

**\*\* 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,
$EIRP = 15.05 \text{ dBm} + 4.0 \text{ dBi}$	$P = \text{Power input to the antenna (mW)}$
$EIRP = 19.05 \text{ dBm}$	$G = \text{Power gain of the antenna (dBi)}$

**Power density at the specific separation:**

$S = PG/(4R^2 \pi)$	Where,
$S = (31.99 * 2.51) / (4 * 20^2 * \pi)$	$S = \text{Maximum power density (mW/cm}^2\text{)}$
$S = 0.016 \text{ mW/cm}^2$	$P = \text{Power input to the antenna (mW)}$
	$G = \text{Numeric power gain of the antenna}$
	$R = \text{Distance to the center of the radiation of the antenna}$
	(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,
$R = \sqrt{(31.99 * 2.51 / 4\pi)}$	$P = \text{Power input to the antenna (mW)}$
$R = 2.53 \text{ Cm}$	$G = \text{Numeric power gain of the antenna}$
	$R = \text{Distance to the center of the radiation of the antenna}$
	(20cm = limit for MPE)

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

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

$$G = \log^{-1} (4 / 10)$$

$$G = 2.51$$