

November 19, 1998

Federal Communications Commission
Equipment Authorization Division
7435 Oakland Mills Road
Columbia, MD 21046

Subject: Maximum Permissible Exposure calculations for **FCC ID: NVCRM10003**

To whom it may concern,

Whisper is submitting a low power transmitter for the Gas Remote Meter Interface. The unit has a low power frequency hopping spread spectrum radio operating in the 902 - 928 MHz range with a radiated output power of 12.1 mW.

Assuming a worst case of no duty cycle.

For an Isotropic radiator the surface area of a sphere can be used to determine the area over which the transmitter energy is radiated.

$$\text{Surface area of a sphere} = 4 \cdot \pi \cdot \text{radius}^2$$

In the case where there is antenna gain, the worst case energy density is increased by the antenna gain. The exposure level can be calculated as follows for the -3.0 dBi antenna gain:

$$\text{MPE distance} = (\text{output power} \cdot \text{duty cycle} \cdot 10 (\text{antenna gain}/10) / (4 \cdot \pi \cdot \text{Exposure Limit (mW / cm}^2\text{)})^{1/2}$$

For the -3.0 dBi Antenna

$$\begin{aligned} \text{NVCRM10003 MPE distance} &= (92 \text{ mW} \cdot 1 \cdot 0.5 / 4 \cdot 3.14 \cdot 1)^{1/2} \\ &= 1.91 \text{ cm} \\ &= .75 \text{ in} \end{aligned}$$

If you have any questions please do not hesitate to call me.

Sincerely,

Chris Byleckie
Technical Director
Electronic Compliance Laboratories