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## **MPE Calculations**

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**R33C4HC3001**

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| <b>1.0</b> | <b>SCOPE</b>               | <b>3</b> |
| <b>2.0</b> | <b>REVISION LEVEL</b>      | <b>3</b> |
| <b>3.0</b> | <b>REFERENCE DOCUMENTS</b> | <b>3</b> |
| <b>4.0</b> | <b>CALCULATIONS</b>        | <b>3</b> |
| <b>5.0</b> | <b>CONCLUSION</b>          | <b>4</b> |

## 1.0 SCOPE:

**This Report Demonstrates Evaluation and Compliance for Human Exposure to Electromagnetic Fields as Outlined by the Federal Communications Commission Office of Engineering and Technology Bulletin 65.**

## 2.0 REVISION LEVEL:

| DATE      | COMMENTS              | REVISION |
|-----------|-----------------------|----------|
| 1/22/2007 | Created.              | 1.0      |
| 4/17/2007 | Change the FCC number | 2.0      |
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|           |                       |          |
|           |                       |          |

## 3.0 REFERENCE DOCUMENTS:

- (A) Limits for Maximum Permissible Exposure (MPE). Code of Federal Regulations Title 47, Volume 1, Sections 1.1310
- (B) Limits for Maximum Permissible Exposure (MPE). Code of Federal Regulations Title 47, Volume 1, Sections 2.1093
- (C) Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields. OET Bulletin 67 Edition 97-01.

## 4.0 CALCULATIONS:

The following worst case emissions are based on a PPt (Peak Power Total) measurement of 0.0 dBm into the antenna. And the worst case antenna gain on axis is found to be 1.0 dBi.

Total power into antenna:

$$\text{A) } P_t = 0.0 \text{ dBm} = 10^{(0.0 \text{ dBm}/10)} = 1.0 \text{ mW}$$

Total effective isotropic radiated power at the Transmitter:

$$\text{B) } \text{EIRP} = 1.0 \text{ dBm} + 1.0 \text{ dBi} = 2.0 \text{ dBm}$$

$$2.0 \text{ dBm} = 1.58 \text{ mW}$$

Power density at a distance of 20 centimeters is:

$$C) \quad S = \frac{EIRP}{4\pi R^2} = 0.31 \mu W/cm^2$$

Where S = Power density (mW/cm<sup>2</sup>), EIRP = Equivalent isotropic radiated power (mW), R = Distance to the center of radiation of the antenna (cm)

## 5.0 CONCLUSION:

Based on the FCC Limits for Maximum Permissible Exposure (MPE) given in Table 1 of reference document (A) as 1 mW/cm<sup>2</sup> this device falls under the required limits.