

RADIATION CALCULATIONS FOR 4.60 meter EARTH STATION			
Nomenclature	Formula	Value	Unit
INPUT PARAMETERS			
M = Antenna Aperture Major Axis m = Antenna Aperture Minor Axis d = Diameter of Feed Mouth		4.60 4.60 0.029	meters meters meters
P = Max Power into Antenna n = Apperture Efficiency k = Wavelength @ 14.25 GHz		300.0 66% 0.0210526	Watts meters
CALCULATED VALUES			
A = Area of Reflector	$\pi \times M \times m / 4$	16.619	meters ²
l = Length of Near Field	$M^2 / 4k$	251	meters
L = Beginning of Far Field	$0.6M^2 / k$	603	meters
G = Antenna Gain @ 14.25 GHz	$n(4 \times \pi \times A) / k^2$	310,990	(54.9) dBi
a = Area of Feed Mouth	$\pi \times d^2 / 4$	0.0007	meters ²
POWER DENSITY CALCULATIONS			
Region	Maximum Power Density in Region		Hazard Assessment (FCC MPE Limit = 5 mW/cm ²)
	Formula	Value (mW/cm ²)	
1 Near Field	$4nP/A$	4.77	< FCC MPE Limit
2 Far Field	$GP / (4(\pi)L^2)$	2.04	< FCC MPE Limit
3 Transition	<= Nr Fld Region	4.77	< FCC MPE Limit
4 Near Reflector Surface	$4P/A$	7.22	> FCC MPE Limit (See Attachment 1)
5 Between Reflector & Ground	P/A	1.81	> FCC MPE Limit (See Attachment 1)