

# RF Radiation Safety Calculations

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RF Safety Calculations based on OET Bulletin 65 for Parabolic Reflectors.

Calculations are based on Bulletin 65 Equations 11 through 18.

## Input Values

|                        |            |
|------------------------|------------|
| Frequency of Operation | 14200 MHz  |
| Reflector Diameter     | 0.6 Meters |
| Gain of Antenna        | 37.7 dBi   |
| Input Power to Antenna | 15.1 Watts |

## Power Density At Antenna Surface

(From Bulletin 65 Equation 11)

|                                            |                           |
|--------------------------------------------|---------------------------|
| Maximum Power Density At Antenna Surface = | 213.62 W/m <sup>2</sup>   |
| Maximum Power Density At Antenna Surface = | 21.36 mW/cm <sup>2</sup>  |
| Maximum Power Density At Antenna Surface = | 13.30 dBW/cm <sup>2</sup> |

Is this Compliant With Limits?

|                                                               |    |
|---------------------------------------------------------------|----|
| For Occupational/Controlled Exposure (5 mW/cm <sup>2</sup> )= | NO |
|---------------------------------------------------------------|----|

|                                                                       |    |
|-----------------------------------------------------------------------|----|
| For General Population/Uncontrolled Exposure (1 mW/cm <sup>2</sup> )= | NO |
|-----------------------------------------------------------------------|----|

## Power Density in the Near-Field Region

|                                |             |
|--------------------------------|-------------|
| Extent of the Near-Field =     | 1.36 Meters |
| (From Bulletin 65 Equation 12) |             |

|                                |             |
|--------------------------------|-------------|
| Aperture Efficiency =          | 0.740 Units |
| (From Bulletin 65 Equation 14) |             |

|                                    |                          |
|------------------------------------|--------------------------|
| On-Axis Near-Field Power Density = | 158.02 W/m <sup>2</sup>  |
| (From Bulletin 65 Equation 13)     | 15.80 mW/cm <sup>2</sup> |

Is this Compliant With Limits?

|                                                               |    |
|---------------------------------------------------------------|----|
| For Occupational/Controlled Exposure (5 mW/cm <sup>2</sup> )= | NO |
|---------------------------------------------------------------|----|

|                                                                       |    |
|-----------------------------------------------------------------------|----|
| For General Population/Uncontrolled Exposure (1 mW/cm <sup>2</sup> )= | NO |
|-----------------------------------------------------------------------|----|

## Power Density in the Transition Region

|                                 |              |
|---------------------------------|--------------|
| Beginning of Far-Field Region = | 10.22 Meters |
| (From Bulletin 65 Equation 16)  |              |

Transition Region Power Density  
(From Bulletin 65 Equation 17)

In the Transition Region, Power Density varies from

Power Density = 15.80 mW/cm<sup>2</sup> at 1.36 Meters  
Power Density = 2.10 mW/cm<sup>2</sup> at 10.22 Meters

Is the Full Transition Region Compliant With Limits?

For Occupational/Controlled Exposure (5 mW/cm<sup>2</sup>)= NO

For General Population/Uncontrolled Exposure (1 mW/cm<sup>2</sup>)= NO

At What Range Is Power Density Compliant With Limits?

For Occupational/Controlled Exposure (5 mW/cm<sup>2</sup>)= 4.29 Meters

For General Population/Uncontrolled Exposure (1 mW/cm<sup>2</sup>)= Too Many Meters

## Power Density in the Far-Field Region

Far-Field Starts at = 10.22 Meters

Power Density at the start of Far-Field Region = 6.77 mW/cm<sup>2</sup>  
(From Bulletin 65 Equation 18)

At What Range Is Power Density Compliant With Limits?

For Occupational/Controlled Exposure (5 mW/cm<sup>2</sup>)= 11.90 Meters

For General Population/Uncontrolled Exposure (1 mW/cm<sup>2</sup>)= 26.60 Meters