24.22. **Model:** Use the photon model.
Solve: The energy of a 1000 kHz photon is

$$E_{\text{photon}} = hf = \left(6.63\times10^{-34}\ \text{Js}\right)\left(1000\times10^{3}\ \text{Hz}\right) = 6.63\times10^{-28}\ \text{J}$$

The energy transmitted each second is $20\times10^{3}\ \text{J}$. The number of photons transmitted each second is $20\times10^{3}\ \text{J}/\ 6.63\times10^{-28}\ \text{J} = 3.02\times10^{31}$.