Field Profile and mode excitation

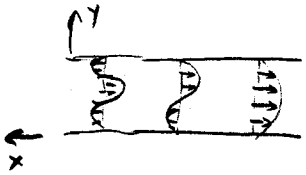
A waveguide supports 3 TE modes. What does the electric field look like for these modes? What infinitely thin current probe would
NOT excite the 1st mode
NOT excite the 2nd mode
NOT excite the 3rd mode

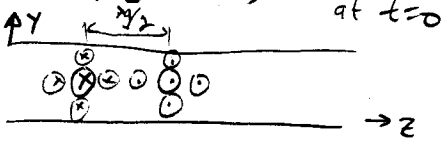
TE modes : $\vec{E} = \hat{x}\, 2jE_0 \sin(k_y y)\, e^{-j\beta z}$

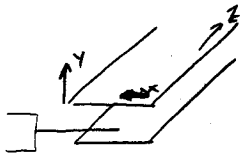
$\vec{\mathcal{E}} = Re\{\vec{E}\cdot e^{j\omega t}\} = \hat{x}\, 2E_0 \sin(k_y y)\, Re\{j\cos(\beta z-\omega t) + (j)^2 \sin(\beta z-\omega t)\}$

$\vec{\mathcal{E}} = -\hat{x}\, 2E_0 \sin(k_y y)\sin(\beta z-\omega t)$ $\qquad \lambda_g = \frac{2\pi}{\beta}$

$\vec{\mathcal{E}} = -\hat{x}\, 2E_0 \sin\left(\frac{m\pi}{d} y\right)\sin(\beta z-\omega t)$







Need $\vec{J} = J_0 \hat{x}$

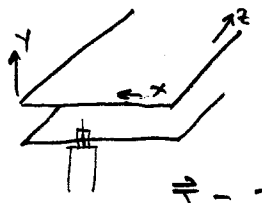
TO NOT excite the second mode $\vec{J} = I_0 \hat{x}\, \delta(y-d/2)\,\delta(z)$

TO NOT excite the third mode $\vec{J} = I_0 \hat{x}\, \delta(y-d/3)\,\delta(z)$

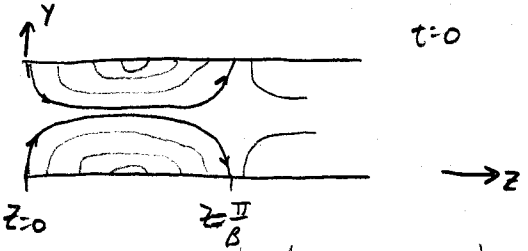
What about a TM mode?

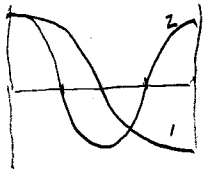
$$\vec{E} = \frac{2E_0}{k_0}\left[-\hat{y}\,k_z\cos(k_y y) - \hat{z}\,j\,k_y \sin(k_y y)\right] e^{-j\beta z}$$

$$\vec{\mathcal{E}} = -\hat{y}\, 2E_0 \frac{k_z}{k_0}\cos(k_y y)\cos(\beta z-\omega t) + \hat{z}\, 2E_0 \frac{k_y}{k_0}\sin(k_y y)\sin(\beta z-\omega t)$$



$\vec{J} = J_0 \hat{y}$





TO NOT excite the first mode
$\vec{J} = I_0 \hat{y}\, \delta(y-d/3)\,\delta(z)$

Not excite the Second mode
$\vec{J} = I_0 \hat{y}\, \delta(y-d/4)\,\delta(z)$