Exposure of humans to RF fields

Transmit Frequency 928.525 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
($f/300$ = 930.5 MHz/300)

- General Population / Uncontrolled exposure limit will be 0.62 mW/cm^2
($f/1500$ = 930.5 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.