RF TEST REPORT

Applicant	Nokia Shanghai Bell Co., Ltd.
FCC ID	2ADZRG240WJ
Product	7368 ISAM ONT
Model	G-240W-J
Report No.	R1905B0068-R2V3
Issue Date	September 27, 2019

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

Peng Tao

Performed by: Peng Tao

Kai Xu

Approved by: Kai Xu

TA Technology (Shanghai) Co., Ltd.

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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: May 30, 2019~ September 5, 2019			

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.

IC (recognition number is 8510A)

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

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

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

A2LA (Certificate Number: 3857.01)

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

1.3. Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
Post code:	201201
Country:	P. R. China
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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

Client Information

Applicant	Nokia Shanghai Bell Co., Ltd.
Applicant address	No. 388, Ningqiao Rd. Pilot Free Trade Zone, Shanghai, China
Manufacturer 1	TAICANG T&W ELECTRONICS CO.,LTD
Manufacturer address 1	89# Jiang Nan RD, Lu Du, Taicang, Jiangsu, China
Manufacturer 2	SHENZHEN TWOWING TECHNOLOGIES CO., LTD
Manufacturer address 2	1st-12th Floor, Nangang Industrial Building, Tangtou Industrial Park, Shiyan, Baoan, Shenzhen, Guangdong 518108, China

General information

EUT Description	
Model	G-240W-J
IMEI	/
Hardware Version	PEM2
Software Version	3FE48164AGCA97
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
Test Mode(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
Max. Conducted Power	29.81 dBm
Operating Frequency Range(s)	U-NII-1: 5150-5250MHz U-NII-3: 5725-5850MHz
Operating temperature range:	-5 ° C to 45° C
Operating voltage range:	10 V to 14 V
State DC voltage:	12V
Used environment:	Indoor

EUT Accessory	
Adapter 1	Manufacturer: Shenzhen SOY Technology Co., Ltd Model: SUN-1200300
Adapter 2	Manufacturer: RUIDE(SHENZHEN) ELECTRONIC INDUSTRIAL CO., LTD. Model: RD1203000-C55-20MG
Note: The information of the EUT is declared by the manufacturer.	

	Kit Code	EMA	Part Description	Power Adaptor
G-240 W-J	3FE48008AA	3FE48009AA	2 POTS, 4 GE, Dual band WIFI AC3000 802.11ac 4x4/802.11n 3x3 US Plug in, 2Pin, Wall Mounted, 12V	SUN-1200300 RD1203000-C55-20MG

3. Applied Standards

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

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

ANSI C63.10 (2013)

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

4. Test Configuration

Test Mode

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

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

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

Worst-case data rates are shown as following table.

Band	Data Rate			
	MIMO Antenna 1	**MIMO Antenna 2**	**MIMO Antenna 3**	**MIMO Antenna 4**
802.11a	6 Mbps	6 Mbps	6 Mbps	6 Mbps
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	**MIMO Antenna 1**	**MIMO Antenna 2**	**MIMO Antenna 3**	**MIMO Antenna 4**
Average conducted output power	O	O	O	O
Occupied bandwidth	O	--	--	--
Frequency stability	O	--	--	--
Power Spectral Density	O	O	O	O
Unwanted Emissions	O	--	--	--
Conducted Emissions	O	--	--	--
Note：“O”: test all bands				

According to RF Output power results in chapter 5.1, MIMO Antenna 1 was selected as the worst antenna.

During the test, the pre-test was performed in all modes, including beamforming and non beamforming mode, the test data of the worst-case condition was recorded in this report.

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				
Does this device support TDWR Band? ☐Yes ☒No				

5. Test Case Results

5.1. Occupied Bandwidth

Ambient condition

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

Method of Measurement

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

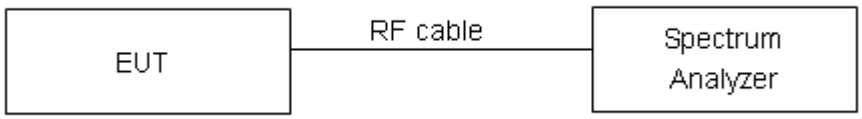
For U-NII-1/U-NII-2A/U-NII-2C, set RBW ≈1% OCB kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the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

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

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

Use the 99 % power bandwidth function of the instrument

Test Setup



Limits

Rule FCC Part §15.407(e)

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

Measurement Uncertainty

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

Test Results:

U-NII-1

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5180	16.728	21.28	PASS
	5200	16.703	21.06	PASS
	5240	16.719	21.00	PASS
802.11n HT20	5180	17.869	21.29	PASS
	5200	17.858	21.54	PASS
	5240	17.851	21.56	PASS
802.11n HT40	5190	36.352	39.83	PASS
	5230	36.305	40.05	PASS
802.11ac VHT20	5180	17.826	21.51	PASS
	5200	17.858	21.32	PASS
	5240	17.826	21.50	PASS
802.11ac VHT40	5190	36.340	42.30	PASS
	5230	36.312	39.82	PASS
802.11ac VHT80	5210	75.082	86.22	PASS

U-NII-3

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	16.757	16.34	500	PASS
	5785	16.712	16.35	500	PASS
	5825	16.750	16.34	500	PASS
802.11n HT20	5745	17.827	17.36	500	PASS
	5785	17.766	17.00	500	PASS
	5825	17.779	17.32	500	PASS
802.11n HT40	5755	36.308	36.20	500	PASS
	5795	36.263	36.00	500	PASS
802.11ac VHT20	5745	17.882	17.35	500	PASS
	5785	17.832	17.37	500	PASS
	5825	17.805	17.58	500	PASS
802.11ac VHT40	5755	36.310	36.31	500	PASS
	5795	36.303	35.74	500	PASS
802.11ac VHT80	5775	75.800	75.41	500	PASS

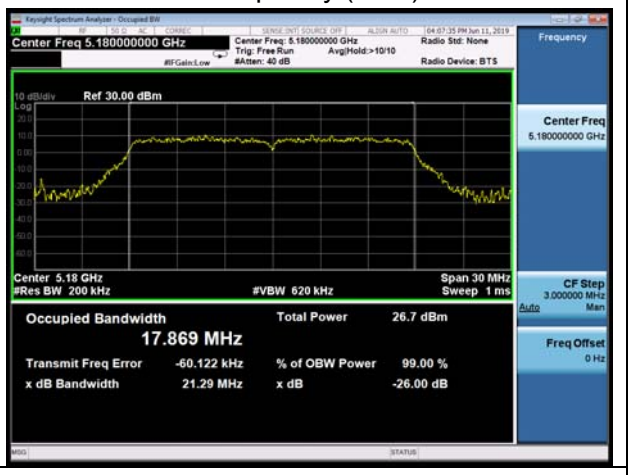
MIMO Antenna 1

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

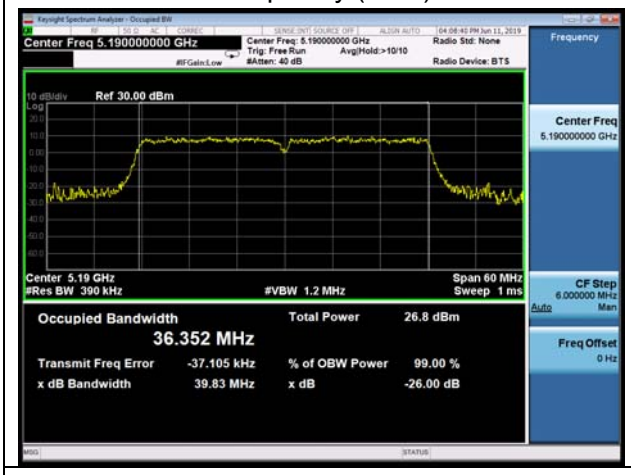
U-NII-1, 802.11a

Carrier frequency (MHz):5240

U-NII-1, 802.11n HT20

Carrier frequency (MHz):5240

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

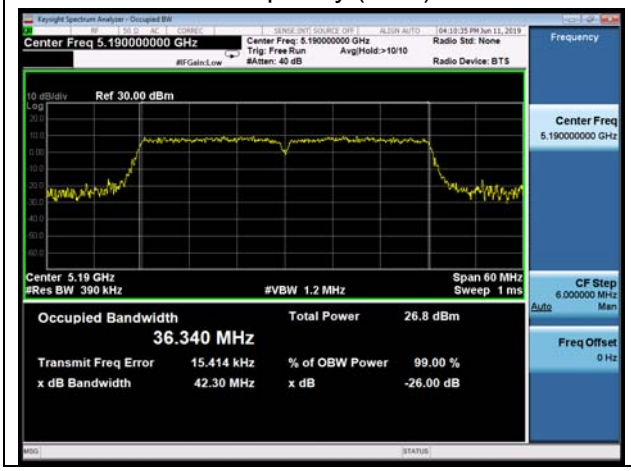


U-NII-1, 802.11ac VHT20
Carrier frequency (MHz): 5180

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



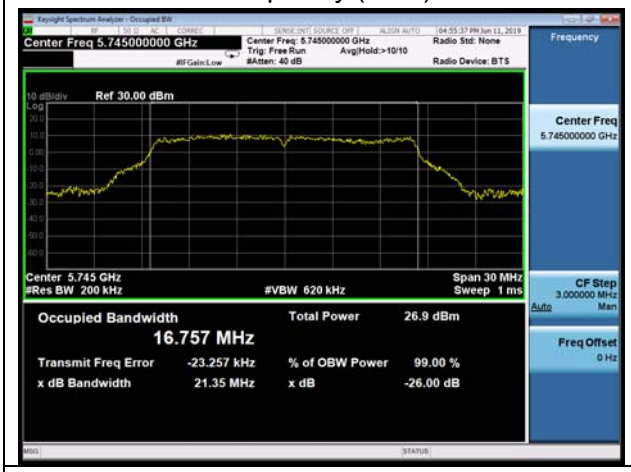
U-NII-1, 802.11ac VHT20
Carrier frequency (MHz):5240

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

99% bandwidth

U-NII-3, 802.11a

Carrier frequency (MHz): 5745

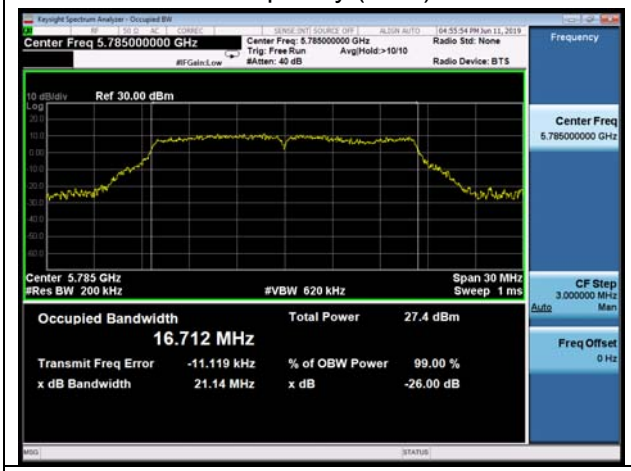


U-NII-3, 802.11n HT20

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

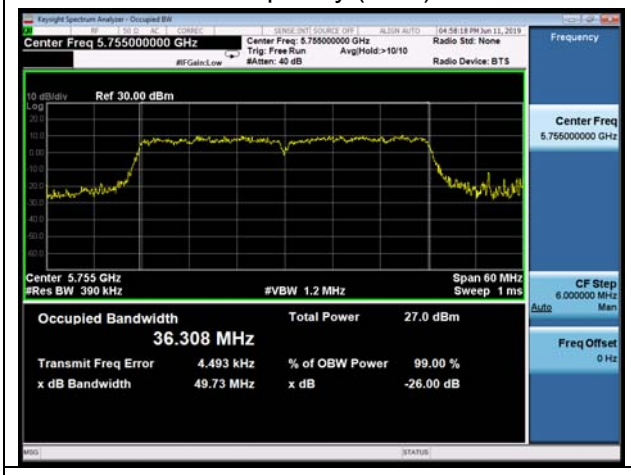
Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825

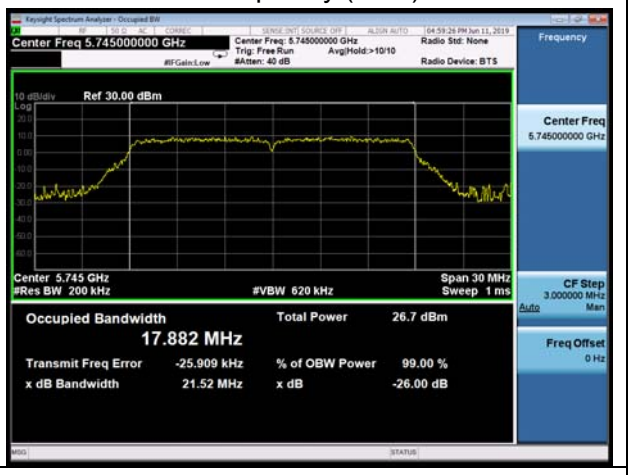
U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755



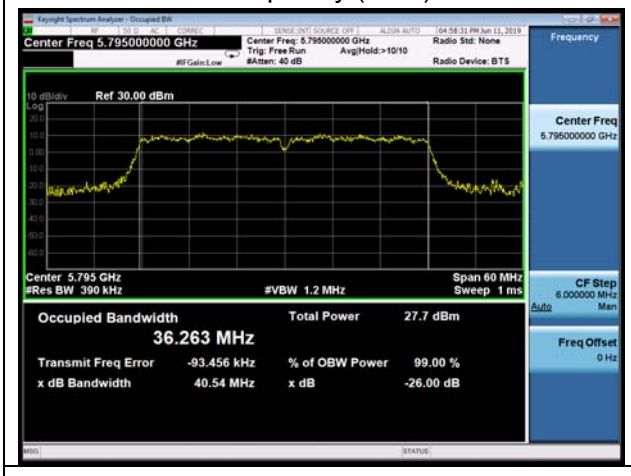
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795

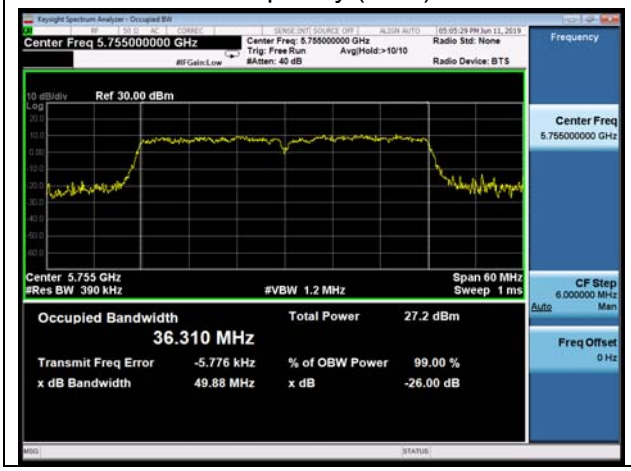


U-NII-3, 802.11ac VHT20

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
	

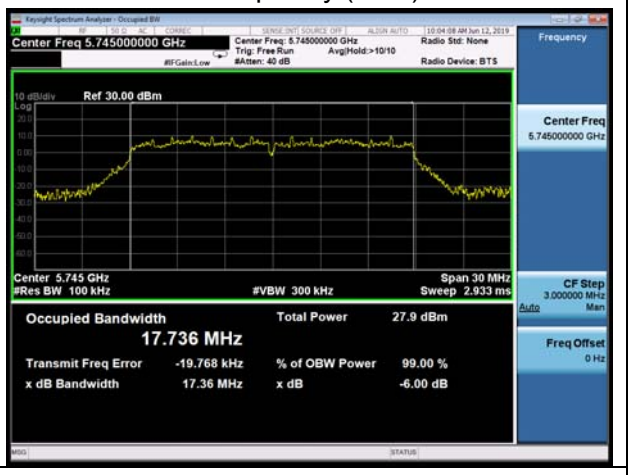
Minimum 6 dB bandwidth

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

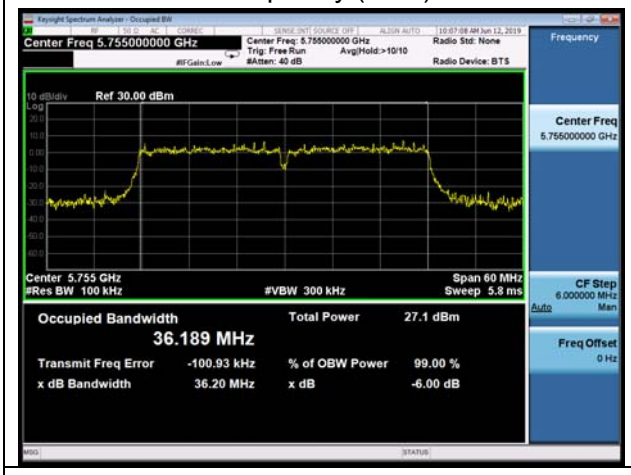
Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825

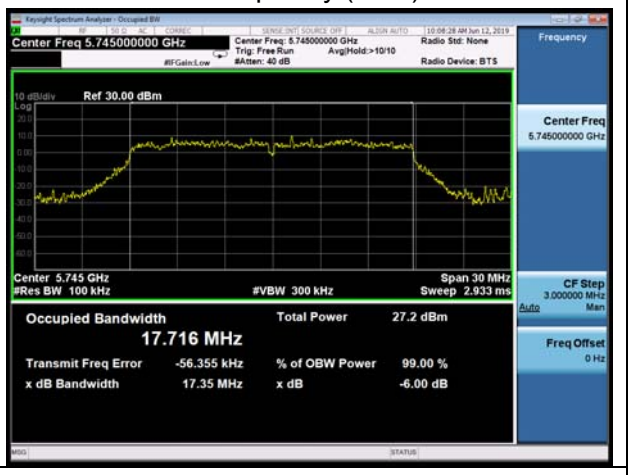
U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755



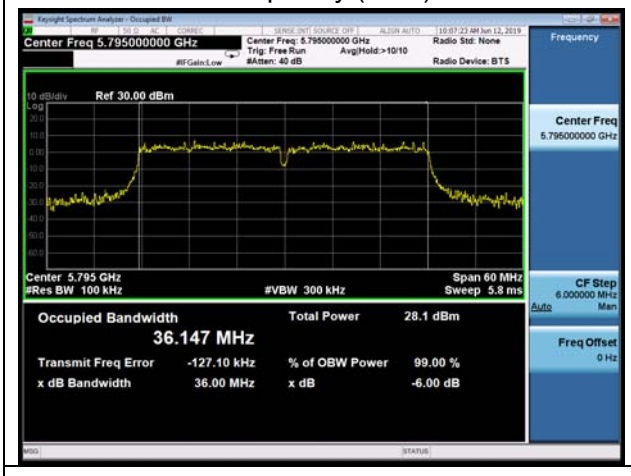
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795

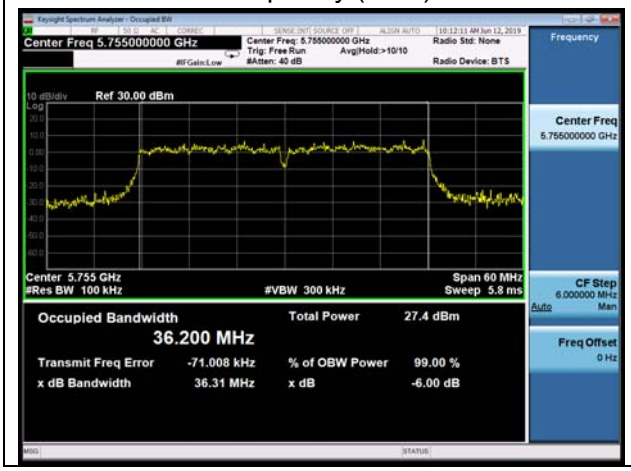


U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5785

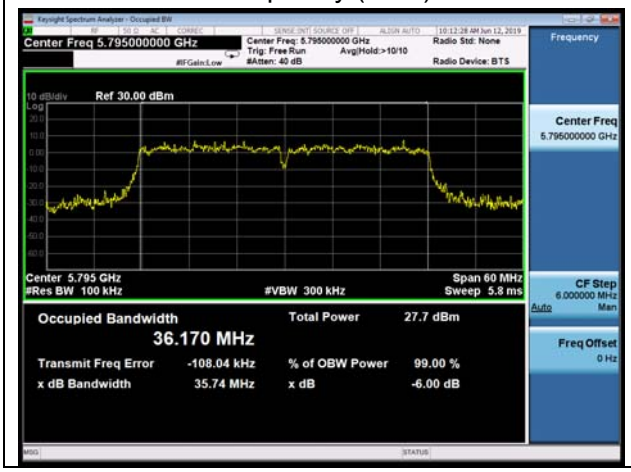
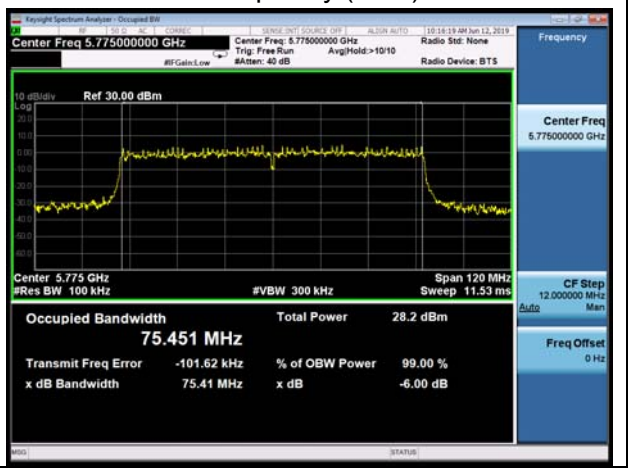
U-NII-3, 802.11ac VHT40

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

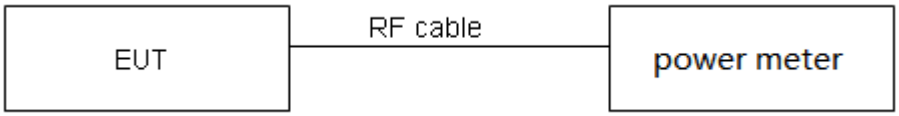
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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	0.21
802.11n HT20	1.92	2.02	0.95	0.21
802.11n HT40	0.94	1.04	0.90	0.44
802.11ac VHT20	1.93	1.95	0.99	NA
802.11ac VHT40	0.95	0.98	0.97	0.14
802.11ac VHT80	0.46	0.49	0.94	0.28
Note: when Duty cycle>0.98, Duty cycle correction Factor not required.				

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)			
802.11a	36/5180	18.24	18.45	18.01	18.22	17.73	17.94	17.95	18.16	24.22	30.00	PASS
	40/5200	18.29	18.50	18.16	18.37	17.82	18.03	17.64	17.85	24.22	30.00	PASS
	48/5240	18.37	18.58	18.27	18.48	17.81	18.02	17.63	17.84	24.27	30.00	PASS
802.11n HT20	36/5180	18.25	18.46	18.06	18.27	17.63	17.84	17.86	18.07	24.19	30.00	PASS
	40/5200	18.15	18.36	18.11	18.32	17.58	17.79	17.89	18.10	24.17	30.00	PASS
	48/5240	18.23	18.44	18.03	18.24	17.59	17.80	17.93	18.14	24.18	30.00	PASS
802.11n HT40	38/5190	17.32	17.76	17.58	18.02	16.75	17.19	17.03	17.47	23.64	30.00	PASS
	46/5230	18.43	18.87	18.66	19.10	17.96	18.40	18.15	18.59	24.77	30.00	PASS
802.11ac VHT20	36/5180	18.41	18.41	18.39	18.39	17.25	17.25	18.03	18.03	24.07	30.00	PASS
	40/5200	18.46	18.46	18.31	18.31	17.38	17.38	18.15	18.15	24.11	30.00	PASS
	48/5240	18.38	18.38	18.25	18.25	17.44	17.44	18.09	18.09	24.08	30.00	PASS
802.11ac VHT40	38/5190	20.59	20.73	19.47	19.61	19.65	19.79	20.28	20.42	26.19	30.00	PASS
	46/5230	20.46	20.60	20.23	20.37	19.92	20.06	20.51	20.65	26.45	30.00	PASS
802.11ac VHT80	42/5210	14.73	15.01	15.01	15.29	14.44	14.72	14.92	15.20	21.08	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-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)			
802.11a	149/5745	22.58	22.79	23.01	23.22	23.33	23.54	22.35	22.56	29.07	30.00	PASS
	157/5785	22.64	22.85	22.86	23.07	23.22	23.43	22.47	22.68	29.04	30.00	PASS
	165/5825	22.74	22.95	22.96	23.17	23.38	23.59	22.38	22.59	29.11	30.00	PASS
802.11n HT20	149/5745	23.34	23.55	23.74	23.95	23.87	24.08	23.02	23.23	29.74	30.00	PASS
	157/5785	23.42	23.63	23.84	24.05	23.91	24.12	23.11	23.32	29.81	30.00	PASS
	165/5825	23.36	23.57	23.79	24.00	23.75	23.96	23.19	23.40	29.76	30.00	PASS
802.11n HT40	151/5755	21.68	22.12	22.18	22.62	22.67	23.11	21.95	22.39	28.59	30.00	PASS
	159/5795	21.73	22.17	22.24	22.68	22.78	23.22	22.01	22.45	28.67	30.00	PASS
802.11ac VHT20	149/5745	21.49	21.49	22.02	22.02	22.37	22.37	21.39	21.39	27.86	30.00	PASS
	157/5785	21.58	21.58	21.96	21.96	22.45	22.45	21.37	21.37	27.88	30.00	PASS
	165/5825	21.52	21.52	21.93	21.93	22.41	22.41	21.42	21.42	27.86	30.00	PASS
802.11ac VHT40	151/5755	20.86	21.00	21.58	21.72	21.96	22.10	21.06	21.20	27.55	30.00	PASS
	159/5795	20.79	20.93	21.62	21.76	21.99	22.13	20.86	21.00	27.51	30.00	PASS
802.11ac VHT80	155/5775	19.48	19.76	19.73	20.01	20.58	20.86	19.43	19.71	26.13	30.00	PASS

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

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

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	18.24	18.45	18.01	18.22	17.58	17.79	17.85	18.06	24.16	26.98	PASS
	40/5200	18.11	18.32	18.10	18.31	17.56	17.77	17.82	18.03	24.14	26.98	PASS
	48/5240	18.20	18.41	18.02	18.23	17.57	17.78	17.91	18.12	24.16	26.98	PASS
802.11n HT40	38/5190	17.28	17.72	17.57	18.01	16.73	17.17	16.96	17.40	23.60	26.98	PASS
	46/5230	18.37	18.81	18.63	19.07	17.92	18.36	18.03	18.47	24.70	26.98	PASS
802.11ac VHT20	36/5180	18.36	18.36	18.38	18.38	17.24	17.24	17.98	17.98	24.03	26.98	PASS
	40/5200	18.41	18.41	18.28	18.28	17.35	17.35	18.12	18.12	24.08	26.98	PASS
	48/5240	18.32	18.32	18.22	18.22	17.42	17.42	18.02	18.02	24.03	26.98	PASS
802.11ac VHT40	38/5190	20.55	20.69	19.43	19.57	19.63	19.77	20.27	20.41	26.16	26.98	PASS
	46/5230	20.44	20.58	20.17	20.31	19.88	20.02	20.46	20.60	26.41	26.98	PASS
802.11ac VHT80	42/5210	14.69	14.97	14.96	15.24	14.39	14.67	14.83	15.11	21.02	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-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	20.35	20.56	21.01	21.22	21.24	21.45	20.05	20.26	26.92	26.98	PASS
	157/5785	20.41	20.62	20.86	21.07	21.11	21.32	20.22	20.43	26.90	26.98	PASS
	165/5825	20.37	20.58	20.94	21.15	21.07	21.28	20.19	20.40	26.89	26.98	PASS
802.11n HT40	151/5755	19.84	20.28	20.61	21.05	20.95	21.39	20.09	20.53	26.85	26.98	PASS
	159/5795	19.78	20.22	20.58	21.02	20.94	21.38	19.86	20.30	26.78	26.98	PASS
802.11ac VHT20	149/5745	20.26	20.26	21.11	21.11	21.22	21.22	19.92	19.92	26.68	26.98	PASS
	157/5785	20.54	20.54	20.79	20.79	21.03	21.03	20.27	20.27	26.69	26.98	PASS
	165/5825	20.42	20.42	20.69	20.69	20.94	20.94	20.02	20.02	26.55	26.98	PASS
802.11ac VHT40	151/5755	19.74	19.88	20.69	20.83	21.08	21.22	20.16	20.30	26.61	26.98	PASS
	159/5795	19.86	20.00	20.74	20.88	21.34	21.48	19.99	20.13	26.69	26.98	PASS
802.11ac VHT80	155/5775	19.37	19.65	20.01	20.29	20.57	20.85	19.33	19.61	26.15	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	5199.990736	5199.980795	5199.972092	5199.964849
12	0	5199.990988	5199.976635	5199.964538	5199.957984
12	5	5199.984209	5199.972083	5199.964135	5199.954684
12	10	5199.979163	5199.965518	5199.954449	5199.945402
12	20	5199.975592	5199.965074	5199.952016	5199.935962
12	30	5199.966396	5199.959184	5199.950439	5199.926973
12	40	5199.956681	5199.950719	5199.945467	5199.921053
12	45	5199.956204	5199.946308	5199.938629	5199.914868
10	20	5199.953072	5199.946063	5199.930281	5199.906006
14	20	5199.946735	5199.940718	5199.929073	5199.902882
MHz		-0.053265	-0.059282	-0.070927	-0.097118
PPM		-10.243267	-11.400378	-13.639867	-18.676481

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
12	-5	5785.008624	5785.004663	5784.995508	5784.986779
12	0	5785.008419	5784.998577	5784.986801	5784.977178
12	5	5785.007451	5784.998448	5784.979307	5784.969446
12	10	5785.005769	5784.997960	5784.973030	5784.965250
12	20	5785.000764	5784.991489	5784.969004	5784.964279
12	30	5784.998194	5784.981957	5784.960428	5784.963604
12	40	5784.993403	5784.972926	5784.954547	5784.960028
12	45	5784.992023	5784.964620	5784.954529	5784.951402
10	20	5784.988430	5784.958510	5784.949663	5784.942817
14	20	5784.987020	5784.951218	5784.946879	5784.933121
MHz		-0.012980	-0.048782	-0.053121	-0.066879
PPM		-2.243733	-8.432539	-9.182505	-11.560732

5.4. Power Spectral Density

Ambient condition

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

Method of Measurement

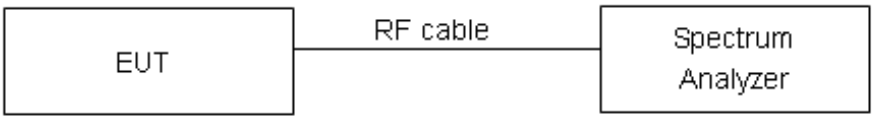
The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

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

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)			
802.11a	36/5180	7.73	7.94	7.42	7.63	6.92	7.13	7.30	7.51	13.58	13.98	PASS
	40/5200	7.42	7.64	7.37	7.58	6.68	6.90	7.26	7.47	13.43	13.98	PASS
	48/5240	7.99	8.20	7.86	8.07	7.09	7.31	7.31	7.52	13.81	13.98	PASS
802.11n HT20	36/5180	7.69	7.90	7.03	7.24	6.30	6.51	6.38	6.59	13.12	13.98	PASS
	40/5200	7.29	7.50	7.28	7.49	6.66	6.88	6.83	7.04	13.26	13.98	PASS
	48/5240	7.40	7.62	7.38	7.60	6.72	6.93	7.41	7.62	13.47	13.98	PASS
802.11n HT40	38/5190	3.11	3.55	3.12	3.56	2.35	2.79	2.73	3.17	9.30	13.98	PASS
	46/5230	4.10	4.54	4.39	4.82	3.85	4.28	3.92	4.36	10.53	13.98	PASS
802.11ac VHT20	36/5180	7.53	7.53	7.27	7.27	6.98	6.98	7.26	7.26	13.28	13.98	PASS
	40/5200	7.53	7.53	7.44	7.44	6.93	6.93	6.91	6.91	13.23	13.98	PASS
	48/5240	7.85	7.85	7.40	7.40	6.59	6.59	7.07	7.07	13.27	13.98	PASS
802.11ac VHT40	38/5190	7.19	7.34	6.84	6.98	6.58	6.72	6.69	6.83	12.99	13.98	PASS
	46/5230	7.41	7.56	7.09	7.23	7.05	7.19	7.11	7.26	13.33	13.98	PASS
802.11ac VHT80	42/5210	-1.40	-1.12	-0.93	-0.65	-1.47	-1.20	-1.92	-1.64	4.88	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-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)			
802.11a	149/5745	8.67	8.89	9.22	9.43	9.09	9.30	8.18	8.39	15.04	26.98	PASS
	157/5785	9.50	9.71	9.30	9.51	9.10	9.31	8.58	8.79	15.36	26.98	PASS
	165/5825	8.83	9.04	8.56	8.77	8.56	8.77	8.21	8.42	14.78	26.98	PASS
802.11n HT20	149/5745	9.49	9.70	9.63	9.85	9.70	9.92	9.04	9.25	15.71	26.98	PASS
	157/5785	9.71	9.93	9.10	9.31	8.78	8.99	9.32	9.53	15.47	26.98	PASS
	165/5825	9.66	9.87	9.05	9.27	9.07	9.28	8.44	8.65	15.31	26.98	PASS
802.11n HT40	151/5755	5.79	6.22	5.82	6.25	6.61	7.05	5.07	5.51	12.31	26.98	PASS
	159/5795	5.30	5.74	4.95	5.38	5.31	5.75	4.88	5.31	11.57	26.98	PASS
802.11ac VHT20	149/5745	8.04	8.04	7.95	7.95	8.28	8.28	7.52	7.52	13.98	26.98	PASS
	157/5785	8.42	8.42	8.07	8.07	8.57	8.57	7.27	7.27	14.13	26.98	PASS
	165/5825	8.48	8.48	7.41	7.41	7.97	7.97	7.04	7.04	13.78	26.98	PASS
802.11ac VHT40	151/5755	4.82	4.97	4.83	4.97	5.32	5.46	4.48	4.63	11.04	26.98	PASS
	159/5795	4.01	4.16	4.30	4.44	4.67	4.81	4.08	4.22	10.44	26.98	PASS
802.11ac VHT80	155/5775	-0.03	0.24	-0.21	0.07	0.87	1.14	-0.33	-0.06	6.40	26.98	PASS

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

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

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	7.47	7.69	7.32	7.53	6.61	6.82	6.59	6.80	13.25	13.98	PASS
	40/5200	7.31	7.52	7.61	7.82	6.99	7.20	7.00	7.21	13.47	13.98	PASS
	48/5240	7.84	8.05	7.67	7.88	7.07	7.28	7.37	7.58	13.73	13.98	PASS
802.11n HT40	38/5190	2.89	3.33	3.11	3.55	2.39	2.82	3.25	3.68	9.38	13.98	PASS
	46/5230	4.85	5.29	4.60	5.03	3.66	4.09	3.95	4.39	10.75	13.98	PASS
802.11ac VHT20	36/5180	7.44	7.44	7.24	7.24	6.60	6.60	6.74	6.74	13.04	13.98	PASS
	40/5200	7.18	7.18	7.16	7.16	6.97	6.97	7.14	7.14	13.14	13.98	PASS
	48/5240	7.67	7.67	7.93	7.93	6.99	6.99	7.45	7.45	13.54	13.98	PASS
802.11ac VHT40	38/5190	7.49	7.63	7.63	7.78	7.76	7.91	7.37	7.51	13.73	13.98	PASS
	46/5230	7.42	7.57	7.44	7.58	6.92	7.06	6.74	6.88	13.30	13.98	PASS
802.11ac VHT80	42/5210	-1.403	-1.13	-1.21	-0.94	-1.36	-1.09	-1.17	-0.90	5.01	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=$10\log(10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})}+10^{(\text{PSD antenna3 in dBm/10})}) +10^{(\text{PSD antenna4 in dBm/10})})$

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-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	9.01	9.22	9.28	9.49	9.17	9.38	8.57	8.78	15.25	26.98	PASS
	157/5785	9.59	9.80	9.53	9.74	9.35	9.56	8.84	9.05	15.57	26.98	PASS
	165/5825	9.20	9.41	9.50	9.71	9.56	9.77	9.03	9.24	15.56	26.98	PASS
802.11n HT40	151/5755	5.57	6.01	5.76	6.20	5.58	6.01	5.62	6.06	12.09	26.98	PASS
	159/5795	5.79	6.23	6.68	7.12	5.65	6.09	5.83	6.27	12.47	26.98	PASS
802.11ac VHT20	149/5745	8.24	8.24	8.03	8.03	8.16	8.16	8.49	8.49	14.25	26.98	PASS
	157/5785	8.05	8.05	8.18	8.18	8.10	8.10	8.18	8.18	14.15	26.98	PASS
	165/5825	8.06	8.06	8.13	8.13	8.19	8.19	7.99	7.99	14.11	26.98	PASS
802.11ac VHT40	151/5755	4.32	4.47	4.78	4.92	4.59	4.73	4.83	4.97	10.80	26.98	PASS
	159/5795	4.95	5.09	4.64	4.79	4.88	5.02	4.76	4.91	10.98	26.98	PASS
802.11ac VHT80	155/5775	0.04	0.32	0.10	0.38	0.14	0.42	0.09	0.37	6.39	26.98	PASS

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

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

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)

Antenna 1

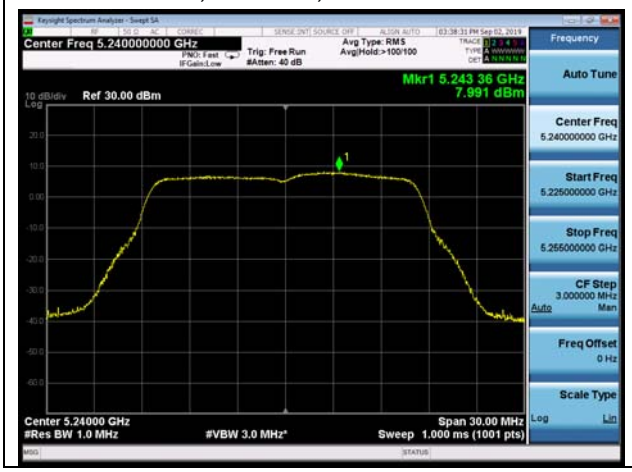
U-NII-1, 802.11a, Channel No.: 36

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

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

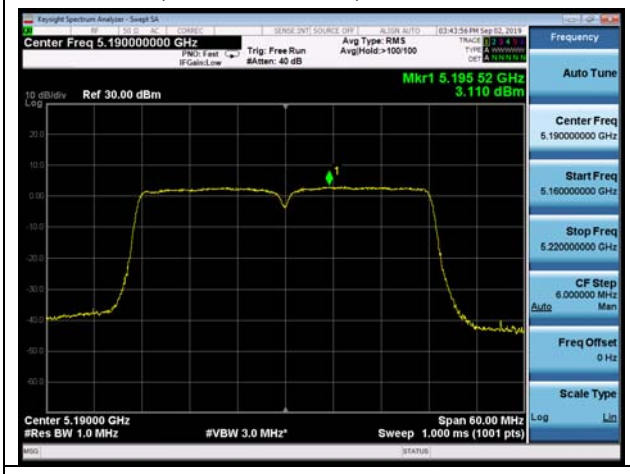
U-NII-1, 802.11n HT20, Channel No.: 40

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



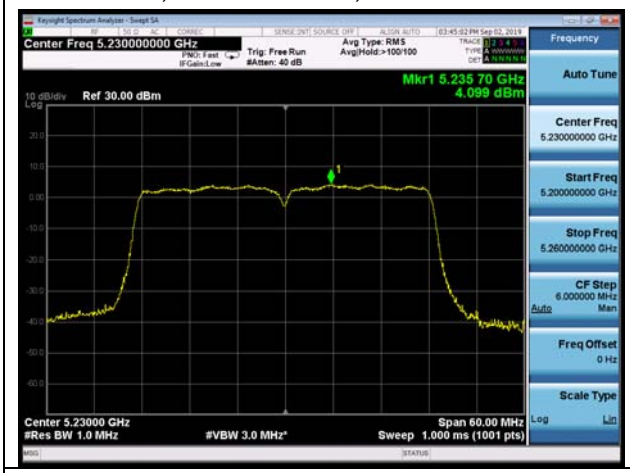
U-NII-1, 802.11n HT20, Channel No.: 48

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



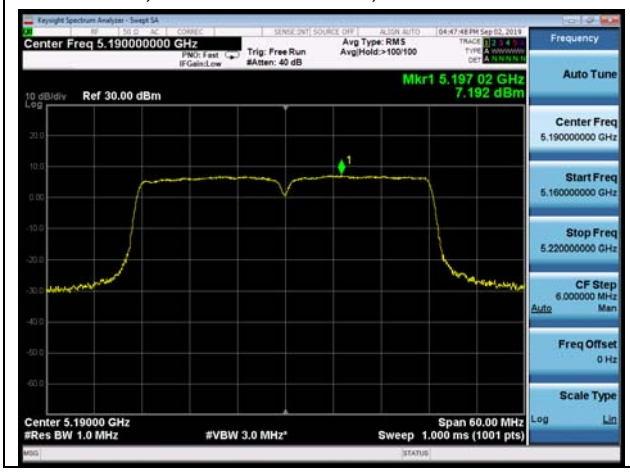
U-NII-1, 802.11ac VHT20, Channel No.: 36

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



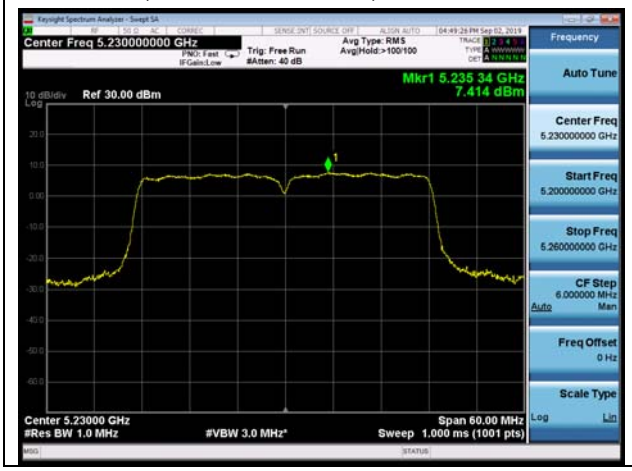
U-NII-1, 802.11ac VHT20, Channel No.: 40

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



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

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

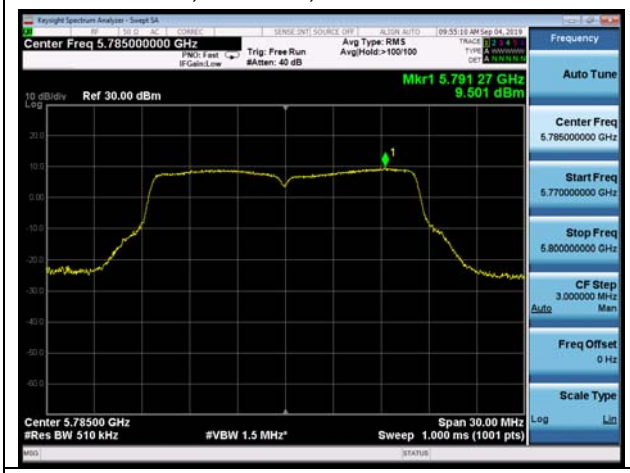


U-NII-1, 802.11ac VHT80, Channel No.: 42

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

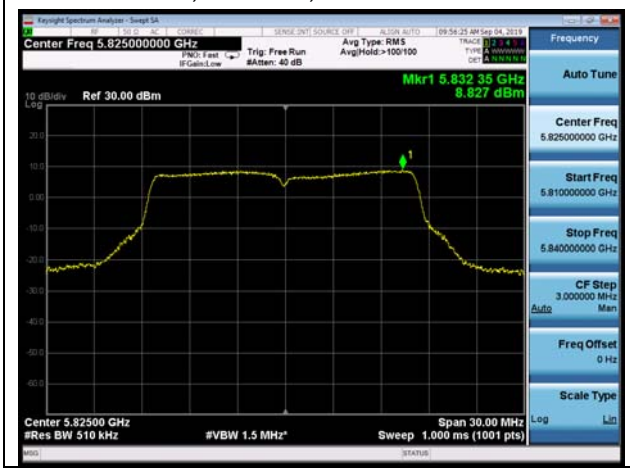
U-NII-3, 802.11n HT20, Channel No.: 149

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



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

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

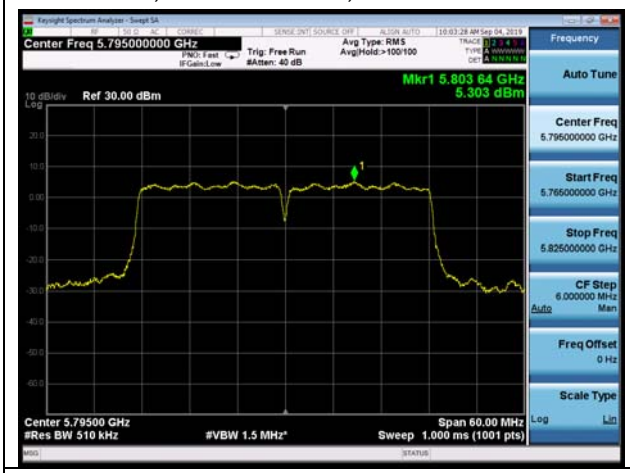


U-NII-3, 802.11n HT20, Channel No.: 165

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

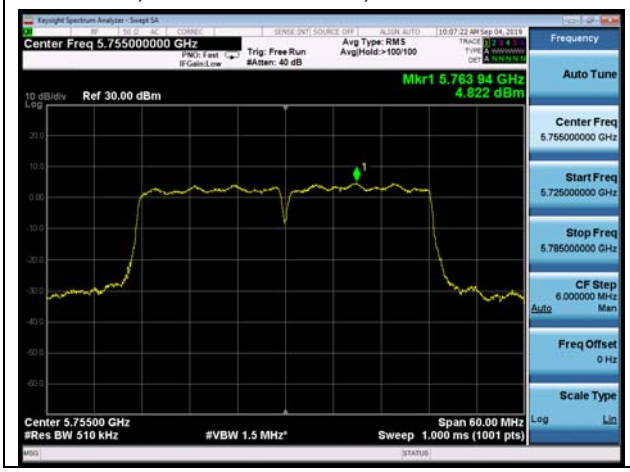
U-NII-3, 802.11ac VHT20, Channel No.: 149

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



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

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



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

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

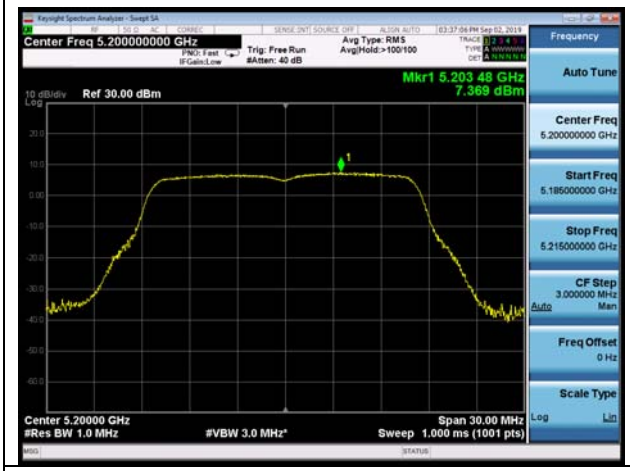
U-NII-3, 802.11ac VHT80, Channel No.: 155

Antenna 2

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

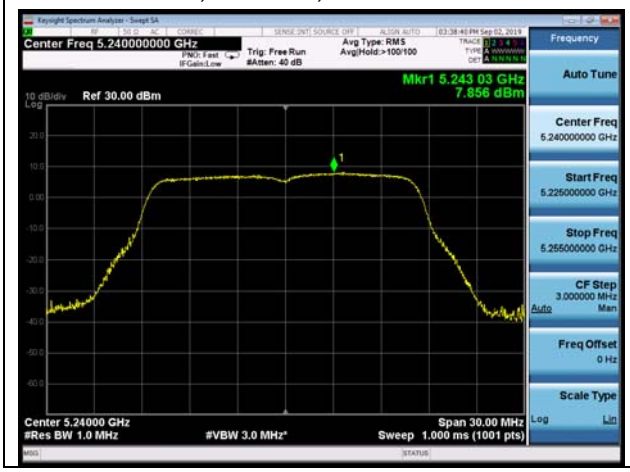
U-NII-1, 802.11n HT20, Channel No.: 36

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



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

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

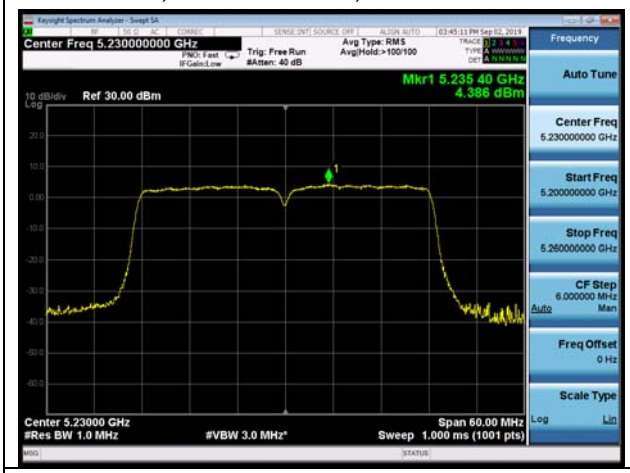


U-NII-1, 802.11n HT20, Channel No.: 48

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

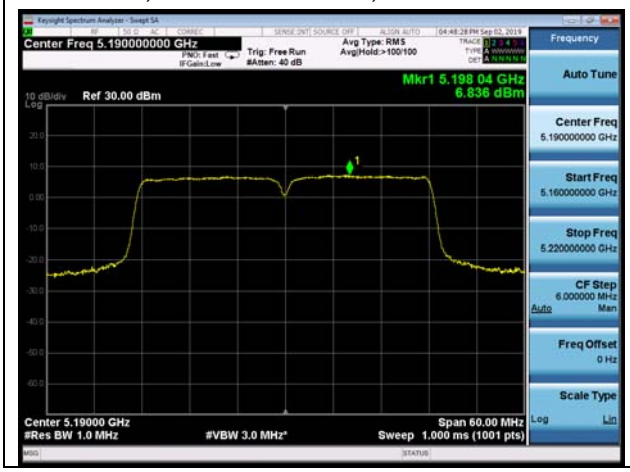
U-NII-1, 802.11ac VHT20, Channel No.: 36

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



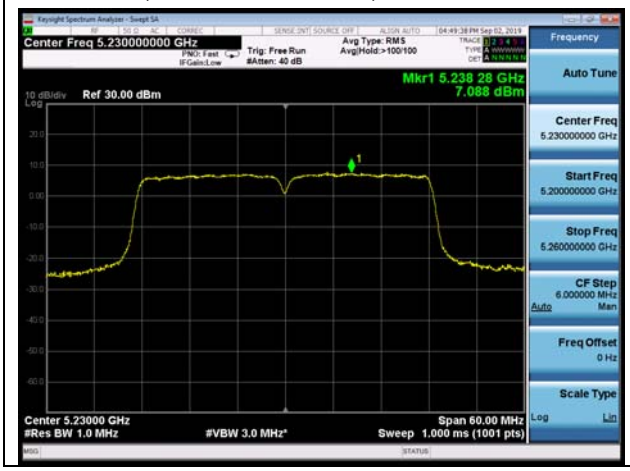
U-NII-1, 802.11ac VHT20, Channel No.: 40

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



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

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

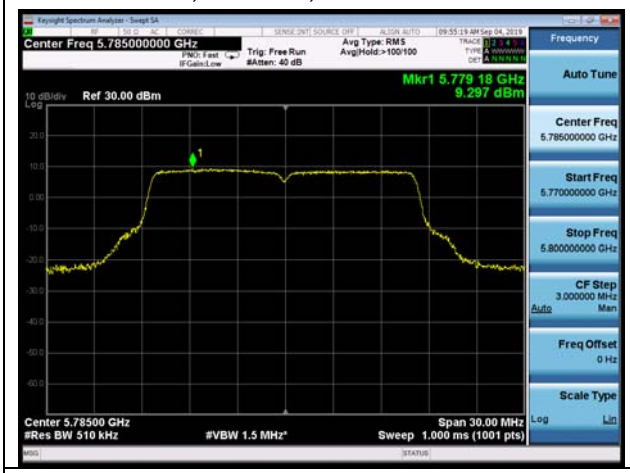


U-NII-1, 802.11ac VHT80, Channel No.: 42

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

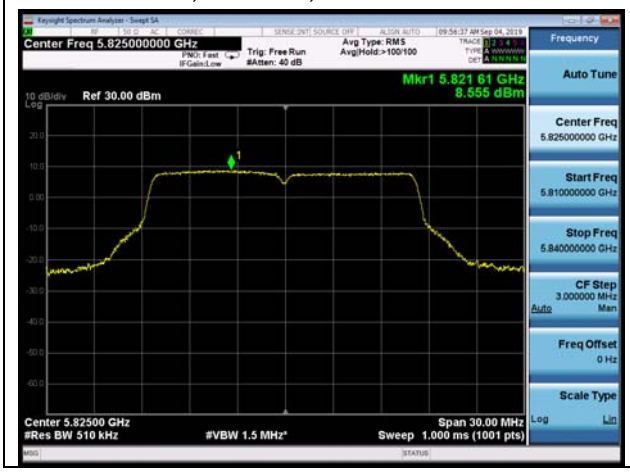
U-NII-3, 802.11n HT20, Channel No.: 149

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



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

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

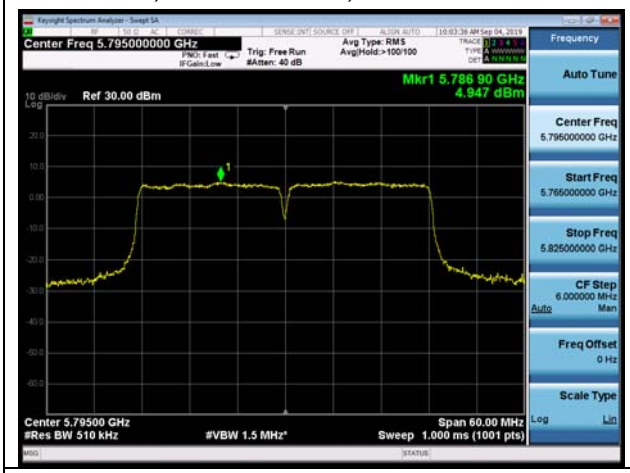


U-NII-3, 802.11n HT20, Channel No.: 165

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

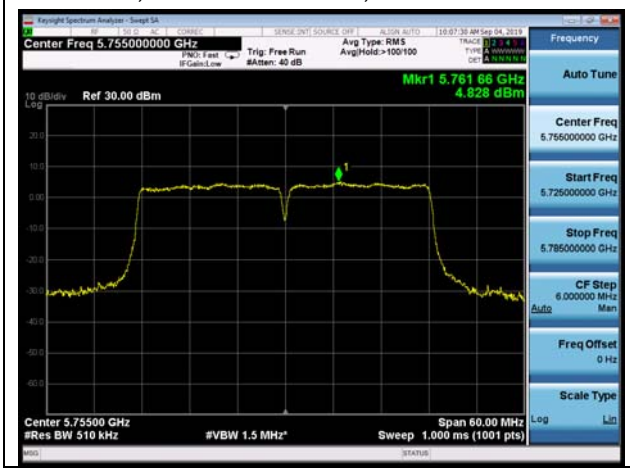
U-NII-3, 802.11ac VHT20, Channel No.: 149

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



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

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



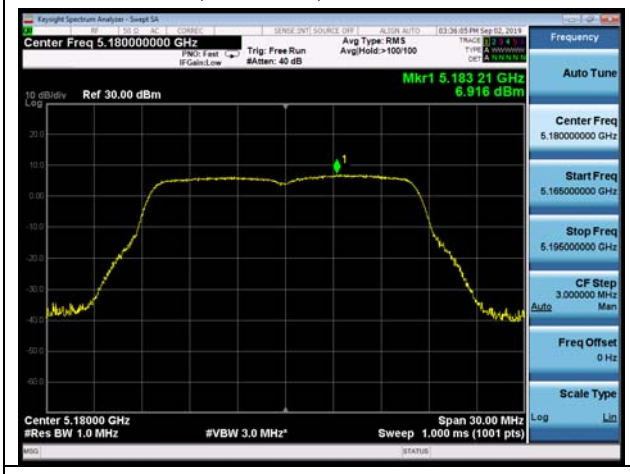
U-NII-3, 802.11ac VHT20, Channel No.: 165

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

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

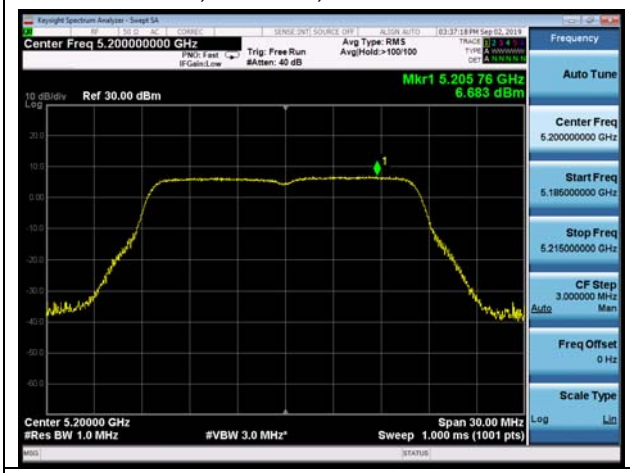
Antenna 3

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



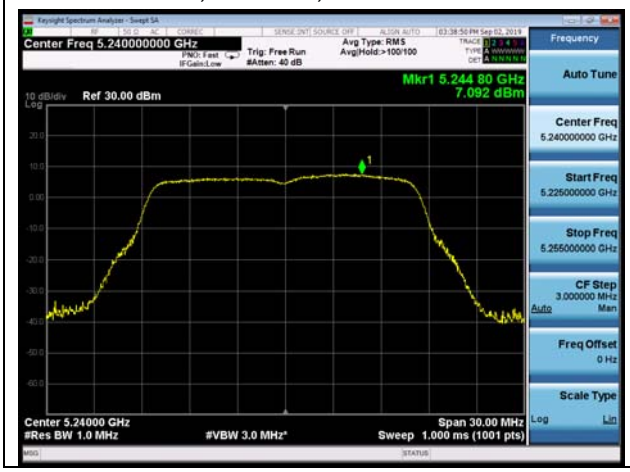
U-NII-1, 802.11n HT20, Channel No.: 36

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



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

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

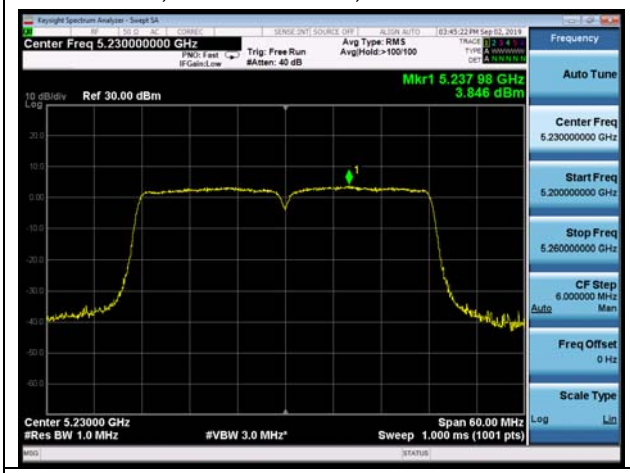


U-NII-1, 802.11n HT20, Channel No.: 48

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

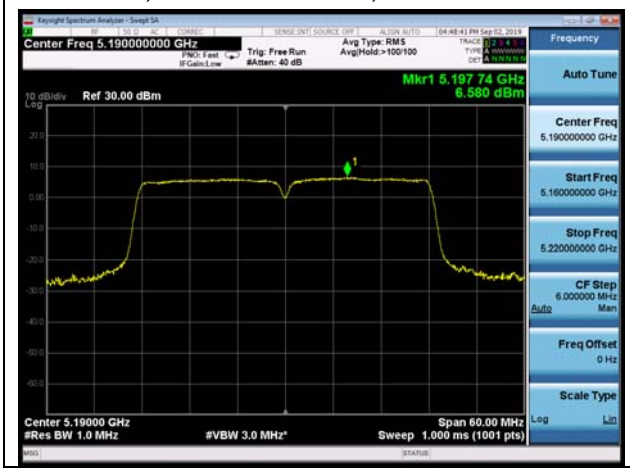
U-NII-1, 802.11ac VHT20, Channel No.: 36

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



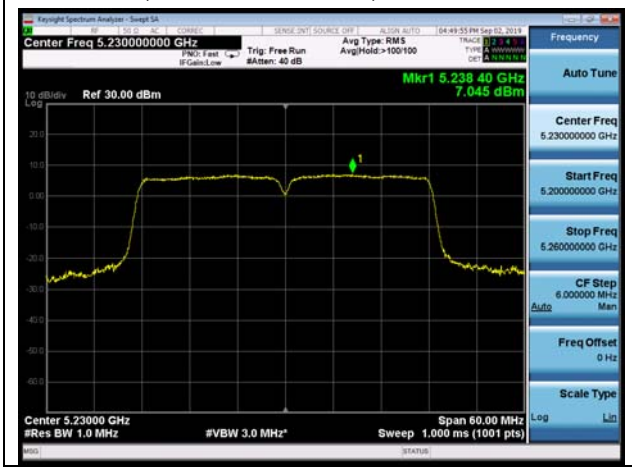
U-NII-1, 802.11ac VHT20, Channel No.: 40

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



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

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

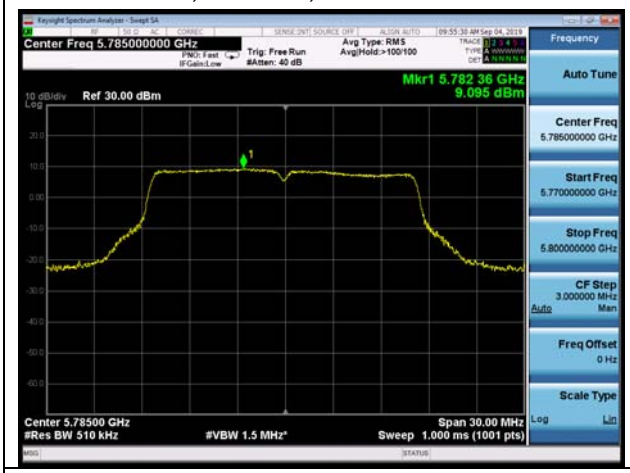


U-NII-1, 802.11ac VHT80, Channel No.: 42

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

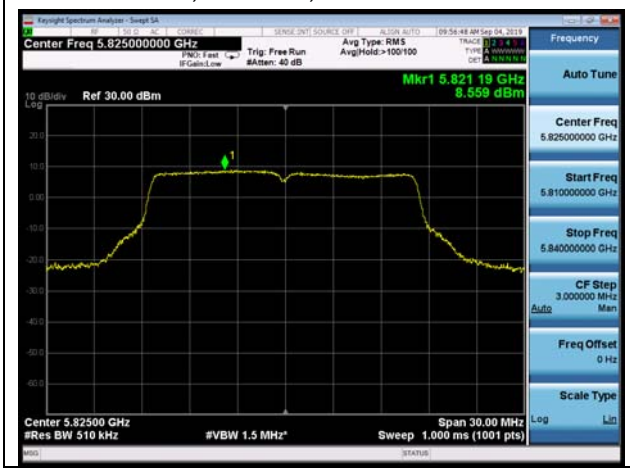
U-NII-3, 802.11n HT20, Channel No.: 149

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



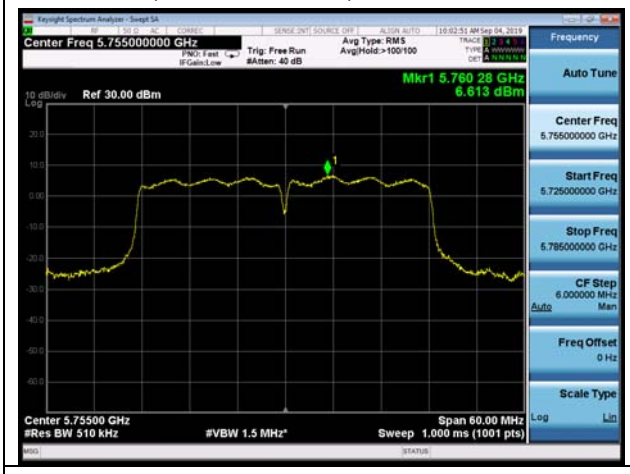
U-NII-3, 802.11n HT20, Channel No.: 157

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



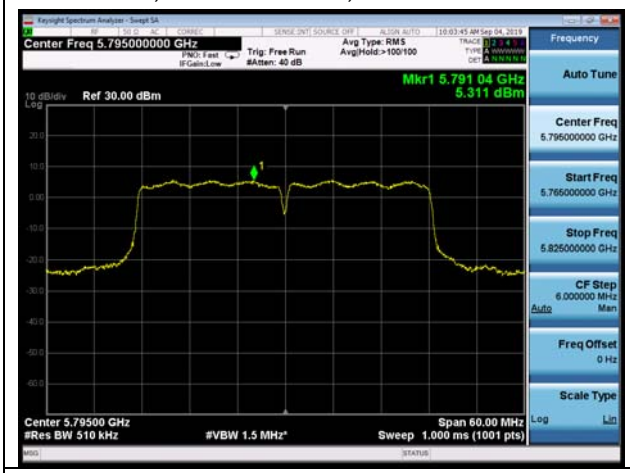
U-NII-3, 802.11n HT20, Channel No.: 165

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



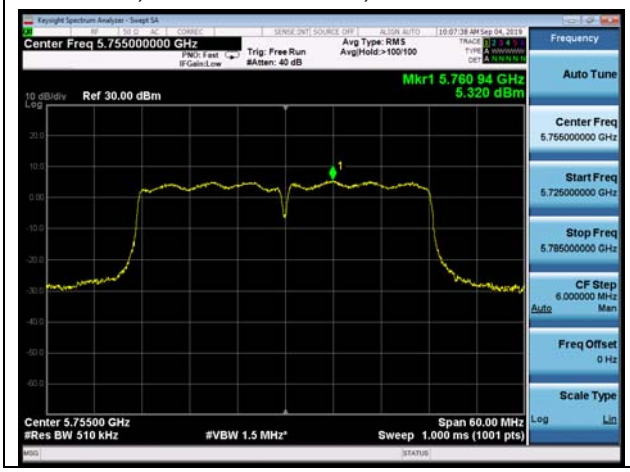
U-NII-3, 802.11ac VHT20, Channel No.: 149

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



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

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



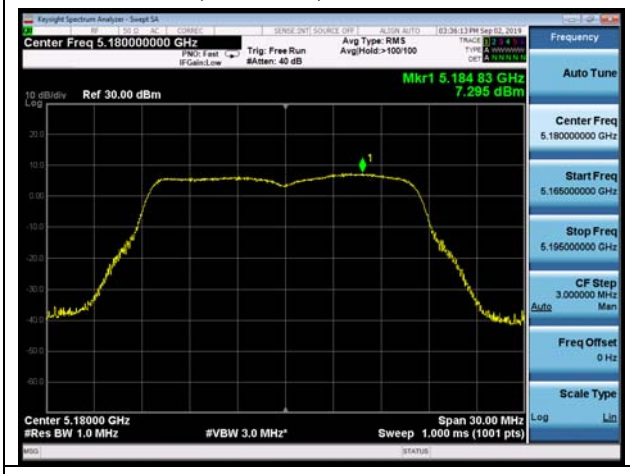
U-NII-3, 802.11ac VHT20, Channel No.: 165

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

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

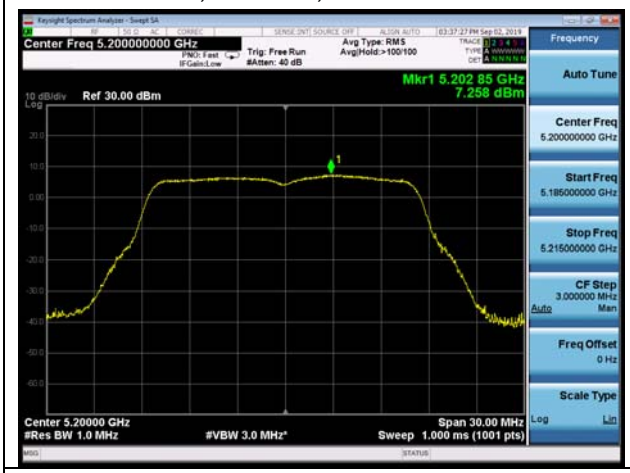
Antenna 4

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



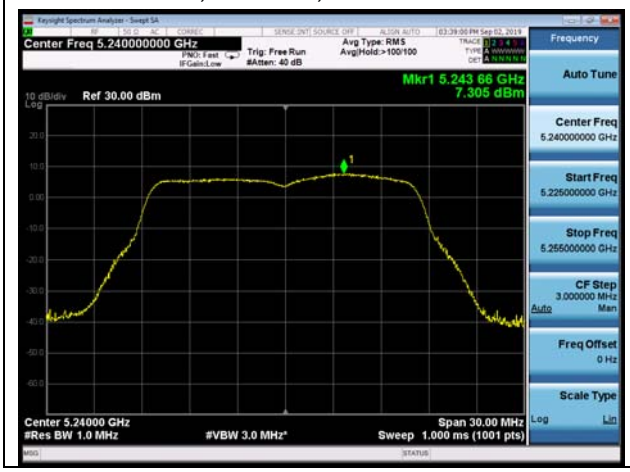
U-NII-1, 802.11n HT20, Channel No.: 36

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



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

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

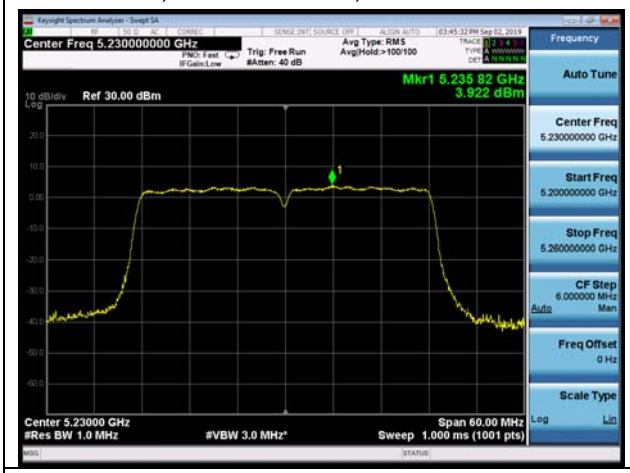


U-NII-1, 802.11n HT20, Channel No.: 48

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

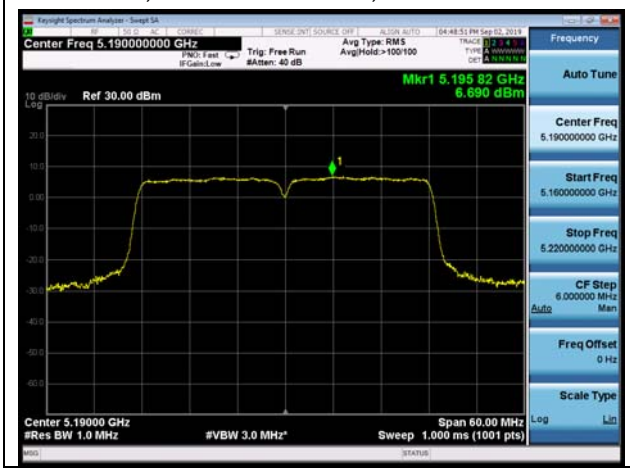
U-NII-1, 802.11ac VHT20, Channel No.: 36

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



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

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



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

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

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