

8 CONDUCTED RF OUPUT POWER

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8.1 WIFI Output Power

8.1.1 WIFI2.4G Output Power

test Mode	Modulation	Channel number	Fre. (MHz)	Aux.Ant		SAR Test
				output power(dBm)	tune up power(dBm)	
WIFI 2.4G	11b	1	2412	15.21	15.50	No
		6	2437	15.18	15.50	No
		11	2462	15.25	15.50	Yes
	11g	1	2412	13.11	13.50	No
		6	2437	13.49	13.50	No
		11	2462	13.01	13.50	No
	11n-HT20	1	2412	13.00	13.00	No
		6	2437	12.99	13.00	No
		11	2462	11.95	13.00	No
	11n-HT40	3	2422	10.85	12.00	No
		6	2437	12.93	13.00	No
		9	2452	9.24	11.00	No

Note: When multiple channel bandwidth configurations in a frequency band have the same maximum tune-up output power, the test configuration is determined by applying the following steps sequentially.

- 1) The largest channel bandwidth configuration is selected between the multiple configurations in a frequency band with the same maximum tune-up output power.
- 2) When multiple transmission modes (802.11b/g/n/VHT) have the same maximum tune-up output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11b is chosen over 802.11g, and 802.11g chosen over 802.11n.
- 3) According KDB 247228, 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 ≤ 1.2 W/kg, OFDM SAR test is not required.
Adjusted SAR = $0.324 * (35.48\text{mW}/35.48\text{mW}) = 0.324$ W/Kg, so 2.4G OFDM SAR test is not required.

8.1.1 WIFI2.4G Output Power

test Mode	Modulation	Channel number	Fre. (MHz)	Main.Ant		SAR Test
				output power(dBm)	tune up power(dBm)	
WIFI 2.4G	11b	1	2412	15.23	15.50	No
		6	2437	15.28	15.50	Yes
		11	2462	15.26	15.50	No
	11g	1	2412	13.19	13.50	No
		6	2437	13.24	13.50	No
		11	2462	13.42	13.50	No
	HT20	1	2412	12.83	13.00	No
		6	2437	12.69	13.00	No
		11	2462	12.27	13.00	No
	HT40	3	2422	11.39	13.00	No
		6	2437	12.63	13.00	No
		9	2452	9.62	11.00	No

Note: When multiple channel bandwidth configurations in a frequency band have the same maximum tune-up output power, the test configuration is determined by applying the following steps sequentially.
1) The largest channel bandwidth configuration is selected between the multiple configurations in a frequency band with the same maximum tune-up output power.
2) When multiple transmission modes (802.11b/g/n/VHT) have the same maximum tune-up output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11b is chosen over 802.11g, and 802.11g chosen over 802.11n.
3) According KDB 247228, 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 ≤ 1.2 W/kg, OFDM SAR test is not required.
Adjusted SAR = $0.173 * (35.48\text{mW}/35.48\text{mW}) = 0.173$ W/Kg, so 2.4G OFDM SAR test is not required.

8.1.2 WIFI5G Output Power

test Mode	Modulation	Channel number	Fre. (MHz)	Aux.Ant		SAR Test
				output power (dBm)	tune up power (dBm)	
WIFI 5G UNII-1	11a	36	5180	13.35	13.50	No
		40	5200	13.29	13.50	No
		48	5240	13.36	13.50	Yes
	11n20	36	5180	12.94	13.00	No
		40	5200	12.87	13.00	No
		48	5240	12.95	13.00	No
	11n40	38	5190	12.55	13.00	No
		46	5230	12.24	13.00	No
	11ac20	36	5180	12.96	13.00	No
		40	5200	12.78	13.00	No
		48	5240	12.92	13.00	No
	11ac40	38	5190	12.58	13.00	No
		46	5230	12.48	13.00	No
	11ac80	42	5210	12.40	13.00	No
WIFI UNII-3	11a	149	5745	13.20	13.50	No
		157	5785	13.15	13.50	No
		165	5825	13.33	13.50	Yes
	11n20	149	5745	12.27	13.00	No
		157	5785	12.52	13.00	No
		165	5825	12.57	13.00	No
	11n40	151	5755	12.51	13.00	No
		159	5795	12.51	13.00	No
	11ac20	149	5745	12.15	13.00	No
		157	5785	12.32	13.00	No
		165	5825	12.18	13.00	No
	11ac40	151	5755	12.54	13.00	No
		159	5795	12.54	13.00	No
	11ac80	155	5775	12.51	13.00	No

Note: When multiple channel bandwidth configurations in a frequency band have the same maximum tune-up output power, the test configuration is determined by applying the following steps sequentially.

1) The largest channel bandwidth configuration is selected among the multiple configurations in a frequency band with the same maximum tune-up output power.

2) When multiple transmission modes (802.11a/g/n/ac) have the same maximum tune-up output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac.

8.1.2 WIFI5G Output Power

test Mode	Modulation	Channel number	Fre. (MHz)	Main.Ant		SAR Test
				output power (dBm)	tune up power (dBm)	
WIFI 5G UNII-1	11a	36	5180	13.09	13.50	No
		40	5200	13.26	13.50	No
		48	5240	13.35	13.50	Yes
	11n20	36	5180	12.76	13.00	No
		40	5200	12.99	13.00	No
		48	5240	12.87	13.00	No
	11n40	38	5190	12.58	13.00	No
		46	5230	12.36	13.00	No
	11ac20	36	5180	12.79	13.00	No
		40	5200	12.81	13.00	No
		48	5240	12.69	13.00	No
	11ac40	38	5190	12.58	13.00	No
		46	5230	12.48	13.00	No
	11ac80	42	5210	12.53	13.00	No
WIFI UNII-3	11a	149	5745	12.95	13.50	Yes
		157	5785	13.26	13.50	Yes
		165	5825	13.33	13.50	Yes
	11n20	149	5745	12.22	13.00	No
		157	5785	12.59	13.00	No
		165	5825	12.58	13.00	No
	11n40	151	5755	12.58	13.00	No
		159	5795	12.58	13.00	No
	11ac20	149	5745	12.32	13.00	No
		157	5785	12.16	13.00	No
		165	5825	12.25	13.00	No
	11ac40	151	5755	12.25	13.00	No
		159	5795	12.36	13.00	No
	11ac80	155	5775	12.58	13.00	No

Note: When multiple channel bandwidth configurations in a frequency band have the same maximum tune-up output power, the test configuration is determined by applying the following steps sequentially.

1) The largest channel bandwidth configuration is selected among the multiple configurations in a frequency band with the same maximum tune-up output power.

2) When multiple transmission modes (802.11a/g/n/ac) have the same maximum tune-up output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac.

8.2 Bluetooth

8.2.1 Bluetooth Output Power

Bluetooth-Aux.Ant					
test Mode	Modulation	Fre.(MHz)	AV output power(dBm)	Tune up power(dBm)	SAR Test
BT	DH5	2402	5.83	6.00	No
		2441	5.84	6.00	Yes
		2480	5.75	6.00	No
	2DH5	2402	5.55	6.00	No
		2441	5.49	6.00	No
		2480	5.39	6.00	No
	3DH5	2402	5.44	6.00	No
		2441	5.19	6.00	No
		2480	5.33	6.00	No
	BLE1M	2402	5.17	6.00	No
		2440	5.35	6.00	No
		2480	5.50	6.00	No

Note: Since bluetooth BR mode is the maximum output power mode, SAR measurements were performed with test software using DH5 modulation, and SAR measurement is not required for the EDR and LE. When the secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode.

8.2.2 Bluetooth Duty Cycle

The Bluetooth duty cycle is 76.06% as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the maximum duty cycle is 100%, therefore the actual duty cycle will be scaled up to 100% for Bluetooth reported SAR calculation.

Duty Cycle

