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## **RF Exposure Limits**

**for**

**AT1595-82**

**Active Inmarsat Antenna**

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The criteria used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation is listed in FCC P.1.1310 & P.2.1091

## 1 METHOD OF MEASUREMENTS

In order to demonstrate compliance with FCC P.2.1091, the following information is needed:

- Calculation that estimates the minimum separation distance (20 cm or more) between an antenna and persons required to satisfy power density limits for free space.
- Antenna installation and device operating instructions for installers (professional/unskilled users), and the parties responsible for ensuring compliance with the RF exposure requirement.
- Any caution statements and/or warning labels that are necessary in order to comply with the exposure limits.
- Any other RF exposure related issues that may affect compliance.

## 2 CALCULATION METHOD FOR RF SAFETY DISTANCE

The power density,  $S$ , in units of  $\text{mW/cm}^2$  is:

$$S = \frac{P_{IN}G}{4\pi r^2} = \frac{EIRP}{4\pi r^2}$$

Where  $P_{IN}$  is power input to the antenna in  $\text{mW}$ ,  $G$  is the numeric (linear) gain of the antenna relative to isotropic radiator,  $EIRP$  is the equivalent isotropic radiated power, and  $r$  is the distance to center of radiation in  $\text{cm}$ .

Therefore:

$$r = \sqrt{\frac{EIRP}{4\pi S}}$$

## 3 RF EVALUATION

Antenna installation and device operating instructions shall be provided to installers to maintain and ensure compliance with RF exposure requirements.

Caution statements and/or warning labels that are necessary in order to comply with the exposure limits will be indicated in the User's Manual and displayed on the device label.

Using the maximum EIRP of 40.93 dBm and the power density of 1  $\text{mW/cm}^2$  for general population/uncontrolled exposure:

$$r = \sqrt{\frac{10^{\left(\frac{40.93 \text{ dBm}}{10}\right)}}{4\pi \frac{\text{mW}}{\text{cm}^2}}} = \sqrt{\frac{12388 \text{ mW}}{4\pi \frac{\text{mW}}{\text{cm}^2}}} = 31.4 \text{ cm}$$

The recommended minimum distance is 31.4 cm. In practice, 55 cm is printed in the user manual and on some versions of the product because we use the same warning label from a different, higher power product.