## APPENDIX A: RF EXPOSURE CALCULATIONS

From FCC 1.1310 table 1A, the maximum permissible RF exposure for an uncontrolled environment is $1mW/cm^2$. The Electric field generated for a $1mW/cm^2$ exposure (S) is calculated as follows:

$S = E^2/Z$

*where*:
S = Power density
E = Electric field
Z = Impedance.

$E = \sqrt{S \times Z}$

$1mW/cm^2 = 10\ W/m^2$

The impedance of free space is 337 ohms, where E and H fields are perpendicular.
Thus:

$E = \sqrt{10 \times 377} = 61.4$ V/m which is equivalent to $1mW/cm^2$

Using the relationship between Electric field E, Power in watts P, and distance in meters d, the corresponding Antenna numeric gain G and the transmitter output power and solving for d,

$$d = \sqrt{\frac{EIRP_{peak} \times 30}{E}}$$

### TABLE 11-1: RF EXPOSURE SEPARATION DISTANCE

| ANTENNA TYPE | Antenna Gain (dBi) | Max EIRP (dBm) | CALCULATED RF EXPOSURE SEPARATION DISTANCE (cm) | MINIMUM RF EXPOSURE SEPARATION DISTANCE (cm) |
|---|---|---|---|---|
| Diversity Slot Antenna | 2.8 | 12.7 | 1.2 | 20.0 |