

**\*\* MPE Calculations \*\***

The MPE calculation for this exposure is shown below.

The peak radiated output power (EIRP) is calculated as follows:

|                             |                                     |
|-----------------------------|-------------------------------------|
| EIRP = P + G                | Where,                              |
| EIRP = 11.43 dBm + 2.118dBi | P = Power input to the antenna (mW) |
| EIRP = 13.55 dBm            | G = Power gain of the antenna (dBi) |

**Power density at the specific separation:**

|   |  |
|---|--|
| $S = PG / (4R^2 \pi)$                   | Where,   |
| $S = (13.90 * 1.63) / (4 * 20^2 * \pi)$ | S = Maximum power density (mW/cm <sup>2</sup> )                                      |
| $S = 0.0045 \text{ mW/cm}^2$            | P = Power input to the antenna (mW)  |
|   | G = Numeric power gain of the antenna  |
|   | R = Distance to the center of the radiation of the antenna<br>(20cm = limit for MPE) |

The Maximum permissible exposure (MPE) for the general population is 1 mW/cm<sup>2</sup> .

The power density does not exceed the 1 mW/cm<sup>2</sup> limit.

Therefore, the exposure condition is compliant with FCC rules.

**Estimated safe separation:**

|                                   |  |
|-----------------------------------|--|
| $R = \sqrt{PG / 4 \pi}$           | Where,   |
| $R = \sqrt{13.90 * 1.63 / 4 \pi}$ | P = Power input to the antenna (mW)  |
| $R = 1.34 \text{ Cm}$             | G = Numeric power gain of the antenna  |
|                                   | R = Distance to the center of the radiation of the antenna<br>(20cm = limit for MPE) |

The numeric gain(G) of the antenna with a gain specified in dB is determined by:

$$G = \text{Log}^{-1} (\text{dB antenna gain} / 10)$$

$$G = \text{Log}^{-1} (2.118 / 10)$$

$$G = 1.63$$