MPE Calculations

FCC part 1.1310, Table 1 limits the power density for uncontrolled exposure to 1mW/ cm^2 for systems operating in the UNII bands. The distance, d(cm) from the antenna at which the power density, P_d (mW/cm^2) is below this limit is calculated from the maximum EIRP, P_t (mW) using the equation:

$$P_d = P_t /(4 \pi d^2)$$

Re-arranging for the distance at which the power density is 1mW/cm2 gives:

$$d = \sqrt{(P_t /(4 \pi))}$$

The device under test is designed to use an antenna with a gain of 18 dBi at an output power of 10.9dBm, giving an EIRP of 28.9 dBm (776.2 mW). It can also use an antenna of gain 24dBi at an output power (at the antenna) of 5.9dBm, giving an EIRP of 29.9 dBm (977.3 mW). Based on the highest EIRP for the system, the distance at which the power density meets the 1mW/ cm^2 limit for uncontrolled exposure is:

$$d = \sqrt{(977.3/(4 \pi))} = \underline{8.82 \text{ cm}}$$

The users guide instructs the user *(in two separate sections) to install the device such that it has a separation of at least 20cm from persons (see text below) to comply with the FCC's requirements.

At 20cm from the antenna, the maximum power density for an EIRP of 977.3mW is:

$$P_d = P_t /(4 \pi d^2) = \underline{0.19 \text{ mW/ cm}^2}$$

This separation of 20cm more than meets the FCC's and Industry Canada Rf exposure requirements.

Installation Note:
To ensure compliance with FCC RF exposure requirements, the antenna used for this device must be installed to provide a separation distance of at least 20 cm from all persons.

RF Exposure Requirements
To ensure compliance with FCC RF exposure requirements, the antenna used for this device must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or radio transmitter. Installers and end-users must follow the installation instructions provided in this user guide.