

RADIATION HAZARD CALCULATIONS FOR <span style="float: right;">0.45 meter</span>			
Nomenclature	Formula	Value	Unit
<b>INPUT PARAMETERS</b>			
D = Antenna Diameter		0.45	meters
d = Diameter of Feed Mouth		0.029	meters
P = Max Power into Antenna		15	Watts
n = Apperture Efficiency		60%	
k = Wavelength @ 14.25 GHz		0.0211	meters
<b>CALCULATED VALUES</b>			
A = Area of Reflector	$\pi D^2/4$	0.16	meters <sup>2</sup>
l = Length of Near Field	$D^2/4k$	2	meters
L = Beginning of Far Field	$0.6D^2/k$	6	meters
G = Antenna Gain @ 14.25 GHz	$n(\pi D/k)^2$	2,706	34.3 dBi
a = Area of Feed Mouth	$\pi d^2/4$	0.0007	meters <sup>2</sup>
<b>POWER DENSITY CALCULATIONS</b>			
Region	Maximum Power Density in Region		Hazard Assessment (FCC MPE Limit = 1 mW/cm <sup>2</sup> )
	Formula	Value (mW/cm <sup>2</sup> )	
1 Near Field	$4nP/A$	22.6	> FCC MPE Limit ( See Attachment A )
2 Far Field	$GP/(4(\pi)L^2)$	9.7	> FCC MPE Limit ( See Attachment A )
3 Transition	$\leq N_r$ Fld Region	22.6	> FCC MPE Limit ( See Attachment A )
4 Near Reflector Surface	$4P/A$	37.7	> FCC MPE Limit ( See Attachment A )
5 Between Reflector & Ground	$P/A$	9.4	> FCC MPE Limit ( See Attachment A )
6 Between Reflector and Feed	$4P/a$	9083.8	> FCC MPE Limit ( See Attachment A )

RADIATION HAZARD CALCULATIONS FOR <span style="float: right;">0.5 meter</span>			
Nomenclature	Formula	Value	Unit
<b>INPUT PARAMETERS</b>			
D = Antenna Diameter		0.5	meters
d = Diameter of Feed Mouth		0.029	meters
P = Max Power into Antenna		15	Watts
n = Apperture Efficiency		60%	
k = Wavelength @ 14.25 GHz		0.0211	meters
<b>CALCULATED VALUES</b>			
A = Area of Reflector	$\pi D^2/4$	0.20	meters <sup>2</sup>
l = Length of Near Field	$D^2/4k$	3	meters
L = Beginning of Far Field	$0.6D^2/k$	7	meters
G = Antenna Gain @ 14.25 GHz	$n(\pi D/k)^2$	3,341	35.2 dBi
a = Area of Feed Mouth	$\pi d^2/4$	0.0007	meters <sup>2</sup>
<b>POWER DENSITY CALCULATIONS</b>			
Region	Maximum Power Density in Region		Hazard Assessment (FCC MPE Limit = 1 mW/cm <sup>2</sup> )
	Formula	Value (mW/cm <sup>2</sup> )	
1 Near Field	$4nP/A$	18.3	> FCC MPE Limit ( See Attachment A )
2 Far Field	$GP/(4(\pi)L^2)$	7.9	> FCC MPE Limit ( See Attachment A )
3 Transition	$\leq N_r$ Fld Region	18.3	> FCC MPE Limit ( See Attachment A )
4 Near Reflector Surface	$4P/A$	30.6	> FCC MPE Limit ( See Attachment A )
5 Between Reflector & Ground	$P/A$	7.6	> FCC MPE Limit ( See Attachment A )
6 Between Reflector and Feed	$4P/a$	9083.8	> FCC MPE Limit ( See Attachment A )