

Appendix A. Test Data

Duty cycle						
Band	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	5180	1.989	1.996	99.649	0.015	0.010
802.11n HT20	5180	10.000	10.000	100.000	0.000	0.010
802.11n HT40	5190	10.000	10.000	100.000	0.000	0.010
802.11ac VHT20	5180	10.000	10.000	100.000	0.000	0.010
802.11ac VHT40	5190	10.000	10.000	100.000	0.000	0.010
802.11ac VHT80	5210	10.000	10.000	100.000	0.000	0.010
802.11ac VHT160	5250	10.000	10.000	100.000	0.000	0.010
802.11ax HE20	5180	10.000	10.000	100.000	0.000	0.010
802.11ax HE40	5190	10.000	10.000	100.000	0.000	0.010
802.11ax HE80	5210	10.000	10.000	100.000	0.000	0.010
802.11ax HE160	5250	10.000	10.000	100.000	0.000	0.010

RF power setting in Test SW					
Mode	CH	Frequency (MHz)	Ant-0	Ant-1	Test SW Version
802.11a	36	5180	34	34	PUTTY
	40	5200	34	34	
	44	5220	40	40	
	48	5240	34	34	
	52	5260	34	34	
	56	5280	34	34	
	60	5300	40	40	
	64	5320	35	35	
	100	5500	36	36	
	112	5560	36	36	
	116	5580	40	40	
	124	5620	40	40	
	132	5660	40	40	
	140	5700	36	36	
	149	5745	38	38	
	157	5785	38	38	
	165	5825	38	38	
802.11n HT20	36	5180	35	35	PUTTY
	40	5200	35	35	
	44	5220	39	39	
	48	5240	35	35	
	52	5260	35	35	
	56	5280	35	35	
	60	5300	39	39	
	64	5320	36	36	
	100	5500	38	38	
	112	5560	38	38	
	116	5580	39	39	
	124	5620	39	39	
	132	5660	39	39	
	140	5700	37	37	
	149	5745	38	38	
	157	5785	38	38	
	165	5825	38	38	
802.11n HT40	38	5190	39	39	PUTTY
	46	5230	39	39	
	54	5270	39	39	
	62	5310	39	39	
	102	5510	40	40	
	110	5550	40	40	
	126	5630	40	40	
	134	5670	40	40	
	151	5755	40	40	
	159	5795	40	40	

Mode	CH	Frequency (MHz)	Ant-0	Ant-1	Test SW Version
802.11ac VHT20	36	5180	35	35	PUTTY
	40	5200	35	35	
	44	5220	39	39	
	48	5240	35	35	
	52	5260	35	35	
	56	5280	35	35	
	60	5300	39	39	
	64	5320	36	36	
	100	5500	38	38	
	112	5560	38	38	
	116	5580	39	39	
	124	5620	39	39	
	132	5660	39	39	
	140	5700	37	37	
	149	5745	38	38	
	157	5785	38	38	
	165	5825	38	38	
802.11ac VHT40	38	5190	39	39	PUTTY
	46	5230	39	39	
	54	5270	39	39	
	62	5310	39	39	
	102	5510	40	40	
	110	5550	40	40	
	126	5630	40	40	
	134	5670	40	40	
	151	5755	40	40	
	159	5795	40	40	
802.11ac VHT80	42	5210	36	36	PUTTY
	58	5290	36	36	
	106	5530	36	36	
	122	5610	36	36	
	138	5690	36	36	
	138	5690	36	36	
	155	5775	36	36	
802.11ac VHT160	50	5250	40	40	PUTTY
	50	5250	40	40	
	114	5570	40	40	

Mode	CH	Frequency (MHz)		Ant-0	Ant-1	Test SW Version
802.11ax HE20	36	5180	Full	35	35	PUTTY
	40	5200	Full	35	35	
	44	5220	Full	39	39	
	48	5240	Full	35	35	
	52	5260	Full	35	35	
	56	5280	Full	35	35	
	60	5300	Full	39	39	
	64	5320	Full	36	36	
	100	5500	Full	38	38	
	112	5560	Full	38	38	
	116	5580	Full	39	39	
	124	5620	Full	39	39	
	132	5660	Full	39	39	
	140	5700	Full	37	37	
	149	5745	Full	38	38	
	157	5785	Full	38	38	
	165	5825	Full	38	38	
802.11ax HE40	38	5190	Full	39	39	PUTTY
	46	5230	Full	39	39	
	54	5270	Full	39	39	
	62	5310	Full	39	39	
	102	5510	Full	40	40	
	110	5550	Full	40	40	
	126	5630	Full	40	40	
	134	5670	Full	40	40	
	142	5710	Full	40	40	
	142	5710	Full	40	40	
	151	5755	Full	40	40	
	159	5795	Full	40	40	
802.11ax HE80	42	5210	Full	36	36	PUTTY
	58	5290	Full	36	36	
	106	5530	Full	36	36	
	122	5610	Full	36	36	
	155	5775	Full	36	36	
802.11ax HE160	50	5250	Full	40	40	PUTTY
	50	5250	Full	40	40	
	114	5570	Full	40	40	

Maximum Conducted Output Power Measurement							
Band	Date Rate or Sub-test	CH	Frequency (MHz)	Average power			Limit
				Ant-0	Ant-1	Total	
				dBm	dBm	dBm	
802.11a	6M	36	5180	17.09	17.01	20.06	23.45
		40	5200	17.12	17.20	20.17	23.45
		48	5240	17.33	17.23	20.29	23.45
		52	5260	16.90	16.66	19.79	23.20
		56	5280	16.79	16.73	19.77	23.20
		64	5320	17.37	16.77	20.09	23.20
		100	5500	16.54	16.86	19.71	22.97
		112	5560	16.18	15.90	19.05	22.97
		140	5700	16.56	16.35	19.46	22.97
		149	5745	17.86	17.54	20.71	29.22
		157	5785	18.20	18.42	21.32	29.22
		165	5825	18.05	19.01	21.56	29.22
802.11n HT20	13M	36	5180	17.21	17.16	20.20	23.45
		40	5200	17.31	17.19	20.26	23.45
		48	5240	17.39	17.17	20.29	23.45
		52	5260	17.13	16.93	20.04	23.45
		56	5280	16.82	16.81	19.83	23.45
		64	5320	17.52	17.00	20.28	23.45
		100	5500	17.30	17.56	20.44	23.23
		112	5560	16.31	16.22	19.28	23.23
		140	5700	16.85	16.41	19.65	23.23
		149	5745	17.67	16.92	20.32	29.22
		157	5785	17.95	17.84	20.91	29.22
		165	5825	17.65	18.50	21.11	29.22
802.11n HT40	27M	38	5190	19.80	19.49	22.66	23.45
		46	5230	19.48	19.69	22.60	23.45
		54	5270	19.17	19.24	22.22	23.45
		62	5310	19.33	18.61	22.00	23.45
		102	5510	18.89	18.50	21.71	23.23
		110	5550	17.69	17.51	20.61	23.23
		134	5670	18.19	18.02	21.12	23.23
		151	5755	18.74	18.52	21.64	29.22
		159	5795	19.04	19.18	22.12	29.22

Band	Date Rate or Sub-test	CH	Frequency (MHz)	Average power			Limit
				Ant-0	Ant-1	Total	
				dBm	dBm	dBm	
802.11ac VHT20	13M	36	5180	17.24	17.02	20.14	23.45
		40	5200	17.30	17.17	20.25	23.45
		48	5240	17.56	17.27	20.43	23.45
		52	5260	16.88	16.73	19.82	23.45
		56	5280	16.82	16.82	19.83	23.45
		64	5320	17.44	16.99	20.23	23.45
		100	5500	17.19	17.69	20.46	23.23
		112	5560	16.01	15.74	18.89	23.23
		140	5700	16.95	16.50	19.74	23.23
		149	5745	17.43	16.66	20.07	29.22
		157	5785	18.30	17.39	20.88	29.22
		165	5825	17.56	18.40	21.01	29.22
802.11ac VHT40	27M	38	5190	19.53	19.46	22.51	23.45
		46	5230	19.62	19.42	22.53	23.45
		54	5270	19.19	19.70	22.46	23.45
		62	5310	19.33	18.97	22.16	23.45
		102	5510	18.96	18.60	21.79	23.23
		110	5550	18.16	17.86	21.02	23.23
		134	5670	18.46	17.99	21.24	23.23
		151	5755	19.02	18.33	21.70	29.22
		159	5795	19.38	19.10	22.25	29.22
802.11ac VHT80	58.6M	42	5210	18.30	18.13	21.23	23.45
		58	5290	17.78	17.56	20.68	23.45
		106	5530	16.02	16.05	19.05	23.23
		122	5610	16.07	15.80	18.95	23.23
		155	5775	16.94	16.36	19.67	29.22
802.11ac VHT160	117M	50	5250	3.57	3.43	6.51	23.45
		50	5250	3.57	3.43	6.51	23.45
		114	5570	17.77	17.61	20.70	23.23

Band	Date Rate or Sub-test	CH	Freq. (MHz)	RU	Average power			Limit
					Ant-0	Ant-1	Total	
					dBm	dBm	dBm	
802.11ax HE20	MCS 0	36	5180	Full	17.45	17.24	20.36	23.45
		40	5200	Full	17.38	17.47	20.44	23.45
		48	5240	Full	17.59	17.40	20.51	23.45
		52	5260	Full	17.14	17.02	20.09	23.45
		56	5280	Full	17.07	17.08	20.09	23.45
		64	5320	Full	17.61	17.10	20.37	23.45
		100	5500	Full	17.33	17.84	20.60	23.23
		112	5560	Full	16.45	16.23	19.35	23.23
		140	5700	Full	16.95	16.53	19.76	23.23
		149	5745	Full	17.79	17.04	20.44	29.22
		157	5785	Full	18.33	17.85	21.11	29.22
		165	5825	Full	17.92	18.72	21.35	29.22
802.11ax HE40	MCS0	38	5190	Full	20.03	19.87	22.96	23.45
		46	5230	Full	19.90	19.88	22.90	23.45
		54	5270	Full	19.38	19.71	22.56	23.45
		62	5310	Full	19.34	18.98	22.17	23.45
		102	5510	Full	19.03	18.88	21.97	23.23
		110	5550	Full	18.18	17.90	21.05	23.23
		134	5670	Full	18.48	18.23	21.37	23.23
		151	5755	Full	19.03	18.55	21.81	29.22
		159	5795	Full	19.45	19.53	22.50	29.22
802.11ax HE80	MCS 0	42	5210	Full	18.36	18.22	21.30	23.45
		58	5290	Full	17.84	17.74	20.80	23.45
		106	5530	Full	16.33	16.31	19.33	23.23
		122	5610	Full	16.18	15.94	19.07	23.23
		155	5775	Full	17.22	16.74	20.00	29.22
802.11ax HE160	MCS 0	50	5250	Full	17.00	16.91	19.96	23.45
		50	5250	Full	17.16	16.61	19.90	23.45
		114	5570	Full	17.95	17.70	20.84	23.23

26 dB & 99 % RF Bandwidth Measurement										
Band	CH	Freq. (MHz)	99 % Bandwidth				26 dB Bandwidth			
			Ant-0	Ant-1	Ant-2	Ant-3	Ant-0	Ant-1	Ant-2	Ant-3
			MHz	MHz	MHz	MHz	MHz	MHz	MHz	MHz
802.11a	36	5180	16.295	16.323	-	-	18.940	19.470	-	-
	40	5200	16.308	16.303	-	-	19.020	18.940	-	-
	48	5240	16.302	16.317	-	-	18.860	18.950	-	-
	52	5260	16.313	16.297	-	-	18.840	18.900	-	-
	56	5280	16.327	16.315	-	-	19.600	18.920	-	-
	64	5320	16.325	16.328	-	-	19.410	18.900	-	-
	100	5500	16.393	16.312	-	-	19.150	18.870	-	-
	112	5560	16.374	16.307	-	-	19.110	18.860	-	-
	140	5700	16.322	16.345	-	-	18.800	18.780	-	-
802.11ax HE20	36	5180	18.881	18.852	-	-	20.960	20.860	-	-
	40	5200	18.852	18.833	-	-	21.060	21.230	-	-
	48	5240	18.808	18.812	-	-	20.750	20.940	-	-
	52	5260	18.811	18.811	-	-	20.750	20.990	-	-
	56	5280	18.866	18.816	-	-	20.890	20.930	-	-
	64	5320	18.836	18.824	-	-	20.830	20.960	-	-
	100	5500	18.748	18.793	-	-	20.860	21.030	-	-
	112	5560	18.767	18.836	-	-	20.960	21.270	-	-
	140	5700	18.833	18.811	-	-	20.670	20.860	-	-
802.11ax HE40	38	5190	37.650	37.647	-	-	40.600	40.390	-	-
	46	5230	37.560	37.520	-	-	40.090	40.560	-	-
	54	5270	37.438	37.519	-	-	40.450	40.330	-	-
	62	5310	37.442	37.577	-	-	40.430	40.580	-	-
	102	5510	37.381	37.511	-	-	40.170	40.380	-	-
	110	5550	37.375	37.510	-	-	40.570	40.360	-	-
	134	5670	37.394	37.484	-	-	40.370	40.740	-	-
802.11ax HE80	42	5210	76.559	76.646	-	-	81.760	82.230	-	-
	58	5290	76.533	76.569	-	-	82.010	81.990	-	-
	106	5530	76.347	76.816	-	-	81.760	82.220	-	-
	122	5610	76.415	76.553	-	-	81.900	82.170	-	-
802.11ax HE160	50	5250	77.483	77.670	-	-	81.580	81.560	-	-
	50	5250	77.679	77.687	-	-	81.200	81.070	-	-
	114	5570	155.223	155.010	-	-	164.380	163.960	-	-

Band III_6 dB & 99 % RF Bandwidth Measurement											
Band	CH	Freq. (MHz)	99 % Bandwidth				6 dB Bandwidth				6dB Limit For FCC
			Ant-0	Ant-1	Ant-2	Ant-3	Ant-0	Ant-1	Ant-2	Ant-3	
			MHz	MHz	MHz	MHz	kHz	kHz	kHz	kHz	
802.11a	149	5745	16.219	16.459	-	-	13860	15120.000	-	-	≥ 500 kHz
	157	5785	16.234	16.417	-	-	13840	15130.000	-	-	
	165	5825	16.340	16.432	-	-	13830	15120.000	-	-	
802.11ax HE20	149	5745	18.996	18.841	-	-	16720	15090	-	-	
	157	5785	19.008	18.831	-	-	13790	15280	-	-	
	165	5825	18.880	18.861	-	-	11360	15100	-	-	
802.11ax HE40	151	5755	37.703	37.531	-	-	31300	33050	-	-	
	159	5795	37.632	37.470	-	-	32530	31620	-	-	
802.11ax HE80	155	5775	76.704	76.434	-	-	56340	57560	-	-	

Power Spectral Density Measurement									
Band	CH	Frequency (MHz)	Measurement				Duty Factor	Calculated	Limit
			Ant-0	Ant-1	Ant-2	Ant-3		Total	
			dBm/MHz	dBm/MHz	dBm/MHz	dBm/MHz		dBm/MHz	
802.11a	36	5180	6.780	6.921	-	-	0.015	9.877	10.450
	40	5200	7.140	7.401	-	-	0.015	10.298	10.450
	48	5240	7.531	7.140	-	-	0.015	10.365	10.450
	52	5260	7.426	6.588	-	-	0.015	10.053	10.450
	56	5280	6.918	6.865	-	-	0.015	9.917	10.450
	64	5320	7.239	6.644	-	-	0.015	9.977	10.450
	100	5500	6.517	7.033	-	-	0.015	9.808	10.230
	112	5560	6.347	6.272	-	-	0.015	9.335	10.230
	140	5700	7.227	6.309	-	-	0.015	9.818	10.230
802.11ax HE20	36	5180	7.458	6.944	-	-	0.000	10.219	10.450
	40	5200	7.404	7.124	-	-	0.000	10.277	10.450
	48	5240	7.581	7.227	-	-	0.000	10.418	10.450
	52	5260	7.171	6.952	-	-	0.000	10.073	10.450
	56	5280	6.988	7.250	-	-	0.000	10.131	10.450
	64	5320	7.369	6.621	-	-	0.000	10.021	10.450
	100	5500	6.605	7.683	-	-	0.000	10.188	10.230
	112	5560	6.532	6.900	-	-	0.000	9.730	10.230
	140	5700	7.569	6.190	-	-	0.000	9.944	10.230
802.11ax HE40	38	5190	6.931	6.890	-	-	0.000	9.921	10.450
	46	5230	7.573	7.288	-	-	0.000	10.443	10.450
	54	5270	6.977	6.863	-	-	0.000	9.931	10.450
	62	5310	6.646	6.130	-	-	0.000	9.406	10.450
	102	5510	5.384	5.724	-	-	0.000	8.568	10.230
	110	5550	5.306	4.790	-	-	0.000	8.066	10.230
	134	5670	5.978	5.152	-	-	0.000	8.595	10.230
802.11ax HE80	42	5210	4.972	4.911	-	-	0.000	7.952	10.450
	58	5290	4.792	4.552	-	-	0.000	7.684	10.450
	106	5530	3.720	3.239	-	-	0.000	6.496	10.230
	122	5610	3.815	2.923	-	-	0.000	6.402	10.230
802.11ax HE160	50	5250	2.381	1.751	-	-	0.000	5.088	10.450
	50	5250	2.219	1.309	-	-	0.000	4.798	10.450
	114	5570	0.667	0.147	-	-	0.000	3.425	10.230

Note: Power Density = measured result + 10 log (1/duty cycle) + Conversion ratio = measured result + duty factory.

Band III_ Power Spectral Density Measurement										
Band	CH	Frequency (MHz)	Measurement				Duty Factor	Calculated	Limit	PASS/FAIL
			Ant-0		Ant-1			Total		
			dBm/100 kHz	dBm/500 kHz	dBm/100 kHz	dBm/500 kHz	dB	dBm/500 kHz	dBm/500 kHz	
802.11a	149	5745	1.241	8.246	-0.632	6.373	0.015	10.420	29.22	PASS
	157	5785	1.925	8.930	0.839	7.844	0.015	11.431	29.22	PASS
	165	5825	1.618	8.623	0.666	7.671	0.015	11.183	29.22	PASS
802.11ax HE20	149	5745	-0.877	6.113	-2.534	4.456	0.000	8.373	29.22	PASS
	157	5785	-0.019	6.971	-2.041	4.949	0.000	9.087	29.22	PASS
	165	5825	-0.570	6.420	-1.347	5.642	0.000	9.059	29.22	PASS
802.11ax HE40	151	5755	-3.121	3.869	-4.886	2.103	0.000	6.085	29.22	PASS
	159	5795	-2.237	4.753	-4.241	2.749	0.000	6.876	29.22	PASS
802.11ax HE80	155	5775	-5.018	1.971	-6.662	0.327	0.000	4.237	29.22	PASS

Note: Power Density = measured result + 10 log (1/duty cycle) + Conversion ratio = measured result + duty factory.

Conversion ration = 10*Log(500 k/100 k)