

ATTACHMENT A

RADIATION HAZARD CALCULATIONS FOR 1.60 meter EARTH STATION			
Nomenclature	Formula	Value	Unit
INPUT PARAMETERS			
D = Antenna Diameter		1.60	meters
d = Diameter of Feed Mouth		0.033	meters
P = Max Power into Antenna		13.5	Watts
n = Apperture Efficiency		65%	
k = Wavelength @ 29.997 GHz		0.0100	meters
CALCULATED VALUES			
A = Area of Reflector	$\pi D^2/4$	2.011	meters ²
l = Length of Near Field	$D^2/4k$	64	meters
L = Beginning of Far Field	$0.6D^2/k$	154	meters
G = Antenna Gain @ 29.997 GHz	$n(\pi D^2/k)^2$	164,219	52.2 dBi
a = Area of Feed Mouth	$\pi d^2/4$	0.0009	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	$4nP/A$	1.75	< FCC MPE Limit
2 Far Field	$GP/(4(\pi)l^2)$	0.75	< FCC MPE Limit
3 Transition	<= Nr Fld Region	1.75	< FCC MPE Limit
4 Near Reflector Surface	$4P/A$	2.69	< FCC MPE Limit
5 Between Reflector & Ground	P/A	0.67	< FCC MPE Limit
6 Between Reflector and Feed	$4P/a$	6313.6	> FCC MPE Limit