

## MAXIMUM PERMISSIVE EXPOSURE, MPE CALCULATOR 2450 RFID with 3.5 dBi antenna, Intermec PN 805-576-001

MPE Calculator

TX Frequency (MHz) **2450** Watts **1** dBi **3.50**  
 Cable Losses dB **0** dBm 30.000000 dBd + 2.17 = dBi dBd to dBd 2.17  
 Antenna Gain dBd **1.33**

Calculated ERP (mW) 1358.313447 radiated (ERP) dBm 31.330  
 Calculated EIRP (mW) 2238.721139 radiated (EIRP) dBm 33.500

**Occupational Limit**  
**5.0 mW/cm<sup>2</sup>**

**General Public Limit**  
**1.0 mW/cm<sup>2</sup>**

$$\frac{\text{EIRP}}{d^2} = \text{mW/cm}^2$$

d = cm EIRP=mW

| TX Frequency (MHz) |        |
|--------------------|--------|
| wavelength         |        |
| meters             | cm     |
| 0.12244898         | 12.245 |

| FCC radiofrequency radiation exposure limits 1.1310 |           |  |              |
|-----------------------------------------------------|-----------|--|--------------|
| Freq. MHz                                           | occ.limit |  | public limit |
| 300-1,500                                           | f/1500    |  | f/300        |
| 1,500-10,000                                        | 5         |  | 1            |

MPE uses EIRP for calculations. EIRP is based on TX power added to the antenna gain in dBi.  
 dBi = dB gain compared to an isotropic radiator

| EIRP (watts) | Distance (cm) | Distance (Meters) | Distance (inches) | mW/cm <sup>2</sup> |
|--------------|---------------|-------------------|-------------------|--------------------|
| 2238.721     | 100.0         | 1.000             | 39.37             | 0.01782            |
| 2238.721     | 75.0          | 0.750             | 29.53             | 0.03167            |
| 2238.721     | 50.0          | 0.500             | 19.69             | 0.07126            |
| 2238.721     | 40.0          | 0.400             | 15.75             | 0.11134            |
| 2238.721     | 30.0          | 0.300             | 11.81             | 0.19795            |
| 2238.721     | 20.0          | 0.200             | 7.87              | 0.44538            |
| 2238.721     | 19.0          | 0.190             | 7.48              | 0.49350            |
| 2238.721     | 18.0          | 0.180             | 7.09              | 0.54985            |
| 2238.721     | 17.0          | 0.170             | 6.69              | 0.61644            |
| 2238.721     | 16.0          | 0.160             | 6.30              | 0.69591            |
| 2238.721     | 15.0          | 0.150             | 5.91              | 0.79179            |
| 2238.721     | 14.5          | 0.145             | 5.71              | 0.84733            |
| 2238.721     | 14.0          | 0.140             | 5.51              | 0.90894            |
| 2238.721     | 13.5          | 0.135             | 5.31              | 0.97751            |
| 2238.721     | 13.0          | 0.130             | 5.12              | 1.05415            |
| 2238.721     | 12.5          | 0.125             | 4.92              | 1.14017            |
| 2238.721     | 12.0          | 0.120             | 4.72              | 1.23717            |
| 2238.721     | 11.5          | 0.115             | 4.53              | 1.34708            |
| 2238.721     | 11.0          | 0.110             | 4.33              | 1.47233            |
| 2238.721     | 10.5          | 0.105             | 4.13              | 1.61589            |
| 2238.721     | 10.0          | 0.100             | 3.94              | 1.78152            |