

**** 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 = 14.84dBm + 8.92dBi	P = Power input to the antenna (mW)
EIRP = 23.76 dBm	G = Power gain of the antenna (dBi)

Power density at the specific separation:

S = PG/(4R ² π)	Where,
S = (30.48 * 7.80) / (4 * 20 ² * π)	S = Maximum power density (mW/cm ²)
S = 0.0473 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/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 = √(PG / 4 π)	Where,
R = √(30.48 * 7.80/ 4 π)	P = Power input to the antenna (mW)
R = 4.35Cm	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:

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

$$G = \text{Log}^{-1} (8.92 / 10)$$

$$G = 7.80$$