Problem 8.7 What is the maximum amplitude of the total electric field in the air medium of Problem 8.6, and at what nearest distance from the boundary does it occur?

Solution: From Problem 8.6, $\Gamma = -0.71$ and $\lambda = 6$ m.

$$|\widetilde{\mathbf{E}}_1|_{\max} = (1+|\Gamma|)E_0^i = (1+0.71)\times 50 = 85.5 \text{ V/m},$$
$$l_{\max} = \frac{\theta_r \lambda_1}{4\pi} = \frac{\pi \times 6}{4\pi} = 1.5 \text{ m}.$$