

7.10 RF Exposure Considerations

Power density is given by:

$$S = \text{EIRP} / (4 * \text{PI} * \text{D}^2)$$

where

S: Power density (W/m²)

EIRP: Equivalent Isotropic Radiated Power (W)

D: Separation distance (m)

Power density in units of W/m² is converted to units of mW/cm² by dividing by 10.

Band	Mode	Separation Distance (m)	Maximum Output Power (dBm)	Antenna Gain (dBi)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)
2.4 GHz	Bluetooth	0.20	4.49	1.69	0.00083	1.0

Note: FCC Limit: §1.1310 Table 1 (B)

Sample Calculation:

$$\begin{aligned} S(\text{mW/cm}^2) &= \text{EIRP} / (4 * \text{PI} * \text{D}^2) / 10 \\ &= 10^{((1.69+4.49-30)/10)} / (4 * \text{PI} * 0.2^2) / 10 \\ &= 0.00083 \end{aligned}$$