

**\*\* 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 = 9.89dBm + 4.966dBi	P = Power input to the antenna (dBm)
EIRP = 14.86 dBm	G = Power gain of the antenna (dBi)

**Power density at the specific separation:**

$S = PG / (4R^2 \pi)$	Where,
$S = (9.75 * 3.14) / (4 * 20^2 * \pi)$	S = Maximum power density (mW/cm <sup>2</sup> )
$S = 0.061 \text{mW/cm}^2$	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 (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,
$R = \sqrt{9.75 * 3.14 / 4 \pi}$	P = Power input to the antenna (mW)
$R = 1.56 \text{Cm}$	G = Numeric power gain of the antenna
	R = Distance to the center of the radiation of the antenna (20cm = limit for MPE)

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

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

$$G = \text{Log}^{-1} (4.966 / 10)$$

$$G = 3.14$$