

$$\begin{pmatrix} b_1 \\ b_2 \\ b_3 \\ b_4 \end{pmatrix} = \frac{1}{\sqrt{2}} \begin{pmatrix} 0 & 0 & j & 1 \\ 0 & 0 & 1 & j \\ j & 1 & 0 & 0 \\ 1 & j & 0 & 0 \end{pmatrix} \begin{pmatrix} a_1 \\ a_2 \\ a_3 \\ a_4 \end{pmatrix} \Rightarrow \begin{aligned} \Gamma_3 b_3 &= \frac{b_3}{3} \\ \Gamma_4 b_4 &= \frac{b_4}{2} \end{aligned}$$

$$\Gamma_{\text{carga}} = \frac{Z_{\text{carga}} - Z_0}{Z_{\text{carga}} + Z_0} = \frac{a}{b} \rightarrow a_i = \Gamma_i \cdot b_i \quad \Gamma_{\text{in}} = \frac{Z_{\text{in}} - Z_0}{Z_{\text{in}} + Z_0} = \frac{b}{a}$$

$$\Gamma = \frac{Z_{\text{carga}} - Z_0}{Z_{\text{carga}} + Z_0} \rightarrow \Gamma_3 = \frac{100 - 50}{100 + 50} = \frac{50}{150} = \frac{1}{3}; \quad \Gamma_4 = \frac{150 - 50}{150 + 50} = \frac{100}{200} = \frac{1}{2}; \quad \Gamma_2 = \frac{50 - 50}{50 + 50} = 0$$

$$b_1 = j \frac{a_3}{\sqrt{2}} + \frac{a_4}{\sqrt{2}} = \frac{1}{\sqrt{2}} \left(j \frac{b_3}{3} + \frac{b_4}{2} \right) = \frac{1}{\sqrt{2}} \left(-\frac{a_1}{\sqrt{2}} \cdot \frac{1}{3} + \frac{a_1}{2\sqrt{2}} \right) \rightarrow \frac{b_1}{a_1} = \Gamma_{\text{in}} = \frac{1}{2} \left(-\frac{1}{3} + \frac{1}{2} \right) = \frac{1}{2} \left(\frac{-2+3}{6} \right) = \frac{1}{6} \cdot \frac{1}{2} = \frac{1}{12}$$

$$b_3 = j \frac{a_1}{\sqrt{2}}; \quad b_4 = \frac{a_1}{\sqrt{2}}$$

② $P_{\text{disp gen}} = 10 \text{ dBm}$ d'Pen la puerta 2^a $10 \text{ dBm} = 10 \text{ mW} = 10 \cdot 10^{-3} \text{ W}$

$$P_2 = \frac{1}{2} [|b_2|^2 - |a_2|^2] = \frac{1}{2} \left[\frac{1}{2} a_1^2 \left(\frac{1}{3\sqrt{2}} + \frac{1}{2\sqrt{2}} \right)^2 - \frac{1}{2} a_1^2 \right] = \frac{1}{2} a_1^2 \cdot \left| \frac{1}{2} \left(\frac{1}{3} + \frac{1}{2} \right) \right|^2 =$$

$$b_2 = \frac{1}{\sqrt{2}} (a_3 + j a_4) = \frac{1}{\sqrt{2}} \left(j \frac{b_3}{3} + j \frac{b_4}{2} \right) = \frac{1}{\sqrt{2}} j \left(\frac{a_1}{3\sqrt{2}} + \frac{a_1}{2\sqrt{2}} \right) = \frac{1}{2} j \left(\frac{a_1}{3} + \frac{a_1}{2} \right) = 1,76 \cdot 10^{-3} \text{ W}$$

$$P_{\text{avs}} = \frac{1}{2} |a_1|^2$$

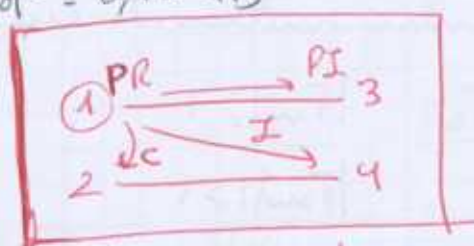
$$2,4 \text{ dBm}$$

③ $P_R = -10 \log |S_{11}|^2 = -10 \log 10,031^2 = 30,45 \text{ dB}$
 $P_I = -10 \log |S_{12}|^2 = -10 \log 0,21^2 = 14 \text{ dB}$
 $C = -10 \log |S_{12}|^2 = -10 \log 10,981^2 = 0,15 \text{ dB}$

$$D = I - C = 45,825 \text{ dB}$$

$$I = -10 \log |S_{14}|^2 = 46 \text{ dB}$$

↑ aislamiento



originalmente para:

$$\text{Ahora } P_R = -10 \log |S_{11}|^2 = 30,45 \text{ dB}$$

$$P_I = -10 \log |S_{13}|^2 = 0,175 \text{ dB}$$

$$C = -10 \log |S_{12}|^2 = 14 \text{ dB}$$

$$I = -10 \log |S_{14}|^2 = 46 \text{ dB}$$

$$D = I - C = 30 \text{ dB}$$