



5046 Sierra Pines Dr. Mariposa, CA 95338

## FCC 1.1310(b), Maximum Permissible Exposure Calculations

Date of Report 3/14/06

Calculations prepared for:

**Alico Systems Inc.**  
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Calculations prepared by:

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Model Number: WNE-2407M,  
WNE-5809M

FCC Identification: NA

Fundamental Operating Frequency: 2412- 2462 MHz, 5745 - 5825 MHz

Maximum Rated Output Power: 0.7762W

2.8184W

Measured Output Power: 0.7762W  
2.8184W

MPE Limit in accordance with 1.1310(b): Limits for general population/uncontrolled exposure

MPE Limit for 2412- 2462 MHz = 1 mW/cm<sup>2</sup> (10 W/m<sup>2</sup>) multiply mw/m by 10  
MPE Limit for 5745 - 5825 MHz = 1 mW/cm<sup>2</sup> (10 W/m<sup>2</sup>) multiply mw/m by 10

### (B) Limits for General Population/Uncontrolled Exposure

0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	---	---	f/1500	30
1500-100,000	---	---	<b>1.0</b>	30min

Power Output (Watts)	Power Density Limit (mW/cm <sup>2</sup> )	Minimum Distance (Meters)
<b>2.4 GHz</b>	<b>1</b>	0.0785
<b>5.8 GHz</b>	<b>1</b>	0.1657

$$\text{Power Density (W/m}^2\text{)} = \frac{30 \times P_t \times G}{d^2 \times Z_0}$$

$P_t$  = Power Delivered to the Antenna  
 $d$  = Distance in meters

$G$  = Antenna Gain  
 $Z_0$  = Impedance of Free Space

The typical antennas to be used with the EUT are structure mount antennas which under normal operation has at least 0.2 meter separation from a user. As can be seen from the MPE result, this device passes the limit specified in 1.1310 at a distance of 0.16 and 0.08 meter.

Calculation:

2.4 GHz, 7 dBi Omni, 21.9 dBm ( conducted power)

$$21.9 \text{ dBm} + 7 \text{ dB} = 28.9 \text{ dBm} = 0.7762 \text{ Watt}$$

$$d = \sqrt{\frac{30 \times 0.7762 \times 1}{10 \times 377}}$$

$$= 0.0785 \text{ meter.}$$

5.8 GHz, 9 dBi Omni, 25.5 dBm ( conducted power)

$$25.5 \text{ dBm} + 9 \text{ dBi} = 34.5 \text{ dBm} = 2.8184 \text{ Watt}$$

$$d = \sqrt{\frac{30 \times 3.45 \times 1}{10 \times 377}}$$

$$= 0.1657 \text{ meter.}$$