# MPE Calculation for WITS Vehicle Data Logging Unit

The FCC requires that the calculated MPE be equal to or less than a given limit dependent on frequency at a distance of 20 cm from a device to the body of a user.

The WITS WLAN transmitter operates over the 2412 – 2462MHz frequency band.

The unit can operate with its internal or external antenna. This calculation is based on the maximum measured transmitter power with an antenna having +3dBi gain.

The equation for the MPE calculation is given in OET Bulletin 65, page 19 as:

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

**Where**    S = Power density

EIRP = Effective Isotropically Radiated Power (EIRP = P x G)

R = distance to the centre of radiation of the antenna

**Values for the WITS**

Output power : +22.1dBm max from test report

ie: EIRP = 162.2mW

R = 20cm

## Calculation

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

$S = 162.2 /(12.56 \times 20^2)$

**$S = 0.032$ mW/cm$^2$**

## Requirement

From table 1 (b) - Limits for General Population/ Uncontrolled Exposure of FCC Rule Part 1.1310 for the 2412 – 2462MHz frequency range.

**$S = 1.0$ mW/cm$^2$**

## Conclusion

The MPE value of the WITS at 20 cm meets the RF exposure limits.