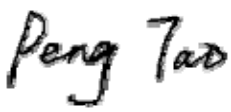
RF TEST REPORT

Applicant	Huawei Technologies Co., Ltd.
FCC ID	QISLIO-LX9
Product	Smart Phone
Model	LIO-L29, LIO-L09
Report No.	R1907H0137-R8V2
Issue Date	January 21, 2020

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.



Performed by: Peng Tao

Approved by: Kai Xu

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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 20, 2019~ August 20, 2019			

Note: This revised report (Report No.: R1907H0137-R8V2) supersedes and replaces the previously issued report (Report No.: R1907H0137-R8V1). Please discard or destroy the previously issued report and dispose of it accordingly.

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
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E-mail:	xukai@ta-shanghai.com

2. General Description of Equipment under Test

Client Information

Applicant	Huawei Technologies Co., Ltd.
Applicant address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Manufacturer	Huawei Technologies Co., Ltd.
Manufacturer address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

General information

EUT Description			
Model	LIO-L29, LIO-L09		
IMEI	YDM0119625000032		
Hardware Version	HL1LIONM		
Software Version	5.0.1.103M(C432E103R4P1)		
Power Supply	Battery/AC adapter		
Antenna Type	Internal Antenna		
Antenna Gain	Channel/frequency (MHz)	Antenna 1 (dBi)	Antenna 2 (dBi)
	40/5200	-0.67	-4.36
	52/5260	-2.06	-4.20
	120/5600	0.31	-1.83
	149/5745	-0.87	-3.45
	157/5785	-1.61	-3.14
additional beamforming gain	NA		
Test Mode(s)	U-NII-1(5150MHz-5250MHz) U-NII-2A(5250MHz-5350MHz) U-NII-2C(5470MHz-5725MHz without 5600MHz -5650MHz) U-NII-3(5725MHz-5850MHz)		
Modulation Type	802.11a/n (HT20/HT40) : OFDM 802.11ac (VHT20/VHT40/VHT80/VHT160): OFDM		
Max. Conducted Power	17.69 dBm		
Operating Frequency Range(s)	U-NII-1: 5150-5250MHz U-NII-2A:5250-5350MHz U-NII-2C:5470-5725MHz (without 5600MHz -5650MHz) U-NII-3: 5725-5850MHz		

Operating temperature range:	0° C to 35° C
Operating voltage range:	3.6 V to 4.3V
State DC voltage:	3.8V
EUT Accessory	
Battery 1	Manufacturer: HUAWEI Technologies Co., Ltd. (Sunwoda, Murata) Model: HB555591EEW
Battery 2	Manufacturer: HUAWEI Technologies Co., Ltd. (Sunwoda, ATL) Model: HB555591EEW
Battery 3	Manufacturer: HUAWEI Technologies Co., Ltd. (SCUD) Model: HB555591EEW
Earphone 1	Manufacturer: Jiangxi Lianchuang Hongsheng Electronic Co. ,LTD Model: MEND1632B729001
Earphone 2	Manufacturer: Jiangxi Lianchuang Hongsheng Electronic Co. ,LTD Model: MEND1632B729000
Earphone 3	Manufacturer: GoerTek Inc Model: WINDY-C
Earphone 4	Manufacturer: Boluo County Quancheng Electronic Co.,ltd Model: 1331-3301-6001-TC-296
Earphone 5	Manufacturer: Foster Electric Co.,(GuangZhou)LTD.Sales Dep. Model: 618017
Note: The information of the EUT is declared by the manufacturer. 2. There is more than one Battery, each one should be applied throughout the compliance test respectively, and however, only the worst case (Battery 1) will be recorded in this report.	

LIO-L29 is dual SIM smart phone. LIO-L09 is single SIM smart phone. The model LIO-L29 and LIO-L09 are identical except for LIO-L09 support single SIM card which deleted by software.

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 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	6 Mbps
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
802.11ac VHT160	MCS0	MCS0	MCS8

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	--	--	802.11a
Power Spectral Density	O	O	O
Unwanted Emissions	--	--	O
Conducted Emissions	--	--	O
Note：“O”: test all bands			

According to RF Output power results in chapter 5.1, 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
		160 MHz	50	5250 MHz
	U-NII-2A	20 MHz	52	5260MHz
			56	5280MHz
			60	5300MHz
			64	5320MHz
		40 MHz	54	5270MHz
			62	5310MHz
		80 MHz	58	5290MHz
		160 MHz	50	5250 MHz
	U-NII-2C	20 MHz	100	5500MHz
			104	5520MHz
			108	5540MHz
			112	5560MHz
			116	5580MHz
			132	5660MHz
			136	5680MHz
			140	5700MHz
		40 MHz	102	5510MHz
			110	5550MHz
			118	5590MHz
			134	5670MHz
			142	5710MHz
		80 MHz	106	5530MHz
			138	5690MHz
		160 MHz	114	5570 MHz
	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.

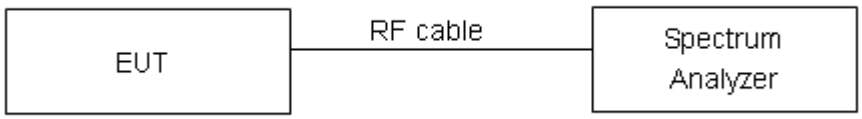
For U-NII-1/U-NII-2A/U-NII-2C, set RBW ≈1% OCB kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the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

U-NII-1

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5180	16.530	20.30	PASS
	5200	16.552	20.73	PASS
	5240	16.509	19.96	PASS
802.11n HT20	5180	17.582	20.72	PASS
	5200	17.605	20.09	PASS
	5240	17.597	20.60	PASS
802.11n HT40	5190	36.154	41.20	PASS
	5230	36.099	41.81	PASS
802.11ac VHT20	5180	17.591	20.49	PASS
	5200	17.625	20.46	PASS
	5240	17.595	20.31	PASS
802.11ac VHT40	5190	36.149	41.52	PASS
	5230	36.084	41.69	PASS
802.11ac VHT80	5210	75.289	84.92	PASS
802.11ac VHT160	5250	154.870	169.50	PASS

U-NII-2A

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5260	16.535	20.27	PASS
	5300	16.513	20.05	PASS
	5320	16.516	20.09	PASS
802.11n HT20	5260	17.596	20.34	PASS
	5300	17.605	20.71	PASS
	5320	17.603	20.60	PASS
802.11n HT40	5270	36.082	40.77	PASS
	5310	36.098	41.56	PASS
802.11ac VHT20	5260	17.611	20.32	PASS
	5300	17.554	20.29	PASS
	5320	17.611	20.63	PASS
802.11ac VHT40	5270	36.107	41.33	PASS
	5310	36.123	41.40	PASS
802.11ac VHT80	5290	75.062	84.30	PASS

U-NII-2C

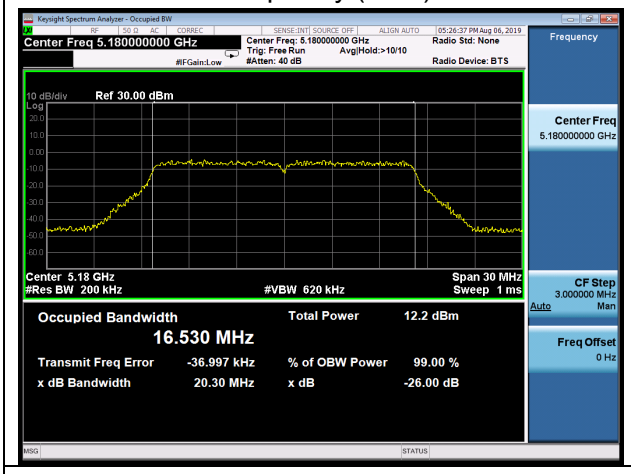
Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5500	16.554	20.19	PASS
	5580	16.700	26.89	PASS
	5700	16.554	20.29	PASS
802.11n HT20	5500	17.601	20.38	PASS
	5580	17.663	24.24	PASS
	5700	17.580	20.25	PASS
802.11n HT40	5510	36.006	40.95	PASS
	5550	36.190	51.84	PASS
	5670	36.158	41.83	PASS
802.11ac VHT20	5500	17.601	20.48	PASS
	5580	17.674	25.01	PASS
	5700	17.630	20.96	PASS
802.11ac VHT40	5510	36.104	41.47	PASS
	5550	36.194	52.99	PASS
	5670	36.064	43.44	PASS
802.11ac VHT80	5530	75.169	83.69	PASS
802.11ac VHT160	5570	153.670	168.20	PASS

U-NII-3

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	16.559	16.37	500	PASS
	5785	16.523	16.33	500	PASS
	5825	16.544	16.39	500	PASS
802.11n HT20	5745	17.612	17.56	500	PASS
	5785	17.624	17.56	500	PASS
	5825	17.591	16.72	500	PASS
802.11n HT40	5755	36.108	34.26	500	PASS
	5795	36.140	35.70	500	PASS
802.11ac VHT20	5745	17.605	17.09	500	PASS
	5785	17.595	16.70	500	PASS
	5825	17.584	17.32	500	PASS
802.11ac VHT40	5755	36.047	35.09	500	PASS
	5795	36.105	35.50	500	PASS
802.11ac VHT80	5775	74.999	75.25	500	PASS

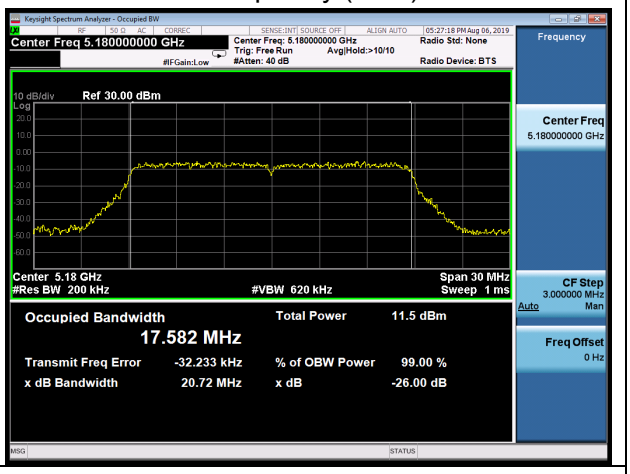
U-NII-1, 802.11a

Carrier frequency (MHz): 5180



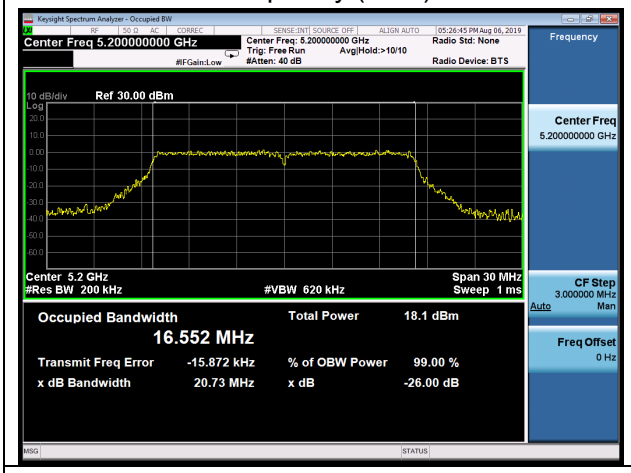
U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5180



U-NII-1, 802.11a

Carrier frequency (MHz): 5200

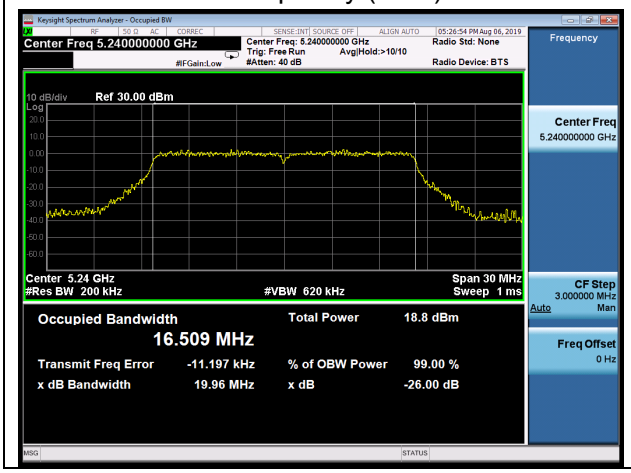


U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5200

U-NII-1, 802.11a

Carrier frequency (MHz):5240



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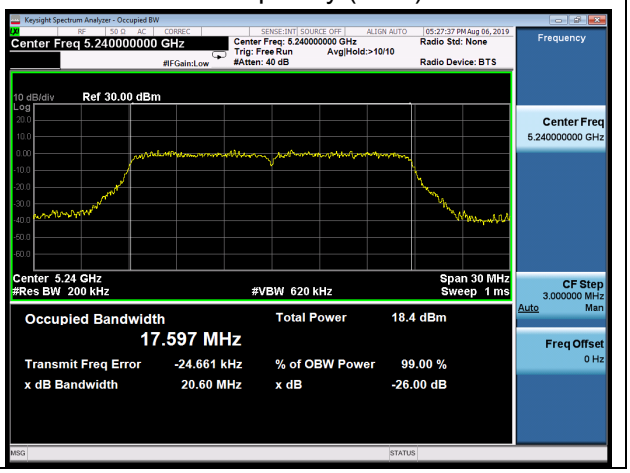

U-NII-1, 802.11n HT40

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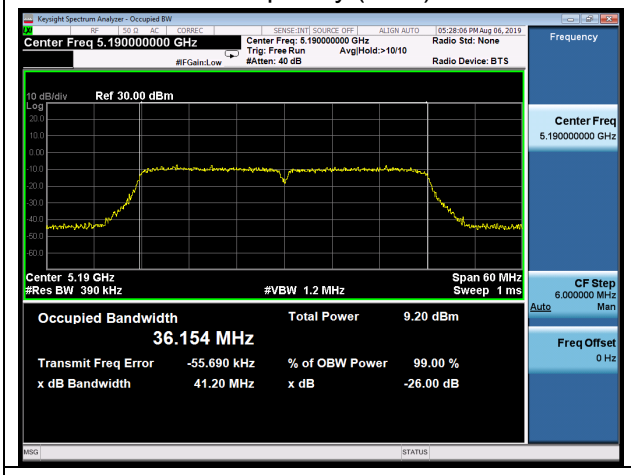
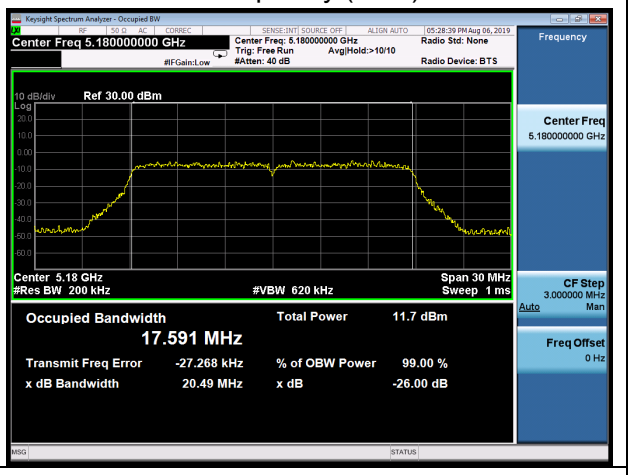


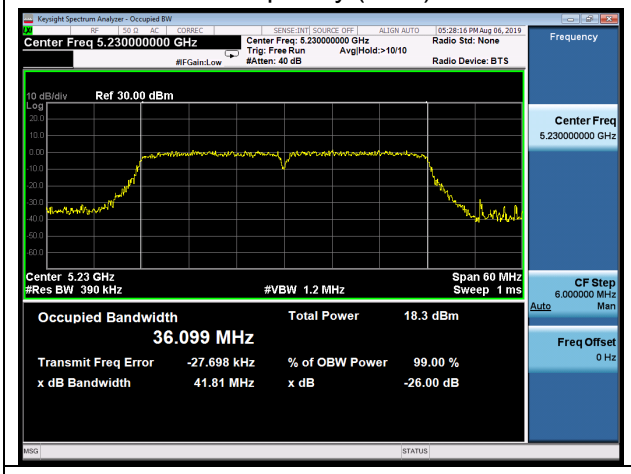
U-NII-1, 802.11ac VHT20

Carrier frequency (MHz): 5180



U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5230



U-NII-1, 802.11ac VHT20

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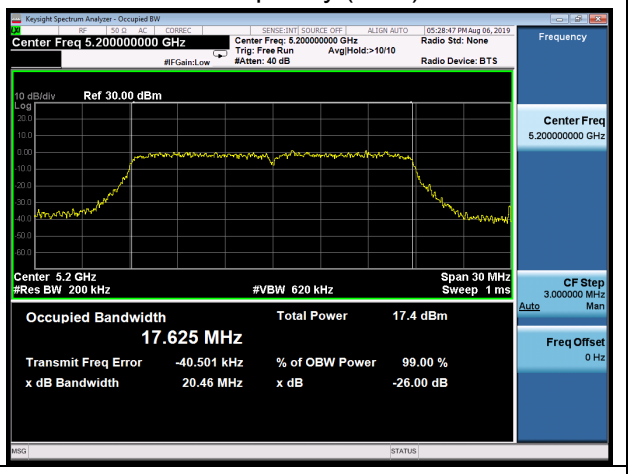
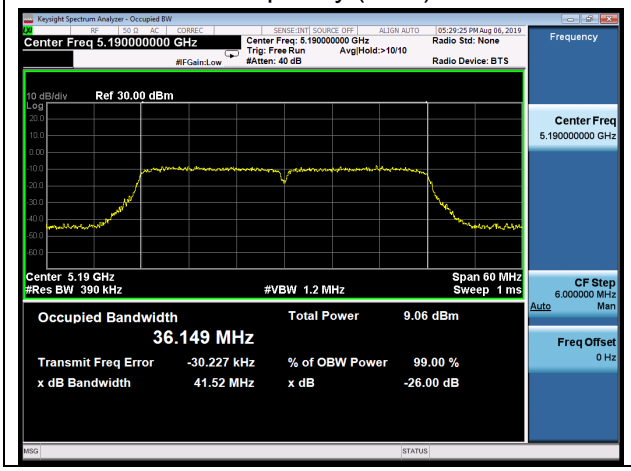


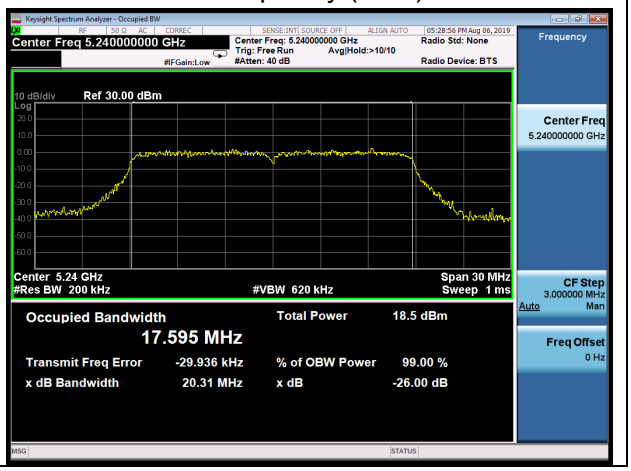
U-NII-1, 802.11ac VHT40

Carrier frequency (MHz): 5190



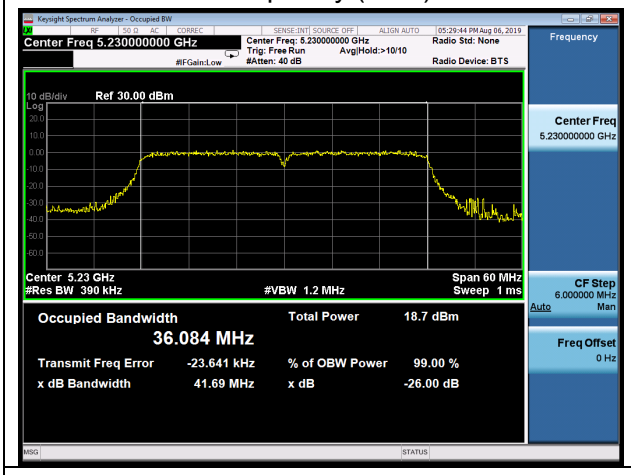
U-NII-1, 802.11ac VHT20

Carrier frequency (MHz):5240



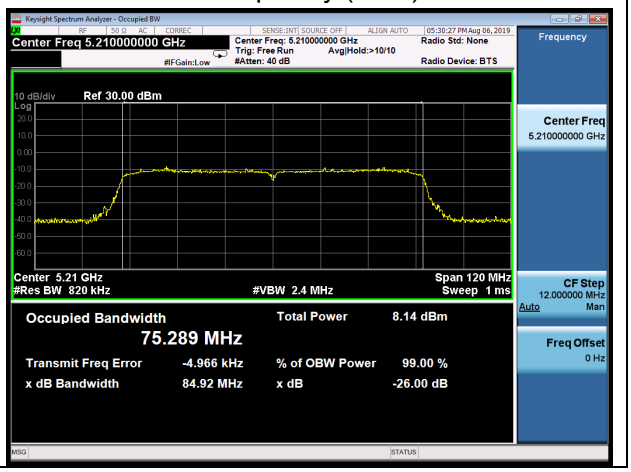
U-NII-1, 802.11ac VHT40

Carrier frequency (MHz): 5230



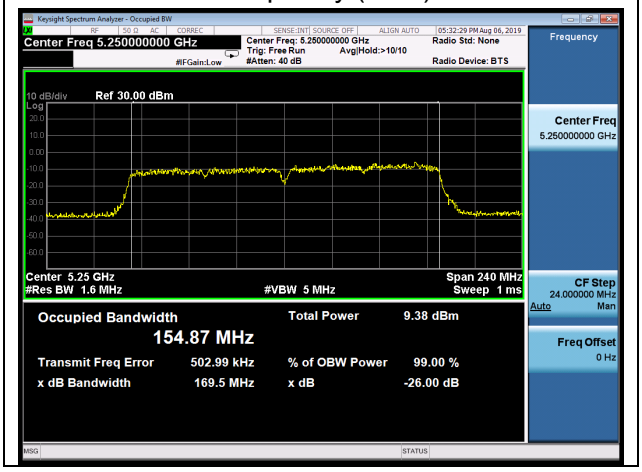
U-NII-1, 802.11ac VHT80

Carrier frequency (MHz): 5210



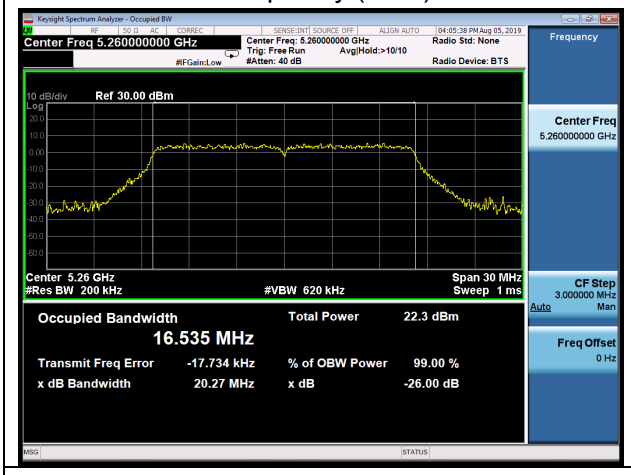
U-NII-1, 802.11ac VHT160

Carrier frequency (MHz): 5250



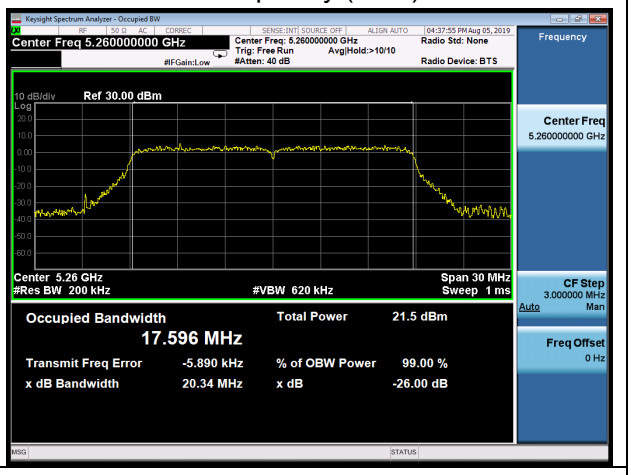
U-NII-2A, 802.11a

Carrier frequency (MHz): 5260



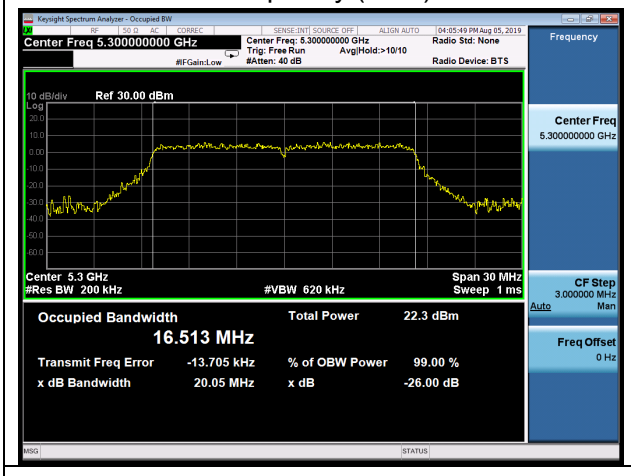
U-NII-2A, 802.11n HT20

Carrier frequency (MHz): 5260



U-NII-2A, 802.11a

Carrier frequency (MHz): 5300



U-NII-2A, 802.11n HT20

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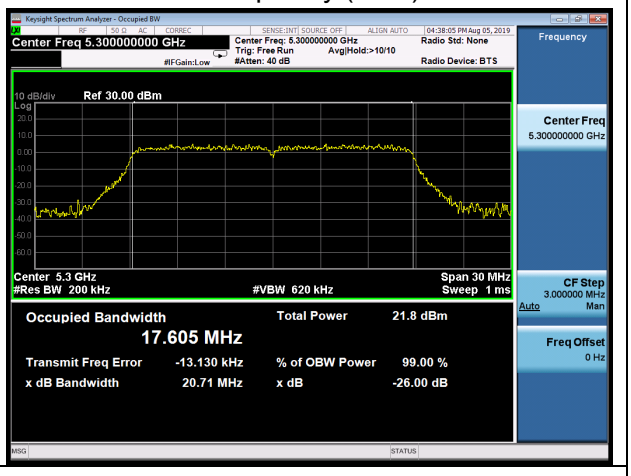

U-NII-2A, 802.11a

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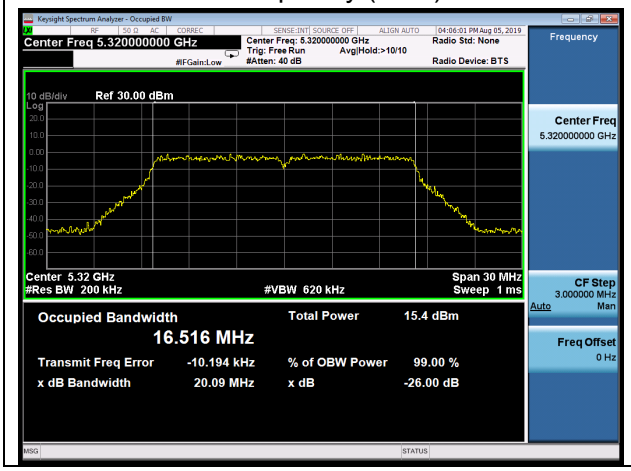

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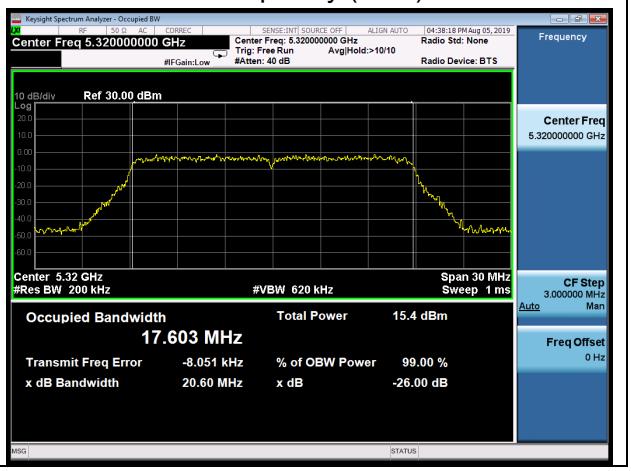
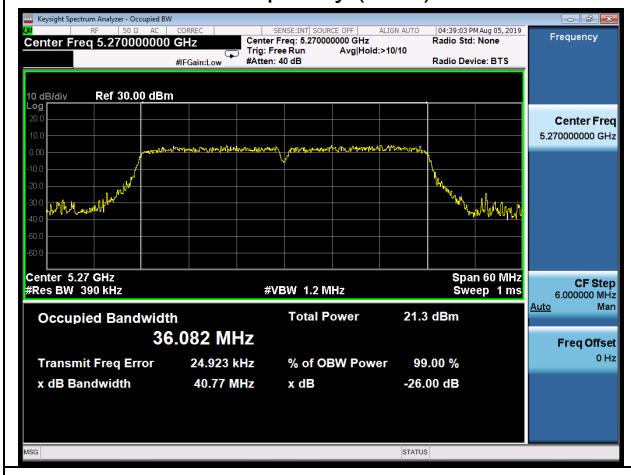
Carrier frequency (MHz):5320



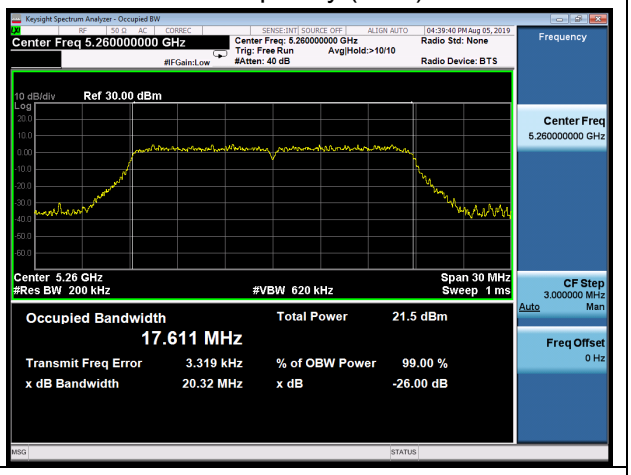
U-NII-2A, 802.11n HT40

Carrier frequency (MHz): 5270



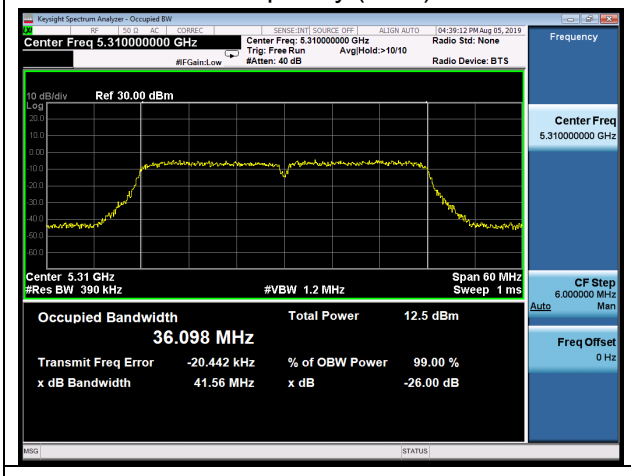
U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz):5260



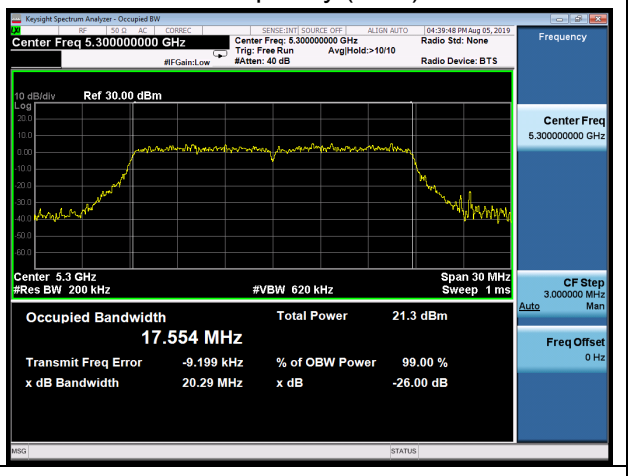
U-NII-2A, 802.11n HT40

Carrier frequency (MHz): 5310



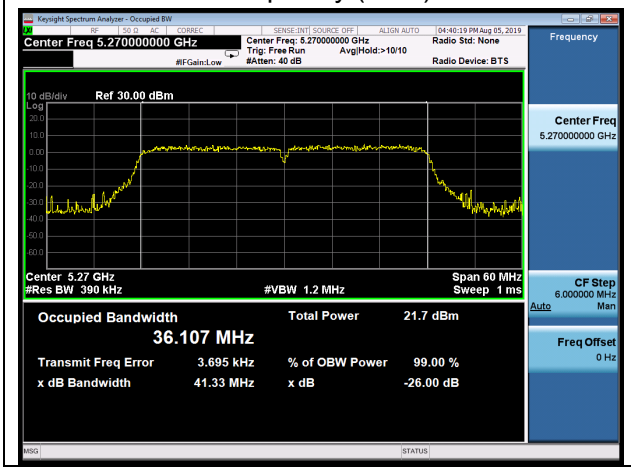
U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz): 5300



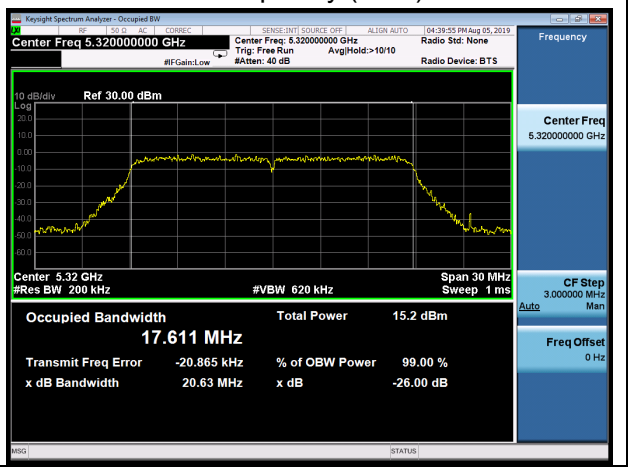
U-NII-2A, 802.11ac VHT40

Carrier frequency (MHz): 5270



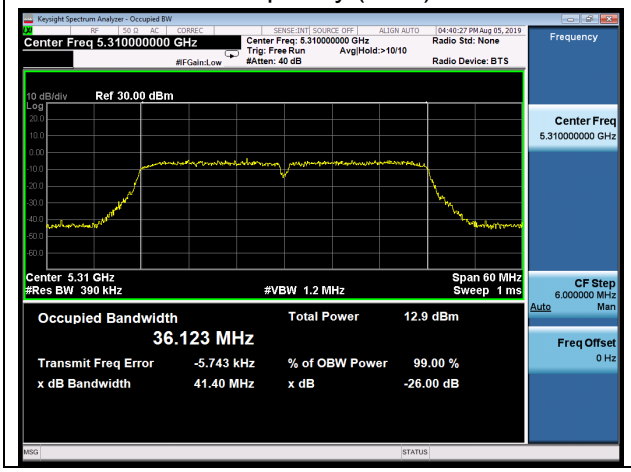
U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz):5320



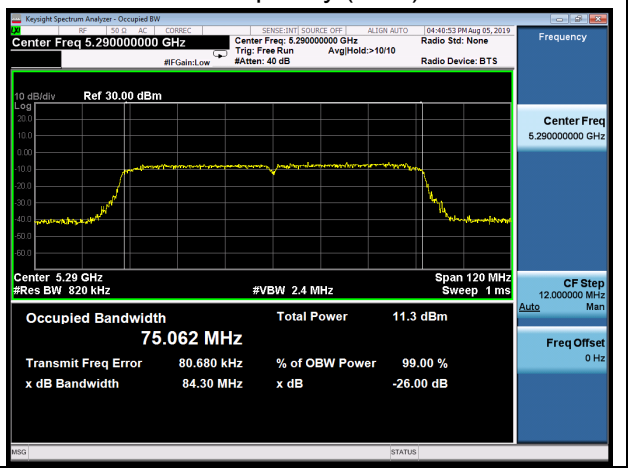
U-NII-2A, 802.11ac VHT40

Carrier frequency (MHz): 5310



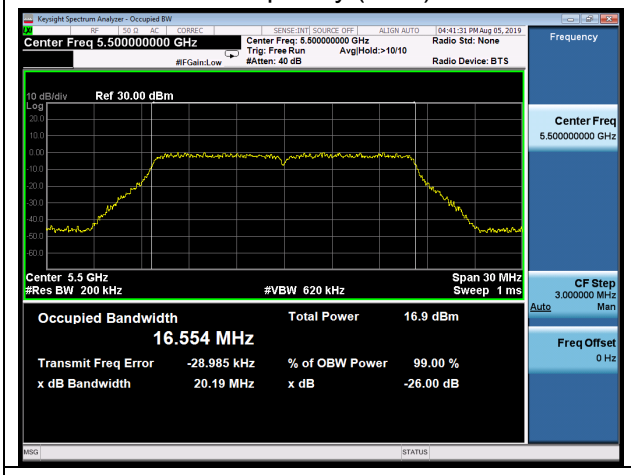
U-NII-2A, 802.11ac VHT80

Carrier frequency (MHz): 5290



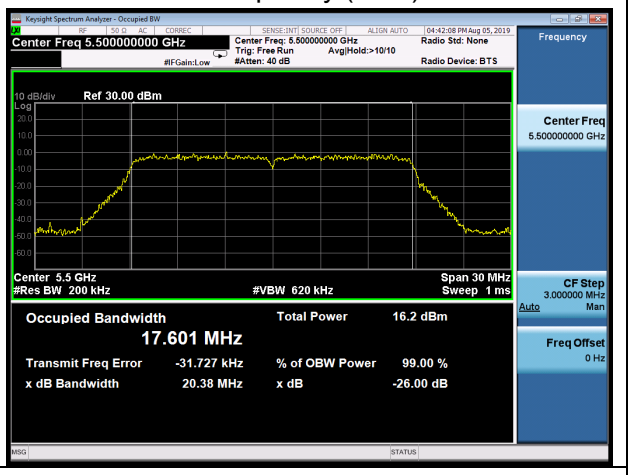
U-NII-2C, 802.11a

Carrier frequency (MHz): 5500



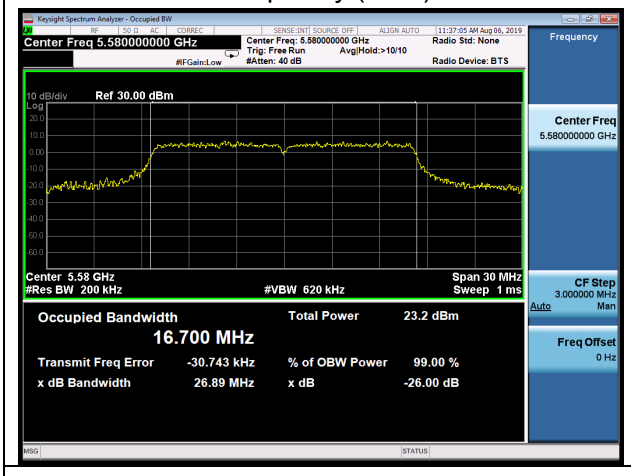
U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5500



U-NII-2C, 802.11a

Carrier frequency (MHz): 5580

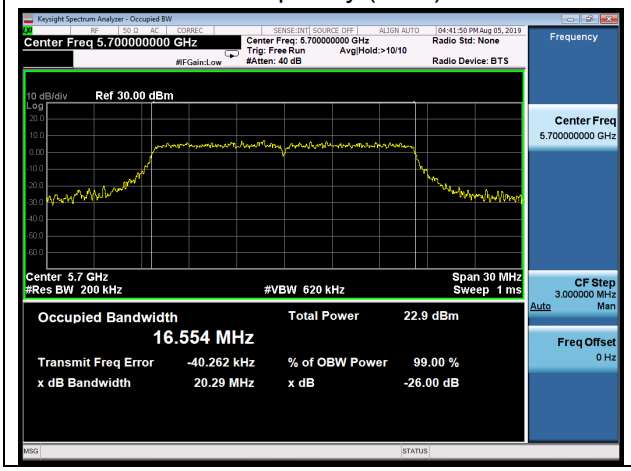


U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5580

U-NII-2C, 802.11a

Carrier frequency (MHz):5700

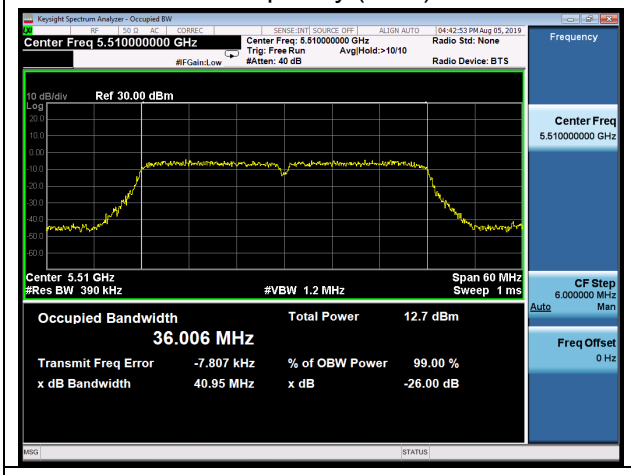


U-NII-2C, 802.11n HT20

Carrier frequency (MHz):5700

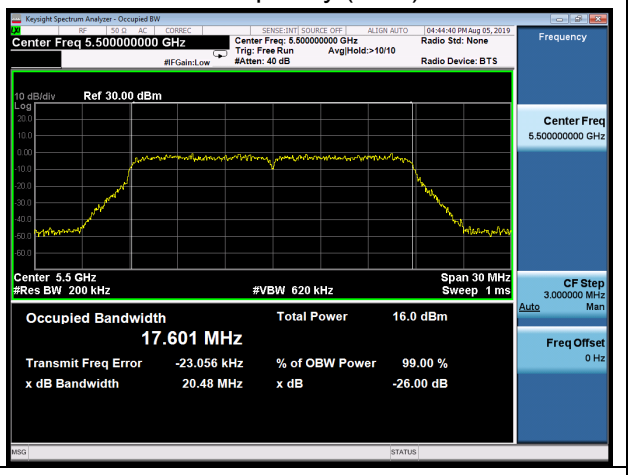
U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5510



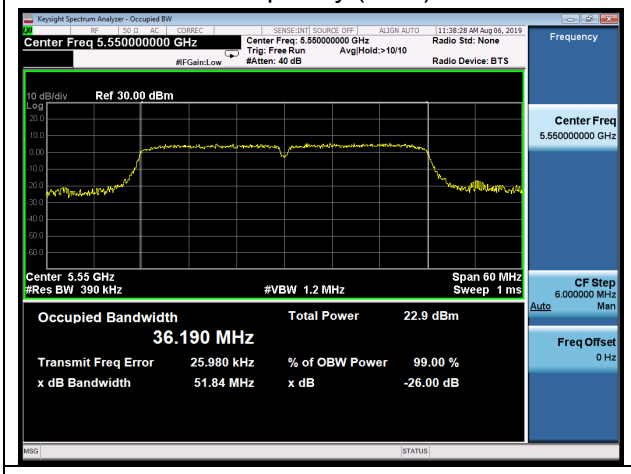
U-NII-2C, 802.11ac VHT20

Carrier frequency (MHz): 5500



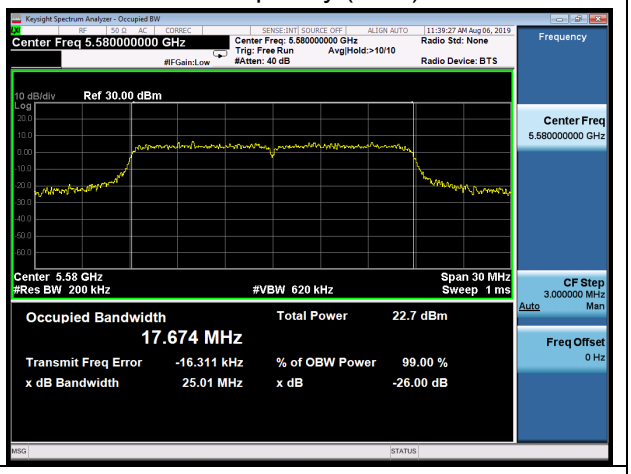
U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5550



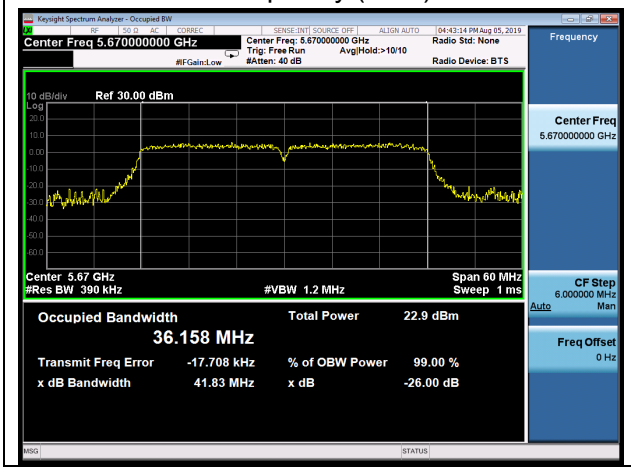
U-NII-2C, 802.11ac VHT20

Carrier frequency (MHz): 5580



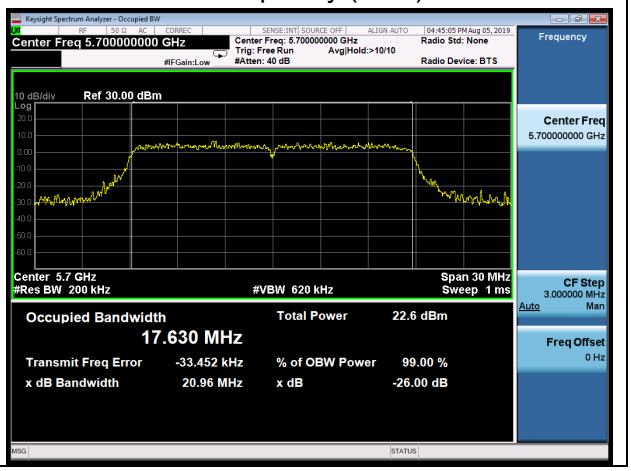
U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5670



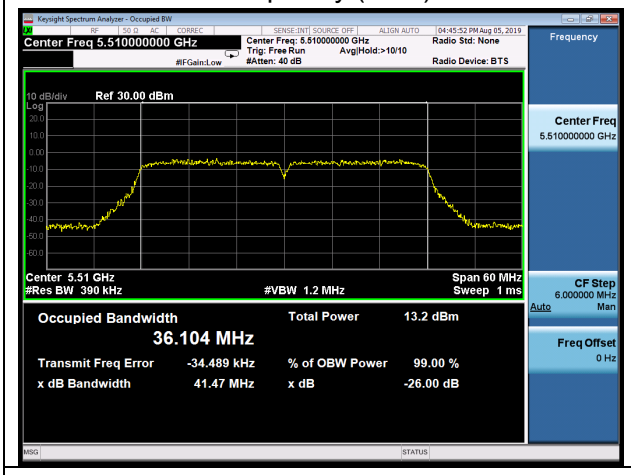
U-NII-2C, 802.11ac VHT20

Carrier frequency (MHz):5700



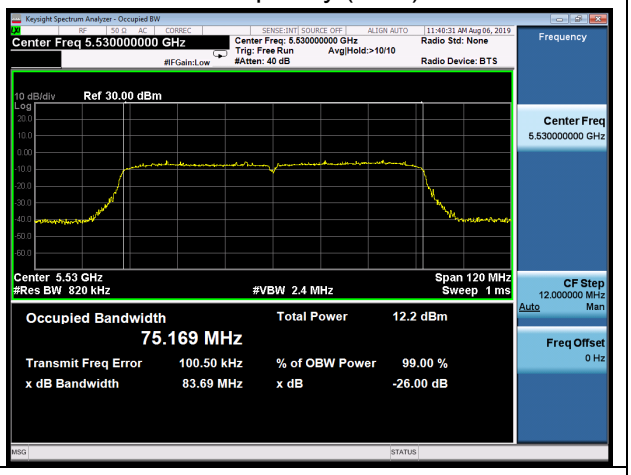
U-NII-2C, 802.11ac VHT40

Carrier frequency (MHz): 5510



U-NII-2C, 802.11ac VHT80

Carrier frequency (MHz): 5530

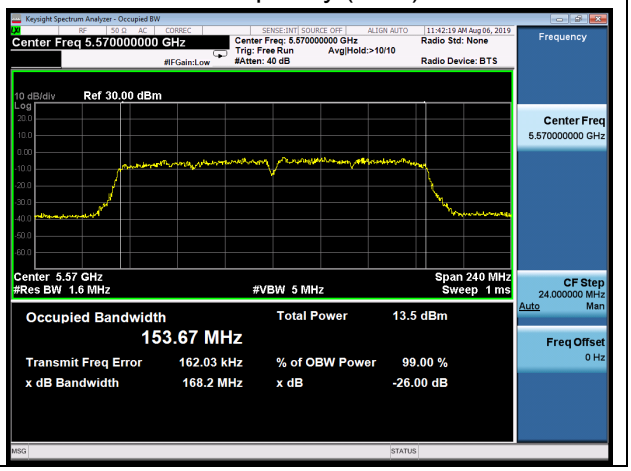


U-NII-2C, 802.11ac VHT40

Carrier frequency (MHz): 5550

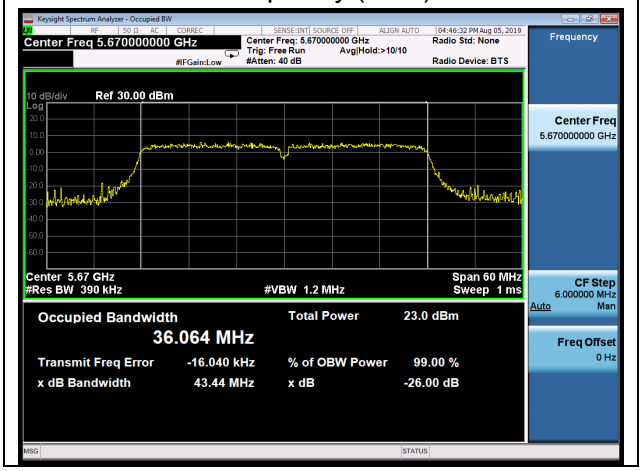
U-NII-2C, 802.11ac VHT160

Carrier frequency (MHz): 5570



U-NII-2C, 802.11ac VHT40

Carrier frequency (MHz): 5670



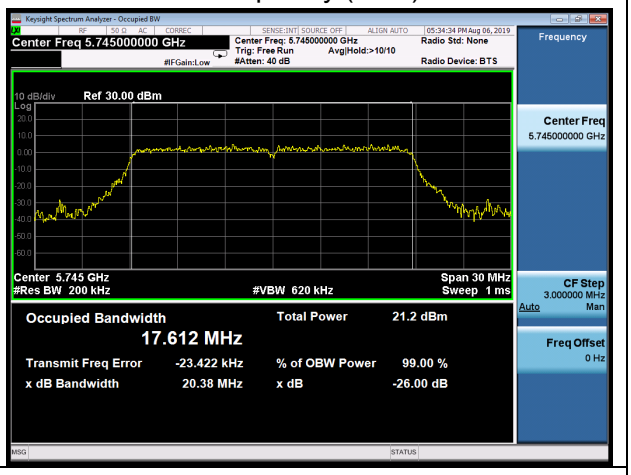
99% bandwidth

U-NII-3, 802.11a

Carrier frequency (MHz): 5745

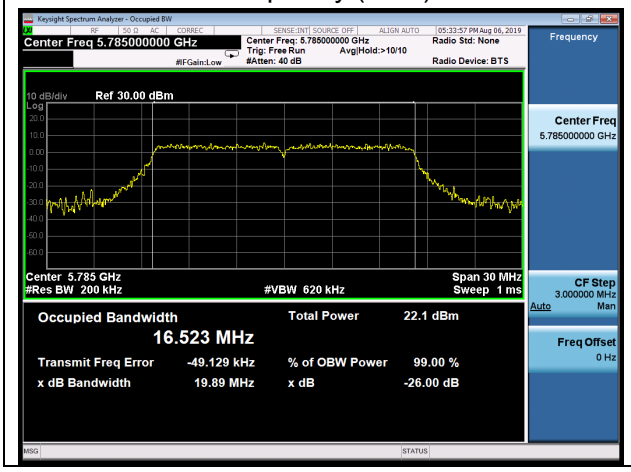
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745



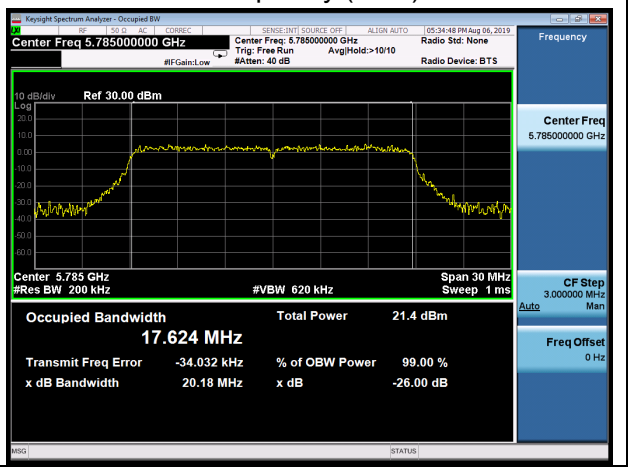
U-NII-3, 802.11a

Carrier frequency (MHz): 5785



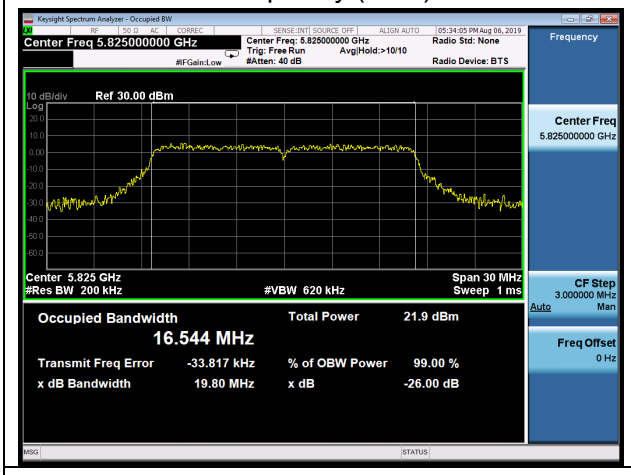
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785



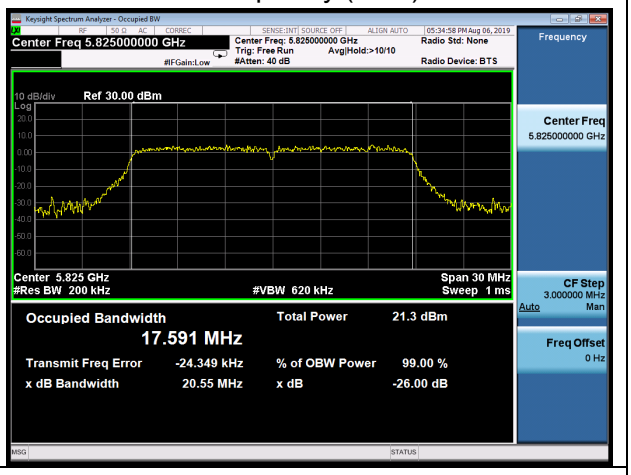
U-NII-3, 802.11a

Carrier frequency (MHz): 5825



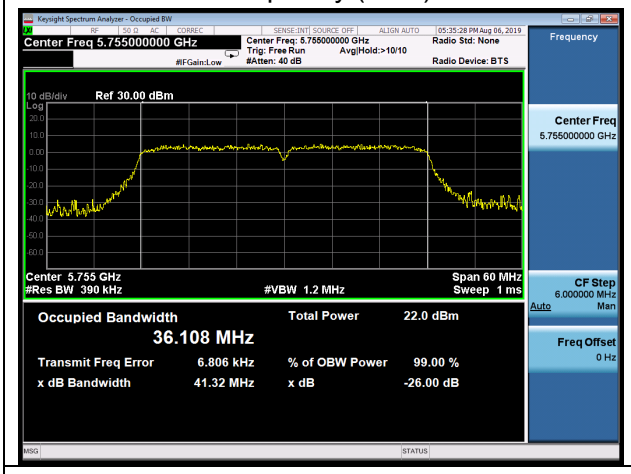
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825



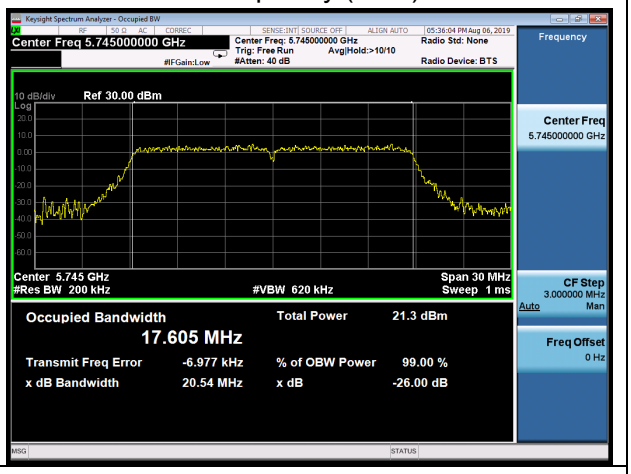
U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755



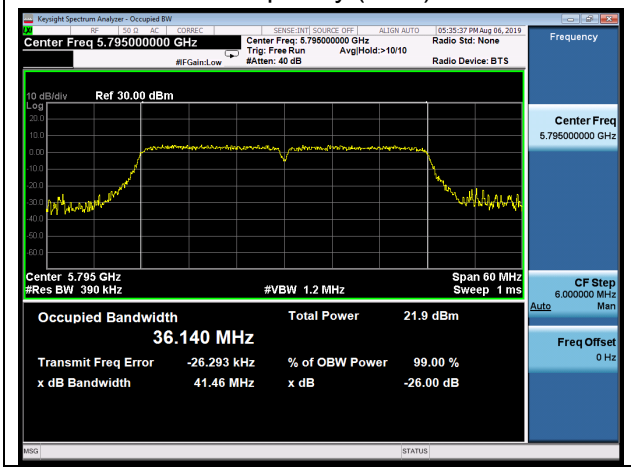
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795

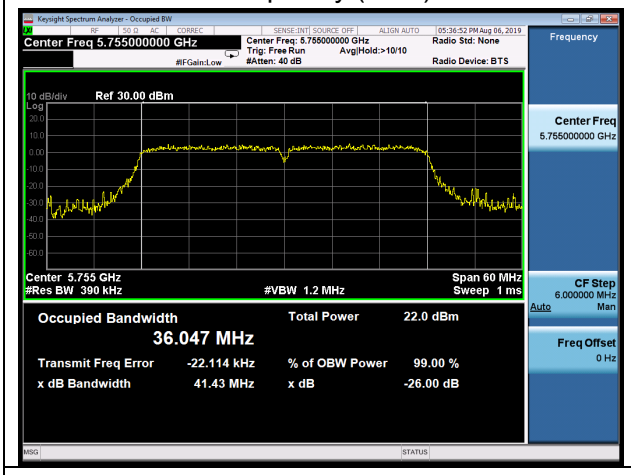


U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5785

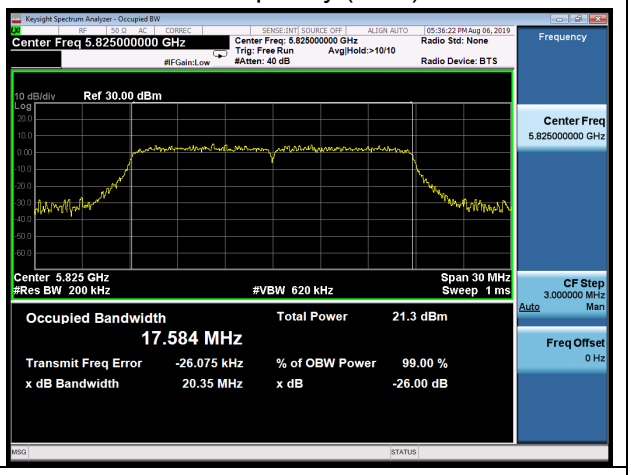
U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5755



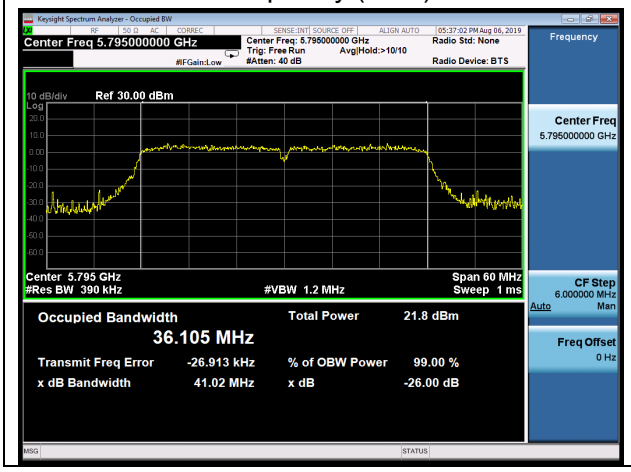
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5825



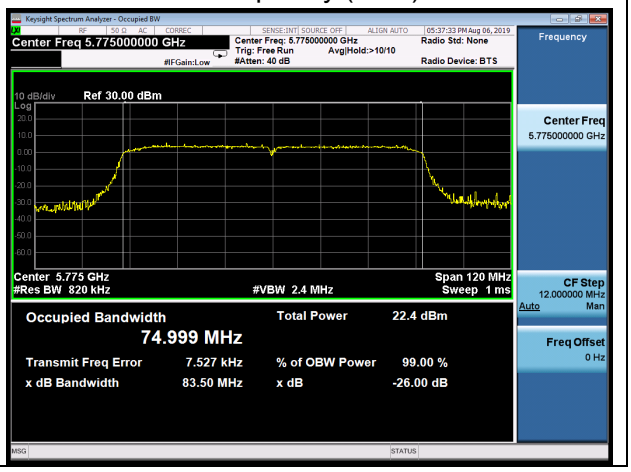
U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5795



U-NII-3, 802.11ac VHT80

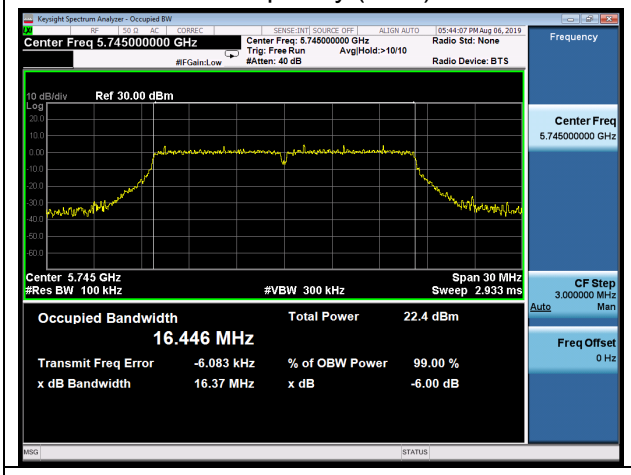
Carrier frequency (MHz): 5775



Minimum 6 dB bandwidth

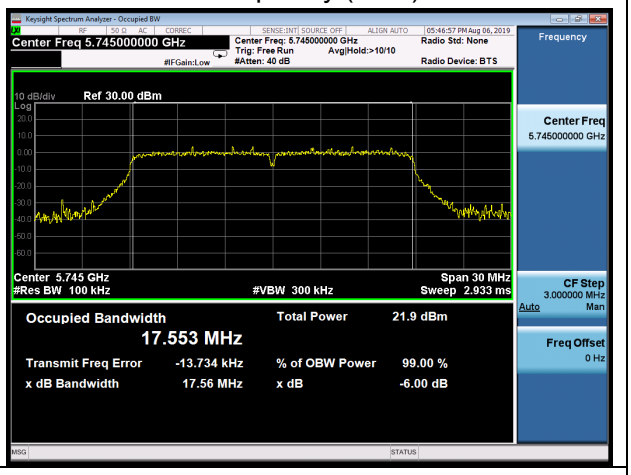
U-NII-3, 802.11a

Carrier frequency (MHz): 5745



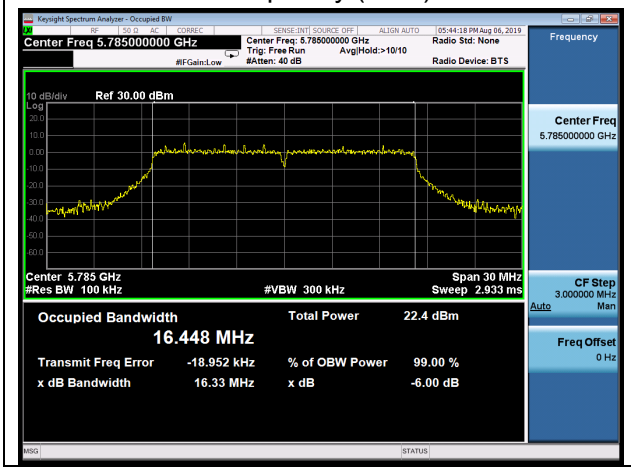
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745



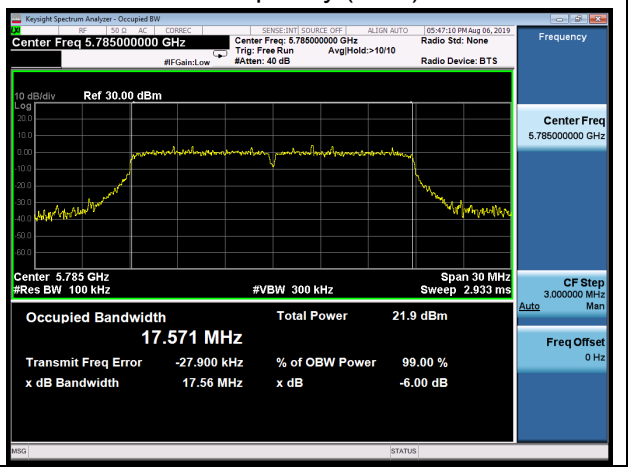
U-NII-3, 802.11a

Carrier frequency (MHz): 5785



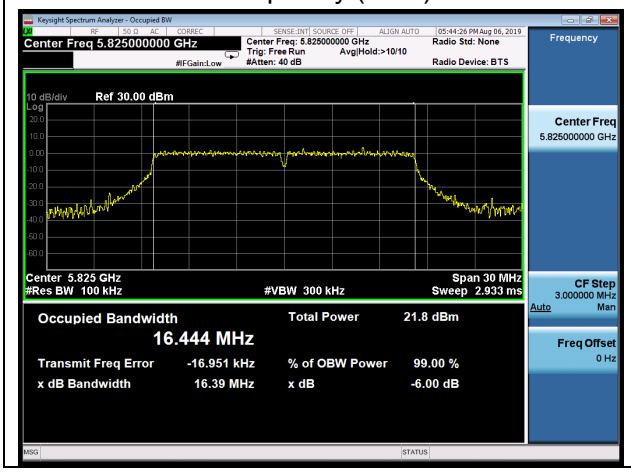
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785



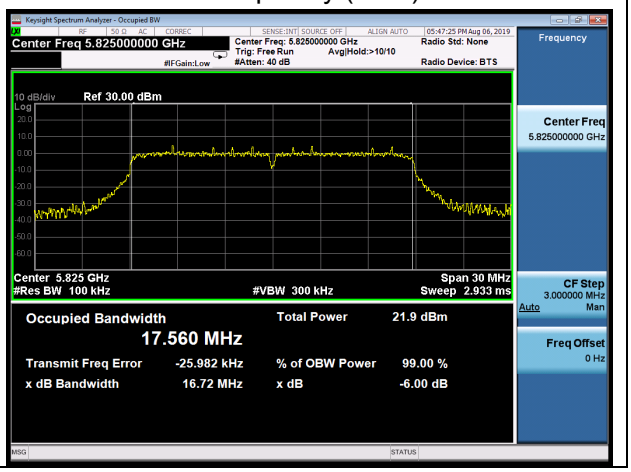
U-NII-3, 802.11a

Carrier frequency (MHz): 5825



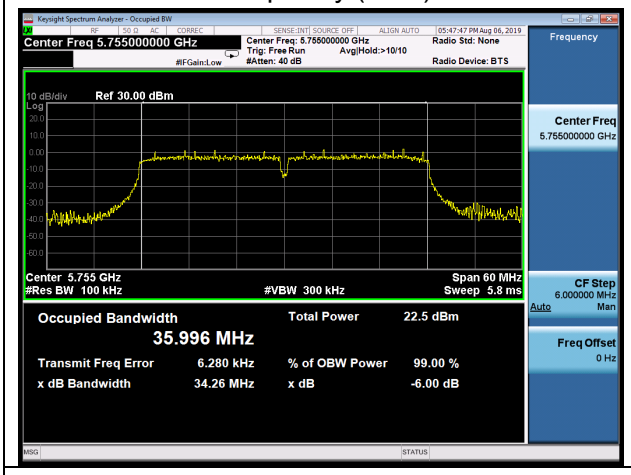
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825



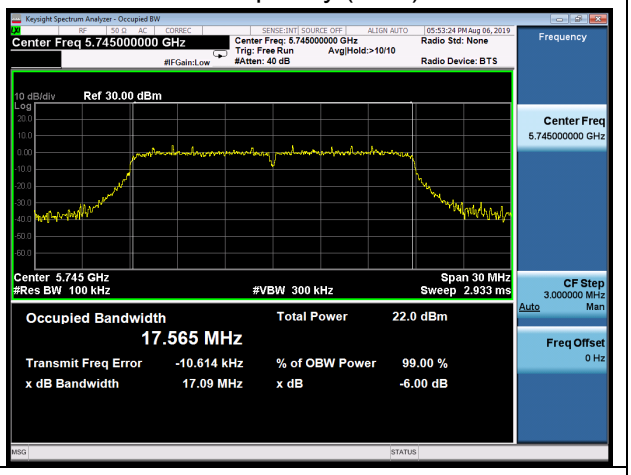
U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755



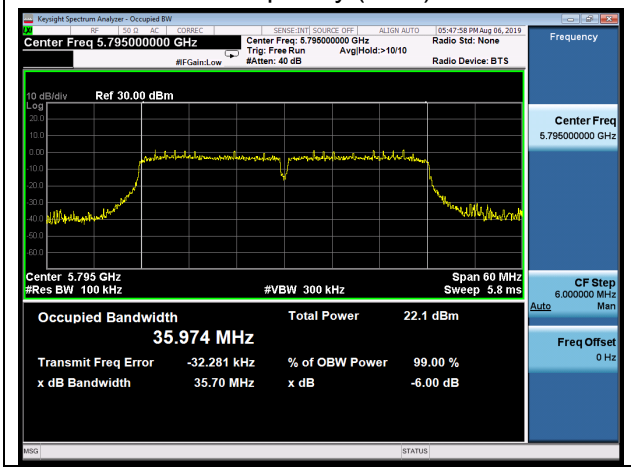
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745



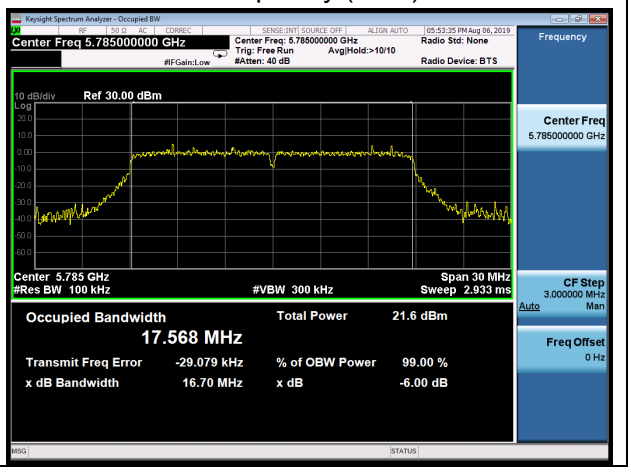
U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795



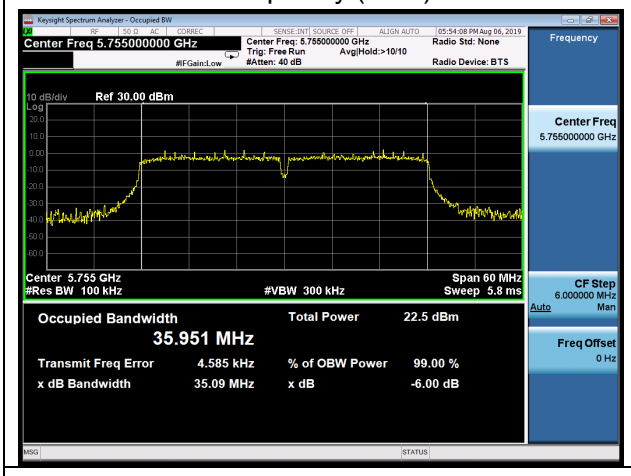
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5785



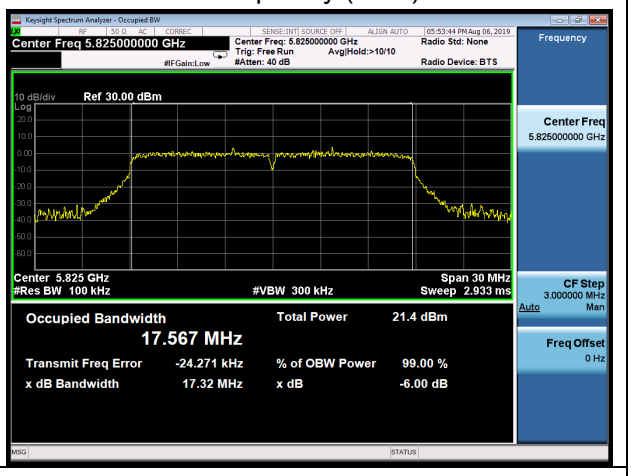
U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5755



U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5825

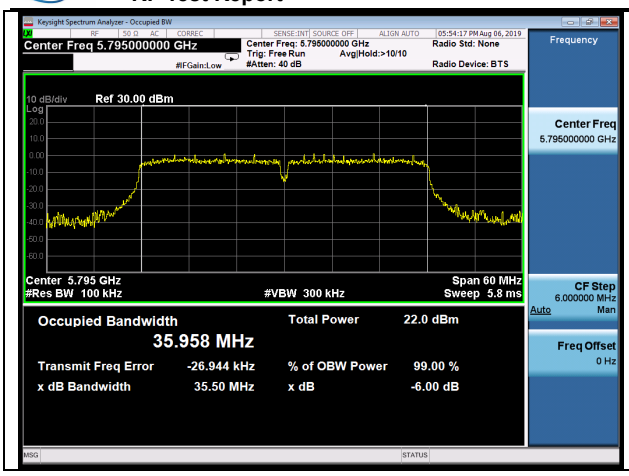


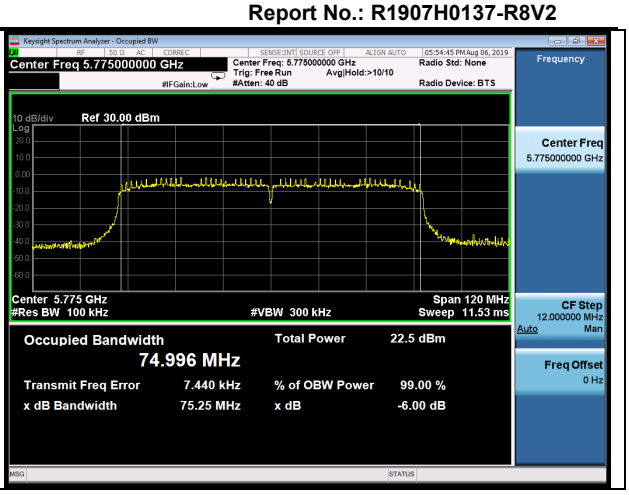
U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5795

U-NII-3, 802.11ac VHT80

Carrier frequency (MHz): 5775





5.2. Average Power Output –Conducted

Ambient condition

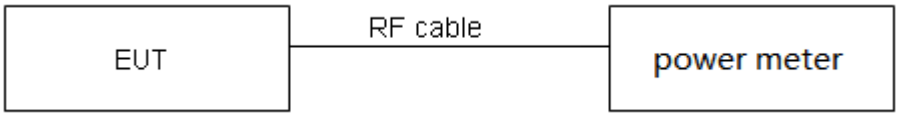
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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	2.73	2.74	0.99	N/A
802.11n HT20	2.54	2.56	0.99	N/A
802.11n HT40	1.24	1.27	0.98	N/A
802.11ac VHT20	2.55	2.58	0.99	N/A
802.11ac VHT40	1.25	1.28	0.98	N/A
802.11ac VHT80	0.60	0.62	0.96	0.17
802.11ac VHT160	0.32	0.34	0.93	0.31
Note: when Duty cycle>0.98, Duty cycle correction Factor not required.				

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	20.27	24.07 >24	24
		60/5300	20.05	24.02 >24	24
		64/5320	20.09	24.03 >24	24
	802.11n HT20	52/5260	20.34	24.08 >24	24
		60/5300	20.71	24.16 >24	24
		64/5320	20.60	24.14 >24	24
	802.11n HT40	54/5270	40.77	27.10 >24	24
		62/5310	41.56	27.19 >24	24
	802.11ac VHT20	52/5260	20.32	24.08 >24	24
		60/5300	20.29	24.07 >24	24
		64/5320	20.63	24.14 >24	24
	802.11ac VHT40	54/5270	41.33	27.16 >24	24
		62/5310	41.40	27.17 >24	24
	802.11ac VHT80	58/5290	84.30	30.26 >24	24
U-NII-2C	802.11a	100/5500	20.19	24.05 >24	24
		116/5580	26.86	25.29 >24	24
		140/5700	20.29	24.07 >24	24
	802.11n HT20	100/5500	20.38	24.09 >24	24
		116/5580	24.24	24.85 >24	24
		140/5700	20.25	24.06 >24	24
	802.11n HT40	102/5510	40.95	27.12 >24	24
		110/5550	51.84	28.15 >24	24
		134/5670	41.83	27.21 >24	24

	802.11ac VHT20	100/5500	20.48	24.11 >24	24
		116/5580	25.01	24.98 >24	24
		140/5700	20.96	24.21 >24	24
	802.11ac VHT40	102/5510	41.47	27.18 >24	24
		110/5550	52.99	28.24 >24	24
		134/5670	43.44	27.38 >24	24
	802.11ac VHT80	106/5530	83.69	30.23 >24	24
	802.11ac VHT160	114/5570	168.20	33.26>24	24
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	9.11	9.11	24	PASS
	40/5200	13.03	13.03	24	PASS
	48/5240	12.83	12.83	24	PASS
802.11n HT20	36/5180	8.88	8.88	24	PASS
	40/5200	12.94	12.94	24	PASS
	48/5240	13.25	13.25	24	PASS
802.11n HT40	38/5190	6.06	6.06	24	PASS
	46/5230	13.13	13.13	24	PASS
802.11ac VHT20	36/5180	8.85	8.85	24	PASS
	40/5200	12.95	12.95	24	PASS
	48/5240	13.26	13.26	24	PASS
802.11ac VHT40	38/5190	6.22	6.22	24	PASS
	46/5230	13.14	13.14	24	PASS
802.11ac VHT80	42/5210	2.91	3.08	24	PASS
802.11ac VHT160	50/5250	3.44	3.75	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	12.64	12.64	24.00	PASS
	60/5300	12.88	12.88	24.00	PASS
	64/5320	8.86	8.86	24.00	PASS
802.11n HT20	52/5260	13.42	13.42	24.00	PASS
	60/5300	13.18	13.18	24.00	PASS
	64/5320	9.32	9.32	24.00	PASS
802.11n HT40	54/5270	12.85	12.85	24.00	PASS
	62/5310	5.67	5.67	24.00	PASS
802.11ac VHT20	52/5260	13.21	13.21	24.00	PASS
	60/5300	13.19	13.19	24.00	PASS
	64/5320	9.01	9.01	24.00	PASS
802.11ac VHT40	54/5270	12.84	12.84	24.00	PASS
	62/5310	5.61	5.61	24.00	PASS
802.11ac VHT80	58/5290	3.71	3.88	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	10.03	10.03	24.00	PASS
	116/5580	14.52	14.52	24.00	PASS
	140/5700	13.46	13.46	24.00	PASS
802.11n HT20	100/5500	10.34	10.34	24.00	PASS
	116/5580	14.63	14.63	24.00	PASS
	140/5700	13.58	13.58	24.00	PASS
802.11n HT40	102/5510	6.44	6.44	24.00	PASS
	110/5550	14.37	14.37	24.00	PASS
	134/5670	13.42	13.42	24.00	PASS
802.11ac VHT20	100/5500	10.35	10.35	24.00	PASS
	116/5580	14.47	14.47	24.00	PASS
	140/5700	13.59	13.59	24.00	PASS
802.11ac VHT40	102/5510	6.51	6.51	24.00	PASS
	110/5550	14.41	14.41	24.00	PASS
	134/5670	13.58	13.58	24.00	PASS
802.11ac VHT80	106/5530	5.61	5.78	24.00	PASS
802.11ac VHT160	114/5570	4.18	4.49	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	12.99	12.99	30	PASS
	157/5785	13.25	13.25	30	PASS
	165/5825	13.15	13.15	30	PASS
802.11n HT20	149/5745	12.93	12.93	30	PASS
	157/5785	12.62	12.62	30	PASS
	165/5825	12.68	12.68	30	PASS
802.11n HT40	151/5755	13.11	13.11	30	PASS
	159/5795	13.32	13.32	30	PASS
802.11ac VHT20	149/5745	12.69	12.69	30	PASS
	157/5785	12.54	12.54	30	PASS
	165/5825	12.67	12.67	30	PASS
802.11ac VHT40	151/5755	13.13	13.13	30	PASS
	159/5795	13.35	13.35	30	PASS
802.11ac VHT80	155/5775	12.89	13.06	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	9.46	9.46	24	PASS
	40/5200	13.33	13.33	24	PASS
	48/5240	12.89	12.89	24	PASS
802.11n HT20	36/5180	8.89	8.89	24	PASS
	40/5200	13.02	13.02	24	PASS
	48/5240	13.33	13.33	24	PASS
802.11n HT40	38/5190	5.88	5.88	24	PASS
	46/5230	12.97	12.97	24	PASS
802.11ac VHT20	36/5180	8.83	8.83	24	PASS
	40/5200	12.98	12.98	24	PASS
	48/5240	13.35	13.35	24	PASS
802.11ac VHT40	38/5190	5.72	5.72	24	PASS
	46/5230	12.98	12.98	24	PASS
802.11ac VHT80	42/5210	3.81	3.98	24	PASS
802.11ac VHT160	50/5250	3.39	3.70	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	12.79	12.79	24.00	PASS
	60/5300	12.59	12.59	24.00	PASS
	64/5320	8.54	8.54	24.00	PASS
802.11n HT20	52/5260	13.31	13.31	24.00	PASS
	60/5300	13.06	13.06	24.00	PASS
	64/5320	8.95	8.95	24.00	PASS
802.11n HT40	54/5270	12.53	12.53	24.00	PASS
	62/5310	4.71	4.71	24.00	PASS
802.11ac VHT20	52/5260	13.26	13.26	24.00	PASS
	60/5300	13.12	13.12	24.00	PASS
	64/5320	9.03	9.03	24.00	PASS
802.11ac VHT40	54/5270	12.52	12.52	24.00	PASS
	62/5310	4.75	4.75	24.00	PASS
802.11ac VHT80	58/5290	3.55	3.72	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	9.86	9.86	24.00	PASS
	116/5580	14.42	14.42	24.00	PASS
	140/5700	13.95	13.95	24.00	PASS
802.11n HT20	100/5500	10.33	10.33	24.00	PASS
	116/5580	14.48	14.48	24.00	PASS
	140/5700	14.01	14.01	24.00	PASS
802.11n HT40	102/5510	6.08	6.08	24.00	PASS
	110/5550	13.95	13.95	24.00	PASS
	134/5670	14.12	14.12	24.00	PASS
802.11ac VHT20	100/5500	10.44	10.44	24.00	PASS
	116/5580	14.56	14.56	24.00	PASS
	140/5700	14.02	14.02	24.00	PASS
802.11ac VHT40	102/5510	6.03	6.03	24.00	PASS
	110/5550	13.98	13.98	24.00	PASS
	134/5670	14.23	14.23	24.00	PASS
802.11ac VHT80	106/5530	4.56	4.73	24.00	PASS
802.11ac VHT160	114/5570	4.54	4.85	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	13.38	13.38	30	PASS
	157/5785	13.49	13.49	30	PASS
	165/5825	13.96	13.96	30	PASS
802.11n HT20	149/5745	13.85	13.85	30	PASS
	157/5785	13.69	13.69	30	PASS
	165/5825	13.41	13.41	30	PASS
802.11n HT40	151/5755	13.37	13.37	30	PASS
	159/5795	13.62	13.62	30	PASS
802.11ac VHT20	149/5745	13.51	13.51	30	PASS
	157/5785	13.49	13.49	30	PASS
	165/5825	13.52	13.52	30	PASS
802.11ac VHT40	151/5755	13.43	13.43	30	PASS
	159/5795	13.65	13.65	30	PASS
802.11ac VHT80	155/5775	13.36	13.53	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

MIMO

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	9.24	9.24	9.42	9.42	12.34	24.00	PASS
	40/5200	13.13	13.13	13.36	13.36	16.26	24.00	PASS
	48/5240	12.89	12.89	13.02	13.02	15.97	24.00	PASS
802.11n HT20	36/5180	8.86	8.86	8.91	8.91	11.90	24.00	PASS
	40/5200	12.93	12.93	13.12	13.12	16.04	24.00	PASS
	48/5240	13.22	13.22	13.45	13.45	16.35	24.00	PASS
802.11n HT40	38/5190	6.12	6.12	6.03	6.03	9.09	24.00	PASS
	46/5230	13.28	13.28	13.08	13.08	16.19	24.00	PASS
802.11ac VHT20	36/5180	8.89	8.89	8.96	8.96	11.94	24.00	PASS
	40/5200	12.98	12.98	13.03	13.03	16.02	24.00	PASS
	48/5240	13.27	13.27	13.45	13.45	16.37	24.00	PASS
802.11ac VHT40	38/5190	5.92	5.92	5.91	5.91	8.93	24.00	PASS
	46/5230	13.42	13.42	13.11	13.11	16.28	24.00	PASS
802.11ac VHT80	42/5210	4.28	4.45	3.87	4.04	7.26	24.00	PASS
802.11ac VHT160	50/5250	3.55	3.86	3.78	4.09	4.09	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 $N_{ANT} \leq 4$;

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 $N_{ANT} \geq 5$.

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 G_{ANT} set equal to the gain of the antenna having the highest gain.

So directional gain = G_{ANT} + Array Gain =-0.67 (CH40) <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	12.74	12.74	13.02	13.02	15.89	24.00	PASS
	60/5300	12.79	12.79	12.47	12.47	15.64	24.00	PASS
	64/5320	8.72	8.72	8.65	8.65	11.70	24.00	PASS
802.11n HT20	52/5260	12.95	12.95	13.35	13.35	16.16	24.00	PASS
	60/5300	13.11	13.11	13.25	13.25	16.19	24.00	PASS
	64/5320	9.11	9.11	9.22	9.22	12.18	24.00	PASS
802.11n HT40	54/5270	12.86	12.86	12.65	12.65	15.77	24.00	PASS
	62/5310	5.54	5.54	5.26	5.26	8.41	24.00	PASS
802.11ac VHT20	52/5260	13.21	13.21	13.35	13.35	16.29	24.00	PASS
	60/5300	13.15	13.15	13.28	13.28	16.23	24.00	PASS
	64/5320	9.17	9.17	9.21	9.21	12.20	24.00	PASS
802.11ac VHT40	54/5270	12.92	12.92	12.57	12.57	15.76	24.00	PASS
	62/5310	5.52	5.52	4.72	4.72	8.15	24.00	PASS
802.11ac VHT80	58/5290	3.75	3.92	3.52	3.69	6.82	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 $N_{ANT} \leq 4$;
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 $N_{ANT} \geq 5$.

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 G_{ANT} set equal to the gain of the antenna having the highest gain.
So directional gain = G_{ANT} + Array Gain =-2.06(CH52) <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	9.85	9.85	9.97	9.97	12.92	24.00	PASS
	116/5580	14.62	14.62	14.43	14.43	17.54	24.00	PASS
	140/5700	13.18	13.18	13.84	13.84	16.53	24.00	PASS
802.11n HT20	100/5500	10.43	10.43	10.56	10.56	13.51	24.00	PASS
	116/5580	14.27	14.27	14.52	14.52	17.41	24.00	PASS
	140/5700	13.85	13.85	14.18	14.18	17.03	24.00	PASS
802.11n HT40	102/5510	6.42	6.42	6.39	6.39	9.42	24.00	PASS
	110/5550	14.32	14.32	13.87	13.87	17.11	24.00	PASS
	134/5670	13.32	13.32	14.08	14.08	16.73	24.00	PASS
802.11ac VHT20	100/5500	10.44	10.44	10.52	10.52	13.49	24.00	PASS
	116/5580	14.61	14.61	14.75	14.75	17.69	24.00	PASS
	140/5700	13.81	13.81	14.17	14.17	17.00	24.00	PASS
802.11ac VHT40	102/5510	6.45	6.45	6.34	6.34	9.41	24.00	PASS
	110/5550	14.48	14.48	13.87	13.87	17.20	24.00	PASS
	134/5670	13.35	13.35	14.11	14.11	16.76	24.00	PASS
802.11ac VHT80	106/5530	4.85	5.02	4.31	4.48	7.77	24.00	PASS
802.11ac VHT160	114/5570	5.56	5.87	5.86	6.17	9.04	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 $N_{ANT} \le 4$;
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 $N_{ANT} \ge 5$.

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 G_{ANT} set equal to the gain of the antenna having the highest gain.
So directional gain = G_{ANT} + Array Gain =0.31(CH120) <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	52/5260	12.93	12.93	13.48	13.48	16.22	30.00	PASS
	60/5300	13.24	13.24	13.67	13.67	16.47	30.00	PASS
	64/5320	13.28	13.28	13.86	13.86	16.59	30.00	PASS
802.11n HT20	52/5260	12.65	12.65	13.57	13.57	16.14	30.00	PASS
	60/5300	12.51	12.51	13.54	13.54	16.07	30.00	PASS
	64/5320	12.69	12.69	13.54	13.54	16.15	30.00	PASS
802.11n HT40	54/5270	13.03	13.03	13.35	13.35	16.20	30.00	PASS
	62/5310	13.19	13.19	13.75	13.75	16.49	30.00	PASS
802.11ac VHT20	52/5260	12.72	12.72	13.71	13.71	16.25	30.00	PASS
	60/5300	12.56	12.56	13.51	13.51	16.07	30.00	PASS
	64/5320	12.72	12.72	13.55	13.55	16.17	30.00	PASS
802.11ac VHT40	54/5270	13.07	13.07	13.26	13.26	16.18	30.00	PASS
	62/5310	13.25	13.25	13.73	13.73	16.51	30.00	PASS
802.11ac VHT80	58/5290	12.75	12.92	13.51	13.68	16.33	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 $N_{ANT} \leq 4$;
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 $N_{ANT} \geq 5$.

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 G_{ANT} set equal to the gain of the antenna having the highest gain.
So directional gain = G_{ANT} + Array Gain =-0.87(CH149) /-1.61(CH157) <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
3.8	0	5200.000405	5199.995361	5199.986257	5199.985550
3.8	5	5199.991164	5199.988387	5199.980620	5199.982079
3.8	10	5199.990693	5199.980425	5199.977175	5199.980238
3.8	15	5199.990563	5199.971904	5199.970151	5199.974402
3.8	20	5199.982323	5199.968602	5199.963284	5199.973699
3.8	25	5199.972330	5199.959231	5199.953501	5199.969026
3.8	30	5199.971398	5199.952929	5199.943559	5199.968006
3.8	35	5199.962460	5199.943373	5199.938910	5199.965997
3.6	20	5199.961065	5199.942036	5199.935101	5199.962759
4.35	20	5199.960916	5199.941237	5199.927452	5199.961149
MHz		-0.039084	-0.058763	-0.072548	-0.038851
PPM		-7.516237	-11.300549	-13.951571	-7.471301

Voltage (V)	Temperature (°C)	U-NII-2A Test Results			
		5300MHz			
		1min	2min	5min	10min
3.8	0	5300.005910	5300.002667	5300.002301	5299.993018
3.8	5	5300.000096	5299.999758	5299.997482	5299.992590
3.8	10	5299.996601	5299.996091	5299.993693	5299.984370
3.8	15	5299.993396	5299.994531	5299.984822	5299.976547
3.8	20	5299.984000	5299.993584	5299.984108	5299.967841
3.8	25	5299.979216	5299.986189	5299.983659	5299.963496
3.8	30	5299.972722	5299.980550	5299.978392	5299.954784
3.8	35	5299.964226	5299.975756	5299.970896	5299.948550
3.6	20	5299.959636	5299.967030	5299.967366	5299.947212
4.35	20	5299.951930	5299.963694	5299.964128	5299.939161
MHz		-0.048070	-0.036306	-0.035872	-0.060839
PPM		-9.069801	-6.850147	-6.768335	-11.479037

Voltage (V)	Temperature (°C)	U-NII-2C Test Results			
		5580MHz			
		1min	2min	5min	10min
3.8	0	5579.999405	5579.989488	5579.986870	5579.979254
3.8	5	5579.993644	5579.981739	5579.981311	5579.978772
3.8	10	5579.993548	5579.972355	5579.980727	5579.970895
3.8	15	5579.985118	5579.972172	5579.979421	5579.961736
3.8	20	5579.981855	5579.967121	5579.975619	5579.954550
3.8	25	5579.979310	5579.963536	5579.975340	5579.948124
3.8	30	5579.978573	5579.958687	5579.975121	5579.945274
3.8	35	5579.970923	5579.956684	5579.970730	5579.940952
3.6	20	5579.965688	5579.948883	5579.968468	5579.937841
4.35	20	5579.956797	5579.948494	5579.961352	5579.935072
MHz		-0.043203	-0.051506	-0.038648	-0.064928
PPM		-7.742406	-9.230532	-6.926197	-11.635900

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
3.8	0	5785.001702	5784.997839	5784.988678	5784.979385
3.8	5	5784.999488	5784.995745	5784.978817	5784.979235
3.8	10	5784.994442	5784.989046	5784.976177	5784.973977
3.8	15	5784.987698	5784.982293	5784.975323	5784.971544
3.8	20	5784.977787	5784.978513	5784.967727	5784.963352
3.8	25	5784.975297	5784.970578	5784.966262	5784.955935
3.8	30	5784.969271	5784.967818	5784.961031	5784.954731
3.8	35	5784.966761	5784.960812	5784.960970	5784.951640
3.6	20	5784.957958	5784.953740	5784.953330	5784.950858
4.35	20	5784.951126	5784.947890	5784.947874	5784.944747
MHz		-0.048874	-0.052110	-0.052126	-0.055253
PPM		-8.448388	-9.007743	-9.010629	-9.551119

5.4. Power Spectral Density

Ambient condition

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

Method of Measurement

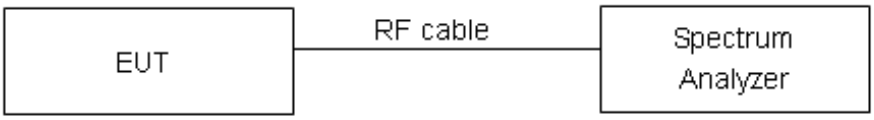
The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

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	17/11dBm/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:

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

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	-3.01	-3.01	11	PASS
	40	0.81	0.81	11	PASS
	48	1.17	1.17	11	PASS
802.11n HT20	36	-3.23	-3.23	11	PASS
	40	0.56	0.56	11	PASS
	48	1.36	1.36	11	PASS
802.11n HT40	38	-9.04	-9.04	11	PASS
	46	-1.57	-1.57	11	PASS
802.11ac VHT20	36	-3.12	-3.12	11	PASS
	40	0.78	0.78	11	PASS
	48	1.06	1.06	11	PASS
802.11ac VHT40	38	-9.05	-9.05	11	PASS
	46	-1.66	-1.66	11	PASS
802.11ac VHT80	42	-15.25	-15.08	11	PASS
802.11ac VHT160	50	-16.42	-16.10	11	PASS

U-NII-2A

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52	0.88	0.88	11	PASS
	60	1.78	1.78	11	PASS
	64	-1.54	-1.54	11	PASS
802.11n HT20	52	1.23	1.23	11	PASS
	60	1.49	1.49	11	PASS
	64	-2.07	-2.07	11	PASS
802.11n HT40	54	-1.34	-1.34	11	PASS
	62	-7.93	-7.93	11	PASS
802.11ac VHT20	52	0.88	0.88	11	PASS
	60	1.54	1.54	11	PASS
	64	-1.96	-1.96	11	PASS
802.11ac VHT40	54	0.94	0.94	11	PASS
	62	-8.21	-8.21	11	PASS
802.11ac VHT80	58	-13.10	-12.93	11	PASS

U-NII-2C

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	100	-0.91	-0.91	11	PASS
	116	3.80	3.80	11	PASS
	140	2.48	2.48	11	PASS
802.11n HT20	100	-1.05	-1.05	11	PASS
	116	3.67	3.67	11	PASS
	140	2.35	2.35	11	PASS
802.11n HT40	102	-7.74	-7.74	11	PASS
	110	0.71	0.71	11	PASS
	134	-0.48	-0.48	11	PASS
802.11ac VHT20	100	-1.49	-1.49	11	PASS
	116	3.51	3.51	11	PASS
	140	2.16	2.16	11	PASS
802.11ac VHT40	102	-7.47	-7.47	11	PASS
	110	0.34	0.34	11	PASS
	134	0.65	0.65	11	PASS
802.11ac VHT80	106	-11.09	-10.92	11	PASS
802.11ac VHT160	114	-14.19	-13.88	11	PASS

U-NII-3

Network Standards	Channel Number	Read Value (dBm/500kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	-0.37	-0.37	30	PASS
	157	-1.31	-1.31	30	PASS
	165	-1.15	-1.15	30	PASS
802.11n HT20	149	-0.88	-0.88	30	PASS
	157	-1.36	-1.36	30	PASS
	165	-1.65	-1.65	30	PASS
802.11n HT40	151	-4.09	-4.09	30	PASS
	159	-4.26	-4.26	30	PASS
802.11ac VHT20	149	-1.04	-1.04	30	PASS
	157	-1.44	-1.44	30	PASS
	165	-1.74	-1.74	30	PASS
802.11ac VHT40	151	-3.60	-3.60	30	PASS
	159	-3.92	-3.92	30	PASS
802.11ac VHT80	155	-7.34	-7.17	30	PASS

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	-2.56	-2.56	11	PASS
	40	1.18	1.18	11	PASS
	48	1.06	1.06	11	PASS
802.11n HT20	36	-2.69	-2.69	11	PASS
	40	0.85	0.85	11	PASS
	48	1.01	1.01	11	PASS
802.11n HT40	38	-8.90	-8.90	11	PASS
	46	-1.66	-1.66	11	PASS
802.11ac VHT20	36	-2.62	-2.62	11	PASS
	40	0.66	0.66	11	PASS
	48	0.91	0.91	11	PASS
802.11ac VHT40	38	-9.04	-9.04	11	PASS
	46	-1.93	-1.93	11	PASS
802.11ac VHT80	42	-14.33	-14.15	11	PASS
802.11ac VHT160	50	-16.61	-16.30	11	PASS

U-NII-2A

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52	1.19	1.19	11	PASS
	60	1.94	1.94	11	PASS
	64	-1.74	-1.74	11	PASS
802.11n HT20	52	1.04	1.04	11	PASS
	60	1.65	1.65	11	PASS
	64	-2.27	-2.27	11	PASS
802.11n HT40	54	-1.63	-1.63	11	PASS
	62	-8.28	-8.28	11	PASS
802.11ac VHT20	52	1.15	1.15	11	PASS
	60	1.34	1.34	11	PASS
	64	-2.47	-2.47	11	PASS
802.11ac VHT40	54	-1.33	-1.33	11	PASS
	62	-8.81	-8.81	11	PASS
802.11ac VHT80	58	-13.27	-13.10	11	PASS

U-NII-2C

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	100	-1.45	-1.45	11	PASS
	116	3.81	3.81	11	PASS
	140	2.58	2.58	11	PASS
802.11n HT20	100	-1.61	-1.61	11	PASS
	116	3.59	3.59	11	PASS
	140	2.77	2.77	11	PASS
802.11n HT40	102	-8.31	-8.31	11	PASS
	110	0.53	0.53	11	PASS
	134	-0.43	-0.43	11	PASS
802.11ac VHT20	100	-1.84	-1.84	11	PASS
	116	3.53	3.53	11	PASS
	140	2.48	2.48	11	PASS
802.11ac VHT40	102	-8.00	-8.00	11	PASS
	110	0.17	0.17	11	PASS
	134	-0.38	-0.38	11	PASS
802.11ac VHT80	106	-12.23	-12.06	11	PASS
802.11ac VHT160	114	-14.49	-14.18	11	PASS

U-NII-3

Network Standards	Channel Number	Read Value (dBm/500kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	-0.52	-0.52	30	PASS
	157	0.01	0.01	30	PASS
	165	-0.20	-0.20	30	PASS
802.11n HT20	149	-0.47	-0.47	30	PASS
	157	-0.24	-0.24	30	PASS
	165	-0.68	-0.68	30	PASS
802.11n HT40	151	-3.54	-3.54	30	PASS
	159	-3.24	-3.24	30	PASS
802.11ac VHT20	149	-0.45	-0.45	30	PASS
	157	-0.44	-0.44	30	PASS
	165	-0.78	-0.78	30	PASS
802.11ac VHT40	151	-3.55	-3.55	30	PASS
	159	-3.18	-3.18	30	PASS
802.11ac VHT80	155	-6.39	-6.21	30	PASS

MIMO

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	-2.90	-2.90	-2.44	-2.44	0.35	11.00	PASS
	40/5200	0.95	0.95	1.72	1.72	4.36	11.00	PASS
	48/5240	1.58	1.58	1.48	1.48	4.54	11.00	PASS
802.11n HT20	36/5180	-3.74	-3.74	-3.02	-3.02	-0.36	11.00	PASS
	40/5200	0.31	0.31	1.07	1.07	3.71	11.00	PASS
	48/5240	0.44	0.44	0.99	0.99	3.73	11.00	PASS
802.11n HT40	38/5190	-9.23	-9.23	-9.14	-9.14	-6.17	11.00	PASS
	46/5230	-1.66	-1.66	-1.41	-1.41	1.48	11.00	PASS
802.11ac VHT20	36/5180	-3.43	-3.43	-2.89	-2.89	-0.14	11.00	PASS
	40/5200	0.48	0.48	1.01	1.01	3.76	11.00	PASS
	48/5240	0.24	0.24	1.06	1.06	3.68	11.00	PASS
802.11ac VHT40	38/5190	-9.15	-9.15	-9.36	-9.36	-6.24	11.00	PASS
	46/5230	-1.93	-1.93	-2.03	-2.03	1.03	11.00	PASS
802.11ac VHT80	42/5210	-14.04	-13.87	-14.60	-14.43	-11.13	11.00	PASS
802.11ac VHT160	50/5250	-16.25	-15.93	-17.26	-16.95	-16.95	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 G_{ANT} set equal to the gain of the antenna having the highest gain. So directional gain = G_{ANT} + Array Gain =-0.67 (CH40)<6 dBi. So the PSD limt is 17-(directional gain-6 dBi) =11dBm.

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	1.67	1.67	1.85	1.85	4.77	11.00	PASS
	60/5300	2.23	2.23	1.75	1.75	5.01	11.00	PASS
	64/5320	-1.41	-1.41	-1.68	-1.68	1.47	11.00	PASS
802.11n HT20	52/5260	1.07	1.07	1.13	1.13	4.11	11.00	PASS
	60/5300	1.65	1.65	1.52	1.52	4.60	11.00	PASS
	64/5320	-2.13	-2.13	-1.74	-1.74	1.08	11.00	PASS
802.11n HT40	54/5270	-1.15	-1.15	-1.56	-1.56	1.66	11.00	PASS
	62/5310	-8.17	-8.17	-8.43	-8.43	-5.28	11.00	PASS
802.11ac VHT20	52/5260	1.33	1.33	1.40	1.40	4.37	11.00	PASS
	60/5300	1.44	1.44	1.60	1.60	4.53	11.00	PASS
	64/5320	-1.82	-1.82	-2.30	-2.30	0.96	11.00	PASS
802.11ac VHT40	54/5270	-0.98	-0.98	-1.52	-1.52	1.77	11.00	PASS
	62/5310	-8.50	-8.50	-8.39	-8.39	-5.44	11.00	PASS
802.11ac VHT80	58/5290	-12.86	-12.69	-13.83	-13.66	-10.14	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 G_{ANT} set equal to the gain of the antenna having the highest gain. So directional gain = G_{ANT} + Array Gain =-2.06(CH52) <6 dBi. So the PSD limt is 17-(directional gain-6 dBi) =11dBm.

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	-1.29	-1.29	-1.26	-1.26	1.74	11.00	PASS
	116/5580	3.69	3.69	4.13	4.13	6.93	11.00	PASS
	140/5700	2.76	2.76	3.07	3.07	5.93	11.00	PASS
802.11n HT20	100/5500	-1.19	-1.19	-1.76	-1.76	1.55	11.00	PASS
	116/5580	3.34	3.34	3.55	3.55	6.45	11.00	PASS
	140/5700	2.21	2.21	2.27	2.27	5.25	11.00	PASS
802.11n HT40	102/5510	-8.18	-8.18	-7.70	-7.70	-4.92	11.00	PASS
	110/5550	0.61	0.61	0.49	0.49	3.56	11.00	PASS
	134/5670	-0.18	-0.18	-1.00	-1.00	2.44	11.00	PASS
802.11ac VHT20	100/5500	-1.24	-1.24	-1.91	-1.91	1.44	11.00	PASS
	116/5580	3.22	3.22	3.67	3.67	6.46	11.00	PASS
	140/5700	2.22	2.22	2.75	2.75	5.50	11.00	PASS
802.11ac VHT40	102/5510	-8.38	-8.38	-7.71	-7.71	-5.02	11.00	PASS
	110/5550	0.69	0.69	0.70	0.70	3.71	11.00	PASS
	134/5670	-0.54	-0.54	-0.05	-0.05	2.73	11.00	PASS
802.11ac VHT80	106/5530	-11.39	-11.22	-12.23	-12.06	-8.61	11.00	PASS
802.11ac VHT160	114/5570	-13.82	-13.50	-14.88	-14.56	-14.56	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 G_{ANT} set equal to the gain of the antenna having the highest gain. So directional gain = G_{ANT} + Array Gain =0.31(CH120) <6 dBi. So the PSD limt is 17-(directional gain-6 dBi) =11dBm.

U-NII-3

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	149/5745	-0.54	-0.54	-0.50	-0.50	2.49	30.00	PASS
	157/5785	-0.71	-0.71	-0.26	-0.26	2.54	30.00	PASS
	165/5825	-1.31	-1.31	-0.31	-0.31	2.23	30.00	PASS
802.11n HT20	149/5745	-0.73	-0.73	-0.54	-0.54	2.38	30.00	PASS
	157/5785	-1.47	-1.47	-0.59	-0.59	2.01	30.00	PASS
	165/5825	-1.81	-1.81	-0.73	-0.73	1.77	30.00	PASS
802.11n HT40	151/5755	-3.95	-3.95	-3.28	-3.28	-0.59	30.00	PASS
	159/5795	-4.67	-4.67	-3.06	-3.06	-0.78	30.00	PASS
802.11ac VHT20	149/5745	-0.92	-0.92	-0.94	-0.94	2.08	30.00	PASS
	157/5785	-1.40	-1.40	-0.26	-0.26	2.22	30.00	PASS
	165/5825	-1.85	-1.85	-0.74	-0.74	1.75	30.00	PASS
802.11ac VHT40	151/5755	-3.65	-3.65	-3.15	-3.15	-0.38	30.00	PASS
	159/5795	-4.67	-4.67	-3.06	-3.06	-0.78	30.00	PASS
802.11ac VHT80	155/5775	-7.43	-7.26	-6.63	-6.46	-3.83	30.00	PASS

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

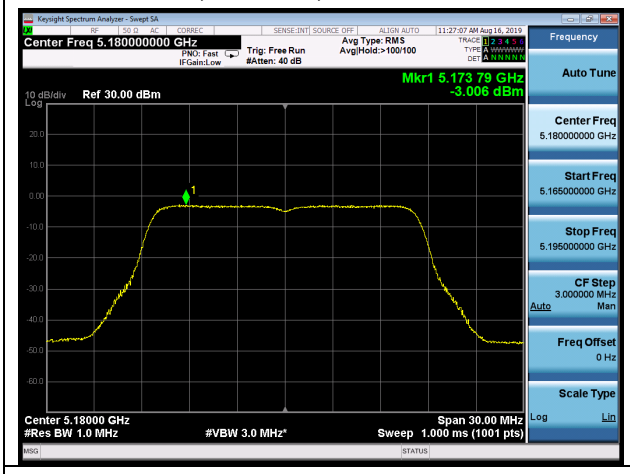
2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})})$

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

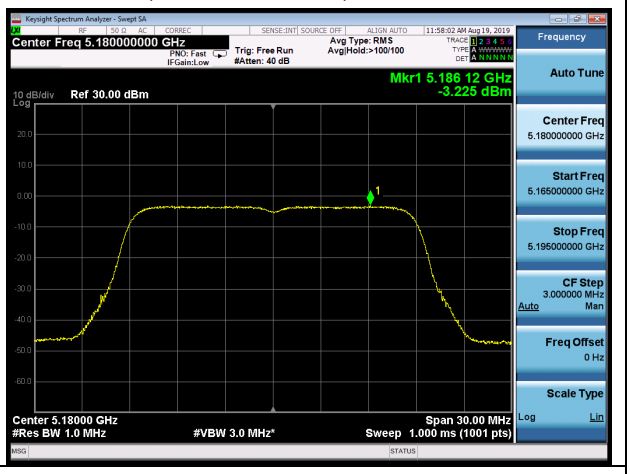
4.If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain. So directional gain = G_{ANT} + Array Gain =-0.87(CH149) /-1.61(CH157)<6 dBi. So the PSD limt is 17-(directional gain-6 dBi) =30dBm.

SISO Antenna 1

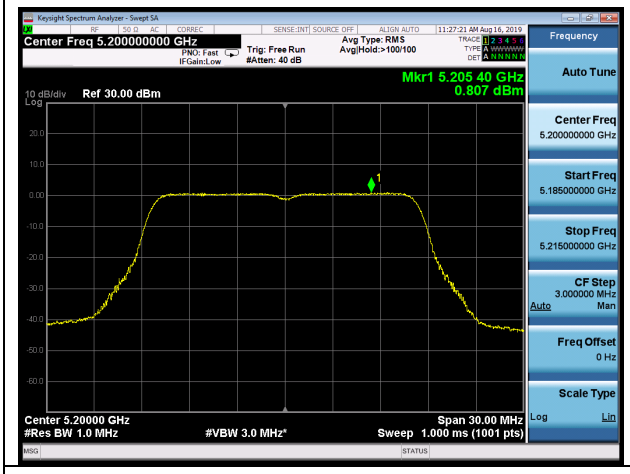
U-NII-1, 802.11a, Channel No.: 36



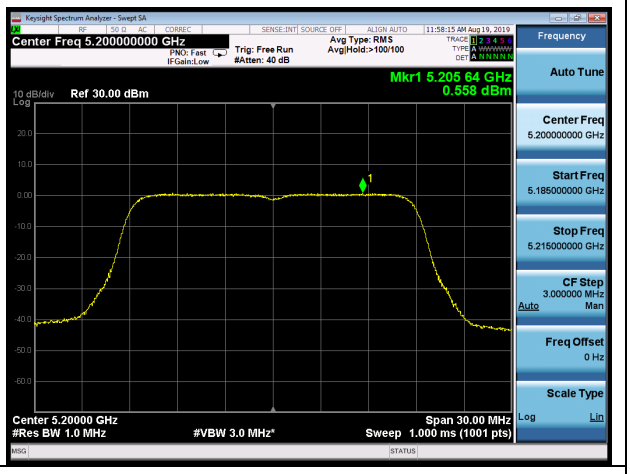
U-NII-1, 802.11n HT20, Channel No.: 36



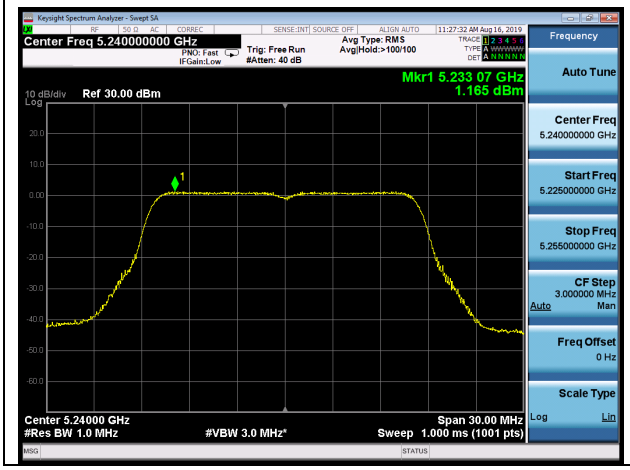
U-NII-1, 802.11a, Channel No.: 40



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



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



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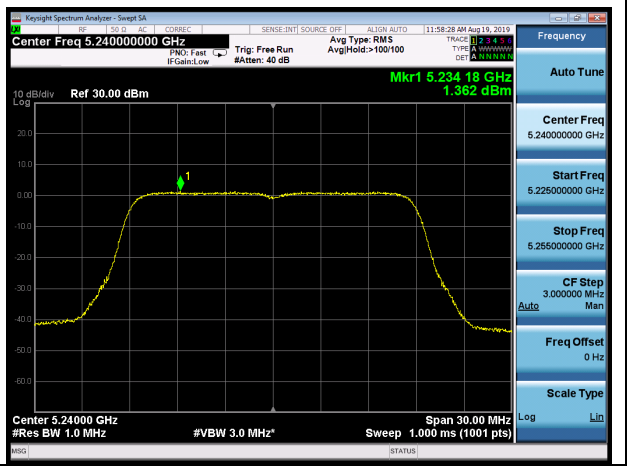
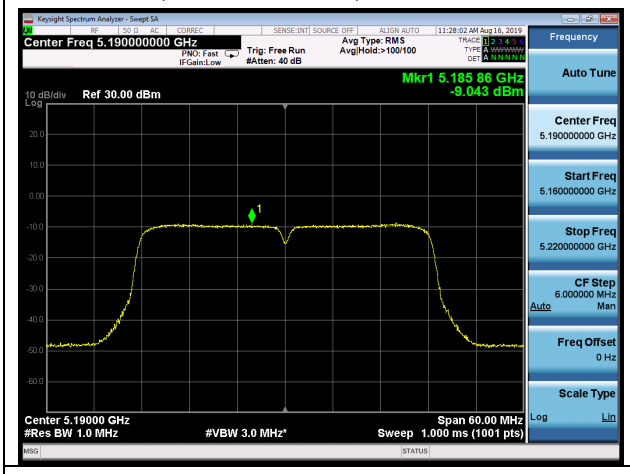
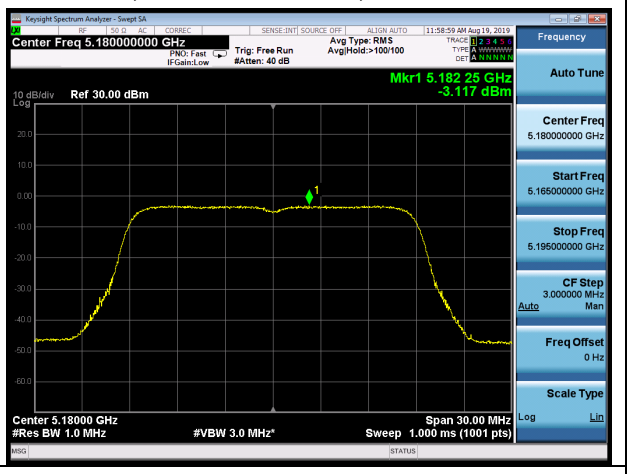


U-NII-1, 802.11n HT40, Channel No.: 38



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



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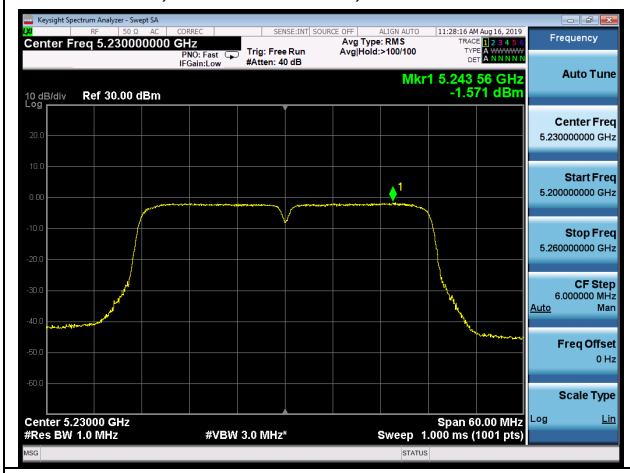

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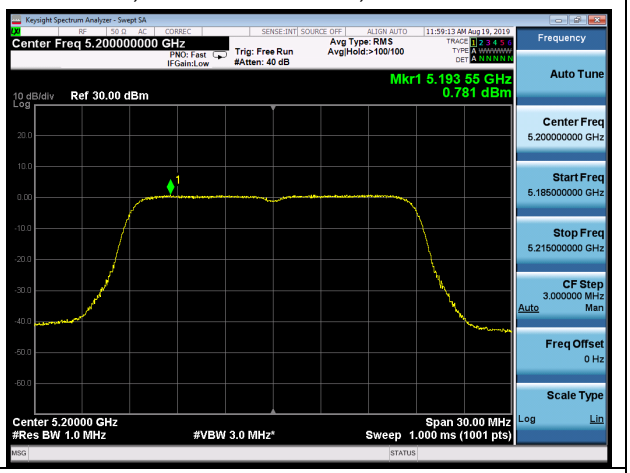

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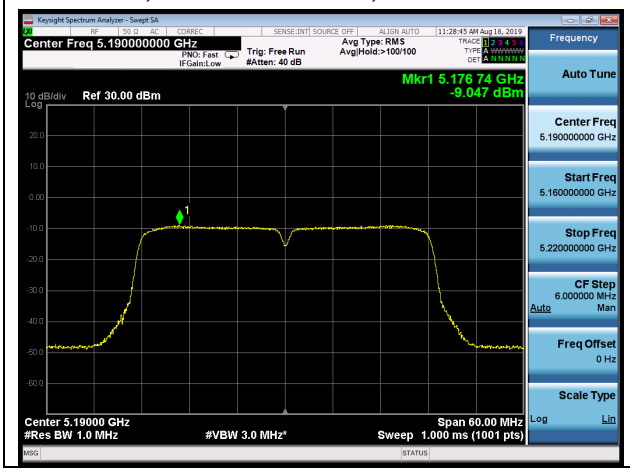

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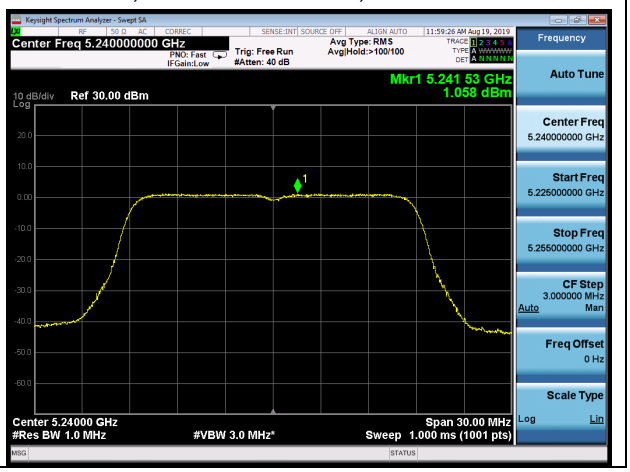

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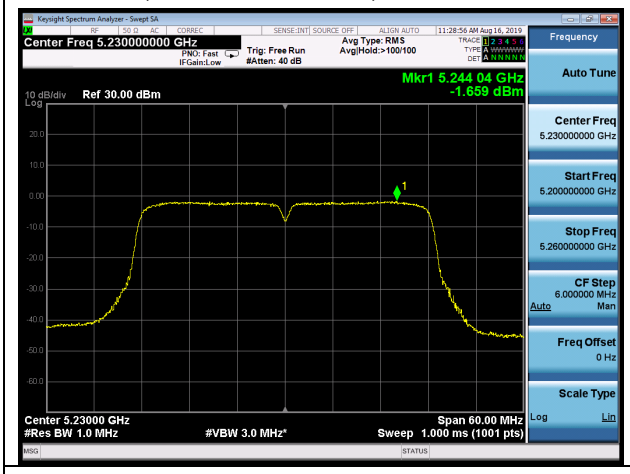
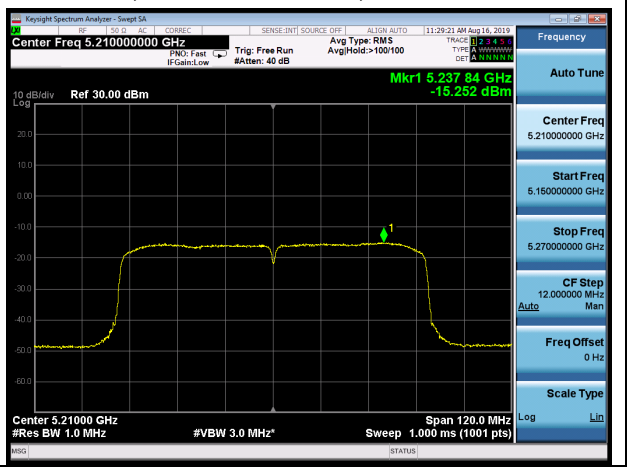
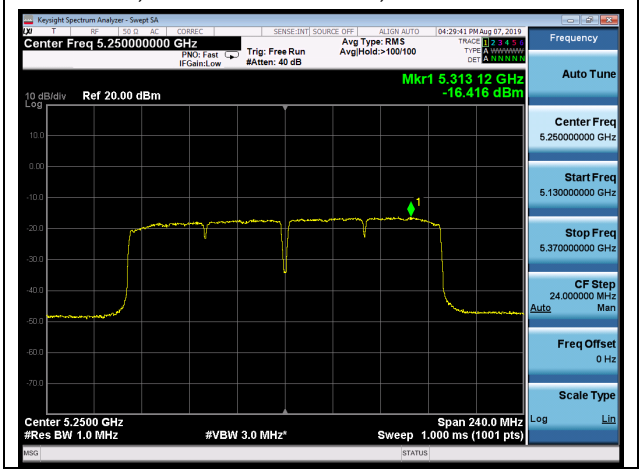


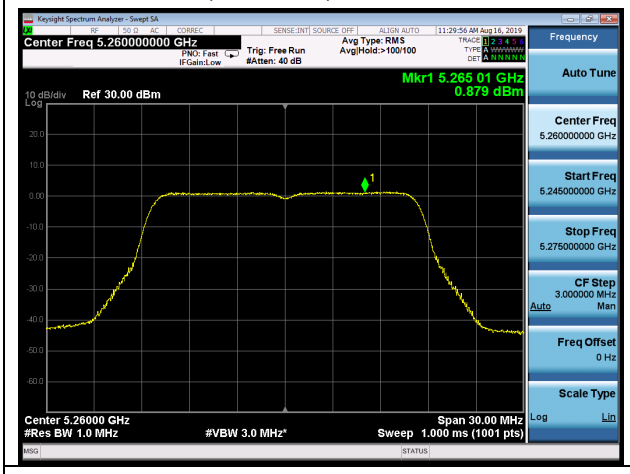
U-NII-1, 802.11ac VHT80, Channel No.: 42



U-NII-1, 802.11ac VHT160, Channel No.: 50

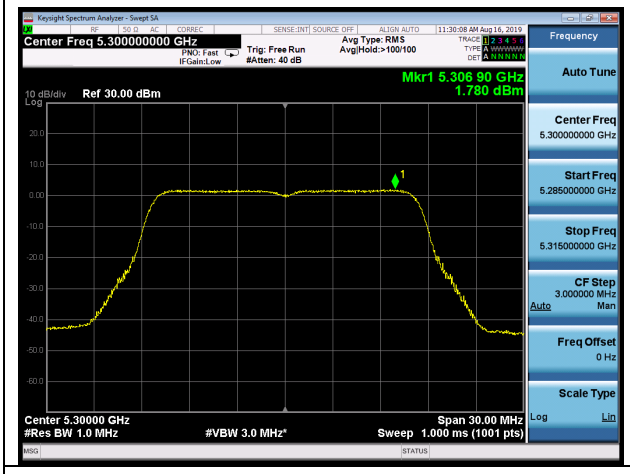


U-NII-2A, 802.11a, Channel No.: 52



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

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



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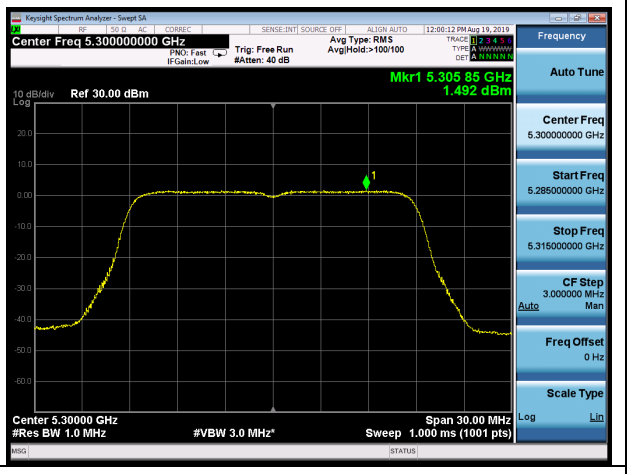
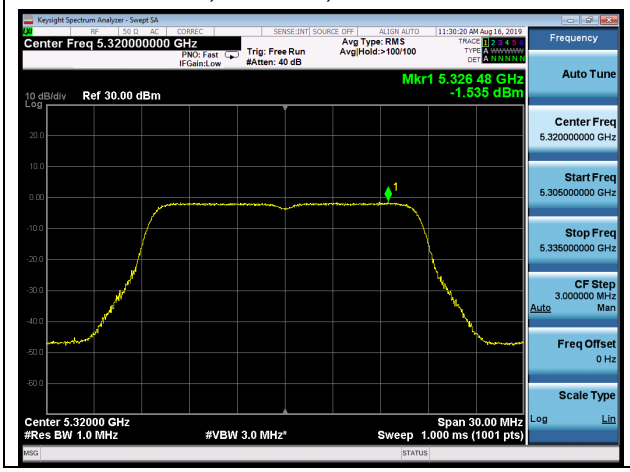


U-NII-2A, 802.11a, Channel No.: 64



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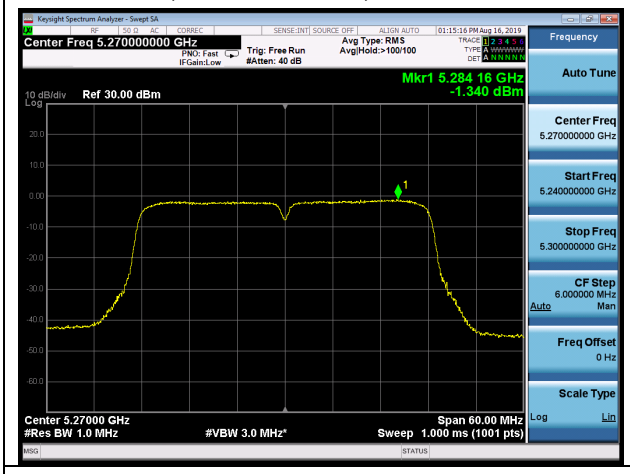
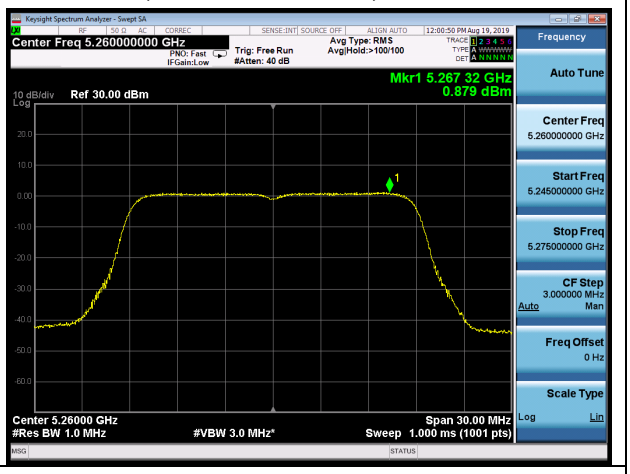
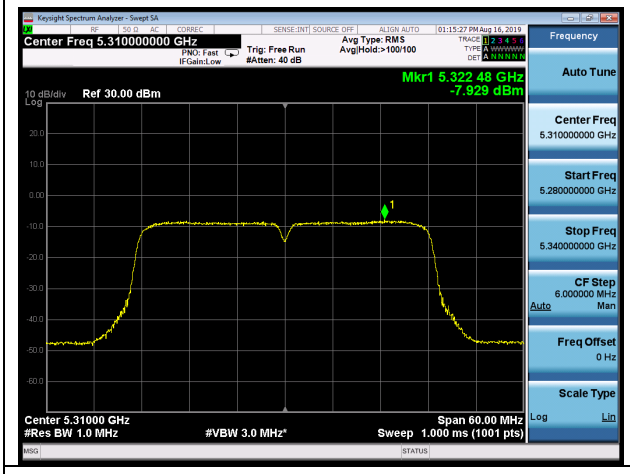
U-NII-2A, 802.11n HT40, Channel No.: 54



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



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



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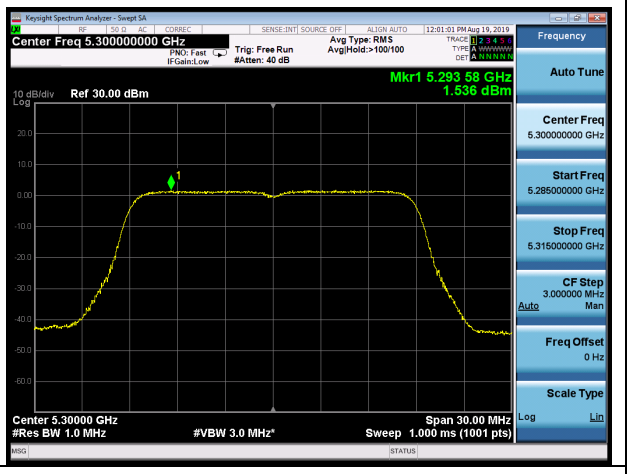
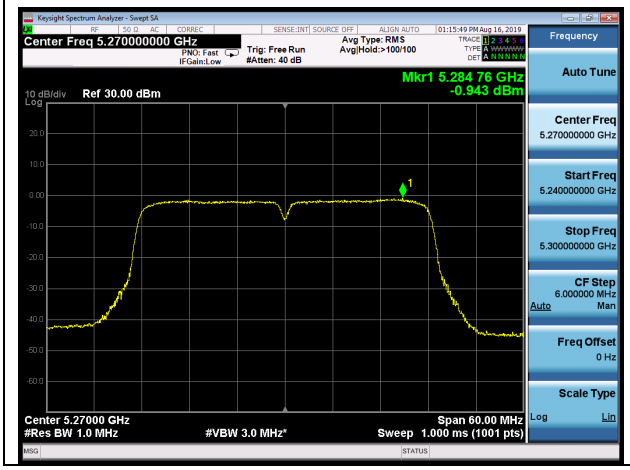
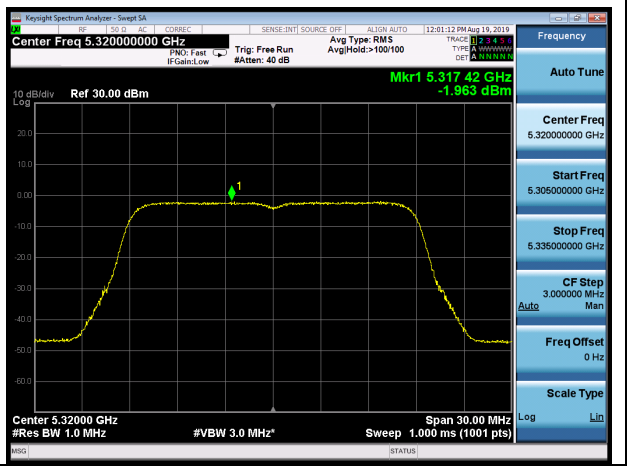


U-NII-2A, 802.11ac VHT40, Channel No.: 54



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



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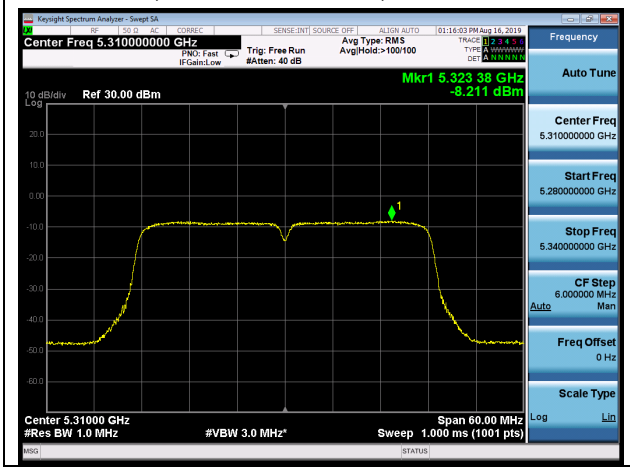

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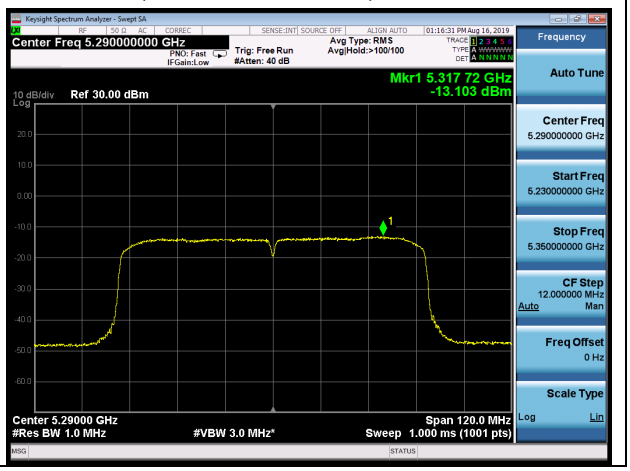
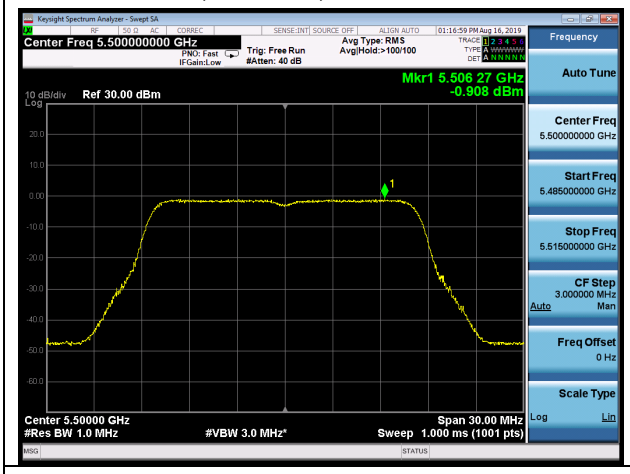
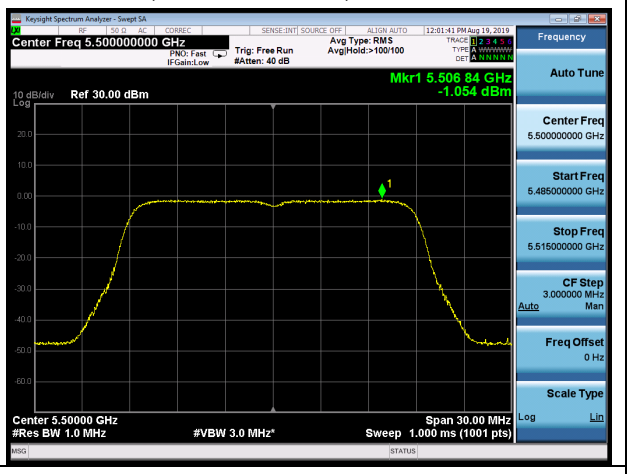


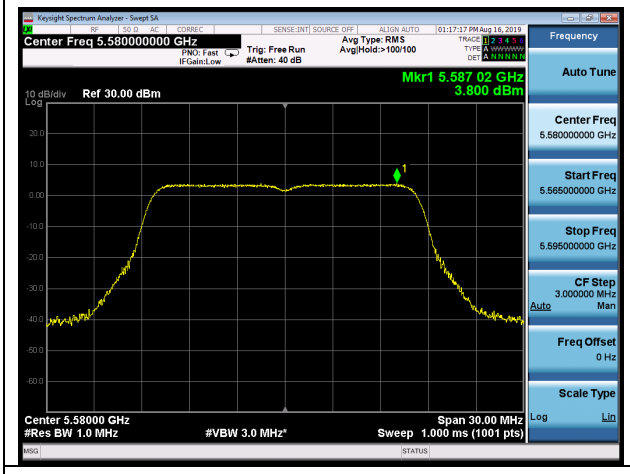
U-NII-2C, 802.11a, Channel No.: 100



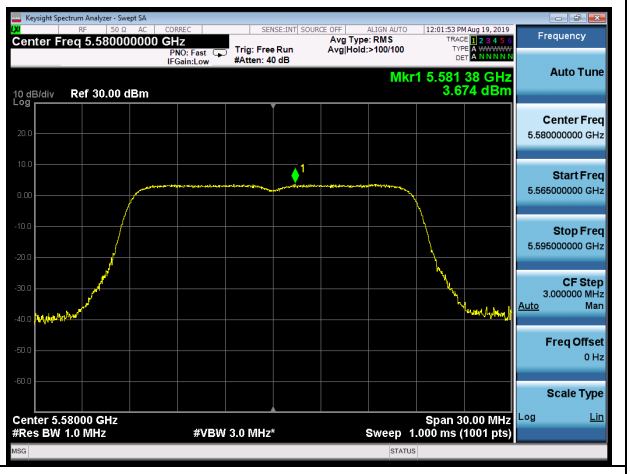
U-NII-2C, 802.11n HT20, Channel No.: 100



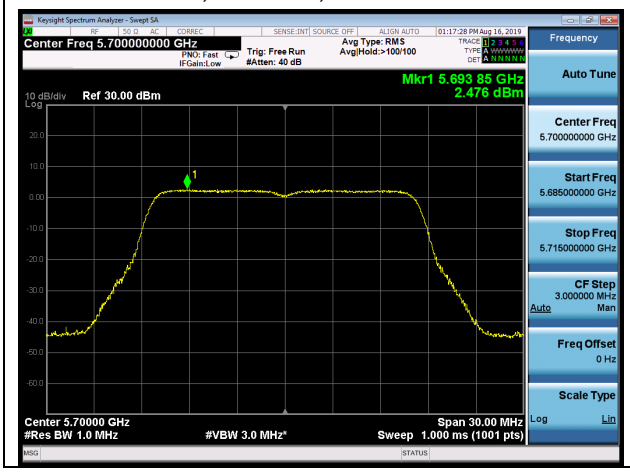
U-NII-2C, 802.11a, Channel No.: 116



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