The Directional Coupler Specification Sheet

Here are some typical parameters used to specify technical the performance of directional couplers!

**Bandwidth (Hz)**

A directional coupler, like all other devices, can effectively operate only within a finite bandwidth. Generally, bandwidth is defined as the frequency range where the coupling is that of the specified value, within some minimum deviation (e.g., 3 dB).

**Port Impedance ($\Gamma$, return loss, VSWR, $S_{11}$, $Z_{in}$)**

A parameter that specifies the match of the input ports. Can (and will) be specified any number of ways.

**Input power (Watts)**

The maximum input power the coupler can handle before it will be damaged.

**Coupling (dB)**

See “The Directional Coupler” handout
**Directivity (dB)**

See “The Directional Coupler” handout

**Isolation (dB)**

See “The Directional Coupler” handout

**Mainline Loss (dB)**

See “The Directional Coupler” handout

**Coupling Loss (dB)**

See “The Directional Coupler” handout

**Insertion Loss (dB)**

See “The Directional Coupler” handout

**Coupling Flatness (dB)**

This parameter specifies how much the coupling varies over the bandwidth of the device. Typically this value is 1 to 2 dB or less.

Recall that many of these values are dependent! For example,

\[ ML = CL + IL \text{ (dB)} \quad \text{and} \quad I = C + D \text{ (dB)} \]