RF TEST REPORT

Applicant	Nokia Shanghai Bell Co., Ltd.
FCC ID	2ADZRHA140WB
Product	7368 Intelligent Services Access Manager CPE
Model	HA-140W-B
Report No.	R1910B0142-R6V3
Issue Date	April 2, 2020

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

Performed by: Peng Tao

Approved by: Kai Xu

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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: December 12, 2019 ~ January 13, 2020			
Note: All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

Note: This revised report (Report No.: R1910B0142-R6V3) supersedes and replaces the previously issued report (Report No.: R1910B0142-R6V2). 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
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E-mail:	xukai@ta-shanghai.com

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	SHENZHEN TWOWING TECHNOLOGIES CO.,LTD.
Manufacturer address	Nangang Industrial Building, Tangtou Industrial Park,Shiyan, Shengzhen,China

General information

EUT Description	
Model	HA-140W-B
IMEI	1#
Hardware Version	PEM2
Software Version	3FE48210FGCB55
Power Supply	AC adapter
Antenna Type	Internal Antenna
Antenna Gain	Antenna 1: 3 dBi Antenna 2: 3 dBi Antenna 3: 3 dBi Antenna 4: 3 dBi
Directional Gain:	PSD Directional Gain: 9.02 dBi Power Directional Gain: 3.00dBi
additional beamforming gain:	9.02dB
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 (VHT20/VHT40/VHT80): OFDM
Max. Conducted Power	29.67 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
Operating temperature range:	-5 ° C to 45° C

Operating voltage range:	9 V to 14 V
State DC voltage:	12V
EUT Accessory	
Adapter 1	Manufacturer: FUHUA ELECTRONIC CO., LTD. Model:UES36WU-120250SPA
Adapter 2	Manufacturer: SHENZHEN SOY TECHNOLOGY CO., LTD. Model: SUV-1200300
Note: The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.	

Information of Configuration:

No.	Name	Model/Code No.	Edition	Serial No. or Quantity
1.1	HA-140W-B	3FE48130AA	PEM2	1
2.2	Power adapter	UES36WU-120250SPA	A/0	1
2.3	Power adapter	SUV-1200300	A/0	1

	Kit Code	EMA	Part Description	Power Adaptor
HA-140W-B	3FE48111AA	3FE48130AA	7368CPE,AC2800, 1xPOTS,4xGUNI,US plug	UES36WU-120250SPA SUV-1200300

	Name	RCR	KIT code	EMA code	PBA code	PB code	Part Description
HA-140 W-B	US	ALU02 561014	3FE4811 1AAAA	3FE48130 AAAA	3FE48132 AAAA	3FE48133 AAAA	7368CPE,AC2800, 1xPOTS, 4xGE UNI, US plug

Auxiliary equipment details

No.	Name	Brand name	Model	NSB code	Valid Until
1	BigTao220	XINERTEL	DE8709	-	No Cal. Required
2	PC	Thinkpad	T470	-	No Cal. Required
3	Phone	NA	NA	-	No Cal. Required
4	USB	Sandisk	CZ73-16	-	No Cal. Required

5	2.4G WIFI Card	Asus	PCE-AC88	-	No Cal. Required
6	5G WIFI Card	Asus	PCE-AC88	-	No Cal. Required

Information of Ports

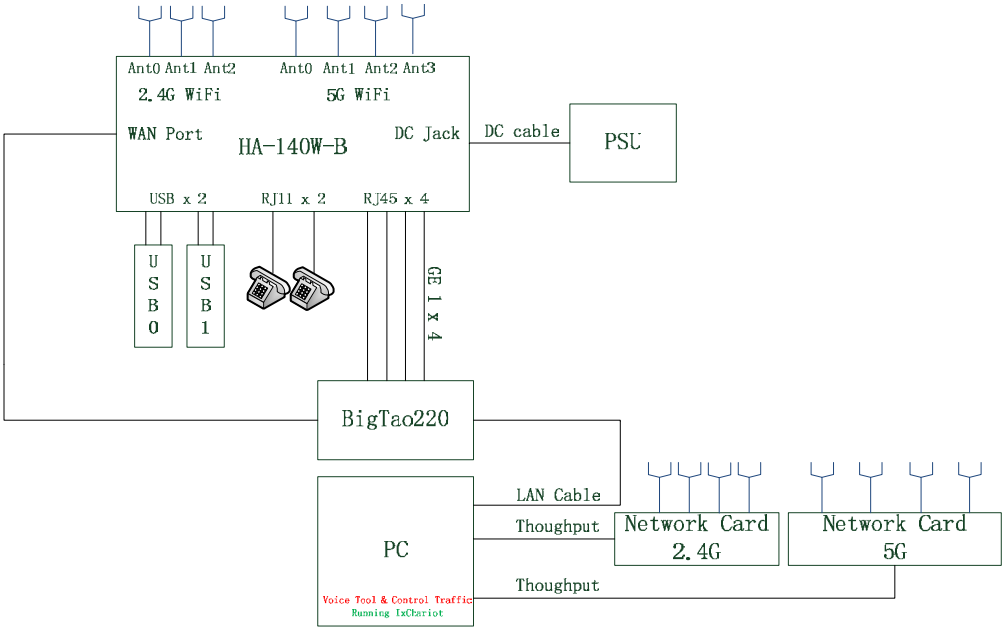
No.	Port name	Number	Shielded or unshielded	Cable type (optic, twisted pair, etc.)	Max. Cable length
1	Power	1	unshielded	-	-
2	GE	4	unshielded	-	-
3	POTS	1	unshielded	-	-
4	USB	2	shielded	-	-
5	WAN	1	unshielded	-	-

Test Configuration

Description: The HA-140W-B is an ethernet gateway which has 1 POT, 4 GE ports, 1 ethernet WAN port, 2 USB ports, 2.4G wi-fi and 5G wi-fi.

Function test should be done during the test for EUT operating status, and or should be done after the test for EUT power off status.

The basic functional test consists of the traffic test, POTs connection test and WIFI connection test, which establishes the communication traffic generator and HA-140W-B (EUT). The POTs keep connecting though OFLT program. The 2.4G wi-fi and 5G wi-fi keep connecting. The USB ports run read/write script though program. The EUT runs 4 traffics on each line with BigTao, the each upstream of 3 GE is 300Mbps, and downstream is 900Mbps.



3. Applied Standards

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

FCC CFR47 Part 15E (2019) 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			
	SISO Antenna 1	**SISO Antenna 2**	**SISO Antenna 3**	**SISO Antenna 4**
802.11a	6 Mbps	6 Mbps	6 Mbps	6 Mbps

Band	Data Rate			
	MIMO Antenna 1	**MIMO Antenna 2**	**MIMO Antenna 3**	**MIMO Antenna 4**
802.11n HT20	MCS0	MCS0	MCS0	MCS0
802.11n HT40	MCS0	MCS0	MCS0	MCS0
802.11ac VHT20	MCS0	MCS0	MCS0	MCS0
802.11ac VHT40	MCS0	MCS0	MCS0	MCS0
802.11ac VHT80	MCS0	MCS0	MCS0	MCS0

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

Test Cases	SISO ANT 1	SISO ANT 2	SISO ANT 3	SISO ANT 4	MIMO ANT 1	MIMO ANT 2	MIMO ANT 3	MIMO ANT 4
Average conducted output power	--	--	--	802.11a	802.11n HT20/40 802.11ac VHT20/40/80	802.11n HT20/40 802.11ac VHT20/40/80	802.11n HT20/40 802.11ac VHT20/40/80	802.11n HT20/40 802.11ac VHT20/40/80
Occupied bandwidth	--	--	--	802.11a	--	--	--	802.11n HT20/40 802.11ac VHT20/40/80
Frequency stability	--	--	--	802.11a	--	--	--	802.11n HT20/40 802.11ac VHT20/40/80
Power Spectral Density	--	--	--	802.11a	802.11n HT20/40 802.11ac VHT20/40/80	802.11n HT20/40 802.11ac VHT20/40/80	802.11n HT20/40 802.11ac VHT20/40/80	802.11n HT20/40 802.11ac VHT20/40/80
Unwanted Emissions	--	--	--	802.11a	--	--	--	802.11n HT20/40 802.11ac VHT20/40/80
Conducted Emissions	--	--	--	802.11a	--	--	--	802.11n HT20/40 802.11ac VHT20/40/80
Note：“O”: test all bands								

According to RF Output power results in chapter 5.1, SISO Antenna 4 was selected as the worst SISO antenna for 802.11a, MIMO Antenna 4 was selected as the worst antenna.

Wireless Technology and Frequency Range

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

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

5. Test Case Results

5.1. Occupied Bandwidth

Ambient condition

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

Method of Measurement

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

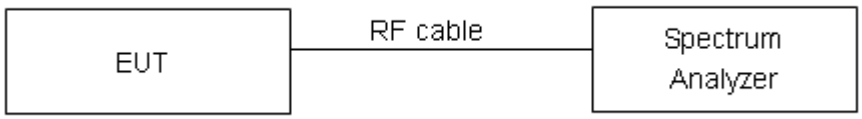
For U-NII-1/U-NII-2A/U-NII-2C, set RBW ≈1% OCB kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the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

For U-NII-3, Set RBW = 100 kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

Use the 99 % power bandwidth function of the instrument

Test Setup



Limits

Rule FCC Part §15.407(e)

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

Measurement Uncertainty

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

Test Results:

U-NII-1

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5180	17.001	29.61	PASS
	5200	17.029	29.06	PASS
	5240	17.142	29.77	PASS
802.11n HT20	5180	17.858	21.38	PASS
	5200	17.866	21.40	PASS
	5240	17.837	21.32	PASS
802.11n HT40	5190	36.331	44.53	PASS
	5230	36.388	55.98	PASS
802.11ac VHT20	5180	17.857	21.14	PASS
	5200	17.858	21.47	PASS
	5240	17.857	21.46	PASS
802.11ac VHT40	5190	36.334	47.56	PASS
	5230	36.376	41.46	PASS
802.11ac VHT80	5210	74.904	81.19	PASS

U-NII-2A

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5260	16.693	21.34	PASS
	5300	16.703	21.22	PASS
	5320	16.687	21.15	PASS
802.11n HT20	5260	17.858	21.17	PASS
	5300	17.848	21.39	PASS
	5320	17.821	21.33	PASS
802.11n HT40	5270	36.279	39.77	PASS
	5310	36.261	39.72	PASS
802.11ac VHT20	5260	17.843	21.41	PASS
	5300	17.835	21.61	PASS
	5320	17.831	21.26	PASS
802.11ac VHT40	5270	36.310	39.98	PASS
	5310	36.285	39.60	PASS
802.11ac VHT80	5290	75.675	81.56	PASS

U-NII-2C

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5500	16.707	21.07	PASS
	5600	16.699	21.02	PASS
	5700	16.690	21.16	PASS
	5720	16.739	21.77	PASS
802.11n HT20	5500	17.819	21.51	PASS
	5600	17.844	21.25	PASS
	5700	17.856	21.46	PASS
	5720	17.822	21.44	PASS
802.11n HT40	5510	36.339	39.97	PASS
	5590	36.249	39.78	PASS
	5670	36.228	39.73	PASS
	5710	36.294	40.04	PASS
802.11ac VHT20	5500	17.823	21.39	PASS
	5600	17.840	21.51	PASS
	5700	17.850	21.43	PASS
	5720	17.793	21.68	PASS
802.11ac VHT40	5510	36.262	39.76	PASS
	5590	36.247	39.95	PASS
	5670	36.222	40.00	PASS
	5710	36.275	39.99	PASS
802.11ac VHT80	5610	75.701	81.74	PASS
	5690	75.737	81.76	PASS

U-NII-3

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	16.742	16.33	500	PASS
	5785	16.808	16.36	500	PASS
	5825	16.812	16.34	500	PASS
802.11n HT20	5745	18.031	17.62	500	PASS
	5785	18.118	17.62	500	PASS
	5825	18.053	17.62	500	PASS
802.11n HT40	5755	36.482	36.18	500	PASS
	5795	36.568	36.41	500	PASS
802.11ac VHT20	5745	18.047	17.62	500	PASS
	5785	18.211	17.64	500	PASS
	5825	18.107	17.62	500	PASS
802.11ac VHT40	5755	36.458	36.40	500	PASS
	5795	36.536	36.41	500	PASS
802.11ac VHT80	5775	76.034	75.88	500	PASS

MIMO Antenna 1

U-NII-1, 802.11a

Carrier frequency (MHz): 5180

U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5180

U-NII-1, 802.11a

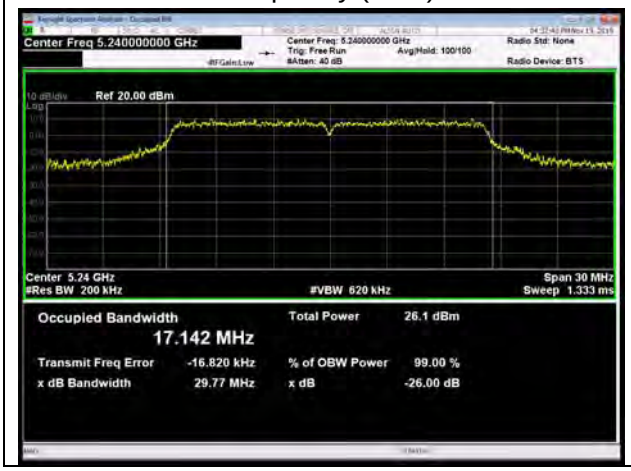
Carrier frequency (MHz): 5200

U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5200

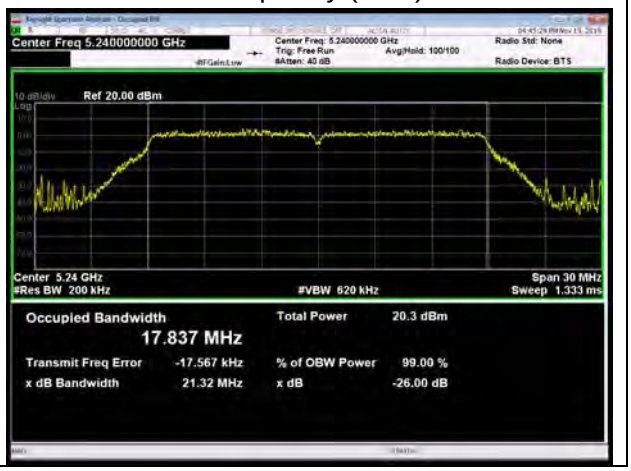
U-NII-1, 802.11a

Carrier frequency (MHz):5240



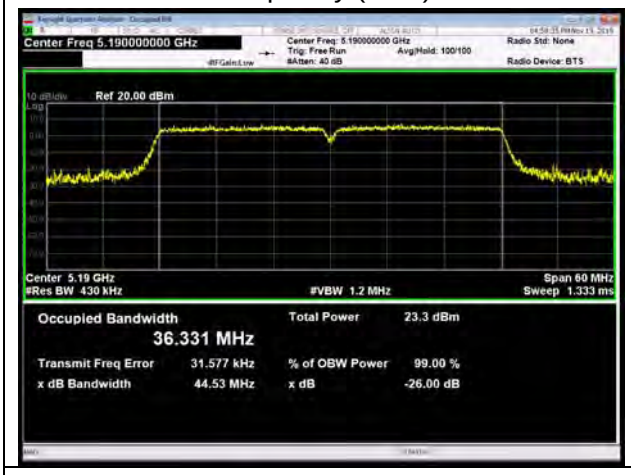
U-NII-1, 802.11n HT20

Carrier frequency (MHz):5240



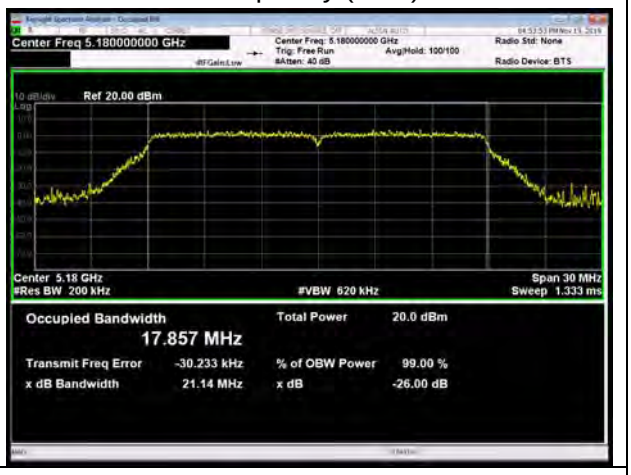
U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5190



U-NII-1, 802.11ac VHT20

Carrier frequency (MHz): 5180



U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5230

U-NII-1, 802.11ac VHT20

Carrier frequency (MHz): 5200

U-NII-1, 802.11ac VHT40

Carrier frequency (MHz): 5190

U-NII-1, 802.11ac VHT20

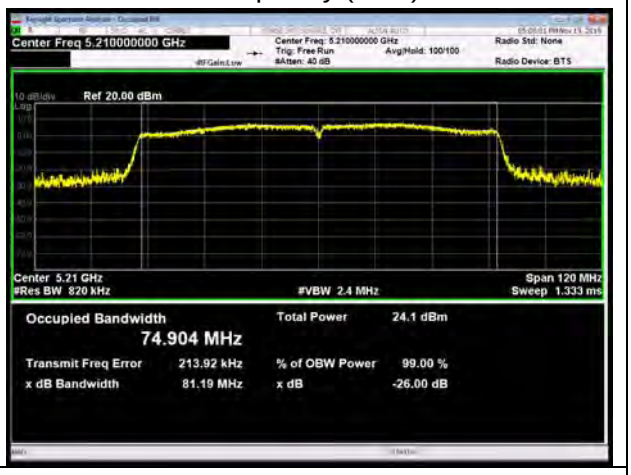
Carrier frequency (MHz):5240

U-NII-1, 802.11ac VHT40

Carrier frequency (MHz): 5230

U-NII-1, 802.11ac VHT80

Carrier frequency (MHz): 5210

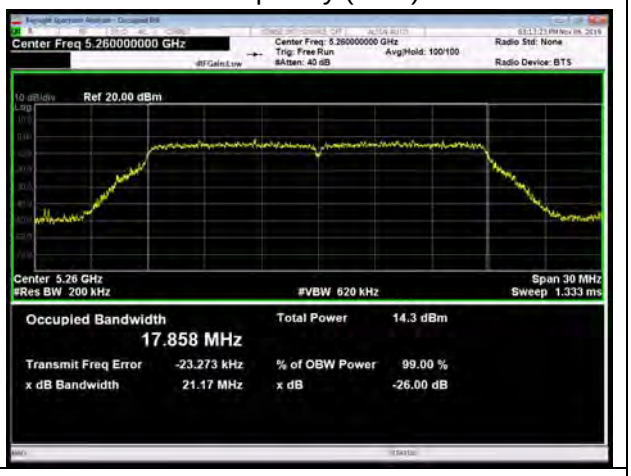


U-NII-2A, 802.11a

Carrier frequency (MHz): 5260

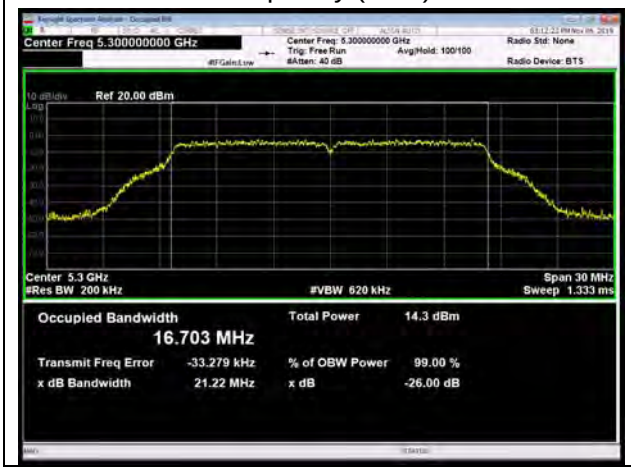
U-NII-2A, 802.11n HT20

Carrier frequency (MHz): 5260



U-NII-2A, 802.11a

Carrier frequency (MHz): 5300

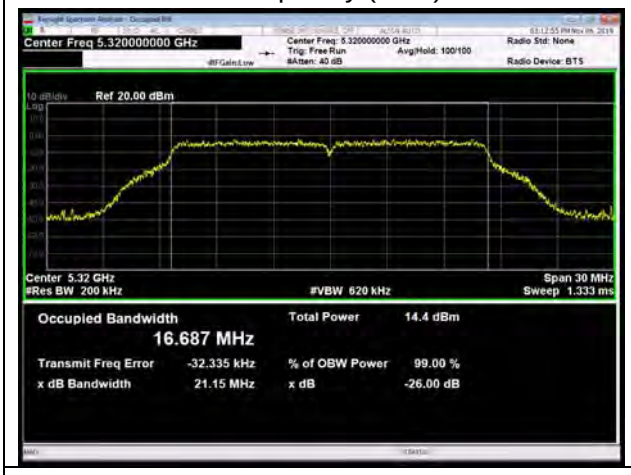


U-NII-2A, 802.11n HT20

Carrier frequency (MHz): 5300

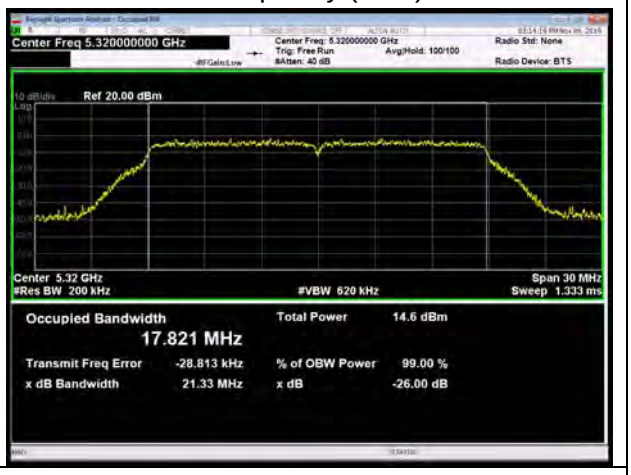
U-NII-2A, 802.11a

Carrier frequency (MHz):5320



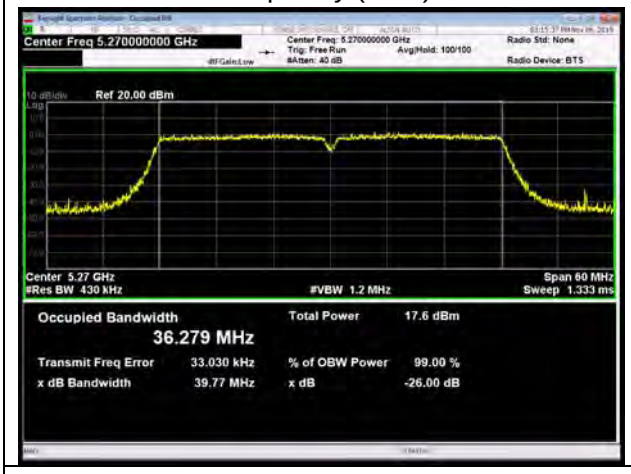
U-NII-2A, 802.11n HT20

Carrier frequency (MHz):5320



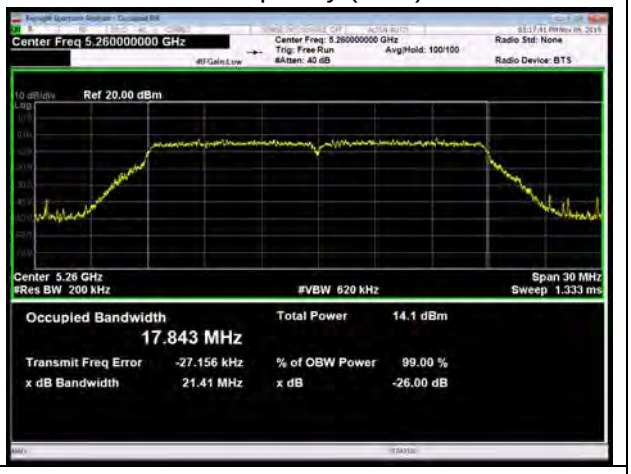
U-NII-2A, 802.11n HT40

Carrier frequency (MHz): 5270



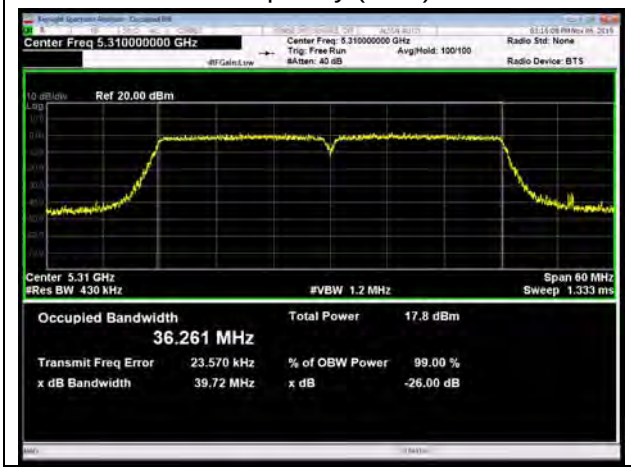
U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz):5260



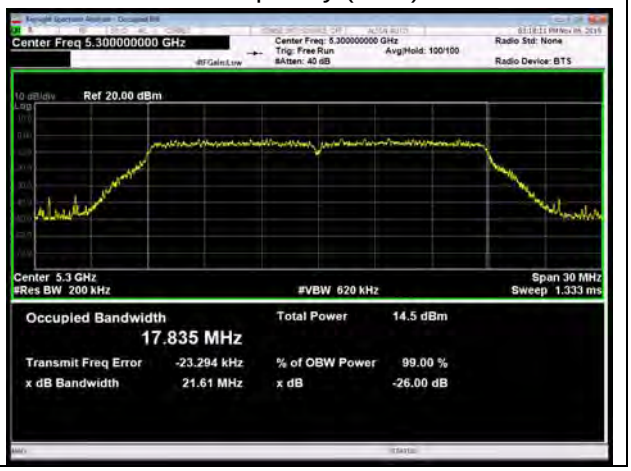
U-NII-2A, 802.11n HT40

Carrier frequency (MHz): 5310



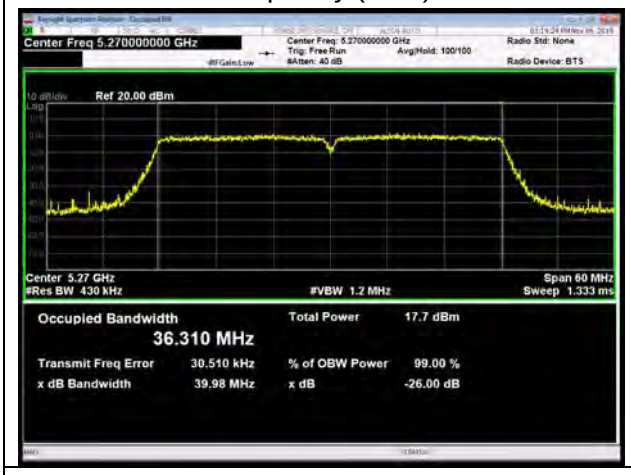
U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz): 5300



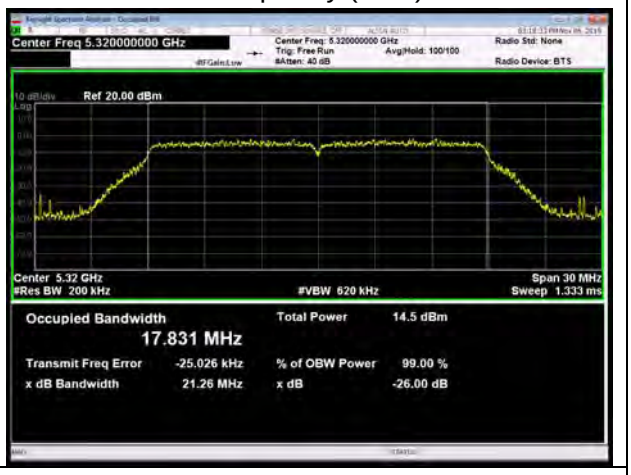
U-NII-2A, 802.11ac VHT40

Carrier frequency (MHz): 5270



U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz):5320

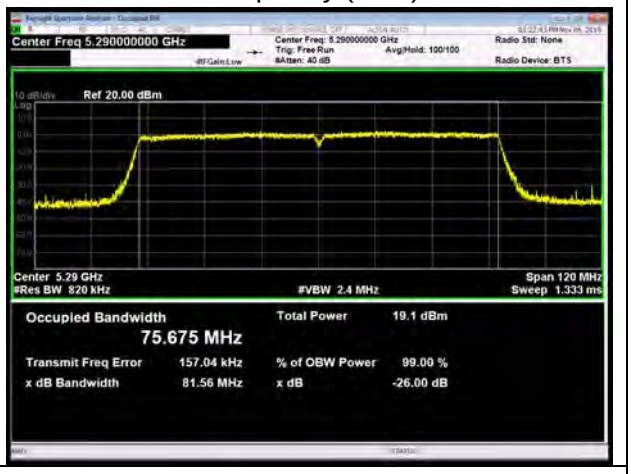


U-NII-2A, 802.11ac VHT40

Carrier frequency (MHz): 5310

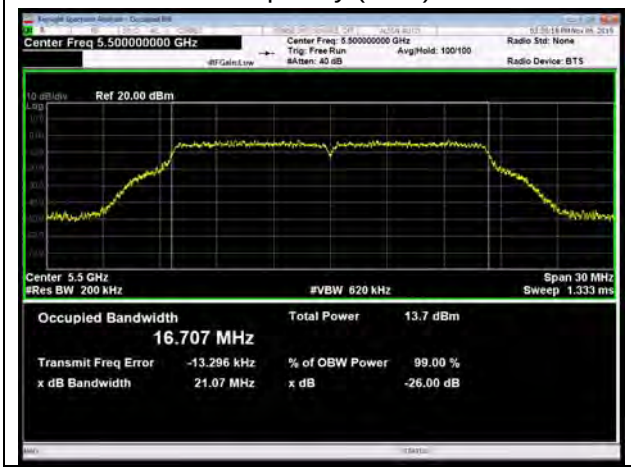
U-NII-2A, 802.11ac VHT80

Carrier frequency (MHz): 5290



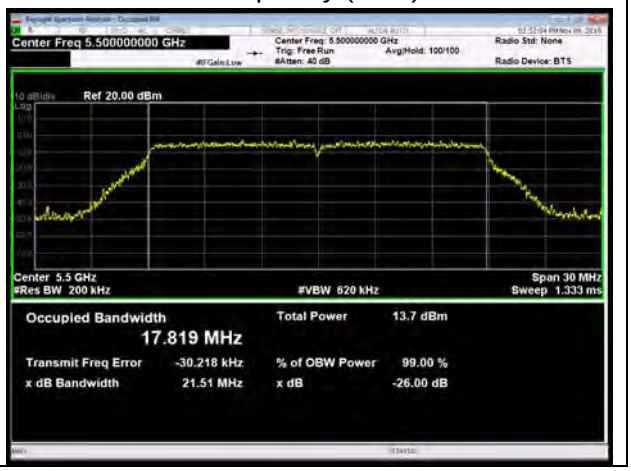
U-NII-2C, 802.11a

Carrier frequency (MHz): 5500



U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5500



U-NII-2C, 802.11a

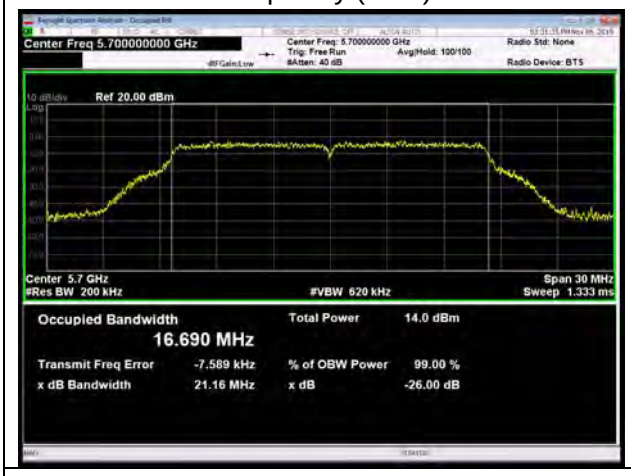
Carrier frequency (MHz): 5600

U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5600

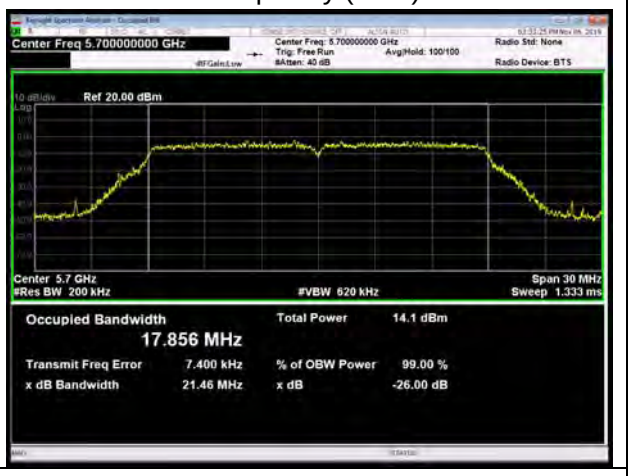
U-NII-2C, 802.11a

Carrier frequency (MHz): 5580



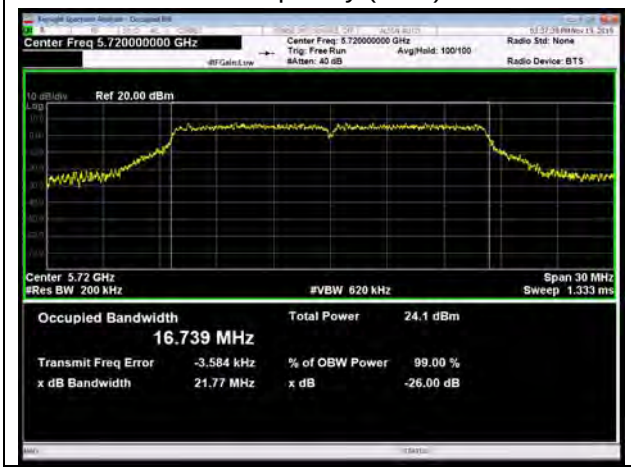
U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5580



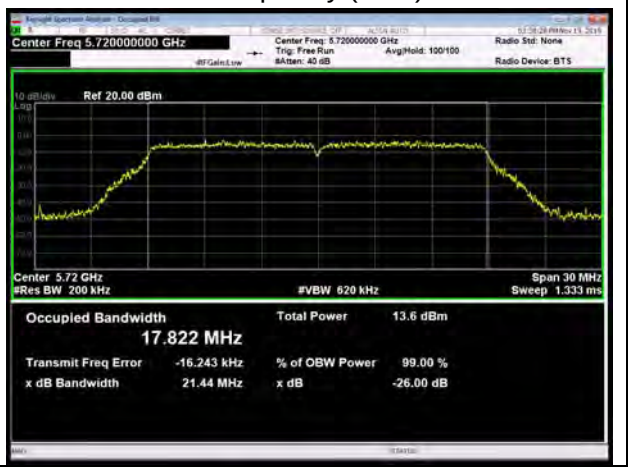
U-NII-2C, 802.11a

Carrier frequency (MHz):5700

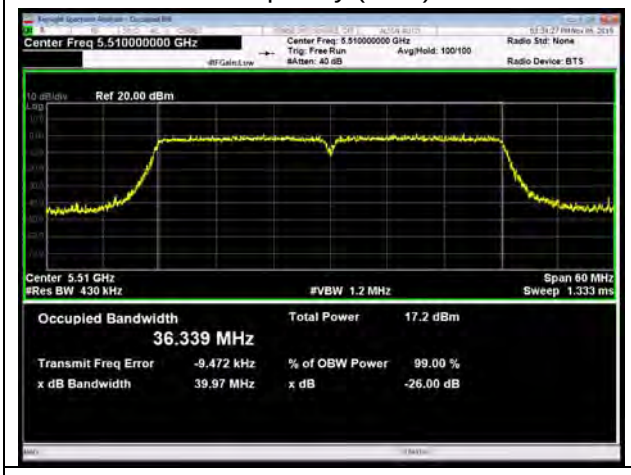


U-NII-2C, 802.11n HT20

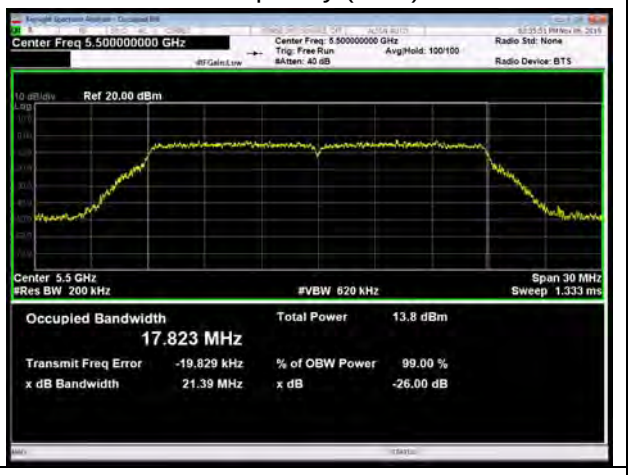
Carrier frequency (MHz):5700



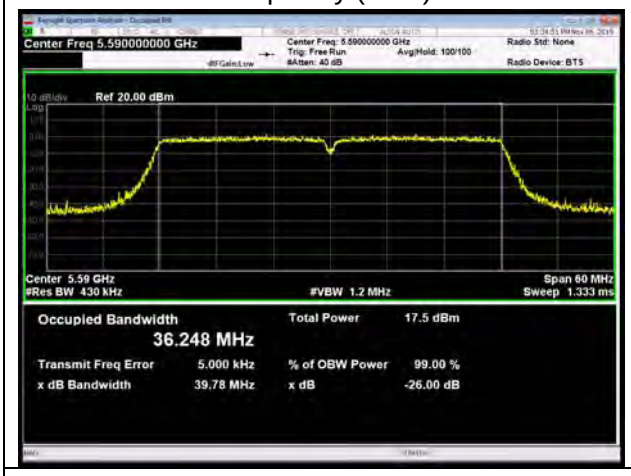
U-NII-2C, 802.11n HT40
Carrier frequency (MHz): 5510



U-NII-2C, 802.11ac VHT20
Carrier frequency (MHz): 5500

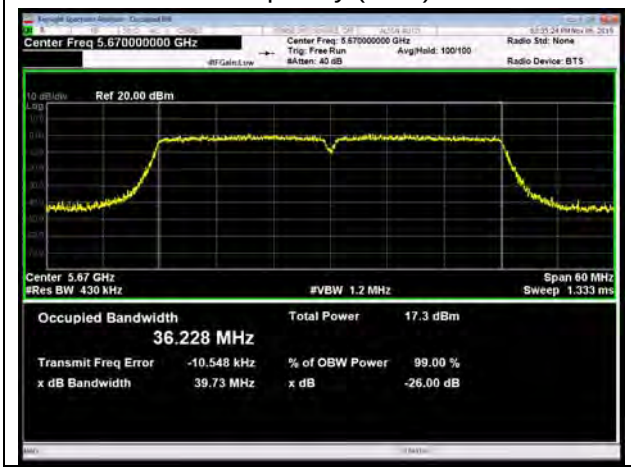


U-NII-2C, 802.11n HT40
Carrier frequency (MHz): 5590

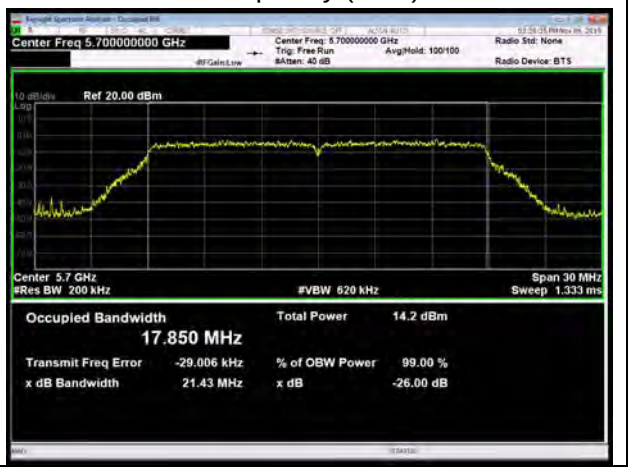


U-NII-2C, 802.11ac VHT20
Carrier frequency (MHz): 5600

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



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

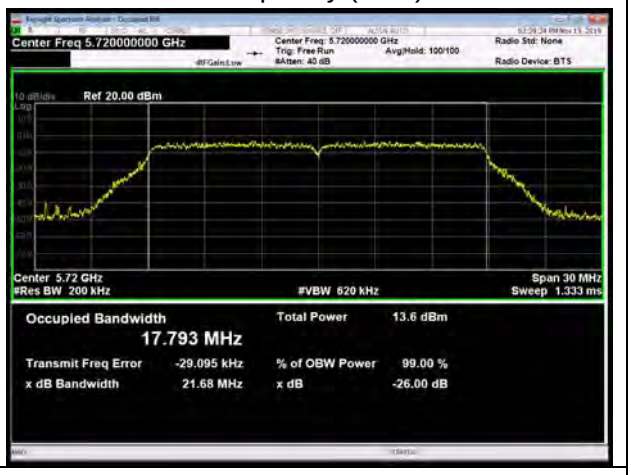


U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5710

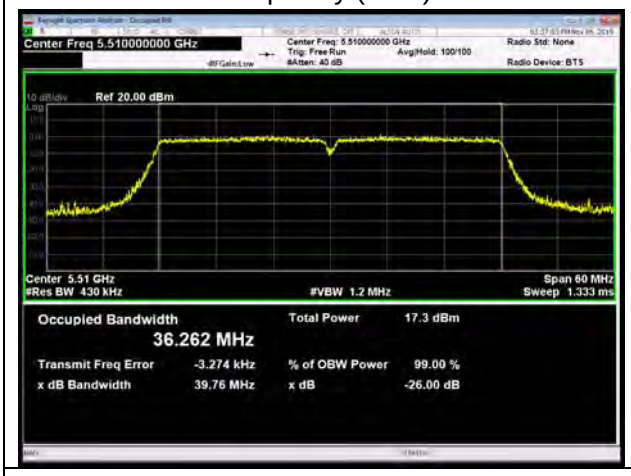
U-NII-2C, 802.11ac VHT20

Carrier frequency (MHz):5700



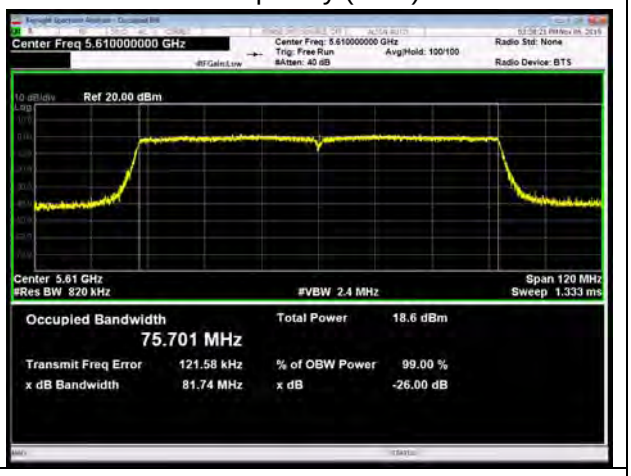
U-NII-2C, 802.11ac VHT40

Carrier frequency (MHz): 5510



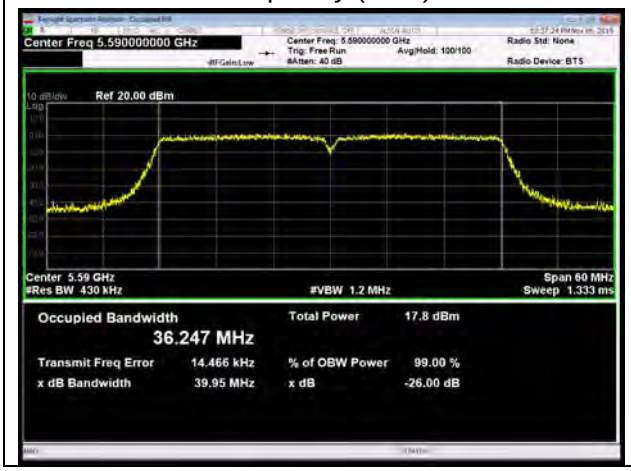
U-NII-2C, 802.11ac VHT80

Carrier frequency (MHz): 5530



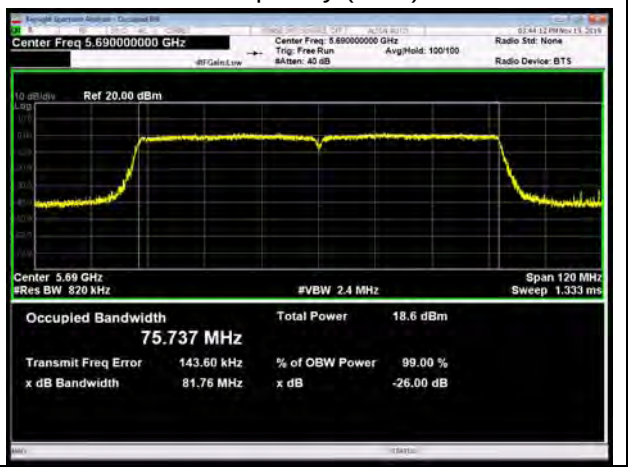
U-NII-2C, 802.11ac VHT40

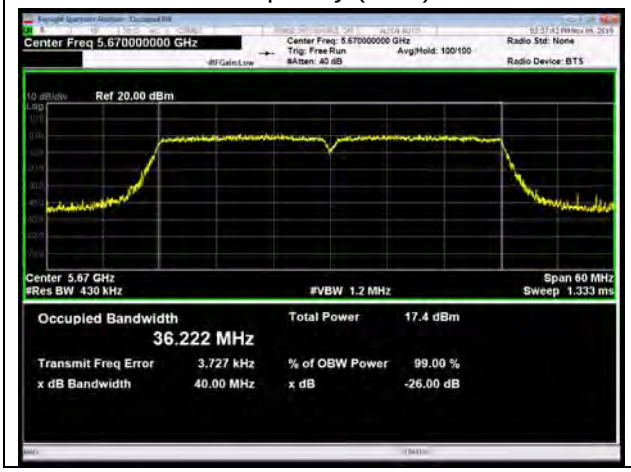
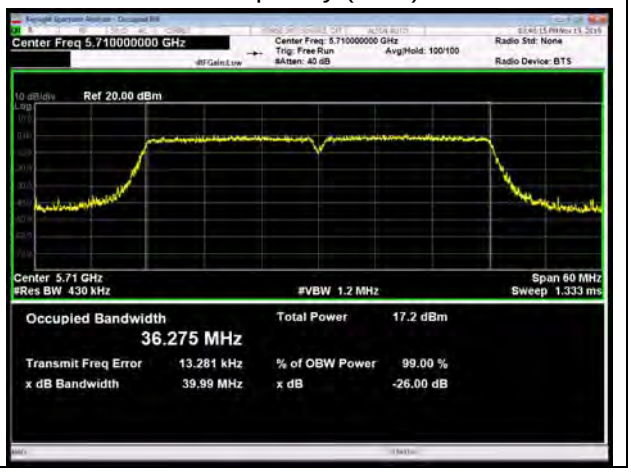
Carrier frequency (MHz): 5590



U-NII-2C, 802.11ac VHT80

Carrier frequency (MHz): 5610

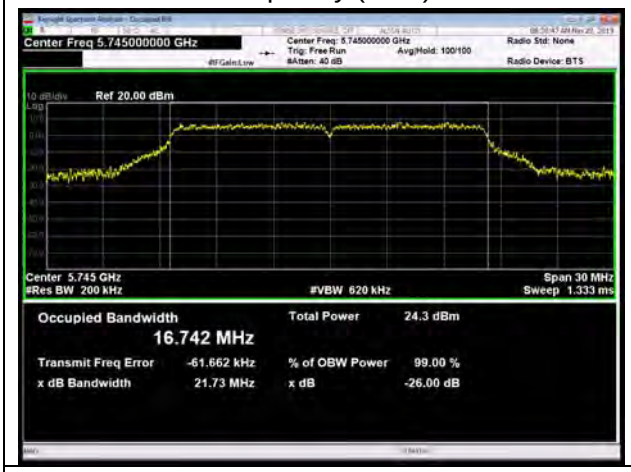


U-NII-2C, 802.11ac VHT40 Carrier frequency (MHz): 5670	U-NII-2C, 802.11ac VHT40 Carrier frequency (MHz): 5710
	

99% bandwidth

U-NII-3, 802.11a

Carrier frequency (MHz): 5745

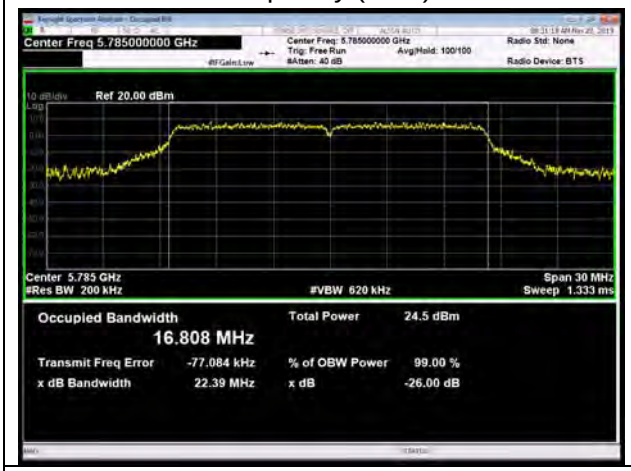


U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745

U-NII-3, 802.11a

Carrier frequency (MHz): 5785



U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785

U-NII-3, 802.11a

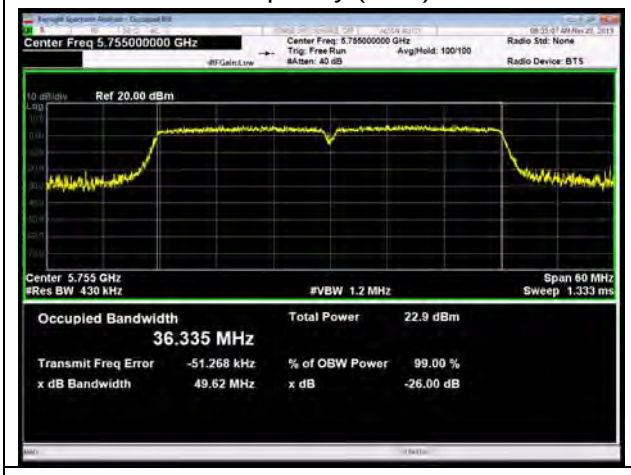
Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755



U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745

U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795

U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5785

U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5755

U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5825

U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5795

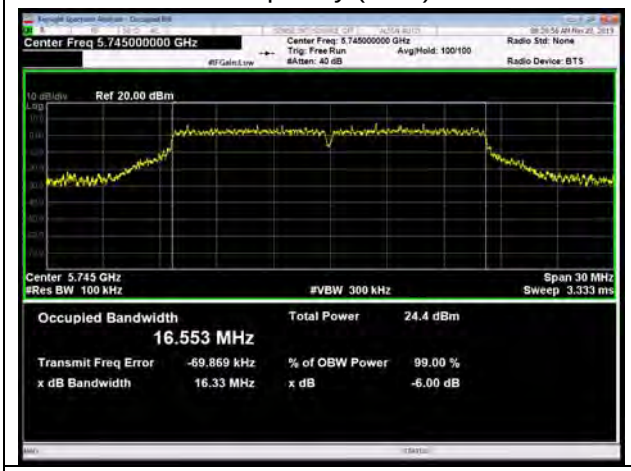
U-NII-3, 802.11ac VHT80

Carrier frequency (MHz): 5775

Minimum 6 dB bandwidth

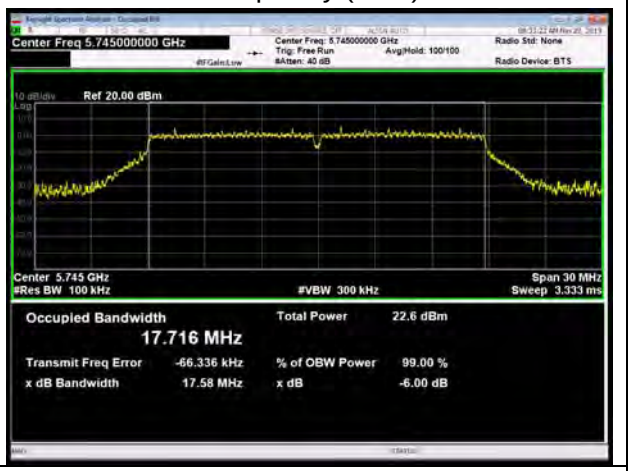
U-NII-3, 802.11a

Carrier frequency (MHz): 5745



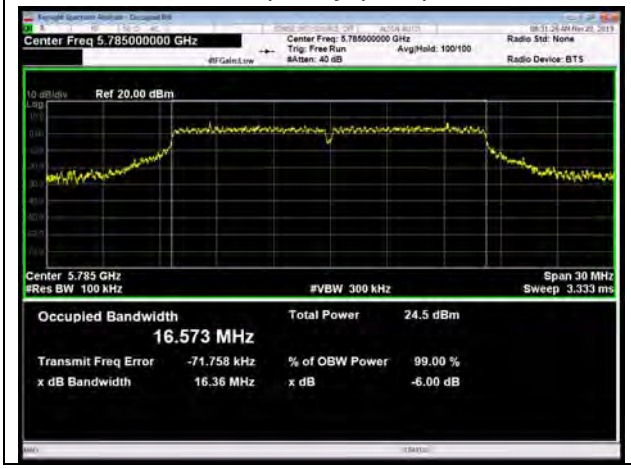
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745



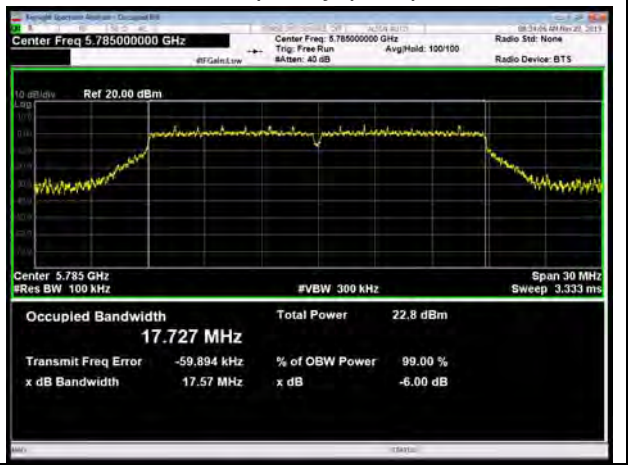
U-NII-3, 802.11a

Carrier frequency (MHz): 5785



U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785



U-NII-3, 802.11a

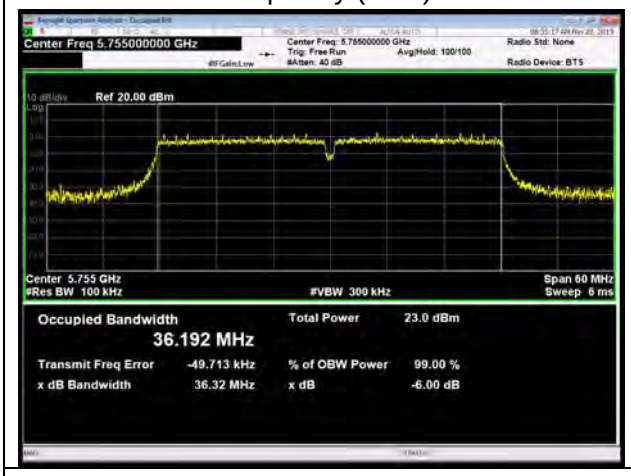
Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825

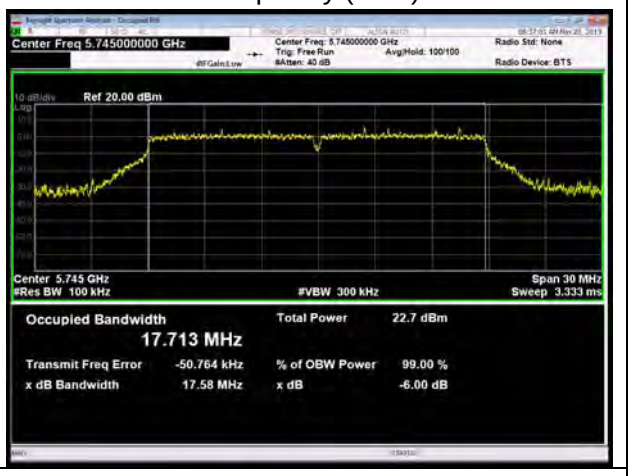
U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755



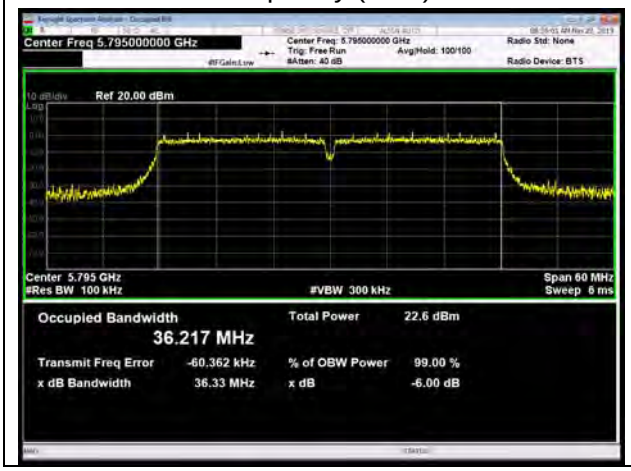
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795

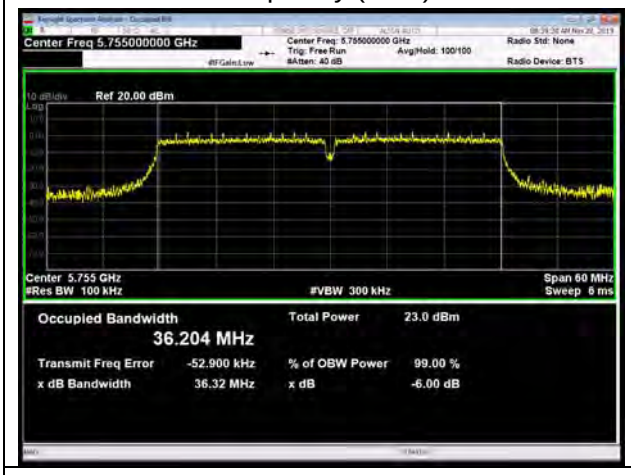


U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5785

U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5755

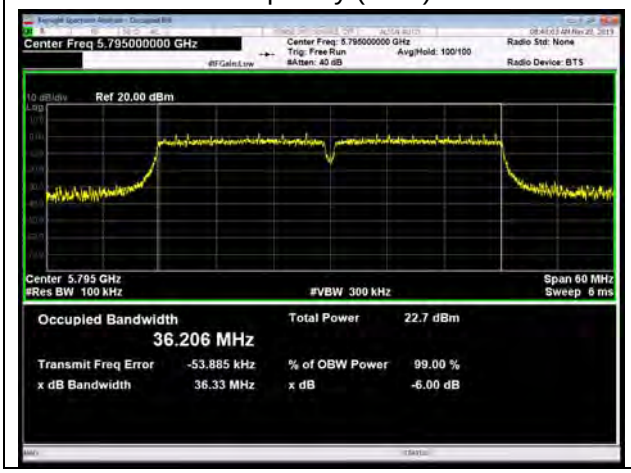


U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5825

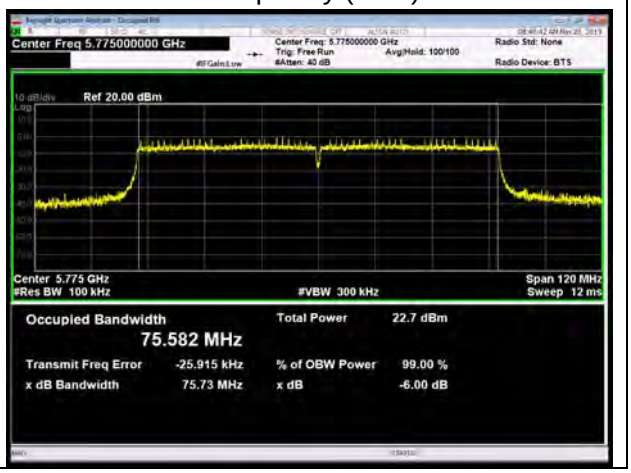
U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5795



U-NII-3, 802.11ac VHT80

Carrier frequency (MHz): 5775



5.2. Average Power Output –Conducted

Ambient condition

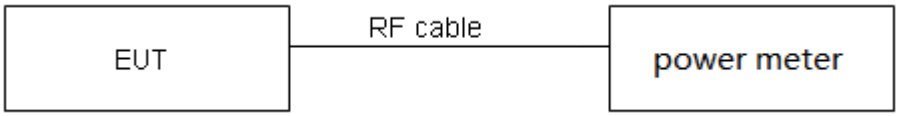
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

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

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

Test Setup



Limits

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

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

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

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

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

Measurement Uncertainty

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

Test Results

Band	T_{on} (ms)	$T_{(on+off)}$ (ms)	Duty cycle	Duty cycle correction Factor(dB)
802.11a	2.06	2.17	0.95	0.23
802.11n HT20	1.92	2.02	0.95	0.22
802.11n HT40	0.94	1.04	0.90	0.45
802.11ac VHT20	1.93	1.96	0.98	NA
802.11ac VHT40	0.95	0.98	0.97	0.13
802.11ac VHT80	0.46	0.49	0.93	0.29
Note: when Duty cycle>0.98, Duty cycle correction Factor not required.				

SISO Antenna 1

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	21.34	24.29>24.00	24.00
		60/5300	21.22	24.27>24.00	24.00
		64/5320	21.15	24.25>24.00	24.00
U-NII-2C	802.11a	100/5500	21.07	24.24>24.00	24.00
		120/5600	21.02	24.23>24.00	24.00
		140/5700	21.16	24.26>24.00	24.00
		144/5720	21.77	24.38>24.00	24.00
Note: 250mW=24dBm					

SISO Antenna 2

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	21.34	24.29>24.00	24.00
		60/5300	21.22	24.27>24.00	24.00
		64/5320	21.15	24.25>24.00	24.00
U-NII-2C	802.11a	100/5500	21.07	24.24>24.00	24.00
		120/5600	21.02	24.23>24.00	24.00
		140/5700	21.16	24.26>24.00	24.00
		144/5720	21.77	24.38>24.00	24.00
Note: 250mW=24dBm					

SISO Antenna 3

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	21.34	24.29>24.00	24.00
		60/5300	21.22	24.27>24.00	24.00
		64/5320	21.15	24.25>24.00	24.00
U-NII-2C	802.11a	100/5500	21.07	24.24>24.00	24.00
		120/5600	21.02	24.23>24.00	24.00
		140/5700	21.16	24.26>24.00	24.00
		144/5720	21.77	24.38>24.00	24.00
Note: 250mW=24dBm					

SISO Antenna 4

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	21.34	24.29>24.00	24.00
		60/5300	21.22	24.27>24.00	24.00
		64/5320	21.15	24.25>24.00	24.00
U-NII-2C	802.11a	100/5500	21.07	24.24 >24.00	24.00
		120/5600	21.02	24.23>24.00	24.00
		140/5700	21.16	24.26>24.00	24.00
		144/5720	21.77	24.38>24.00	24.00
Note: 250mW=24dBm					

MIMO without 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	21.34	24.29>24.00	24.00
		60/5300	21.22	24.27>24.00	24.00
		64/5320	21.15	24.25>24.00	24.00
	802.11n HT20	52/5260	21.17	24.26>24.00	24.00
		60/5300	21.39	24.30>24.00	24.00
		64/5320	21.33	24.29>24.00	24.00
	802.11n HT40	54/5270	39.77	27.00>24.00	24.00
		62/5310	39.72	26.99>24.00	24.00
	802.11ac VHT20	52/5260	21.41	24.31>24.00	24.00
		60/5300	21.61	24.35>24.00	24.00
		64/5320	21.26	24.28>24.00	24.00
	802.11ac VHT40	54/5270	39.98	27.02>24.00	24.00
		62/5310	39.60	26.98>24.00	24.00
	802.11ac VHT80	58/5290	81.56	30.11>24.00	24.00
U-NII-2C	802.11a	100/5500	21.07	24.24>24.00	24.00
		120/5600	21.02	24.23>24.00	24.00
		140/5700	21.16	24.26>24.00	24.00
	802.11n HT20	144/5720	21.77	24.38>24.00	24.00
		100/5500	21.51	24.33>24.00	24.00
		120/5600	21.25	24.27>24.00	24.00
	802.11n HT40	140/5700	21.46	24.32>24.00	24.00
		102/5510	39.97	27.02>24.00	24.00
		118/5590	39.78	27.00>24.00	24.00
		134/5670	39.73	26.99>24.00	24.00
	802.11ac VHT20	142/5710	40.04	27.02>24.00	24.00
		100/5500	21.39	24.30>24.00	24.00
		140/5700	21.43	24.31>24.00	24.00
		144/5720	21.68	24.36>24.00	24.00
	802.11ac VHT40	102/5510	39.76	26.99>24.00	24.00
		118/5590	39.95	27.02>24.00	24.00
		134/5670	40.00	27.02>24.00	24.00
		142/5710	39.99	27.02>24.00	24.00
	802.11ac VHT80	122/5610	81.74	30.12 >24.00	24.00
		138/5690	81.76	30.13>24.00	24.00
Note: 250mW=24dBm					

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	21.34	24.29>24.00	24.00
		60/5300	21.22	24.27>24.00	24.00
		64/5320	21.15	24.25>24.00	24.00
	802.11n HT20	52/5260	21.17	24.26>24.00	24.00
		60/5300	21.39	24.30>24.00	24.00
		64/5320	21.33	24.29>24.00	24.00
	802.11n HT40	54/5270	39.77	27.00>24.00	24.00
		62/5310	39.72	26.99>24.00	24.00
	802.11ac VHT20	52/5260	21.41	24.31>24.00	24.00
		60/5300	21.61	24.35>24.00	24.00
		64/5320	21.26	24.28>24.00	24.00
	802.11ac VHT40	54/5270	39.98	27.02>24.00	24.00
		62/5310	39.60	26.98>24.00	24.00
	802.11ac VHT80	58/5290	81.56	30.11>24.00	24.00
U-NII-2C	802.11a	100/5500	21.07	24.24>24.00	24.00
		120/5600	21.02	24.23>24.00	24.00
		140/5700	21.16	24.26>24.00	24.00
		144/5720	21.77	24.38>24.00	24.00
	802.11n HT20	100/5500	21.51	24.33>24.00	24.00
		120/5600	21.25	24.27>24.00	24.00
		140/5700	21.46	24.32>24.00	24.00
		144/5720	21.44	24.31>24.00	24.00
	802.11n HT40	102/5510	39.97	27.02>24.00	24.00
		118/5590	39.78	27.00>24.00	24.00
		134/5670	39.73	26.99>24.00	24.00
		142/5710	40.04	27.02>24.00	24.00
	802.11ac VHT20	100/5500	21.39	24.30>24.00	24.00
		120/5600	21.51	24.33>24.00	24.00
		140/5700	21.43	24.31>24.00	24.00
		144/5720	21.68	24.36>24.00	24.00
	802.11ac VHT40	102/5510	39.76	26.99>24.00	24.00
		118/5590	39.95	27.02>24.00	24.00
		134/5670	40.00	27.02>24.00	24.00
		142/5710	39.99	27.02>24.00	24.00
	802.11ac VHT80	122/5610	81.74	30.12>24.00	24.00
		138/5690	81.76	30.13>24.00	24.00
Note: 250mW=24dBm					

Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor

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	20.69	20.92	30	PASS
	40/5200	24.24	24.47	30	PASS
	48/5240	24.28	24.51	30	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	22.24	22.47	24.00	PASS
	60/5300	22.36	22.59	24.00	PASS
	64/5320	20.78	21.01	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	20.59	20.82	24.00	PASS
	120/5600	22.38	22.61	24.00	PASS
	140/5700	22.29	22.52	24.00	PASS
	144/5720	22.35	22.58	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	23.89	24.12	30	PASS
	157/5785	24.16	24.39	30	PASS
	165/5825	23.93	24.16	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	20.57	20.80	30	PASS
	40/5200	23.78	24.01	30	PASS
	48/5240	23.84	24.07	30	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	21.89	22.12	24.00	PASS
	60/5300	21.97	22.20	24.00	PASS
	64/5320	20.66	20.89	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	20.26	20.49	24.00	PASS
	120/5600	21.69	21.92	24.00	PASS
	140/5700	21.56	21.79	24.00	PASS
	144/5720	21.73	21.96	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	24.53	24.76	30	PASS
	157/5785	24.48	24.71	30	PASS
	165/5825	24.23	24.46	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

SISO Antenna 3

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	20.28	20.51	30	PASS
	40/5200	23.58	23.81	30	PASS
	48/5240	23.60	23.83	30	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	21.46	21.69	24.00	PASS
	60/5300	21.55	21.78	24.00	PASS
	64/5320	20.46	20.69	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	20.04	20.27	24.00	PASS
	120/5600	21.75	21.98	24.00	PASS
	140/5700	21.83	22.06	24.00	PASS
	144/5720	21.85	22.08	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	23.54	23.77	30	PASS
	157/5785	23.64	23.87	30	PASS
	165/5825	23.28	23.51	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

SISO Antenna 4

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	20.67	20.90	30	PASS
	40/5200	23.49	23.72	30	PASS
	48/5240	23.55	23.78	30	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	21.87	22.10	24.00	PASS
	60/5300	21.74	21.97	24.00	PASS
	64/5320	20.86	21.09	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	20.74	20.97	24.00	PASS
	120/5600	22.01	22.24	24.00	PASS
	140/5700	21.86	22.09	24.00	PASS
	144/5720	21.83	22.06	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	23.73	23.96	30	PASS
	157/5785	23.84	24.07	30	PASS
	165/5825	23.52	23.75	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

MIMO (Without Beamforming)

U-NII-1

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		MIMO Antenna3		MIMO Antenna4		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)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	36/5180	17.98	18.20	17.66	17.88	17.18	17.40	17.64	17.86	23.87	30.00	PASS
	40/5200	18.02	18.24	17.72	17.94	17.23	17.45	17.77	17.99	23.94	30.00	PASS
	48/5240	18.21	18.43	17.82	18.04	17.29	17.51	17.75	17.97	24.02	30.00	PASS
802.11n HT40	38/5190	13.37	13.82	13.69	14.14	13.15	13.60	13.46	13.91	19.89	30.00	PASS
	46/5230	17.10	17.55	16.58	17.03	16.23	16.68	16.68	17.13	23.13	30.00	PASS
802.11ac VHT20	36/5180	18.46	18.46	18.03	18.03	17.55	17.55	17.88	17.88	24.01	30.00	PASS
	40/5200	18.37	18.37	17.98	17.98	17.65	17.65	17.79	17.79	23.98	30.00	PASS
	48/5240	18.33	18.33	17.87	17.87	17.59	17.59	17.65	17.65	23.89	30.00	PASS
802.11ac VHT40	38/5190	21.19	21.32	20.98	21.11	20.56	20.69	20.78	20.91	27.04	30.00	PASS
	46/5230	21.23	21.36	21.01	21.14	20.62	20.75	20.79	20.92	27.07	30.00	PASS
802.11ac VHT80	42/5210	21.32	21.61	21.11	21.40	20.59	20.88	20.87	21.16	27.29	30.00	PASS

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

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm/10})}+10^{(\text{Power antenna2 in dBm/10})}+10^{(\text{Power antenna3 in dBm/10})}+10^{(\text{Power antenna4 in dBm/10})})$.

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 $N_{ANT} \leqslant 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 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 $N_{ANT} \geqslant 5$.

So directional gain = G_{ANT} + Array Gain =3+0=3 dBi<6dBi. So the power limt is 30dBm.

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		MIMO Antenna3		MIMO Antenna4		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)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	52/5260	11.27	11.49	12.06	12.28	11.71	11.93	11.57	11.79	17.90	24.00	PASS
	60/5300	11.77	11.99	12.39	12.61	11.87	12.09	11.66	11.88	18.17	24.00	PASS
	64/5320	11.80	12.02	12.20	12.42	11.95	12.17	11.78	12.00	18.18	24.00	PASS
802.11n HT40	54/5270	14.48	14.93	14.89	15.34	14.57	15.02	14.04	14.49	20.97	24.00	PASS
	62/5310	14.75	15.20	14.94	15.39	14.82	15.27	14.25	14.70	21.16	24.00	PASS
802.11ac VHT20	52/5260	12.23	12.23	12.47	12.47	11.75	11.75	11.53	11.53	18.03	24.00	PASS
	60/5300	12.27	12.27	12.42	12.42	12.06	12.06	11.66	11.66	18.13	24.00	PASS
	64/5320	12.52	12.52	12.55	12.55	12.07	12.07	11.74	11.74	18.25	24.00	PASS
802.11ac VHT40	54/5270	15.08	15.21	15.32	15.45	15.03	15.16	14.69	14.82	21.19	24.00	PASS
	62/5310	15.11	15.24	15.29	15.42	15.09	15.22	14.72	14.85	21.21	24.00	PASS
802.11ac VHT80	58/5290	13.05	13.34	13.22	13.51	13.01	13.30	12.76	13.05	19.33	24.00	PASS

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

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm/10})}+10^{(\text{Power antenna2 in dBm/10})}+10^{(\text{Power antenna3 in dBm/10})}+10^{(\text{Power antenna4 in dBm/10})})$.

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 $N_{ANT} \leqslant 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 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 $N_{ANT} \geqslant 5$.

So directional gain = G_{ANT} + Array Gain =3+0=3 dBi<6dBi. So the power limt is 24dBm.

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		MIMO Antenna3		MIMO Antenna4		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)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	100/5500	11.94	12.16	12.37	12.59	11.75	11.97	11.48	11.70	18.14	24.00	PASS
	120/5600	11.72	11.94	12.15	12.37	11.67	11.89	11.52	11.74	18.01	24.00	PASS
	140/5700	11.69	11.91	12.21	12.43	11.77	11.99	11.44	11.66	18.03	24.00	PASS
	144/5720	11.65	11.87	12.16	12.38	11.55	11.77	11.33	11.55	17.92	24.00	PASS
802.11n HT40	102/5510	12.89	13.34	13.25	13.70	12.76	13.21	13.29	13.74	19.52	24.00	PASS
	118/5590	14.83	15.28	15.26	15.71	14.65	15.10	14.47	14.92	21.28	24.00	PASS
	134/5670	14.72	15.17	15.31	15.76	14.73	15.18	14.48	14.93	21.29	24.00	PASS
	142/5710	14.65	15.10	15.13	15.58	14.67	15.12	14.28	14.73	21.16	24.00	PASS
802.11ac VHT20	100/5500	11.83	11.83	12.54	12.54	11.69	11.69	11.56	11.56	17.94	24.00	PASS
	120/5600	11.72	11.72	12.46	12.46	11.75	11.75	11.43	11.43	17.88	24.00	PASS
	140/5700	11.85	11.85	12.48	12.48	11.69	11.69	11.58	11.58	17.93	24.00	PASS
	144/5720	11.74	11.74	12.39	12.39	11.71	11.71	11.45	11.45	17.86	24.00	PASS
802.11ac VHT40	102/5510	14.79	14.92	15.32	15.45	14.62	14.75	14.54	14.67	20.98	24.00	PASS
	118/5590	14.66	14.79	15.27	15.40	14.72	14.85	14.43	14.56	20.94	24.00	PASS
	134/5670	14.83	14.96	15.38	15.51	14.66	14.79	14.48	14.61	21.01	24.00	PASS
	142/5710	14.58	14.71	15.29	15.42	14.58	14.71	14.37	14.50	20.87	24.00	PASS
802.11ac VHT80	122/5610	15.69	15.98	16.31	16.60	15.74	16.03	15.67	15.96	22.17	24.00	PASS
	138/5690	15.65	15.94	16.29	16.58	15.63	15.92	15.47	15.76	22.09	24.00	PASS

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

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm/10})}+10^{(\text{Power antenna2 in dBm/10})}+10^{(\text{Power antenna3 in dBm/10})}+10^{(\text{Power antenna4 in dBm/10})})$.

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 $N_{ANT} \leqslant 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 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 $N_{ANT} \geqslant 5$.

So directional gain = G_{ANT} + Array Gain =3+0=3 dBi<6dBi. So the power limt is 24.00dBm.

U-NII-3

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		MIMO Antenna3		MIMO Antenna4		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)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	149/5745	22.89	23.11	23.99	24.21	22.38	22.60	22.99	23.21	29.34	30.00	PASS
	157/5785	23.06	23.28	23.66	23.88	22.77	22.99	23.27	23.49	29.44	30.00	PASS
	165/5825	23.37	23.59	23.89	24.11	22.58	22.80	23.02	23.24	29.48	30.00	PASS
802.11n HT40	151/5755	22.83	23.28	23.86	24.31	22.84	23.29	23.21	23.66	29.67	30.00	PASS
	159/5795	22.56	23.01	23.54	23.99	22.47	22.92	23.11	23.56	29.41	30.00	PASS
802.11ac VHT20	149/5745	22.94	22.94	23.91	23.91	22.56	22.56	23.03	23.03	29.16	30.00	PASS
	157/5785	23.11	23.11	23.87	23.87	22.68	22.68	23.05	23.05	29.22	30.00	PASS
	165/5825	23.19	23.19	23.77	23.77	22.73	22.73	23.24	23.24	29.27	30.00	PASS
802.11ac VHT40	151/5755	22.73	22.86	23.94	24.07	22.76	22.89	23.19	23.32	29.34	30.00	PASS
	159/5795	22.56	22.69	23.66	23.79	22.52	22.65	23.04	23.17	29.12	30.00	PASS
802.11ac VHT80	155/5775	23.11	23.40	23.62	23.91	22.58	22.87	23.22	23.51	29.46	30.00	PASS

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

The Total Power $=10\log(10^{(\text{Power antenna1 in dBm/10})}+10^{(\text{Power antenna2 in dBm/10})}+10^{(\text{Power antenna3 in dBm/10})}+10^{(\text{Power antenna4 in dBm/10})})$.

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 $N_{ANT} \leqslant 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 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 $N_{ANT} \geqslant 5$.

So directional gain = G_{ANT} + Array Gain =3+0=3 dBi<6dBi. So the power limt is 30dBm.

MIMO (With Beamforming)

U-NII-1

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		MIMO Antenna3		MIMO Antenna4		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)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	36/5180	17.86	18.08	17.62	17.84	17.05	17.27	17.54	17.76	23.77	26.98	PASS
	40/5200	17.95	18.17	17.67	17.89	17.16	17.38	17.68	17.90	23.87	26.98	PASS
	48/5240	18.14	18.36	17.79	18.01	17.12	17.34	17.73	17.95	23.95	26.98	PASS
802.11n HT40	38/5190	13.31	13.76	13.63	14.08	13.11	13.56	13.44	13.89	19.84	26.98	PASS
	46/5230	17.04	17.49	16.52	16.97	16.22	16.67	16.63	17.08	23.08	26.98	PASS
802.11ac VHT20	36/5180	18.34	18.34	17.96	17.96	17.46	17.46	17.84	17.84	23.93	26.98	PASS
	40/5200	18.33	18.33	17.92	17.92	17.54	17.54	17.71	17.71	23.91	26.98	PASS
	48/5240	18.26	18.26	17.78	17.78	17.52	17.52	17.62	17.62	23.83	26.98	PASS
802.11ac VHT40	38/5190	20.55	20.68	20.37	20.50	20.03	20.16	20.15	20.28	26.43	26.98	PASS
	46/5230	20.63	20.76	20.58	20.71	20.08	20.21	20.21	20.34	26.54	26.98	PASS
802.11ac VHT80	42/5210	20.47	20.76	20.05	20.34	19.68	19.97	20.11	20.40	26.40	26.98	PASS

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

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)}+10^{(\text{Power antenna3 in dBm}/10)}+10^{(\text{Power antenna4 in dBm}/10)})$.

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)= 3+10log（4/1）=9.02 dBi ＞ 6dBi. So the power limt is 26.98dBm

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		MIMO Antenna3		MIMO Antenna4		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)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	52/5260	11.16	11.38	12.03	12.25	11.71	11.93	11.54	11.76	17.86	20.98	PASS
	60/5300	11.72	11.94	12.35	12.57	11.83	12.05	11.63	11.85	18.13	20.98	PASS
	64/5320	11.77	11.99	12.13	12.35	11.91	12.13	11.76	11.98	18.14	20.98	PASS
802.11n HT40	54/5270	14.34	14.79	14.83	15.28	14.55	15.00	14.02	14.47	20.91	20.98	PASS
	62/5310	14.27	14.72	14.92	15.37	14.48	14.93	14.06	14.51	20.91	20.98	PASS
802.11ac VHT20	52/5260	12.11	12.11	12.46	12.46	11.71	11.71	11.47	11.47	17.97	20.98	PASS
	60/5300	12.16	12.16	12.36	12.36	12.03	12.03	11.62	11.62	18.07	20.98	PASS
	64/5320	12.43	12.43	12.54	12.54	12.04	12.04	11.71	11.71	18.21	20.98	PASS
802.11ac VHT40	54/5270	14.77	14.90	15.18	15.31	14.65	14.78	14.41	14.54	20.92	20.98	PASS
	62/5310	14.66	14.79	15.11	15.24	14.74	14.87	14.57	14.70	20.93	20.98	PASS
802.11ac VHT80	58/5290	13.04	13.33	13.13	13.42	13.00	13.29	12.72	13.01	19.29	20.98	PASS

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

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)}+10^{(\text{Power antenna3 in dBm}/10)}+10^{(\text{Power antenna4 in dBm}/10)})$.

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)= 3+10log（4/1）=9.02 dBi ＞ 6dBi. So the power limt is 20.98dBm

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		MIMO Antenna3		MIMO Antenna4		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)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	100/5500	11.94	12.16	12.37	12.59	11.75	11.97	11.48	11.70	18.14	20.98	PASS
	120/5600	11.72	11.94	12.15	12.37	11.67	11.89	11.52	11.74	18.01	20.98	PASS
	140/5700	11.69	11.91	12.21	12.43	11.77	11.99	11.44	11.66	18.03	20.98	PASS
	144/5720	11.62	11.84	12.14	12.36	11.52	11.74	11.28	11.50	17.89	20.98	PASS
802.11n HT40	102/5510	12.87	13.32	13.21	13.66	12.72	13.17	13.26	13.71	19.49	20.98	PASS
	118/5590	14.35	14.80	15.03	15.48	14.21	14.66	14.09	14.54	20.90	20.98	PASS
	134/5670	14.27	14.72	15.12	15.57	14.37	14.82	14.11	14.56	20.95	20.98	PASS
	142/5710	14.40	14.85	15.04	15.49	14.41	14.86	14.01	14.46	20.95	20.98	PASS
802.11ac VHT20	100/5500	11.83	11.83	12.54	12.54	11.69	11.69	11.56	11.56	17.94	20.98	PASS
	120/5600	11.72	11.72	12.46	12.46	11.75	11.75	11.43	11.43	17.88	20.98	PASS
	140/5700	11.85	11.85	12.48	12.48	11.64	11.64	11.58	11.58	17.92	20.98	PASS
	144/5720	11.71	11.71	12.37	12.37	11.66	11.66	11.38	11.38	17.82	20.98	PASS
802.11ac VHT40	102/5510	14.39	14.52	15.03	15.16	14.35	14.48	14.25	14.38	20.67	20.98	PASS
	118/5590	14.32	14.45	15.01	15.14	14.39	14.52	14.18	14.31	20.64	20.98	PASS
	134/5670	14.48	14.61	15.14	15.27	14.44	14.57	14.23	14.36	20.74	20.98	PASS
	142/5710	14.54	14.67	15.22	15.35	14.52	14.65	14.33	14.46	20.82	20.98	PASS
802.11ac VHT80	122/5610	14.44	14.73	15.17	15.46	14.52	14.81	14.31	14.60	20.94	20.98	PASS
	138/5690	14.28	14.57	15.02	15.31	14.36	14.65	14.46	14.75	20.85	20.98	PASS

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

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm/10})}+10^{(\text{Power antenna2 in dBm/10})}+10^{(\text{Power antenna3 in dBm/10})}+10^{(\text{Power antenna4 in dBm/10})})$.

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)= 3+10log（4/1）=9.02 dBi ＞ 6dBi. So the power limt is 20.98dBm

U-NII-3

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		MIMO Antenna3		MIMO Antenna4		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)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11n HT20	149/5745	20.17	20.39	21.43	21.65	20.44	20.66	20.52	20.74	26.91	26.98	PASS
	157/5785	20.38	20.60	21.38	21.60	20.36	20.58	20.44	20.66	26.90	26.98	PASS
	165/5825	20.52	20.74	21.32	21.54	20.27	20.49	20.34	20.56	26.87	26.98	PASS
802.11n HT40	151/5755	20.08	20.53	20.94	21.39	20.37	20.82	20.43	20.88	26.93	26.98	PASS
	159/5795	20.02	20.47	21.03	21.48	20.27	20.72	20.37	20.82	26.91	26.98	PASS
802.11ac VHT20	149/5745	20.23	20.23	21.32	21.32	20.21	20.21	20.45	20.45	26.60	26.98	PASS
	157/5785	20.18	20.18	21.26	21.26	20.16	20.16	20.39	20.39	26.54	26.98	PASS
	165/5825	20.27	20.27	21.23	21.23	20.28	20.28	20.36	20.36	26.57	26.98	PASS
802.11ac VHT40	151/5755	20.31	20.44	21.33	21.46	20.64	20.77	20.71	20.84	26.92	26.98	PASS
	159/5795	20.24	20.37	21.26	21.39	20.69	20.82	20.85	20.98	26.93	26.98	PASS
802.11ac VHT80	155/5775	20.15	20.44	20.62	20.91	20.19	20.48	20.23	20.52	26.62	26.98	PASS

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

The Total Power =$10\log(10^{(\text{Power antenna1 in dBm/10})}+10^{(\text{Power antenna2 in dBm/10})}+10^{(\text{Power antenna3 in dBm/10})}+10^{(\text{Power antenna4 in dBm/10})})$.

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)= 3+10log（4/1）=9.02 dBi ＞ 6dBi. So the power limt is 26.98dBm

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
12	-5	5200.006862	5200.001381	5199.992884	5199.986256
12	0	5199.998804	5199.999894	5199.990361	5199.980020
12	5	5199.991354	5199.995737	5199.985755	5199.974002
12	10	5199.991006	5199.991596	5199.984019	5199.973904
12	20	5199.986479	5199.988826	5199.982582	5199.973151
12	30	5199.982841	5199.984546	5199.977854	5199.967557
12	40	5199.980720	5199.983728	5199.977433	5199.957763
12	45	5199.973319	5199.983090	5199.968189	5199.949112
9	20	5199.969233	5199.981324	5199.966525	5199.940675
14	20	5199.960606	5199.976399	5199.962492	5199.939319
MHz		-0.039394	-0.023601	-0.037508	-0.060681
PPM		-7.575769	-4.538645	-7.213108	-11.669457

Voltage (V)	Temperature (°C)	U-NII-2A Test Results			
		5300MHz			
		1min	2min	5min	10min
12	-5	5299.999258	5299.996618	5299.988990	5299.987182
12	0	5299.994522	5299.991381	5299.986383	5299.979332
12	5	5299.990281	5299.987562	5299.981954	5299.978312
12	10	5299.981661	5299.984569	5299.973625	5299.971741
12	20	5299.977252	5299.976401	5299.964405	5299.962883
12	30	5299.967884	5299.972604	5299.954820	5299.957808
12	40	5299.959491	5299.966844	5299.950043	5299.956080
12	45	5299.953125	5299.966108	5299.946186	5299.951729
9	20	5299.943188	5299.964450	5299.943558	5299.949141
14	20	5299.939878	5299.960095	5299.935347	5299.942769
MHz		-0.060122	-0.039905	-0.064653	-0.057231
PPM		-11.343749	-7.529194	-12.198599	-10.798286

Voltage (V)	Temperature (°C)	U-NII-2C Test Results			
		5580MHz			
		1min	2min	5min	10min
12	-5	5580.007910	5579.999817	5579.992373	5579.985844
12	0	5580.005761	5579.990876	5579.984678	5579.979236
12	5	5579.997074	5579.983670	5579.981988	5579.978501
12	10	5579.989393	5579.979042	5579.977953	5579.975176
12	20	5579.981199	5579.971084	5579.969563	5579.973023
12	30	5579.972193	5579.966504	5579.966925	5579.965201
12	40	5579.962981	5579.957121	5579.962617	5579.955898
12	45	5579.956313	5579.957114	5579.960068	5579.946205
9	20	5579.948583	5579.952006	5579.953192	5579.944502
14	20	5579.945108	5579.948358	5579.951095	5579.935472
MHz		-0.054892	-0.051642	-0.048905	-0.064528
PPM		-9.837286	-9.254792	-8.764255	-11.564112

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
12	-5	5785.005086	5785.001508	5784.992624	5784.988317
12	0	5784.995808	5784.992592	5784.991198	5784.981068
12	5	5784.994067	5784.984146	5784.985946	5784.979737
12	10	5784.993418	5784.980605	5784.982790	5784.975077
12	20	5784.985886	5784.972545	5784.973837	5784.968268
12	30	5784.983316	5784.964739	5784.964269	5784.962011
12	40	5784.982502	5784.955035	5784.956466	5784.952926
12	45	5784.979094	5784.948004	5784.955383	5784.947698
9	20	5784.971564	5784.946593	5784.952665	5784.938544
14	20	5784.963400	5784.944590	5784.946653	5784.938328
MHz		-0.036600	-0.055410	-0.053347	-0.061672
PPM		-6.326666	-9.578149	-9.221658	-10.660692

5.4. Power Spectral Density

Ambient condition

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

Method of Measurement

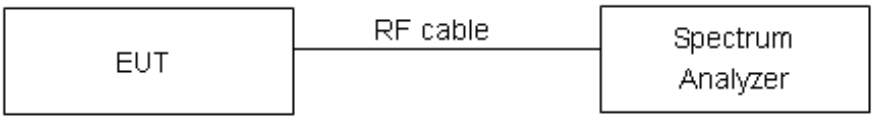
The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

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.

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	9.98	10.21	17	PASS
	40	13.27	13.49	17	PASS
	48	13.54	13.76	17	PASS

U-NII-2A

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52	10.34	10.57	11	PASS
	60	10.67	10.89	11	PASS
	64	10.50	10.72	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	10.09	10.32	11	PASS
	120	10.46	10.68	11	PASS
	140	10.34	10.57	11	PASS
	144	10.35	10.58	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	9.77	9.99	30	PASS
	157	9.86	10.09	30	PASS
	165	9.55	9.77	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	10.42	10.65	17	PASS
	40	13.05	13.28	17	PASS
	48	13.09	13.31	17	PASS

U-NII-2A

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52	10.07	10.30	11	PASS
	60	10.31	10.53	11	PASS
	64	10.19	10.42	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	9.95	10.18	11	PASS
	120	10.73	10.95	11	PASS
	140	10.24	10.47	11	PASS
	144	10.64	10.86	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	11.41	11.63	30	PASS
	157	11.13	11.35	30	PASS
	165	10.70	10.92	30	PASS

SISO Antenna 3

U-NII-1

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	9.85	10.07	17	PASS
	40	13.20	13.42	17	PASS
	48	13.29	13.52	17	PASS

U-NII-2A

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52	10.10	10.32	11	PASS
	60	10.24	10.46	11	PASS
	64	10.13	10.36	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	9.94	10.17	11	PASS
	120	10.64	10.86	11	PASS
	140	10.34	10.57	11	PASS
	144	10.65	10.87	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	10.31	10.53	30	PASS
	157	10.35	10.58	30	PASS
	165	10.32	10.55	30	PASS

SISO Antenna 4

U-NII-1

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	10.55	10.77	17	PASS
	40	12.99	13.22	17	PASS
	48	12.92	13.14	17	PASS

U-NII-2A

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52	9.67	9.89	11	PASS
	60	9.85	10.07	11	PASS
	64	10.01	10.23	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	9.86	10.09	11	PASS
	120	10.54	10.77	11	PASS
	140	9.77	10.00	11	PASS
	144	10.14	10.37	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	10.14	10.37	30	PASS
	157	9.98	10.20	30	PASS
	165	9.64	9.86	30	PASS

MIMO (Without Beamforming)

U-NII-1

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density									Limit (dBm/ MHz)	Conclusion
		Antenna 1		Antenna 2		Antenna 3		Antenna 4		Total Power (dBm /MHz)		
		Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)			
802.11n HT20	36/5180	7.34	7.56	7.25	7.47	7.14	7.36	6.75	6.97	13.37	13.98	PASS
	40/5200	7.29	7.51	7.30	7.52	7.12	7.34	6.68	6.90	13.35	13.98	PASS
	48/5240	7.40	7.62	7.17	7.39	7.17	7.39	6.67	6.89	13.35	13.98	PASS
802.11n HT40	38/5190	0.69	1.14	0.31	0.76	0.08	0.53	0.50	0.95	6.87	13.98	PASS
	46/5230	4.04	4.49	3.67	4.12	3.37	3.82	3.30	3.74	10.07	13.98	PASS
802.11ac VHT20	36/5180	7.40	7.40	7.15	7.15	7.18	7.18	6.88	6.88	13.18	13.98	PASS
	40/5200	7.69	7.69	7.29	7.29	7.43	7.43	6.54	6.54	13.28	13.98	PASS
	48/5240	7.62	7.62	7.29	7.29	7.73	7.73	6.85	6.85	13.41	13.98	PASS
802.11ac VHT40	38/5190	7.45	7.59	7.32	7.45	7.13	7.26	6.84	6.97	13.35	13.98	PASS
	46/5230	7.78	7.92	7.40	7.53	7.28	7.41	6.97	7.11	13.52	13.98	PASS
802.11ac VHT80	42/5210	5.47	5.76	5.62	5.92	5.35	5.64	4.54	4.83	11.58	13.98	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=10log($10^{(\text{PSD antenna1 in dBm/10})}$+$10^{(\text{PSD antenna2 in dBm/10})}$+$10^{(\text{PSD antenna3 in dBm/10})}$) +$10^{(\text{PSD antenna4 in dBm/10})}$)

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=3+10log（4/1)=9.02 dBi>6 dBi. So the PSD limt is13.98dBm.

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density									Limit (dBm/ MHz)	Conclusion
		Antenna 1		Antenna 2		Antenna 3		Antenna 4		Total Power (dBm/ MHz)		
		Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)			
802.11n HT20	52/5260	1.44	1.66	1.25	1.47	1.22	1.44	1.06	1.28	7.49	7.98	PASS
	60/5300	1.60	1.82	1.68	1.90	1.18	1.40	1.23	1.45	7.67	7.98	PASS
	64/5320	1.70	1.92	1.67	1.89	1.11	1.33	1.60	1.82	7.77	7.98	PASS
802.11n HT40	54/5270	1.36	1.80	1.29	1.74	1.08	1.53	0.98	1.42	7.65	7.98	PASS
	62/5310	1.91	2.35	1.61	2.06	1.39	1.83	0.99	1.44	7.95	7.98	PASS
802.11ac HT20	52/5260	1.59	1.59	1.83	1.83	1.66	1.66	1.07	1.07	7.57	7.98	PASS
	60/5300	1.43	1.43	1.63	1.63	1.69	1.69	1.18	1.18	7.51	7.98	PASS
	64/5320	1.72	1.72	2.00	2.00	1.63	1.63	1.25	1.25	7.68	7.98	PASS
802.11ac HT40	54/5270	1.57	1.70	1.45	1.58	1.51	1.65	1.26	1.40	7.60	7.98	PASS
	62/5310	1.77	1.90	1.78	1.91	1.72	1.85	1.22	1.35	7.78	7.98	PASS
802.11ac HT80	58/5290	-2.99	-2.69	-4.05	-3.75	-4.41	-4.11	-4.69	-4.40	2.33	7.98	PASS

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

The Total Power =10log($10^{(\text{Power antenna1 in dBm/10})}$+$10^{(\text{Power antenna2 in dBm/10})}$+$10^{(\text{Power antenna3 in dBm/10})}$) +$10^{(\text{PSD antenna4 in dBm/10})}$).

2. 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=3+10log（4/1)=9.02dBi>6 dBi. So the PSD limt is 7.98dBm.

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density									Limit (dBm/ MHz)	Conclusion
		Antenna 1		Antenna 2		Antenna 3		Antenna 4		Total Power (dBm/ MHz)		
		Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)			
802.11n HT20	100/5500	1.16	1.38	1.56	1.78	1.75	1.97	0.92	1.14	7.60	7.98	PASS
	120/5600	1.86	2.08	2.07	2.29	1.35	1.57	1.03	1.25	7.83	7.98	PASS
	140/5700	1.60	1.82	1.79	2.01	1.18	1.40	0.54	0.76	7.54	7.98	PASS
	144/5720	1.70	1.92	1.46	1.68	1.38	1.60	0.87	1.09	7.61	7.98	PASS
802.11n HT40	102/5510	-0.11	0.34	-0.07	0.37	-1.43	-0.99	-0.53	-0.08	5.96	7.98	PASS
	118/5590	1.64	2.09	1.73	2.17	1.51	1.96	0.94	1.39	7.93	7.98	PASS
	134/5670	1.34	1.78	1.56	2.01	1.82	2.26	1.18	1.63	7.95	7.98	PASS
	142/5710	1.09	1.54	1.76	2.21	1.60	2.05	1.36	1.80	7.93	7.98	PASS
802.11ac HT20	100/5500	1.58	1.58	1.67	1.67	1.70	1.70	1.26	1.26	7.58	7.98	PASS
	120/5600	1.91	1.91	2.19	2.19	1.69	1.69	1.35	1.35	7.81	7.98	PASS
	140/5700	1.73	1.73	1.65	1.65	1.47	1.47	0.83	0.83	7.45	7.98	PASS
	144/5720	1.78	1.78	2.03	2.03	1.28	1.28	0.81	0.81	7.52	7.98	PASS
802.11ac HT40	102/5510	1.31	1.45	1.33	1.47	0.92	1.06	1.21	1.34	7.35	7.98	PASS
	118/5590	1.64	1.78	1.99	2.13	1.61	1.75	1.17	1.31	7.77	7.98	PASS
	134/5670	1.39	1.53	1.63	1.76	1.99	2.13	1.60	1.73	7.81	7.98	PASS
	142/5710	1.59	1.73	1.84	1.97	1.75	1.89	1.30	1.44	7.78	7.98	PASS
802.11ac HT80	122/5610	-1.32	-1.03	-0.67	-0.38	-0.96	-0.66	-1.09	-0.80	5.31	7.98	PASS
	138/5690	-1.23	-0.93	-0.68	-0.38	-0.97	-0.67	-1.03	-0.73	5.35	7.98	PASS

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

The Total Power =10log($10^{(\text{Power antenna1 in dBm/10})}$+$10^{(\text{Power antenna2 in dBm/10})}$+$10^{(\text{Power antenna3 in dBm/10})}$) +$10^{(\text{PSD antenna4 in dBm/10})}$).

2. 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=3+10log（4/1)=9.02dBi>6 dBi. So the PSD limt is 7.98dBm.

U-NII-3

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density								Total Power (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Conclusion
		Antenna 1		Antenna 2		Antenna 3		Antenna 4				
		Read Value (dBm/ 500kHz)	PSD (dBm/ 500kHz)	Read Value (dBm/ 500kHz)	PSD (dBm/ 500kHz)	Read Value (dBm/ 500kHz)	PSD (dBm/ 500kHz)	Read Value (dBm/ 500kHz)	PSD (dBm/ 500kHz)			
802.11n HT20	149/5745	8.72	8.94	9.45	9.67	8.30	8.52	8.85	9.07	15.09	26.98	PASS
	157/5785	9.23	9.45	9.56	9.78	7.58	7.80	8.78	9.00	15.09	26.98	PASS
	165/5825	8.81	9.03	9.39	9.61	7.82	8.04	8.85	9.07	14.99	26.98	PASS
802.11n HT40	151/5755	5.88	6.33	6.63	7.07	5.50	5.94	6.18	6.63	12.53	26.98	PASS
	159/5795	5.96	6.40	6.06	6.51	4.76	5.21	5.59	6.04	12.09	26.98	PASS
802.11ac VHT20	149/5745	9.24	9.24	9.45	9.45	8.20	8.20	9.23	9.23	15.08	26.98	PASS
	157/5785	8.84	8.84	9.46	9.46	8.27	8.27	9.08	9.08	14.95	26.98	PASS
	165/5825	8.88	8.88	9.10	9.10	8.03	8.03	8.88	8.88	14.76	26.98	PASS
802.11ac VHT40	151/5755	6.06	6.19	6.60	6.74	5.26	5.40	6.35	6.49	12.25	26.98	PASS
	159/5795	5.91	6.05	6.27	6.40	5.00	5.14	6.39	6.53	12.08	26.98	PASS
802.11ac VHT80	155/5775	2.78	3.08	3.69	3.98	1.80	2.10	2.21	2.51	8.99	26.98	PASS

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

The Total Power =10log($10^{(\text{Power antenna1 in dBm/10})}$+$10^{(\text{Power antenna2 in dBm/10})}$+$10^{(\text{Power antenna3 in dBm/10})}$) +$10^{(\text{PSD antenna4 in dBm/10})}$).

2. 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=3+10log（4/1)=9.02dBi>6 dBi. So the PSD limt is 26.98dBm.

MIMO (With Beamforming)

U-NII-1

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density									Limit (dBm/ MHz)	Conclusion
		Antenna 1		Antenna 2		Antenna 3		Antenna 4		Total Power (dBm /MHz)		
		Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)			
802.11n HT20	36/5180	7.23	7.45	7.08	7.30	7.17	7.39	6.70	6.92	13.29	13.98	PASS
	40/5200	7.21	7.43	7.18	7.40	7.04	7.26	6.88	7.10	13.32	13.98	PASS
	48/5240	7.38	7.60	7.14	7.36	7.29	7.51	6.75	6.97	13.39	13.98	PASS
802.11n HT40	38/5190	0.79	1.24	0.40	0.84	0.42	0.87	0.14	0.58	6.91	13.98	PASS
	46/5230	3.74	4.19	3.49	3.94	3.09	3.53	3.62	4.06	9.96	13.98	PASS
802.11ac VHT20	36/5180	7.45	7.45	7.41	7.41	7.45	7.45	7.08	7.08	13.37	13.98	PASS
	40/5200	7.27	7.27	7.40	7.40	7.15	7.15	6.92	6.92	13.21	13.98	PASS
	48/5240	7.47	7.47	7.24	7.24	7.41	7.41	7.07	7.07	13.32	13.98	PASS
802.11ac VHT40	38/5190	7.02	7.16	6.72	6.86	6.55	6.69	6.56	6.70	12.87	13.98	PASS
	46/5230	6.95	7.08	7.11	7.25	6.69	6.82	6.61	6.74	13.00	13.98	PASS
802.11ac VHT80	42/5210	4.669	4.96	4.73	5.03	4.64	4.93	4.49	4.78	10.95	13.98	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=10log($10^{(\text{PSD antenna1 in dBm/10})}$+$10^{(\text{PSD antenna2 in dBm/10})}$+$10^{(\text{PSD antenna3 in dBm/10})}$) +$10^{(\text{PSD antenna4 in dBm/10})}$)

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=3+10log（4/1)=9.02dBi>6 dBi. So the PSD limt is 13.98dBm.

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density									Limit (dBm/ MHz)	Conclusion
		Antenna 1		Antenna 2		Antenna 3		Antenna 4		Total Power (dBm/ MHz)		
		Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)			
802.11n HT20	52/5260	1.34	1.56	1.18	1.40	1.12	1.34	0.69	0.91	7.33	7.98	PASS
	60/5300	1.49	1.71	1.49	1.71	1.38	1.60	1.21	1.43	7.63	7.98	PASS
	64/5320	1.82	2.04	1.73	1.95	1.27	1.49	1.03	1.25	7.72	7.98	PASS
802.11n HT40	54/5270	1.39	1.84	1.56	2.00	0.70	1.14	0.85	1.29	7.60	7.98	PASS
	62/5310	1.59	2.04	1.31	1.76	1.06	1.51	0.76	1.21	7.66	7.98	PASS
802.11ac HT20	52/5260	1.38	1.38	1.77	1.77	1.15	1.15	1.08	1.08	7.37	7.98	PASS
	60/5300	1.66	1.66	1.64	1.64	1.09	1.09	1.28	1.28	7.45	7.98	PASS
	64/5320	1.69	1.69	1.71	1.71	1.19	1.19	1.07	1.07	7.45	7.98	PASS
802.11ac HT40	54/5270	1.50	1.63	1.57	1.70	1.25	1.39	0.93	1.06	7.47	7.98	PASS
	62/5310	1.31	1.44	1.54	1.68	1.12	1.26	1.17	1.30	7.44	7.98	PASS
802.11ac HT80	58/5290	-3.85	-3.56	-4.17	-3.88	-4.77	-4.48	-4.73	-4.44	1.95	7.98	PASS

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

The Total Power =10log($10^{(\text{Power antenna1 in dBm/10})}$+$10^{(\text{Power antenna2 in dBm/10})}$+$10^{(\text{Power antenna3 in dBm/10})}$) +$10^{(\text{PSD antenna4 in dBm/10})}$).

2. 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=3+10log（4/1)=9.02dBi>6 dBi. So the PSD limt is 7.98dBm.

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density									Limit (dBm/ MHz)	Conclusion
		Antenna 1		Antenna 2		Antenna 3		Antenna 4		Total Power (dBm/ MHz)		
		Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)	Read Value (dBm/ MHz)	PSD (dBm/ MHz)			
802.11n HT20	100/5500	1.31	1.53	1.46	1.68	1.50	1.72	0.87	1.09	7.53	7.98	PASS
	120/5600	1.32	1.54	1.46	1.68	1.38	1.60	1.18	1.40	7.58	7.98	PASS
	140/5700	1.28	1.50	1.69	1.91	1.30	1.52	0.37	0.59	7.43	7.98	PASS
	144/5720	1.60	1.82	1.86	2.08	1.34	1.56	0.75	0.97	7.65	7.98	PASS
802.11n HT40	102/5510	-0.41	0.03	-0.42	0.02	-1.21	-0.77	-0.64	-0.19	5.81	7.98	PASS
	118/5590	1.29	1.73	1.71	2.16	1.04	1.48	0.53	0.97	7.63	7.98	PASS
	134/5670	1.21	1.65	1.62	2.07	1.25	1.70	0.42	0.87	7.62	7.98	PASS
	142/5710	0.96	1.41	1.48	1.92	1.06	1.50	0.24	0.68	7.42	7.98	PASS
802.11ac HT20	100/5500	1.58	1.58	1.69	1.69	1.75	1.75	0.94	0.94	7.52	7.98	PASS
	120/5600	1.57	1.57	2.18	2.18	1.64	1.64	1.41	1.41	7.73	7.98	PASS
	140/5700	1.73	1.73	1.57	1.57	1.34	1.34	1.02	1.02	7.44	7.98	PASS
	144/5720	1.89	1.89	1.72	1.72	1.56	1.56	1.11	1.11	7.60	7.98	PASS
802.11ac HT40	102/5510	0.98	1.11	0.94	1.08	0.71	0.85	0.35	0.49	6.91	7.98	PASS
	118/5590	1.34	1.48	1.56	1.69	1.13	1.26	0.64	0.78	7.34	7.98	PASS
	134/5670	1.35	1.48	1.71	1.85	1.37	1.50	1.01	1.14	7.52	7.98	PASS
	142/5710	1.01	1.15	1.33	1.46	1.16	1.29	0.87	1.00	7.25	7.98	PASS
802.11ac HT80	122/5610	-2.47	-2.17	-2.11	-1.82	-2.38	-2.09	-2.42	-2.12	3.97	7.98	PASS
	138/5690	-2.42	-2.12	-2.19	-1.89	-2.74	-2.44	-2.84	-2.54	3.78	7.98	PASS

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

The Total Power =10log($10^{(\text{Power antenna1 in dBm/10})}$+$10^{(\text{Power antenna2 in dBm/10})}$+$10^{(\text{Power antenna3 in dBm/10})}$) +$10^{(\text{PSD antenna4 in dBm/10})}$).

2. 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=3+10log（4/1)=9.02dBi>6 dBi. So the PSD limt is 7.98dBm.

U-NII-3

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density									Limit (dBm/ 500kHz)	Conclusion
		Antenna 1		Antenna 2		Antenna 3		Antenna 4		Total Power (dBm/ 500kHz)		
		Read Value (dBm/ 500kHz)	PSD (dBm/ 500kHz)	Read Value (dBm/ 500kHz)	PSD (dBm/ 500kHz)	Read Value (dBm/ 500kHz)	PSD (dBm/ 500kHz)	Read Value (dBm/ 500kHz)	PSD (dBm/ 500kHz)			
802.11n HT20	149/5745	7.89	8.11	9.65	9.87	8.51	8.73	8.35	8.57	14.89	26.98	PASS
	157/5785	8.40	8.62	8.70	8.92	8.29	8.51	8.19	8.41	14.64	26.98	PASS
	165/5825	8.12	8.34	9.75	9.97	8.55	8.77	8.46	8.68	15.01	26.98	PASS
802.11n HT40	151/5755	4.60	5.05	6.09	6.54	4.73	5.18	4.71	5.16	11.55	26.98	PASS
	159/5795	4.68	5.13	6.09	6.54	5.19	5.63	5.09	5.54	11.76	26.98	PASS
802.11ac VHT20	149/5745	8.12	8.12	9.46	9.46	8.19	8.19	8.16	8.16	14.54	26.98	PASS
	157/5785	8.19	8.19	9.14	9.14	7.80	7.80	8.17	8.17	14.38	26.98	PASS
	165/5825	8.46	8.46	9.29	9.29	8.72	8.72	8.31	8.31	14.73	26.98	PASS
802.11ac VHT40	151/5755	4.65	4.79	5.89	6.02	5.20	5.34	5.05	5.19	11.38	26.98	PASS
	159/5795	4.89	5.02	5.89	6.02	5.02	5.15	4.98	5.12	11.37	26.98	PASS
802.11ac VHT80	155/5775	1.49	1.79	1.81	2.10	1.35	1.65	1.25	1.54	7.79	26.98	PASS

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

The Total Power =10log($10^{(\text{Power antenna1 in dBm/10})}$+$10^{(\text{Power antenna2 in dBm/10})}$+$10^{(\text{Power antenna3 in dBm/10})}$) +$10^{(\text{PSD antenna4 in dBm/10})}$).

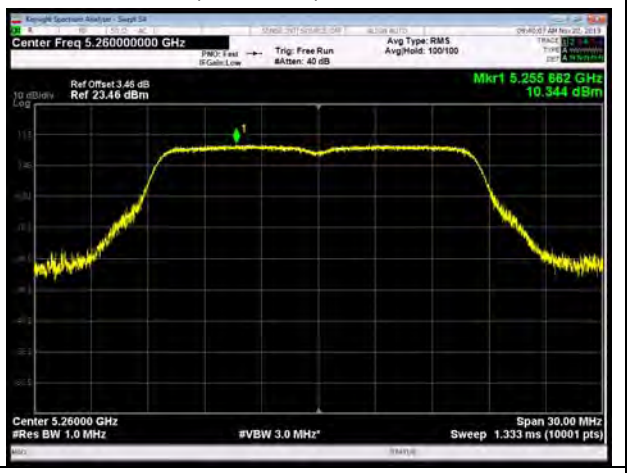
2. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = GANT + Array Gain, For PSD measurements on all devices,Array Gain=10log(Nant/Nss)dB,so directional gain=GANT+Array Gain=3+10log（4/1)=9.02dBi>6 dBi. So the PSD limt is 26.98dBm.

MIMO (Without Beamforming)

SISO Antenna 1

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

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



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

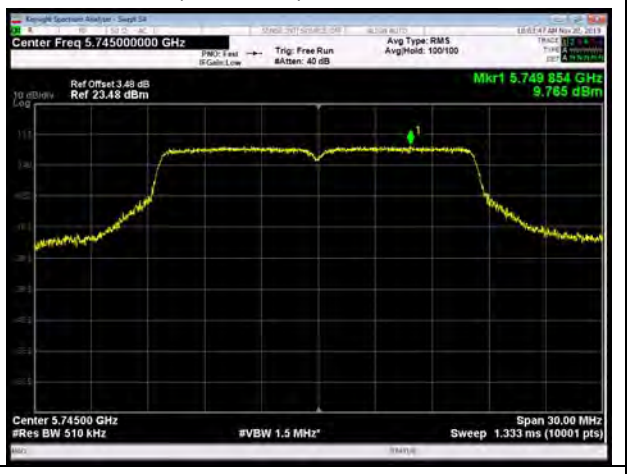
U-NII-2A, 802.11a, Channel No.: 60

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

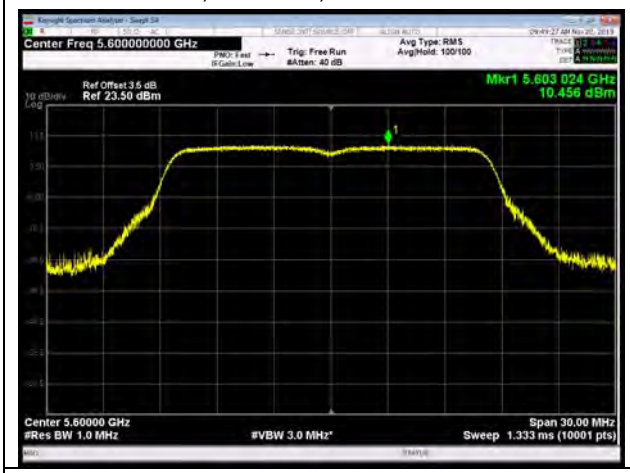
U-NII-2A, 802.11a, Channel No.: 64

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

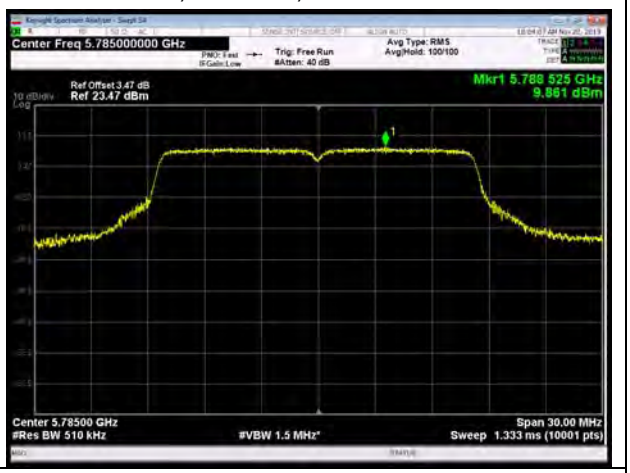
U-NII-3, 802.11a, Channel No.: 149



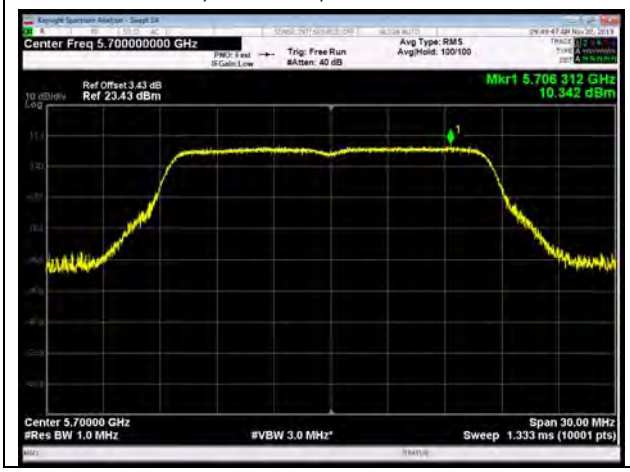
U-NII-2C, 802.11a, Channel No.: 120



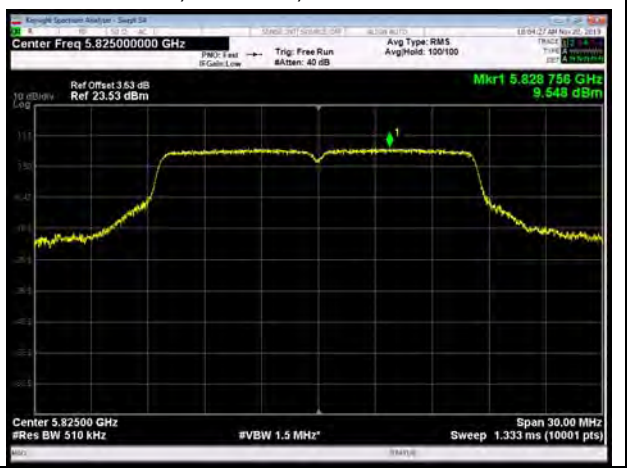
U-NII-3, 802.11a, Channel No.: 157



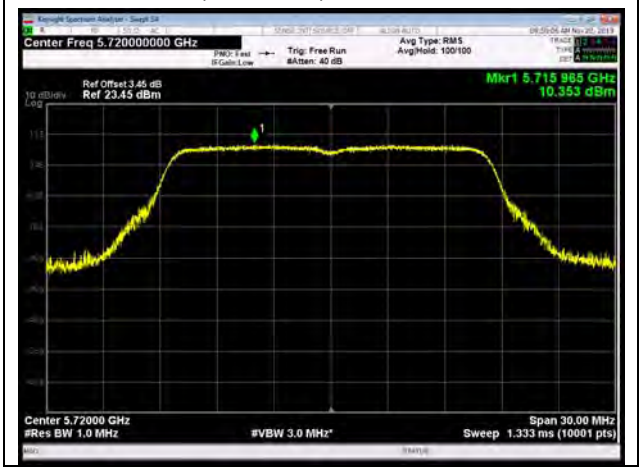
U-NII-2C, 802.11a, Channel No.: 140



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



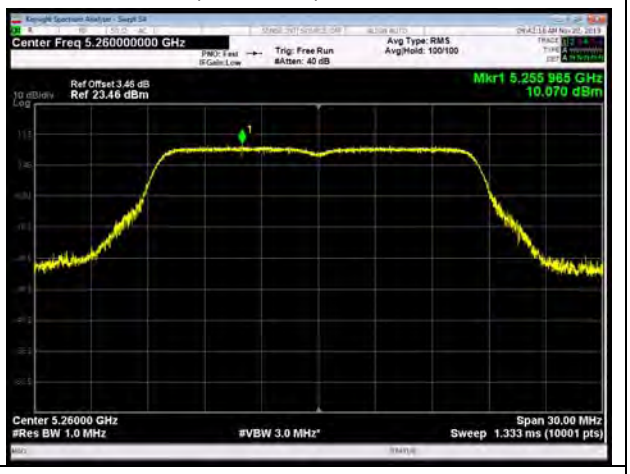
U-NII-2C, 802.11a, Channel No.: 144



SISO Antenna 2

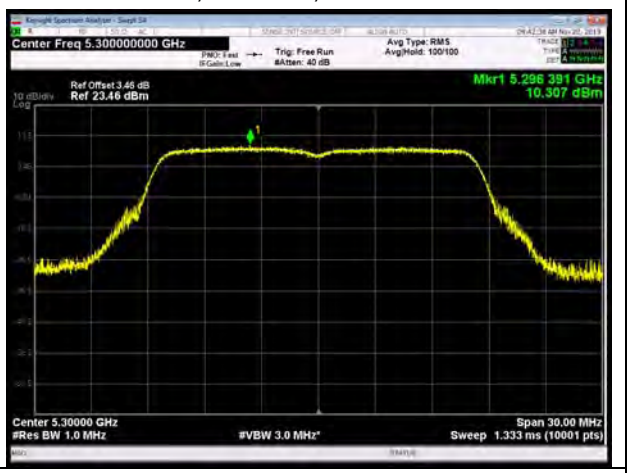
U-NII-1, 802.11a, Channel No.: 36

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



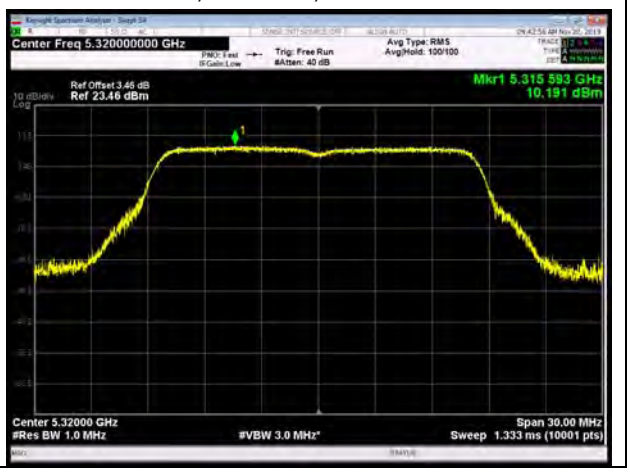
U-NII-1, 802.11a, Channel No.: 40

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



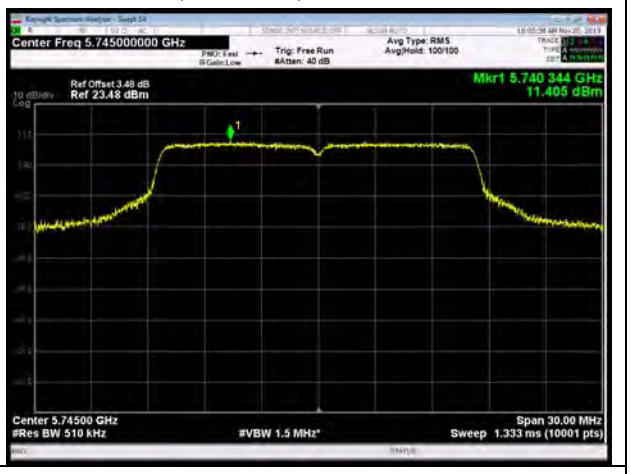
U-NII-1, 802.11a, Channel No.: 48

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

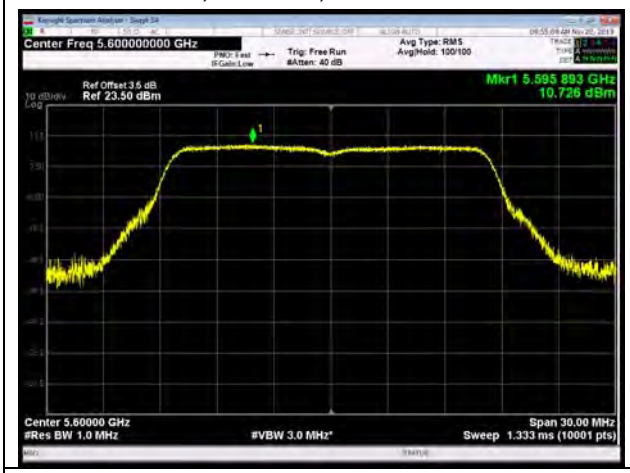


U-NII-2C, 802.11a, Channel No.: 100

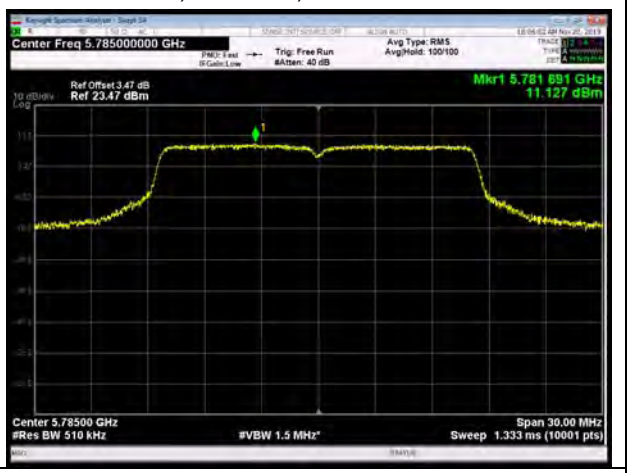
U-NII-3, 802.11a, Channel No.: 149



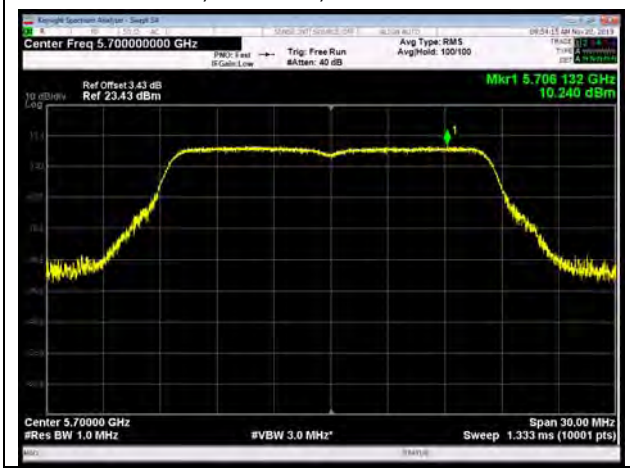
U-NII-2C, 802.11a, Channel No.: 120



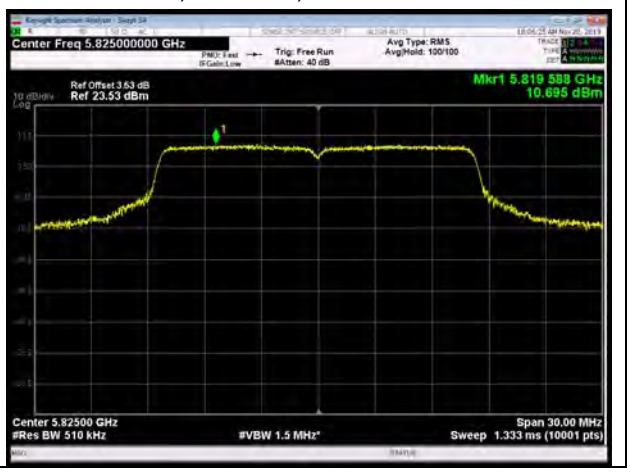
U-NII-3, 802.11a, Channel No.: 157



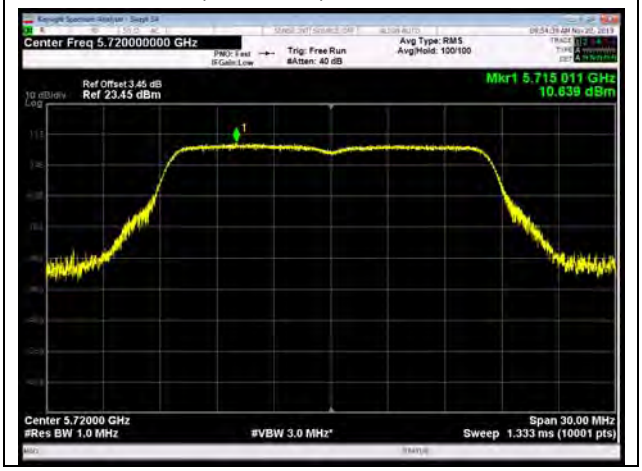
U-NII-2C, 802.11a, Channel No.: 140



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



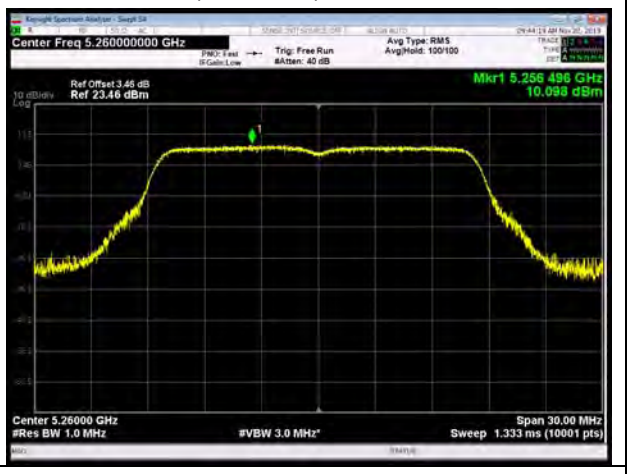
U-NII-2C, 802.11a, Channel No.: 144



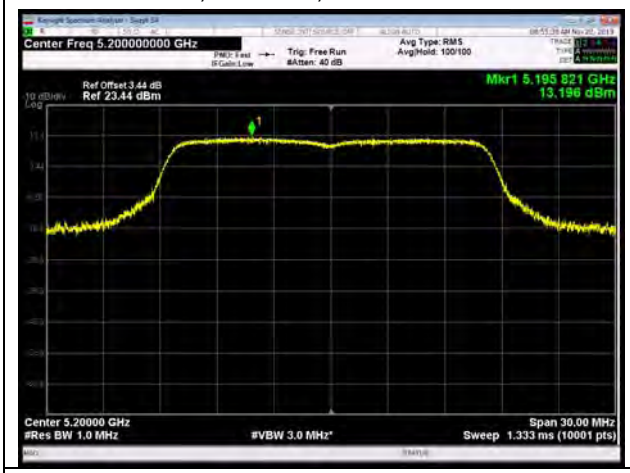
SISO Antenna 3

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

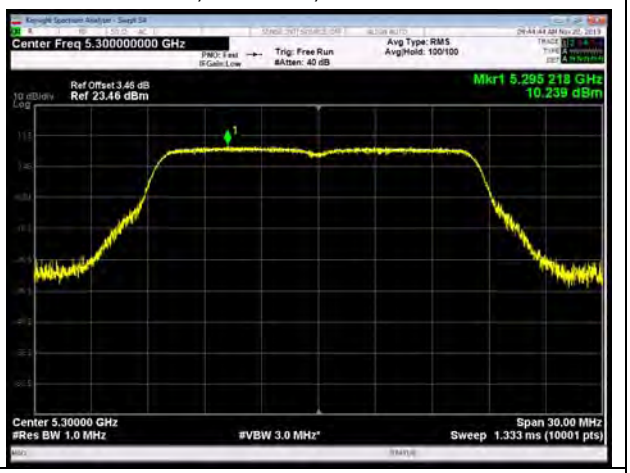
U-NII-2A, 802.11a, Channel No.: 52



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



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

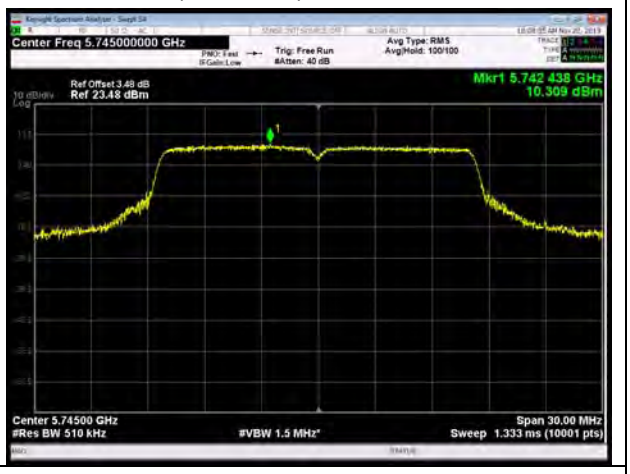


U-NII-1, 802.11a, Channel No.: 48

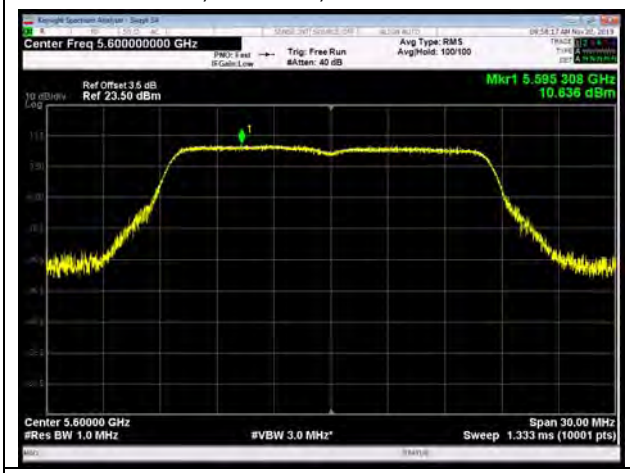
U-NII-2A, 802.11a, Channel No.: 64

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

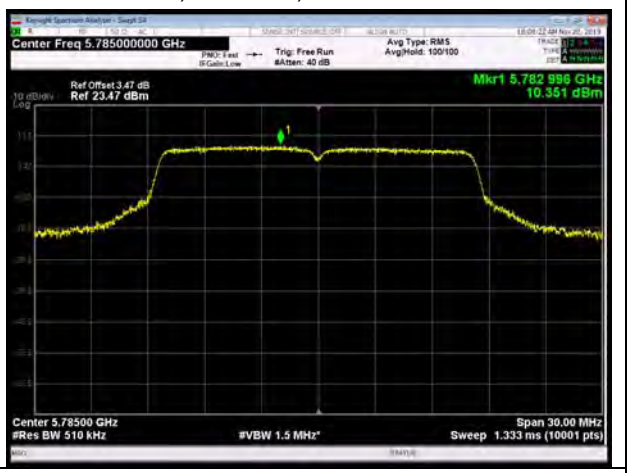
U-NII-3, 802.11a, Channel No.: 149



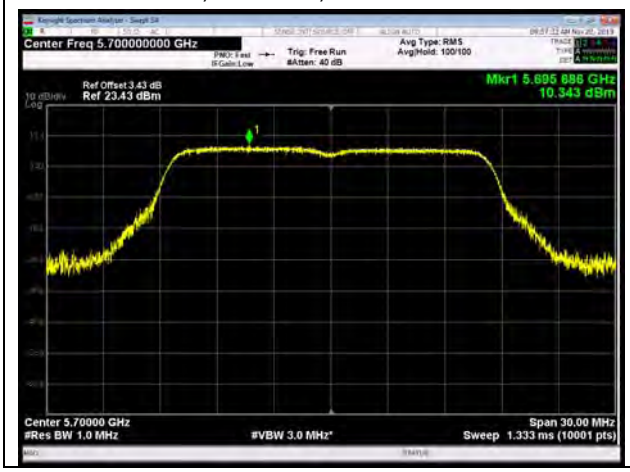
U-NII-2C, 802.11a, Channel No.: 120



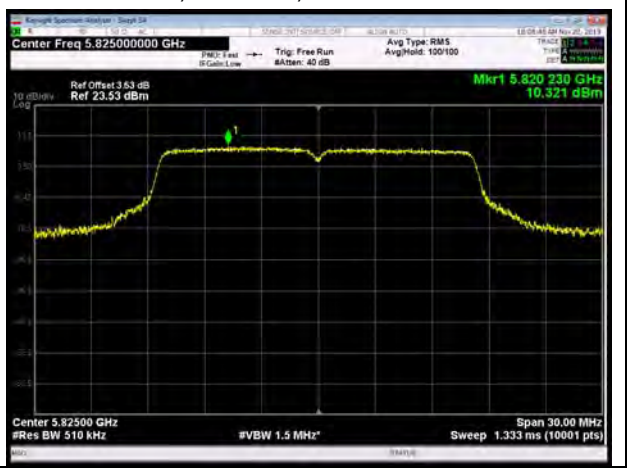
U-NII-3, 802.11a, Channel No.: 157



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



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

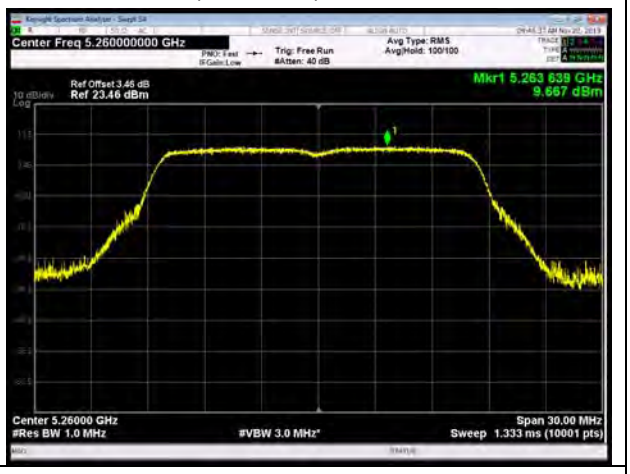


U-NII-2C, 802.11a, Channel No.: 144

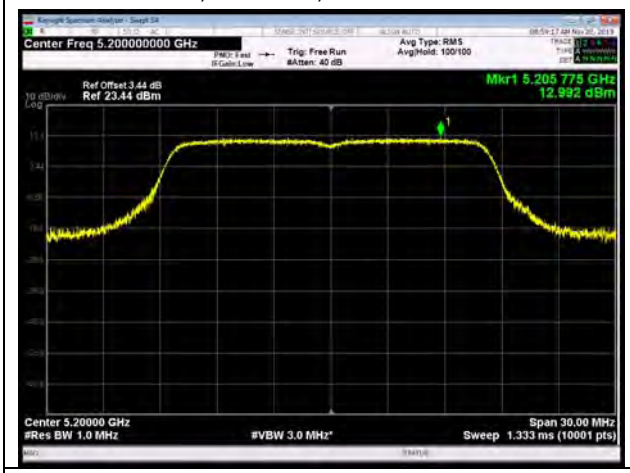
SISO Antenna 4

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

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

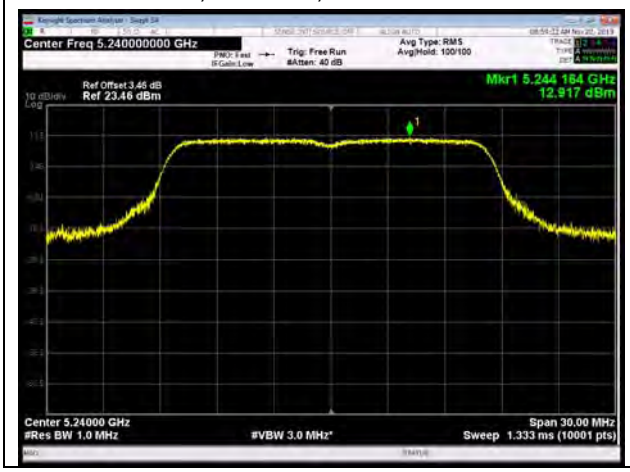


U-NII-1, 802.11a, Channel No.: 40

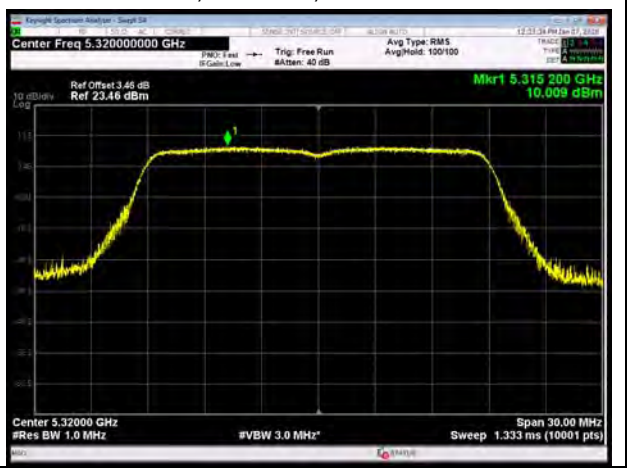


U-NII-2A, 802.11a, Channel No.: 60

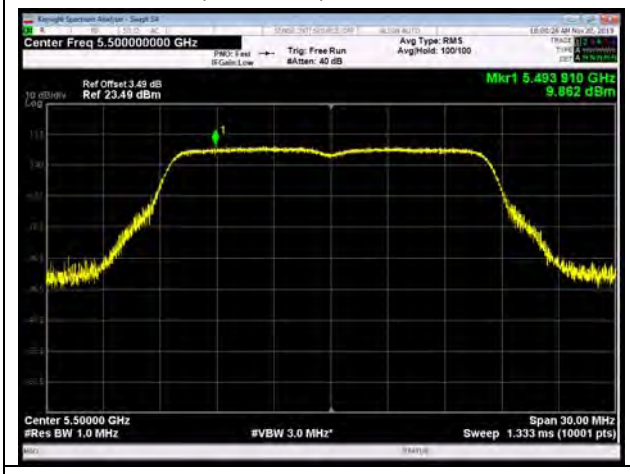
U-NII-1, 802.11a, Channel No.: 48



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

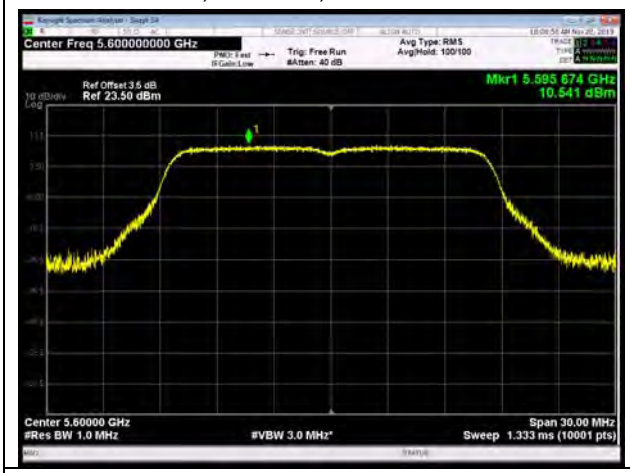


U-NII-2C, 802.11a, Channel No.: 100

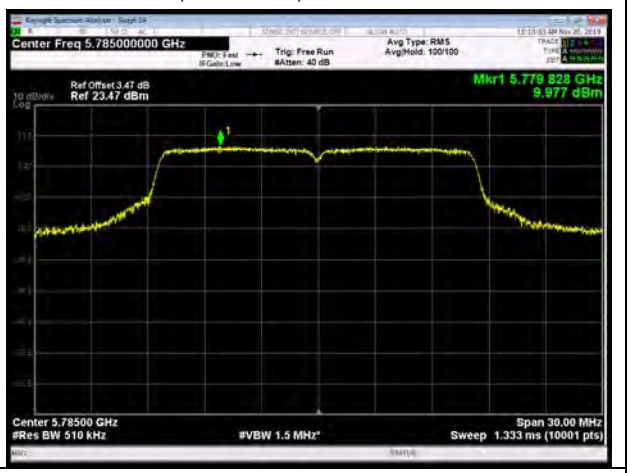


U-NII-3, 802.11a, Channel No.: 149

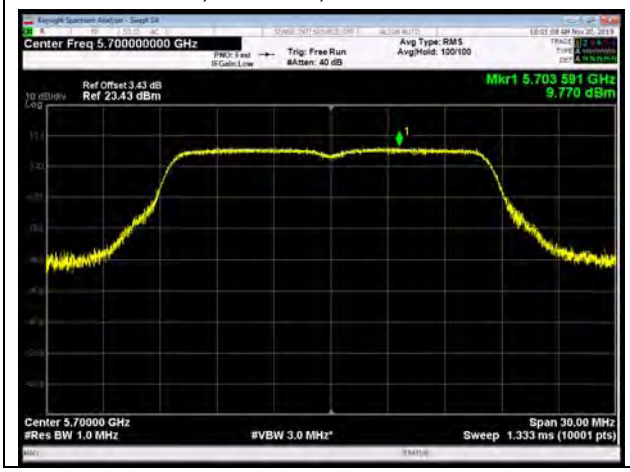
U-NII-2C, 802.11a, Channel No.: 120



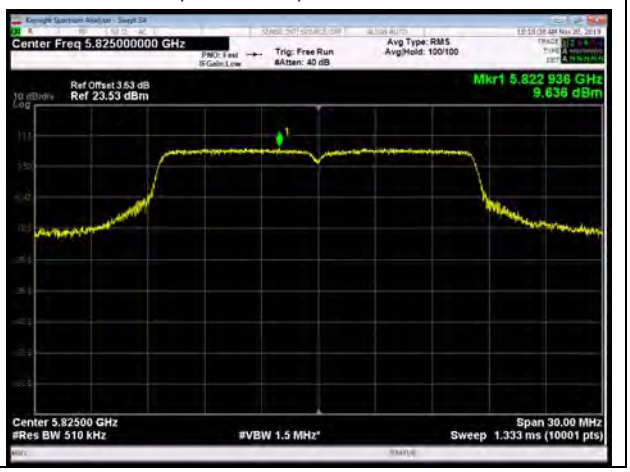
U-NII-3, 802.11a, Channel No.: 157



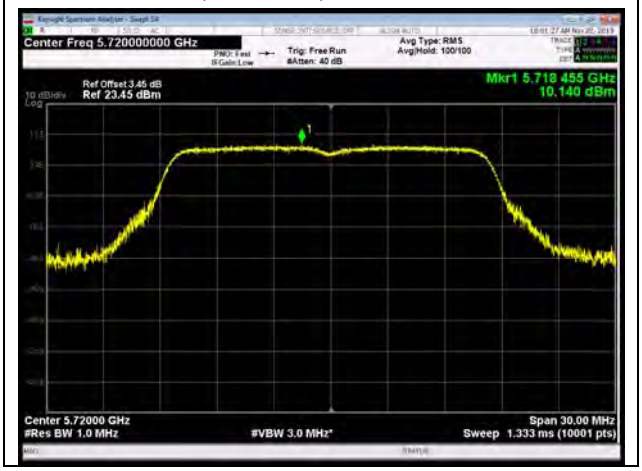
U-NII-2C, 802.11a, Channel No.: 140



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



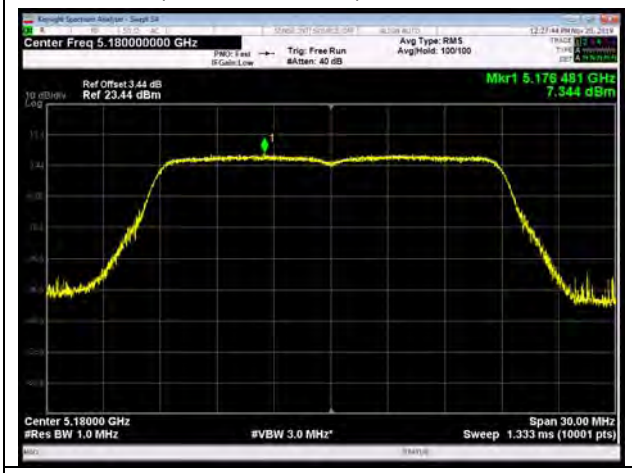
U-NII-2C, 802.11a, Channel No.: 144



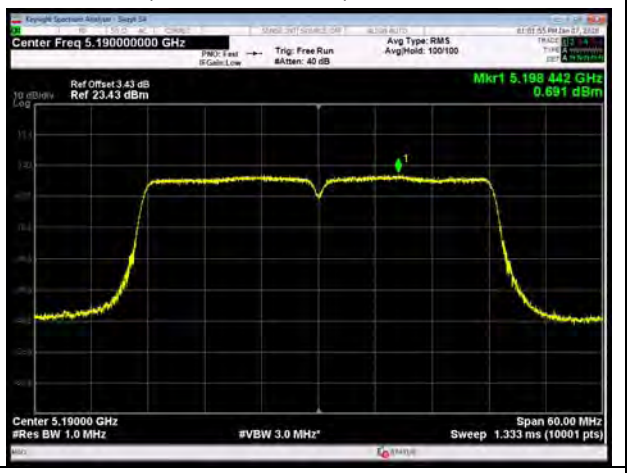
Without Beamforming

MIMO Antenna 1

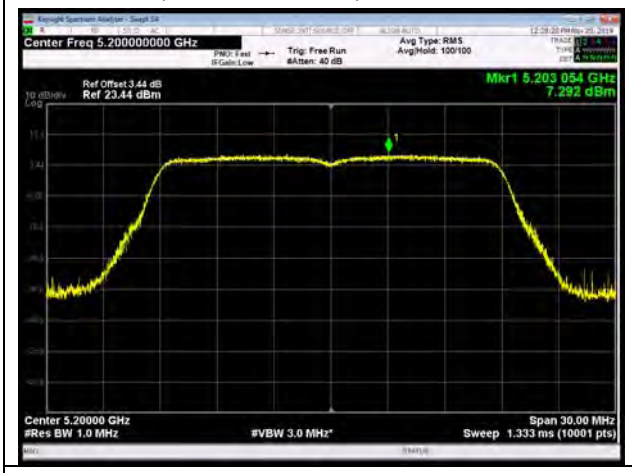
U-NII-1, 802.11n HT20, Channel No.: 36



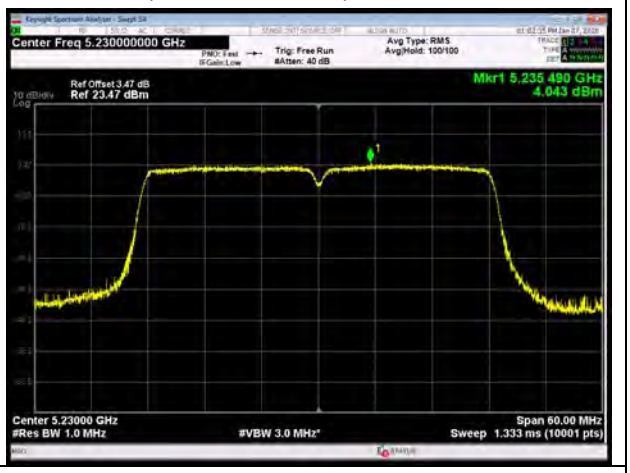
U-NII-1, 802.11n HT40, Channel No.: 38



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

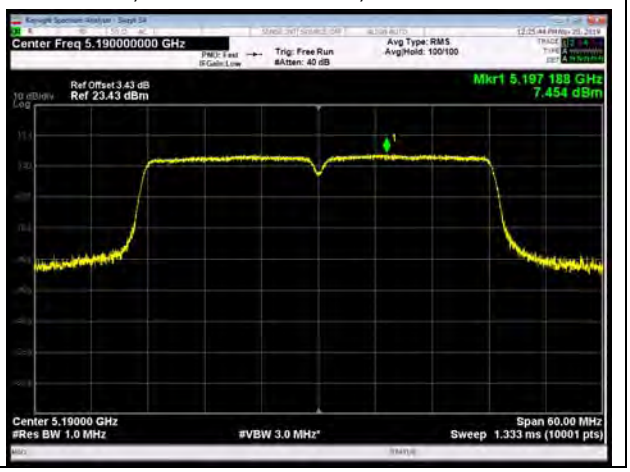


U-NII-1, 802.11n HT40, Channel No.: 46



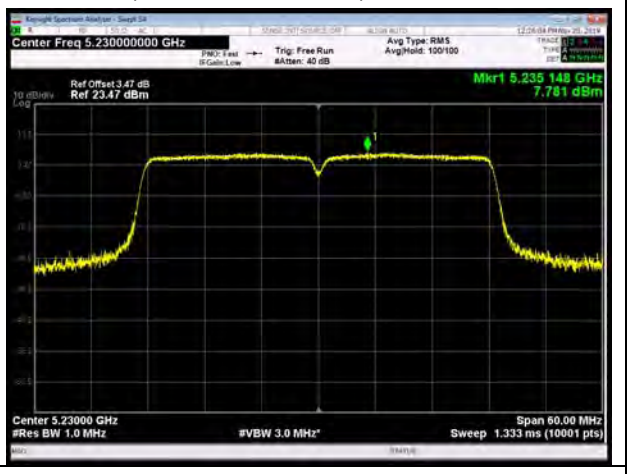
U-NII-1, 802.11n HT20, Channel No.: 48

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

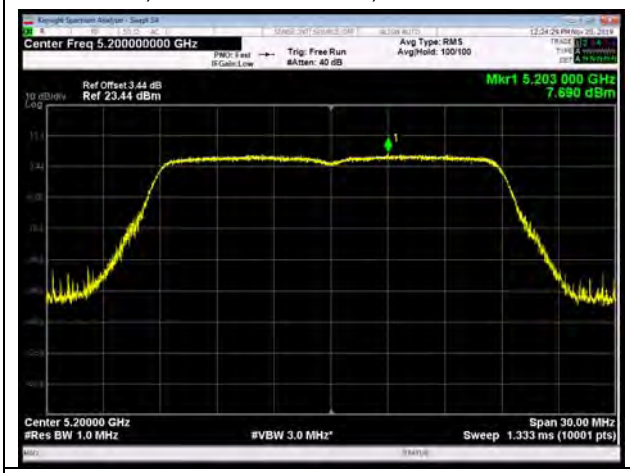


U-NII-1, 802.11ac VHT20, Channel No.: 36

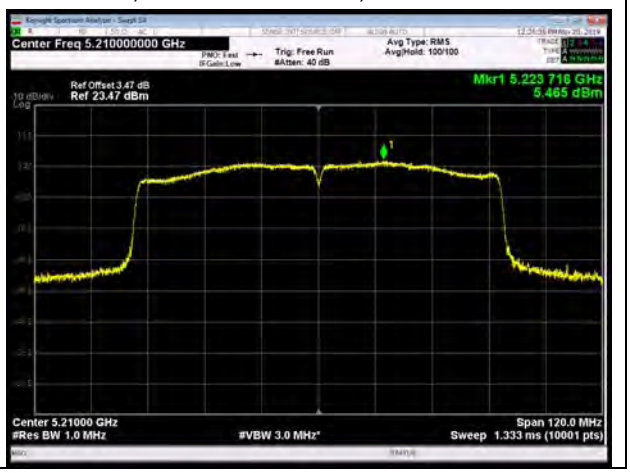
U-NII-1, 802.11ac VHT40, Channel No.: 46



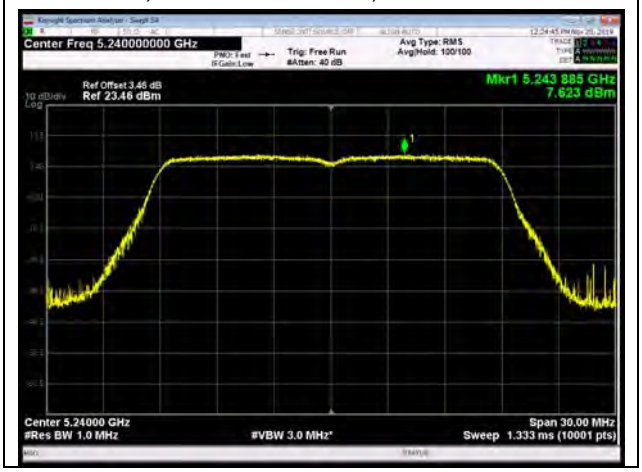
U-NII-1, 802.11ac VHT20, Channel No.: 40



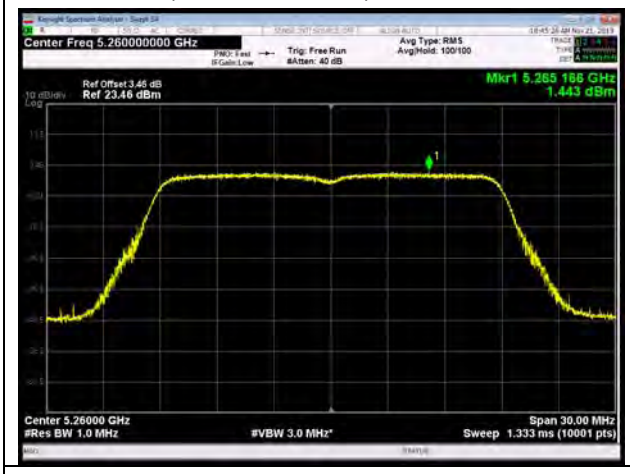
U-NII-1, 802.11ac VHT40, Channel No.: 46



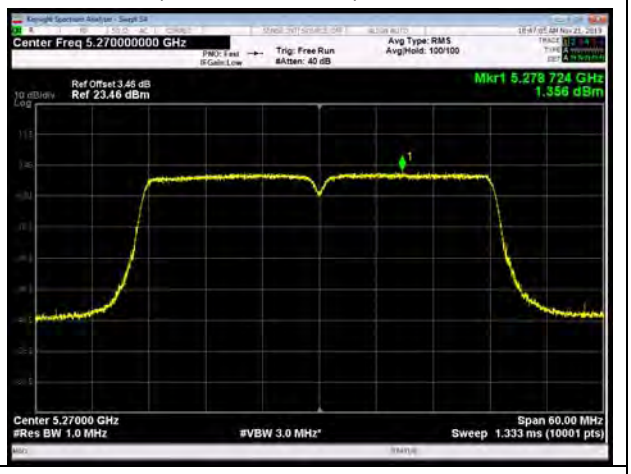
U-NII-1, 802.11ac VHT20, Channel No.: 48



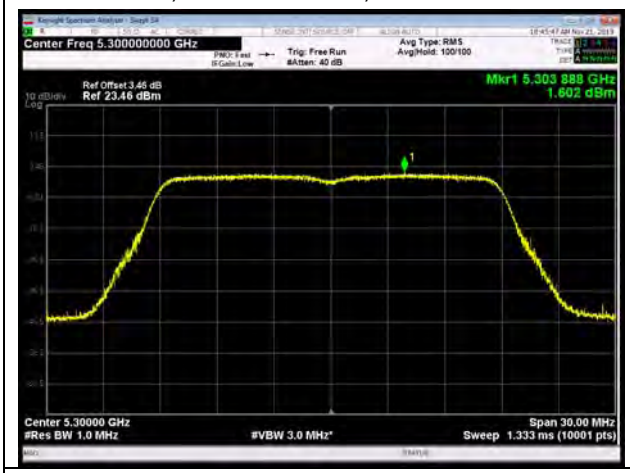
U-NII-2A, 802.11n HT20, Channel No.: 52



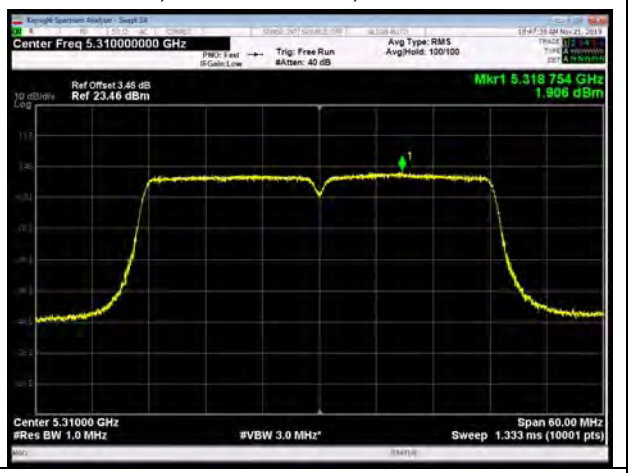
U-NII-2A, 802.11n HT40, Channel No.: 54



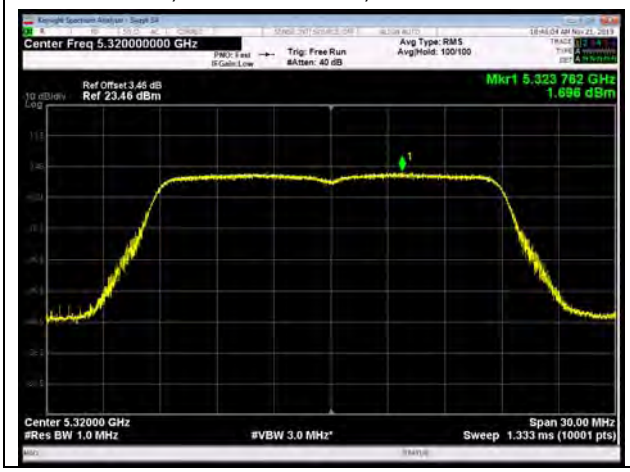
U-NII-2A, 802.11n HT20, Channel No.: 60



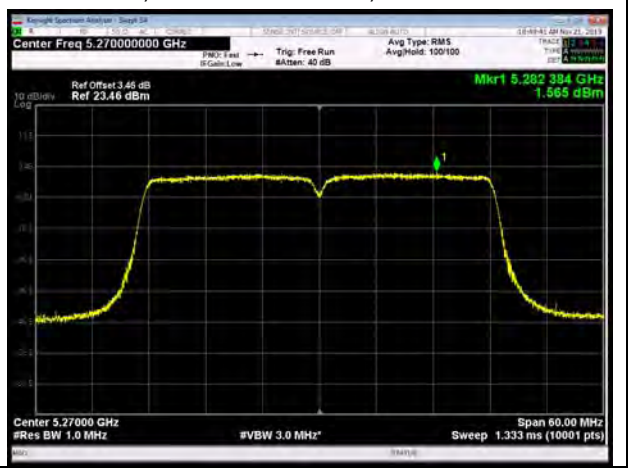
U-NII-2A, 802.11n HT40, Channel No.: 62



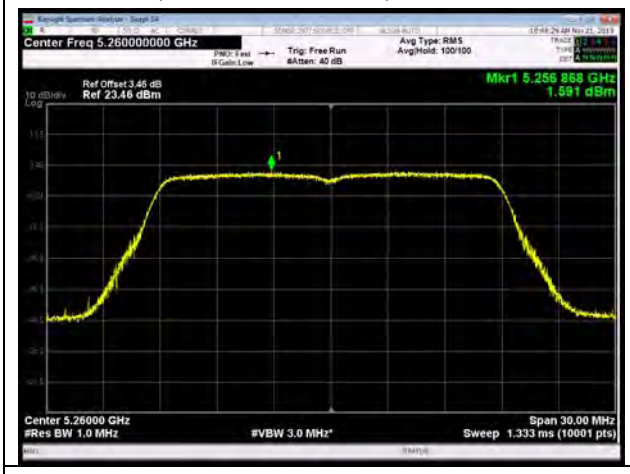
U-NII-2A, 802.11n HT20, Channel No.: 64



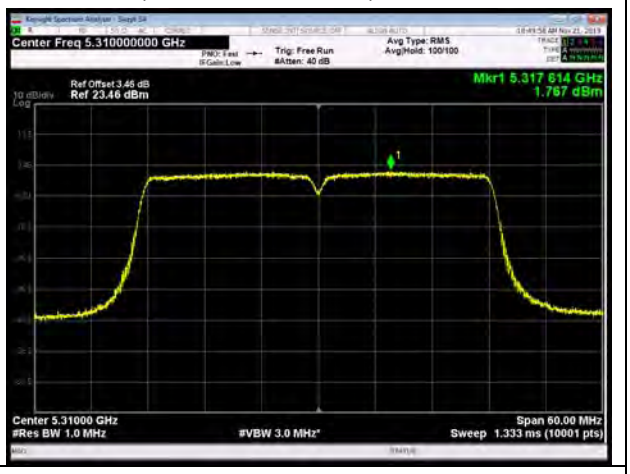
U-NII-2A, 802.11ac VHT40, Channel No.: 54



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



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



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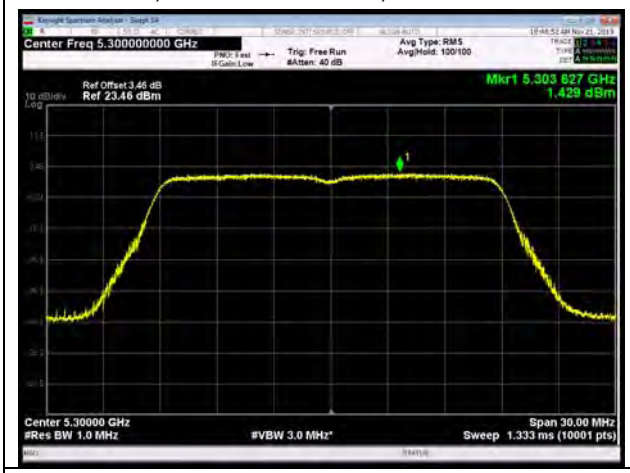
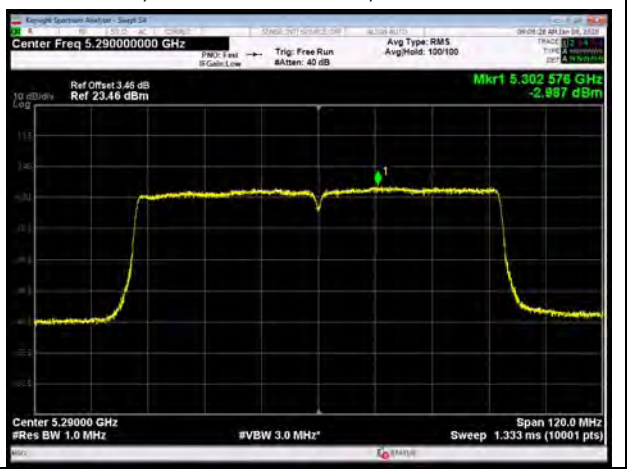
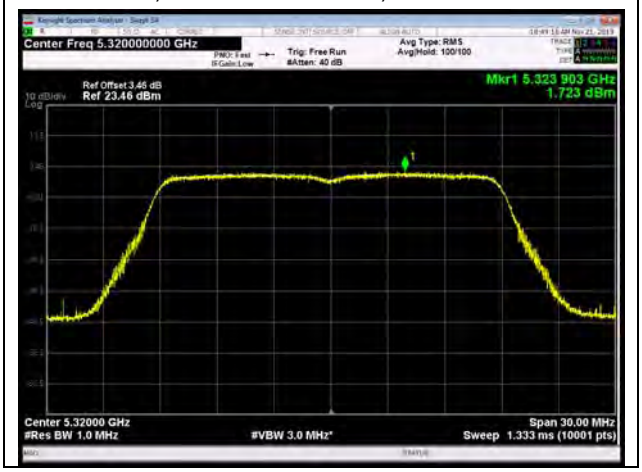


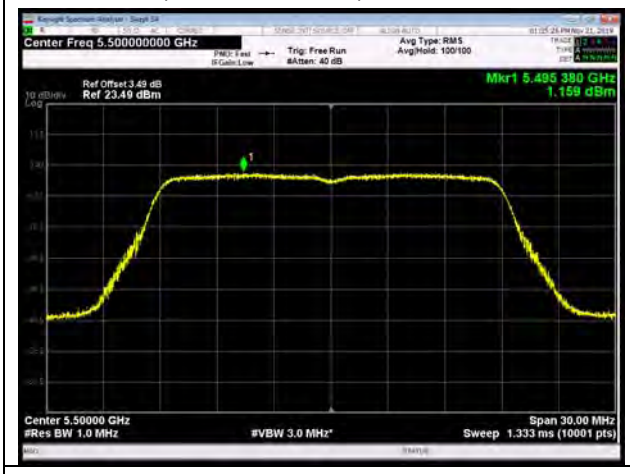
U-NII-2A, 802.11ac VHT80, Channel No.: 58



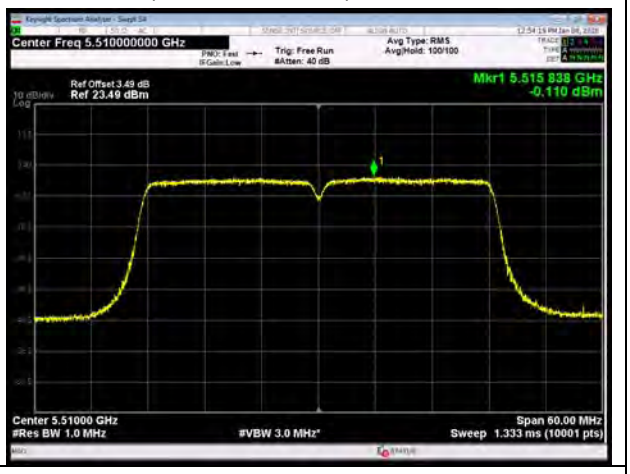
U-NII-2A, 802.11ac VHT20, Channel No.: 64



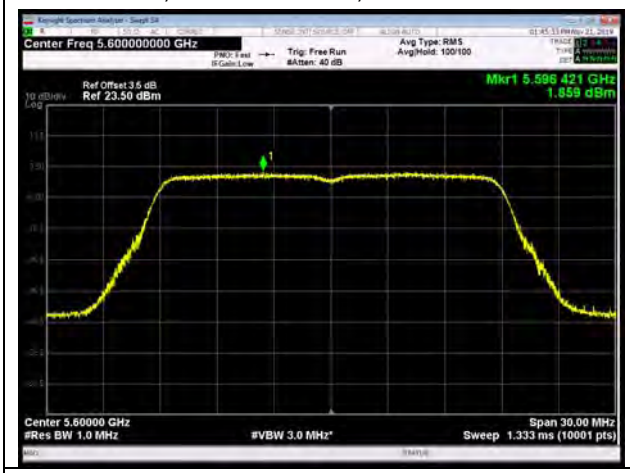
U-NII-2C, 802.11n HT20, Channel No.: 100



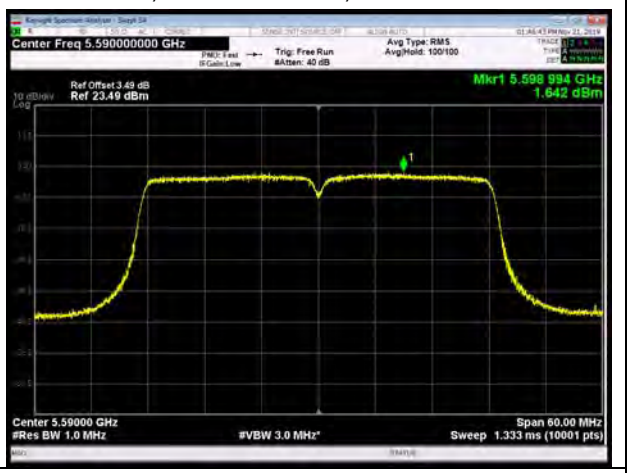
U-NII-2C, 802.11n HT40, Channel No.: 102



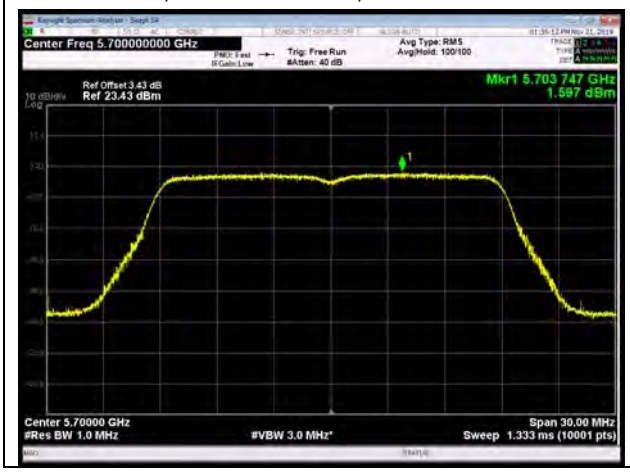
U-NII-2C, 802.11n HT20, Channel No.: 120



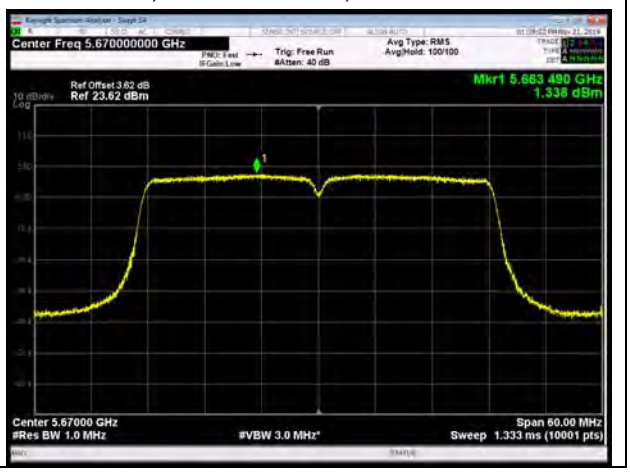
U-NII-2C, 802.11n HT40, Channel No.: 118

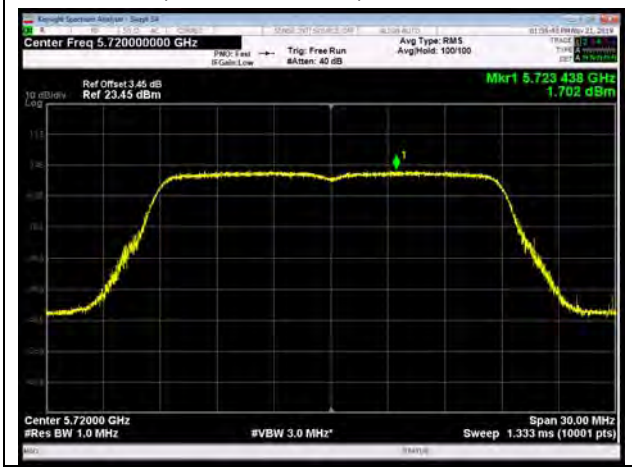
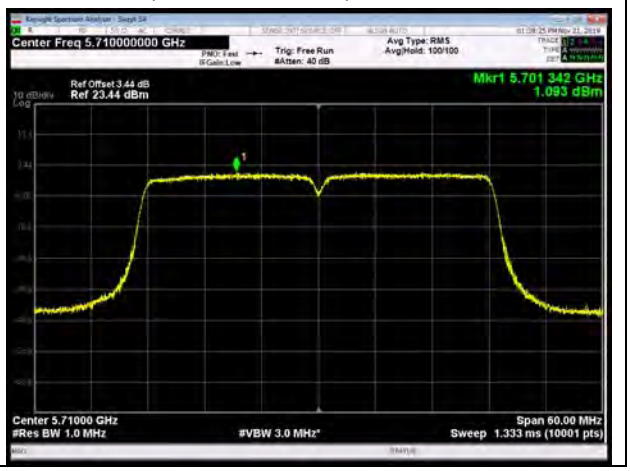


U-NII-2C, 802.11n HT20, Channel No.: 140

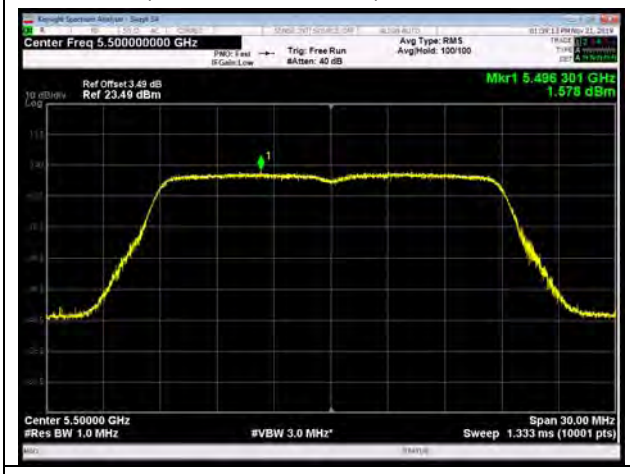


U-NII-2C, 802.11n HT40, Channel No.: 134

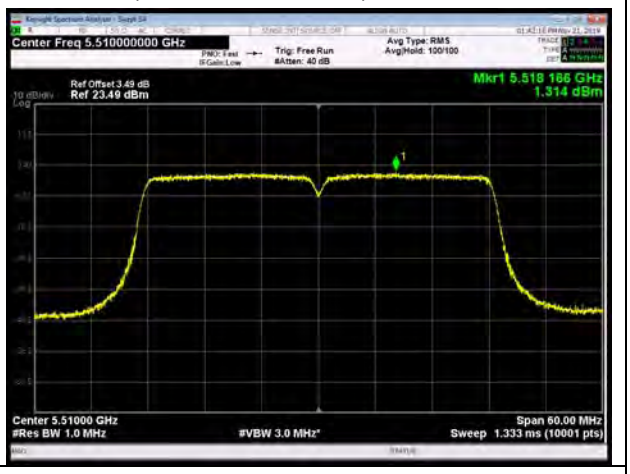


U-NII-2C, 802.11n HT20, Channel No.: 144	U-NII-2C, 802.11n HT40, Channel No.: 142
	

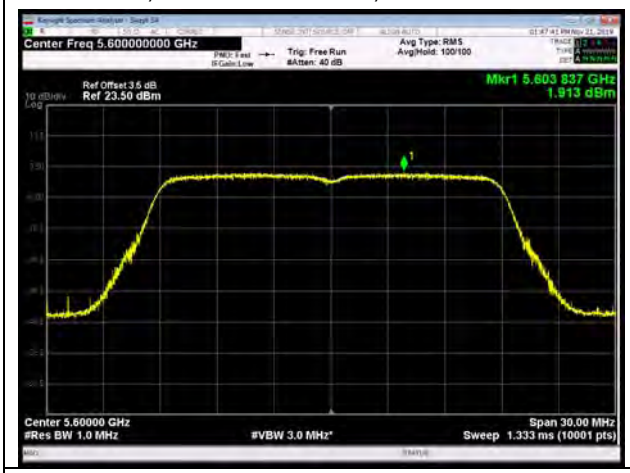
U-NII-2C, 802.11ac VHT20, Channel No.: 100



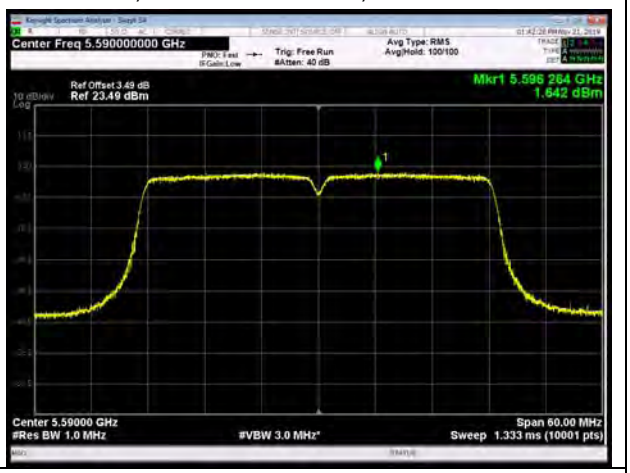
U-NII-2C, 802.11ac VHT40, Channel No.: 102



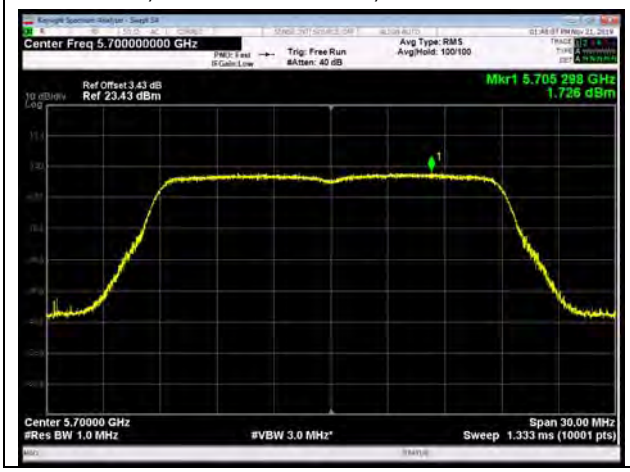
U-NII-2C, 802.11ac VHT20, Channel No.: 120



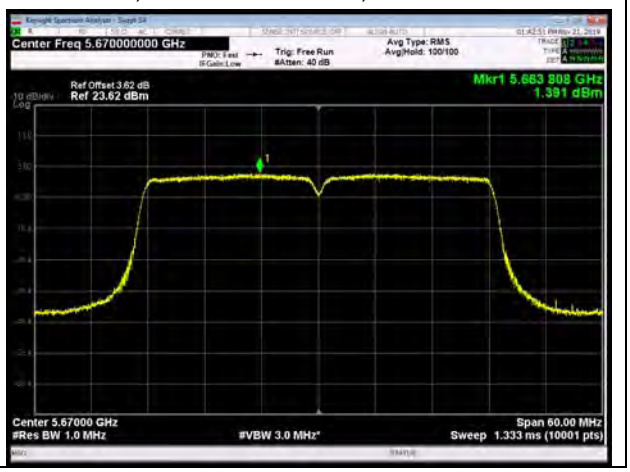
U-NII-2C, 802.11ac VHT40, Channel No.: 118



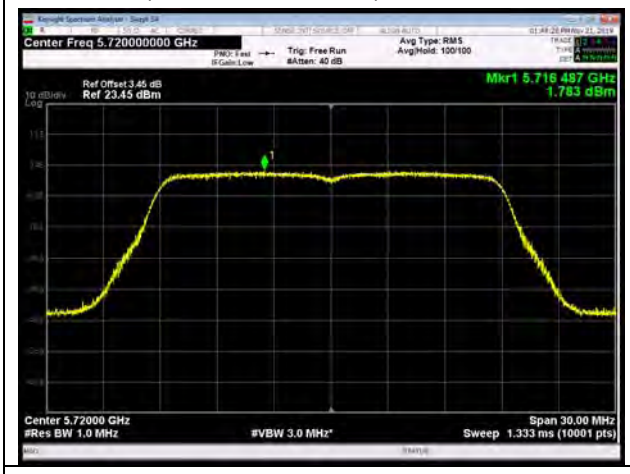
U-NII-2C, 802.11ac VHT20, Channel No.: 140



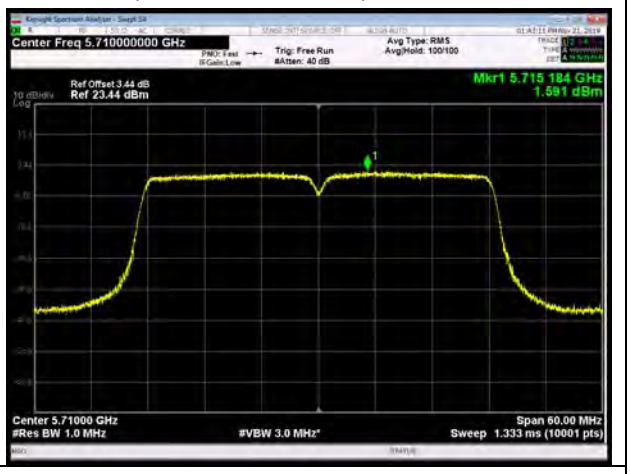
U-NII-2C, 802.11ac VHT40, Channel No.: 134



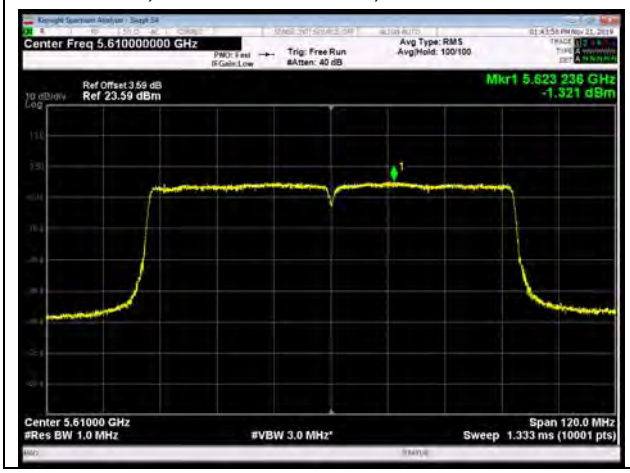
U-NII-2C, 802.11ac VHT20, Channel No.: 144



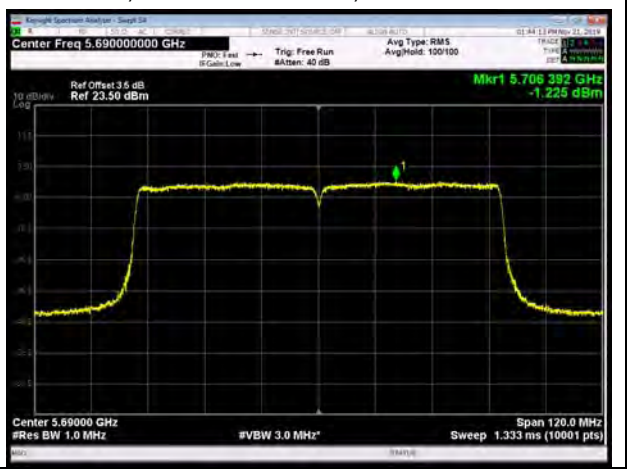
U-NII-2C, 802.11ac VHT40, Channel No.: 142



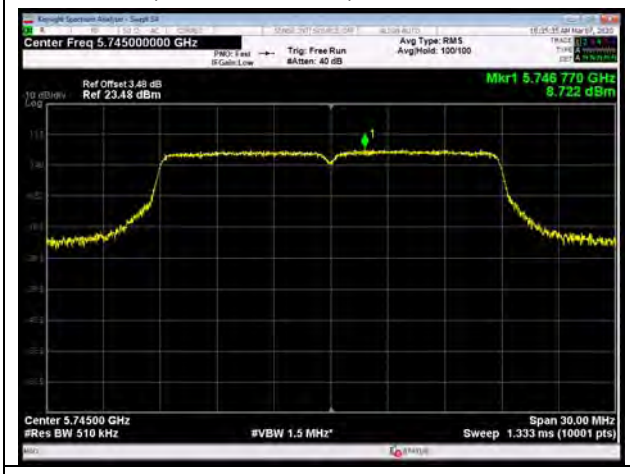
U-NII-2C, 802.11ac VHT80, Channel No.: 122



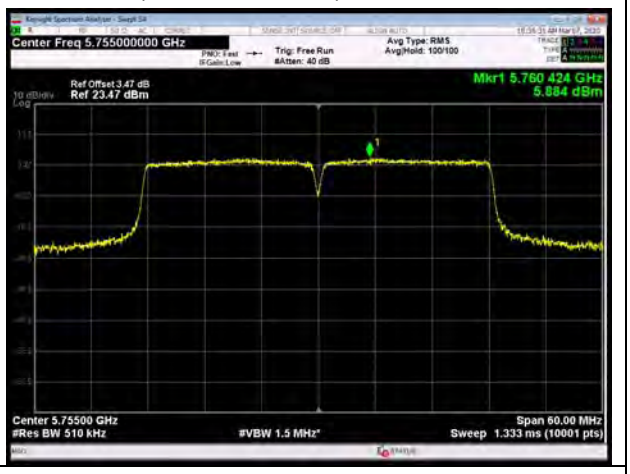
U-NII-2C, 802.11ac VHT80, Channel No.: 1138



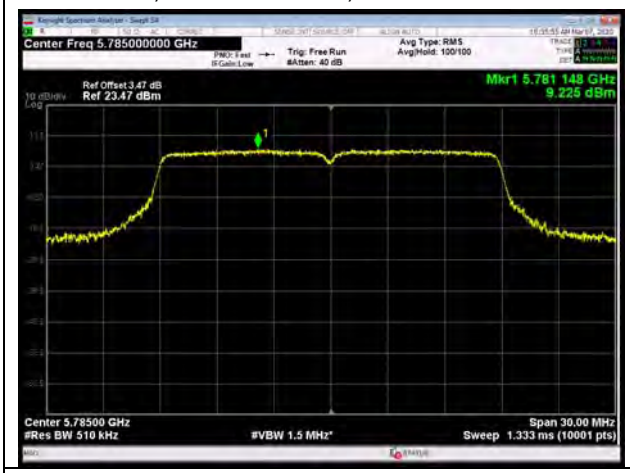
U-NII-3, 802.11n HT20, Channel No.: 149



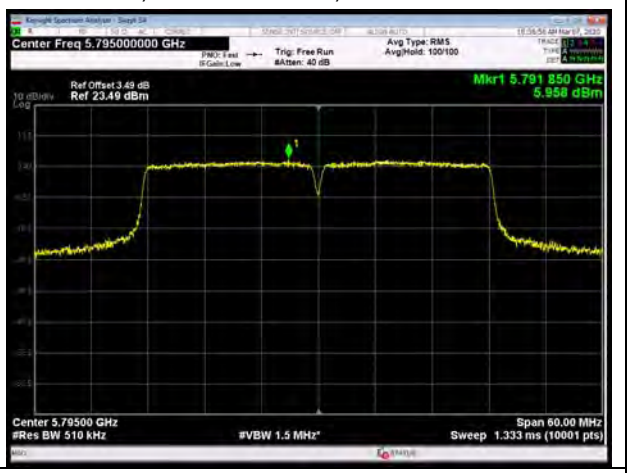
U-NII-3, 802.11n HT40, Channel No.: 151



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

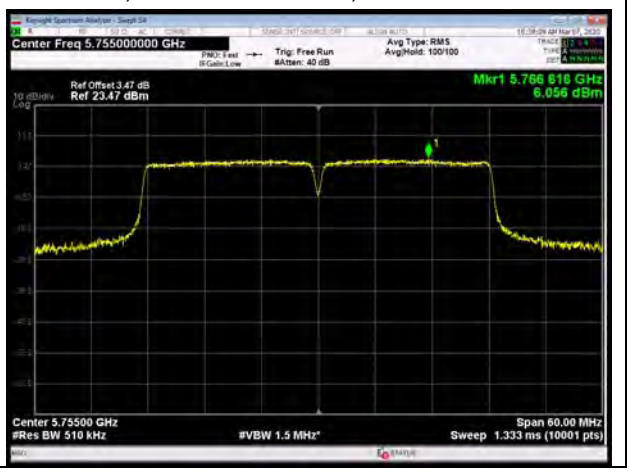


U-NII-3, 802.11n HT40, Channel No.: 159

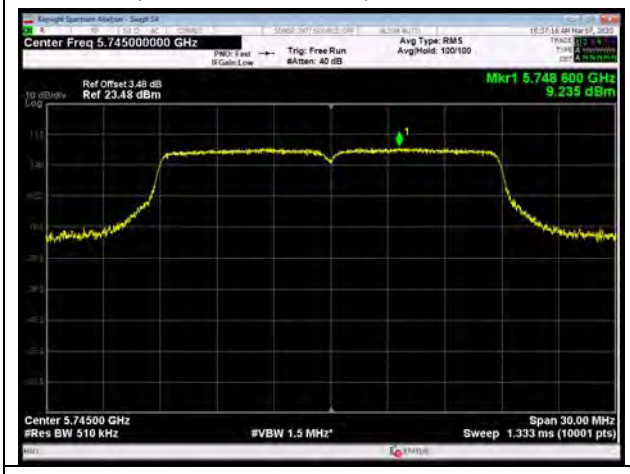


U-NII-3, 802.11n HT20, Channel No.: 165

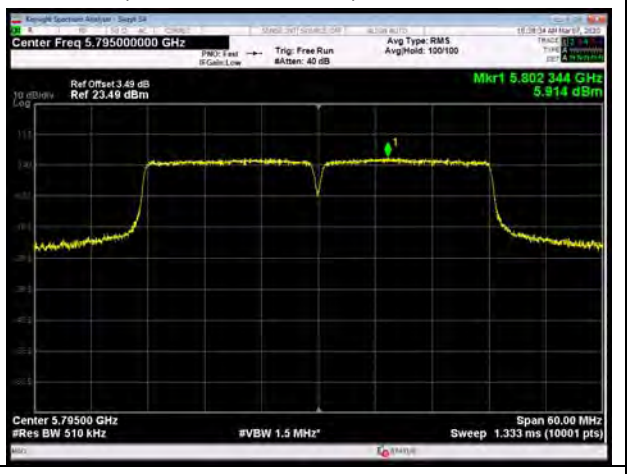
U-NII-3, 802.11ac VHT40, Channel No.: 151



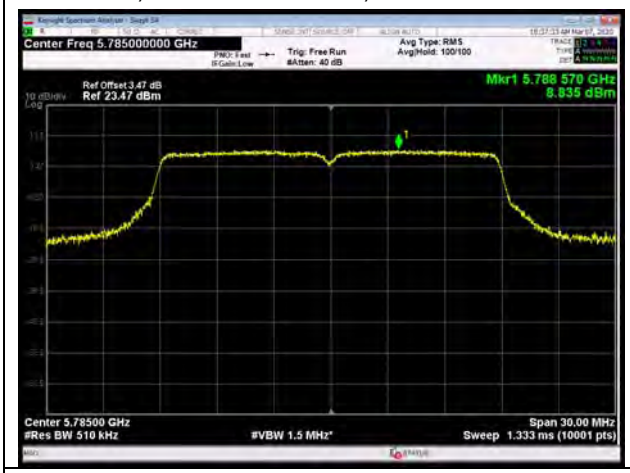
U-NII-3, 802.11ac VHT20, Channel No.: 149



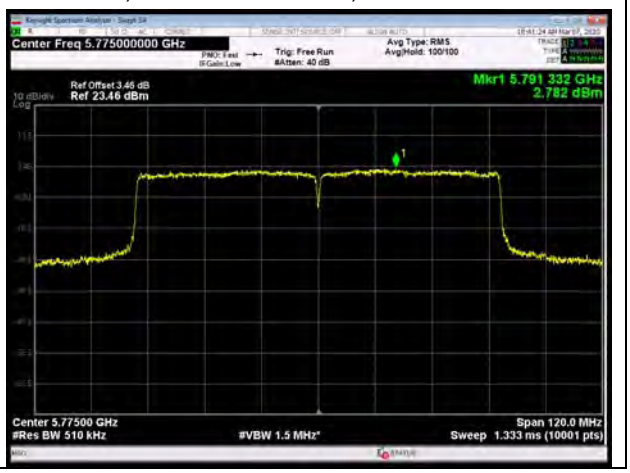
U-NII-3, 802.11ac VHT40, Channel No.: 159



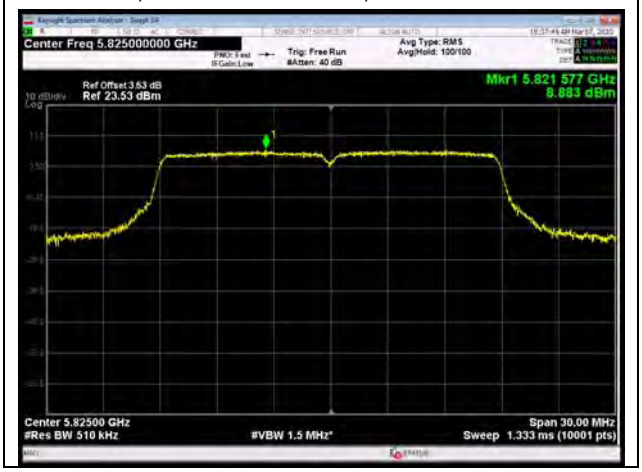
U-NII-3, 802.11ac VHT20, Channel No.: 157



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



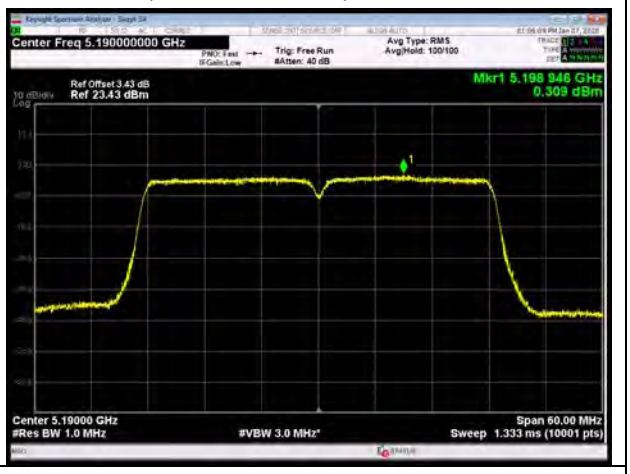
U-NII-3, 802.11ac VHT20, Channel No.: 165



MIMO Antenna 2

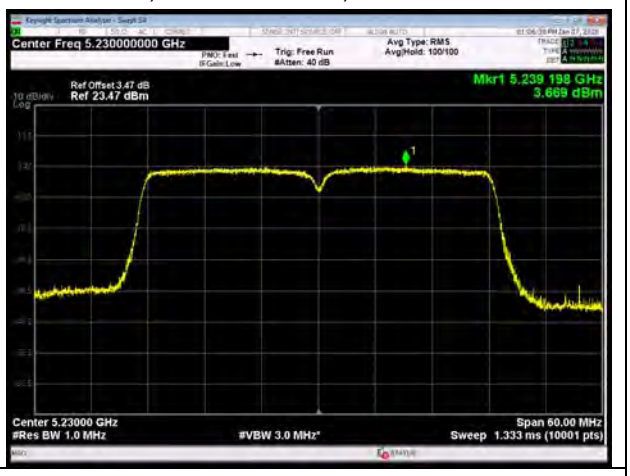
U-NII-1, 802.11n HT20, Channel No.: 36

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

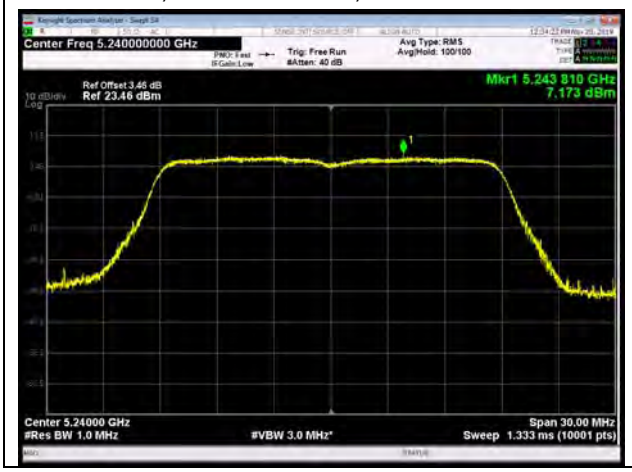


U-NII-1, 802.11n HT20, Channel No.: 40

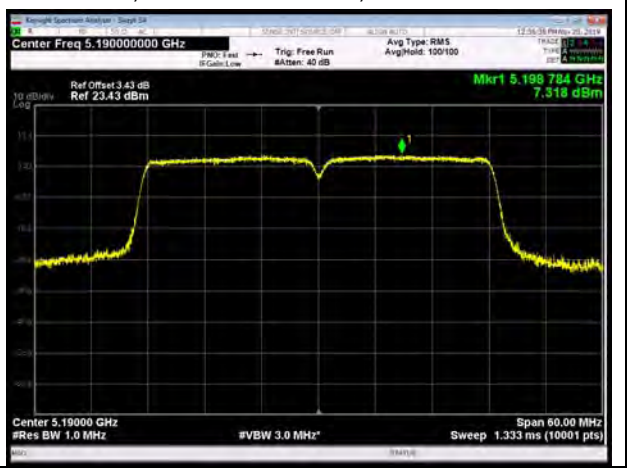
U-NII-1, 802.11n HT40, Channel No.: 46



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

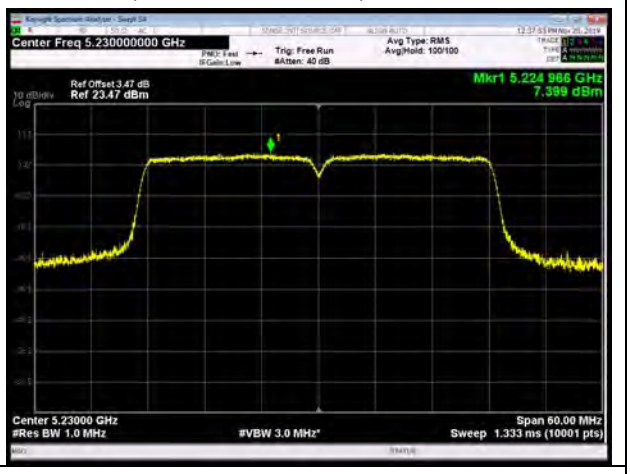


U-NII-1, 802.11ac VHT40, Channel No.: 38



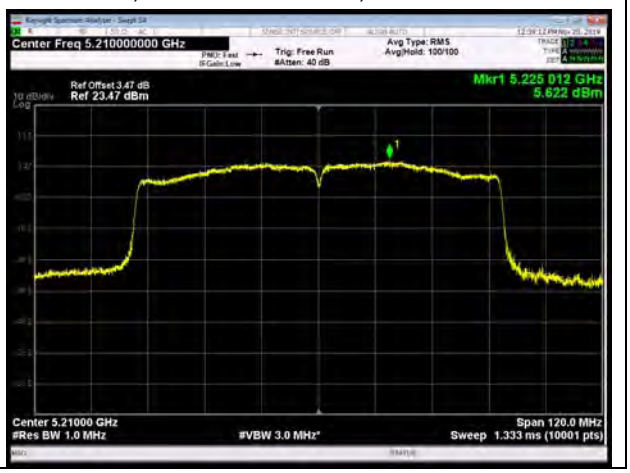
U-NII-1, 802.11ac VHT20, Channel No.: 36

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

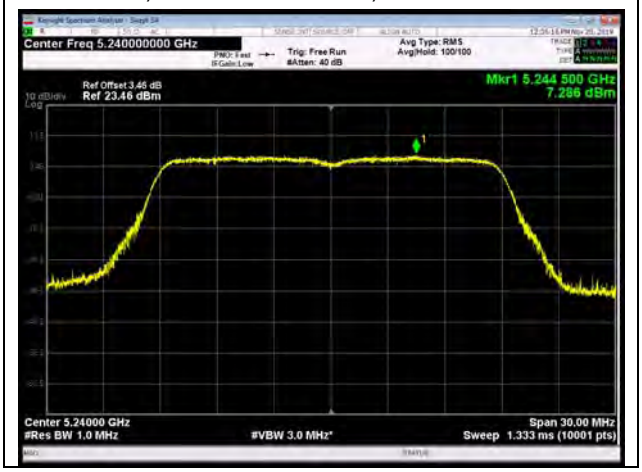


U-NII-1, 802.11ac VHT20, Channel No.: 40

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

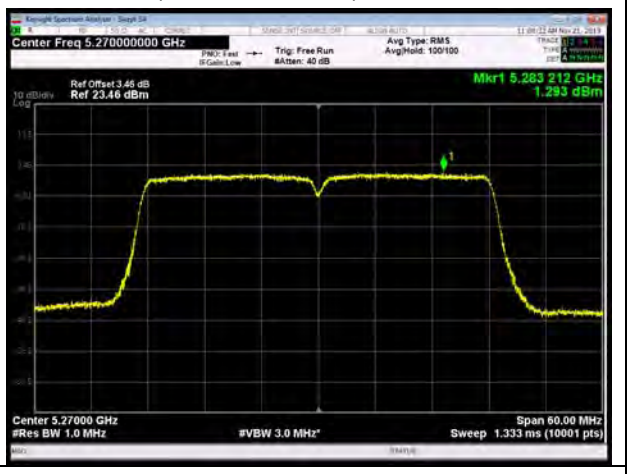


U-NII-1, 802.11ac VHT20, Channel No.: 48

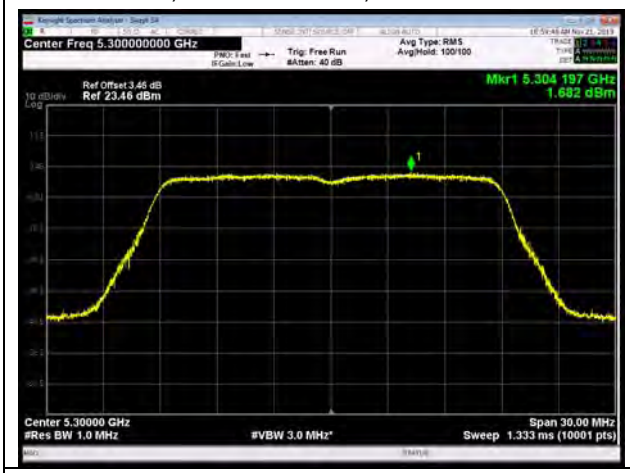


U-NII-2A, 802.11n HT20, Channel No.: 52

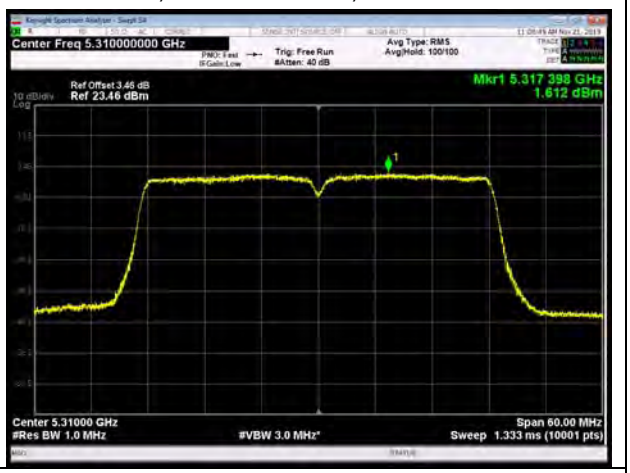
U-NII-2A, 802.11n HT40, Channel No.: 54



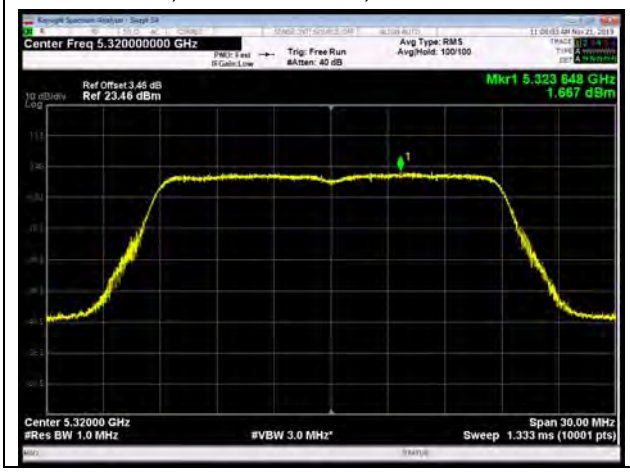
U-NII-2A, 802.11n HT20, Channel No.: 60



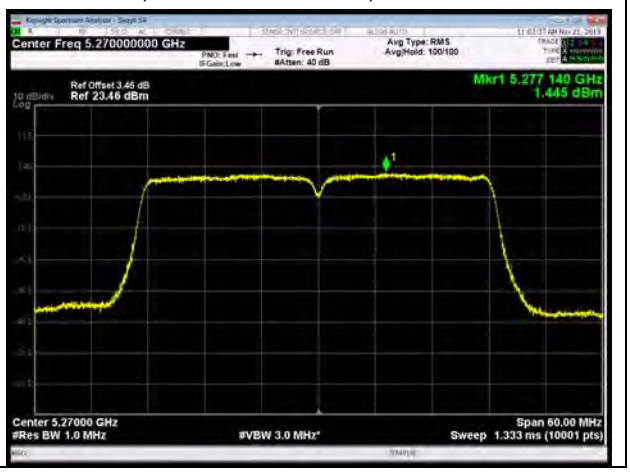
U-NII-2A, 802.11n HT40, Channel No.: 62



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

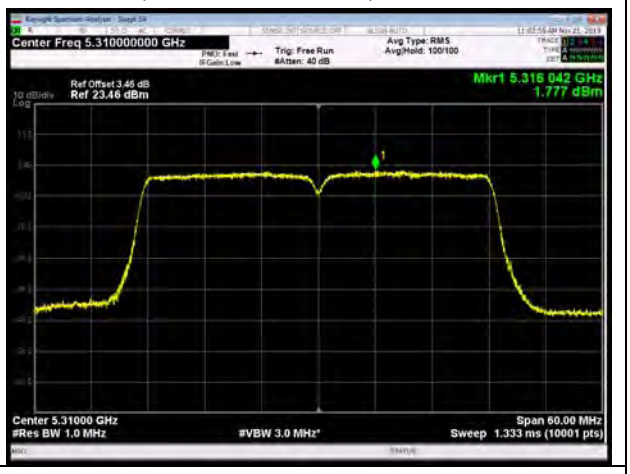


U-NII-2A, 802.11ac VHT40, Channel No.: 54

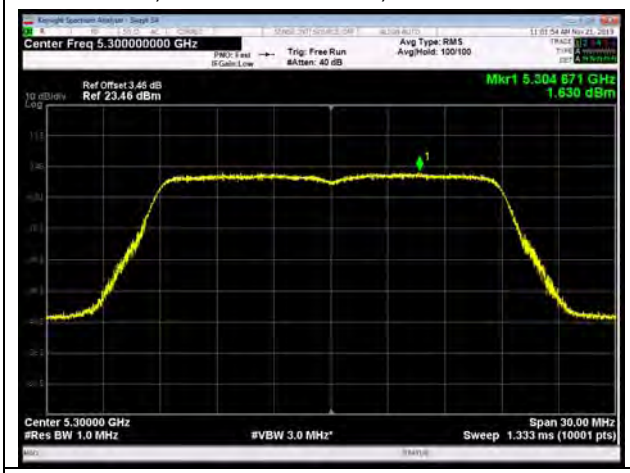


U-NII-2A, 802.11ac VHT20, Channel No.:52

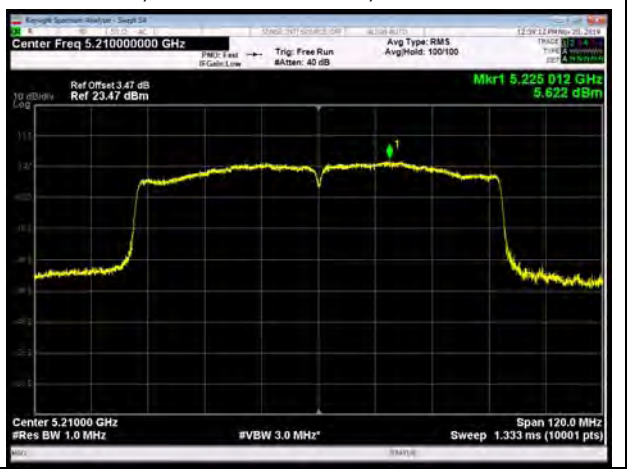
U-NII-2A, 802.11ac VHT40, Channel No.: 62



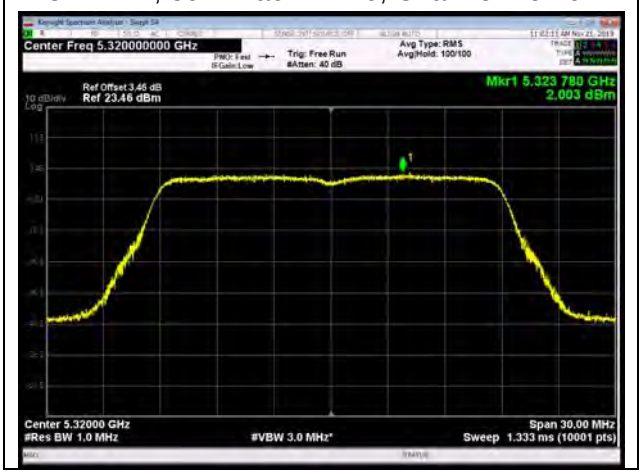
U-NII-2A, 802.11ac VHT20, Channel No.: 60



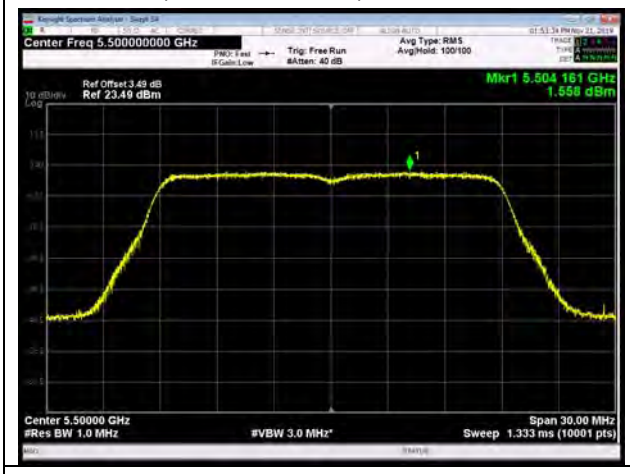
U-NII-2A, 802.11ac VHT80, Channel No.: 58



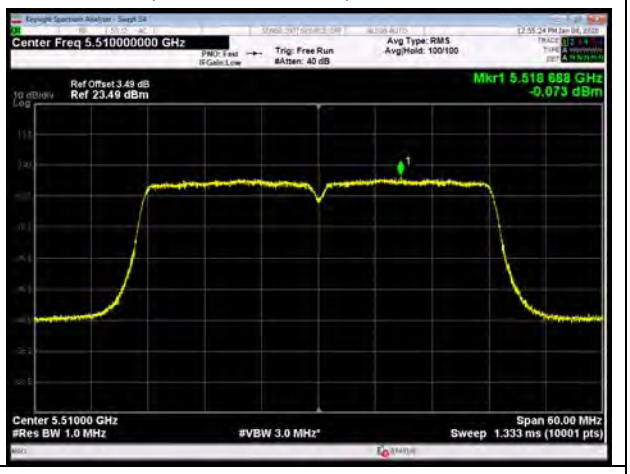
U-NII-2A, 802.11ac VHT20, Channel No.: 64



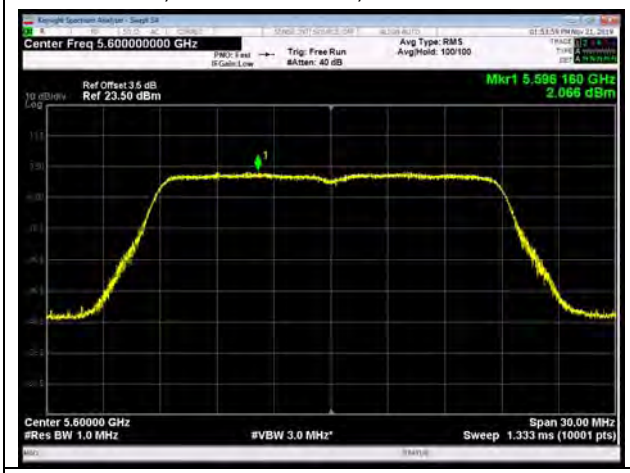
U-NII-2C, 802.11n HT20, Channel No.: 100



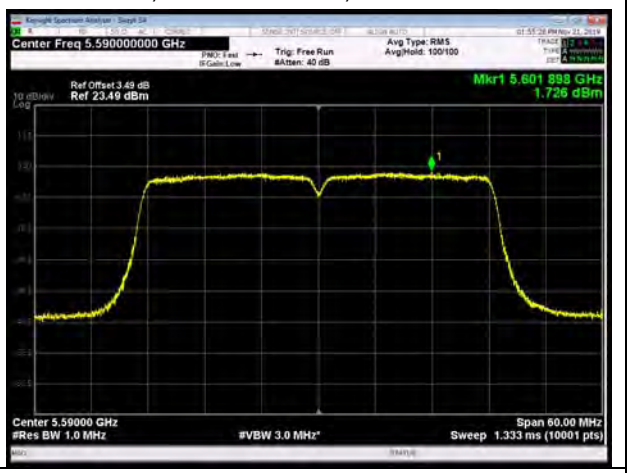
U-NII-2C, 802.11n HT40, Channel No.: 102



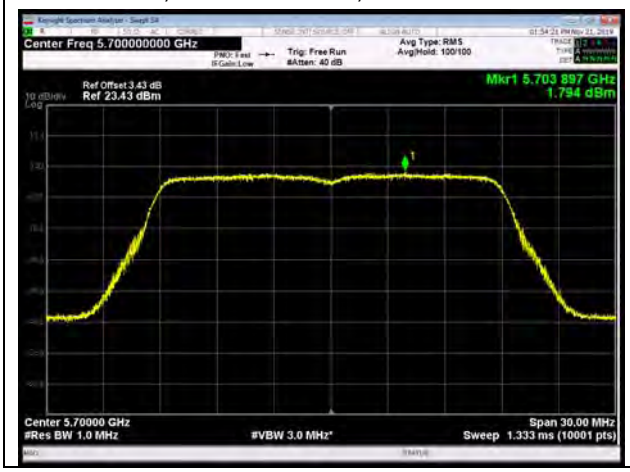
U-NII-2C, 802.11n HT20, Channel No.: 120



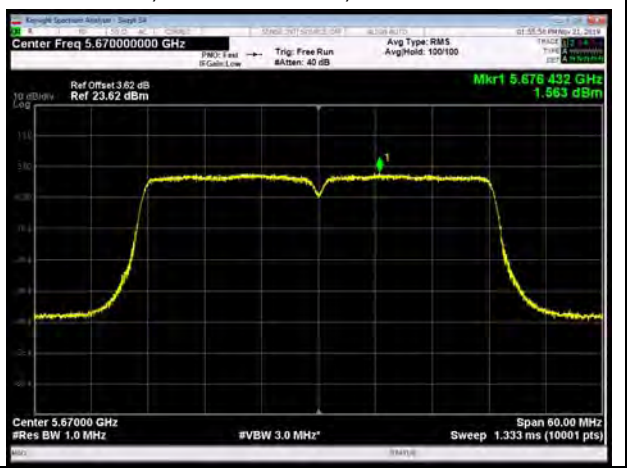
U-NII-2C, 802.11n HT40, Channel No.: 118

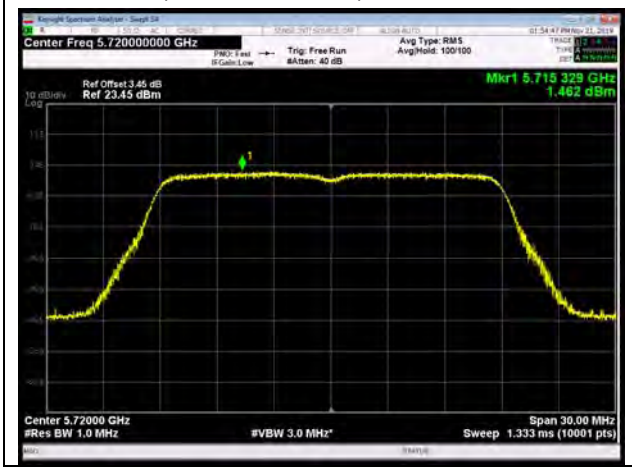
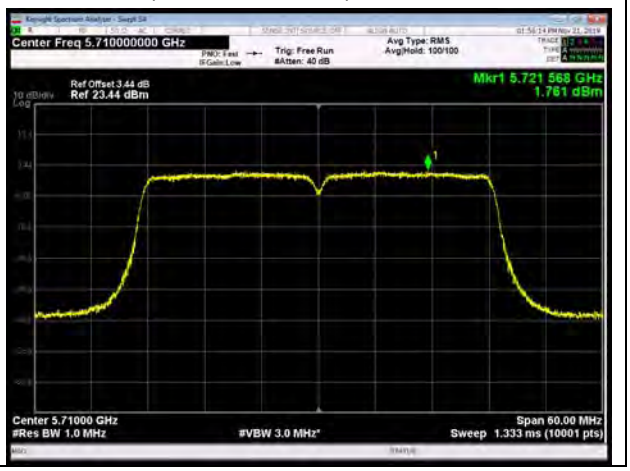


U-NII-2C, 802.11n HT20, Channel No.: 140

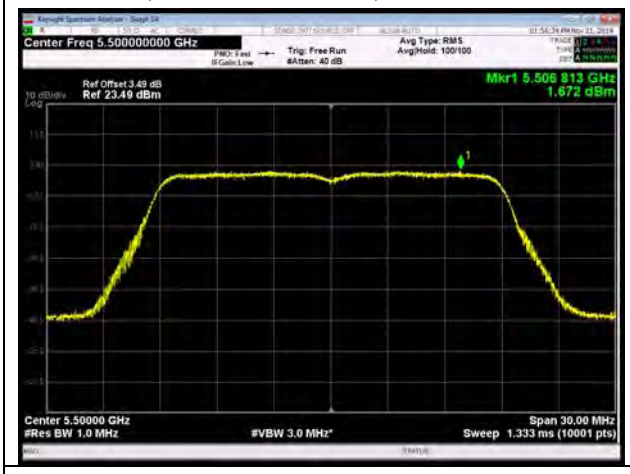


U-NII-2C, 802.11n HT40, Channel No.: 134

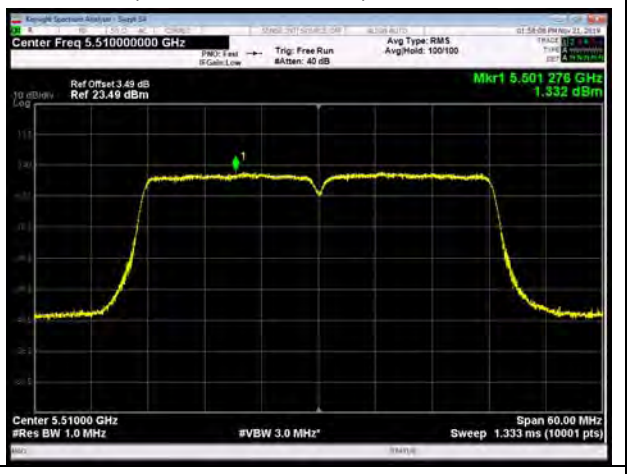


U-NII-2C, 802.11n HT20, Channel No.: 144	U-NII-2C, 802.11n HT40, Channel No.: 142
	

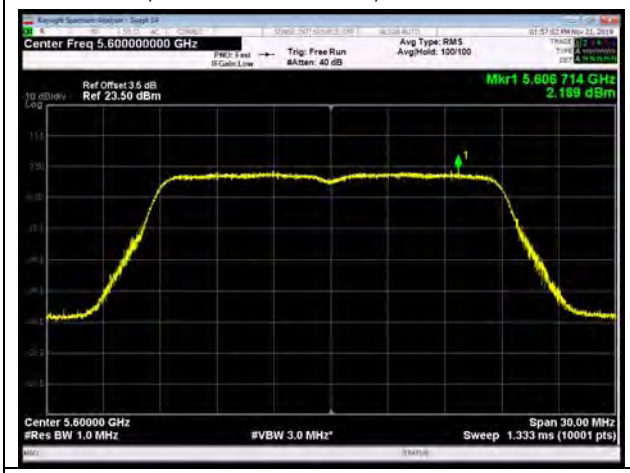
U-NII-2C, 802.11ac VHT20, Channel No.: 100



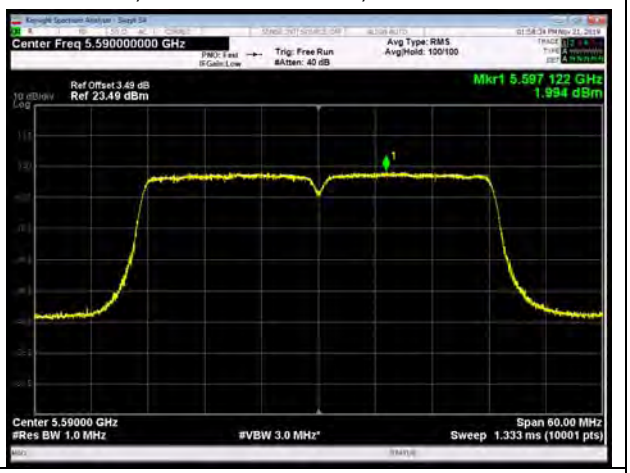
U-NII-2C, 802.11ac VHT40, Channel No.: 102



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



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



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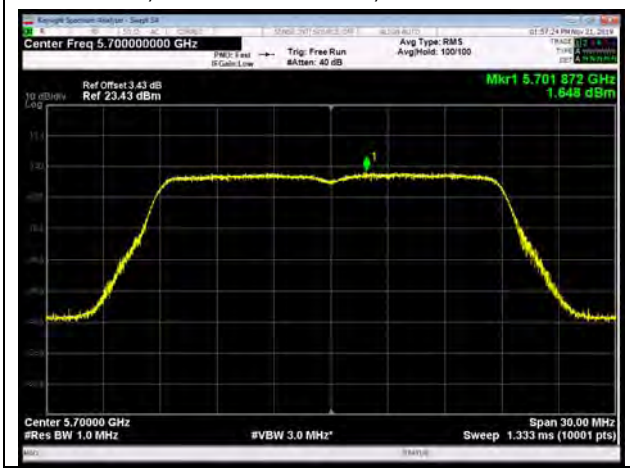

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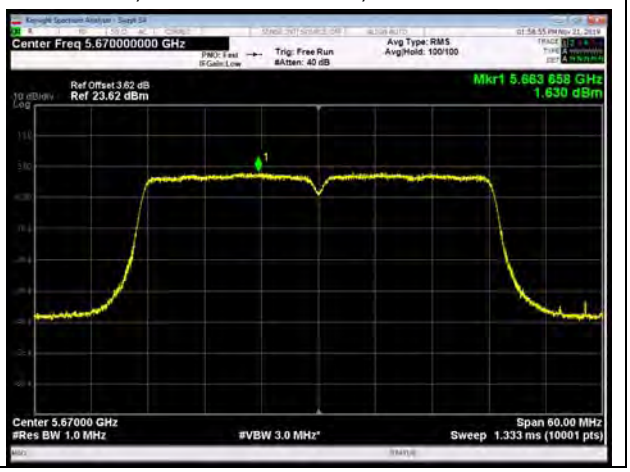
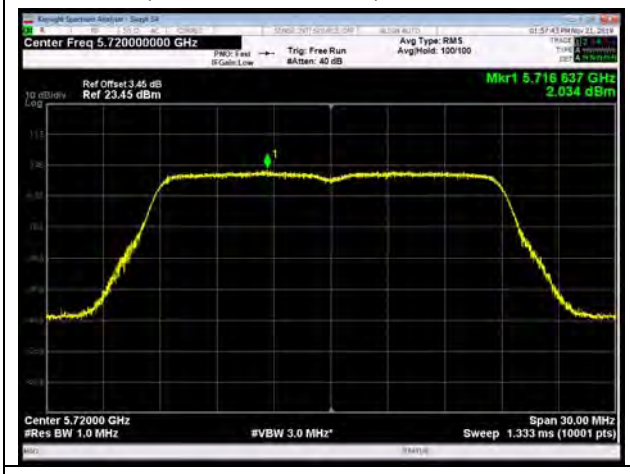
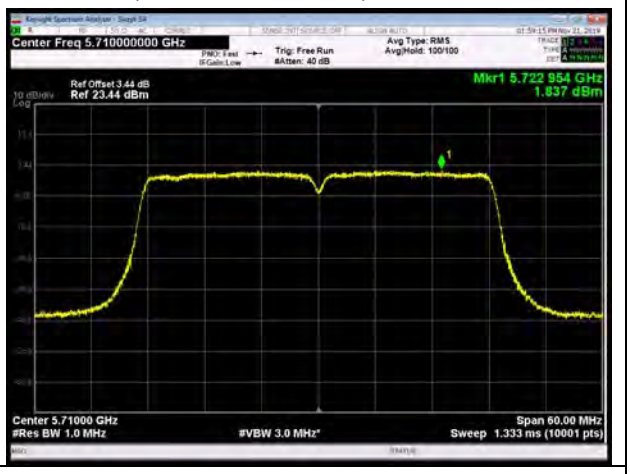


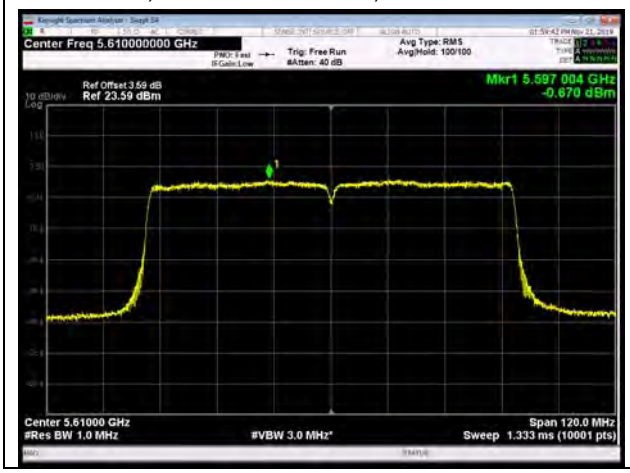
U-NII-2C, 802.11ac VHT20, Channel No.: 144



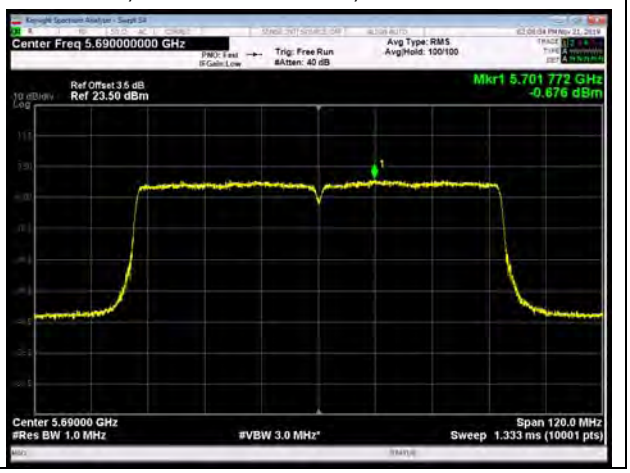
U-NII-2C, 802.11ac VHT40, Channel No.: 142



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

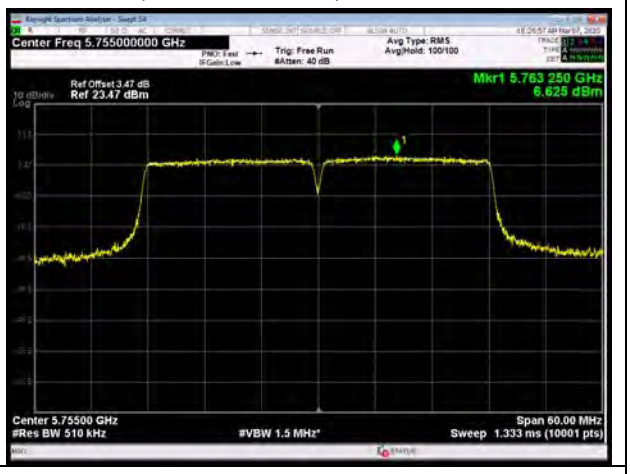


U-NII-2C, 802.11ac VHT80, Channel No.: 1138

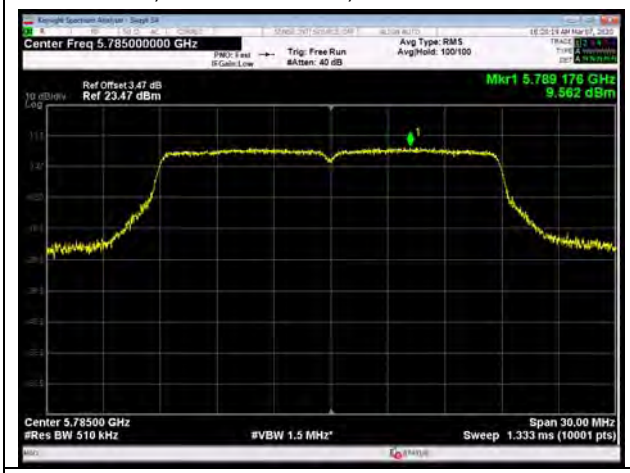


U-NII-3, 802.11n HT20, Channel No.: 149

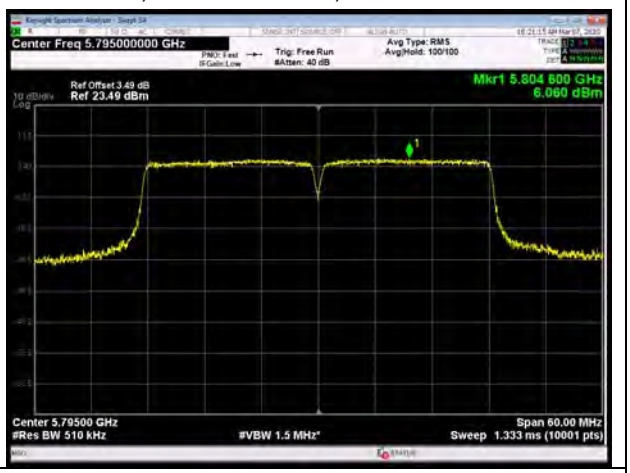
U-NII-3, 802.11n HT40, Channel No.: 151



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

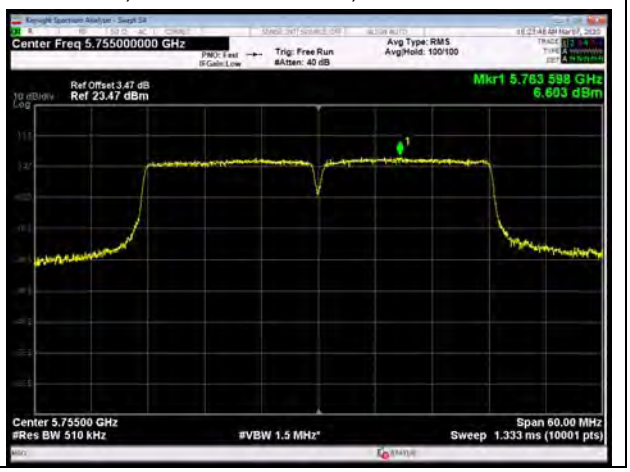


U-NII-3, 802.11n HT40, Channel No.: 159

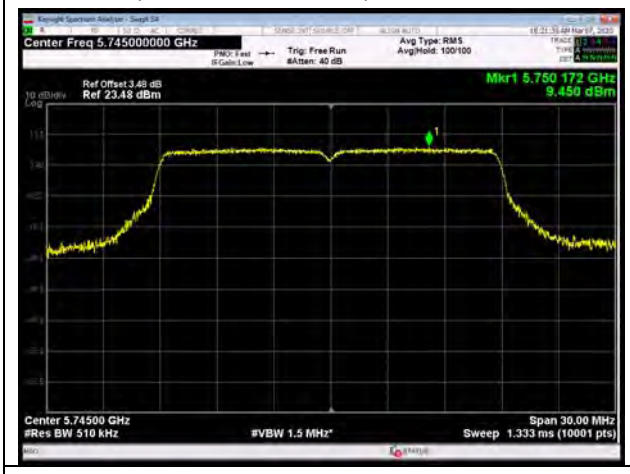


U-NII-3, 802.11n HT20, Channel No.: 165

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



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



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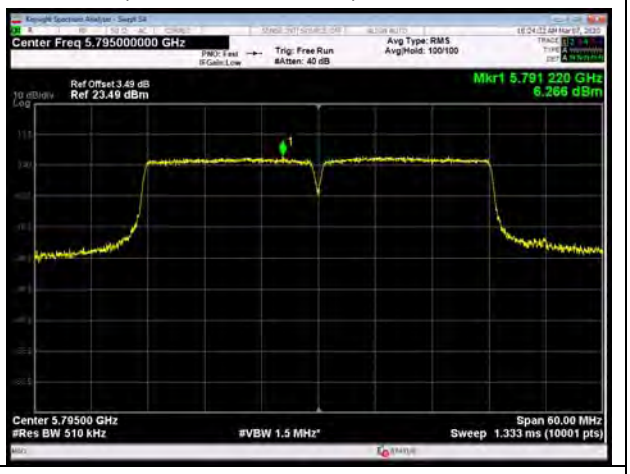
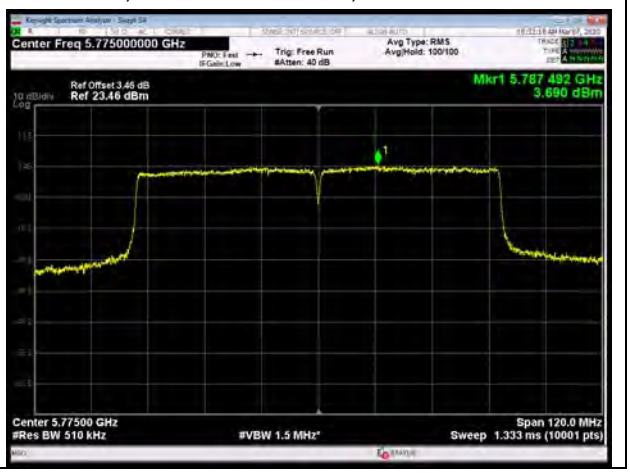
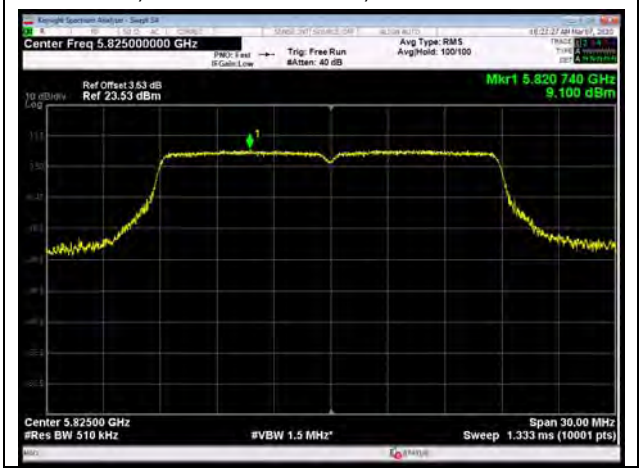


U-NII-3, 802.11ac VHT20, Channel No.: 157

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



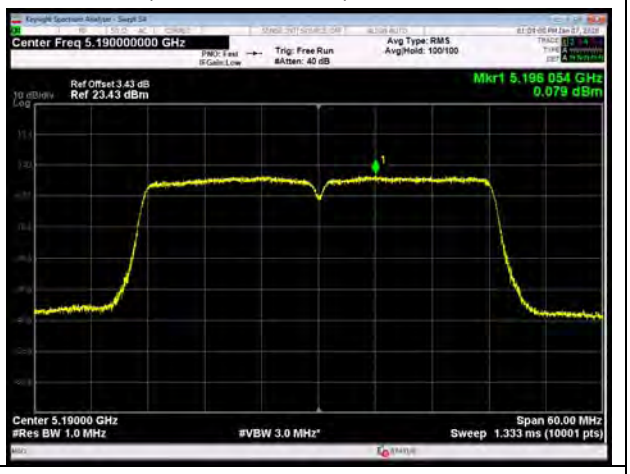
U-NII-3, 802.11ac VHT20, Channel No.: 165



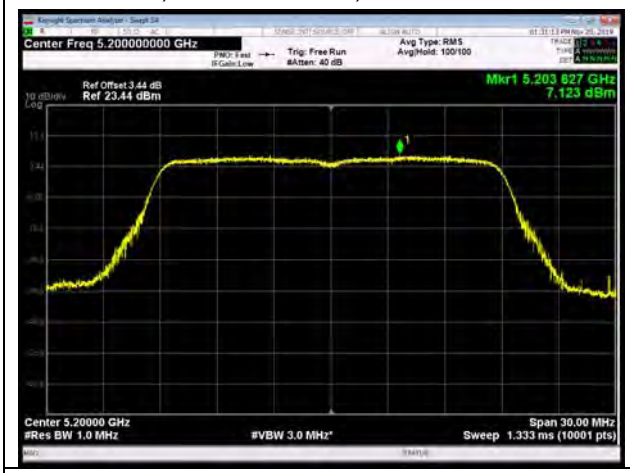
MIMO Antenna 3

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

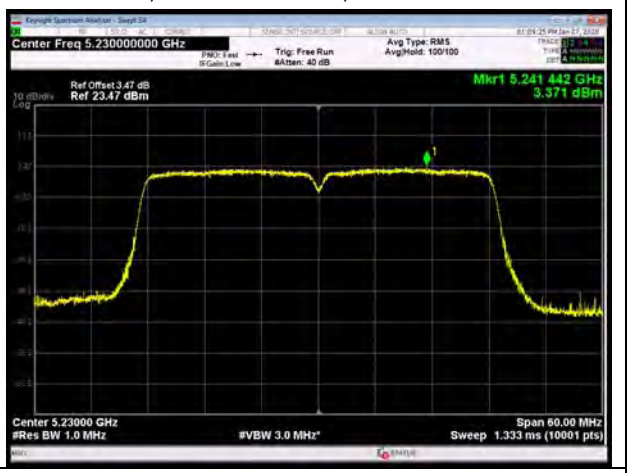
U-NII-1, 802.11n HT40, Channel No.: 38



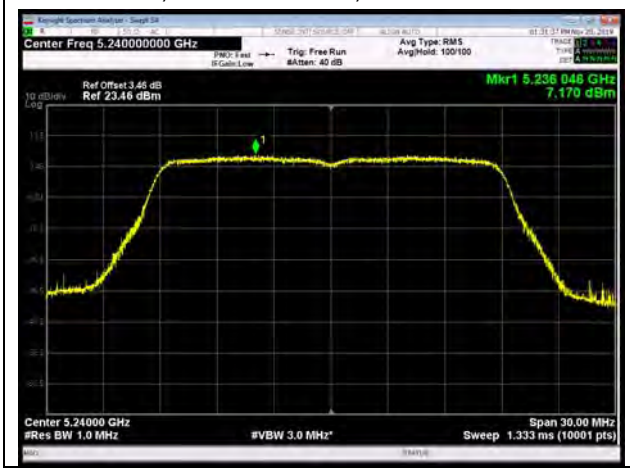
U-NII-1, 802.11n HT20, Channel No.: 40



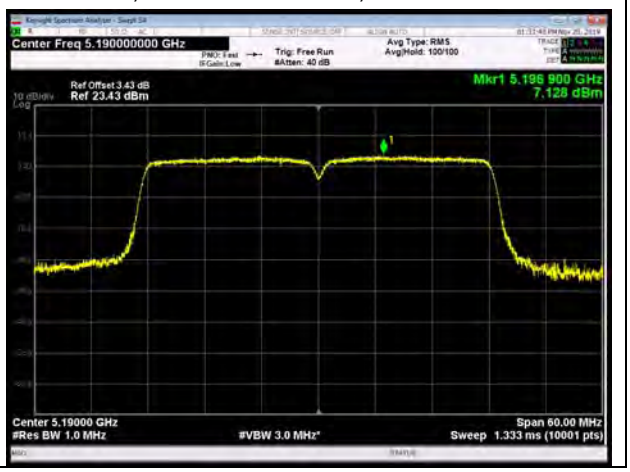
U-NII-1, 802.11n HT40, Channel No.: 46



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

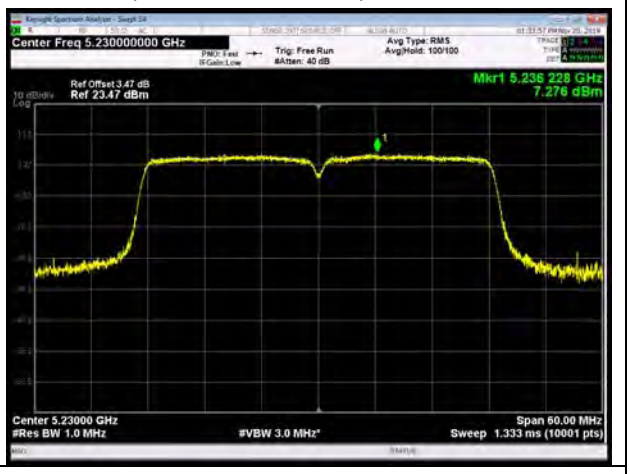


U-NII-1, 802.11ac VHT40, Channel No.: 38

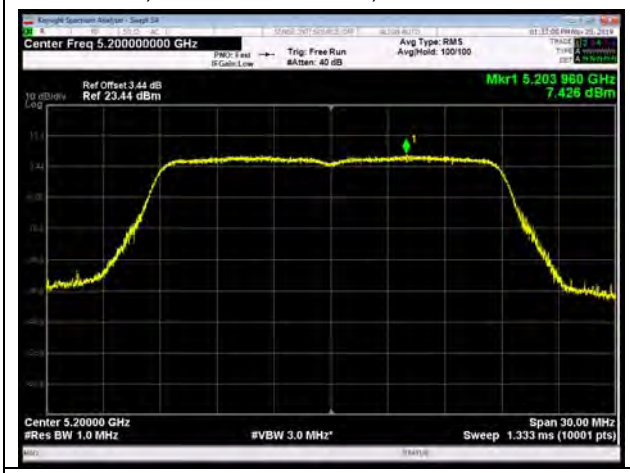


U-NII-1, 802.11ac VHT20, Channel No.: 36

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

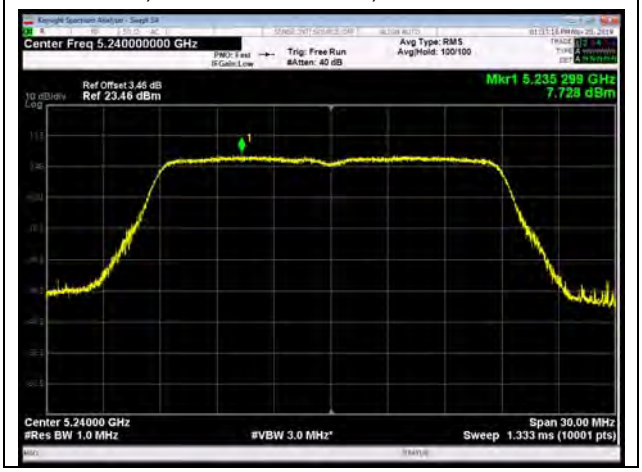


U-NII-1, 802.11ac VHT20, Channel No.: 40

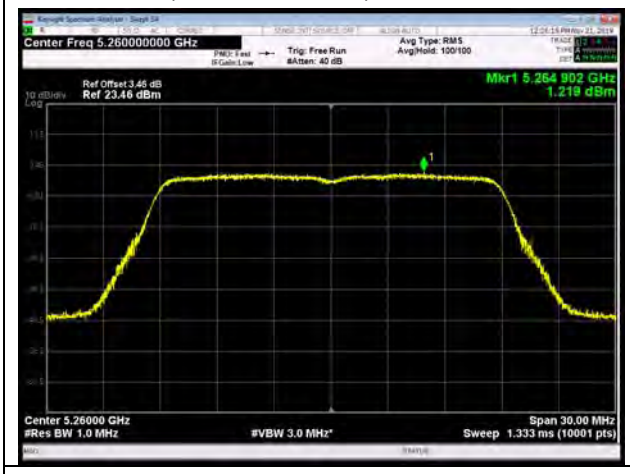


U-NII-1, 802.11ac VHT80, Channel No.: 42

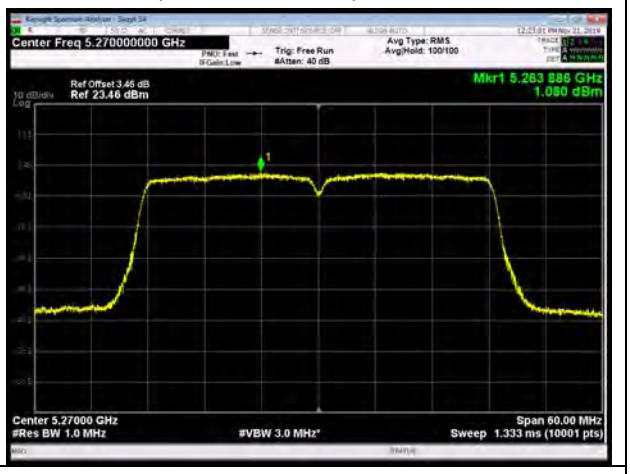
U-NII-1, 802.11ac VHT20, Channel No.: 48



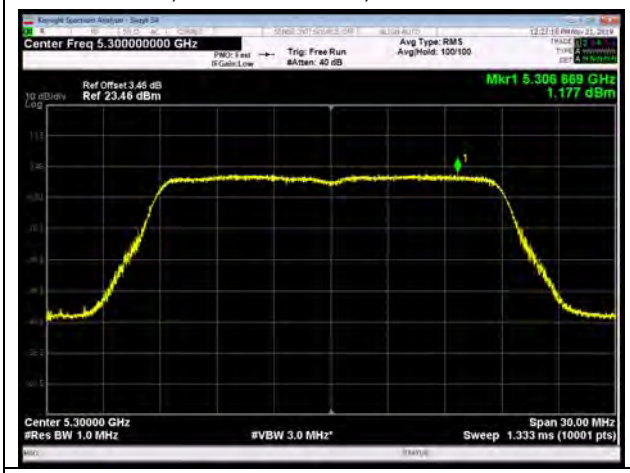
U-NII-2A, 802.11n HT20, Channel No.: 52



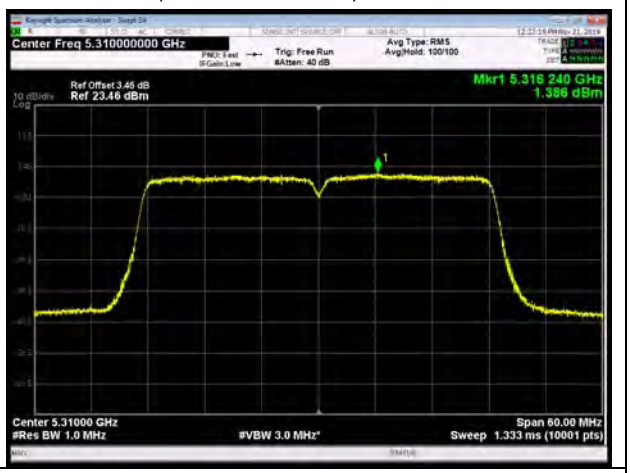
U-NII-2A, 802.11n HT40, Channel No.: 54



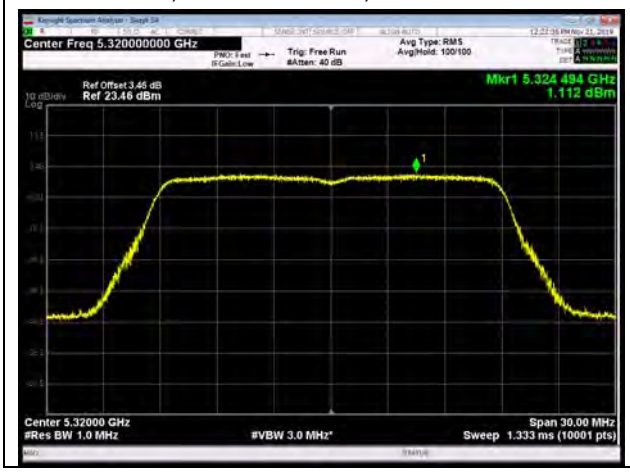
U-NII-2A, 802.11n HT20, Channel No.: 60



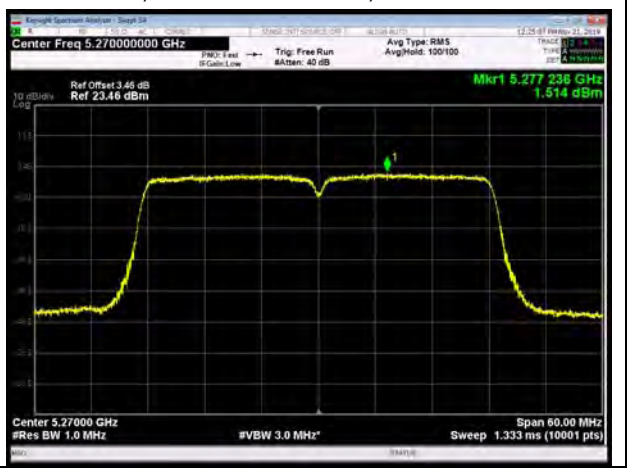
U-NII-2A, 802.11n HT40, Channel No.: 62



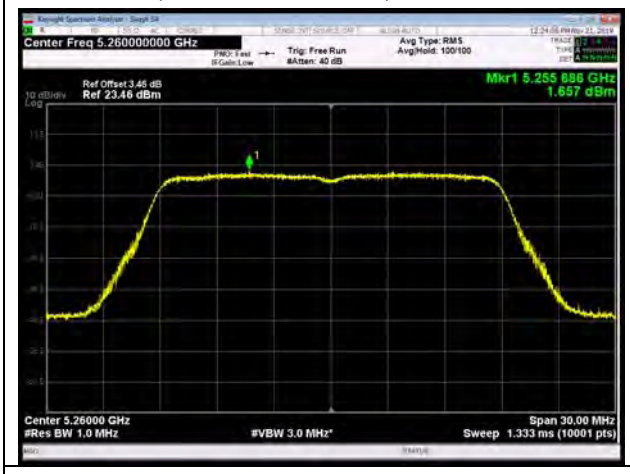
U-NII-2A, 802.11n HT20, Channel No.: 64



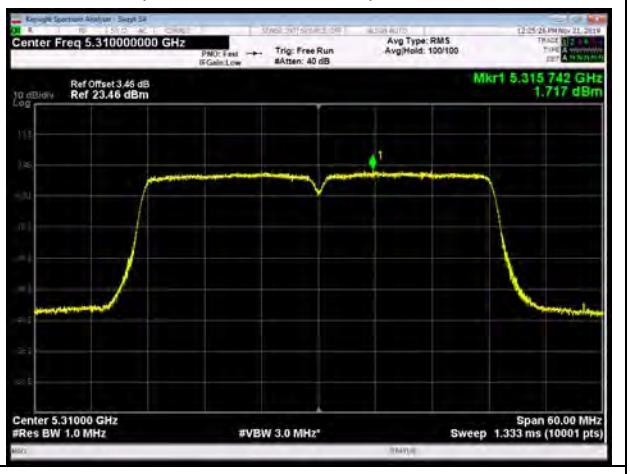
U-NII-2A, 802.11ac VHT40, Channel No.: 54



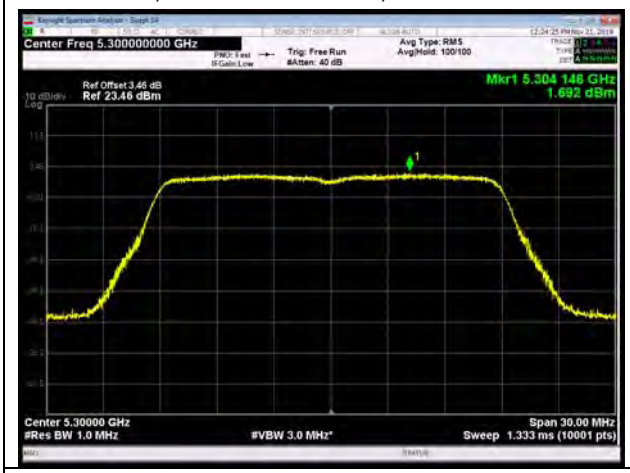
U-NII-2A, 802.11ac VHT20, Channel No.:52



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

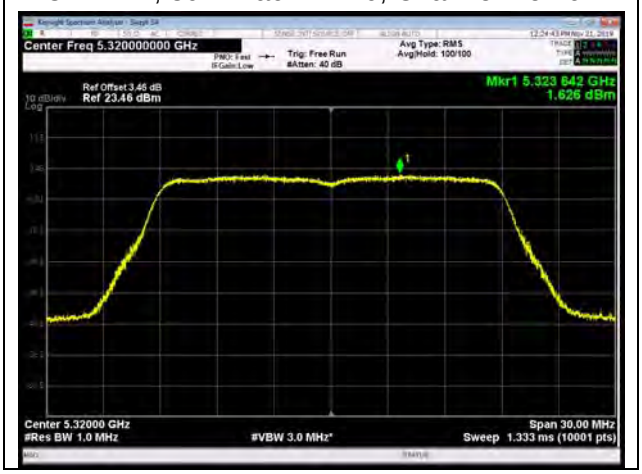


U-NII-2A, 802.11ac VHT20, Channel No.: 60

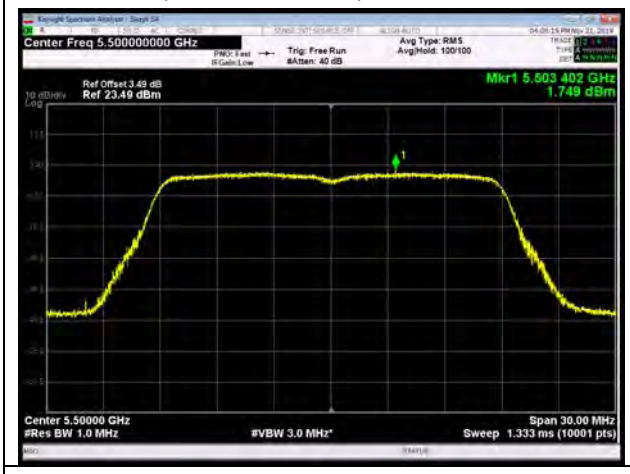


U-NII-2A, 802.11ac VHT80, Channel No.: 58

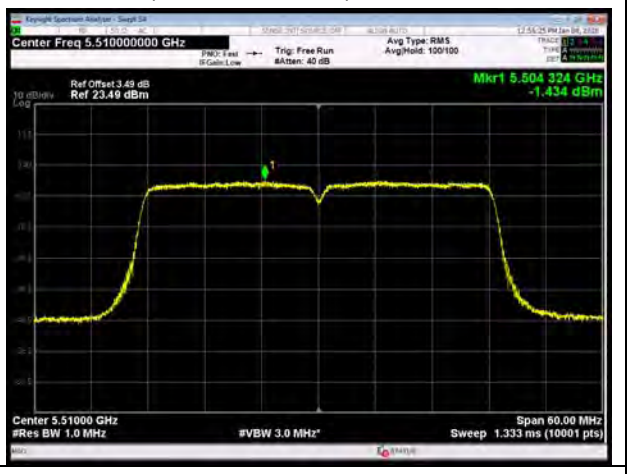
U-NII-2A, 802.11ac VHT20, Channel No.: 64



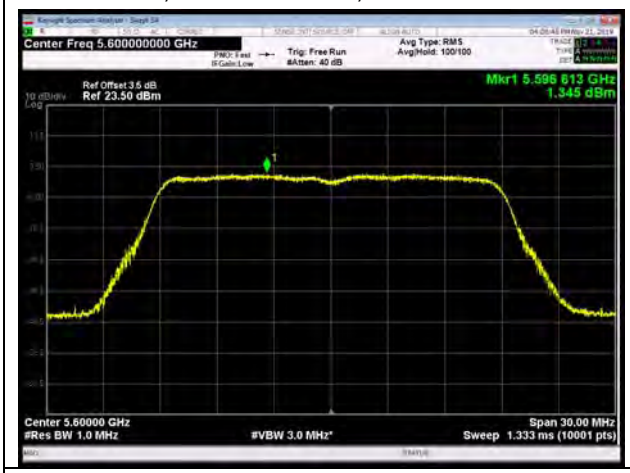
U-NII-2C, 802.11n HT20, Channel No.: 100



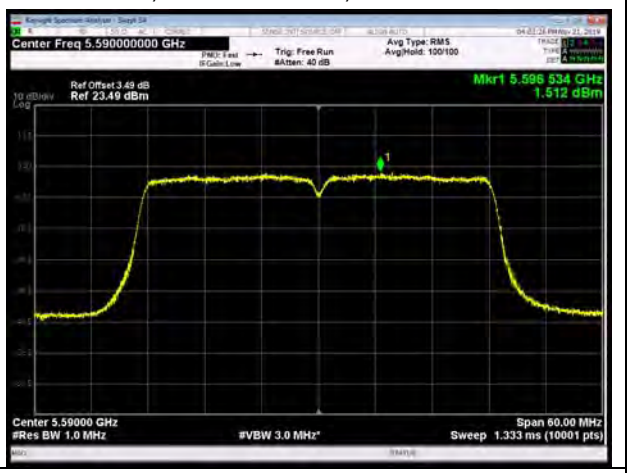
U-NII-2C, 802.11n HT40, Channel No.: 102



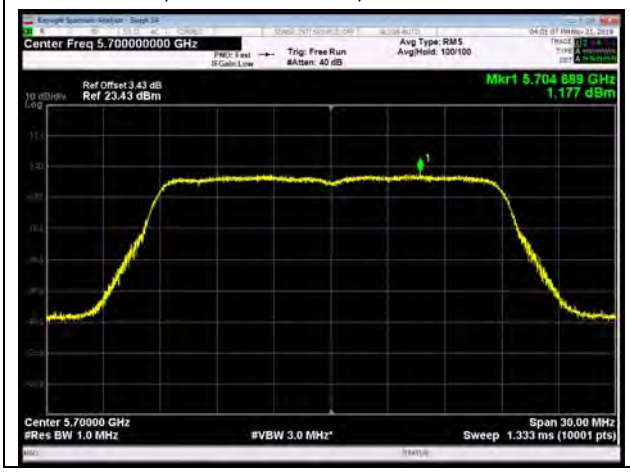
U-NII-2C, 802.11n HT20, Channel No.: 120



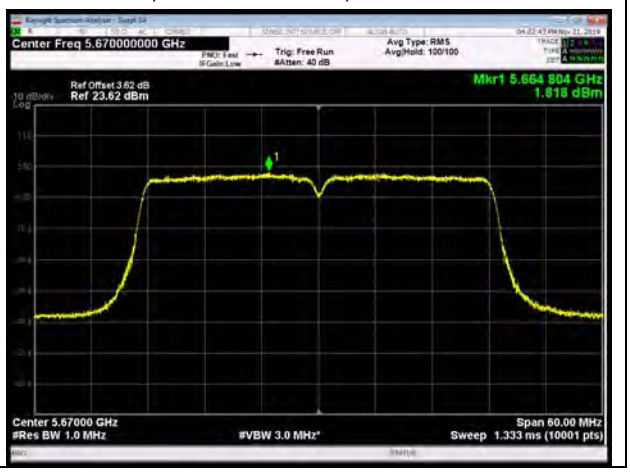
U-NII-2C, 802.11n HT40, Channel No.: 118

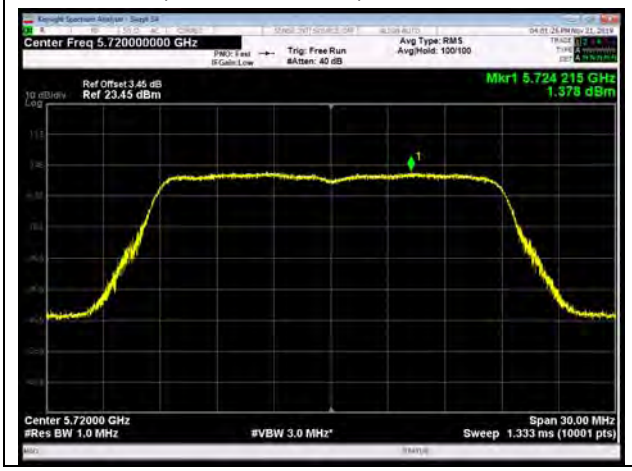
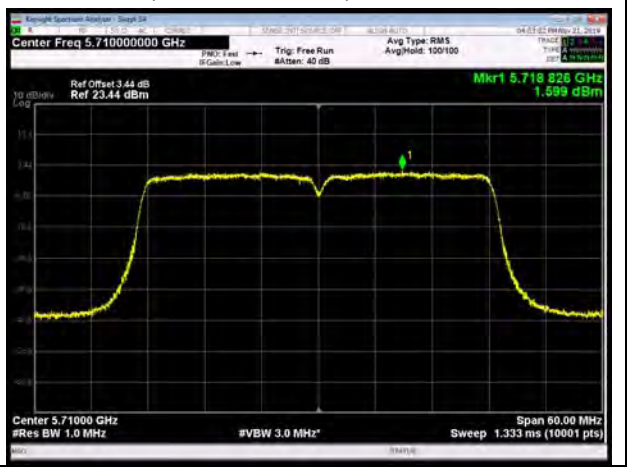


U-NII-2C, 802.11n HT20, Channel No.: 140



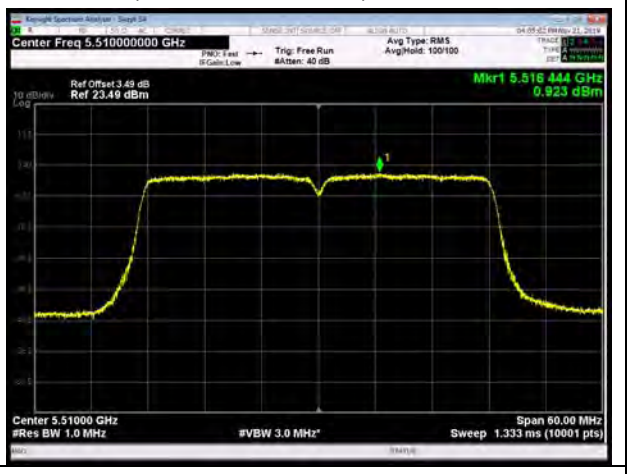
U-NII-2C, 802.11n HT40, Channel No.: 134



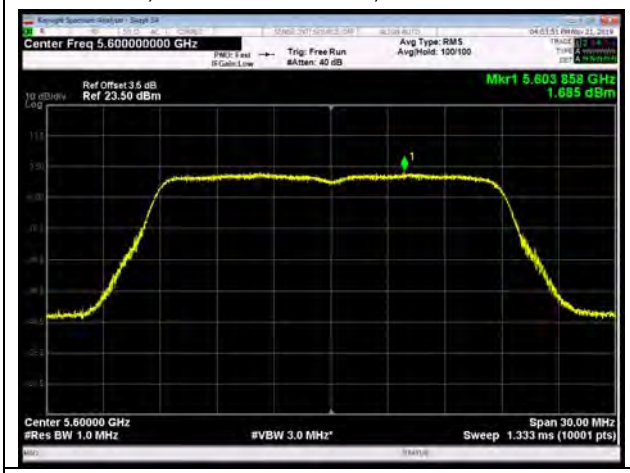
U-NII-2C, 802.11n HT20, Channel No.: 144	U-NII-2C, 802.11n HT40, Channel No.: 142
	

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

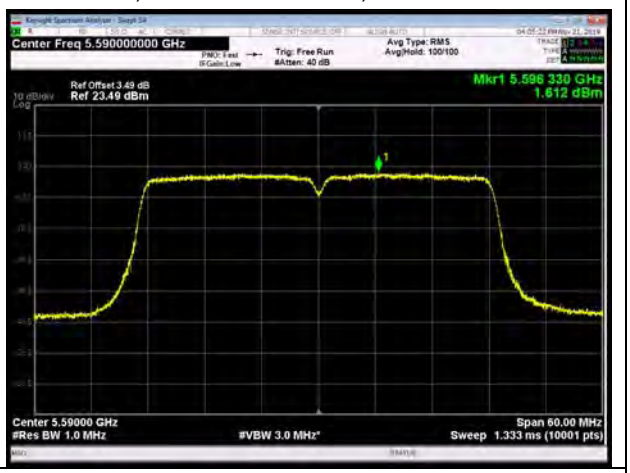
U-NII-2C, 802.11ac VHT40, Channel No.: 102



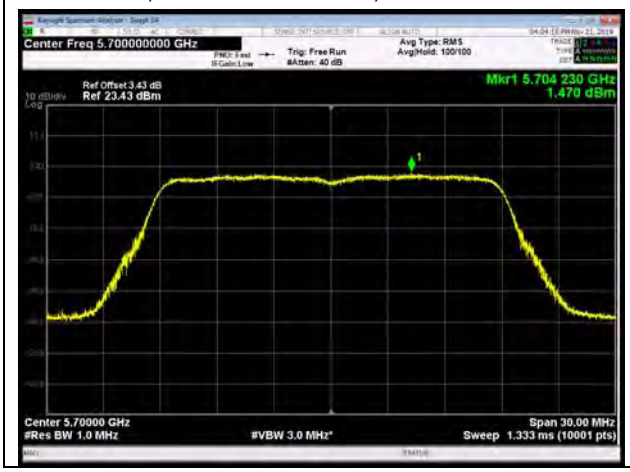
U-NII-2C, 802.11ac VHT20, Channel No.: 120



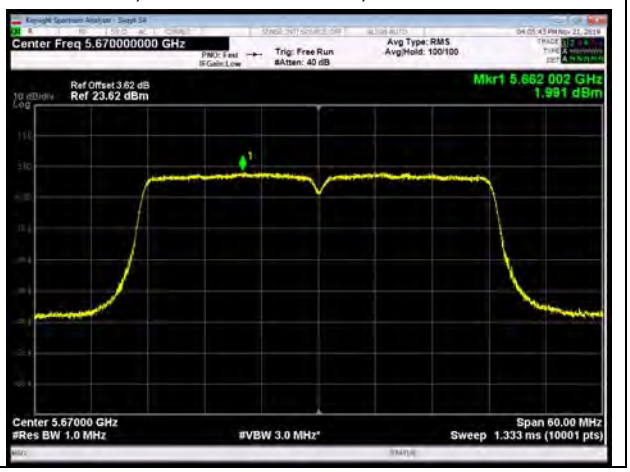
U-NII-2C, 802.11ac VHT40, Channel No.: 118



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

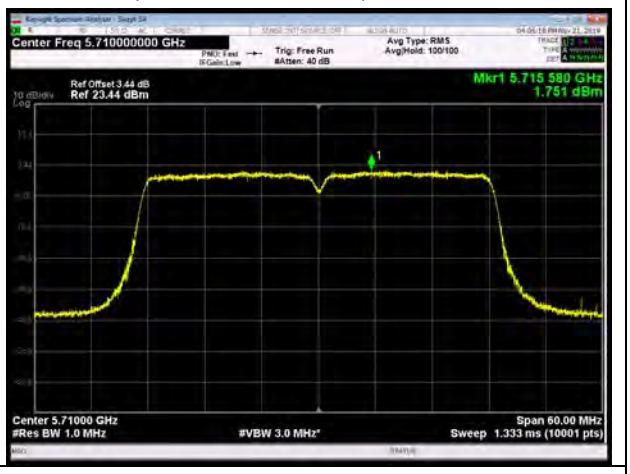


U-NII-2C, 802.11ac VHT40, Channel No.: 134

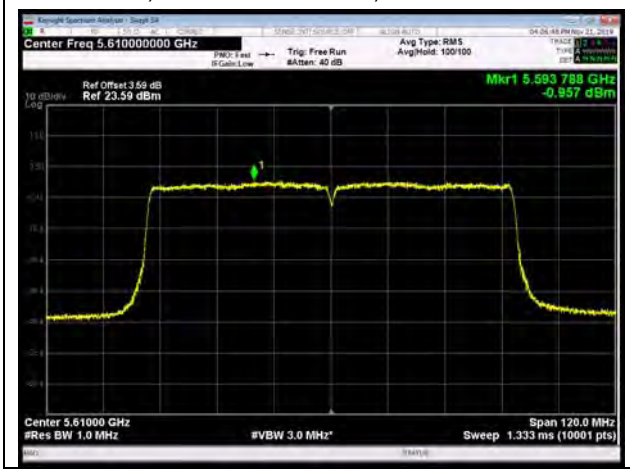


U-NII-2C, 802.11ac VHT20, Channel No.: 144

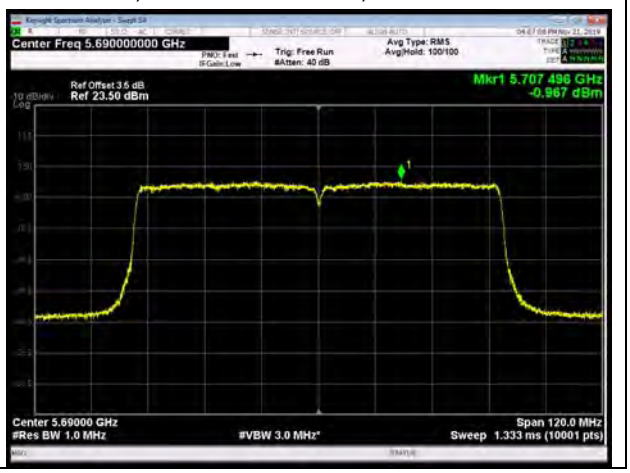
U-NII-2C, 802.11ac VHT40, Channel No.: 142



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

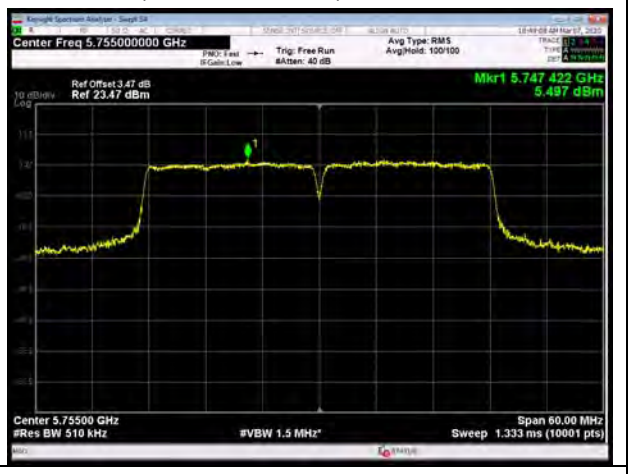


U-NII-2C, 802.11ac VHT80, Channel No.: 138



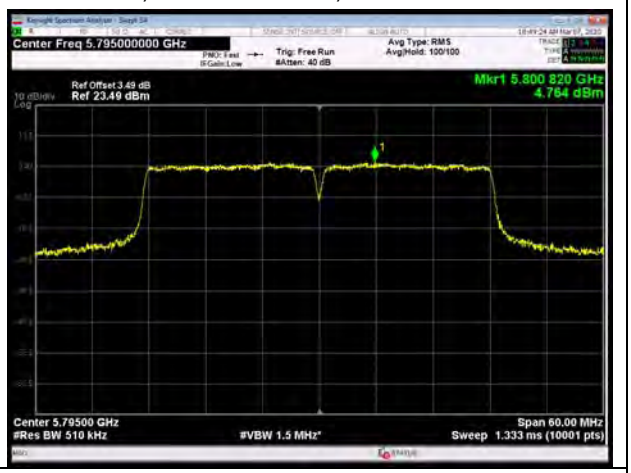
U-NII-3, 802.11n HT20, Channel No.: 149

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

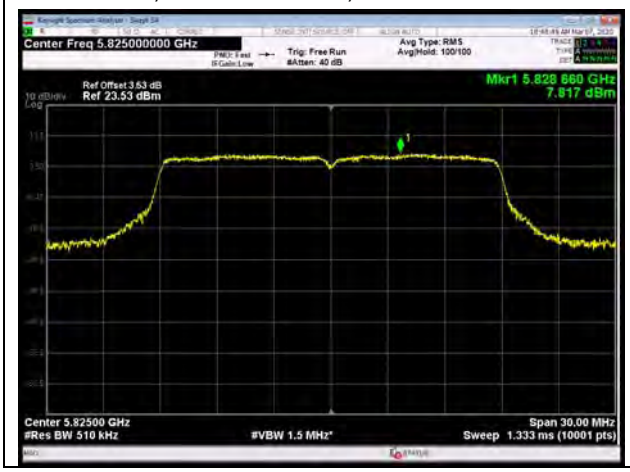


U-NII-3, 802.11n HT20, Channel No.: 157

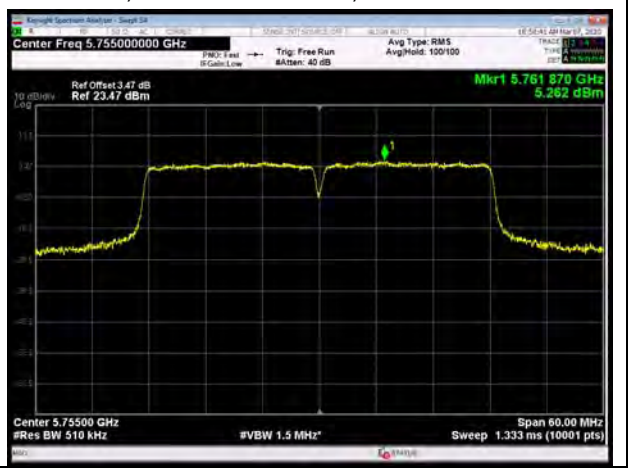
U-NII-3, 802.11n HT40, Channel No.: 159



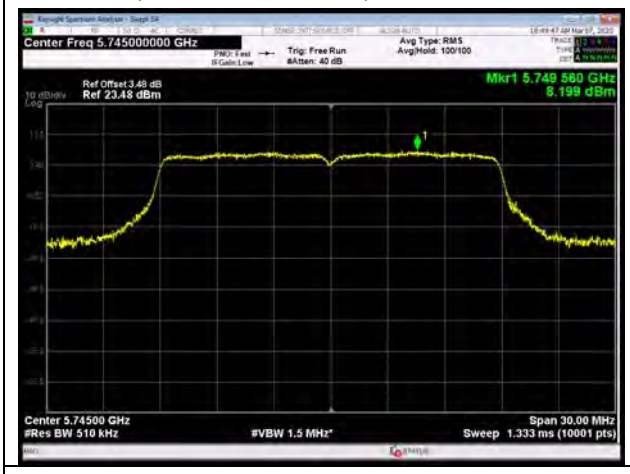
U-NII-3, 802.11n HT20, Channel No.: 165



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



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



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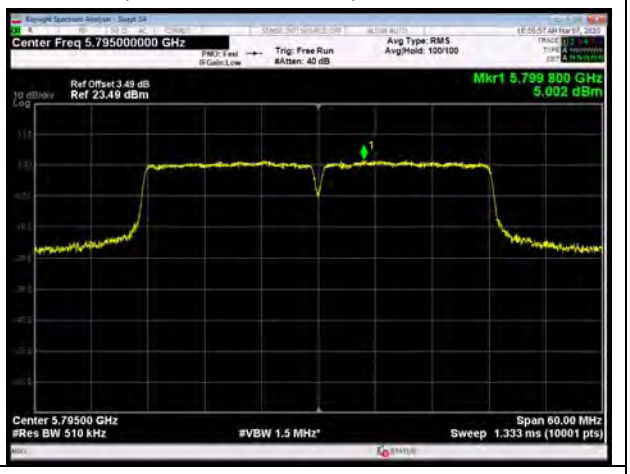
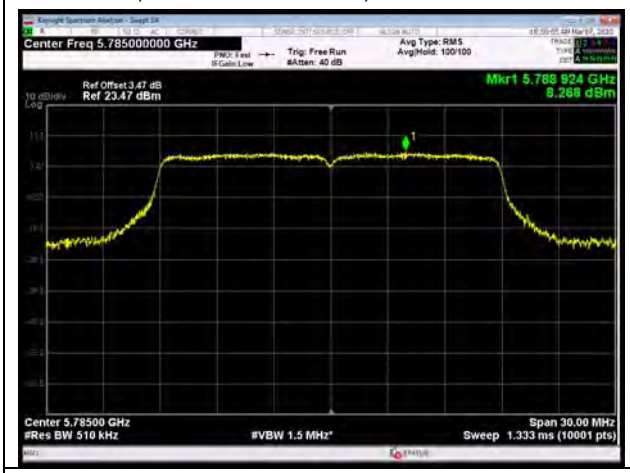
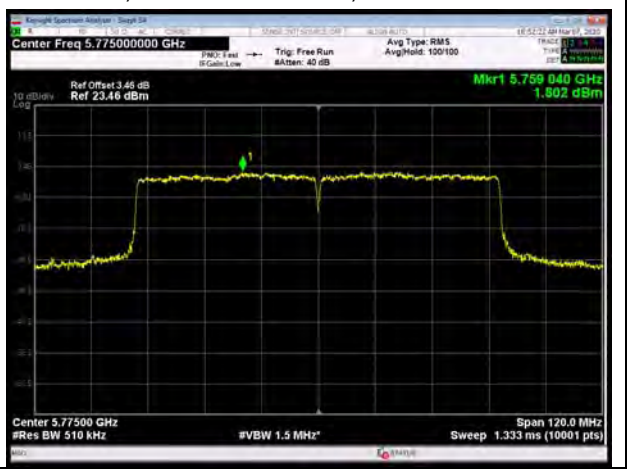


U-NII-3, 802.11ac VHT20, Channel No.: 157



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

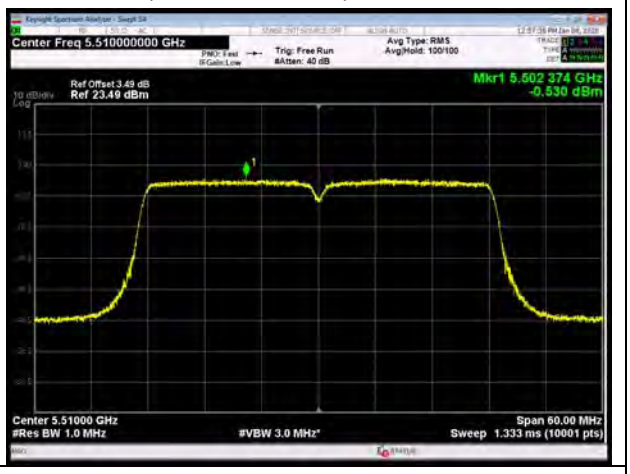


U-NII-3, 802.11ac VHT20, Channel No.: 165

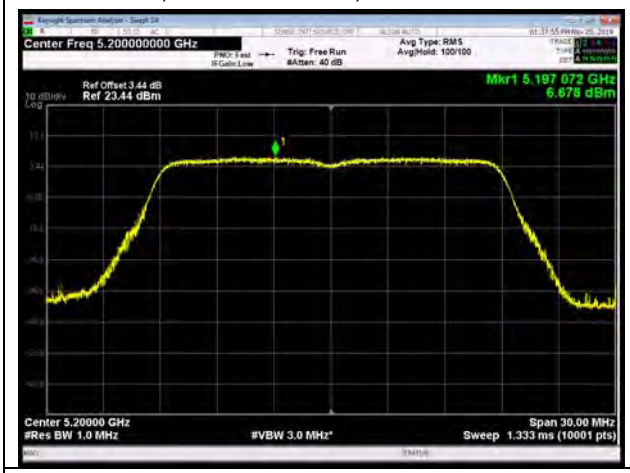
MIMO Antenna 4

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

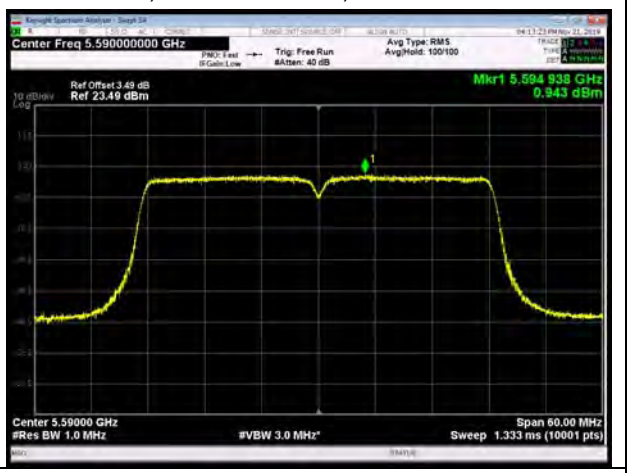
U-NII-1, 802.11n HT40, Channel No.: 38



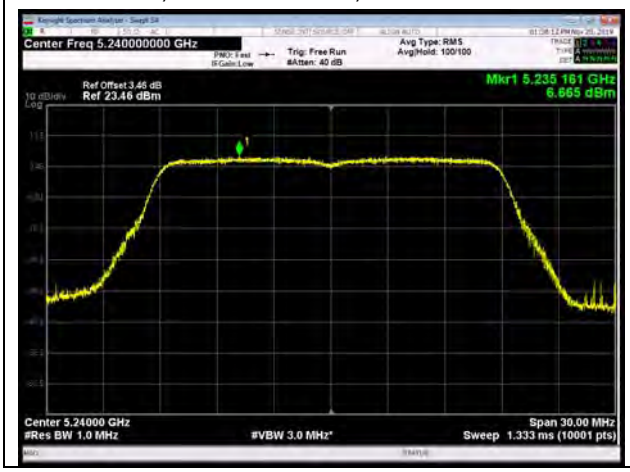
U-NII-1, 802.11n HT20, Channel No.: 40



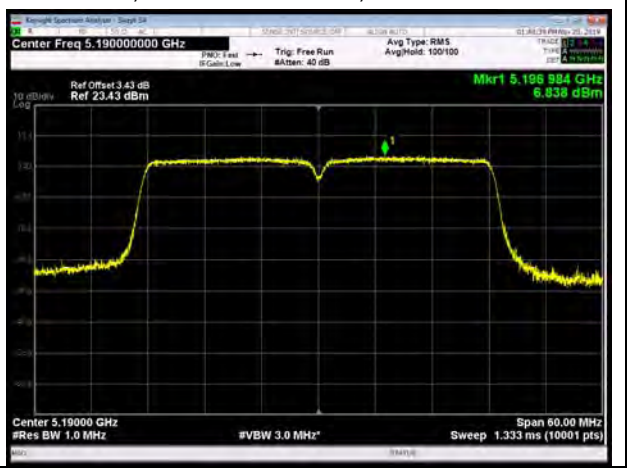
U-NII-1, 802.11n HT40, Channel No.: 46



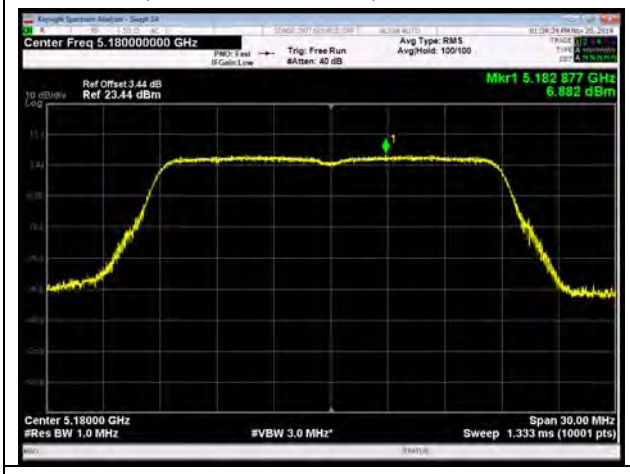
U-NII-1, 802.11n HT20, Channel No.: 48



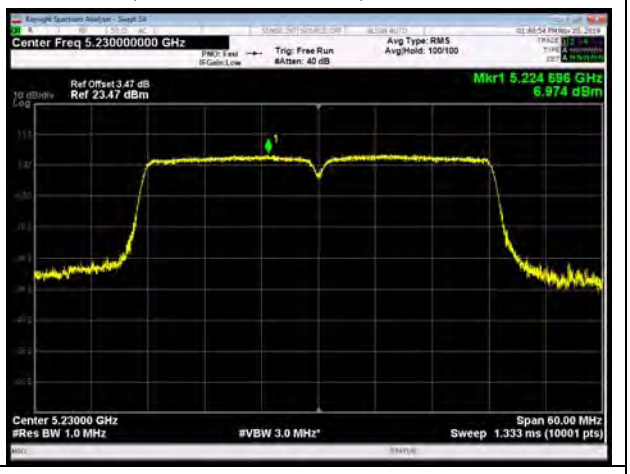
U-NII-1, 802.11ac VHT40, Channel No.: 38



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



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



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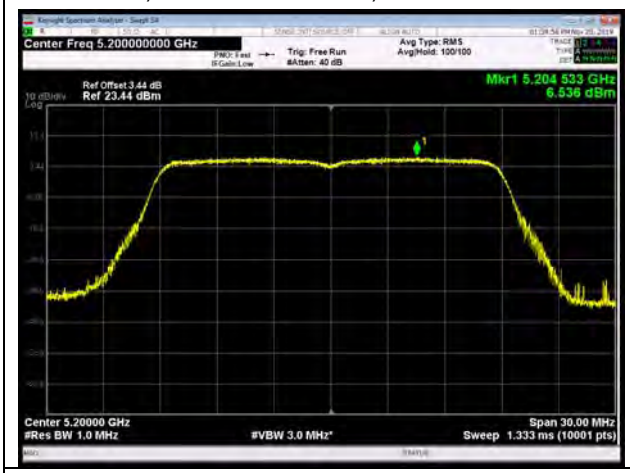
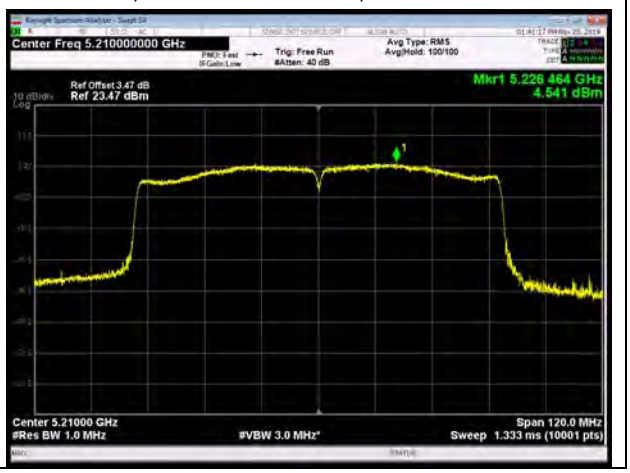
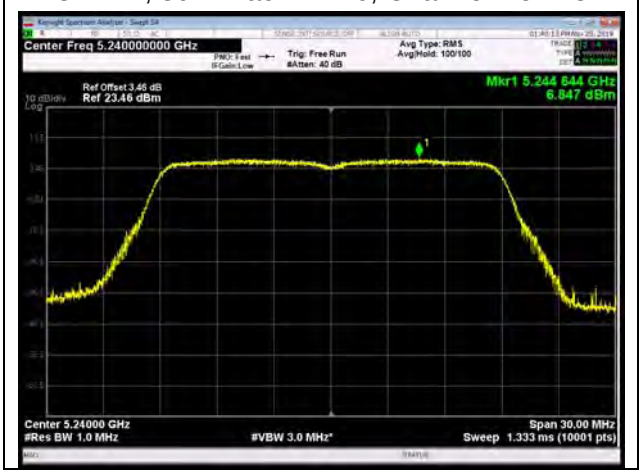


U-NII-1, 802.11ac VHT80, Channel No.: 42

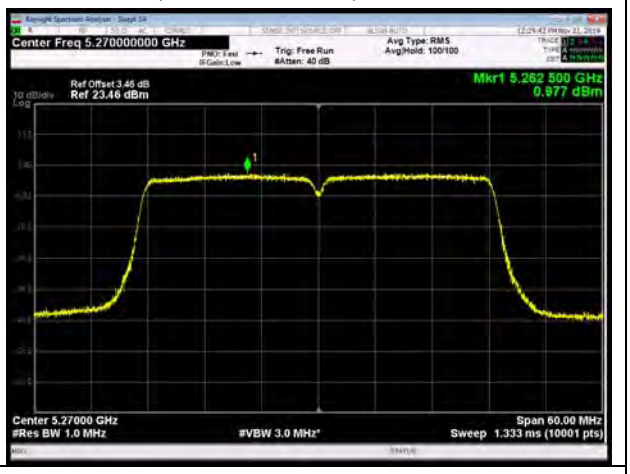


U-NII-1, 802.11ac VHT20, Channel No.: 48

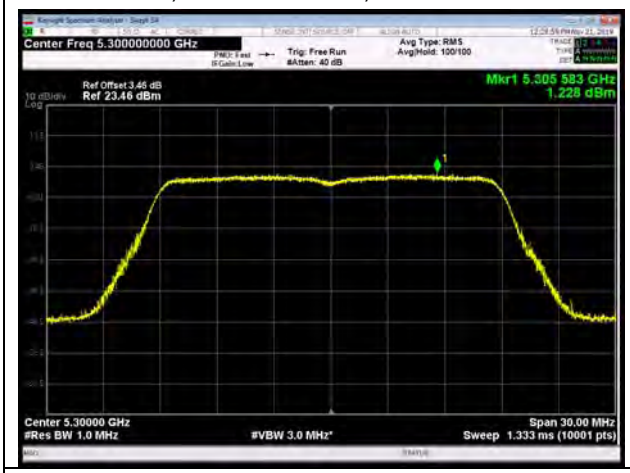


U-NII-2A, 802.11n HT20, Channel No.: 52

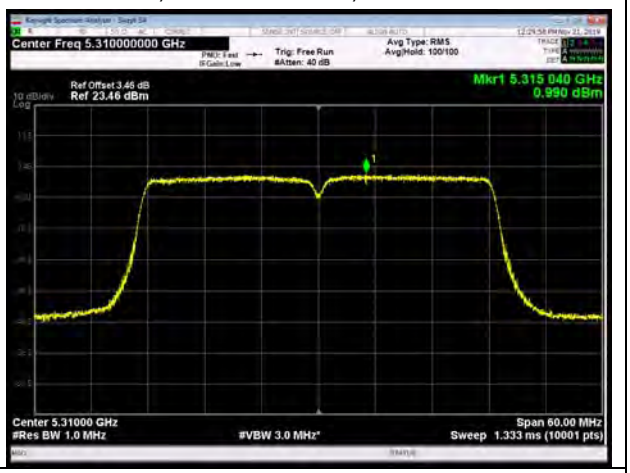
U-NII-2A, 802.11n HT40, Channel No.: 54



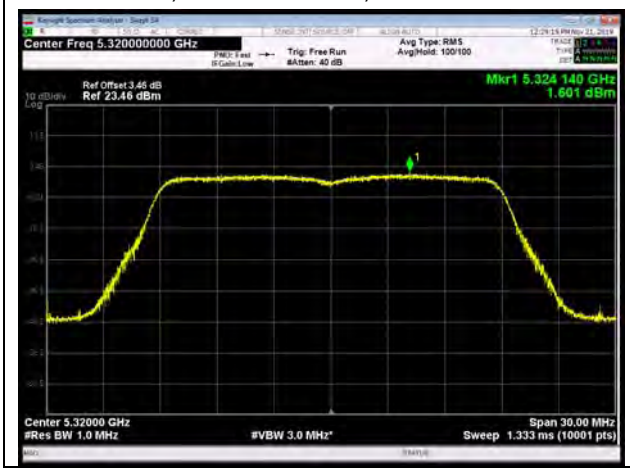
U-NII-2A, 802.11n HT20, Channel No.: 60



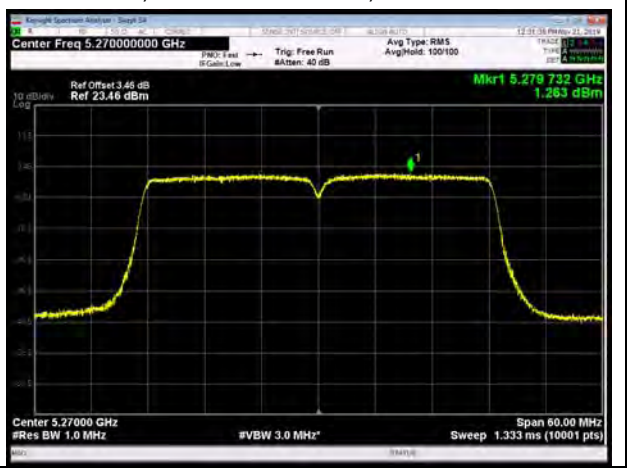
U-NII-2A, 802.11n HT40, Channel No.: 62



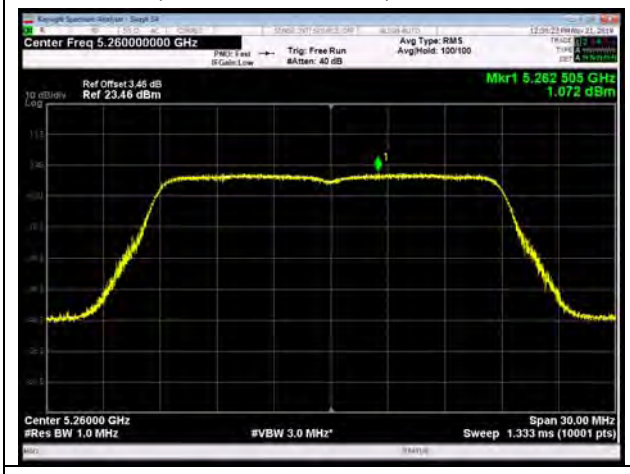
U-NII-2A, 802.11n HT20, Channel No.: 64



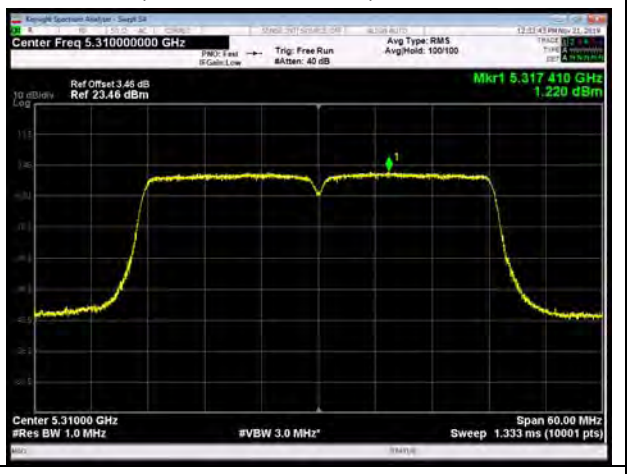
U-NII-2A, 802.11ac VHT40, Channel No.: 54



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



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



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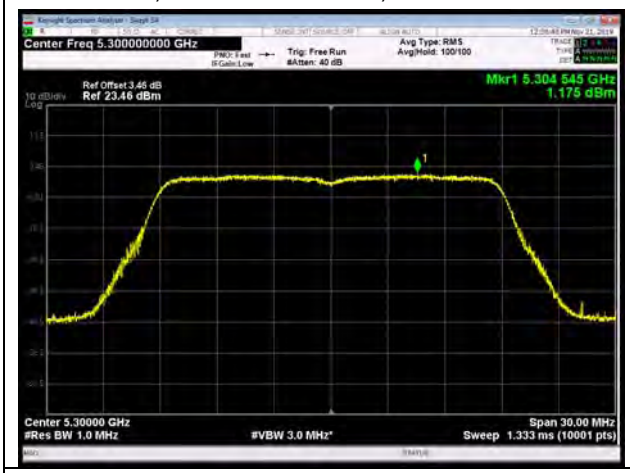
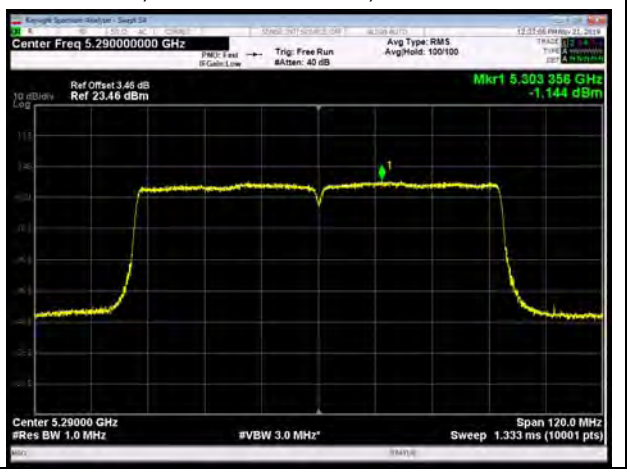
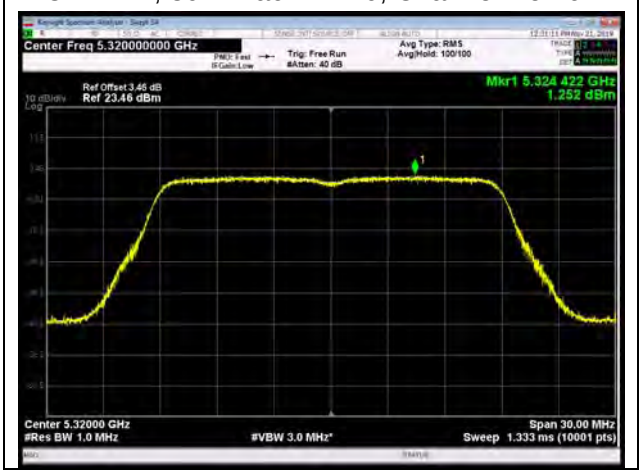


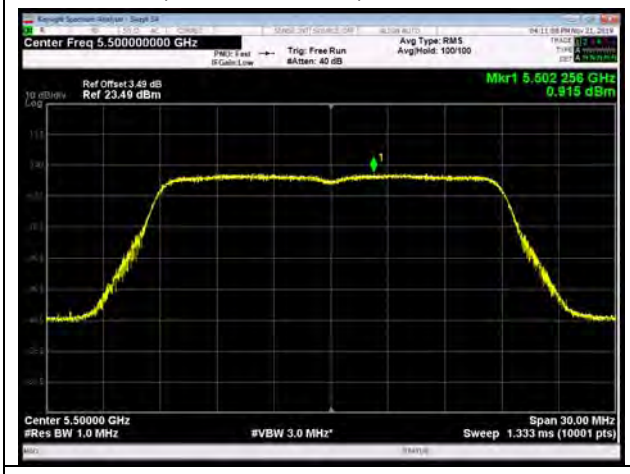
U-NII-2A, 802.11ac VHT80, Channel No.: 58



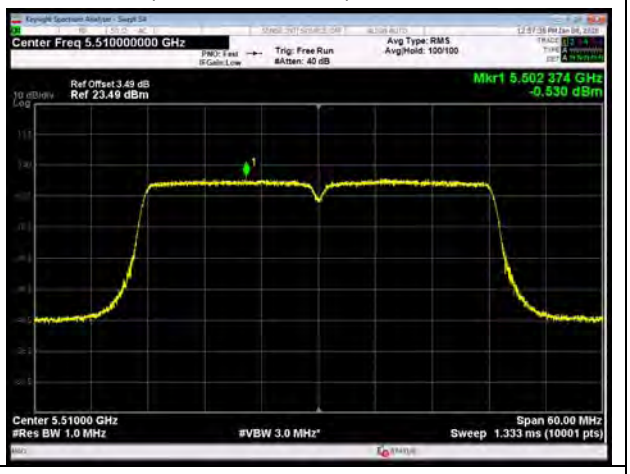
U-NII-2A, 802.11ac VHT20, Channel No.: 64



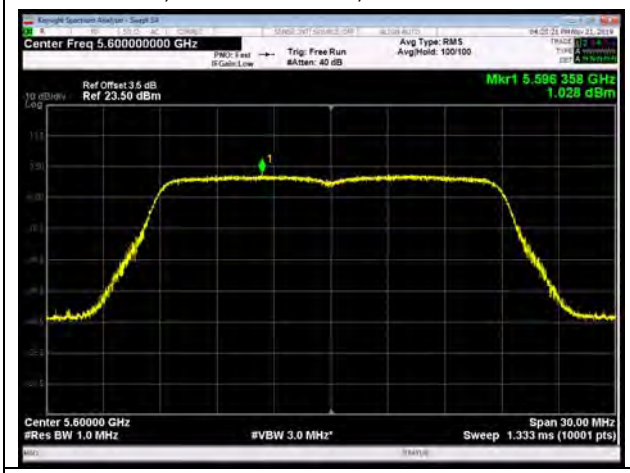
U-NII-2C, 802.11n HT20, Channel No.: 100



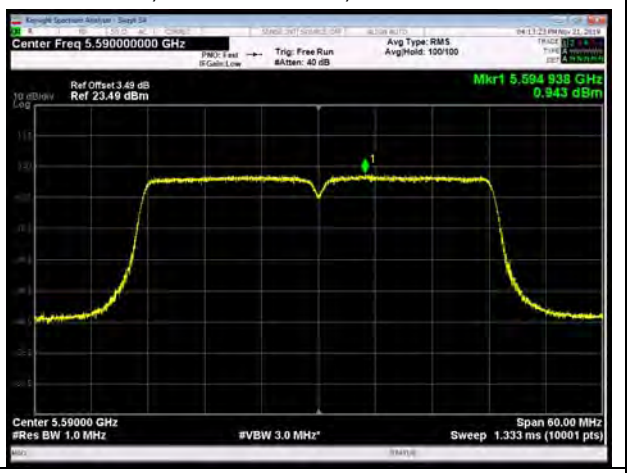
U-NII-2C, 802.11n HT40, Channel No.: 102



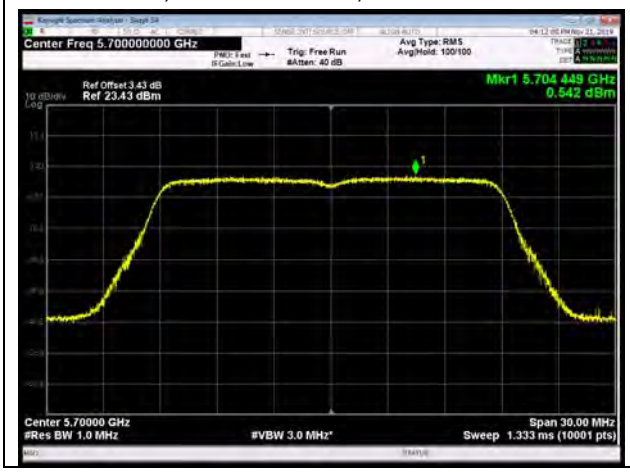
U-NII-2C, 802.11n HT20, Channel No.: 120



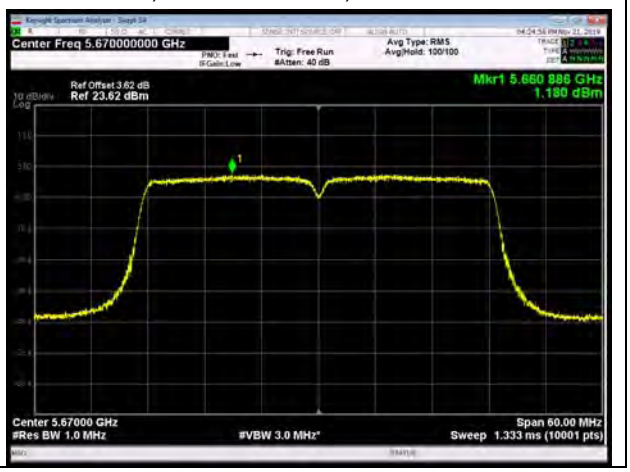
U-NII-2C, 802.11n HT40, Channel No.: 118

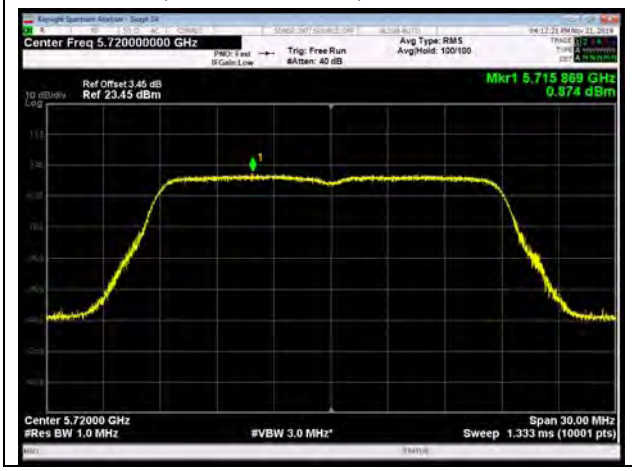
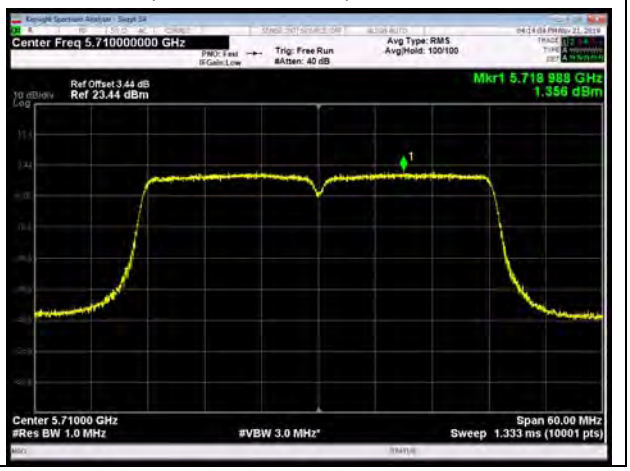


U-NII-2C, 802.11n HT20, Channel No.: 140

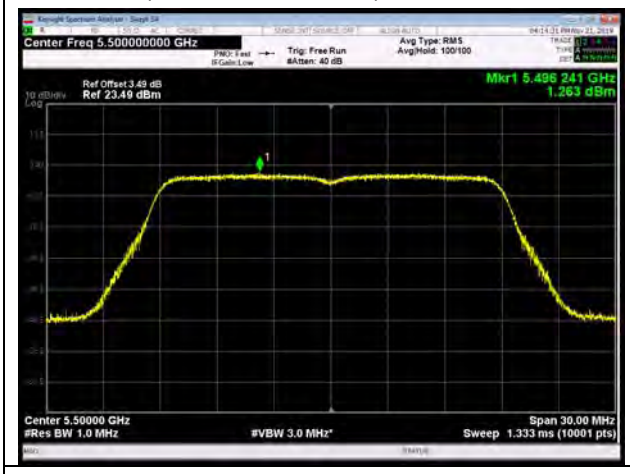


U-NII-2C, 802.11n HT40, Channel No.: 134

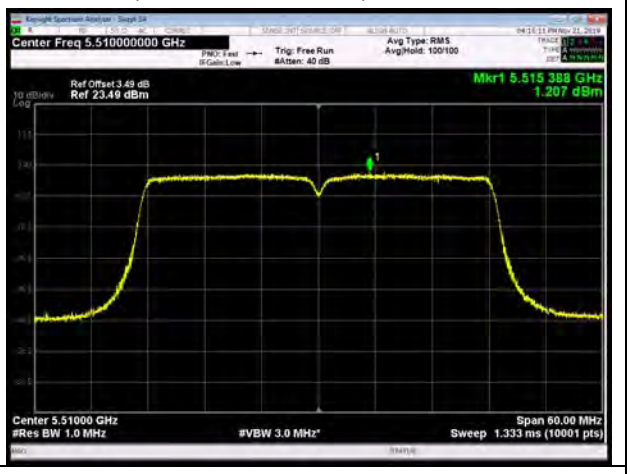


U-NII-2C, 802.11n HT20, Channel No.: 144	U-NII-2C, 802.11n HT40, Channel No.: 142
	

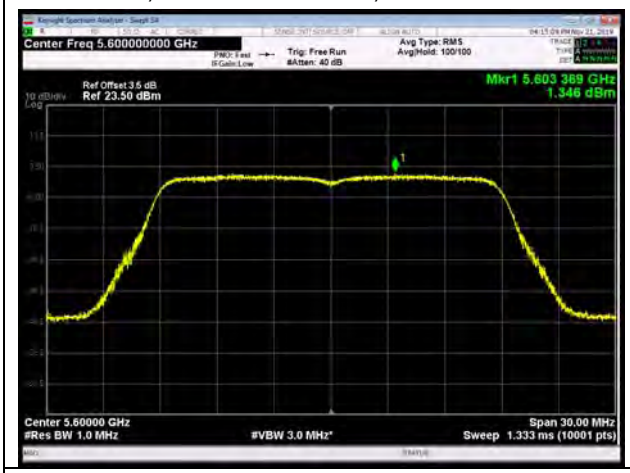
U-NII-2C, 802.11ac VHT20, Channel No.: 100



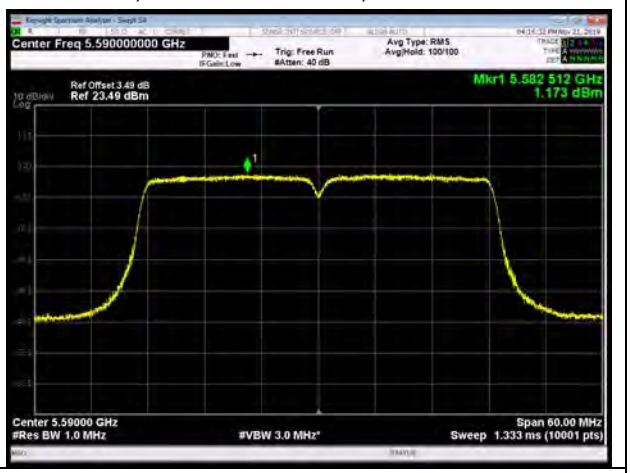
U-NII-2C, 802.11ac VHT40, Channel No.: 102



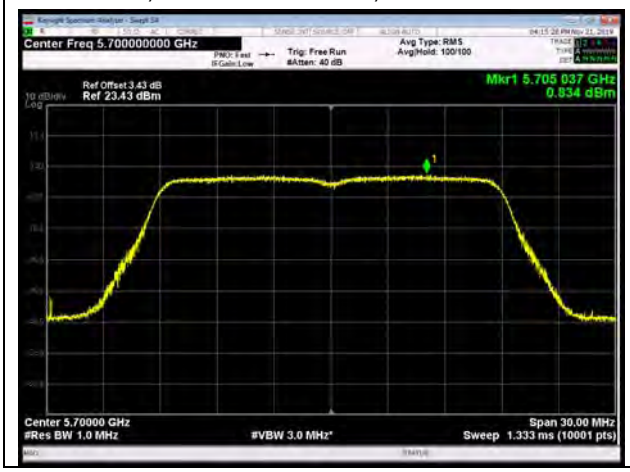
U-NII-2C, 802.11ac VHT20, Channel No.: 120



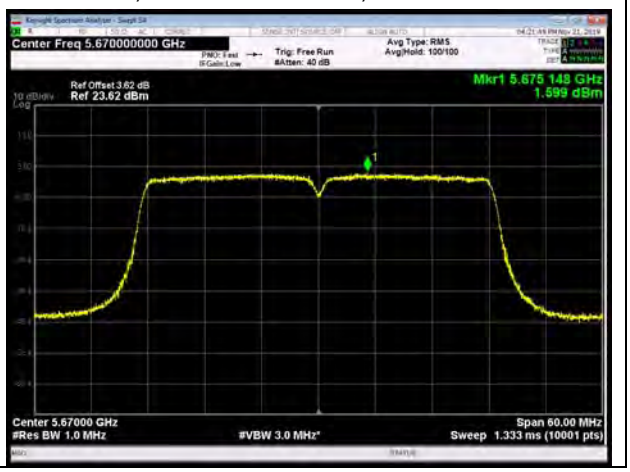
U-NII-2C, 802.11ac VHT40, Channel No.: 118



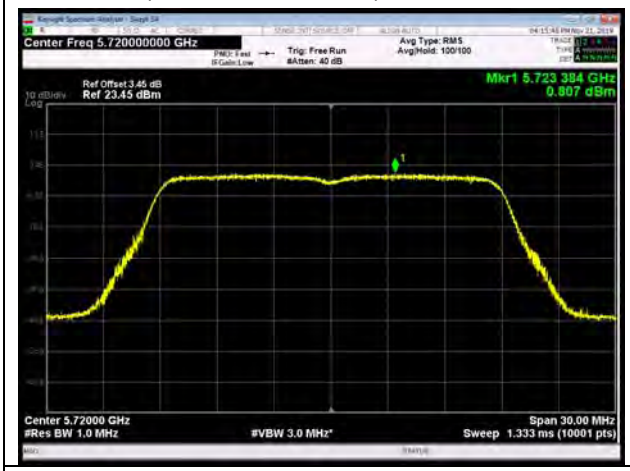
U-NII-2C, 802.11ac VHT20, Channel No.: 140



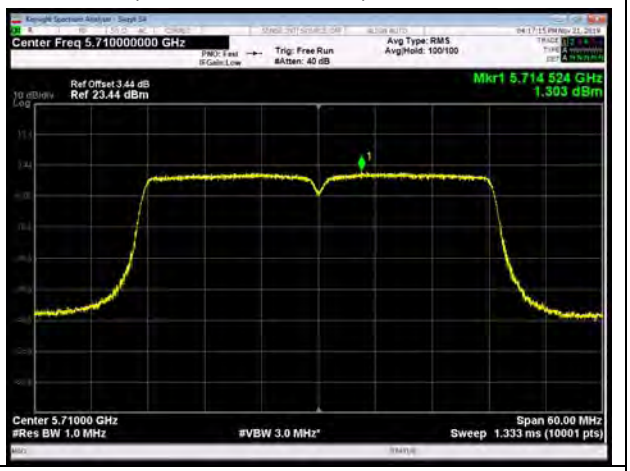
U-NII-2C, 802.11ac VHT40, Channel No.: 134



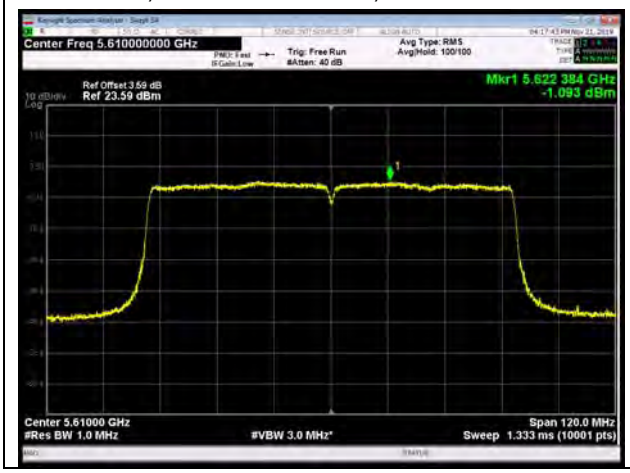
U-NII-2C, 802.11ac VHT20, Channel No.: 144



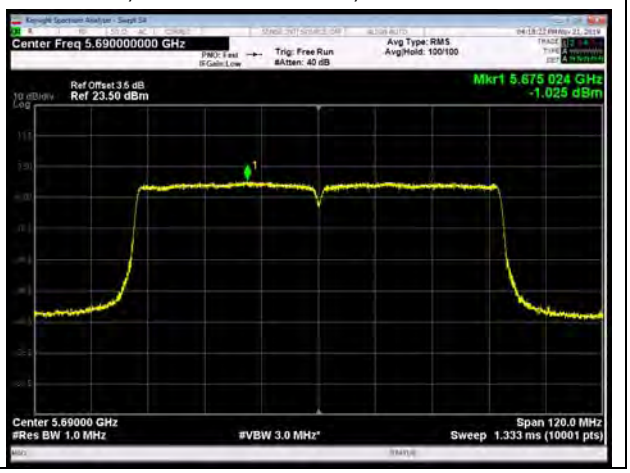
U-NII-2C, 802.11ac VHT40, Channel No.: 142



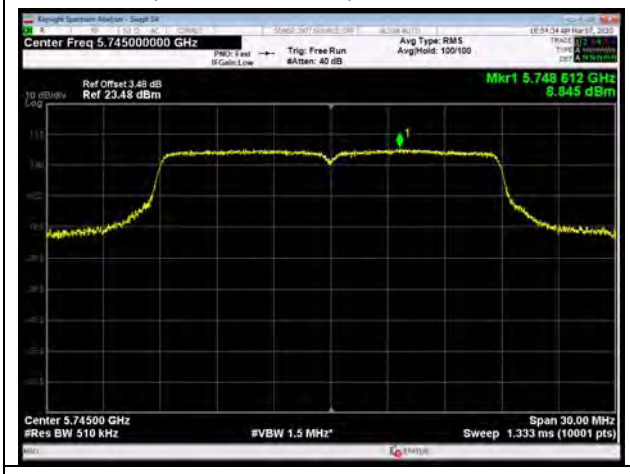
U-NII-2C, 802.11ac VHT80, Channel No.: 122



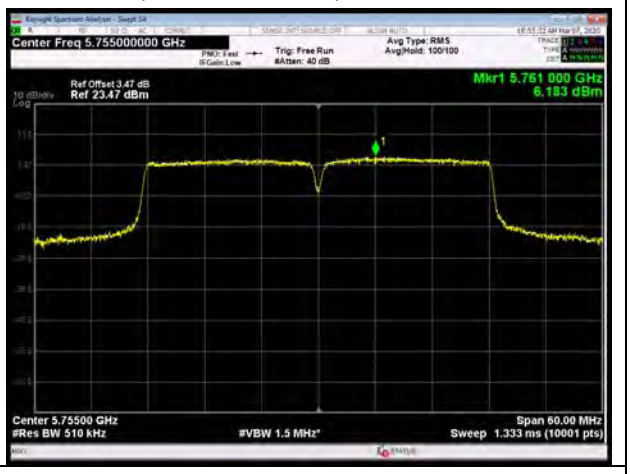
U-NII-2C, 802.11ac VHT80, Channel No.: 1138



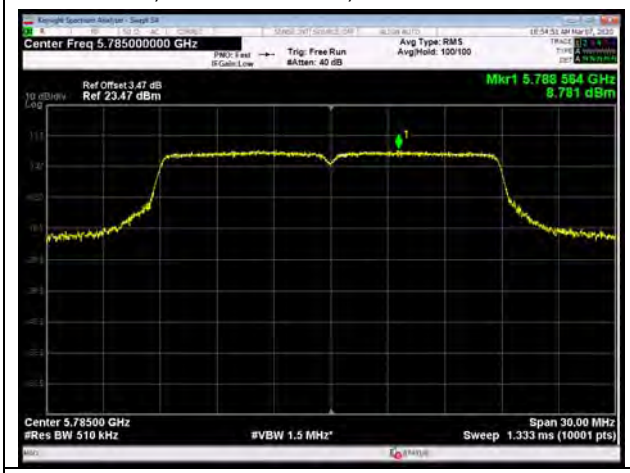
U-NII-3, 802.11n HT20, Channel No.: 149



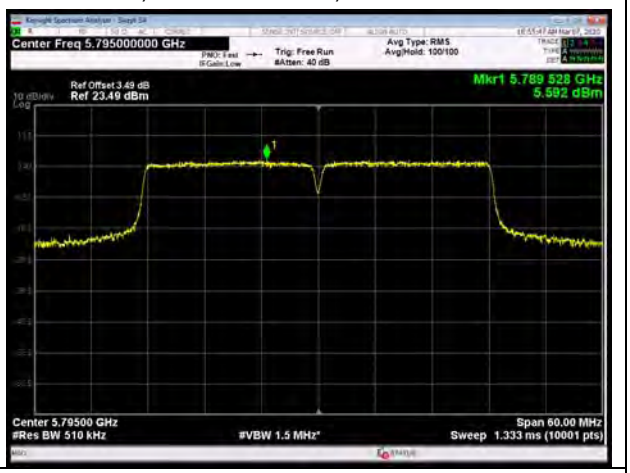
U-NII-3, 802.11n HT40, Channel No.: 151



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

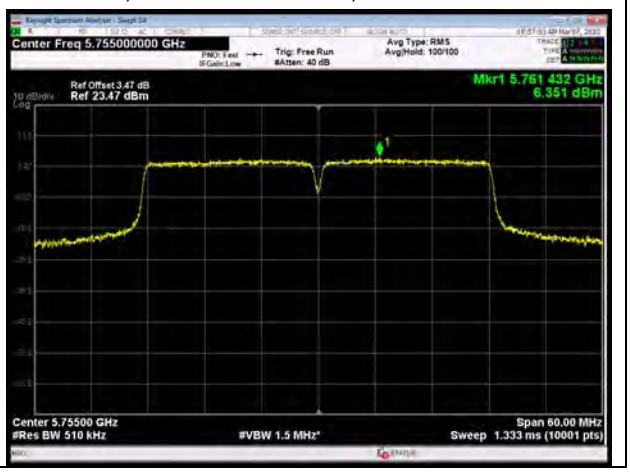


U-NII-3, 802.11n HT40, Channel No.: 159



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

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



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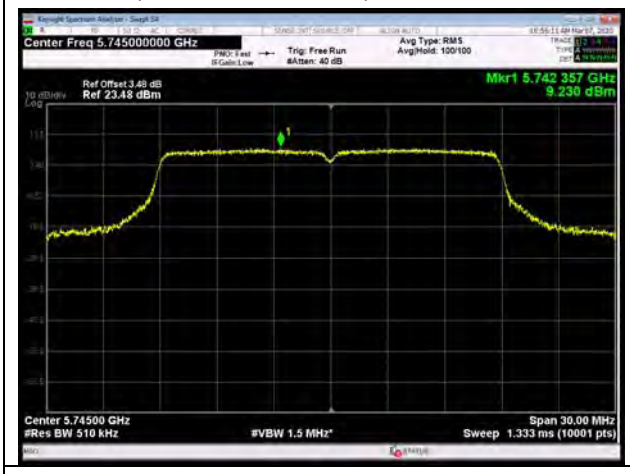

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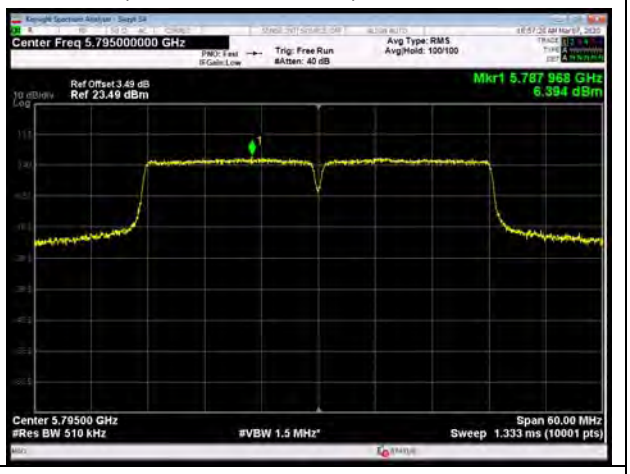

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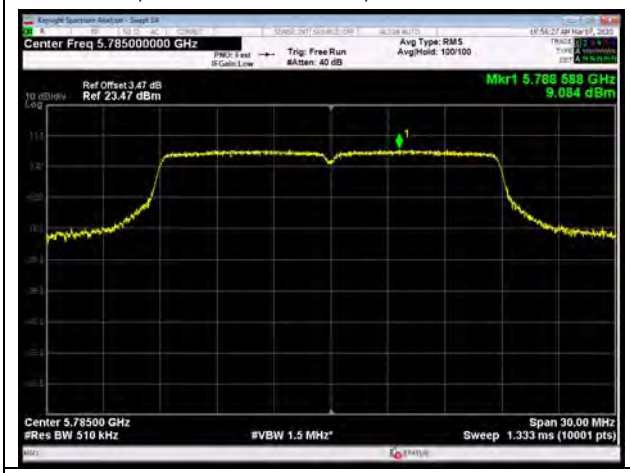
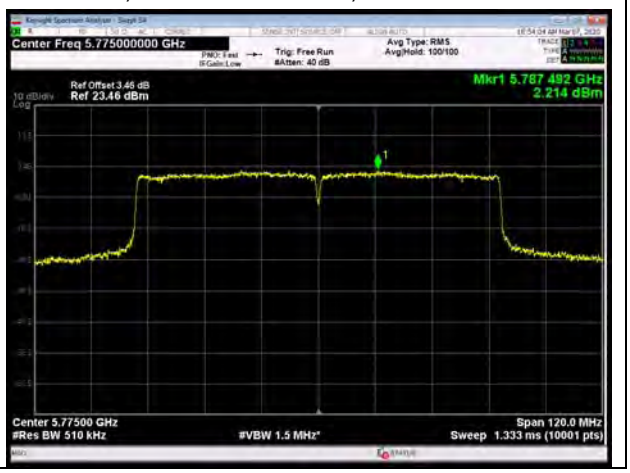
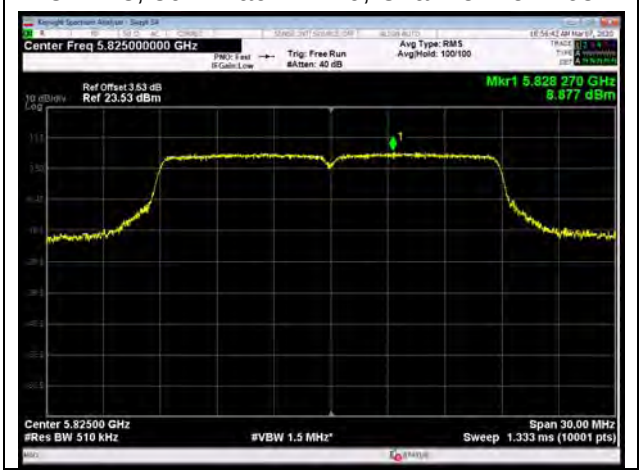


U-NII-3, 802.11ac VHT80, Channel No.: 155



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

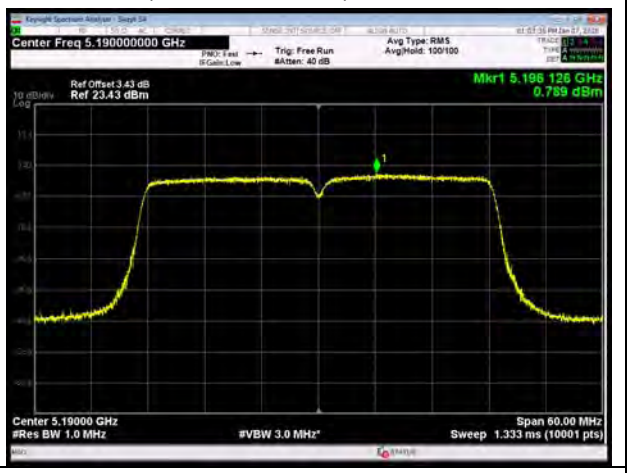


With Beamforming

MIMO Antenna 1

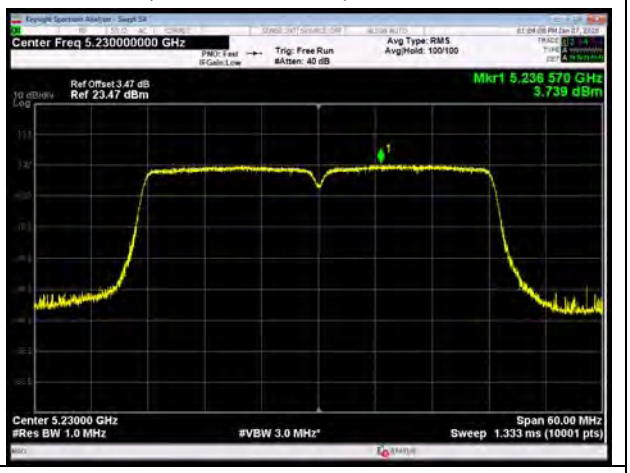
U-NII-1, 802.11n HT20, Channel No.: 36

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

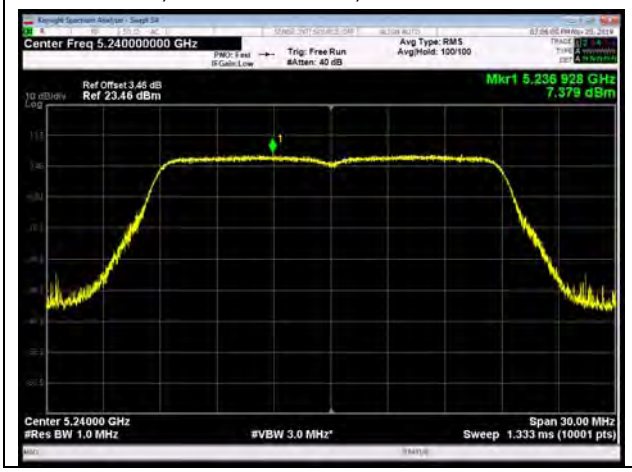


U-NII-1, 802.11n HT20, Channel No.: 40

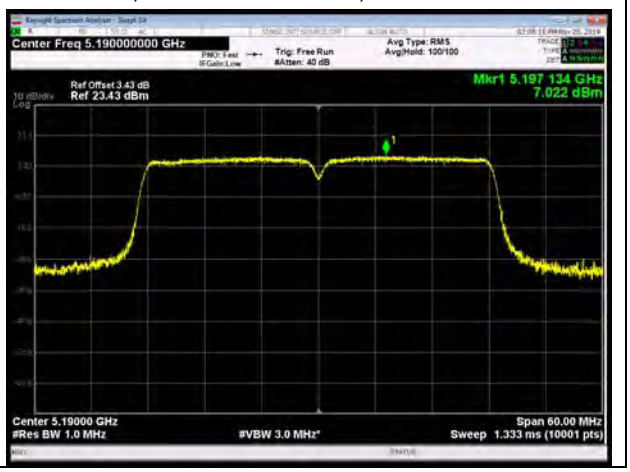
U-NII-1, 802.11n HT40, Channel No.: 46



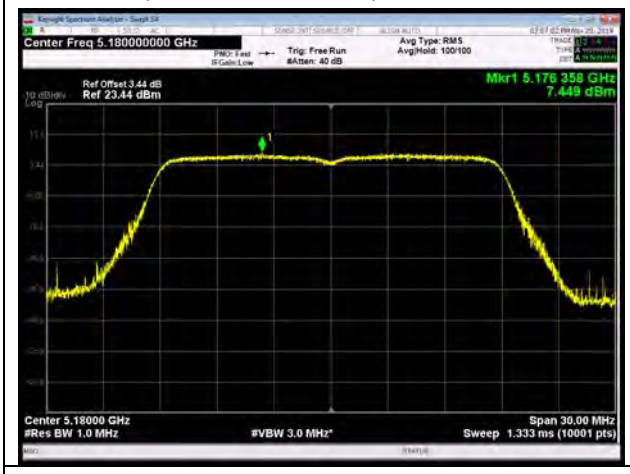
U-NII-1, 802.11n HT20, Channel No.: 48



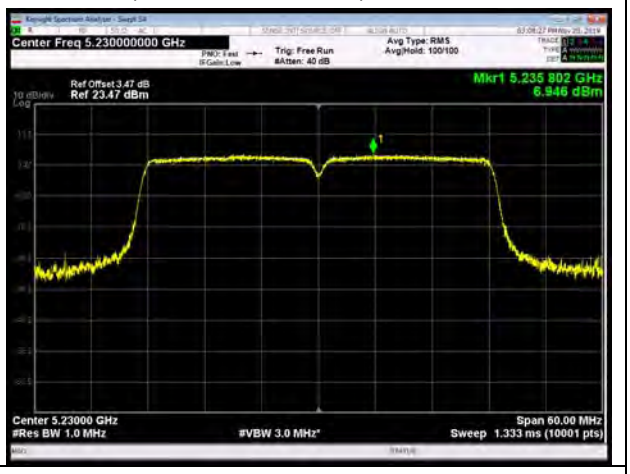
U-NII-1, 802.11ac VHT40, Channel No.: 38



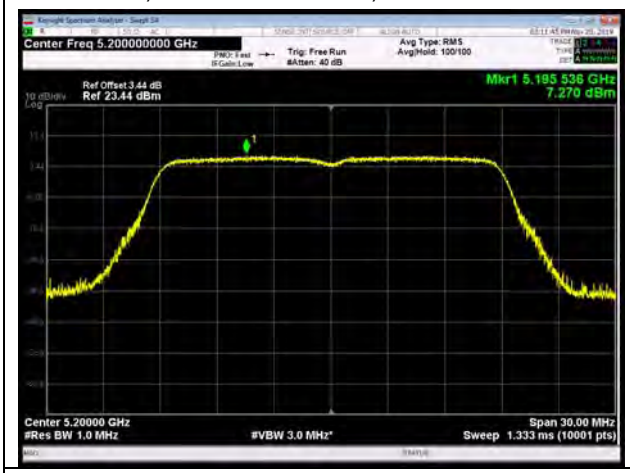
U-NII-1, 802.11ac VHT20, Channel No.: 36



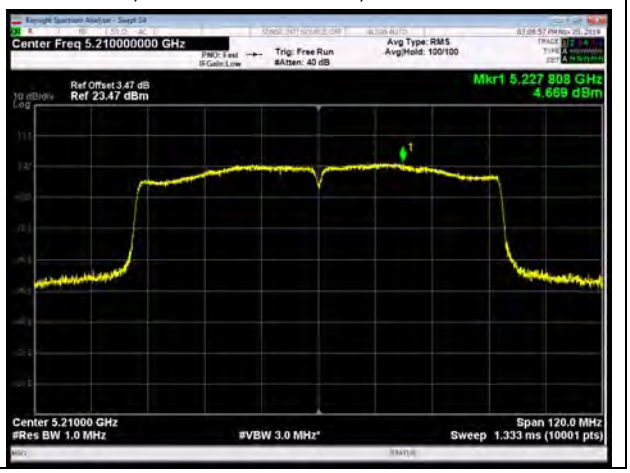
U-NII-1, 802.11ac VHT40, Channel No.: 46



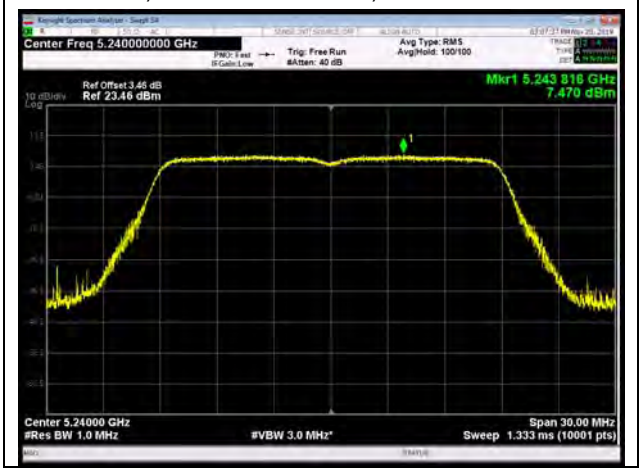
U-NII-1, 802.11ac VHT20, Channel No.: 40



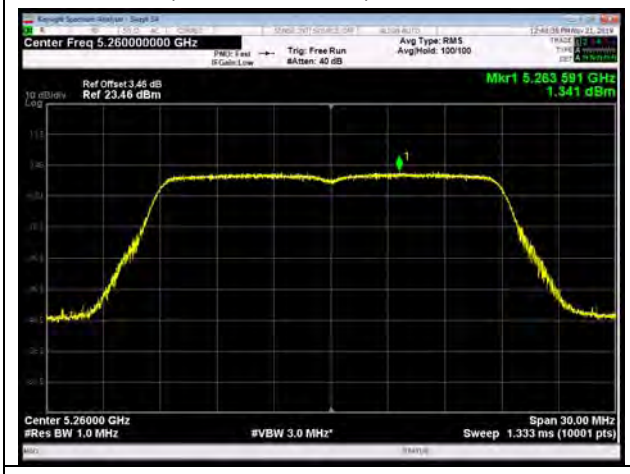
U-NII-1, 802.11ac VHT80, Channel No.: 42



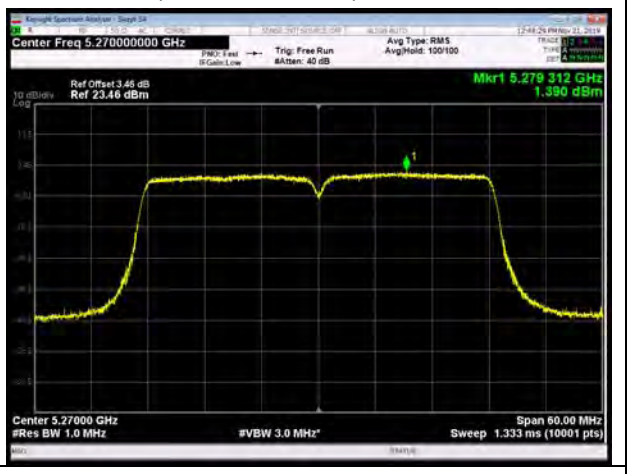
U-NII-1, 802.11ac VHT20, Channel No.: 48



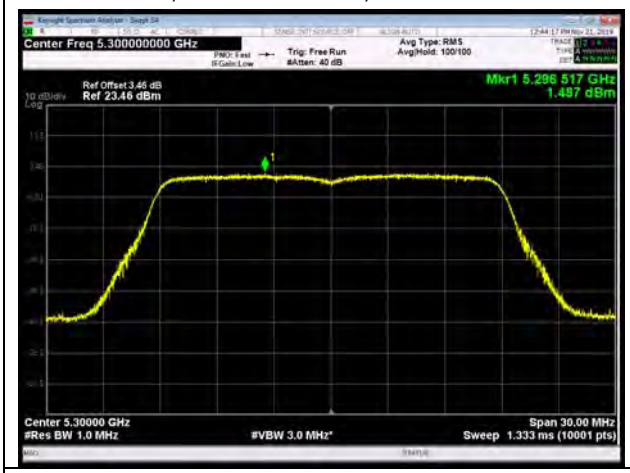
U-NII-2A, 802.11n HT20, Channel No.: 52



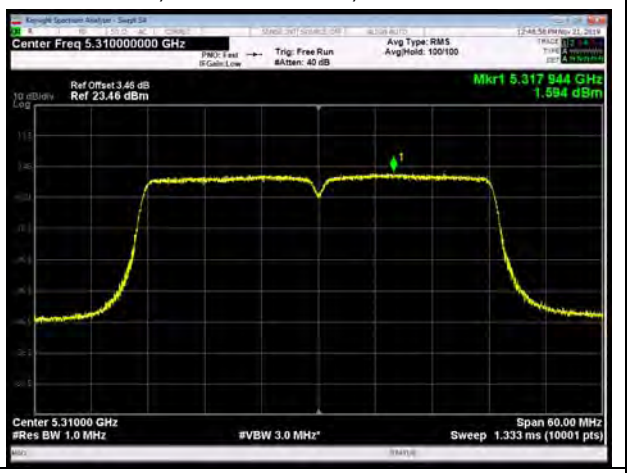
U-NII-2A, 802.11n HT40, Channel No.: 54



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



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



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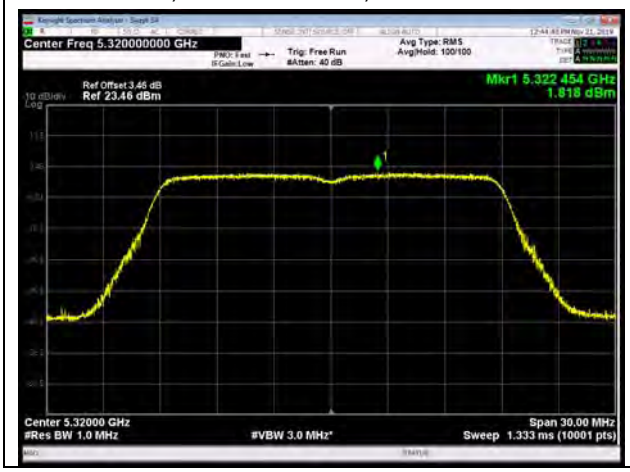
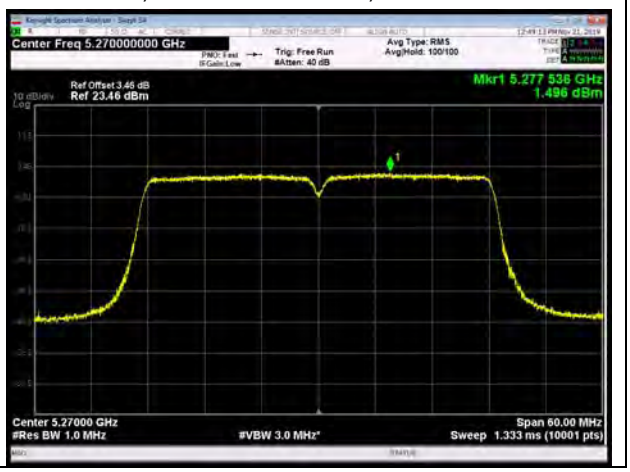
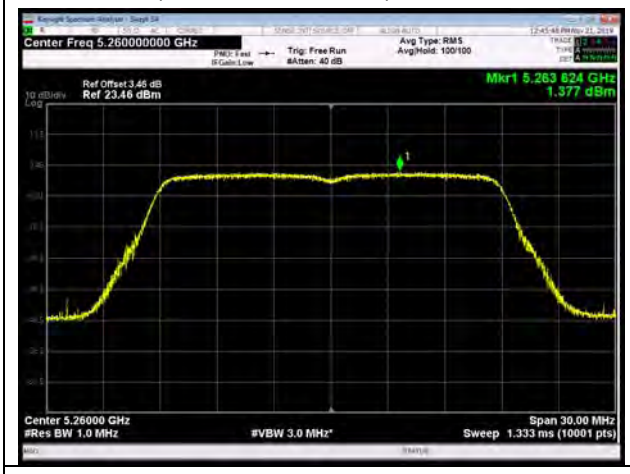


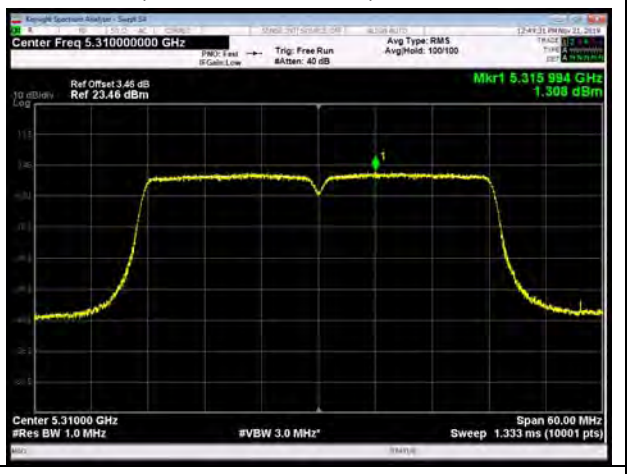
U-NII-2A, 802.11ac VHT40, Channel No.: 54



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



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



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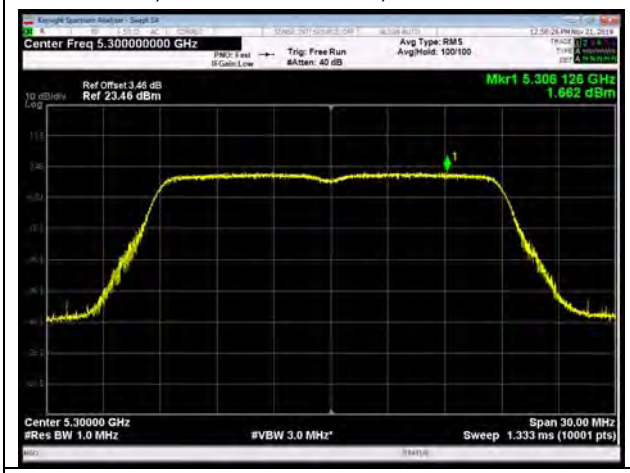
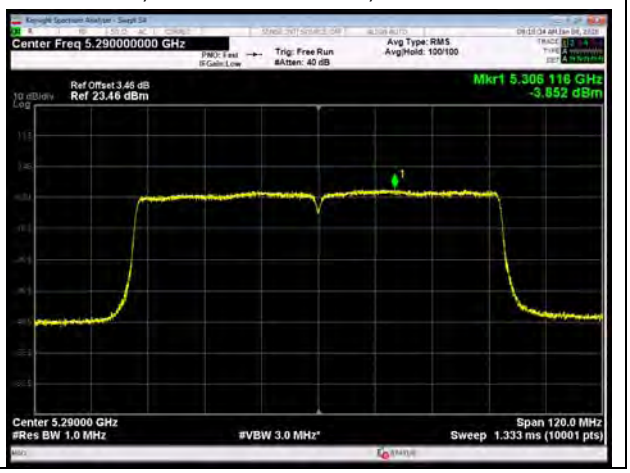
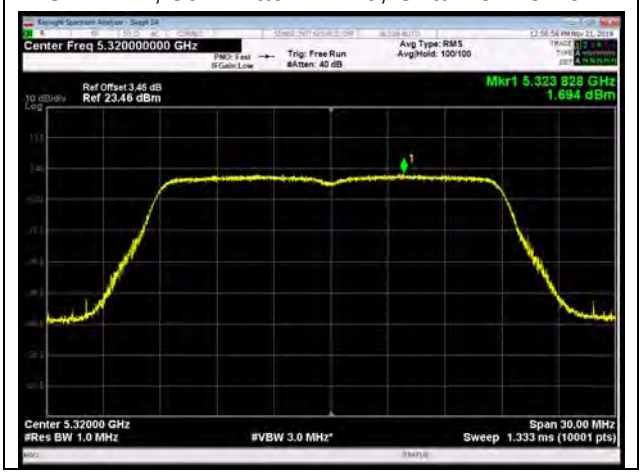


U-NII-2A, 802.11ac VHT80, Channel No.: 58

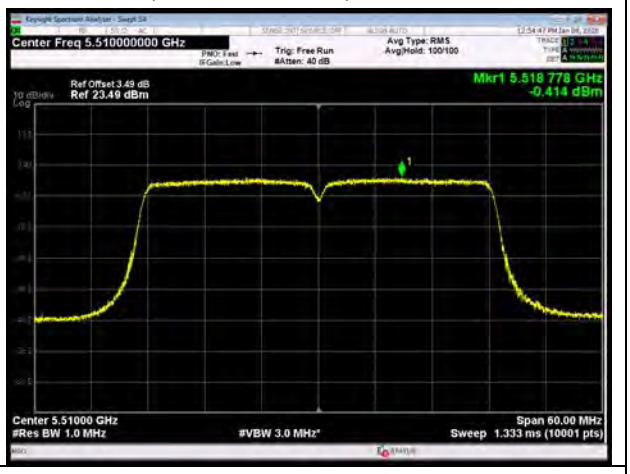


U-NII-2A, 802.11ac VHT20, Channel No.: 64



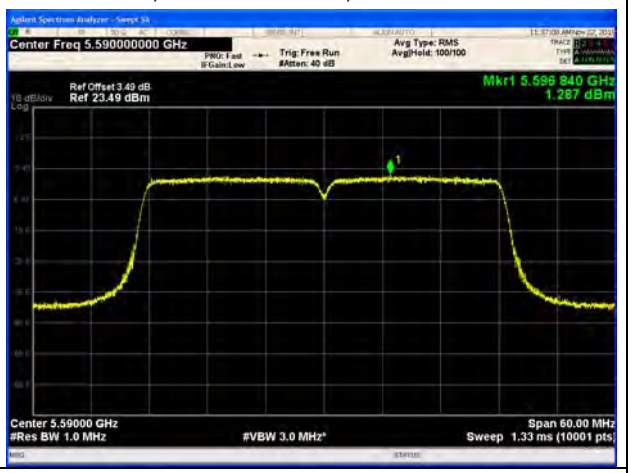
U-NII-2C, 802.11n HT20, Channel No.: 100

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



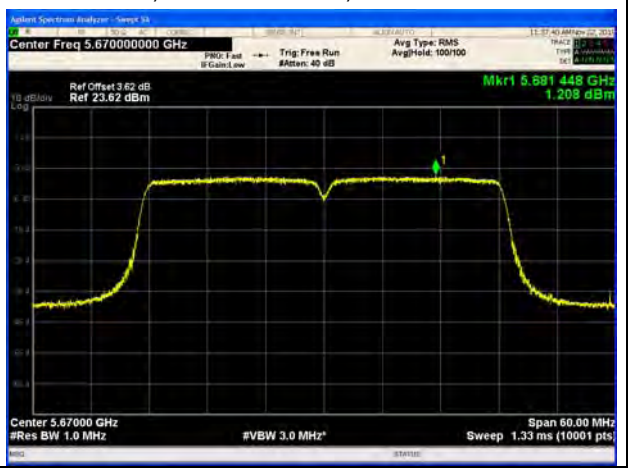
U-NII-2C, 802.11n HT20, Channel No.: 120

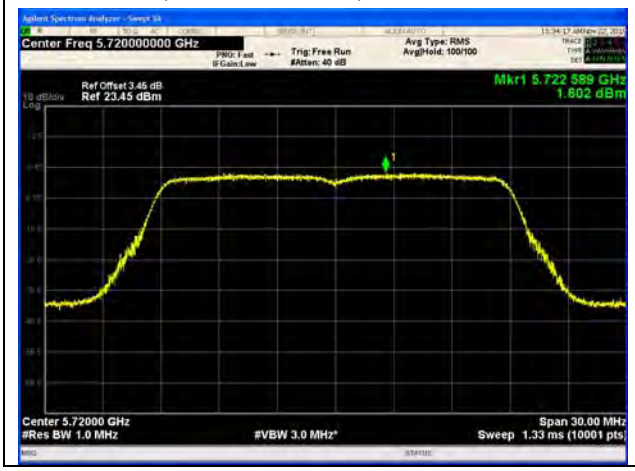
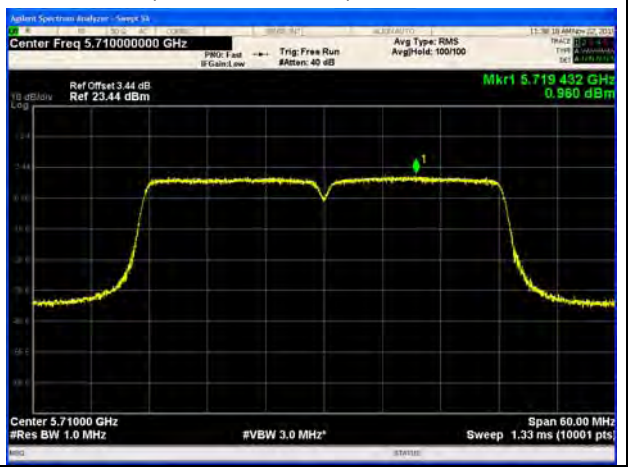
U-NII-2C, 802.11n HT40, Channel No.: 118



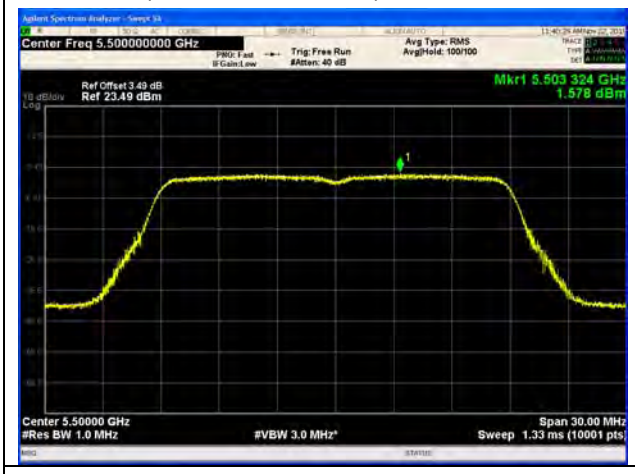
U-NII-2C, 802.11n HT20, Channel No.: 140

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

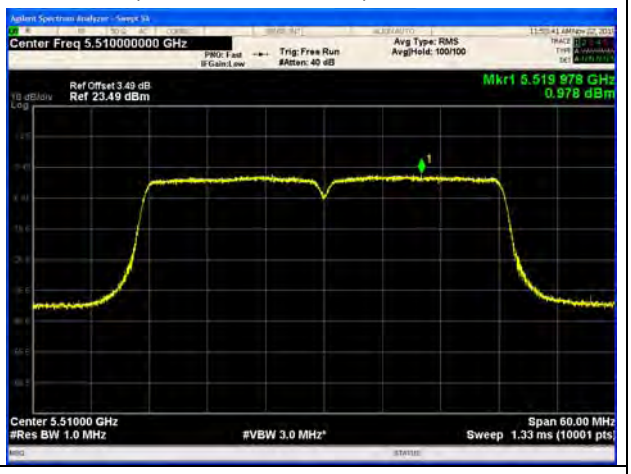


U-NII-2C, 802.11n HT20, Channel No.: 144	U-NII-2C, 802.11n HT40, Channel No.: 142
	

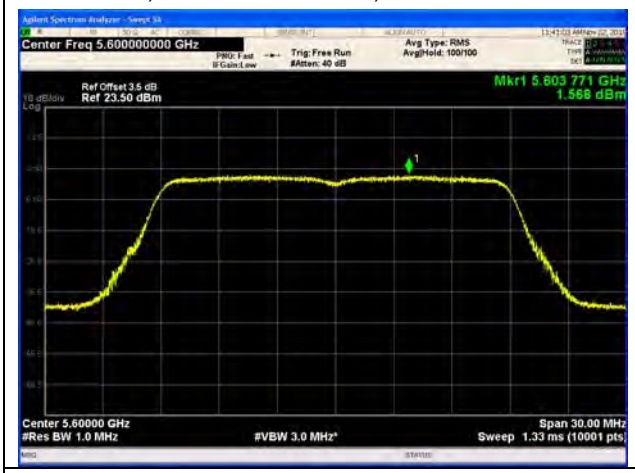
U-NII-2C, 802.11ac VHT20, Channel No.: 100



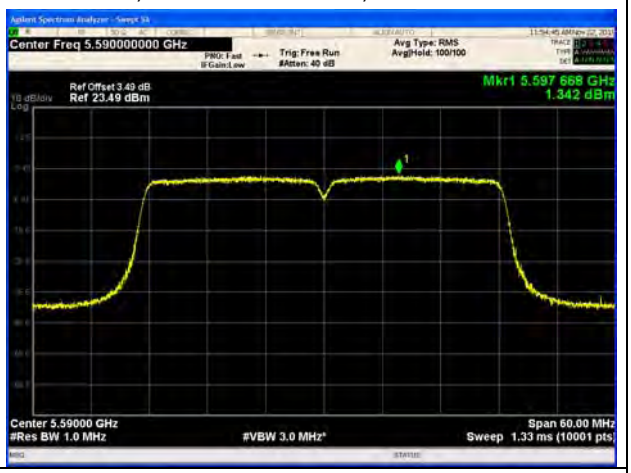
U-NII-2C, 802.11ac VHT40, Channel No.: 102



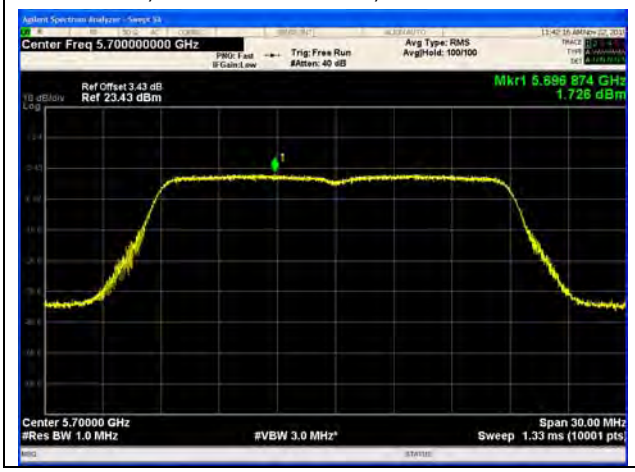
U-NII-2C, 802.11ac VHT20, Channel No.: 120



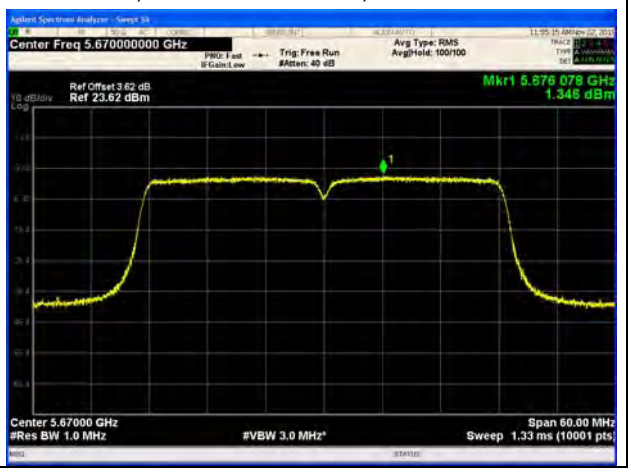
U-NII-2C, 802.11ac VHT40, Channel No.: 118



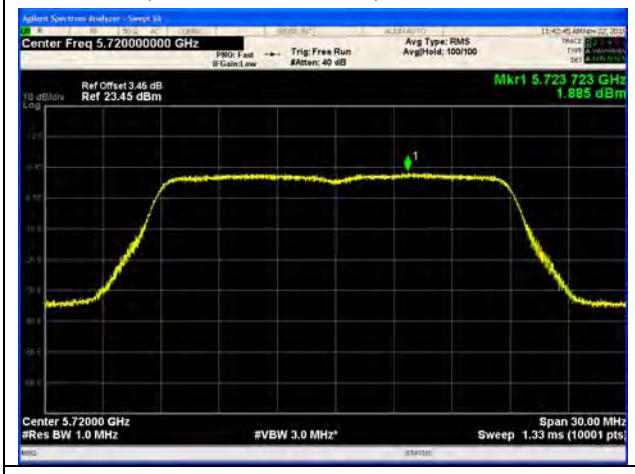
U-NII-2C, 802.11ac VHT20, Channel No.: 140



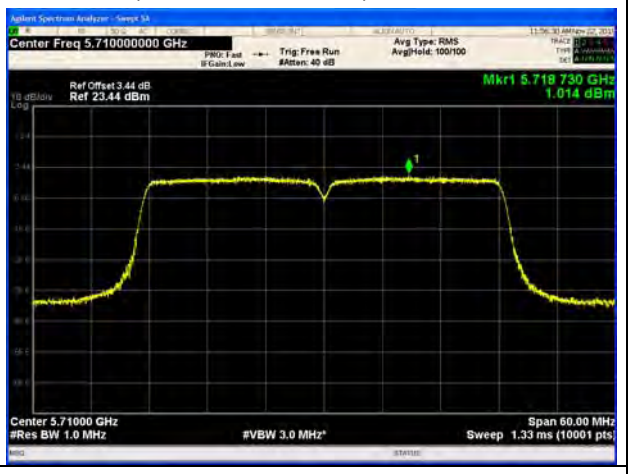
U-NII-2C, 802.11ac VHT40, Channel No.: 134



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

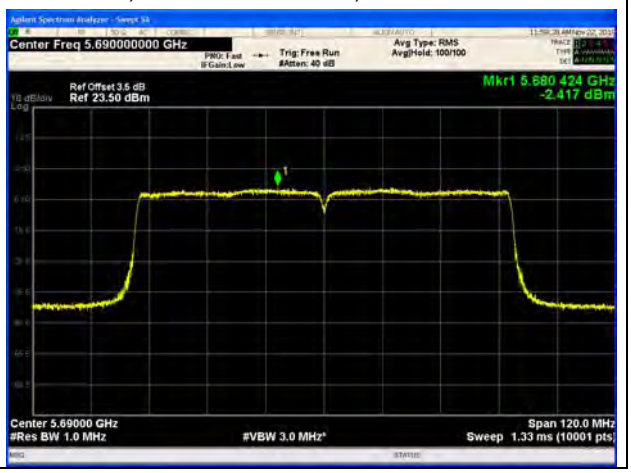


U-NII-2C, 802.11ac VHT40, Channel No.: 142



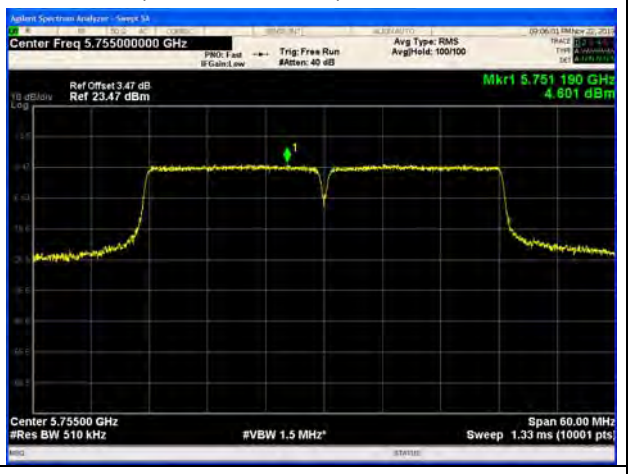
U-NII-2C, 802.11ac VHT80, Channel No.: 122

U-NII-2C, 802.11ac VHT80, Channel No.: 1138



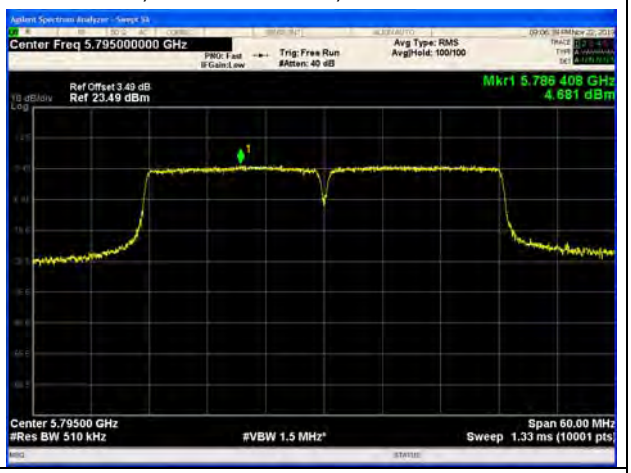
U-NII-3, 802.11n HT20, Channel No.: 149

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

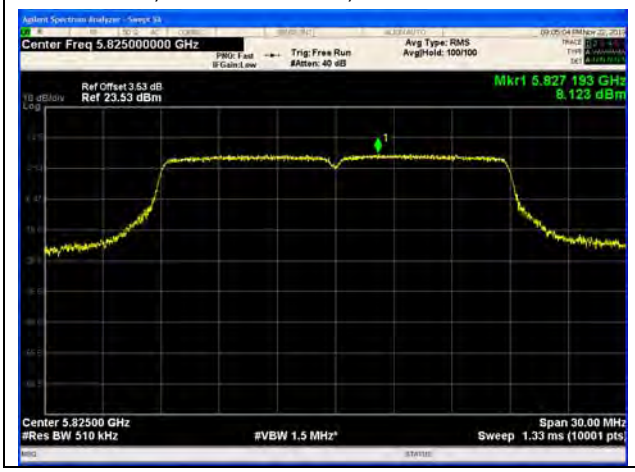


U-NII-3, 802.11n HT20, Channel No.: 157

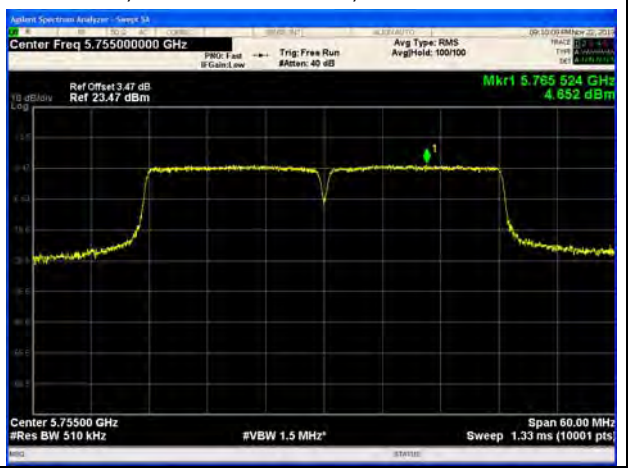
U-NII-3, 802.11n HT40, Channel No.: 159



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

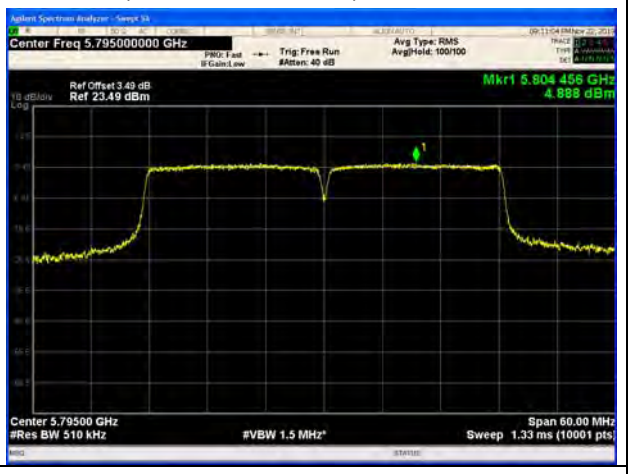


U-NII-3, 802.11ac VHT40, Channel No.: 151

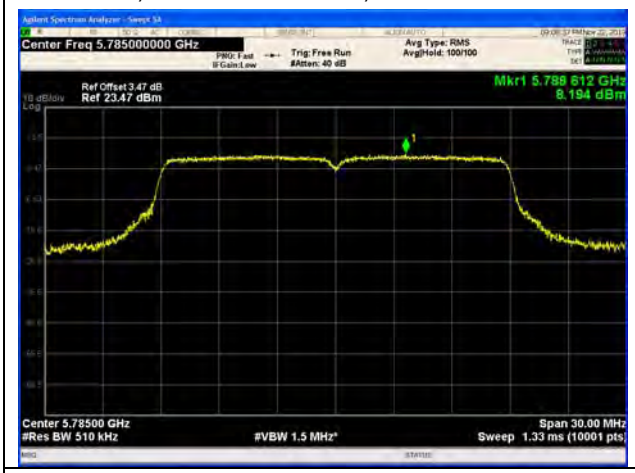


U-NII-3, 802.11ac VHT20, Channel No.: 149

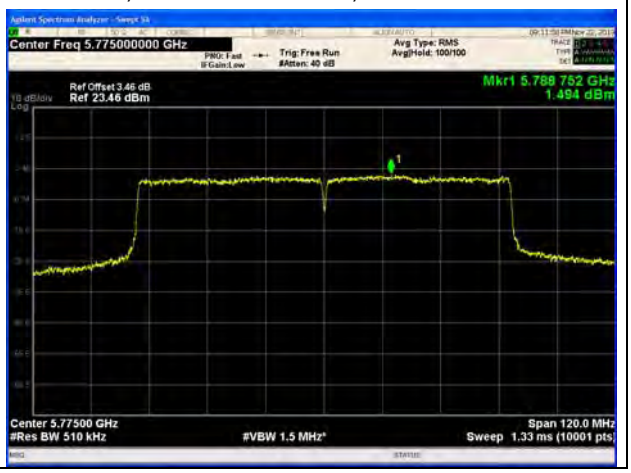
U-NII-3, 802.11ac VHT40, Channel No.: 159



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



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

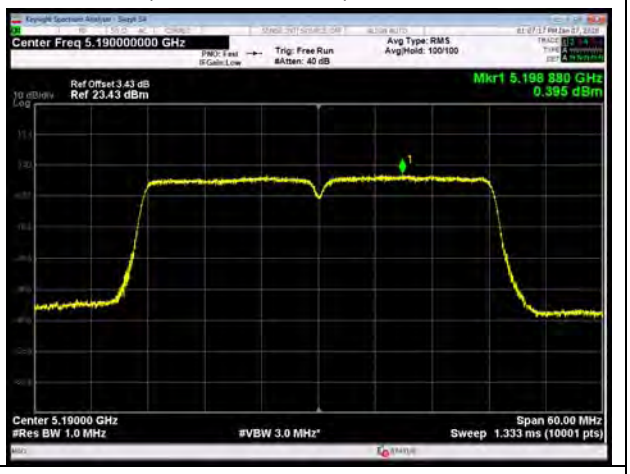


U-NII-3, 802.11ac VHT20, Channel No.: 165

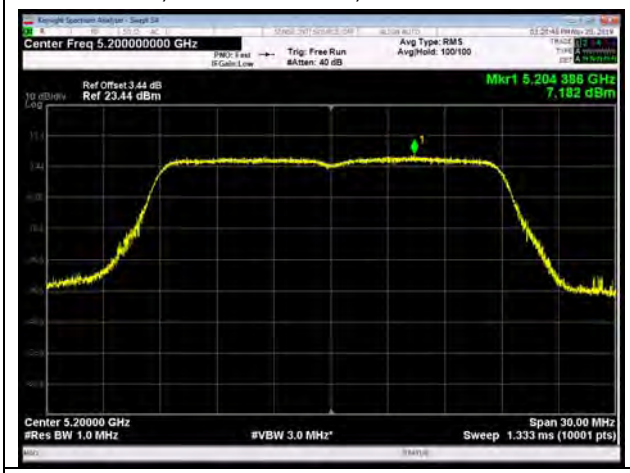
MIMO Antenna 2

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

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

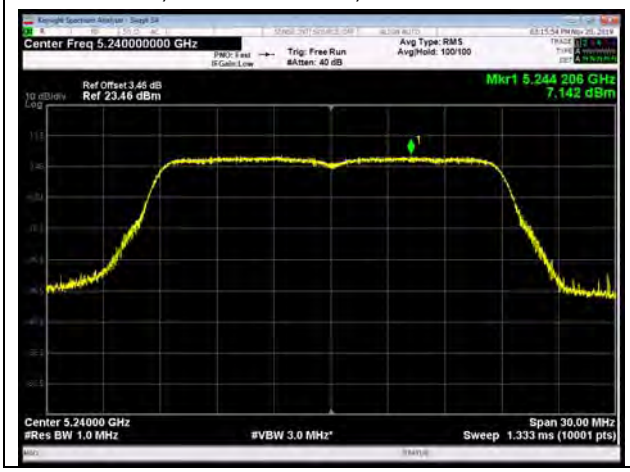


U-NII-1, 802.11n HT20, Channel No.: 40

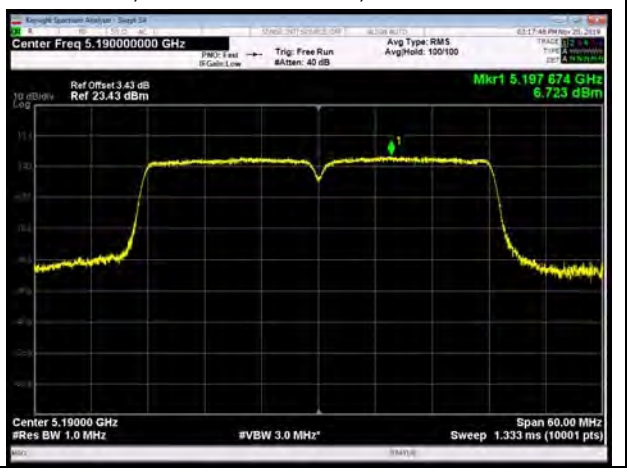


U-NII-1, 802.11n HT40, Channel No.: 46

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

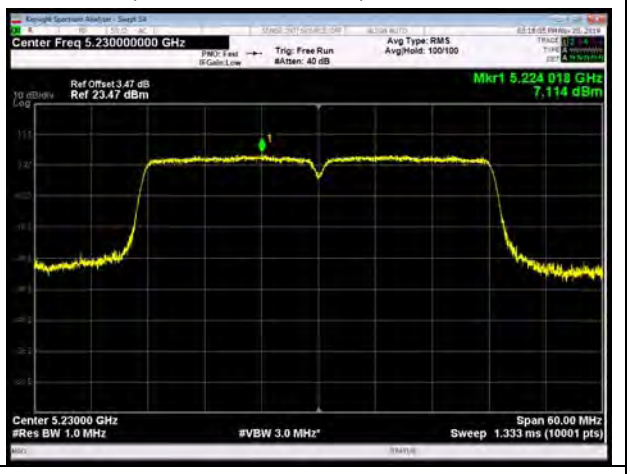


U-NII-1, 802.11ac VHT40, Channel No.: 38

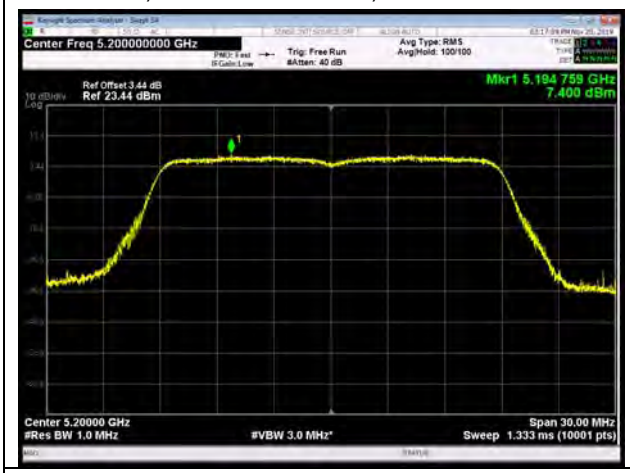


U-NII-1, 802.11ac VHT20, Channel No.: 36

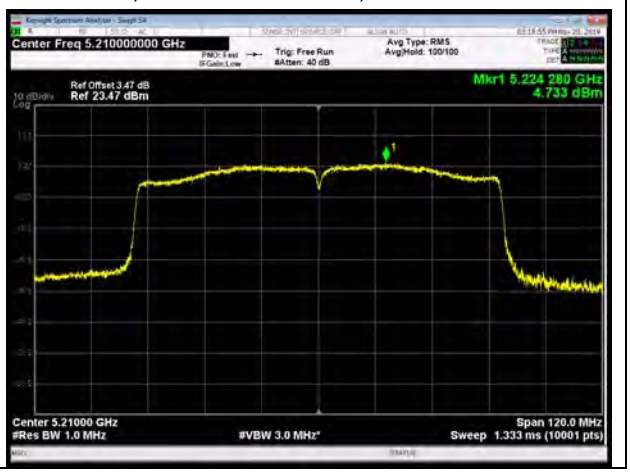
U-NII-1, 802.11ac VHT40, Channel No.: 46



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



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



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