

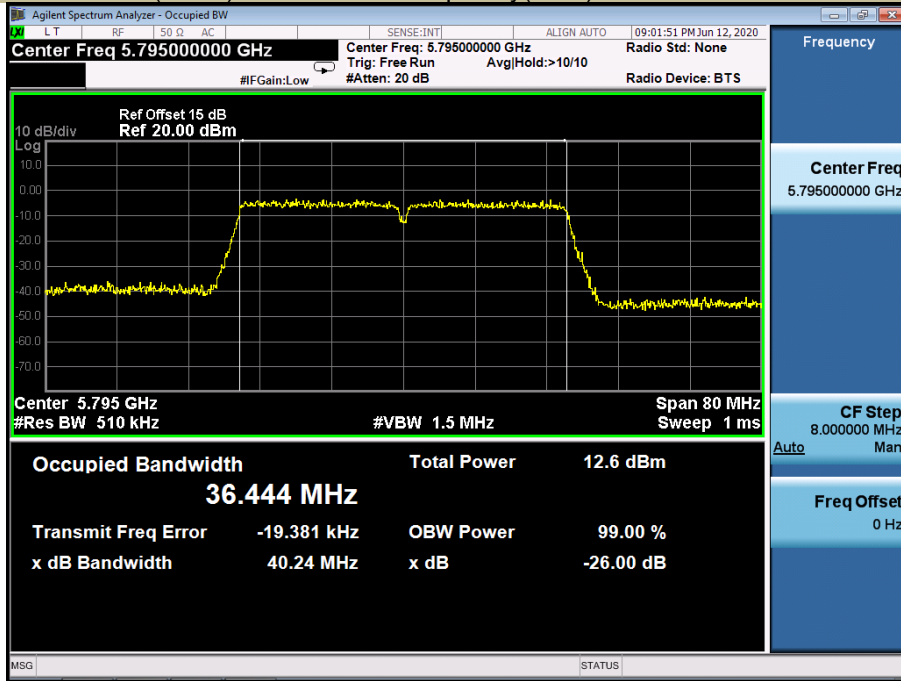
99% Occupied Bandwidth

U-NII - 3

Test Model 802.11ac(HT40)

Frequency(MHz)

5795



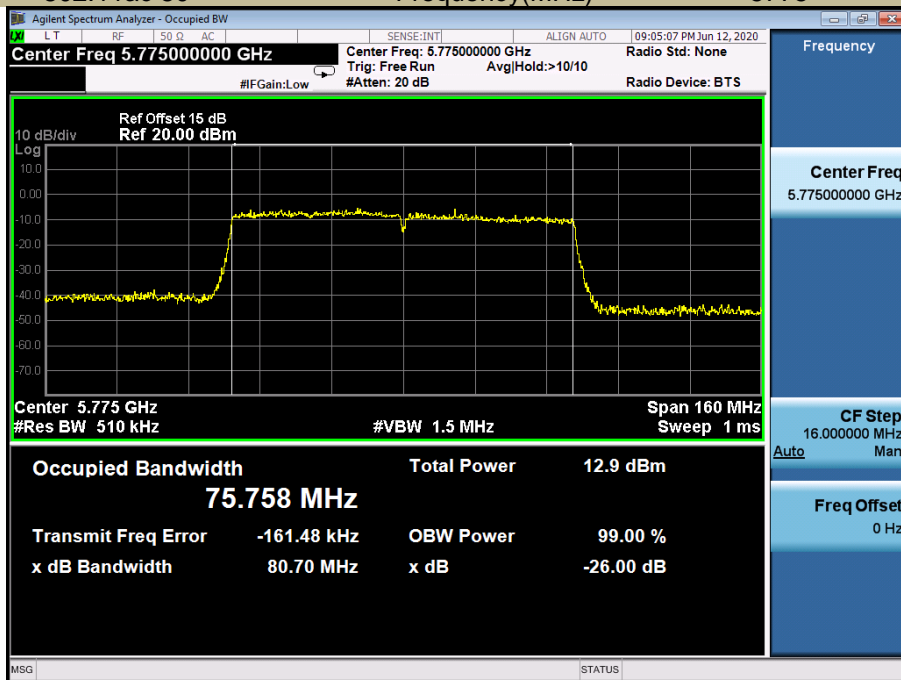
99% Occupied Bandwidth

U-NII - 3

Test Model 802.11ac 80

Frequency(MHz)

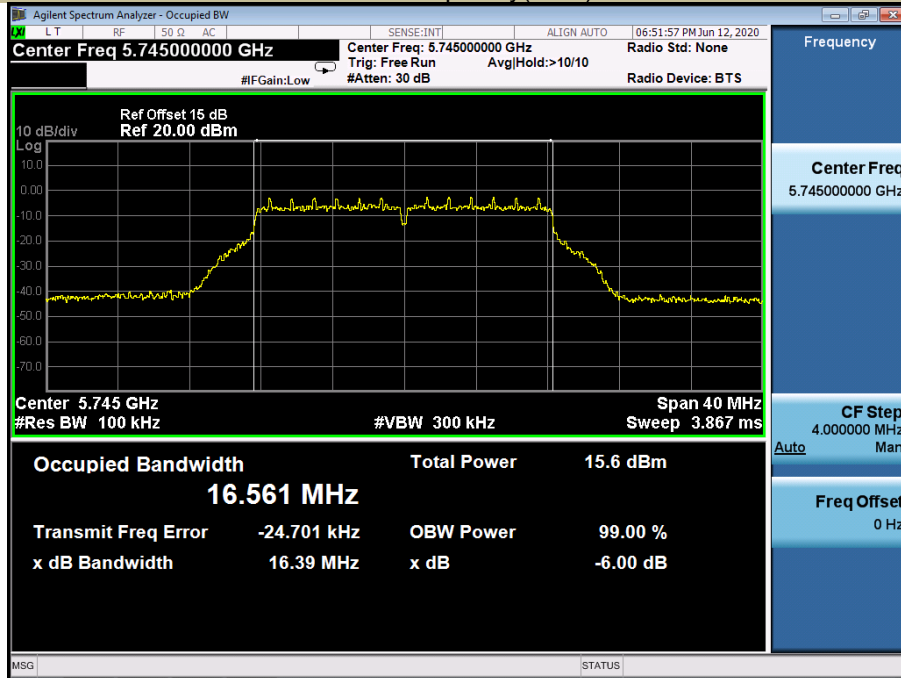
5775



6db Emission Bandwidth
Test Model 802.11a

U-NII - 3
Frequency(MHz)

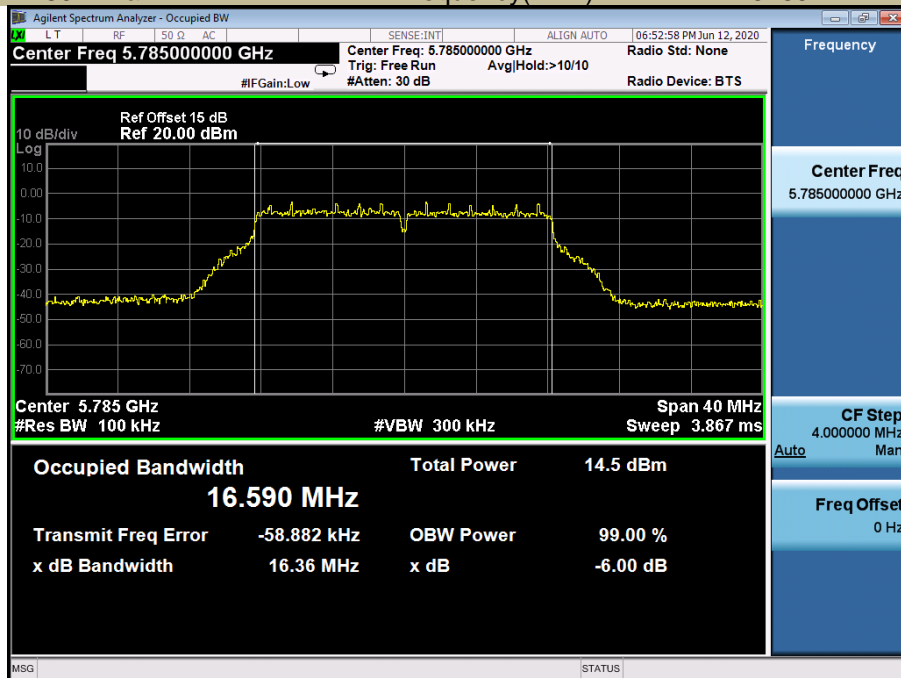
5745



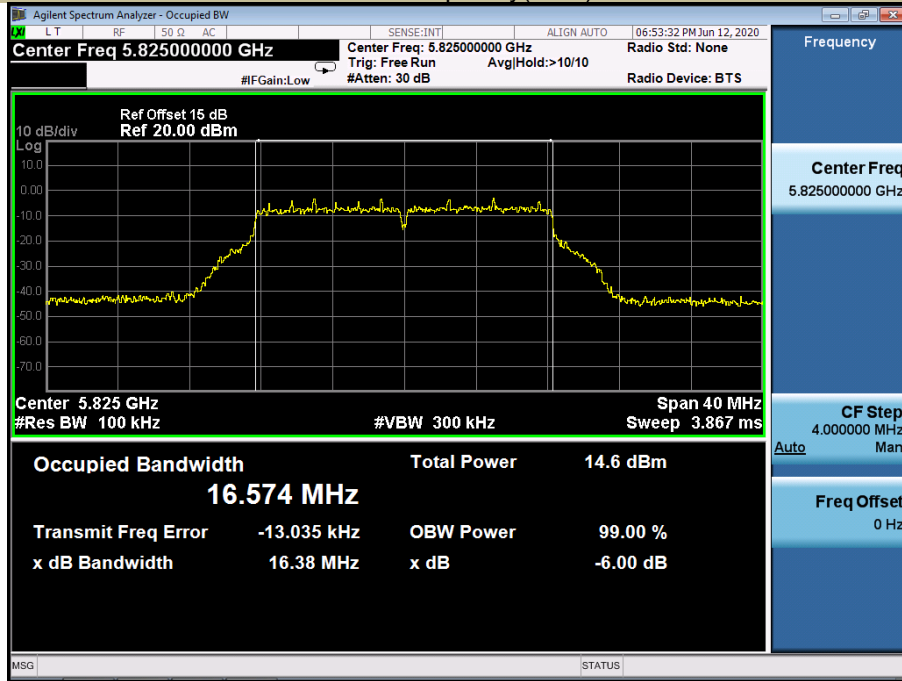
6db Emission Bandwidth
Test Model 802.11a

U-NII - 3
Frequency(MHz)

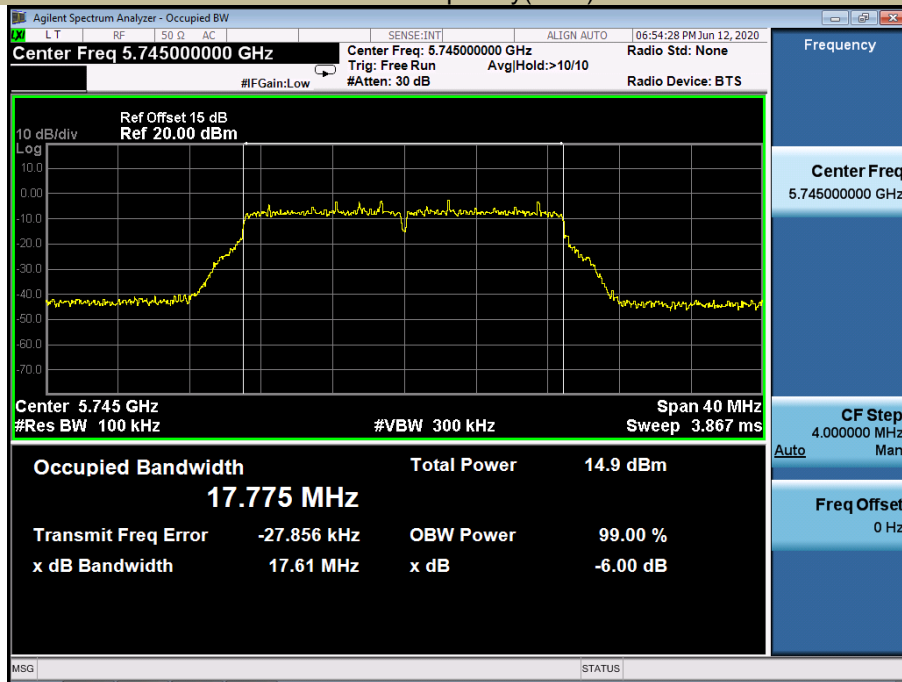
5785



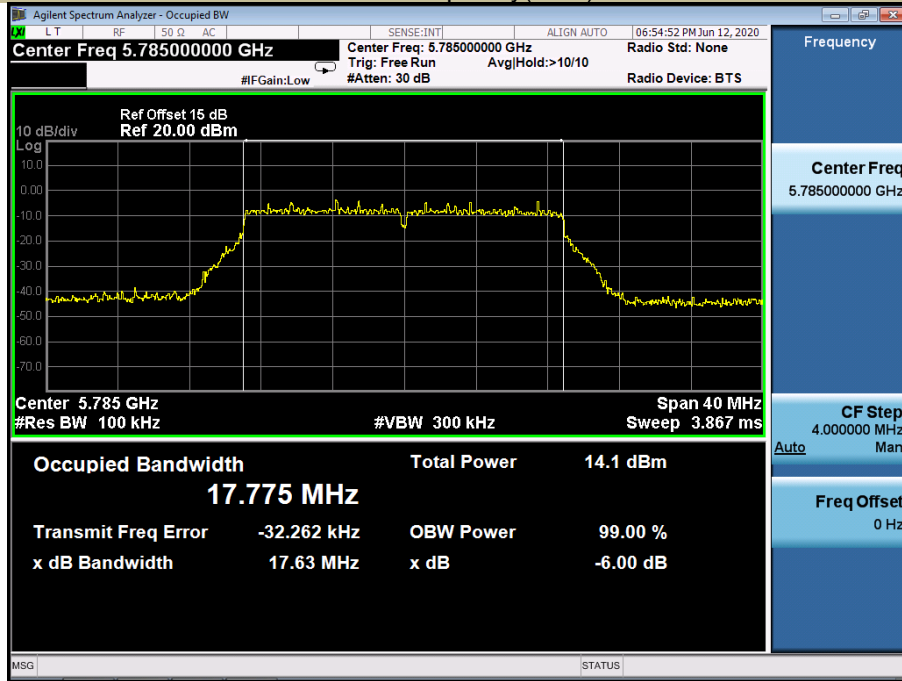
6db Emission Bandwidth U-NII - 3
 Test Model 802.11a Frequency(MHz) 5825



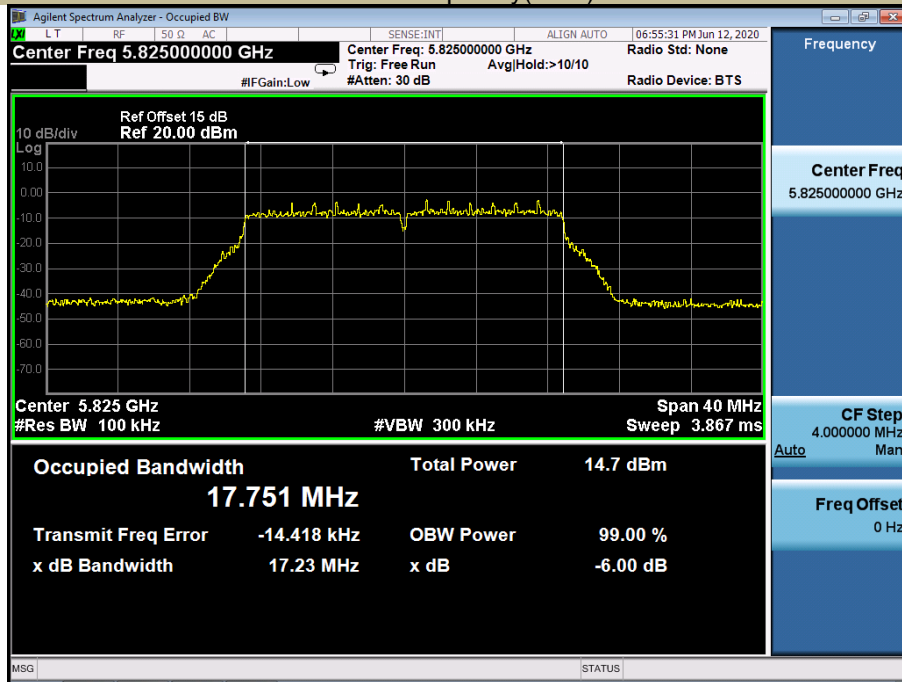
6db Emission Bandwidth U-NII - 3
 Test Model 802.11n-HT20 Frequency(MHz) 5745



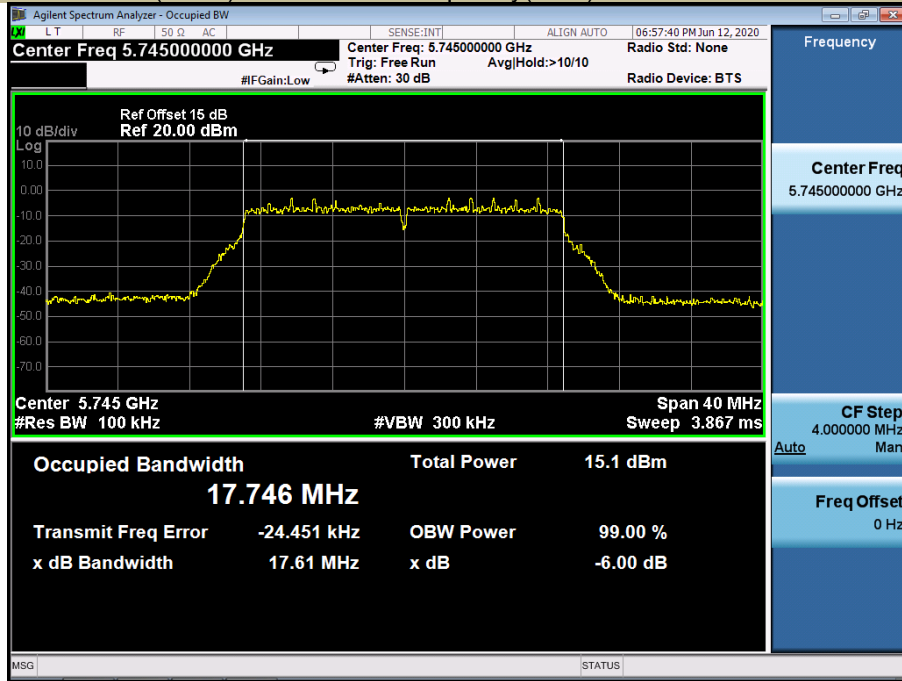
6db Emission Bandwidth U-NII - 3
 Test Model 802.11n-HT20 Frequency(MHz) 5785



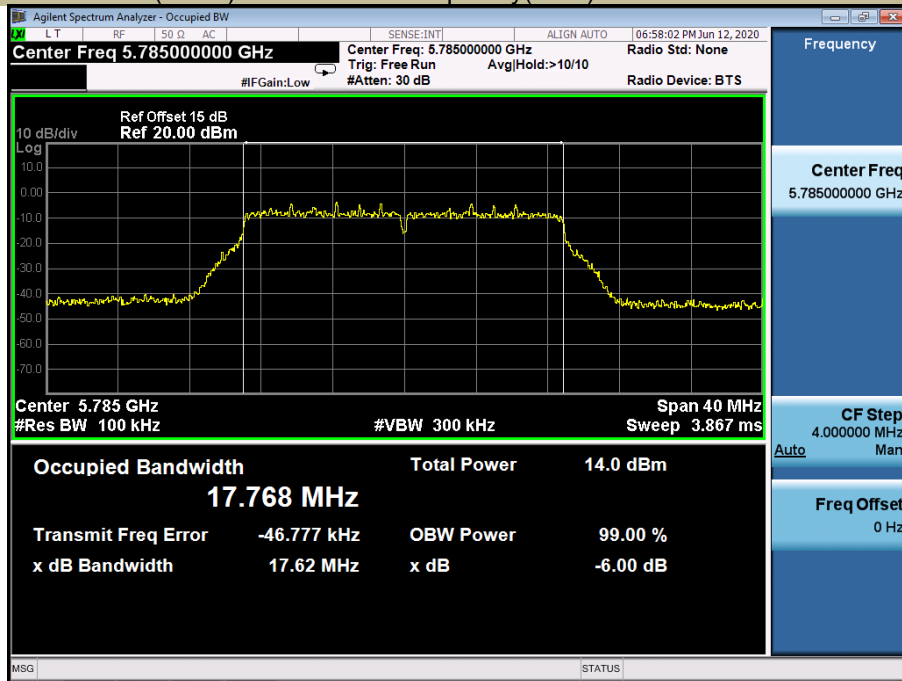
6db Emission Bandwidth U-NII - 3
 Test Model 802.11n-HT20 Frequency(MHz) 5825



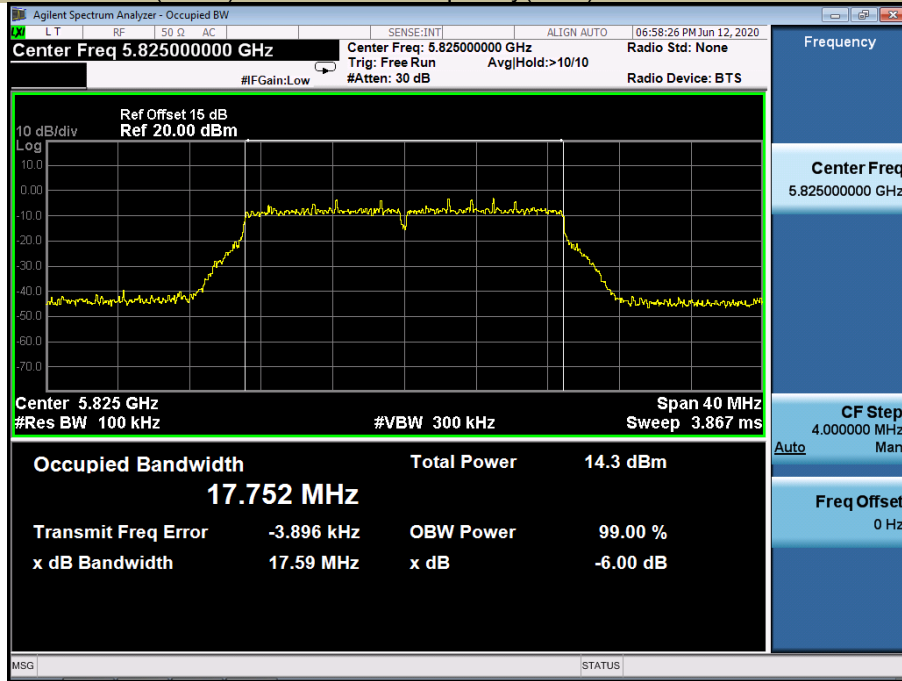
6db Emission Bandwidth U-NII - 3
 Test Model 802.11ac(HT20) Frequency(MHz) 5745



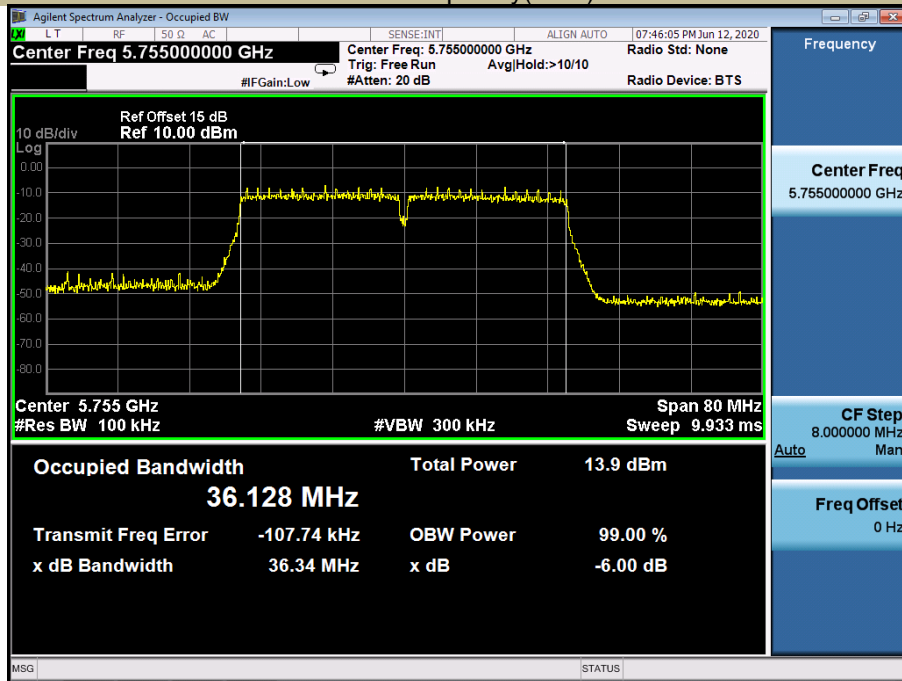
6db Emission Bandwidth U-NII - 3
 Test Model 802.11ac(HT20) Frequency(MHz) 5785



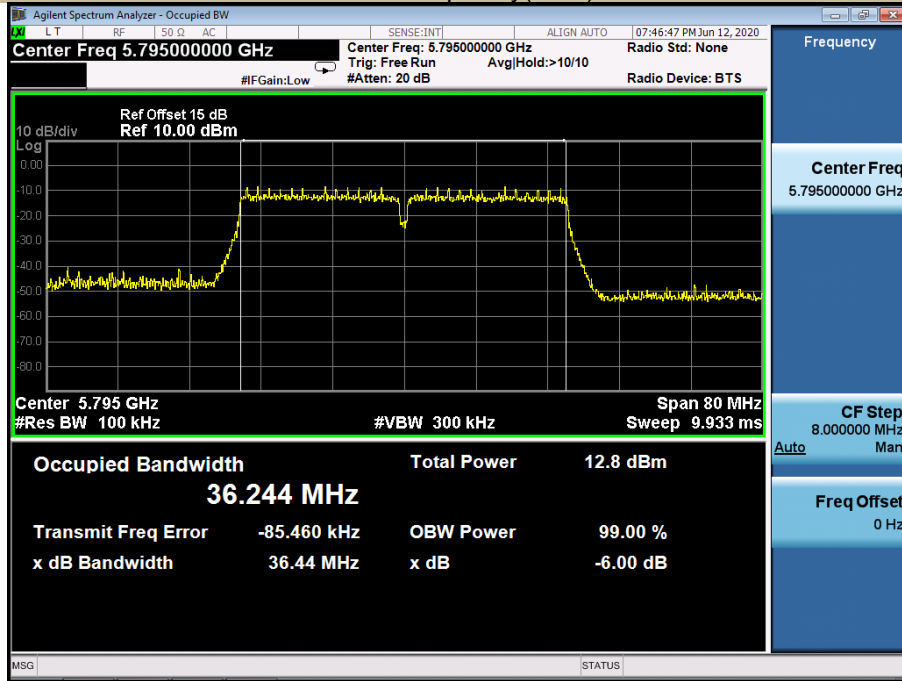
6db Emission Bandwidth U-NII - 3
 Test Model 802.11ac(HT20) Frequency(MHz) 5825



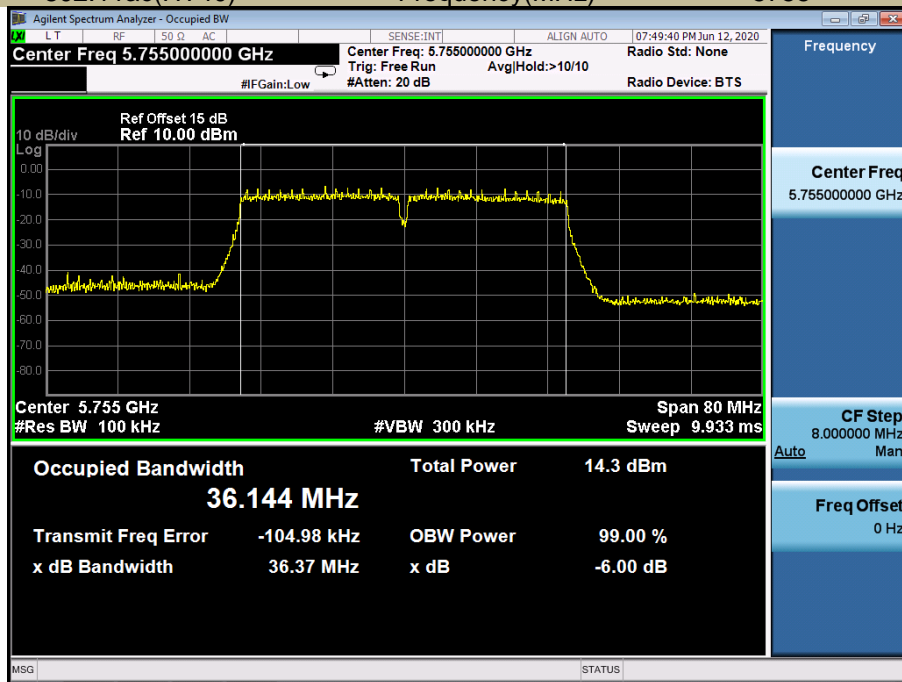
6db Emission Bandwidth U-NII - 3
 Test Model 802.11n-HT40 Frequency(MHz) 5755



6db Emission Bandwidth U-NII - 3
 Test Model 802.11n-HT40 Frequency(MHz) 5795



6db Emission Bandwidth U-NII - 3
 Test Model 802.11ac(HT40) Frequency(MHz) 5755



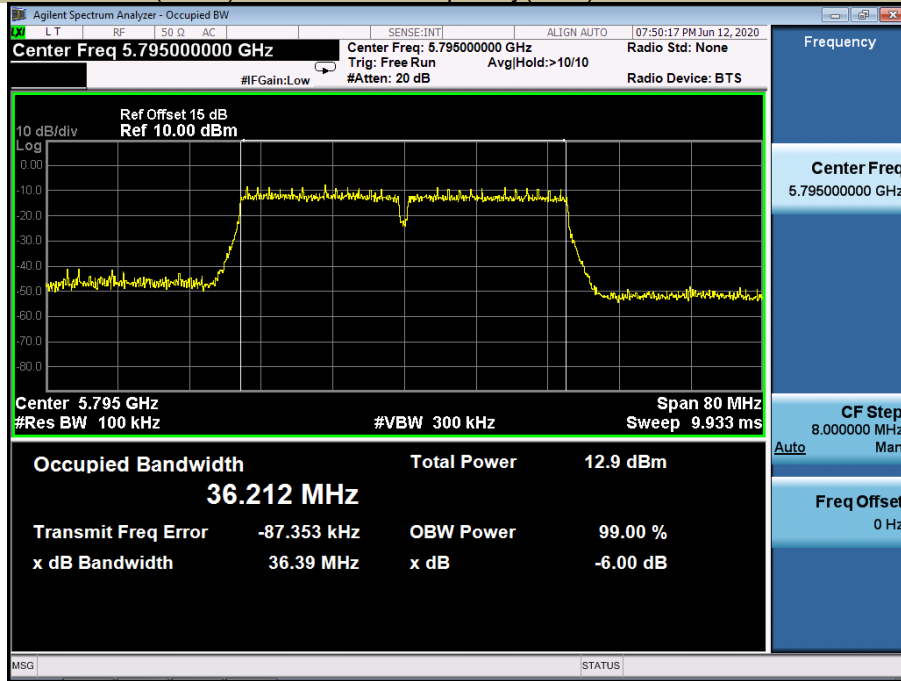
6db Emission Bandwidth

U-NII - 3

Test Model 802.11ac(HT40)

Frequency(MHz)

5795



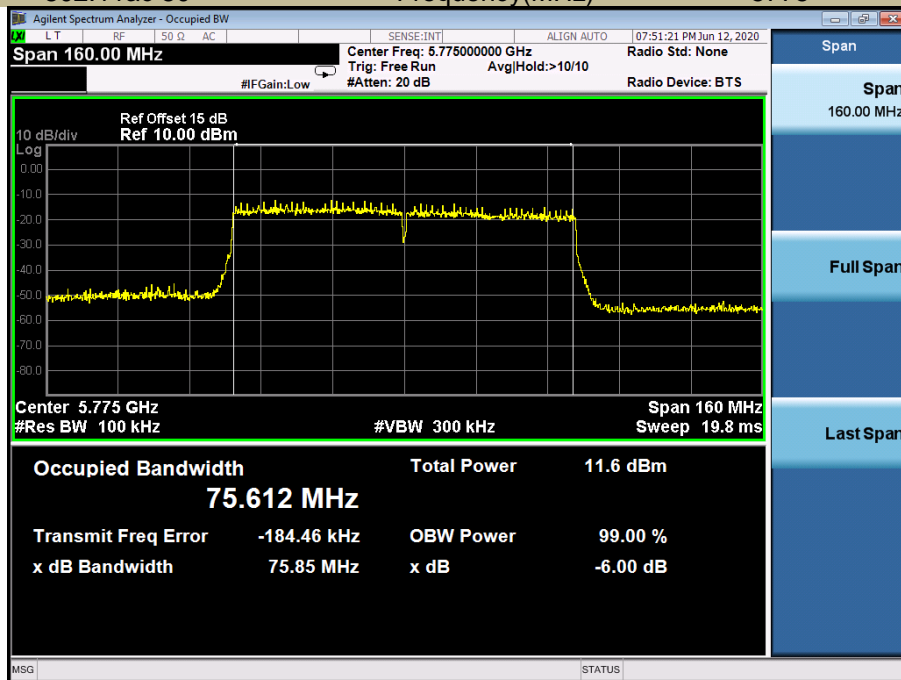
6db Emission Bandwidth

U-NII - 3

Test Model 802.11ac 80

Frequency(MHz)

5775



8.2 MAXIMUM CONDUCTED OUTPUT POWER

8.2.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I

According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C

According to FCC Part 15.407(a)(3) for UNII Band III

According to 789033 D02 Section II(E)

8.2.2 Conformance Limit

■ For the band 5.15-5.25 GHz,

(a) (1) (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).

(a) (1) (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.

(a) (1) (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.

(a) (1) (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

(a) (2) 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

(a) (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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. 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

8.2.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.2.4 Test Procedure

The maximum average conducted output power can be measured using Method PM-G (Measurement using a gated RF average power meter):

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

- a. The Transmitter output (antenna port) was connected to the power meter.
- b. Turn on the EUT and power meter and then record the power value.
- c. Repeat above procedures on all channels needed to be tested.

8.2.5 Test Results

1T1R - Antenna 1

802.11a mode

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH36	5180	17.98	24	Pass
	CH40	5200	17.15	24	Pass
	CH48	5240	16.39	24	Pass

802.11n-HT20

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH36	5180	17.32	24	Pass
	CH40	5200	16.87	24	Pass
	CH48	5240	16.24	24	Pass

802.11 ac (HT20)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH36	5180	17.65	24	Pass
	CH40	5200	17.05	24	Pass
	CH48	5240	16.92	24	Pass

802.11n-HT40

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH38	5190	18.60	24	Pass
	CH46	5230	16.88	24	Pass

802.11 ac (HT40)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH38	5190	18.04	24	Pass
	CH46	5230	17.03	24	Pass

802.11 ac (HT80)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH42	5210	18.56	24	Pass

802.11a mode

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH52	5260	15.56	24	24.34	Pass
	CH56	5280	14.85	24	24.38	Pass
	CH64	5320	14.85	24	24.37	Pass

 802.11n-HT20

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH52	5260	15.31	24	24.40	Pass
	CH56	5280	14.58	24	24.38	Pass
	CH64	5320	14.76	24	24.37	Pass

 802.11 ac (HT20)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH52	5260	15.65	24	24.37	Pass
	CH56	5280	14.65	24	24.40	Pass
	CH64	5320	14.70	24	24.38	Pass

 802.11n-HT40

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH54	5270	15.80	24	27.04	Pass
	CH62	5310	15.12	24	27.04	Pass

 802.11 ac (HT40)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH54	5270	16.29	24	27.03	Pass
	CH62	5310	15.31	24	26.99	Pass

 802.11 ac (HT80)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH58	5290	16.17	24	30.08	Pass

802.11a mode

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH100	5500	15.50	24	24.36	Pass
	CH116	5580	14.92	24	24.39	Pass
	CH140	5700	13.77	24	24.36	Pass

 802.11n-HT20

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH100	5500	15.69	24	24.39	Pass
	CH116	5580	15.17	24	24.41	Pass
	CH140	5700	13.79	24	24.33	Pass

 802.11 ac (HT20)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH100	5500	15.70	24	24.40	Pass
	CH116	5580	14.93	24	24.42	Pass
	CH140	5700	13.53	24	24.37	Pass

 802.11n-HT40

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH102	5510	15.71	24	27.02	Pass
	CH134	5670	14.95	24	27.02	Pass

 802.11 ac (HT40)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH102	5510	15.88	24	27.01	Pass
	CH134	5670	14.64	24	27.02	Pass

 802.11 ac (HT80)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH106	5530	17.05	24	30.04	Pass

802.11a mode

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH149	5745	14.50	30	Pass
	CH157	5785	13.38	30	Pass
	CH165	5825	13.85	30	Pass

 802.11n-HT20

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH149	5745	14.18	30	Pass
	CH157	5785	13.31	30	Pass
	CH165	5825	13.33	30	Pass

 802.11 ac (HT20)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH149	5745	14.33	30	Pass
	CH157	5785	13.51	30	Pass
	CH165	5825	13.49	30	Pass

 802.11n-HT40

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH151	5755	14.79	30	Pass
	CH159	5795	13.41	30	Pass

 802.11 ac (HT40)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH151	5755	14.31	30	Pass
	CH159	5795	13.97	30	Pass

 802.11 ac (HT80)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH155	5775	14.57	30	Pass

1T1R - Antenna 2

802.11a mode

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH36	5180	17.90	24	Pass
	CH40	5200	17.06	24	Pass
	CH48	5240	16.25	24	Pass

802.11n-HT20

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH36	5180	18.46	24	Pass
	CH40	5200	17.40	24	Pass
	CH48	5240	16.52	24	Pass

802.11 ac (HT20)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH36	5180	18.34	24	Pass
	CH40	5200	17.20	24	Pass
	CH48	5240	17.02	24	Pass

802.11n-HT40

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH38	5190	18.85	24	Pass
	CH46	5230	17.22	24	Pass

802.11 ac (HT40)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH38	5190	18.62	24	Pass
	CH46	5230	17.35	24	Pass

802.11 ac (HT80)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH42	5210	18.72	24	Pass

802.11a mode

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH52	5260	15.93	24	24.34	Pass
	CH56	5280	14.99	24	24.38	Pass
	CH64	5320	15.01	24	24.37	Pass

 802.11n-HT20

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH52	5260	15.53	24	24.40	Pass
	CH56	5280	14.96	24	24.38	Pass
	CH64	5320	14.91	24	24.37	Pass

 802.11 ac (HT20)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH52	5260	15.83	24	24.37	Pass
	CH56	5280	14.67	24	24.40	Pass
	CH64	5320	15.05	24	24.38	Pass

 802.11n-HT40

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH54	5270	16.00	24	27.04	Pass
	CH62	5310	15.36	24	27.04	Pass

 802.11 ac (HT40)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH54	5270	16.35	24	27.03	Pass
	CH62	5310	15.48	24	26.99	Pass

 802.11 ac (HT80)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH58	5290	16.83	24	30.08	Pass

802.11a mode

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH100	5500	15.66	24	24.36	Pass
	CH116	5580	15.05	24	24.39	Pass
	CH140	5700	13.90	24	24.36	Pass

 802.11n-HT20

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH100	5500	15.85	24	24.39	Pass
	CH116	5580	15.29	24	24.41	Pass
	CH140	5700	13.97	24	24.33	Pass

 802.11 ac (HT20)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH100	5500	15.81	24	24.40	Pass
	CH116	5580	15.07	24	24.42	Pass
	CH140	5700	13.82	24	24.37	Pass

 802.11n-HT40

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH102	5510	16.05	24	27.02	Pass
	CH134	5670	15.07	24	27.02	Pass

 802.11 ac (HT40)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH102	5510	16.72	24	27.01	Pass
	CH134	5670	14.95	24	27.02	Pass

 802.11 ac (HT80)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH106	5530	17.27	24	30.04	Pass

802.11a mode

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH149	5745	14.59	30	Pass
	CH157	5785	13.58	30	Pass
	CH165	5825	14.18	30	Pass

 802.11n-HT20

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH149	5745	14.39	30	Pass
	CH157	5785	13.45	30	Pass
	CH165	5825	13.67	30	Pass

 802.11 ac (HT20)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH149	5745	14.51	30	Pass
	CH157	5785	13.70	30	Pass
	CH165	5825	13.71	30	Pass

 802.11n-HT40

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH151	5755	14.99	30	Pass
	CH159	5795	13.72	30	Pass

 802.11 ac (HT40)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH151	5755	14.77	30	Pass
	CH159	5795	14.04	30	Pass

 802.11 ac (HT80)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH155	5775	15.00	30	Pass

For 2T2R
 802.11n-HT20

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH36	5180	20.94	23	Pass
	CH40	5200	20.15	23	Pass
	CH48	5240	19.39	23	Pass

 802.11 ac (HT20)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH36	5180	21.02	23	Pass
	CH40	5200	20.14	23	Pass
	CH48	5240	19.98	23	Pass

 802.11n-HT40

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH38	5190	21.74	23	Pass
	CH46	5230	20.06	23	Pass

 802.11 ac (HT40)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH38	5190	21.35	23	Pass
	CH46	5230	20.20	23	Pass

 802.11 ac (HT80)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII - 1	CH42	5210	21.65	23	Pass

802.11n-HT20

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH52	5260	18.43	23	24.40	Pass
	CH56	5280	17.78	23	24.38	Pass
	CH64	5320	17.85	23	24.37	Pass

 802.11 ac (HT20)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH52	5260	18.75	23	24.37	Pass
	CH56	5280	17.67	23	24.40	Pass
	CH64	5320	17.89	23	24.38	Pass

 802.11n-HT40

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH54	5270	18.91	23	27.04	Pass
	CH62	5310	18.25	23	27.04	Pass

 802.11 ac (HT40)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH54	5270	19.33	23	27.03	Pass
	CH62	5310	18.41	23	26.99	Pass

 802.11 ac (HT80)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2A	CH58	5290	19.52	23	30.08	Pass

802.11n-HT20

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH100	5500	18.78	23	24.39	Pass
	CH116	5580	18.24	23	24.41	Pass
	CH140	5700	16.89	23	24.33	Pass

 802.11 ac (HT20)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH100	5500	18.77	23	24.40	Pass
	CH116	5580	18.01	23	24.42	Pass
	CH140	5700	16.69	23	24.37	Pass

 802.11n-HT40

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH102	5510	18.89	23	27.02	Pass
	CH134	5670	18.02	23	27.02	Pass

 802.11 ac (HT40)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH102	5510	19.33	23	27.01	Pass
	CH134	5670	17.81	23	27.02	Pass

 802.11 ac (HT80)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Limit (11 dBm + 10 log B)	Verdict
U-NII – 2C	CH106	5530	20.17	23	30.04	Pass

802.11n-HT20

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH149	5745	17.30	29	Pass
	CH157	5785	16.39	29	Pass
	CH165	5825	16.51	29	Pass

 802.11 ac (HT20)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH149	5745	17.43	29	Pass
	CH157	5785	16.62	29	Pass
	CH165	5825	16.61	29	Pass

 802.11n-HT40

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH151	5755	17.90	29	Pass
	CH159	5795	16.58	29	Pass

 802.11 ac (HT40)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH151	5755	17.56	29	Pass
	CH159	5795	17.02	29	Pass

 802.11 ac (HT80)

Band	Channel Number	Channel Freq. (MHz)	Conducted Output Power(dBm)	Limit (dBm)	Verdict
U-NII – 3	CH155	5775	17.80	29	Pass

8.3 MAXIMUM PEAK POWER DENSITY

8.3.1 Applicable Standard

According to FCC Part 15.407(a)(1) for UNII Band I

According to FCC Part 15.407(a)(2) for UNII Band II-A and UNII Band II-C

According to FCC Part 15.407(a)(3) for UNII Band III

According to 789033 D02 Section II(F)

8.3.2 Conformance Limit

■ For the band 5.15-5.25 GHz,

(a) (1) (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).

(a) (1) (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.

(a) (1) (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.

(a) (1) (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

(b) (2) 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

(a) (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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. 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

8.3.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

8.3.4 Test Procedure

Methods refer to FCC KDB 789033

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set $RBW \geq 1/T$, where T is defined in section II.B.I.a).
- b) Set $VBW \geq 3 RBW$.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/RBW)$ to the measured result, whereas $RBW (< 500 \text{ KHz})$ is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10\log(1\text{MHz}/RBW)$ to the measured result, whereas $RBW (< 1 \text{ MHz})$ is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since $RBW=100 \text{ KHz}$ is available on nearly all spectrum analyzers.

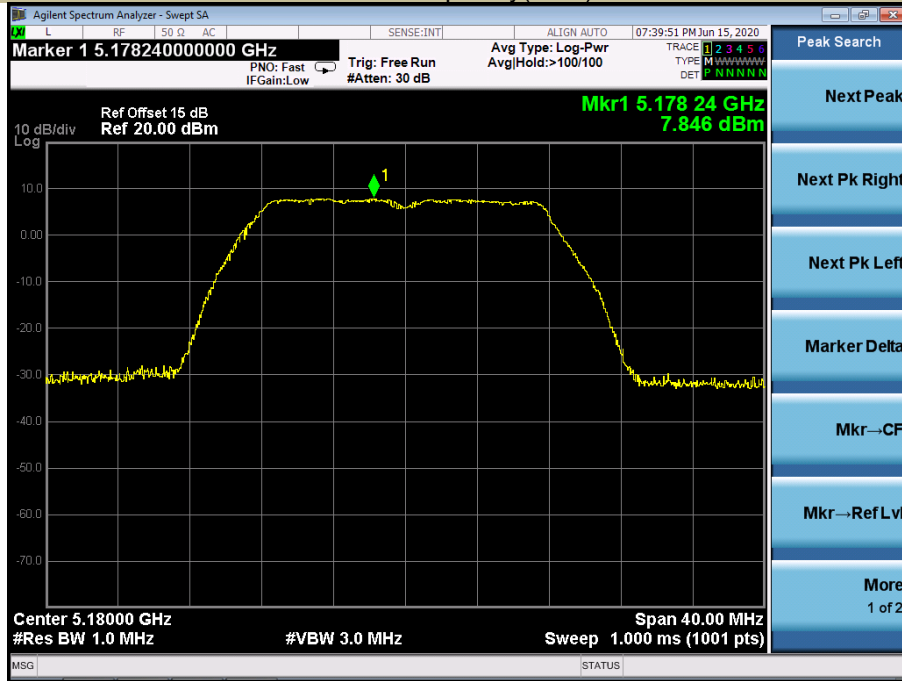
8.3.5 Test Results

For 1T1R-Antenna 1

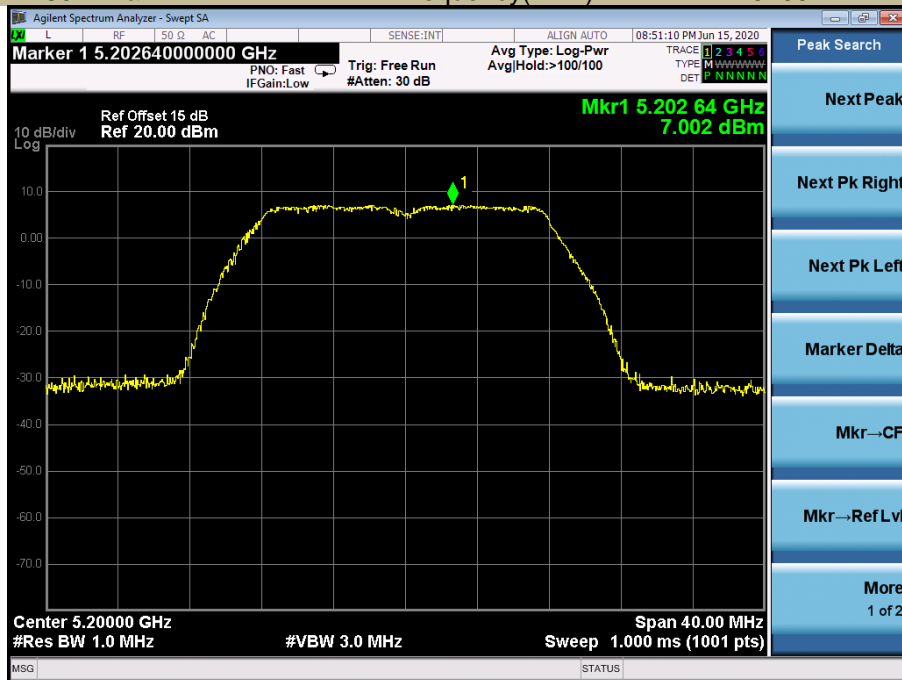
5150-5250MHz

Operating mode	Test Channel	Power Spectral Density dBm/MHz	Limit (dBm/MHz)
802.11a	5180	7.846	11
	5200	7.002	11
	5240	6.622	11
802.11n-HT20	5180	6.630	11
	5200	6.633	11
	5240	6.731	11
802.11ac(HT20)	5180	6.569	11
	5200	6.261	11
	5240	6.493	11
802.11n-HT40	5190	5.309	11
	5230	3.984	11
802.11ac(HT40)	5190	4.599	11
	5230	3.877	11
802.11ac(HT80)	5210	0.855	11

Power Spectral Density U-NII - 1
 Test Model 802.11a Frequency(MHz) 5180



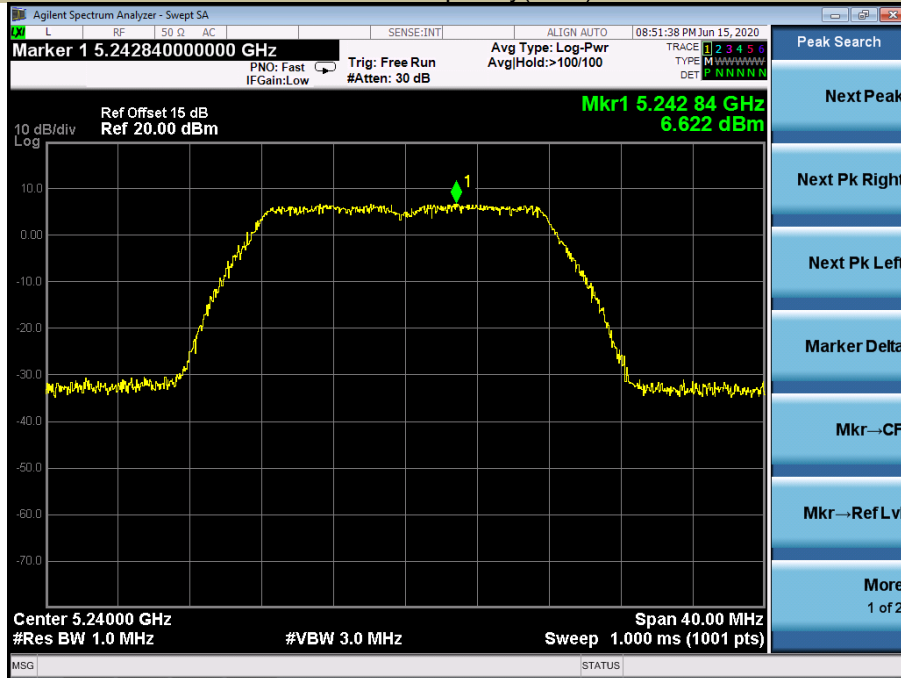
Power Spectral Density U-NII - 1
 Test Model 802.11a Frequency(MHz) 5200



Power Spectral Density
Test Model 802.11a

U-NII - 1
Frequency(MHz)

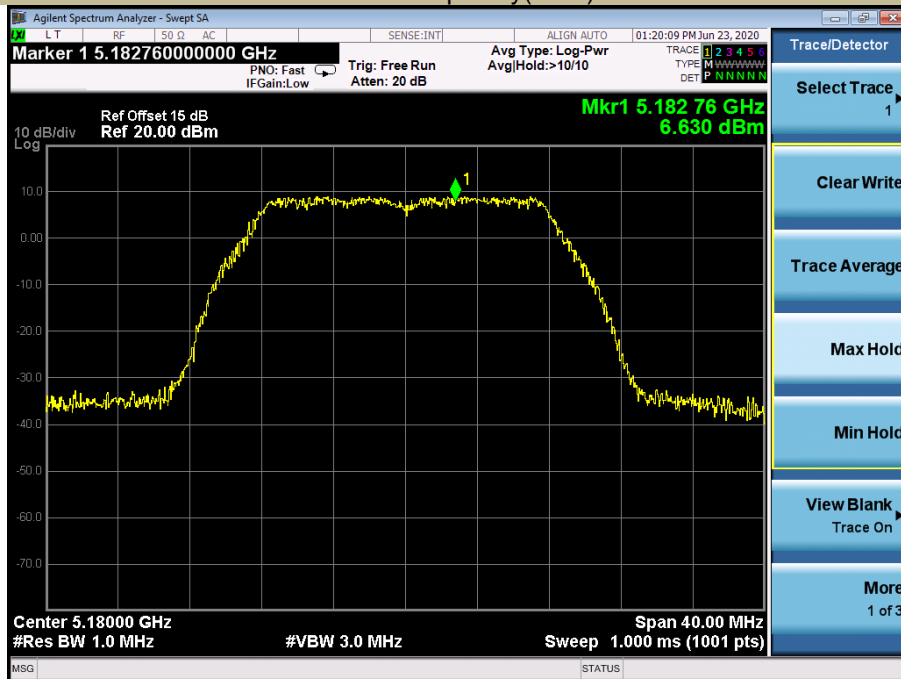
5240



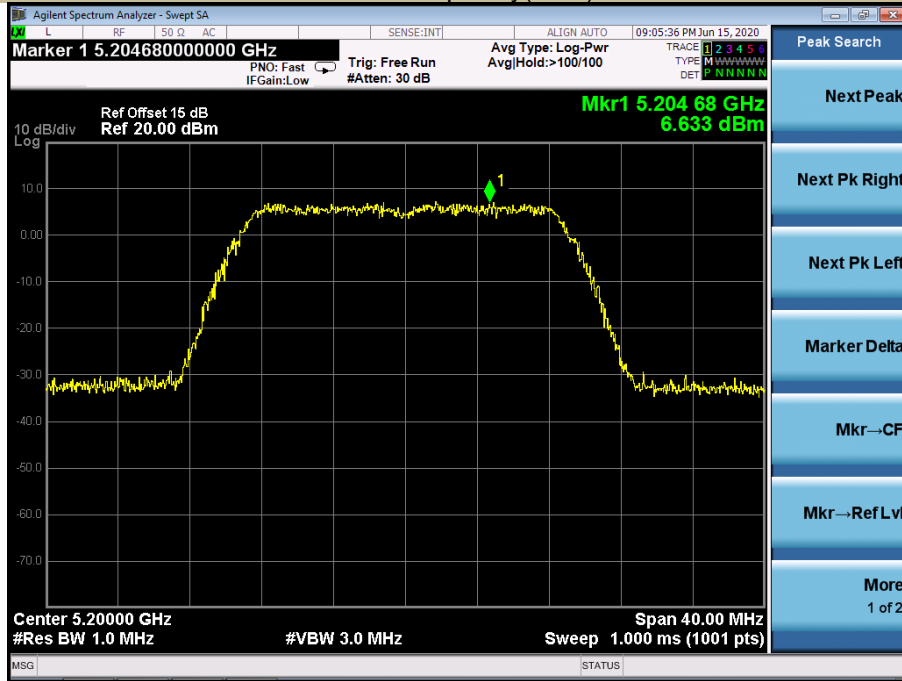
Power Spectral Density
Test Model 802.11n-HT20

U-NII - 1
Frequency(MHz)

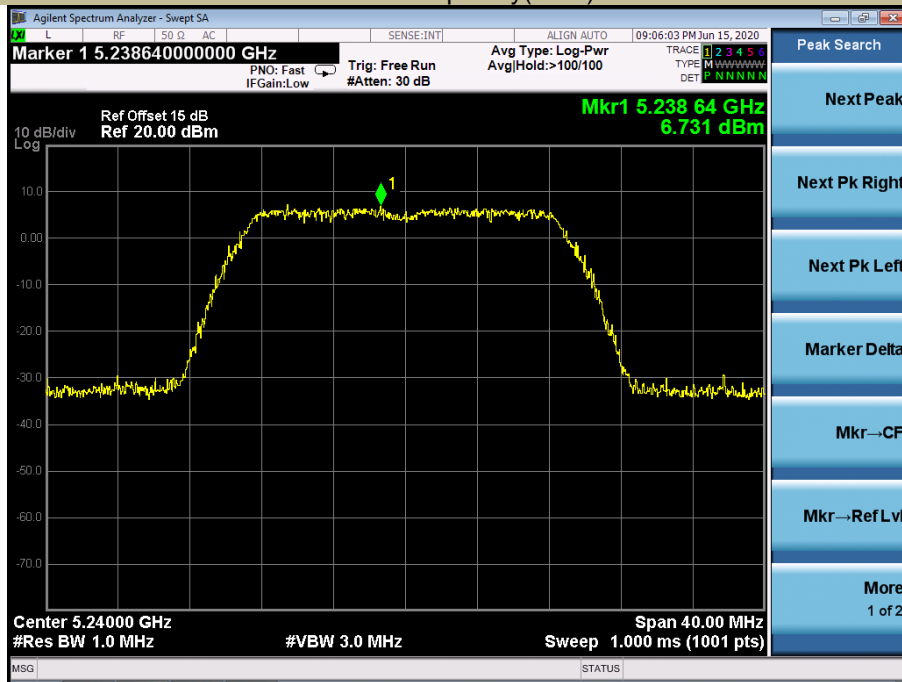
5180



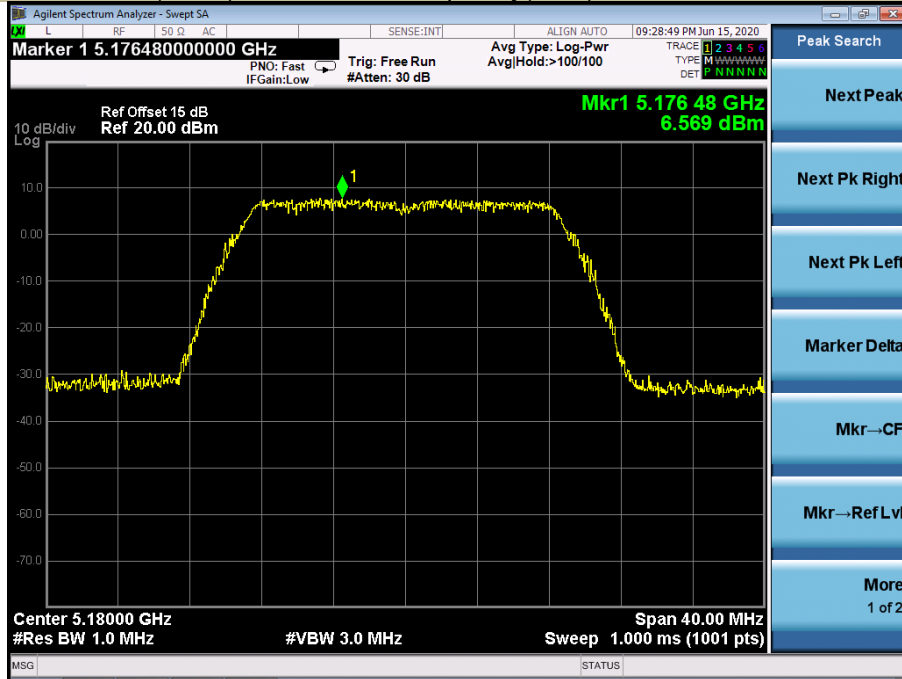
Power Spectral Density U-NII - 1
 Test Model 802.11n-HT20 Frequency(MHz) 5200



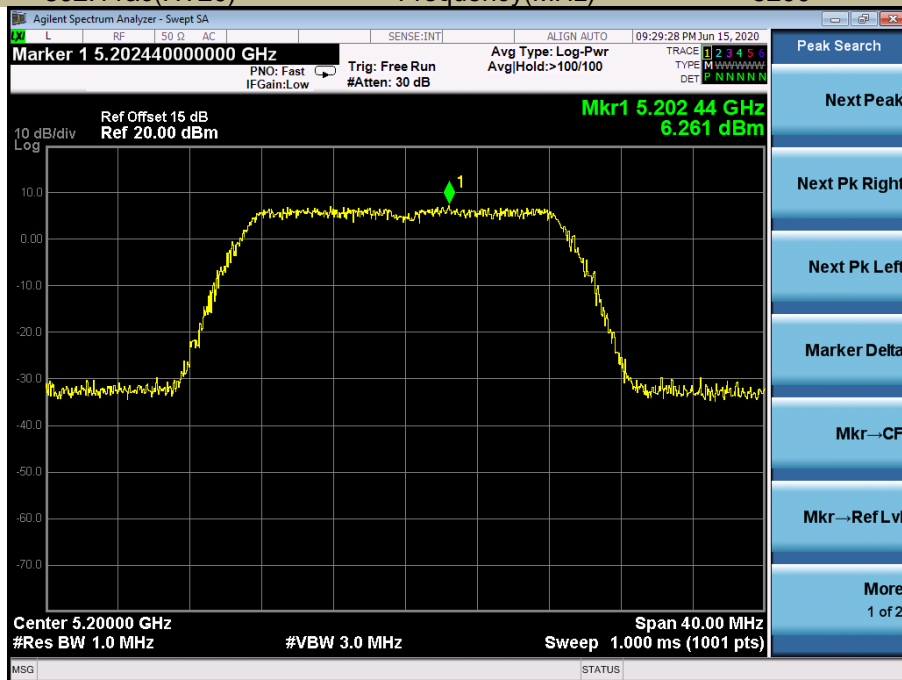
Power Spectral Density U-NII - 1
 Test Model 802.11n-HT20 Frequency(MHz) 5240



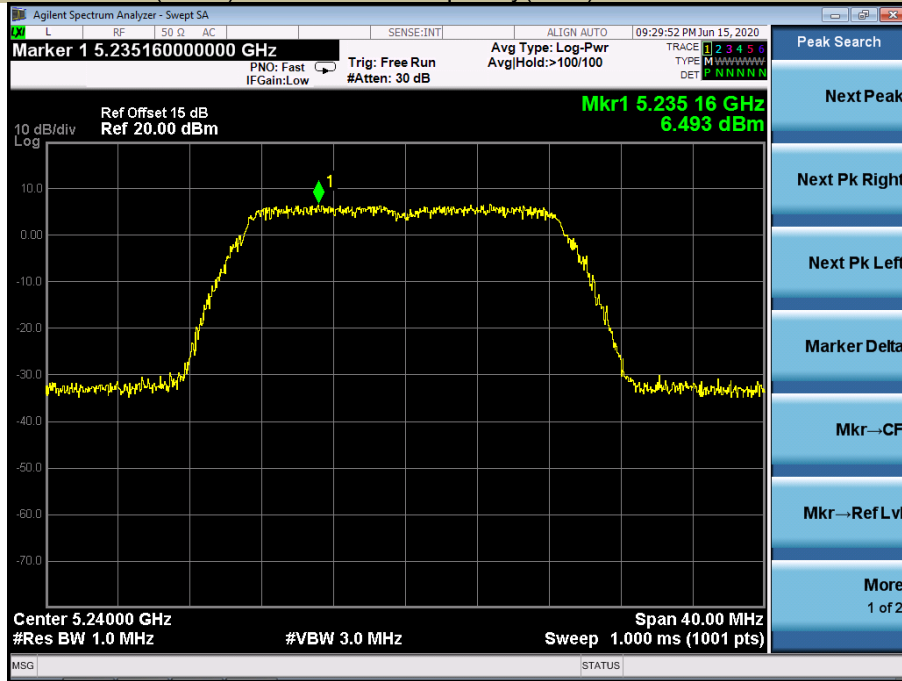
Power Spectral Density U-NII - 1
 Test Model 802.11ac(HT20) Frequency(MHz) 5180



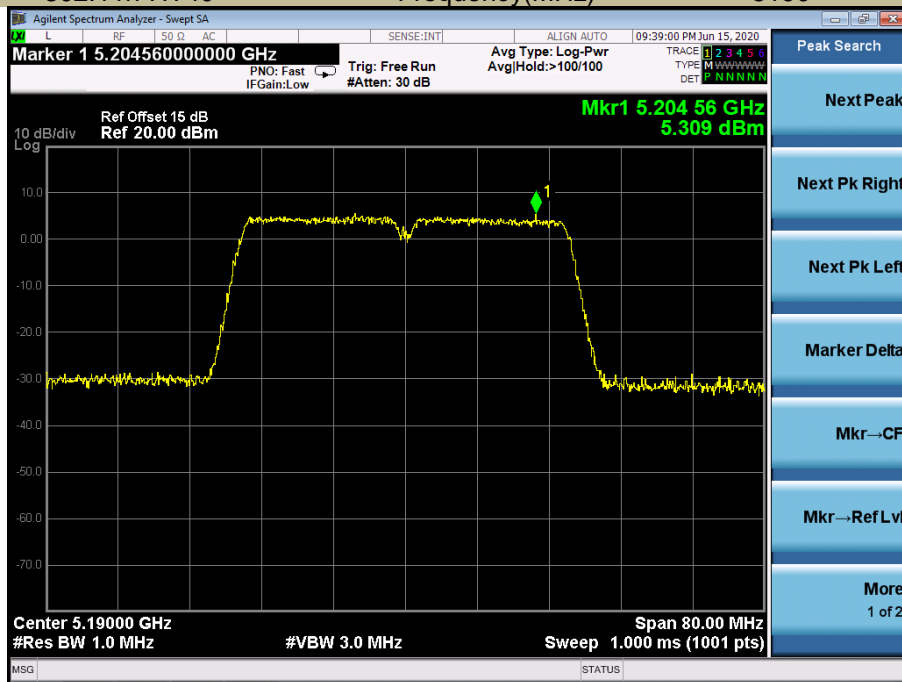
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 Test Model 802.11ac(HT20) Frequency(MHz) 5200



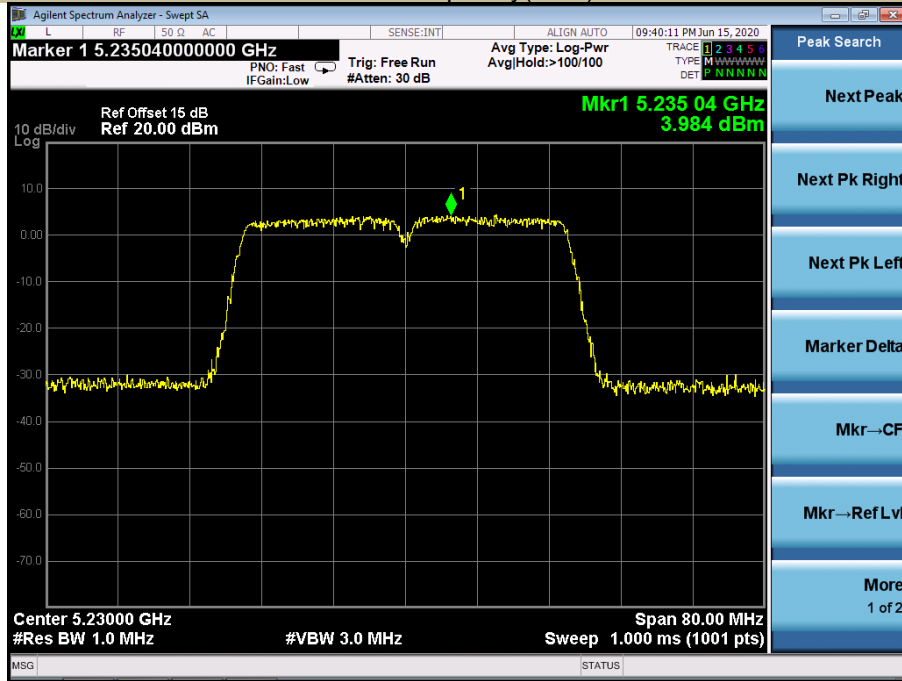
Power Spectral Density U-NII - 1
 Test Model 802.11ac(HT20) Frequency(MHz) 5240



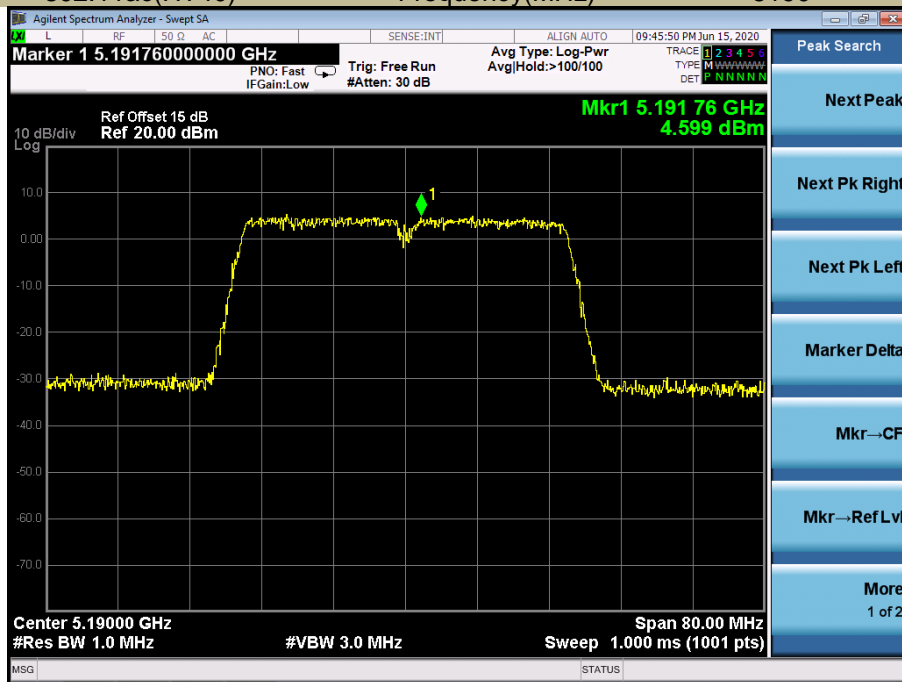
Power Spectral Density U-NII - 1
 Test Model 802.11n-HT40 Frequency(MHz) 5190



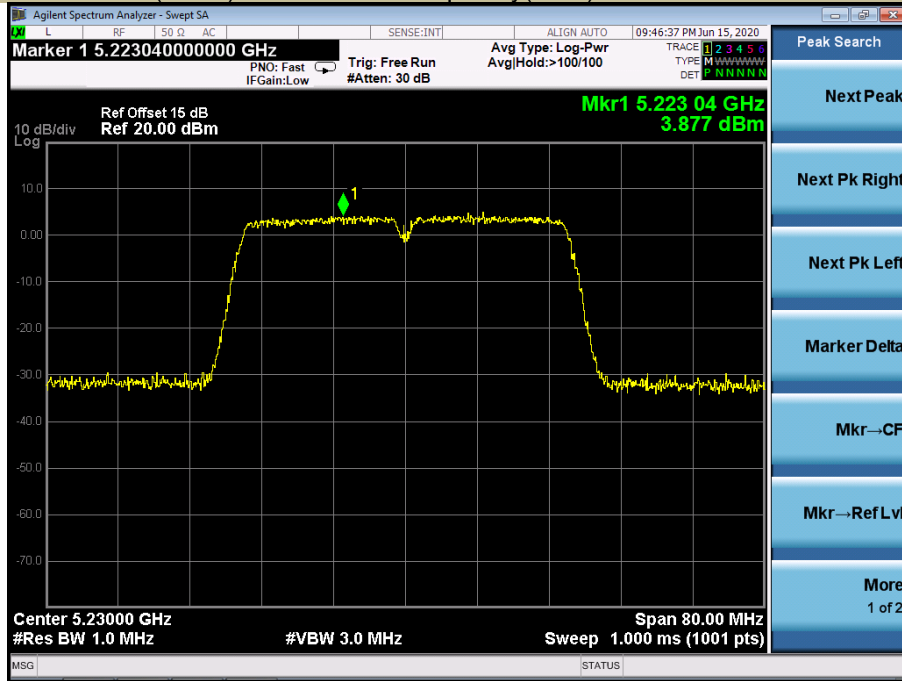
Power Spectral Density U-NII - 1
 Test Model 802.11n-HT40 Frequency(MHz) 5230



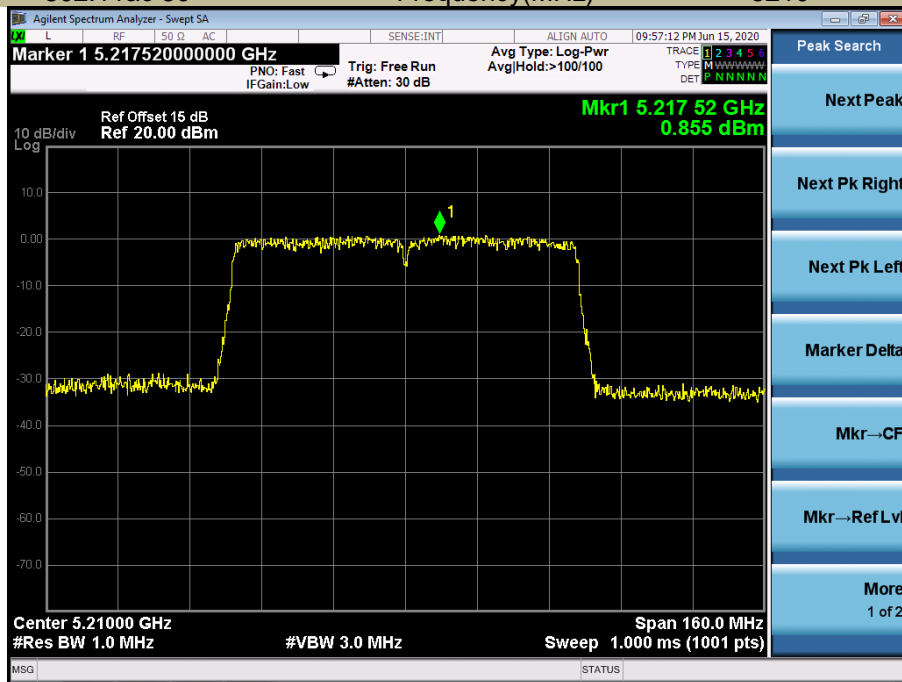
Power Spectral Density U-NII - 1
 Test Model 802.11ac(HT40) Frequency(MHz) 5190



Power Spectral Density U-NII - 1
 Test Model 802.11ac(HT40) Frequency(MHz) 5230



Power Spectral Density U-NII - 1
 Test Model 802.11ac 80 Frequency(MHz) 5210

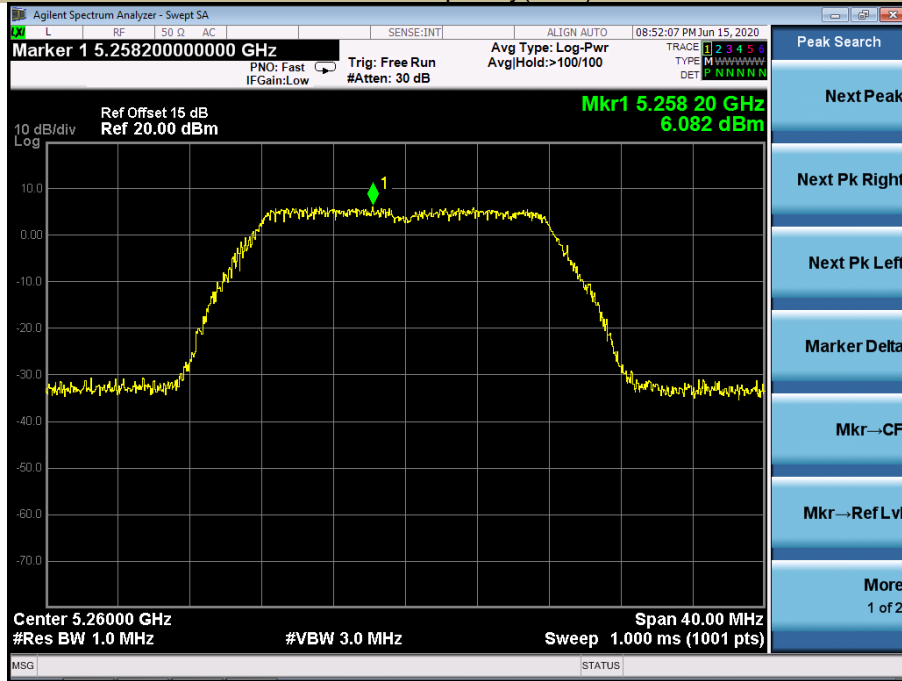


5250-5350MHz

Operating mode	Test Channel	Power Spectral Density dBm/MHz	Limit (dBm/MHz)
802.11a	5260	6.082	11
	5280	4.965	11
	5320	5.218	11
802.11n-HT20	5260	5.504	11
	5280	4.662	11
	5320	4.689	11
802.11ac(HT20)	5260	5.565	11
	5280	4.596	11
	5320	4.522	11
802.11n-HT40	5270	2.787	11
	5310	2.729	11
802.11ac(HT40)	5270	2.435	11
	5310	2.164	11
802.11ac(HT80)	5290	-0.931	11

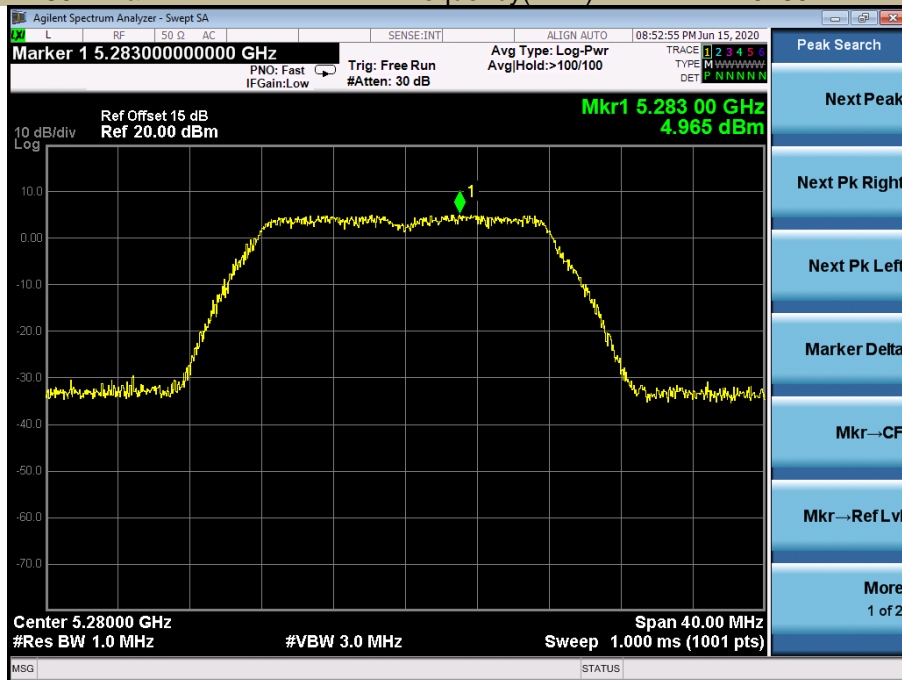
Power Spectral Density
Test Model 802.11a

U-NII – 2A
Frequency(MHz) 5260



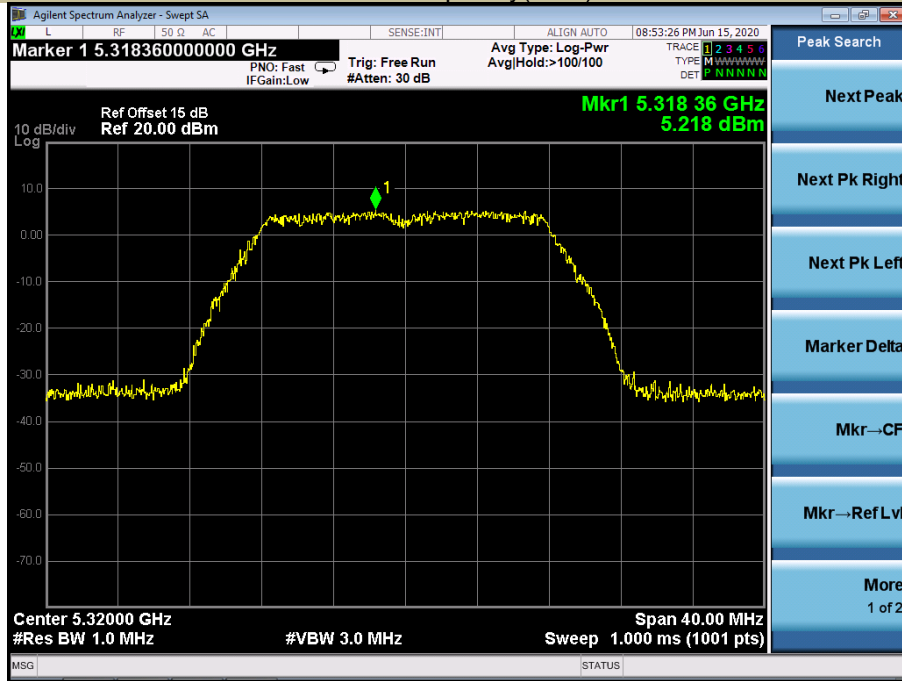
Power Spectral Density
Test Model 802.11a

U-NII – 2A
Frequency(MHz) 5280



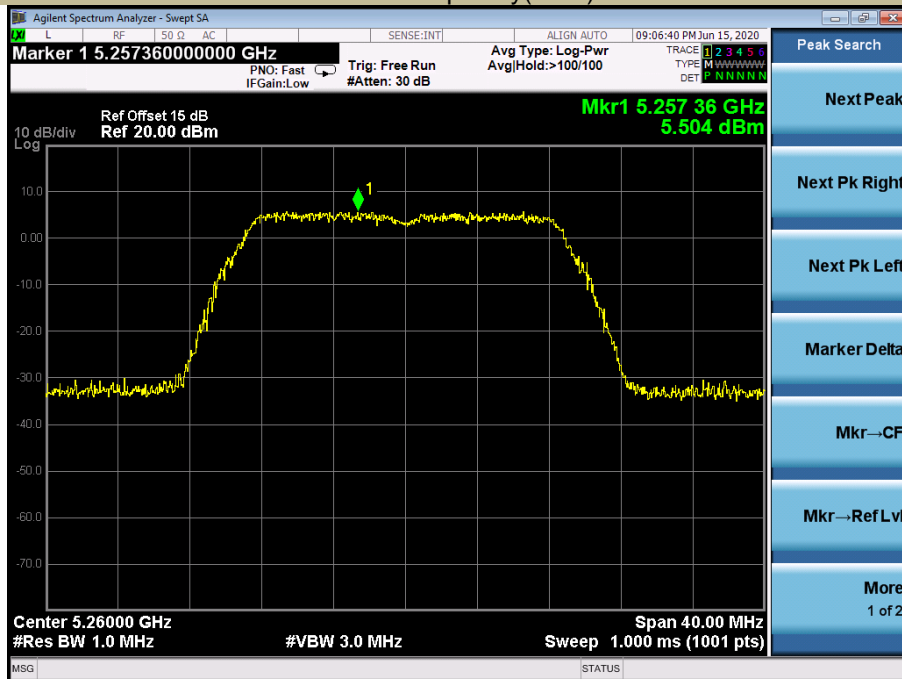
Power Spectral Density
Test Model 802.11a

U-NII – 2A
Frequency(MHz) 5320

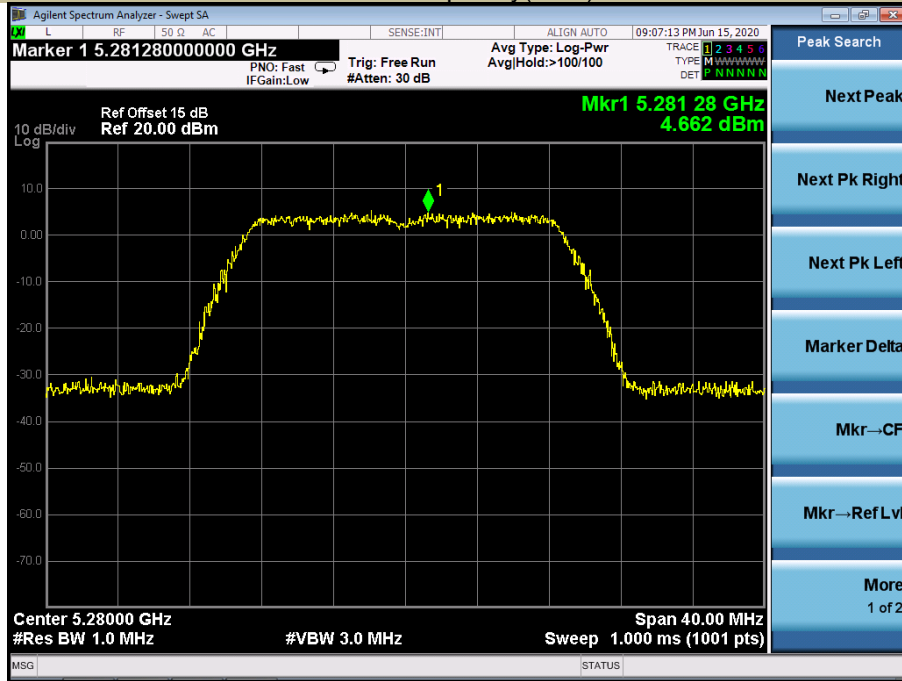


Power Spectral Density
Test Model 802.11n-HT20

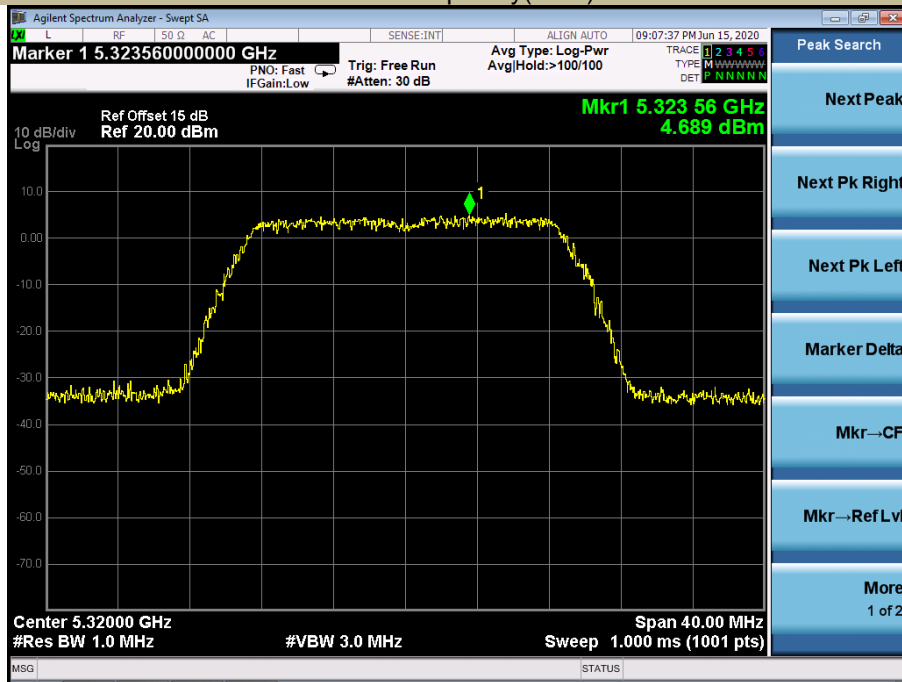
U-NII – 2A
Frequency(MHz) 5260



Power Spectral Density U-NII – 2A
 Test Model 802.11n-HT20 Frequency(MHz) 5280



Power Spectral Density U-NII – 2A
 Test Model 802.11n-HT20 Frequency(MHz) 5320



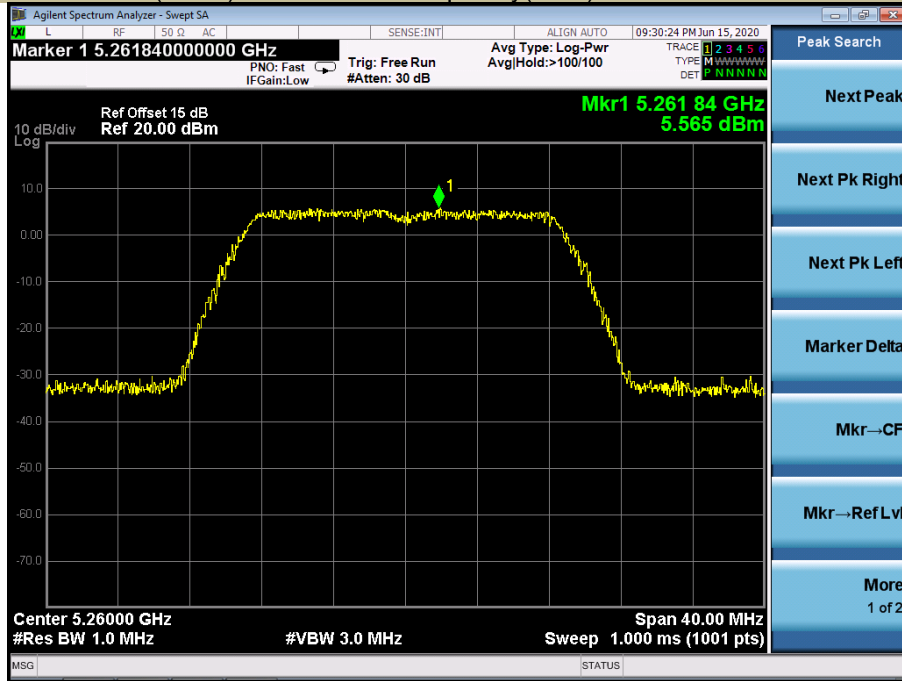
Power Spectral Density

U-NII – 2A

Test Model 802.11ac(HT20)

Frequency(MHz)

5260



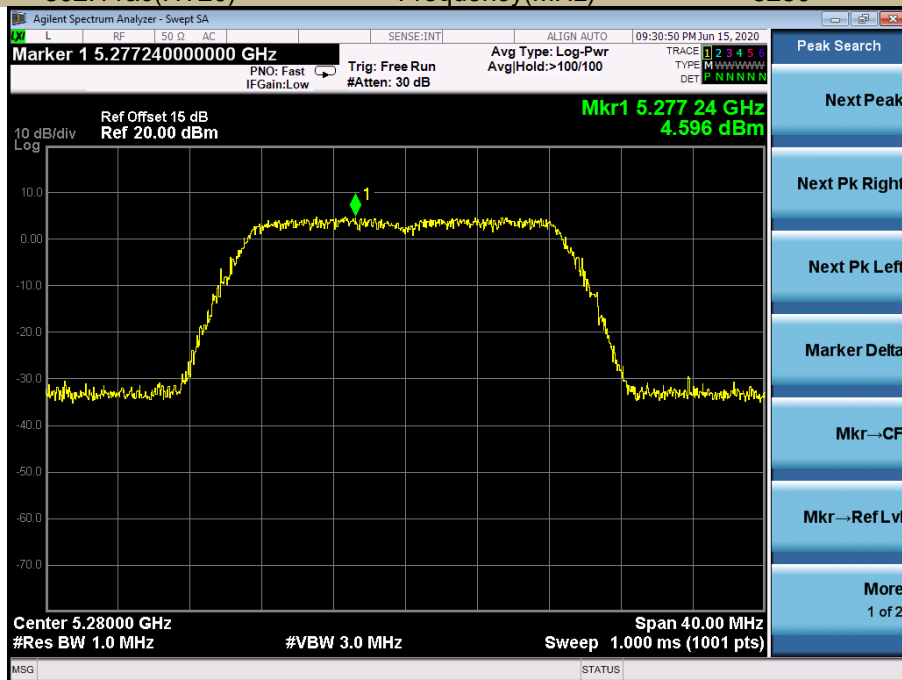
Power Spectral Density

U-NII – 2A

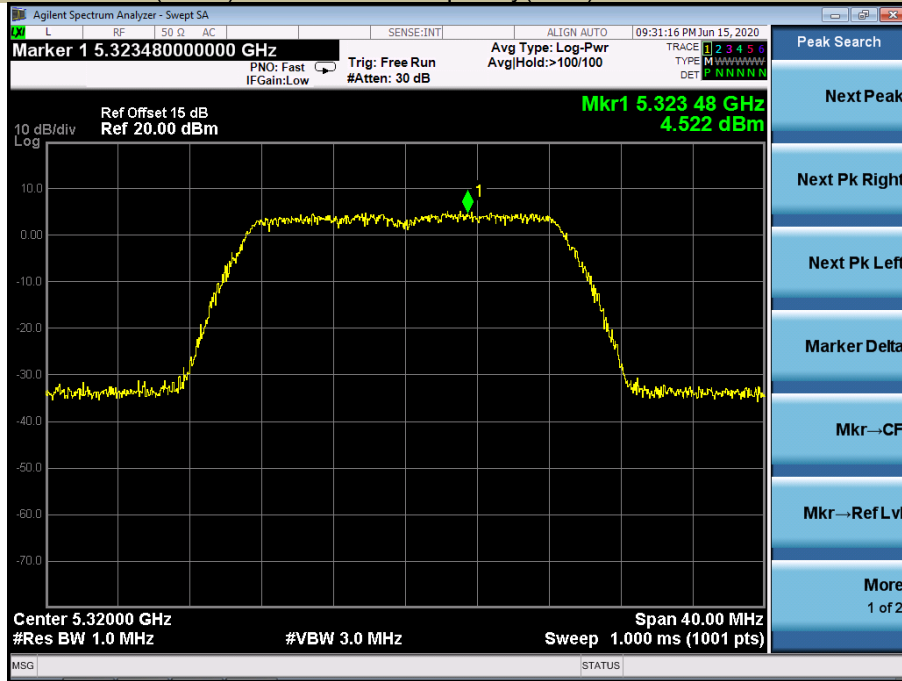
Test Model 802.11ac(HT20)

Frequency(MHz)

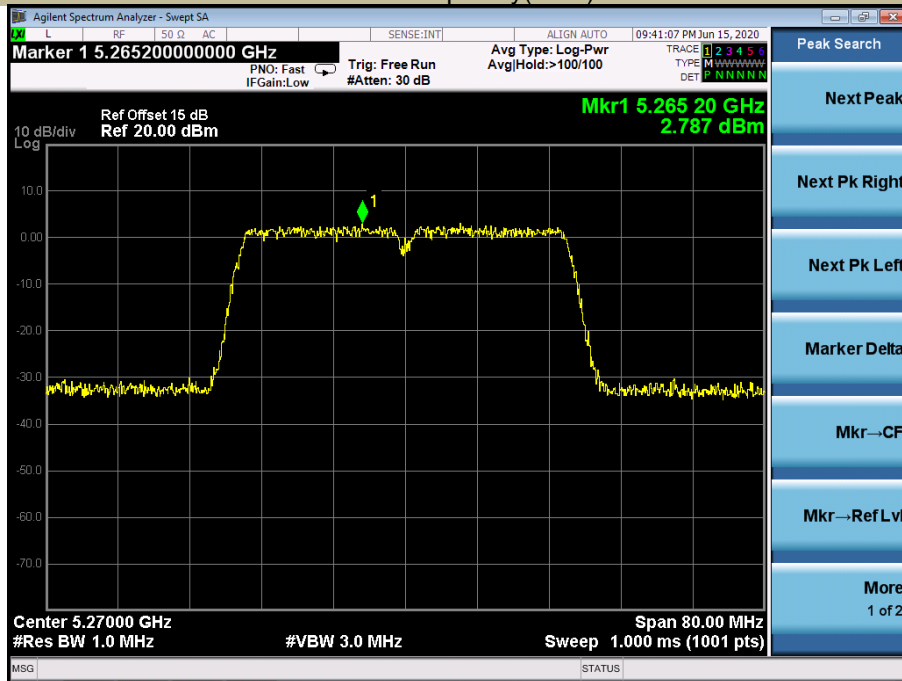
5280



Power Spectral Density U-NII – 2A
 Test Model 802.11ac(HT20) Frequency(MHz) 5320

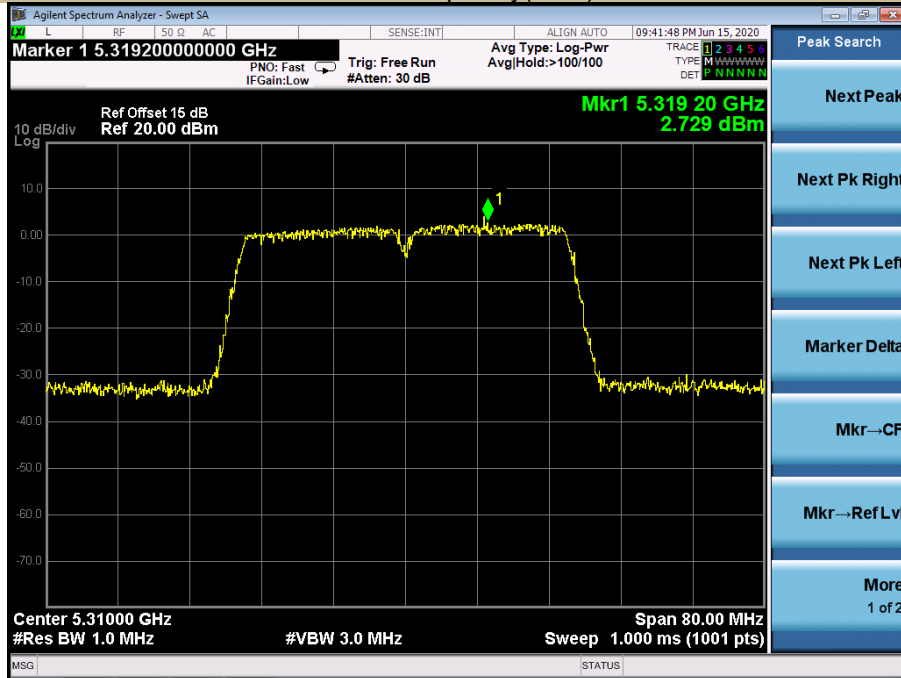


Power Spectral Density U-NII – 2A
 Test Model 802.11n-HT40 Frequency(MHz) 5270



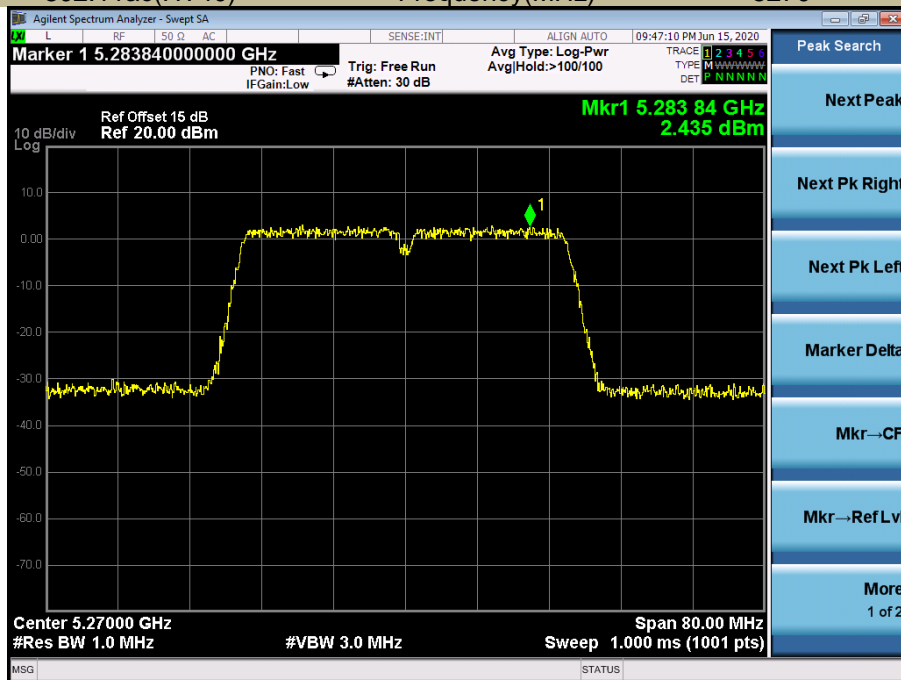
Power Spectral Density
Test Model 802.11n-HT40

U-NII – 2A
Frequency(MHz) 5310



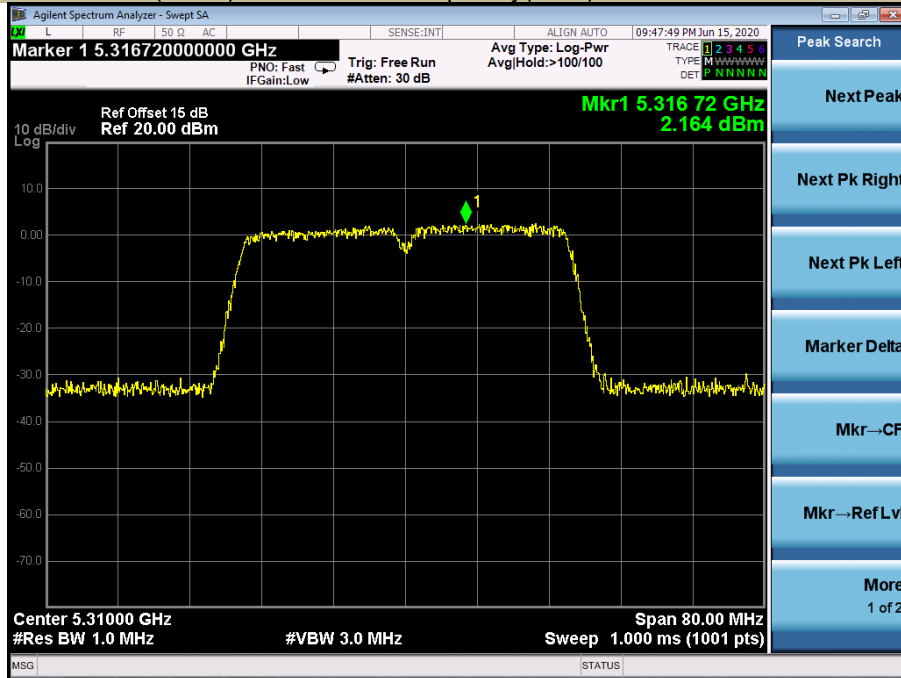
Power Spectral Density
Test Model 802.11ac(HT40)

U-NII – 2A
Frequency(MHz) 5270



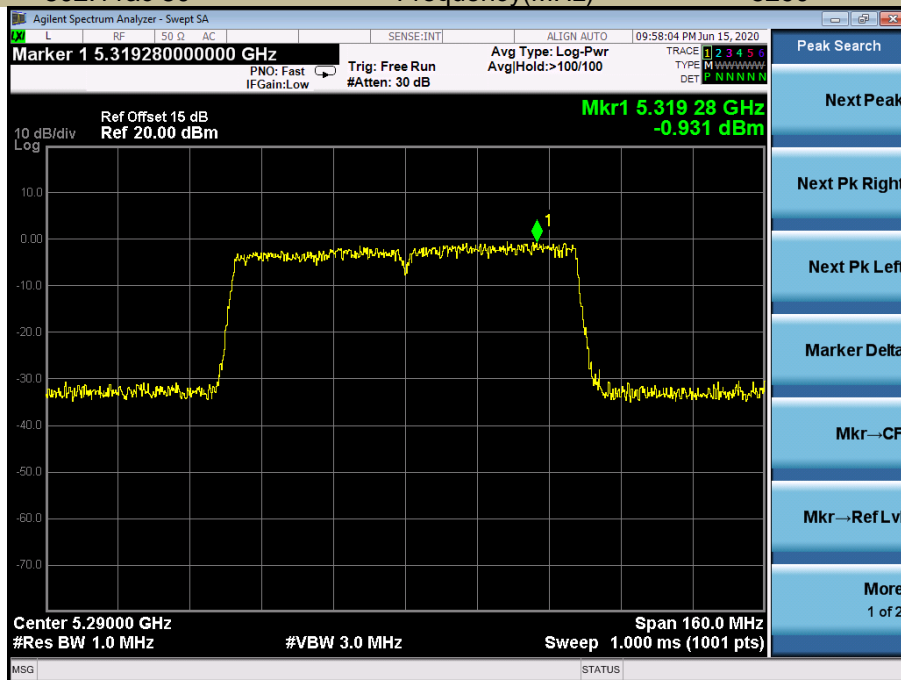
Power Spectral Density
Test Model 802.11ac(HT40)

U-NII – 2A
Frequency(MHz) 5310



Power Spectral Density
Test Model 802.11ac 80

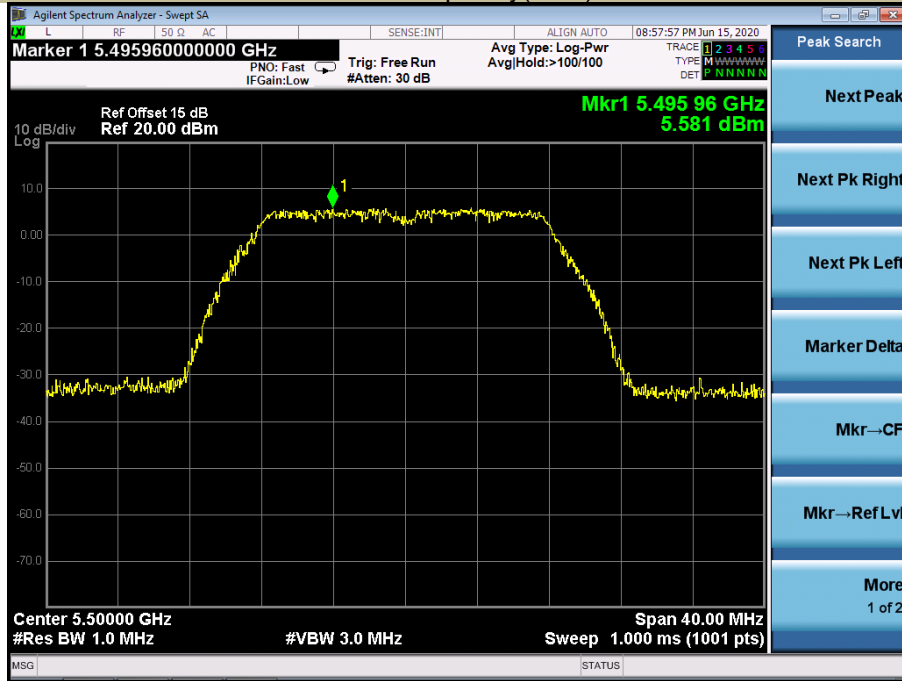
U-NII – 2A
Frequency(MHz) 5290



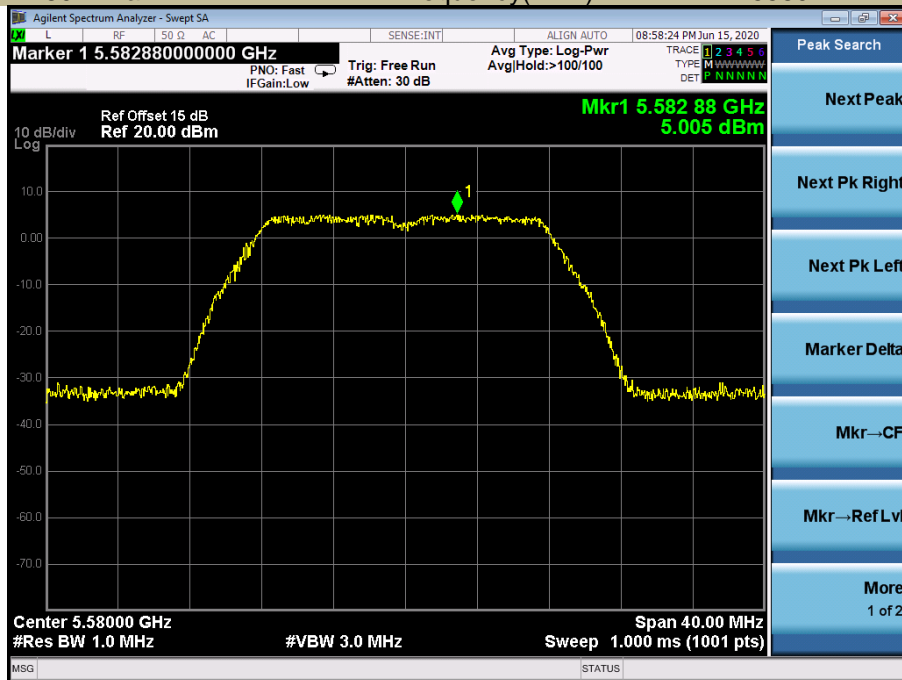
5470-5725MHz

Operating mode	Test Channel	Power Spectral Density dBm/MHz	Limit (dBm/MHz)
802.11a	5500	5.581	11
	5580	5.005	11
	5700	3.886	11
802.11n-HT20	5500	5.443	11
	5580	4.844	11
	5700	3.320	11
802.11ac(HT20)	5500	5.367	11
	5580	5.015	11
	5700	3.589	11
802.11n-HT40	5510	2.696	11
	5670	2.039	11
802.11ac(HT40)	5510	3.401	11
	5670	2.185	11
802.11ac(HT80)	5530	-0.761	11

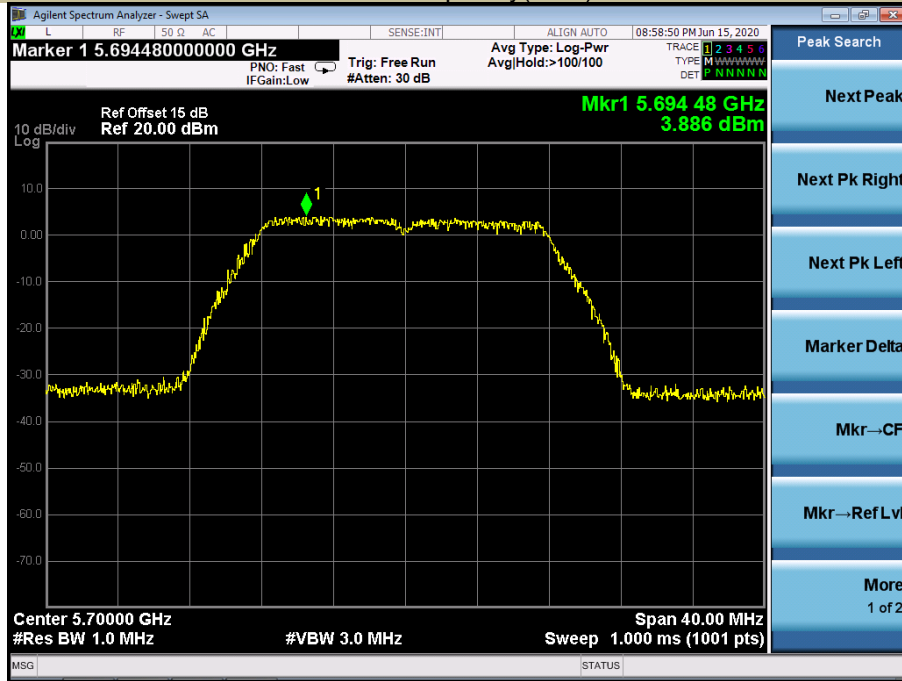
Power Spectral Density U-NII – 2C
 Test Model 802.11a Frequency(MHz) 5500



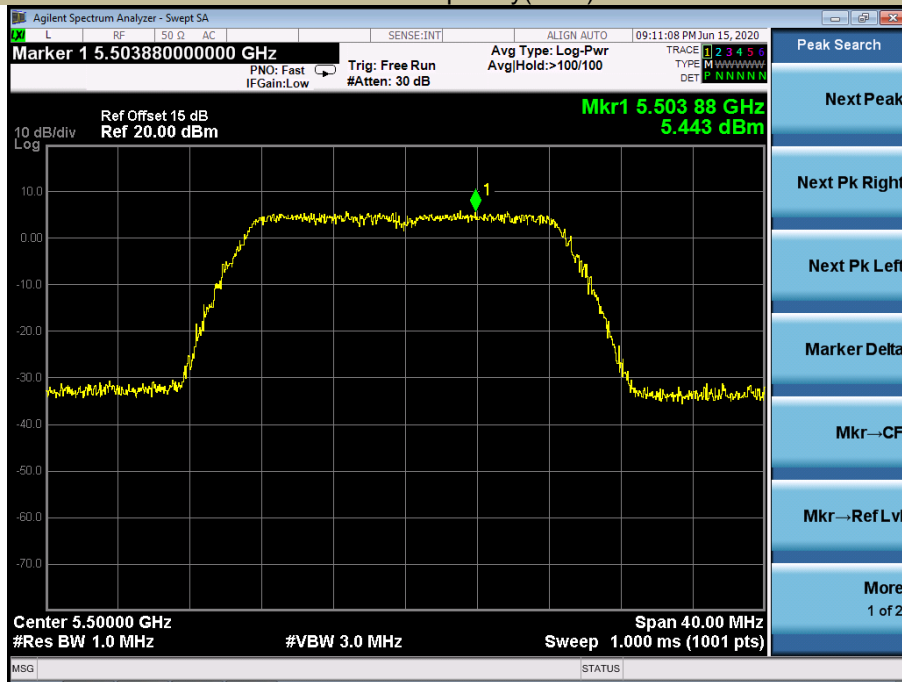
Power Spectral Density U-NII – 2C
 Test Model 802.11a Frequency(MHz) 5580



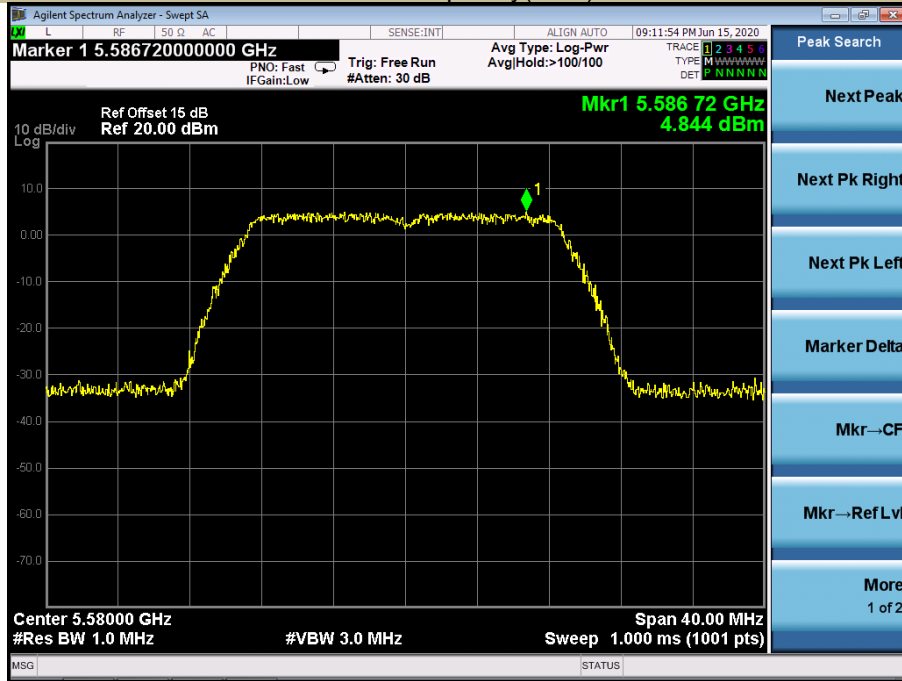
Power Spectral Density U-NII – 2C
 Test Model 802.11a Frequency(MHz) 5700



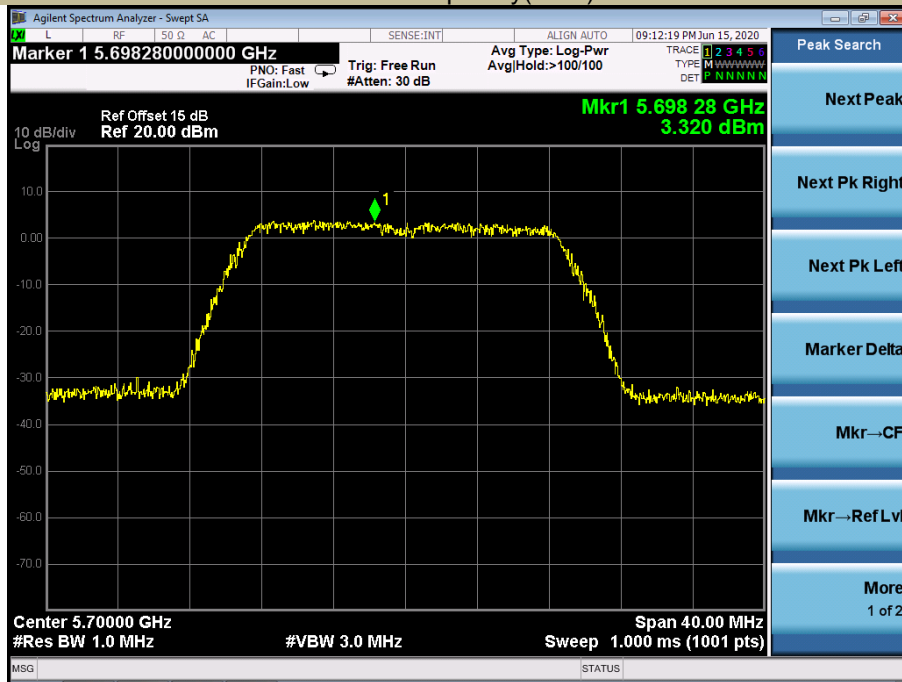
Power Spectral Density U-NII – 2C
 Test Model 802.11n-HT20 Frequency(MHz) 5500



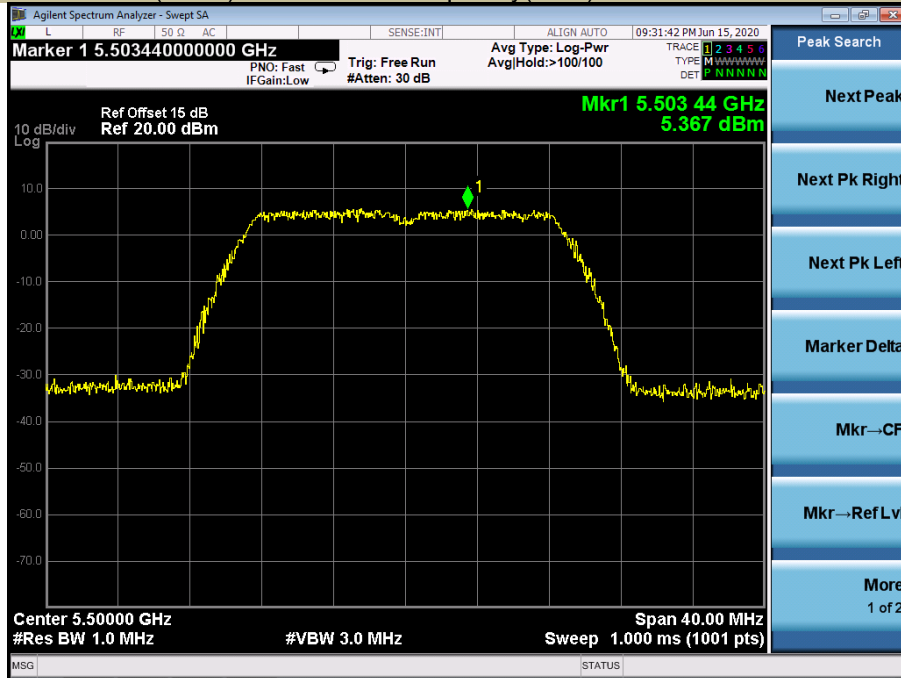
Power Spectral Density U-NII – 2C
 Test Model 802.11n-HT20 Frequency(MHz) 5580



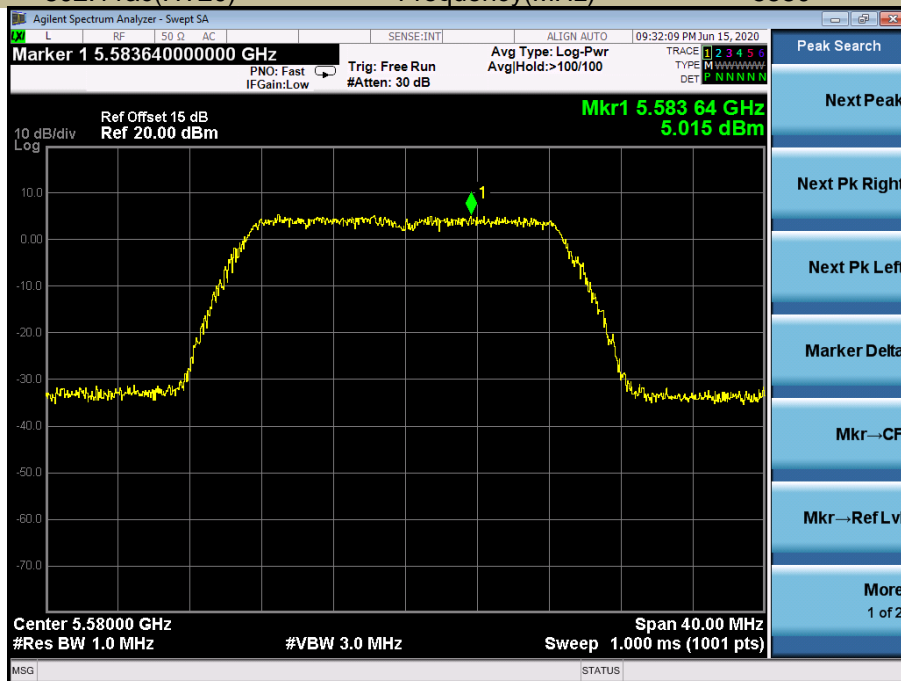
Power Spectral Density U-NII – 2C
 Test Model 802.11n-HT20 Frequency(MHz) 5700



Power Spectral Density U-NII – 2C
 Test Model 802.11ac(HT20) Frequency(MHz) 5500



Power Spectral Density U-NII – 2C
 Test Model 802.11ac(HT20) Frequency(MHz) 5580



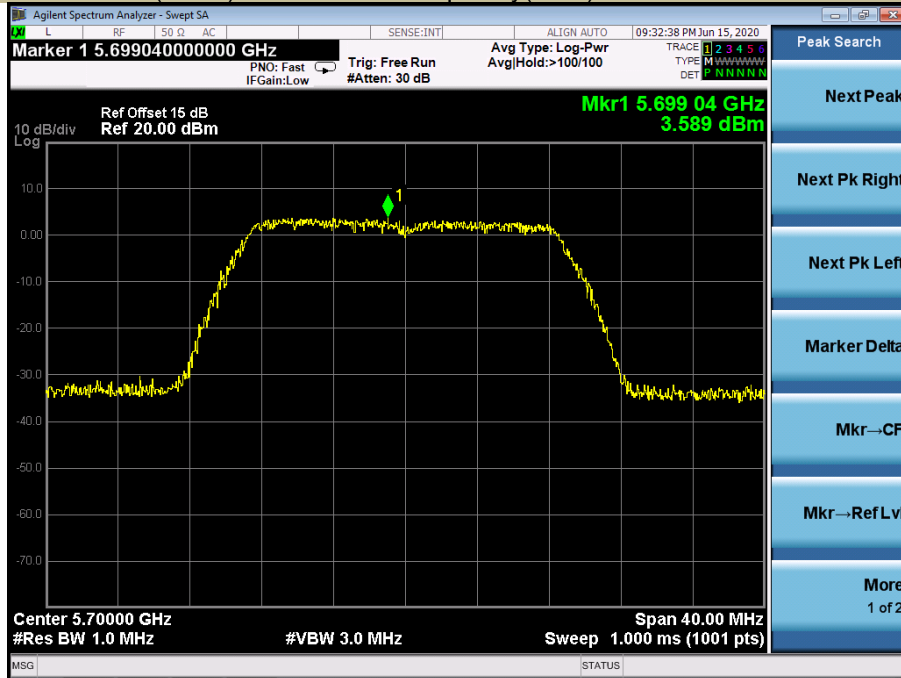
Power Spectral Density

U-NII – 2C

Test Model 802.11ac(HT20)

Frequency(MHz)

5700



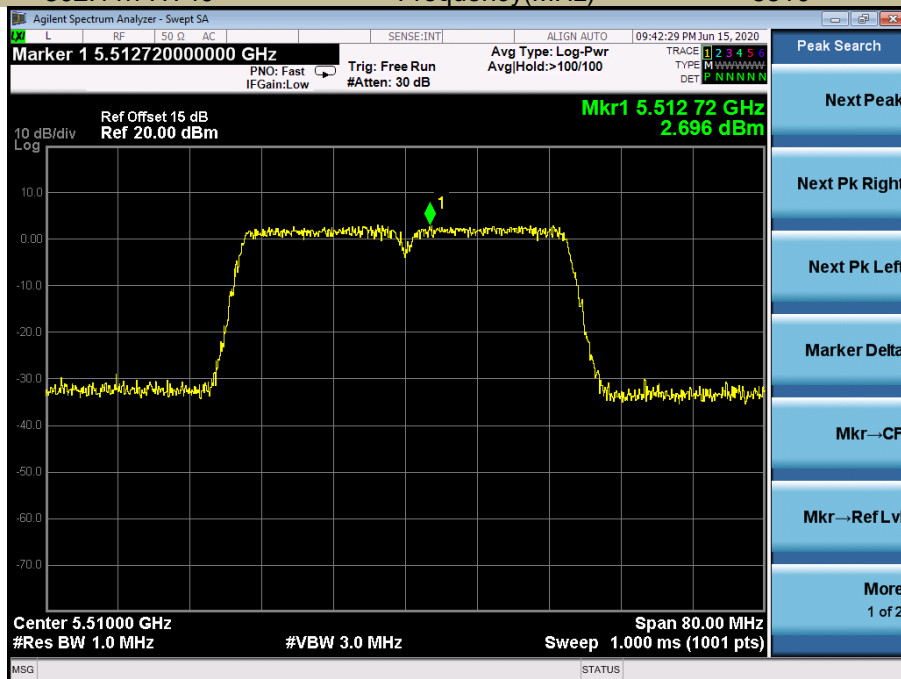
Power Spectral Density

U-NII – 2C

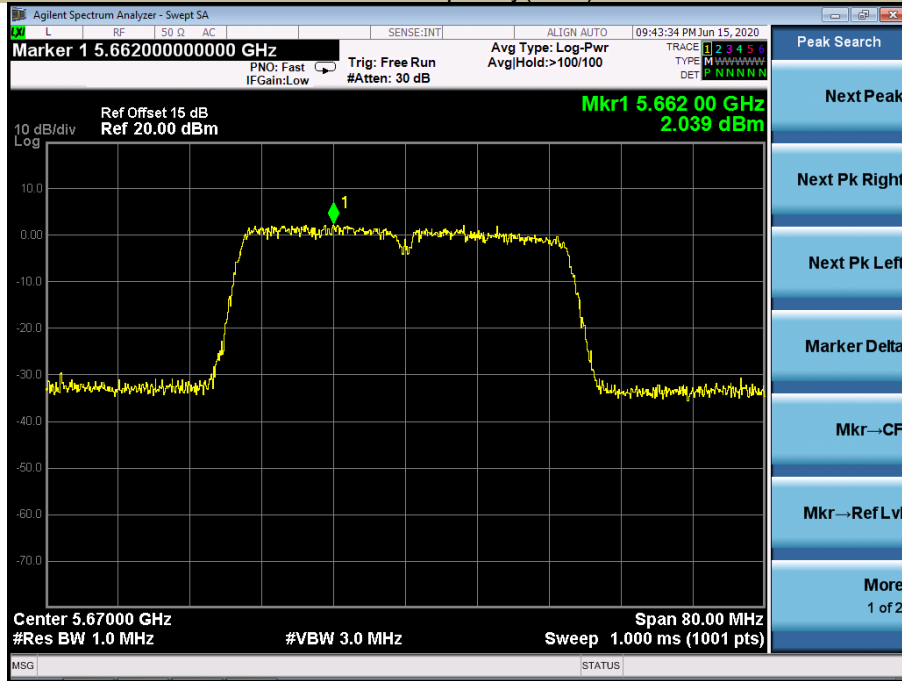
Test Model 802.11n-HT40

Frequency(MHz)

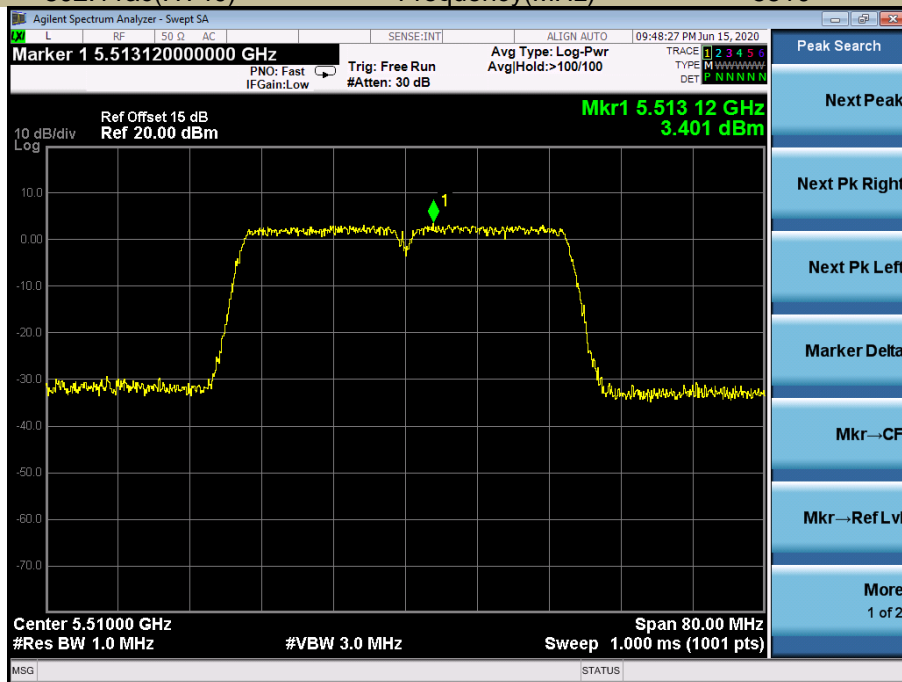
5510



Power Spectral Density U-NII – 2C
 Test Model 802.11n-HT40 Frequency(MHz) 5670

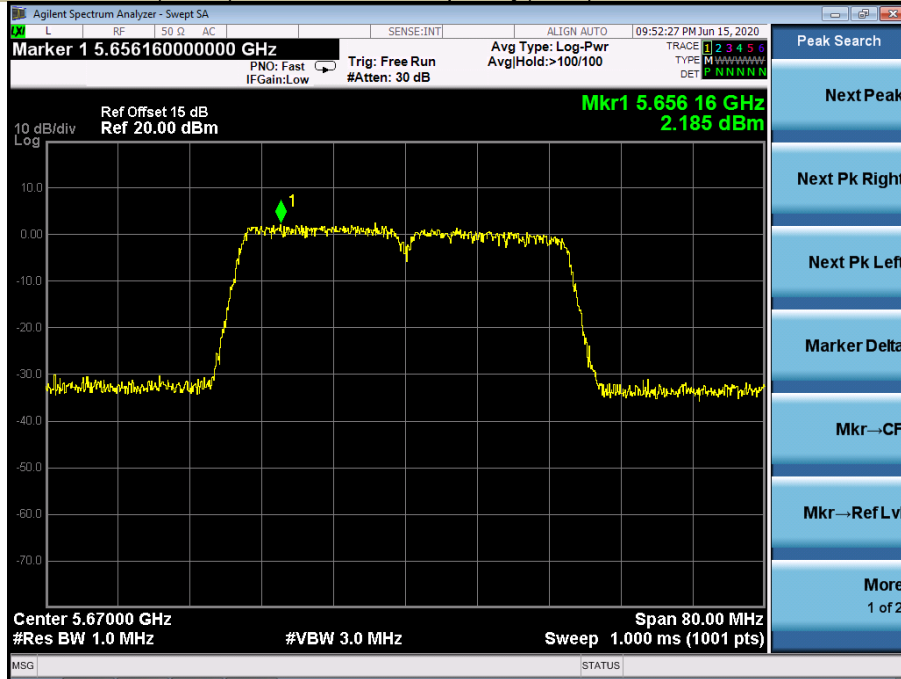


Power Spectral Density U-NII – 2C
 Test Model 802.11ac(HT40) Frequency(MHz) 5510



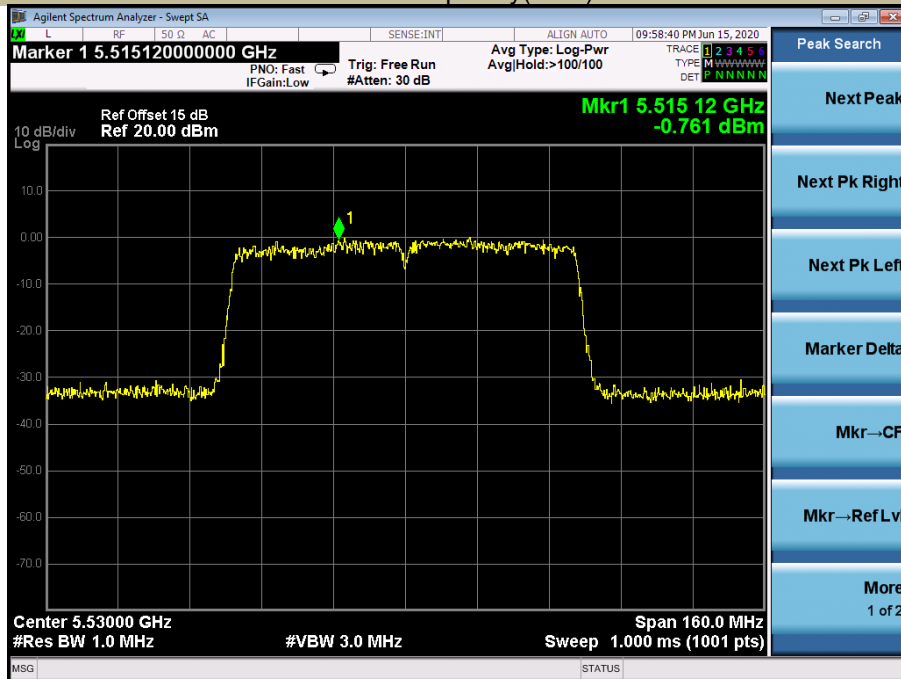
Power Spectral Density
Test Model 802.11ac(HT40)

U-NII – 2C
Frequency(MHz) 5670



Power Spectral Density
Test Model 802.11ac 80

U-NII – 2C
Frequency(MHz) 5530

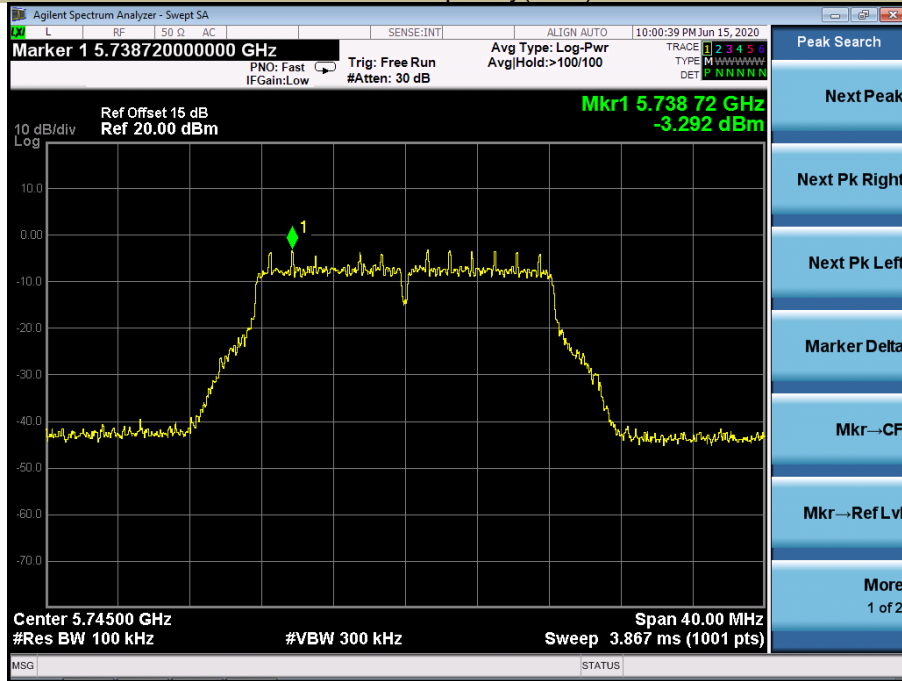


5725-5850MHz

Operating mode	Test Channel	Power Spectral Density dBm/100kHz	Power Spectral Density dBm/500kHz	Limit (dBm/500kHz)
802.11a	5745	-3.292	-1.072	30
	5785	-4.334	-2.114	30
	5825	-3.486	-1.266	30
802.11n-HT20	5745	-3.634	-1.414	30
	5785	-3.922	-1.702	30
	5825	-4.283	-2.063	30
802.11ac(HT20)	5745	-3.870	-1.65	30
	5785	-3.836	-1.616	30
	5825	-4.551	-2.331	30
802.11n-HT40	5755	-5.688	-3.468	30
	5795	-6.725	-4.505	30
802.11ac(HT40)	5755	-7.097	-4.877	30
	5795	-6.417	-4.197	30
802.11ac(HT80)	5775	-9.589	-7.369	30

If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

Power Spectral Density U-NII - 3
 Test Model 802.11a Frequency(MHz) 5745



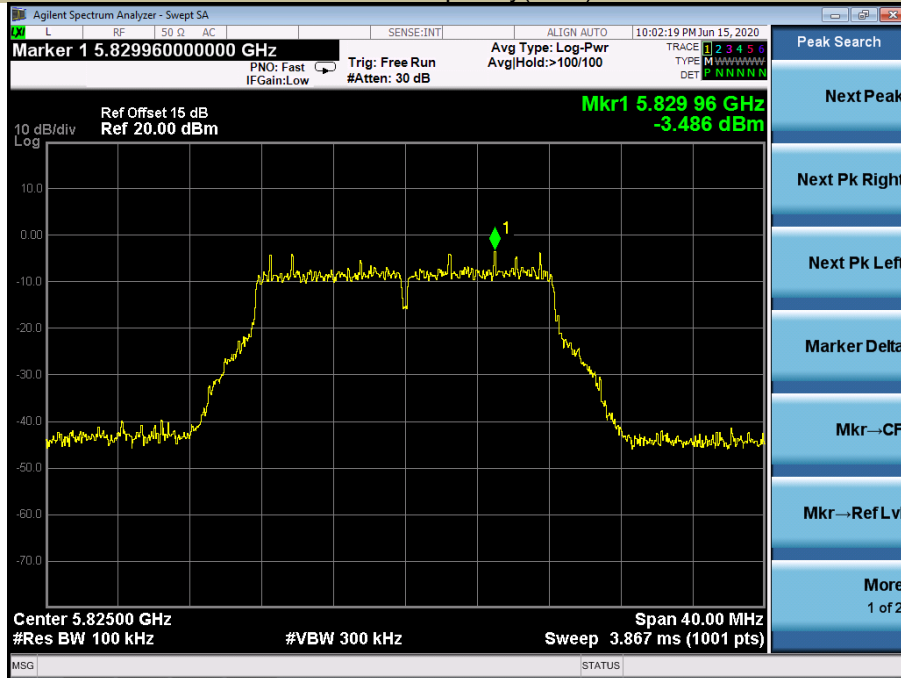
Power Spectral Density U-NII - 3
 Test Model 802.11a Frequency(MHz) 5785



Power Spectral Density
Test Model 802.11a

U-NII - 3
Frequency(MHz)

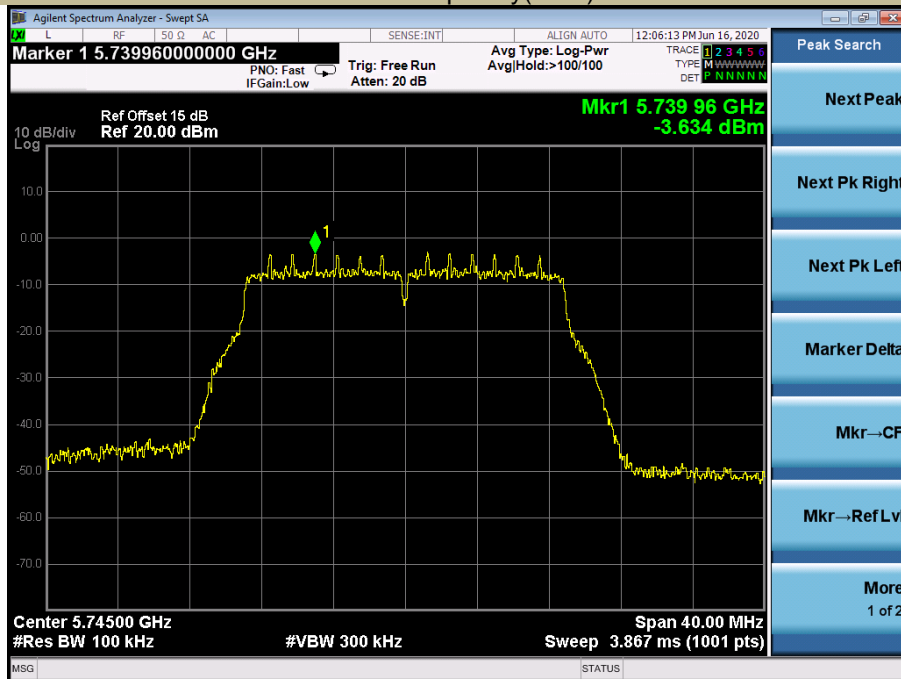
5825



Power Spectral Density
Test Model 802.11n-HT20

U-NII - 3
Frequency(MHz)

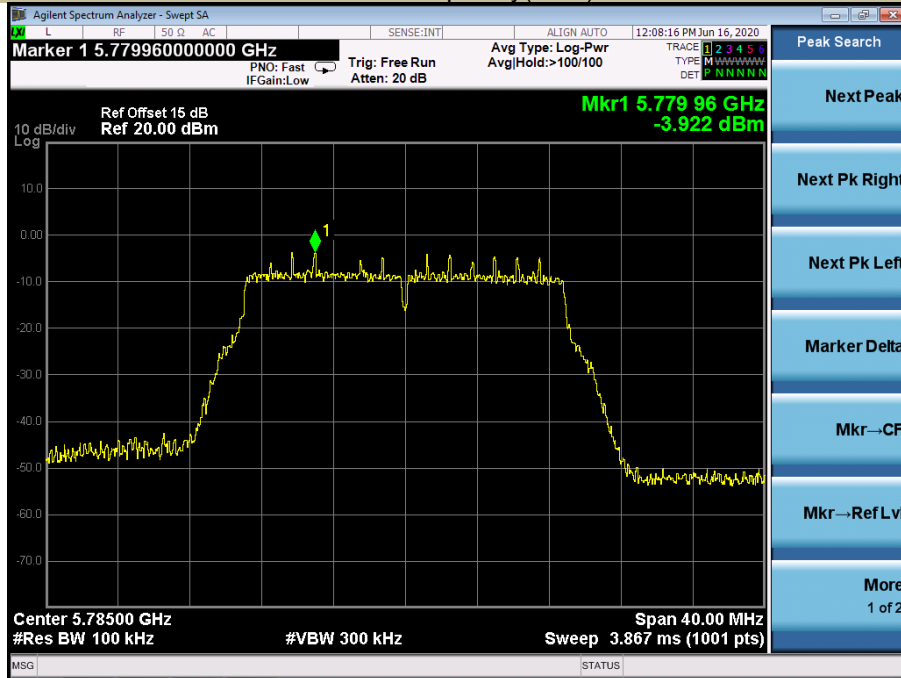
5745



Power Spectral Density
Test Model 802.11n-HT20

U-NII - 3
Frequency(MHz)

5785



Power Spectral Density
Test Model 802.11n-HT20

U-NII - 3
Frequency(MHz)

5825

