Special Problem II.A-39

Consider a three-port device with the scattering matrix:

$$\mathbf{S} = \begin{bmatrix} 0 & 0.5 & -0.4 \\ 0.5 & -j0.2 & j0.3 \\ -0.4 & j0.3 & 0 \end{bmatrix}$$

Say that ports **1** and **3** of the device are **terminated** in matched loads.

And, the voltage of an **incident** wave on **port 2** has power of:

$$P_2^+ = 100 \quad mW$$

A. Determine the power exiting port 1 and port 3.

B. Determine the power absorbed by port 2.

C. Determine the power absorbed by the entire 3-port device.