# MPE Calculations

**RF Exposure Requirements:**

**§1.1307(b)(1) and §1.1307(b)(2):** Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

**RF Radiation Exposure Limit: §1.1310:**

As specified in this section, the Maximum Permissible Exposure (MPE) Limit shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Sec. 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of Sec. 2.1093 of this chapter.

**MPE Limit Calculations:**

1) EUT operating frequency band 450-456 MHz MHz. Highest conducted power is 25 dBm (0.307 W). Maximum 3 dBi antenna gain; 100% maximum duty cycle.

Power Density Determination:
$S = PG / 4\pi R^2$ or $R = \sqrt{(PG / 4\pi S)}$
where, $S$ = Power Density (mW/cm$^2$)
$P$ = Linear Power Input to antenna in mW (307 mW)
$G$ = Numerical Antenna Gain (2)
$R$ = Radius (20 cm , as noted in installation instructions)
$S = (307*2.0/4\pi 20^2) = (614/5026) = $ **0.122 mW/cm$^2$** @ 20cm

450-456 MHz band:  MPE limit = f/1500 or **0.302 mW/cm$^2$** General Exposure limit;

Therefore, the calculated MPE is below the General Exposure MPE limit at 20 cm.