

Exposure of humans to RF fields

As per Section 1.1310 mobile transmitters are required to be operated in a manner that ensures the public is not exposed to RF energy levels in accordance with OST/OET Bulletin Number 65.

Calculations have been made using the General Public/Uncontrolled Exposure limits.

Minimum safe distances have been calculated below.

$$\text{Power density, mW/m}^2 = E^2/3770$$

- Occupational / Controlled Exposure limit will be 10 mW/m² or 60 V/m
- General Population / Uncontrolled exposure limit will be 2 mW/m² or 28 V/m

The minimum distance from the antenna at which the MPE is met is calculated from the equation relating field strength in V/m, transmit power in watts, transmit antenna gain, transmitter duty cycle and separation distance in metres:

$$E, \text{ V/m} = (\sqrt{(30 * P * G * DC)}) / d$$

The rated maximum transmitter power = 25 watts.

Transmitter is operated using a quarter wave whip antenna with a gain of 1.64 (2.14 dBi)

The client has declared a duty cycle of 50% as the device operates on a push to talk basis

Controlled

Uncontrolled

$$d = \sqrt{(30 * P * G * DC)} / E$$

$$d = \sqrt{(30 * 25 * 1.64 * 0.5)} / 60$$

$$d = 0.41 \text{ metres or } 41 \text{ cm}$$

$$d = \sqrt{(30 * 25 * 1.64 * 0.5)} / 28$$

$$d = 0.88 \text{ metres or } 88 \text{ cm}$$

Result: Complies if the safe distances defined for each environment are applied.