RF Exposure – MPE Calculations - Uplink

Input

Transmitter Power: 439 mW

Antenna Gain: 12 dB

Cable loss: 1.5 dB @ 806 – 869 MHz

Frequency range: 806-869 MHz

Assumptions

1. A single ¼ wavelength radiating antenna is assumed.
2. Closest exposure distance is assumed to be 50 cm

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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 50 cm is considered to be in the far-field for all cases.

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

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

@ 806 – 869 MHz

P is 439 mW
G is 10.5 dB (Antenna gain – loss) or $10^{(10.5/10)}$ or 11.22
R is 50 cm

$S = 0.157\ mW/cm^2$

For Occupational/Controlled Exposure
From 300 to 1500 MHz, power density limit is f/300 mW/cm^2
@ 806 MHz, power density limit is **$2.687\ mW/cm^2$ for 6 minutes.**

For General Population/Uncontrolled Exposure
From 300 to 1500 MHz, power density limit is f/1500 mW/cm^2
@ 806 MHz, Power density limit is **$0.537\ mW/cm^2$ for 30 minutes.**

Conclusion: **Meets MPE limits**