

MPE Calculations

FCC part 1.1310, Table 1 limits the power density for uncontrolled exposure to $1\text{mW}/\text{cm}^2$ for systems operating in the 15.247 DTS. 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:

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

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

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

The device under test is designed to use antennas with maximum gains of 2dBi at an output power of 19 dBm (using output power listed on the original grant), giving an EIRP of 21 dBm (138mW). Based on the highest EIRP for the system, the distance at which the power density meets the $1\text{mW}/\text{cm}^2$ limit for uncontrolled exposure is:

$$d = \sqrt{(138 / (4 \pi P_d))} = 3.3 \text{ cm}$$

The device is to be approved for mobile applications, which requires a separation distance of at least 20cm. At a distance of 20cm from the antenna of the device the power density is:

$$P_d = 138 / (4 \pi 20^2) = 0.027 \text{ mW}/\text{cm}^2$$

The users guide instructs the user to install the device such that it has a separation of at least 20cm from persons (see text below, taken from page 22) to comply with rf exposure requirements.

Guidelines

It is the responsibility of the installer and user of the AirFlow AirSwitch 1200 to guarantee that all AirHub 100s are operated at least 20 centimeters from any person.

This is necessary to insure that the product is operated in accordance with the RF Guidelines for Human Exposure which have been adopted by the Federal Communications Commission. The device shall not be co-located with other transmitters.