

**MPE Calculation
for
FCC ID: OWS-NIC503
IC: 5975A-NIC503**

The i210 is 900MHz FHSS module.

Operating Environment:

The operating environment for the for the radio in all cases is a fixed, uncontrolled environment, however, the devices are classified as being "Mobile", Therefore the exposure at 20 cm is calculated.

Fixed, Uncontrolled Environment: (OET65/C Appdx A)

The FCC limit for the power density for uncontrolled exposure to RF devices operation at 900MHz at a distance of 20 cm is:

$$f \text{ (MHz)}/1500 = 900/1500 = .6\text{mW/cm}^2$$

Power density is calculated from the following equation

$$\text{Exposure (mW/cm}^2\text{)} = \frac{\text{EIRP(mW)} * \text{Duty Cycle}}{4 * \text{PI} * \text{Radius}^2\text{(cm)}}$$

Where:

Radius = 20 cm

Duty Cycle = assumed to be 100% to yield a worst case result.

The maximum allowed external antenna gain on 900MHz is 2.5 dBi

The transmit power is 29.78 dBm, 950.604 mW

900MHz ISM band MPE distance Calculation

Using the EIRP measured on 900MHz ISM band.

MAX Pout: 29.78dBm

MAX Ant Gain 2.5 dBi (1.778x)

EIRP: 32.28 dBm (1690.44mW EIRP)

Calculating power density at a distance of 20 cm yields:

$$\text{Power Density} = \frac{1690.44 * 1}{4 * \text{Pi} * 20^2} \Rightarrow \frac{1690.44}{5026.54} \Rightarrow .3363 \text{ mw/cm}^2$$

$$\begin{aligned} \text{Delta} &= \text{specification} - \text{result} \\ &= .6 \text{ mW/cm}^2 - .3363 \text{ mw/cm}^2 = .2637 \text{ mw/cm}^2 \\ &= -3.57 \text{ dB below limit} \end{aligned}$$