

## **Uncontrolled Exposure RF Exposure Requirements – 1.1307(b)(2); 1.1310**

**Specification:**            **Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's Guidelines.**

**EUT meets the requirements of these sections.**

### **MPE CALCULATION**

MPE Limit Calculation: EUT's operating over the frequency band of 869.6-893.4 MHz; therefore, for the Cellular band's downlink, the

**Limit for Uncontrolled exposure: 0.58 mW/cm<sup>2</sup> or 5.8 \* 10<sup>-4</sup> W/m<sup>2</sup>**

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 = 158.5 \text{ mW} * 5.01 / 4 * 3.14 * (20 \text{ cm})^2 = 794.1 \text{ mW} / 5.03 * 10^3 \text{ cm}^2 = 0.157 \text{ mW/cm}^2$$

where, S = Power Density (mW/cm<sup>2</sup>)

P = Power Input to antenna (158.5 milli-Watts)

G = Maximum Antenna Gain (7 dBi)

R = distance to the center of radiation of the antenna (20 cm or 0.2 m for the minimum distance)

**The power density @ 20 cm = 0.157 mW/cm<sup>2</sup>, therefore EUT meets the Uncontrolled exposure limit.**

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**EUT meets the requirements of these sections.**

### **MPE CALCULATION**

MPE Limit Calculation: EUT's operating over the frequency band of 824.6-848.4 MHz; therefore, for the Cellular band's uplink,

**Limit for Uncontrolled exposure: 0.55 mW/cm<sup>2</sup> or 5.5 W/m<sup>2</sup>**

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 = 18.6 \text{ mW} * 3.98 / 4 * 3.14 * (20 \text{ cm})^2 = 74.1 \text{ mW} / 5.03 * 10^3 \text{ cm}^2 = 0.0147 \text{ mW/cm}^2$$

where, S = Power Density (mW/cm<sup>2</sup>)

P = Power Input to antenna (18.6 milli-Watts)

G = Maximum Antenna Gain (6 dBi)

R = distance to the center of radiation of the antenna (20 cm or 0.2 m for the minimum distance)

**The power density @ 20 cm = 0.0147 mW/cm<sup>2</sup> , therefore EUT meets the Uncontrolled exposure limit.**

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**EUT meets the requirements of these sections.**

### **MPE CALCULATION**

MPE Limit Calculation: EUT's lowest frequency channel @ 1930.6 MHz; therefore, for the PCS band's downlink,  
**Limit for Uncontrolled exposure: 1.0 mW/cm<sup>2</sup> or 10 W/m<sup>2</sup>**

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 = 175.8 \text{ mW} * 5.01 / 4 * 3.14 * (20 \text{ cm})^2 = 880.7 \text{ mW} / 5.03 * 10^3 \text{ cm}^2 = 0.1752 \text{ mW/cm}^2$$

where, S = Power Density (mW/cm<sup>2</sup>)

P = Power Input to antenna (175.8 milli-Watts)

G = Maximum Antenna Gain (7 dBi)

R = distance to the center of radiation of the antenna (20 cm or 0.2 m for the minimum distance)

**The power density @ 20 cm = 0.1752 mW/cm<sup>2</sup>, therefore EUT meets the Uncontrolled exposure limit.**

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**EUT meets the requirements of these sections.**

### **MPE CALCULATION**

MPE Limit Calculation: EUT's lowest frequency channel @ 1850.6 MHz; therefore, for the PCS band's uplink,  
**Limit for Uncontrolled exposure: 1.0 mW/cm<sup>2</sup> or 10 W/m<sup>2</sup>**

Equation from page 18 of OET 65, Edition 97-01

$$S = PG / 4\pi R^2 = 21.4 \text{ mW} * 3.98 / 4 * 3.14 * (20 \text{ cm})^2 = 85.1 \text{ mW} / 5.03 * 10^3 \text{ cm}^2 = 0.0169 \text{ mW/cm}^2$$

where, S = Power Density (mW/cm<sup>2</sup>)

P = Power Input to antenna (21.4 milli-Watts)

G = Maximum Antenna Gain (6 dBi)

R = distance to the center of radiation of the antenna (20 cm or 0.2 m for the minimum distance)

**The power density @ 20 cm = 0.0169 mW/cm<sup>2</sup>, therefore EUT meets the Uncontrolled exposure limit.**