Parameters for Example 3.7.1

$j := \sqrt{-1}$ $dB := 1$ $G_P := 9 \cdot dB$

$M := \begin{bmatrix} 0.641 & 0.057 \\ 2.058 & 0.572 \end{bmatrix}$ $\phi := \begin{bmatrix} -171.3 \cdot deg & 16.3 \cdot deg \\ 28.5 \cdot deg & -95.7 \cdot deg \end{bmatrix}$ $m := 1 .. 2$ $n := 1 .. 2$ $S_{m,n} := M_{m,n} \cdot e^{j \cdot (\phi_{m,n})}$

$\Delta := S_{1,1} \cdot S_{2,2} - S_{2,1} \cdot S_{1,2}$ $|\Delta| = 3.014 \cdot 10^{-1}$ $\arg(\Delta) = 1.099 \cdot 10^{2} \cdot deg$

$K := \left[\frac{1 - (|S_{1,1}|)^2 - (|S_{2,2}|)^2 + (|\Delta|)^2}{2 \cdot |S_{1,2} \cdot S_{2,1}|} \right]$ $K = 1.504$ $g_p := \frac{10^{(.1 \cdot G_P)}}{(|S_{2,1}|)^2}$ $g_p = 1.875$

$r_p := \frac{\sqrt{1 - 2 \cdot K \cdot |S_{1,2} \cdot S_{2,1}| \cdot g_p + (|S_{1,2} \cdot S_{2,1}|)^2 \cdot g_p^2}}{|1 + g_p \cdot [(|S_{2,2}|)^2 - (|\Delta|)^2]|}$ $r_p = 4.309 \cdot 10^{-1}$

$C_p := \frac{g_p \cdot \overline{S_{2,2} - \Delta \cdot (\overline{S_{1,1}})}}{1 + g_p \cdot [(|S_{2,2}|)^2 - (|\Delta|)^2]}$ $|C_p| = 5.083 \cdot 10^{-1}$ $\arg(C_p) = 1.039 \cdot 10^{2} \cdot deg$

$\theta := -32 \cdot deg$ $\Gamma_L := C_p + r_p \cdot e^{j \cdot \theta}$ $|\Gamma_L| = 3.595 \cdot 10^{-1}$ $\arg(\Gamma_L) = 4.748 \cdot 10^{1} \cdot deg$

$$\Gamma_{in} := S_{1,1} + \frac{S_{2,1}\cdot S_{1,2}\cdot \Gamma_L}{1 - S_{2,2}\cdot \Gamma_L} \qquad |\Gamma_{in}| = 6.29\cdot 10^{-1} \qquad \arg(\Gamma_{in}) = -1.755\cdot 10^{2}\,\text{deg} \qquad \Gamma_s := \overline{\Gamma_{in}}$$

$$Mag\_\Gamma_a := \left| \frac{\Gamma_{in} - \overline{\Gamma_s}}{1 - \Gamma_{in}\cdot \Gamma_s} \right| \qquad Mag\_\Gamma_a = 0 \qquad VSWR_{in} := \frac{1 + Mag\_\Gamma_a}{1 - Mag\_\Gamma_a} \qquad VSWR_{in} = 1$$

$$\Gamma_{out} := S_{2,2} + \frac{S_{2,1}\cdot S_{1,2}\cdot \Gamma_s}{1 - S_{1,1}\cdot \Gamma_s} \qquad |\Gamma_{out}| = 6.697\cdot 10^{-1} \qquad \arg(\Gamma_{out}) = -1.027\cdot 10^{2}\,\text{deg}$$

$$Mag\_\Gamma_b := \left| \frac{\Gamma_{out} - \overline{\Gamma_L}}{1 - \Gamma_{out}\cdot \Gamma_L} \right| \qquad Mag\_\Gamma_b = 6.219\cdot 10^{-1} \qquad VSWR_{out} := \frac{1 + Mag\_\Gamma_b}{1 - Mag\_\Gamma_b} \qquad VSWR_{out} = 4.289$$

$$G_P := \left[\frac{1}{\left[1 - \left(|\Gamma_{in}|\right)^2\right]}\right]\cdot \left(|S_{2,1}|\right)^2 \cdot \left[\frac{1 - \left(|\Gamma_L|\right)^2}{\left(|1 - S_{2,2}\cdot \Gamma_L|\right)^2}\right] \qquad G_P = 7.943 \qquad G_{P\_dB} := 10\cdot\log(G_P) \qquad G_{P\_dB} = 9\,\text{dB}$$

$$G_T := \left[\frac{1 - \left(|\Gamma_s|\right)^2}{\left(|1 - \Gamma_{in}\cdot \Gamma_s|\right)^2}\right]\cdot \left(|S_{2,1}|\right)^2 \cdot \left[\frac{1 - \left(|\Gamma_L|\right)^2}{\left(|1 - S_{2,2}\cdot \Gamma_L|\right)^2}\right] \qquad G_T = 7.943 \qquad G_{T\_dB} := 10\cdot\log(G_T) \qquad G_{T\_dB} = 9\,\text{dB}$$