

| RADIATION HAZARD CALCULATIONS FOR 1.20 meter EARTH STATION |                                 |                             |  |
|--|---------------------------------|-----------------------------|--|
| Nomenclature   | Formula                         | Value                       | Unit   |
| INPUT PARAMETERS   |                                 |                             |  |
| D = Antenna Diameter                                       |                                 | 1.20                        | meters   |
| d = Diameter of Feed Mouth                                 |                                 | 0.049                       | meters   |
| P = Max Power into Antenna                                 |                                 | 0.5                         | Watts  |
| n = Apperture Efficiency                                   |                                 | 67%                         |  |
| k = Wavelength @ 30 GHz                                    |                                 | 0.0100                      | meters   |
| CALCULATED VALUES  |                                 |                             |  |
| A = Area of Reflector                                      | $\pi D^2/4$                     | 1.131                       | meters <sup>2</sup>  |
| l = Length of Near Field                                   | $D^2/4k$                        | 36                          | meters   |
| L = Beginning of Far Field                                 | $0.6D^2/k$                      | 86                          | meters   |
| G = Antenna Gain @ 30 GHz                                  | $n(\pi D/k)^2$                  | 95,235                      | 49.8 dBi   |
| a = Area of Feed Mouth                                     | $\pi d^2/4$                     | 0.0019                      | meters <sup>2</sup>  |
| POWER DENSITY CALCULATIONS                                 |                                 |                             |  |
| Region   | Maximum Power Density in Region |                             | Hazard Assessment<br>(FCC MPE Limit = 1 mW/cm <sup>2</sup> ) |
|  | Formula                         | Value (mW/cm <sup>2</sup> ) |  |
| 1 Near Field   | $4nP/A$                         | 0.12                        | < FCC MPE Limit  |
| 2 Far Field  | $GP/(4(\pi)L^2)$                | 0.05                        | < FCC MPE Limit  |
| 3 Transition   | <= Nr Fld Region                | 0.12                        | < FCC MPE Limit  |
| 4 Near Reflector Surface                                   | $4P/A$                          | 0.18                        | < FCC MPE Limit  |
| 5 Between Reflector & Ground                               | $P/A$                           | 0.04                        | < FCC MPE Limit  |
| 6 Between Reflector and Feed                               | $4P/a$                          | 106.1                       | > FCC MPE Limit (See Attachment 1)                           |