

## **PROXIM PROJECT: 02U1141-1**

### **MPE CALCULATION for 5 dBi ANTENNA**

Formular used in the MPE Calculations:

$$E^2/3770 = S, \text{ mW/cm}^2$$

$$P_{\text{watts}} * G_{\text{gain}} = 10^{(P_{\text{dBm}} - 30 + G_{\text{dBi}}) / 10}$$

$$E, \text{ V/m} = (P_{\text{watts}} * G_{\text{gain}} * 30)^{.5} / d, \text{ meters}$$

$$d = ((P_{\text{watts}} * G * 30) / 3770 * S)^{.5} \text{ ----- (A)}$$

Since

$$S \text{ (mW/cm}^2\text{)} = 1.00 \quad \text{from 1.1310 Table 1}$$

$$P \text{ (dBm)} = 12.6 \quad \text{EUT output power}$$

$$G \text{ (dBi)} = 5.0 \quad \text{EUT antenna gain}$$

Substitute these parameters into the A above, we have

$$\text{MPE safe distance } d \text{ (cm)} = 2.1$$

NOTE: For mobile or fixed location transmitters, minimum separation distance is 20 cm, even if calculations indicate MPE distance is less

### **MPE CALCULATION for 7 dBi ANTENNA**

Formular used in the MPE Calculations:

$$E^2/3770 = S, \text{ mW/cm}^2$$

$$P_{\text{watts}} * G_{\text{gain}} = 10^{(P_{\text{dBm}} - 30 + G_{\text{dBi}}) / 10}$$

$$E, \text{ V/m} = (P_{\text{watts}} * G_{\text{gain}} * 30)^{.5} / d, \text{ meters}$$

$$d = ((P_{\text{watts}} * G * 30) / 3770 * S)^{.5} \text{ ----- (A)}$$

Since

$$S \text{ (mW/cm}^2\text{)} = 1.00 \quad \text{from 1.1310 Table 1}$$

$$P \text{ (dBm)} = 12.6 \quad \text{EUT output power}$$

$$G \text{ (dBi)} = 7.0 \quad \text{EUT antenna gain}$$

Substitute these parameters into the A above, we have

$$\text{MPE safe distance } d \text{ (cm)} = 2.7$$

NOTE: For mobile or fixed location transmitters, minimum separation distance is 20 cm, even if calculations indicate MPE distance is less

## **MPE CALCULATION for 12 dBi ANTENNA**

Formular used in the MPE Calculations:

$$E^2/3770 = S, \text{ mW/cm}^2$$

$$P_{\text{watts}} * G_{\text{gain}} = 10^{(P_{\text{dBm}} - 30 + G_{\text{dBi}})/10}$$

$$E, \text{ V/m} = (P_{\text{watts}} * G_{\text{gain}} * 30)^{.5} / d, \text{ meters}$$

$$d = ((P_{\text{watts}} * G * 30) / (3770 * S))^{.5} \text{ ----- (A)}$$

Since

$$S \text{ (mW/cm}^2) = 1.00 \quad \text{from 1.1310 Table 1}$$

$$P \text{ (dBm)} = 12.6 \quad \text{EUT output power}$$

$$G \text{ (dBi)} = 12.0 \quad \text{EUT antenna gain}$$

Substitute these parameters into the A above, we have

$$\text{MPE safe distance } d \text{ (cm)} = 4.8$$

NOTE: For mobile or fixed location transmitters, minimum separation distance is 20 cm, even if calculations indicate MPE distance is less