

The **GSM 850/1900** radio is a regular GSM product exclusively esigned for mainly mobile applications.

*A minimum separation distance of 20 cm must be maintained between the antenna and the person for this device to satisfy the RF exposure requirements of the FCC. For fixed mount operation, the antenna co-location requirements of Section 1.1307 (b) (3) of the FCC rules must be satisfied.*

### **RF Human Exposure Analysis as per 47CFR § 1.1310**

For transmitter operating in the 824-890 Mhz range, paragraph 1.1310 Table 1 limits maximum permissible exposure (MPE) to f/1500 mW/cm<sup>2</sup> for uncontrolled environments and f/300 mW/cm<sup>2</sup> for controlled environments.

For transmitter operating in the 1850-1990 Mhz range, paragraph 1.1310 Table 1 limits maximum permissible exposure (MPE) to 1.0 mW/cm<sup>2</sup> for uncontrolled environments and 5.0 mW/cm<sup>2</sup> for controlled environments.

The far field on-axis power flux density (W/m<sup>2</sup>) is calculated using the following formula:

$$S = G P_T / 4 \pi r^2$$

$$S = \text{Power density (mW/cm}^2\text{)}$$

$$P = \text{Transmitted power in mW}$$

$$r = \text{Distance in cm}$$

### **Calculations**

Cellular Band 824-890 MHz – Limit 0.549 / 2.746

$$\begin{aligned} \text{Max conducted average power} &= \text{Max conducted peak power} * \text{Duty Cycle} \\ &= 1218 \text{ mW} * (1:8.3) = 147\text{mW} \end{aligned}$$

$$\text{Maximum average ERP} = 147\text{mW} * 2.0 = 294 \text{ mW}$$

$$S = 294\text{mW} * 1,64 / (4 \cdot \pi \cdot 20^2) = 0,096 \text{ mW/cm}^2 < 0.549 \text{ mW/cm}^2$$

PCS Band 1850-1990 MHz - Limit 1.0 / 5.0

$$\begin{aligned} \text{Max conducted average power} &= \text{Max conducted peak power} * \text{Duty Cycle} \\ &= 427 \text{ mW} * (1:8.3) = 52\text{mW} \end{aligned}$$

$$\text{Maximum average EIRP} = 52\text{mW} * 2.0 = 104 \text{ mW}$$

$$S = 104 / (4 \cdot \pi \cdot 20^2) = 0,021 \text{ mW/cm}^2 < 1.0 \text{ mW/cm}^2$$