-NII-2C

Network Standards	Channel/ Frequency (MHz)	Output Power					Limit (dBm)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm)		
		Read Value (dBm)	Output Power (dBm)	Read Value (dBm)	Output Power (dBm)			
802.11a	100/5500	17.11	17.28	16.77	16.94	20.12	22.84	PASS
	120/5600	16.83	17.00	17.06	17.23	20.13	22.84	PASS
	140/5700	17.13	17.30	16.91	17.08	20.20	22.85	PASS
802.11n HT20	100/5500	16.82	17.06	16.69	16.93	20.00	22.99	PASS
	120/5600	17.05	17.29	16.99	17.23	20.27	22.99	PASS
	140/5700	17.12	17.36	17.02	17.26	20.32	22.99	PASS
802.11n HT40	102/5510	14.39	14.79	14.21	14.61	17.71	22.99	PASS
	118/5590	19.69	20.09	19.24	19.64	22.88	22.99	PASS
	134/5670	19.44	19.84	19.62	20.02	22.94	22.99	PASS
802.11ac VHT20	100/5500	17.32	17.61	16.83	17.12	20.39	22.87	PASS
	120/5600	17.21	17.50	17.19	17.48	20.50	22.86	PASS
	140/5700	17.07	17.36	16.67	16.96	20.18	22.99	PASS
802.11ac VHT40	102/5510	19.67	20.27	18.84	19.44	22.88	22.99	PASS
	118/5590	19.44	20.04	19.13	19.73	22.90	22.99	PASS
	134/5670	19.33	19.93	19.27	19.87	22.91	22.99	PASS
802.11ac VHT80	122/5610	13.09	17.49	13.11	17.51	20.51	22.99	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1), The Total Power =10log($10^{(\text{Power antenna1 in dBm/10})}$+$10^{(\text{Power antenna2 in dBm/10})}$).

2. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F) 2) e）(i),If all antennas have the same gain, directional gain = GANT + 10 log(NANT/NSS)=4+10log（2/1）=7.01 dBi＞6dBi. So the limt =Final Limit -1.01 dBm

With beamforming U-NII-3

Network Standards	Channel/ Frequency (MHz)	Output Power					Limit (dBm)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm)		
		Read Value (dBm)	Output Power (dBm)	Read Value (dBm)	Output Power (dBm)			
802.11a	149/5745	25.65	25.82	22.93	23.10	27.68	28.99	PASS
	157/5785	23.73	23.90	22.88	23.05	26.51	28.99	PASS
	165/5825	23.29	23.46	22.63	22.80	26.15	28.99	PASS
802.11n HT20	149/5745	25.20	25.44	22.24	22.48	27.22	28.99	PASS
	157/5785	23.94	24.18	22.70	22.94	26.61	28.99	PASS
	165/5825	23.63	23.87	22.65	22.89	26.42	28.99	PASS
802.11n HT40	151/5755	24.29	24.69	22.03	22.43	26.71	28.99	PASS
	159/5795	23.82	24.22	22.61	23.01	26.66	28.99	PASS
802.11ac VHT20	149/5745	25.60	25.89	22.45	22.74	27.61	28.99	PASS
	157/5785	23.84	24.13	22.80	23.09	26.66	28.99	PASS
	165/5825	23.07	23.36	22.23	22.52	25.98	28.99	PASS
802.11ac VHT40	151/5755	24.97	25.57	22.95	23.55	27.69	28.99	PASS
	159/5795	23.82	24.42	23.11	23.71	27.09	28.99	PASS
802.11ac VHT80	155/5775	20.04	24.44	17.98	22.38	26.54	28.99	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. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F) 2) e）(i),If all antennas have the same gain, directional gain = GANT + 10 log(NANT/NSS)= 4+10log（2/1）=7.01 dBi＞ 6dBi. So the limt is 30-7.01+6=28.99dBm.

Without beamforming U-NII-1

Network Standards	Channel/ Frequency (MHz)	Output Power					Limit (dBm)	Conclusion
		ANT1		ANT2		Total Power (dBm)		
		Read Value (dBm)	Output Power (dBm)	Read Value (dBm)	Output Power (dBm)			
802.11a	36/5180	22.74	22.91	22.63	22.80	25.87	30.00	PASS
	40/5200	22.10	22.27	22.46	22.63	25.47	30.00	PASS
	48/5240	23.13	23.30	22.38	22.55	25.95	30.00	PASS
802.11n HT20	36/5180	22.54	22.78	22.58	22.82	25.81	30.00	PASS
	40/5200	22.35	22.59	22.39	22.63	25.62	30.00	PASS
	48/5240	22.90	23.14	22.47	22.71	25.94	30.00	PASS
802.11n HT40	38/5190	21.40	21.80	21.61	22.01	24.91	30.00	PASS
	46/5230	23.06	23.46	22.93	23.33	26.40	30.00	PASS
802.11ac VHT20	36/5180	22.61	22.90	22.70	22.99	25.96	30.00	PASS
	40/5200	22.88	23.17	23.09	23.38	26.29	30.00	PASS
	48/5240	23.82	24.11	23.14	23.43	26.80	30.00	PASS
802.11ac VHT40	38/5190	21.58	22.18	21.48	22.08	25.14	30.00	PASS
	46/5230	22.77	23.37	22.90	23.50	26.44	30.00	PASS
802.11ac VHT80	42/5210	18.82	23.22	17.64	22.04	25.68	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 $N_{ss}=1$. 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 $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = G_{ANT} + Array Gain =4+0=4 dBi<6dBi. So the power limt is 30dBm.

Without beamforming U-NII-2A

Network Standards	Channel/ Frequency (MHz)	Output Power					Limit (dBm)	Conclusion
		ANT1		ANT2		Total Power (dBm)		
		Read Value (dBm)	Output Power (dBm)	Read Value (dBm)	Output Power (dBm)			
802.11a	52/5260	17.26	17.43	17.12	17.29	20.37	23.89	PASS
	60/5300	17.08	17.25	16.94	17.11	20.19	23.90	PASS
	64/5320	17.11	17.28	16.93	17.10	20.20	23.90	PASS
802.11n HT20	52/5260	16.98	17.22	16.78	17.02	20.13	24.00	PASS
	60/5300	17.03	17.27	16.96	17.20	20.24	24.00	PASS
	64/5320	17.36	17.60	16.89	17.13	20.38	24.00	PASS
802.11n HT40	54/5270	20.44	20.84	20.16	20.56	23.71	24.00	PASS
	62/5310	15.33	15.73	15.04	15.44	18.59	24.00	PASS
802.11ac VHT20	52/5260	17.33	17.62	16.73	17.02	20.35	23.97	PASS
	60/5300	17.15	17.44	16.57	16.86	20.17	24.00	PASS
	64/5320	17.37	17.66	16.88	17.17	20.44	24.00	PASS
802.11ac VHT40	54/5270	19.99	20.59	20.11	20.71	23.66	24.00	PASS
	62/5310	20.41	21.01	20.04	20.64	23.84	24.00	PASS
802.11ac VHT80	58/5290	14.61	19.01	14.59	18.99	22.01	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 $N_{ss}=1$. 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 $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = G_{ANT} + Array Gain =4+0=4 dBi<6dBi. So the power limt is Final Limit.

Without beamforming U-NII-2C

Network Standards	Channel/ Frequency (MHz)	Output Power					Limit (dBm)	Conclusion
		ANT1		ANT2		Total Power (dBm)		
		Read Value (dBm)	Output Power (dBm)	Read Value (dBm)	Output Power (dBm)			
802.11a	100/5500	17.15	17.32	16.84	17.01	20.18	23.85	PASS
	120/5600	16.88	17.05	17.14	17.31	20.19	23.85	PASS
	140/5700	17.24	17.41	16.99	17.16	20.30	23.86	PASS
802.11n HT20	100/5500	16.89	17.13	16.66	16.90	20.02	24.00	PASS
	120/5600	17.11	17.35	16.91	17.15	20.26	24.00	PASS
	140/5700	17.16	17.40	17.02	17.26	20.34	24.00	PASS
802.11n HT40	102/5510	14.39	14.79	14.23	14.63	17.72	24.00	PASS
	118/5590	20.26	20.66	20.64	21.04	23.86	24.00	PASS
	134/5670	20.11	20.51	20.32	20.72	23.62	24.00	PASS
802.11ac VHT20	100/5500	17.36	17.65	16.79	17.08	20.39	23.88	PASS
	120/5600	17.24	17.53	17.16	17.45	20.51	23.87	PASS
	140/5700	17.12	17.41	16.79	17.08	20.26	24.00	PASS
802.11ac VHT40	102/5510	20.07	20.67	19.84	20.44	23.57	24.00	PASS
	118/5590	20.15	20.75	20.41	21.01	23.89	24.00	PASS
	134/5670	19.82	20.42	20.66	21.26	23.87	24.00	PASS
802.11ac VHT80	122/5610	13.42	17.82	13.25	17.65	20.75	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}=1. 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 $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.
So directional gain = G_{ANT} + Array Gain =4+0=4 dBi<6dBi. So the power limt is Final Limit.

Without beamforming U-NII-3

Network Standards	Channel/ Frequency (MHz)	Output Power					Limit (dBm)	Conclusion
		ANT1		ANT2		Total Power (dBm)		
		Read Value (dBm)	Output Power (dBm)	Read Value (dBm)	Output Power (dBm)			
802.11a	149/5745	25.29	25.46	22.76	22.93	27.39	30.00	PASS
	157/5785	23.93	24.10	22.81	22.98	26.59	30.00	PASS
	165/5825	23.89	24.06	22.14	22.31	26.28	30.00	PASS
802.11n HT20	149/5745	25.11	25.35	22.82	23.06	27.36	30.00	PASS
	157/5785	23.98	24.22	22.50	22.74	26.55	30.00	PASS
	165/5825	23.70	23.94	22.34	22.58	26.32	30.00	PASS
802.11n HT40	151/5755	24.00	24.40	22.45	22.85	26.70	30.00	PASS
	159/5795	23.89	24.29	23.01	23.41	26.88	30.00	PASS
802.11ac VHT20	149/5745	25.46	25.75	22.48	22.77	27.53	30.00	PASS
	157/5785	23.99	24.28	22.85	23.14	26.76	30.00	PASS
	165/5825	22.98	23.27	22.39	22.68	26.00	30.00	PASS
802.11ac VHT40	151/5755	24.86	25.46	22.88	23.48	27.59	30.00	PASS
	159/5795	23.54	24.14	22.83	23.43	26.81	30.00	PASS
802.11ac VHT80	155/5775	19.92	24.32	18.17	22.57	26.54	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 $N_{ss}=1$. 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 $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

So directional gain = G_{ANT} + Array Gain =4+0=4 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

Voltage (V)	Temperature (°C)	U-NII-1 Test Results			
		5200MHz			
		1min	2min	5min	10min
120	-5	5199.992803	5199.987630	5199.980295	5199.971330
120	0	5199.996602	5199.981327	5199.975815	5199.969281
120	5	5199.991490	5199.978528	5199.971014	5199.964938
120	10	5199.985944	5199.973061	5199.969696	5199.957082
120	15	5199.984955	5199.964437	5199.960787	5199.954159
120	25	5199.982637	5199.956803	5199.952784	5199.944675
120	35	5199.973698	5199.954729	5199.947154	5199.935801
120	45	5199.967534	5199.953005	5199.938018	5199.933948
90	25	5199.957745	5199.950476	5199.933270	5199.926502
264	25	5199.956509	5199.945575	5199.928041	5199.919924
MHz		-0.043491	-0.054425	-0.071959	-0.080076
PPM		-8.363587	-10.466318	-13.838302	-15.399203

Voltage (V)	Temperature (°C)	U-NII-2A Test Results			
		5300MHz			
		1min	2min	5min	10min
120	-5	5300.004441	5299.996446	5299.994718	5299.988492
120	0	5299.994975	5299.995258	5299.985204	5299.984893
120	5	5299.991099	5299.990788	5299.978271	5299.979285
120	10	5299.985784	5299.981760	5299.977750	5299.969384
120	15	5299.976533	5299.977385	5299.972325	5299.965284
120	25	5299.973111	5299.969583	5299.969343	5299.957423
120	35	5299.963884	5299.965726	5299.964997	5299.948321
120	45	5299.961668	5299.956171	5299.957797	5299.946965
90	25	5299.956499	5299.951199	5299.953578	5299.942682
264	25	5299.954387	5299.948451	5299.944879	5299.935731
MHz		-0.045613	-0.051549	-0.055121	-0.064269
PPM		-8.606279	-9.726188	-10.400205	-12.126143

Voltage (V)	Temperature (°C)	U-NII-2C Test Results			
		5600MHz			
		1min	2min	5min	10min
120	-5	5600.000610	5599.990873	5599.989739	5599.982626
120	0	5599.995510	5599.987177	5599.985436	5599.982069
120	5	5599.989205	5599.980953	5599.983421	5599.973487
120	10	5599.986544	5599.973126	5599.976206	5599.971036
120	15	5599.985034	5599.966259	5599.975175	5599.970587
120	25	5599.975324	5599.966098	5599.965596	5599.968702
120	35	5599.969981	5599.960913	5599.962163	5599.962197
120	45	5599.961330	5599.956789	5599.958668	5599.957473
90	25	5599.955641	5599.949834	5599.949670	5599.956787
264	25	5599.948763	5599.942693	5599.943568	5599.951221
MHz		-0.051237	-0.057307	-0.056432	-0.048779
PPM		-9.149505	-10.233377	-10.077094	-8.710583

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
120	-5	5784.992457	5784.982567	5784.973066	5784.964226
120	0	5784.989754	5784.979784	5784.970830	5784.960323
120	5	5784.985529	5784.970155	5784.969020	5784.955040
120	10	5784.985361	5784.961393	5784.965420	5784.948973
120	20	5784.979518	5784.956986	5784.962508	5784.941555
120	28	5784.971681	5784.949704	5784.952677	5784.937655
120	32	5784.963214	5784.942444	5784.944111	5784.934588
120	45	5784.955444	5784.938604	5784.938902	5784.930537
90	25	5784.946206	5784.931524	5784.934216	5784.925124
264	25	5784.936629	5784.929085	5784.931567	5784.921406
MHz		-0.063371	-0.070915	-0.068433	-0.078594
PPM		-10.954323	-12.258462	-11.829346	-13.585854

5.4. Power Spectral Density

Ambient condition

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

Method of Measurement

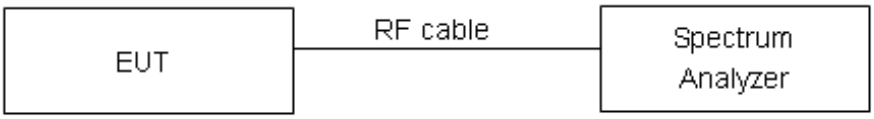
The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

Set RBW = 500 kHz, VBW =1.5MHz for the band 5.725-5.85 GHz

Set RBW = 1 MHz, VBW =3MHz for the band 5.150-5.250 GHz

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	17/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:

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

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)			
802.11a	36/5180	12.24	12.41	12.61	12.78	15.61	15.99	PASS
	40/5200	12.98	13.15	11.63	11.80	15.54	15.99	PASS
	48/5240	12.81	12.98	12.47	12.64	15.83	15.99	PASS
802.11n HT20	36/5180	12.07	12.31	12.27	12.51	15.42	15.99	PASS
	40/5200	11.96	12.20	11.81	12.05	15.13	15.99	PASS
	48/5240	12.65	12.89	11.50	11.74	15.36	15.99	PASS
802.11n HT40	38/5190	9.47	9.87	9.38	9.78	12.83	15.99	PASS
	46/5230	10.00	10.39	10.00	10.40	13.41	15.99	PASS
802.11ac VHT20	36/5180	12.24	12.54	12.02	12.32	15.44	15.99	PASS
	40/5200	12.55	12.84	12.19	12.48	15.68	15.99	PASS
	48/5240	12.90	13.19	12.40	12.69	15.96	15.99	PASS
802.11ac VHT40	38/5190	9.37	9.97	9.89	10.48	13.24	15.99	PASS
	46/5230	9.55	10.15	9.85	10.45	13.31	15.99	PASS
802.11ac VHT80	42/5210	3.27	7.67	3.77	8.17	10.94	15.99	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. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F) 2) e)(i),If all antennas have the same gain, directional gain = GANT + 10 log(NANT/NSS)=4+10log(2/1) =7.01 dBi＞ 6dBi. So the limt is 17-7.01+6=15.99dBm.

With Beamforming 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	6.61	6.78	6.60	6.77	9.78	9.99	PASS
	60/5300	6.27	6.44	6.45	6.62	9.54	9.99	PASS
	64/5320	6.82	6.99	6.21	6.38	9.71	9.99	PASS
802.11n HT20	52/5260	6.57	6.80	6.86	7.10	9.96	9.99	PASS
	60/5300	6.61	6.85	6.57	6.80	9.84	9.99	PASS
	64/5320	6.70	6.94	6.35	6.59	9.78	9.99	PASS
802.11n HT40	54/5270	5.16	5.55	5.01	5.41	8.49	9.99	PASS
	62/5310	1.01	1.41	1.41	1.81	4.62	9.99	PASS
802.11ac VHT20	52/5260	6.45	6.74	5.93	6.22	9.50	9.99	PASS
	60/5300	6.38	6.68	6.12	6.41	9.56	9.99	PASS
	64/5320	6.71	7.01	6.28	6.57	9.81	9.99	PASS
802.11ac VHT40	54/5270	5.05	5.64	5.24	5.84	8.75	9.99	PASS
	62/5310	5.30	5.90	5.06	5.66	8.79	9.99	PASS
802.11ac VHT80	58/5290	-0.82	3.58	-0.19	4.21	6.92	9.99	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. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F) 2) e)(i),If all antennas have the same gain, directional gain = GANT + 10 log(NANT/NSS)=4+10log(2/1) =7.01 dBi＞ 6dBi. So the limt is 9.99dBm.

With Beamforming 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	6.59	6.76	6.64	6.81	9.80	9.99	PASS
	120/5600	6.52	6.69	6.69	6.86	9.79	9.99	PASS
	140/5700	6.48	6.65	6.69	6.86	9.77	9.99	PASS
802.11n HT20	100/5500	7.02	7.26	6.40	6.64	9.97	9.99	PASS
	120/5600	6.57	6.81	6.73	6.97	9.90	9.99	PASS
	140/5700	6.75	6.99	6.45	6.68	9.85	9.99	PASS
802.11n HT40	102/5510	0.59	0.99	0.74	1.14	4.07	9.99	PASS
	118/5590	5.46	5.85	5.95	6.34	9.12	9.99	PASS
	134/5670	5.86	6.26	5.22	5.61	8.96	9.99	
802.11ac VHT20	100/5500	6.52	6.81	6.40	6.69	9.76	9.99	PASS
	120/5600	6.33	6.63	6.61	6.90	9.78	9.99	PASS
	140/5700	6.46	6.76	6.51	6.80	9.79	9.99	PASS
802.11ac VHT40	102/5510	5.42	6.01	5.06	5.66	8.85	9.99	PASS
	118/5590	5.31	5.91	5.35	5.95	8.94	9.99	PASS
	134/5670	5.31	5.91	5.69	6.29	9.11	9.99	
802.11ac VHT80	122/5610	-3.05	1.36	-3.20	1.20	4.29	9.99	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. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F) 2) e)(i),If all antennas have the same gain, directional gain = GANT + 10 log(NANT/NSS)=4+10log(2/1) =7.01 dBi＞ 6dBi. So the limt is 9.99dBm.

With Beamforming U-NII-3

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /kHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm/ 500kHz)		
		Read Value (dBm /500kHz)	PSD (dBm /500kHz)	Read Value (dBm/ 500kHz)	PSD (dBm/ 500kHz)			
802.11a	149/5745	12.74	12.91	9.50	9.67	14.60	28.99	PASS
	157/5785	10.75	10.92	9.70	9.87	13.44	28.99	PASS
	165/5825	9.78	9.96	8.70	8.87	12.46	28.99	PASS
802.11n HT20	149/5745	11.88	12.12	9.65	9.88	14.16	28.99	PASS
	157/5785	10.44	10.68	9.46	9.70	13.23	28.99	PASS
	165/5825	9.59	9.83	8.73	8.97	12.43	28.99	PASS
802.11n HT40	151/5755	7.84	8.23	4.83	5.23	9.99	28.99	PASS
	159/5795	7.49	7.89	6.27	6.67	10.33	28.99	PASS
802.11ac VHT20	149/5745	11.83	12.13	8.77	9.06	13.87	28.99	PASS
	157/5785	10.52	10.82	9.04	9.33	13.15	28.99	PASS
	165/5825	9.43	9.73	8.37	8.66	12.24	28.99	PASS
802.11ac VHT40	151/5755	8.45	9.04	6.36	6.95	11.13	28.99	PASS
	159/5795	7.52	8.12	6.47	7.07	10.64	28.99	PASS
802.11ac VHT80	155/5775	1.50	5.90	-0.01	4.39	8.22	28.99	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. Direction gain calculation according to KDB662911 D01 Multiple Transmitter Output v02r01 F) 2) e）(i),If all antennas have the same gain, directional gain = GANT + 10 log(NANT/NSS)= 4+10log（2/1）=7.01 dBi＞ 6dBi. So the limt is 30-7.01+6=28.99dBm.

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	12.73	12.90	12.48	12.65	15.79	15.99	PASS
	40/5200	12.30	12.47	12.04	12.21	15.35	15.99	PASS
	48/5240	12.94	13.11	11.91	12.09	15.64	15.99	PASS
802.11n HT20	36/5180	11.97	12.21	12.03	12.26	15.25	15.99	PASS
	40/5200	11.48	11.71	11.89	12.12	14.93	15.99	PASS
	48/5240	12.53	12.76	11.87	12.11	15.46	15.99	PASS
802.11n HT40	38/5190	9.29	9.68	9.13	9.53	12.62	15.99	PASS
	46/5230	8.95	9.34	9.71	10.11	12.75	15.99	PASS
802.11ac VHT20	36/5180	12.08	12.38	12.23	12.52	15.46	15.99	PASS
	40/5200	12.23	12.53	12.13	12.43	15.49	15.99	PASS
	48/5240	12.16	12.45	12.47	12.76	15.62	15.99	PASS
802.11ac VHT40	38/5190	8.73	9.33	8.94	9.54	12.45	15.99	PASS
	46/5230	9.98	10.58	8.80	9.40	13.04	15.99	PASS
802.11ac VHT80	42/5210	3.59	7.99	2.96	7.36	10.70	15.99	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=1. 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,so directional gain=GANT+Array Gain=4+10log(2/1)=7.01＞6 dBi. So the PSD limt is 17-7.01+6=15.99dBm.

Without Beamforming 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	6.80	6.97	6.49	6.66	9.83	9.99	PASS
	60/5300	6.89	7.06	6.43	6.60	9.84	9.99	PASS
	64/5320	6.94	7.11	6.15	6.32	9.74	9.99	PASS
802.11n HT20	52/5260	6.84	7.07	6.03	6.26	9.70	9.99	PASS
	60/5300	6.68	6.92	6.13	6.37	9.66	9.99	PASS
	64/5320	7.13	7.36	5.81	6.05	9.77	9.99	PASS
802.11n HT40	54/5270	6.58	6.97	6.42	6.82	9.91	9.99	PASS
	62/5310	1.35	1.75	1.86	2.25	5.02	9.99	PASS
802.11ac VHT20	52/5260	6.64	6.93	6.00	6.29	9.64	9.99	PASS
	60/5300	6.90	7.20	5.75	6.04	9.67	9.99	PASS
	64/5320	7.12	7.41	6.10	6.40	9.95	9.99	PASS
802.11ac VHT40	54/5270	6.88	7.48	5.68	6.27	9.93	9.99	PASS
	62/5310	6.37	6.96	6.31	6.91	9.95	9.99	PASS
802.11ac VHT80	58/5290	-0.19	4.21	-0.53	3.87	7.06	9.99	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=1. 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,so directional gain=GANT+Array Gain=4+10log(2/1)=7.01＞6 dBi. So the PSD limt is 9.99dBm.

Without Beamforming 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	6.85	7.02	6.01	6.18	9.63	9.99	PASS
	120/5600	6.78	6.95	6.54	6.71	9.84	9.99	PASS
	140/5700	6.89	7.06	6.52	6.69	9.89	9.99	PASS
802.11n HT20	100/5500	6.87	7.11	6.24	6.48	9.82	9.99	PASS
	120/5600	6.99	7.22	6.25	6.49	9.88	9.99	PASS
	140/5700	7.00	7.24	6.30	6.54	9.91	9.99	PASS
802.11n HT40	102/5510	0.79	1.18	0.55	0.94	4.07	9.99	PASS
	118/5590	6.86	7.25	6.23	6.63	9.96	9.99	PASS
	134/5670	6.59	6.99	6.39	6.79	9.90	9.99	PASS
802.11ac VHT20	100/5500	6.97	7.26	5.72	6.01	9.69	9.99	PASS
	120/5600	6.72	7.02	5.87	6.16	9.62	9.99	PASS
	140/5700	6.70	7.00	6.54	6.84	9.93	9.99	PASS
802.11ac VHT40	102/5510	6.59	7.19	6.03	6.63	9.93	9.99	PASS
	118/5590	6.39	6.99	6.28	6.88	9.95	9.99	PASS
	134/5670	6.33	6.93	6.22	6.81	9.88	9.99	PASS
802.11ac VHT80	122/5610	-2.41	1.99	-2.94	1.46	4.74	9.99	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=1. 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,so directional gain=GANT+Array Gain=4+10log(2/1)=7.01＞6 dBi. So the PSD limt is 9.99dBm.

Without Beamforming U-NII-3

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /kHz)	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	149/5745	12.25	12.42	9.25	9.42	14.18	28.99	PASS
	157/5785	11.16	11.33	10.06	10.23	13.82	28.99	PASS
	165/5825	10.72	10.89	8.95	9.12	13.11	28.99	PASS
802.11n HT20	149/5745	12.59	12.83	8.64	8.88	14.30	28.99	PASS
	157/5785	10.91	11.15	9.75	9.98	13.61	28.99	PASS
	165/5825	10.14	10.38	9.24	9.48	12.96	28.99	PASS
802.11n HT40	151/5755	7.69	8.08	5.54	5.93	10.15	28.99	PASS
	159/5795	7.31	7.70	5.88	6.27	10.06	28.99	PASS
802.11ac HT20	149/5745	11.70	11.99	8.92	9.21	13.83	28.99	PASS
	157/5785	10.39	10.68	8.92	9.21	13.02	28.99	PASS
	165/5825	9.42	9.71	8.55	8.85	12.31	28.99	PASS
802.11ac HT40	151/5755	8.62	9.22	6.47	7.07	11.29	28.99	PASS
	159/5795	7.93	8.53	6.80	7.40	11.01	28.99	PASS
802.11ac VHT80	155/5775	0.91	5.31	-0.02	4.38	7.88	28.99	PASS

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

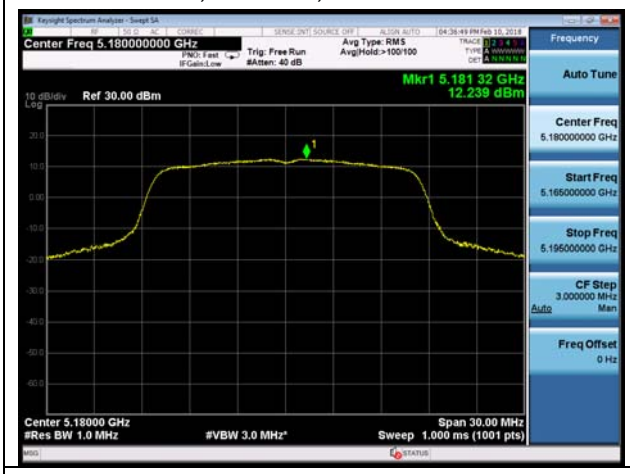
2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})})$

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. 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,so directional gain=GANT+Array Gain=4+10log(2/1)=7.01＞6 dBi. So the PSD limt is 30-7.01+6=28.99dBm.

With Beamforming

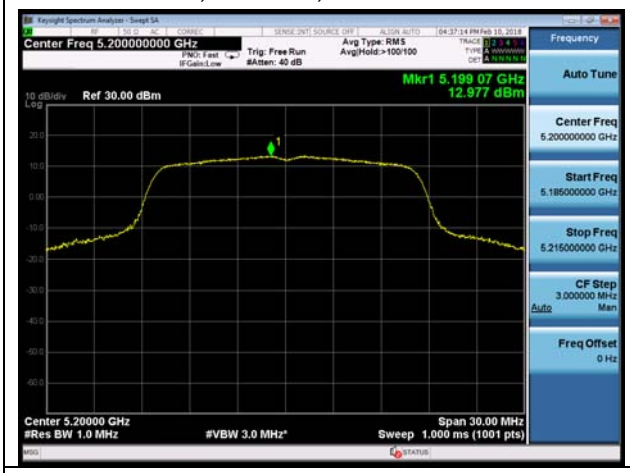
Antenna 1

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



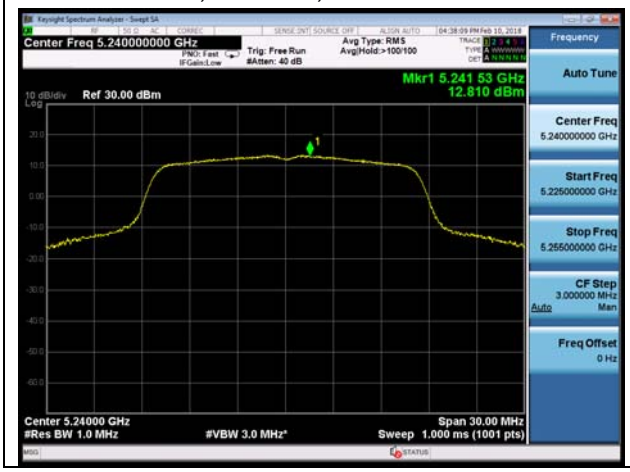
U-NII-1, 802.11n HT20, Channel No.: 36

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



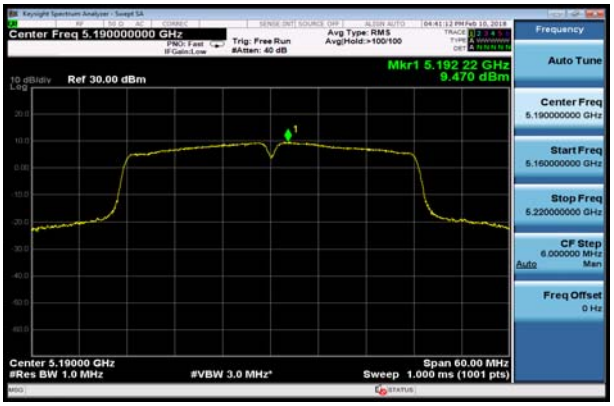
U-NII-1, 802.11n HT20, Channel No.: 40

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



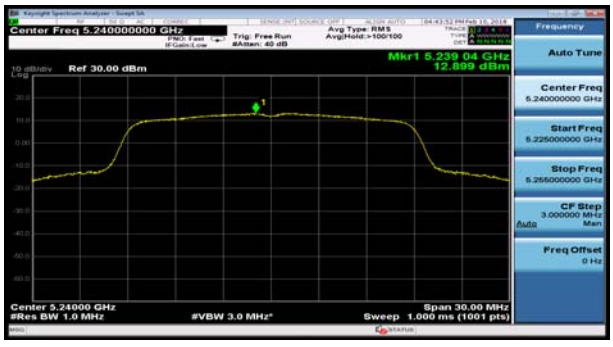
U-NII-1, 802.11ac VHT20, Channel No.: 36

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

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

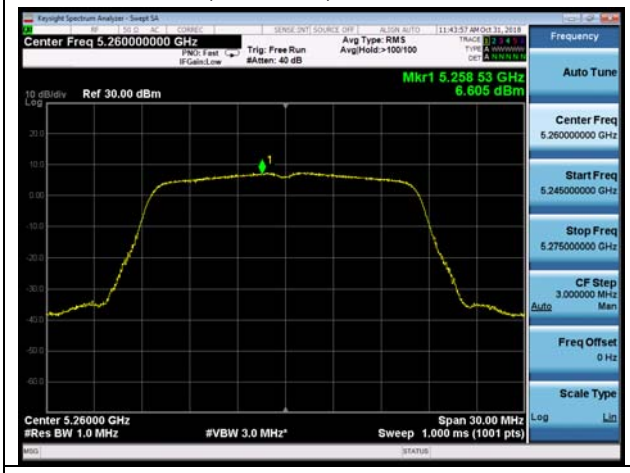
U-NII-1, 802.11ac VHT40, Channel No.: 38

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

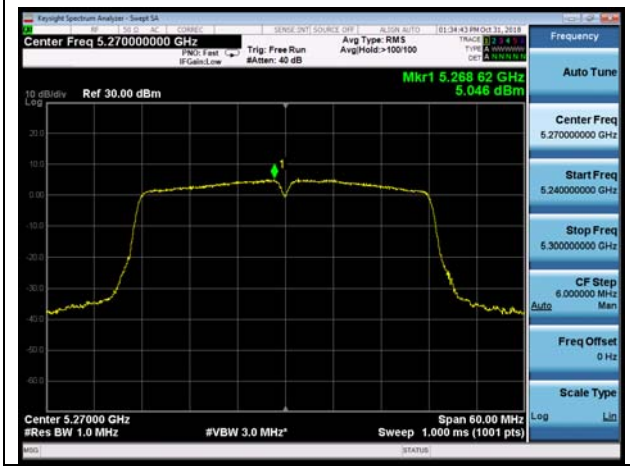
U-NII-2A, 802.11n HT40, Channel No.: 54

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

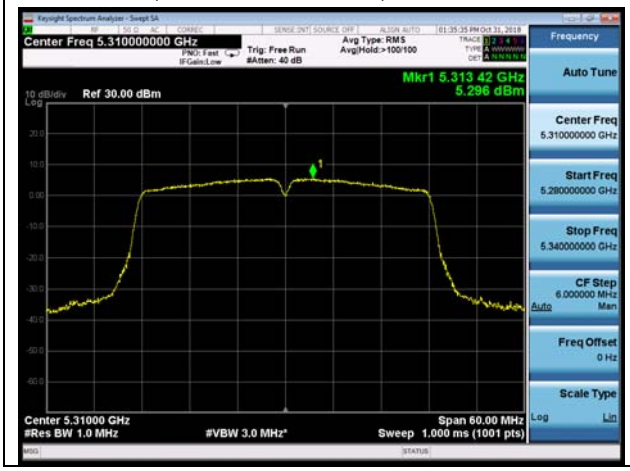
U-NII-2A, 802.11n HT40, Channel No.: 62

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

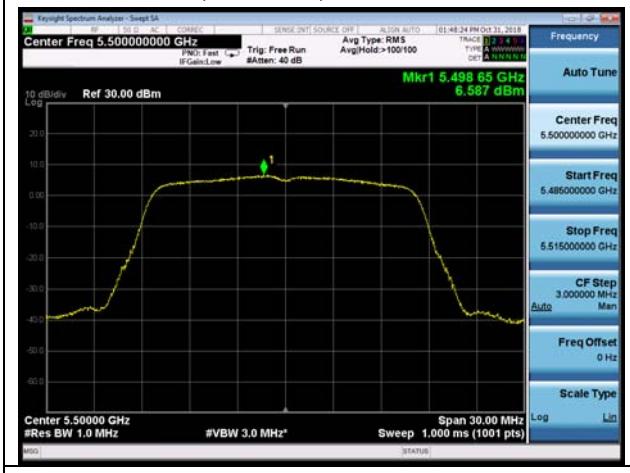
U-NII-2A, 802.11ac VHT40, Channel No.: 54



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

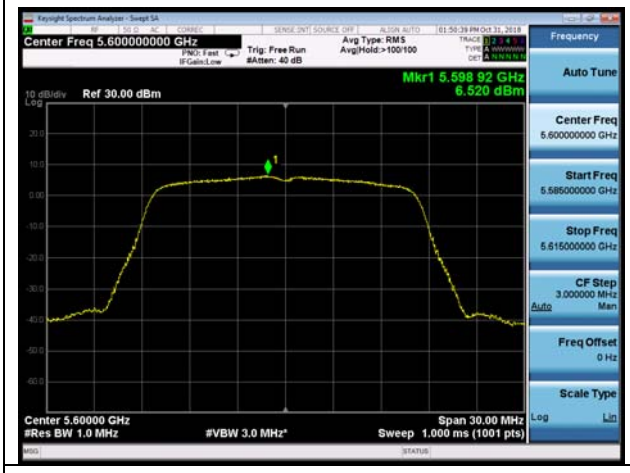
U-NII-2A, 802.11ac VHT40, Channel No.: 62	U-NII-2A, 802.11ac VHT80, Channel No.: 58
	

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

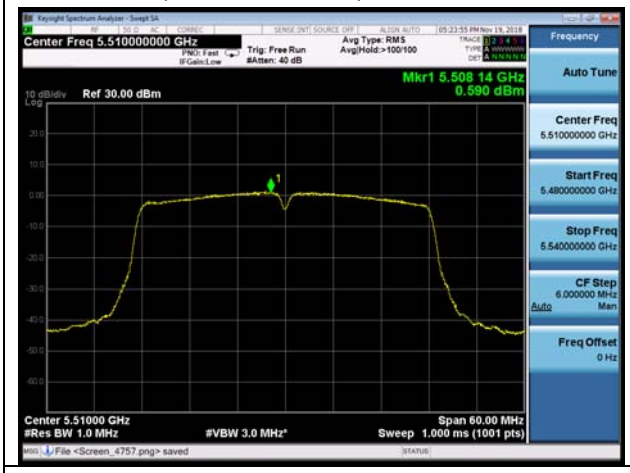


U-NII-2C, 802.11n HT20, Channel No.: 116

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

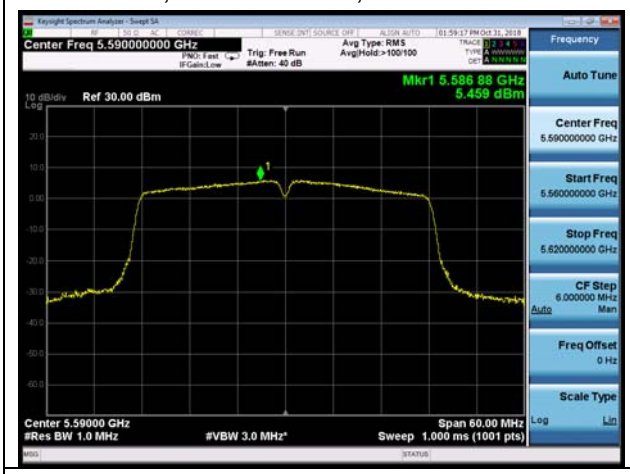
U-NII-2C, 802.11n HT20, Channel No.: 140

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



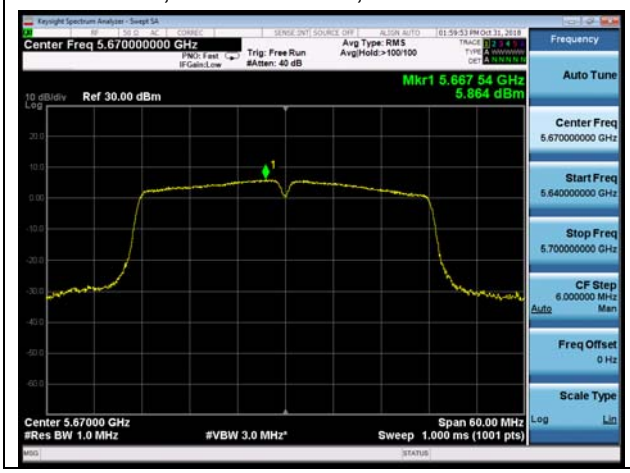
U-NII-2C, 802.11ac VHT20, Channel No.: 100

U-NII-2C, 802.11n HT40, Channel No.: 110



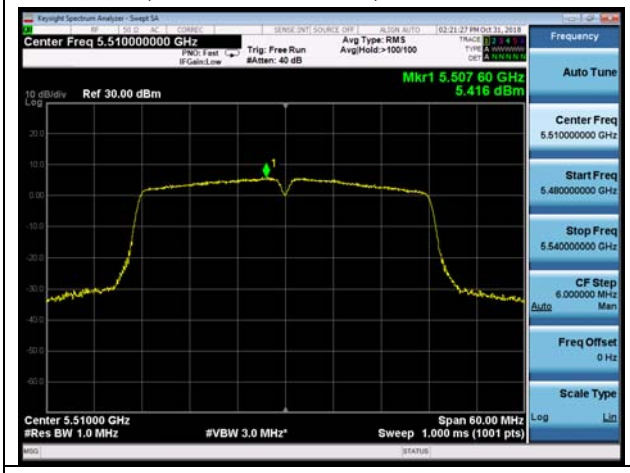
U-NII-2C, 802.11ac VHT20, Channel No.: 116

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



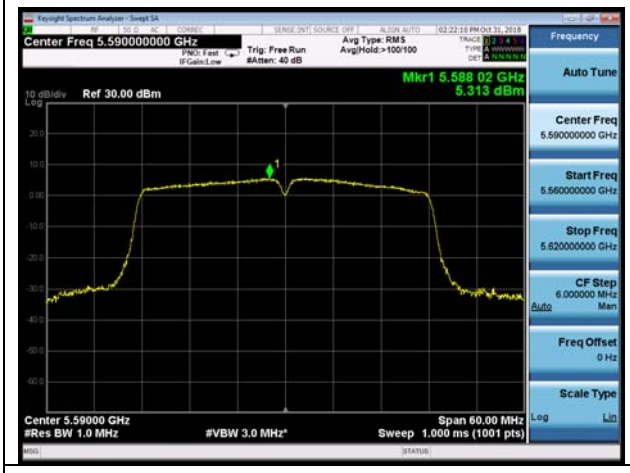
U-NII-2C, 802.11ac VHT20, Channel No.: 140

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



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

U-NII-2C, 802.11ac VHT40, Channel No.: 110



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