

### 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>**