

**** MPE Calculations ****

The MPE calculation for this exposure is shown below.

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

$EIRP = P + G$ $EIRP = 18.53 \text{ dBm} + 1.2 \text{ dBi}$ $EIRP = 19.73 \text{ dBm}$	Where, P = Power input to the antenna (mW) G = Power gain of the antenna (dBi)
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Power density at the specific separation:

$S = PG / (4R^2 \pi)$ $S = (71.29 * 1.32) / (4 * 20^2 * \pi)$ $S = 0.0187 \text{ mW/cm}^2$	Where, S = Maximum power density (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 (20cm = limit for MPE)
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The Maximum permissible exposure (MPE) for the general population is 1 mW/cm² .

The power density does not exceed the 1 mW/cm² limit.

Therefore, the exposure condition is compliant with FCC rules.

Estimated safe separation:

$R = \sqrt{PG / 4 \pi}$ $R = \sqrt{71.29 * 1.32 / 4 \pi}$ $R = 2.74 \text{ Cm}$	Where, 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 (20cm = limit for MPE)
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The numeric gain(G) of the antenna with a gain specified in dB is determined by:

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

$$G = \text{Log}^{-1} (1.2 / 10)$$

$$G = 1.32$$