RF TEST REPORT

Applicant	Smawave Technology Co. ,Ltd
FCC ID	2AU8HSRP620
Product	5G IP67 Ruggedized Router
Brand	smawave
Model	SRP620
Report No.	R2201A0113-R2
Issue Date	March 9, 2022

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15E (2021)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Approved by: Kai Xu

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Summary of measurement results

Number	Test Case	Clause in FCC rules	Verdict
1	Average 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: February 8, 2022 ~ March 8, 2022 Date of Sample Received: January 28, 2022			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

1. Test Laboratory

1.1. Notes of the test report

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

1.2. Test facility

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

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

A2LA (Certificate Number: 3857.01)

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

1.3. Testing Location

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

2. General Description of Equipment under Test

2.1. Applicant and Manufacturer Information

Applicant	Smawave Technology Co. ,Ltd
Applicant address	3/F, Building 8, 1001 North Qinzhou Road，Xuhui District, Shanghai, China
Manufacturer	Smawave Technology Co. ,Ltd
Manufacturer address	3/F, Building 8, 1001 North Qinzhou Road，Xuhui District, Shanghai, China

2.2. General information

EUT Description			
Model	SRP620		
IMEI	862165041380377		
Hardware Version	V1.0		
Software Version	SQXR60_V1.0		
Power Supply	External power supply		
Antenna Type	External Antenna		
Antenna Gain	Band	Antenna 1 Gain(dBi)	Antenna 2 Gain(dBi)
	U-NII-1	4.4	2.4
	U-NII-3	4.8	3.1
Directional Gain	U-NII-1	Power Directional Gain: 4.4 dBi PSD Directional Gain: 7.41 dBi	
	U-NII-3	Power Directional Gain: 4.8 dBi PSD Directional Gain: 7.81 dBi	
Operating Frequency Range(s)	U-NII-1: 5150MHz-5250MHz U-NII-3: 5725MHz -5850MHz		
Modulation Type	802.11a/n (HT20/HT40) : OFDM 802.11ac (VHT20/VHT40/VHT80): OFDM 802.11ax (HE20/HE40/HE80): OFDM		
Max. Conducted Power	25.73 dBm		
Testing temperature range:	-20 ° C to 50° C		
Operating temperature range:	-40 ° C to 70° C		
Operating voltage range:	9 V to 36 V		
State DC voltage:	24V		
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant. 2. This device support automatically discontinue transmission, while the device is not transmitting any information, the device can automatically discontinue transmission and become standby mode for power saving. The device can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.			

3. Applied Standards

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

Test standards:

FCC CFR47 Part 15E (2021) Unlicensed National Information Infrastructure Devices

ANSI C63.10 (2013)

Reference standard:

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

4. Test Configuration

Test Mode

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

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

Mode	Data Rate		
	Antenna 1	Antenna 2	CDD
802.11a	6 Mbps	6 Mbps	6 Mbps
802.11n HT20	MCS0	MCS0	MCS8
802.11n HT40	MCS0	MCS0	MCS8
802.11ac VHT20	MCS0	MCS0	MCS0
802.11ac VHT40	MCS0	MCS0	MCS0
802.11ac VHT80	MCS0	MCS0	MCS0
802.11ax HE20	MCS0	MCS0	MCS0
802.11ax HE40	MCS0	MCS0	MCS0
802.11ax HE80	MCS0	MCS0	MCS0

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

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

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-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				

5. Test Case Results

5.1. Occupied Bandwidth

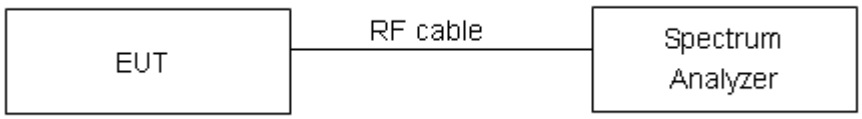
Ambient condition

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

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.
For U-NII-1, set RBW ≈1% OCB kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.
For U-NII-3, Set RBW = 100 kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.
Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.
Use the 99 % power bandwidth function of the instrument

Test Setup



Limits

Rule FCC Part §15.407(e)
Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Measurement Uncertainty

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

Test Results:

U-NII-1

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5180	16.40	20.07	PASS
	5200	16.36	20.17	PASS
	5240	16.38	19.79	PASS
802.11n HT20	5180	17.62	21.26	PASS
	5200	17.61	21.01	PASS
	5240	17.60	20.93	PASS
802.11n HT40	5190	36.10	40.56	PASS
	5230	36.05	40.46	PASS
802.11ac VHT20	5180	17.60	21.12	PASS
	5200	17.59	20.53	PASS
	5240	17.57	20.22	PASS
802.11ac VHT40	5190	36.11	40.22	PASS
	5230	36.05	40.05	PASS
802.11ac VHT80	5210	75.34	81.85	PASS
802.11ax HE20	5180	18.91	21.48	PASS
	5200	18.91	21.19	PASS
	5240	18.88	21.09	PASS
802.11ax HE40	5190	37.80	41.32	PASS
	5230	37.67	41.12	PASS
802.11ax HE80	5210	76.96	81.64	PASS

U-NII-3

Mode	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	16.35	15.69	500	PASS
	5785	16.37	14.44	500	PASS
	5825	16.39	16.04	500	PASS
802.11n HT20	5745	17.68	17.57	500	PASS
	5785	17.56	16.70	500	PASS
	5825	17.67	17.55	500	PASS
802.11n HT40	5755	36.14	36.32	500	PASS
	5795	36.03	36.30	500	PASS
802.11ac VHT20	5745	17.60	16.89	500	PASS
	5785	17.62	17.63	500	PASS
	5825	17.48	15.78	500	PASS
802.11ac VHT40	5755	36.18	35.92	500	PASS
	5795	36.06	36.30	500	PASS
802.11ac VHT80	5775	75.48	75.73	500	PASS
802.11ax HE20	5745	18.88	12.98	500	PASS
	5785	18.88	17.96	500	PASS
	5825	18.89	13.97	500	PASS
802.11ax HE40	5755	37.75	37.67	500	PASS
	5795	37.77	37.85	500	PASS
802.11ax HE80	5775	77.17	77.15	500	PASS

U-NII-1, 802.11a

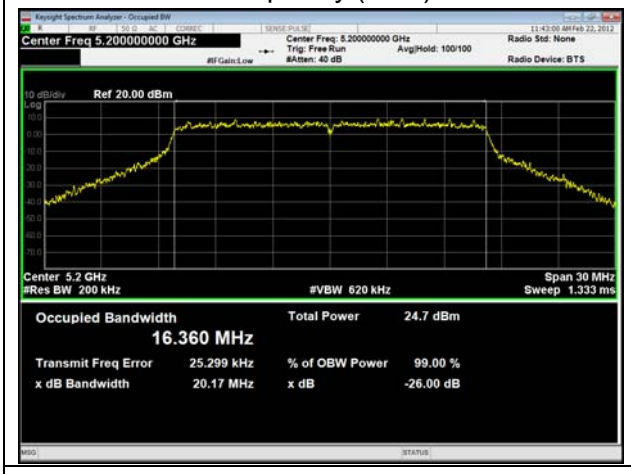
Carrier frequency (MHz): 5180

U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5180

U-NII-1, 802.11a

Carrier frequency (MHz): 5200

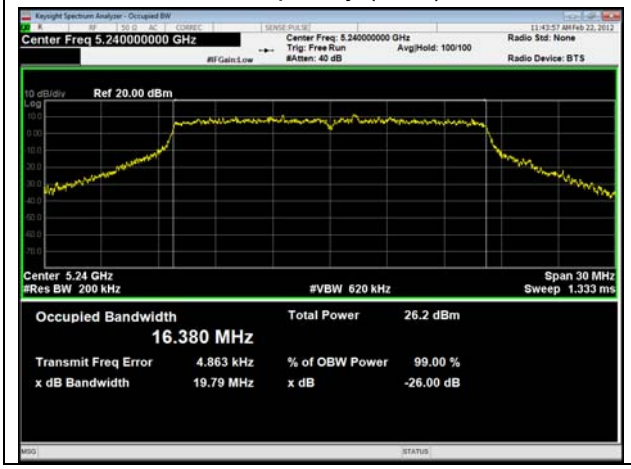


U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5200

U-NII-1, 802.11a

Carrier frequency (MHz):5240



U-NII-1, 802.11n HT20

Carrier frequency (MHz):5240

U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5190

U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5230

U-NII-1, 802.11ac VHT20

Carrier frequency (MHz): 5180

U-NII-1, 802.11ax HE20

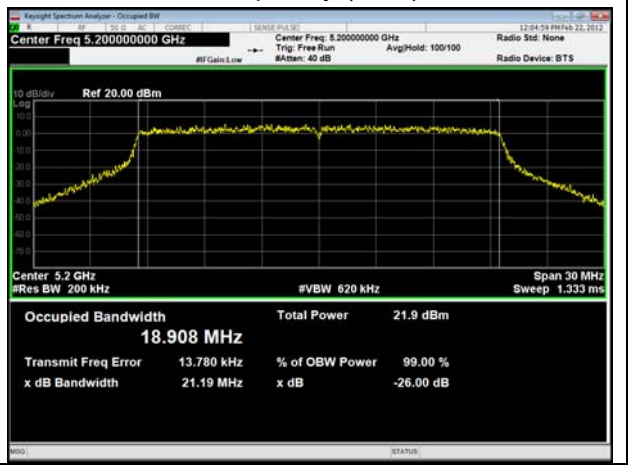
Carrier frequency (MHz): 5180

U-NII-1, 802.11ac VHT20

Carrier frequency (MHz): 5200

U-NII-1, 802.11ax HE20

Carrier frequency (MHz): 5200



U-NII-1, 802.11ac VHT20

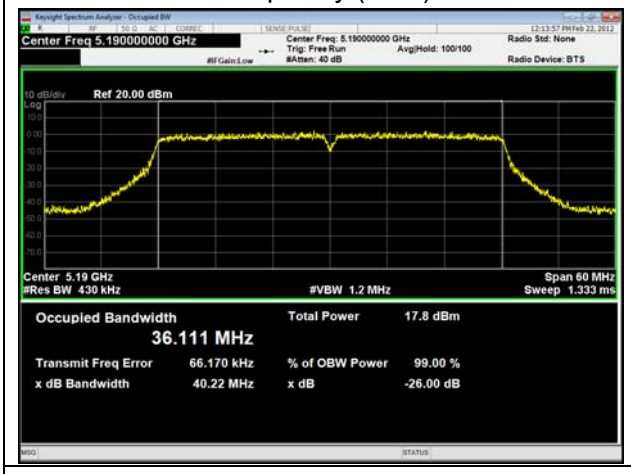
Carrier frequency (MHz):5240

U-NII-1, 802.11ax HE20

Carrier frequency (MHz):5240

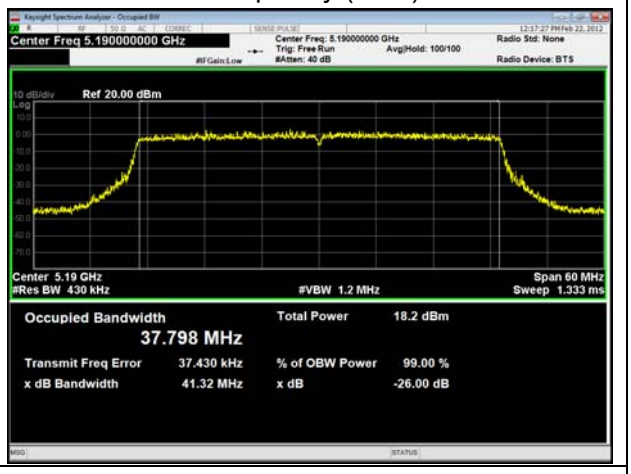
U-NII-1, 802.11ac VHT40

Carrier frequency (MHz): 5190



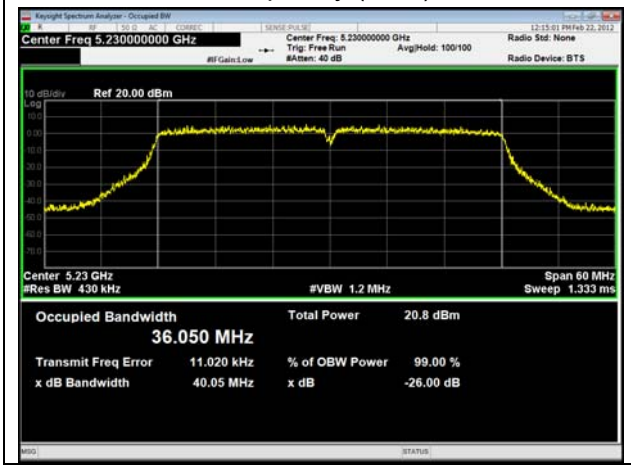
U-NII-1, 802.11ax HE40

Carrier frequency (MHz): 5190



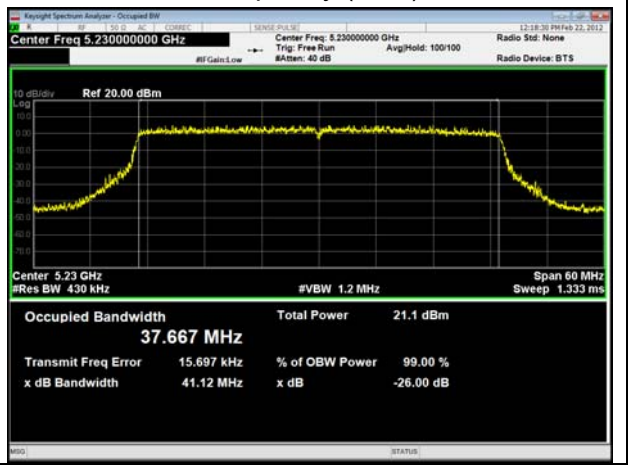
U-NII-1, 802.11ac VHT40

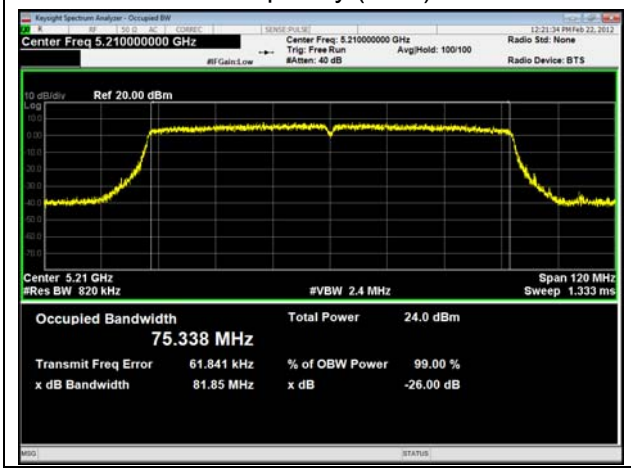
Carrier frequency (MHz): 5230



U-NII-1, 802.11ax HE40

Carrier frequency (MHz): 5230

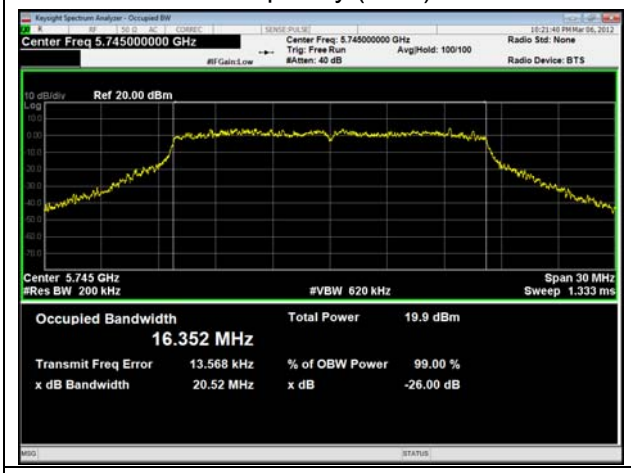


U-NII-1, 802.11ac VHT80 Carrier frequency (MHz): 5210	U-NII-1, 802.11ax HE80 Carrier frequency (MHz): 5210
	

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, 802.11n HT40

Carrier frequency (MHz): 5795

U-NII-3, 802.11ac VHT20

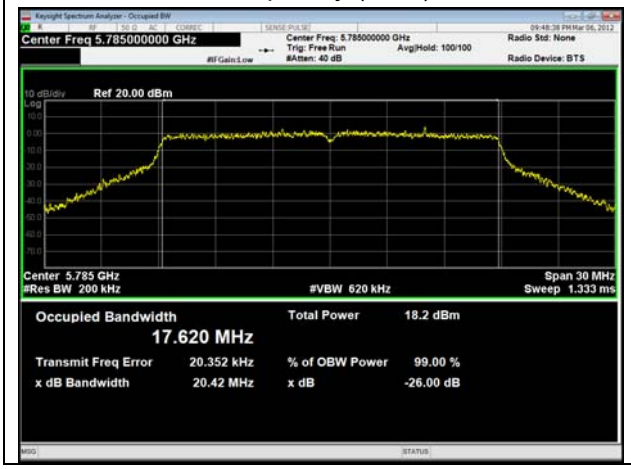
Carrier frequency (MHz): 5745

U-NII-3, 802.11ax HE20

Carrier frequency (MHz): 5745

U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5785



U-NII-3, 802.11ax HE20

Carrier frequency (MHz): 5785

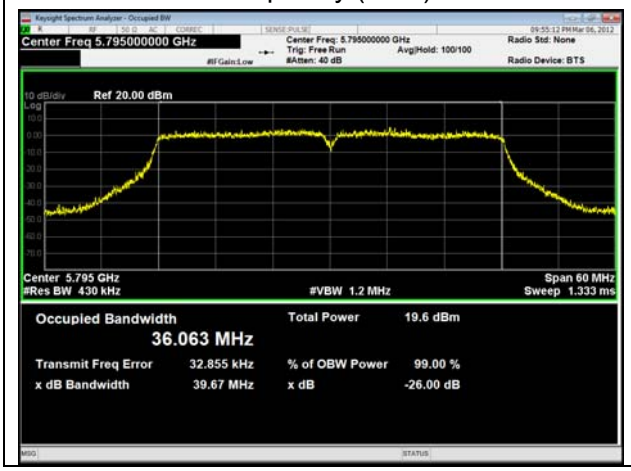
U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5825

U-NII-3, 802.11ax HE20
Carrier frequency (MHz): 5825

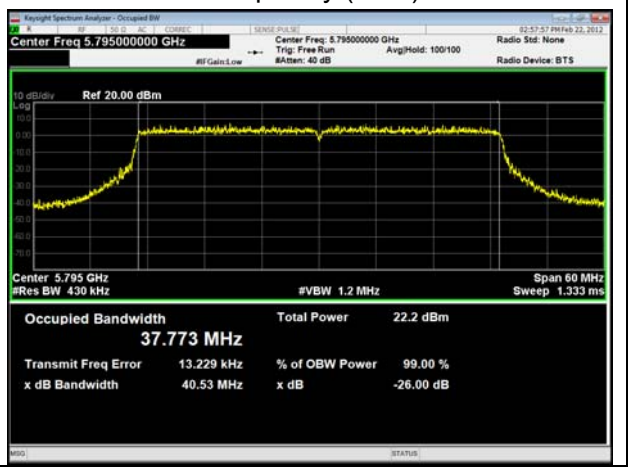
U-NII-3, 802.11ac VHT40
Carrier frequency (MHz): 5755

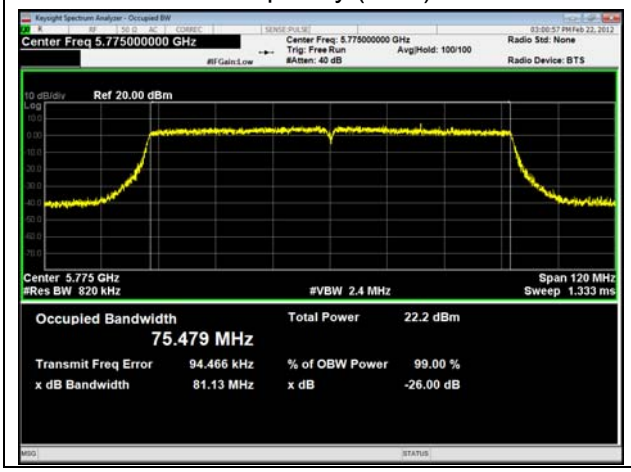
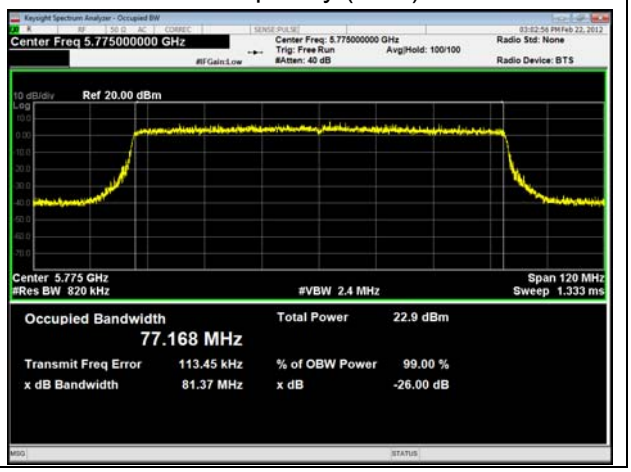
U-NII-3, 802.11ax HE40
Carrier frequency (MHz): 5755

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



U-NII-3, 802.11ax HE40
Carrier frequency (MHz): 5795



U-NII-3, 802.11ac VHT80 Carrier frequency (MHz): 5775	U-NII-3, 802.11ax HE80 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

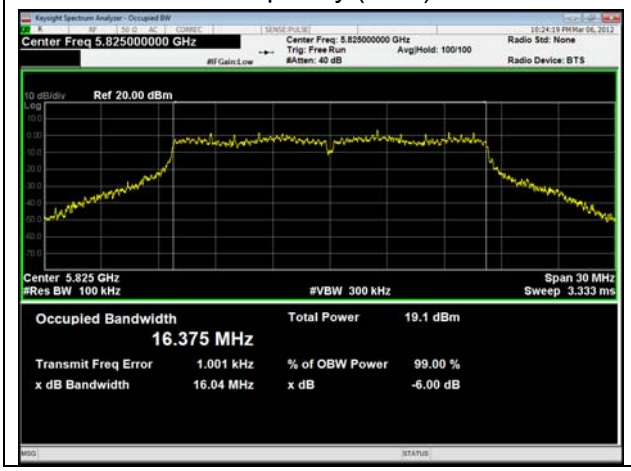
Carrier frequency (MHz): 5785

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, 802.11n HT40

Carrier frequency (MHz): 5795

U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745

U-NII-3, 802.11ax HE20

Carrier frequency (MHz): 5745

U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5785

U-NII-3, 802.11ax HE20

Carrier frequency (MHz): 5785

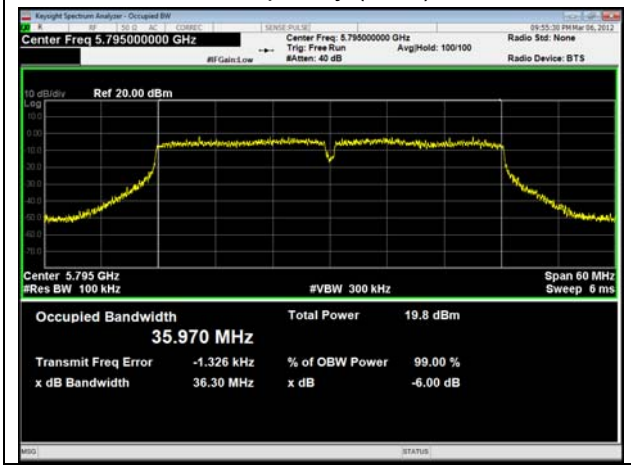
U-NII-3, 802.11ac VHT20
Carrier frequency (MHz): 5825

U-NII-3, 802.11ax HE20
Carrier frequency (MHz): 5825

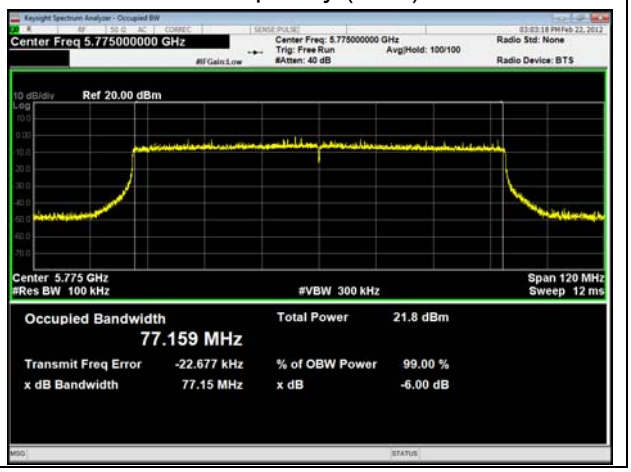
U-NII-3, 802.11ac VHT40
Carrier frequency (MHz): 5755

U-NII-3, 802.11ax HE40
Carrier frequency (MHz): 5755

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



U-NII-3, 802.11ax HE40
Carrier frequency (MHz): 5795

U-NII-3, 802.11ac VHT80 Carrier frequency (MHz): 5775	U-NII-3, 802.11ax HE80 Carrier frequency (MHz): 5775
	

5.2. Average Power Output

Ambient condition

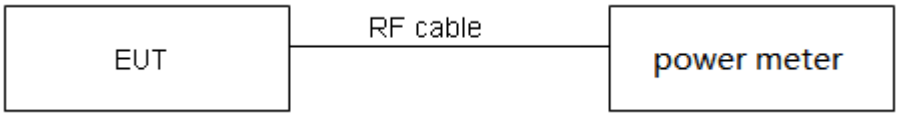
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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)(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.

(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

Mode	T_{on} (ms)	$T_{(on+off)}$ (ms)	Duty cycle	Duty cycle correction Factor(dB)
802.11a	1.97	2.06	0.954	0.21
802.11n HT20	5.40	5.76	0.938	0.28
802.11n HT40	11.30	12.40	0.911	0.40
802.11ac VHT20	5.44	5.80	0.938	0.28
802.11ac VHT40	11.20	12.30	0.910	0.41
802.11ac VHT80	11.30	12.40	0.911	0.40
802.11ax HE20	5.44	5.72	0.951	0.22
802.11ax HE40	5.44	5.68	0.956	0.19
802.11ax HE80	5.44	5.68	0.956	0.19
Note: when Duty cycle≥0.98, Duty cycle correction Factor not required.				

Power Index											
Channel	802.11a	802.11n HT20	802.11ac VHT20	802.11ax HE20	Channel	802.11n HT40	802.11ac VHT40	802.11ax HE40	Channel	802.11ac VHT80	802.11ax HE80
CH36	20	21	20	17	CH38	14	14	14	CH42	12	12
CH40	20	21	20	17	CH46	14	14	14	CH155	12	12
CH48	20	21	20	17	CH151	19	19	17	/	/	/
CH149	16	18	18	16	CH159	15	15	17	/	/	/
CH157	16	15	15	15	/	/	/	/	/	/	/
CH165	15	14	14	14	/	/	/	/	/	/	/

SISO Antenna 1

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Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	21.89	22.10	30	PASS
	40/5200	22.00	22.21	30	PASS
	48/5240	21.01	21.22	30	PASS
802.11n HT20	36/5180	22.41	22.69	30	PASS
	40/5200	22.77	23.05	30	PASS
	48/5240	21.56	21.84	30	PASS
802.11n HT40	38/5190	15.85	16.25	30	PASS
	46/5230	15.37	15.77	30	PASS
802.11ac VHT20	36/5180	21.49	21.77	30	PASS
	40/5200	21.63	21.91	30	PASS
	48/5240	20.43	20.71	30	PASS
802.11ac VHT40	38/5190	16.05	16.46	30	PASS
	46/5230	15.33	15.74	30	PASS
802.11ac VHT80	42/5210	13.33	13.73	30	PASS
802.11ax HE20	36/5180	18.18	18.40	30	PASS
	40/5200	18.34	18.56	30	PASS
	48/5240	17.38	17.60	30	PASS
802.11ax HE40	38/5190	15.71	15.90	30	PASS
	46/5230	15.09	15.28	30	PASS
802.11ax HE80	42/5210	13.22	13.41	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

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Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	16.53	16.74	30	PASS
	157/5785	17.05	17.26	30	PASS
	165/5825	16.34	16.55	30	PASS
802.11n HT20	149/5745	18.15	18.43	30	PASS
	157/5785	15.62	15.90	30	PASS
	165/5825	14.86	15.14	30	PASS
802.11n HT40	151/5755	20.04	20.44	30	PASS
	159/5795	16.24	16.64	30	PASS
802.11ac VHT20	149/5745	18.17	18.45	30	PASS
	157/5785	15.83	16.11	30	PASS
	165/5825	14.87	15.15	30	PASS
802.11ac VHT40	151/5755	19.72	20.13	30	PASS
	159/5795	16.20	16.61	30	PASS
802.11ac VHT80	155/5775	13.44	13.84	30	PASS
802.11ax HE20	149/5745	16.10	16.32	30	PASS
	157/5785	15.63	15.85	30	PASS
	165/5825	14.70	14.92	30	PASS
802.11ax HE40	151/5755	18.25	18.44	30	PASS
	159/5795	19.00	19.19	30	PASS
802.11ax HE80	155/5775	13.49	13.68	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

SISO Antenna 2

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Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	17.73	17.94	30	PASS
	40/5200	20.71	20.92	30	PASS
	48/5240	22.12	22.33	30	PASS
802.11n HT20	36/5180	18.44	18.72	30	PASS
	40/5200	21.28	21.56	30	PASS
	48/5240	22.66	22.94	30	PASS
802.11n HT40	38/5190	13.09	13.49	30	PASS
	46/5230	16.09	16.49	30	PASS
802.11ac VHT20	36/5180	17.70	17.98	30	PASS
	40/5200	20.47	20.75	30	PASS
	48/5240	21.85	22.13	30	PASS
802.11ac VHT40	38/5190	13.07	13.48	30	PASS
	46/5230	16.25	16.66	30	PASS
802.11ac VHT80	42/5210	18.93	19.33	30	PASS
802.11ax HE20	36/5180	14.09	14.31	30	PASS
	40/5200	17.25	17.47	30	PASS
	48/5240	18.58	18.80	30	PASS
802.11ax HE40	38/5190	13.05	13.24	30	PASS
	46/5230	15.80	15.99	30	PASS
802.11ax HE80	42/5210	18.85	19.04	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

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Test Mode	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	16.86	17.07	30	PASS
	157/5785	16.42	16.63	30	PASS
	165/5825	15.53	15.74	30	PASS
802.11n HT20	149/5745	18.56	18.84	30	PASS
	157/5785	14.78	15.06	30	PASS
	165/5825	13.98	14.26	30	PASS
802.11n HT40	151/5755	20.16	20.56	30	PASS
	159/5795	15.30	15.70	30	PASS
802.11ac VHT20	149/5745	18.49	18.77	30	PASS
	157/5785	14.80	15.08	30	PASS
	165/5825	13.89	14.17	30	PASS
802.11ac VHT40	151/5755	19.87	20.28	30	PASS
	159/5795	15.42	15.83	30	PASS
802.11ac VHT80	155/5775	18.21	18.61	30	PASS
802.11ax HE20	149/5745	16.37	16.59	30	PASS
	157/5785	14.62	14.84	30	PASS
	165/5825	13.84	14.06	30	PASS
802.11ax HE40	151/5755	18.55	18.74	30	PASS
	159/5795	18.21	18.40	30	PASS
802.11ax HE80	155/5775	18.08	18.27	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

CDD Antenna

U-NII-1

Test Mode	Channel/ Frequency (MHz)	CDD Antenna 1		CDD Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	36/5180	21.83	22.04	17.97	18.18	23.53	30.00	PASS
	44/5220	22.25	22.46	20.86	21.07	24.83	30.00	PASS
	48/5240	21.10	21.31	22.43	22.64	25.03	30.00	PASS
802.11n HT20	36/5180	22.65	22.93	18.74	19.02	24.41	30.00	PASS
	44/5220	22.99	23.27	21.48	21.76	25.59	30.00	PASS
	48/5240	21.69	21.97	23.08	23.36	25.73	30.00	PASS
802.11n HT40	38/5190	16.22	16.62	13.22	13.62	18.39	30.00	PASS
	46/5230	15.49	15.89	16.16	16.56	19.25	30.00	PASS
802.11ac VHT20	36/5180	21.53	21.81	17.63	17.91	23.29	30.00	PASS
	44/5220	21.79	22.07	20.48	20.76	24.47	30.00	PASS
	48/5240	20.74	21.02	21.98	22.26	24.69	30.00	PASS
802.11ac VHT40	38/5190	16.17	16.58	13.35	13.76	18.40	30.00	PASS
	46/5230	15.45	15.86	16.28	16.69	19.30	30.00	PASS
802.11ac VHT80	42/5210	18.61	19.01	18.99	19.39	22.22	30.00	PASS
802.11ax HE20	36/5180	18.24	18.46	14.40	14.62	19.96	30.00	PASS
	44/5220	18.49	18.71	17.37	17.59	21.19	30.00	PASS
	48/5240	17.71	17.93	18.93	19.15	21.59	30.00	PASS
802.11ax HE40	38/5190	15.83	16.02	13.11	13.30	17.88	30.00	PASS
	46/5230	15.32	15.51	16.05	16.24	18.90	30.00	PASS
802.11ax HE80	42/5210	18.80	18.99	19.17	19.36	22.19	30.00	PASS

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

2. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT\ MAX}$ + Array Gain,

For power measurements on IEEE 802.11 devices,

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

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

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

So directional gain = $G_{ANT\ MAX}$ + Array Gain =4.4+0=4.4 dBi<6dBi. So the power limit is 30dBm

U-NII-3

Test Mode	Channel/ Frequency (MHz)	CDD Antenna 1		CDD Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	149/5745	16.37	16.58	16.21	16.42	19.51	30.00	PASS
	157/5785	17.12	17.32	15.83	16.04	19.74	30.00	PASS
	165/5825	16.11	16.32	14.89	15.09	18.76	30.00	PASS
802.11n HT20	149/5745	17.80	18.08	17.82	18.10	21.10	30.00	PASS
	157/5785	15.69	15.97	14.27	14.55	18.33	30.00	PASS
	165/5825	14.57	14.85	13.39	13.67	17.31	30.00	PASS
802.11n HT40	151/5755	20.08	20.48	19.67	20.07	23.29	30.00	PASS
	159/5795	16.23	16.63	15.17	15.57	19.15	30.00	PASS
802.11ac VHT20	149/5745	18.25	18.53	18.38	18.66	21.60	30.00	PASS
	157/5785	15.79	16.07	14.37	14.65	18.43	30.00	PASS
	165/5825	14.73	15.01	13.52	13.80	17.46	30.00	PASS
802.11ac VHT40	151/5755	19.59	20.00	19.31	19.71	22.87	30.00	PASS
	159/5795	16.12	16.53	15.23	15.63	19.11	30.00	PASS
802.11ac VHT80	155/5775	18.70	19.10	17.21	17.61	21.43	30.00	PASS
802.11ax HE20	149/5745	16.11	16.33	15.93	16.15	19.25	30.00	PASS
	157/5785	15.62	15.84	14.07	14.29	18.14	30.00	PASS
	165/5825	14.61	14.83	12.96	13.18	17.09	30.00	PASS
802.11ax HE40	151/5755	18.29	18.48	18.31	18.50	21.50	30.00	PASS
	159/5795	18.86	19.05	17.46	17.65	21.41	30.00	PASS
802.11ax HE80	155/5775	18.83	19.02	17.64	17.83	21.47	30.00	PASS

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),
The Total Power =$10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.
2. . The manufacturer declared the transmitter output signals is CDD mode And Nss=1. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain.
Directional gain = $G_{ANT\ MAX}$ + Array Gain,
For power measurements on IEEE 802.11 devices,
Array Gain = 0 dB (i.e., no array gain) for NANT $\leqslant$ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths $\geqslant$ 40 MHz for any NANT;
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with NANT$\geqslant$5.
So directional gain = $G_{ANT\ MAX}$ + Array Gain =4.8+0=4.8 dBi<6dBi. So the power limit is 30dBm

5.3. Frequency Stability

Ambient condition

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

Method of Measurement

1. Frequency stability with respect to ambient temperature

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

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

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

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

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

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

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

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

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

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

2. Frequency stability when varying supply voltage

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

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

b) Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the

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

Limit

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

Measurement Uncertainty

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

Test Results

Voltage (V)	Temperature (°C)	U-NII-1 Test Results			
		5200MHz			
		1min	2min	5min	10min
24	-20	5200.008268	5200.002104	5199.992162	5199.985465
24	-10	5200.003437	5199.995292	5199.991330	5199.979213
24	0	5199.994450	5199.987636	5199.983969	5199.975480
24	10	5199.989826	5199.981764	5199.982810	5199.971066
24	20	5199.984254	5199.972569	5199.979936	5199.962989
24	30	5199.976826	5199.966454	5199.974185	5199.962799
24	40	5199.971971	5199.962827	5199.964624	5199.959195
24	50	5199.971270	5199.953333	5199.958143	5199.958588
9	20	5199.964648	5199.948361	5199.950427	5199.956356
36	20	5199.955698	5199.941775	5199.942867	5199.953151
Max. ΔMHz		-0.044302	-0.058225	-0.057133	-0.046849
PPM		-8.519617	-11.197113	-10.987088	-9.009444

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
24	-20	5785.000424	5784.996828	5784.990247	5784.984503
24	-10	5784.996084	5784.990005	5784.986599	5784.981937
24	0	5784.988780	5784.989268	5784.980865	5784.976928
24	10	5784.982116	5784.984820	5784.975989	5784.968299
24	20	5784.972129	5784.982809	5784.970130	5784.959449
24	30	5784.967613	5784.976007	5784.962619	5784.956423
24	40	5784.963249	5784.966579	5784.955157	5784.946839
24	50	5784.958635	5784.963733	5784.951839	5784.946699
9	20	5784.956759	5784.955665	5784.950535	5784.942687
36	20	5784.947621	5784.950140	5784.942234	5784.940355
Max. ΔMHz		-0.052379	-0.049860	-0.057766	-0.059645
PPM		-9.054317	-8.618757	-9.985417	-10.310315

5.4. Power Spectral Density

Ambient condition

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

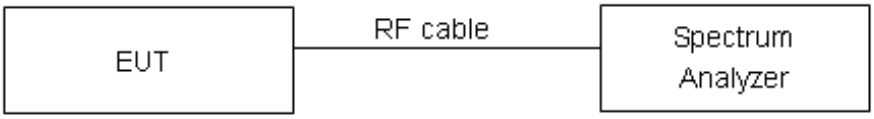
Method of Measurement

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

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

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

Test setup



Limits

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

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500kHz 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	17dBm/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

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Mode	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	11.51	11.72	17	PASS
	40	11.76	11.97	17	PASS
	48	10.71	10.92	17	PASS
802.11n HT20	36	11.97	12.25	17	PASS
	40	12.00	12.28	17	PASS
	48	10.80	11.08	17	PASS
802.11n HT40	38	2.29	2.69	17	PASS
	46	1.49	1.89	17	PASS
802.11ac VHT20	36	11.07	11.35	17	PASS
	40	11.09	11.37	17	PASS
	48	9.95	10.23	17	PASS
802.11ac VHT40	38	2.27	2.68	17	PASS
	46	1.41	1.82	17	PASS
802.11ac VHT80	42	-3.77	-3.37	17	PASS
802.11ax HE20	36	7.68	7.90	17	PASS
	40	7.58	7.80	17	PASS
	48	6.62	6.84	17	PASS
802.11ax HE40	38	2.10	2.29	17	PASS
	46	1.15	1.34	17	PASS
802.11ax HE80	42	-3.26	-3.07	17	PASS

U-NII-3

Mode	Channel Number	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	8.18	8.66	30	PASS
	157	9.16	9.64	30	PASS
	165	9.03	9.51	30	PASS
802.11n HT20	149	7.62	8.17	30	PASS
	157	8.23	8.78	30	PASS
	165	8.40	8.95	30	PASS
802.11n HT40	151	5.56	6.23	30	PASS
	159	6.21	6.88	30	PASS
802.11ac VHT20	149	7.58	8.13	30	PASS
	157	8.37	8.92	30	PASS
	165	8.47	9.02	30	PASS
802.11ac VHT40	151	5.99	6.67	30	PASS
	159	6.13	6.81	30	PASS
802.11ac VHT80	155	-6.85	-6.18	30	PASS
802.11ax HE20	149	3.35	3.84	30	PASS
	157	4.21	4.70	30	PASS
	165	4.22	4.71	30	PASS
802.11ax HE40	151	1.09	1.55	30	PASS
	159	2.22	2.68	30	PASS
802.11ax HE80	155	-6.97	-6.51	30	PASS
Note: PSD=Read Value+ Duty cycle+10*log(500/470) correction factor					

SISO Antenna 2

U-NII-1

Mode	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	7.30	7.51	17	PASS
	40	10.48	10.69	17	PASS
	48	11.55	11.76	17	PASS
802.11n HT20	36	7.70	7.98	17	PASS
	40	10.47	10.75	17	PASS
	48	11.92	12.20	17	PASS
802.11n HT40	38	-0.33	0.07	17	PASS
	46	2.34	2.74	17	PASS
802.11ac VHT20	36	6.70	6.98	17	PASS
	40	9.97	10.25	17	PASS
	48	11.09	11.37	17	PASS
802.11ac VHT40	38	-0.31	0.10	17	PASS
	46	2.63	3.04	17	PASS
802.11ac VHT80	42	1.76	2.16	17	PASS
802.11ax HE20	36	3.18	3.40	17	PASS
	40	6.32	6.54	17	PASS
	48	7.94	8.16	17	PASS
802.11ax HE40	38	-0.41	-0.22	17	PASS
	46	2.30	2.49	17	PASS
802.11ax HE80	42	1.99	2.18	17	PASS

U-NII-3

Mode	Channel Number	Read Value (dBm/470kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	3.16	3.64	30	PASS
	157	2.65	3.12	30	PASS
	165	1.87	2.34	30	PASS
802.11n HT20	149	4.72	5.27	30	PASS
	157	0.91	1.46	30	PASS
	165	-0.23	0.32	30	PASS
802.11n HT40	151	3.11	3.79	30	PASS
	159	-2.00	-1.33	30	PASS
802.11ac VHT20	149	4.53	5.07	30	PASS
	157	0.78	1.33	30	PASS
	165	-0.40	0.14	30	PASS
802.11ac VHT40	151	2.85	3.52	30	PASS
	159	-2.11	-1.43	30	PASS
802.11ac VHT80	155	-2.26	-1.59	30	PASS
802.11ax HE20	149	2.16	2.65	30	PASS
	157	0.33	0.82	30	PASS
	165	-0.24	0.25	30	PASS
802.11ax HE40	151	1.38	1.84	30	PASS
	159	1.25	1.71	30	PASS
802.11ax HE80	155	-2.02	-1.56	30	PASS
Note: PSD=Read Value+ Duty cycle+10*log(500/470) correction factor					

CDD Antenna

U-NII-1

Mode	Channel/ Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		Antenna 1		Antenna 2		Total Power (dBm /MHz)		
		Read Value (dBm/MHz)	PSD (dBm/MHz)	Read Value (dBm/MHz)	PSD (dBm/MHz)			
802.11a	36/5180	11.67	11.88	7.59	7.80	13.31	15.59	PASS
	40/5200	11.87	12.08	10.55	10.76	14.48	15.59	PASS
	48/5240	10.45	10.66	12.17	12.38	14.61	15.59	PASS
802.11n HT20	36/5180	11.75	12.03	8.21	8.49	13.62	15.59	PASS
	40/5200	12.31	12.59	10.82	11.10	14.92	15.59	PASS
	48/5240	11.11	11.39	12.60	12.88	15.21	15.59	PASS
802.11n HT40	38/5190	2.53	2.93	-0.06	0.34	4.84	15.59	PASS
	46/5230	1.81	2.21	2.28	2.68	5.47	15.59	PASS
802.11ac VHT20	36/5180	10.66	10.94	6.80	7.08	12.43	15.59	PASS
	40/5200	11.02	11.30	9.96	10.24	13.81	15.59	PASS
	48/5240	10.04	10.32	11.27	11.55	13.99	15.59	PASS
802.11ac VHT40	38/5190	2.50	2.91	-0.59	-0.18	4.64	15.59	PASS
	46/5230	1.88	2.29	2.62	3.03	5.68	15.59	PASS
802.11ac VHT80	42/5210	2.08	2.48	2.67	3.07	5.80	15.59	PASS
802.11ax HE20	36/5180	7.39	7.61	3.67	3.89	9.14	15.59	PASS
	40/5200	7.95	8.17	6.67	6.89	10.59	15.59	PASS
	48/5240	6.60	6.82	8.32	8.54	10.77	15.59	PASS
802.11ax HE40	38/5190	2.62	2.81	-0.75	-0.56	4.45	15.59	PASS
	46/5230	1.49	1.68	2.19	2.38	5.05	15.59	PASS
802.11ax HE80	42/5210	2.04	2.23	2.72	2.91	5.59	15.59	PASS

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

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

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT\ MAX}$ + Array Gain, For PSD measurements on all devices,

Array Gain=10log(Nant/Nss)dB,

so directional gain=$G_{ANT\ MAX}$ + Array Gain=4.4+10log(2/1)=7.41>6 dBi.

So the PSD limit is 17-(directional gain-6 dBi) =17-(7.41-6) =15.59 dBm.

U-NII-3

Mode	Channel /Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion
		ANT1		ANT2		Total PSD (dBm/MHz)		
		Read Value (dBm/470kHz)	PSD (dBm/500kHz)	Read Value (dBm/470kHz)	PSD (dBm/500kHz)			
802.11a	149/5745	2.53	3.01	3.21	3.69	6.37	28.19	PASS
	157/5785	3.13	3.61	2.14	2.62	6.15	28.19	PASS
	165/5825	2.24	2.72	1.63	2.11	5.43	28.19	PASS
802.11n HT20	149/5745	3.64	4.19	4.53	5.08	7.67	28.19	PASS
	157/5785	1.68	2.23	0.43	0.98	4.66	28.19	PASS
	165/5825	0.92	1.47	0.72	1.27	4.38	28.19	PASS
802.11n HT40	151/5755	3.08	3.75	2.40	3.07	6.43	28.19	PASS
	159/5795	-1.18	-0.51	-1.65	-0.98	2.28	28.19	PASS
802.11 ac VHT20	149/5745	4.15	4.70	4.47	5.02	7.87	28.19	PASS
	157/5785	1.66	2.21	0.54	1.09	4.69	28.19	PASS
	165/5825	0.19	0.74	0.02	0.57	3.66	28.19	PASS
802.11 ac VHT40	151/5755	2.45	3.13	2.85	3.53	6.34	28.19	PASS
	159/5795	-0.89	-0.21	-1.68	-1.00	2.42	28.19	PASS
802.11ac VHT80	155/5775	-1.36	-0.69	-2.82	-2.15	1.65	28.19	PASS
802.11 ax HE20	149/5745	1.99	2.48	2.01	2.50	5.50	28.19	PASS
	157/5785	1.33	1.82	0.14	0.63	4.27	28.19	PASS
	165/5825	0.62	1.10	-1.00	-0.51	3.38	28.19	PASS
802.11 ax HE40	151/5755	1.33	1.79	1.30	1.76	4.78	28.19	PASS
	159/5795	1.80	2.26	0.05	0.51	4.48	28.19	PASS
802.11ax HE80	155/5775	-1.35	-0.89	-1.97	-1.51	1.82	28.19	PASS

Note: 1. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})})$

2. The manufacturer declared the transmitter output signals is CDD mode And Nss=1. According to KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)(ii): If antenna gains are not equal, the user may use either of the following methods to calculate directional gain, provided that each transmit antenna is driven by only one spatial stream: Directional gain may be calculated by using the formulas applicable to equal gain antennas with G_{ANT} set equal to the gain of the antenna having the highest gain.

Directional gain = $G_{ANT\ MAX}$ + Array Gain, For PSD measurements on all devices,

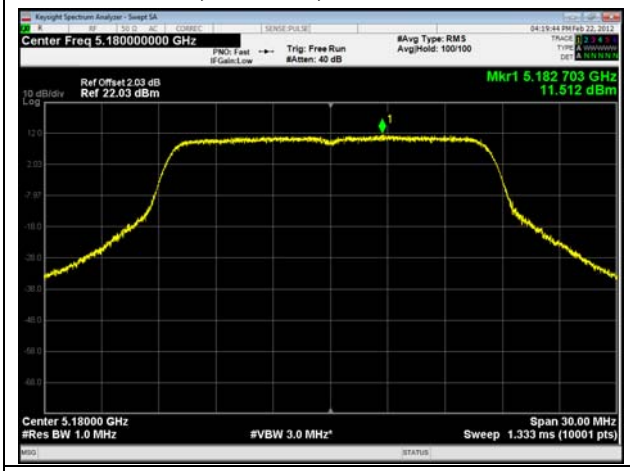
Array Gain=10log(Nant/Nss)dB,

so directional gain=$G_{ANT\ MAX}$ +Array Gain=4.8+10log(2/1)=7.81>6 dBi.

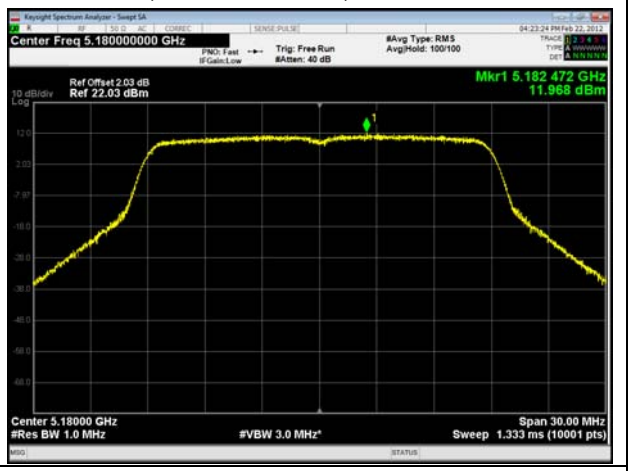
So the PSD limit is 30-(directional gain-6 dBi) =30-(7.81-6) =28.19 dBm.

SISO Antenna 1

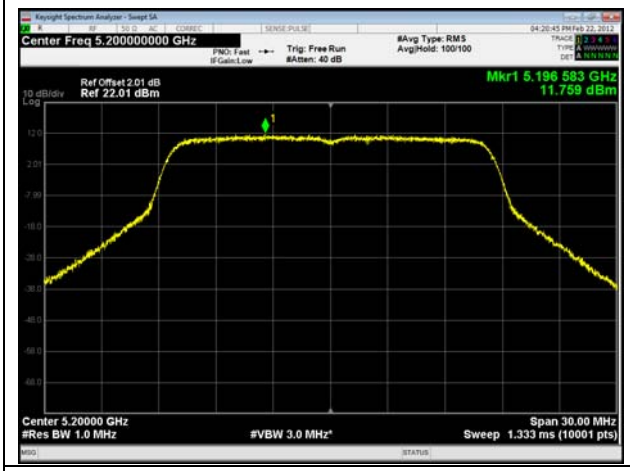
U-NII-1, 802.11a, Channel No.: 36



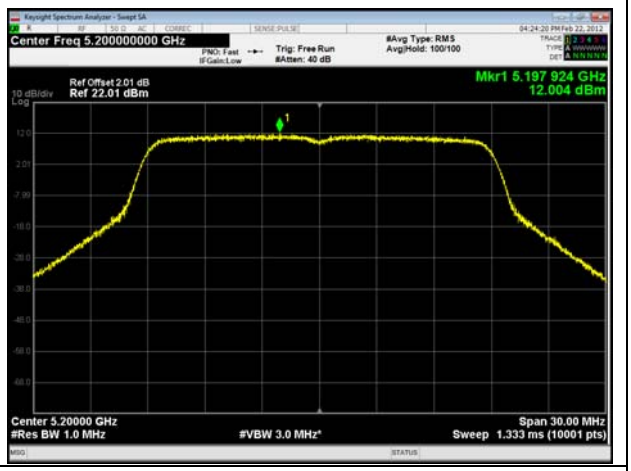
U-NII-1, 802.11n HT20, Channel No.: 36



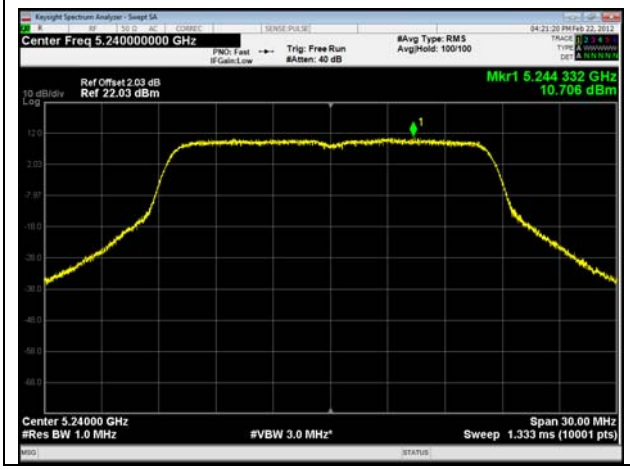
U-NII-1, 802.11a, Channel No.: 40



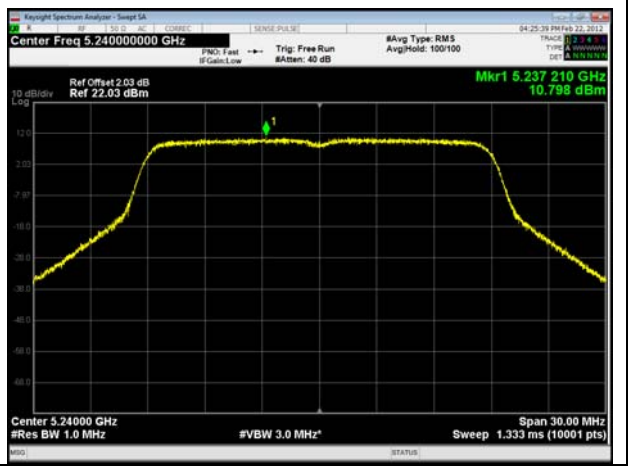
U-NII-1, 802.11n HT20, Channel No.: 40



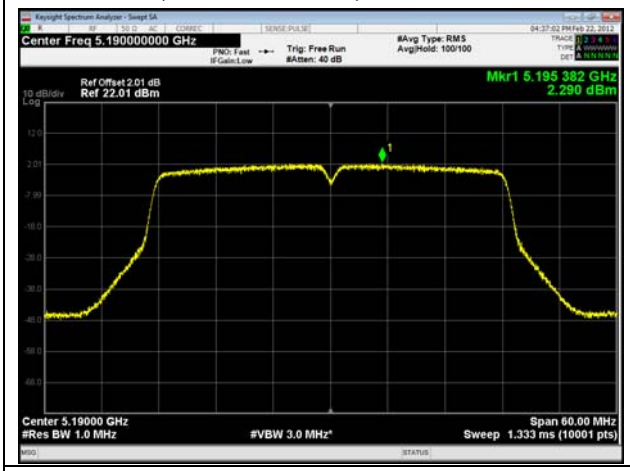
U-NII-1, 802.11a, Channel No.: 48



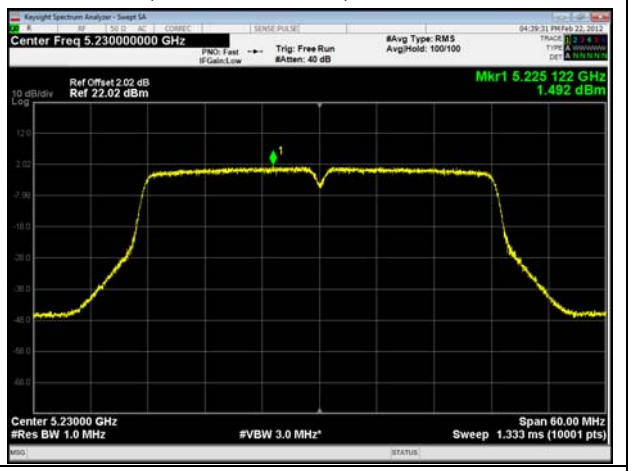
U-NII-1, 802.11n HT20, Channel No.: 48



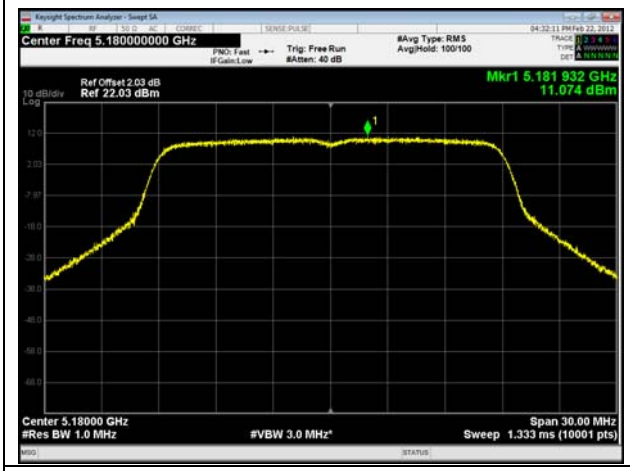
U-NII-1, 802.11n HT40, Channel No.: 38



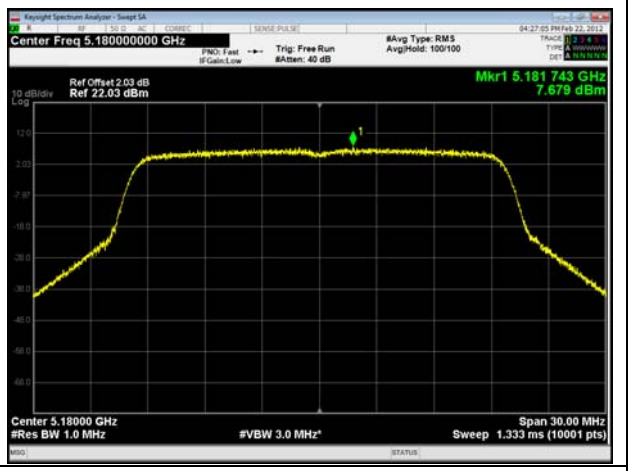
U-NII-1, 802.11n HT40, Channel No.: 46



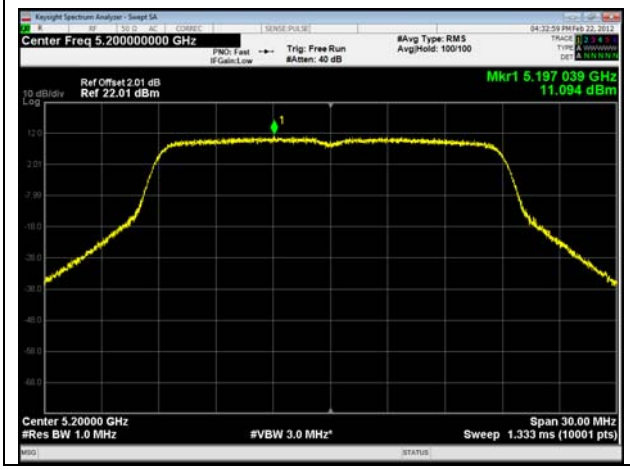
U-NII-1, 802.11ac VHT20, Channel No.: 36



U-NII-1, 802.11ax HE20, Channel No.: 36



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



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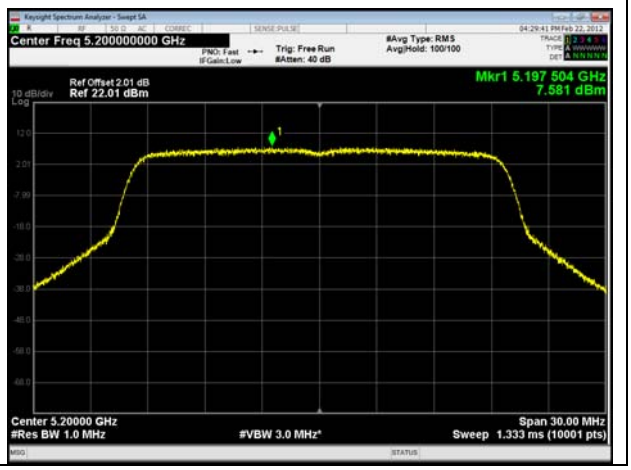

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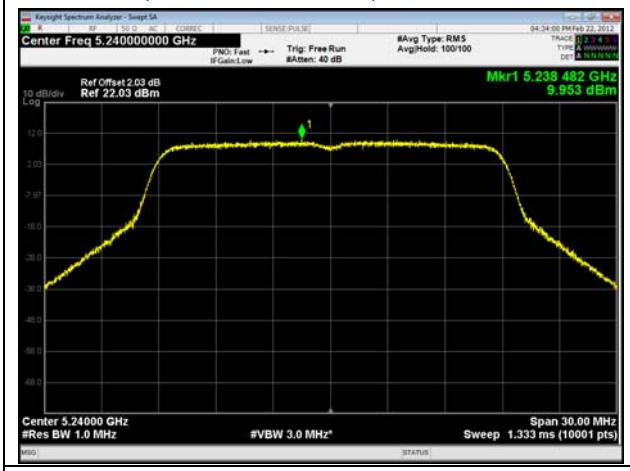

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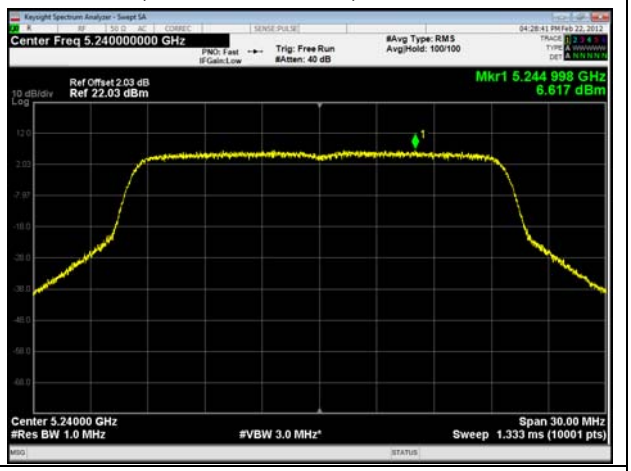
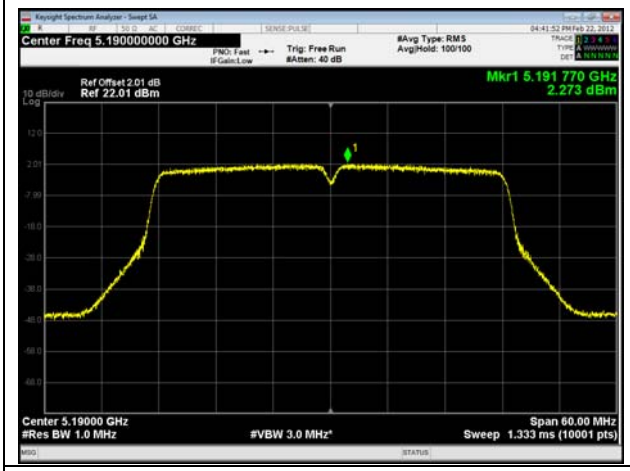
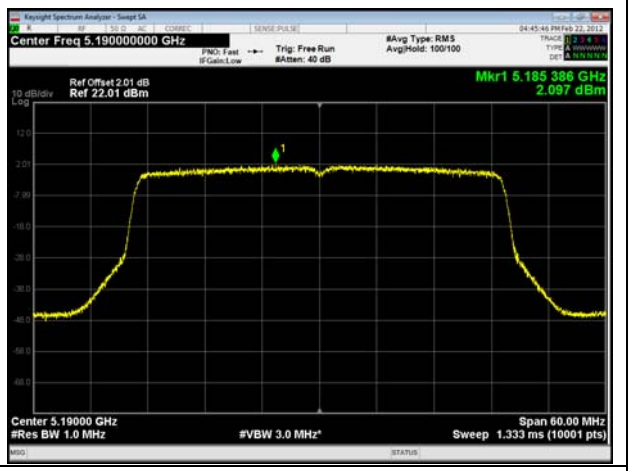


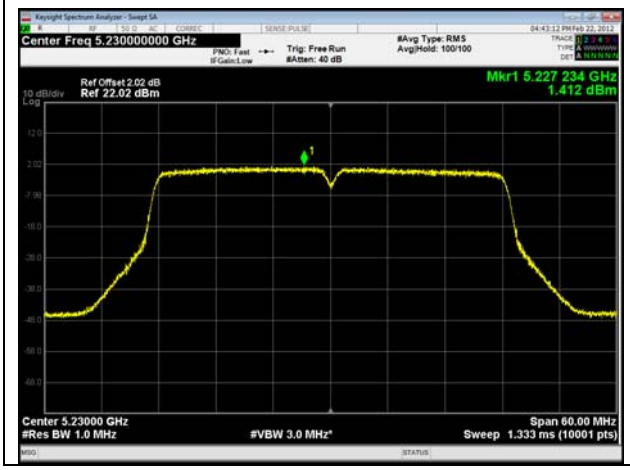
U-NII-1, 802.11ac VHT40, Channel No.: 38



U-NII-1, 802.11ax HE40, Channel No.: 38



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



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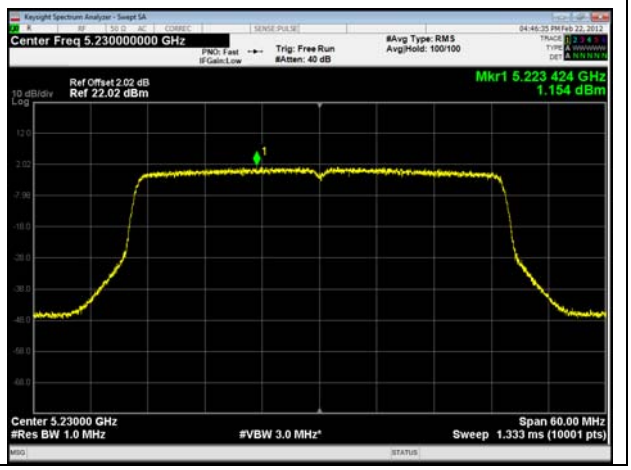
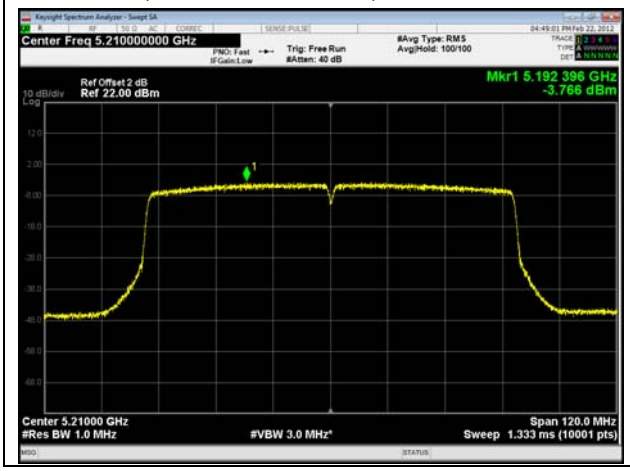
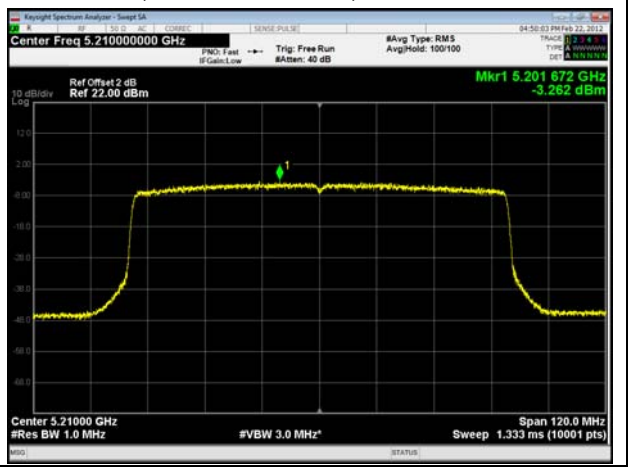
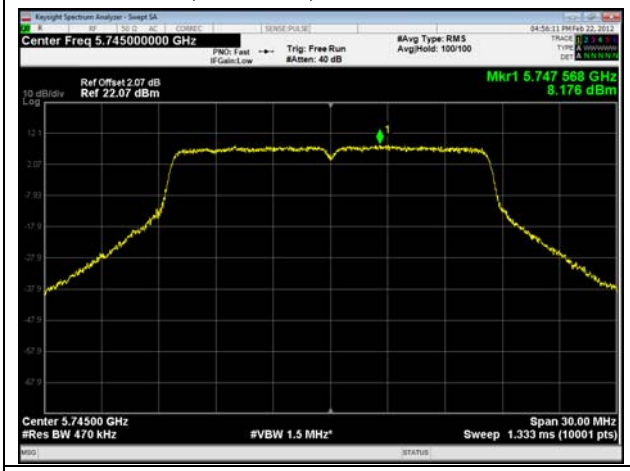
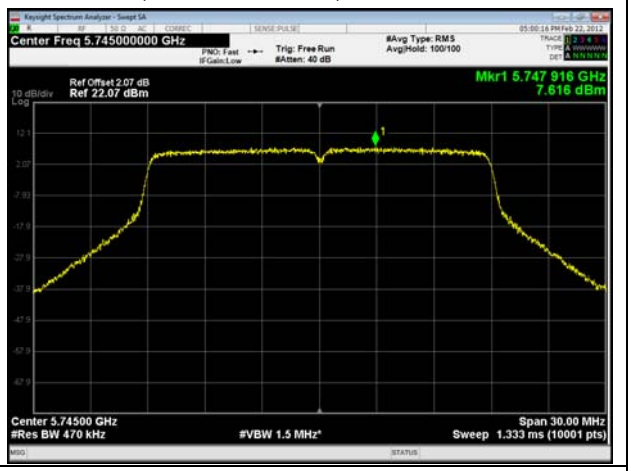


U-NII-1, 802.11ac VHT80, Channel No.: 42	U-NII-1, 802.11ax HE80, Channel No.: 42
	

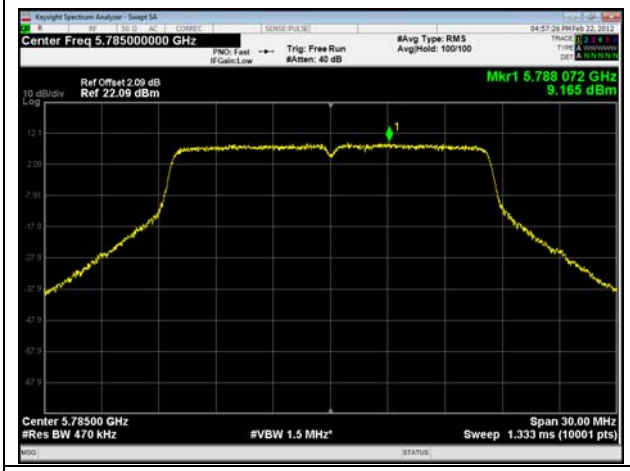
U-NII-3, 802.11a, Channel No.: 149



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



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



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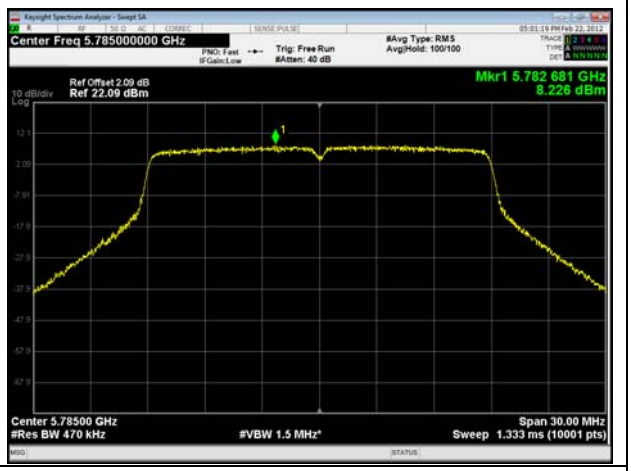

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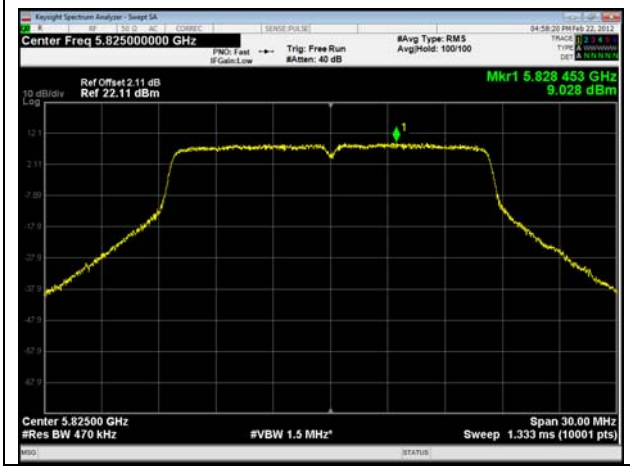

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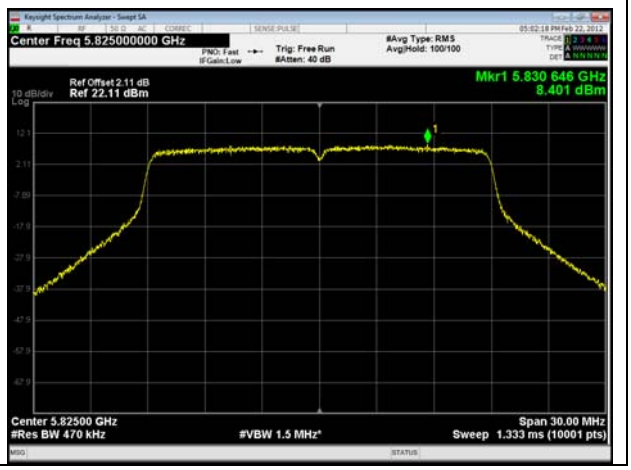
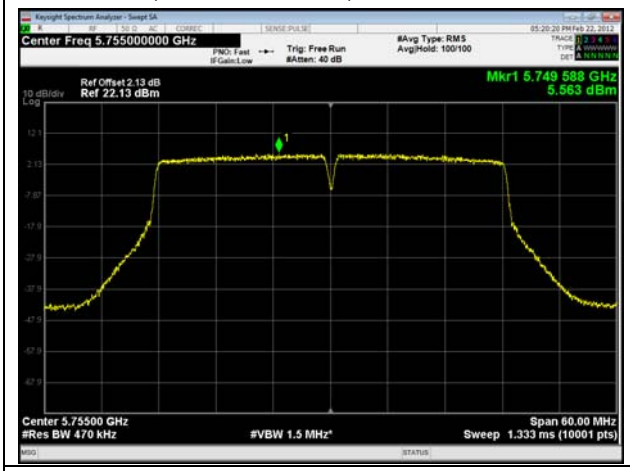
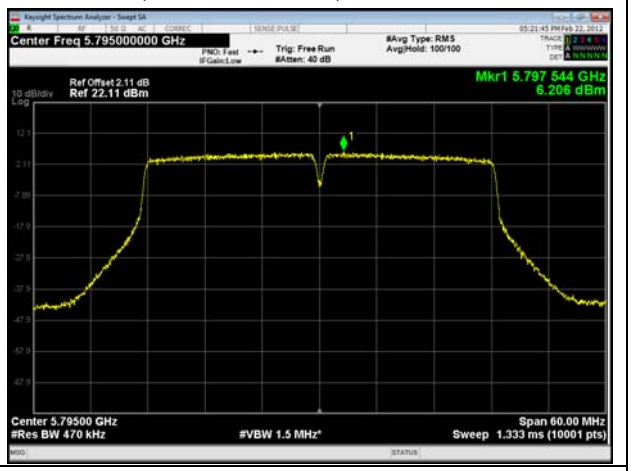


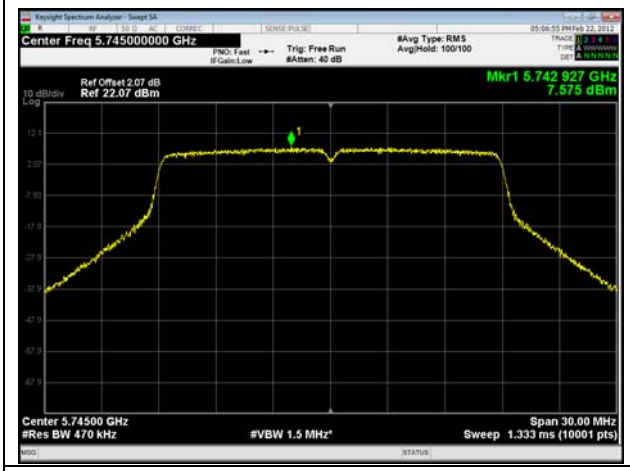
U-NII-3, 802.11n HT40, Channel No.: 151



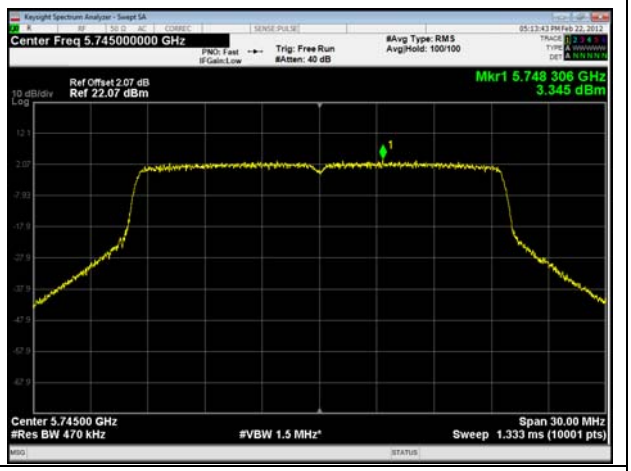
U-NII-3, 802.11n HT40, Channel No.: 159



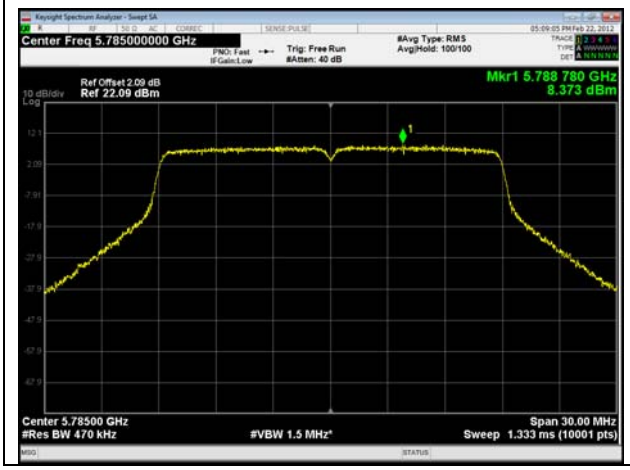
U-NII-3, 802.11ac VHT20, Channel No.: 149



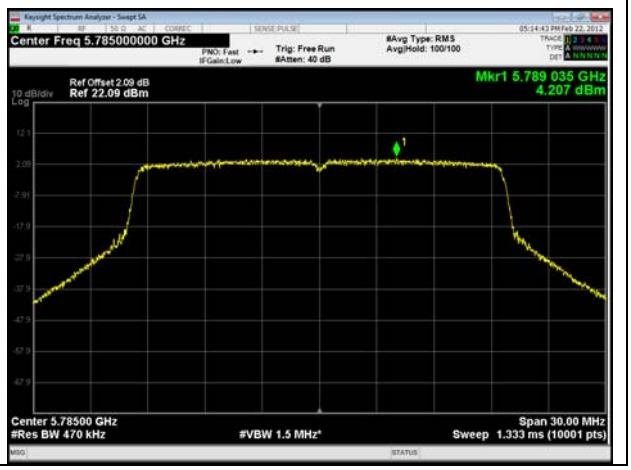
U-NII-3, 802.11ax HE20, Channel No.: 149



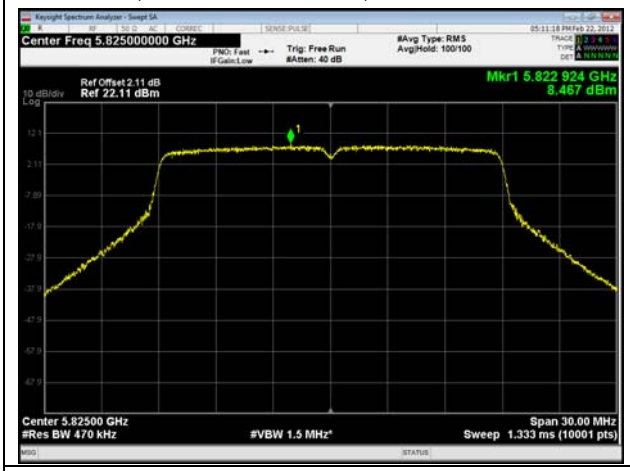
U-NII-3, 802.11ac VHT20, Channel No.: 157



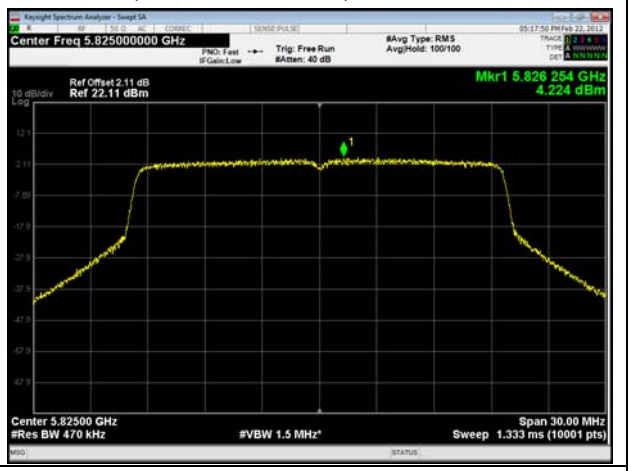
U-NII-3, 802.11ax HE20, Channel No.: 157



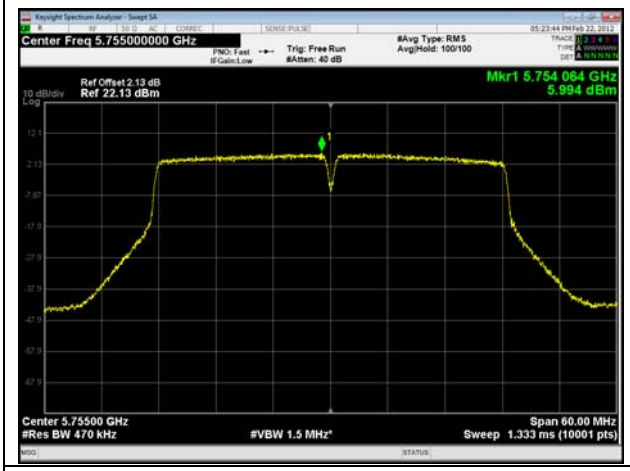
U-NII-3, 802.11ac VHT20, Channel No.: 165



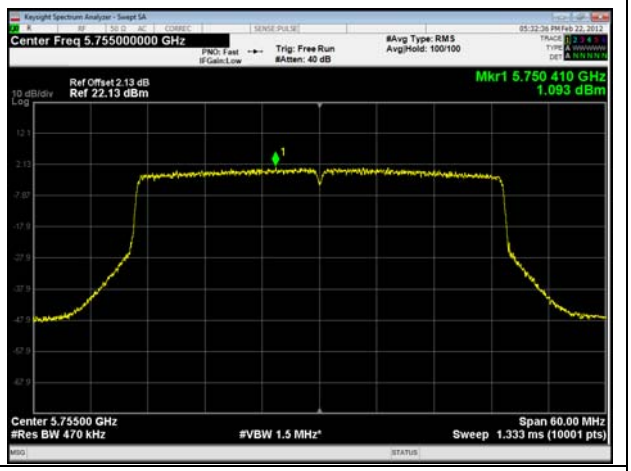
U-NII-3, 802.11ax HE20, Channel No.: 165



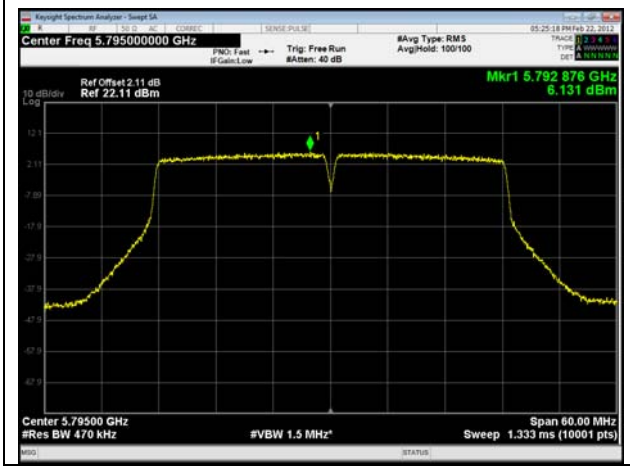
U-NII-3, 802.11ac VHT40, Channel No.: 151



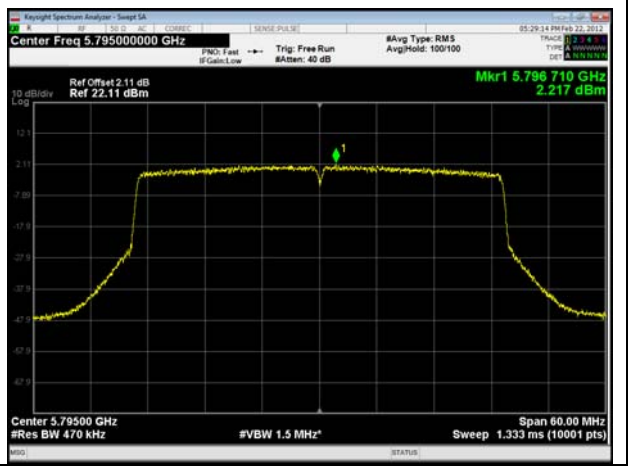
U-NII-3, 802.11ax HE40, Channel No.: 151

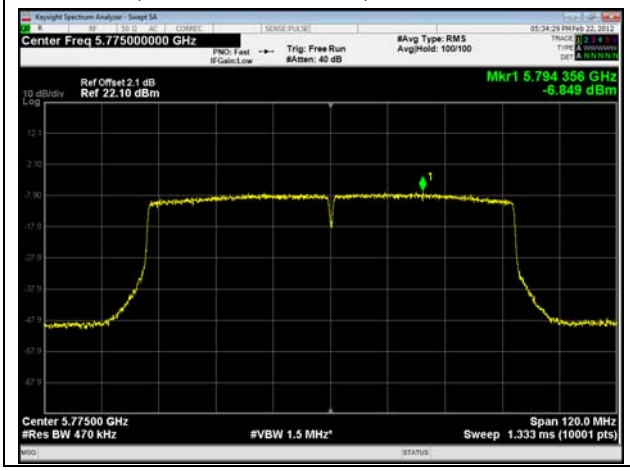
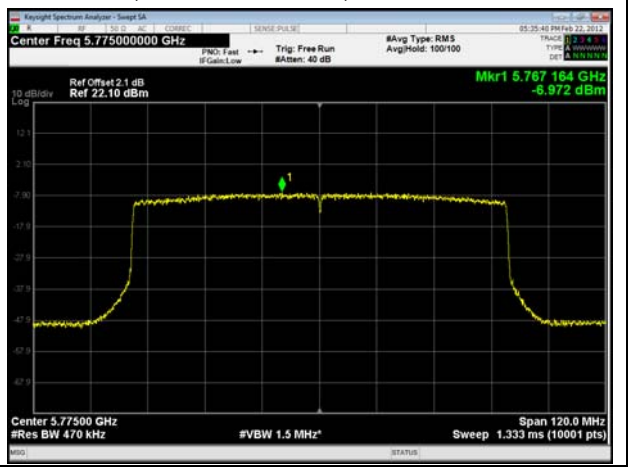


U-NII-3, 802.11ac VHT40, Channel No.: 159



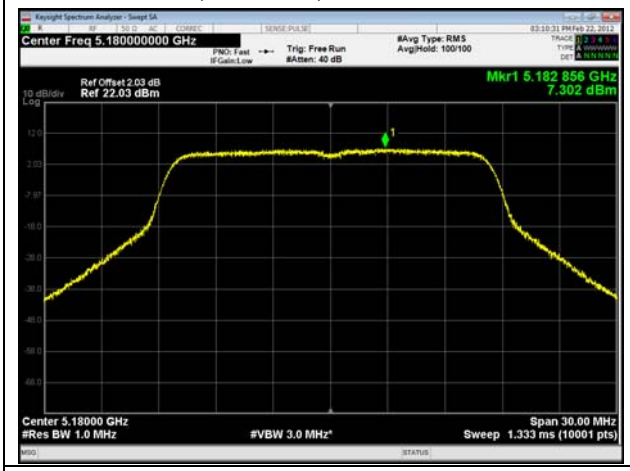
U-NII-3, 802.11ax HE40, Channel No.: 159



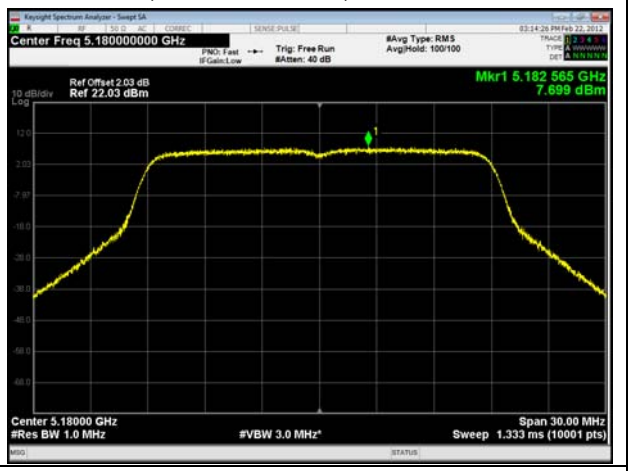
U-NII-3, 802.11ac VHT80, Channel No.: 155	U-NII-3, 802.11ax HE80, Channel No.: 155
	

SISO Antenna 2

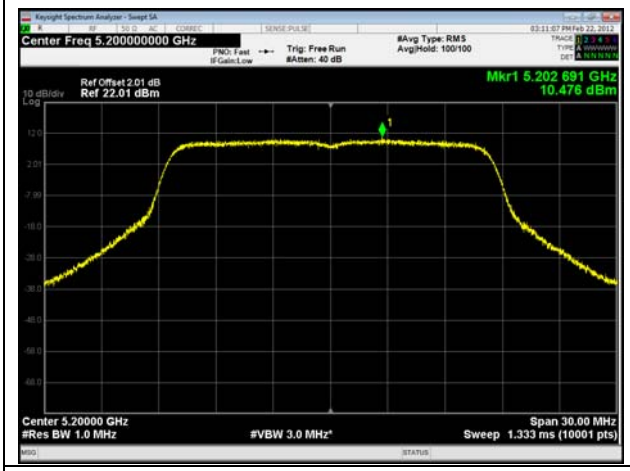
U-NII-1, 802.11a, Channel No.: 36



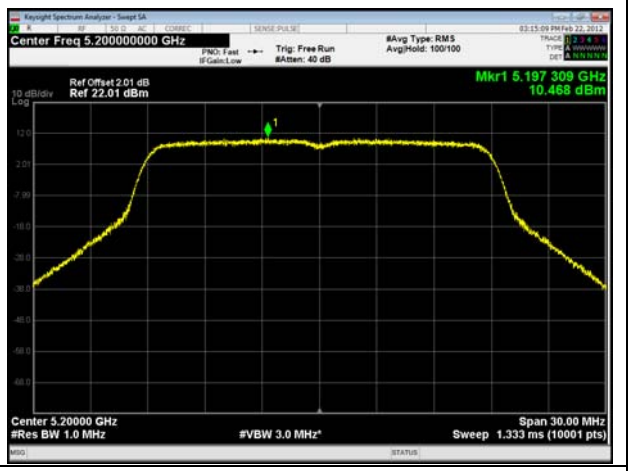
U-NII-1, 802.11n HT20, Channel No.: 36



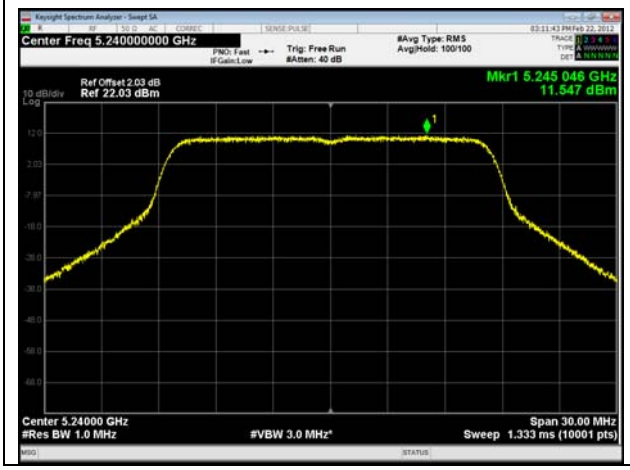
U-NII-1, 802.11a, Channel No.: 40



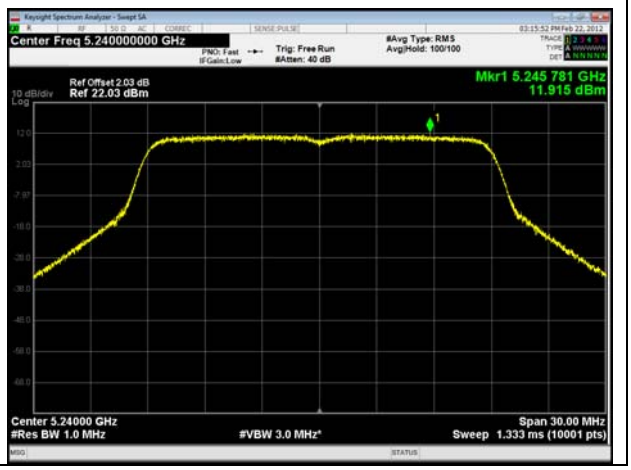
U-NII-1, 802.11n HT20, Channel No.: 40



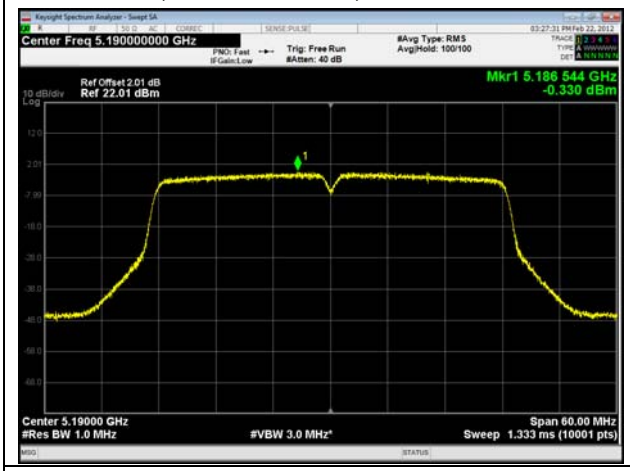
U-NII-1, 802.11a, Channel No.: 48



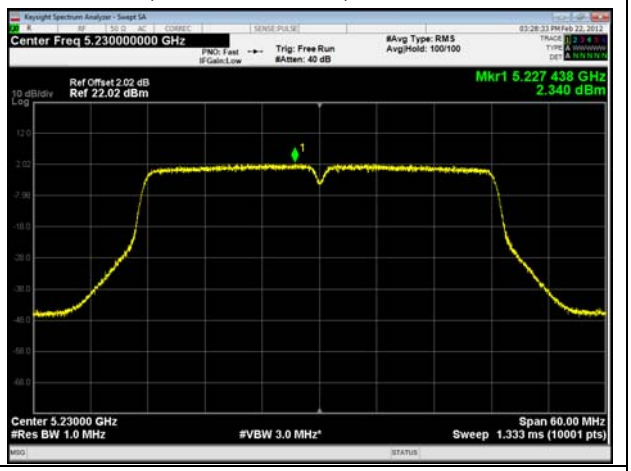
U-NII-1, 802.11n HT20, Channel No.: 48



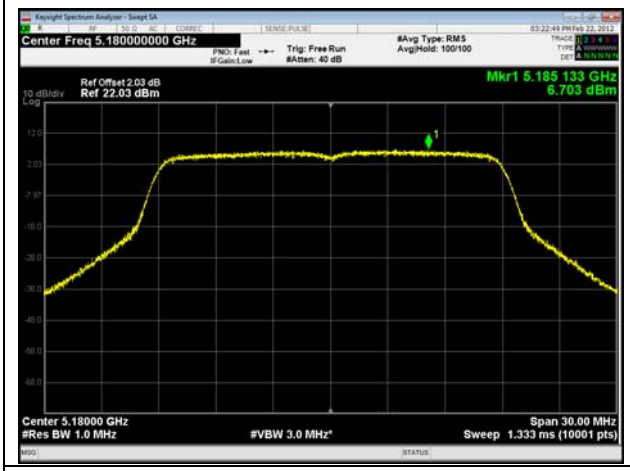
U-NII-1, 802.11n HT40, Channel No.: 38



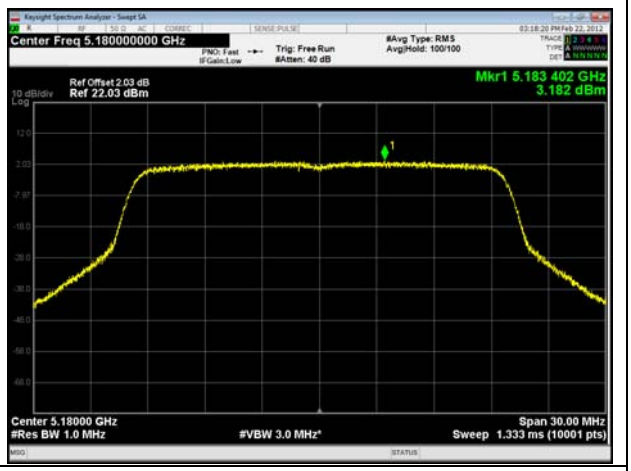
U-NII-1, 802.11n HT40, Channel No.: 46



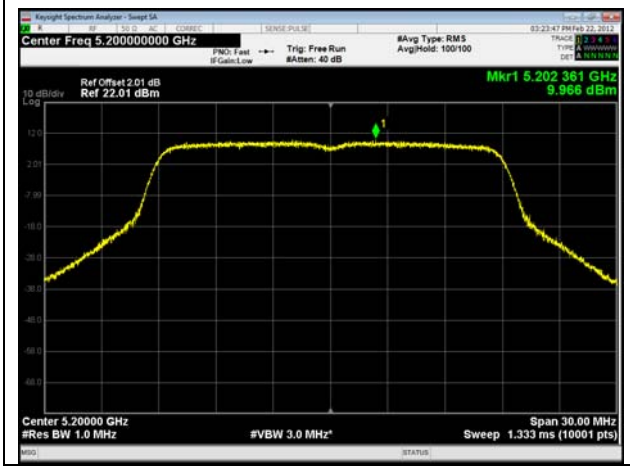
U-NII-1, 802.11ac VHT20, Channel No.: 36



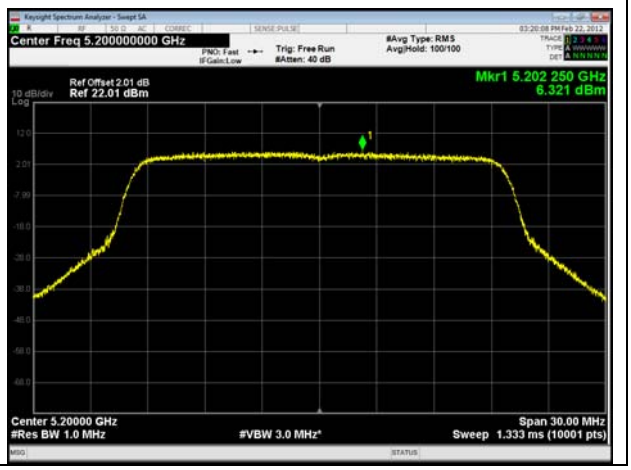
U-NII-1, 802.11ax HE20, Channel No.: 36



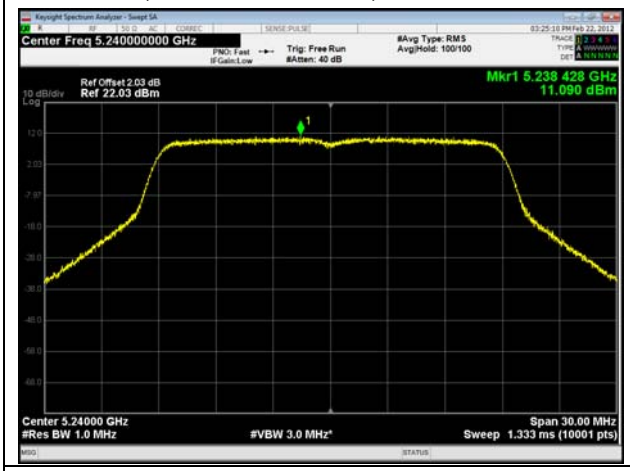
U-NII-1, 802.11ac VHT20, Channel No.: 40



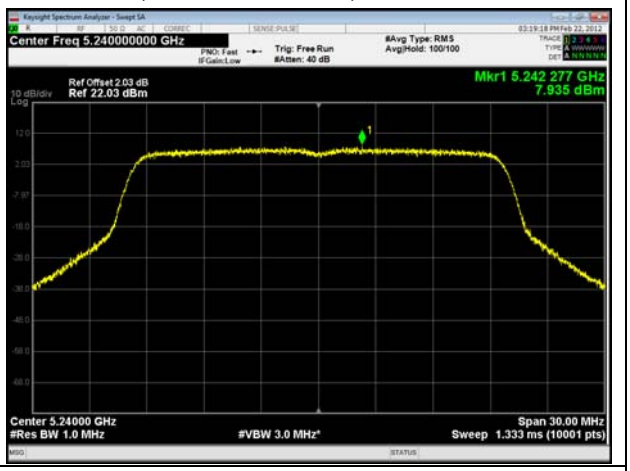
U-NII-1, 802.11ax HE20, Channel No.: 40



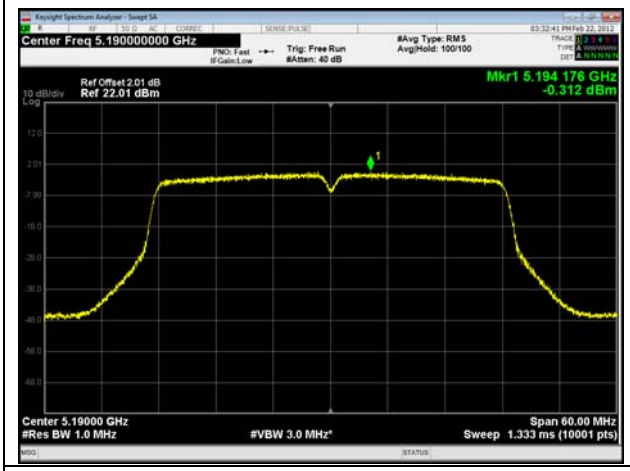
U-NII-1, 802.11ac VHT20, Channel No.: 48



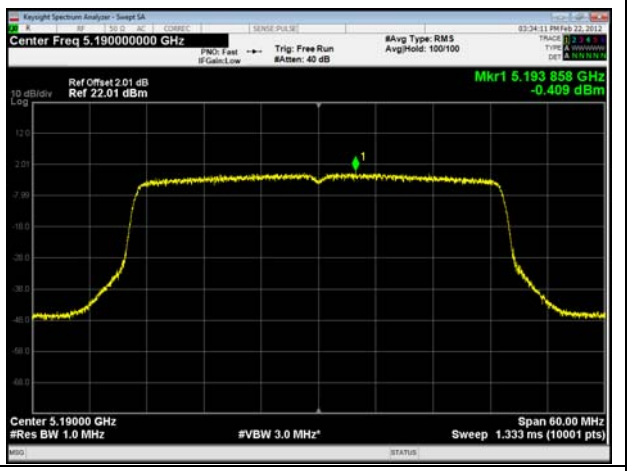
U-NII-1, 802.11ax HE20, Channel No.: 48



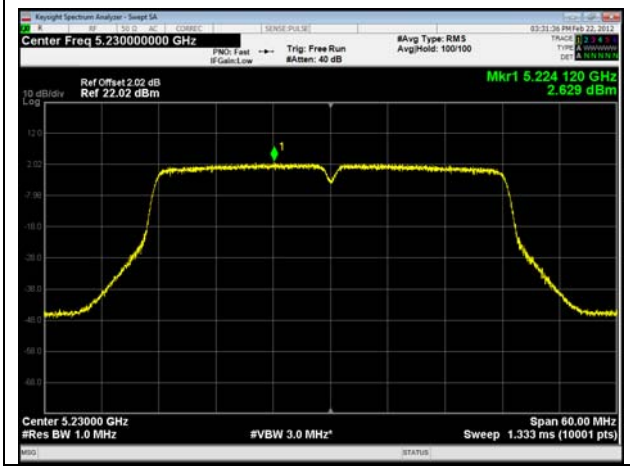
U-NII-1, 802.11ac VHT40, Channel No.: 38



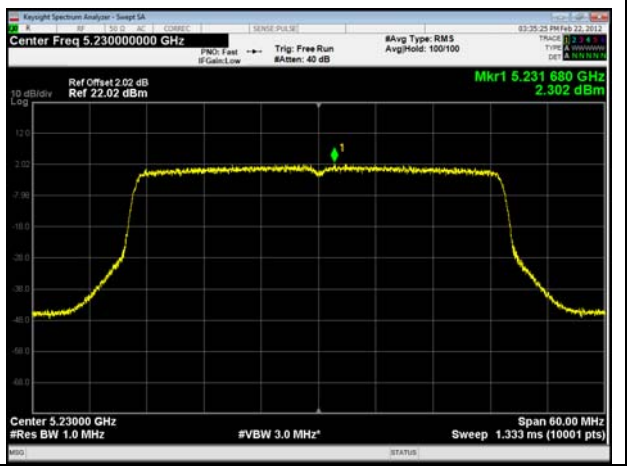
U-NII-1, 802.11ax HE40, Channel No.: 38

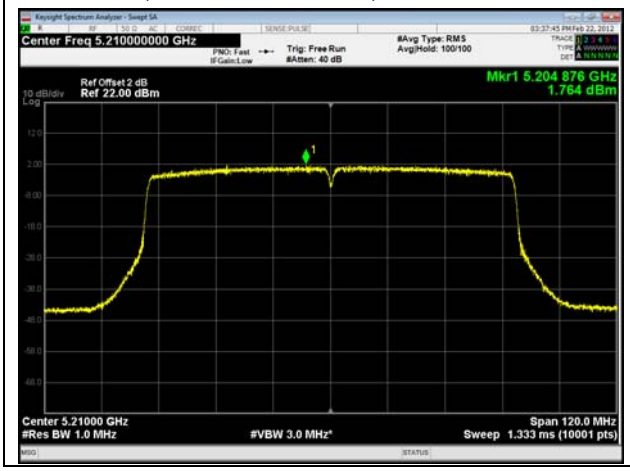
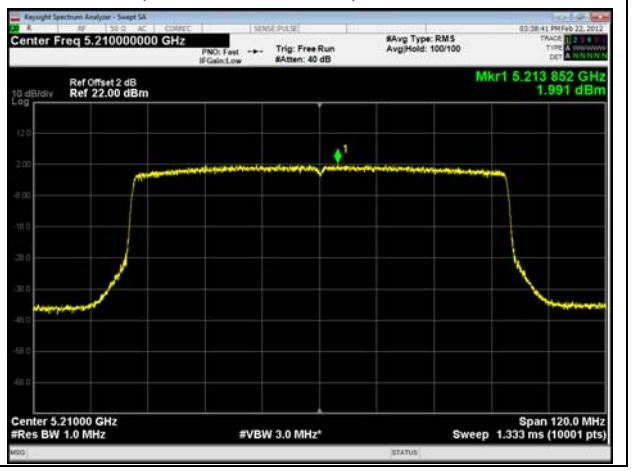


U-NII-1, 802.11ac VHT40, Channel No.: 46

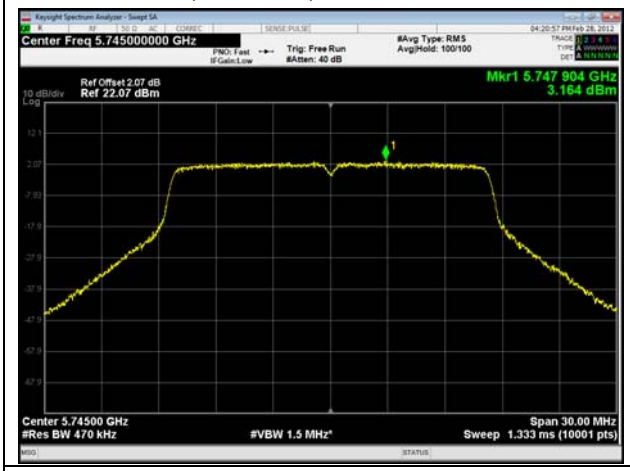


U-NII-1, 802.11ax HE40, Channel No.: 46

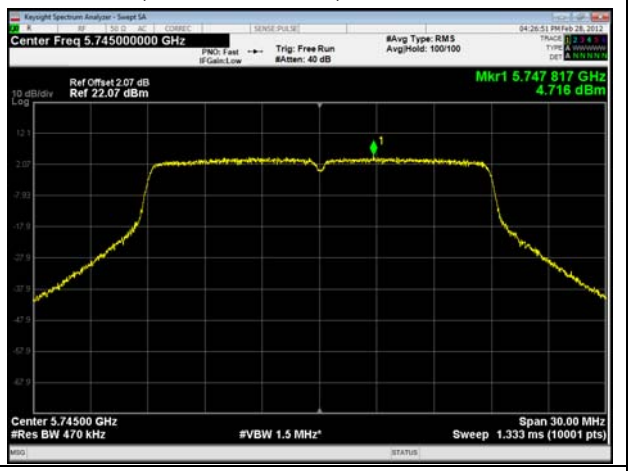


U-NII-1, 802.11ac VHT80, Channel No.: 42	U-NII-1, 802.11ax HE80, Channel No.: 42
	

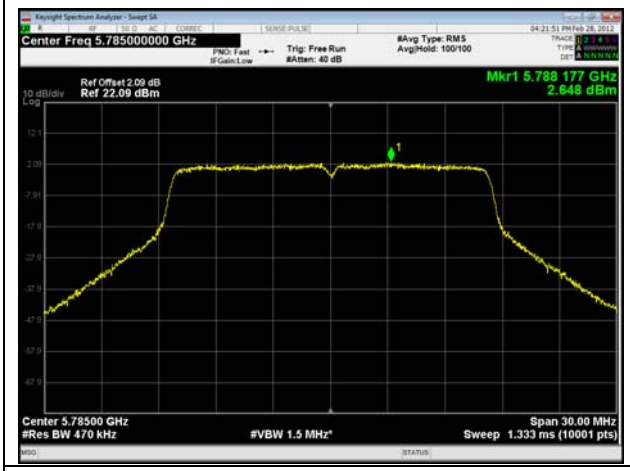
U-NII-3, 802.11a, Channel No.: 149



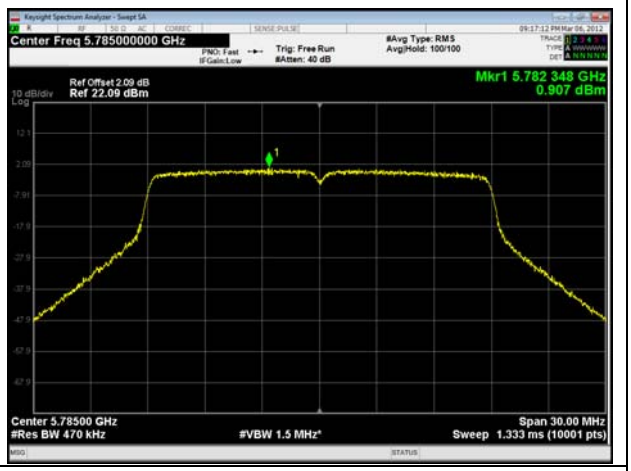
U-NII-3, 802.11n HT20, Channel No.: 149



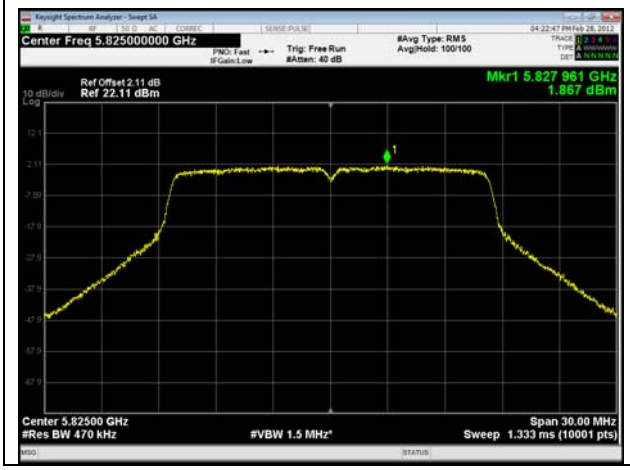
U-NII-3, 802.11a, Channel No.: 157



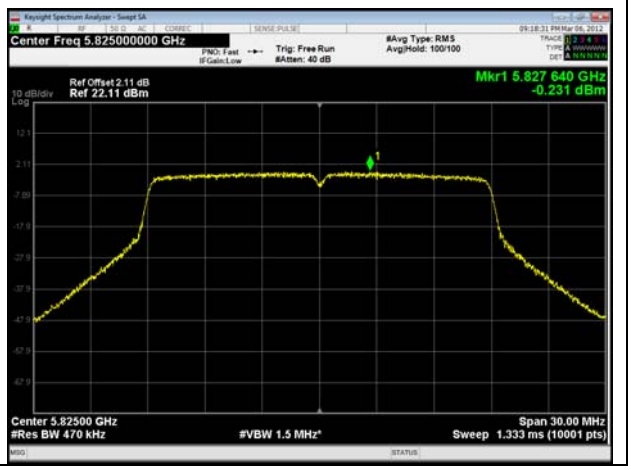
U-NII-3, 802.11n HT20, Channel No.: 157



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



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



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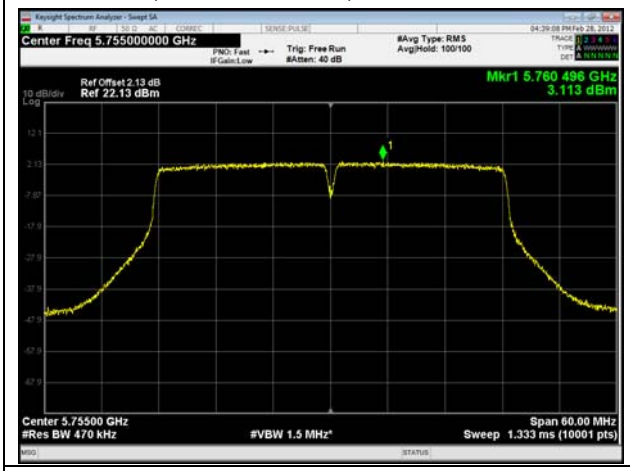
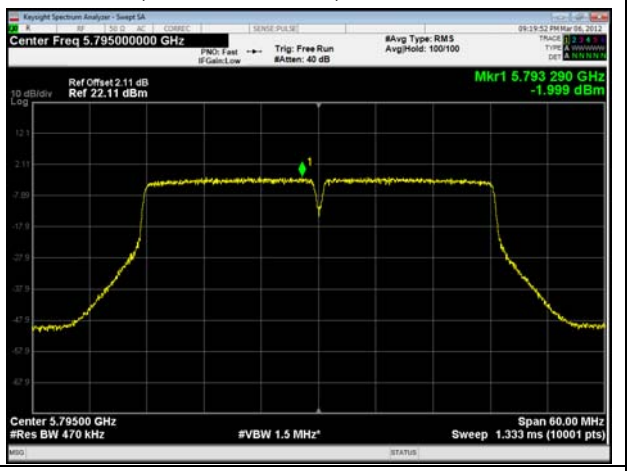
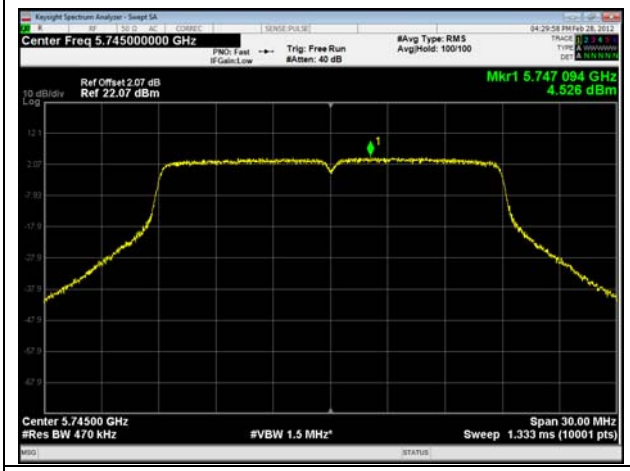


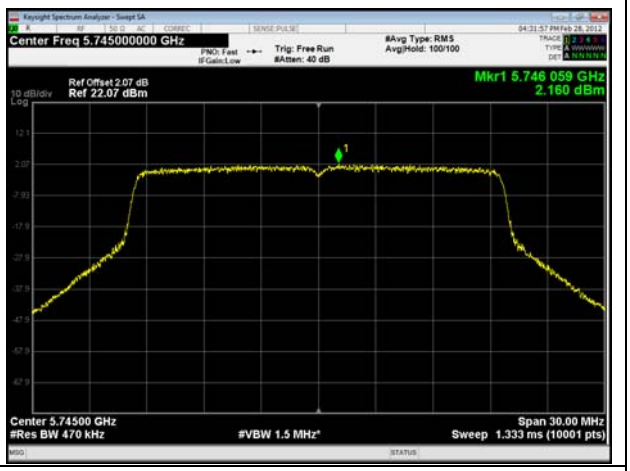
U-NII-3, 802.11n HT40, Channel No.: 159



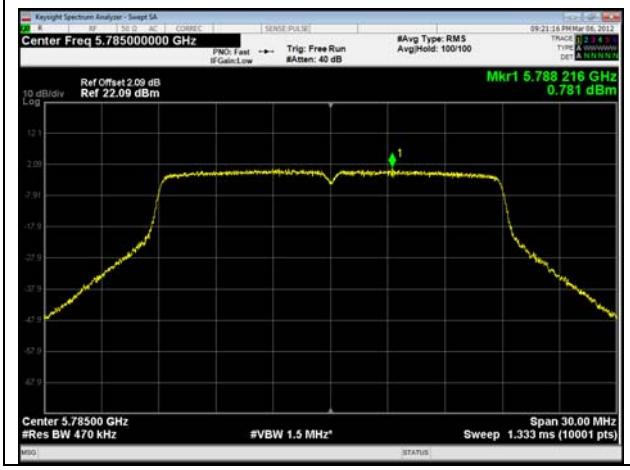
U-NII-3, 802.11ac VHT20, Channel No.: 149



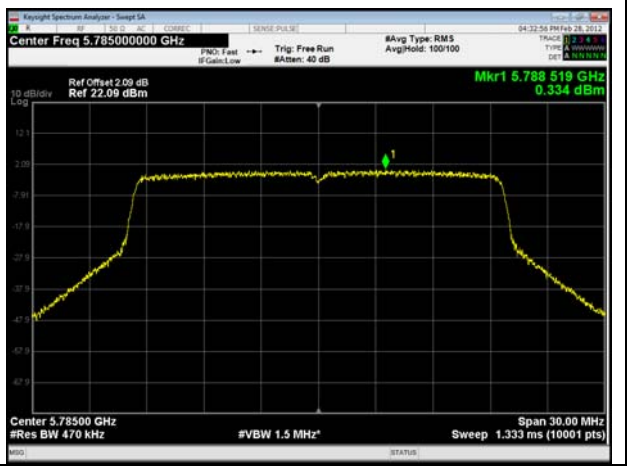
U-NII-3, 802.11ax HE20, Channel No.: 149



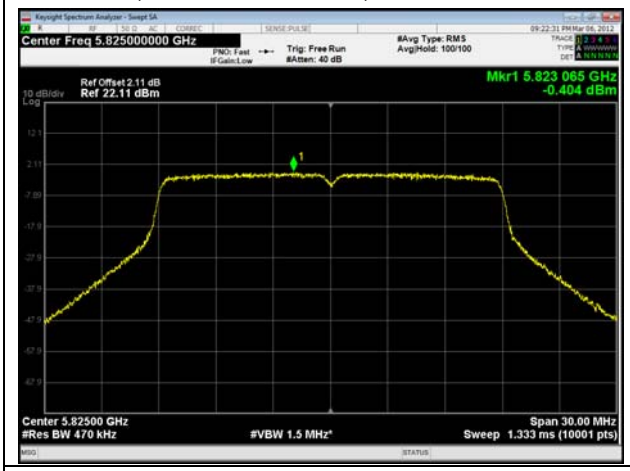
U-NII-3, 802.11ac VHT20, Channel No.: 157



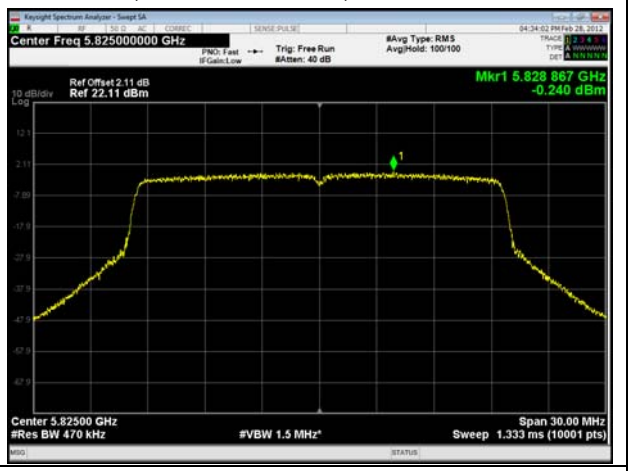
U-NII-3, 802.11ax HE20, Channel No.: 157



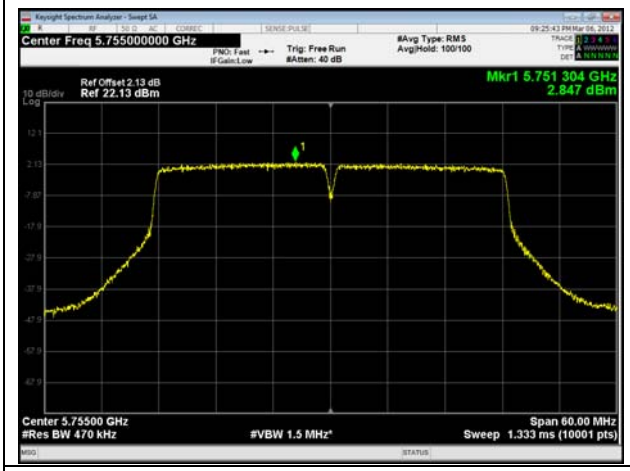
U-NII-3, 802.11ac VHT20, Channel No.: 165



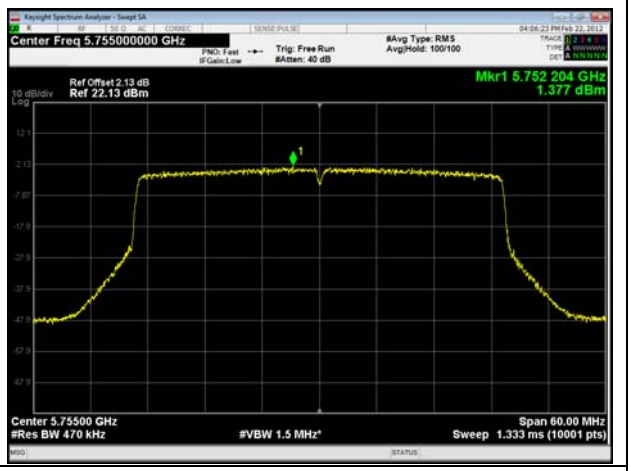
U-NII-3, 802.11ax HE20, Channel No.: 165



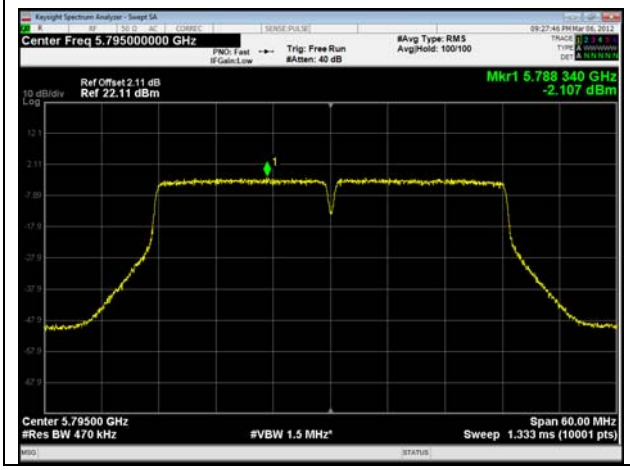
U-NII-3, 802.11ac VHT40, Channel No.: 151



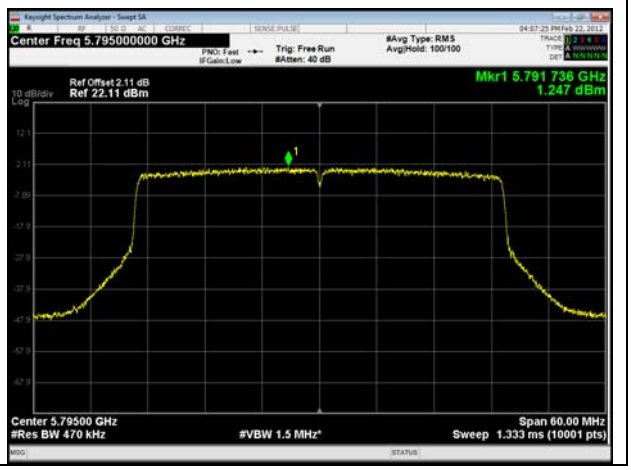
U-NII-3, 802.11ax HE40, Channel No.: 151

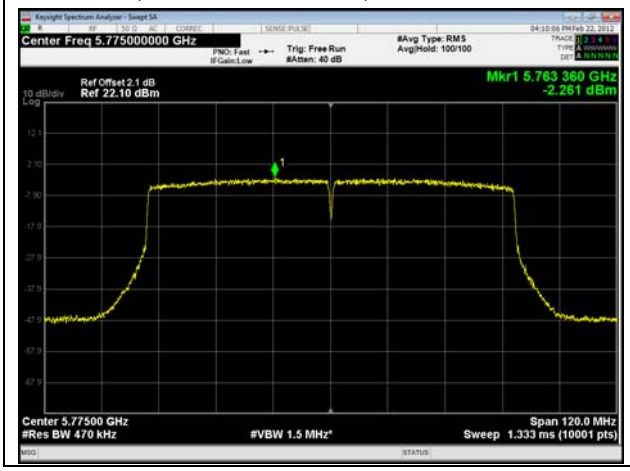
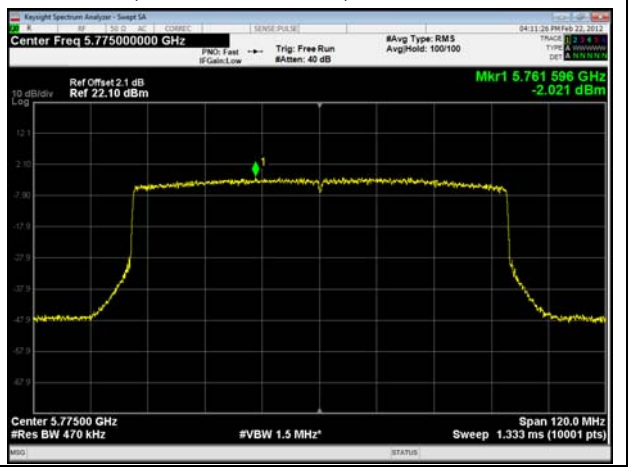


U-NII-3, 802.11ac VHT40, Channel No.: 159



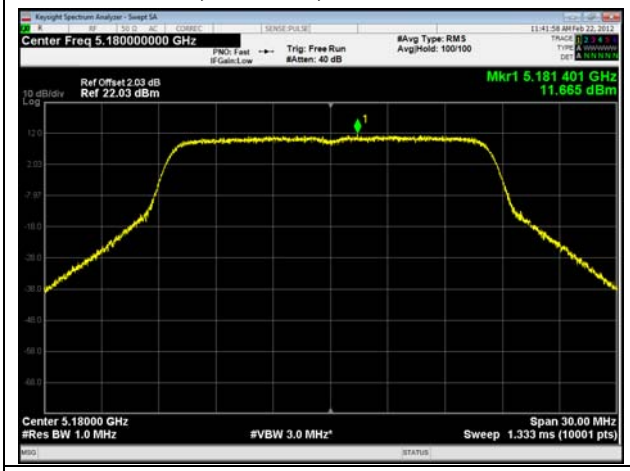
U-NII-3, 802.11ax HE40, Channel No.: 159



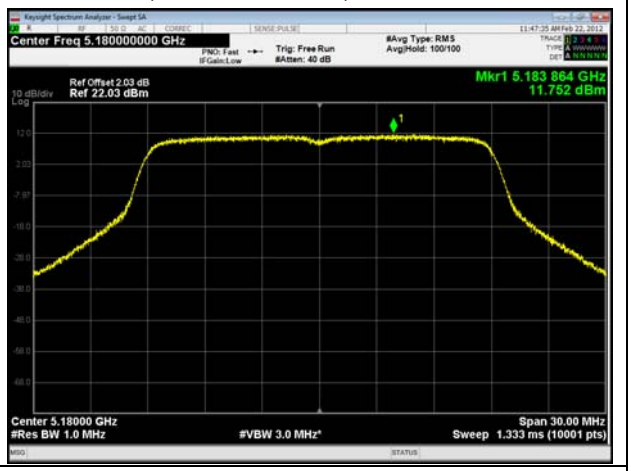
U-NII-3, 802.11ac VHT80, Channel No.: 155	U-NII-3, 802.11ax HE80, Channel No.: 155
	

CDD Antenna 1

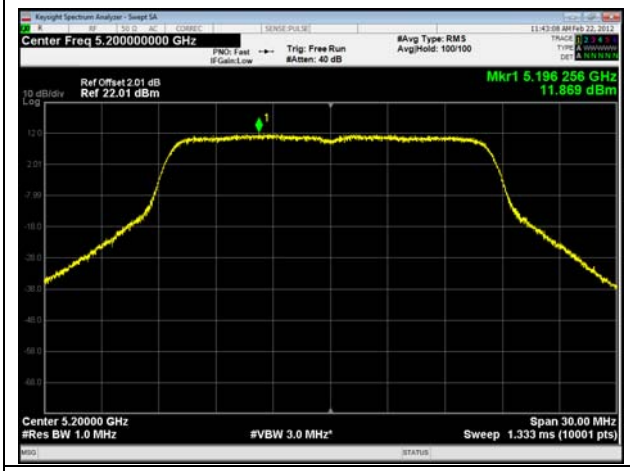
U-NII-1, 802.11a, Channel No.: 36



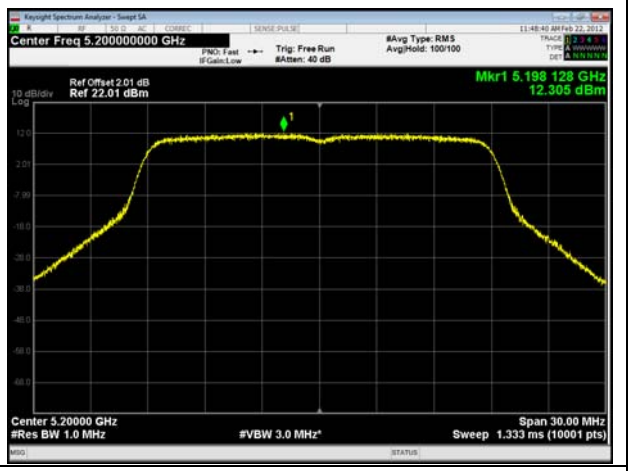
U-NII-1, 802.11n HT20, Channel No.: 36



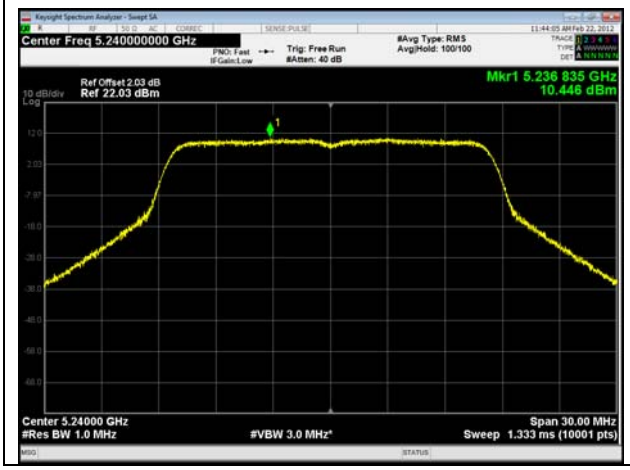
U-NII-1, 802.11a, Channel No.: 40



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



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



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