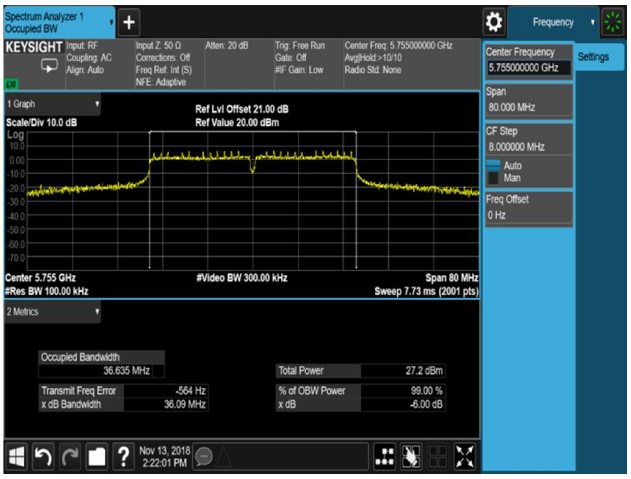
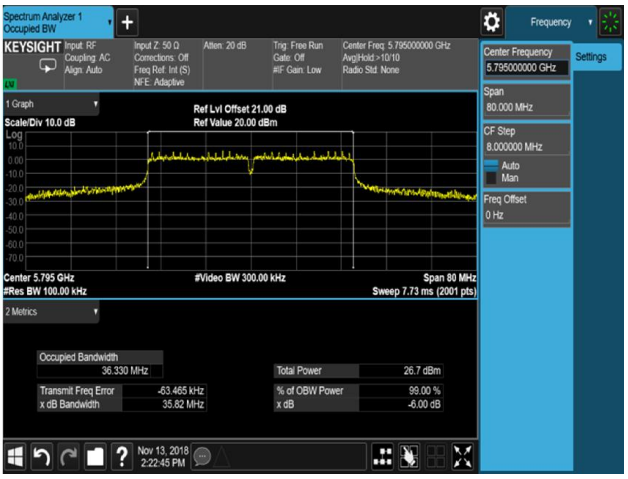
802.11ac-VHT40 6dB Bandwidth - Ant A / Ant A + B	
Channel 151 (5755MHz)	Channel 159 (5795MHz)
	
802.11ac-VHT80 6dB Bandwidth - Ant A / Ant A + B	
Channel 155 (5775MHz)	

7.4. Output Power Measurement

7.4.1.Test Limit

For the band 5.15 - 5.25 GHz, 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 maximumconducted output power shall be reduced by the amount in dB that the directional gain of theantenna exceeds 6dBi.

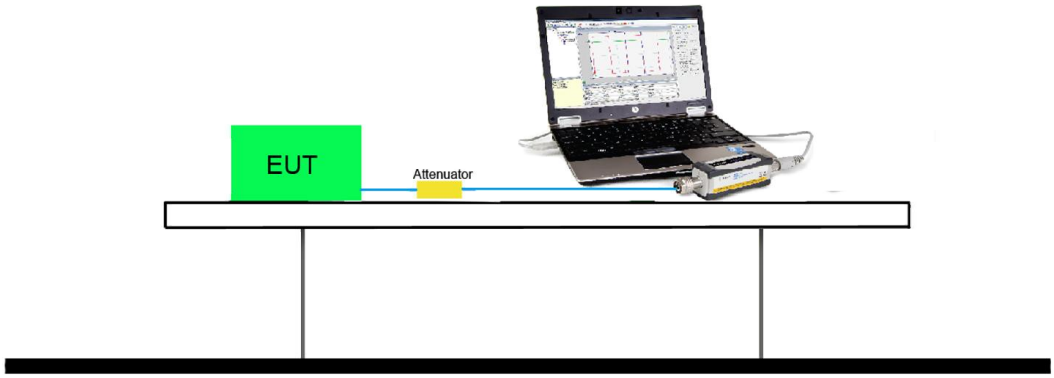
7.4.2.Test Procedure Used

KDB 789033 D02v02r01 - Section E) 3) b) Method PM-G

7.4.3.Test Setting

Average power measurements were perform 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.

7.4.4.Test Setup



7.4.5.Test Result

Power output test was verified over all data rates of each mode shown as below table, and then choose the maximum power output (grey marker) for final test of each channel.

For Ant A / Ant A + B port:

Test Mode	Bandwidth	Channel	Frequency (MHz)	Data Rate/ MCS	Average Power (dBm)
802.11a	20	36	5180	6Mbps	20.42
				24Mbps	19.90
				54Mbps	19.32
802.11n	20	36	5180	MCS0	19.74
				MCS4	19.29
				MCS8	18.77
802.11n	40	38	5190	MCS0	17.03
				MCS4	16.58
				MCS9	16.09
802.11ac	20	36	5180	MCS0	19.51
				MCS4	19.03
				MCS8	18.61
802.11ac	40	38	5190	MCS0	17.54
				MCS4	17.03
				MCS9	16.62
802.11ac	80	42	5210	MCS0	16.60
				MCS4	16.02
				MCS9	15.58

Product	AC1200 Wireless Dual Band PCI Express Adapter	Temperature	24°C
Test Engineer	Snake Ni	Relative Humidity	59%
Test Site	TR3	Test Date	2018/11/11

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant A Average Power (dBm)	Ant B Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
Ant A								
11a	6Mbps	36	5180	20.42	--	--	≤ 23.98	Pass
11a	6Mbps	44	5220	20.38	--	--	≤ 23.98	Pass
11a	6Mbps	48	5240	20.27	--	--	≤ 23.98	Pass
11a	6Mbps	52	5260	20.41	--	--	≤ 23.98	Pass
11a	6Mbps	60	5300	19.92	--	--	≤ 23.98	Pass
11a	6Mbps	64	5320	19.99	--	--	≤ 23.98	Pass
11a	6Mbps	100	5500	19.24	--	--	≤ 23.98	Pass
11a	6Mbps	116	5580	20.13	--	--	≤ 23.98	Pass
11a	6Mbps	140	5700	20.05	--	--	≤ 23.98	Pass
11a	6Mbps	149	5745	20.43	--	--	≤ 30.00	Pass
11a	6Mbps	157	5785	20.45	--	--	≤ 30.00	Pass
11a	6Mbps	165	5825	20.22	--	--	≤ 30.00	Pass
Ant A + B								
11n-HT20	MCS0	36	5180	19.74	19.81	22.79	≤ 23.98	Pass
11n-HT20	MSC0	40	5220	19.80	19.73	22.78	≤ 23.98	Pass
11n-HT20	MCS0	48	5240	18.95	18.86	21.92	≤ 23.98	Pass
11n-HT20	MSC0	52	5260	19.14	19.40	22.28	≤ 23.98	Pass
11n-HT20	MCS0	60	5300	19.41	19.23	22.33	≤ 23.98	Pass
11n-HT20	MSC0	64	5320	19.30	19.33	22.33	≤ 23.98	Pass
11n-HT20	MCS0	100	5500	18.89	18.46	21.69	≤ 23.98	Pass
11n-HT20	MSC0	116	5580	19.34	19.26	22.31	≤ 23.98	Pass
11n-HT20	MCS0	140	5700	19.28	19.30	22.30	≤ 23.98	Pass
11n-HT20	MCS0	149	5745	20.19	20.35	23.28	≤ 30.00	Pass
11n-HT20	MCS0	157	5785	20.25	19.74	23.01	≤ 30.00	Pass
11n-HT20	MCS0	165	5825	19.92	19.88	22.91	≤ 30.00	Pass

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant A Average Power (dBm)	Ant B Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
Ant A + B								
11n-HT40	MCS0	38	5190	17.03	17.28	20.17	≤ 23.98	Pass
11n-HT40	MCS0	46	5230	20.25	20.23	23.25	≤ 23.98	Pass
11n-HT40	MCS0	54	5270	19.82	19.68	22.76	≤ 23.98	Pass
11n-HT40	MCS0	62	5310	20.19	20.22	23.22	≤ 23.98	Pass
11n-HT40	MCS0	102	5510	17.18	16.93	20.07	≤ 23.98	Pass
11n-HT40	MCS0	110	5550	20.22	20.08	23.16	≤ 23.98	Pass
11n-HT40	MCS0	134	5670	20.25	19.97	23.12	≤ 23.98	Pass
11n-HT40	MCS0	151	5755	20.26	20.32	23.30	≤ 30.00	Pass
11n-HT40	MCS0	159	5795	19.96	20.13	23.06	≤ 30.00	Pass
11ac-VHT20	MCS0	36	5180	19.51	18.70	22.13	≤ 23.98	Pass
11ac-VHT20	MSC0	40	5220	19.55	19.46	22.52	≤ 23.98	Pass
11ac-VHT20	MCS0	48	5240	19.47	19.05	22.28	≤ 23.98	Pass
11ac-VHT20	MSC0	52	5260	19.45	18.82	22.16	≤ 23.98	Pass
11ac-VHT20	MCS0	60	5300	19.21	18.98	22.11	≤ 23.98	Pass
11ac-VHT20	MSC0	64	5320	19.22	19.10	22.17	≤ 23.98	Pass
11ac-VHT20	MCS0	100	5500	17.51	17.31	20.42	≤ 23.98	Pass
11ac-VHT20	MSC0	116	5580	18.72	19.36	22.06	≤ 23.98	Pass
11ac-VHT20	MCS0	140	5700	19.75	19.23	22.51	≤ 23.98	Pass
11ac-VHT20	MCS0	149	5745	19.94	20.02	22.99	≤ 30.00	Pass
11ac-VHT20	MCS0	157	5785	19.95	19.87	22.92	≤ 30.00	Pass
11ac-VHT20	MCS0	165	5825	20.23	19.95	23.10	≤ 30.00	Pass

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant A Average Power (dBm)	Ant B Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	Result
Ant A + B								
11ac-VHT40	MCS0	38	5190	17.54	17.26	20.41	≤ 23.98	Pass
11ac-VHT40	MCS0	46	5230	20.09	19.99	23.05	≤ 23.98	Pass
11ac-VHT40	MCS0	54	5270	20.20	19.89	23.06	≤ 23.98	Pass
11ac-VHT40	MCS0	62	5310	16.11	16.51	19.32	≤ 23.98	Pass
11ac-VHT40	MCS0	102	5510	16.35	16.53	19.45	≤ 23.98	Pass
11ac-VHT40	MCS0	110	5550	19.89	19.79	22.85	≤ 23.98	Pass
11ac-VHT40	MCS0	134	5670	20.15	20.24	23.21	≤ 23.98	Pass
11ac-VHT40	MCS0	151	5755	19.85	20.12	23.00	≤ 30.00	Pass
11ac-VHT40	MCS0	159	5795	20.28	20.22	23.26	≤ 30.00	Pass
11ac-VHT80	MCS0	42	5210	16.60	16.82	19.72	≤ 23.98	Pass
11ac-VHT80	MCS0	58	5290	19.95	20.12	23.05	≤ 23.98	Pass
11ac-VHT80	MCS0	106	5530	16.58	16.61	19.61	≤ 23.98	Pass
11ac-VHT80	MCS0	155	5775	19.91	20.02	22.98	≤ 30.00	Pass

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

7.5. Transmit Power Control

7.5.1.Test Limit

The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm.

7.5.2.Test Procedure Used

KDB 789033 D02v01- Section E)3)b) Method PM-G

7.5.3.Test Setting

Average power measurements were perform 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. The trace was averaged over 100 traces to obtain the final measured average power.

7.5.4.Test Setup

7.5.5.Test Result

TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW, so the item is not assessed.

7.6. Power Spectral Density Measurement

7.6.1.Test Limit

For the band 5.15-5.25 GHz, tthe 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 peak power spectral density shall be reduced by the amount in dB that the directional gain of theantenna exceeds 6dBi.

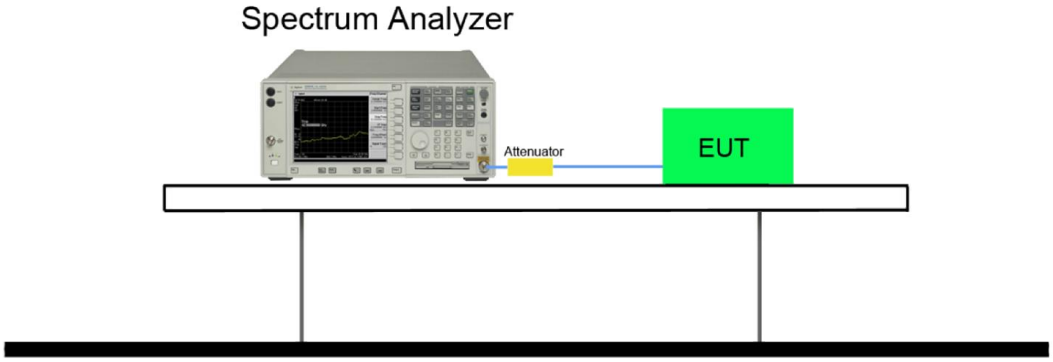
7.6.2.Test Procedure Used

KDB 789033 D02v02r01 - SectionF

7.6.3.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 = 100 kHz
4. VBW = 3MHz
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.
11. When the measurement bandwidth of Maximum PSD is specified in 500 kHz, add a constant factor 10*log(500kHz/100kHz) = 6.99 dB to the measured result.

7.6.4.Test Setup



7.6.5.Test Result

Product	AC1200 Wireless Dual Band PCI Express Adapter	Temperature	25°C
Test Engineer	Flag Yang	Relative Humidity	59%
Test Site	TR3	Test Date	2018/11/12

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant A PSD (dBm/ MHz)	Ant B PSD (dBm/ MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/ MHz)	Result
Ant A									
11a	6Mbps	36	5180	8.73	--	97.49	8.84	≤ 11.00	Pass
11a	6Mbps	44	5220	9.10	--	97.49	9.21	≤ 11.00	Pass
11a	6Mbps	48	5240	8.63	--	97.49	8.74	≤ 11.00	Pass
11a	6Mbps	52	5260	8.98	--	97.49	9.09	≤ 11.00	Pass
11a	6Mbps	60	5300	8.40	--	97.49	8.51	≤ 11.00	Pass
11a	6Mbps	64	5320	8.37	--	97.49	8.48	≤ 11.00	Pass
11a	6Mbps	100	5500	7.43	--	97.49	7.54	≤ 11.00	Pass
11a	6Mbps	116	5580	8.51	--	97.49	8.62	≤ 11.00	Pass
11a	6Mbps	140	5700	9.11	--	97.49	9.22	≤ 11.00	Pass
Ant A+B									
11n-HT20	MCS0	36	5180	7.47	7.50	93.36	10.79	≤ 11.00	Pass
11n-HT20	MCS0	44	5220	7.58	7.45	93.36	10.82	≤ 11.00	Pass
11n-HT20	MCS0	48	5240	7.33	7.48	93.36	10.71	≤ 11.00	Pass
11n-HT20	MCS0	52	5260	7.32	7.50	93.36	10.72	≤ 11.00	Pass
11n-HT20	MCS0	60	5300	7.49	7.46	93.36	10.78	≤ 11.00	Pass
11n-HT20	MCS0	64	5320	7.66	7.45	93.36	10.86	≤ 11.00	Pass
11n-HT20	MCS0	100	5500	7.13	6.57	93.36	10.17	≤ 11.00	Pass
11n-HT20	MCS0	116	5580	7.43	7.67	93.36	10.86	≤ 11.00	Pass
11n-HT20	MCS0	140	5700	7.62	7.56	93.36	10.90	≤ 11.00	Pass

Note 1: For 11a, Total PSD (dBm/ MHz) = Ant A PSD (dBm/ MHz) + 10*log (1/Duty Cycle).

Note 2: For 11n-HT20, Total PSD (dBm/ MHz) = 10*log $\{10^{(\text{Ant A PSD}/10)} + 10^{(\text{Ant B PSD}/10)}\}$ (dBm/ MHz) + 10*log (1/Duty Cycle).

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant A PSD (dBm/ MHz)	Ant B PSD (dBm/ MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/ MHz)	Result
Ant A+B									
11n-HT40	MCS0	38	5190	2.03	2.29	90.15	5.62	≤ 11.00	Pass
11n-HT40	MCS0	46	5230	5.62	5.00	90.15	8.78	≤ 11.00	Pass
11n-HT40	MCS0	54	5270	5.78	5.01	90.15	8.87	≤ 11.00	Pass
11n-HT40	MCS0	62	5310	4.78	5.74	90.15	8.75	≤ 11.00	Pass
11n-HT40	MCS0	102	5510	2.34	2.07	90.15	5.67	≤ 11.00	Pass
11n-HT40	MCS0	110	5550	5.17	5.37	90.15	8.73	≤ 11.00	Pass
11n-HT40	MCS0	134	5670	5.45	5.20	90.15	8.79	≤ 11.00	Pass
11ac-VHT20	MCS0	36	5180	7.61	7.49	92.42	10.90	≤ 11.00	Pass
11ac-VHT20	MCS0	44	5220	7.57	7.35	92.42	10.81	≤ 11.00	Pass
11ac-VHT20	MCS0	48	5240	7.61	7.35	92.42	10.83	≤ 11.00	Pass
11ac-VHT20	MCS0	52	5260	7.62	7.48	92.42	10.90	≤ 11.00	Pass
11ac-VHT20	MCS0	60	5300	7.43	7.40	92.42	10.77	≤ 11.00	Pass
11ac-VHT20	MCS0	64	5320	7.48	7.57	92.42	10.88	≤ 11.00	Pass
11ac-VHT20	MCS0	100	5500	6.10	5.37	92.42	9.10	≤ 11.00	Pass
11ac-VHT20	MCS0	116	5580	7.31	7.67	92.42	10.85	≤ 11.00	Pass
11ac-VHT20	MCS0	140	5700	7.31	7.53	92.42	10.78	≤ 11.00	Pass
11ac-VHT40	MCS0	38	5190	3.33	2.90	89.60	6.61	≤ 11.00	Pass
11ac-VHT40	MCS0	46	5230	5.29	5.71	89.60	8.99	≤ 11.00	Pass
11ac-VHT40	MCS0	54	5270	5.07	5.22	89.60	8.63	≤ 11.00	Pass
11ac-VHT40	MCS0	62	5310	3.71	4.29	89.60	7.50	≤ 11.00	Pass
11ac-VHT40	MCS0	102	5510	1.55	0.97	89.60	4.76	≤ 11.00	Pass
11ac-VHT40	MCS0	110	5550	4.76	4.86	89.60	8.29	≤ 11.00	Pass
11ac-VHT40	MCS0	134	5670	5.13	5.33	89.60	8.72	≤ 11.00	Pass
11ac-VHT80	MCS0	42	5210	-0.11	0.17	79.23	4.05	≤ 11.00	Pass
11ac-VHT80	MCS0	58	5290	2.45	2.95	79.23	6.73	≤ 11.00	Pass
11ac-VHT80	MCS0	106	5530	-1.29	-1.47	79.23	2.64	≤ 11.00	Pass

Note 1: When EUT duty cycle ≥ 98%, Total PSD (dBm/ MHz) = 10*log {$10^{(\text{Ant A PSD}/10)}$ + $10^{(\text{Ant B PSD}/10)}$} (dBm/ MHz).

Note 2: When EUT duty cycle < 98%, Total PSD (dBm/ MHz) = 10*log {$10^{(\text{Ant A PSD}/10)}$ + $10^{(\text{Ant B PSD}/10)}$} (dBm/ MHz) + 10*log (1/Duty Cycle).

Product	AC1200 Wireless Dual Band PCI Express Adapter	Temperature	25°C
Test Engineer	Flag Yang	Relative Humidity	59%
Test Site	TR3	Test Date	2018/11/12

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Ant A PSD (dBm/ 100kHz)	Ant B PSD (dBm/ 100kHz)	Duty Cycle (%)	Constant Factor	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Result
Ant A										
11a	6Mbps	149	5745	0.18	--	97.49	6.99	7.28	≤ 30.00	Pass
11a	6Mbps	157	5785	0.21	--	97.49	6.99	7.31	≤ 30.00	Pass
11a	6Mbps	165	5825	0.40	--	97.49	6.99	7.50	≤ 30.00	Pass
Ant A+B										
11n-HT20	MCS0	149	5745	-0.25	-0.28	93.36	6.99	10.03	≤ 30.00	Pass
11n-HT20	MCS0	157	5785	-0.16	-0.31	93.36	6.99	10.06	≤ 30.00	Pass
11n-HT20	MCS0	165	5825	-0.16	-0.35	93.36	6.99	10.04	≤ 30.00	Pass
11n-HT40	MCS0	151	5755	-3.81	-3.62	90.15	6.99	6.74	≤ 30.00	Pass
11n-HT40	MCS0	159	5795	-3.91	-3.84	90.15	6.99	6.57	≤ 30.00	Pass
11ac-VHT20	MCS0	149	5745	-0.13	-0.04	92.42	6.99	10.26	≤ 30.00	Pass
11ac-VHT20	MCS0	157	5785	0.07	-0.07	92.42	6.99	10.34	≤ 30.00	Pass
11ac-VHT20	MCS0	165	5825	0.02	-0.21	92.42	6.99	10.25	≤ 30.00	Pass
11ac-VHT40	MCS0	151	5755	-3.30	-3.62	89.60	6.99	7.02	≤ 30.00	Pass
11ac-VHT40	MCS0	159	5795	-3.50	-3.85	89.60	6.99	6.80	≤ 30.00	Pass
11ac-VHT80	MCS0	155	5775	-5.49	-5.63	79.23	6.99	5.45	≤ 30.00	Pass

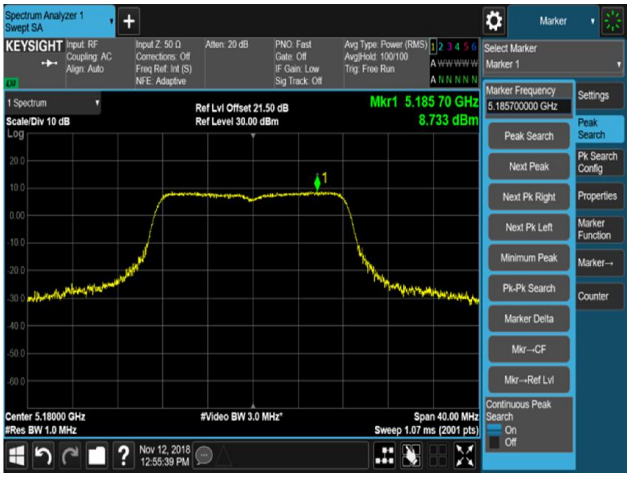
Note 1: When EUT duty cycle ≥ 98%, the total PSD (dBm/500KHz) = 10*log $\{10^{(\text{Ant A PSD}/10)} + 10^{(\text{Ant B PSD}/10)}\}$ (dBm/100KHz) + Constant Factor.

Note 2: When EUT duty cycle < 98%, the total PSD (dBm/500KHz) = 10*log $\{10^{(\text{Ant A PSD}/10)} + 10^{(\text{Ant B PSD}/10)}\}$ (dBm/100KHz) + Constant Factor + 10*log (1/Duty Cycle).

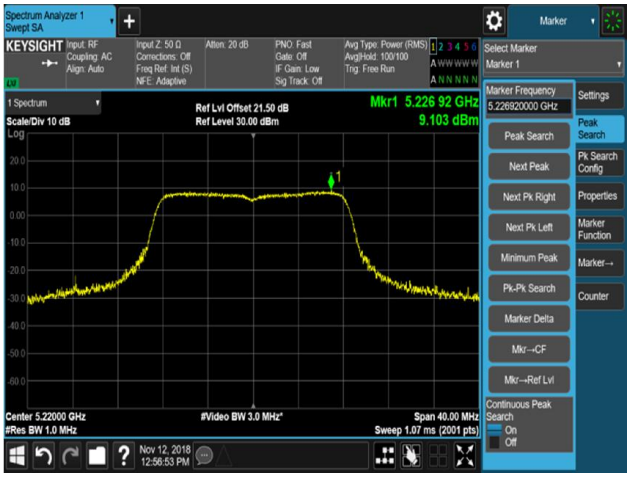
Product	AC1200 Wireless Dual Band PCI Express Adapter	Temperature	25°C
Test Engineer	Flag Yang	Test Date	2018/11/12

802.11a Power Spectral Density - Ant A

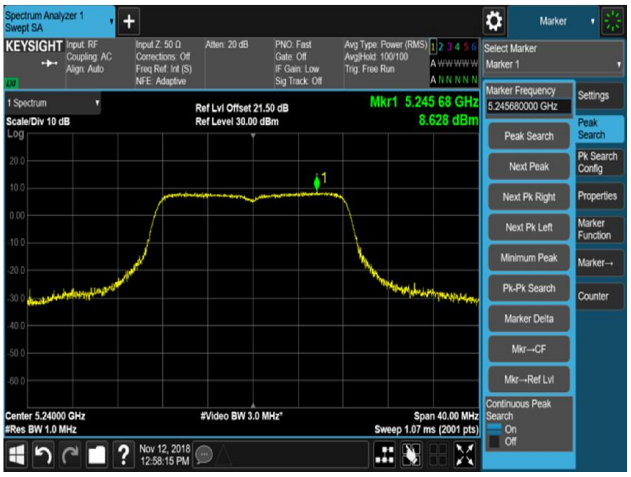
Channel 36 (5180MHz)



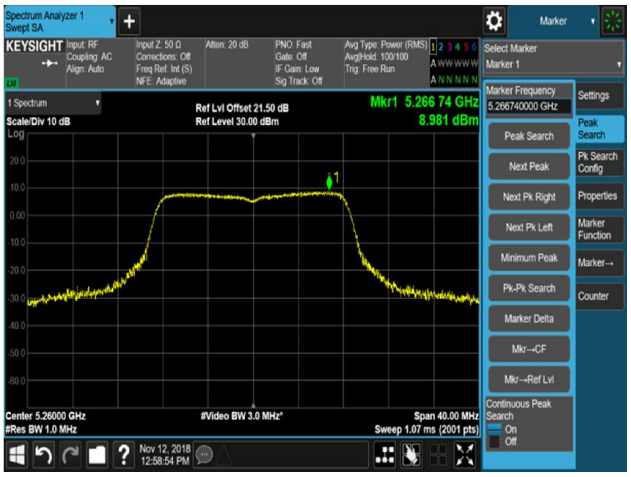
Channel 44 (5220MHz)



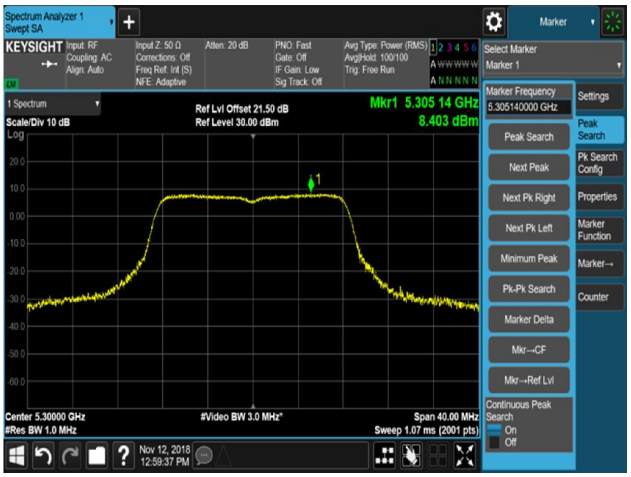
Channel 48 (5240MHz)



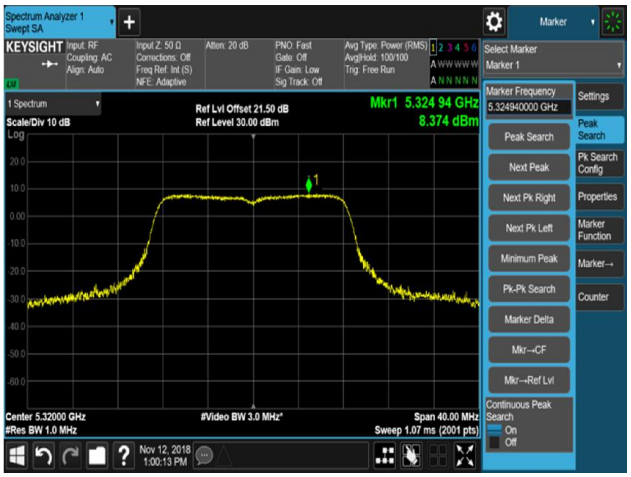
Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)

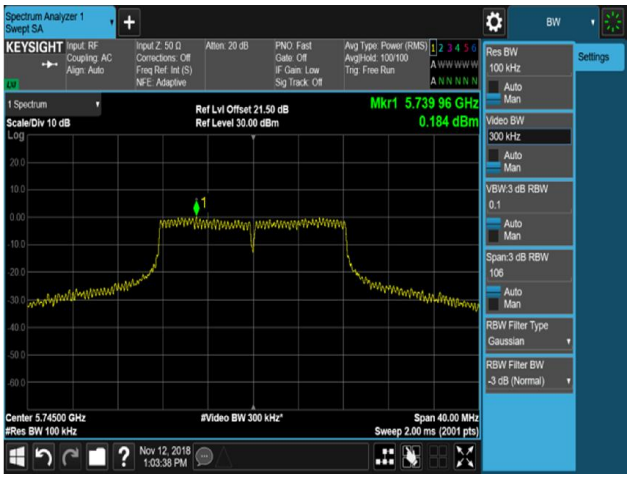


Channel 100 (5500MHz)

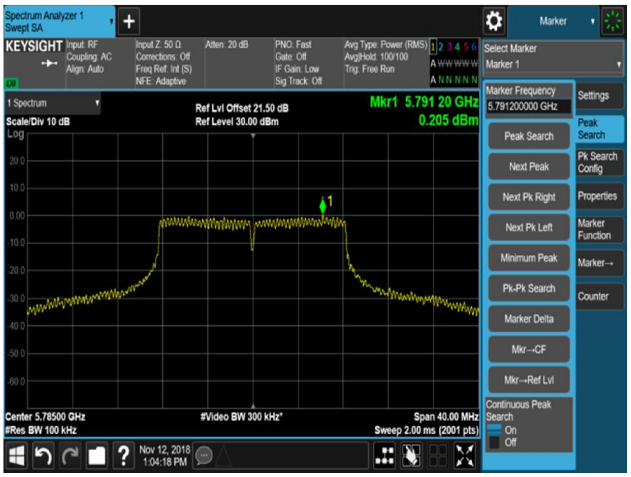
Channel 116 (5580MHz)

Channel 140 (5700MHz)

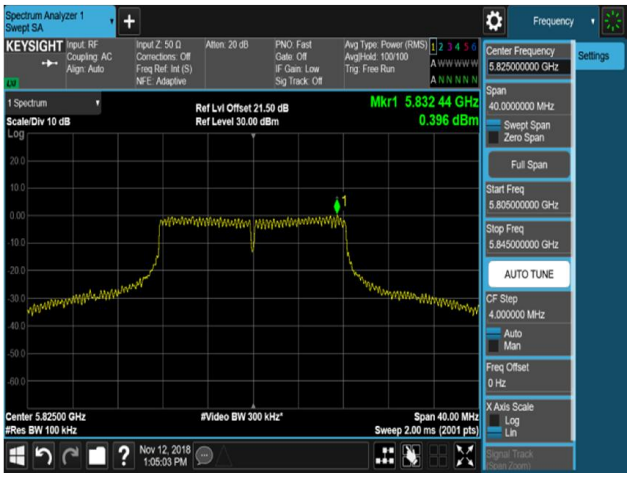
Channel 149 (5745MHz)

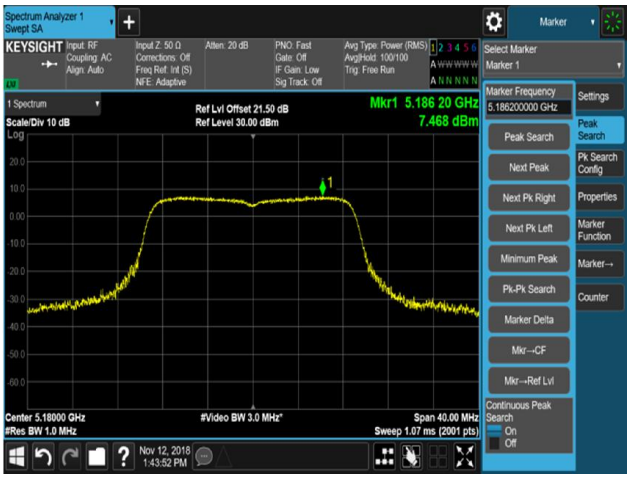
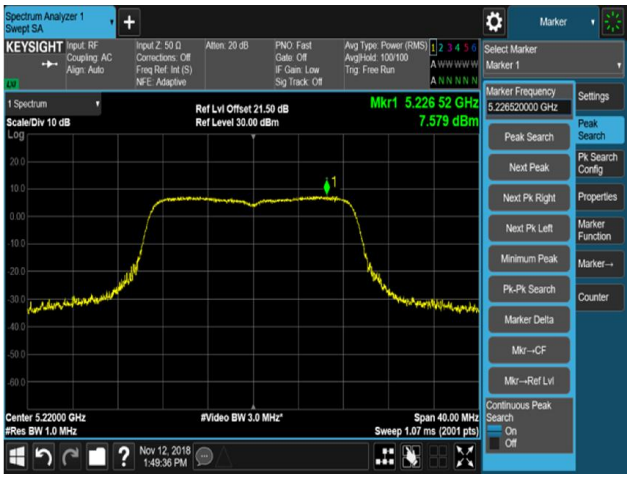
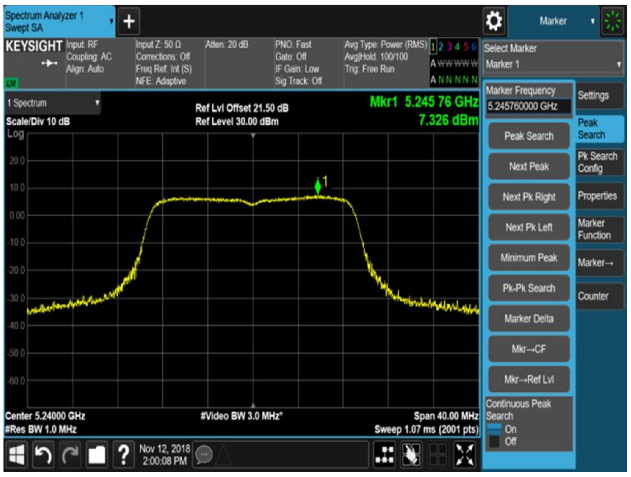
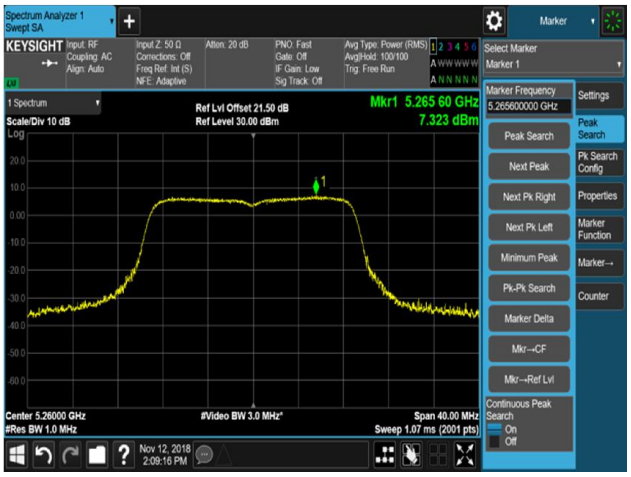
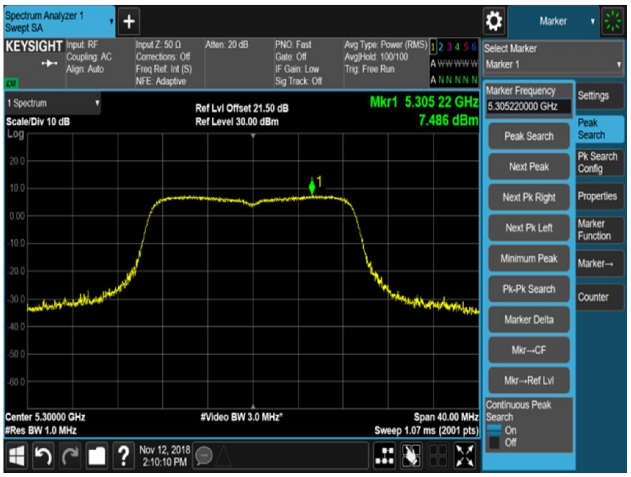


Channel 157 (5785MHz)



Channel 165 (5825MHz)



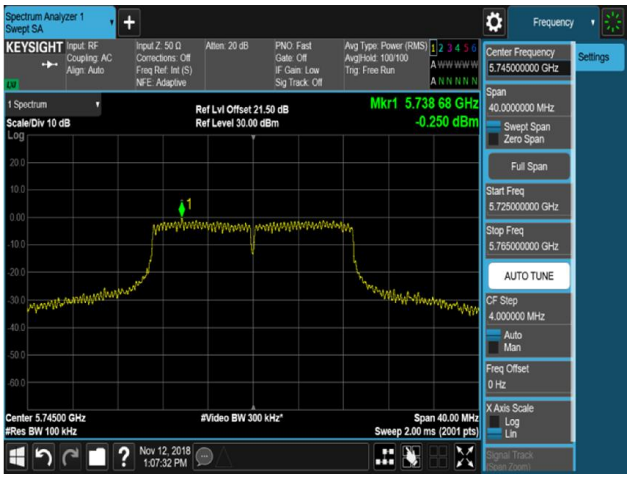
802.11n-HT20 Power Spectral Density - Ant A / Ant A + B	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

Channel 100 (5500MHz)

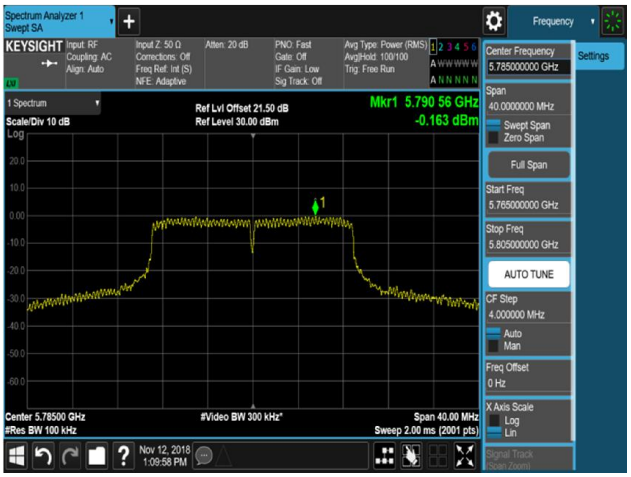
Channel 116 (5580MHz)

Channel 140 (5700MHz)

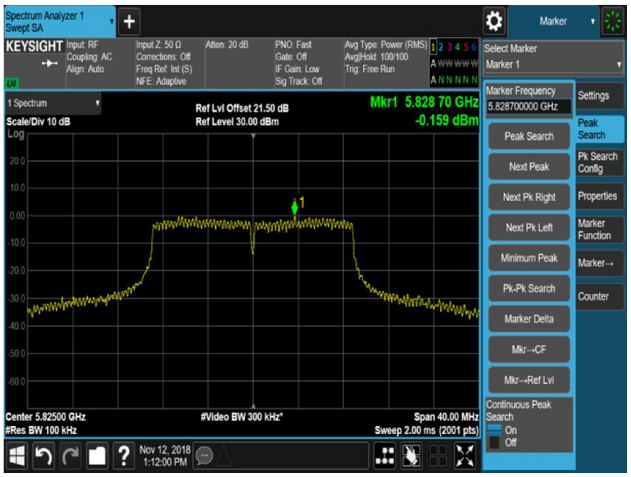
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



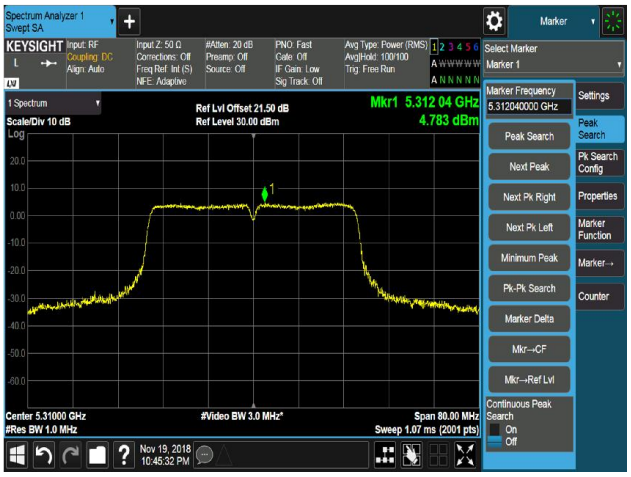
802.11n-HT40 Power Spectral Density - Ant A / Ant A + B

Channel 38 (5190MHz)

Channel 46 (5230MHz)

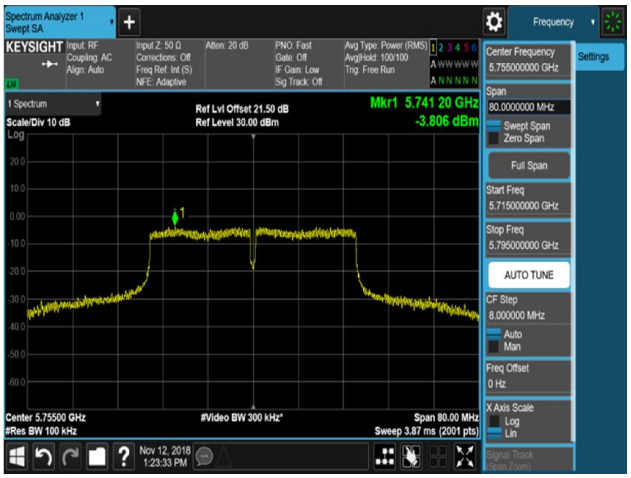
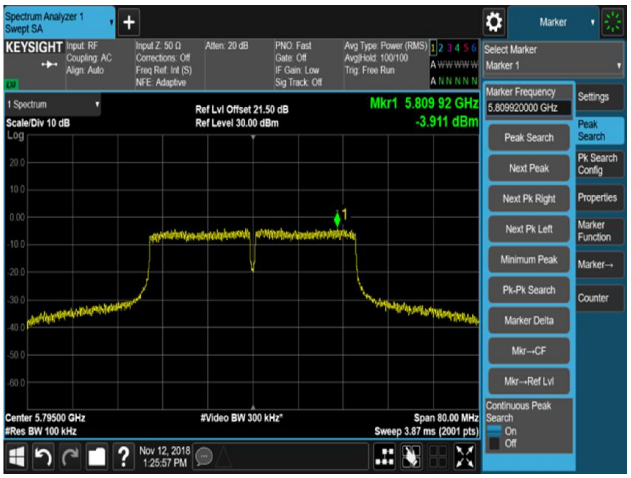
Channel 54 (5270MHz)

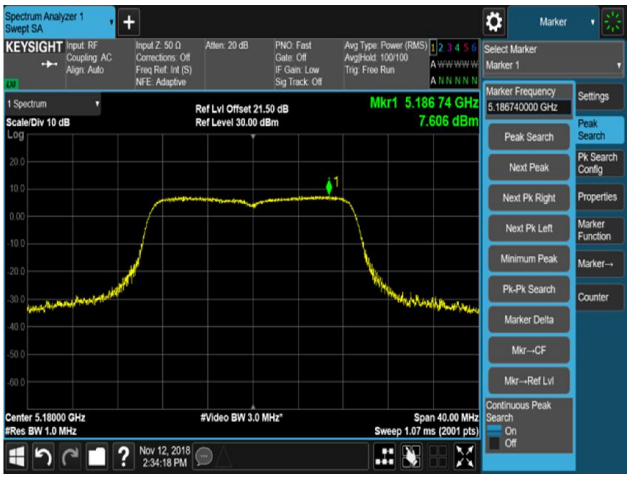
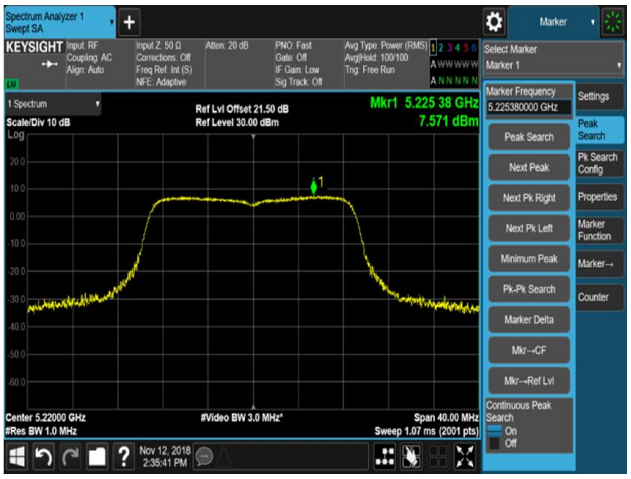
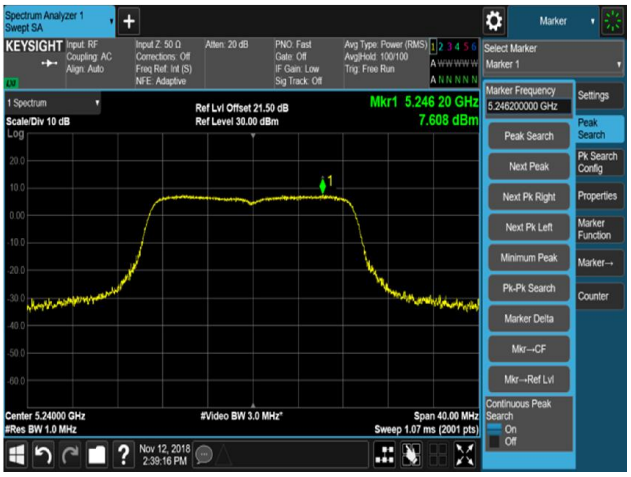
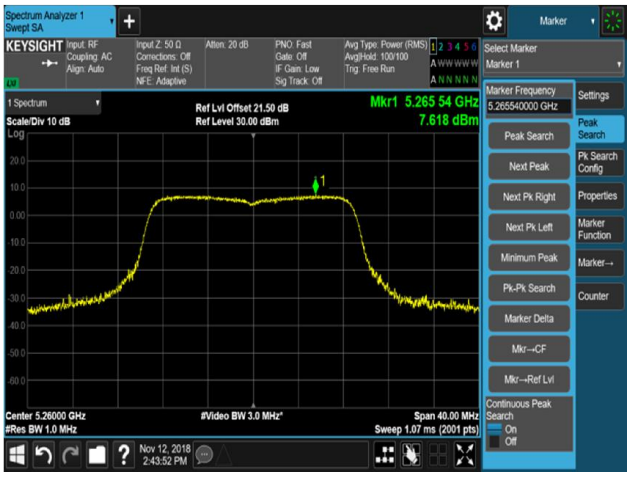
Channel 62 (5310MHz)



Channel 102 (5510MHz)

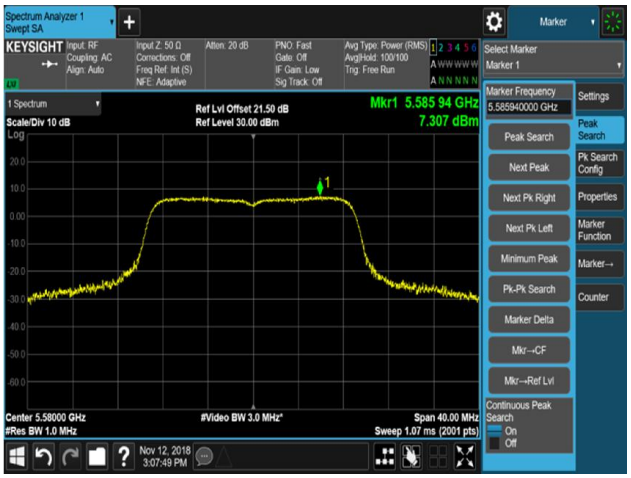
Channel 110 (5550MHz)

Channel 134 (5670MHz)	Channel 151 (5755MHz)
	
Channel 159 (5795MHz)	
	

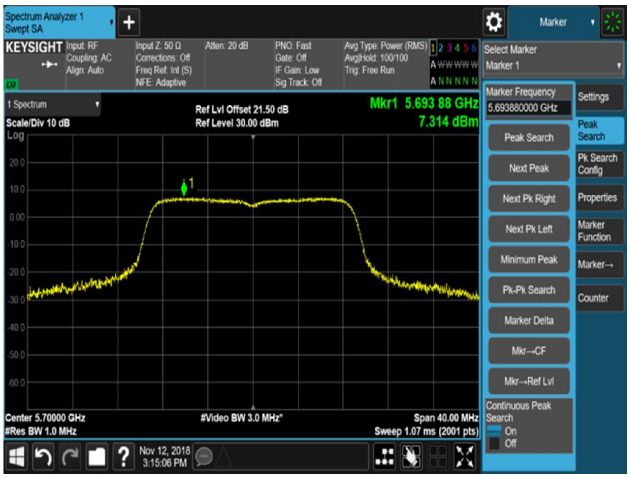
802.11ac-VHT20 Power Spectral Density - Ant A / Ant A + B	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)

Channel 100 (5500MHz)

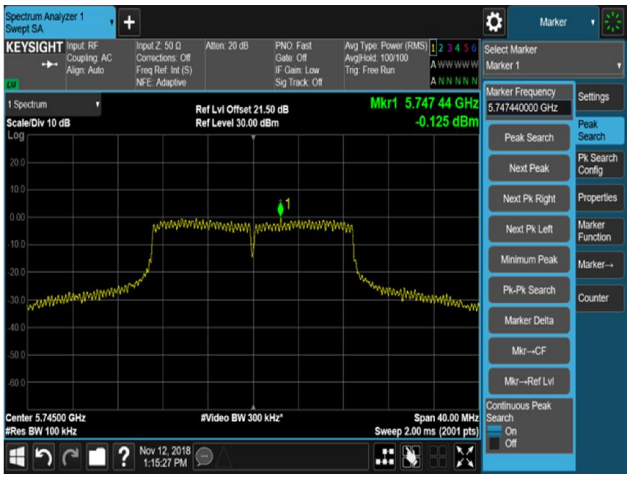
Channel 116 (5580MHz)



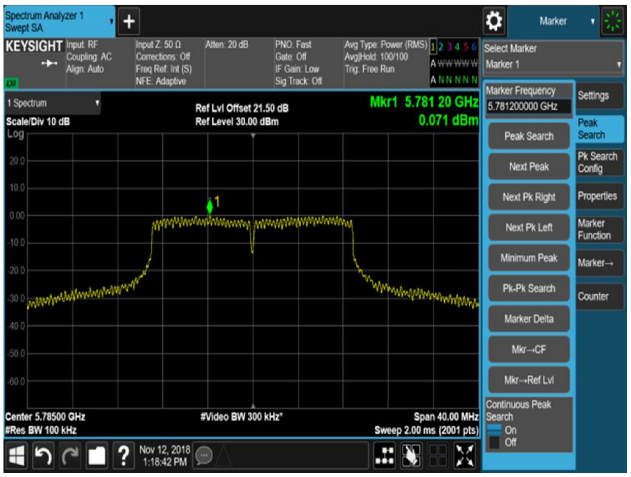
Channel 140 (5700MHz)



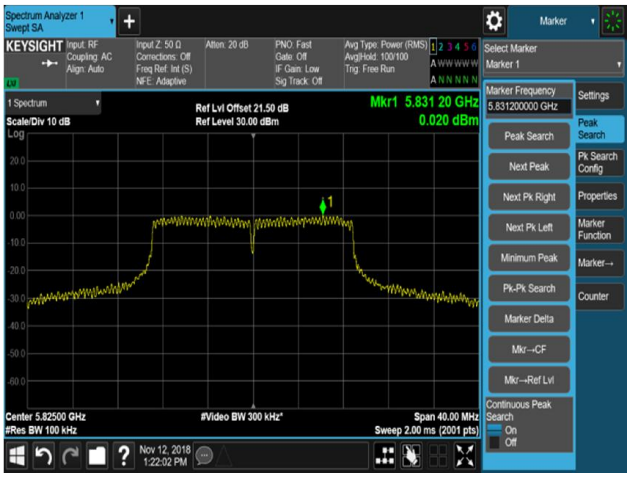
Channel 149 (5745MHz)



Channel 157 (5785MHz)



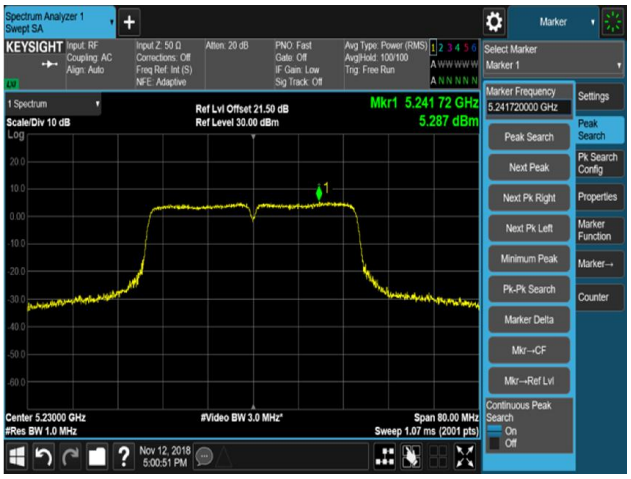
Channel 165 (5825MHz)



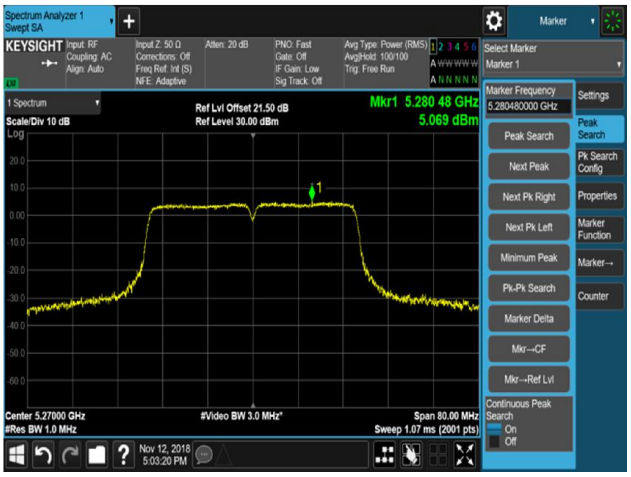
802.11ac-VHT40 Power Spectral Density - Ant A / Ant A + B

Channel 38 (5190MHz)

Channel 46 (5230MHz)

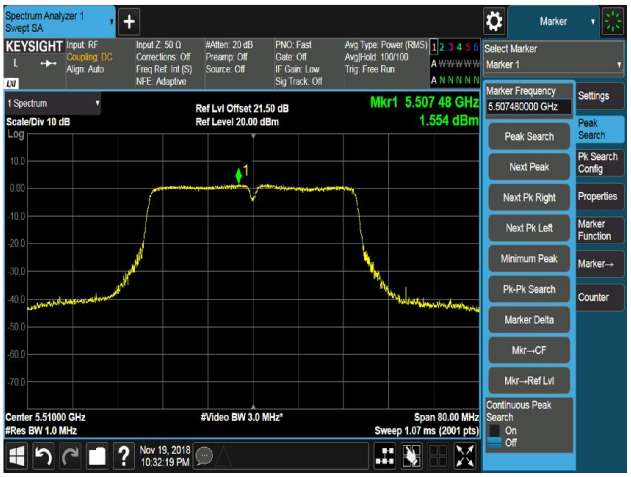


Channel 54 (5270MHz)

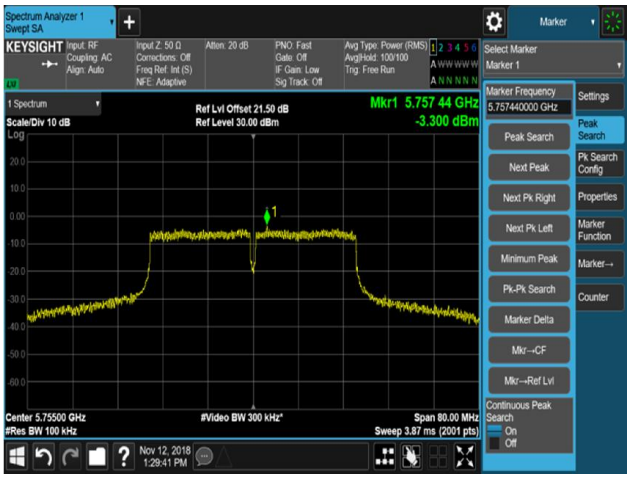
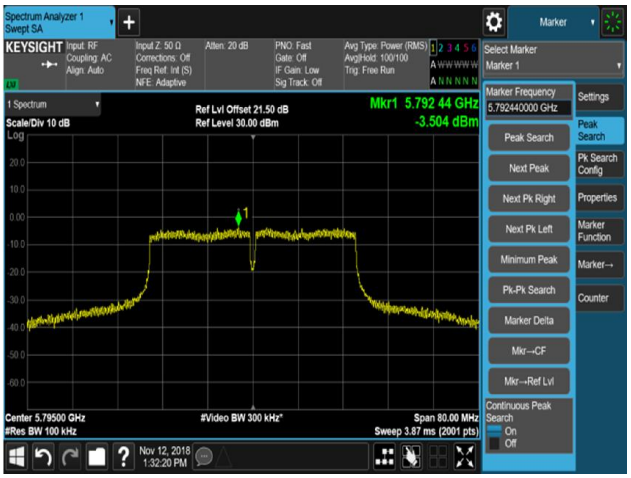


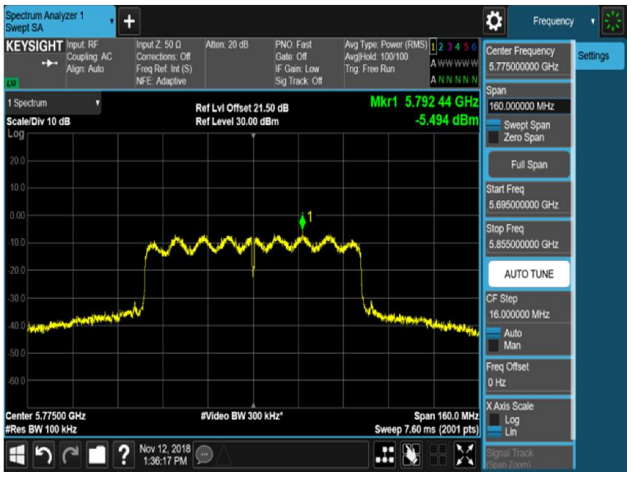
Channel 62 (5310MHz)

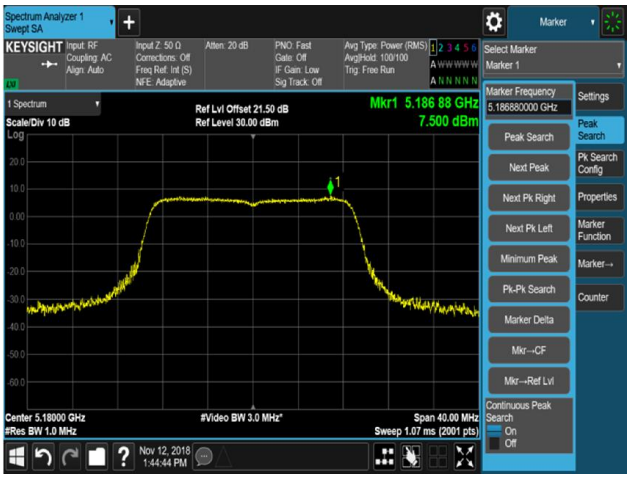
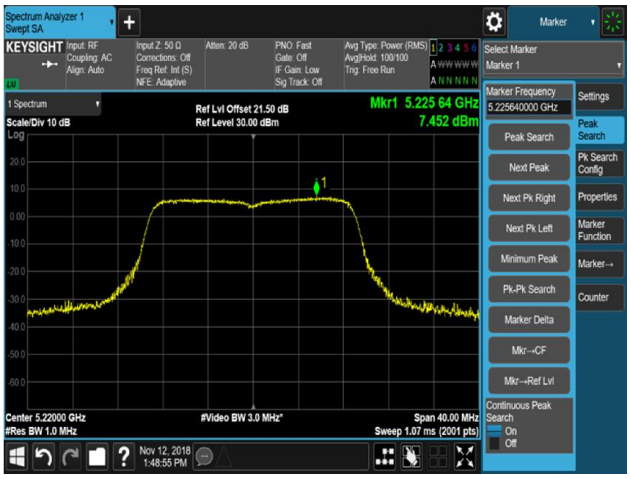
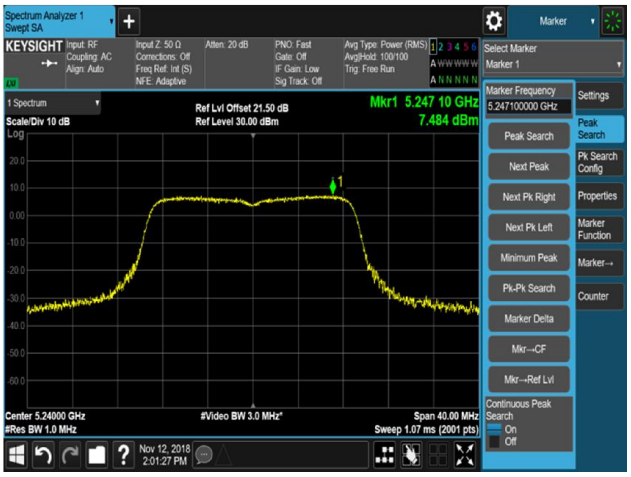
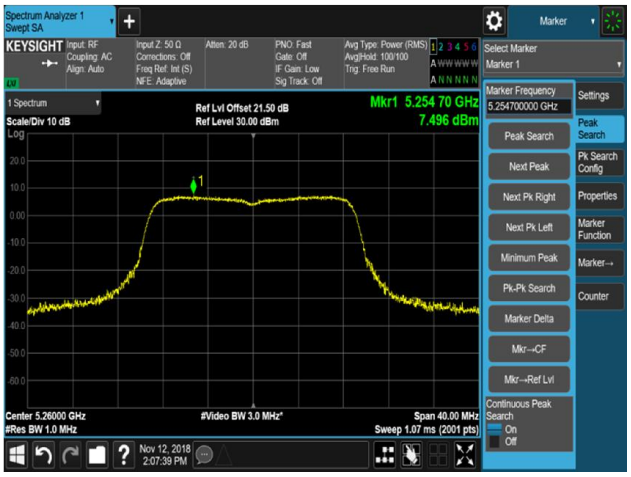
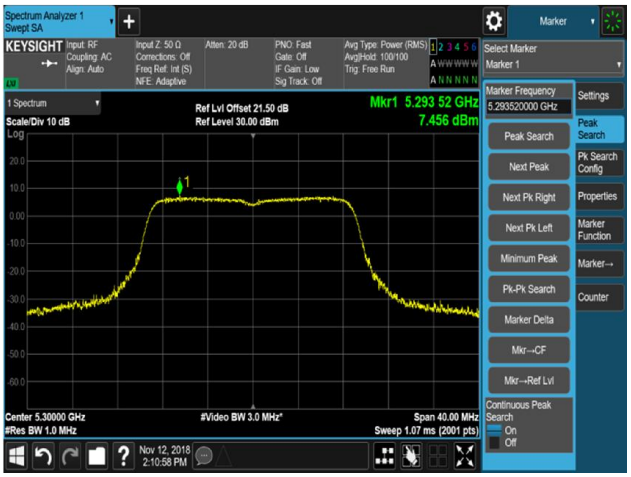
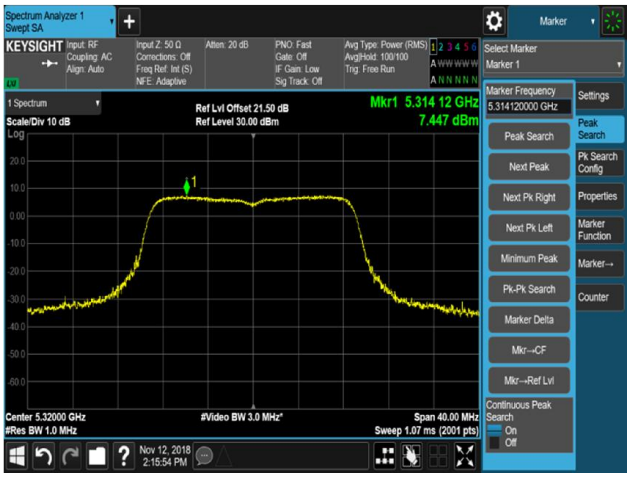
Channel 102 (5510MHz)



Channel 110 (5550MHz)

Channel 134 (5670MHz)	Channel 151 (5755MHz)
	
Channel 159 (5795MHz)	
	

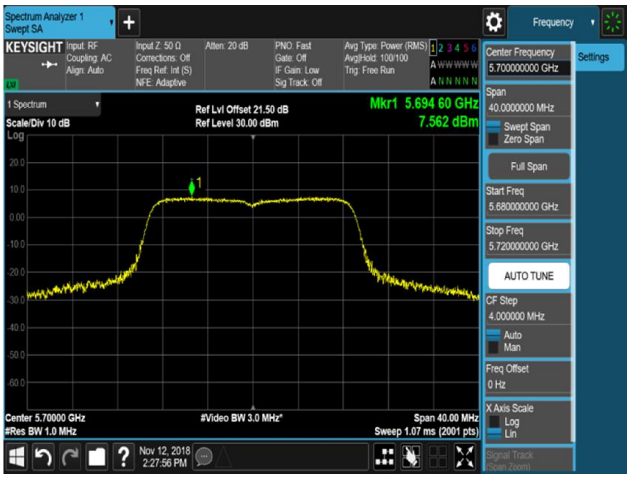
802.11ac-VHT80 Power Spectral Density - Ant A / Ant A + B	
Channel 42 (5210MHz)	Channel 58 (5290MHz)
Channel 106 (5530MHz)	Channel 155 (5775MHz)
	

802.11n-HT20 Power Spectral Density - Ant B / Ant A + B	
Channel 36 (5180MHz)	Channel 44 (5220MHz)
	
Channel 48 (5240MHz)	Channel 52 (5260MHz)
	
Channel 60 (5300MHz)	Channel 64 (5320MHz)
	

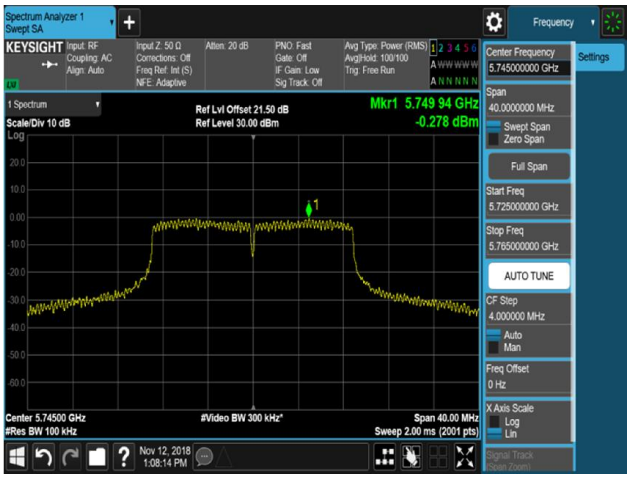
Channel 100 (5500MHz)

Channel 116 (5580MHz)

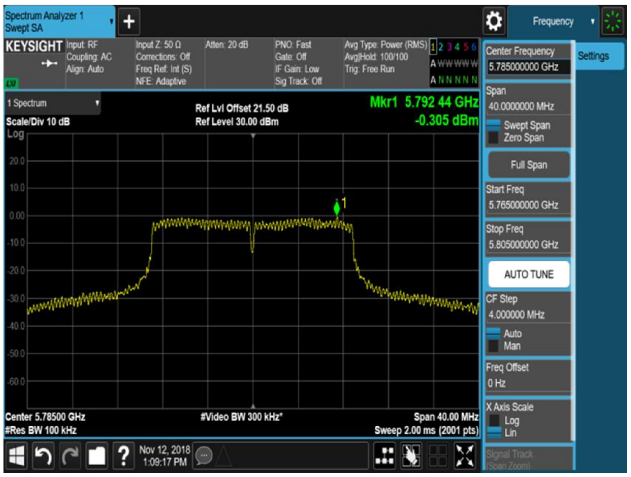
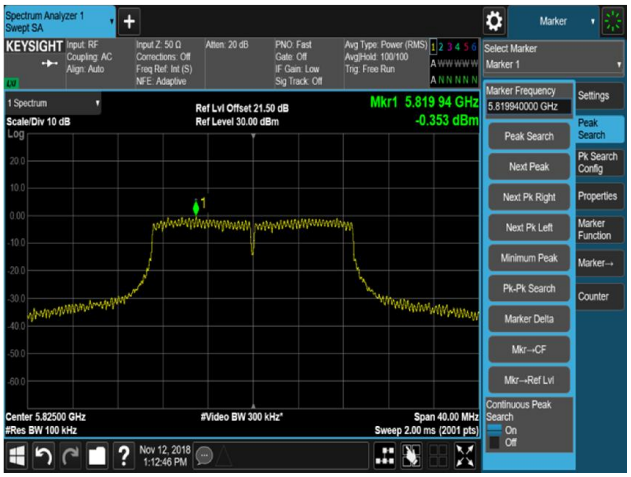
Channel 140 (5700MHz)



Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)