

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	1.408	1.440	97.778	0.098	0.710
802.11n HT20	5180	1.320	1.352	97.633	0.104	0.758
802.11n HT40	5190	0.656	0.700	93.714	0.282	1.524
802.11ac VHT20	5180	1.328	1.360	97.647	0.103	0.753
802.11ac VHT40	5190	0.664	0.708	93.785	0.279	1.506
802.11ac VHT80	5210	1.146	1.188	96.465	0.156	0.873

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	-	-	

Mode	CH	Frequency (MHz)	Ant-0	Ant-1	Ant-2	Ant-3	Test SW Version
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	-	-	
	165	5825	13	13	-	-	
802.11ac VHT40	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 VHT80	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	dBm
802.11a	36	5180	14.09	13.86	-	-	16.98	24.00
	40	5200	13.94	13.81	-	-	16.88	24.00
	48	5240	14.02	13.77	-	-	16.90	24.00
	52	5260	14.07	13.83	-	-	16.96	24.00
	56	5280	13.95	13.64	-	-	16.81	24.00
	64	5320	14.16	13.80	-	-	16.99	24.00
	100	5500	14.15	13.79	-	-	16.98	24.00
	112	5560	13.91	13.36	-	-	16.65	24.00
	140	5700	14.28	13.56	-	-	16.94	24.00
	144	5720	14.00	13.43	-	-	16.73	22.75
	149	5745	13.96	13.58	-	-	16.78	30.00
	157	5785	14.11	13.80	-	-	16.97	30.00
	165	5825	14.01	13.90	-	-	16.96	30.00
802.11n HT20	36	5180	13.85	13.89	-	-	16.88	24.00
	40	5200	13.61	13.74	-	-	16.69	24.00
	48	5240	13.74	13.54	-	-	16.66	24.00
	52	5260	13.71	13.77	-	-	16.75	24.00
	56	5280	13.73	13.57	-	-	16.67	24.00
	64	5320	13.88	13.77	-	-	16.84	24.00
	100	5500	13.95	13.63	-	-	16.81	24.00
	112	5560	13.71	13.35	-	-	16.55	24.00
	140	5700	14.01	13.68	-	-	16.86	24.00
	144	5720	13.93	13.47	-	-	16.72	22.79
	149	5745	13.83	13.68	-	-	16.77	30.00
	157	5785	13.87	13.74	-	-	16.82	30.00
	165	5825	13.82	13.88	-	-	16.86	30.00
802.11n HT40	38	5190	14.01	13.79	-	-	16.91	24.00
	46	5230	13.92	13.55	-	-	16.75	24.00
	54	5270	13.94	13.62	-	-	16.80	24.00
	62	5310	13.86	13.59	-	-	16.74	24.00
	102	5510	13.99	13.60	-	-	16.81	24.00
	110	5550	13.91	13.21	-	-	16.59	24.00
	134	5670	14.06	13.62	-	-	16.86	24.00
	142	5710	14.02	13.52	-	-	16.79	24.00
	151	5755	14.00	13.59	-	-	16.81	30.00
	159	5795	13.95	13.79	-	-	16.88	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	13.89	13.92	-	-	16.92	24.00
	40	5200	13.65	13.77	-	-	16.72	24.00
	48	5240	13.76	13.63	-	-	16.71	24.00
	52	5260	13.77	13.82	-	-	16.81	24.00
	56	5280	13.82	13.68	-	-	16.76	24.00
	64	5320	13.98	13.87	-	-	16.94	24.00
	100	5500	13.99	13.71	-	-	16.87	24.00
	112	5560	13.74	13.39	-	-	16.58	24.00
	140	5700	14.08	13.73	-	-	16.92	24.00
	144	5720	13.95	13.55	-	-	16.77	22.79
	149	5745	13.87	13.74	-	-	16.82	30.00
	157	5785	13.92	13.84	-	-	16.89	30.00
802.11ac VHT40	165	5825	13.91	13.97	-	-	16.95	30.00
	38	5190	14.06	13.87	-	-	16.97	24.00
	46	5230	14.01	13.67	-	-	16.85	24.00
	54	5270	14.00	13.72	-	-	16.87	24.00
	62	5310	13.94	13.67	-	-	16.82	24.00
	102	5510	14.09	13.68	-	-	16.90	24.00
	110	5550	13.99	13.32	-	-	16.68	24.00
	134	5670	14.15	13.75	-	-	16.96	24.00
	142	5710	14.12	13.62	-	-	16.89	24.00
	151	5755	14.10	13.73	-	-	16.93	30.00
802.11ac VHT80	159	5795	14.03	13.89	-	-	16.97	30.00
	42	5210	13.76	13.63	-	-	16.71	24.00
	58	5290	13.71	13.50	-	-	16.61	24.00
	106	5530	13.83	13.17	-	-	16.52	24.00
	122	5610	13.84	13.19	-	-	16.53	24.00
	138	5690	13.74	13.26	-	-	16.51	24.00
	155	5775	13.90	13.58	-	-	16.75	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	16.764	17.395	-	-	20.130	29.800	-	-
	40	5200	16.912	16.647	-	-	20.240	20.200	-	-
	48	5240	16.927	16.620	-	-	20.280	20.190	-	-
	52	5260	16.910	16.726	-	-	20.210	20.100	-	-
	56	5280	16.904	16.630	-	-	20.400	20.260	-	-
	64	5320	16.872	16.552	-	-	20.220	20.310	-	-
	100	5500	16.877	16.549	-	-	20.270	20.100	-	-
	112	5560	16.911	16.617	-	-	20.370	20.110	-	-
	140	5700	16.903	16.712	-	-	20.400	20.300	-	-
802.11ac VHT20	144	5720	13.443	13.267	-	-	15.180	14.960	-	-
	36	5180	17.775	18.324	-	-	20.560	31.550	-	-
	40	5200	17.788	17.625	-	-	20.590	20.350	-	-
	48	5240	17.799	17.569	-	-	20.660	20.010	-	-
	52	5260	17.752	17.605	-	-	20.510	20.190	-	-
	56	5280	17.811	17.619	-	-	20.640	20.230	-	-
	64	5320	17.787	17.598	-	-	20.630	20.260	-	-
	100	5500	17.820	17.601	-	-	20.540	20.150	-	-
	112	5560	17.798	17.590	-	-	20.530	20.230	-	-
802.11ac VHT40	140	5700	17.789	17.687	-	-	20.560	20.360	-	-
	144	5720	13.891	13.784	-	-	15.240	15.100	-	-
	38	5190	36.138	37.205	-	-	41.030	70.570	-	-
	46	5230	36.124	36.036	-	-	41.250	40.380	-	-
	54	5270	36.159	36.493	-	-	41.270	41.410	-	-
	62	5310	36.132	36.128	-	-	40.930	40.610	-	-
	102	5510	36.134	36.209	-	-	41.030	40.530	-	-
	110	5550	36.167	36.173	-	-	41.370	40.810	-	-
	134	5670	36.152	36.029	-	-	41.190	40.400	-	-
802.11ac VHT80	142	5710	32.964	32.935	-	-	35.650	35.030	-	-
	42	5210	75.562	75.708	-	-	81.780	81.110	-	-
	58	5290	75.554	75.881	-	-	81.900	81.540	-	-
	106	5530	75.589	75.883	-	-	82.050	81.640	-	-
	122	5610	75.296	75.273	-	-	81.360	80.820	-	-
802.11ac VHT80	138	5690	72.379	72.527	-	-	75.950	75.550	-	-

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	
802.11a	144	5720	3.994	3.980	-	-	3106	3115	-	-	≥ 500 kHz
	149	5745	17.067	16.728	-	-	15120	15130	-	-	
	157	5785	17.142	16.891	-	-	15120	16280	-	-	
	165	5825	17.104	16.778	-	-	15110	15130	-	-	
802.11ac VHT20	144	5720	4.166	4.170	-	-	3728	3736	-	-	
	149	5745	17.950	17.672	-	-	15140	15710	-	-	
	157	5785	17.970	17.781	-	-	15140	16530	-	-	
	165	5825	17.949	17.668	-	-	15130	15120	-	-	
802.11ac VHT40	142	5710	4.021	3.946	-	-	3107	3111	-	-	
	151	5755	36.136	36.221	-	-	35120	35080	-	-	
	159	5795	36.125	36.572	-	-	35130	35710	-	-	
802.11ac VHT80	138	5690	4.545	4.070	-	-	3101	3102	-	-	
	155	5775	75.463	75.534	-	-	75130	75200	-	-	

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		dBm/MHz	
802.11a	36	5180	3.499	3.151	-	-	0.098	6.436	11.000
	40	5200	2.950	2.992	-	-	0.098	6.079	11.000
	48	5240	3.832	3.092	-	-	0.098	6.586	11.000
	52	5260	3.294	3.177	-	-	0.098	6.344	11.000
	56	5280	3.489	3.066	-	-	0.098	6.390	11.000
	64	5320	3.130	3.052	-	-	0.098	6.199	11.000
	100	5500	3.384	3.088	-	-	0.098	6.346	11.000
	112	5560	3.434	2.963	-	-	0.098	6.313	11.000
	140	5700	3.553	2.636	-	-	0.098	6.226	11.000
	144	5720	3.511	3.235	-	-	0.098	6.483	11.000
802.11ac VHT20	36	5180	3.048	2.990	-	-	0.103	6.132	11.000
	40	5200	2.914	2.956	-	-	0.103	6.049	11.000
	48	5240	2.900	3.606	-	-	0.103	6.381	11.000
	52	5260	3.376	3.280	-	-	0.103	6.442	11.000
	56	5280	3.609	3.186	-	-	0.103	6.517	11.000
	64	5320	3.161	3.185	-	-	0.103	6.287	11.000
	100	5500	3.122	2.996	-	-	0.103	6.173	11.000
	112	5560	3.275	2.789	-	-	0.103	6.152	11.000
	140	5700	3.428	2.980	-	-	0.103	6.324	11.000
	144	5720	3.398	3.266	-	-	0.103	6.446	11.000
802.11ac VHT40	38	5190	0.123	-0.598	-	-	0.279	3.066	11.000
	46	5230	0.143	0.476	-	-	0.279	3.602	11.000
	54	5270	0.322	-0.629	-	-	0.279	3.162	11.000
	62	5310	0.097	0.092	-	-	0.279	3.383	11.000
	102	5510	0.454	0.031	-	-	0.279	3.537	11.000
	110	5550	0.213	-0.021	-	-	0.279	3.386	11.000
	134	5670	0.148	0.006	-	-	0.279	3.366	11.000
	142	5710	0.265	-0.114	-	-	0.279	3.369	11.000
802.11ac VHT80	42	5210	-3.765	-3.986	-	-	0.156	-0.707	11.000
	58	5290	-3.250	-4.285	-	-	0.156	-0.570	11.000
	106	5530	-2.967	-4.404	-	-	0.156	-0.460	11.000
	122	5610	-1.901	-3.217	-	-	0.156	0.657	11.000
	138	5690	-2.616	-3.344	-	-	0.156	0.202	11.000

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

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	dBm/500 kHz	
802.11a	144	5720	-7.538	-0.451	-6.903	0.185	-	-	-	-	0.098	2.889	30.00	PASS
	149	5745	-5.175	1.913	-5.600	1.488	-	-	-	-	0.098	4.716	30.00	PASS
	157	5785	-5.210	1.877	-5.410	1.677	-	-	-	-	0.098	4.788	30.00	PASS
	165	5825	-4.746	2.341	-5.480	1.608	-	-	-	-	0.098	5.000	30.00	PASS
802.11ac VHT20	144	5720	-7.808	-0.715	-7.434	-0.341	-	-	-	-	0.103	2.487	30.00	PASS
	149	5745	-5.060	2.033	-5.036	2.057	-	-	-	-	0.103	5.055	30.00	PASS
	157	5785	-5.749	1.344	-5.253	1.840	-	-	-	-	0.103	4.609	30.00	PASS
	165	5825	-5.565	1.528	-5.040	2.053	-	-	-	-	0.103	4.809	30.00	PASS
802.11ac VHT40	142	5710	-11.800	-4.532	-10.355	-3.087	-	-	-	-	0.279	-0.739	30.00	PASS
	151	5755	-8.500	-1.232	-8.548	-1.280	-	-	-	-	0.279	1.755	30.00	PASS
	159	5795	-8.876	-1.608	-8.555	-1.286	-	-	-	-	0.279	1.566	30.00	PASS
802.11ac VHT80	138	5690	-14.758	-7.612	-14.638	-7.492	-	-	-	-	0.156	-4.542	30.00	PASS
	155	5775	-11.925	-4.779	-12.223	-5.077	-	-	-	-	0.156	-1.915	30.00	PASS

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

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