

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	1.416	1.448	97.790	0.097	0.706
802.11n HT20	5180	0.685	0.725	94.483	0.246	1.460
802.11n HT40	5190	0.354	0.396	89.394	0.487	2.825
802.11ac VHT20	5180	1.328	1.360	97.647	0.103	0.753
802.11ac VHT40	5190	0.660	0.700	94.286	0.256	1.515
802.11ac VHT80	5210	1.150	1.190	96.639	0.148	0.870

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	13	13	-	-	ADB
	40	5200	15	15	-	-	
	48	5240	15	15	-	-	
	52	5260	15	15	-	-	
	56	5280	16	16	-	-	
	64	5320	13	13	-	-	
	100	5500	11	11	-	-	
	112	5560	10	10	-	-	
	140	5700	10	10	-	-	
	144	5720	11	11	-	-	
	144	5720	11	11	-	-	
	149	5745	12	12	-	-	
	157	5785	12	12	-	-	
	165	5825	13	13	-	-	
802.11n HT20	36	5180	12	12	-	-	ADB
	40	5200	15	15	-	-	
	48	5240	13	13	-	-	
	52	5260	15	15	-	-	
	56	5280	15	15	-	-	
	64	5320	12	12	-	-	
	100	5500	11	11	-	-	
	112	5560	11	11	-	-	
	140	5700	10	10	-	-	
	144	5720	11	11	-	-	
	144	5720	11	11	-	-	
	149	5745	12	12	-	-	
	157	5785	12	12	-	-	
	165	5825	13	13	-	-	
802.11n HT40	38	5190	11	11	-	-	ADB
	46	5230	14	14	-	-	
	54	5270	16	16	-	-	
	62	5310	13	13	-	-	
	102	5510	12	12	-	-	
	110	5550	12	12	-	-	
	134	5670	11	11	-	-	
	142	5710	12	12	-	-	
	142	5710	12	12	-	-	
	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	12	12	-	-	ADB
	40	5200	15	15	-	-	
	48	5240	13	13	-	-	
	52	5260	15	15	-	-	
	56	5280	15	15	-	-	
	64	5320	12	12	-	-	
	100	5500	11	11	-	-	
	112	5560	11	11	-	-	
	140	5700	10	10	-	-	
	144	5720	11	11	-	-	
	144	5720	11	11	-	-	
	149	5745	12	12	-	-	
	157	5785	12	12	-	-	
	165	5825	13	13	-	-	
802.11ac VHT40	38	5190	11	11	-	-	ADB
	46	5230	14	14	-	-	
	54	5270	16	16	-	-	
	62	5310	13	13	-	-	
	102	5510	12	12	-	-	
	110	5550	12	12	-	-	
	134	5670	11	11	-	-	
	142	5710	12	12	-	-	
	142	5710	12	12	-	-	
	151	5755	13	13	-	-	
	159	5795	13	13	-	-	
802.11ac VHT80	42	5210	8	8	-	-	ADB
	58	5290	12	12	-	-	
	106	5530	12	12	-	-	
	122	5610	14	14	-	-	
	138	5690	13	13	-	-	
	138	5690	13	13	-	-	
	155	5775	15	15	-	-	

Maximum Conducted Output Power Measurement									
Band	Date Rate or Sub-test	CH	Frequency (MHz)	Average power					Limit
				Ant-0	Ant-1	Ant-2	Ant-3	Total	
				dBm	dBm	dBm	dBm	dBm	
802.11a	6M	36	5180	12.63	13.95	-	-	16.35	24.00
		40	5200	14.31	15.43	-	-	17.92	24.00
		48	5240	14.33	14.96	-	-	17.67	24.00
		52	5260	13.59	14.53	-	-	17.10	24.00
		56	5280	14.61	15.17	-	-	17.91	24.00
		64	5320	12.16	13.18	-	-	15.71	24.00
		100	5500	10.27	9.97	-	-	13.13	23.99
		112	5560	8.75	9.06	-	-	11.92	23.99
		140	5700	8.79	9.68	-	-	12.27	23.99
		144	5720	8.54	9.45	-	-	12.02	22.78
		144	5720	0.96	1.95	-	-	4.49	30.00
		149	5745	10.67	11.84	-	-	14.30	30.00
		157	5785	10.69	11.77	-	-	14.27	30.00
		165	5825	11.64	12.87	-	-	15.31	30.00
802.11n HT20	13M	36	5180	11.99	13.05	-	-	15.56	22.35
		40	5200	14.33	15.70	-	-	18.08	22.35
		48	5240	12.61	13.46	-	-	16.07	22.35
		52	5260	13.96	14.66	-	-	17.33	22.35
		56	5280	13.91	14.70	-	-	17.33	22.35
		64	5320	11.31	12.41	-	-	14.91	22.35
		100	5500	10.45	10.23	-	-	13.35	22.35
		112	5560	10.37	10.25	-	-	13.32	22.35
		140	5700	8.90	10.06	-	-	12.53	22.35
		144	5720	8.63	9.65	-	-	12.18	21.11
		144	5720	1.31	2.48	-	-	4.94	28.35
		149	5745	10.76	12.04	-	-	14.46	28.35
		157	5785	10.84	12.17	-	-	14.57	28.35
		165	5825	11.72	13.40	-	-	15.65	28.35
802.11n HT40	27M	38	5190	10.62	11.90	-	-	14.32	22.35
		46	5230	13.07	14.32	-	-	16.75	22.35
		54	5270	14.50	15.28	-	-	17.92	22.35
		62	5310	11.90	12.95	-	-	15.47	22.35
		102	5510	10.96	10.80	-	-	13.89	22.35
		110	5550	10.56	10.97	-	-	13.78	22.35
		134	5670	9.67	10.31	-	-	13.01	22.35
		142	5710	9.85	10.70	-	-	13.31	22.35
		142	5710	-2.35	-2.57	-	-	0.55	28.35
		151	5755	11.56	12.72	-	-	15.19	28.35
		159	5795	11.50	12.72	-	-	15.16	28.35

Band	Date Rate or Sub-test	CH	Frequency (MHz)	Average power					Limit
				Ant-0	Ant-1	Ant-2	Ant-3	Total	
				dBm	dBm	dBm	dBm	dBm	dBm
802.11ac VHT20	13M	36	5180	12.11	13.26	-	-	15.73	22.35
		40	5200	14.53	15.93	-	-	18.30	22.35
		48	5240	12.75	13.65	-	-	16.23	22.35
		52	5260	14.13	14.78	-	-	17.48	22.35
		56	5280	14.11	14.82	-	-	17.49	22.35
		64	5320	11.54	12.63	-	-	15.13	22.35
		100	5500	10.57	10.41	-	-	13.50	22.35
		112	5560	10.63	10.38	-	-	13.52	22.35
		140	5700	9.13	10.23	-	-	12.73	22.35
		144	5720	8.70	10.01	-	-	12.41	21.11
		144	5720	1.45	2.90	-	-	5.25	28.35
		149	5745	10.91	12.33	-	-	14.69	28.35
		157	5785	11.04	12.42	-	-	14.79	28.35
		165	5825	12.01	13.57	-	-	15.87	28.35
802.11ac VHT40	27M	38	5190	10.82	12.03	-	-	14.48	22.35
		46	5230	13.32	14.52	-	-	16.97	22.35
		54	5270	14.71	15.41	-	-	18.08	22.35
		62	5310	12.17	13.07	-	-	15.65	22.35
		102	5510	11.14	11.07	-	-	14.12	22.35
		110	5550	10.68	11.13	-	-	13.92	22.35
		134	5670	9.78	10.49	-	-	13.16	22.35
		142	5710	10.10	10.93	-	-	13.54	22.35
		142	5710	-2.32	-1.19	-	-	1.29	28.35
		151	5755	11.84	12.90	-	-	15.41	28.35
		159	5795	11.80	12.96	-	-	15.43	28.35
802.11ac VHT80	58.6M	42	5210	8.06	9.03	-	-	11.58	22.35
		58	5290	10.99	11.83	-	-	14.44	22.35
		106	5530	10.98	10.82	-	-	13.91	22.35
		122	5610	12.43	12.62	-	-	15.54	22.35
		138	5690	10.94	11.55	-	-	14.26	22.35
		138	5690	-4.51	-3.21	-	-	-0.80	28.35
		155	5775	13.51	14.57	-	-	17.08	28.35

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	16.861	16.603	-	-	20.090	20.100	-	-
	40	5200	18.575	18.269	-	-	35.470	33.020	-	-
	48	5240	18.993	18.753	-	-	35.520	33.130	-	-
	52	5260	18.897	18.490	-	-	34.730	33.070	-	-
	56	5280	20.815	20.124	-	-	35.930	35.450	-	-
	64	5320	16.881	16.564	-	-	20.220	20.040	-	-
	100	5500	16.843	16.567	-	-	20.210	20.120	-	-
	112	5560	16.939	16.571	-	-	20.240	19.900	-	-
	140	5700	16.848	16.603	-	-	20.180	20.160	-	-
	144	5720	13.404	13.269	-	-	15.160	15.080	-	-

802.11ac VHT20	36	5180	17.782	17.608	-	-	20.600	20.060	-	-
	40	5200	21.050	19.533	-	-	37.920	37.080	-	-
	48	5240	18.633	18.137	-	-	34.770	30.590	-	-
	52	5260	21.219	20.239	-	-	38.290	37.760	-	-
	56	5280	21.269	20.178	-	-	38.520	37.870	-	-
	64	5320	17.801	17.622	-	-	20.650	20.240	-	-
	100	5500	17.800	17.616	-	-	20.610	20.200	-	-
	112	5560	17.869	17.643	-	-	20.730	20.270	-	-
	140	5700	17.815	17.634	-	-	20.640	20.120	-	-
	144	5720	13.855	13.790	-	-	15.220	14.990	-	-
802.11ac VHT40	38	5190	36.186	36.170	-	-	40.890	40.400	-	-
	46	5230	37.443	37.118	-	-	73.080	70.540	-	-
	54	5270	44.419	42.639	-	-	81.320	75.150	-	-
	62	5310	36.084	36.217	-	-	41.040	40.580	-	-
	102	5510	36.092	36.216	-	-	41.050	40.580	-	-
	110	5550	36.324	36.302	-	-	46.160	40.720	-	-
	134	5670	36.169	36.301	-	-	41.560	40.590	-	-
	142	5710	32.926	32.839	-	-	35.650	35.190	-	-
802.11ac VHT80	42	5210	75.677	75.253	-	-	82.100	80.380	-	-
	58	5290	75.534	75.257	-	-	81.610	80.570	-	-
	106	5530	75.520	75.201	-	-	81.860	80.410	-	-
	122	5610	76.022	75.451	-	-	96.860	81.060	-	-
	138	5690	72.322	72.051	-	-	76.070	75.050	-	-

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	kHz
802.11a	144	5720	4.071	3.946	-	-	3132	3155	-	-	≥ 500 kHz
	149	5745	17.124	16.775	-	-	15110	15140	-	-	
	157	5785	17.105	16.795	-	-	15100	15150	-	-	
	165	5825	17.110	16.726	-	-	15140	15110	-	-	
802.11ac VHT20	144	5720	4.288	4.191	-	-	3766	3757	-	-	
	149	5745	18.035	17.706	-	-	15110	15120	-	-	
	157	5785	18.007	17.670	-	-	15130	15720	-	-	
	165	5825	18.009	17.697	-	-	15140	15100	-	-	
802.11ac VHT40	142	5710	4.635	3.977	-	-	3139	3154	-	-	
	151	5755	36.294	36.362	-	-	35130	35120	-	-	
	159	5795	36.200	36.399	-	-	35130	35120	-	-	
802.11ac VHT80	138	5690	13.875	4.733	-	-	3151	3148	-	-	
	155	5775	75.773	75.281	-	-	75060	75130	-	-	

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	2.135	3.233	-	-	0.097	5.826	9.350
	40	5200	3.575	4.763	-	-	0.097	7.317	9.350
	48	5240	3.331	4.360	-	-	0.097	6.983	9.350
	52	5260	3.014	3.757	-	-	0.097	6.509	9.350
	56	5280	3.986	4.444	-	-	0.097	7.328	9.350
	64	5320	1.311	2.359	-	-	0.097	4.974	9.350
	100	5500	-0.399	-1.178	-	-	0.097	2.336	9.350
	112	5560	-1.903	-1.728	-	-	0.097	1.293	9.350
	140	5700	-1.711	-1.436	-	-	0.097	1.536	9.350
	144	5720	-1.080	-0.269	-	-	0.097	2.452	9.350

802.11ac VHT20	36	5180	1.479	2.468	-	-	0.103	5.115	9.350
	40	5200	3.525	4.841	-	-	0.103	7.346	9.350
	48	5240	3.600	4.629	-	-	0.103	7.259	9.350
	52	5260	3.203	4.030	-	-	0.103	6.750	9.350
	56	5280	3.288	4.042	-	-	0.103	6.795	9.350
	64	5320	0.933	1.618	-	-	0.103	4.403	9.350
	100	5500	-0.193	-0.550	-	-	0.103	2.746	9.350
	112	5560	-0.898	-0.519	-	-	0.103	2.409	9.350
	140	5700	-1.710	-0.872	-	-	0.103	1.843	9.350
	144	5720	-0.791	0.318	-	-	0.103	2.913	9.350
802.11ac VHT40	38	5190	-3.075	-2.293	-	-	0.256	0.599	9.350
	46	5230	0.268	0.815	-	-	0.256	3.816	9.350
	54	5270	0.748	1.458	-	-	0.256	4.383	9.350
	62	5310	-1.888	-0.983	-	-	0.256	1.854	9.350
	102	5510	-2.919	-3.223	-	-	0.256	0.198	9.350
	110	5550	-3.295	-3.203	-	-	0.256	0.017	9.350
	134	5670	-4.305	-3.881	-	-	0.256	-0.822	9.350
	142	5710	-2.985	-2.236	-	-	0.256	0.671	9.350
802.11ac VHT80	42	5210	-9.102	-8.077	-	-	0.148	-5.401	9.350
	58	5290	-5.867	-5.084	-	-	0.148	-2.299	9.350
	106	5530	-5.895	-6.273	-	-	0.148	-2.921	9.350
	122	5610	-4.480	-4.363	-	-	0.148	-1.262	9.350
	138	5690	-5.493	-4.669	-	-	0.148	-1.903	9.350

Band III Power Spectral Density Measurement														
Band	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	-11.651	-4.661	-10.740	-3.750	-	-	-	-	0.097	-1.075	28.35	PASS
	149	5745	-8.705	-1.715	-7.969	-0.979	-	-	-	-	0.097	1.776	28.35	PASS
	157	5785	-9.154	-2.164	-8.026	-1.036	-	-	-	-	0.097	1.544	28.35	PASS
	165	5825	-7.807	-0.817	-6.473	0.517	-	-	-	-	0.097	3.008	28.35	PASS
802.11ac VHT20	144	5720	-11.737	-4.747	-10.721	-3.731	-	-	-	-	0.103	-1.096	28.35	PASS
	149	5745	-8.500	-1.510	-7.227	-0.237	-	-	-	-	0.103	2.286	28.35	PASS
	157	5785	-9.085	-2.095	-7.306	-0.316	-	-	-	-	0.103	1.998	28.35	PASS
	165	5825	-7.844	-0.854	-6.038	0.952	-	-	-	-	0.103	3.256	28.35	PASS
802.11ac VHT40	142	5710	-15.351	-8.361	-14.579	-7.589	-	-	-	-	0.256	-4.692	28.35	PASS
	151	5755	-10.609	-3.619	-10.051	-3.061	-	-	-	-	0.256	-0.066	28.35	PASS
	159	5795	-11.376	-4.386	-10.044	-3.054	-	-	-	-	0.256	-0.404	28.35	PASS
802.11ac VHT80	138	5690	-17.654	-10.664	-17.099	-10.109	-	-	-	-	0.148	-7.219	28.35	PASS
	155	5775	-12.497	-5.507	-11.258	-4.268	-	-	-	-	0.148	-1.685	28.35	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)