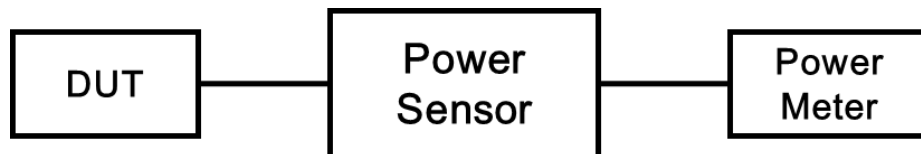


Appendix A - Conducted Power Measurements

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	19.34	14.21	15.00	17.10	14.22	15.00	not supported	not supported	not supported
	6	2437	19.42	14.26	15.00	17.12	14.27	15.00	not supported	not supported	not supported
	11	2462	19.45	14.22	15.00	17.05	14.23	15.00	not supported	not supported	not supported
	12	2467	19.38	14.20	15.00	17.08	14.20	15.00	not supported	not supported	not supported
	13	2472	18.13	14.18	15.00	17.07	14.21	15.00	not supported	not supported	not supported
802.11g	1	2412	20.16	14.84	15.00	19.63	14.53	15.00	not supported	not supported	not supported
	6	2437	20.19	14.76	15.00	19.93	14.62	15.00	not supported	not supported	not supported
	11	2462	20.21	14.90	15.00	19.96	14.68	15.00	not supported	not supported	not supported
	12	2467	20.39	14.86	15.00	19.79	14.53	15.00	not supported	not supported	not supported
	13	2472	9.68	0.11	1.50	10.02	0.38	1.50	not supported	not supported	not supported
802.11n HT20	1	2412	20.06	14.79	15.00	19.98	14.72	15.00	23.00	16.98	17.00
	6	2437	20.11	14.74	15.00	20.21	14.78	15.00	23.10	17.68	18.00
	11	2462	20.34	14.78	15.00	20.08	14.82	15.00	23.20	17.41	18.00
	12	2467	20.17	14.80	15.00	20.21	14.75	15.00	23.20	14.89	15.00
	13	2472	9.58	0.06	1.50	9.86	0.08	1.50	12.70	1.42	1.50
802.11n HT40	3	2422	20.75	14.81	15.00	20.56	14.87	15.00	23.60	16.42	16.50
	6	2437	20.62	14.80	15.00	20.46	14.77	15.00	23.50	16.94	17.50
	9	2452	20.74	14.84	15.00	20.53	14.49	14.50	23.60	15.89	16.00
	10	2457	20.25	12.48	12.50	20.05	12.40	12.50	23.10	12.44	12.50
	11	2462	13.52	3.62	5.00	13.50	3.52	5.00	16.50	4.89	5.00
802.11ax HE20	1	2412	19.99	14.37	15.00	20.39	14.80	15.00	23.20	16.89	17.00
	6	2437	19.69	14.34	15.00	19.56	14.10	15.00	22.60	17.14	18.00
	11	2462	19.91	14.46	15.00	20.34	14.90	15.00	23.10	17.02	17.50
	12	2467	19.98	14.35	15.00	20.36	14.84	15.00	23.10	14.88	15.00
	13	2472	9.74	0.03	1.50	11.48	0.40	1.50	13.70	1.42	1.50
802.11ax HE40	3	2422	20.34	14.51	15.00	20.65	14.80	15.00	23.50	16.44	16.50
	6	2437	20.31	14.52	15.00	20.27	14.65	15.00	23.30	16.82	17.50
	9	2452	20.36	14.62	15.00	20.38	14.82	15.00	23.30	15.89	16.00
	10	2457	20.17	12.35	12.50	20.01	12.14	12.50	23.10	12.41	12.50
	11	2462	14.75	3.64	5.00	15.33	4.88	5.00	18.00	4.84	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)	SISO A Average Power (dBm)	SISO B Average Power (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)
802.11a	36	5180	11.72	12.00	11.88	12.00	0.00	0.00	not supported	not supported
	40	5200	11.68	12.00	11.84	12.00	0.00	0.00	not supported	not supported
	44	5220	11.69	12.00	11.92	12.00	0.00	0.00	not supported	not supported
	48	5240	11.64	12.00	11.89	12.00	0.00	0.00	not supported	not supported
802.11n HT20	36	5180	11.67	12.00	11.74	12.00	0.00	0.00	14.62	15.00
	40	5200	11.71	12.00	11.78	12.00	0.00	0.00	14.66	15.00
	44	5220	11.61	12.00	11.91	12.00	0.00	0.00	14.68	15.00
	48	5240	11.52	12.00	11.83	12.00	0.00	0.00	14.59	15.00
802.11n HT40	38	5190	11.82	12.00	11.82	12.00	0.00	0.00	14.74	15.00
	46	5230	11.77	12.00	11.88	12.00	0.00	0.00	14.74	15.00
802.11ac VHT20	36	5180	11.66	12.00	11.64	12.00	0.00	0.00	14.57	15.00
	40	5200	11.64	12.00	11.71	12.00	0.00	0.00	14.59	15.00
	44	5220	11.52	12.00	11.81	12.00	0.00	0.00	14.58	15.00
	48	5240	11.56	12.00	11.75	12.00	0.00	0.00	14.57	15.00
802.11ac VHT40	38	5190	11.78	12.00	11.82	12.00	0.00	0.00	14.72	15.00
	46	5230	11.75	12.00	11.78	12.00	0.00	0.00	14.68	15.00
802.11ac VHT80	42	5210	11.91	12.00	11.87	12.00	0.00	0.00	14.80	15.00
802.11ax HE20	36	5180	11.47	12.00	11.67	12.00	0.00	0.00	14.49	15.00
	40	5200	11.42	12.00	11.75	12.00	0.00	0.00	14.50	15.00
	44	5220	11.40	12.00	11.85	12.00	0.00	0.00	14.55	15.00
	48	5240	11.36	12.00	11.82	12.00	0.00	0.00	14.51	15.00
802.11ax HE40	38	5190	11.55	12.00	11.72	12.00	0.00	0.00	14.55	15.00
	46	5230	11.49	12.00	11.87	12.00	0.00	0.00	14.60	15.00
802.11ax HE80	42	5210	11.55	12.00	11.69	12.00	0.00	0.00	14.54	15.00

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)	SISO A Average Power (dBm)	SISO B Average Power (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)
802.11a	52	5260	11.72	12.00	11.82	12.00	0.00	0.00	not supported	not supported
	56	5280	11.70	12.00	11.78	12.00	0.00	0.00	not supported	not supported
	60	5300	11.77	12.00	11.69	12.00	0.00	0.00	not supported	not supported
	64	5320	11.74	12.00	11.62	12.00	0.00	0.00	not supported	not supported
802.11n HT20	52	5260	11.66	12.00	11.69	12.00	0.00	0.00	14.59	15.00
	56	5280	11.58	12.00	11.73	12.00	0.00	0.00	14.57	15.00
	60	5300	11.65	12.00	11.66	12.00	0.00	0.00	14.57	15.00
	64	5320	11.62	12.00	11.72	12.00	0.00	0.00	14.59	15.00
802.11n HT40	54	5270	11.82	12.00	11.76	12.00	0.00	0.00	14.71	15.00
	62	5310	11.78	12.00	11.71	12.00	0.00	0.00	14.66	15.00
802.11ac VHT20	52	5260	11.66	12.00	11.63	12.00	0.00	0.00	14.56	15.00
	56	5280	11.61	12.00	11.66	12.00	0.00	0.00	14.55	15.00
	60	5300	11.65	12.00	11.60	12.00	0.00	0.00	14.54	15.00
	64	5320	11.62	12.00	11.69	12.00	0.00	0.00	14.57	15.00
802.11ac VHT40	54	5270	11.83	12.00	11.75	12.00	0.00	0.00	14.71	15.00
	62	5310	11.82	12.00	11.70	12.00	0.00	0.00	14.68	15.00
802.11ac VHT80	58	5290	11.97	12.00	11.96	12.00	0.00	0.00	14.88	15.00
802.11ac VHT160	50	5250	11.92	12.00	11.94	12.00	0.00	0.00	13.88	14.00
802.11ax HE20	52	5260	11.69	12.00	11.66	12.00	0.00	0.00	14.59	15.00
	56	5280	11.64	12.00	11.70	12.00	0.00	0.00	14.59	15.00
	60	5300	11.72	12.00	11.61	12.00	0.00	0.00	14.58	15.00
	64	5320	11.68	12.00	11.66	12.00	0.00	0.00	14.59	15.00
802.11ax HE40	54	5270	11.78	12.00	11.76	12.00	0.00	0.00	14.69	15.00
	62	5310	11.76	12.00	11.71	12.00	0.00	0.00	14.65	15.00
802.11ax HE80	58	5290	11.79	12.00	11.89	12.00	0.00	0.00	14.76	15.00
802.11ax HE160	50	5250	11.82	12.00	11.91	12.00	0.00	0.00	13.81	14.00

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)	SISO A Average Power (dBm)	SISO B Average Power (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)
802.11a	100	5500	11.65	12.00	11.66	12.00	0.00	0.00	not supported	not supported
	116	5580	11.53	12.00	11.69	12.00	0.00	0.00	not supported	not supported
	124	5620	11.56	12.00	11.72	12.00	0.00	0.00	not supported	not supported
	132	5660	11.55	12.00	11.63	12.00	0.00	0.00	not supported	not supported
	140	5700	11.58	12.00	11.61	12.00	0.00	0.00	not supported	not supported
	144	5720	11.55	12.00	11.59	12.00	0.00	0.00	not supported	not supported
802.11n HT20	100	5500	11.83	12.00	11.92	12.00	0.00	0.00	14.79	15.00
	116	5580	11.76	12.00	11.89	12.00	0.00	0.00	14.74	15.00
	124	5620	11.74	12.00	11.84	12.00	0.00	0.00	14.71	15.00
	132	5660	11.73	12.00	11.72	12.00	0.00	0.00	14.64	15.00
	140	5700	11.63	12.00	11.78	12.00	0.00	0.00	14.62	15.00
	144	5720	11.58	12.00	11.85	12.00	0.00	0.00	14.63	15.00
802.11n HT40	102	5510	11.74	12.00	11.89	12.00	0.00	0.00	14.73	15.00
	110	5550	11.68	12.00	11.84	12.00	0.00	0.00	14.68	15.00
	126	5630	11.67	12.00	11.91	12.00	0.00	0.00	14.71	15.00
	134	5670	11.66	12.00	11.83	12.00	0.00	0.00	14.66	15.00
	142	5710	11.83	12.00	11.86	12.00	0.00	0.00	14.76	15.00
802.11ac VHT20	100	5500	11.87	12.00	11.84	12.00	0.00	0.00	14.77	15.00
	116	5580	11.78	12.00	11.89	12.00	0.00	0.00	14.75	15.00
	124	5620	11.68	12.00	11.77	12.00	0.00	0.00	14.64	15.00
	132	5660	11.73	12.00	11.67	12.00	0.00	0.00	14.61	15.00
	140	5700	11.64	12.00	11.74	12.00	0.00	0.00	14.61	15.00
	144	5720	11.59	12.00	11.76	12.00	0.00	0.00	14.59	15.00
802.11ac VHT40	102	5510	11.70	12.00	11.81	12.00	0.00	0.00	14.67	15.00
	110	5550	11.71	12.00	11.80	12.00	0.00	0.00	14.67	15.00
	126	5630	11.67	12.00	11.91	12.00	0.00	0.00	14.71	15.00
	134	5670	11.69	12.00	11.82	12.00	0.00	0.00	14.67	15.00
	142	5710	11.63	12.00	11.78	12.00	0.00	0.00	14.62	15.00
802.11ac VHT80	106	5530	11.92	12.00	11.98	12.00	0.00	0.00	14.87	15.00
	122	5610	11.90	12.00	11.86	12.00	0.00	0.00	14.80	15.00
	138	5690	11.93	12.00	11.94	12.00	0.00	0.00	14.85	15.00
802.11ac VHT160	114	5570	11.91	12.00	11.96	12.00	0.00	0.00	13.64	13.75
802.11ax HE20	100	5500	11.73	12.00	11.92	12.00	0.00	0.00	14.74	15.00
	116	5580	11.56	12.00	11.85	12.00	0.00	0.00	14.62	15.00
	124	5620	11.53	12.00	11.82	12.00	0.00	0.00	14.59	15.00
	132	5660	11.61	12.00	11.66	12.00	0.00	0.00	14.55	15.00
	140	5700	11.63	12.00	11.72	12.00	0.00	0.00	14.59	15.00
	144	5720	11.61	12.00	11.79	12.00	0.00	0.00	14.62	15.00
802.11ax HE40	102	5510	11.68	12.00	11.79	12.00	0.00	0.00	14.65	15.00
	110	5550	11.69	12.00	11.80	12.00	0.00	0.00	14.66	15.00
	126	5630	11.59	12.00	11.85	12.00	0.00	0.00	14.64	15.00
	134	5670	11.60	12.00	11.78	12.00	0.00	0.00	14.61	15.00
	142	5710	11.53	12.00	11.80	12.00	0.00	0.00	14.58	15.00
802.11ax HE80	106	5530	11.69	12.00	11.90	12.00	0.00	0.00	14.71	15.00
	122	5610	11.66	12.00	11.77	12.00	0.00	0.00	14.63	15.00
	138	5690	11.60	12.00	11.91	12.00	0.00	0.00	14.67	15.00
802.11ax HE160	114	5570	11.61	12.00	11.89	12.00	0.00	0.00	13.52	13.75

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)	SISO A Average Power (dBm)	SISO B Average Power (dBm)	Average Power (dBm)	Tune-Up Limit (dBm)
802.11a	149	5745	11.68	12.00	11.54	12.00	0.00	0.00	not supported	not supported
	157	5785	11.63	12.00	11.61	12.00	0.00	0.00	not supported	not supported
	165	5825	11.82	12.00	11.58	12.00	0.00	0.00	not supported	not supported
802.11n HT20	149	5745	11.62	12.00	11.77	12.00	0.00	0.00	14.61	15.00
	157	5785	11.65	12.00	11.79	12.00	0.00	0.00	14.64	15.00
	165	5825	11.73	12.00	11.62	12.00	0.00	0.00	14.59	15.00
802.11n HT40	151	5755	11.90	12.00	11.95	12.00	0.00	0.00	14.84	15.00
	159	5795	11.89	12.00	11.91	12.00	0.00	0.00	14.81	15.00
802.11ac VHT20	149	5745	11.63	12.00	11.71	12.00	0.00	0.00	14.59	15.00
	157	5785	11.61	12.00	11.77	12.00	0.00	0.00	14.61	15.00
	165	5825	11.72	12.00	11.82	12.00	0.00	0.00	14.69	15.00
802.11ac VHT40	151	5755	11.83	12.00	11.87	12.00	0.00	0.00	14.77	15.00
	159	5795	11.77	12.00	11.82	12.00	0.00	0.00	14.71	15.00
802.11ac VHT80	155	5775	11.96	12.00	11.92	12.00	0.00	0.00	14.85	15.00
802.11ax HE20	149	5745	11.66	12.00	11.66	12.00	0.00	0.00	14.58	15.00
	157	5785	11.62	12.00	11.69	12.00	0.00	0.00	14.57	15.00
	165	5825	11.74	12.00	11.74	12.00	0.00	0.00	14.66	15.00
802.11ax HE40	151	5755	11.83	12.00	11.85	12.00	0.00	0.00	14.76	15.00
	159	5795	11.72	12.00	11.80	12.00	0.00	0.00	14.68	15.00
802.11ax HE80	155	5775	11.80	12.00	11.86	12.00	0.00	0.00	14.75	15.00

Bluetooth BR / EDR					
Band	Channel	Frequency (MHz)	Aux		
			Peak power (dBm)	Average power (dBm)	Tune up Limit (dBm)
Bluetooth BR GFSK	0	2402	7.89	7.69	8.00
	39	2441	7.98	7.84	8.00
	78	2480	7.96	7.89	8.00
Bluetooth EDR $\pi/4$ -DQPSK	0	2402	8.53	7.26	8.00
	39	2441	8.70	7.54	8.00
	78	2480	8.85	7.61	8.00
Bluetooth EDR 8DPSK	0	2402	8.59	7.25	8.00
	39	2441	8.77	7.51	8.00
	78	2480	8.92	7.60	8.00

Bluetooth LE					
Band	Channel	Frequency (MHz)	Aux		
			Peak power (dBm)	Average power (dBm)	Tune up Limit (dBm)
Bluetooth LE 1M	0	2402	6.60	6.51	7.00
	39	2440	6.98	6.87	7.00
	78	2480	6.91	6.82	7.00