

## Detector Irradiance

Detector:  $\Phi_D = 10^{-6} \text{ W}$  (required)

$$A_D = (20 \text{ mm})^2 = 400 \text{ mm}^2$$

Detector Irradiance:

$$E_D = \frac{\Phi_D}{A_D} = .0025 \text{ W/m}^2$$

Scene:

$$M_s = \pi L_s$$

Transfer:

$$E_D = \frac{\pi L_s}{4 (f/\#)^2}$$

$$E_D = \frac{M_s}{4 (f/\#)^2}$$

$$M_s = 4 (f/\#)^2 E_D \quad \underline{f/2}$$

Scene Exitance:

$$M_s = 0.04 \text{ W/m}^2$$

or

$$M_s = 0.04 \mu\text{W/mm}^2$$