

MPE Calculation / RF Exposure

Product: Pathfinder2
Applicant: Dogtra Co., Ltd.
Model: PR20U
Address: #715-2(146BL-3L) Gojan-dong, Namdong-gu, Incheon, Korea
FCC ID: SWN-PR20U

According to §2.1091, §2.1093 and §1.1307(b), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

$$S = ERP/4 \pi R^2$$

In other words, $R = \sqrt{ERP/4\pi \times S(Pd)}$

For MURS

Where S = Power density
ERP = Effective Radiated Power
R = distance to the centre of radiation of the antenna

Calculation S = 0.2 mW/cm² for General population uncontrolled exposure (FCC Part 1.1310 Radiofrequency radiation exposure limits)

P = 32.22 dBm (1667.25 mW) : measured maximum output power including tune-up tolerance.*note

G = Antenna gain = 0 dBi (1 in linear terms)

ERP = P x G = 1 667.25 mW

$R = \sqrt{1 667.25/12.56 \times 0.2}$

R = 26 cm

Conclusion If it used at least 26 cm away from human body, RF exposure compliance is satisfied.

Note: Measured maximum output power : 31.22 dBm / Tune-up tolerance : 31 +/- 1 dB
BLE and MURS do not transmit at the same time.

For BLE

$$S = ERP/4 \pi R^2$$

Values S = 1.0 mW/cm² for General population uncontrolled exposure (FCC Part 1.1310 Radiofrequency radiation exposure limits)

$$S = 1.0 \text{ mW/cm}^2$$

PT(BLE) = -1.43 dBm (0.72 mW) : measured maximum output power

G = Antenna gain = 3.65 dBi (2.317 in linear terms)

$$EIRP = PT \times G$$

$$R = 26 \text{ cm}$$

Calculation EIRP = 0.72 x 2.317 = 1.67 mW

$$S = 1.67/12.56 \times (26)^2 = 1.67/8490$$

$$S = 0.0002 \text{ mW/cm}^2$$

Conclusion This confirms compliance to the required radio frequency radiation exposure limit of 1.0 mW/cm² at 26 cm operation.

Note: Measured maximum output power : -2.43 dBm / Tune-up tolerance : -2 dBm +/- 1 dB
BLE and MURS do not transmit at the same time.