

Analysis of Non-Ionizing Radiation for a 2.4 m Earth Station Antenna System

This report analyzes the non-ionizing radiation levels for a 2.4 m earth station antenna system.

The FCC's Office of Engineering Technology's Bulletin No. 65 specifies that there are two separate tiers of exposure limits that are dependant upon the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The two tiers are General Population / Uncontrolled environment, and an Occupational / Controlled environment.

The applicable exposure limit for the General Population / Uncontrolled environment, i.e., areas that people may enter freely, at this frequency of operation is 1 mW/cm² average power density over a 30 minute period.

The applicable exposure limit for the Occupational / Controlled environment, i.e., areas that only authorized / trained personnel have access to, at this frequency of operation is 5 mW/cm² average power density over a 6 minute period.

The highest power density will typically be found at the reflector surface. The formula for determining power density at the surface of the reflector is $(4 * P) / A$, where P is the power into the antenna and A is the area of the reflector.

The power density at the reflector surface is therefore: $(4 * 25 \text{ mW}) / 4.524 \text{ m}^2 = 0.002 \text{ mW/cm}^2$.

Conclusions

The power density is well below both the controlled and uncontrolled access limits. Further, the proposed earth station system will be located in an environment with controlled access and will be serviced by trained personnel. Only trained personnel will operate the transmitting system during testing. No access to the reflector/feed area will be permitted when the transmitter is turned on. Based on the above analysis it is concluded that no hazard exists for the public.