

17. (a) The magnetic field amplitude of the wave is

$$B_m = \frac{E_m}{c} = \frac{2.0 \text{ V/m}}{2.998 \times 10^8 \text{ m/s}} = 6.7 \times 10^{-9} \text{ T} .$$

- (b) The intensity is

$$I = \frac{E_m^2}{2\mu_0 c} = \frac{(2.0 \text{ V/m})^2}{2(4\pi \times 10^{-7} \text{ T}\cdot\text{m/A})(2.998 \times 10^8 \text{ m/s})} = 5.3 \times 10^{-3} \text{ W/m}^2 .$$

- (c) The power of the source is

$$P = 4\pi r^2 I_{\text{avg}} = 4\pi (10 \text{ m})^2 (5.3 \times 10^{-3} \text{ W/m}^2) = 6.7 \text{ W} .$$