



RF TEST REPORT

Applicant SKSpruce Technologies Co., Ltd.

FCC ID 2AHKT-WOA5300-20

Product Outdoor Access Point

Brand SKSPRUCE

Model WOA5300-20

Report No. R1805A0243-R2V2

Issue Date November 21, 2018

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

Performed by: Peng Tao

Approved by: Kai Xu

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TABLE OF CONTENT

1.	Test Laboratory	4
1.1.	Notes of the test report.....	4
1.2.	Test facility	4
1.3.	Testing Location.....	5
2.	General Description of Equipment under Test.....	6
3.	Applied Standards	7
4.	Test Configuration	8
5.	Test Case Results	11
5.1.	Occupied Bandwidth	11
5.2.	Average Power Output –Conducted.....	29
5.3.	Frequency Stability.....	41
5.4.	Power Spectral Density.....	45
5.5.	Unwanted Emission	103
5.6.	Conducted Emission	190
6.	Main Test Instruments.....	192



Summary of measurement results

Number	Summary of measurements of results	Clause in FCC rules	Verdict
1	Average conducted output power	15.407(a)	PASS
2	Occupied bandwidth	15.407(e)	PASS
3	Frequency stability	15.407(g)	PASS
4	Maximum power spectral density	15.407(a)	PASS
5	Unwanted Emissions	15.407(b)	PASS
6	Conducted Emissions	15.207	PASS
Date of Testing: June 4, 2018~ July 9, 2018 and September 25, 2018			



1. Test Laboratory

1.1. Notes of the test report

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

1.2. Test facility

CNAS (accreditation number: L2264)

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

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

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

IC (recognition number is 8510A)

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

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

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

A2LA (Certificate Number: 3857.01)

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



1.3. Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
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City: Shanghai
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2. General Description of Equipment under Test

Client Information

Applicant	SKSpruce Technologies Co., Ltd.
Applicant address	A1, Tianfu Software Park, 1129 Century City Road, Hi-tech Zone, Chengdu, China
Manufacturer	SKSpruce Technologies Co., Ltd.
Manufacturer address	A1, Tianfu Software Park, 1129 Century City Road, Hi-tech Zone, Chengdu, China

General information

EUT Description	
Model	WOA5300-20
SN	8162017081500043
Hardware Version	A0
Software Version	AmOS 3.0
Power Supply	AC adapter
Antenna Type	Internal Antenna
Antenna Gain	Antenna 1: 10 dBi Antenna 2: 10 dBi
additional beamforming gain	NA
Test Mode(s)	U-NII-1(5150MHz-5250MHz) U-NII-2A(5250MHz-5350MHz) U-NII-2C(5470MHz-5725MHz with 5600MHz -5650MHz) U-NII-3(5725MHz-5850MHz)
Modulation Type	802.11a/n (HT20/HT40) : OFDM 802.11ac (VHT20/VHT40/VHT80): OFDM
Max. Conducted Power	25.93 dBm
Operating Frequency Range(s)	U-NII-1: 5150-5250MHz U-NII-2A:5250-5350MHz U-NII-2C:5470-5725MHz (with 5600MHz -5650MHz) U-NII-3: 5725-5850MHz
Operating temperature range:	-30 ° C to 65° C
Operating voltage range:	40 V to 55 V
State AC voltage:	48V
EUT Accessory	
Adapter	Manufacturer: PROCET(Creative Lianjie Network Technology Co.Ltd) Model: PT-PSE106GRO
Note: The information of the EUT is declared by the manufacturer.	



3. Applied Standards

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

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

ANSI C63.10 (2013)

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01



4. Test Configuration

Test Mode

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

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

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

Worst-case data rates are shown as following table.

Band	Data Rate		
	Antenna 1	Antenna 2	MIMO
802.11a	6 Mbps	6 Mbps	6 Mbps
802.11n HT20	MCS0	MCS0	MCS8
802.11n HT40	MCS0	MCS0	MCS8
802.11ac VHT20	MCS0	MCS0	MCS8
802.11ac VHT40	MCS0	MCS0	MCS8
802.11ac VHT80	MCS0	MCS0	MCS8

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

Test Cases	Antenna 1	Antenna 2	MIMO
Average conducted output power	O	O	O
Occupied bandwidth	--	--	O
Frequency stability	--	--	--
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
	U-NII-2A	40 MHz	38	5190MHz
			46	5230MHz
		80 MHz	42	5210MHz
	U-NII-2C	20 MHz	52	5260MHz
			56	5280MHz
			60	5300MHz
			64	5320MHz
		40 MHz	54	5270MHz
			62	5310MHz
			58	5290MHz
			100	5500MHz
			104	5520MHz
	U-NII-3	20 MHz	108	5540MHz
			112	5560MHz
			116	5580MHz
			120	5600MHz
			124	5620MHz
			128	5640MHz
			132	5660MHz
			136	5680MHz
			140	5700MHz
			102	5510MHz
	U-NII-2A	40 MHz	110	5550MHz
			118	5590MHz
			126	5630MHz
			134	5670MHz
			142	5710MHz
			106	5530MHz
	U-NII-2C	80 MHz	122	5610MHz
			138	5690MHz
			149	5745MHz
	U-NII-3	20 MHz	153	5765MHz
			157	5785MHz
			161	5805MHz



		165	5825MHz
40 MHz	151	5755MHz	
	159	5795MHz	
	155	5775MHz	
Does this device support TPC Function? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Does this device support TDWR Band? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.

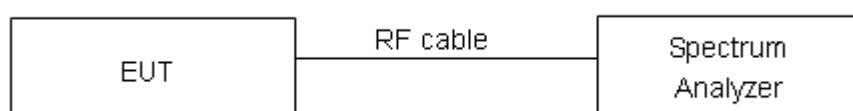
For U-NII-1, set RBW \approx 1% OCB kHz, VBW $\geq 3 \times$ RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the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

For U-NII-3, Set RBW = 100 kHz, VBW $\geq 3 \times$ 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	16.402	19.160	PASS
	5200	16.398	18.950	PASS
	5240	16.400	18.820	PASS
802.11n HT20	5180	17.593	20.100	PASS
	5200	17.592	20.150	PASS
	5240	17.582	19.780	PASS
802.11n HT40	5190	35.971	39.850	PASS
	5230	35.927	39.510	PASS
802.11ac VHT20	5180	17.595	20.030	PASS
	5200	17.579	19.950	PASS
	5240	17.581	19.880	PASS
802.11ac VHT40	5190	35.943	39.680	PASS
	5230	35.923	39.380	PASS
802.11ac VHT80	5210	75.756	82.720	PASS

U-NII-2A

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5260	16.383	19.100	PASS
	5300	16.396	18.970	PASS
	5320	16.379	18.910	PASS
802.11n HT20	5260	17.590	19.810	PASS
	5300	17.586	19.770	PASS
	5320	17.578	19.750	PASS
802.11n HT40	5270	35.855	39.200	PASS
	5310	35.885	38.970	PASS
802.11ac VHT20	5260	17.578	19.740	PASS
	5300	17.571	19.950	PASS
	5320	17.587	19.810	PASS
802.11ac VHT40	5270	35.863	39.240	PASS
	5310	35.954	39.020	PASS
802.11ac VHT80	5290	76.910	120.000	PASS



U-NII-2C

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5500	16.385	19.120	PASS
	5580	16.382	19.030	PASS
	5700	16.378	18.990	PASS
802.11n HT20	5500	17.571	19.800	PASS
	5580	17.578	19.740	PASS
	5700	17.575	19.870	PASS
802.11n HT40	5510	35.874	38.980	PASS
	5550	35.940	39.090	PASS
	5670	35.916	39.230	PASS
802.11ac VHT20	5500	17.581	20.050	PASS
	5580	17.580	19.890	PASS
	5700	17.576	19.890	PASS
802.11ac VHT40	5510	35.894	39.030	PASS
	5550	35.862	39.030	PASS
	5670	35.865	38.940	PASS
802.11ac VHT80	5530	75.640	83.090	PASS

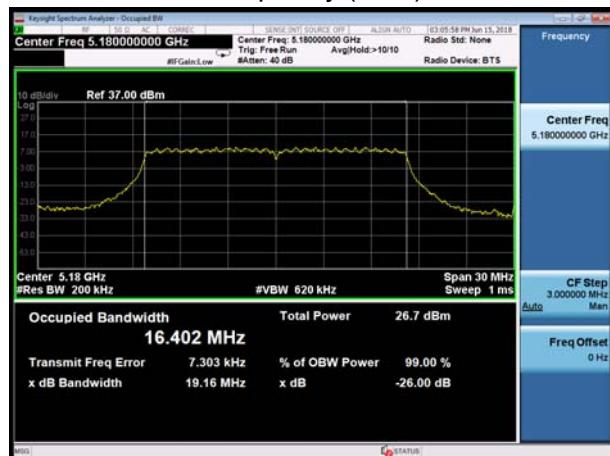
U-NII-3

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	16.508	16.370	500	PASS
	5785	16.477	16.380	500	PASS
	5825	16.416	16.400	500	PASS
802.11n HT20	5745	17.692	17.620	500	PASS
	5785	17.650	17.600	500	PASS
	5825	17.623	17.610	500	PASS
802.11n HT40	5755	35.952	34.500	500	PASS
	5795	35.917	35.110	500	PASS
802.11ac VHT20	5745	17.678	17.590	500	PASS
	5785	17.657	17.610	500	PASS
	5825	17.625	17.620	500	PASS
802.11ac VHT40	5755	35.981	34.950	500	PASS
	5795	35.925	35.190	500	PASS
802.11ac VHT80	5775	75.852	75.510	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



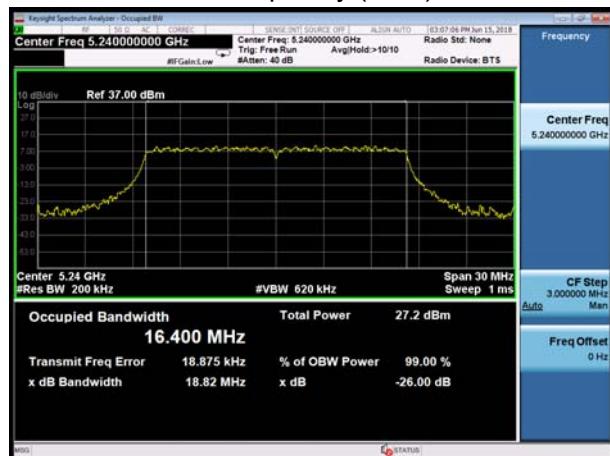
U-NII-1, 802.11n HT20

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, 802.11ac VHT20

Carrier frequency (MHz): 5180



U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5230



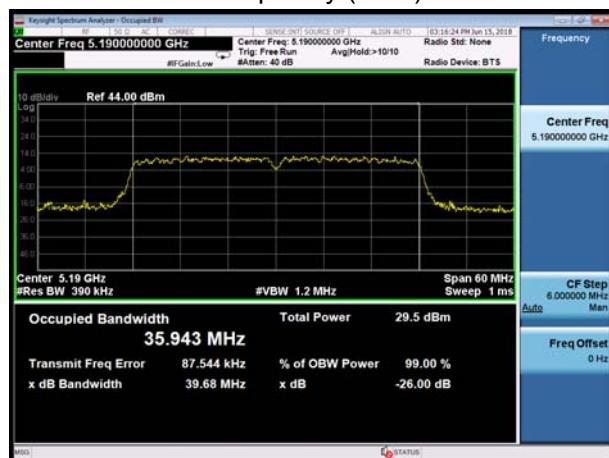
U-NII-1, 802.11ac VHT20

Carrier frequency (MHz): 5200



U-NII-1, 802.11ac VHT40

Carrier frequency (MHz): 5190



U-NII-1, 802.11ac VHT20

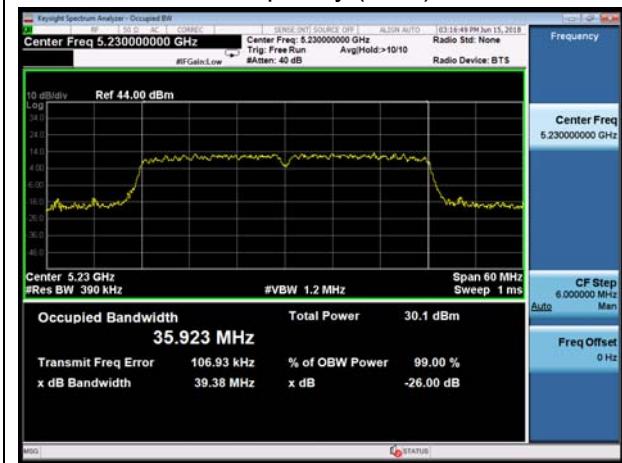
Carrier frequency (MHz): 5240





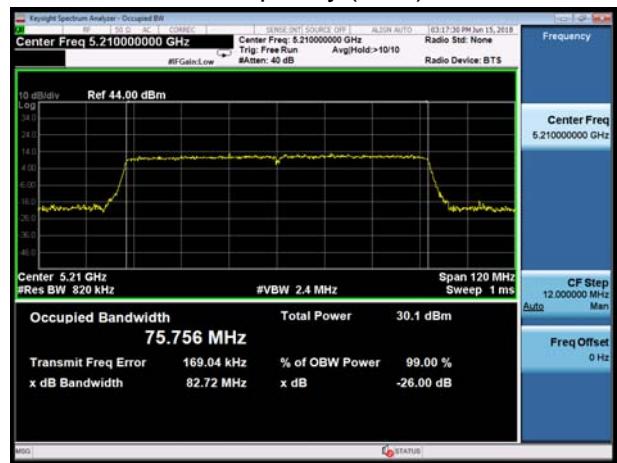
U-NII-1, 802.11ac VHT40

Carrier frequency (MHz): 5230



U-NII-1, 802.11ac VHT80

Carrier frequency (MHz): 5210





U-NII-2A, 802.11a

Carrier frequency (MHz): 5260



U-NII-2A, 802.11n HT20

Carrier frequency (MHz): 5260



U-NII-2A, 802.11a

Carrier frequency (MHz): 5300



U-NII-2A, 802.11n HT20

Carrier frequency (MHz): 5300



U-NII-2A, 802.11a

Carrier frequency (MHz): 5320



U-NII-2A, 802.11n HT20

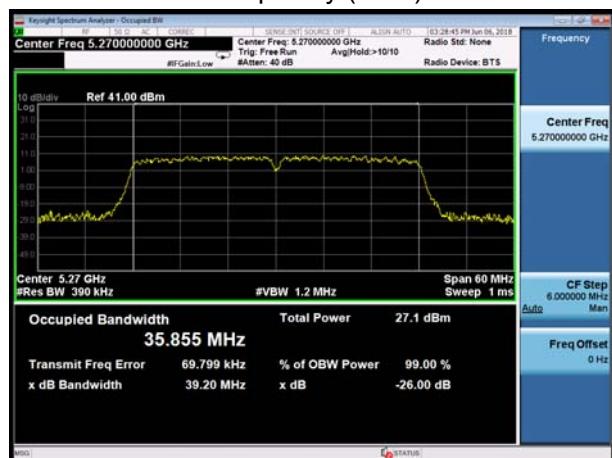
Carrier frequency (MHz): 5320





U-NII-2A, 802.11n HT40

Carrier frequency (MHz): 5270



U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz): 5260



U-NII-2A, 802.11n HT40

Carrier frequency (MHz): 5310



U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz): 5300



U-NII-2A, 802.11ac VHT40

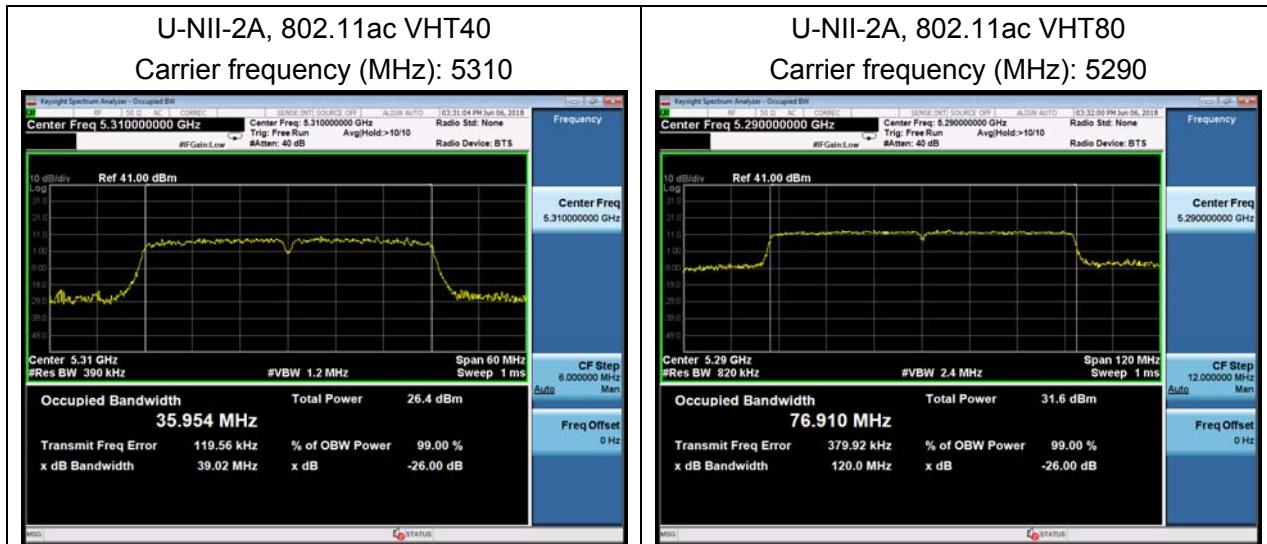
Carrier frequency (MHz): 5270



U-NII-2A, 802.11ac VHT20

Carrier frequency (MHz): 5320







U-NII-2C, 802.11a

Carrier frequency (MHz): 5500



U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5500



U-NII-2C, 802.11a

Carrier frequency (MHz): 5580



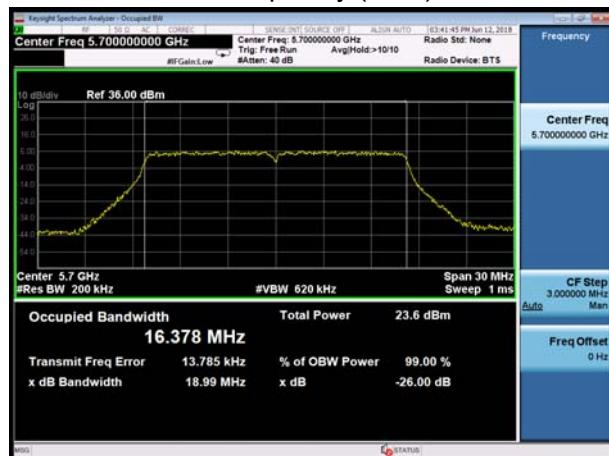
U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5580



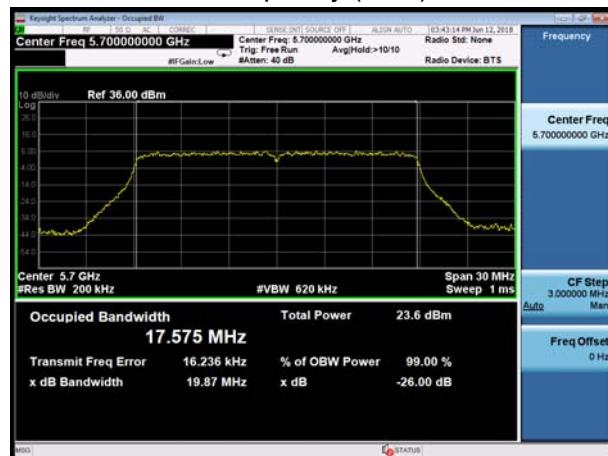
U-NII-2C, 802.11a

Carrier frequency (MHz): 5700



U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5700





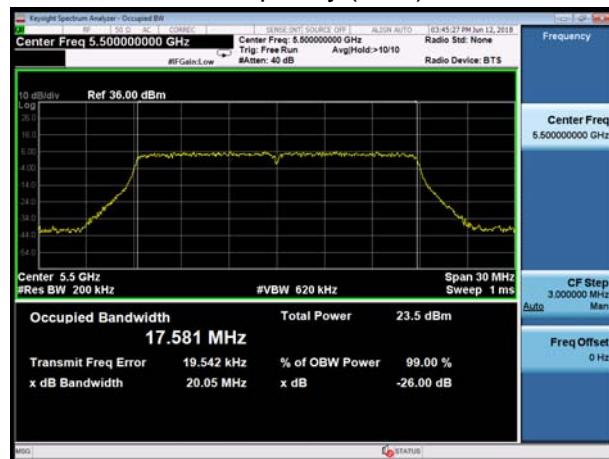
U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5510



U-NII-2C, 802.11ac VHT20

Carrier frequency (MHz): 5500



U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5550



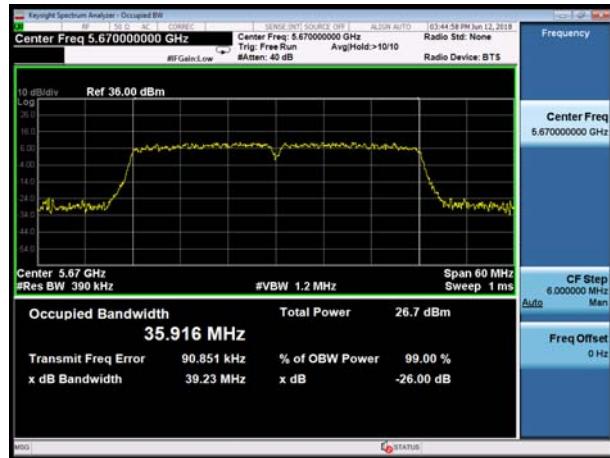
U-NII-2C, 802.11ac VHT20

Carrier frequency (MHz): 5580



U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5670



U-NII-2C, 802.11ac VHT20

Carrier frequency (MHz): 5700





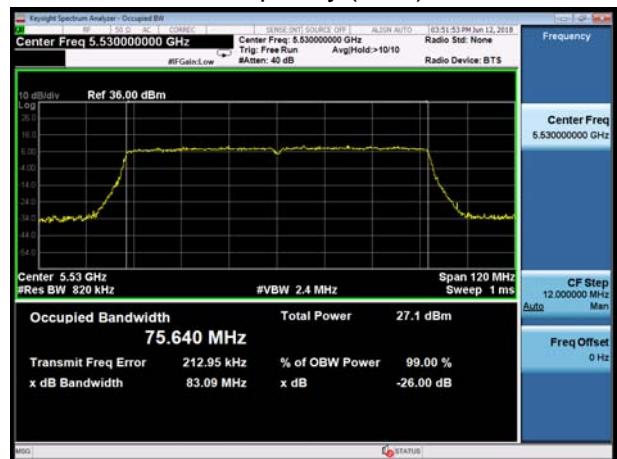
U-NII-2C, 802.11ac VHT40

Carrier frequency (MHz): 5510



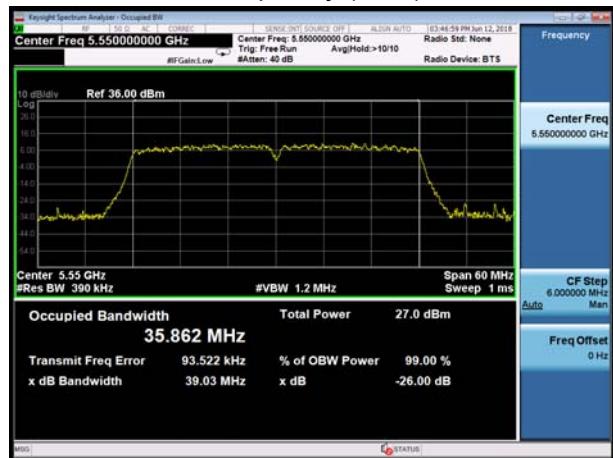
U-NII-2C, 802.11ac VHT80

Carrier frequency (MHz): 5530



U-NII-2C, 802.11ac VHT40

Carrier frequency (MHz): 5550



U-NII-2C, 802.11ac VHT40

Carrier frequency (MHz): 5670





99% bandwidth

U-NII-3, 802.11a

Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745



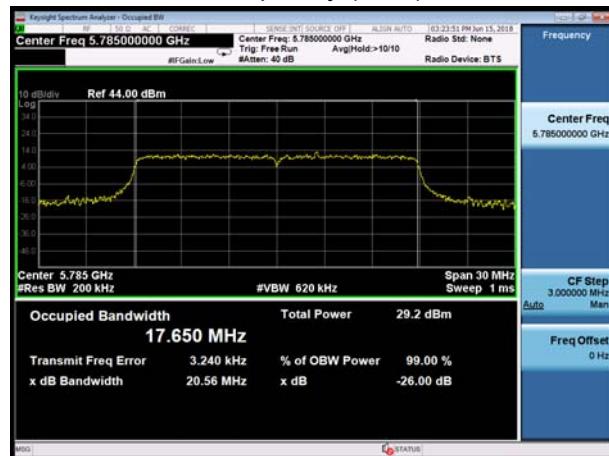
U-NII-3, 802.11a

Carrier frequency (MHz): 5785



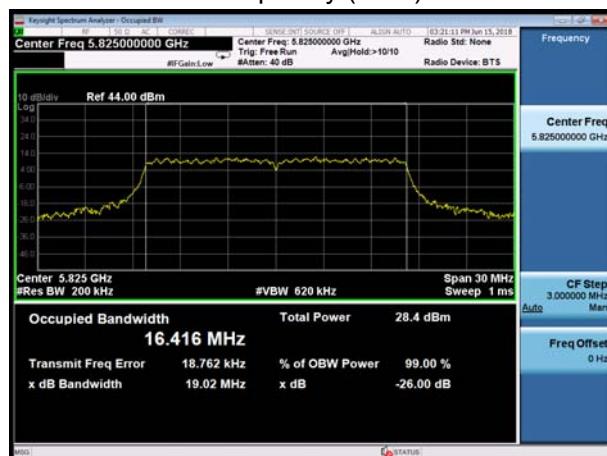
U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785



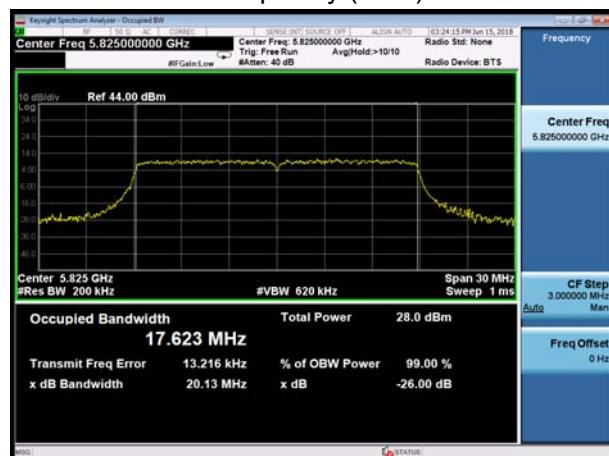
U-NII-3, 802.11a

Carrier frequency (MHz): 5825



U-NII-3, 802.11n HT20

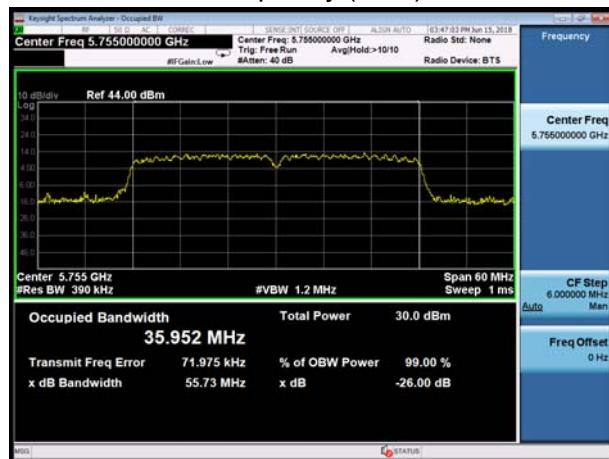
Carrier frequency (MHz): 5825





U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755



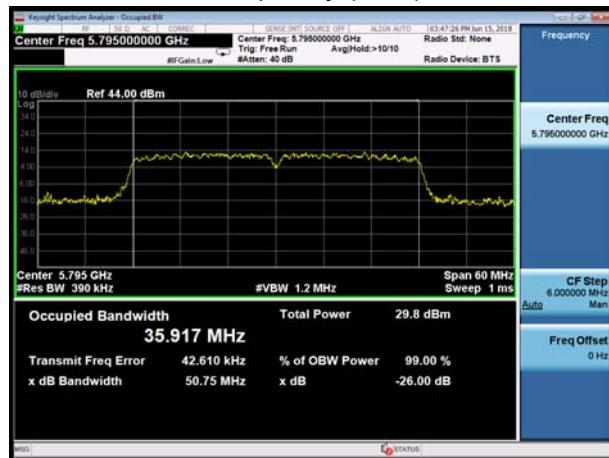
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745



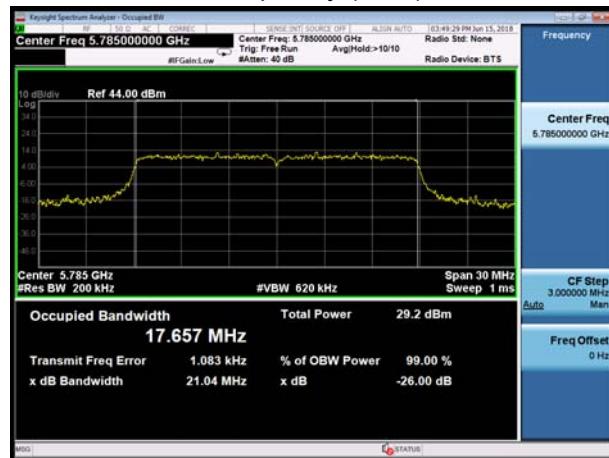
U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795



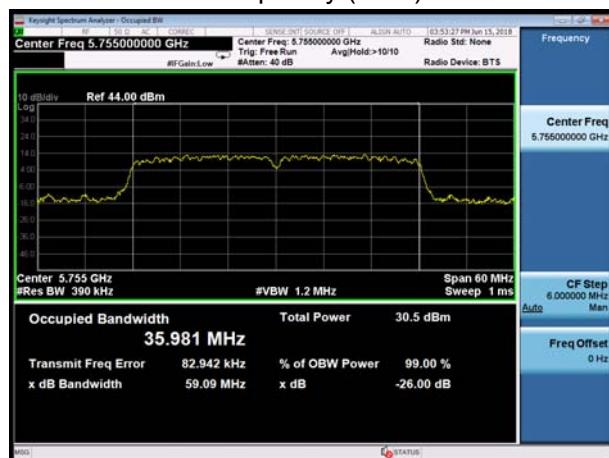
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5785



U-NII-3, 802.11ac VHT40

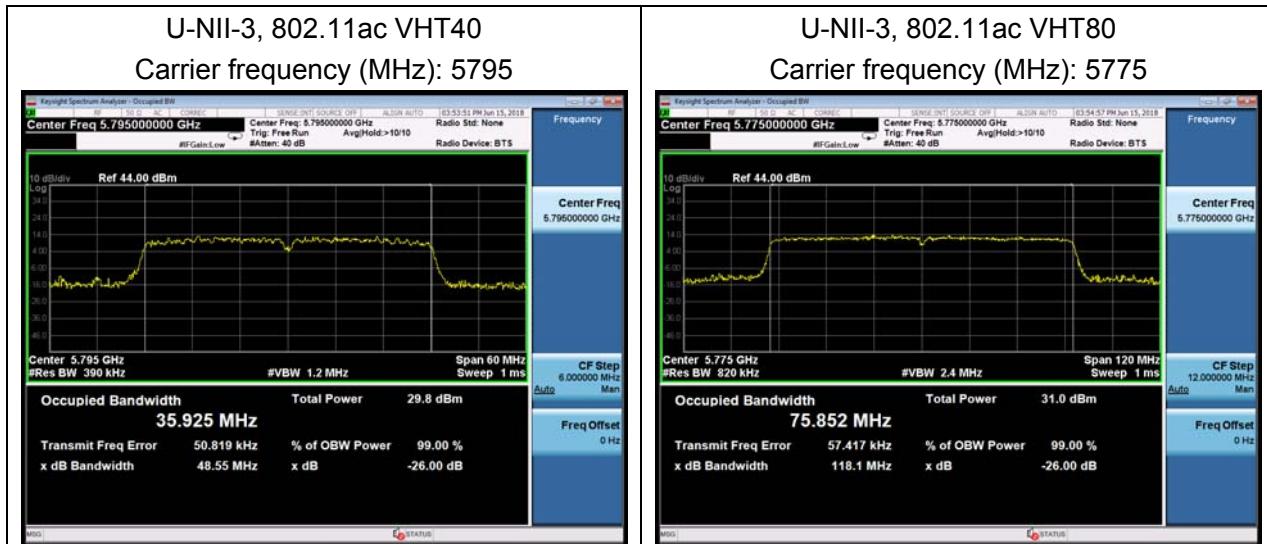
Carrier frequency (MHz): 5755



U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5825







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



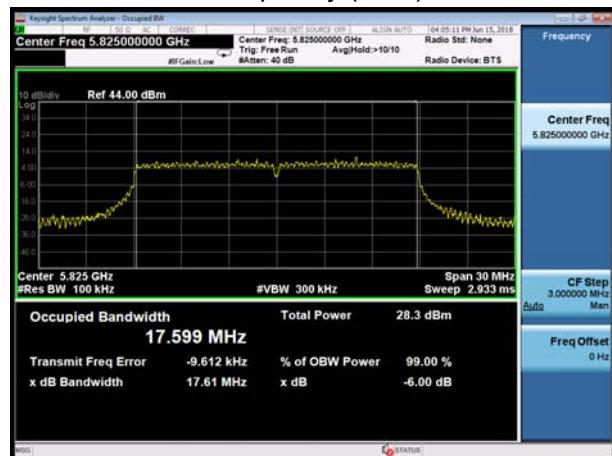
U-NII-3, 802.11a

Carrier frequency (MHz): 5825



U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825





U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755



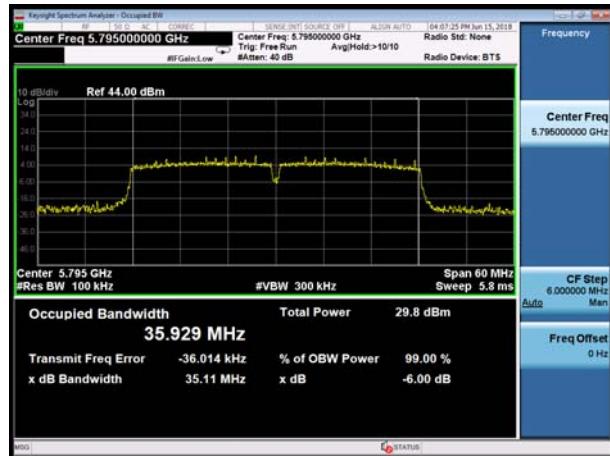
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5745



U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795



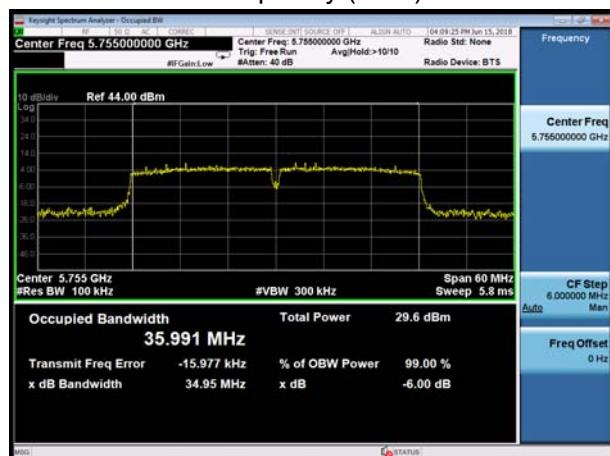
U-NII-3, 802.11ac VHT20

Carrier frequency (MHz): 5785



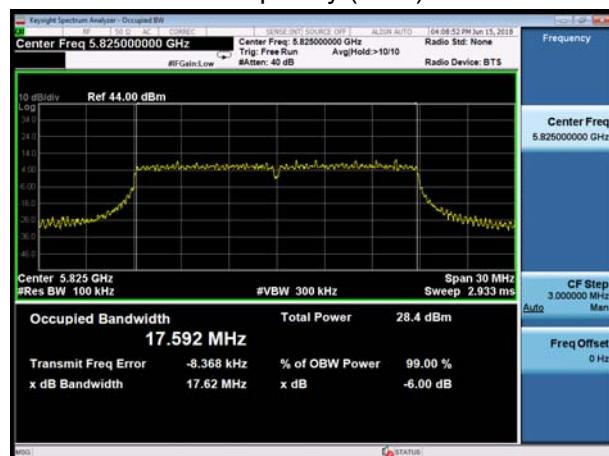
U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5755



U-NII-3, 802.11ac VHT20

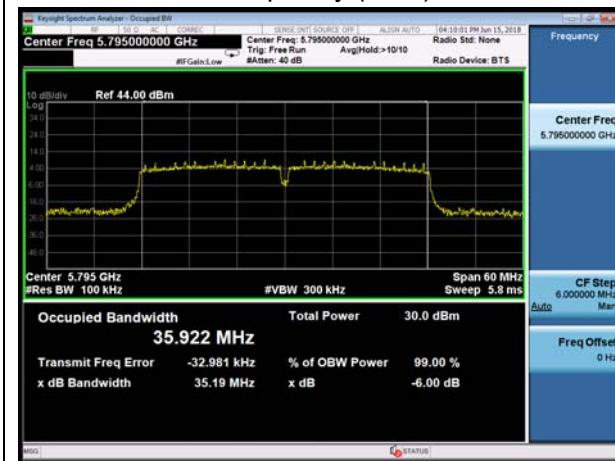
Carrier frequency (MHz): 5825





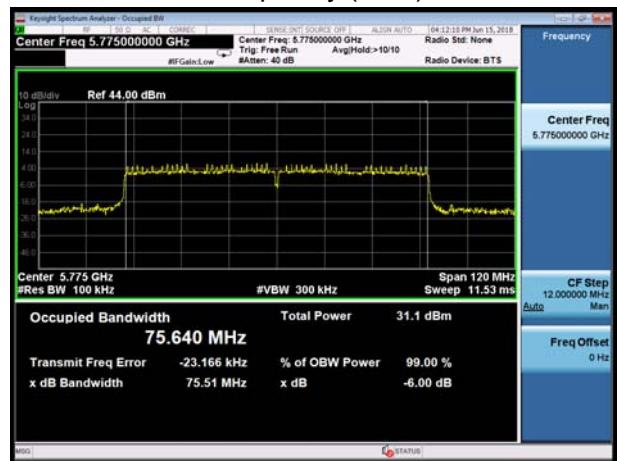
U-NII-3, 802.11ac VHT40

Carrier frequency (MHz): 5795



U-NII-3, 802.11ac VHT80

Carrier frequency (MHz): 5775



5.2. Average Power Output –Conducted

Ambient condition

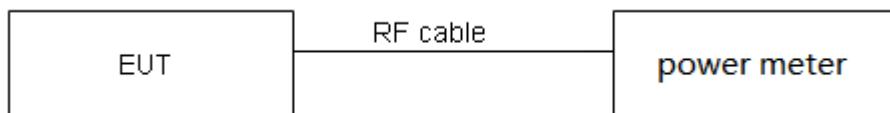
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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)

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

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, 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.

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 $k = 2$, $U = 0.44 \text{ dB}$.



Test Results

Band	T _{on} (ms)	T _(on+off) (ms)	Duty cycle	Duty cycle correction Factor(dB)
802.11a	2.06	2.14	0.97	0.15
802.11n HT20	5.01	5.09	0.98	NA
802.11n HT40	2.42	2.50	0.97	0.14
802.11ac VHT20	5.01	5.09	0.98	NA
802.11ac VHT40	2.43	2.51	0.97	0.14
802.11ac VHT80	1.15	1.22	0.94	0.28

Note: when Duty cycle>0.98, Duty cycle correction Factor not required.

Antenna 1 Gain Index

Packet Type	CH36	CH40	CH48	CH52	CH60	CH64	CH100	CH116	CH140	CH149	CH157	CH165
802.11a	29	29	29	20	19	19	16	17	17	25	25	25
802.11n HT20	29	29	29	20	19	19	16	17	17	25	25	25
802.11ac VHT20	29	29	29	20	19	19	16	17	17	25	25	25
Packet Type	CH38	CH46	CH54	CH62	CH102	CH110	CH134	CH151	CH159	/	/	/
802.11n HT40	29	29	20	19	16	17	17	25	25	/	/	/
802.11ac VHT40	29	29	20	19	16	17	17	25	25	/	/	/
Packet Type	CH42	CH58	CH106	CH155	/	/	/	/	/	/	/	/
802.11ac VHT80	30	20	17	26	/	/	/	/	/	/	/	/

Antenna 2 Gain Index

Packet Type	CH36	CH40	CH48	CH52	CH60	CH64	CH100	CH116	CH140	CH149	CH157	CH165
802.11a	29	29	29	20	19	19	18	17	17	25	25	25
802.11n HT20	29	29	28	20	19	19	18	17	17	25	25	25
802.11ac VHT20	29	29	28	20	19	19	18	18	17	25	25	25
Packet Type	CH38	CH46	CH54	CH62	CH102	CH110	CH134	CH151	CH159	/	/	/
802.11n HT40	29	28	20	19	17	18	17	25	25	/	/	/
802.11ac VHT40	29	28	20	19	17	18	17	25	25	/	/	/
Packet Type	CH42	CH58	CH106	CH155	/	/	/	/	/	/	/	/
802.11ac VHT80	29	20	17	25	/	/	/	/	/	/	/	/



MIMO Antenna 1 Gain Index													
Packet Type	CH36	CH40	CH48	CH52	CH60	CH64	CH100	CH116	CH140	CH149	CH157	CH165	
802.11a	24	24	24	17	17	16	14	15	15	23	23	23	24
802.11n HT20	24	24	24	17	17	16	14	15	15	23	23	23	24
802.11ac VHT20	24	24	24	17	17	16	14	15	15	23	23	23	24
Packet Type	CH38	CH46	CH54	CH62	CH102	CH110	CH134	CH151	CH159	/	/	/	/
802.11n HT40	27	27	17	17	13	14	15	23	23	/	/	/	/
802.11ac VHT40	27	27	17	17	13	14	15	23	23	/	/	/	/
Packet Type	CH42	CH58	CH106	CH155	/	/	/	/	/	/	/	/	/
802.11ac VHT80	27	17	14	24	/	/	/	/	/	/	/	/	/

MIMO Antenna 2 Gain Index													
Packet Type	CH36	CH40	CH48	CH52	CH60	CH64	CH100	CH116	CH140	CH149	CH157	CH165	
802.11a	24	24	24	17	17	16	14	15	15	23	23	23	24
802.11n HT20	24	24	24	17	17	16	14	15	15	23	23	23	24
802.11ac VHT20	24	24	24	17	17	16	14	15	15	23	23	23	24
Packet Type	CH38	CH46	CH54	CH62	CH102	CH110	CH134	CH151	CH159	/	/	/	/
802.11n HT40	27	27	17	17	13	14	15	23	23	/	/	/	/
802.11ac VHT40	27	27	17	17	13	14	15	23	23	/	/	/	/
Packet Type	CH42	CH58	CH106	CH155	/	/	/	/	/	/	/	/	/
802.11ac VHT80	27	17	14	24	/	/	/	/	/	/	/	/	/



Network Standards		Channel/Frequency (MHz)	B=26 dB bandwidth (MHz)	Limit 11 dBm + 10 log B (dBm)	Final Limit(dBm)
U-NII-2A	802.11a	52/5260	19.100	23.81<24	23.81
		60/5300	18.970	23.78<24	23.78
		64/5320	18.910	23.77<24	23.77
	802.11n HT20	52/5260	19.810	23.97<24	23.97
		60/5300	19.770	23.96<24	23.96
		64/5320	19.750	23.96<24	23.96
	802.11n HT40	54/5270	39.200	26.93>24	24.00
		62/5310	38.970	26.91>24	24.00
	802.11ac VHT20	52/5260	19.740	23.95<24	23.95
		60/5300	19.950	24.00>24	24.00
		64/5320	19.810	23.97<24	23.97
	802.11ac VHT40	54/5270	39.240	26.94>24	24.00
		62/5310	39.020	26.91>24	24.00
	802.11ac VHT80	58/5290	120.000	31.79>24	24.00
U-NII-2C	802.11a	100/5500	19.120	23.81<24	23.81
		116/5580	19.030	23.79<24	23.79
		140/5700	18.990	23.79<24	23.79
	802.11n HT20	100/5500	19.800	23.97<24	23.97
		116/5580	19.740	23.95<24	23.95
		140/5700	19.870	23.98<24	23.98
	802.11n HT40	102/5510	38.980	26.91>24	24.00
		110/5550	39.090	26.92>24	24.00
		134/5670	39.230	26.94>24	24.00
	802.11ac VHT20	100/5500	20.050	24.02>24	24.00
		116/5580	19.890	23.99<24	23.99
		140/5700	19.890	23.99>24	23.99
	802.11ac VHT40	102/5510	39.030	26.91>24	24.00
		110/5550	39.030	26.91>24	24.00
		134/5670	38.940	26.90>24	24.00
	802.11ac VHT80	106/5530	83.090	30.02>24	24.00

Note: 250mW=24dBm

**Test results****SISO Antenna 1****U-NII-1**

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	23.95	24.10	26	PASS
	40/5200	23.86	24.01	26	PASS
	48/5240	24.15	24.30	26	PASS
802.11n HT20	36/5180	23.99	23.99	26	PASS
	40/5200	24.05	24.05	26	PASS
	48/5240	24.16	24.16	26	PASS
802.11n HT40	38/5190	23.79	23.93	26	PASS
	46/5230	24.09	24.23	26	PASS
802.11ac VHT20	36/5180	23.95	23.95	26	PASS
	40/5200	23.98	23.98	26	PASS
	48/5240	24.14	24.14	26	PASS
802.11ac VHT40	38/5190	23.86	24.00	26	PASS
	46/5230	24.01	24.15	26	PASS
802.11ac VHT80	42/5210	23.86	24.14	26	PASS

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

2. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mw.

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	52/5260	16.24	16.39	19.81	PASS
	60/5300	15.96	16.11	19.78	PASS
	64/5320	16.34	16.49	19.77	PASS
802.11n HT20	52/5260	16.34	16.34	19.97	PASS
	60/5300	16.07	16.07	19.96	PASS
	64/5320	16.42	16.42	19.96	PASS
802.11n HT40	54/5270	16.27	16.41	20.00	PASS
	62/5310	16.15	16.29	20.00	PASS
802.11ac VHT20	52/5260	16.23	16.23	19.95	PASS
	60/5300	16.03	16.03	20.00	PASS
	64/5320	16.42	16.42	19.97	PASS
802.11ac VHT40	54/5270	16.48	16.62	20.00	PASS
	62/5310	16.13	16.27	20.00	PASS
802.11ac VHT80	58/5290	16.31	16.59	20.00	PASS



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

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	100/5500	15.63	15.78	19.81	PASS
	116/5580	16.64	16.79	19.79	PASS
	140/5700	16.59	16.74	19.79	PASS
802.11n HT20	100/5500	15.58	15.58	19.97	PASS
	116/5580	16.77	16.77	19.95	PASS
	140/5700	16.64	16.64	19.98	PASS
802.11n HT40	102/5510	15.67	15.81	20.00	PASS
	110/5550	15.86	16.00	20.00	PASS
	134/5670	16.47	16.61	20.00	PASS
802.11ac VHT20	100/5500	15.72	15.72	20.00	PASS
	116/5580	16.78	16.78	19.99	PASS
	140/5700	16.69	16.69	19.99	PASS
802.11ac VHT40	102/5510	15.73	15.87	20.00	PASS
	110/5550	15.94	16.08	20.00	PASS
	134/5670	16.38	16.52	20.00	PASS
802.11ac VHT80	106/5530	16.64	16.92	20.00	PASS

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

U-NII-3

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	23.92	24.07	26	PASS
	157/5785	24.03	24.18	26	PASS
	165/5825	23.65	23.80	26	PASS
802.11n HT20	149/5745	23.97	23.97	26	PASS
	157/5785	24.11	24.11	26	PASS
	165/5825	23.67	23.67	26	PASS
802.11n HT40	151/5755	23.93	24.07	26	PASS
	159/5795	24.16	24.30	26	PASS
802.11ac VHT20	149/5745	24.01	24.01	26	PASS
	157/5785	24.11	24.11	26	PASS
	165/5825	23.69	23.69	26	PASS
802.11ac VHT40	151/5755	23.95	24.09	26	PASS
	159/5795	24.02	24.16	26	PASS
802.11ac VHT80	155/5775	24.10	24.38	26	PASS



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

SISO Antenna 2**U-NII-1**

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	23.96	24.11	26	PASS
	40/5200	24.11	24.26	26	PASS
	48/5240	24.42	24.57	26	PASS
802.11n HT20	36/5180	24.22	24.22	26	PASS
	40/5200	24.36	24.36	26	PASS
	48/5240	23.94	23.94	26	PASS
802.11n HT40	38/5190	24.16	24.30	26	PASS
	46/5230	23.86	24.00	26	PASS
802.11ac VHT20	36/5180	24.23	24.23	26	PASS
	40/5200	24.38	24.38	26	PASS
	48/5240	24.09	24.09	26	PASS
802.11ac VHT40	38/5190	24.24	24.38	26	PASS
	46/5230	23.88	24.02	26	PASS
802.11ac VHT80	42/5210	23.98	24.26	26	PASS

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

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	52/5260	16.73	16.88	19.81	PASS
	60/5300	16.34	16.49	19.78	PASS
	64/5320	16.67	16.82	19.77	PASS
802.11n HT20	52/5260	16.94	16.94	19.97	PASS
	60/5300	16.46	16.46	19.96	PASS
	64/5320	16.89	16.89	19.96	PASS
802.11n HT40	54/5270	16.81	16.95	20.00	PASS
	62/5310	16.55	16.69	20.00	PASS
802.11ac VHT20	52/5260	16.92	16.92	19.95	PASS
	60/5300	16.28	16.28	20.00	PASS
	64/5320	16.88	16.88	19.97	PASS
802.11ac VHT40	54/5270	16.77	16.91	20.00	PASS
	62/5310	16.66	16.80	20.00	PASS
802.11ac VHT80	58/5290	16.63	16.91	20.00	PASS

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



U-NII-2C

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	100/5500	16.75	16.90	19.81	PASS
	116/5580	16.49	16.64	19.79	PASS
	140/5700	16.33	16.48	19.79	PASS
802.11n HT20	100/5500	16.78	16.78	19.97	PASS
	116/5580	16.54	16.54	19.95	PASS
	140/5700	16.29	16.29	19.98	PASS
802.11n HT40	102/5510	15.99	16.13	20.00	PASS
	110/5550	16.35	16.49	20.00	PASS
	134/5670	16.02	16.16	20.00	PASS
802.11ac VHT20	100/5500	16.79	16.79	20.00	PASS
	116/5580	16.65	16.65	19.99	PASS
	140/5700	16.31	16.31	19.99	PASS
802.11ac VHT40	102/5510	15.93	16.07	20.00	PASS
	110/5550	16.38	16.52	20.00	PASS
	134/5670	15.86	16.00	20.00	PASS
802.11ac VHT80	106/5530	15.84	16.12	20.00	PASS

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

U-NII-3

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	23.89	24.04	26	PASS
	157/5785	24.16	24.31	26	PASS
	165/5825	23.65	23.80	26	PASS
802.11n HT20	149/5745	24.06	24.06	26	PASS
	157/5785	24.29	24.29	26	PASS
	165/5825	23.65	23.65	26	PASS
802.11n HT40	151/5755	24.06	24.20	26	PASS
	159/5795	24.22	24.36	26	PASS
802.11ac VHT20	149/5745	23.94	23.94	26	PASS
	157/5785	24.15	24.15	26	PASS
	165/5825	23.69	23.69	26	PASS
802.11ac VHT40	151/5755	23.99	24.13	26	PASS
	159/5795	24.26	24.40	26	PASS
802.11ac VHT80	155/5775	23.62	23.90	26	PASS

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

**MIMO****U-NII-1**

Network Standards	Channel/Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	36/5180	19.68	19.83	20.28	20.43	23.15	26.00	PASS
	44/5220	19.72	19.87	20.33	20.48	23.19	26.00	PASS
	48/5240	20.14	20.29	20.71	20.86	23.59	26.00	PASS
802.11n HT20	36/5180	19.93	19.93	20.36	20.36	23.16	26.00	PASS
	44/5220	19.58	19.58	20.51	20.51	23.08	26.00	PASS
	48/5240	20.21	20.21	20.92	20.92	23.59	26.00	PASS
802.11n HT40	38/5190	22.08	22.22	22.42	22.56	25.40	26.00	PASS
	46/5230	22.28	22.42	22.64	22.78	25.62	26.00	PASS
802.11ac VHT20	36/5180	20.11	20.11	20.37	20.37	23.25	26.00	PASS
	44/5220	20.13	20.13	20.57	20.57	23.37	26.00	PASS
	48/5240	20.44	20.44	20.86	20.86	23.67	26.00	PASS
802.11ac VHT40	38/5190	22.31	22.45	22.85	22.99	25.74	26.00	PASS
	46/5230	22.54	22.68	23.00	23.14	25.93	26.00	PASS
802.11ac VHT80	42/5210	21.76	22.04	22.46	22.74	25.41	26.00	PASS

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

2. The manufacturer declared the transmitter output signals is CDD mode And N_{ss}=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain,
For power measurements on IEEE 802.11 devices,
Array Gain = 0 dB (i.e., no array gain) for N_{ANT} ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{ss}) dB or 3 dB, whichever is less, for 20-MHz channel widths with N_{ANT} ≥ 5.
So directional gain = G_{ANT} + Array Gain = 10+0=10 dBi>6dBi. So the power limit is 30+6-10=26dBm.

3. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mw.



U-NII-2A

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	52/5260	13.37	13.52	13.85	14.00	16.78	19.81	PASS
	60/5300	13.87	14.02	13.64	13.79	16.92	19.78	PASS
	64/5320	13.35	13.50	13.24	13.39	16.45	19.77	PASS
802.11n HT20	52/5260	13.81	13.81	13.88	13.88	16.86	19.97	PASS
	60/5300	13.86	13.86	13.94	13.94	16.91	19.96	PASS
	64/5320	13.29	13.29	13.66	13.66	16.49	19.96	PASS
802.11n HT40	54/5270	13.65	13.79	13.91	14.05	16.93	20.00	PASS
	62/5310	13.72	13.86	13.87	14.01	16.95	20.00	PASS
802.11ac VHT20	52/5260	13.84	13.84	13.93	13.93	16.90	19.95	PASS
	60/5300	13.96	13.96	13.87	13.87	16.93	20.00	PASS
	64/5320	13.56	13.56	13.51	13.51	16.55	19.97	PASS
802.11ac VHT40	54/5270	13.74	13.88	13.81	13.95	16.93	20.00	PASS
	62/5310	13.65	13.79	13.79	13.93	16.87	20.00	PASS
802.11ac VHT80	58/5290	13.15	13.43	13.26	13.54	16.49	20.00	PASS

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

2. The manufacturer declared the transmitter output signals is CDD mode And $N_{ss}=2$. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = $G_{ANT} + \text{Array Gain}$, For power measurements on IEEE 802.11 devices,
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;
Array Gain = $5 \log(N_{ANT}/N_{ss})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.
So directional gain = $G_{ANT} + \text{Array Gain} = 10+0=10$ dBi>6dBi. So the power limit = limit+(6-10)dBm.



U-NII-2C

Network Standards	Channel/ Frequency (MHz)	MIMO Antenna 1		MIMO Antenna 2		Total Power (dBm)	Limit (dBm)	Conclusion
		Average Power Measured (dBm)	Average Power with duty factor (dBm)	Average Power Measured (dBm)	Average Power with duty factor (dBm)			
802.11a	100/5500	13.76	13.91	13.56	13.71	16.82	19.81	PASS
	116/5580	13.87	14.02	13.22	13.37	16.72	19.79	PASS
	140/5700	13.56	13.71	13.92	14.07	16.90	19.79	PASS
802.11n HT20	100/5500	13.67	13.67	13.03	13.03	16.37	19.97	PASS
	116/5580	13.97	13.97	13.38	13.38	16.70	19.95	PASS
	140/5700	13.55	13.55	14.27	14.27	16.94	19.98	PASS
802.11n HT40	102/5510	12.87	13.01	13.44	13.58	16.32	20.00	PASS
	110/5550	13.51	13.65	13.86	14.00	16.84	20.00	PASS
	134/5670	13.02	13.16	12.89	13.03	16.11	20.00	PASS
802.11ac VHT20	100/5500	13.58	13.58	13.64	13.64	16.62	20.00	PASS
	116/5580	13.87	13.87	13.39	13.39	16.65	19.99	PASS
	140/5700	13.52	13.52	14.16	14.16	16.86	19.99	PASS
802.11ac VHT40	102/5510	12.76	12.90	13.32	13.46	16.20	20.00	PASS
	110/5550	13.55	13.69	14.02	14.16	16.94	20.00	PASS
	134/5670	13.11	13.25	12.99	13.13	16.20	20.00	PASS
802.11ac VHT80	106/5530	13.64	13.92	13.15	13.43	16.69	20.00	PASS

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

2. The manufacturer declared the transmitter output signals is CDD mode And N_{ss}=2. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain,
For power measurements on IEEE 802.11 devices,
Array Gain = 0 dB (i.e., no array gain) for N_{ANT} ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{ss}) dB or 3 dB, whichever is less, for 20-MHz channel widths with N_{ANT} ≥ 5.
So directional gain = G_{ANT} + Array Gain = 10+0=10 dBi>6dBi. So the power limit = limit+(6-10)dBm.



U-NII-3

Network Standards	Channel/Frequency (MHz)	Output Power					Limit (dBm)	Conclusion		
		ANT1		ANT2		Total Power (dBm)				
		Read Value (dBm)	Output Power (dBm)	Read Value (dBm)	Output Power (dBm)					
U-NII-1 802.11a	149/5745	22.41	22.56	22.43	22.58	25.58	26.00	PASS		
	157/5785	22.25	22.40	22.58	22.73	25.58	26.00	PASS		
	165/5825	22.66	22.81	22.59	22.74	25.78	26.00	PASS		
802.11n HT20	149/5745	22.33	22.33	22.55	22.55	25.45	26.00	PASS		
	157/5785	22.55	22.55	22.71	22.71	25.64	26.00	PASS		
	165/5825	22.75	22.75	22.67	22.67	25.72	26.00	PASS		
802.11n HT40	151/5755	22.41	22.55	22.42	22.56	25.57	26.00	PASS		
	159/5795	22.27	22.41	22.58	22.72	25.58	26.00	PASS		
802.11ac HT20	149/5745	22.41	22.41	22.44	22.44	25.44	26.00	PASS		
	157/5785	22.54	22.54	22.67	22.67	25.62	26.00	PASS		
	165/5825	22.84	22.84	22.62	22.62	25.74	26.00	PASS		
802.11ac HT40	151/5755	22.40	22.54	22.46	22.60	25.58	26.00	PASS		
	159/5795	22.19	22.33	22.57	22.71	25.54	26.00	PASS		
802.11ac HT80	155/5775	22.31	22.59	22.72	23.00	25.81	26.00	PASS		

Note: 1. For Total Power, according to KDB 662911 D01 Multiple Transmitter Output v02r01 1),
The Total Power = $10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)})$.
2. The manufacturer declared the transmitter output signals is CDD mode And N_{ss}=1. According to KDB 662911 D01 Multiple Transmitter Output v02r01 2)f)(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain,
For power measurements on IEEE 802.11 devices,
Array Gain = 0 dB (i.e., no array gain) for N_{ANT} ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{ss}) dB or 3 dB, whichever is less, for 20-MHz channel widths with N_{ANT} ≥ 5.
So directional gain = G_{ANT} + Array Gain = 10+0=10 dB>6dBi. So the power limit is 30+6-10=26dBm.



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 than 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 $k = 2$, $U = 936\text{Hz}$

**Test Results**

Voltage (V)	Temperature (°C)	U-NII-1 Test Results			
		5200MHz			
		1min	2min	5min	10min
48	-30	5200.006514	5200.000280	5199.997708	5199.997442
48	-20	5200.003509	5199.995287	5199.991281	5199.989428
48	-10	5199.994629	5199.991131	5199.990257	5199.987795
48	0	5199.989289	5199.990649	5199.982542	5199.980045
48	10	5199.983503	5199.982575	5199.978350	5199.973717
48	20	5199.973674	5199.981115	5199.975514	5199.971577
48	30	5199.965522	5199.972298	5199.969513	5199.962447
48	40	5199.955538	5199.968666	5199.968311	5199.954661
40	50	5199.948213	5199.962163	5199.962002	5199.945111
55	65	5199.946393	5199.954432	5199.955021	5199.942566
MHz		-0.053607	-0.045568	-0.044979	-0.057434
PPM		-10.308997	-8.763158	-8.649742	-11.045068

Voltage (V)	Temperature (°C)	U-NII-2A Test Results			
		5300MHz			
		1min	2min	5min	10min
48	-30	5299.991974	5299.983559	5299.981654	5299.981172
48	-20	5299.988612	5299.974183	5299.980519	5299.977831
48	-10	5299.980672	5299.967008	5299.979138	5299.975572
48	0	5299.977350	5299.963283	5299.972625	5299.965988
48	10	5299.973576	5299.962106	5299.970362	5299.960729
48	20	5299.973225	5299.957769	5299.969487	5299.959368
48	30	5299.968368	5299.952196	5299.963016	5299.956802
48	40	5299.961674	5299.944929	5299.961598	5299.954748
40	50	5299.952223	5299.944534	5299.954766	5299.947976
55	65	5299.942314	5299.935672	5299.951562	5299.939093
MHz		-0.057686	-0.064328	-0.048438	-0.060907
PPM		-10.884197	-12.137315	-9.139152	-11.491808



Voltage (V)	Temperature (°C)	U-NII-2C Test Results			
		5580MHz			
		1min	2min	5min	10min
48	-30	5579.999028	5579.992593	5579.989171	5579.980073
48	-20	5579.997864	5579.983787	5579.988771	5579.975380
48	-10	5579.989347	5579.975138	5579.983228	5579.971439
48	0	5579.987360	5579.973016	5579.974660	5579.965268
48	10	5579.980127	5579.963999	5579.969369	5579.960712
48	20	5579.975611	5579.957755	5579.968039	5579.955938
48	30	5579.973373	5579.953954	5579.959713	5579.954366
48	40	5579.970567	5579.951561	5579.959639	5579.947582
40	50	5579.968708	5579.951550	5579.953651	5579.940071
55	65	5579.967239	5579.951333	5579.952319	5579.935775
MHz		-0.032761	-0.048667	-0.047681	-0.064225
PPM		-5.871188	-8.721736	-8.544914	-11.509883

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
48	-30	5785.003149	5784.998712	5784.990360	5784.980395
48	-20	5784.997367	5784.991875	5784.984601	5784.977967
48	-10	5784.988828	5784.985756	5784.980683	5784.975982
48	0	5784.981497	5784.976263	5784.975899	5784.970646
48	10	5784.977406	5784.974788	5784.974768	5784.964026
48	20	5784.976508	5784.973345	5784.966355	5784.959979
48	30	5784.971572	5784.964408	5784.964862	5784.958456
48	40	5784.962861	5784.956581	5784.962007	5784.955439
40	50	5784.953935	5784.947597	5784.958974	5784.953384
55	65	5784.950939	5784.944559	5784.953091	5784.949236
MHz		-0.049061	-0.055441	-0.046909	-0.050764
PPM		-8.480763	-9.583646	-8.108761	-8.775088

5.4. Power Spectral Density

Ambient condition

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

Method of Measurement

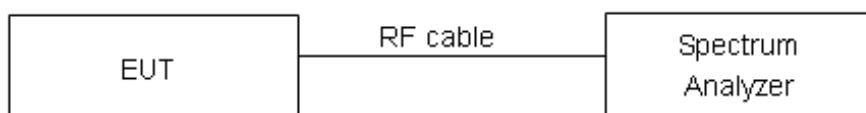
The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

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

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

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

Test setup



Limits

Rule FCC Part 15.407(a)(1)/ Part 15.407(a)(2) / Part 15.407(a)(3)

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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

Frequency Bands/MHz	Limits
5150-5250	17/MHz
5.25-5.35 GHz and 5.47-5.725 GHz	11dBm/MHz
5725-5850	30dBm/500kHz

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 2$, $U = 0.75\text{dB}$.

**Test Results:**

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

SISO Antenna 1**U-NII-1**

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	12.31	12.46	13	PASS
	40	11.81	11.96	13	PASS
	48	11.70	11.85	13	PASS
802.11n HT20	36	11.27	11.27	13	PASS
	40	11.11	11.11	13	PASS
	48	11.65	11.65	13	PASS
802.11n HT40	38	8.48	8.62	13	PASS
	46	9.05	9.19	13	PASS
802.11ac VHT20	36	11.33	11.33	13	PASS
	40	10.90	10.90	13	PASS
	48	11.72	11.72	13	PASS
802.11ac VHT40	38	8.21	8.35	13	PASS
	46	9.14	9.28	13	PASS
802.11ac VHT80	42	4.66	4.94	13	PASS

U-NII-2A

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52	4.75	4.90	7	PASS
	60	6.11	6.26	7	PASS
	64	5.40	5.55	7	PASS
802.11n HT20	52	5.38	5.38	7	PASS
	60	5.11	5.11	7	PASS
	64	5.38	5.38	7	PASS
802.11n HT40	54	2.89	3.03	7	PASS
	62	2.58	2.72	7	PASS
802.11ac VHT20	52	5.73	5.73	7	PASS
	60	5.27	5.27	7	PASS
	64	5.58	5.58	7	PASS
802.11ac VHT40	54	3.17	3.31	7	PASS
	62	2.66	2.80	7	PASS
802.11ac VHT80	58	-0.50	-0.22	7	PASS



U-NII-2C

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	100	3.54	3.69	7	PASS
	116	5.01	5.16	7	PASS
	140	5.52	5.66	7	PASS
802.11n HT20	100	3.58	3.58	7	PASS
	116	4.46	4.46	7	PASS
	140	5.96	5.96	7	PASS
802.11n HT40	102	0.65	0.80	7	PASS
	110	0.77	0.92	7	PASS
	134	1.61	1.75	7	PASS
802.11ac VHT20	100	3.56	3.56	7	PASS
	116	4.54	4.54	7	PASS
	140	5.05	5.05	7	PASS
802.11ac VHT40	102	0.63	0.77	7	PASS
	110	0.97	1.11	7	PASS
	134	1.87	2.01	7	PASS
802.11ac VHT80	106	-2.08	-1.80	7	PASS

U-NII-3

Network Standards	Channel Number	Read Value (dBm/500kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	10.28	10.42	26	PASS
	157	10.28	10.43	26	PASS
	165	9.74	9.88	26	PASS
802.11n HT20	149	9.85	9.85	26	PASS
	157	10.15	10.15	26	PASS
	165	9.75	9.75	26	PASS
802.11n HT40	151	7.31	7.45	26	PASS
	159	7.11	7.25	26	PASS
802.11ac VHT20	149	9.98	9.98	26	PASS
	157	9.87	9.87	26	PASS
	165	9.74	9.74	26	PASS
802.11ac VHT40	151	7.36	7.50	26	PASS
	159	6.69	6.83	26	PASS
802.11ac VHT80	155	4.19	4.47	26	PASS

**SISO Antenna 2****U-NII-1**

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	12.78	12.93	13	PASS
	40	12.54	12.69	13	PASS
	48	12.74	12.89	13	PASS
802.11n HT20	36	12.57	12.57	13	PASS
	40	12.66	12.66	13	PASS
	48	12.64	12.64	13	PASS
802.11n HT40	38	9.89	10.03	13	PASS
	46	10.36	10.50	13	PASS
802.11ac VHT20	36	12.62	12.62	13	PASS
	40	12.53	12.53	13	PASS
	48	12.53	12.53	13	PASS
802.11ac VHT40	38	9.95	10.09	13	PASS
	46	9.80	9.94	13	PASS
802.11ac VHT80	42	6.69	6.97	13	PASS

U-NII-2A

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52	5.27	5.42	7	PASS
	60	4.69	4.84	7	PASS
	64	5.61	5.76	7	PASS
802.11n HT20	52	5.52	5.52	7	PASS
	60	4.73	4.73	7	PASS
	64	5.39	5.39	7	PASS
802.11n HT40	54	2.59	2.73	7	PASS
	62	2.24	2.38	7	PASS
802.11ac VHT20	52	5.23	5.23	7	PASS
	60	5.09	5.09	7	PASS
	64	5.32	5.32	7	PASS
802.11ac VHT40	54	2.28	2.42	7	PASS
	62	2.48	2.62	7	PASS
802.11ac VHT80	58	-0.83	-0.55	7	PASS



U-NII-2C

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	100	6.13	6.28	7	PASS
	116	6.00	6.15	7	PASS
	140	5.40	5.55	7	PASS
802.11n HT20	100	6.06	6.06	7	PASS
	116	5.92	5.92	7	PASS
	140	5.56	5.56	7	PASS
802.11n HT40	102	1.47	1.61	7	PASS
	110	2.24	2.38	7	PASS
	134	1.32	1.46	7	PASS
802.11ac VHT20	100	5.85	5.85	7	PASS
	116	6.00	6.00	7	PASS
	140	5.35	5.35	7	PASS
802.11ac VHT40	102	1.83	1.97	7	PASS
	110	2.39	2.53	7	PASS
	134	1.40	1.54	7	PASS
802.11ac VHT80	106	-1.69	-1.41	7	PASS

U-NII-3

Network Standards	Channel Number	Read Value (dBm/500kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	10.30	10.45	26	PASS
	157	10.71	10.86	26	PASS
	165	9.80	9.95	26	PASS
802.11n HT20	149	10.12	10.12	26	PASS
	157	10.21	10.21	26	PASS
	165	9.38	9.38	26	PASS
802.11n HT40	151	7.43	7.57	26	PASS
	159	7.26	7.40	26	PASS
802.11ac VHT20	149	10.40	10.40	26	PASS
	157	10.55	10.55	26	PASS
	165	9.52	9.52	26	PASS
802.11ac VHT40	151	7.42	7.56	26	PASS
	159	7.52	7.66	26	PASS
802.11ac VHT80	155	3.70	3.98	26	PASS



MIMO

U-NII-1

Network Standards	Channel/ Frequency (MHz)	Power Spectral Density				Total Power (dBm /MHz)	Limit (dBm /MHz)	Conclusion			
		Antenna 1		Antenna 2							
		Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)						
802.11a	36/5180	8.82	8.97	9.03	9.18	12.09	13.00	PASS			
	40/5200	8.21	8.35	8.95	9.10	11.75	13.00	PASS			
	48/5240	8.68	8.83	9.34	9.49	12.18	13.00	PASS			
802.11n HT20	36/5180	8.45	8.45	8.43	8.43	11.45	13.00	PASS			
	40/5200	8.01	8.01	8.76	8.76	11.41	13.00	PASS			
	48/5240	8.78	8.78	9.82	9.82	12.34	13.00	PASS			
802.11n HT40	38/5190	7.49	7.63	8.16	8.30	10.99	13.00	PASS			
	46/5230	8.09	8.23	8.69	8.83	11.55	13.00	PASS			
802.11ac VHT20	36/5180	8.26	8.26	8.53	8.53	11.41	13.00	PASS			
	40/5200	8.09	8.09	8.47	8.47	11.29	13.00	PASS			
	48/5240	8.84	8.84	9.19	9.19	12.03	13.00	PASS			
802.11ac VHT40	38/5190	7.55	7.69	8.28	8.42	11.08	13.00	PASS			
	46/5230	8.24	8.38	8.93	9.07	11.75	13.00	PASS			
802.11ac VHT80	42/5210	3.791	4.07	4.86	5.14	7.65	13.00	PASS			

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

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

3. The manufacturer declared the transmitter output signals is CDD mode And Nss=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=10+10log (2/2)=10>6 dBi. So the PSD limit is 17-(directional gain-6 dBi) =17-(10-6)=13 dBm.



U-NII-2A

Network Standards	Channel/Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion		
		Antenna 1		Antenna 2		Total Power (dBm /MHz)				
		Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)					
802.11a	52/5260	1.61	1.75	2.36	2.50	5.16	7.00	PASS		
	60/5300	3.15	3.30	3.43	3.58	6.45	7.00	PASS		
	64/5320	2.41	2.56	2.80	2.94	5.77	7.00	PASS		
802.11n HT20	52/5260	1.84	1.84	2.55	2.55	5.22	7.00	PASS		
	60/5300	2.69	2.69	3.56	3.56	6.16	7.00	PASS		
	64/5320	1.76	1.76	2.99	2.99	5.43	7.00	PASS		
802.11n HT40	54/5270	-0.88	-0.74	-0.09	0.05	2.68	7.00	PASS		
	62/5310	0.30	0.44	1.37	1.51	4.02	7.00	PASS		
802.11ac VHT20	52/5260	1.82	1.82	2.86	2.86	5.38	7.00	PASS		
	60/5300	2.53	2.53	3.52	3.52	6.07	7.00	PASS		
	64/5320	1.87	1.87	2.45	2.45	5.18	7.00	PASS		
802.11ac VHT40	54/5270	-0.70	-0.56	-0.55	-0.40	2.53	7.00	PASS		
	62/5310	0.16	0.30	1.26	1.40	3.90	7.00	PASS		
802.11ac VHT80	58/5290	-4.22	-3.94	-3.24	-2.96	-0.41	7.00	PASS		

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor
 2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density= $10\log(10^{(\text{PSD antenna1 in dBm}/10)} + 10^{(\text{PSD antenna2 in dBm}/10)})$
 3. The manufacturer declared the transmitter output signals is CDD mode And Nss=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=10+10log (2/2)=10>6 dBi. So the PSD limit is 11-(directional gain-6 dBi)=11-(10-6)=7 dBm.



U-NII-2C

Network Standards	Channel/Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion		
		Antenna 1		Antenna 2		Total Power (dBm /MHz)				
		Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)					
802.11a	100/5500	2.35	2.50	2.65	2.80	5.66	7.00	PASS		
	116/5580	2.77	2.92	3.38	3.53	6.25	7.00	PASS		
	140/5700	3.52	3.67	3.43	3.58	6.63	7.00	PASS		
802.11n HT20	100/5500	2.43	2.43	2.12	2.12	5.29	7.00	PASS		
	116/5580	2.53	2.53	3.02	3.02	5.79	7.00	PASS		
	140/5700	3.13	3.13	3.88	3.88	6.53	7.00	PASS		
802.11n HT40	102/5510	-1.15	-1.01	-1.26	-1.12	1.95	7.00	PASS		
	110/5550	-1.72	-1.58	-1.49	-1.35	1.55	7.00	PASS		
	134/5670	0.00	0.14	0.44	0.58	3.37	7.00	PASS		
802.11ac VHT20	100/5500	2.07	2.07	2.72	2.72	5.42	7.00	PASS		
	116/5580	2.73	2.73	3.62	3.62	6.21	7.00	PASS		
	140/5700	3.69	3.69	3.79	3.79	6.75	7.00	PASS		
802.11ac VHT40	102/5510	-1.23	-1.08	-1.18	-1.04	1.95	7.00	PASS		
	110/5550	-1.70	-1.55	-1.57	-1.42	1.52	7.00	PASS		
	134/5670	0.13	0.27	0.19	0.33	3.31	7.00	PASS		
802.11ac VHT80	106/5530	-4.27	-3.99	-4.02	-3.74	-0.85	7.00	PASS		

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor
 2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density= $10\log(10^{(\text{PSD antenna1 in dBm}/10)} + 10^{(\text{PSD antenna2 in dBm}/10)})$
 3. The manufacturer declared the transmitter output signals is CDD mode And NSS=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=10+10log (2/2)=10>6 dBi. So the PSD limit is 11-(directional gain-6 dBi) =11-(10-6)=7 dBm.



U-NII-3

Network Standards	Channel/Frequency (MHz)	Power Spectral Density					Limit (dBm /MHz)	Conclusion		
		Antenna 1		Antenna 2		Total Power (dBm /MHz)				
		Read Value (dBm/MHz)	PSD (dBm /MHz)	Read Value (dBm/MHz)	PSD (dBm /MHz)					
802.11a	36/5180	9.48	9.63	9.17	9.32	12.49	26.00	PASS		
	40/5200	8.84	8.99	9.08	9.23	12.12	26.00	PASS		
	48/5240	9.56	9.70	8.76	8.90	12.33	26.00	PASS		
802.11n HT20	36/5180	8.76	8.76	8.74	8.74	11.76	26.00	PASS		
	40/5200	9.25	9.25	8.43	8.43	11.87	26.00	PASS		
	48/5240	9.38	9.38	8.01	8.01	11.76	26.00	PASS		
802.11n HT40	38/5190	6.51	6.65	5.85	5.99	9.34	26.00	PASS		
	46/5230	6.25	6.39	5.93	6.07	9.24	26.00	PASS		
802.11ac VHT20	36/5180	8.61	8.61	8.42	8.42	11.52	26.00	PASS		
	40/5200	9.27	9.27	8.56	8.56	11.94	26.00	PASS		
	48/5240	8.76	8.76	8.74	8.74	11.76	26.00	PASS		
802.11ac VHT40	38/5190	6.75	6.89	6.44	6.58	9.75	26.00	PASS		
	46/5230	6.18	6.32	6.04	6.18	9.26	26.00	PASS		
802.11ac VHT80	42/5210	3.41	3.69	2.87	3.15	6.44	26.00	PASS		

Note: 1. Power Spectral Density =Read Value+Duty cycle correction factor
 2. For Total PSD, according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density= $10\log(10^{(\text{PSD antenna1 in dBm}/10)} + 10^{(\text{PSD antenna2 in dBm}/10)})$
 3. The manufacturer declared the transmitter output signals is CDD mode And Nss=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=10+10log (2/2)=10>6 dBi. So the PSD limit is 30-(directional gain-6 dBi) =30-(10-6)=26 dBm.

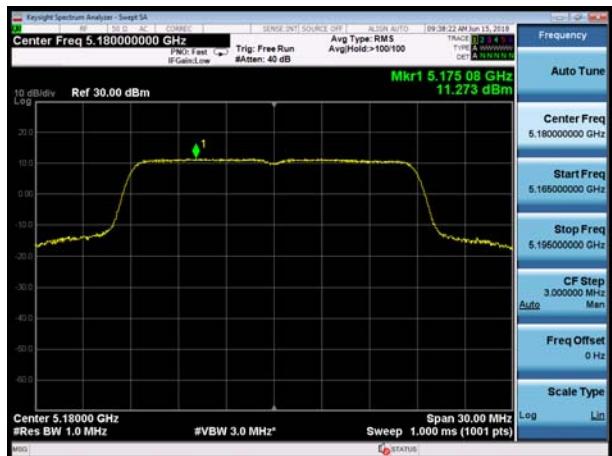


SISO Antenna 1

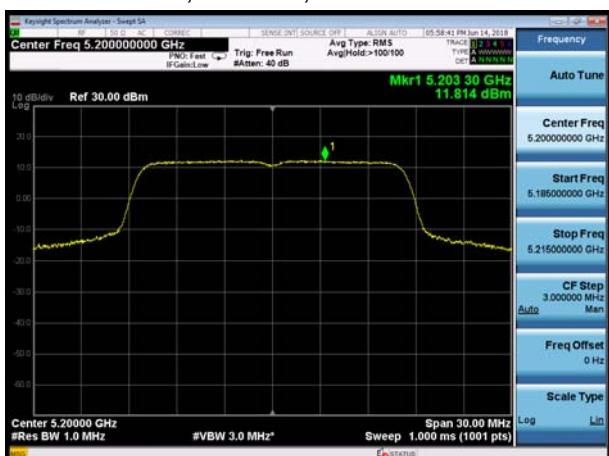
U-NII-1, 802.11a, Channel No.: 36



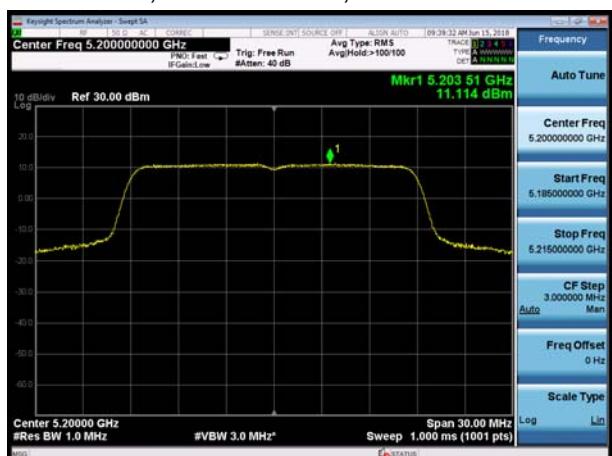
U-NII-1, 802.11n HT20, Channel No.: 36



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



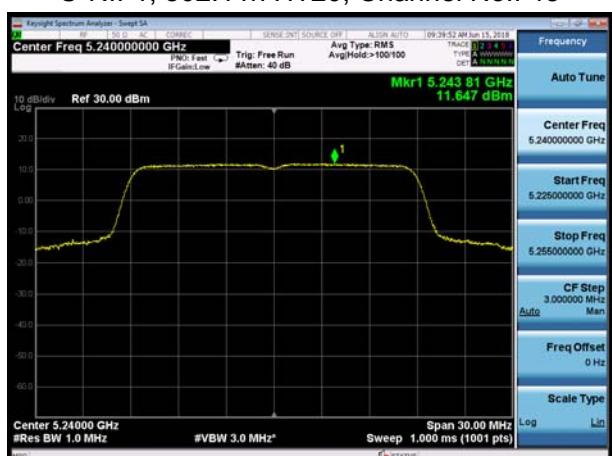
U-NII-1, 802.11n HT20, Channel No.: 40



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, 802.11ac VHT20, Channel No.: 36



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



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



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



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





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



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

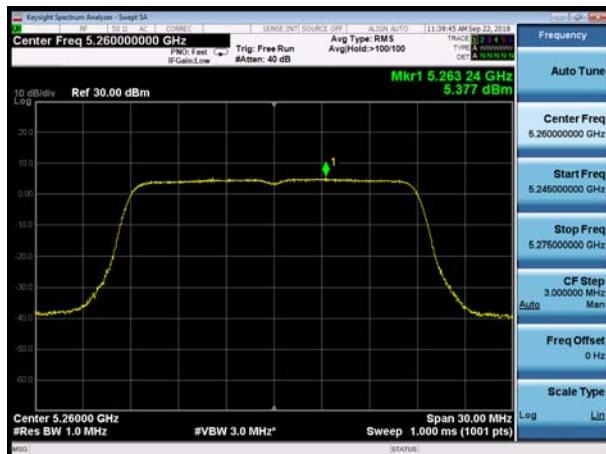




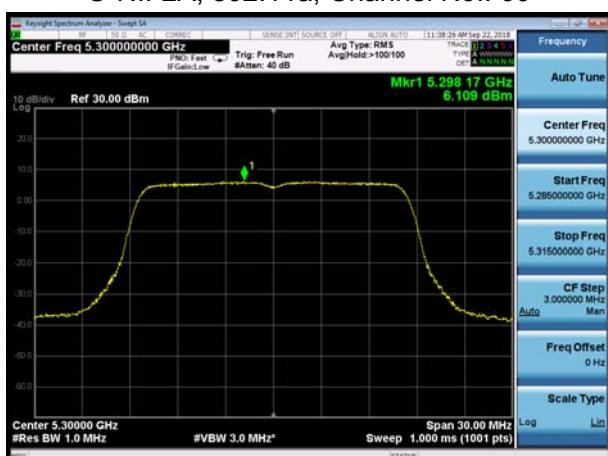
U-NII-2A, 802.11a, Channel No.: 52



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



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



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



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



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

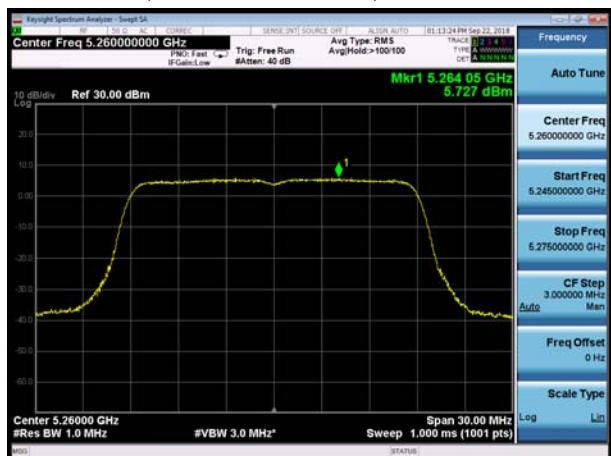




U-NII-2A, 802.11n HT40, Channel No.: 54



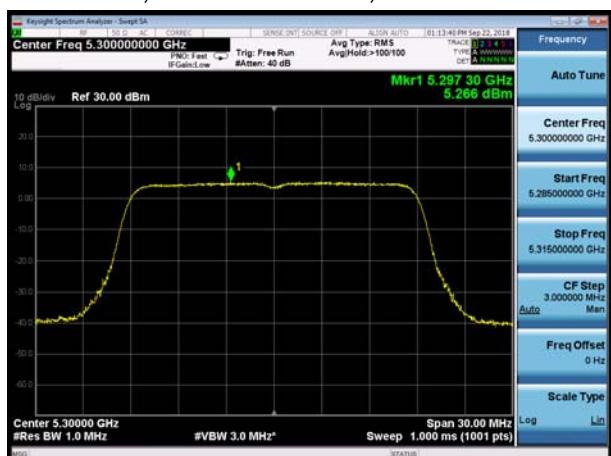
U-NII-2A, 802.11ac VHT20, Channel No.:52



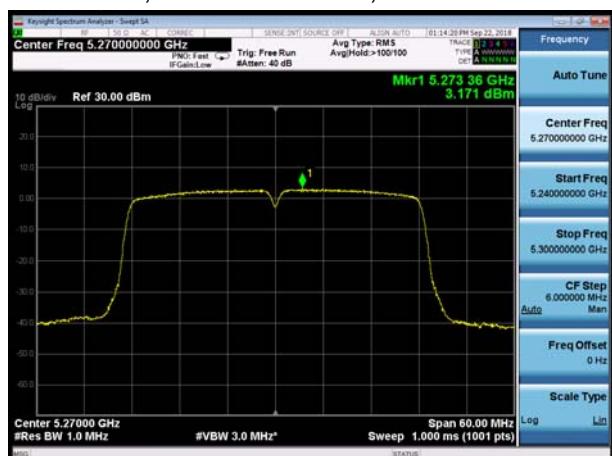
U-NII-2A, 802.11n HT40, Channel No.: 62



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



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

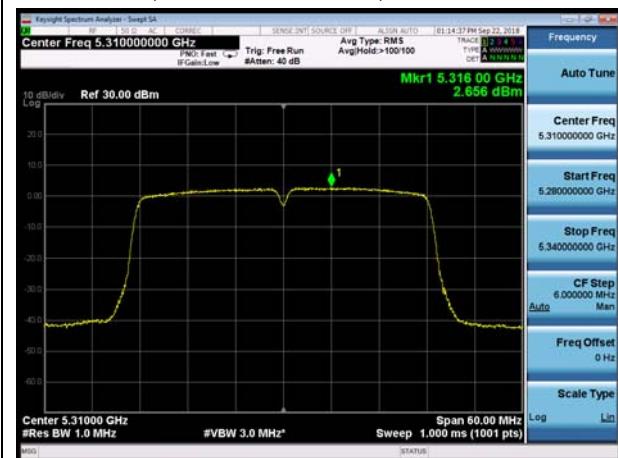


U-NII-2A, 802.11ac VHT20, Channel No.: 64

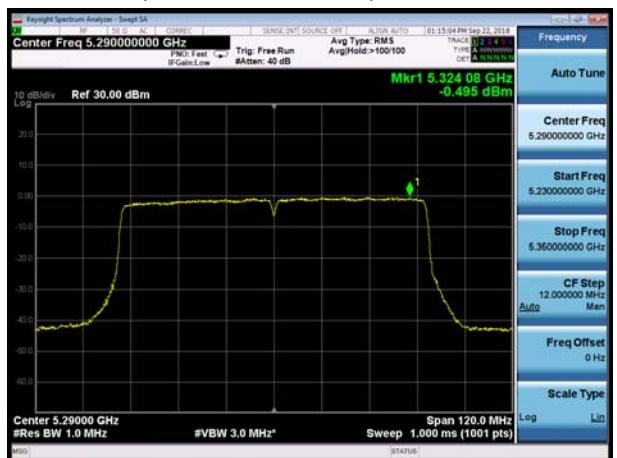




U-NII-2A, 802.11ac VHT40, Channel No.: 62



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





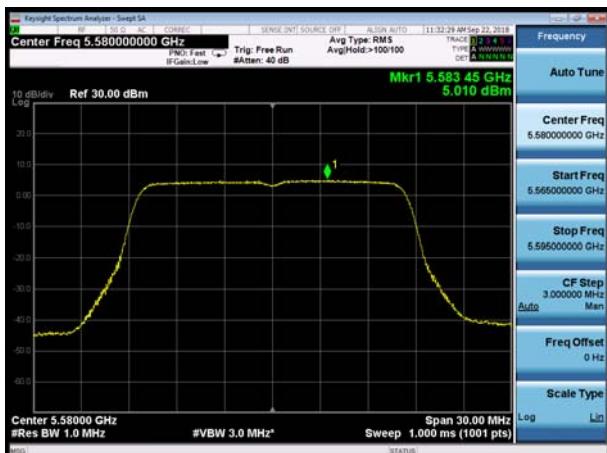
U-NII-2C, 802.11a, Channel No.: 100



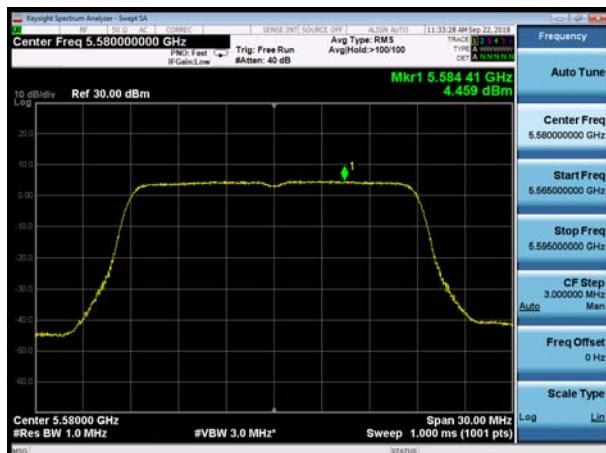
U-NII-2C, 802.11n HT20, Channel No.: 100



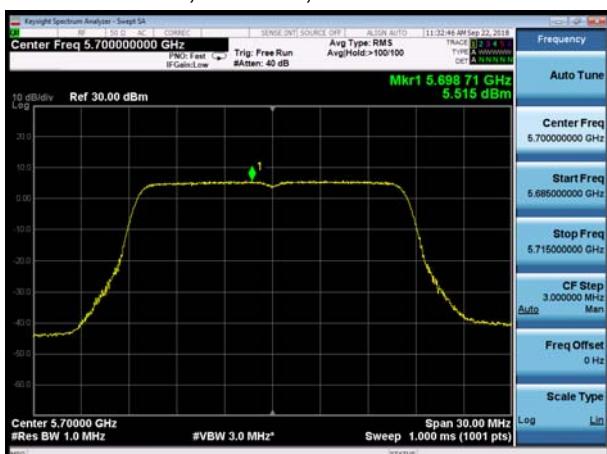
U-NII-2C, 802.11a, Channel No.: 116



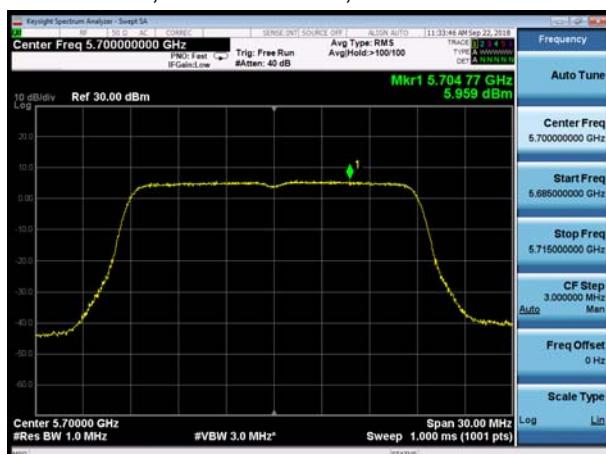
U-NII-2C, 802.11n HT20, Channel No.: 116



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



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

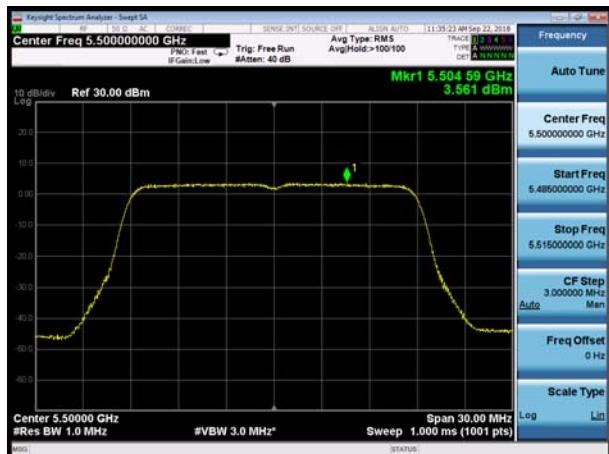




U-NII-2C, 802.11n HT40, Channel No.: 102



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



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



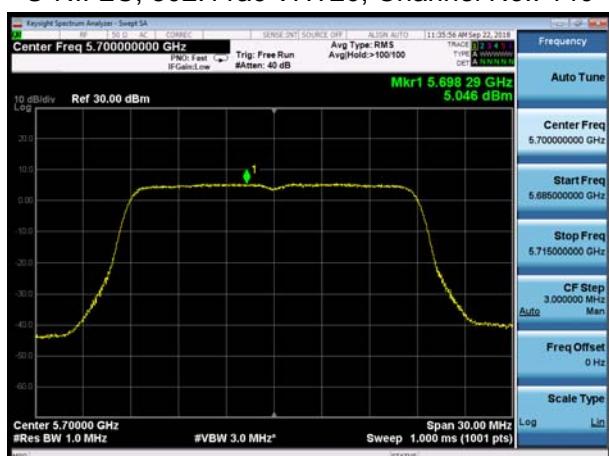
U-NII-2C, 802.11ac VHT20, Channel No.: 116



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

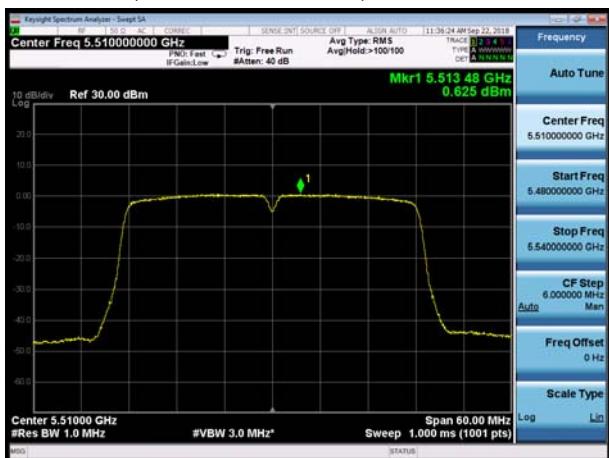


U-NII-2C, 802.11ac VHT20, Channel No.: 140

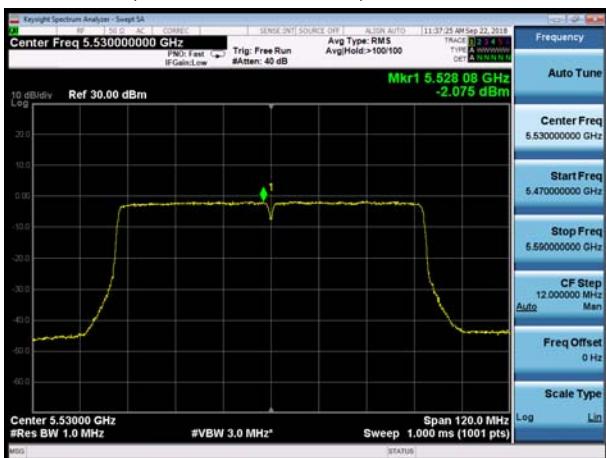




U-NII-2C, 802.11ac VHT40, Channel No.: 102



U-NII-2C, 802.11ac VHT80, Channel No.: 106



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

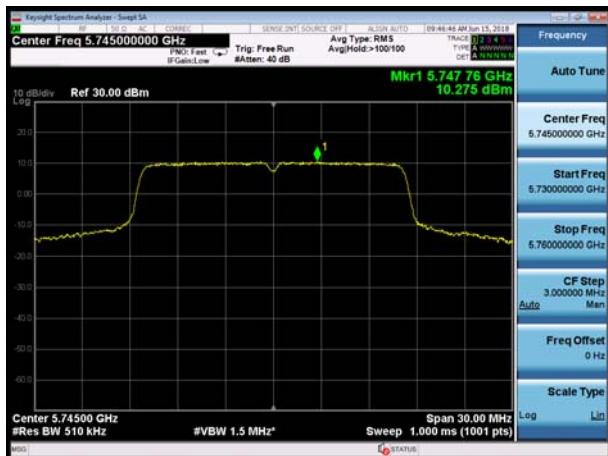


U-NII-2C, 802.11ac VHT40, Channel No.: 134

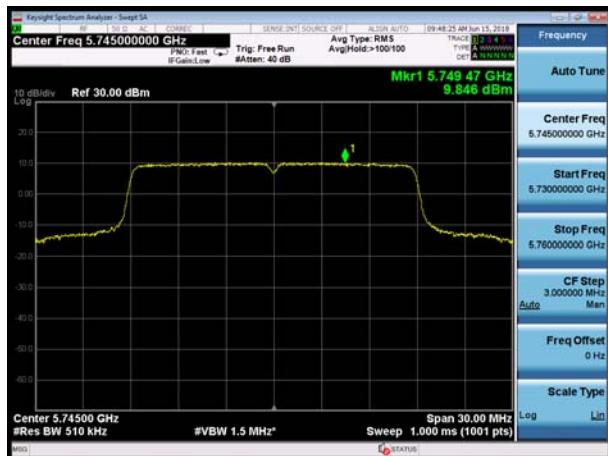




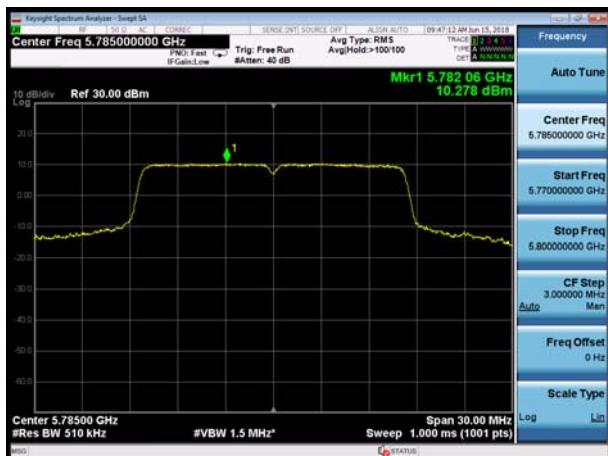
U-NII-3, 802.11a, Channel No.: 149



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



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



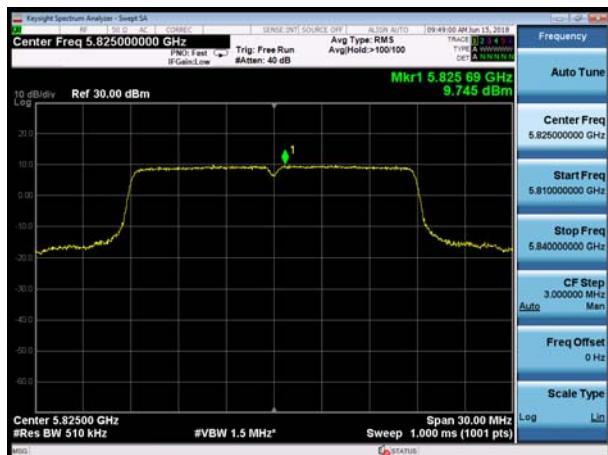
U-NII-3, 802.11n HT20, Channel No.: 157



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



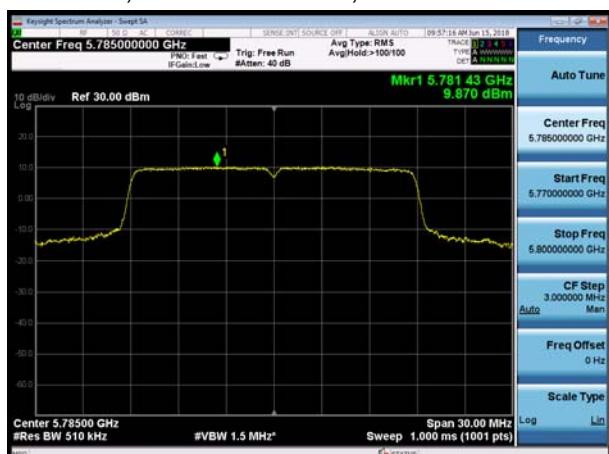
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U-NII-3, 802.11n HT40, Channel No.: 159



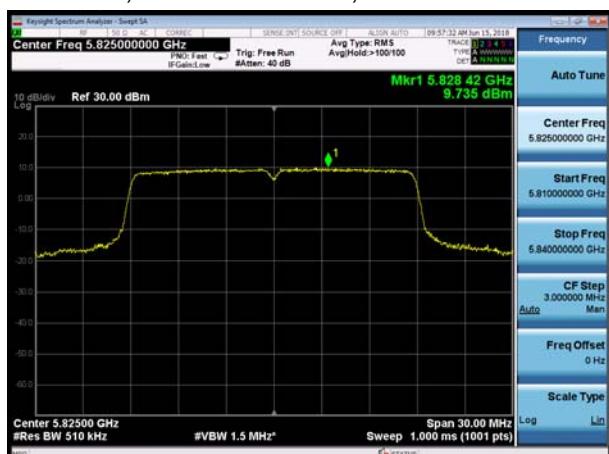
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U-NII-3, 802.11ac VHT40, Channel No.: 151



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

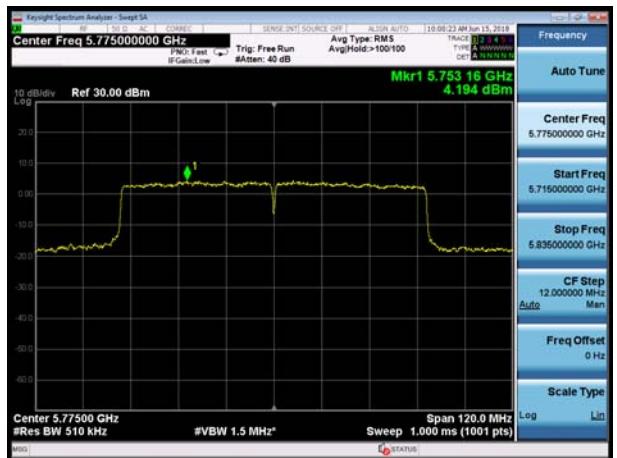




U-NII-3, 802.11ac VHT40, Channel No.: 159



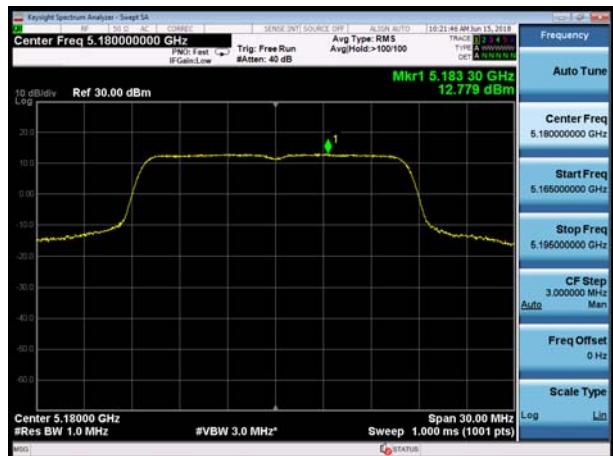
U-NII-3, 802.11ac VHT80, Channel No.: 155



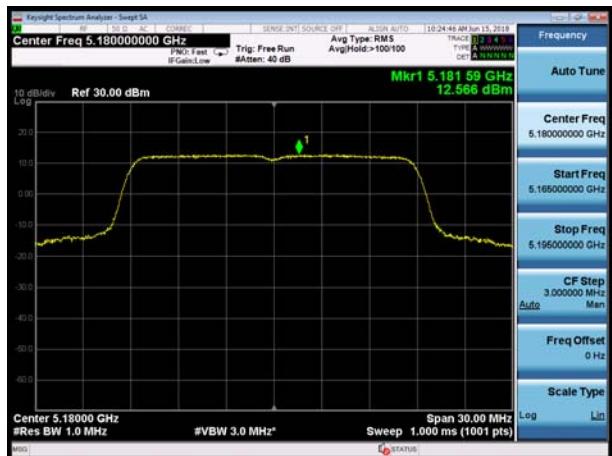


SISO Antenna 2

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, 802.11ac VHT20, Channel No.: 36



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



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



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



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

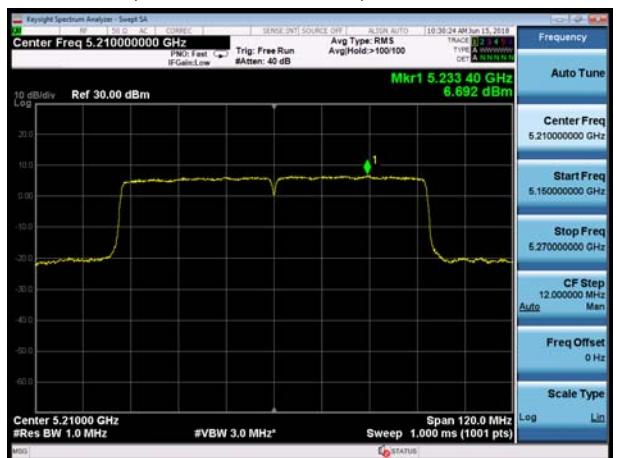




U-NII-1, 802.11ac VHT40, Channel No.: 46

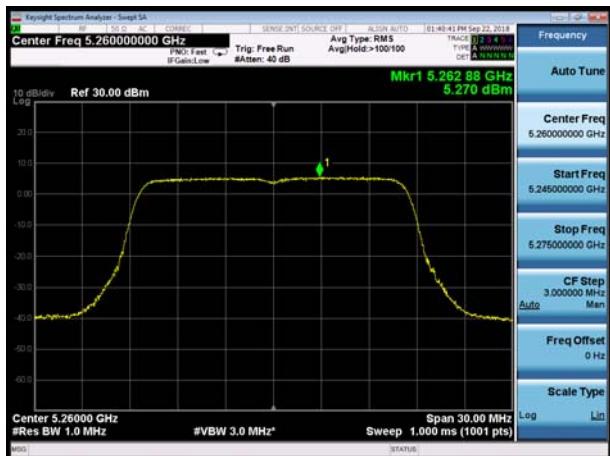


U-NII-1, 802.11ac VHT80, Channel No.: 42

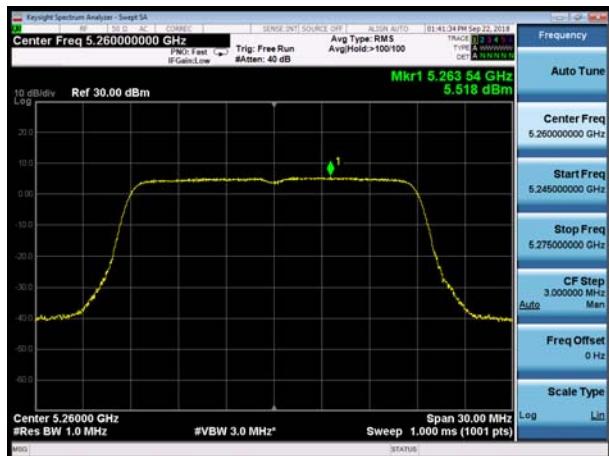




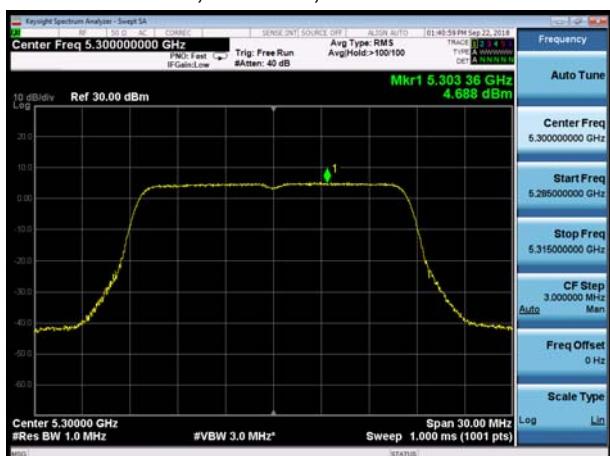
U-NII-2A, 802.11a, Channel No.: 52



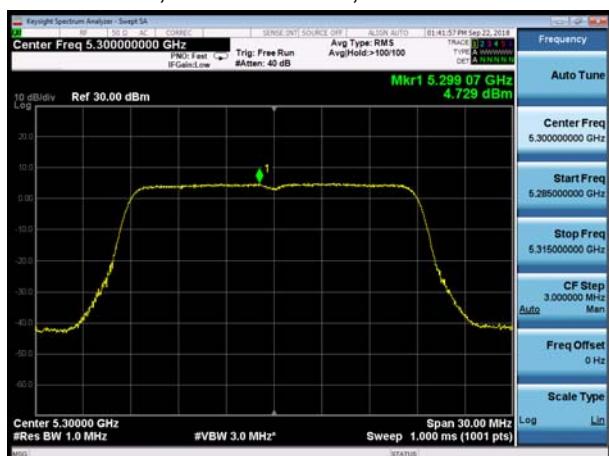
U-NII-2A, 802.11n HT20, Channel No.: 52



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



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



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



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

