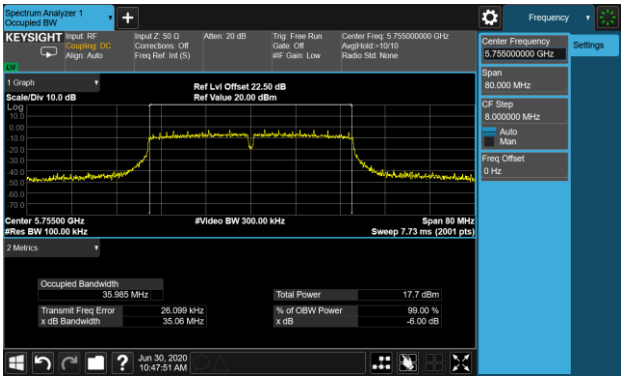
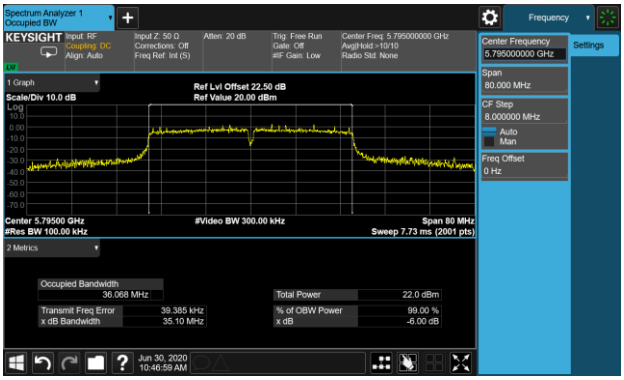
802.11ac-VHT40 6dB Bandwidth - Ant 0 / Ant 0 + 1	
Channel 151 (5755MHz)	Channel 159 (5795MHz)
	
802.11ac-VHT80 6dB Bandwidth - Ant 0 / Ant 0 + 1	
Channel 155 (5775MHz)	
	

6.4. Output Power Measurement

6.4.1.Test Limit

FCC Limit

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.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm).

If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

ISED Limit

For the band 5.15-5.25 GHz, the maximum e.i.r.p. shall not exceed 200 mW (23.01dBm) or 10 + 10 $\log_{10}$ B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power shall not exceed 250 mW (23.98dBm) or 11 + 10 $\log_{10}$ B, dBm, whichever power is less. The maximum e.i.r.p. shall not exceed 1.0 W (30dBm) or 17 + 10 $\log_{10}$ B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

For the 5.725-5.85 GHz band, the maximum conducted output power shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power.

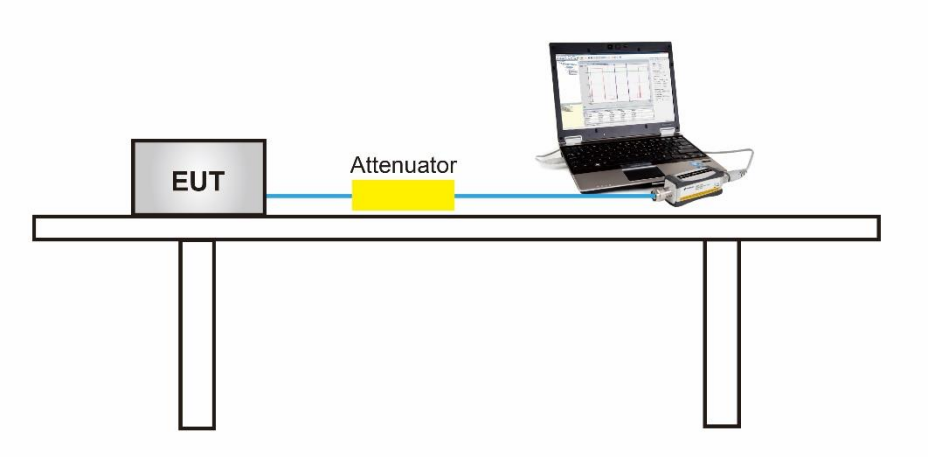
6.4.2.Test Procedure Used

KDB 789033D02v01r04- Section E)3)b) Method PM-G

6.4.3.Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

6.4.4.Test Setup



6.4.5.Test Result

Product	WIFI+BT Combo Module	Test Engineer	Yuri Li
Test Date	2020/06/30~2020/08/18	Test Site	TR3
Test Mode	CDD mode [For FCC UNII-1 (5150-5250MHz)]		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
11a	6Mbps	36	5180	13.94	10.16	15.46	23.98	Pass
11a	6Mbps	44	5220	14.30	11.08	15.99	23.98	Pass
11a	6Mbps	48	5240	14.38	11.63	16.23	23.98	Pass
11n-HT20	MCS0	36	5180	12.65	8.95	14.19	23.98	Pass
11n-HT20	MCS0	40	5220	12.92	9.55	14.56	23.98	Pass
11n-HT20	MCS0	48	5240	13.32	10.19	15.04	23.98	Pass
11n-HT40	MCS0	38	5190	13.47	9.06	14.81	23.98	Pass
11n-HT40	MCS0	46	5230	13.05	10.04	14.81	23.98	Pass
11ac-VHT20	MCS0	36	5180	12.77	9.03	14.30	23.98	Pass
11ac-VHT20	MCS0	40	5220	13.10	9.75	14.75	23.98	Pass
11ac-VHT20	MCS0	48	5240	13.31	10.32	15.08	23.98	Pass
11ac-VHT40	MCS0	38	5190	12.52	8.62	14.00	23.98	Pass
11ac-VHT40	MCS0	46	5230	12.68	9.84	14.50	23.98	Pass
11ac-VHT80	MCS0	42	5210	13.04	9.12	14.52	23.98	Pass

Note: The Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)}\}$.

Product	WIFI+BT Combo Module	Test Engineer	Yuri Li
Test Date	2020/06/30~2020/08/18	Test Site	TR3
Test Mode	CDD mode [For ISED UNII-1 (5150-5250MHz)]		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Total Average Power (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Result
11a	6Mbps	36	5180	11.76	6.97	13.00	17.34	≤ 22.13	Pass
11a	6Mbps	44	5220	11.65	7.71	13.12	17.46	≤ 22.13	Pass
11a	6Mbps	48	5240	11.10	7.44	12.65	16.99	≤ 22.13	Pass
11n-HT20	MCS0	36	5180	12.23	7.86	13.58	17.92	≤ 22.43	Pass
11n-HT20	MCS0	40	5220	12.05	8.01	13.49	17.83	≤ 22.43	Pass
11n-HT20	MCS0	48	5240	11.96	7.97	13.42	17.76	≤ 22.43	Pass
11n-HT40	MCS0	38	5190	13.47	9.06	14.81	19.15	≤ 23.01	Pass
11n-HT40	MCS0	46	5230	13.05	10.04	14.81	19.15	≤ 23.01	Pass
11ac-VHT20	MCS0	36	5180	11.91	7.20	13.17	17.51	≤ 22.43	Pass
11ac-VHT20	MCS0	40	5220	11.40	7.54	12.90	17.24	≤ 22.43	Pass
11ac-VHT20	MCS0	48	5240	11.35	7.80	12.94	17.28	≤ 22.43	Pass
11ac-VHT40	MCS0	38	5190	12.52	8.62	14.00	18.34	≤ 23.01	Pass
11ac-VHT40	MCS0	46	5230	12.68	9.84	14.50	18.84	≤ 23.01	Pass
11ac-VHT80	MCS0	42	5210	13.04	9.12	14.52	18.86	≤ 23.01	Pass

Note 1: The Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)}\}$.

Note 2: The Max EIRP (dBm) = Total Average Power (dBm) + Antenna Gain (dBi), Antenna Gain = 4.34dBi

Note 3: EIRP Limit Calculation as below:

For 5150-5250MHz

802.11a: 10 + 10*log (16.33MHz) = 22.13dBm< 23.01dBm;

802.11n-HT20: 10 + 10*log (17.51MHz) = 22.43dBm< 23.01dBm;

802.11ac-VHT20: 10 + 10*log (17.51MHz) = 22.43dBm< 23.01dBm;

802.11n-HT40/ac-VHT40/ac-VHT80: 10 + 10*log B >23.01dBm;

Product	WIFI+BT Combo Module	Test Engineer	Yuri Li
Test Date	2020/06/30~2020/08/18	Test Site	TR3
Test Mode	CDD mode [For FCC & ISED UNII-2a / -2c /-3]		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Result
11a	6Mbps	52	5260	15.31	12.94	17.30	≤ 23.14	21.64	≤ 29.14	Pass
11a	6Mbps	60	5300	13.87	12.58	16.28	≤ 23.14	20.62	≤ 29.14	Pass
11a	6Mbps	64	5320	13.94	13.06	16.53	≤ 23.14	20.87	≤ 29.14	Pass
11a	6Mbps	100	5500	14.45	16.58	18.65	≤ 23.14	22.99	≤ 29.14	Pass
11a	6Mbps	116	5580	14.66	17.38	19.24	≤ 23.14	23.58	≤ 29.14	Pass
11a	6Mbps	140	5700	15.47	14.88	18.20	≤ 23.14	22.54	≤ 29.14	Pass
11a	6Mbps	144	5720	17.32	16.50	19.94	≤ 22.21	24.28	≤ 28.21	Pass
11a	6Mbps	149	5745	13.58	13.45	16.53	≤ 30.00	--	--	Pass
11a	6Mbps	157	5785	18.08	15.61	20.03	≤ 30.00	--	--	Pass
11a	6Mbps	165	5825	15.34	13.89	17.69	≤ 30.00	--	--	Pass
11n-HT20	MCS0	52	5260	14.13	11.72	16.10	≤ 23.44	20.44	≤ 29.44	Pass
11n-HT20	MCS0	60	5300	12.43	11.01	14.79	≤ 23.44	19.13	≤ 29.44	Pass
11n-HT20	MCS0	64	5320	12.59	11.55	15.11	≤ 23.44	19.45	≤ 29.44	Pass
11n-HT20	MCS0	100	5500	12.85	15.41	17.33	≤ 23.45	21.67	≤ 29.45	Pass
11n-HT20	MCS0	116	5580	13.78	16.05	18.07	≤ 23.45	22.41	≤ 29.46	Pass
11n-HT20	MCS0	140	5700	14.84	14.01	17.46	≤ 23.45	21.80	≤ 29.46	Pass
11n-HT20	MCS0	144	5720	16.43	15.09	18.82	≤ 22.41	23.16	≤ 28.41	Pass
11n-HT20	MCS0	149	5745	12.96	13.05	16.02	≤ 30.00	--	--	Pass
11n-HT20	MCS0	157	5785	17.38	14.48	19.18	≤ 30.00	--	--	Pass
11n-HT20	MCS0	165	5825	14.96	13.35	17.24	≤ 30.00	--	--	Pass
11n-HT40	MCS0	54	5270	13.83	11.83	15.95	≤ 23.98	20.29	≤ 30.00	Pass
11n-HT40	MCS0	62	5310	12.46	11.44	14.99	≤ 23.98	19.33	≤ 30.00	Pass
11n-HT40	MCS0	102	5510	13.23	15.28	17.39	≤ 23.98	21.73	≤ 30.00	Pass
11n-HT40	MCS0	110	5550	13.94	16.58	18.47	≤ 23.98	22.81	≤ 30.00	Pass
11n-HT40	MCS0	134	5670	15.13	15.54	18.35	≤ 23.98	22.69	≤ 30.00	Pass
11n-HT40	MCS0	142	5710	16.17	15.05	18.66	≤ 23.98	23.00	≤ 30.00	Pass
11n-HT40	MCS0	151	5755	13.37	13.24	16.32	≤ 30.00	--	--	Pass
11n-HT40	MCS0	159	5795	17.18	14.54	19.07	≤ 30.00	--	--	Pass

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 Average Power (dBm)	Ant 1 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Max EIRP (dBm)	EIRP Limit (dBm)	Result
11ac-VHT20	MCS0	52	5260	13.96	11.68	15.98	≤ 23.44	20.32	≤ 29.44	Pass
11ac-VHT20	MCS0	60	5300	12.70	11.27	15.05	≤ 23.44	19.39	≤ 29.44	Pass
11ac-VHT20	MCS0	64	5320	12.88	11.72	15.35	≤ 23.44	19.69	≤ 29.44	Pass
11ac-VHT20	MCS0	100	5500	12.94	15.74	17.57	≤ 23.44	21.91	≤ 29.44	Pass
11ac-VHT20	MCS0	116	5580	13.78	16.16	18.14	≤ 23.44	22.48	≤ 29.44	Pass
11ac-VHT20	MCS0	140	5700	14.15	13.63	16.91	≤ 23.44	21.25	≤ 29.44	Pass
11ac-VHT20	MCS0	144	5720	16.54	15.13	18.90	≤ 22.39	23.24	≤ 28.39	Pass
11ac-VHT20	MCS0	149	5745	12.94	12.62	15.79	≤ 30.00	--	--	Pass
11ac-VHT20	MCS0	157	5785	17.19	14.71	19.13	≤ 30.00	--	--	Pass
11ac-VHT20	MCS0	165	5825	14.96	13.36	17.24	≤ 30.00	--	--	Pass
11ac-VHT40	MCS0	54	5270	13.38	11.73	15.64	≤ 23.98	19.98	≤ 30.00	Pass
11ac-VHT40	MCS0	62	5310	12.42	11.17	14.85	≤ 23.98	19.19	≤ 30.00	Pass
11ac-VHT40	MCS0	102	5510	13.37	15.63	17.66	≤ 23.98	22.00	≤ 30.00	Pass
11ac-VHT40	MCS0	110	5550	13.95	16.56	18.46	≤ 23.98	22.80	≤ 30.00	Pass
11ac-VHT40	MCS0	134	5670	15.25	15.64	18.46	≤ 23.98	22.80	≤ 30.00	Pass
11ac-VHT40	MCS0	142	5710	15.81	15.22	18.54	≤ 23.98	22.88	≤ 30.00	Pass
11ac-VHT40	MCS0	151	5755	14.48	11.92	16.40	≤ 30.00	--	--	Pass
11ac-VHT40	MCS0	159	5795	16.76	14.25	18.69	≤ 30.00	--	--	Pass
11ac-VHT80	MCS0	58	5290	13.36	11.34	15.48	≤ 23.98	19.82	≤ 30.00	Pass
11ac-VHT80	MCS0	106	5530	13.75	16.25	18.19	≤ 23.98	22.53	≤ 30.00	Pass
11ac-VHT80	MCS0	138	5690	15.68	15.23	18.47	≤ 23.98	22.81	≤ 30.00	Pass
11ac-VHT80	MCS0	155	5775	16.64	15.04	18.92	≤ 30.00	--	--	Pass

Note 1: The Total Average Power (dBm) = $10*\log\{10^{(\text{Ant 0 Average Power }/10)} + 10^{(\text{Ant 1 Average Power }/10)}\}$.

Note 2: EIRP Limit Calculation as below:

For 5250-5350MHz

802.11a: 17 + 10*log (16.35MHz) = 29.14dBm< 30dBm;

802.11n-HT20: 17 + 10*log (17.54MHz) = 29.44dBm< 30dBm;

802.11ac-VHT20: 17 + 10*log (17.53MHz) = 29.44dBm< 30dBm;

802.11n-HT40/ac-VHT40/ac-VHT80:17 + 10*log B >30dBm.

For 5470-5725MHz

802.11a: 17 + 10*log (16.35MHz) = 29.14dBm< 30dBm;

802.11n-HT20: 17 + 10*log (17.57MHz) = 29.45dBm< 30dBm;

802.11ac-VHT20: 17 + 10*log (17.54MHz) = 29.44dBm< 30dBm;

802.11n-HT40/ac-VHT40/ac-VHT80:17 + 10*log B >30dBm.

For Channel 144 (5720MHz), 17+10*log (5MHz + $BW_{99\%}$/2)< 30dBm

Note 3: Max Conducted Output Power Limit Calculation as below:

For 5250-5350MHz

802.11a: 11 + 10*log (16.42MHz) = 23.14dBm< 23.98dBm;

802.11n-HT20: 11 + 10*log (16.37MHz) = 23.44dBm< 23.98dBm;

802.11ac-VHT20: 11 + 10*log (17.57MHz) = 23.44dBm< 23.98dBm;

802.11n-HT40/ac-VHT40/ac-VHT80:11 + 10*log B >23.98dBm.

For 5470-5725MHz

802.11a: 11 + 10*log (16.37MHz) = 23.14dBm< 23.98dBm;

802.11n-HT20: 11 + 10*log (17.41MHz) = 23.45dBm< 23.98dBm;

802.11ac-VHT20: 11 + 10*log (17.37MHz) = 23.44dBm< 23.98dBm;

802.11n-HT40/ac-VHT40/ac-VHT80:11 + 10*log B >23.98dBm.

For Channel 144 (5720MHz), 11+10*log (5MHz + $BW_{99\%}$/2)< 23.98dBm

For 5725-5850MHz: Limit (dBm) = 30.00dBm.

Note 4: The Max EIRP (dBm) = Total Average Power (dBm) + Antenna Gain (dBi), Antenna Gain = 4.34dBi

6.5. Transmit Power Control

6.5.1.Test Limit

The devices with a maximum e.i.r.p. greater than 500 mW (27dBm) shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W (30dBm).

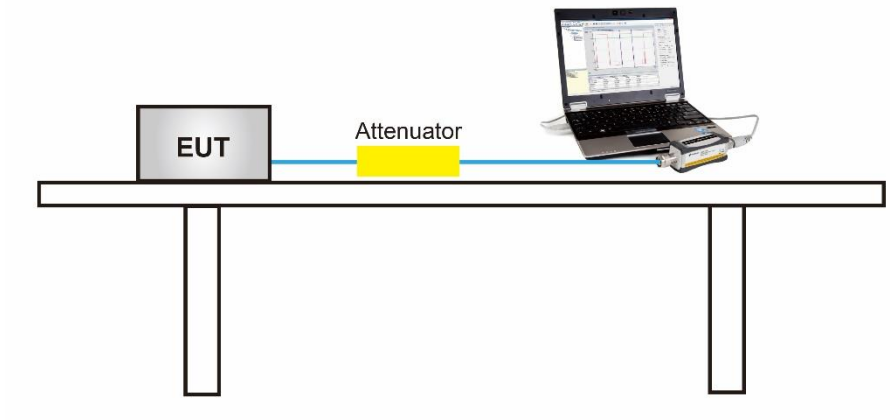
6.5.2.Test Procedure Used

KDB 789033D02v01r04- Section E)3)b) Method PM-G

6.5.3.Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

6.5.4.Test Setup



6.5.5.Test Result

A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

6.6. Power Spectral Density Measurement

6.6.1.Test Limit

FCC Limit

For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

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.

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 6dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

ISED Limit

For the band 5.15-5.25 GHz, the e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

For the band 5.25-5.35 GHz and 5.47-5725 GHz, the power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

For the 5.725-5.85 GHz band, the 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, the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

6.6.2.Test Procedure Used

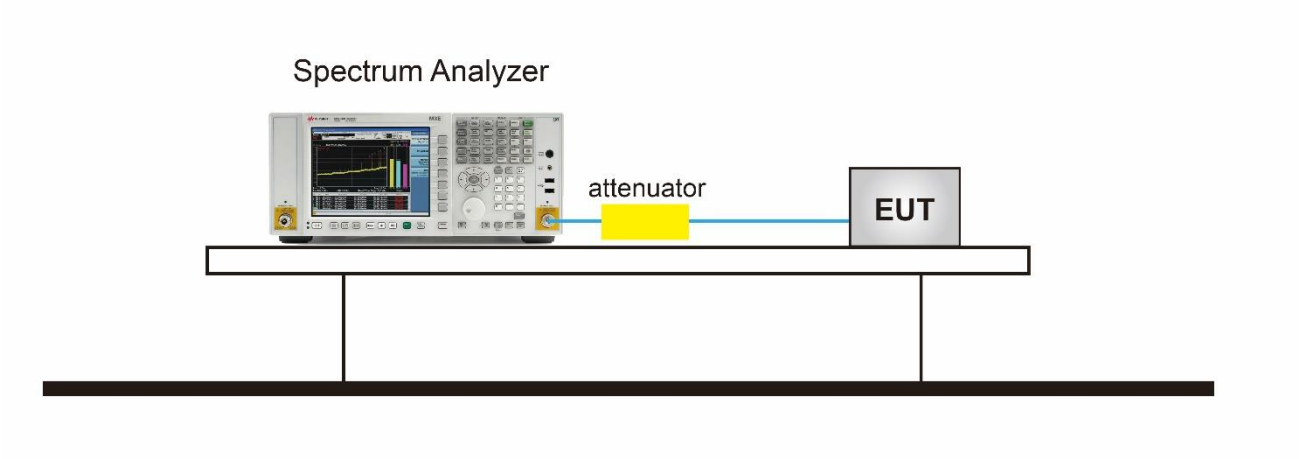
KDB 789033 D02v02r01 - Section F

6.6.3.Test Setting

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire 26dB EBW of the signal.
3. RBW = 1MHz, if measurement bandwidth of Maximum PSD is specified in 500 kHz, RBW = 510 kHz
4. VBW ≥ 3 RBW

5. Number of sweep points ≥ 2 × (span / RBW)
6. Detector = power averaging (Average)
7. Sweep time = auto
8. Trigger = free run
9. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
10. Add 10*log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10*log(1/0.25) = 6 dB if the duty cycle is 25 percent.

6.6.4.Test Setup



6.6.5.Test Result

Product	WIFI+BT Combo Module	Test Engineer	Yuri Li
Test Date	2020/06/27~2020/08/18	Test Site	TR3
Test Mode	CDD mode [For FCC UNII-1 (5150-5250MHz)]		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 PSD (dBm/ MHz)	Ant 1 PSD (dBm/ MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/MHz)	Result
11a	6Mbps	36	5180	2.69	-1.02	93.50	4.52	≤ 9.65	Pass
11a	6Mbps	44	5220	2.96	-0.36	93.50	4.91	≤ 9.65	Pass
11a	6Mbps	48	5240	3.45	0.39	93.50	5.49	≤ 9.65	Pass
11n-HT20	MCS0	36	5180	1.49	-1.76	89.13	3.67	≤ 9.65	Pass
11n-HT20	MCS0	44	5220	1.83	-1.02	89.13	4.15	≤ 9.65	Pass
11n-HT20	MCS0	48	5240	1.94	-0.82	89.13	4.28	≤ 9.65	Pass
11n-HT40	MCS0	38	5190	-0.48	-4.84	80.68	1.81	≤ 9.65	Pass
11n-HT40	MCS0	46	5230	-0.32	-4.07	80.68	2.14	≤ 9.65	Pass
11ac-VHT20	MCS0	36	5180	1.77	-1.12	90.40	4.01	≤ 9.65	Pass
11ac-VHT20	MCS0	44	5220	1.38	-1.04	90.40	3.78	≤ 9.65	Pass
11ac-VHT20	MCS0	48	5240	2.03	-0.70	90.40	4.32	≤ 9.65	Pass
11ac-VHT40	MCS0	38	5190	-1.45	-5.22	78.57	1.12	≤ 9.65	Pass
11ac-VHT40	MCS0	46	5230	-0.88	-4.44	78.57	1.75	≤ 9.65	Pass
11ac-VHT80	MCS0	42	5210	-5.38	-8.59	65.87	-1.87	≤ 9.65	Pass

Note 1: When EUT duty cycle < 98%, the total PSD (dBm/MHz) = 10*log {$10^{(\text{Ant 0 PSD}/10)}$ + $10^{(\text{Ant 1 PSD}/10)}$} (dBm/MHz) + 10*log (1/Duty Cycle).

Note 2: PSD Limit (dBm/MHz) = 11 - (7.35 - 6) = 9.65dBm/MHz

Product	WIFI+BT Combo Module	Test Engineer	Yuri Li
Test Date	2020/06/27~2020/08/24	Test Site	TR3
Test Mode	CDD mode [For ISED UNII-1 (5150-5250MHz)]		

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 PSD (dBm/ MHz)	Ant 1 PSD (dBm/ MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	E.I.R.P PSD (dBm/MHz)	E.I.R.P PSD Limit (dBm/MHz)	Result
11a	6Mbps	36	5180	0.92	-3.84	93.50	2.46	9.81	≤ 10.00	Pass
11a	6Mbps	44	5220	0.68	-3.18	93.50	2.47	9.82	≤ 10.00	Pass
11a	6Mbps	48	5240	0.60	-2.92	93.50	2.49	9.84	≤ 10.00	Pass
11n-HT20	MCS0	36	5180	-0.10	-3.09	89.13	2.17	9.52	≤ 10.00	Pass
11n-HT20	MCS0	44	5220	-0.97	-3.23	89.13	1.55	8.90	≤ 10.00	Pass
11n-HT20	MCS0	48	5240	-1.01	-3.63	89.13	1.39	8.74	≤ 10.00	Pass
11n-HT40	MCS0	38	5190	-0.48	-4.84	80.68	1.81	9.16	≤ 10.00	Pass
11n-HT40	MCS0	46	5230	-0.32	-4.07	80.68	2.14	9.49	≤ 10.00	Pass
11ac-VHT20	MCS0	36	5180	0.65	-3.98	90.40	2.38	9.73	≤ 10.00	Pass
11ac-VHT20	MCS0	44	5220	0.54	-3.13	90.40	2.53	9.88	≤ 10.00	Pass
11ac-VHT20	MCS0	48	5240	0.56	-3.07	90.40	2.56	9.91	≤ 10.00	Pass
11ac-VHT40	MCS0	38	5190	-1.45	-5.22	78.57	1.12	8.47	≤ 10.00	Pass
11ac-VHT40	MCS0	46	5230	-0.88	-4.44	78.57	1.75	9.10	≤ 10.00	Pass
11ac-VHT80	MCS0	42	5210	-5.38	-8.59	65.87	-1.87	5.48	≤ 10.00	Pass

Note 1:

When EUT duty cycle < 98%, the total PSD (dBm/MHz) = 10*log $\{10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)}\}$ (dBm/MHz) + 10*log (1/Duty Cycle).

Note 2: E.I.R.P PSD (dBm/MHz) = Total PSD (dBm/ MHz) + Directional Gain (dBi), Directional Gain = 7.35dBi

Product	WIFI+BT Combo Module	Test Engineer	Yuri Li
Test Date	2020/06/27~2020/08/18	Test Site	TR3
Test Mode	CDD Mode (For FCC & ISED UNII- 2a/-2c)		

Test Mode	Data Rate /MCS	Channel No.	Freq. (MHz)	Ant 0 PSD (dBm/MHz)	Ant 1 PSD (dBm/MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/MHz)	Result
11a	6Mbps	52	5260	3.94	1.58	93.50	5.93	≤ 9.65	Pass
11a	6Mbps	60	5300	2.58	1.22	93.50	4.96	≤ 9.65	Pass
11a	6Mbps	64	5320	2.56	1.63	93.50	5.13	≤ 9.65	Pass
11a	6Mbps	100	5500	3.02	5.48	93.50	7.43	≤ 9.65	Pass
11a	6Mbps	116	5580	3.77	6.31	93.50	8.23	≤ 9.65	Pass
11a	6Mbps	140	5700	5.07	4.22	93.50	7.68	≤ 9.65	Pass
11a	6Mbps	144	5720	6.32	5.27	93.50	8.84	≤ 9.65	Pass
11n-HT20	MCS0	52	5260	2.45	0.36	89.13	4.54	≤ 9.65	Pass
11n-HT20	MCS0	60	5300	1.33	0.33	89.13	3.87	≤ 9.65	Pass
11n-HT20	MCS0	64	5320	1.34	0.70	89.13	4.04	≤ 9.65	Pass
11n-HT20	MCS0	100	5500	1.59	4.54	89.13	6.32	≤ 9.65	Pass
11n-HT20	MCS0	116	5580	2.38	5.64	89.13	7.32	≤ 9.65	Pass
11n-HT20	MCS0	140	5700	3.67	4.77	89.13	7.26	≤ 9.65	Pass
11n-HT20	MCS0	144	5720	5.01	4.19	89.13	7.63	≤ 9.65	Pass
11n-HT40	MCS0	54	5270	-0.05	-2.19	80.68	2.02	≤ 9.65	Pass
11n-HT40	MCS0	62	5310	-1.49	-3.05	80.68	0.81	≤ 9.65	Pass
11n-HT40	MCS0	102	5510	-0.93	1.57	80.68	3.50	≤ 9.65	Pass
11n-HT40	MCS0	110	5550	0.14	2.51	80.68	4.50	≤ 9.65	Pass
11n-HT40	MCS0	134	5670	1.71	1.95	80.68	4.84	≤ 9.65	Pass
11n-HT40	MCS0	142	5710	2.54	1.48	80.68	5.05	≤ 9.65	Pass
11ac-VHT20	MCS0	52	5260	2.44	0.80	90.40	4.71	≤ 9.65	Pass
11ac-VHT20	MCS0	60	5300	0.93	0.07	90.40	3.53	≤ 9.65	Pass
11ac-VHT20	MCS0	64	5320	0.63	0.43	90.40	3.54	≤ 9.65	Pass
11ac-VHT20	MCS0	100	5500	1.50	4.16	90.40	6.04	≤ 9.65	Pass
11ac-VHT20	MCS0	116	5580	2.74	5.39	90.40	7.28	≤ 9.65	Pass
11ac-VHT20	MCS0	140	5700	3.10	3.11	90.40	6.11	≤ 9.65	Pass
11ac-VHT20	MCS0	144	5720	5.30	4.48	90.40	7.92	≤ 9.65	Pass

Test Mode	Data Rate /MCS	Channel No.	Freq. (MHz)	Ant 0 PSD (dBm/MHz)	Ant 1 PSD (dBm/MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/MHz)	Result
11ac-VHT40	MCS0	54	5270	-0.44	-2.39	78.57	2.75	≤ 9.65	Pass
11ac-VHT40	MCS0	62	5310	-2.05	-3.06	78.57	1.53	≤ 9.65	Pass
11ac-VHT40	MCS0	102	5510	-1.67	1.58	78.57	4.31	≤ 9.65	Pass
11ac-VHT40	MCS0	110	5550	-0.59	2.47	78.57	5.26	≤ 9.65	Pass
11ac-VHT40	MCS0	134	5670	1.58	2.10	78.57	5.91	≤ 9.65	Pass
11ac-VHT40	MCS0	142	5710	2.31	1.86	78.57	6.15	≤ 9.65	Pass
11ac-VHT80	MCS0	58	5290	-5.02	-6.34	65.87	-0.81	≤ 9.65	Pass
11ac-VHT80	MCS0	106	5530	-4.02	-0.89	65.87	2.65	≤ 9.65	Pass
11ac-VHT80	MCS0	138	5690	-1.06	-1.58	65.87	3.51	≤ 9.65	Pass

Note 1: When EUT duty cycle < 98%, the total PSD (dBm/MHz) = 10*log $\{10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)}\}$ (dBm/MHz) + 10*log (1/Duty Cycle).

Note 2: PSD Limit (dBm/MHz) = 11 - (7.35 - 6) = 9.65dBm/MHz

Product	WIFI+BT Combo Module	Test Engineer	Yuri Li
Test Date	2020/06/27~2020/08/18	Test Site	TR3
Test Mode	CDD Mode (For FCC & ISED UNII- 3)		

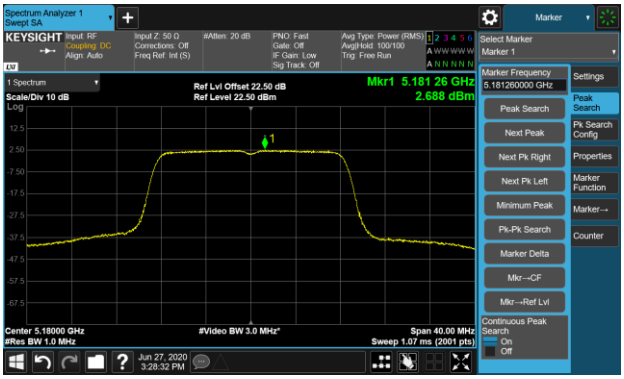
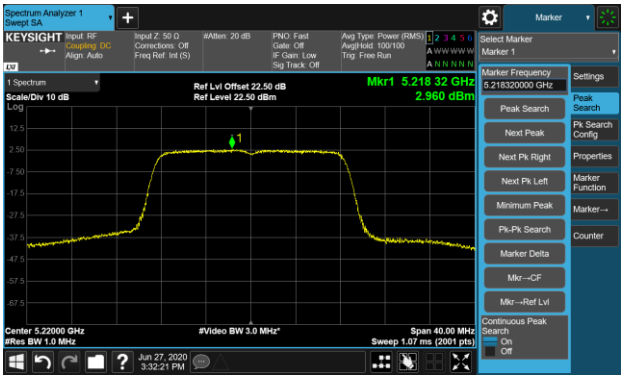
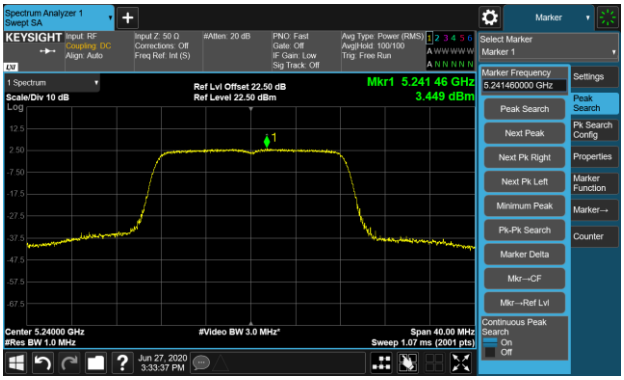
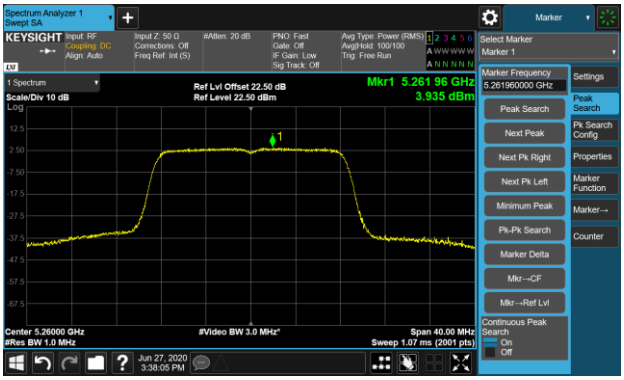
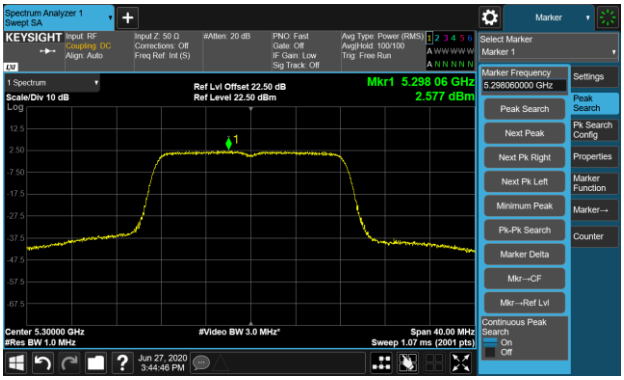
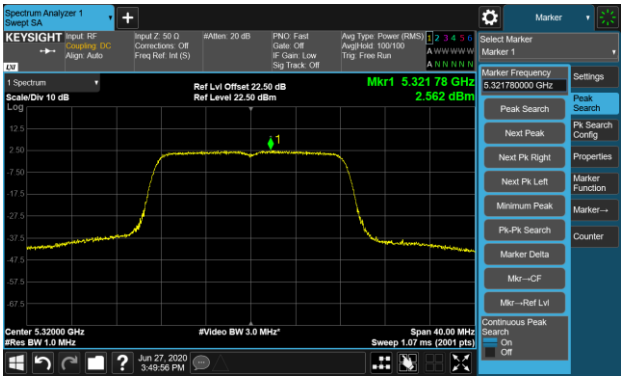
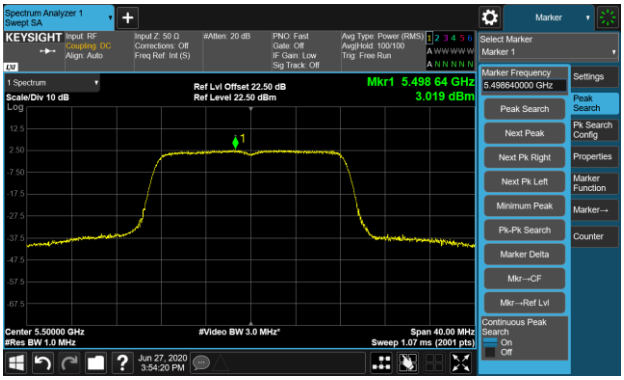
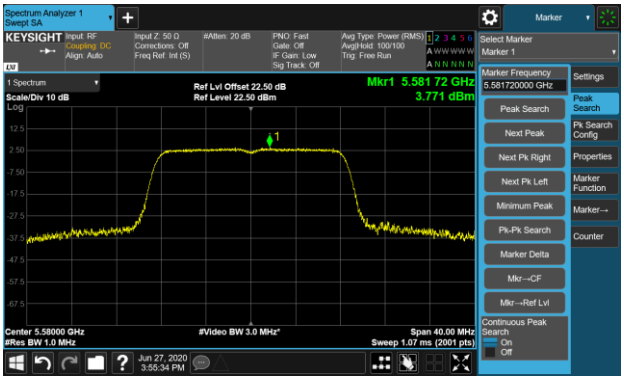
Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant 0 PSD (dBm/510KHz)	Ant 1 PSD (dBm/510kHz)	Duty Cycle (%)	Total PSD (dBm/ 510kHz)	Limit (dBm/ 500kHz)	Result
11a	6Mbps	149	5745	-1.13	-1.58	93.50	1.95	≤ 28.65	Pass
11a	6Mbps	157	5785	2.80	0.50	93.50	5.10	≤ 28.65	Pass
11a	6Mbps	165	5825	0.56	-1.43	93.50	2.98	≤ 28.65	Pass
11n-HT20	MCS0	149	5745	-1.93	-1.98	89.13	1.56	≤ 28.65	Pass
11n-HT20	MCS0	157	5785	1.89	-0.94	89.13	4.21	≤ 28.65	Pass
11n-HT20	MCS0	165	5825	-0.04	-2.02	89.13	2.59	≤ 28.65	Pass
11n-HT40	MCS0	151	5755	-4.94	-5.04	80.68	-1.05	≤ 28.65	Pass
11n-HT40	MCS0	159	5795	-1.54	-4.08	80.68	1.32	≤ 28.65	Pass
11ac-VHT20	MCS0	149	5745	-2.37	-2.85	90.40	0.85	≤ 28.65	Pass
11ac-VHT20	MCS0	157	5785	1.73	-0.80	90.40	4.10	≤ 28.65	Pass
11ac-VHT20	MCS0	165	5825	-0.32	-2.37	90.40	2.22	≤ 28.65	Pass
11ac-VHT40	MCS0	151	5755	-6.27	-6.70	78.57	-2.42	≤ 28.65	Pass
11ac-VHT40	MCS0	159	5795	-1.53	-4.65	78.57	1.24	≤ 28.65	Pass
11ac-VHT80	MCS0	155	5775	-5.17	-6.29	65.87	-0.87	≤ 28.65	Pass

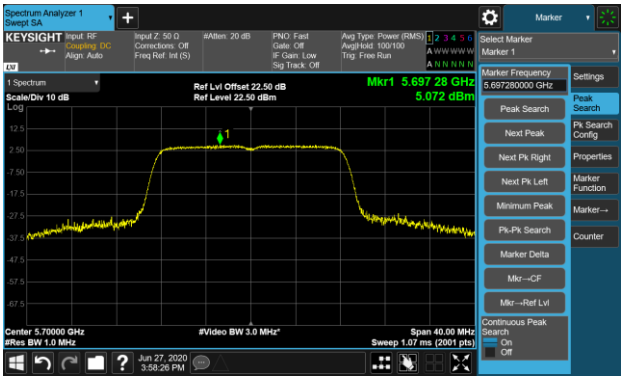
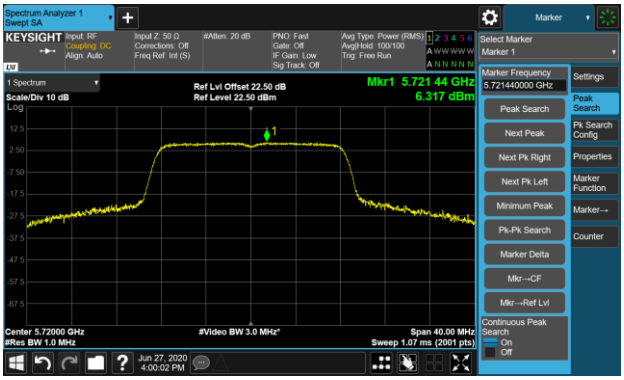
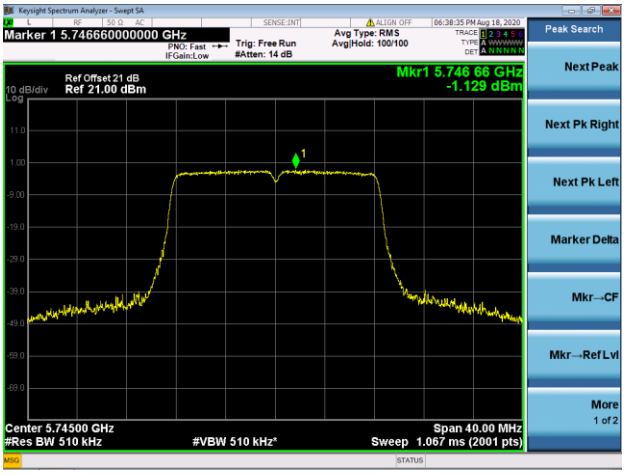
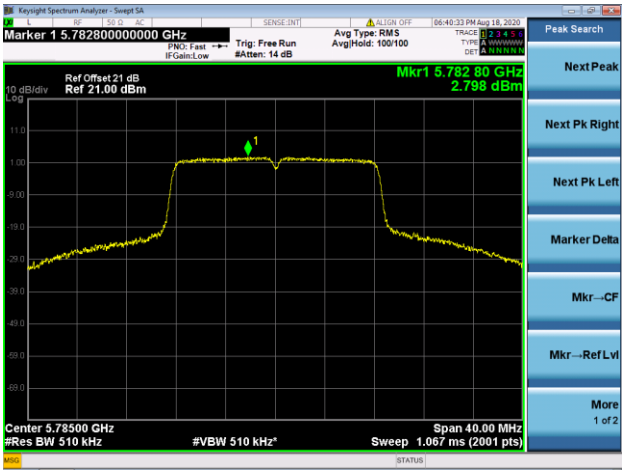
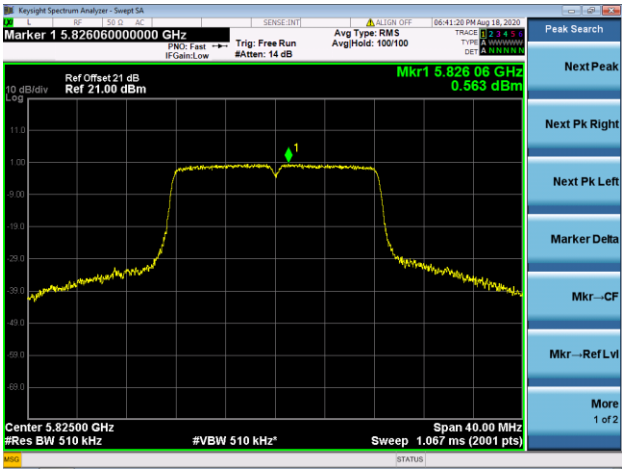
Note 1: When EUT duty cycle < 98%,

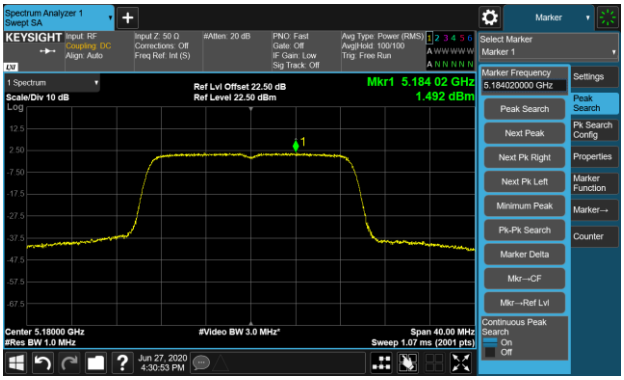
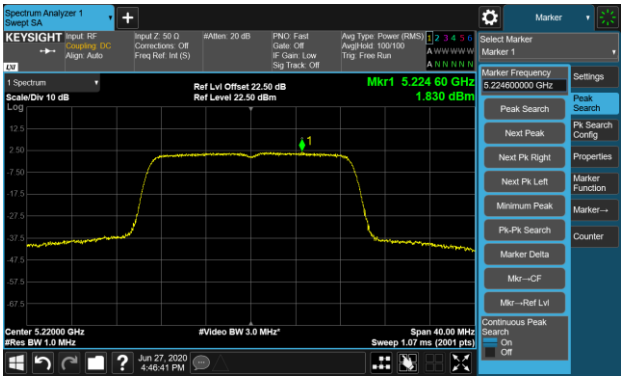
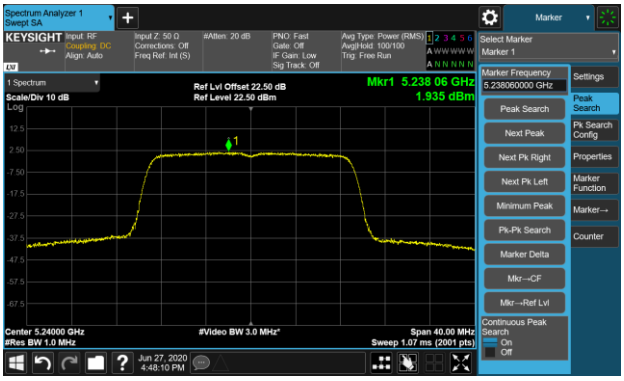
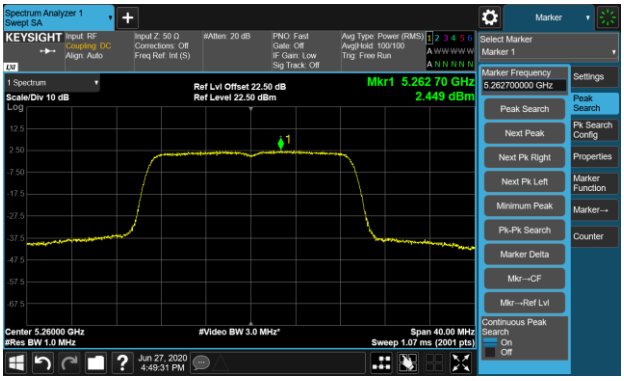
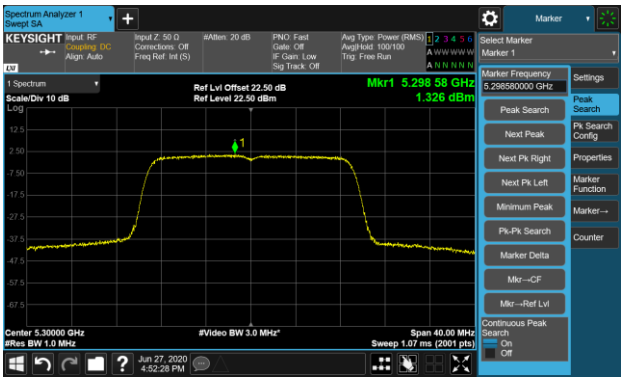
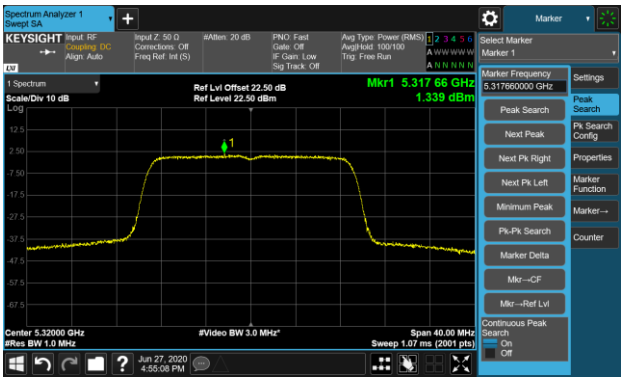
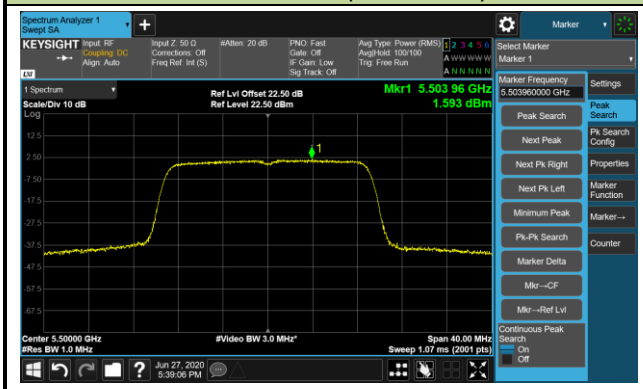
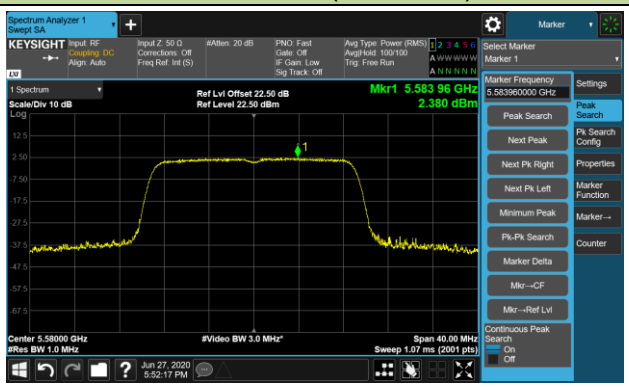
the total PSD (dBm/510kHz) = 10*log $\{10^{(\text{Ant 0 PSD}/10)} + 10^{(\text{Ant 1 PSD}/10)}\}$ (dBm/510kHz) + 10*log (1/Duty Cycle).

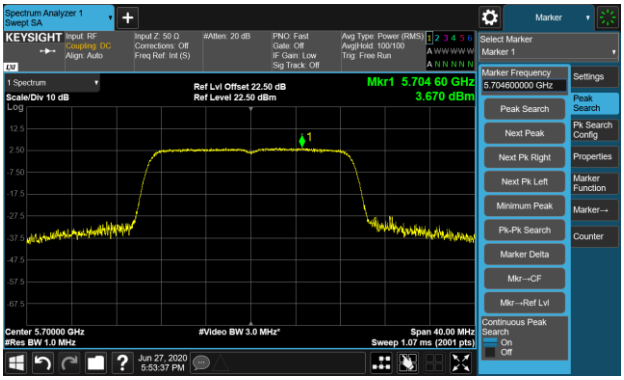
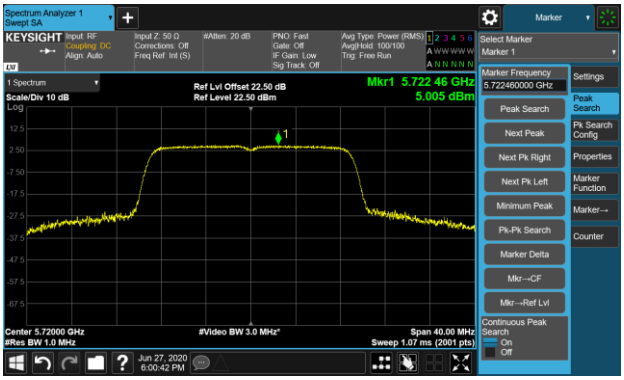
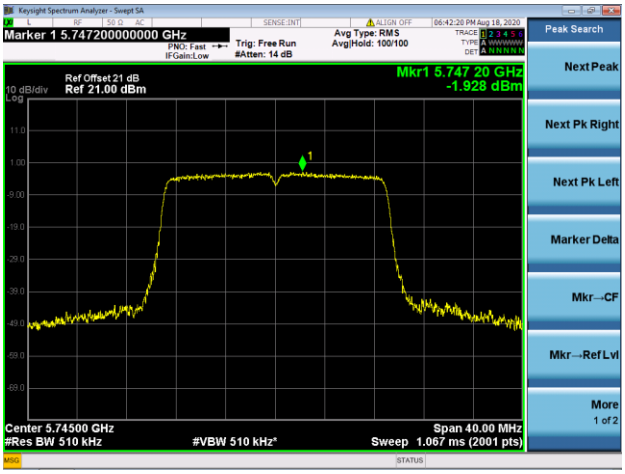
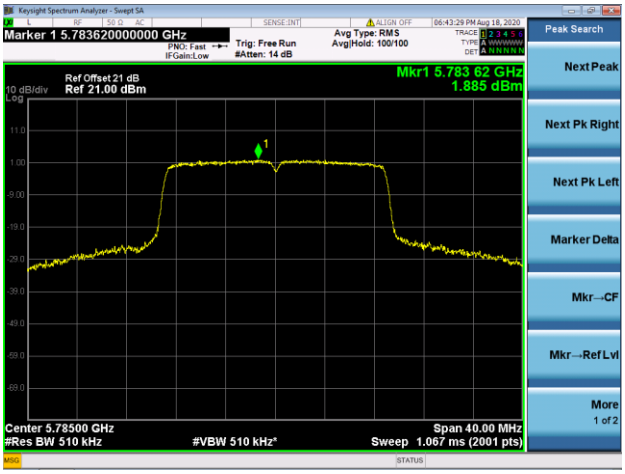
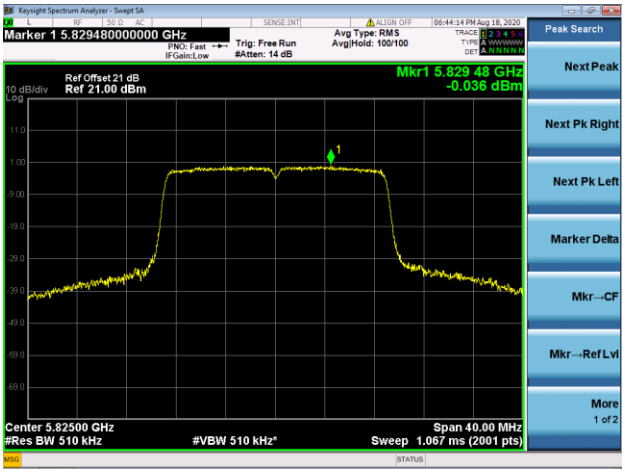
Note 2: PSD Limit (dBm/MHz) = 30 - (7.35 - 6) = 28.65dBm/MHz

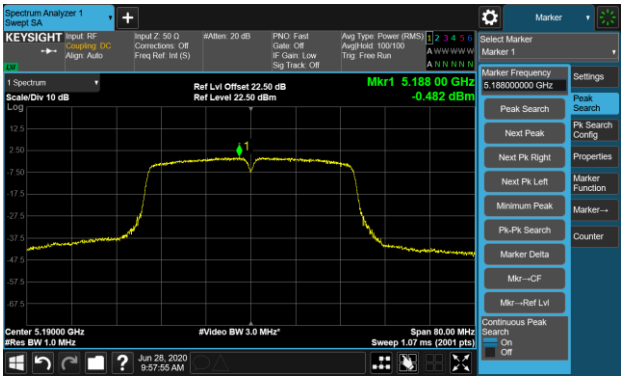
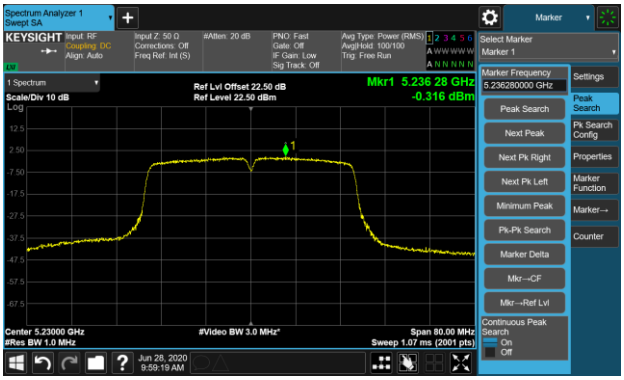
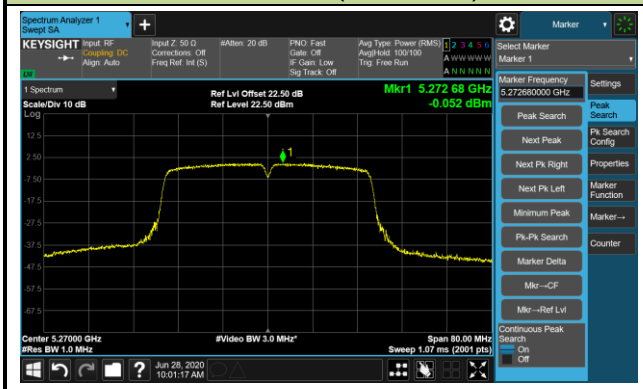
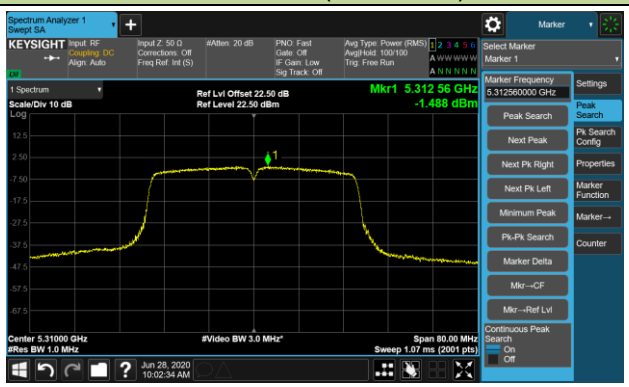
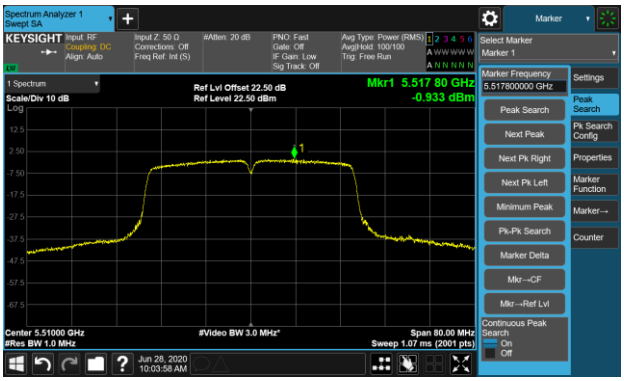
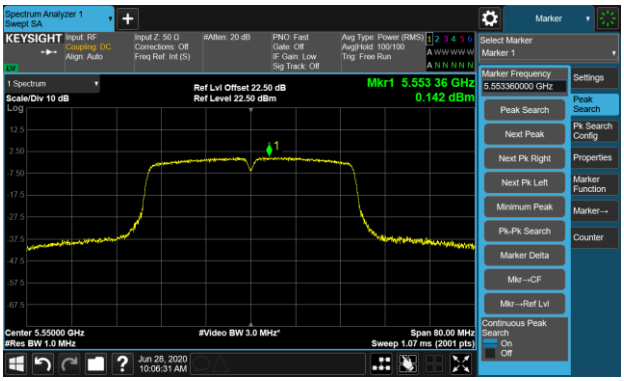
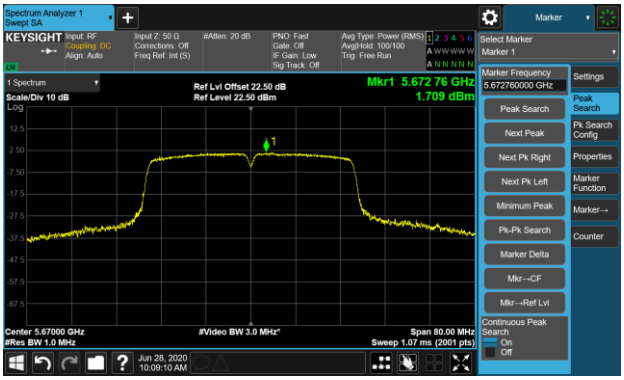
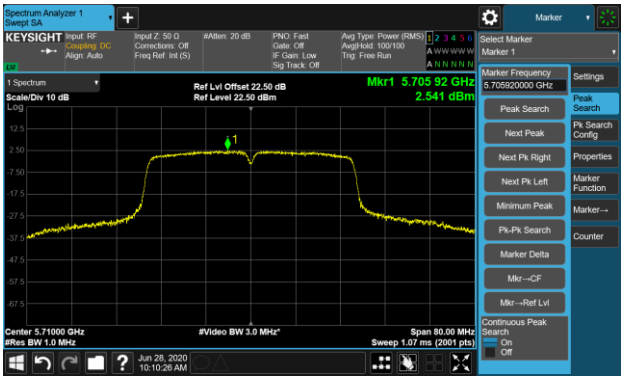
For FCC UNII-1 and FCC & ISED UNII-2a/-2c/-3 Bands

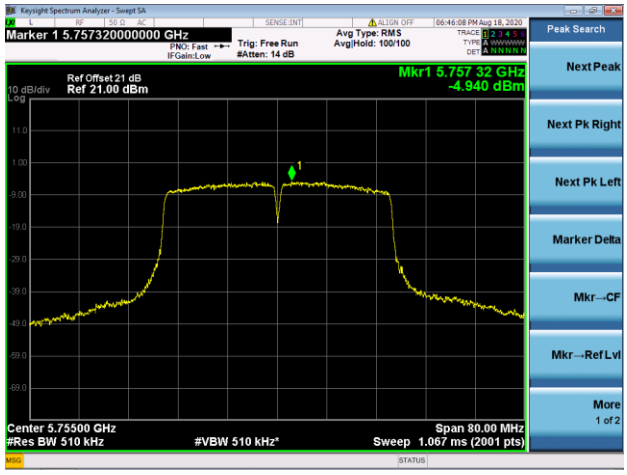
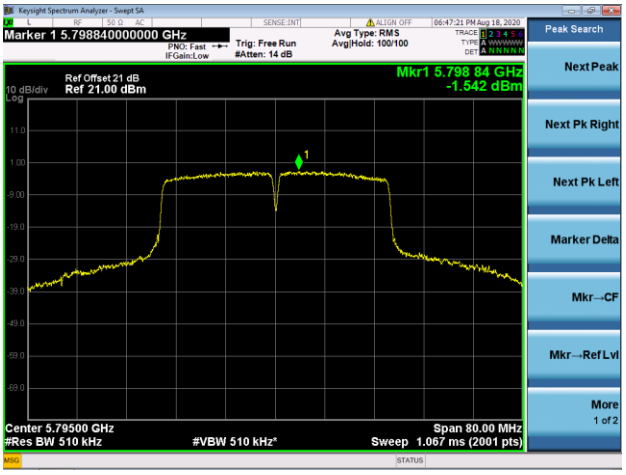
802.11a Power Spectral Density - Ant 0 / Ant 0 + 1 (CDD Mode)	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	
Channel 100 (5500MHz)	Channel 116 (5580MHz)
	

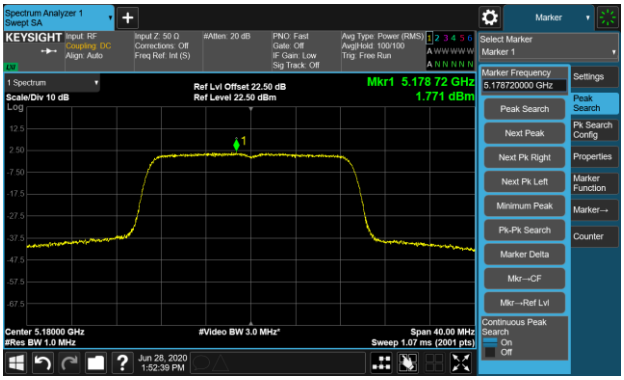
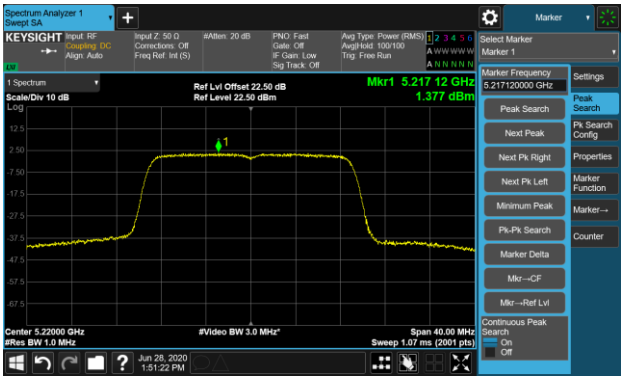
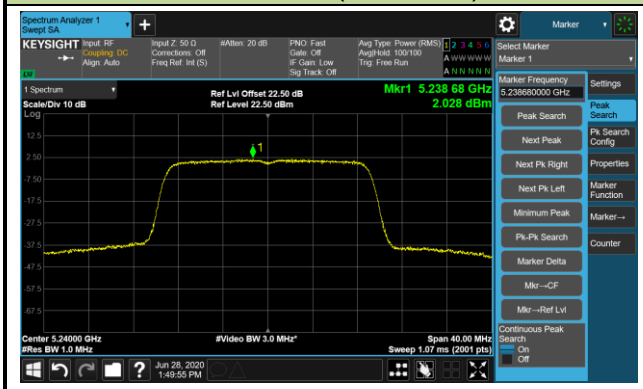
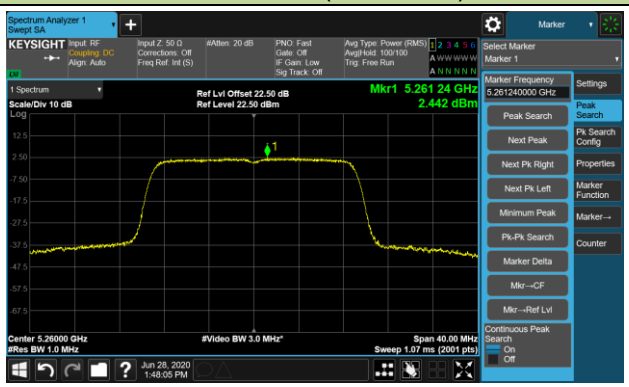
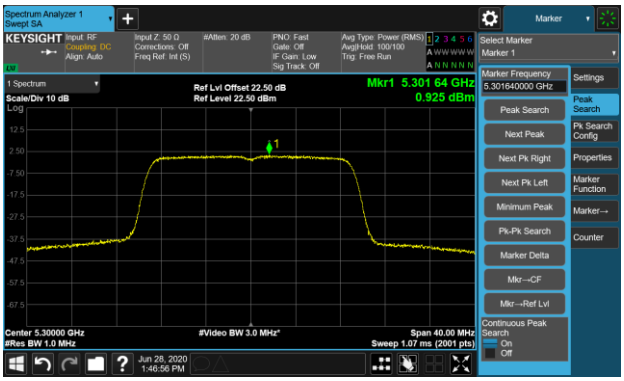
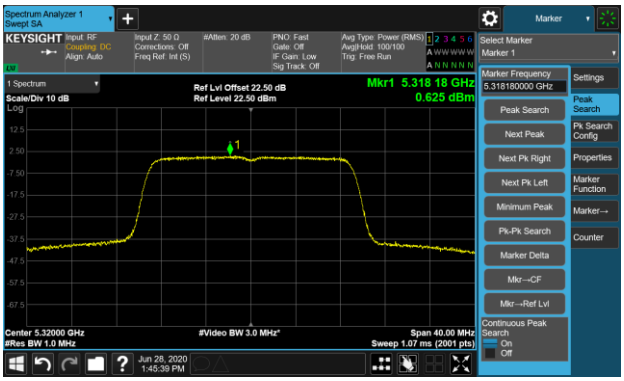
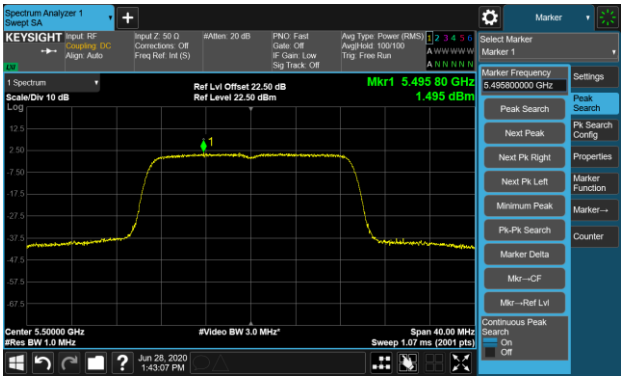
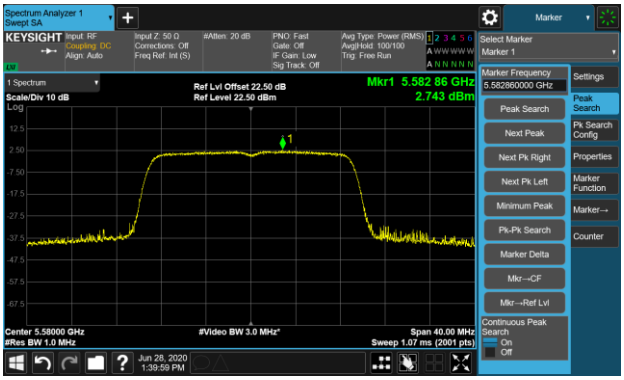
802.11a Power Spectral Density - Ant 0 / Ant 0 + 1 (CDD Mode)	
Channel 140 (5700MHz)	Channel 144 (5720MHz)
	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
	
Channel 165 (5825MHz)	
	

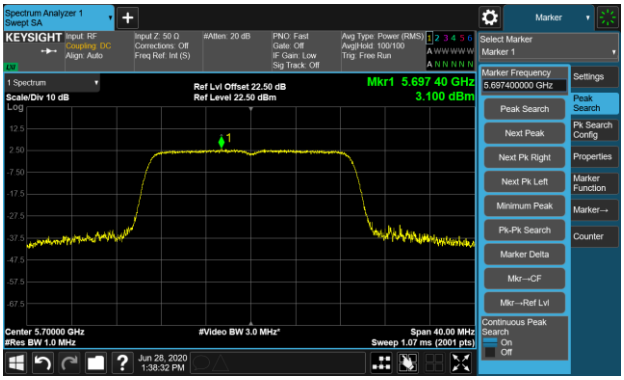
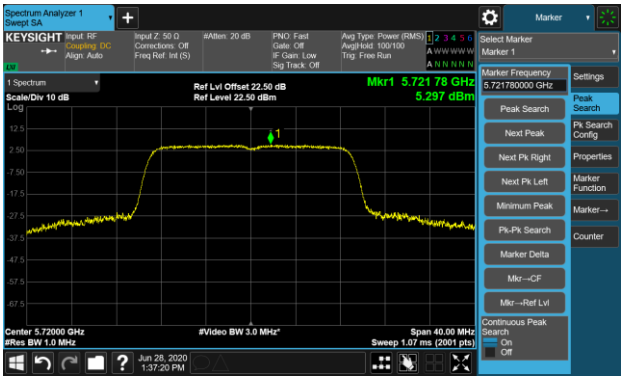
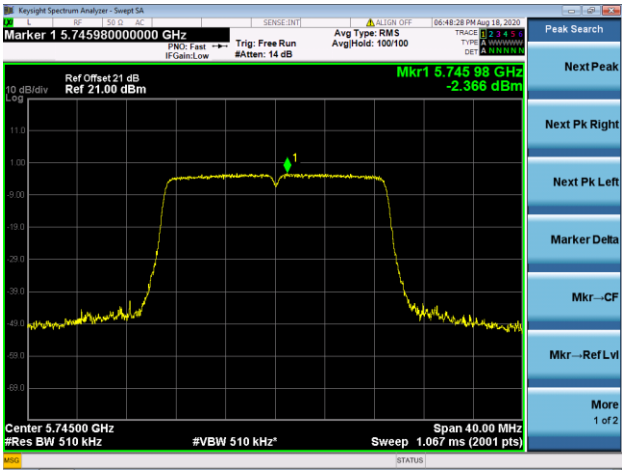
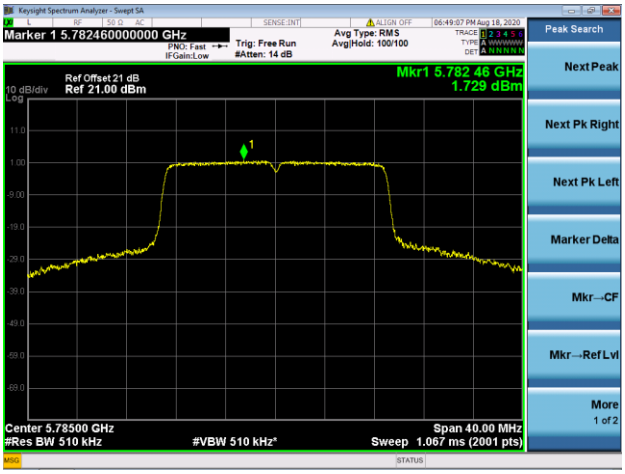
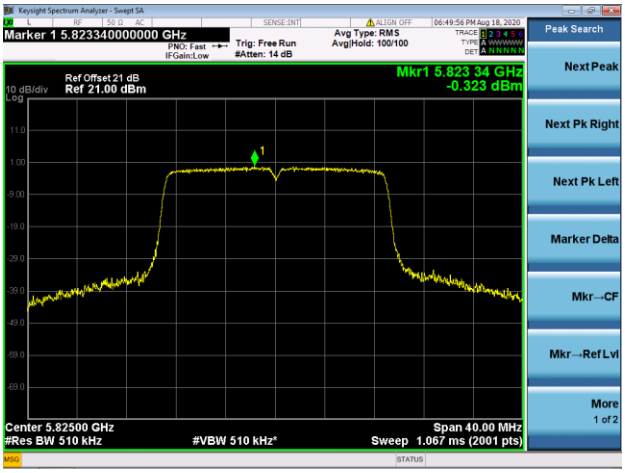
802.11n-HT20 Power Spectral Density - Ant 0 / Ant 0 + 1 (CDD Mode)	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	
Channel 100 (5500MHz)	Channel 116 (5580MHz)
	

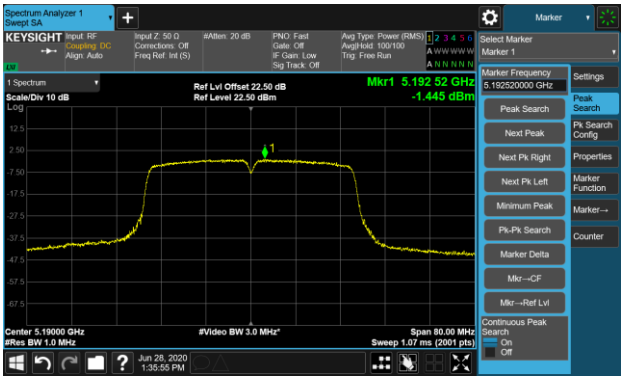
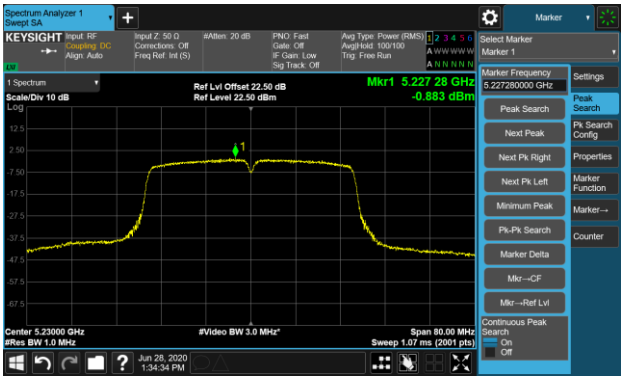
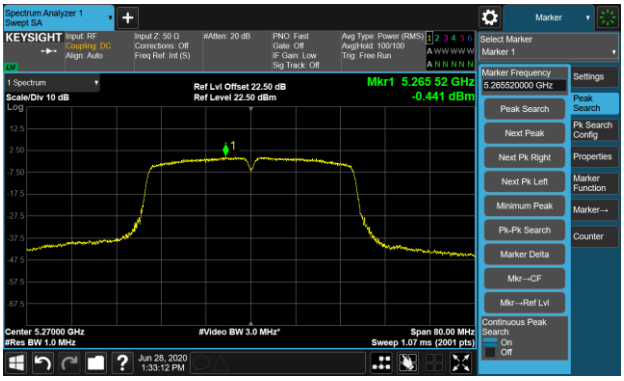
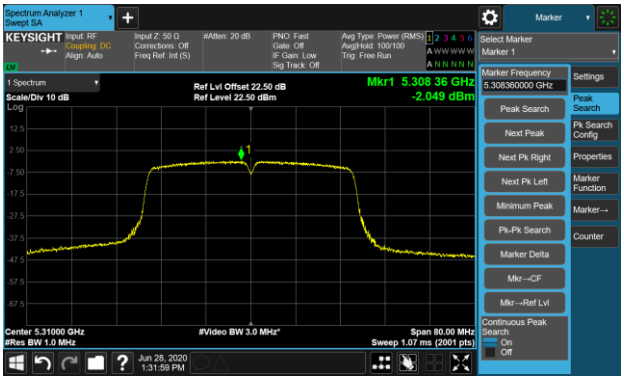
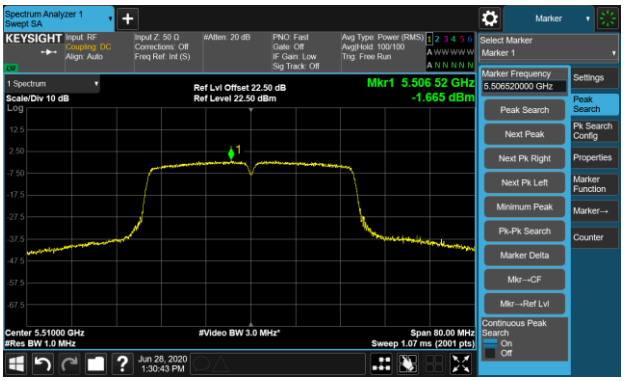
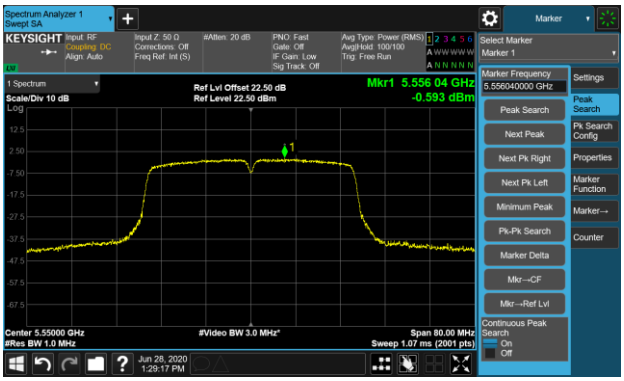
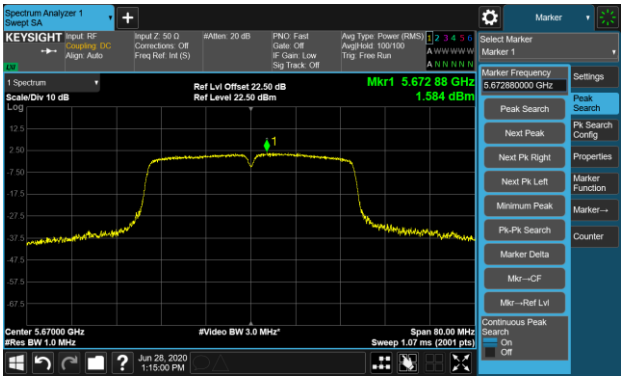
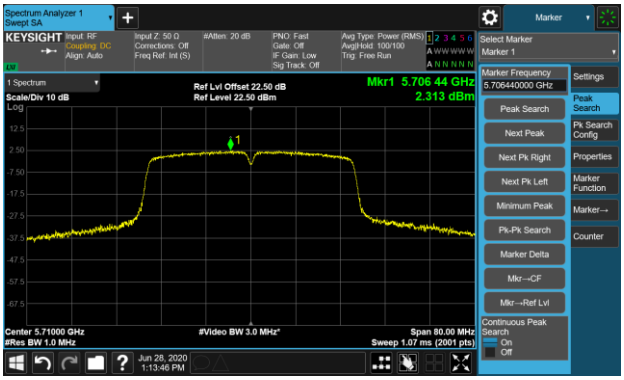
802.11n-HT20 Power Spectral Density - Ant 0 / Ant 0 + 1 (CDD Mode)	
Channel 140 (5700MHz)	Channel 144 (5720MHz)
	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
	
Channel 165 (5825MHz)	
	

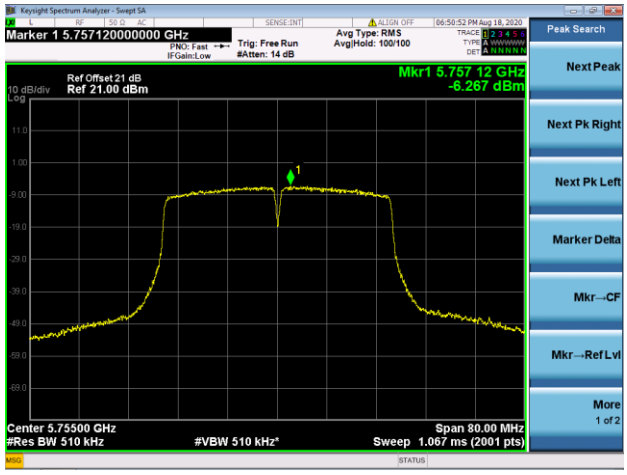
802.11n-HT40 Power Spectral Density - Ant 0 / Ant 0 + 1 (CDD Mode)	
Channel 38 (5190MHz)	Channel 44 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
Channel 102 (5510MHz)	Channel 110 (5550MHz)
	
Channel 134 (5670MHz)	Channel 142 (5710MHz)
	

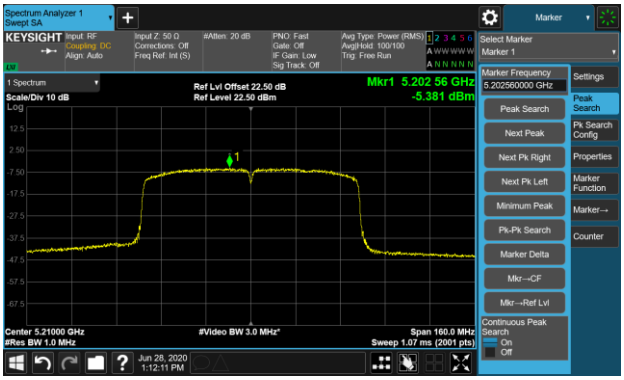
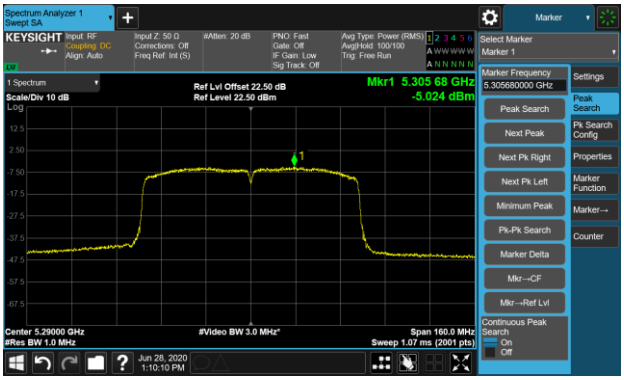
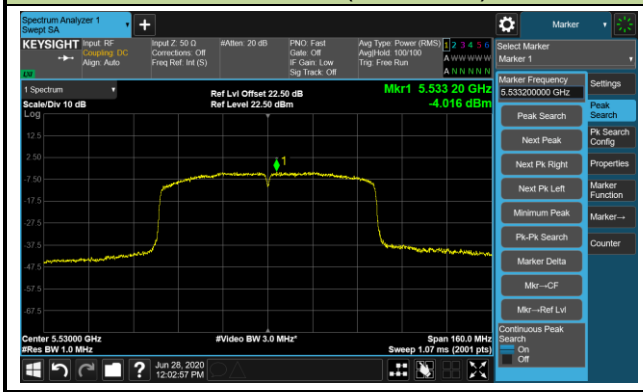
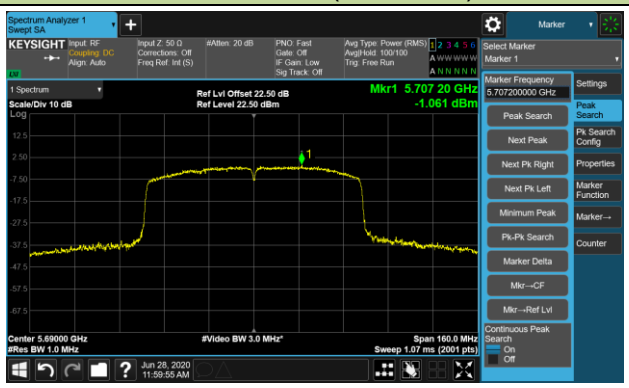
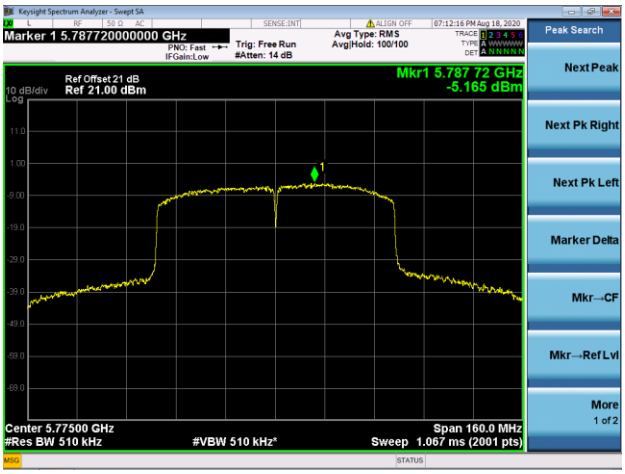
802.11n-HT40 Power Spectral Density - Ant 0 / Ant 0 + 1 (CDD Mode)	
Channel 151 (5755MHz)	Channel 159 (5795MHz)
	

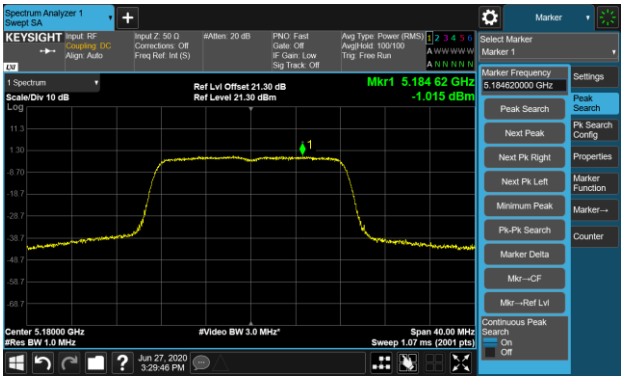
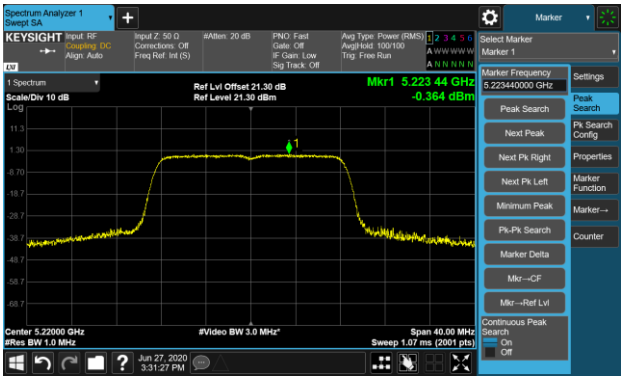
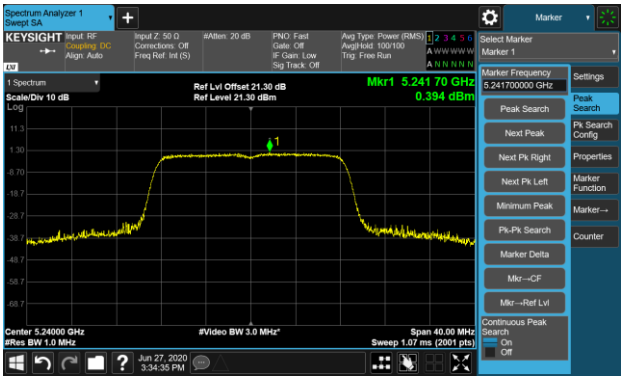
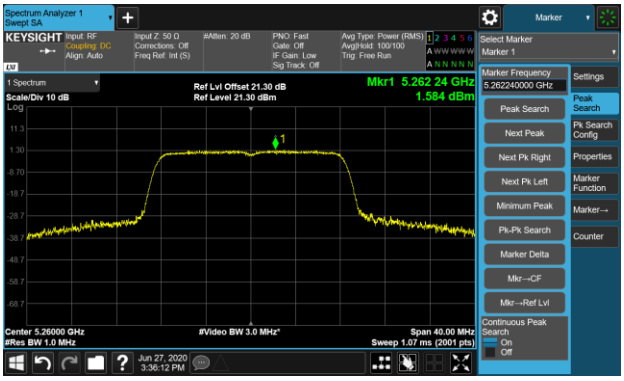
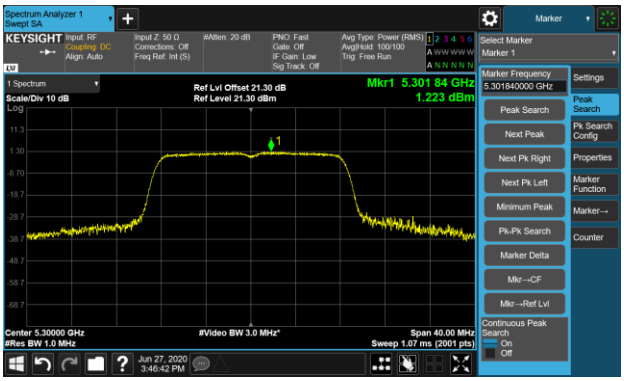
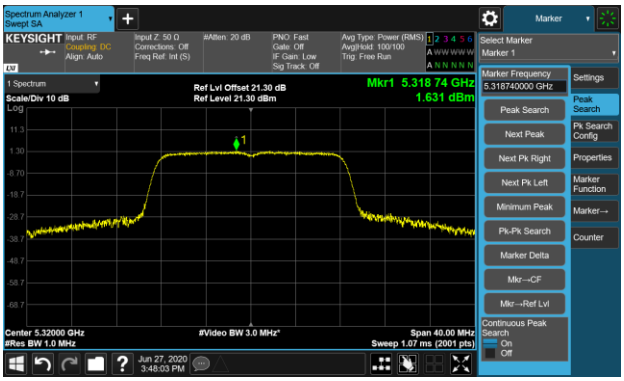
802.11ac-VHT20 Power Spectral Density - Ant 0 / Ant 0 + 1 (CDD Mode)	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	
Channel 100 (5500MHz)	Channel 116 (5580MHz)
	

802.11ac-VHT20 Power Spectral Density - Ant 0 / Ant 0 + 1 (CDD Mode)	
Channel 140 (5700MHz)	Channel 144 (5720MHz)
	
Channel 149 (5745MHz)	Channel 157 (5785MHz)
	
Channel 165 (5825MHz)	
	

802.11ac-VHT40 Power Spectral Density - Ant 0 / Ant 0 + 1 (CDD Mode)	
Channel 38 (5190MHz)	Channel 46 (5230MHz)
	
Channel 54 (5270MHz)	Channel 62 (5310MHz)
	
Channel 102 (5510MHz)	Channel 110 (5550MHz)
	
Channel 134 (5670MHz)	Channel 142 (5710MHz)
	

802.11ac-VHT40 Power Spectral Density - Ant 0 / Ant 0 + 1 (CDD Mode)	
Channel 151 (5755MHz)	Channel 159 (5795MHz)
	

802.11ac-VHT80 Power Spectral Density - Ant 0 / Ant 0 + 1 (CDD Mode)	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
	
Channel 106 (5530MHz)	Channel 138 (5690MHz)
	
Channel 155 (5775MHz)	
	

802.11a Power Spectral Density - Ant 1 / Ant 0 + 1 (CDD Mode)	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	
Channel 100 (5500MHz)	Channel 116 (5580MHz)