

RF EXPOSURE EVALUATION

FCC ID: SGP-M618DB

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency(RF) Radiation as specified in §1.1307(b):

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:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f_{\text{GHz}}}] \leq 3.0 \text{ for 1-g SAR, and } \leq 7.5 \text{ for 10-g extremity SAR,}^{16} \text{ where}$$

- f_{GHz} is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation¹⁷
- 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.

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.

For BT

Channel (MHz)	Maximum output power (dBm)	Tune up tolerance (dBm)	Max Tune Up Power (dBm)	Distance (mm)	Calculation results	Limit	Operating Mode
2402	-7.466	-7.466 ± 1	-6.466	5	0.070	3	BDR
2441	-7.580	-7.580 ± 1	-6.580	5	0.069	3	
2480	-8.072	-8.072 ± 1	-7.072	5	0.062	3	

For 2.4G

Channel (MHz)	Max power (dBuV/m)	Max output power (dBm)	Tune up tolerance (dBm)	Max Tune Up Power (dBm)	Max Tune Up Power (mW/cm ²)	Distance (mm)	Calculation results	Limit
2402	92.27	-2.9875	-2.9875 ± 1	-1.9875	0.64	5	0.197	3
2441	93.97	-1.2875	-1.2875 ± 1	-0.2875	0.94	5	0.293	3
2478	92.58	-2.6775	-2.6775 ± 1	-1.6775	0.68	5	0.215	3

$$E = \text{EIRP} - 20 \log D + 104.8$$

Where:

E= electric field strength in dBuV/m

EIRP= equivalent isotropic radiated power in dBm

D= specified measurement distance in meters

$$\text{EIRP} = E - 104.8 + 20 \log D = 92.27 - 104.8 + 20 \log 3 = -2.9875 \text{ dbm}$$

Note 1: Calculation Value = [(max. power of channel, included tune-up tolerance, mW)/(min.test separation distance, mm)] • [√ f(GHz)].

$$\text{Fox example: } 0.64/5 \cdot \sqrt{2.402} = 0.197 \leq 3.0$$

Test Results: **PASS**.