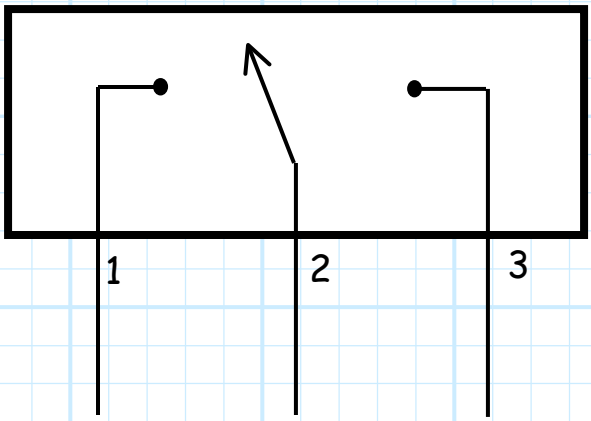
Special Problem II.A-46

Consider this microwave **switch**:



This switch can be in **either** state "A" or state "B", where:

in state "A" port **1** and port **2** are connected.

in state "B" port **2** and port **3** are connected.

The **scattering matrix** of this device in one state is:

$$\bar{\bar{S}} = \begin{bmatrix} 0.01 & j0.90 & 0.001 \\ j0.90 & 0.01 & 0.001 \\ 0.001 & 0.001 & 0.01 \end{bmatrix}$$

From this scattering matrix, determine (**justify** your answers!):

1. The **state** of this switch ("A" or "B").

2. If the switch is **absorptive** or **reflective**.

3. The **insertion loss** of the device.