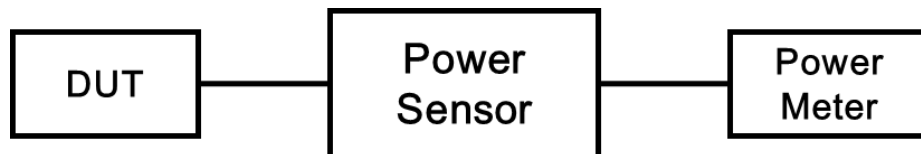


Appendix A - Conducted Power Measurements

WLAN Conducted Power

1. As per FCC OET KDB 248227 D01, conducted output power and SAR testing are not required for 802.11g/n20/n40/ax channels when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is $\leq 1.2\text{W/kg}$.
2. When the reported SAR of the initial test configuration is $> 0.8\text{ W/kg}$, SAR measurement is required for subsequent next highest measured output power channel(s) in the initial test configuration until reported SAR is $\leq 1.2\text{ W/kg}$ or all required channels are tested.
3. Additional conducted power measurement is required when reported SAR is $> 1.2\text{W/kg}$. In case the subsequent test configuration and the channel bandwidth is smaller than the initial test configuration, all channels that overlap with the larger channel bandwidth in the initial configuration should be tested.
4. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac/ax) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac then ax)
5. When the highest reported SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure requirements, is adjusted by the ratio of the subsequent test configuration to the initial test configuration specified maximum output power and the adjusted SAR is $\leq 1.2\text{ W/Kg}$, SAR is not required for that subsequent test configuration.



Power Measurement Setup

WLAN 2.4 GHz											
Mode	Channel	Frequency (MHz)	Main			Aux			MIMO		
			Peak Power (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)	Peak Power (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)	Peak Power (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)
802.11b	1	2412	18.62	16.02	16.50	17.56	17.78	18.00	21.10	19.90	20.30
	6	2437	18.43	16.06	16.50	16.91	17.21	18.00	20.63	19.59	20.30
	11	2462	18.86	16.40	16.50	16.90	17.11	17.50	20.92	19.68	20.00
	12	2467	18.50	16.24	16.50	16.62	17.17	17.50	20.53	19.65	20.00
	13	2472	18.42	16.13	16.50	16.01	16.43	16.50	20.22	19.20	19.50
802.11g	1	2412	18.59	15.94	16.50	20.51	17.64	18.00	22.56	19.79	20.30
	6	2437	17.82	16.12	16.50	19.29	17.69	18.00	21.44	19.89	20.30
	11	2462	18.49	16.38	16.50	19.53	17.68	18.00	21.89	19.99	20.30
	12	2467	16.30	14.31	14.50	15.96	14.08	14.50	19.23	17.11	17.50
	13	2472	16.88	11.13	11.50	14.97	11.48	11.50	19.00	14.22	14.50
802.11n HT20	1	2412	20.09	16.35	16.50	20.20	17.04	17.50	22.86	19.62	20.00
	6	2437	17.84	15.98	16.50	19.38	17.69	18.00	21.56	19.83	20.30
	11	2462	18.27	16.31	16.50	18.79	16.60	17.00	21.47	19.37	19.70
	12	2467	15.72	13.74	14.00	16.05	13.96	14.00	18.53	16.77	17.00
	13	2472	12.52	9.49	9.50	12.19	9.13	9.50	15.54	12.23	12.50
802.11n HT40	3	2422	17.42	14.59	15.00	17.39	14.80	15.00	20.23	17.61	18.00
	6	2437	18.36	16.07	16.50	20.01	17.67	18.00	21.89	19.86	20.30
	9	2452	17.39	14.85	15.00	17.31	14.72	15.00	20.41	17.70	18.00
	10	2457	14.48	11.89	12.00	14.42	11.61	12.00	17.56	14.67	15.00
	11	2462	13.02	9.58	10.00	13.42	9.73	10.00	16.24	12.57	13.00
802.11ac VHT20	1	2412	19.24	16.37	16.50	20.01	17.14	17.50	22.34	19.69	20.00
	6	2437	18.37	16.38	16.50	19.45	17.69	18.00	21.66	20.00	20.30
	11	2462	18.34	16.27	16.50	18.54	16.58	17.00	21.23	19.34	19.70
	12	2467	15.87	13.75	14.00	16.12	13.97	14.00	19.15	16.78	17.00
	13	2472	12.31	9.48	9.50	12.01	9.18	9.50	15.23	12.25	12.50
802.11ac VHT40	3	2422	17.21	14.59	15.00	17.28	14.68	15.00	20.16	17.55	18.00
	6	2437	18.35	16.15	16.50	19.75	17.75	18.00	22.01	19.94	20.30
	9	2452	18.68	14.40	15.00	17.01	14.63	15.00	20.56	17.43	18.00
	10	2457	14.52	11.88	12.00	14.39	11.64	12.00	17.43	14.68	15.00
	11	2462	12.69	9.58	10.00	12.79	9.71	10.00	15.79	12.56	13.00
802.11ax HE20	1	2412	19.68	16.39	16.50	20.60	17.31	17.50	22.99	19.79	20.00
	6	2437	18.50	16.38	16.50	19.69	17.75	18.00	22.01	20.03	20.30
	11	2462	18.62	16.36	16.50	19.51	17.30	17.50	21.89	19.77	20.00
	12	2467	16.27	13.95	14.00	15.93	13.63	14.00	19.34	16.71	17.00
	13	2472	12.77	9.63	10.00	13.85	9.98	10.00	16.22	12.72	13.00
802.11ax HE40	3	2422	17.67	14.79	15.00	17.56	14.83	15.00	20.34	17.73	18.00
	6	2437	18.54	16.21	16.50	20.12	17.69	18.00	22.15	19.93	20.30
	9	2452	17.17	14.55	15.00	17.46	14.84	15.00	20.14	17.61	18.00
	10	2457	15.39	12.49	12.50	15.08	12.26	12.50	18.10	15.29	15.50
	11	2462	13.18	9.76	10.00	13.47	9.99	10.00	16.02	12.79	13.00

WLAN 5.2 GHz								
Mode	Channel	Frequency (MHz)	Main		Aux		MIMO	
			Average Power (dBm)	Tune-Up Limit (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)
802.11a	36	5180	14.32	14.50	14.89	15.00	17.53	17.70
	40	5200	14.30	14.50	14.58	15.00	17.36	17.70
	44	5220	14.20	14.50	14.98	15.00	17.52	17.70
	48	5240	14.14	14.50	14.92	15.00	17.46	17.70
802.11n HT20	36	5180	14.18	14.50	14.76	15.00	17.39	17.70
	40	5200	14.36	14.50	14.63	15.00	17.41	17.70
	44	5220	14.23	14.50	14.92	15.00	17.50	17.70
	48	5240	14.16	14.50	14.91	15.00	17.47	17.70
802.11n HT40	38	5190	14.21	14.50	14.96	15.00	17.52	17.70
	46	5230	14.30	14.50	14.83	15.00	17.49	17.70
802.11ac VHT20	36	5180	14.23	14.50	14.87	15.00	17.48	17.70
	40	5200	14.22	14.50	14.65	15.00	17.35	17.70
	44	5220	14.36	14.50	14.95	15.00	17.58	17.70
	48	5240	14.21	14.50	14.92	15.00	17.49	17.70
802.11ac VHT40	38	5190	14.17	14.50	14.92	15.00	17.48	17.70
	46	5230	14.16	14.50	14.81	15.00	17.41	17.70
802.11ac VHT80	42	5210	13.96	14.00	13.92	14.00	16.86	17.00
802.11ax HE20	36	5180	14.34	14.50	14.63	15.00	17.40	17.70
	40	5200	14.39	14.50	14.69	15.00	17.46	17.70
	44	5220	14.24	14.50	14.72	15.00	17.40	17.70
	48	5240	14.15	14.50	14.65	15.00	17.32	17.70
802.11ax HE40	38	5190	14.29	14.50	14.68	15.00	17.40	17.70
	46	5230	14.35	14.50	14.88	15.00	17.54	17.70
802.11ax HE80	42	5210	13.52	14.00	13.66	14.00	16.51	17.00

WLAN 5.3 GHz								
Mode	Channel	Frequency (MHz)	Main		Aux		MIMO	
			Average Power (dBm)	Tune-Up Limit (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)
802.11a	52	5260	14.26	14.50	14.62	15.00	17.36	17.70
	56	5280	14.29	14.50	14.75	15.00	17.44	17.70
	60	5300	14.13	14.50	14.91	15.00	17.45	17.70
	64	5320	14.27	14.50	14.64	15.00	17.37	17.70
802.11n HT20	52	5260	14.18	14.50	14.66	15.00	17.34	17.70
	56	5280	14.15	14.50	14.77	15.00	17.39	17.70
	60	5300	14.09	14.50	14.94	15.00	17.45	17.70
	64	5320	14.13	14.50	14.67	15.00	17.32	17.70
802.11n HT40	54	5270	14.40	14.50	14.82	15.00	17.53	17.70
	62	5310	14.41	14.50	14.90	15.00	17.58	17.70
802.11ac VHT20	52	5260	14.15	14.50	14.63	15.00	17.31	17.70
	56	5280	14.22	14.50	14.70	15.00	17.38	17.70
	60	5300	14.07	14.50	14.86	15.00	17.40	17.70
	64	5320	14.20	14.50	14.88	15.00	17.47	17.70
802.11ac VHT40	54	5270	14.42	14.50	14.82	15.00	17.54	17.70
	62	5310	14.15	14.50	14.78	15.00	17.39	17.70
802.11ac VHT80	58	5290	14.44	14.50	14.16	14.50	17.22	17.50
802.11ac VHT160	50	5250	13.14	13.50	13.32	13.50	16.15	16.50
802.11ax HE20	52	5260	14.31	14.50	14.83	15.00	17.49	17.70
	56	5280	14.29	14.50	14.70	15.00	17.41	17.70
	60	5300	14.23	14.50	14.86	15.00	17.47	17.70
	64	5320	14.25	14.50	14.62	15.00	17.35	17.70
802.11ax HE40	54	5270	14.14	14.50	14.68	15.00	17.33	17.70
	62	5310	14.22	14.50	14.78	15.00	17.42	17.70
802.11ax HE80	58	5290	14.21	14.50	14.33	14.50	17.19	17.50
802.11ax HE160	50	5250	13.22	13.50	13.42	13.50	16.24	16.50

WLAN 5.6 GHz								
Mode	Channel	Frequency (MHz)	Main		Aux		MIMO	
			Average Power (dBm)	Tune-Up Limit (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)
802.11a	100	5500	15.58	16.00	13.77	14.00	17.68	18.10
	116	5580	15.92	16.00	13.73	14.00	17.88	18.10
	124	5620	15.94	16.00	13.66	14.00	17.86	18.10
	132	5660	15.62	16.00	13.83	14.00	17.73	18.10
	140	5700	15.76	16.00	13.67	14.00	17.75	18.10
	144	5720	15.63	16.00	13.70	14.00	17.69	18.10
802.11n HT20	100	5500	15.63	16.00	13.75	14.00	17.71	18.10
	116	5580	15.90	16.00	13.79	14.00	17.89	18.10
	124	5620	15.91	16.00	13.64	14.00	17.84	18.10
	132	5660	15.67	16.00	13.87	14.00	17.78	18.10
	140	5700	15.82	16.00	13.63	14.00	17.78	18.10
	144	5720	15.63	16.00	13.57	14.00	17.64	18.10
802.11n HT40	102	5510	15.84	16.00	13.80	14.00	17.85	18.10
	110	5550	15.86	16.00	13.79	14.00	17.86	18.10
	126	5630	15.63	16.00	13.69	14.00	17.68	18.10
	134	5670	15.62	16.00	13.87	14.00	17.75	18.10
	142	5710	15.71	16.00	13.59	14.00	17.69	18.10
802.11ac VHT20	100	5500	15.62	16.00	13.83	14.00	17.73	18.10
	116	5580	15.79	16.00	13.76	14.00	17.81	18.10
	124	5620	15.89	16.00	13.71	14.00	17.85	18.10
	132	5660	15.68	16.00	13.78	14.00	17.75	18.10
	140	5700	15.72	16.00	13.66	14.00	17.73	18.10
	144	5720	15.64	16.00	13.59	14.00	17.65	18.10
802.11ac VHT40	102	5510	15.83	16.00	13.80	14.00	17.85	18.10
	110	5550	15.93	16.00	13.82	14.00	17.92	18.10
	126	5630	15.64	16.00	13.77	14.00	17.72	18.10
	134	5670	15.62	16.00	13.80	14.00	17.72	18.10
	142	5710	15.70	16.00	13.82	14.00	17.78	18.10
802.11ac VHT80	106	5530	15.31	15.50	13.63	14.00	17.47	17.80
	122	5610	15.79	16.00	13.98	14.00	17.89	18.10
	138	5690	15.66	16.00	13.85	14.00	17.76	18.10
802.11ac VHT160	114	5570	12.22	12.50	12.31	12.50	15.18	15.50
802.11ax HE20	100	5500	15.66	16.00	13.91	14.00	17.79	18.10
	116	5580	15.62	16.00	13.80	14.00	17.72	18.10
	124	5620	15.63	16.00	13.83	14.00	17.74	18.10
	132	5660	15.77	16.00	13.94	14.00	17.87	18.10
	140	5700	15.82	16.00	13.85	14.00	17.86	18.10
	144	5720	15.63	16.00	13.72	14.00	17.69	18.10
802.11ax HE40	102	5510	15.53	16.00	13.56	14.00	17.57	18.10
	110	5550	15.54	16.00	13.97	14.00	17.74	18.10
	126	5630	15.37	16.00	13.82	14.00	17.58	18.10
	134	5670	15.74	16.00	13.58	14.00	17.71	18.10
	142	5710	15.92	16.00	13.68	14.00	17.86	18.10
802.11ax HE80	106	5530	15.34	15.50	13.62	14.00	17.48	17.80
	122	5610	15.63	16.00	13.92	14.00	17.77	18.10
	138	5690	15.70	16.00	13.91	14.00	17.81	18.10
802.11ax HE160	114	5570	12.42	12.50	12.44	12.50	15.35	15.50

WLAN 5.8 GHz								
Mode	Channel	Frequency (MHz)	Main		Aux		MIMO	
			Average Power (dBm)	Tune-Up Limit (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)
802.11a	149	5745	16.67	17.00	13.60	14.00	18.32	18.70
	157	5785	16.78	17.00	13.73	14.00	18.43	18.70
	165	5825	16.82	17.00	13.86	14.00	18.50	18.70
802.11n HT20	149	5745	16.72	17.00	13.65	14.00	18.37	18.70
	157	5785	16.77	17.00	13.67	14.00	18.41	18.70
	165	5825	16.86	17.00	13.80	14.00	18.51	18.70
802.11n HT40	151	5755	15.69	17.00	13.93	14.00	17.81	18.70
	159	5795	16.37	17.00	13.98	14.00	18.25	18.70
802.11ac VHT20	149	5745	16.82	17.00	13.59	14.00	18.41	18.70
	157	5785	16.83	17.00	13.76	14.00	18.48	18.70
	165	5825	16.92	17.00	13.84	14.00	18.56	18.70
802.11ac VHT40	151	5755	16.97	17.00	13.90	14.00	18.62	18.70
	159	5795	16.52	17.00	13.91	14.00	18.32	18.70
802.11ac VHT80	155	5775	15.98	17.00	13.97	14.00	18.01	18.70
802.11ax HE20	149	5745	16.95	17.00	13.78	14.00	18.56	18.70
	157	5785	16.82	17.00	13.91	14.00	18.52	18.70
	165	5825	16.93	17.00	13.91	14.00	18.59	18.70
802.11ax HE40	151	5755	16.88	17.00	13.63	14.00	18.47	18.70
	159	5795	16.81	17.00	13.65	14.00	18.43	18.70
802.11ax HE80	155	5775	16.92	17.00	13.66	14.00	18.50	18.70

WLAN 6.2 GHz								
Mode	Channel	Frequency (MHz)	Main		Aux		MIMO	
			Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit (dBm)
802.11a	1	5955	0.53	1.00	0.24	1.00	3.40	4.00
	45	6175	0.30	1.00	0.63	1.00	3.39	4.00
	93	6415	0.16	1.00	0.51	1.00	3.26	4.00
802.11ax HE20	1	5955	0.79	1.00	0.87	1.00	3.78	4.00
	45	6175	0.87	1.00	0.72	1.00	3.79	4.00
	93	6415	0.44	1.00	0.83	1.00	3.55	4.00
802.11ax HE40	3	5965	3.14	3.50	2.34	3.50	5.65	6.50
	43	6165	3.43	3.50	3.23	3.50	6.30	6.50
	91	6405	3.17	3.50	3.35	3.50	6.15	6.50
802.11ax HE80	7	5985	6.61	7.00	6.07	7.00	9.20	10.00
	39	6145	5.90	7.00	6.71	7.00	9.23	10.00
	87	6385	6.93	7.00	6.62	7.00	9.69	10.00
802.11ax HE160	15	6025	8.95	9.00	8.97	9.00	11.88	12.00
	47	6185	8.88	9.00	8.80	9.00	11.77	12.00
	79	6345	9.44	9.50	9.08	9.50	12.20	12.50

WLAN 6.5 GHz								
Mode	Channel	Frequency (MHz)	Main		Aux		MIMO	
			Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit (dBm)
802.11a	97	6435	1.39	1.50	0.01	1.50	3.64	4.50
	105	6475	0.96	1.50	1.19	1.50	3.92	4.50
	113	6515	1.42	1.50	0.55	1.50	3.93	4.50
802.11ax HE20	97	6435	1.40	1.50	0.72	1.50	4.00	4.50
	105	6475	1.38	1.50	1.29	1.50	4.22	4.50
	113	6515	1.07	1.50	1.10	1.50	3.99	4.50
802.11ax HE40	99	6445	3.62	4.00	3.54	4.00	6.48	7.00
	107	6485	3.86	4.00	3.53	4.00	6.62	7.00
802.11ax HE80	103	6465	6.80	7.00	6.65	7.00	9.69	10.00
802.11ax HE80	119	6545	6.90	7.00	6.78	7.00	9.73	10.00
802.11ax HE160	111	6505	9.22	9.50	9.23	9.50	12.18	12.50

WLAN 6.7 GHz								
Mode	Channel	Frequency (MHz)	Main		Aux		MIMO	
			Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit (dBm)
802.11a	117	6535	0.64	1.50	0.63	1.50	3.52	4.50
	149	6695	0.73	1.50	0.69	1.50	3.64	4.50
	181	6855	0.33	1.50	0.47	1.50	3.30	4.50
802.11ax HE20	117	6535	1.35	1.50	0.70	1.50	3.99	4.50
	149	6695	0.84	1.50	0.99	1.50	3.89	4.50
	181	6855	0.68	1.50	0.89	1.50	3.78	4.50
802.11ax HE40	115	6525	3.56	4.00	3.68	4.00	6.60	7.00
	147	6685	3.40	4.00	3.17	4.00	6.17	7.00
	179	6845	3.22	4.00	3.03	4.00	6.07	7.00
802.11ac VHT80	135	6625	6.56	7.00	6.58	7.00	9.43	10.00
	151	6705	6.08	7.00	6.10	7.00	9.04	10.00
	167	6785	6.46	7.00	5.86	7.00	9.08	10.00
	183	6865	6.72	7.00	6.41	7.00	9.47	10.00
802.11ax HE160	143	6665	8.76	9.00	8.91	9.00	11.71	12.00
	175	6825	8.58	9.00	8.20	9.00	11.35	12.00

WLAN 7.0 GHz								
Mode	Channel	Frequency (MHz)	Main		Aux		MIMO	
			Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average Power (dBm)	Tune-Up Limit (dBm)
802.11a	185	6875	1.38	2.00	0.46	2.00	3.82	4.90
	209	6995	1.20	2.00	0.97	2.00	3.92	4.90
	233	7115	0.64	2.00	1.38	2.00	3.98	4.90
802.11ax HE20	185	6875	1.61	2.00	1.53	2.00	4.42	4.90
	209	6995	1.58	2.00	1.64	2.00	4.57	4.90
	233	7115	1.26	2.00	1.54	2.00	4.33	4.90
802.11ax HE40	187	6885	4.06	4.50	3.72	4.50	6.82	7.50
	211	7005	3.49	4.50	4.46	4.50	6.98	7.50
	227	7085	4.21	4.50	3.83	4.50	6.91	7.50
802.11ax HE80	199	6945	7.08	7.50	6.75	7.50	9.84	10.50
	215	7025	6.11	7.50	7.32	7.50	9.63	10.50
802.11ax HE160	207	6985	9.37	9.50	9.48	9.50	12.32	12.50

Bluetooth BR / EDR					
Band	Channel	Frequency (MHz)	Aux		
			Peak power (dBm)	Average power (dBm)	Tune up Limit
Bluetooth BR GFSK	0	2402	10.59	10.91	11.50
	39	2441	10.46	10.77	11.50
	78	2480	10.26	10.57	11.50
Bluetooth EDR $\pi/4$ -DQPSK	0	2402	10.49	8.20	8.50
	39	2441	10.36	8.02	8.50
	78	2480	10.17	7.78	8.50
Bluetooth EDR 8DPSK	0	2402	10.60	8.17	8.50
	39	2441	10.49	7.99	8.50
	78	2480	10.25	7.75	8.50

Bluetooth LE					
Band	Channel	Frequency (MHz)	Aux		
			Peak power (dBm)	Average power (dBm)	Tune up Limit
Bluetooth LE 1M	0	2402	10.56	10.88	11.50
	19	2440	10.31	10.60	11.50
	39	2480	10.23	10.54	11.50
Bluetooth LE 2M	0	2402	10.51	10.73	11.50
	19	2440	10.42	10.48	11.50
	39	2480	10.11	10.37	11.50