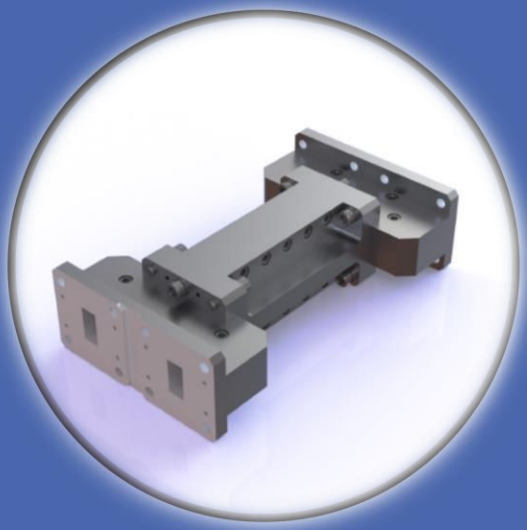
WR51 Wideband E-Plane Hybrid Coupler

Description

The WR51 E-plane hybrid coupler is a special case of directional coupler that divides an input signal evenly between two output ports with 3 dB coupling. The output signals can have a phase difference of 90 degrees. The proposed hybrid coupler operates in the K-band, offering 17.2-22.2 GHz operating bandwidth for the standard waveguide WR51. It achieves a deep matching level beyond 24 dB over the whole band of operation. Its performance is marked by a remarkably flat response for phase difference, featuring a 0.5 dB magnitude imbalance between the coupling and through ports. With high matching and minimal insertion loss, this coupler serves as a powerful tool for optimizing the construction of balanced amplifiers. Its ability to ensure proper power division and phase relationships between amplifier stages enhances the overall effectiveness of such systems. In phased array antennas, hybrid coupler finds application in beamforming networks, contributing to precise control over the antenna radiation pattern. Also, for high-power assemblies hybrid coupler can be used to divide the power by maintaining 90° phase shift between the output ports.



Electrical Specifications

Frequency	: 17.20 – 22.20 GHz
VSWR	: 1.15: 1
Coupling	: 3.0 dB ± 0.5 dB
Isolation	: 27 dB
Amplitude Imbalance	: 3.0 dB ± 1.13 dB
Phase Imbalance	: 90.0 ± 1
Pressurization	: 5 psi

Mechanical Specifications

Waveguide Size	: WR 51
Interface – Input Ports	: Waveguide
Material	: Aluminum 6061
Paint	: Black

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WR51 E-Plane Hybrid Coupler Typical Measured Results