RF Exposure – USA

FCC Maximum Permissible Exposure (MPE) limits for equipment operating in the frequency range 300 – 1500 MHz is $\frac{f}{1500}$ mW/cm^2 which equates to $\frac{850}{1500}$ mW/m^2 or 0.5667 mW/m^2

The equation S= $\frac{EIRP}{4\pi r\text{^}2}$ can be written to find safe distance, r:

r = √ (EIRP/4πS)

EIRP: Equivalent Isotropic Radiated Power in mW

S: power density = 0.5667 mW/m^2

The maximum radiated power permitted in any single antenna sector is 500 W ERP

500 W ERP = 56.989 dBm ERP = 59.139 dBm ERP = 820.29 W EIRP = 820290 mW EIRP

The minimum safe distance from the antenna = √ (EIRP/4πS)

= √ (820290/4π*0.5667)

= 339.40 cm

The declared minimum safe distance is 3.5 m or 350 cm

The power density at 350 cm = $\frac{820290}{4\pi*350\text{^}2}$ = 0.533 mW/m^2

0.533 mW/m^2 is lower than the FCC limit of 0.5667 mW/m^2 at 850 MHz so meets the EMF exposure requirement for general population at this distance