

### 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

#### **BEACON TRANSMITTER AT 216.5 MHz**

Maximum peak output power at antenna input terminal:	17.9 (dBm)
Maximum peak output power at antenna input terminal:	62.2 (mW)
Antenna gain(maximum):	3.6 (dBi)
Maximum antenna gain:	2.29 (numeric)
Time Averaging:	100 (%)
Prediction distance:	20 (cm)
Prediction frequency:	216.5 (MHz)
MPE limit for uncontrolled exposure at prediction frequency:	0.144 (mW/cm <sup>2</sup> )

Power density at prediction frequency: **0.028** (mW/cm<sup>2</sup>)

#### **MOBILE TRANSMITTER AT 850 MHz**

Maximum peak output power at antenna input terminal:	24.6 (dBm)
Maximum peak output power at antenna input terminal:	288.4 (mW)
Antenna gain(maximum):	7 (dBi)
Maximum antenna gain:	5.01 (numeric)
Time Averaging:	1.67 (%)
Prediction distance:	20 (cm)
Prediction frequency:	849 (MHz)
MPE limit for uncontrolled exposure at prediction frequency:	0.566 (mW/cm <sup>2</sup> )

Power density at prediction frequency: **0.005** (mW/cm<sup>2</sup>)

#### **MOBILE TRANSMITTER AT 1900 MHz**

Maximum peak output power at antenna input terminal:	24.3 (dBm)
Maximum peak output power at antenna input terminal:	269.2 (mW)
Antenna gain(maximum):	7 (dBi)
Maximum antenna gain:	5.01 (numeric)
Time Averaging:	1.67 (%)
Prediction distance:	20 (cm)
Prediction frequency:	1900 (MHz)
MPE limit for uncontrolled exposure at prediction frequency:	1.000 (mW/cm <sup>2</sup> )

Power density at prediction frequency: **0.004** (mW/cm<sup>2</sup>)

\* Antenna gain taken from maximum antenna gain in original filing of mobile radio

\*\*Time averaging taken from rf exhibit filing for mobile radio

#### **AGGREGATE POWER DENSITY DUE TO SIMULTANEOUS TRANSMISSION**

Worst-case combination would be 849 MHz transmitter in combination with 216.5 MHz beacon transmitter.

**Aggregate power density = 0.028 + 0.005 = 0.033 mW/cm<sup>2</sup>**