

| 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 = Aperture Efficiency | | 49% | |
| k = Wavelength @ 28.6 GHz | | 0.0105 | meters |
| CALCULATED VALUES | | | |
| A = Area of Reflector | $\pi D^2/4$ | 66.476 | meters ² |
| l = Length of Near Field | $D^2/4k$ | 2017 | meters |
| L = Beginning of Far Field | $0.6D^2/k$ | 4842 | meters |
| G = Antenna Gain @ 28.6 GHz | $n(\pi D/k)^2$ | 3,720,651 | 65.7 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 | \Leftarrow Nr Fld Region | 0.59 | < FCC MPE Limit |
| 4 Near Reflector Surface | $4P/A$ | 1.20 | < FCC MPE Limit |
| 5 Between Reflector & Ground | P/A | 0.30 | < FCC MPE Limit |
| 6 Between Subreflector and Feed | $4P/a$ | 121116.7 | > FCC MPE Limit (See Attachment 1) |

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| D = Antenna Diameter | | 9.20 | meters |
| d = Diameter of Feed Mouth | | 0.029 | meters |
| P = Max Power into Antenna | | 200 | Watts |
| n = Aperture 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 | $D^2/4k$ | 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 |
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| 5 Between Reflector & Ground | P/A | 0.30 | < FCC MPE Limit |
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