

FCC ID: 2A5AQ-HCZNSPK
Portable device

According to §15.247(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission’s guidelines.

According to KDB447498 D01 General RF Exposure Guidance V06

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:

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})]^* [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

$f(\text{GHz})$ is the RF channel transmit frequency in GHz;

Power and distance are rounded to the nearest mW and mm before calculation ;

The result is rounded to one decimal place for comparison ;

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

We use 5mm as separation distance to calculate.

Maximum measured transmitter power:

BT

	Channel Freq. (MHz)	Max Transmit Power (dBm)	Max tune-up power (dBm)	Result calculation	1-g SAR
GFSK	2402	1.2	2	0.49	3.0
	2441	0.86	1	0.39	3.0
	2480	0.68	1	0.39	3.0
pi/4-DQPSK	2402	1.74	2	0.49	3.0
	2441	1.45	2	0.49	3.0
	2480	1.27	2	0.49	3.0
8DPSK	2402	2.04	3	0.62	3.0
	2441	1.74	2	0.49	3.0
	2480	1.56	2	0.49	3.0

BLE

BLE 1M	2402	-1.20	0	0.3	3.0
	2441	-1.65	0	0.31	3.0
	2480	-2.39	-1	0.25	3.0
BLE 2M	2402	-1.18	0	0.3	3.0
	2441	-1.62	0	0.31	3.0
	2480	-2.36	-2	0.19	3.0

CONCLUSION of simultaneous transmitter

Both of the BT and BLE can transmit simultaneously,

the formula of calculated the MPE is:

$$\text{CPD1/LPD1} + \text{CPD2/LPD2} + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

Therefore the worst-case situation is $0.62 / 1.00 + 0.31 / 1 = 0.93$ which is less

Conclusion:

For the max result : $0.93 \leq 3.0$ for 1-g SAR extremity SAR, No SAR is required.