

12. The intensity of the signal at Proxima Centauri is

$$I = \frac{P}{4\pi r^2} = \frac{1.0 \times 10^6 \text{ W}}{4\pi[(4.3 \text{ ly})(9.46 \times 10^{15} \text{ m/ly})]^2} = 4.8 \times 10^{-29} \text{ W/m}^2 .$$