

RADIATION CALCULATIONS FOR 0.30 meter TERRESTRIAL STATION			
Nomenclature	Formula	Value	Unit
INPUT PARAMETERS			
M = Antenna Aperture Major Axis		0.30	meters
m = Antenna Aperture Minor Axis		0.30	meters
d = Diameter of Feed Mouth		0.029	meters
P = Max Power into Antenna		0.1	Watts
n = Apperture Efficiency		70%	
k = Wavelength @ 25.5 GHz		0.0118	meters
CALCULATED VALUES			
A = Area of Reflector	$\text{PlxMxm}/4$	0.071	meters ²
l = Length of Near Field	$\text{M}^2/4\text{k}$	2	meters
L = Beginning of Far Field	$0.6\text{M}^2/\text{k}$	5	meters
G = Antenna Gain @ 25.5 GHz	$\text{n}(4\text{xPlxA})/\text{k}^2$	4,492	(36.5) dBi
a = Area of Feed Mouth	$\text{Pl}^*\text{d}^2/4$	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	$4\text{nP}/\text{A}$	0.40	< FCC MPE Limit
2 Far Field	$\text{GP}/(4(\text{Pl})\text{L}^2)$	0.17	< FCC MPE Limit
3 Transition	<= Nr Fld Region	0.40	< FCC MPE Limit
4 Near Reflector Surface	$4\text{P}/\text{A}$	0.57	< FCC MPE Limit
5 Between Reflector & Ground	P/A	0.14	< FCC MPE Limit
6 Between Reflector and Feed	$4\text{P}/\text{a}$	60.6	> FCC MPE Limit (See Attachment 1)