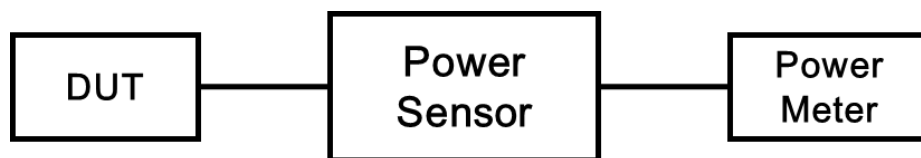


Appendix A - Conducted Power Measurements

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.
6. For 802.11ax mode, maximum output powers for each RU size were measured to demonstrate that are no higher than other OFDM 802.11 modes.



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	19.40	16.57	17.00	19.26	16.45	17.00	not supported	not supported	not supported
	6	2437	19.56	16.68	17.00	19.59	16.60	17.00	not supported	not supported	not supported
	11	2462	19.50	16.54	17.00	19.45	16.49	17.00	not supported	not supported	not supported
	12	2467	19.19	16.51	17.00	19.17	16.47	17.00	not supported	not supported	not supported
	13	2472	18.21	15.32	15.50	18.15	15.31	15.50	not supported	not supported	not supported
802.11g	1	2412	24.85	16.42	17.00	24.81	16.34	17.00	not supported	not supported	not supported
	6	2437	25.00	16.33	17.00	24.98	16.27	17.00	not supported	not supported	not supported
	11	2462	24.78	16.12	16.25	24.76	16.08	16.50	not supported	not supported	not supported
	12	2467	23.28	14.81	15.00	23.18	14.77	15.00	not supported	not supported	not supported
	13	2472	9.48	1.82	2.00	9.46	1.41	1.50	not supported	not supported	not supported
802.11n HT20	1	2412	25.07	16.71	17.00	24.99	16.65	17.00	25.04	16.87	17.00
	6	2437	25.31	16.66	17.00	25.19	16.66	17.00	27.83	19.53	20.00
	11	2462	24.16	15.49	16.00	24.18	15.46	16.50	24.18	16.12	16.75
	12	2467	22.85	14.42	15.00	22.75	14.39	15.00	22.81	15.41	15.50
	13	2472	9.45	1.45	2.00	9.40	1.35	1.50	9.44	1.81	2.00
802.11n HT40	3	2422	25.23	16.41	16.50	24.72	16.36	16.50	24.65	16.21	16.75
	6	2437	24.80	16.21	17.00	24.76	16.13	17.00	24.79	17.08	18.50
	9	2452	24.67	15.82	16.00	24.54	15.75	16.00	24.62	16.44	16.50
	10	2457	20.84	12.12	12.25	20.75	11.82	12.00	20.81	12.61	12.75
	11	2462	12.72	4.33	5.00	12.63	4.30	5.00	12.69	4.81	5.00
802.11ax HE20	1	2412	25.82	16.32	17.00	25.80	16.22	17.00	25.82	16.82	17.00
	6	2437	26.42	15.34	17.00	26.76	15.31	17.00	26.90	18.25	20.00
	11	2462	25.57	15.41	16.00	25.49	15.37	16.00	25.54	16.12	16.75
	12	2467	24.40	14.34	15.00	24.36	14.33	15.00	24.39	15.41	15.50
	13	2472	11.32	1.25	2.00	11.26	1.15	1.50	11.30	1.66	2.00
802.11ax HE40	3	2422	26.71	16.33	16.50	26.65	16.23	16.50	26.69	16.21	16.75
	6	2437	26.32	16.10	16.50	26.33	16.03	16.50	26.34	17.12	18.50
	9	2452	26.04	15.77	16.00	25.99	15.76	16.00	26.03	16.42	16.50
	10	2457	22.07	12.12	12.25	22.06	11.87	12.00	22.08	12.52	12.75
	11	2462	15.12	5.21	5.50	15.01	4.41	4.50	15.08	4.82	5.00

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	13.03	14.00	13.14	14.00	not supported	not supported
	40	5200	13.13	14.00	13.18	14.00	not supported	not supported
	44	5220	13.05	14.00	13.06	14.00	not supported	not supported
	48	5240	13.08	14.00	13.15	14.00	not supported	not supported
802.11n HT20	36	5180	13.11	14.00	13.25	14.00	16.05	17.00
	40	5200	13.25	14.00	13.33	14.00	15.83	17.00
	44	5220	13.18	14.00	13.38	14.00	15.94	17.00
	48	5240	13.34	14.00	13.34	14.00	16.12	17.00
802.11n HT40	38	5190	13.19	14.00	13.24	14.00	15.87	17.00
	46	5230	13.21	14.00	13.19	14.00	15.74	17.00
802.11ac VHT80	42	5210	13.33	14.00	13.42	14.00	16.05	17.00
802.11ax HE20	36	5180	13.25	14.00	13.12	14.00	15.91	17.00
	40	5200	13.22	14.00	13.25	14.00	16.01	17.00
	44	5220	13.18	14.00	13.39	14.00	15.94	17.00
	48	5240	13.34	14.00	13.34	14.00	15.98	17.00
802.11ax HE40	38	5190	13.25	14.00	13.28	14.00	15.88	17.00
	46	5230	13.11	14.00	13.22	14.00	15.70	17.00
802.11ax HE80	42	5210	13.38	14.00	13.29	14.00	16.08	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	13.11	14.00	13.20	14.00	not supported	not supported
	56	5280	13.02	14.00	13.15	14.00	not supported	not supported
	60	5300	12.96	14.00	13.17	14.00	not supported	not supported
	64	5320	12.90	14.00	13.12	14.00	not supported	not supported
802.11n HT20	52	5260	13.28	14.00	13.22	14.00	16.12	17.00
	56	5280	13.22	14.00	13.25	14.00	15.97	17.00
	60	5300	13.25	14.00	13.28	14.00	15.95	17.00
	64	5320	13.34	14.00	13.34	14.00	16.41	16.50
802.11n HT40	54	5270	13.33	14.00	13.35	14.00	16.00	17.00
	62	5310	13.28	14.00	13.28	14.00	15.82	16.00
802.11ac VHT80	58	5290	13.24	14.00	13.26	14.00	15.80	17.00
802.11ac VHT160	50	5250	13.39	14.00	13.39	14.00	14.78	15.00
802.11ax HE20	52	5260	13.25	14.00	13.21	14.00	16.34	16.50
	56	5280	13.29	14.00	13.22	14.00	15.81	17.00
	60	5300	13.33	14.00	13.28	14.00	15.88	17.00
	64	5320	13.38	14.00	13.31	14.00	16.07	17.00
802.11ax HE40	54	5270	13.25	14.00	13.34	14.00	16.01	17.00
	62	5310	13.19	14.00	13.28	14.00	15.42	16.00
802.11ax HE80	58	5290	13.21	14.00	13.27	14.00	16.01	17.00
802.11ax HE160	50	5250	13.31	14.00	13.19	14.00	14.81	15.00

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	13.57	14.50	13.51	14.50	not supported	not supported
	116	5580	13.43	14.50	13.40	14.50	not supported	not supported
	124	5620	13.40	14.50	13.46	14.50	not supported	not supported
	132	5660	13.37	14.50	13.33	14.50	not supported	not supported
	140	5700	13.55	14.50	13.54	14.50	not supported	not supported
802.11n HT20	100	5500	13.43	14.50	13.47	14.50	16.82	17.00
	116	5580	13.31	14.50	13.30	14.50	16.09	17.50
	124	5620	13.57	14.50	13.54	14.50	16.11	17.50
	132	5660	13.41	14.50	13.45	14.50	16.15	17.50
	140	5700	13.41	14.50	13.44	14.50	16.15	17.50
	144	5720	13.35	14.50	13.33	14.50	16.16	17.50
802.11n HT40	102	5510	13.56	14.50	13.51	14.50	16.83	17.00
	110	5550	13.45	14.50	13.41	14.50	16.18	17.50
	126	5630	13.47	14.50	13.40	14.50	16.23	17.50
	134	5670	13.35	14.50	13.33	14.50	15.97	17.50
	142	5710	13.41	14.50	13.25	14.50	15.88	17.50
802.11ac VHT80	106	5530	13.60	14.50	13.53	14.50	16.15	17.50
	122	5610	13.45	14.50	13.45	14.50	16.20	17.50
	138	5690	13.50	14.50	13.42	14.50	16.32	17.50
802.11ac VHT160	114	5570	13.38	14.50	13.31	14.50	14.81	15.00
802.11ax HE20	100	5500	13.60	14.50	13.60	14.50	16.82	17.00
	116	5580	13.44	14.50	13.41	14.50	16.28	17.50
	124	5620	13.50	14.50	13.40	14.50	16.02	17.50
	132	5660	13.31	14.50	13.35	14.50	15.92	17.50
	140	5700	13.59	14.50	13.59	14.50	16.34	17.50
	144	5720	13.44	14.50	13.44	14.50	16.28	17.50
802.11ax HE40	102	5510	13.49	14.50	13.42	14.50	16.83	17.00
	110	5550	13.34	14.50	13.36	14.50	16.26	17.50
	126	5630	13.52	14.50	13.56	14.50	16.27	17.50
	134	5670	13.35	14.50	13.38	14.50	16.26	17.50
	142	5710	13.49	14.50	13.40	14.50	16.26	17.50
802.11ax HE80	106	5530	13.38	14.50	13.32	14.50	15.93	17.50
	122	5610	13.34	14.50	13.26	14.50	16.10	17.50
	138	5690	13.28	14.50	13.22	14.50	16.07	17.50
802.11ax HE160	114	5570	13.33	14.50	13.29	14.50	14.88	15.00

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	13.10	14.00	13.15	14.00	not supported	not supported
	157	5785	12.89	14.00	12.91	14.00	not supported	not supported
	165	5825	13.05	14.00	13.06	14.00	not supported	not supported
802.11n HT20	149	5745	12.92	14.00	12.89	14.00	15.47	17.00
	157	5785	13.10	14.00	13.05	14.00	15.66	17.00
	165	5825	12.94	14.00	12.92	14.00	15.78	17.00
802.11n HT40	151	5755	13.15	14.00	13.20	14.00	15.89	17.00
	159	5795	13.18	14.00	13.23	14.00	15.81	17.00
802.11ac VHT80	155	5775	13.17	14.00	13.19	14.00	15.75	17.00
802.11ax HE20	149	5745	13.14	14.00	13.10	14.00	15.70	17.00
	157	5785	12.92	14.00	12.96	14.00	15.78	17.00
	165	5825	13.12	14.00	13.12	14.00	15.74	17.00
802.11ax HE40	151	5755	12.88	14.00	12.91	14.00	15.73	17.00
	159	5795	13.12	14.00	13.11	14.00	15.95	17.00
802.11ax HE80	155	5775	12.98	14.00	12.97	14.00	15.81	17.00

Bluetooth BR / EDR					
Band	Channel	Frequency (MHz)	Aux		
			Peak power (dBm)	Average power (dBm)	Tune up Limit
Bluetooth BR GFSK	0	2402	9.34	9.32	10.00
	39	2441	9.63	9.50	10.00
	78	2480	9.72	9.60	10.00
Bluetooth EDR $\pi/4$ -DQPSK	0	2402	6.48	6.42	7.00
	39	2441	6.42	6.33	7.00
	78	2480	6.23	6.19	7.00
Bluetooth EDR 8DPSK	0	2402	6.29	6.25	7.00
	39	2441	6.39	6.34	7.00
	78	2480	6.22	6.12	7.00

Bluetooth LE					
Band	Channel	Frequency (MHz)	Aux		
			Peak power (dBm)	Average power (dBm)	Tune up Limit
Bluetooth LE 1M	0	2402	6.33	6.25	7.00
	19	2440	6.38	6.34	7.00
	39	2480	6.42	6.38	7.00

802.11ax RU WLAN Output Power

WLAN 2.4 GHz												
Mode	Channel	Frequency (MHz)	RU config.	Main			Aux			MIMO		
				Peak Power (dBm)	Average power (dBm)	Tune-Up Limit	Peak Power (dBm)	Average power (dBm)	Tune-Up Limit	Peak Power (dBm)	Average power (dBm) MIMO	Tune-Up Limit
802.11ax HE20	1	2412	26/0	25.60	16.10	17.00	25.60	16.12	17.00	25.07	16.16	17.00
			52/37	25.52	16.13	17.00	25.67	16.11	17.00	25.16	16.24	17.00
			106/53	25.51	16.08	17.00	25.69	16.08	17.00	25.05	16.13	17.00
	6	2437	26/0	26.27	15.27	17.00	26.56	15.18	17.00	26.81	18.22	20.00
			52/37	26.23	15.26	17.00	26.51	15.17	17.00	26.80	18.23	20.00
			106/53	26.32	15.25	17.00	26.61	15.23	17.00	26.78	18.23	20.00
	11	2462	26/0	25.40	15.29	16.00	25.41	15.31	16.00	25.14	15.79	16.75
			52/37	25.34	15.20	16.00	25.24	15.10	16.00	25.07	15.68	16.75
			106/53	25.31	15.16	16.00	25.24	15.16	16.00	25.09	15.71	16.75
	12	2467	26/0	24.26	14.29	15.00	24.33	14.25	15.00	23.02	14.12	15.50
			52/37	24.40	14.30	15.00	24.21	14.24	15.00	23.16	14.18	15.50
			106/53	24.14	14.18	15.00	24.06	14.13	15.00	23.21	14.25	15.50
	13	2472	26/0	-0.93	-10.95	-10.00	-0.82	-10.91	-10.00	1.66	-7.96	-7.00
			52/37	1.34	-8.70	-8.00	1.30	-8.77	-8.00	3.81	-5.86	-5.00
			106/53	4.15	-5.82	-5.00	4.25	-5.87	-5.00	6.85	-2.84	-2.00
802.11ax HE40	3	2422	242/61	26.39	16.08	16.50	26.49	16.10	16.50	26.23	15.73	16.75
	6	2437	242/61	26.22	16.03	16.50	26.28	16.01	16.50	25.88	16.66	18.50
	9	2452	242/61	25.97	15.70	16.00	25.85	15.70	16.00	25.21	15.67	16.50
	10	2457	242/61	21.55	11.69	12.25	21.97	11.82	12.00	21.20	11.66	12.75
	11	2462	242/61	9.20	-0.64	1.00	11.73	1.13	1.50	13.55	3.30	4.50

802.11ax RU WLAN Output Power

WLAN 5.2 GHz									
Mode	Channel	Frequency (MHz)	RU config.	Main		Aux		MIMO	
				Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm) MIMO	Tune-Up Limit
802.11ax HE20	36	5180	26/0	13.10	14.00	13.03	14.00	13.06	14.00
			52/37	13.00	14.00	12.96	14.00	15.78	17.00
			106/53	12.95	14.00	12.99	14.00	15.84	17.00
	40	5200	26/0	13.01	14.00	12.98	14.00	15.70	17.00
			52/37	12.95	14.00	13.00	14.00	12.94	14.00
			106/53	13.09	14.00	12.99	14.00	15.90	17.00
	44	5220	26/0	12.96	14.00	12.96	14.00	12.91	14.00
			52/37	13.03	14.00	13.09	14.00	15.73	17.00
			106/53	13.00	14.00	13.05	14.00	15.86	17.00
	48	5240	26/0	13.06	14.00	13.05	14.00	12.99	14.00
			52/37	13.09	14.00	12.97	14.00	15.70	17.00
			106/53	12.97	14.00	13.08	14.00	15.74	17.00
802.11ax HE40	38	5190	242/61	13.07	14.00	13.02	14.00	15.75	17.00
	46	5230	242/61	12.98	14.00	13.02	14.00	15.68	17.00
802.11ax HE80	42	5210	484/65	12.99	14.00	13.09	14.00	15.90	17.00

802.11ax RU WLAN Output Power

WLAN 5.3 GHz									
Mode	Channel	Frequency (MHz)	RU config.	Main		Aux		MIMO	
				Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm) MIMO	Tune-Up Limit
802.11ax HE20	52	5260	26/0	13.03	14.00	13.03	14.00	13.15	14.00
			52/37	13.07	14.00	13.11	14.00	15.72	16.50
			106/53	13.15	14.00	13.14	14.00	15.73	16.50
	56	5280	26/0	13.12	14.00	13.12	14.00	13.27	14.00
			52/37	13.01	14.00	13.06	14.00	15.75	17.00
			106/53	12.98	14.00	13.00	14.00	15.76	17.00
	60	5300	26/0	13.05	14.00	13.05	14.00	13.12	14.00
			52/37	13.10	14.00	12.97	14.00	15.77	17.00
			106/53	13.02	14.00	12.95	14.00	15.68	17.00
	64	5320	26/0	12.97	14.00	13.04	14.00	13.04	14.00
			52/37	12.95	14.00	13.12	14.00	15.79	17.00
			106/53	13.03	14.00	13.01	14.00	15.75	17.00
802.11ax HE40	54	5270	242/61	12.96	14.00	13.14	14.00	15.73	17.00
	62	5310	242/61	13.03	14.00	12.99	14.00	15.39	16.00
802.11ax HE80	58	5290	484/65	12.98	14.00	13.03	14.00	15.92	17.00
802.11ax HE160	50	5250	996/67	12.96	14.00	13.10	14.00	14.34	15.00
			996/S67	13.12	14.00	13.04	14.00	14.35	15.00

802.11ax RU WLAN Output Power

WLAN 5.6 GHz									
Mode	Channel	Frequency (MHz)	RU config.	Main		Aux		MIMO	
				Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm) MIMO	Tune-Up Limit
802.11ax HE20	100	5500	26/0	13.12	14.50	13.29	14.50	13.24	14.50
			52/37	13.20	14.50	13.21	14.50	15.68	17.00
			106/53	13.12	14.50	13.22	14.50	15.70	17.00
	116	5580	26/0	13.29	14.50	13.25	14.50	13.22	14.50
			52/37	13.21	14.50	13.22	14.50	15.77	17.50
			106/53	13.25	14.50	13.22	14.50	15.65	17.50
	124	5620	26/0	13.29	14.50	13.17	14.50	13.17	14.50
			52/37	13.16	14.50	13.17	14.50	15.66	17.50
			106/53	13.24	14.50	13.25	14.50	15.68	17.50
	132	5660	26/0	13.18	14.50	13.15	14.50	13.17	14.50
			52/37	13.25	14.50	13.29	14.50	15.82	17.50
			106/53	13.19	14.50	13.14	14.50	15.69	17.50
	140	5700	26/0	13.29	14.50	13.27	14.50	13.21	14.50
			52/37	13.29	14.50	13.24	14.50	15.78	17.50
			106/53	13.20	14.50	13.22	14.50	15.79	17.50
	144	5720	26/0	13.21	14.50	13.27	14.50	13.09	14.50
			52/37	13.23	14.50	13.18	14.50	15.82	17.50
			106/53	13.20	14.50	13.15	14.50	15.87	17.50
802.11ax HE40	102	5510	242/61	13.25	14.50	13.11	14.50	15.73	17.00
	110	5550	242/61	13.19	14.50	13.11	14.50	15.74	17.50
	126	5630	242/61	13.24	14.50	13.22	14.50	15.86	17.50
	134	5670	242/61	13.27	14.50	13.13	14.50	15.72	17.50
	142	5710	242/61	13.17	14.50	13.12	14.50	15.71	17.50
802.11ax HE80	106	5530	484/65	13.21	14.50	13.12	14.50	15.81	17.50
	122	5610	484/65	13.29	14.50	13.20	14.50	15.77	17.50
	138	5690	484/65	13.27	14.50	13.20	14.50	15.66	17.50
802.11ax HE160	114	5570	996/67	13.28	14.50	13.26	14.50	14.76	15.00
			996/S67	13.19	14.50	13.13	14.50	14.76	15.00

802.11ax RU WLAN Output Power

WLAN 5.8 GHz									
Mode	Channel	Frequency (MHz)	RU config.	Main		Aux		MIMO	
				Average power (dBm)	Tune-Up Limit	Average power (dBm)	Tune-Up Limit	Average power (dBm) MIMO	Tune-Up Limit
802.11ax HE20	149	5745	26/0	12.75	14.00	12.81	14.00	14.85	16.00
			52/37	12.76	14.00	12.64	14.00	14.91	16.00
			106/53	12.77	14.00	12.76	14.00	14.89	16.00
	157	5785	26/0	12.65	14.00	12.76	14.00	14.99	16.00
			52/37	12.73	14.00	12.75	14.00	14.70	16.00
			106/53	12.68	14.00	12.65	14.00	14.95	16.00
	165	5825	26/0	12.77	14.00	12.71	14.00	14.80	16.00
			52/37	12.82	14.00	12.78	14.00	14.98	16.00
			106/53	12.68	14.00	12.81	14.00	14.78	16.00
802.11ax HE40	151	5755	242/61	12.67	14.00	12.69	14.00	14.81	16.00
	159	5795	242/61	12.72	14.00	12.77	14.00	14.81	16.00
802.11ax HE80	155	5775	484/65	12.63	14.00	12.70	14.00	14.88	16.00