

## WR-12 Waveguide Dual-Directional Coupler, 10 dB

### Description:

**Model SWD-1040H-12-DB-C-3.0** is a WR-12, four-port waveguide dual-directional coupler that delivers a 10 dB nominal coupling level and 40 dB typical directivity across the full waveguide band from 60 to 90 GHz. The dual-directional coupler uses a traditional multi-hole and split block design to achieve a flat coupling level, high directivity, and low insertion loss. The waveguide interface of the coupler is WR-12 waveguides with UG-387/U anti-cocking flanges. Other coupling levels including custom coupling levels and asymmetrical forward/reverse coupling levels are available under different model numbers.



### Features:

- Full Band Operation
- Low Insertion Loss
- High Directivity
- Flat Coupling Level Across the Band

### Applications:

- Test Labs
- Instrumentations
- Sub-assemblies

### Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Frequency	60 GHz		90 GHz
Insertion Loss*		1.5 dB	
Coupling*		10 dB	
Directivity*		40 dB	
Main Line Return Loss		20 dB	
Coupling Port Return Loss		20 dB	
Specification Temperature		+25 °C	
Operating Temperature	-40 °C		+85 °C

\*The definition of the insertion loss, coupling and directivity is shown as following. The required termination on the waveguide port is 30 dB or better for accurate measurement.

\* The actual directivity and return loss are higher than shown due to the limitations of the network analyzer's dynamic range.

<p>Insertion Loss = <math>-10 \log_{10} [(P2+P3)/P1]</math> when P4 is terminated.</p> <p>Coupling Value = <math>-10 \log_{10} [P3/P1]</math> when P4 is terminated.</p> <p>or <math>-10 \log_{10} [P4/P2]</math> when P3 is terminated.</p>	
<p>Directivity = <math>-10 \log_{10} [P3/P2]</math> when P1 and P4 are terminated.</p> <p>Directivity = <math>-10 \log_{10} [P4/P1]</math> when P2 and P4 are terminated.</p>	

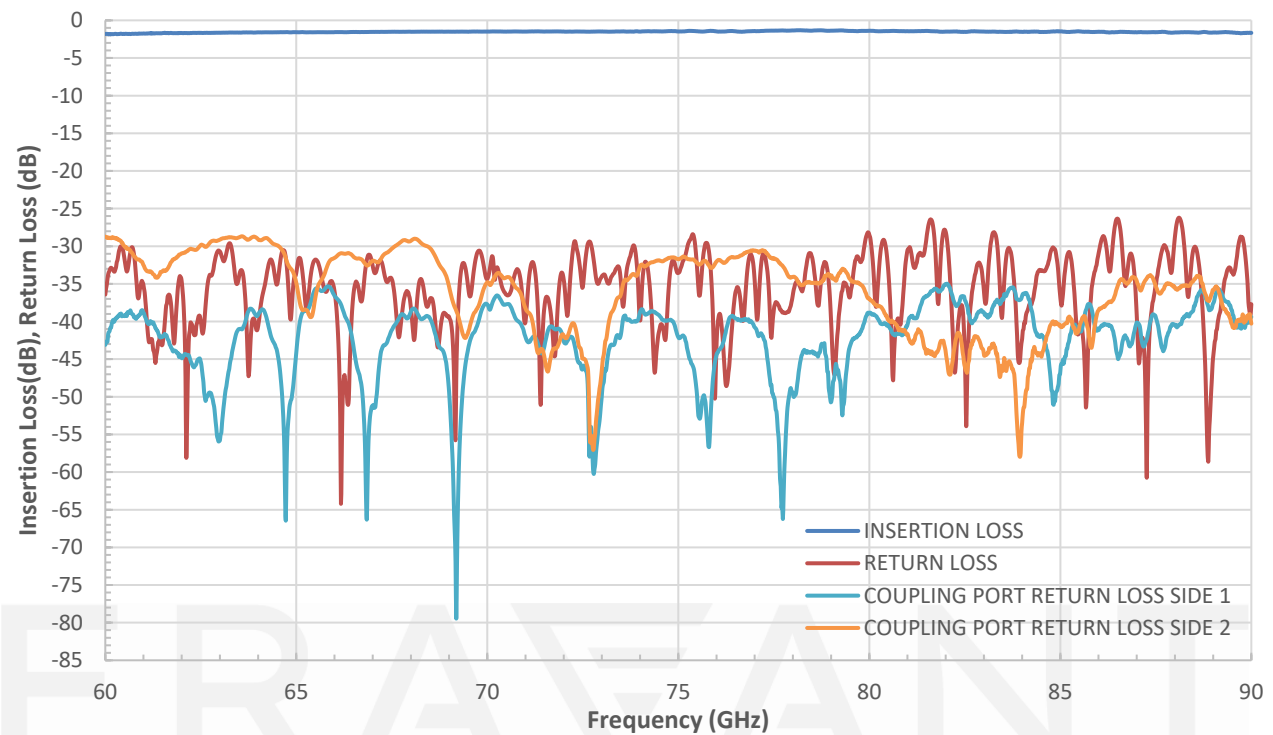


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### Mechanical Specifications:

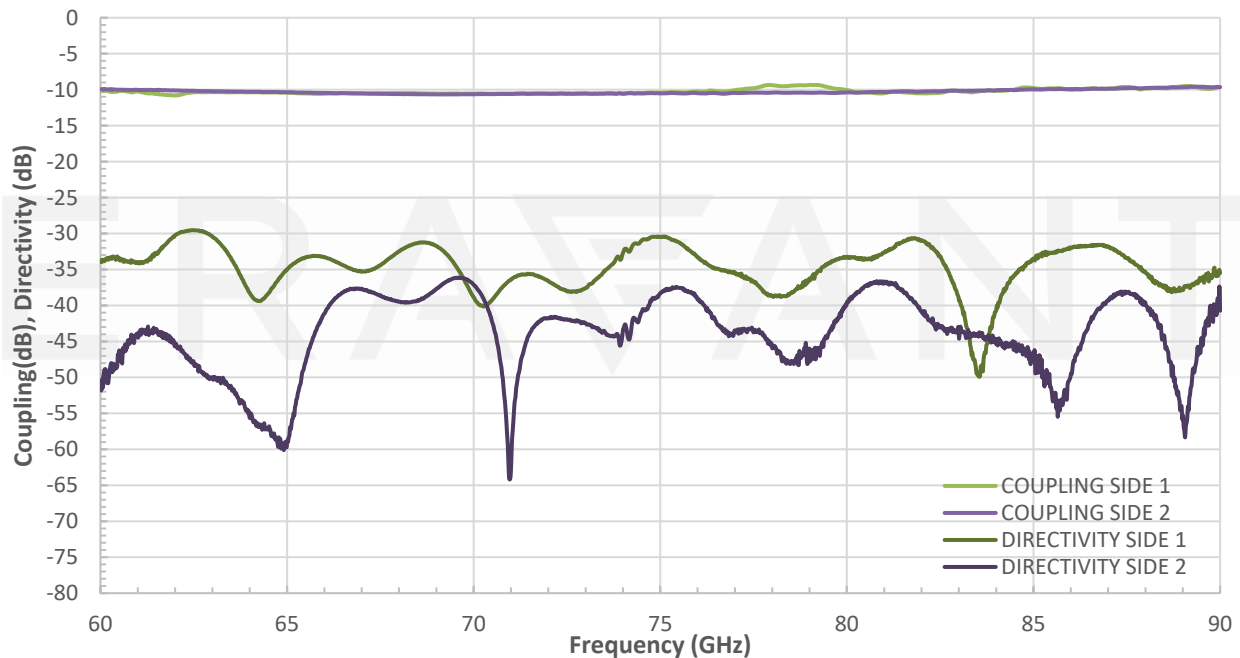
Item	Specification
Waveguide Ports	WR-12 Waveguide with UG-387/U Anti-Cocking Flange
Material	Brass
Finish	Gold Plated
Weight	8 oz.
Outline	WD-DB-E-A-C-3.0

### Measured Insertion loss and Return loss Vs Frequency

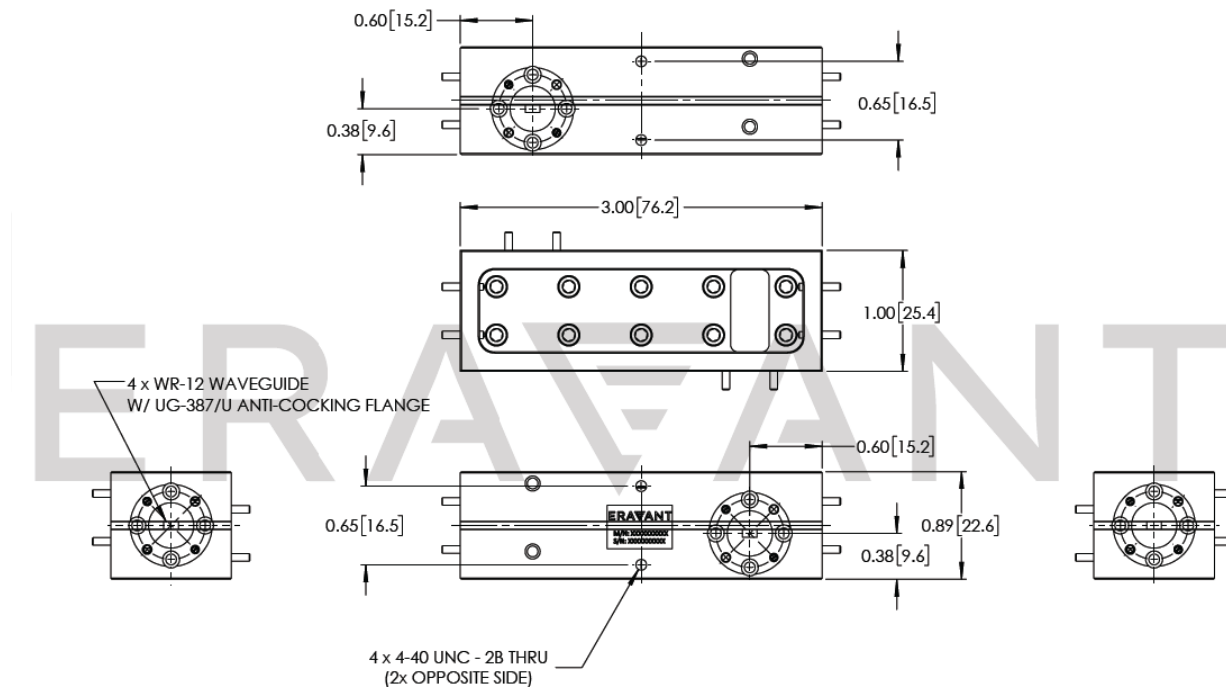


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Measured Coupling and Directivity Vs Frequency



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



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### Note:

- Eravant reserves the right to change the information presented without notice.

### Caution:

- Any foreign objects in the waveguide will cause performance degradation and possible device damage.

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