

RF Exposure Evaluation

A calculation based on the **FCC's Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01)** appears below. Since conducted power measurements were unable to be made, output power was calculated using radiated field strength readings.

Antenna Output = 117.7dBuV/m @ 1m

$ERP = 4\pi PDR^2$ where PD= power density, R= measurement distance [m]

$PD = (\text{field strength})^2 / (\text{free space impedance})$

$117.7\text{dBuV/m} = 0.767\text{V/m}$

$PD = (0.767)^2 / 377 = 0.00156\text{W/m}^2$

$ERP = 4\pi \times 0.000118 \times 1^2 = 0.0196 = 19.6\text{mW}$

The limit for General Population/Uncontrolled Exposure is

$S = 1\text{mW/cm}^2$

The distance from the antenna at which this radiation level will be reached is

$R = \text{SQRT}(EIRP / 4\pi S)$

$EIRP = 1.64 \times ERP$

$R = \text{SQRT}(1.64 \times 19.6 / (4\pi \times 1)) = 1.6\text{cm}$

Due to this small distance and general installation practice (installed inside an RF tight metal tank), the danger of harmful RF radiation exposure from this device is minimal.