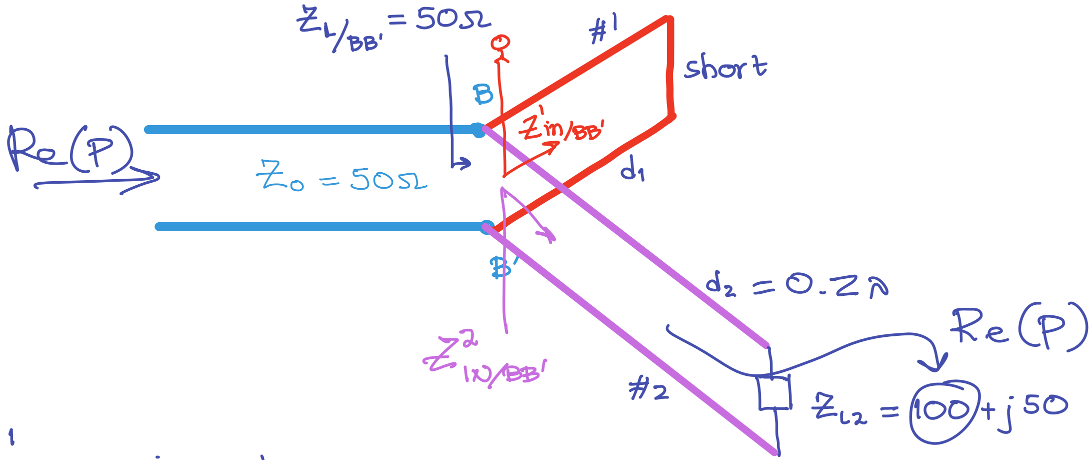
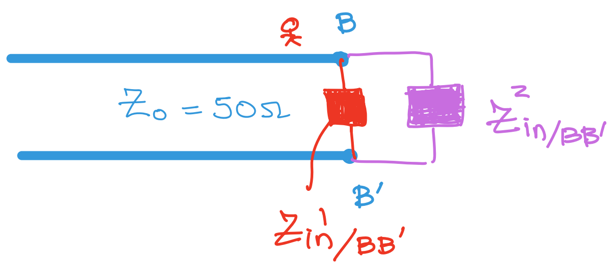


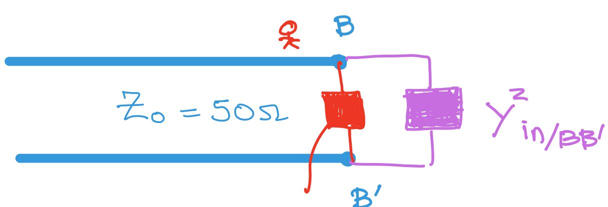
$Z^1_{IN/BB'}$ = impedance at BB' presented by #1 = reactive

$Z^2_{IN/BB'}$ = impedance at BB' presented by #2

$Z_{L/BB'} = 50\Omega$

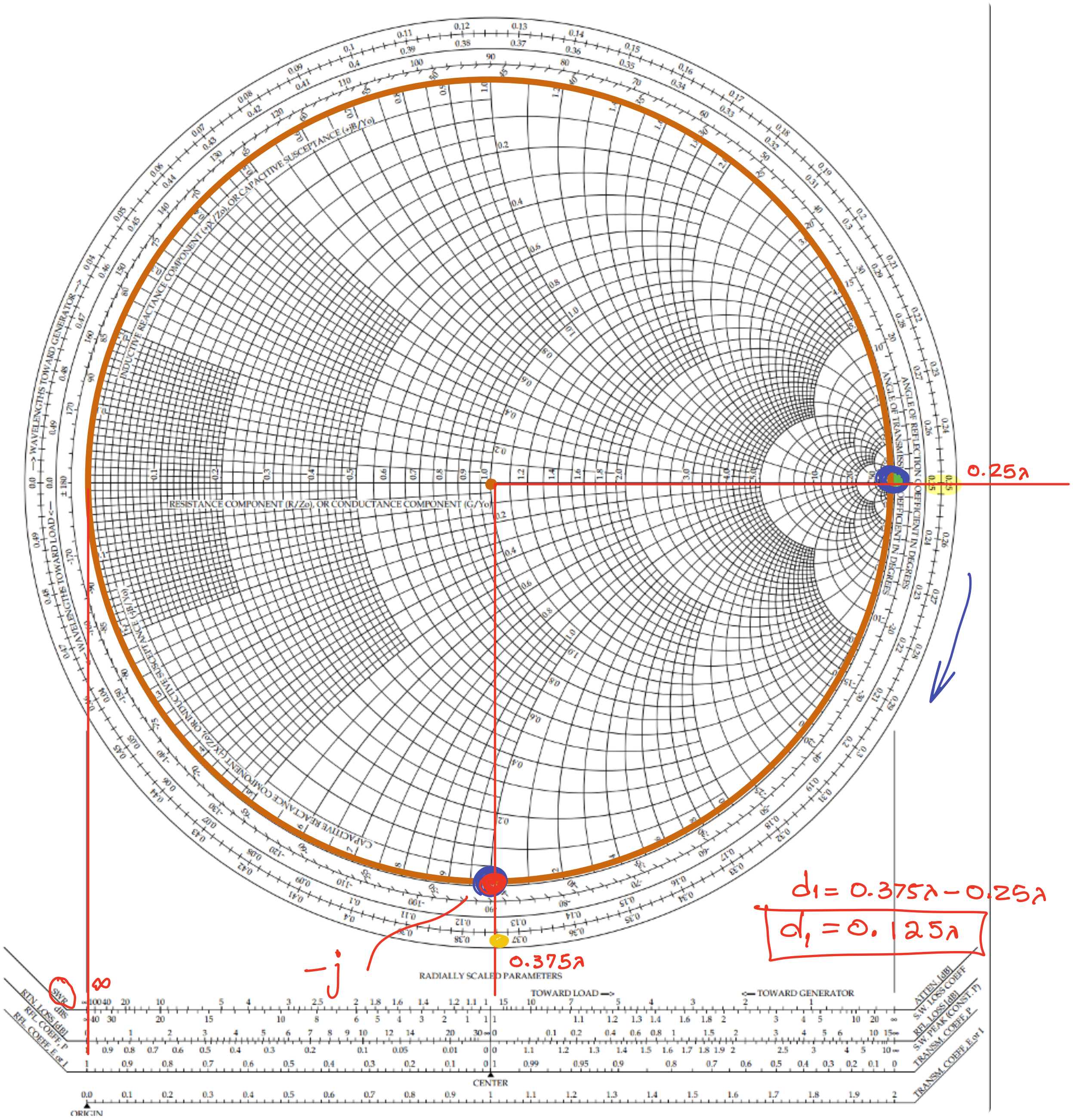


$\Rightarrow$ on the Smith Chart we will admittances



$Y^1_{in/BB'}$ = reactive $= jX$ $\begin{cases} \text{if } X > 0 \Rightarrow \text{cap.} \\ \text{if } X < 0 \Rightarrow \text{ind.} \end{cases}$

Transmission Line #1

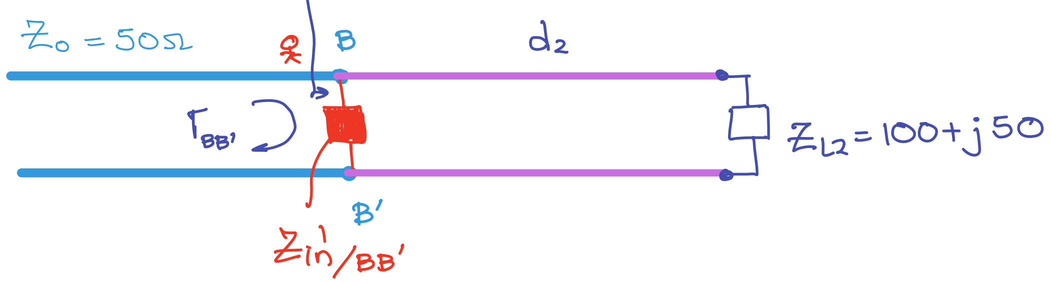


$$\text{VSWR} = \frac{1+|\Gamma|}{1-|\Gamma|}$$

$$Z_L^{\#1} = 0 = \text{short}$$

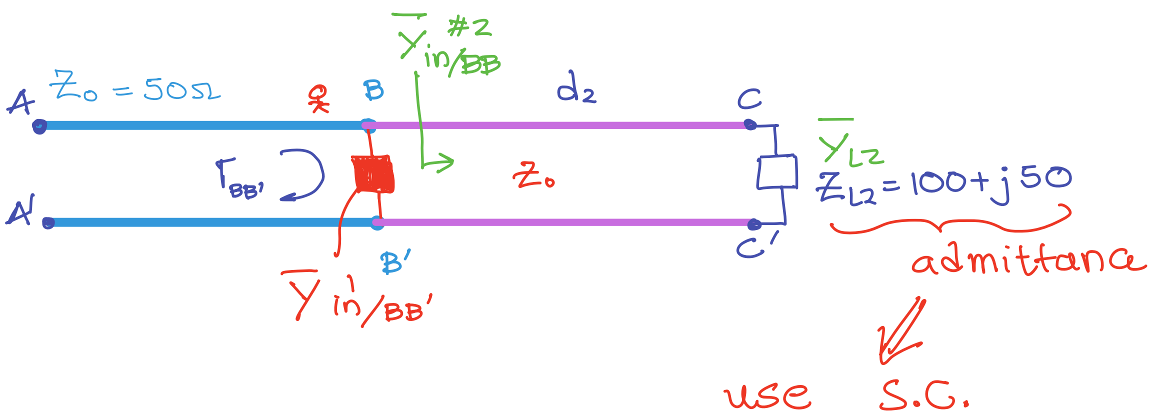
$$Y_L^{\#1} = \frac{1}{Z_L^{\#1}} = \infty$$

$$Z_{L/BB} = Z^1_{in/BB} \,//\, T.L\#2$$



What is d_2 and $Z^1_{in/BB'}$ so that $\Gamma_{BB'} = 0$

[Because $Z^1_{in/BB'}$ (or T.L #1) is connected with T.L #2 $\Rightarrow$ We change all loads and in general all impedances <u>into</u> <u>admittances</u>]

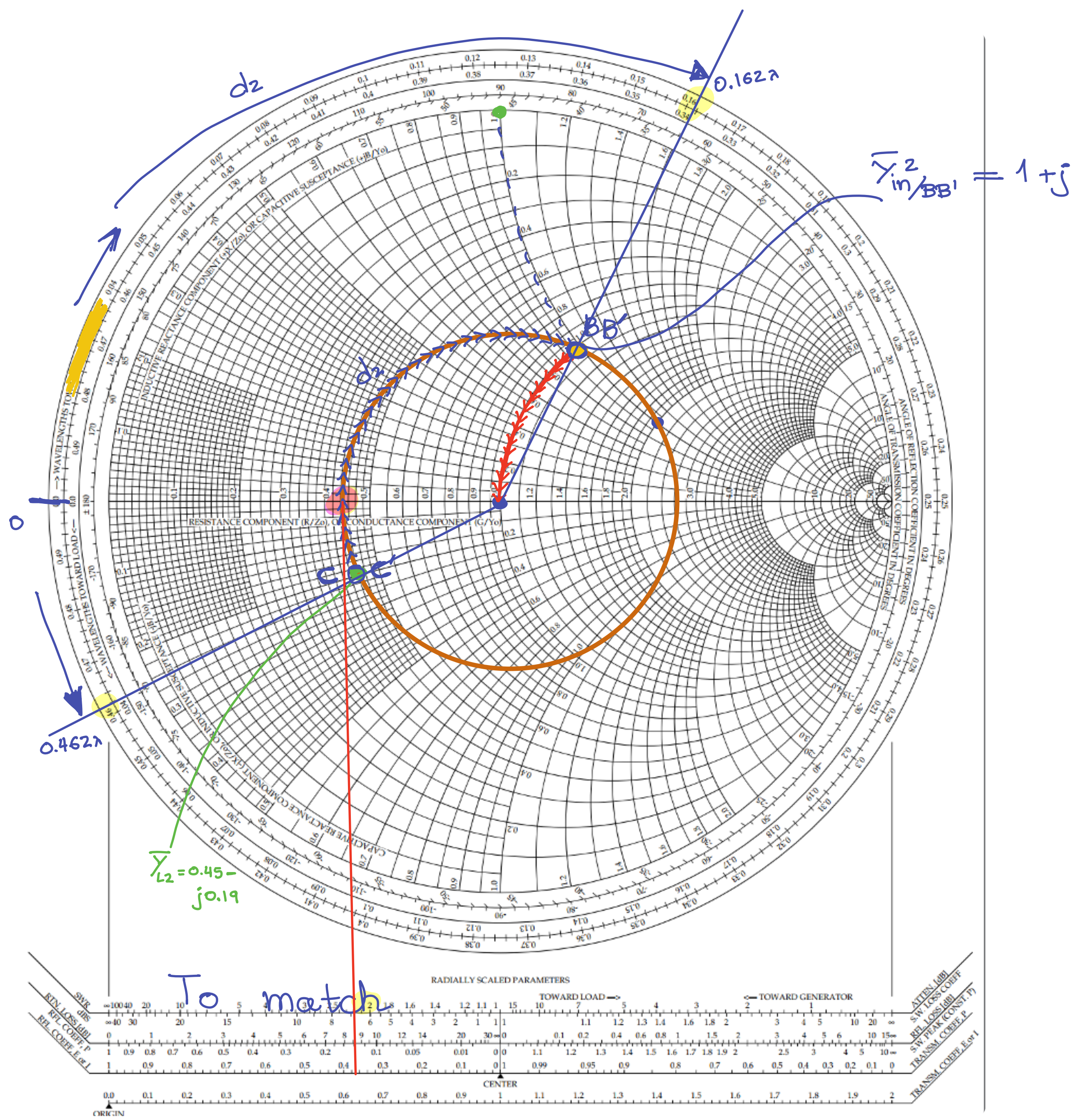


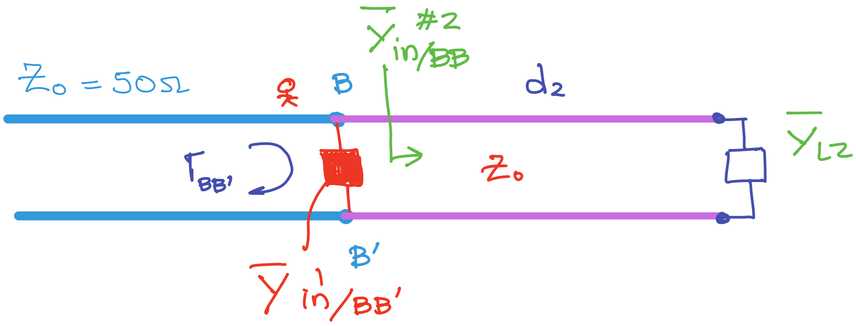
$$Z_{L2} \rightarrow Y_{L2} \Rightarrow \underbrace{Z_{L2} \rightarrow \bar{Z}_{L2}} \Rightarrow \bar{Z}_{L2} \rightarrow \bar{Y}_{L2}$$

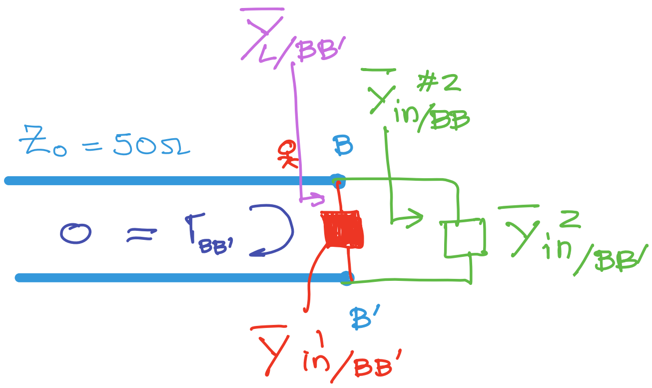
using S.C.

$$\bar{Z}_{L2} = \frac{100+j50}{50} = \underline{2+j}$$

$$\underbrace{(0.5-0.462)\lambda}_{0.038\lambda} + 0.162\lambda = 0.038\lambda + 0.162\lambda = \boxed{0.2\lambda = d_2}$$





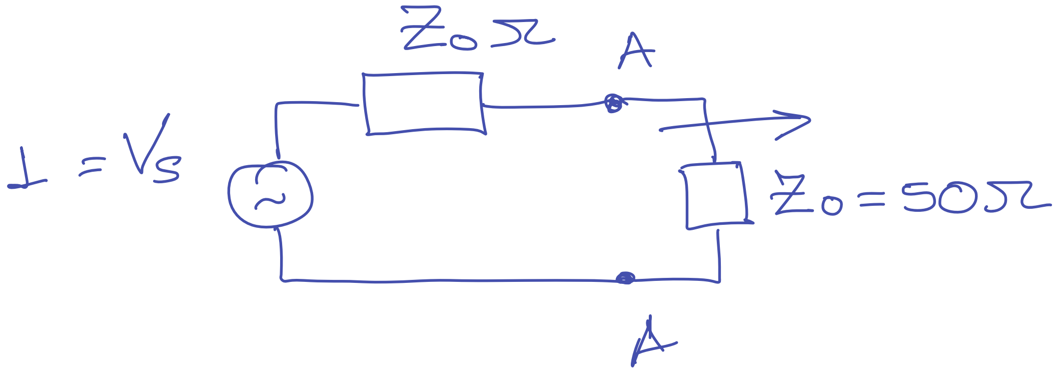


$$\boxed{\overline{Y}_{L/BB'} = \underbrace{\overline{Y}^1_{in/BB'}}_{?} + \underbrace{\overline{Y}^2_{in/BB}}_{\overset{?}{=}(1+j)}} = 1$$

$$\overline{Y}_{L/BB'} = 1 = \overline{Y}^1_{in/BB'} + (1+j) \Rightarrow$$

$$\Rightarrow \cancel{1} = \overline{Y}^1_{in/BB'} + \cancel{1} + j \Rightarrow$$

$$\Rightarrow \boxed{\overline{Y}^1_{in/BB'} = -j}$$



$Z_0\,\Omega$
A
$1 = V_S$
$Z_0 = 50\Omega$
A