

For FCC Standalone SAR test exclusion considerations

FCC ID: TLZ-CM2XXNF

WIFI Range	
F(GHz) Low	F(GHz) High
2.412	2.462
5.18	5.825
BT Range	
2.402	2.480

According to **KDB 447498 D01 General RF Exposure Guidance v05**

4.3.1 Standalone SAR test exclusion considerations

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances > 50 mm are determined by:

a) $[\text{Power allowed at numeric threshold for 50 mm in step 1}] + (\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz}) / 150)$ mW, at 100 MHz to 1500 MHz

b) $[\text{Power allowed at numeric threshold for 50 mm in step 1}] + (\text{test separation distance} - 50 \text{ mm}) \cdot 10$ mW at > 1500 MHz and ≤ 6 GHz

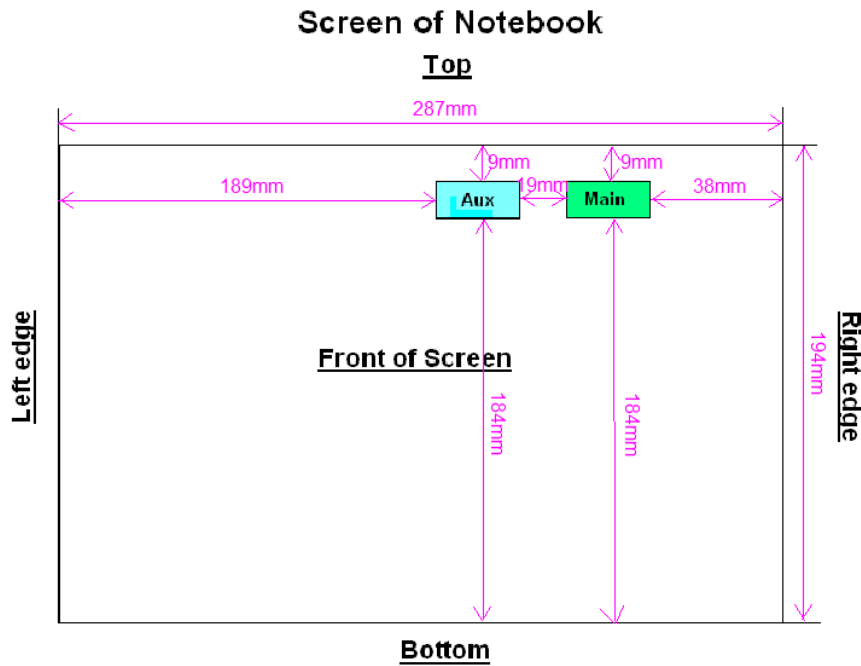
Based on the Maximum measured transmitter power:

Antenna	Pout Conducted (dBm)	Maximum Antenna Gain (dBi)	Pout EIRP (mW)
2.4GHz WIFI	23.71	2.98	467
5GHz WIFI	17.35	5.16	178
BT	5.63	2.98	7.26

Note: WIFI and BT antenna share the same antenna, so simultaneous transmission is not applied.

The distance between the antenna to the bottom of the device is 184mm.

EUT Antenna Locations



For 2.4GHz WIFI:

Maximum TX Power is 467 mW EIRP

The Maximum exclusion power at 2.4GHz is 1446mW

Conclusion: 2.4GHz WIFI SAR was not required.

For 5GHz WIFI:

Maximum TX Power is 178 mW EIRP

The Maximum exclusion power at 5GHz is 1412mW

Conclusion: 5GHz WIFI and BT SAR was not required.

For BT:

Maximum TX Power is 7.26 mW EIRP

The Maximum exclusion power at 2.4GHz is 1446mW

Conclusion: BT SAR was not required.

Exclusion distance:

For 2.4GHz WIFI:

Maximum TX Power is 467 mW EIRP

According to the Maximum EIRP, the exclusion distance should be calculate use the formula below:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR for distance $\leq 50\text{mm}$

[Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz for distance $\geq 50\text{mm}$ at > 1500 MHz and ≤ 6 GHz

The Maximum exclusion distance at 2.4GHz is 87.09mm.

Conclusion: 2.4GHz WIFI SAR was not required when the distance is higher than 87.09mm.

For 5GHz WIFI:

Maximum TX Power is 178 mW EIRP

According to the Maximum EIRP, the exclusion distance should be calculate use the formula below:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR for distance $\leq 50\text{mm}$

[Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz for distance $\geq 50\text{mm}$ at > 1500 MHz and ≤ 6 GHz

The Maximum exclusion distance at 5GHz is 61.56mm.

Conclusion: 5GHz WIFI BT SAR was not required when the distance is higher than 61.56mm.

For BT:

Maximum TX Power is 7.26 mW EIRP

According to the Maximum EIRP, the exclusion distance should be calculate use the formula below:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR for distance $\leq 50\text{mm}$

[Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz for distance $\geq 50\text{mm}$ at > 1500 MHz and ≤ 6 GHz

The Maximum exclusion distance at BT is 3.81mm, in other words, the BT transmitter always satisfy the SAR exclusion regardless of the distance between the transmitter to user.

Conclusion: BT SAR was not required.