

## E-Band Waveguide Directional Coupler, 10 dB, Legacy Design

### Description:

**Model SWD-1040H-12-SB-MT** is an E-band, three-port waveguide directional coupler that delivers a 10 dB nominal coupling level and 30 dB minimum directivity across the full waveguide band from 60 to 90 GHz. The three-port coupler uses a traditional multi-hole and split block design to achieve a flat coupling level, high directivity, and low insertion loss. The RF ports of the coupler are WR-12 waveguides with UG-387/U flanges. Other standard coupling levels (3, 6, 10, 20, 30, and 40 dB) are available under different model numbers as **SWD-XX40H-12-SB-MT**, where **XX** is the desired coupling level.



### Features:

- Full Band Operation
- Low Insertion Loss
- High Directivity

### Applications:

- Test Labs
- Instrumentations

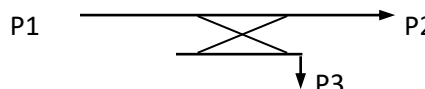
### Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Frequency	60 GHz		90 GHz
Insertion Loss*		1.3 dB	
Coupling*		10 dB	
Directivity*	30 dB	40 dB	
Return Loss		25 dB	
Specification Temperature		+25 °C	
Operating Temperature	-40 °C		+85 °C

\* The definition of insertion loss, coupling and directivity is show below. The required termination on the waveguide port should have 30 dB return loss or better for accurate directivity measurements.

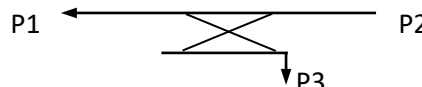
$$\text{Insertion Loss} = -10 \log_{10} [(P2+P3)/P1]$$

$$\text{Coupling Value} = -10 \log_{10} [P3/P1]$$



$$\text{Isolation} = -10 \log_{10} [P3/P2]$$

$$\text{Directivity} = \text{Isolation} - \text{Coupling Value}$$

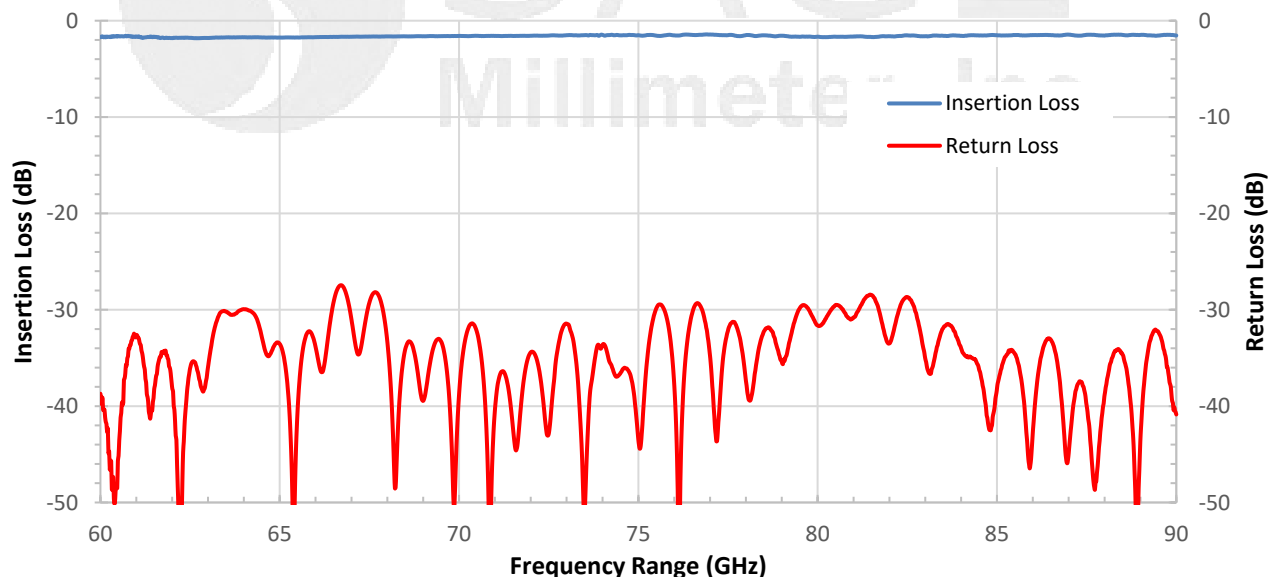


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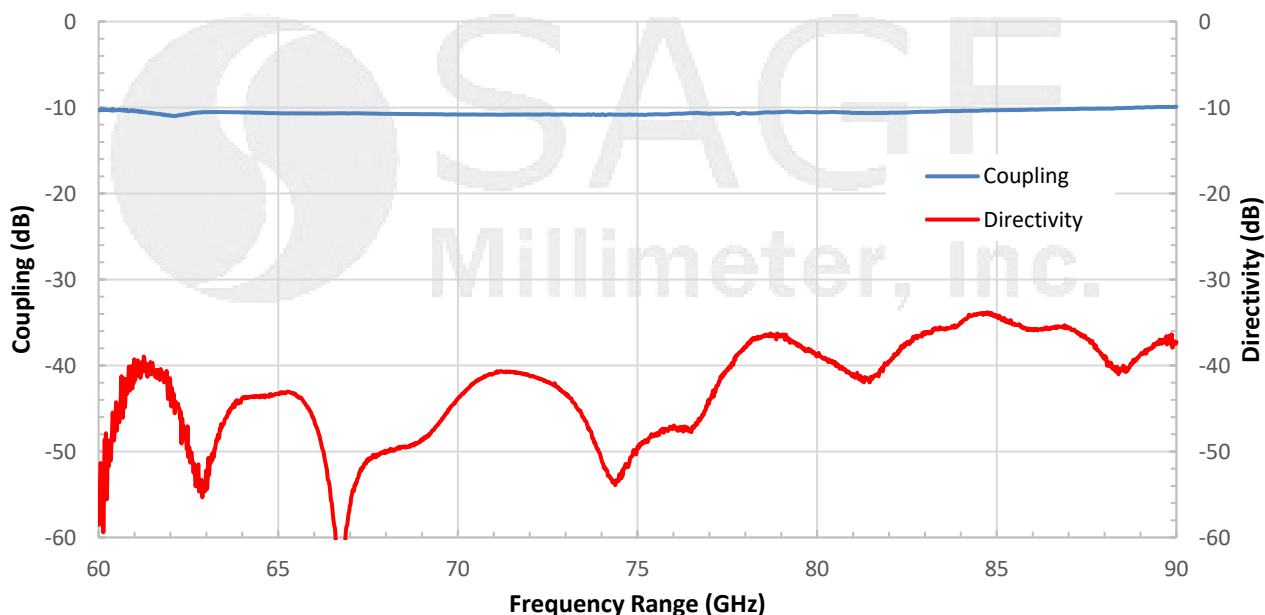
### Mechanical Specifications:

Item	Specification
RF Ports	WR-12 Waveguide with UG-387/U Flange
Material	Brass
Finish	Gold Plated
Weight	9.5 Oz
Outline	WD-SB-E-MT

### Typical Insertion Loss and Return Loss vs Frequency

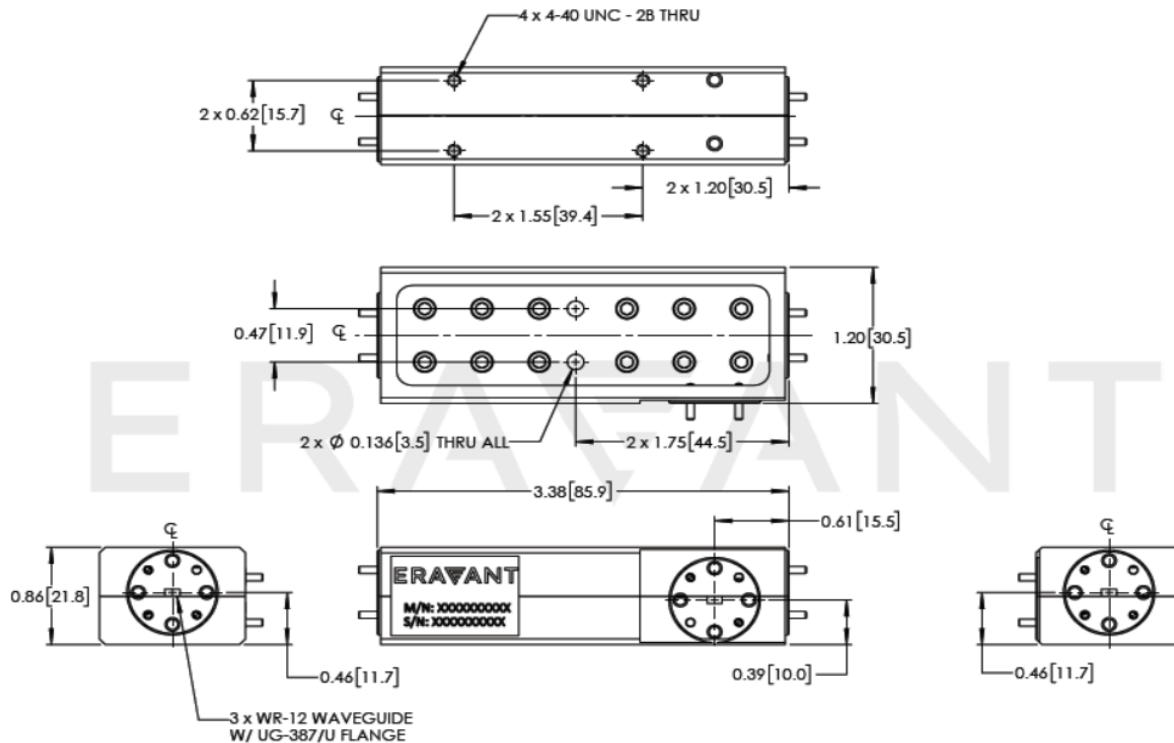


### Typical Coupling and Directivity vs Frequency



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**Mechanical Outline:** (Unless otherwise specified, all dimensions are in inches [millimeters])



### Note:

- The -MT coupler series are based on a legacy Eravant design and have limited stock and availability. They are not recommended for use in high volume production applications.
- For new designs and volume needs, Eravant recommends our current standard coupler model (**SWD-1040H-12-SB**).
- The insertion loss shown includes the loss due to coupling.
- All data presented is collected from a sample lot. Actual data may vary unit to unit, slightly.
- All testing was performed under +25 °C case temperature.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.

### Caution:

- Any foreign objects in the waveguide will degrade performance and/or damage the device.