

Special Problem III.E-1

A transmitter with a 50Ω output impedance delivers 10 Watts to a transmission line with a characteristic impedance of 50 Ohms. An antenna is located at the other end of the line, with an input impedance described by:

$$R_r = 75 \Omega \quad R_l = 25 \Omega \quad X_A = 0 \Omega$$

How much power is delivered to the antenna, and how much is reflected?

How much of the power delivered to the antenna is radiated ?

What is the efficiency of this antenna ?