Maximum Permissible Exposure calculations

The MPE distance will be calculated for the worst case of a 100% transmitter duty cycle. For an isotropic radiator the surface area of a sphere can be used to determine the area over which the transceiver energy is radiated.

Surface area of a sphere = 4 * π * radius^2

In the case where there is an antenna gain, the worst case energy density is increased by the antenna gain. In this case, the exposure level for a controlled environment can be calculated as follows:

MPE distance =((output power*duty cycle*10*(antenna gain/10))/(4*π*Exposure Limit [mW/cm$_2$]))$_{1/2}$

In the case of 2.15 dBi monopole antenna

MPE distance = ((80 mW * 1 * 1.64) /(4 * 3.14 * 0.63))$_{1/2}$
= 4.1 cm