Exposure of humans to RF fields

Calculations have been made using the General Public/Uncontrolled Exposure limits.

Minimum safe distances have been calculated below.

Power density, mW/cm^2 = E^2/3770
- Occupational / Controlled Exposure limit will be 1.51 mW/cm^2
  (f/300 = 454 MHz/300)
- General Population / Uncontrolled exposure limit will be 0.3 mW/cm^2
  (f/1500 = 454 MHz/1500)

The minimum distance from the antenna at which the MPE is met is calculated from the equation relating field strength in V/m, transmit power in watts, transmit antenna gain, transmitter duty cycle and separation distance in metres:

E, V/m = ($\sqrt{}$ (30 * P * G)) / d

Controlled   Uncontrolled

E = 1.51 W/m^2 = E^2/3770	E = 0.3 W/m^2 = E^2/3770
E= $\sqrt{}$1.51*3770	E= $\sqrt{}$0.3*3770
<u>E = 75.4 V/m</u> E	<u> = 33.6 V/m</u>

The rated maximum transmitter power = 0.020 watts.

Transmitter is operated using a quarter wave whip antenna with a gain of 5 dBi (3.2).

Controlled   Uncontrolled

d = $\sqrt{}$ (30 * P * G*DC) / E	
d = $\sqrt{}$ (30 * 0.02 * 3.2) / 75.4	d = $\sqrt{}$ (30 * 0.02 * 3.2) / 33.6
d = <u>0.018 metres or 1.8 cm</u>	d = <u>0.041 metres or 4.1 cm</u>

Result: Complies if a safe distance of 20 cm is applied

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