FCC §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

According to §1.1310, 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.

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:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(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
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

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 according to 5) in section 4.1 is applied to determine SAR test exclusion.

When an antenna qualifies for the standalone SAR test exclusion of 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to the following to determine the simultaneous transmission SAR test exclusion criteria: [(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]·[√f(GHz)/x] W/kg, for test separation distances ≤ 50 mm; where x = 7.5 for 1-g SAR and x = 18.75 for 10-g SAR.

Measurement Result

Operation modes	Frequency (MHz)	Maximum Peak Power (dBm)	Duty Cycle (%)	Time based average Power (mW)	Separated distance from user (mm)	Calculated value	Exempt from Test? (Yes/No)
GSM 850	824-849	32	0.175	2.77	0	0.5	Yes
PCS 1900	1850-1910	30	0.175	1.75	0	0.5	Yes
BLE	2402-2480	4	100	2.51	0	0.8	Yes

The maximum transmission rate when active is once every 10 second and the data consist of 140bytes. At the lowest data rate 8 kbit/s every transmission will last for less than 0,0175s with a resulting dutycycle of <0.175%. Please refer to the attention letter for more detail.

WWAN and Bluetooth can transmit Simultaneously:

Operation modes	Frequency (MHz)	Maximum Peak Power (dBm)	Duty Cycle (%)	Time based average Power (mW)	Separated distance from user (mm)	SAR estimation (W/kg)
GSM 850	824-849	32	0.175	2.77	0	0.068
PCS 1900	1850-1910	30	0.175	1.75	0	0.065
BLE	2402-2480	4	100	2.51	0	0.105

SAR estimation=
[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]·[√f(GHz)/x] W/kg, for test separation distances ≤ 50 mm; where x = 7.5 for 1-g SAR and x = 18.75 for 10-g SAR.

ΣSAR= 0.068+0.105=0.173 W/kg < 1.6 W/kg

So the SAR test is not necessary.