$$\Gamma_{m_{sc}} = \Gamma_{m_L} - \frac{\alpha}{1+r'}$$

$$\Gamma_{m_{oc}} = \Gamma_{m_L} + \frac{\alpha}{1-r'}$$

$$\Rightarrow \quad \alpha = \left(\Gamma_{m_L} - \Gamma_{m_{sc}}\right)\left(1+r'\right)$$

$$\Rightarrow \quad \Gamma_{m_{oc}} - \Gamma_{m_L} = \left(\Gamma_{m_L} - \Gamma_{m_{sc}}\right)\frac{(1+r')}{(1-r')}$$

$$\frac{1+r'}{1-r'} = \frac{\Gamma_{m_{oc}} - \Gamma_{m_L}}{\Gamma_{m_L} - \Gamma_{m_{sc}}} \equiv \beta$$

$$1+r' = \beta(1-r')$$

$$r'(1+\beta) = \beta - 1 \quad \Rightarrow \quad r' = \frac{\beta-1}{\beta+1}$$

$$\Rightarrow \quad \alpha = \left(\Gamma_{m_L} - \Gamma_{m_{sc}}\right)\underbrace{\left(1+\frac{\beta-1}{\beta+1}\right)}_{\frac{2\beta}{\beta+1} = \frac{2\left(\frac{\Gamma_{m_{oc}} - \Gamma_{m_L}}{\Gamma_{m_L} - \Gamma_{m_{sc}}}\right)}{\beta+1}}$$

$$\beta + 1 = \frac{\cancel{\Gamma_{mL}} - \Gamma_{msc} + \Gamma_{moc} - \cancel{\Gamma_{mL}}}{\Gamma_{mL} - \Gamma_{msc}}$$

$$\frac{2\beta}{\beta+1} = \frac{2\left(\Gamma_{moc} - \Gamma_{mL}\right)}{\Gamma_{moc} - \Gamma_{msc}}$$

$$\alpha = \frac{\left(\Gamma_{mL} - \Gamma_{msc}\right) 2\left(\Gamma_{moc} - \Gamma_{mL}\right)}{\Gamma_{moc} - \Gamma_{msc}}$$

$$r' = \frac{\beta - 1}{\beta + 1} = \frac{\beta - 1}{\dfrac{\Gamma_{moc} - \Gamma_{msc}}{\Gamma_{mL} - \Gamma_{msc}}}$$

$$\beta - 1 = \frac{\Gamma_{moc} - \Gamma_{mL} + \Gamma_{msc} - \Gamma_{mL}}{\Gamma_{mL} - \Gamma_{msc}}$$

$$= \frac{\Gamma_{moc} + \Gamma_{msc} - 2\Gamma_{mL}}{\Gamma_{mL} - \Gamma_{msc}}$$

$$r' = \frac{\Gamma_{moc} + \Gamma_{msc} - 2\Gamma_{mL}}{\Gamma_{moc} - \Gamma_{msc}}$$

$$\Gamma_{mu} = \Gamma_{mL} + \frac{\alpha \Gamma_{uL}}{1 - r'\Gamma_{uL}}$$

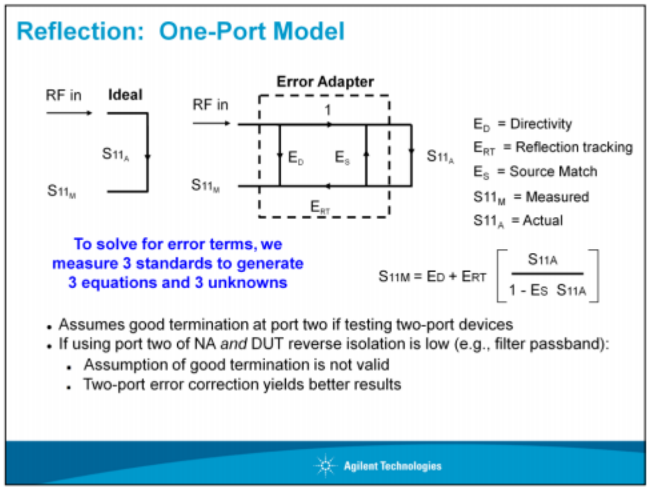
$$\left(\Gamma_{mu} - \Gamma_{mL}\right) = \frac{\alpha \Gamma_{uL}}{1 - r'\Gamma_{uL}}$$

$$\left(\Gamma_{mu} - \Gamma_{mL}\right)\left(1 - r'\Gamma_{uL}\right) = \alpha \Gamma_{uL}$$

$$\Gamma_{mu} - \Gamma_{mL} = \Gamma_{uL}\left(\alpha + \left(\Gamma_{mu} - \Gamma_{mL}\right) r'\right)$$

$$\Gamma_{uL} = \frac{\Gamma_{mu} - \Gamma_{mL}}{\left(\Gamma_{mu} - \Gamma_{mL}\right) r' + \alpha}$$

In the literature, r' is known as source match, E_S, and alpha is known as reflection tracking, E_R. Gamma_mL is known as E_D, directivity. Gamma_mu is sometimes written as S_11M, or measured reflection.



I verified wit an octave script that this method is the same as correcting the impedance using the formula:

$$Z_u = Z_0 \frac{(\Gamma_{mo} - \Gamma_{mL})(\Gamma_{mu} - \Gamma_{ms})}{(\Gamma_{mL} - \Gamma_{ms})(\Gamma_{mo} - \Gamma_{mu})}$$