

SAR Exemption/Exclusions

General Information:

Technology: BLE
 Frequency: 2400-2480
 Declared Conducted Average Power: 6.0dBm or 3.98mW
 Antenna Gain: 1 dBi
 Tune-Up Tolerance: ±2dB
 Maximum Duty Cycle: 86% or -0.66dB(power)
 Usage: Limb/Extremity

Calculated Maximum Output Power (EIRP):

6.0 dBm(declared) + 1dBi(antenna) + 2dB(tune-up) -0.66dB(duty-cycle) = **8.34dBm or 6.82mW**

FCC:

Method: KDB 447498 D01 General RF Exposure Guidance v06

4.3.1.a) For 100 MHz to 6 GHz and test separation distances ≤50mm, the 10-g SAR test exclusion threshold is determined by the following:

$$\frac{\text{Max Power(mW)}}{\text{Min Separation Distance (mm)}} \cdot \sqrt{\text{Frequency(GHz)}} \leq 7.5 \text{ (for 10g extremity SAR)}$$

Solving for Max power gives the equation:

$$\text{Max Power (mW)} \leq 7.5 \cdot \frac{\text{Min Separation Distance (mm)}}{\sqrt{\text{Frequency (GHz)}}}$$

Substituting 5mm separation distance per KDB Publication 447498 D01, Section 4.3.1(a) and a frequency of 2.48 GHz gives us a maximum power limit of 23.81mW.

The device's maximum output power of 6.82mW is less than the maximum power limit of 23.81mW.

Therefore, this device is exempt from FCC SAR testing.

Canada RSS-102:

Method: RSS-102 Issue 6, Section 6.3 SAR Exemption Limits.

Table 11 from RSS-102 Issue 6 has the following. We have adjusted the power levels by a factor of 2.5 as is allowed for limb-worn devices. Additionally, we have added a row for 2480MHz, which was interpolated between 2450 and 3500MHz.

Frequency (MHz)	Power Limit at ≤5 mm separation (mW)
2450	7.50
2480	7.43
3500	5.00

The power limit of 7.425mW for the larger of the maximum conducted power or equivalent isotropic radiated power (EIRP), source-based and time-averaged.

The device's maximum of 6.82mW is less than 7.43mW as shown in Table 11.

Therefore, we are exempt from RSS-102 SAR testing.