RF Exposure – MPE Calculations

Input

Transmitter Power: 202 mW

Antenna Gain: 15 dB

Cable loss: 1.13 dB @ 824 – 894 MHz

Frequency range: 824-894 MHz

Assumptions

1. A single ¼ wavelength radiating antenna is assumed.

2. Closest exposure distance is assumed to be 30 cm (50 cm recommended in manual)

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Calculations

The following results shall be assumed to be accurate for the far-field only. These predictions will over-estimate power density in the near–field. Based on the use of a ¼ wavelength radiator, a distance of 20 cm is considered to be in the far-field for all cases.

For the purposes of these calculations a distance of 30cm was used. The actual distance as specified in the user manual is 50cm. 30cm represents the worst case configuration assuming an incorrect installation.

$S = PG/4*PI*R^2$

@ 824 – 894 MHz

P is 202 mW
G is 13.87dB (Antenna gain – loss) or $10^{(13.87/10)}$ or 24.378
R is 30 cm

S = 0.436 mW/cm^2

For Occupational/Controlled Exposure
From 300 to 1500 MHz, power density limit is f/300 mW/cm^2
@ 824 MHz, power density limit is **2.75 mW/cm^2 for 6 minutes.**

For General Population/Uncontrolled Exposure
From 300 to 1500 MHz, power density limit is f/1500 mW/cm^2
@ 824 MHz, Power density limit is **0.55 mW/cm^2 for 30 minutes.**

Conclusion: **Meets MPE limits**