

MAXIMUM PERMISSIBLE EXPOSURE (MPE) CALCULATIONS

The § 1.1310 Radiofrequency radiation exposure limits are listed in the table below.

	Frequency Range (MHz)	Power Density Limit (mW/cm ²)
Limits for Occupational/Controlled Exposures	0.3-3.0	100
	3.0-30	900/ Frequency ²
	30-300	1.0
	300-1500	Frequency/300
	1500-100,000	5.0
Limits for General Population/Uncontrolled Exposure	0.3-1.34	100
	1.34-30	180/Frequency ²
	30-300	0.2
	300-1500	Frequency/1500
	1500-100,000	1.0

Calculations

The radiated RF power (calculated using the stated antenna gain and the measured conducted output power) was used to calculate the maximum RF exposure at a 20 cm distance using the formula:

$$\text{Maximum RF Exposure at 20cm} = (\text{EIRP in mW}) / (4\pi(20\text{cm})^2)$$

Cell Band:

The maximum measured radiated power for the cell band was 28.86 dBm.

In order to convert to EIRP a 2.15dB factor is added to the ERP to get 31.01 dBm or 1260 mW (Isotropic).

Substituting this into the equation above, we get a Maximum RF Exposure (MPE) at 20cm of:

$$\text{MPE at 20cm} = 1260 \text{ mW} / (4\pi(20\text{cm})^2)$$

$$\text{MPE at 20cm} = 0.25 \text{ mW/cm}^2$$

PCS Band:

The maximum measured radiated power for the PCS band was 16.5 dBm or 44.7 mW. For the PCS band, there is no need to apply the 2.15dB factor to convert to EIRP since the measured radiated power is already in reference to an isotropic radiator.

Substituting 44.7mW into the equation above, we get a Maximum RF Exposure (MPE) at 20cm of:

$$\text{MPE at 20cm} = 44.7 \text{ mW} / (4\pi(20\text{cm})^2)$$

$$\text{MPE at 20cm} = 0.0089 \text{ mW/cm}^2$$

Test Results

The worst case MPE at 20cm of 0.25mW/cm² is much less than the 0.565 mW/cm² limit for general population/uncontrolled exposure shown in the table above for the cell band. For the PCS band, the worst case MPE at 20cm of 0.0089mW/cm² is much less than the 1.0 mW/cm² limit.