

MPE Estimate for MKRU519 Transceiver

SCS Corporation
FCC ID: MKRU519
RF Identification Transceiver

Table 1 of CFR 1.1310 states the MPE for Uncontrolled Exposure is $f/1500$ mW/cm² in the 300-1500 MHz range.

$$\begin{aligned} \text{MPE} &= f/1500 && \text{mW/cm}^2 && \text{where } f=902 \text{ MHz minimum} \\ &= 902/1500 && \text{mW/cm}^2 \\ &= 0.601 && \text{mW/cm}^2 \\ &= 6.01 && \text{W/m}^2 \end{aligned}$$

In order to calculate the range at which the power density (Pd) is 0.601 mW/cm², the following equation is used.

$$Pd = (Pt \cdot Gt) / (4 \cdot \pi \cdot R^2) \quad \text{where:} \quad \begin{aligned} Pt &= \text{transmitted power} = 0.708 \text{ Watt} \\ Gt &= \text{gain of transmitting antenna} = 5.62 \\ \pi &= 3.14 \\ R &= \text{Distance from antenna} \end{aligned}$$

Solving for R yields:

$$\begin{aligned} R &= [(Pt \cdot Gt) / (4 \cdot \pi \cdot Pd)]^{0.5} \\ &= [(.708 \cdot 5.62) / (4 \cdot 3.14 \cdot 6.01)]^{0.5} \\ &= [(3.98) / (75.49)]^{0.5} \\ &= [0.05273]^{0.5} \\ &= 0.230 \quad \text{meters} \\ &= 9.041 \quad \text{inches} \end{aligned}$$

In conclusion, the range at which the power density of the MKRU519 transceiver is 0.6 mW/cm², is 9.04 inches (23 cm). This information will be placed in the MKRU519 operation manual.