Exposure of humans to RF fields

Transmit Frequency 929.500 MHz

Minimum safe distances have been calculated below.

Power density, $mW/cm^2 = E^2/3770$

- Occupational / Controlled Exposure limit will be 3.10 mW/cm^2
(f/300 = 929.5 MHz/300)

- General Population / Uncontrolled exposure limit will be 0.62 mW/cm^2
(f/1500 = 929.5 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
$E = 3.10 \ mW/cm^2 = E^2/3770$
E= $\sqrt{3.1*3770}$
E = 108.1 V/m

Uncontrolled
$E = 0.62 \ mW/cm^2 = E^2/3770$
E= $\sqrt{0.62*3770}$
E = 48.3 V/m

The rated maximum transmitter power (P) = 5 watts.

Transmitter is operated using an antenna with a gain (G) of up to 631 (+28 dBi).

The client has declared a duty cycle (DC) of 100% (1)

Controlled

Uncontrolled

d = $\sqrt{}$ (30 * P * G*DC) / E

d = $\sqrt{}$ (30 * 5 * 631 *1) / 108.1

d = $\sqrt{}$ (30 * 5 * 631 *1) / 48.3

d =   2.85 metres or 285 cm

d = 6.37 metres or 637 cm

Result: Complies if the safe distances defined for each environment are applied.