

RF Exposure Considerations for E-WATERBLOCK Long Range

FCC ID: 2BBE8-101298

The FCC requires that the Maximum ERP be less than the threshold value at a distance of 20 cm from a device to the body of a user.

The transmitter operation for the E-WATERBLOCK Long Range utilizes 915 MHz LoRA

The following FCC Rule Parts and procedures are applicable:

Part 1.1310 – Radiofrequency radiation exposure limits

Part 2.1091 – Radiofrequency radiation exposure evaluation: mobile devices

KDB447498 D01 v07

Mobile and Portable Devices RF Exposure Procedures and Equipment Authorisation Policies

EIRP Calculation:

For 915 MHz LoRA

Transmitter frequency range = 902 MHz to 928MHz

Maximum Conducted Power = 14dBm

Antenna gain: +1dBi

EIRP = 14dBm + 1dBi = 15dBm

ERP = EIRP-2.15dBm = +11.85dBm (**15.31mW**)

Power Thresholds

From Appendix A of KDB 447498 Do1 v07. RF exemption applies if the maximum transmitted power is less than the maximum of the following three criteria:

- i) Less than 1 mw Blanket exemption. $P_{TH} = 0.001 \text{ W}$ (the Radio Board 60556R-F-915 is not compliant)
- ii) determination of exemption under the MPE-based §1.1307(b)(3)(i)(C), if i) not meet
- iii) determination of exemption under the SAR-based §1.1307(b)(3)(i)(B) if both i) and ii) are not met.

Determination of threshold power (P_{TH}) under the MPE-based §1.1307(b)(3)(i)(C)

From table 1 - § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation for 915 MHz:



Threshold ERP (watts) $P_{TH} = 0.0128 * R^2 * f$ (f in MHz)

For

$$R = 0.2 \text{ m}$$

$$f = 915 \text{ MHz}$$

$$P_{TH} = 0.0128 * 0.2^2 * 915$$

$$P_{TH} = 0.0128 * 0.04 * 915$$

$$P_{TH} = \mathbf{0.468 \text{ W (468 mW)}}$$

Conclusion:

The maximum ERP is below the applicable 0.468W threshold for operation at 915MHz, and therefore RF Exposure Evaluation is not required for the E-WATERBLOCK Long Range with a user/antenna separation distance of 20cm and is exempt from evaluation in accordance with §1.1307(b)(3).