

FCC §15.407 (f) & §1.1307 (b) (1) & §2.1093- RF EXPOSURE

Applicable Standard

According to §15.407(f) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission’s guideline.

Table 2 – Summary of SAR Evaluation Requirements for a Cell Phone with Multiple Transmitters

	Individual Transmitter	Simultaneous Transmission
Licensed Transmitters	<u>Routine evaluation required</u>	SAR not required: <u>Unlicensed only</u>
Unlicensed Transmitters	<p>When there is no simultaneous transmission –</p> <ul style="list-style-type: none"> ○ output ≤ 60/f: SAR not required ○ output > 60/f: stand-alone SAR required <p>When there is simultaneous transmission – <u>Stand-alone SAR not required when</u></p> <ul style="list-style-type: none"> ○ output ≤ 2·P_{Ref} and antenna is ≥ 5.0 cm from other antennas ○ output ≤ P_{Ref} and antenna is ≥ 2.5 cm from other antennas ○ output ≤ P_{Ref} and antenna is < 2.5 cm from other antennas, each with either output power ≤ P_{Ref} or 1-g SAR < 1.2 W/kg <p><u>Otherwise stand-alone SAR is required</u></p> <p>When stand-alone SAR is required</p> <ul style="list-style-type: none"> ○ test SAR on highest output channel for each wireless mode and exposure condition ○ if SAR for highest output channel is > 50% of SAR limit, evaluate all channels according to normal procedures 	<ul style="list-style-type: none"> ○ when stand-alone 1-g SAR is not required and antenna is ≥ 5 cm from other antennas <p><u>Licensed & Unlicensed</u></p> <ul style="list-style-type: none"> ○ when the sum of the 1-g SAR is < 1.6 W/kg for all simultaneous transmitting antennas ○ when SAR to peak location separation ratio of simultaneous transmitting antenna pair is < 0.3 <p>SAR required: <u>Licensed & Unlicensed</u></p> <p>antenna pairs with SAR to peak location separation ratio ≥ 0.3; test is only required for the configuration that results in the highest SAR in stand-alone configuration for each wireless mode and exposure condition</p> <p>Note: simultaneous transmission exposure conditions for head and body can be different for different style phones; therefore, different test requirements may apply</p>
Jaw, Mouth and Nose	<p><u>Flat phantom SAR required</u></p> <ul style="list-style-type: none"> ○ when measurement is required in tight regions of SAM and it is not feasible or the results can be questionable due to probe tilt, calibration, positioning and orientation issues ○ position rectangular and clam-shell phones according to flat phantom procedures and conduct SAR measurements for these specific locations 	When simultaneous transmission SAR testing is required, contact the FCC Laboratory for interim guidance.

Routine SAR evaluation refers to that specifically required by § 2.1093, using measurements or computer simulation. When routine SAR evaluation is not required, portable transmitters with output power greater than the applicable low threshold require SAR evaluation to qualify for TCB approval.

Measurement Result

The Bluetooth can transmit simultaneously with 2.4G wireless or 5.2G wireless.

The Output Power:

Bluetooth: 3.88 dBm
2.4G wireless: 0.02 dBm
5.2G wireless: 6.80 dBm

The distance between Bluetooth and wireless antenna > 5 cm. The max output power of wireless and Bluetooth $< 2P_{\text{Ref}}$ (24mW). According to KDB648474, stand-alone SAR is not required for Wi-Fi antenna and simultaneous SAR evaluation is not required for Bluetooth and Wi-Fi antennas.

P_{Ref} is defined as the maximum conducted power available at the antenna according to source-based time-averaging requirements of Section 2.1093(d) (5).

So the SAR evaluation is not necessary.