

MPE Estimate for MKRU519 Transceiver

SCS Corporation
FCC ID: MKRU519
RF Identification Transceiver

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

$$\begin{aligned} \text{MPE} &= f/300 && \text{mW/cm}^2 && \text{where } f=902 \text{ MHz minimum} \\ &= 902/300 && \text{mW/cm}^2 \\ &= 3.01 && \text{mW/cm}^2 \\ &= 30.10 && \text{W/m}^2 \end{aligned}$$

In order to calculate the range at which the power density (Pd) is 3.01 mW/cm², the following equation is used.

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

Solving for R yields:

$$\begin{aligned} R &= [(Pt * Gt) / (4 * \pi * Pd)]^{0.5} \\ &= [(.708 * 5.62) / (4 * 3.14 * 30.1)]^{0.5} \\ &= [(3.98) / (378.25)]^{0.5} \\ &= [0.0105]^{0.5} \\ &= 0.103 \quad \text{meters} \\ &= 4.04 \quad \text{inches} \end{aligned}$$

In conclusion, the range at which the power density of the MKRU519 transceiver is 3.01 mW/cm², is 4.04 inches. This information will be placed in the MKRU519 operation manual.

