

## Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density  
 P = power input to the antenna  
 G = power gain of the antenna in the direction of interest relative to an isotropic radiator  
 R = distance to the center of radiation of the antenna

Maximum peak output power at device output terminal:	-0.70 dBm* see below
Cable and Jumper loss:	0.0 dB
Maximum peak output power at antenna input terminal:	-0.70 dBm
Single Antenna gain (typical):	0.851138038 mW
Number of Antennae:	15 dBi
Total Antenna gain (typical):	1 dB
Prediction distance:	31.6227766 (numeric)
Prediction frequency:	20 cm
MPE limit for uncontrolled exposure at prediction frequency:	24135 MHz
<b>Power density at prediction frequency:</b>	<b>1 mW/cm<sup>2</sup></b>
Tx On time:	0.005355 mW/cm <sup>2</sup>
Tx period time:	0.053546 W/m <sup>2</sup>
Average Factor:	1.000000 ms
Average Power density at prediction frequency:	1.000000 ms
Maximum allowable antenna gain:	100.000000 %
<b>Margin of Compliance:</b>	<b>0.053546 W/m<sup>2</sup></b>
	<b>37.71269855 dBi</b>
	<b>22.71269855 dB</b>

\*Rational for this calculation is as follows:

Measured field strength at 1 m distance is 119.07 dBμV/m.

Field strength at 3 m will be as follows: 119.07 dBμV/m + 20 × Log<sub>10</sub> (1 m / 3 m) = 119.07 dBμV/m – 9.5 dB = 109.57 dBμV/m

EIRP based on 3 m field strength is: 109.57 dBμV/m – 95.23 dB = 14.37 dBm

Output power is: 14.37 dBm – 15 dBi = –0.66 dBm = –0.7 dB

