



MPE Calculations

IX-59BTINF

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1 Scope

This report demonstrates evaluation and compliance for human exposure to electromagnetic fields as outlined by the Federal Communications Commission of Engineering and Technology Bulletin 65.

2 Revision Level

DATE	COMMENTS	REVISION
9/23/08	Created	1.0

3 Reference Documents

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

4 Calculations

The following worst case emissions are based on a PPt (Peak Power Total) measurement of 4 dBm into the antenna. And the worst case antenna gain on axis is found to be -3.15 dBi.

The total power into antenna:

$$A) P_t = 4 \text{ dBm} = 10^{(4 \text{ dBm}/10)} = 2.51 \text{ mW}$$

Total effective isotropic radiated power at the transmitter:

$$B) \text{EIRP} = 4 \text{ dBm} - 3.15 \text{ dBi} = 0.85 \text{ dBm}$$
$$0.85 \text{ dBm} = 1.22 \text{ mW}$$

Power density at a distance of 20 centimeters is:

$$C) S = \text{EIRP} / 4\pi R^2 = 0.243 \mu\text{W}/\text{cm}^2$$

Where S = Power density (mW/cm²), EIRP = Equivalent isotropic radiated power (mW), R = Distance to the center of radiation of the antenna (cm)

5 Conclusion

Based on the FCC Limits for Maximum Permissible Exposure (MPE) given in Table 1 of reference document (A) as 1 mW/cm², this device falls under the required limits.