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## **MPE Calculations**

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**R33TSX38C21**

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## 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
2/19/2007	Created.	1.0

## 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 10.40 dBm into the antenna. And the worst case antenna gain on axis is found to be 0.0 dBi.

Total power into antenna:

$$\text{A) } P_t = 10.40 \text{ dBm} = 10^{(10.40 \text{ dBm}/10)} = 10.96 \text{ mW}$$

Total effective isotropic radiated power at the Transmitter:

$$\text{B) } \text{EIRP} = 10.40 \text{ dBm} + 0.0 \text{ dBi} = 10.4 \text{ dBm}$$

$$10.4 \text{ dBm} = 11.0 \text{ mW}$$

Power density at a distance of 20 centimeters is:

$$C) \quad S = \frac{EIRP}{4\pi R^2} = 2.2 \mu W/cm^2$$

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.