

Appendix A. Test Data

Duty cycle						
Mode	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	5180	1.395	1.446	96.473	0.156	0.717
802.11n HT20	5180	1.303	1.354	96.233	0.167	0.767
802.11n HT40	5190	0.650	0.701	92.643	0.332	1.539
802.11ac VHT20	5180	1.315	1.365	96.337	0.162	0.760
802.11ac VHT40	5190	0.654	0.705	92.766	0.326	1.529
802.11ac VHT80	5210	1.138	1.188	95.791	0.187	0.879

5 GHz Band Config			
Mode	Channel	Freq. (MHz)	Data Rate
802.11a	36	5180	6M
802.11a	40	5200	6M
802.11a	48	5240	6M
802.11a	52	5260	6M
802.11a	56	5280	6M
802.11a	64	5320	6M
802.11a	100	5500	6M
802.11a	112	5560	6M
802.11a	140	5700	6M
802.11a	144	5720	6M
802.11a	149	5745	6M
802.11a	157	5785	6M
802.11a	165	5825	6M
802.11n HT20	36	5180	13M
802.11n HT20	40	5200	13M
802.11n HT20	48	5240	13M
802.11n HT20	52	5260	13M
802.11n HT20	56	5280	13M
802.11n HT20	64	5320	13M
802.11n HT20	100	5500	13M
802.11n HT20	112	5560	13M
802.11n HT20	140	5700	13M
802.11n HT20	144	5720	13M
802.11n HT20	149	5745	13M
802.11n HT20	157	5785	13M
802.11n HT20	165	5825	13M
802.11n HT40	38	5190	27M
802.11n HT40	46	5230	27M
802.11n HT40	54	5270	27M
802.11n HT40	62	5310	27M
802.11n HT40	102	5510	27M
802.11n HT40	110	5550	27M
802.11n HT40	134	5670	27M
802.11n HT40	142	5710	27M
802.11n HT40	151	5755	27M
802.11n HT40	159	5795	27M

5 GHz Band Config			
Mode	Channel	Freq. (MHz)	Data Rate
802.11ac VHT20	36	5180	MCS 0
802.11ac VHT20	40	5200	MCS 0
802.11ac VHT20	48	5240	MCS 0
802.11ac VHT20	52	5260	MCS 0
802.11ac VHT20	56	5280	MCS 0
802.11ac VHT20	64	5320	MCS 0
802.11ac VHT20	100	5500	MCS 0
802.11ac VHT20	112	5560	MCS 0
802.11ac VHT20	140	5700	MCS 0
802.11ac VHT20	144	5720	MCS 0
802.11ac VHT20	149	5745	MCS 0
802.11ac VHT20	157	5785	MCS 0
802.11ac VHT20	165	5825	MCS 0
802.11ac VHT40	38	5190	MCS 0
802.11ac VHT40	46	5230	MCS 0
802.11ac VHT40	54	5270	MCS 0
802.11ac VHT40	62	5310	MCS 0
802.11ac VHT40	102	5510	MCS 0
802.11ac VHT40	110	5550	MCS 0
802.11ac VHT40	134	5670	MCS 0
802.11ac VHT40	142	5710	MCS 0
802.11ac VHT40	151	5755	MCS 0
802.11ac VHT40	159	5795	MCS 0
802.11ac VHT80	42	5210	MCS 0
802.11ac VHT80	58	5290	MCS 0
802.11ac VHT80	106	5530	MCS 0
802.11ac VHT80	122	5610	MCS 0
802.11ac VHT80	138	5690	MCS 0
802.11ac VHT80	155	5775	MCS 0

RF power setting in Test SW							
Mode	CH	Frequency (MHz)	Ant-0	Ant-1	Ant-2	Ant-3	Test SW Version
802.11a	36	5180	12	12	-	-	Command
	40	5200	12	12	-	-	
	48	5240	12	12	-	-	
	52	5260	12	12	-	-	
	56	5280	12	12	-	-	
	64	5320	12	12	-	-	
	100	5500	12	12	-	-	
	112	5560	12	12	-	-	
	140	5700	12	12	-	-	
	144	5720	12	12	-	-	
	149	5745	12	12	-	-	
	157	5785	12	12	-	-	
	165	5825	12	12	-	-	
802.11n HT20	36	5180	13	13	-	-	Command
	40	5200	13	13	-	-	
	48	5240	13	13	-	-	
	52	5260	13	13	-	-	
	56	5280	13	13	-	-	
	64	5320	13	13	-	-	
	100	5500	13	13	-	-	
	112	5560	13	13	-	-	
	140	5700	13	13	-	-	
	144	5720	13	13	-	-	
	149	5745	13	13	-	-	
	157	5785	13	13	-	-	
	165	5825	13	13	-	-	
802.11n HT40	38	5190	13	13	-	-	Command
	46	5230	13	13	-	-	
	54	5270	13	13	-	-	
	62	5310	13	13	-	-	
	102	5510	13	13	-	-	
	110	5550	13	13	-	-	
	134	5670	13	13	-	-	
	142	5710	13	13	-	-	
	151	5755	13	13	-	-	
	159	5795	13	13	-	-	

802.11ac VHT20	36	5180	13	13	-	-	Command
	40	5200	13	13	-	-	
	48	5240	13	13	-	-	
	52	5260	13	13	-	-	
	56	5280	13	13	-	-	
	64	5320	13	13	-	-	
	100	5500	13	13	-	-	
	112	5560	13	13	-	-	
	140	5700	13	13	-	-	
	144	5720	13	13	-	-	
	149	5745	13	13	-	-	
	157	5785	13	13	-	-	
802.11ac VHT40	165	5825	13	13	-	-	
	38	5190	13	13	-	-	Command
	46	5230	13	13	-	-	
	54	5270	13	13	-	-	
	62	5310	13	13	-	-	
	102	5510	13	13	-	-	
	110	5550	13	13	-	-	
	134	5670	13	13	-	-	
	142	5710	13	13	-	-	
802.11ac VHT80	151	5755	13	13	-	-	
	159	5795	13	13	-	-	
	42	5210	13	13	-	-	Command
	58	5290	13	13	-	-	
	106	5530	13	13	-	-	
	122	5610	13	13	-	-	
	138	5690	13	13	-	-	
	155	5775	13	13	-	-	

Maximum Conducted Output Power Measurement								
Mode	CH	Frequency (MHz)	Average power					Limit
			Ant-0	Ant-1	Ant-2	Ant-3	Total	
			dBm	dBm	dBm	dBm	dBm	
802.11a	36	5180	14.11	13.68	-	-	16.91	24.00
	40	5200	13.96	13.72	-	-	16.85	24.00
	48	5240	13.99	13.57	-	-	16.79	24.00
	52	5260	14.03	13.59	-	-	16.82	24.00
	56	5280	14.10	13.52	-	-	16.83	24.00
	64	5320	14.41	13.48	-	-	16.98	24.00
	100	5500	14.04	13.27	-	-	16.68	24.00
	112	5560	14.04	13.36	-	-	16.72	24.00
	140	5700	14.02	13.51	-	-	16.78	24.00
	144	5720	14.10	13.46	-	-	16.80	22.79
	149	5745	14.34	13.51	-	-	16.95	30.00
	157	5785	14.14	13.63	-	-	16.90	30.00
	165	5825	13.91	13.86	-	-	16.89	30.00
802.11n HT20	36	5180	14.16	13.57	-	-	16.88	24.00
	40	5200	13.70	13.40	-	-	16.56	24.00
	48	5240	13.69	13.49	-	-	16.60	24.00
	52	5260	13.86	13.45	-	-	16.67	24.00
	56	5280	13.78	13.39	-	-	16.60	24.00
	64	5320	13.88	13.29	-	-	16.60	24.00
	100	5500	13.76	13.37	-	-	16.58	24.00
	112	5560	13.83	13.26	-	-	16.56	24.00
	140	5700	13.69	13.57	-	-	16.64	24.00
	144	5720	13.79	13.44	-	-	16.63	22.79
	149	5745	13.87	13.50	-	-	16.70	30.00
	157	5785	13.82	13.47	-	-	16.66	30.00
	165	5825	13.71	13.72	-	-	16.72	30.00
802.11n HT40	38	5190	13.93	13.52	-	-	16.74	24.00
	46	5230	13.98	13.61	-	-	16.81	24.00
	54	5270	14.03	13.45	-	-	16.76	24.00
	62	5310	14.01	13.55	-	-	16.80	24.00
	102	5510	14.08	13.22	-	-	16.68	24.00
	110	5550	13.96	13.43	-	-	16.72	24.00
	134	5670	13.88	13.35	-	-	16.64	24.00
	142	5710	13.92	13.65	-	-	16.80	24.00
	151	5755	14.09	13.44	-	-	16.79	30.00
	159	5795	14.03	13.54	-	-	16.80	30.00

Mode	CH	Frequency (MHz)	Average power					Limit
			Ant-0	Ant-1	Ant-2	Ant-3	Total	
			dBm	dBm	dBm	dBm	dBm	dBm
802.11ac VHT20	36	5180	14.22	13.67	-	-	16.97	24.00
	40	5200	13.79	13.50	-	-	16.66	24.00
	48	5240	13.79	13.62	-	-	16.72	24.00
	52	5260	13.94	13.56	-	-	16.77	24.00
	56	5280	13.84	13.52	-	-	16.70	24.00
	64	5320	13.94	13.40	-	-	16.69	24.00
	100	5500	13.85	13.46	-	-	16.67	24.00
	112	5560	13.88	13.37	-	-	16.64	24.00
	140	5700	13.77	13.64	-	-	16.72	24.00
	144	5720	13.92	13.50	-	-	16.73	22.81
	149	5745	13.98	13.58	-	-	16.80	30.00
	157	5785	13.91	13.65	-	-	16.79	30.00
	165	5825	13.80	13.92	-	-	16.87	30.00
802.11ac VHT40	38	5190	14.05	13.65	-	-	16.86	24.00
	46	5230	14.06	13.75	-	-	16.91	24.00
	54	5270	14.15	13.72	-	-	16.95	24.00
	62	5310	14.14	13.66	-	-	16.91	24.00
	102	5510	14.22	13.34	-	-	16.81	24.00
	110	5550	14.09	13.48	-	-	16.80	24.00
	134	5670	13.97	13.46	-	-	16.73	24.00
	142	5710	13.98	13.73	-	-	16.86	24.00
	151	5755	14.21	13.56	-	-	16.90	30.00
	159	5795	14.15	13.71	-	-	16.94	30.00
802.11ac VHT80	42	5210	13.79	13.41	-	-	16.61	24.00
	58	5290	13.85	13.41	-	-	16.64	24.00
	106	5530	13.89	13.43	-	-	16.67	24.00
	122	5610	13.90	13.24	-	-	16.59	24.00
	138	5690	13.70	13.44	-	-	16.58	24.00
	155	5775	13.94	13.40	-	-	16.69	30.00

26 dB & 99 % RF Bandwidth Measurement										
Mode	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	16.847	16.610	-	-	20.260	20.120	-	-
	40	5200	16.842	16.619	-	-	20.260	20.180	-	-
	48	5240	16.823	16.612	-	-	20.360	20.230	-	-
	52	5260	16.872	16.623	-	-	20.260	20.210	-	-
	56	5280	16.858	16.596	-	-	20.290	20.150	-	-
	64	5320	16.867	16.565	-	-	20.190	20.020	-	-
	100	5500	16.819	16.596	-	-	20.190	20.100	-	-
	112	5560	16.919	16.617	-	-	20.340	20.030	-	-
	140	5700	16.868	16.621	-	-	20.350	19.990	-	-
	144	5720	13.463	13.338	-	-	15.200	15.090	-	-
802.11ac VHT20	36	5180	17.752	17.585	-	-	20.510	20.080	-	-
	40	5200	17.768	17.608	-	-	20.610	20.180	-	-
	48	5240	17.774	17.628	-	-	20.570	20.200	-	-
	52	5260	17.791	17.605	-	-	20.520	20.240	-	-
	56	5280	17.768	17.620	-	-	20.610	20.180	-	-
	64	5320	17.796	17.595	-	-	20.590	20.050	-	-
	100	5500	17.747	17.604	-	-	20.520	20.130	-	-
	112	5560	17.789	17.619	-	-	20.610	20.140	-	-
	140	5700	17.816	17.600	-	-	20.620	20.300	-	-
	144	5720	13.901	13.851	-	-	15.320	15.170	-	-
802.11ac VHT40	38	5190	36.100	36.225	-	-	40.930	40.590	-	-
	46	5230	36.102	36.258	-	-	41.040	40.610	-	-
	54	5270	36.090	36.271	-	-	41.020	40.720	-	-
	62	5310	36.062	36.253	-	-	41.050	40.520	-	-
	102	5510	36.096	36.268	-	-	40.820	40.610	-	-
	110	5550	36.131	36.206	-	-	41.250	40.740	-	-
	134	5670	36.139	36.272	-	-	40.970	40.830	-	-
	142	5710	32.945	32.960	-	-	35.630	35.390	-	-
802.11ac VHT80	42	5210	75.513	75.188	-	-	82.010	80.570	-	-
	58	5290	75.550	75.198	-	-	81.870	80.550	-	-
	106	5530	75.537	75.273	-	-	81.670	80.720	-	-
	122	5610	75.579	75.265	-	-	81.830	80.720	-	-
	138	5690	72.355	72.166	-	-	75.900	75.400	-	-

Band III_6 dB & 99 % RF Bandwidth Measurement											
Mode	CH	Freq. (MHz)	99 % Bandwidth				6 dB Bandwidth				6dB Limit
			Ant-0	Ant-1	Ant-2	Ant-3	Ant-0	Ant-1	Ant-2	Ant-3	
			MHz	MHz	MHz	MHz	kHz	kHz	kHz	kHz	kHz
802.11a	144	5720	3.987	3.978	-	-	3111	3130	-	-	≥ 500 kHz
	149	5745	17.078	16.819	-	-	15140	15110	-	-	
	157	5785	17.083	16.795	-	-	15130	15140	-	-	
	165	5825	17.098	16.799	-	-	15130	15110	-	-	
802.11ac VHT20	144	5720	4.136	4.178	-	-	3726	3734	-	-	
	149	5745	17.930	17.730	-	-	15130	15730	-	-	
	157	5785	17.941	17.702	-	-	15140	15720	-	-	
	165	5825	17.961	17.675	-	-	15130	15720	-	-	
802.11ac VHT40	142	5710	3.964	3.992	-	-	3096	3112	-	-	
	151	5755	36.152	36.451	-	-	35130	35110	-	-	
	159	5795	36.073	36.412	-	-	35130	35100	-	-	
802.11ac VHT80	138	5690	4.327	4.080	-	-	3105	3103	-	-	
	155	5775	75.459	75.142	-	-	73910	75110	-	-	

Power Spectral Density Measurement									
Mode	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	dB	dBm/MHz	dBm/MHz
802.11a	36	5180	2.874	2.805	-	-	0.156	6.006	11.000
	40	5200	2.674	2.723	-	-	0.156	5.865	11.000
	48	5240	3.067	2.571	-	-	0.156	5.992	11.000
	52	5260	3.180	2.850	-	-	0.156	6.184	11.000
	56	5280	2.977	2.788	-	-	0.156	6.050	11.000
	64	5320	3.217	2.731	-	-	0.156	6.147	11.000
	100	5500	3.306	2.501	-	-	0.156	6.088	11.000
	112	5560	3.297	2.536	-	-	0.156	6.099	11.000
	140	5700	3.006	2.290	-	-	0.156	5.829	11.000
	144	5720	2.947	2.222	-	-	0.156	5.766	11.000
802.11ac VHT20	36	5180	2.698	2.324	-	-	0.162	5.688	11.000
	40	5200	2.672	2.442	-	-	0.162	5.731	11.000
	48	5240	2.587	2.265	-	-	0.162	5.601	11.000
	52	5260	2.599	2.476	-	-	0.162	5.710	11.000
	56	5280	2.611	2.601	-	-	0.162	5.779	11.000
	64	5320	2.799	2.582	-	-	0.162	5.864	11.000
	100	5500	3.066	2.772	-	-	0.162	6.094	11.000
	112	5560	2.846	2.381	-	-	0.162	5.792	11.000
	140	5700	2.723	2.399	-	-	0.162	5.736	11.000
	144	5720	2.586	2.296	-	-	0.162	5.616	11.000
802.11ac VHT40	38	5190	-0.461	-0.633	-	-	0.326	2.790	11.000
	46	5230	-0.412	-0.668	-	-	0.326	2.798	11.000
	54	5270	-0.228	-0.411	-	-	0.326	3.018	11.000
	62	5310	-0.421	-0.247	-	-	0.326	3.003	11.000
	102	5510	-0.366	-0.468	-	-	0.326	2.920	11.000
	110	5550	-0.090	-0.522	-	-	0.326	3.036	11.000
	134	5670	-0.380	-0.658	-	-	0.326	2.820	11.000
	142	5710	-0.063	-0.960	-	-	0.326	2.848	11.000
802.11ac VHT80	42	5210	-3.423	-3.707	-	-	0.187	-0.366	11.000
	58	5290	-2.991	-3.298	-	-	0.187	0.055	11.000
	106	5530	-3.147	-3.656	-	-	0.187	-0.197	11.000
	122	5610	-3.119	-3.708	-	-	0.187	-0.207	11.000
	138	5690	-3.171	-3.835	-	-	0.187	-0.294	11.000

Band III_ Power Spectral Density Measurement														
Mode	CH	Frequency (MHz)	Measurement								Duty Factor	Calculated	Limit	PASS/FAIL
			Ant-0		Ant-1		Ant-2		Ant-3			Total		
			dBm/100 kHz	dBm/500 kHz	dBm/100 kHz	dBm/500 kHz	dBm/100 kHz	dBm/500 kHz	dBm/100 kHz	dBm/500 kHz		dB	dBm/500 kHz	
802.11a	144	5720	-8.237	-1.092	-8.515	-1.369	-	-	-	-	0.156	1.782	30.00	PASS
	149	5745	-5.844	1.302	-6.428	0.718	-	-	-	-	0.156	4.030	30.00	PASS
	157	5785	-5.881	1.265	-6.146	0.999	-	-	-	-	0.156	4.144	30.00	PASS
	165	5825	-5.913	1.233	-6.303	0.843	-	-	-	-	0.156	4.053	30.00	PASS
802.11ac VHT20	144	5720	-8.392	-1.240	-8.649	-1.497	-	-	-	-	0.162	1.644	30.00	PASS
	149	5745	-6.378	0.774	-6.540	0.612	-	-	-	-	0.162	3.704	30.00	PASS
	157	5785	-6.463	0.689	-5.333	1.819	-	-	-	-	0.162	4.301	30.00	PASS
	165	5825	-6.418	0.733	-6.255	0.897	-	-	-	-	0.162	3.826	30.00	PASS
802.11ac VHT40	142	5710	-12.725	-5.409	-12.766	-5.450	-	-	-	-	0.326	-2.419	30.00	PASS
	151	5755	-9.486	-2.170	-8.826	-1.510	-	-	-	-	0.326	1.183	30.00	PASS
	159	5795	-9.053	-1.737	-9.365	-2.049	-	-	-	-	0.326	1.120	30.00	PASS
802.11ac VHT80	138	5690	-15.717	-8.540	-15.996	-8.820	-	-	-	-	0.187	-5.667	30.00	PASS
	155	5775	-12.458	-5.282	-12.763	-5.587	-	-	-	-	0.187	-2.421	30.00	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)