

$$S_{11} := 0.3674 \angle -168 \text{ deg}$$

$$S_{21} := 4.141 \angle 36.1 \text{ deg}$$

$$S_{12} := 0.05534 \angle 25.2 \text{ deg}$$

$$S_{22} := 0.5534 \angle -80.3 \text{ deg}$$

$$\Delta := S_{11} \cdot S_{22} - S_{12} \cdot S_{21} = 0.186 \angle -176.263^\circ$$

$$K := \frac{1 - |S_{11}|^2 - |S_{22}|^2 + |\Delta|^2}{2 |S_{12} \cdot S_{21}|} = 1.294 \angle 0^\circ$$

$$B_1 := 1 + |S_{11}|^2 - |S_{22}|^2 - |\Delta|^2$$

$$B_2 := 1 + |S_{22}|^2 - |S_{11}|^2 - |\Delta|^2$$

$$C_1 := S_{11} - \Delta \cdot \overline{S_{22}}$$

$$C_2 := S_{22} - \Delta \cdot \overline{S_{11}}$$

$$\Gamma_S := \frac{B_1 - \sqrt{B_1^2 - 4 \cdot |C_1|^2}}{2 \cdot C_1} = 0.597 \angle -175.772^\circ \quad z_S := \frac{1 + \Gamma_S}{1 - \Gamma_S} = 0.255 \angle -7.795^\circ$$

$$\Gamma_L := \frac{B_2 - \sqrt{B_2^2 - 4 \cdot |C_2|^2}}{2 \cdot C_2} = 0.709 \angle 87.248^\circ \quad z_L := \frac{1 + \Gamma_L}{1 - \Gamma_L} = 1.046 \angle 70.632^\circ$$

$$y_S := \frac{1}{z_S} = 3.924 \angle 7.795^\circ$$

$$y_L := \frac{1}{z_L} = 0.956 \angle -70.632^\circ$$

$$G_S := \frac{1}{1 - |\Gamma_S|^2} = 1.554 \angle 0^\circ \quad G_{SdB} := 10 \cdot \log(G_S) = 1.916 \angle 0^\circ$$

$$G_0 := |S_{21}|^2 = 17.148 \angle 0^\circ \quad G_{0dB} := 10 \cdot \log(G_0) = 12.342 \angle 0^\circ$$

$$G_L := \frac{1 - |\Gamma_L|^2}{|1 - S_{22} \cdot \Gamma_L|^2} = 1.327 \angle 0^\circ \quad G_{LdB} := 10 \cdot \log(G_L) = 1.227 \angle 0^\circ$$

$$G_{Tmax} := G_{SdB} + G_{0dB} + G_{LdB} = 15.485 \angle 0^\circ$$

$$Z_S := z_S \cdot 50 = 12.624 - 1.728j$$

$$Z_L := z_L \cdot 50 = 17.351 + 49.358j$$