

**Federal Communications Commission**  
 Equipment Authorization Division  
 Application Processing Branch  
 7435 Oakland Mills Road  
**Columbia, MD 21048**

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**SAR-based exemption from Environmental Evaluation according to CFR 47 §1.1307**  
**(b)(3)(i)(B)**

**FCC ID:** YU2-BT4

**CFR 47 §1.1307 (b)(3)(i)(B): A single RF source is exempt if the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold  $P_{th}$  (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive).  $P_{th}$  is given by:**

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left( \frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

$d$  = the separation distance (cm);

**Threshold calculation:**

**d = 0.5 cm** (device touches skin)

**f = 2.44 GHz** (Bluetooth® LE, mid channel)

$$ERP_{20cm}(mW) = 3060; \quad x = -\log_{10} \left( \frac{60}{3060 \cdot \sqrt{2.44}} \right) \approx 1.901265$$

$$P_{th}(mW) \approx 3060 \cdot (0.5 \text{ cm} / 20 \text{ cm})^{1.901265} \approx 2.75284 \quad \rightarrow \underline{P_{th} \approx 2.75 \text{ mW}}$$

$$P_{th}(dBm) \approx 10 \cdot \log_{10} \left( \frac{2.75284 \text{ mW}}{1 \text{ mW}} \right) \approx 4.3971 \quad \rightarrow \underline{P_{th} \approx 4.4 \text{ dBm}}$$

### Evaluation of RF output power

The RF chip has a maximum output power of 6 dBm. The Pre Suite firmware is used and ensures that no output power higher than **0 dBm** can be set.

The tolerance of the RF chip output power at 0 dBm is **± 1.5 dB**.

The **declared maximum output power** of the device is **1.5 dBm** (conducted, radiated EIRP).

The conducted power and radiated power EIRP measured by the testing laboratory can be found in table 1.

$$\text{ERP [dBm]} = \text{EIRP[dBm]} - 2.15 \text{ dB}$$

**Table 1: Measured values qualify for exemption**

Frequency [MHz]	Conducted power [dBm]	Radiated power [dBm] EIRP	Radiated power [dBm] ERP = EIRP – 2.15 dB	Threshold Pth [dBm]	Qualifies for exemption
2402 (Low Channel)	-7.6	-2.0	-0.15	4.4	yes
2440 (Mid Channel)	-6.8	-0.9	-3.05		
2480 (High Channel)	-7.2	0.2	-1.95		

*Source: Test report 1-1358-20-04-03 TR1-R01 by cetecon advanced GmbH, page 19, results*

➔ The output power is far below the calculated threshold, thus the RF source qualifies for exemption.

### Conclusion:

The device is exempted from routine evaluation according to CFR 47 §1.1307 (b)(3)(i)(B).