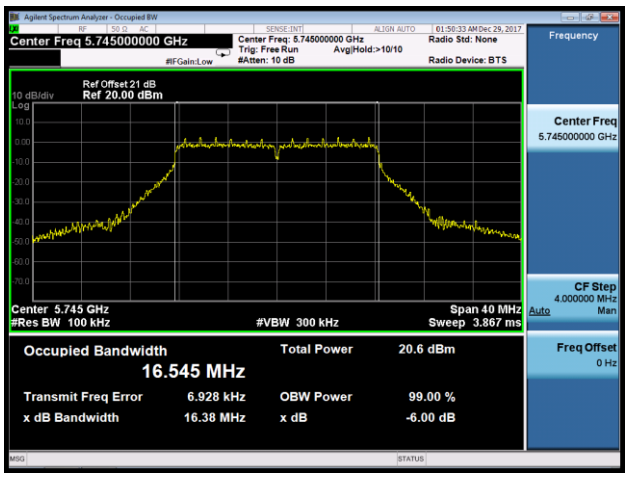
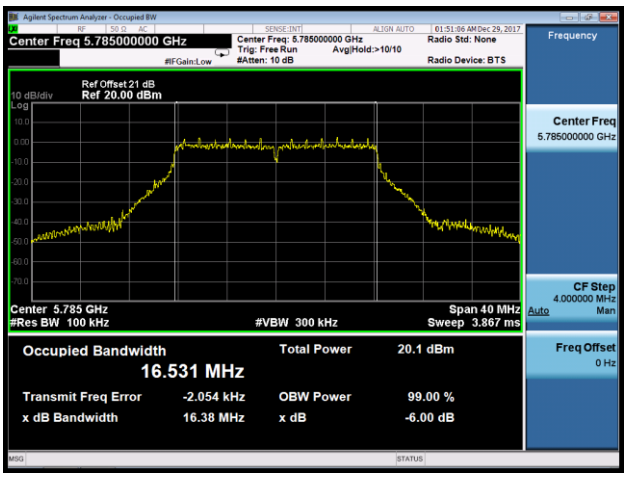
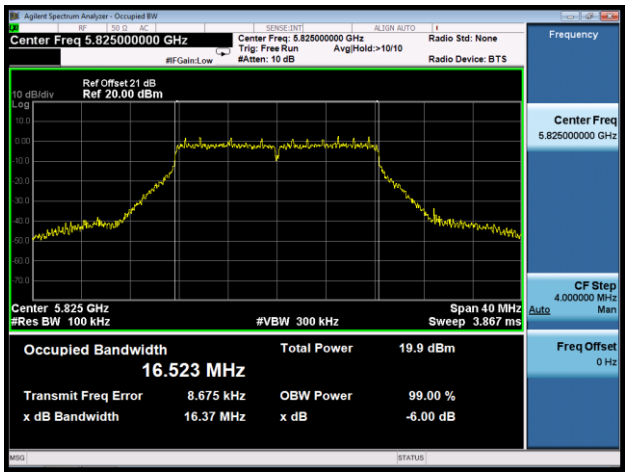
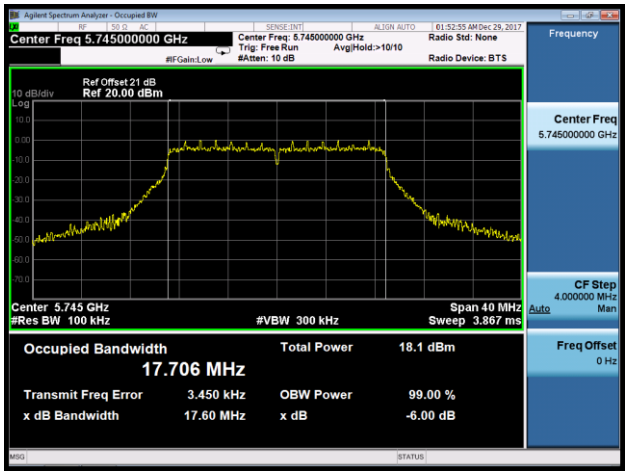
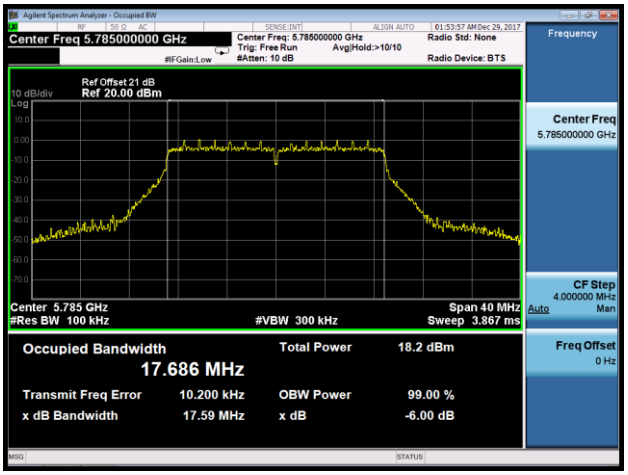
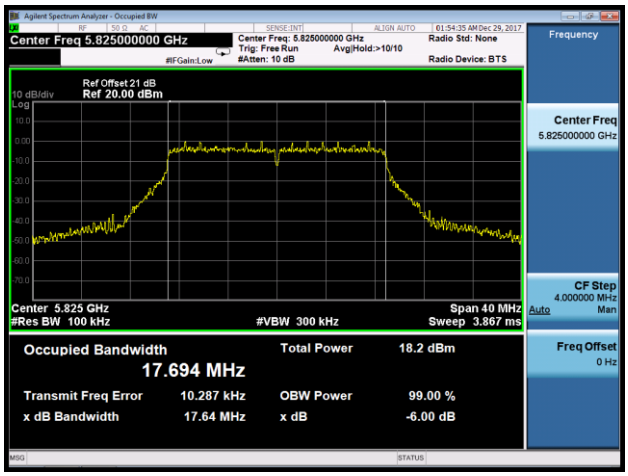
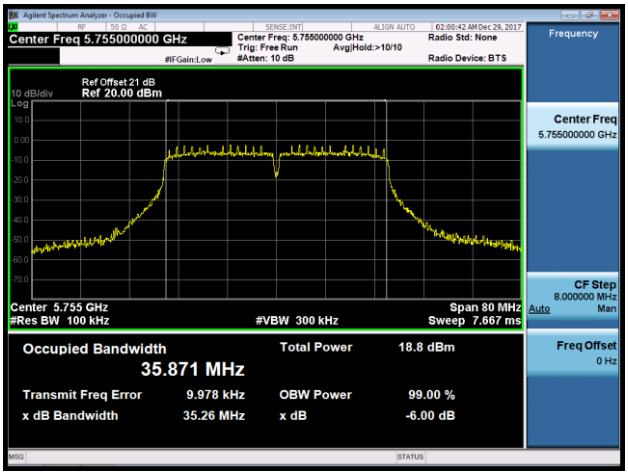
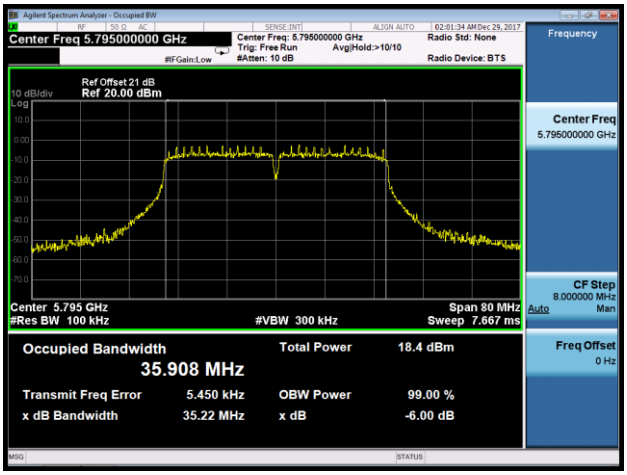
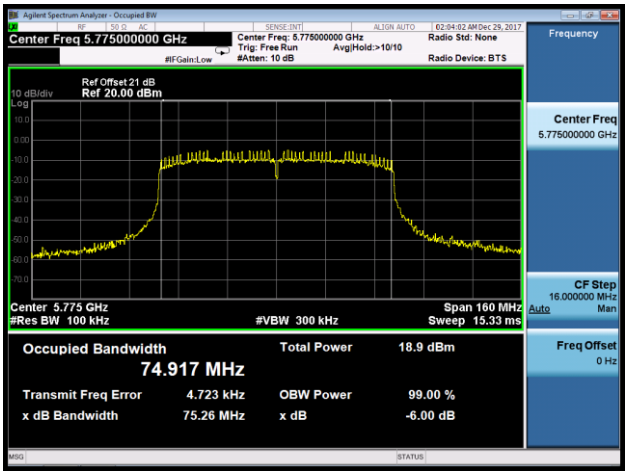
802.11a 6dB Bandwidth	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

802.11ac-VHT20 6dB Bandwidth	
Channel 149 (5745MHz)	**Channel 157 (5785MHz)**
	
Channel 165 (5825MHz)	
	

802.11ac-VHT40 6dB Bandwidth	
Channel 151 (5755MHz)	**Channel 159 (5795MHz)**
	

802.11ac-VHT80 6dB Bandwidth	
Channel 155 (5775MHz)	
	

7.4. Output Power Measurement

7.4.1. Test Limit

For FCC

For mobile and portable 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 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.

Additional Requirement for IC

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 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 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.

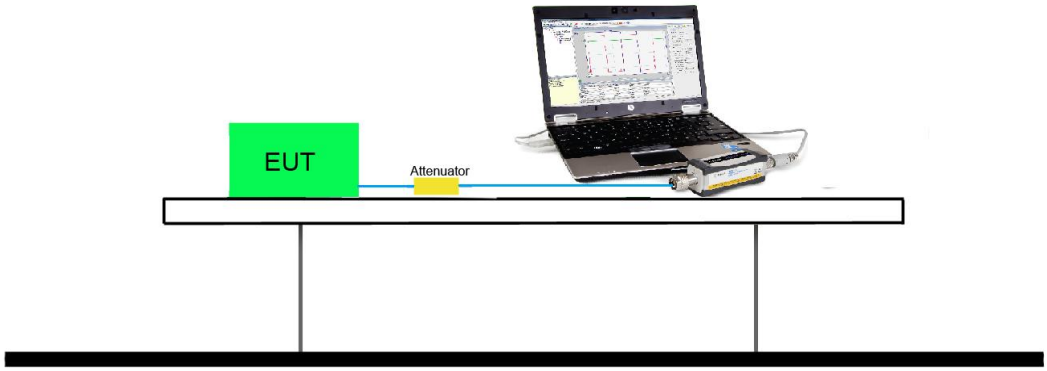
7.4.2. Test Procedure Used

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, and then choose the maximum power output (Gray Marker) for final test of each channel.

Test Mode	Bandwidth	Channel	Frequency (MHz)	Data Rate/ MCS	Average Power (dBm)
802.11a	20	36	5180	6Mbps	12.34
				24Mbps	12.05
				54Mbps	11.94
802.11n	20	36	5180	MCS0	11.78
				MCS3	11.64
				MCS7	11.43
802.11n	40	38	5190	MCS0	10.84
				MCS3	10.66
				MCS7	10.47
802.11ac	20	36	5180	MCS0	11.86
				MCS4	11.59
				MCS8	11.35
802.11ac	40	38	5190	MCS0	10.99
				MCS4	10.64
				MCS9	10.41
802.11ac	80	42	5210	MCS0	10.15
				MCS4	9.95
				MCS9	9.73

Product	Mobile Computer	Temperature	23°C
Test Engineer	Ben Zhu	Relative Humidity	50%
Test Site	TR3	Test Date	2017/12/29

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)	Conducted Power Limit (dBm)	Max EIRP (dBm)	EIRP Limit (dBm)	Result
11a	6Mbps	36	5180	12.34	≤ 23.98	15.06	≤ 22.25	Pass
11a	6Mbps	44	5220	12.22	≤ 23.98	14.94	≤ 22.25	Pass
11a	6Mbps	48	5240	12.17	≤ 23.98	14.89	≤ 22.25	Pass
11a	6Mbps	52	5260	11.97	≤ 23.25	14.63	≤ 29.25	Pass
11a	6Mbps	60	5300	11.85	≤ 23.25	14.51	≤ 29.25	Pass
11a	6Mbps	64	5320	11.78	≤ 23.25	14.44	≤ 29.25	Pass
11a	6Mbps	100	5500	12.89	≤ 23.25	15.55	≤ 29.25	Pass
11a	6Mbps	116	5580	12.96	≤ 23.25	15.62	≤ 29.25	Pass
11a	6Mbps	129	5600	13.04	≤ 23.25	15.70	≤ 29.25	Pass
11a	6Mbps	140	5700	13.36	≤ 23.25	16.02	≤ 29.25	Pass
11a	6Mbps	144	5720	13.18	≤ 23.25	15.84	≤ 29.25	Pass
11a	6Mbps	149	5745	13.95	≤ 30.00	--	--	Pass
11a	6Mbps	157	5785	13.74	≤ 30.00	--	--	Pass
11a	6Mbps	165	5825	13.64	≤ 30.00	--	--	Pass
11n-HT20	MCS0	36	5180	11.78	≤ 23.98	14.50	≤ 22.52	Pass
11n-HT20	MCS0	44	5220	11.64	≤ 23.98	14.36	≤ 22.52	Pass
11n-HT20	MCS0	48	5240	11.55	≤ 23.98	14.27	≤ 22.52	Pass
11n-HT20	MCS0	52	5260	11.61	≤ 23.52	14.27	≤ 29.52	Pass
11n-HT20	MCS0	60	5300	11.40	≤ 23.52	14.06	≤ 29.52	Pass
11n-HT20	MCS0	64	5320	11.31	≤ 23.52	13.97	≤ 29.52	Pass
11n-HT20	MCS0	100	5500	12.08	≤ 23.52	14.74	≤ 29.52	Pass
11n-HT20	MCS0	116	5580	11.93	≤ 23.52	14.59	≤ 29.52	Pass
11n-HT20	MCS0	120	5600	11.89	≤ 23.52	14.55	≤ 29.52	Pass
11n-HT20	MCS0	140	5700	11.92	≤ 23.52	14.58	≤ 29.52	Pass
11n-HT20	MCS0	144	5720	11.97	≤ 23.52	14.63	≤ 29.52	Pass
11n-HT20	MCS0	149	5745	11.92	≤ 30.00	--	--	Pass
11n-HT20	MCS0	157	5785	12.07	≤ 30.00	--	--	Pass
11n-HT20	MCS0	165	5825	12.06	≤ 30.00	--	--	Pass

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)	Conducted Power Limit (dBm)	Max EIRP (dBm)	EIRP Limit (dBm)	Result
11n-HT40	MCS0	38	5190	10.84	≤ 23.98	13.56	≤ 23.01	Pass
11n-HT40	MCS0	46	5230	10.65	≤ 23.98	13.37	≤ 23.01	Pass
11n-HT40	MCS0	54	5270	10.43	≤ 23.98	13.09	≤ 30.00	Pass
11n-HT40	MCS0	62	5310	10.47	≤ 23.98	13.13	≤ 30.00	Pass
11n-HT40	MCS0	102	5510	12.34	≤ 23.98	15.00	≤ 30.00	Pass
11n-HT40	MCS0	110	5550	12.23	≤ 23.98	14.89	≤ 30.00	Pass
11n-HT40	MCS0	118	5590	12.03	≤ 23.98	14.69	≤ 30.00	Pass
11n-HT40	MCS0	134	5670	12.08	≤ 23.98	14.74	≤ 30.00	Pass
11n-HT40	MCS0	142	5710	12.26	≤ 23.98	14.92	≤ 30.00	Pass
11n-HT40	MCS0	151	5755	12.11	≤ 30.00	--	--	Pass
11n-HT40	MCS0	159	5795	12.16	≤ 30.00	--	--	Pass
11ac-VHT20	MCS0	36	5180	11.86	≤ 23.98	14.58	≤ 22.52	Pass
11ac-VHT20	MCS0	44	5220	11.76	≤ 23.98	14.48	≤ 22.52	Pass
11ac-VHT20	MCS0	48	5240	11.70	≤ 23.98	14.42	≤ 22.52	Pass
11ac-VHT20	MCS0	52	5260	11.80	≤ 23.52	14.46	≤ 29.52	Pass
11ac-VHT20	MCS0	60	5300	11.59	≤ 23.52	14.25	≤ 29.52	Pass
11ac-VHT20	MCS0	64	5320	11.39	≤ 23.52	14.05	≤ 29.52	Pass
11ac-VHT20	MCS0	100	5500	12.14	≤ 23.52	14.80	≤ 29.52	Pass
11ac-VHT20	MCS0	116	5580	11.96	≤ 23.52	14.62	≤ 29.52	Pass
11ac-VHT20	MCS0	120	5600	12.04	≤ 23.52	14.70	≤ 29.52	Pass
11ac-VHT20	MCS0	140	5700	11.98	≤ 23.52	14.64	≤ 29.52	Pass
11ac-VHT20	MCS0	144	5720	12.11	≤ 23.52	14.77	≤ 29.52	Pass
11ac-VHT20	MCS0	149	5745	11.98	≤ 30.00	--	--	Pass
11ac-VHT20	MCS0	157	5785	12.22	≤ 30.00	--	--	Pass
11ac-VHT20	MCS0	165	5825	12.16	≤ 30.00	--	--	Pass

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	Average Power (dBm)	Conducted Power Limit (dBm)	Max EIRP (dBm)	EIRP Limit (dBm)	Result
11ac-VHT40	MCS0	38	5190	10.99	≤ 23.98	13.71	≤ 23.01	Pass
11ac-VHT40	MCS0	46	5230	10.73	≤ 23.98	13.45	≤ 23.01	Pass
11ac-VHT40	MCS0	54	5270	10.60	≤ 23.98	13.26	≤ 30.00	Pass
11ac-VHT40	MCS0	62	5310	10.49	≤ 23.98	13.15	≤ 30.00	Pass
11ac-VHT40	MCS0	102	5510	12.50	≤ 23.98	15.16	≤ 30.00	Pass
11ac-VHT40	MCS0	110	5550	12.33	≤ 23.98	14.99	≤ 30.00	Pass
11ac-VHT40	MCS0	118	5590	12.17	≤ 23.98	14.83	≤ 30.00	Pass
11ac-VHT40	MCS0	134	5670	12.16	≤ 23.98	14.82	≤ 30.00	Pass
11ac-VHT40	MCS0	142	5710	12.36	≤ 23.98	15.02	≤ 30.00	Pass
11ac-VHT40	MCS0	151	5755	12.14	≤ 30.00	--	--	Pass
11ac-VHT40	MCS0	159	5795	12.30	≤ 30.00	--	--	Pass
11ac-VHT80	MCS0	42	5210	10.15	≤ 23.98	12.87	≤ 30.00	Pass
11ac-VHT80	MCS0	58	5290	10.35	≤ 23.98	13.01	≤ 30.00	Pass
11ac-VHT80	MCS0	106	5530	11.04	≤ 23.98	13.70	≤ 30.00	Pass
11ac-VHT80	MCS0	122	5610	11.24	≤ 23.98	13.90	≤ 30.00	Pass
11ac-VHT80	MCS0	138	5690	11.42	≤ 23.98	14.08	≤ 30.00	Pass
11ac-VHT80	MCS0	155	5775	12.16	≤ 30.00	--	--	Pass

Note 1: Max EIRP Power (dBm) = Average Power (dBm) + Antenna Gain (dBi)

For 5150 ~ 5350MHz, Antenna Gain = 2.72dBi, For 5470 ~ 5725MHz, Antenna Gain = 2.66dBi.

For 5725 ~ 5850MHz, Antenna Gain = 2.13dBi.

Note 2: EIRP Limit Calculation as below:

For 5150-5250MHz

802.11a: 10 + 10 $\log_{10}$ (16.79MHz) = 22.25dBm < 23dBm;

802.11n-HT20/ac-VHT20: 10 + 10 log10 (17.87MHz) = 22.52dBm < 23dBm;

802.11n-HT40/ac-VHT40/ac-VHT80: 10 + 10 log10 B > 23.01dBm;

For 5250-5350MHz, 5470-5725MHz

802.11a: 17 + 10 log10 (16.78MHz) = 29.25dBm < 30dBm;

802.11n-HT20/ac-VHT20: 17 + 10 log10 (17.85MHz) = 29.52dBm < 30dBm;

802.11n-HT40/ac-VHT40/ac-VHT80: 17 + 10 log10 B > 30dBm;

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

For 5250-5350MHz, 5470-5725MHz

802.11a: 11 + 10 log10 (16.78MHz) = 23.25dBm < 30dBm;

802.11n-HT20/ac-VHT20: 11 + 10 log10 (17.85MHz) = 23.52dBm < 30dBm;

802.11n-HT40/ac-VHT40/ac-VHT80: 11 + 10 log10 B > 23.98dBm;

7.5. Power Spectral Density Measurement

7.5.1. Test Limit

For FCC

For mobile and portable 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 500kHz 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 the antenna exceeds 6dBi.

Additional Requirement for IC

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.

7.5.2. Test Procedure Used

KDB 789033 D02v02r01 - Section F

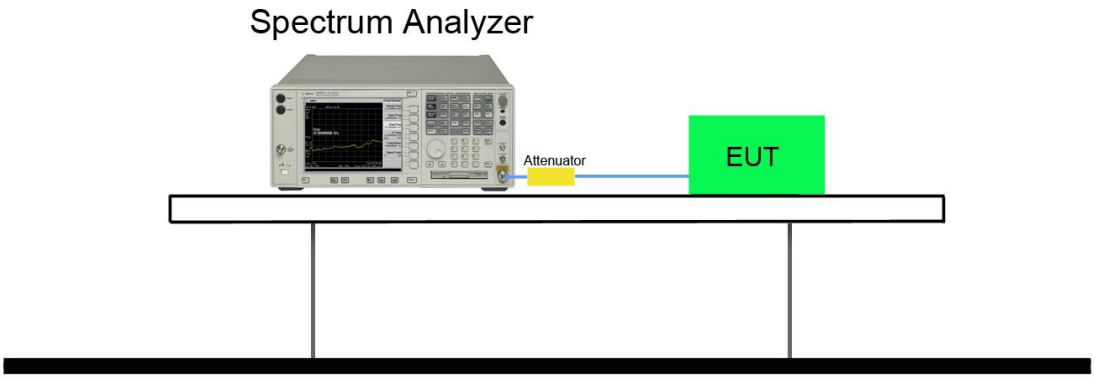
7.5.3. Test Setting

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire 26dB OBW 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 (RMS)
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) = 7 dB to the measured result

7.5.4. Test Setup



7.5.5. Test Result

Product	Mobile Computer	Temperature	23°C
Test Engineer	Ben Zhu	Relative Humidity	50%
Test Site	TR3	Test Date	2017/12/29

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	PSD (dBm/ MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/MHz)	EIRP PSD (dBm /MHz)	EIRP PSD Limit (dBm /MHz)	Result
11a	6Mbps	36	5180	1.43	86.85	2.04	≤ 11.00	4.76	≤ 10.00	Pass
11a	6Mbps	44	5220	1.71	86.85	2.32	≤ 11.00	5.04	≤ 10.00	Pass
11a	6Mbps	48	5240	1.75	86.85	2.36	≤ 11.00	5.08	≤ 10.00	Pass
11a	6Mbps	52	5260	2.08	86.85	2.69	≤ 11.00	--	--	Pass
11a	6Mbps	60	5300	2.13	86.85	2.74	≤ 11.00	--	--	Pass
11a	6Mbps	64	5320	1.72	86.85	2.33	≤ 11.00	--	--	Pass
11a	6Mbps	100	5500	2.50	86.85	3.11	≤ 11.00	--	--	Pass
11a	6Mbps	116	5580	1.88	86.85	2.49	≤ 11.00	--	--	Pass
11a	6Mbps	120	5600	2.20	86.85	2.81	≤ 11.00	--	--	Pass
11a	6Mbps	140	5700	1.70	86.85	2.31	≤ 11.00	--	--	Pass
11a	6Mbps	144	5720	1.75	86.85	2.36	≤ 11.00	--	--	Pass
11ac-VHT20	MCS0	36	5180	-0.45	83.15	0.35	≤ 11.00	3.07	≤ 10.00	Pass
11ac-VHT20	MCS0	44	5220	-0.61	83.15	0.19	≤ 11.00	2.91	≤ 10.00	Pass
11ac-VHT20	MCS0	48	5240	-0.20	83.15	0.60	≤ 11.00	3.32	≤ 10.00	Pass
11ac-VHT20	MCS0	52	5260	-0.49	83.15	0.31	≤ 11.00	--	--	Pass
11ac-VHT20	MCS0	60	5300	-0.38	83.15	0.42	≤ 11.00	--	--	Pass
11ac-VHT20	MCS0	64	5320	-0.62	83.15	0.18	≤ 11.00	--	--	Pass
11ac-VHT20	MCS0	100	5500	-0.14	83.15	0.66	≤ 11.00	--	--	Pass
11ac-VHT20	MCS0	116	5580	0.02	83.15	0.82	≤ 11.00	--	--	Pass
11ac-VHT20	MCS0	120	5600	0.16	83.15	0.96	≤ 11.00	--	--	Pass
11ac-VHT20	MCS0	140	5700	-0.39	83.15	0.41	≤ 11.00	--	--	Pass
11ac-VHT20	MCS0	144	5720	-0.34	83.15	0.46	≤ 11.00	--	--	Pass

Test Mode	Data Rate/ MCS	Channel No.	Freq. (MHz)	PSD (dBm/ MHz)	Duty Cycle (%)	Total PSD (dBm/ MHz)	PSD Limit (dBm/MHz)	EIRP PSD (dBm /MHz)	EIRP PSD Limit (dBm /MHz)	Result
11ac-VHT40	MCS0	38	5190	-3.12	70.88	-1.63	≤ 11.00	1.09	≤ 10.00	Pass
11ac-VHT40	MCS0	46	5230	-3.57	70.88	-2.08	≤ 11.00	0.64	≤ 10.00	Pass
11ac-VHT40	MCS0	54	5270	-3.60	70.88	-2.11	≤ 11.00	--	--	Pass
11ac-VHT40	MCS0	62	5310	-4.01	70.88	-2.52	≤ 11.00	--	--	Pass
11ac-VHT40	MCS0	102	5510	-3.43	70.88	-1.94	≤ 11.00	--	--	Pass
11ac-VHT40	MCS0	110	5550	-2.78	70.88	-1.29	≤ 11.00	--	--	Pass
11ac-VHT40	MCS0	118	5590	-3.38	70.88	-1.89	≤ 11.00	--	--	Pass
11ac-VHT40	MCS0	134	5670	-3.60	70.88	-2.11	≤ 11.00	--	--	Pass
11ac-VHT40	MCS0	142	5710	-3.74	70.88	-2.25	≤ 11.00	--	--	Pass
11ac-VHT80	MCS0	42	5210	-7.58	55.36	-5.01	≤ 11.00	-2.29	≤ 10.00	Pass
11ac-VHT80	MCS0	58	5290	-7.88	55.36	-5.31	≤ 11.00	--	--	Pass
11ac-VHT80	MCS0	106	5530	-7.01	55.36	-4.44	≤ 11.00	--	--	Pass
11ac-VHT80	MCS0	122	5610	-7.33	55.36	-4.76	≤ 11.00	--	--	Pass
11ac-VHT80	MCS0	138	5690	-7.82	55.36	-5.25	≤ 11.00	--	--	Pass
11ac-VHT80	MCS0	155	5775	-7.58	55.36	-5.01	≤ 11.00	--	--	Pass

Note 1: When EUT duty cycle ≥ 98%, the Total PSD (dBm/MHz) = PSD (dBm/MHz)

Note 2: When EUT duty cycle < 98%, the Total PSD (dBm/MHz) = PSD (dBm/MHz) + 10*log (1/Duty Cycle).

Note 3: EIRP PSD (dBm /MHz) = Total PSD (dBm/MHz) + Antenna Gain (dBi)

For 5150 ~ 5350MHz, Antenna Gain = 2.72dBi, For 5470 ~ 5725MHz, Antenna Gain = 2.66dBi.

For 5725 ~ 5850MHz, Antenna Gain = 2.13dBi.

Test Mode	Data Rate /MCS	Channel No.	Freq. (MHz)	PSD (dBm/ 100kHz)	Duty Cycle (%)	Constant Factor (dB)	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Result
11a	6Mbps	149	5745	-6.87	86.85	6.99	0.73	≤ 30	Pass
11a	6Mbps	157	5785	-7.19	86.85	6.99	0.41	≤ 30	Pass
11a	6Mbps	165	5825	-7.03	86.85	6.99	0.57	≤ 30	Pass
11ac-VHT20	MCS0	149	5745	-9.73	83.15	6.99	-1.94	≤ 30	Pass
11ac-VHT20	MCS0	157	5785	-9.46	83.15	6.99	-1.67	≤ 30	Pass
11ac-VHT20	MCS0	165	5825	-8.90	83.15	6.99	-1.11	≤ 30	Pass
11ac-VHT40	MCS0	151	5755	-11.56	70.88	6.99	-3.08	≤ 30	Pass
11ac-VHT40	MCS0	159	5795	-12.00	70.88	6.99	-3.52	≤ 30	Pass
11ac-VHT80	MCS0	155	5775	-16.20	55.36	6.99	-6.64	≤ 30	Pass

Note 1: When EUT duty cycle ≥ 98%, the Total PSD (dBm/500kHz) = PSD (dBm/100kHz) + Constant Factor (dB).

Note 2: When EUT duty cycle < 98%, the Total PSD (dBm/500kHz) = PSD (dBm/100kHz) + Constant Factor (dB) + 10*log (1/Duty Cycle).

802.11a Power Spectral Density

Channel 36 (5180MHz)

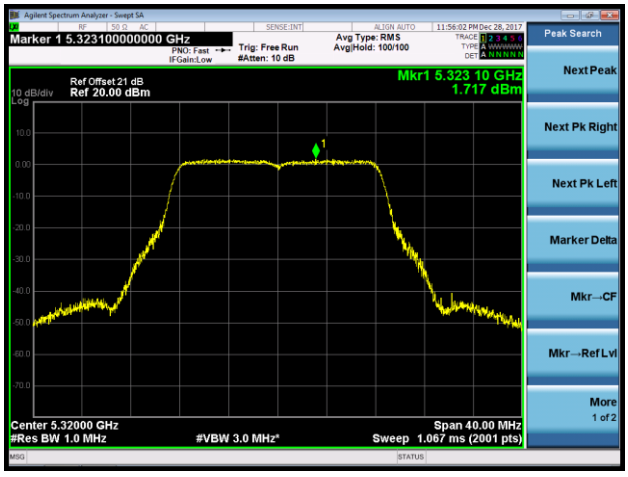
Channel 44 (5220MHz)

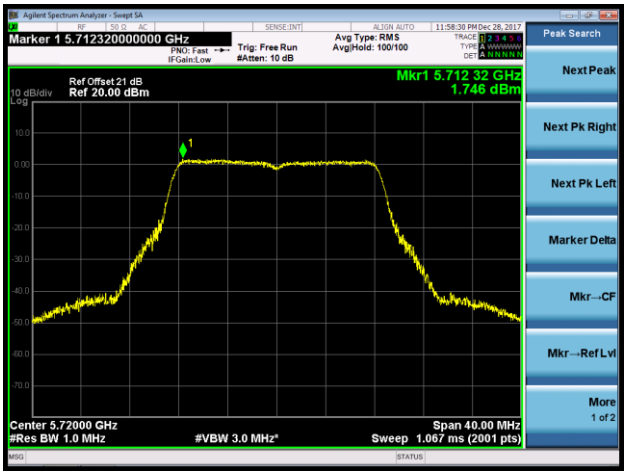
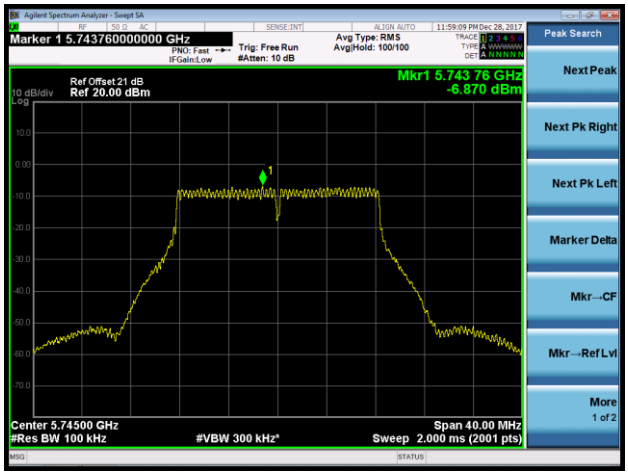
Channel 48 (5240MHz)

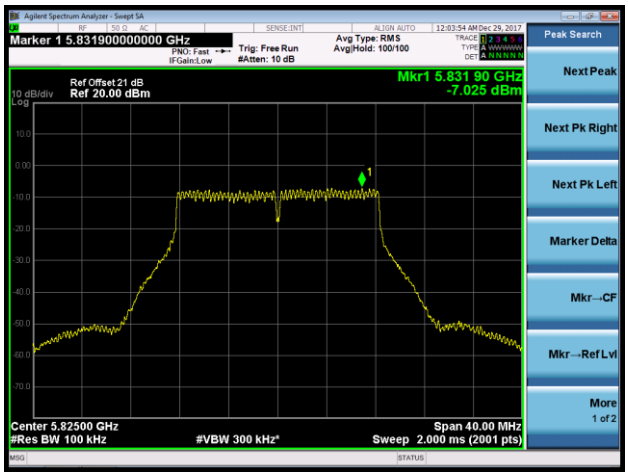
Channel 52 (5260MHz)

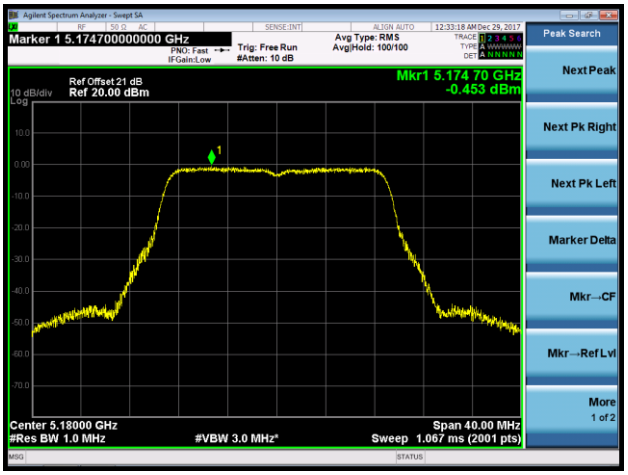
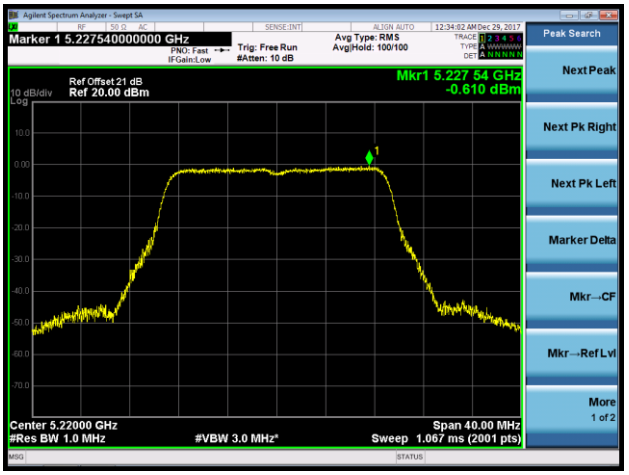
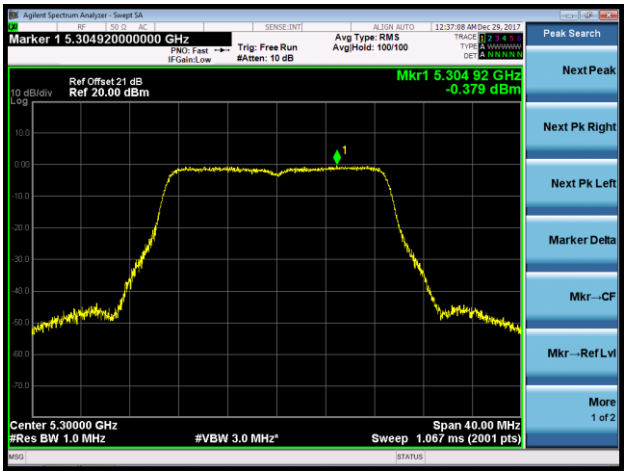
Channel 60 (5300MHz)

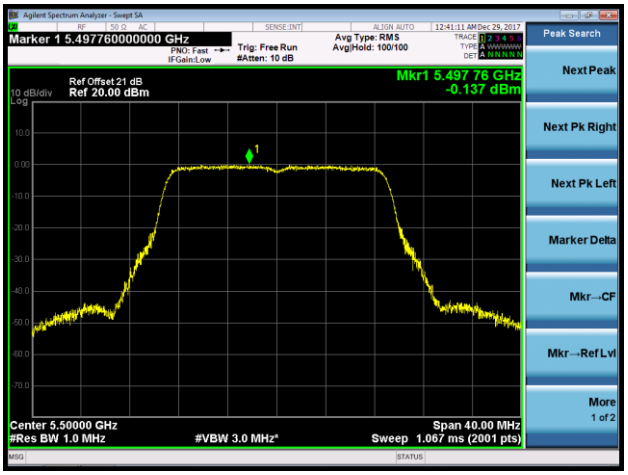
Channel 64 (5320MHz)



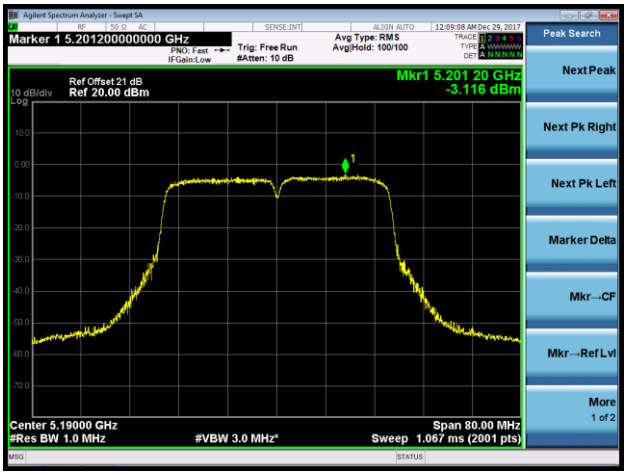
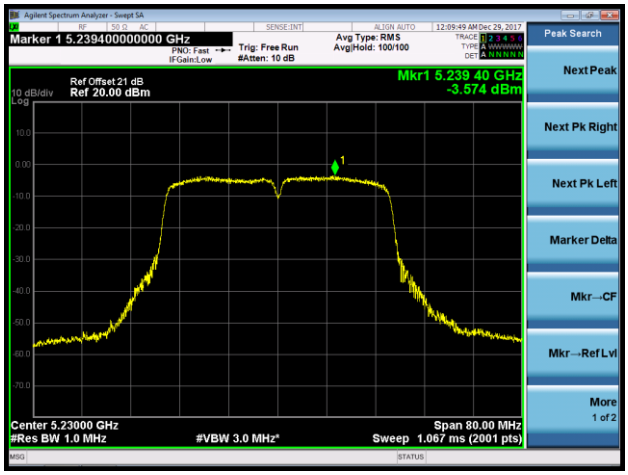
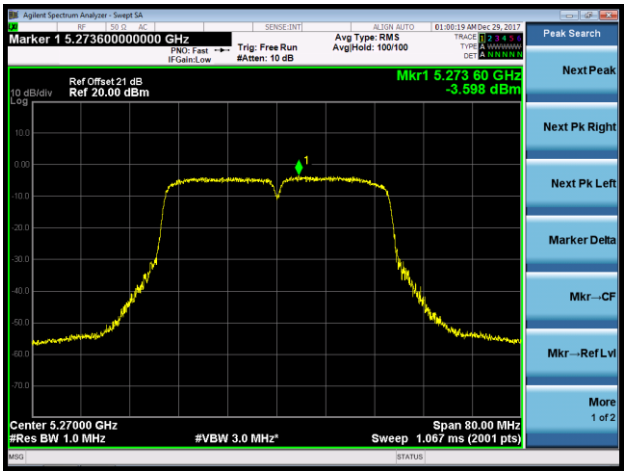
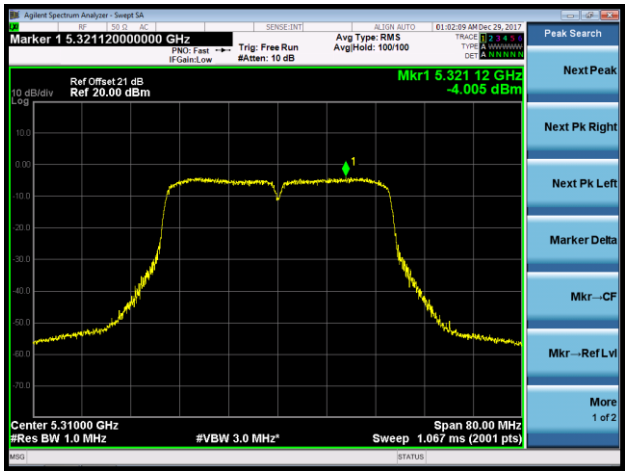
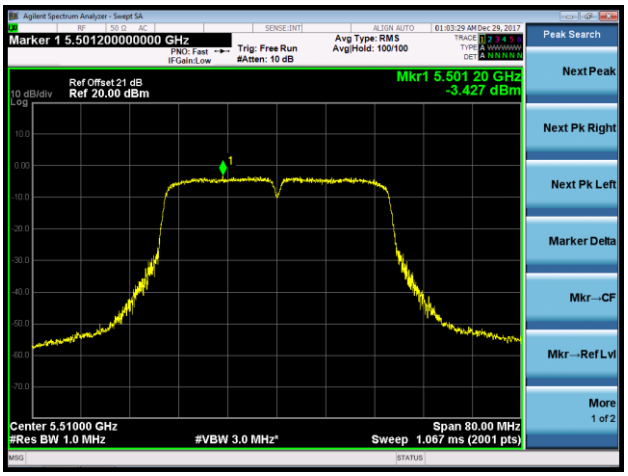
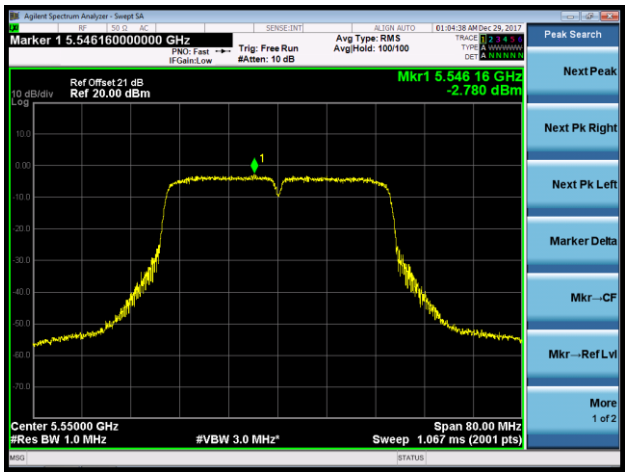
Channel 100 (5500MHz)	Channel 116 (5580MHz)
	
Channel 120 (5600MHz)	**Channel 140 (5700MHz)**
	
Channel 144 (5720MHz)	**Channel 149 (5745MHz)**
	

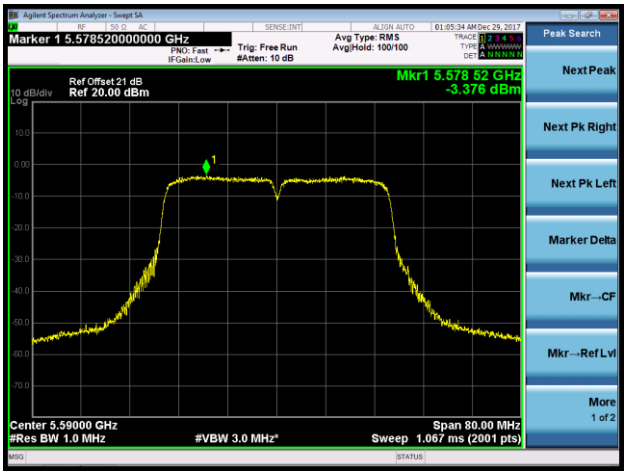
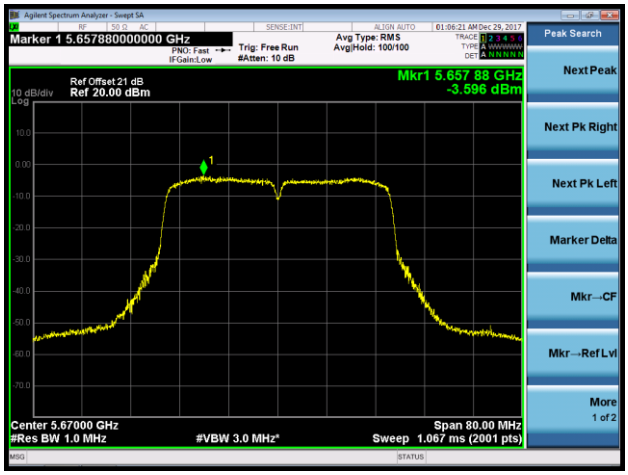
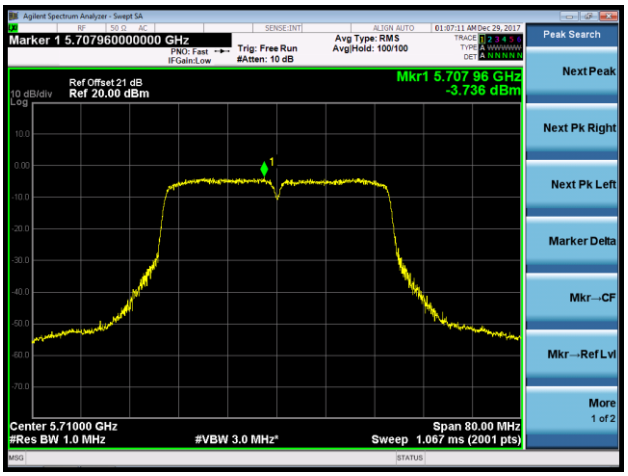
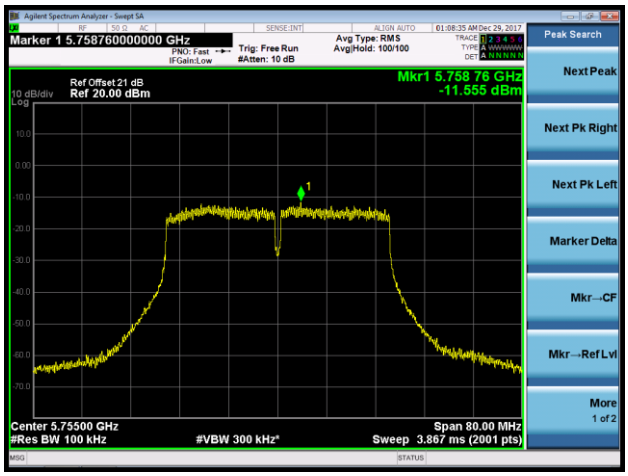
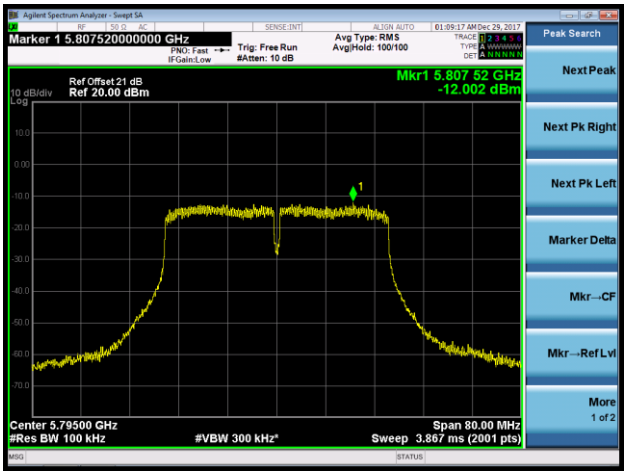
Channel 157 (5785MHz)	Channel 165 (5825MHz)
	

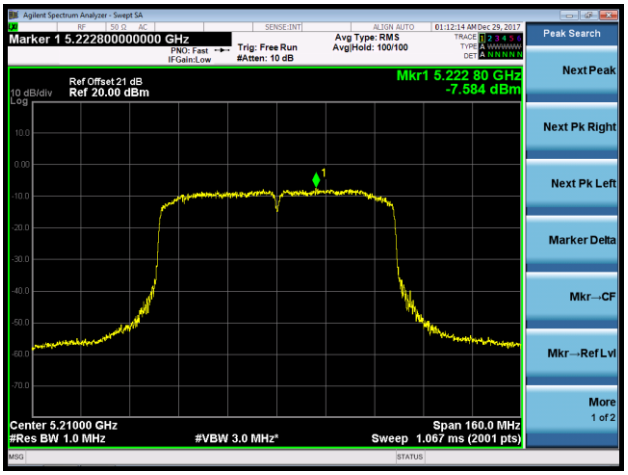
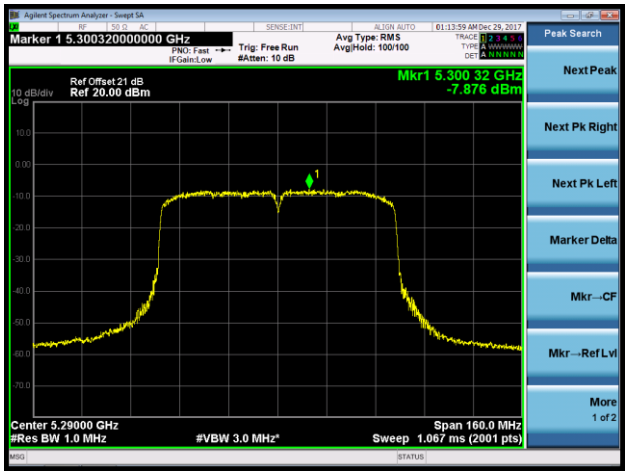
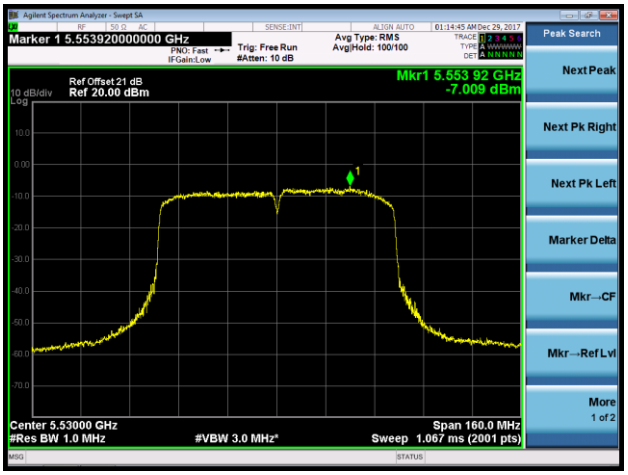
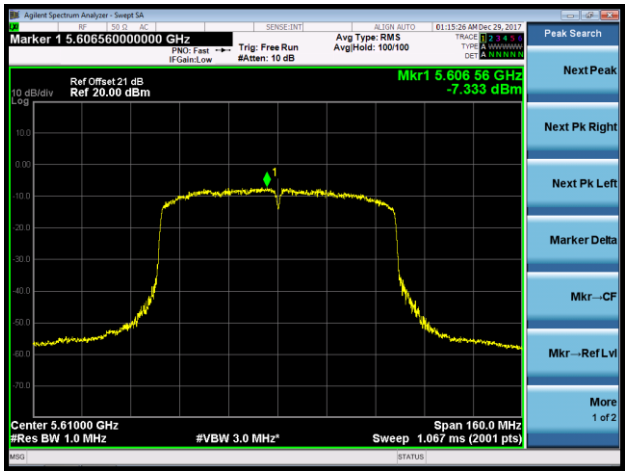
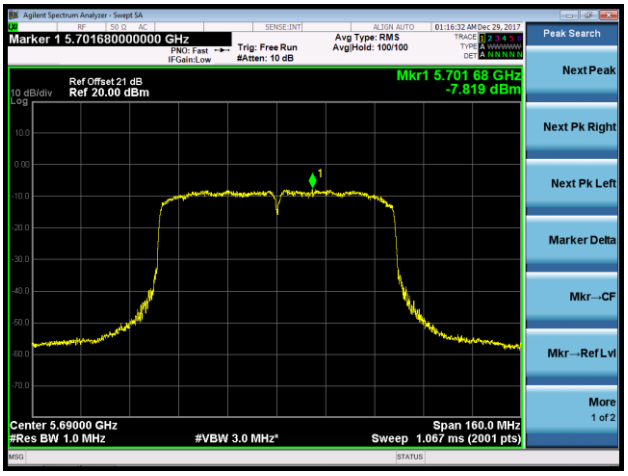
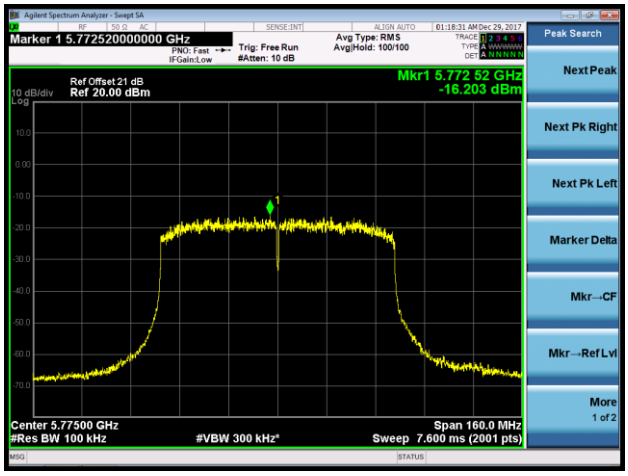
802.11ac-VHT20 Power Spectral Density	
Channel 36 (5180MHz)	**Channel 44 (5220MHz)**
	
Channel 48 (5240MHz)	**Channel 52 (5260MHz)**
	
Channel 60 (5300MHz)	**Channel 64 (5320MHz)**
	

Channel 100 (5500MHz)	Channel 116 (5580MHz)
	
Channel 120 (5600MHz)	**Channel 140 (5700MHz)**
	
Channel 144 (5720MHz)	**Channel 149 (5745MHz)**
	

Channel 157 (5785MHz)	Channel 165 (5825MHz)
	

802.11ac-VHT40 Power Spectral Density	
Channel 38 (5190MHz)	**Channel 46 (5230MHz)**
	
Channel 54 (5270MHz)	**Channel 62 (5310MHz)**
	
Channel 102 (5510MHz)	**Channel 110 (5550MHz)**
	

Channel 118 (5590MHz)	Channel 134 (5670MHz)
	
Channel 142 (5710MHz)	**Channel 151 (5755MHz)**
	
Channel 159 (5795MHz)	
	

802.11ac-VHT80 Power Spectral Density	
Channel 42 (5210MHz)	**Channel 58 (5290MHz)**
	
Channel 106 (5530MHz)	**Channel 122 (5610MHz)**
	
Channel 138 (5690MHz)	**Channel 155 (5775MHz)**
	

7.6. Frequency Stability Measurement

7.6.1. Test Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

7.6.2. Test Procedure Used

Frequency Stability Under Temperature Variations:

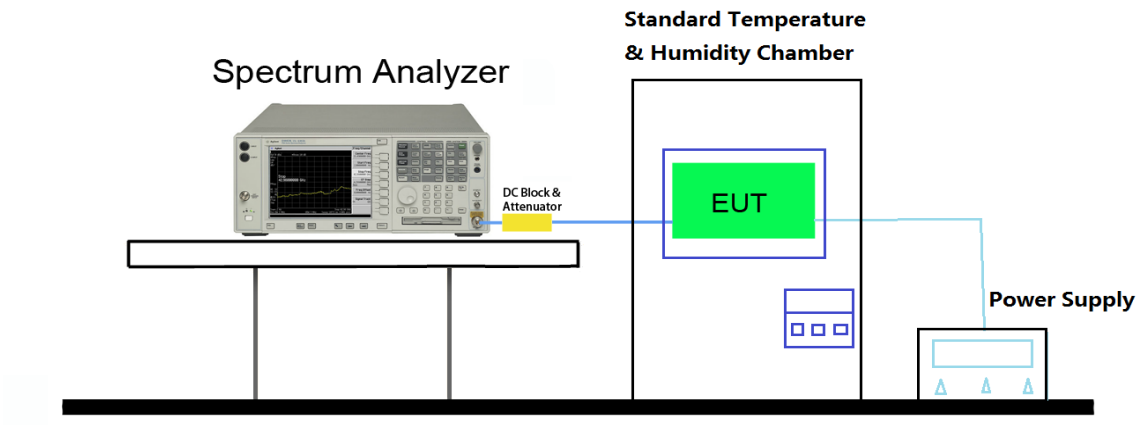
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, record the maximum frequency change.

7.6.3. Test Setup



7.6.4. Test Result

Product	Mobile Computer	Temperature	-30 ~ 50°C
Test Engineer	Ben Zhu	Relative Humidity	46 ~ 66%
Test Site	TR3	Test Date	2017/12/29

Power (VDC)	Temp (℃)	Frequency Tolerance (ppm)
3.7	- 30	6.57
	- 20	4.37
	- 10	6.00
	0	6.78
	+ 10	5.25
	+ 20 (Ref)	3.46
	+ 30	-0.61
	+ 40	0.92
	+ 50	-2.30
4.2	+ 20	-1.79
3.4	+ 20	-2.42

Note 1: Frequency Tolerance (ppm) = {[Measured Frequency (Hz) - Declared Frequency (Hz)] / Declared Frequency (Hz)} *10^6.

Note 2: DC power 3.4V and 4.2V was declared by the manufacturer.

7.7. Radiated Spurious Emission Measurement

7.7.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

7.7.2. Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.4 (Standard test method below 30MHz)

ANSI C63.10 Section 6.5 (Standard test method above 30MHz to 1GHz)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

7.7.3. Test Setting

Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in Table 1
3. VBW = 3MHz
4. Detector = peak

5. Sweep time = auto couple

6. Trace mode = max hold

7. Trace was allowed to stabilize

Table 1 - RBW as a function of frequency

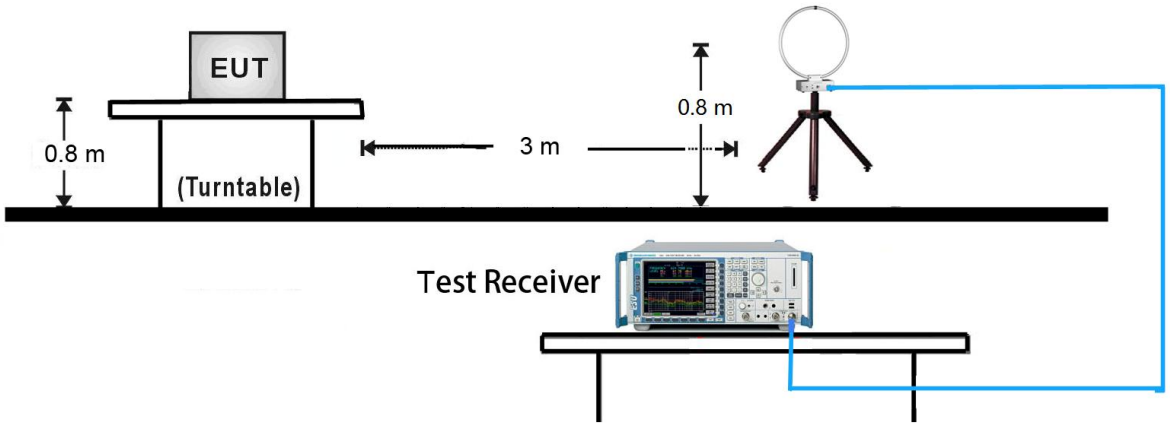
Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

Average Field Strength Measurements

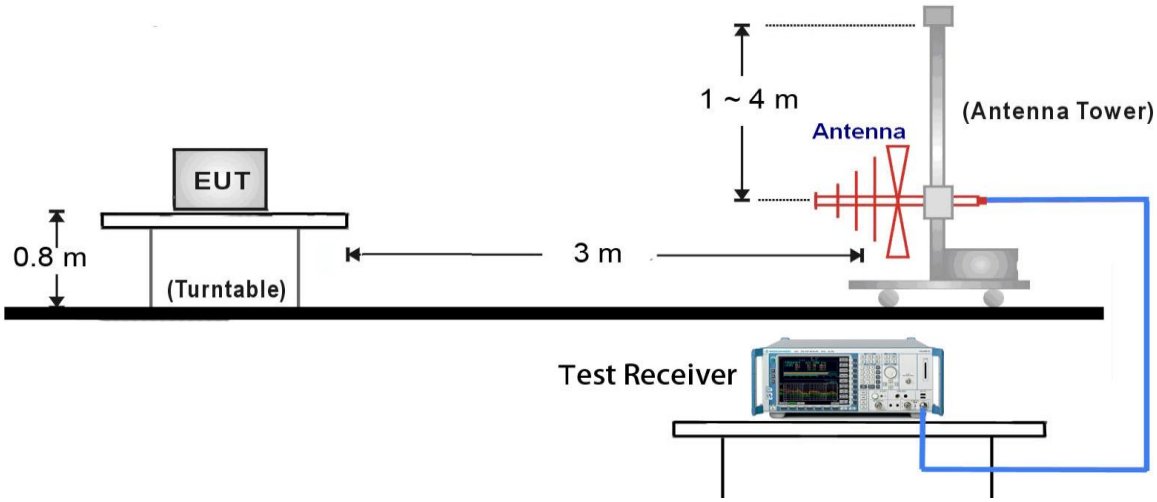
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW ≥ 1/T
4. De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to “Voltage” regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

7.7.4. Test Setup

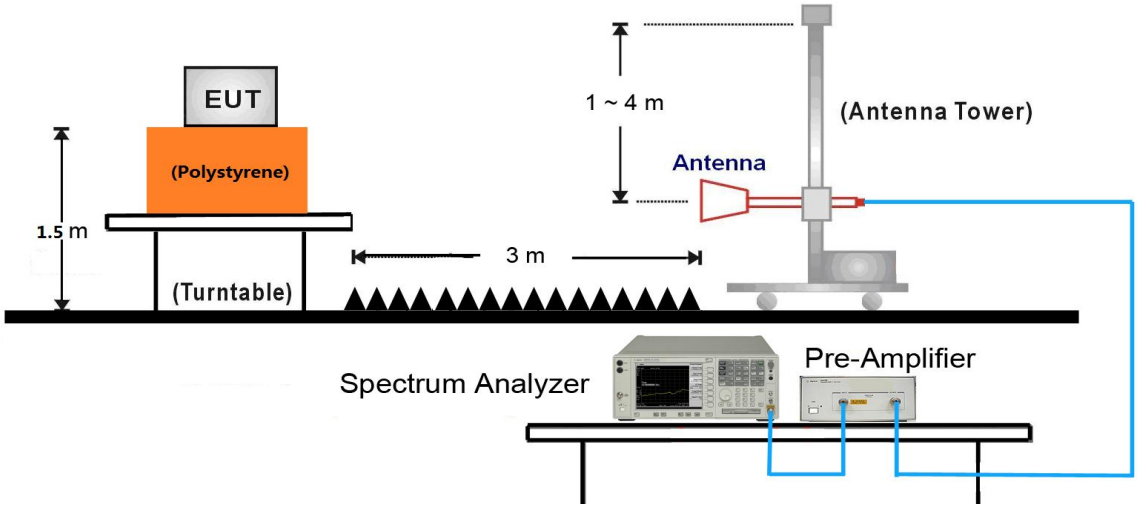
9kHz ~ 30MHz Test Setup:



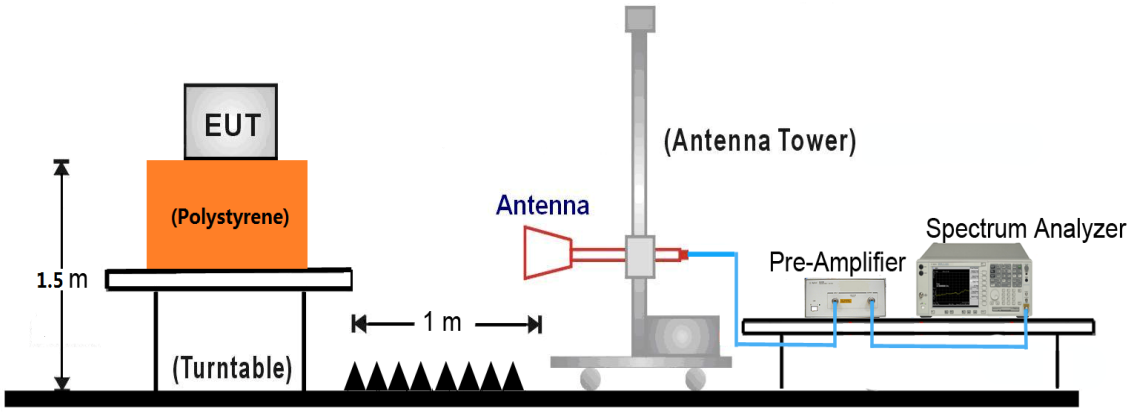
30MHz ~ 1GHz Test Setup:



1GHz ~18GHz Test Setup:



18GHz ~40GHz Test Setup:



7.7.5. Test Result

Product	Mobile Computer	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	51%
Test Site	AC2	Test Date	2018/01/08
Test Mode:	802.11a	Test Channel:	36
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	7468.5	32.4	14.1	46.5	74.0	-27.5	Peak	Horizontal
	8352.5	32.5	13.8	46.3	74.0	-27.7	Peak	Horizontal
*	9797.5	31.3	16.9	48.2	68.2	-20.0	Peak	Horizontal
*	12840.5	29.9	20.6	50.5	68.2	-17.7	Peak	Horizontal
	7502.5	31.6	14.2	45.8	74.0	-28.2	Peak	Vertical
	8471.5	32.9	14.0	46.9	74.0	-27.1	Peak	Vertical
*	10078.0	31.8	17.5	49.3	68.2	-18.9	Peak	Vertical
*	12840.5	29.9	20.6	50.5	68.2	-17.7	Peak	Vertical

Note 1: "*" is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	Mobile Computer	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	51%
Test Site	AC2	Test Date	2018/01/08
Test Mode:	802.11a	Test Channel:	44
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	7502.5	31.6	14.2	45.8	74.0	-28.2	Peak	Horizontal
	8310.0	31.8	13.8	45.6	74.0	-28.4	Peak	Horizontal
*	10035.5	29.9	17.7	47.6	68.2	-20.6	Peak	Horizontal
*	12823.5	29.6	20.5	50.1	68.2	-18.1	Peak	Horizontal
	7417.5	32.7	14.1	46.8	74.0	-27.2	Peak	Vertical
	8352.5	32.2	13.8	46.0	74.0	-28.0	Peak	Vertical
*	10018.5	30.1	17.7	47.8	68.2	-20.4	Peak	Vertical
*	12908.5	29.8	21.0	50.8	68.2	-17.4	Peak	Vertical

Note 1: "*" is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	Mobile Computer	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	51%
Test Site	AC2	Test Date	2018/01/08
Test Mode:	802.11a	Test Channel:	48
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	7434.5	32.2	14.3	46.5	74.0	-27.5	Peak	Horizontal
	8361.0	32.5	13.8	46.3	74.0	-27.7	Peak	Horizontal
*	10103.5	32.1	17.9	50.0	68.2	-18.2	Peak	Horizontal
*	12908.5	29.8	21.0	50.8	68.2	-17.4	Peak	Horizontal
	7434.5	32.2	14.3	46.5	74.0	-27.5	Peak	Vertical
	8471.5	31.2	14.0	45.2	74.0	-28.8	Peak	Vertical
*	9959.0	29.5	17.3	46.8	68.2	-21.4	Peak	Vertical
*	12781.0	29.8	20.5	50.3	68.2	-17.9	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	Mobile Computer	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	51%
Test Site	AC2	Test Date	2018/01/08
Test Mode:	802.11a	Test Channel:	52
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	7451.5	31.8	14.3	46.1	74.0	-27.9	Peak	Horizontal
	8284.5	32.0	13.9	45.9	74.0	-28.1	Peak	Horizontal
*	10010.0	31.8	17.7	49.5	68.2	-18.7	Peak	Horizontal
*	12781.0	29.8	20.5	50.3	68.2	-17.9	Peak	Horizontal
	7451.5	31.8	14.3	46.1	74.0	-27.9	Peak	Vertical
	8386.5	32.2	13.8	46.0	74.0	-28.0	Peak	Vertical
*	9950.5	30.4	17.4	47.8	68.2	-20.4	Peak	Vertical
*	12781.0	30.2	20.5	50.7	68.2	-17.5	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	Mobile Computer	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	51%
Test Site	AC2	Test Date	2018/01/08
Test Mode:	802.11a	Test Channel:	60
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	7434.5	33.4	14.3	47.7	74.0	-26.3	Peak	Horizontal
	8480.0	33.1	14.1	47.2	74.0	-26.8	Peak	Horizontal
*	10299.0	30.1	18.4	48.5	68.2	-19.7	Peak	Horizontal
*	12781.0	30.2	20.5	50.7	68.2	-17.5	Peak	Horizontal
	7434.5	33.4	14.3	47.7	74.0	-26.3	Peak	Vertical
	8378.0	31.1	13.8	44.9	74.0	-29.1	Peak	Vertical
*	9993.0	30.6	17.4	48.0	68.2	-20.2	Peak	Vertical
*	12951.0	30.7	21.2	51.9	68.2	-16.3	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	Mobile Computer	Temperature	22°C
Test Engineer	Snake Ni	Relative Humidity	51%
Test Site	AC2	Test Date	2018/01/08
Test Mode:	802.11a	Test Channel:	64
Remark:	1. Average measurement was not performed if peak level lower than average limit. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	7536.5	32.0	14.4	46.4	74.0	-27.6	Peak	Horizontal
	8437.5	31.2	13.9	45.1	74.0	-28.9	Peak	Horizontal
*	10035.5	30.5	17.7	48.2	68.2	-20.0	Peak	Horizontal
*	12951.0	30.7	21.2	51.9	68.2	-16.3	Peak	Horizontal
	7536.5	32.0	14.4	46.4	74.0	-27.6	Peak	Vertical
	8403.5	32.8	13.9	46.7	74.0	-27.3	Peak	Vertical
*	9950.5	31.0	17.4	48.4	68.2	-19.8	Peak	Vertical
*	12849.0	30.1	20.7	50.8	68.2	-17.4	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)