

Design of matching networks

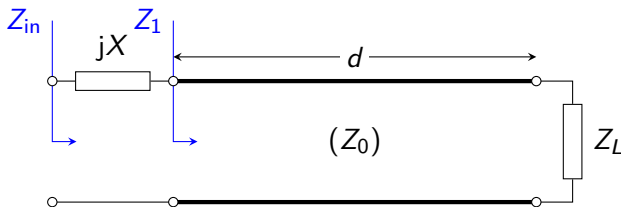
High Frequency Technologies

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Simple matching network

Compute d and X in order to have input matching ($Z_{in} = Z_0$).



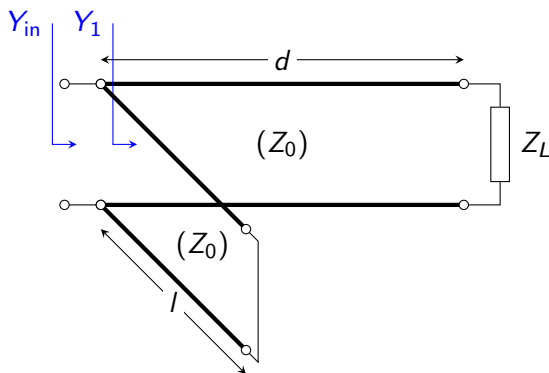
Specifications:

- $Z_0 = 70 \Omega$
- $Z_L = (50 + 10j) \Omega$



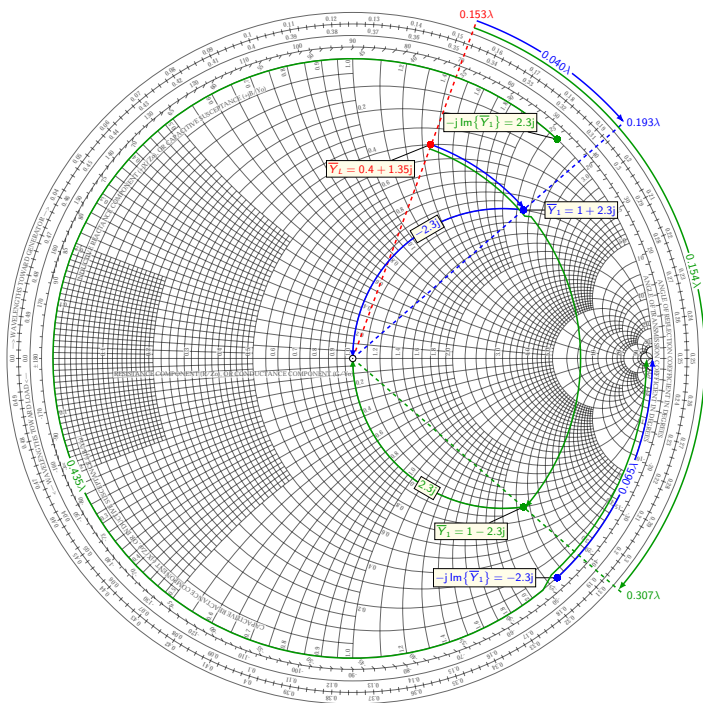
Single stub matching network

Compute d and l in order to have input matching ($Z_{\text{in}} = Z_0$).



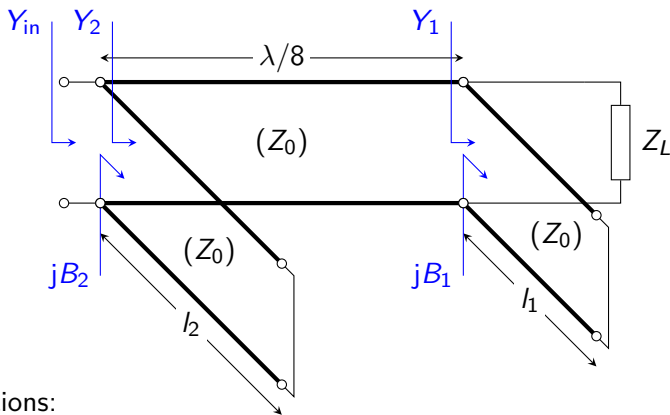
Specifications:

- $Z_0/Z_L = Y_L/Y_0 = 0.4 + 1.35j$



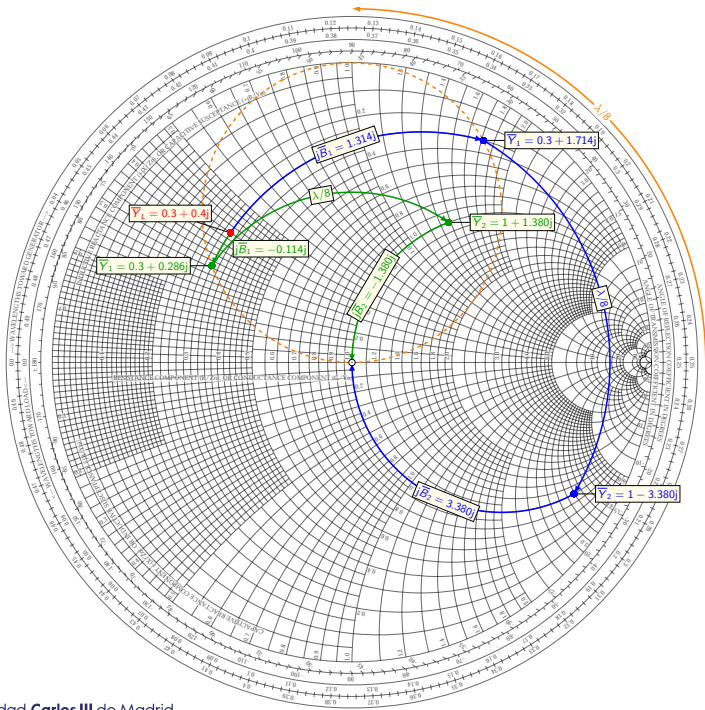
Double stub matching network

Compute l_1 and l_2 in order to have input matching ($Z_{in} = Z_0$).



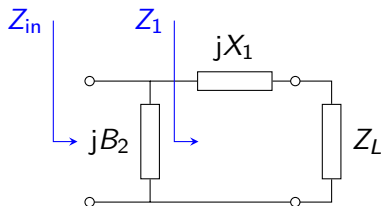
Specifications:

- $Z_0 = 50 \Omega$
- $Z_L = (60 - 80j) \Omega$



Series-parallel matching network with lumped elements

Compute X_1 and B_2 to have input matching ($Z_{\text{in}} = Z_0$).

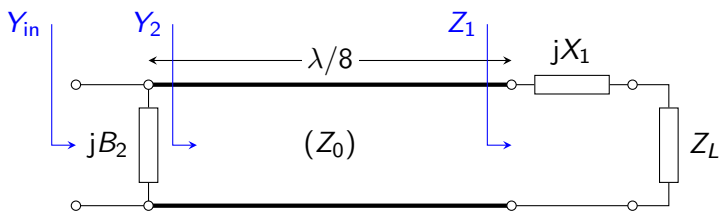


Specifications:

- $Z_0 = 50 \, \Omega$
- $Z_L = (25 + 10j) \, \Omega$

Series-parallel matching network

Compute X_1 and B_2 in order to have input matching network ($Z_{in} = Z_0$).



Specifications:

- The load Z_L connected to a line with characteristic impedance Z_0 produces $RL = 8 \text{ dB}$.
- If Z_L is replaced with a short-circuit, the minima of the voltage standing wave are shifted 0.15λ away from the load.

