



Borsbeeksebrug 22, 6th floor  
2600 Berchem  
Belgium

530 7<sup>th</sup> Avenue, Suite 902  
New York, 10018 NY  
USA

## SAR Calculations for Sensor Dot at 5mm

### 1.1.1 Maximum Output Power

The maximum radiated power including tune-up tolerance is shown as below.

Technology	Max power level
BLE	-2.28 dBm *

\* from report

### 1.1.2 SAR Testing Exclusions

According to KDB 447498 D01, the SAR test exclusion condition is based on source-based time-averaged maximum conducted output power, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The SAR exclusion threshold is determined by the following formula.

1.

$$\frac{\text{Max. Tune up Power}_{(\text{mW})}}{\text{Min. Test Separation Distance}_{(\text{mm})}} \times \sqrt{f_{(\text{GHz})}} \leq 3.0$$

For the test separation distance  $\leq 50$  mm When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

2.

$$\left[ (\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50 \text{ mm}) \times \left( \frac{f_{(\text{MHz})}}{150} \right) \right]_{(\text{mW})}$$

3. For the test separation distance  $> 50$  mm, and the frequency at 100 MHz to 1500 MHz For the test separation distance  $> 50$  mm, and the frequency at  $> 1500$  MHz to 6 GHz

$$[(\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50 \text{ mm}) \times 10]_{(\text{mW})}$$

Mode	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Ant. to Surface (mm)	Calculate d Result (mW)	Require SAR Testing?
BLE	6.1	4.1	5	9.49	No

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Note:

1. When separation distance  $\leq 50$  mm and the calculated result shown in above table is  $\leq 3.0$ , the SAR testing exclusion is applied.
2. When separation distance  $> 50$  mm and the device output power is less than the calculated result (power threshold, mW) shown in above table, the SAR testing exclusion is applied.

## **1.2 Summary**

Since the SAR testing for all device orientations apply SAR test exclusion per KDB 447498, SAR testing for this device is not required.

Benjamin Vandendriessche



CMO, Byteflies NV