

Control 

MPE Calculations

R33KPZ10B11

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1.0 SCOPE:

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

2.0 REVISION LEVEL:

DATE	COMMENTS	REVISION
10/27/2005	Created.	1.0

3.0 REFERENCE DOCUMENTS:

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

4.0 CALCULATIONS:

The KPZ-10B1-x LCD keypad utilizes a low power 2.4 GHz radio located approx 2.5 cm behind the front panel plastic. The following worst case emissions are based on a PPT (Peak Power Total) measurement of 11.6 dBm. And the worst case antenna gain on axis is found to be 2.5 dBi.

Total radiated power at the Transmitter:

A) $P_t = 11.6 \text{ dBm} + 2.5 \text{ dBi} = 14.1 \text{ dBm EIRP}$

$$14.1 \text{ dBm EIRP} = .0257 \text{ Watts. (25.7mW)}$$

Power density at a distance of 10cm from the antenna is:

B) $S = \text{EIRP}/4\pi \cdot r^2$

Where S is Power density in units of mW/cm² and EIRP is Equivalent Isotropic Radiated Power in units of mW and r is distance to the center of radiation of the antenna in units of cm

$$S = 25.7\text{mW}/(4 \pi (10\text{cm})^2) = .0205\text{mW}/\text{cm}^2$$

5.0 CONCLUSION:

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