$$\sigma^p_{\phi\gamma} = \frac{16\pi\epsilon^2 Z'^2 \alpha_{\rm SM}\alpha_\chi}{\hat{\Lambda}^4}\mu^2_{\chi p} \simeq \left(\frac{\epsilon}{10^{-4}}\right)^2 \left(\frac{Z'}{1}\right)^2 \left(\frac{\alpha_\chi}{\alpha_{\rm SM}}\right) \left(\frac{\mu_{\chi p}}{1\ {\rm GeV}}\right)^2 10^{-38}{\rm cm}^2$$

with $\hat{\Lambda} = 1$ GeV