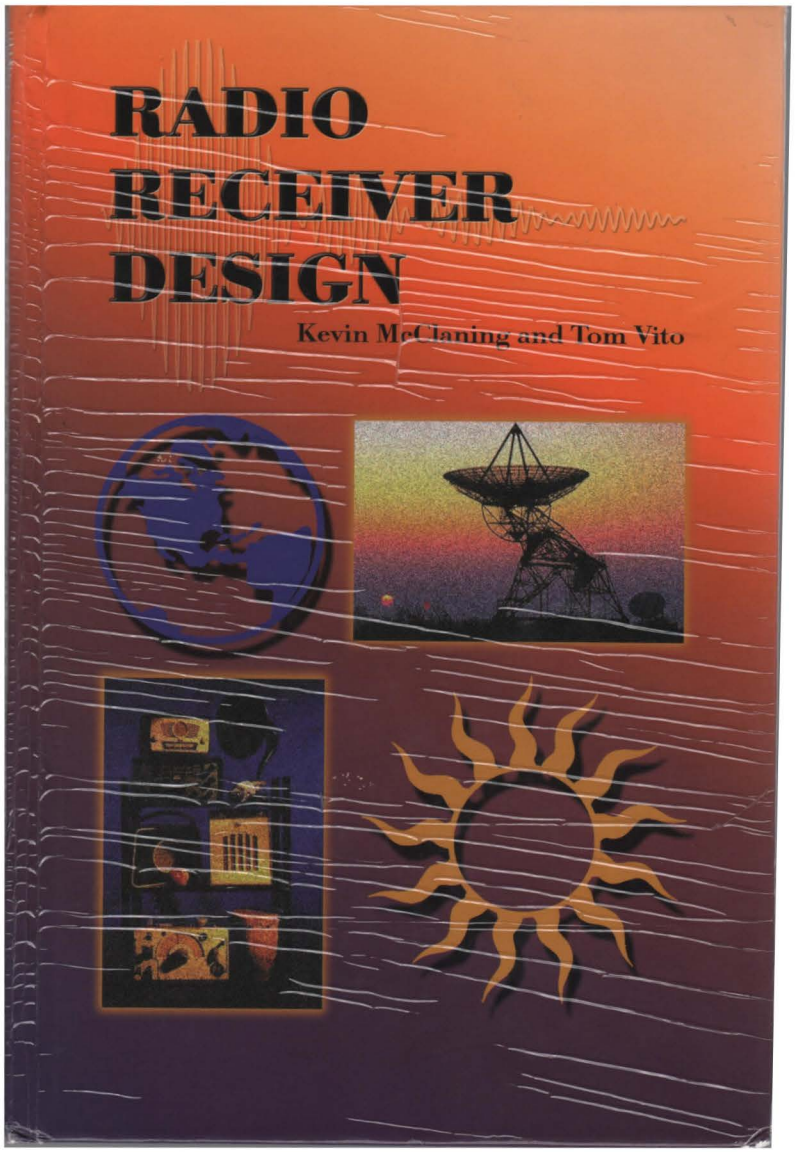

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$$z_{11} = \frac{z_{11,Z0}}{Z_0} \quad z_{12} = \frac{z_{12,Z0}}{Z_0} \quad z_{21} = \frac{z_{21,Z0}}{Z_0} \quad z_{22} = \frac{z_{22,Z0}}{Z_0} \tag{1.146}$$

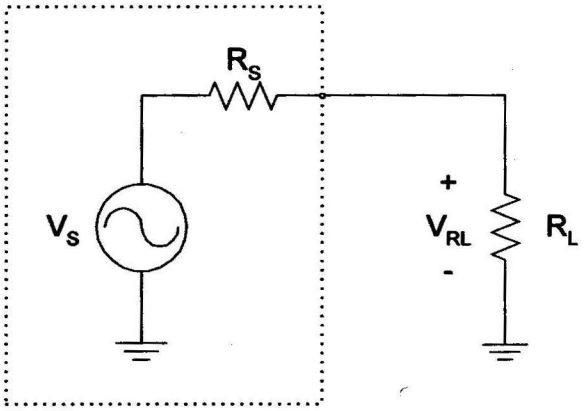
$$y_{11} = y_{11,Z0}Z_0 \quad y_{12} = y_{12,Z0}Z_0 \quad y_{21} = y_{21,Z0}Z_0 \quad y_{22} = y_{22,Z0}Z_0 \tag{1.147}$$

$$h_{11} = \frac{h_{11,Z0}}{Z_0} \quad h_{12} = h_{12,Z0} \quad h_{21} = h_{21,Z0} \quad h_{22} = z_{22,Z0}Z_0 \tag{1.148}$$

1.13 Matching and Maximum Power Transfer

We can model any practical signal source as Figure 1-35 indicates. The combination of V_S and R_S can be a signal generated, an antenna, or a RF amplifier. The value of R_S can be small, but it will never be zero. For a various reasons, R_S is set equal to Z_0, the system's characteristic impedance.

Let us assume the source in Figure 1-35 is an antenna. Then V_S represents the signal energy the antenna receives and R_S represents the radiation resistance of the antenna. If the load resistor represents a receiving system, the receiver should be able to take the maximum amount of signal power from the antenna into the load resistor R_L.



- o Signal Generator
- o Antenna
- o RF Amplifier

Figure 1-35 *Model used to derive maximum power transfer conditions.*