

Glossary of Passive Waveguide Terminology

average power handling capacity – The CW average power handling capability with one-way transmission through the main line of the component under matched load conditions

bandwidth – The range of frequencies over which performance falls within specific limits.

bidirectional coupler – Another name for a 4-port coupler; that is, a single coupler having no internal termination. It is intended to allow forward and reflected signals to be sampled simultaneously.

coupling coefficient of a coupler – The ratio in dB of the incident power fed into the main port to the coupled port power when all ports are terminated by reflectionless terminations. See figure below.

$$\text{Coupling value} = -10 \log_{10} (P_3/P_1).$$

coupling flatness – The maximum peak-to-peak variation in coupling coefficient that may be expected over a specified frequency range.

coupling loss – The reduction in power available to the main-line output due solely to power transferred to the coupled line. It is equal to the theoretical minimum main-line insertion loss. See figure below.

coupling tolerance – The allowable unit-to-unit variation in nominal coupling.

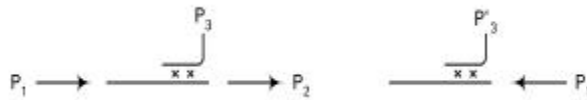
directivity - The difference in dB of the power output at a coupled port, when power is transmitted in the desired direction, to the power output at the same coupled port when the same amount of power is transmitted in the opposite direction. In the case of a bidirectional coupler, an alternative definition is the difference in dB of the power output of the two coupled ports, when power is transmitted in a constant direction on the main line. Reflectionless terminations are assumed to be connected to all ports. See figure below.

$$\text{Directivity} = 10 \log_{10} (P_3/P_3').$$

main-line loss – The change in load power, due to the insertion of the coupler in a transmission system, with reflectionless terminations connected to the ports of the coupler. The main-line loss includes the effect of power transferred to the coupled line. See figure below.

$$\text{Main line loss} = 10 \log_{10} [(P_2+P_3)/P_1].$$

VSWR – The standing-wave ratio at any port of a coupler is a measure of reflected power relative to incident power, and specified for the case of reflectionless terminations at all other ports. As with any device, VSWR is a measure of the quality of match relative to a given characteristic impedance.



Mean Coupling Value Definition