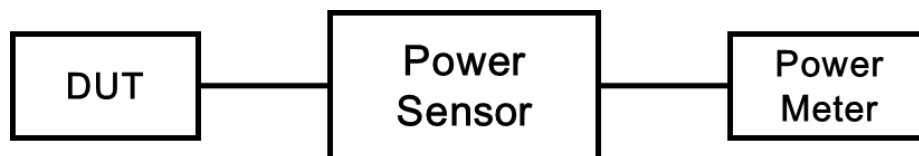


Appendix A - Conducted Power Measurements

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 2.4GHz Band											
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	21.30	16.88	17.00	20.55	15.95	16.00	not supported	not supported	not supported
	6	2437	21.21	16.89	17.00	20.42	15.91	16.00	not supported	not supported	not supported
	11	2462	21.22	16.92	17.00	20.45	15.96	16.00	not supported	not supported	not supported
	12	2467	21.25	16.84	17.00	20.15	15.97	16.00	not supported	not supported	not supported
	13	2472	17.62	15.36	16.50	17.09	15.33	16.00	not supported	not supported	not supported
802.11g	1	2412	21.93	16.97	17.00	21.24	15.98	16.00	not supported	not supported	not supported
	6	2437	22.16	16.97	17.00	21.07	15.87	16.00	not supported	not supported	not supported
	11	2462	22.03	16.86	17.00	21.14	15.89	16.00	not supported	not supported	not supported
	12	2467	20.50	14.95	15.00	19.13	14.88	15.00	not supported	not supported	not supported
	13	2472	16.11	10.40	10.50	16.40	11.45	11.50	not supported	not supported	not supported
802.11n HT20	1	2412	22.02	16.99	17.00	21.02	15.87	16.00	24.50	18.68	18.75
	6	2437	21.86	16.98	17.00	21.15	15.93	16.00	24.50	19.40	19.50
	11	2462	21.96	16.89	17.00	21.46	15.95	16.00	24.70	19.17	19.20
	12	2467	20.12	14.98	15.00	19.38	14.87	15.00	22.70	14.42	14.50
	13	2472	16.94	10.47	10.50	16.40	11.38	11.50	19.60	12.22	12.25
802.11n HT40	3	2422	21.82	15.94	16.00	21.03	15.74	15.75	24.40	18.21	18.25
	6	2437	22.93	16.98	17.00	22.80	15.92	16.00	25.80	18.73	18.75
	9	2452	21.35	15.76	16.50	20.83	15.42	15.50	24.10	17.58	18.00
	10	2457	16.52	10.77	11.25	16.31	10.44	10.50	19.40	10.94	11.00
	11	2462	16.84	10.64	10.75	16.26	10.40	10.50	19.50	11.89	12.00
802.11ax HE20	1	2412	22.04	16.95	17.00	21.83	15.94	16.00	24.90	17.15	17.25
	6	2437	21.98	16.98	17.00	21.23	15.95	16.00	24.60	19.41	19.50
	11	2462	22.00	16.96	17.00	21.20	15.92	16.00	24.60	17.15	17.25
	12	2467	20.12	14.90	15.00	19.51	14.88	15.00	22.80	14.43	14.50
	13	2472	16.58	10.42	10.50	17.21	11.49	11.50	19.90	12.21	12.25
802.11ax HE40	3	2422	21.83	15.86	16.00	21.09	15.69	15.75	24.40	16.15	16.25
	6	2437	22.81	16.67	17.00	22.43	15.91	16.00	25.60	15.89	16.00
	9	2452	21.12	15.66	16.50	20.93	15.49	15.50	24.00	14.42	15.50
	10	2457	16.13	10.74	11.25	15.94	10.47	10.50	19.00	10.93	11.00
	11	2462	16.85	10.63	10.75	16.48	10.41	10.50	19.60	11.92	12.00

WLAN 5.2 GHz Band								
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	15.94	16.00	15.91	16.00	not supported	not supported
	40	5200	15.88	16.00	15.89	16.00	not supported	not supported
	44	5220	15.85	16.00	15.93	16.00	not supported	not supported
	48	5240	15.83	16.00	15.98	16.00	not supported	not supported
802.11n HT20	36	5180	15.92	16.00	15.84	16.00	18.80	19.00
	40	5200	15.88	16.00	15.93	16.00	18.82	19.00
	44	5220	15.84	16.00	15.82	16.00	18.75	19.00
	48	5240	15.82	16.00	15.88	16.00	18.77	19.00
802.11n HT40	38	5190	15.97	16.00	15.92	16.00	18.71	18.75
	46	5230	15.92	16.00	15.94	16.00	18.84	19.00
802.11ac VHT20	36	5180	15.93	16.00	15.82	16.00	18.79	19.00
	40	5200	15.84	16.00	15.86	16.00	18.77	19.00
	44	5220	15.82	16.00	15.74	16.00	18.70	19.00
	48	5240	15.80	16.00	15.83	16.00	18.73	19.00
802.11ac VHT40	38	5190	15.99	16.00	15.92	16.00	18.42	18.75
	46	5230	15.98	16.00	15.94	16.00	18.88	19.00
802.11ac VHT80	42	5210	15.90	16.00	15.87	16.00	18.11	18.25
802.11ax HE20	36	5180	15.99	16.00	15.75	16.00	17.25	17.75
	40	5200	15.96	16.00	15.90	16.00	18.85	19.00
	44	5220	15.90	16.00	15.78	16.00	18.76	19.00
	48	5240	15.88	16.00	15.79	16.00	18.75	19.00
802.11ax HE40	38	5190	15.93	16.00	15.89	16.00	16.41	16.50
	46	5230	15.92	16.00	15.87	16.00	18.81	19.00
802.11ax HE80	42	5210	15.98	16.00	15.81	16.00	18.15	18.25

WLAN 5.3 GHz Band								
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	15.98	16.00	15.86	16.00	not supported	not supported
	56	5280	15.96	16.00	15.86	16.00	not supported	not supported
	60	5300	15.95	16.00	15.83	16.00	not supported	not supported
	64	5320	15.94	16.00	15.92	16.00	not supported	not supported
802.11n HT20	52	5260	15.96	16.00	15.91	16.00	18.85	19.00
	56	5280	15.92	16.00	15.84	16.00	18.80	19.00
	60	5300	15.97	16.00	15.86	16.00	18.83	19.00
	64	5320	15.96	16.00	15.78	16.00	18.79	19.00
802.11n HT40	54	5270	15.93	16.00	15.87	16.00	18.82	19.00
	62	5310	15.90	16.00	15.81	16.00	18.77	19.00
802.11ac VHT20	52	5260	15.92	16.00	15.82	16.00	18.79	19.00
	56	5280	15.94	16.00	15.83	16.00	18.80	19.00
	60	5300	15.95	16.00	15.84	16.00	18.81	19.00
	64	5320	15.93	16.00	15.73	16.00	18.75	19.00
802.11ac VHT40	54	5270	15.90	16.00	15.79	16.00	18.76	19.00
	62	5310	15.95	16.00	15.77	16.00	18.78	19.00
802.11ac VHT80	58	5290	15.96	16.00	15.98	16.00	16.71	16.75
802.11ac VHT160	50	5250	14.60	14.75	14.76	15.50	15.42	15.75
802.11ax HE20	52	5260	15.91	16.00	15.90	16.00	18.82	19.00
	56	5280	15.94	16.00	15.76	16.00	18.77	19.00
	60	5300	15.96	16.00	15.79	16.00	18.79	19.00
	64	5320	15.92	16.00	15.72	16.00	18.44	18.50
802.11ax HE40	54	5270	15.92	16.00	15.77	16.00	18.76	19.00
	62	5310	15.93	16.00	15.71	16.00	17.12	17.25
802.11ax HE80	58	5290	15.90	16.00	15.98	16.00	16.42	16.75
802.11ax HE160	50	5250	14.71	14.75	14.64	15.50	15.42	15.75

WLAN 5.6 GHz Band								
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	14.96	15.00	14.96	15.00	not supported	not supported
	116	5580	14.97	15.00	14.91	15.00	not supported	not supported
	124	5620	14.99	15.00	14.98	15.00	not supported	not supported
	132	5660	14.98	15.00	14.87	15.00	not supported	not supported
	140	5700	14.89	15.00	14.89	15.00	not supported	not supported
	144	5720	14.93	15.00	14.94	15.00	not supported	not supported
802.11n HT20	100	5500	14.98	15.00	14.93	15.00	17.87	18.00
	116	5580	14.91	15.00	14.97	15.00	17.86	18.00
	124	5620	14.93	15.00	14.98	15.00	17.87	18.00
	132	5660	14.96	15.00	14.89	15.00	17.84	18.00
	140	5700	14.90	15.00	14.81	15.00	17.77	18.00
	144	5720	14.89	15.00	14.91	15.00	17.81	18.00
802.11n HT40	102	5510	14.98	15.00	14.93	15.00	17.87	18.00
	110	5550	14.97	15.00	14.91	15.00	17.86	18.00
	126	5630	14.99	15.00	14.87	15.00	17.85	18.00
	134	5670	14.96	15.00	14.83	15.00	17.81	18.00
	142	5710	14.93	15.00	14.88	15.00	17.82	18.00
802.11ac VHT20	100	5500	14.98	15.00	14.90	15.00	17.86	18.00
	116	5580	14.93	15.00	14.96	15.00	17.86	18.00
	124	5620	14.96	15.00	14.90	15.00	17.84	18.00
	132	5660	14.99	15.00	14.80	15.00	17.81	18.00
	140	5700	14.96	15.00	14.81	15.00	17.80	18.00
	144	5720	14.94	15.00	14.87	15.00	17.82	18.00
802.11ac VHT40	102	5510	14.96	15.00	14.87	15.00	17.83	18.00
	110	5550	14.93	15.00	14.83	15.00	17.80	18.00
	126	5630	14.94	15.00	14.86	15.00	17.82	18.00
	134	5670	14.96	15.00	14.74	15.00	17.77	18.00
	142	5710	14.96	15.00	14.78	15.00	17.79	18.00
802.11ac VHT80	106	5530	14.94	15.00	14.89	15.00	17.35	17.50
	122	5610	14.86	15.00	14.86	15.00	17.78	18.00
	138	5690	14.95	15.00	14.93	15.00	17.86	18.00
802.11ac VHT160	114	5570	14.96	15.00	14.86	15.00	16.42	16.50
802.11ax HE20	100	5500	14.86	15.00	14.93	15.00	17.81	18.00
	116	5580	14.93	15.00	14.91	15.00	17.84	18.00
	124	5620	14.98	15.00	14.96	15.00	17.89	18.00
	132	5660	14.98	15.00	14.84	15.00	17.83	18.00
	140	5700	14.93	15.00	14.73	15.00	17.75	18.00
	144	5720	14.98	15.00	14.82	15.00	17.82	18.00
802.11ax HE40	102	5510	14.96	15.00	14.90	15.00	17.12	17.25
	110	5550	14.97	15.00	14.88	15.00	17.84	18.00
	126	5630	14.96	15.00	14.87	15.00	17.83	18.00
	134	5670	14.98	15.00	14.83	15.00	17.82	18.00
	142	5710	14.93	15.00	14.87	15.00	17.82	18.00
802.11ax HE80	106	5530	14.91	15.00	14.88	15.00	17.22	17.50
	122	5610	14.85	15.00	14.86	15.00	17.77	18.00
	138	5690	14.94	15.00	14.80	15.00	17.79	18.00
802.11ax HE160	114	5570	14.98	15.00	14.81	15.00	16.34	16.50

WLAN 5.8 GHz Band								
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	14.98	15.00	14.94	15.00	not supported	not supported
	157	5785	14.97	15.00	14.96	15.00	not supported	not supported
	165	5825	14.93	15.00	14.91	15.00	not supported	not supported
802.11n HT20	149	5745	14.92	15.00	14.84	15.00	17.80	18.00
	157	5785	14.87	15.00	14.97	15.00	17.84	18.00
	165	5825	14.91	15.00	14.87	15.00	17.81	18.00
802.11n HT40	151	5755	14.96	15.00	14.92	15.00	17.86	18.00
	159	5795	14.89	15.00	14.91	15.00	17.81	18.00
802.11ac VHT20	149	5745	14.94	15.00	14.81	15.00	17.79	18.00
	157	5785	14.92	15.00	14.93	15.00	17.84	18.00
	165	5825	14.93	15.00	14.85	15.00	17.81	18.00
802.11ac VHT40	151	5755	14.91	15.00	14.80	15.00	17.77	18.00
	159	5795	14.85	15.00	14.82	15.00	17.75	18.00
802.11ac VHT80	155	5775	14.89	15.00	14.92	15.00	17.82	18.00
802.11ax HE20	149	5745	14.95	15.00	14.74	15.00	17.76	18.00
	157	5785	14.97	15.00	14.92	15.00	17.86	18.00
	165	5825	14.89	15.00	14.78	15.00	17.75	18.00
802.11ax HE40	151	5755	14.93	15.00	14.84	15.00	17.80	18.00
	159	5795	14.87	15.00	14.86	15.00	17.78	18.00
802.11ax HE80	155	5775	14.82	15.00	14.87	15.00	17.76	18.00

WLAN 6.2 GHz Band								
Mode	Channel	Frequency (MHz)	Main		Aux		MIMO	
			Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	MIMO Average power (dBm)	Tune-Up Limit
802.11ax HE20	1	5955	4.52	5.00	4.56	5.00	4.12	5.00
	45	6175	4.42	5.00	4.09	5.00	4.23	5.00
	93	6415	4.46	5.00	4.20	5.00	3.86	5.00
802.11ax HE40	3	5965	8.01	8.25	7.30	8.25	7.12	8.25
	43	6165	7.70	8.25	7.29	8.25	6.83	8.25
	91	6405	7.83	8.25	7.61	8.25	7.15	8.25
802.11ax HE80	7	5985	10.17	10.75	10.11	10.75	10.04	10.75
	39	6145	10.19	10.75	9.92	10.75	9.89	10.75
	87	6385	9.95	10.75	9.91	10.75	9.82	10.75
802.11ax HE160	15	6025	12.86	13.50	12.82	13.50	12.72	13.50
	47	6185	12.79	13.50	12.76	13.50	12.68	13.50
	79	6345	12.48	13.50	12.42	13.50	12.79	13.50

WLAN 6.5 GHz Band								
Mode	Channel	Frequency (MHz)	Main		Aux		MIMO	
			Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	MIMO Average power (dBm)	Tune-Up Limit
802.11ax HE20	97	6435	4.70	5.00	4.72	5.00	4.73	5.00
	105	6475	4.64	5.00	4.76	5.00	4.75	5.00
	113	6515	4.70	5.00	4.75	5.00	4.69	5.00
802.11ax HE40	99	6445	7.93	8.25	7.97	8.25	7.80	8.25
	107	6485	7.92	8.25	7.91	8.25	7.93	8.25
802.11ax HE80	103	6465	10.40	10.75	10.39	10.75	10.24	10.75
802.11ax HE80	119	6545	10.41	10.75	10.40	10.75	10.29	10.75
802.11ax HE160	111	6505	13.11	13.50	13.09	13.50	13.09	13.50

WLAN 6.7 GHz Band								
Mode	Channel	Frequency (MHz)	Main		Aux		MIMO	
			Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	MIMO Average power (dBm)	Tune-Up Limit
802.11ax HE20	117	6535	4.11	4.25	4.13	4.25	4.12	4.25
	149	6695	4.23	4.25	4.24	4.25	4.01	4.25
	181	6855	4.22	4.25	4.06	4.25	4.15	4.25
802.11ax HE40	115	6525	7.98	8.25	7.67	8.25	8.07	8.25
	147	6685	7.43	7.50	7.43	7.50	7.01	7.50
	179	6845	7.35	7.50	7.37	7.50	7.03	7.50
802.11ax HE80	135	6625	9.83	10.00	9.81	10.00	9.88	10.00
	151	6705	9.83	10.00	9.78	10.00	9.90	10.00
	167	6785	9.85	10.00	9.84	10.00	9.75	10.00
	183	6865	9.95	10.00	9.93	10.00	9.86	10.00
802.11ax HE160	143	6665	12.49	12.75	12.54	12.75	12.71	12.75
	175	6825	12.44	12.75	12.52	12.75	12.68	12.75

WLAN 7.0 GHz Band								
Mode	Channel	Frequency (MHz)	Main		Aux		MIMO	
			Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	MIMO Average power (dBm)	Tune-Up Limit
802.11ax HE20	185	6875	4.21	4.25	4.22	4.25	4.14	4.25
	209	6995	4.22	4.25	4.18	4.25	4.21	4.25
	233	7115	-1.89	-1.00	-1.12	-1.00	-1.18	-1.00
802.11ax HE40	187	6885	7.48	7.50	7.42	7.50	7.42	7.50
	211	7005	7.42	7.50	7.46	7.50	7.44	7.50
	227	7085	7.32	7.50	7.48	7.50	7.39	7.50
802.11ax HE80	199	6945	9.92	10.00	9.91	10.00	9.87	10.00
	215	7025	9.95	10.00	9.97	10.00	9.88	10.00
802.11ax HE160	207	6985	12.72	12.75	12.71	12.75	12.67	12.75

Bluetooth BR / EDR						
Mode	Channel	Frequency (MHz)	Modulation	Aux		
				Peak Power (dBm)	Average Power (dBm)	Tune-up Limit (dBm)
Bluetooth BR	0	2402	GFSK	9.09	9.64	11.00
	39	2441		9.17	9.70	
	78	2480		9.45	9.96	
Bluetooth EDR	0	2402	$\pi/4$ -DQPSK	7.86	6.99	7.00
	39	2441		7.85	6.96	
	78	2480		7.90	6.82	
Bluetooth EDR	0	2402	8DPSK	7.88	6.99	7.00
	39	2441		7.93	6.93	
	78	2480		7.99	6.83	

Bluetooth LE						
Mode	Channel	Frequency (MHz)	Data Rate	Aux		
				Peak Power (dBm)	Average Power (dBm)	Tune-up Limit (dBm)
Bluetooth LE	0	2402	1Mbps	7.02	6.75	7.00
	19	2440		7.17	6.88	
	39	2480		7.05	6.78	
	0	2402	2Mbps	7.60	5.56	7.00
	19	2440		7.62	5.57	
	39	2480		7.99	5.94	