

RADIATION CALCULATIONS FOR		0.74 meter EARTH STATION	
Nomenclature	Formula	Value	Unit
INPUT PARAMETERS			
M = Antenna Aperture Major Axis		0.98	meters
m = Antenna Aperture Minor Axis		0.56	meters
w = Major Axis of Feed Mouth		0.065	meters
h = Minor Axis of Feed Mouth		0.042	meters
P = Max Power into Antenna		0.5	Watts
n = Apperture Efficiency		67%	
k = Wavelength @ 30 GHz		0.0100	meters
CALCULATED VALUES			
A = Area of Reflector	$\pi \times M \times m / 4$	0.431	meters ²
l = Length of Near Field	$M^2 / 4k$	24	meters
L = Beginning of Far Field	$0.6M^2 / k$	58	meters
G = Antenna Gain @ 30 GHz	$n(4 \times \pi \times A) / k^2$	36,295	(45.6) dBi
a = Area of Feed Mouth	$\pi \times w \times h / 4$	0.002	meters ²
POWER DENSITY CALCULATIONS			
Region	Maximum Power Density in Region		Hazard Assessment (FCC MPE Limit = 1 mW/cm ²)
	Formula	Value (mW/cm ²)	
1 Near Field	$4nP/A$	0.31	< FCC MPE Limit
2 Far Field	$GP / (4(\pi)L^2)$	0.04	< FCC MPE Limit
3 Transition	\leq Nr Fld Region	0.31	< FCC MPE Limit