Itron
Knowledge to Shape Your Future

FCC part 1.1310(A) / Health Canada Safety Code 6

Maximum Permissible Exposure (MPE) evaluation
For Occupational/controlled environments

Determine the minimum safe distance from the transmitter where a power density of $(f_{MHz}/300)mW/cm^2$ is not exceeded (the Canadian limit is f/30, but the FCC limit is more stringent). The power density is calculated as:

$P_d = P_t*G/4\pi r^2$, where:

- P_d power density in watts
- P_t transmit power in watts
- G numeric antenna gain
- r distance between body and transmitter in centimeters

Max $P_d = 960/300 = 3.2mW/cm^2$
P_t = +23dBm = 200mW
G = 2.1dBi = 1.62 numeric gain
r = 20cm

Duty Cycle = 19.44%

- When transmitting, the duty cycle is 50%
- Transmit cycle is 3.5 seconds transmit, 5.5 seconds receive
- 0.5*[3.5/(3.5+5.5)] = 19.44%

$(200mW)*(1.62)*(.1944)/[4\pi(20cm)^2] = .013$ mW/cm

Or, solving for minimum distance:
$R = [(200mW)*(1.62)*(.1944)/(4\pi*3.2mW/cm^2)]^{1/2} = 1.25$ cm