

RADIATION CALCULATIONS FOR 0.66 meter EARTH STATION			
Nomenclature	Formula	Value	Unit
INPUT PARAMETERS			
M = Antenna Aperture Major Axis m = Antenna Aperture Minor Axis d = Diameter of Feed Mouth		0.74 0.59 0.029	meters meters meters
P = Max Power into Antenna		4.0	Watts
n = Apperture Efficiency		64%	
k = Wavelength @ 30 GHz		0.0100	meters
CALCULATED VALUES			
A = Area of Reflector	$\pi \times M \times m / 4$	0.343	meters ²
l = Length of Near Field	$M^2 / 4k$	14	meters
L = Beginning of Far Field	$0.6M^2 / k$	33	meters
G = Antenna Gain @ 30 GHz	$\eta(4 \times \pi \times A) / k^2$	27,582	(44.4) 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	$4nP/A$	2.99	< FCC MPE Limit
2 Far Field	$GP / (4(\pi)L^2)$	0.81	< FCC MPE Limit
3 Transition	<= Nr Fld Region	2.99	< FCC MPE Limit
4 Near Reflector Surface	$4P/A$	4.67	< FCC MPE Limit
5 Between Reflector & Ground	P/A	1.17	< FCC MPE Limit
6 Between Reflector and Feed	$4P/a$	2422.3	> FCC MPE Limit (See Attachment 1)