Exposure Evaluation

airHost33™ 150 PS
Single-Band Medium Power AirHost Unit

FCCID: HCOAH331PSD20A

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Model No.: AH33-1-PS-D-20-1N-D0-001

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RF Exposure Evaluation

According to FCC Part 1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. More information on evaluating compliance with these limits can be found in the FCC's OST/OET Bulletin Number 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation".

In the Frequency Range of 30 to 300 MHz, the maximum power density limit for the occupational/controlled exposures is 1 mW/cm^2 for an average time of 6 minutes.

In the Frequency Range of 30 to 300 MHz, the maximum power density limit for the general population/uncontrolled exposures is 0.2 mW/cm^2 for an average time of 30 minutes.

The antenna connected to the product is specific to the deployment. The worst case scenario occurs when using a high gain antenna. A typical outdoor antenna is shown in the following example:

The highest conducted output power is 37 dBm but we might need to back off to meet FCC Part 90.219 rules. The ERP can't exceed 37dBm, so for a set output level of 30 dBm with a donor antenna gain of 7 dBi, the EIRP is 37 dBm.

The maximum power density safe exposure level for general population/uncontrolled exposure of 30 minutes for the frequency of 152 MHz is 0.2 mW/cm^2.

Conducted Output Power (dBm)	Max Antenna Gain (dBi)	Max EIRP (mW)	Power Density Limit Allowed (mW/cm²)	Safe Distance (cm)
30	7	5012	0.2	45

RF Exposure Evaluation Distance Calculation

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

Where:

d = Distance to the center of radiation of the antenna (cm) for the allowable Power Density

S = Allowable Power Density Limit (mW/cm^2)

EIRP = Equivalent isotropically radiated power (mW) = $10^{[TX\ Power\ (dBm)\ +\ Ant\ Gain\ (dBi)/10]}$

As shown above, the minimum safe distance where the MPE limit is reached is 45 cm from a 7 dBi antenna and no feeder loss.

If the antenna will be positioned closer to end users than 45 cm, then the installer must calculate the safe distance for a given installation using the formulas provided.