

# 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	2.40 Meters
Gain of Antenna	48.5 dBi
Input Power to Antenna	13 dBW
Input Power to Antenna	19.95 Watts

## Resultant EIRP

	61.50 dBW
	1412537.54 Watts

## Power Density At Antenna Surface

(From Bulletin 65 Equation 11)

Maximum Power Density At Antenna Surface =	17.64 W/m <sup>2</sup>
Maximum Power Density At Antenna Surface =	1.76 mW/cm <sup>2</sup>
Maximum Power Density At Antenna Surface =	2.47 dBW/cm <sup>2</sup>

Is this Compliant With Limits?

For Occupational/Controlled Exposure (5 mW/cm <sup>2</sup> )=	NO
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For General Population/Uncontrolled Exposure (1 mW/cm <sup>2</sup> )=	NO
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## Power Density in the Near-Field Region

Extent of the Near-Field = (From Bulletin 65 Equation 12)	68.16 Meters
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Aperture Efficiency = (From Bulletin 65 Equation 14)	0.556 Units
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On-Axis Near-Field Power Density = (From Bulletin 65 Equation 13)	9.81 W/m <sup>2</sup>
	0.98 mW/cm <sup>2</sup>

Is this Compliant With Limits?

For Occupational/Controlled Exposure (5 mW/cm <sup>2</sup> )=	YES
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For General Population/Uncontrolled Exposure (1 mW/cm <sup>2</sup> )=	YES
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## Power Density in the Transition Region

Beginning of Far-Field Region = **163.58** 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 = **0.98** mW/cm<sup>2</sup> at **68.16** Meters

Power Density = **0.41** mW/cm<sup>2</sup> at **163.58** Meters

Is the Full Transition Region Compliant With Limits?

For Occupational/Controlled Exposure (5 mW/cm<sup>2</sup>)= **YES**

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

At What Range Is Power Density Compliant With Limits?

For Occupational/Controlled Exposure (5 mW/cm<sup>2</sup>)= **13.37** Meters

For General Population/Uncontrolled Exposure (1 mW/cm<sup>2</sup>)= **66.84** Meters

## **Power Density in the Far-Field Region**

Far-Field Starts at =

**163.58** Meters

Power Density at the start of Far-Field Region =

**0.42** 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>)= **47.41** Meters

For General Population/Uncontrolled Exposure (1 mW/cm<sup>2</sup>)= **106.02** Meters