

A rectangular wave guide with dimensions  $2.00 \text{ cm} \times 1.00 \text{ cm}$ . What TE modes will propagate in this wave guide, if the driving frequency is  $2.00 \times 10^{10} \text{ Hz}$ ? What are the group velocity and the phase velocity? Suppose you wanted to excite only *one* TE mode; what range of frequencies could you use? What are the corresponding wavelengths (in open space)?