

## RF Exposure Compliance Requirements TSLM UHF Wireless Modem

**FCC Rule:** 1.1307, 1.1310, 2.1091 (b) (d), 2.1093

### Description of Compliance:

The TSLM will be professionally installed in the SCADA (Supervisory Control And Data Acquisition) market and will be mounted with a fixed RTU (Remote Terminal Unit). A typical installation would use a maximum gain antenna of 10 dBi mounted on a tower. A minimum separation distance of more than 121 cm must be maintained between the radiating structure and any person to classify as a mobile under FCC MPE regulations.

**Note: It is the responsibility of the user to guarantee compliance with the FCC MPE regulations when operating this device in a way other than described above.**

The calculation for the more stringent specification, a General Population/Uncontrolled Mobile device according to section 2.1091(b) and section 1.1310 Note 2 is shown below:

### Limits for General Population/Uncontrolled Exposure:

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) | Averaging Time (mins) |
|-----------------------|-------------------------------|-------------------------------|-------------------------------------|-----------------------|
| 0.3-1.34              | 614                           | 1.63                          | *(100)                              | 30                    |
| 1.34-30               | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | 30                    |
| 30-300                | 27.5                          | 0.073                         | 0.2                                 | 30                    |
| 300-1500              | ---                           | ---                           | f (MHz)/1500 (MHz)                  | 30                    |
| 1500-100000           | ---                           | ---                           | 1.0                                 | 30                    |

Environmental Specification:  $f(\text{MHz})/(1500 \text{ mW/cm}^2)$   
 $406 \text{ MHz}/(1500 \text{ MHz mW/cm}^2) = 0.27 \text{ mW/cm}^2$  (worst case)

$$S = (PG)/(4\pi R^2) \quad (\text{OET Bulletin 65})$$

Where:

S = Power Density (mW/cm<sup>2</sup>)

P = Power input to the antenna (mW)

G = Power Gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna (cm)

Distance Calculation:

$$R = \sqrt{(PG)/(4\pi S)}$$

Typical Antenna Gain: 10.0 dBi  $10^{(10.0 \text{ dBi}/10)} = 10.0$

Power input to the Antenna: 37dBm =  $10^{(37\text{dBm}/10)} = 5000 \text{ mW}$

$$R = \sqrt{(5000\text{mW} \cdot 10.0)/(4\pi \cdot 0.27 \text{ mW/cm}^2)} = 121 \text{ cm (Minimum Distance)}$$