

Part 1.1310 - Exposure of humans to RF fields

As per Section 1.1310 and Section 2.1091 certification of this transmitter is sought using the General Public / Uncontrolled exposure limits as detailed in OST/OET Bulletin Number 65 as the transmitter could be used in various environments using a power output of 5 watts.

In accordance with Section 1.1310 the following Maximum Permissible Exposure (MPE) power density limits have been applied:

- General Population /Uncontrolled exposure = 0.619 mW/cm^2 ($f/1500 = 929 \text{ MHz}/1500$)

As Part 90 certification is being sought for the 929 - 930 MHz band this assessment has been carried out at 929 MHz which will give a worst case assessment.

$$\text{MPE} = E^2/3770 = 0.619 \text{ mW/cm}^2$$

Therefore:

$$E = \sqrt{0.619 * 3770}$$

$$E = 48.3 \text{ V/m}$$

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:

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

The rated maximum transmitter power = 5 watts.

The transmitter would typically be operated using number of antennas.

The highest gain antenna is a yagi antenna with a gain of 11 dBi (12.6).

It has been assumed that the transmitter can be used with a duty cycle of 100%.

Therefore

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

$$d = \sqrt{30.0 * 5.0 * 12.6 * 1.0} / 48.3$$

$$d = \underline{0.90 \text{ metres or } 90 \text{ cm}}$$

Result: Transmitter will comply if the safe distance calculated above is applied.