

RADIATION HAZARD CALCULATIONS FOR		9.2 meter EARTH STATION	
Nomenclature	Formula	Value	Unit
INPUT PARAMETERS			
D, . Antenna Diameter		9.20	meters
d • Diameter of Feed Mouth		0.029	meters
P • Max Power Into Antenna		200	Watts
n = Apperture Efficiency		49%	
k = Wavelength @ 29.1 GHz		0.0103	meters
CALCULATED VALUES			
A = Area of Reflector	$\pi D^2/4$	66.476	meters ²
l • Length of Near Field	$D^2/4k$	2053	meters
L = Beginning of Far Field	$0.6D^2/k$	4926	meters
G, . Antenna Gain @ 28.6 GHz	$n(\pi D/k)^2$	3,851,881	65.9 dBI
a = Area of Feed Mouth	$\pi d^2/4$	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	$4nP/A$	0.59	< FCC MPE Limit
2 Far Field	$GP/(4(\pi)L^2)$	0.25	< FCC MPE Limit
3 Transition	$\leq n_r$ Fld Region	0.59	< FCC MPE Limit
4 Near Reflector Surface	$4P/A$	1.20	< FCC MPE Limit
5 Between Reflector & Ground	PIA	0.30	< FCC MPE Limit
6 Between Subreflector and Feed	$4P/a$	121116.7	> FCC MPE Limit

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Nomenclature	Formula	Value	Unit
INPUT PARAMETERS			
D • Antenna Diameter		9.20	meters
d • Diameter of Feed Mouth		0.029	meters
P • Max Power Into Antenna		200	Watts
n = Apperture Efficiency		49%	
k = Wavelength @ 51.4 GHz		0.0058	meters
CALCULATED VALUES			
A • Area of Reflector	$\pi D^2/4$	66.476	meters ²
l • Length of Near Field		3626	meters
L = Beginning of Far Field	$0.6D^2/k$	8702	meters
G • Antenna Gain @ 51.4 GHz	$n(\pi D/k)^2$	12,017,472	70.8 dBI
a • Area of Feed Mouth	$\pi d^2/4$	0.0007	meters ²
POWER DENSITY CALCULATIONS			
Region	Maximum Power Density In Region		
	Formula	Value (mW/cm ²)	Hazard Assessment (FCC MPE Limit= 5 mW/cm ²)
1 Near Field	$4nP/A$	0.59	< FCC MPE Limit
2 Far Field	$GP/(4(\pi)L^2)$	0.25	< FCC MPE Limit
3 Transition	$\leq N_r$ Fld Region	0.59	< FCC MPE Limit
4 Near Reflector Surface	$4P/A$	1.20	< FCC MPE Limit
5 Between Reflector & Ground	πIA	0.30	< FCC MPE Limit
6 Between Subreflector and Feed	$4P/a$	121116.7	> FCC MPE Limit