

17. The intensity is the rate of energy flow per unit area perpendicular to the flow. The rate at which energy flows across every sphere centered at the source is the same, regardless of the sphere radius, and is the same as the power output of the source. If P is the power output and I is the intensity a distance r from the source, then $P = IA = 4\pi r^2 I$, where $A (= 4\pi r^2)$ is the surface area of a sphere of radius r . Thus $P = 4\pi(2.50\text{ m})^2(1.91 \times 10^{-4}\text{ W/m}^2) = 1.50 \times 10^{-2}\text{ W}$.