

Appendix A. Test Data

SISO

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	2.000	2.040	98.039	0.086	0.010
802.11n HT20	5180	5.490	6.800	80.735	0.929	0.182
802.11n HT40	5190	5.490	6.920	79.335	1.005	0.182
802.11ac VHT20	5180	5.490	6.850	80.146	0.961	0.182
802.11ac VHT40	5190	5.490	6.830	80.381	0.948	0.182
802.11ac VHT80	5210	5.490	6.800	80.735	0.929	0.182
802.11ax HE20	5180	5.520	6.860	80.466	0.944	0.181
802.11ax HE40	5190	5.520	6.860	80.466	0.944	0.181
802.11ax HE80	5210	5.490	6.830	80.381	0.948	0.182

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	40	-	-	-	Tera Term v4.06
	40	5200	40	-	-	-	
	48	5240	52	-	-	-	
	149	5745	54	-	-	-	
	157	5785	54	-	-	-	
	165	5825	54	-	-	-	
802.11n HT20	36	5180	43	-	-	-	Tera Term v4.06
	40	5200	43	-	-	-	
	48	5240	53	-	-	-	
	149	5745	54	-	-	-	
	157	5785	54	-	-	-	
	165	5825	54	-	-	-	
802.11n HT40	38	5190	34	-	-	-	Tera Term v4.06
	46	5230	46	-	-	-	
	151	5755	54	-	-	-	
	159	5795	54	-	-	-	
802.11ac VHT20	36	5180	43	-	-	-	Tera Term v4.06
	40	5200	43	-	-	-	
	48	5240	53	-	-	-	
	149	5745	54	-	-	-	
	157	5785	54	-	-	-	
	165	5825	54	-	-	-	
802.11ac VHT40	38	5190	34	-	-	-	Tera Term v4.06
	46	5230	46	-	-	-	
	151	5755	54	-	-	-	
	159	5795	54	-	-	-	
802.11ac VHT80	42	5210	31	-	-	-	Tera Term v4.06
	155	5775	48	-	-	-	
802.11ax HE20	36	5180	39	-	-	-	Tera Term v4.06
	40	5200	39	-	-	-	
	48	5240	52	-	-	-	
	149	5745	54	-	-	-	
	157	5785	54	-	-	-	
	165	5825	54	-	-	-	
802.11ax HE40	38	5190	33	-	-	-	Tera Term v4.06
	46	5230	45	-	-	-	
	151	5755	54	-	-	-	
	159	5795	54	-	-	-	
802.11ax HE80	42	5210	29	-	-	-	Tera Term v4.06
	155	5775	47	-	-	-	

Maximum Conducted Output Power Measurement							
Mode	CH	Frequency (MHz)	Average power				Limit
			Ant-0	Ant-1	Ant-2	Ant-3	
			dBm	dBm	dBm	dBm	
802.11a	36	5180	18.47	-	-	-	29.00
	40	5200	18.66	-	-	-	29.00
	48	5240	24.63	-	-	-	29.00
	149	5745	25.36	-	-	-	30.00
	157	5785	25.83	-	-	-	30.00
	165	5825	25.65	-	-	-	30.00
802.11n HT20	36	5180	19.94	-	-	-	29.00
	40	5200	20.17	-	-	-	29.00
	48	5240	25.10	-	-	-	29.00
	149	5745	25.09	-	-	-	30.00
	157	5785	25.72	-	-	-	30.00
	165	5825	25.45	-	-	-	30.00
802.11n HT40	38	5190	16.00	-	-	-	29.00
	46	5230	22.06	-	-	-	29.00
	151	5755	25.92	-	-	-	30.00
	159	5795	26.69	-	-	-	30.00
802.11ac VHT20	36	5180	19.87	-	-	-	29.00
	40	5200	20.07	-	-	-	29.00
	48	5240	25.05	-	-	-	29.00
	149	5745	24.93	-	-	-	30.00
	157	5785	25.61	-	-	-	30.00
	165	5825	25.40	-	-	-	30.00
802.11ac VHT40	38	5190	15.69	-	-	-	29.00
	46	5230	21.75	-	-	-	29.00
	151	5755	25.78	-	-	-	30.00
	159	5795	26.38	-	-	-	30.00
802.11ac VHT80	42	5210	14.44	-	-	-	29.00
	155	5775	23.64	-	-	-	30.00
802.11ax HE20	36	5180	18.21	-	-	-	29.00
	40	5200	18.37	-	-	-	29.00
	48	5240	24.78	-	-	-	29.00
	149	5745	25.75	-	-	-	30.00
	157	5785	26.29	-	-	-	30.00
	165	5825	26.12	-	-	-	30.00
802.11ax HE40	38	5190	15.99	-	-	-	29.00
	46	5230	21.58	-	-	-	29.00
	151	5755	26.32	-	-	-	30.00
	159	5795	26.63	-	-	-	30.00
802.11ax HE80	42	5210	13.57	-	-	-	29.00
	155	5775	23.67	-	-	-	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	16.467	-	-	-	19.430	-	-	-
	40	5200	16.477	-	-	-	19.480	-	-	-
	48	5240	16.696	-	-	-	21.320	-	-	-
802.11n HT20	36	5180	17.665	-	-	-	20.880	-	-	-
	40	5200	17.616	-	-	-	20.850	-	-	-
	48	5240	17.757	-	-	-	22.650	-	-	-
802.11n HT40	38	5190	36.044	-	-	-	40.430	-	-	-
	46	5230	36.416	-	-	-	54.840	-	-	-
802.11ac VHT80	42	5210	75.437	-	-	-	82.950	-	-	-
802.11ax HE20	36	5180	18.963	-	-	-	21.230	-	-	-
	40	5200	18.948	-	-	-	21.180	-	-	-
	48	5240	19.059	-	-	-	22.410	-	-	-
802.11ax HE40	38	5190	37.712	-	-	-	40.530	-	-	-
	46	5230	37.868	-	-	-	41.170	-	-	-
802.11ax HE80	42	5210	77.089	-	-	-	83.710	-	-	-

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	149	5745	16.934	-	-	-	16040	-	-	-	>500
	157	5785	17.078	-	-	-	16050	-	-	-	
	165	5825	17.178	-	-	-	16040	-	-	-	
802.11n HT20	149	5745	17.882	-	-	-	16920	-	-	-	
	157	5785	17.946	-	-	-	17150	-	-	-	
	165	5825	17.986	-	-	-	17550	-	-	-	
802.11n HT40	151	5755	36.622	-	-	-	35340	-	-	-	
	159	5795	36.932	-	-	-	35460	-	-	-	
802.11ac VHT80	155	5775	75.279	-	-	-	75380	-	-	-	
802.11ax HE20	149	5745	19.115	-	-	-	18530	-	-	-	
	157	5785	19.187	-	-	-	18410	-	-	-	
	165	5825	19.221	-	-	-	18120	-	-	-	
802.11ax HE40	151	5755	38.268	-	-	-	37560	-	-	-	
	159	5795	38.420	-	-	-	36790	-	-	-	
802.11ax HE80	155	5775	77.642	-	-	-	77230	-	-	-	

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	8.051	-	-	-	0.086	8.137	16.000
	40	5200	8.064	-	-	-	0.086	8.150	16.000
	48	5240	12.115	-	-	-	0.086	12.201	16.000
802.11n HT20	36	5180	8.367	-	-	-	0.929	9.296	16.000
	40	5200	8.579	-	-	-	0.929	9.509	16.000
	48	5240	10.866	-	-	-	0.929	11.796	16.000
802.11n HT40	38	5190	1.397	-	-	-	1.005	2.403	16.000
	46	5230	7.828	-	-	-	1.005	8.834	16.000
802.11ac VHT80	42	5210	-2.631	-	-	-	0.929	-1.702	16.000
802.11ax HE20	36	5180	6.788	-	-	-	0.944	7.732	16.000
	40	5200	6.642	-	-	-	0.944	7.586	16.000
	48	5240	11.027	-	-	-	0.944	11.970	16.000
802.11ax HE40	38	5190	1.405	-	-	-	0.944	2.349	16.000
	46	5230	6.977	-	-	-	0.944	7.921	16.000
802.11ax HE80	42	5210	-3.086	-	-	-	0.948	-2.137	16.000

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	Limit	PASS/FAIL
			Ant-0		Ant-1		Ant-2		Ant-3				
			dBm/100 kHz	dBm/500 kHz	dBm/100 kHz	dBm/500 kHz	dBm/100 kHz	dBm/500 kHz	dBm/100 kHz	dBm/500 kHz			
802.11a	149	5745	5.932	13.008	-	-	-	-	-	-	0.086	30.00	PASS
	157	5785	5.877	12.953	-	-	-	-	-	-	0.086	30.00	PASS
	165	5825	5.615	12.691	-	-	-	-	-	-	0.086	30.00	PASS
802.11n HT20	149	5745	4.502	12.421	-	-	-	-	-	-	0.929	30.00	PASS
	157	5785	4.867	12.786	-	-	-	-	-	-	0.929	30.00	PASS
	165	5825	4.784	12.703	-	-	-	-	-	-	0.929	30.00	PASS
802.11n HT40	151	5755	2.391	10.386	-	-	-	-	-	-	1.005	30.00	PASS
	159	5795	2.129	10.124	-	-	-	-	-	-	1.005	30.00	PASS
802.11ac VHT80	155	5775	-3.719	4.200	-	-	-	-	-	-	0.929	30.00	PASS
802.11ax HE20	149	5745	3.890	11.823	-	-	-	-	-	-	0.944	30.00	PASS
	157	5785	3.777	11.710	-	-	-	-	-	-	0.944	30.00	PASS
	165	5825	3.652	11.586	-	-	-	-	-	-	0.944	30.00	PASS
802.11ax HE40	151	5755	1.560	9.493	-	-	-	-	-	-	0.944	30.00	PASS
	159	5795	1.226	9.160	-	-	-	-	-	-	0.944	30.00	PASS
802.11ax HE80	155	5775	-1.468	6.470	-	-	-	-	-	-	0.948	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)

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Duty cycle						
Mode	Frequency (MHz)	on time (ms)	on+off time (ms)	Duty cycle (%)	Duty Factor (dB)	1/T Minimun VBW (kHz)
802.11n HT20	5180	5.490	6.800	80.735	0.929	0.182
802.11n HT40	5190	5.490	6.920	79.335	1.005	0.182
802.11ac VHT20	5180	5.490	6.850	80.146	0.961	0.182
802.11ac VHT40	5190	5.490	6.830	80.381	0.948	0.182
802.11ac VHT80	5210	5.490	6.800	80.735	0.929	0.182
802.11ax HE20	5180	5.520	6.860	80.466	0.944	0.181
802.11ax HE40	5190	5.520	6.860	80.466	0.944	0.181
802.11ax HE80	5210	5.490	6.830	80.381	0.948	0.182

RF power setting in Test SW

Mode	CH	Frequency (MHz)	Ant-0	Ant-1	Ant-2	Ant-3	Test SW Version
802.11n HT20	36	5180	41	41	-	-	Tera Term v4.06
	40	5200	41	41	-	-	
	48	5240	53	53	-	-	
	149	5745	54	54	-	-	
	157	5785	54	54	-	-	
	165	5825	54	54	-	-	
802.11n HT40	38	5190	32	32	-	-	Tera Term v4.06
	46	5230	45	45	-	-	
	151	5755	54	54	-	-	
	159	5795	54	54	-	-	
802.11ac VHT20	36	5180	41	41	-	-	Tera Term v4.06
	40	5200	41	41	-	-	
	48	5240	53	53	-	-	
	149	5745	54	54	-	-	
	157	5785	54	54	-	-	
	165	5825	54	54	-	-	
802.11ac VHT40	38	5190	32	32	-	-	Tera Term v4.06
	46	5230	45	45	-	-	
	151	5755	54	54	-	-	
	159	5795	54	54	-	-	
802.11ac VHT80	42	5210	30	30	-	-	Tera Term v4.06
	155	5775	47	47	-	-	
802.11ax HE20	36	5180	37	37	-	-	Tera Term v4.06
	40	5200	37	37	-	-	
	48	5240	53	53	-	-	
	149	5745	54	54	-	-	
	157	5785	54	54	-	-	
	165	5825	54	54	-	-	
802.11ax HE40	38	5190	32	32	-	-	Tera Term v4.06
	46	5230	44	44	-	-	
	151	5755	54	54	-	-	
	159	5795	54	54	-	-	
802.11ax HE80	42	5210	28	28	-	-	Tera Term v4.06
	155	5775	46	46	-	-	

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
802.11n HT20	36	5180	18.66	18.64	-	-	21.66	29.00
	40	5200	19.01	18.62	-	-	21.83	29.00
	48	5240	25.25	25.14	-	-	28.21	29.00
	149	5745	25.09	25.05	-	-	28.08	30.00
	157	5785	25.72	25.24	-	-	28.50	30.00
	165	5825	25.45	25.27	-	-	28.37	30.00
802.11n HT40	38	5190	14.78	14.62	-	-	17.71	29.00
	46	5230	21.83	21.67	-	-	24.76	29.00
	151	5755	25.92	25.76	-	-	28.85	30.00
	159	5795	26.69	26.26	-	-	29.49	30.00
802.11ac VHT20	36	5180	18.55	18.60	-	-	21.59	29.00
	40	5200	18.89	18.51	-	-	21.72	29.00
	48	5240	25.23	25.12	-	-	28.19	29.00
	149	5745	24.99	25.02	-	-	28.02	30.00
	157	5785	25.68	25.14	-	-	28.43	30.00
	165	5825	25.33	25.15	-	-	28.25	30.00
802.11ac VHT40	38	5190	14.63	14.47	-	-	17.56	29.00
	46	5230	21.74	21.58	-	-	24.67	29.00
	151	5755	25.78	25.57	-	-	28.69	30.00
	159	5795	26.56	26.14	-	-	29.36	30.00
802.11ac VHT80	42	5210	13.84	13.41	-	-	16.64	29.00
	155	5775	23.24	22.85	-	-	26.06	30.00
802.11ax HE20	36	5180	17.00	16.95	-	-	19.99	29.00
	40	5200	17.11	16.93	-	-	20.04	29.00
	48	5240	25.30	25.23	-	-	28.28	29.00
	149	5745	25.75	25.65	-	-	28.71	30.00
	157	5785	26.29	25.91	-	-	29.12	30.00
	165	5825	26.12	25.79	-	-	28.97	30.00
802.11ax HE40	38	5190	14.85	14.78	-	-	17.83	29.00
	46	5230	21.51	21.23	-	-	24.39	29.00
	151	5755	26.32	26.06	-	-	29.21	30.00
	159	5795	26.63	26.25	-	-	29.46	30.00
802.11ax HE80	42	5210	13.18	12.72	-	-	15.96	29.00
	155	5775	23.18	22.79	-	-	26.00	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
802.11n HT20	36	5180	17.640	17.610	-	-	21.050	19.900	-	-
	40	5200	17.630	17.598	-	-	20.670	20.100	-	-
	48	5240	17.638	17.602	-	-	20.920	20.220	-	-
802.11n HT40	38	5190	36.036	35.972	-	-	40.120	39.780	-	-
	46	5230	36.178	35.982	-	-	40.950	39.700	-	-
802.11ac VHT80	42	5210	75.490	75.482	-	-	82.950	82.010	-	-
802.11ax HE20	36	5180	18.968	18.964	-	-	21.220	21.310	-	-
	40	5200	18.968	18.965	-	-	21.280	21.250	-	-
	48	5240	18.935	18.956	-	-	21.280	21.300	-	-
802.11ax HE40	38	5190	37.763	37.754	-	-	40.640	40.830	-	-
	46	5230	37.781	37.685	-	-	40.790	40.600	-	-
802.11ax HE80	42	5210	77.411	77.313	-	-	82.800	82.960	-	-

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	
802.11n HT20	149	5745	17.924	17.737	-	-	16800	17560.000	-	-	≥ 500 kHz
	157	5785	18.008	17.841	-	-	17180	17540.000	-	-	
	165	5825	18.082	17.779	-	-	16930	17570.000	-	-	
802.11n HT40	151	5755	36.647	36.407	-	-	35540	35950.000	-	-	
	159	5795	37.180	36.814	-	-	35690	36300.000	-	-	
802.11ac VHT20	149	5745	20.000	20.000	-	-	20	20	-	-	
	157	5785	20.000	20.000	-	-	20	20	-	-	
	165	5825	20.000	20.000	-	-	20	20	-	-	
802.11ac VHT40	151	5755	20.000	20.000	-	-	20	20	-	-	
	159	5795	20.000	20.000	-	-	20	20	-	-	
802.11ac VHT80	155	5775	75.293	75.354	-	-	75140	75100	-	-	
802.11ax HE20	149	5745	19.181	19.139	-	-	18460	18290	-	-	
	157	5785	19.168	19.260	-	-	18610	18300	-	-	
	165	5825	19.220	19.171	-	-	18480	17810	-	-	
802.11ax HE40	151	5755	38.355	38.163	-	-	37250	36720	-	-	
	159	5795	38.306	38.466	-	-	37380	37110	-	-	
802.11ax HE80	155	5775	76.960	77.040	-	-	77360	76350	-	-	

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	
802.11n HT20	36	5180	8.006	7.073	-	-	0.929	11.504	16.000
	40	5200	7.629	7.426	-	-	0.929	11.468	16.000
	48	5240	8.152	8.464	-	-	0.929	12.250	16.000
802.11n HT40	38	5190	0.506	0.364	-	-	1.005	4.451	16.000
	46	5230	5.267	5.593	-	-	1.005	9.448	16.000
802.11ac VHT80	42	5210	-3.325	-4.502	-	-	0.929	0.066	16.000
802.11ax HE20	36	5180	5.304	5.519	-	-	0.944	9.367	16.000
	40	5200	5.728	4.904	-	-	0.944	9.290	16.000
	48	5240	8.537	8.540	-	-	0.944	12.493	16.000
802.11ax HE40	38	5190	0.575	0.520	-	-	0.944	4.502	16.000
	46	5230	5.290	5.601	-	-	0.944	9.402	16.000
802.11ax HE80	42	5210	-4.224	-4.346	-	-	0.948	-0.326	16.000

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	
802.11n HT20	149	5745	4.477	12.396	4.410	12.329	-	-	-	-	0.929	15.373	30.00	PASS
	157	5785	4.412	12.331	4.923	12.842	-	-	-	-	0.929	15.605	30.00	PASS
	165	5825	4.592	12.511	4.421	12.340	-	-	-	-	0.929	15.437	30.00	PASS
802.11n HT40	151	5755	2.139	10.134	1.960	9.955	-	-	-	-	1.005	13.056	30.00	PASS
	159	5795	2.033	10.028	2.404	10.399	-	-	-	-	1.005	13.228	30.00	PASS
802.11ac VHT80	155	5775	-4.372	3.547	-3.873	4.046	-	-	-	-	0.929	6.814	30.00	PASS
802.11ax HE20	149	5745	3.478	11.411	3.328	11.262	-	-	-	-	0.944	14.347	30.00	PASS
	157	5785	3.632	11.566	3.964	11.898	-	-	-	-	0.944	14.745	30.00	PASS
	165	5825	3.283	11.217	3.002	10.935	-	-	-	-	0.944	14.089	30.00	PASS
802.11ax HE40	151	5755	1.408	9.341	1.283	9.217	-	-	-	-	0.944	12.290	30.00	PASS
	159	5795	0.512	8.445	1.717	9.651	-	-	-	-	0.944	12.100	30.00	PASS
802.11ax HE80	155	5775	-5.478	2.460	-5.018	2.921	-	-	-	-	0.948	5.707	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)