

MPE Calculations – End User Manual Concerns

The system will be factory calibrated, such that the intentional emissions remain under the 36 dBm (4000mW) max. EIRP as required by Part 15.247. When the system is configured with the Omni-Directional antenna (gain = 8dBi) the EIRP is 35.5dBm. When the system utilizes the 10dBi sector antenna the maximum EIRP is 36dBm.

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

$$P_d = 0.75 P_t / (4 \pi d^2)$$

Re-arranging for the distance at which the power density is $1\text{mW}/\text{cm}^2$ gives:

$$d = \sqrt{(0.75 P_t / (4 \pi))}$$

For a single Omni-Directional antenna system (which would be the case for instances where the end-user installs the product themselves), the distance d is based on an EIRP of 35.5 dBm (3548 mW):

$$d = \sqrt{(0.75 \times 3548 / (4 \pi))} = \underline{\underline{\mathbf{14.6\text{ cm } (5.7'')}}}$$

For a single Sector antenna system (which would be the case for instances where professional installation is required at the end-user premises), the distance d is based on an EIRP of 36 dBm (4000 mW):

$$d = \sqrt{(0.75 \times 4000 / (4 \pi))} = \underline{\underline{\mathbf{15.5\text{ cm } (6.1'')}}}$$

The end-user's guide specifies a safety distance of at least 7 inches to comply with the calculations above for either omni or sector antennas as shown on the following pages.

Instructions

- Read and follow all safety and operating instructions
- Heed all precautions and warnings in the instructions and on the equipment
- Keep instructions for future use

Hazard Warnings

- ?? **Environment** - Do not place the Network/Power Unit in a very cold, dusty, wet or high humidity environment. The unit should be situated away from all heat sources such as radiators, heat registers, stoves, amplifiers and other heat producing appliances.
- ?? **Fire or Electric Shock** - Do not expose the Network/Power Unit to any type of moisture, including rain. Do not use or install near water-related environments such as sinks, bathtubs, laundry areas, spas, swimming pools, or in wet basements. Take care not to spill any liquids on the unit.
- ?? **RF Exposure** – Disconnect power from the wireless router when working within 7 inches (16 cm) of the antenna

Grounding

- Be sure the wireless router and antenna system is grounded to provide protection from voltage surges and built-up static charges. Section 810 of the National Electrical Code ANSINFPA No 70-1984 provides information about proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, connection to grounding electrodes and requirements