RF Exposure Calculation – FCC

Date: July 9, 2024

Applicant: Raven Industries, Inc.
FCC ID: 2BE68-RAV001
Requirement: CFR Title 47, Part 1.1310

S: Calculated power density value in W/m^2

L: 1 mW/cm^2 = 10 W/m^2 (General population exposure limit for power density

P: 141.3 mW (average output power over 30 min.)

G: 1.66 (2.2 dBi Antenna gain, Pulse/Larsen Antenna, P/N W3006)

D: 1 (Duty cycle = 100%)

R: 20cm (Minimum exposure distance)

T: 1.1 (Add 10% Tune up tolerance)

F: 2402 MHz (Frequency, reslting in lowest limit)

Equation for power density:

$$S = \frac{P \cdot G \cdot D}{4 \cdot \pi \cdot R^2} \times T = 1.023\ W/m^2 < 10\ W/m^2$$

The device is therefore compliant with the limit for RF exposure

RF Exposure Calculation - ISED

Date: July 9, 2024

Applicant: Raven Industries, Inc.
IC: 2004B-RAV001
Requirement: RSS-102, Issue 6

Section **6.6 Field reference level exposure exemption limits**

Field reference level (FRL) exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm (i.e. mobile devices), except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 1 W (adjusted for tune-up tolerance)
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance)
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz
- at or above 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 5 W (adjusted for tune-up tolerance)

EIRP = P × G × T = 141.3 mW × 1.66 × 1.1 = 258.014 mW

Limit = 2.676 W = 2676 mW

Result = Exempt

All terms from FCC calculation on pg 1 also apply to ISED calculations.