

MPE Limit Calculation: EUT's operating frequencies @ 2412 and 2462 MHz; only channel 1 and 11 are active on this unit. There are two transmitter modules and each one has its own antenna.. Channel 11 is always connected to an internal 2 dBi antenna. Channel 1 can be connected to an internal 2 dBi antenna or an external antenna of higher gain. Highest conducted power on channel 1 = 23.31 dBm (peak) and highest conducted power on channel 11 = 25.1 dBm. The following antennas can be used with Channel 1:

2 dBi Omni directional antenna (internal)
 3 dBi Omni directional Cupcake antenna
 7 dBi Omni directional Mag antenna
 9 dBi 120 degree sector antenna
 12 dBi Omni directional antenna

The MPE calculation for Channel 1 will be done with the highest gain antenna; 12 dBi.

Limit for Uncontrolled exposure: 1 mW/cm².

EUT maximum antenna gain = 12 dBi.

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2$$

where, S = Power Density mW/m²
 P = Power Input to antenna mili Watts
 G = Numeric Antenna Gain
 R = Distance to the center of radiation of the antenna (20 cm for Mobile minimum distance)

Channel 1:

$$\text{Antenna Numeric Gain} = 10^{\text{dBi}/10}$$

$$\text{Power at antenna port} = 214.3 \text{ mW}$$

$$\text{Antenna Gain} = 12 \text{ dBi}$$

$$\text{Numeric antenna gain} = 10^{12/10} = 15.85$$

$$S = (214.3)(15.85) / 4(3.1416)(20)^2$$

$$S = 0.676 \text{ mW/cm}^2$$

The MPE calculation for Channel 11 will be done with the 2 dBi internal antenna

Channel 11:

$$\text{Antenna Numeric Gain} = 10^{\text{dBi}/10}$$

$$\text{Power at antenna port} = 323.6 \text{ mW}$$

$$\text{Antenna Gain} = 2 \text{ dBi}$$

$$\text{Numeric antenna gain} = 10^{2/10} = 1.58$$

$$S = (323.6)(1.58) / 4(3.1416)(20)^2$$

$$S = 0.102 \text{ mW/cm}^2$$

In the worst case condition where the power is additive:

$$S = 0.676 \text{ mW/cm}^2 + S = 0.102 \text{ mW/cm}^2$$

$$S_{\text{total}} = 0.778 \text{ mW/cm}^2$$

Less than the 1 mW/cm² Limit for Uncontrolled exposure

Therefore, the EUT meets the Uncontrolled Exposure Limit.