

### Special Problem 6.C-4

A transmitter delivers  $800\pi$  Watts to an antenna.

This antenna radiates **all** of this transmitter power **uniformly** throughout a **solid angle**  $\Omega = 0.004\pi$  steradians.

This solid angle  $\Omega$  **subtends** an ellipse, located at a distance of  $x$  meters from the antenna.

The power density of the wave flowing through this ellipse has a magnitude of  $50.0 \text{ mW/m}^2$

- Determine the **intensity** of the propagating wave within the solid angle  $\Omega$ .
- Determine the area of the ellipse.
- Determine the **distance**  $x$  in meters.
- Determine the **directivity** of the antenna.
- Determine the power density of the wave at a distance of  $2x$  meters.

