



## Q-Band Waveguide Directional Coupler, 30 dB

### Description:

**Model SWD-3030E-22-SW** is an Q band, three-port waveguide directional coupler that delivers a 30 dB nominal coupling level and 30 dB typical directivity across the full waveguide band from 33 to 50 GHz. The three-port coupler uses E-plane coupling and features a traditional multi-hole and waveguide design to achieve a flat coupling level, high directivity, and low insertion loss. The interfaces of the coupler are WR-22 waveguides with UG-383/U flanges. Custom coupling levels are available under different model numbers.



### Features:

- Full Band Operation
- Low Insertion Loss
- Light Weight

### Applications:

- Test Labs
- Instrumentation
- Sub-assemblies

### Electrical Specifications:

| Parameter                 | Minimum | Typical | Maximum |
|---------------------------|---------|---------|---------|
| Frequency                 | 33 GHz  |         | 50 GHz  |
| Insertion Loss*           |         | 0.7 dB  |         |
| Coupling*                 |         | 30 dB   |         |
| Directivity*              |         | 30 dB   |         |
| Return Loss               |         | 20 dB   |         |
| Specification Temperature |         | +25 °C  |         |
| Operating Temperature     | -40 °C  |         | +85 °C  |

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

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

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

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

Directivity = Isolation – Coupling Value



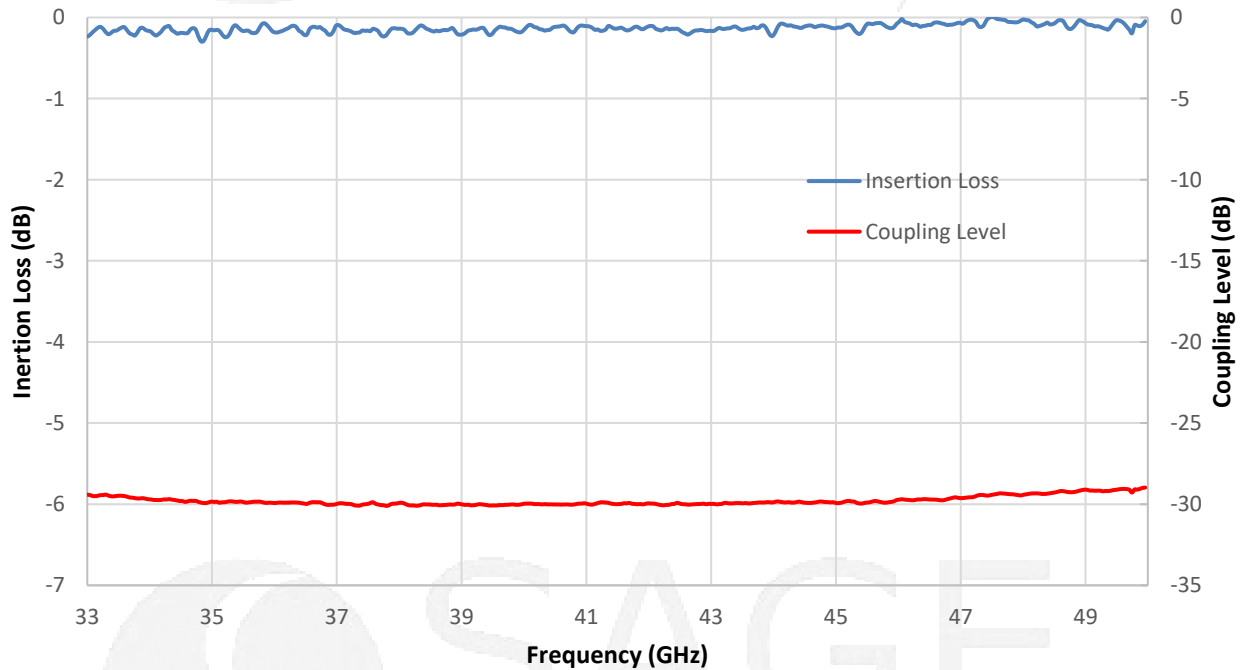


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### Mechanical Specifications:

| Item               | Specification                                   |
|--------------------|-------------------------------------------------|
| Through Ports      | WR-22 Waveguide with UG-383/U Flange            |
| Coupled Port       | WR-22 Waveguide with UG-383/U Flange            |
| Coupling Plane     | E-Plane                                         |
| Waveguide Material | Copper                                          |
| Flange Material    | Brass                                           |
| Finish             | Black Painted Body; Gold Plated Waveguide Faces |
| Weight             | 1.6 Oz                                          |
| Size               | 6.30" (L) x 1.38" (H)                           |
| Outline            | WD-SWE-Q-BX1                                    |

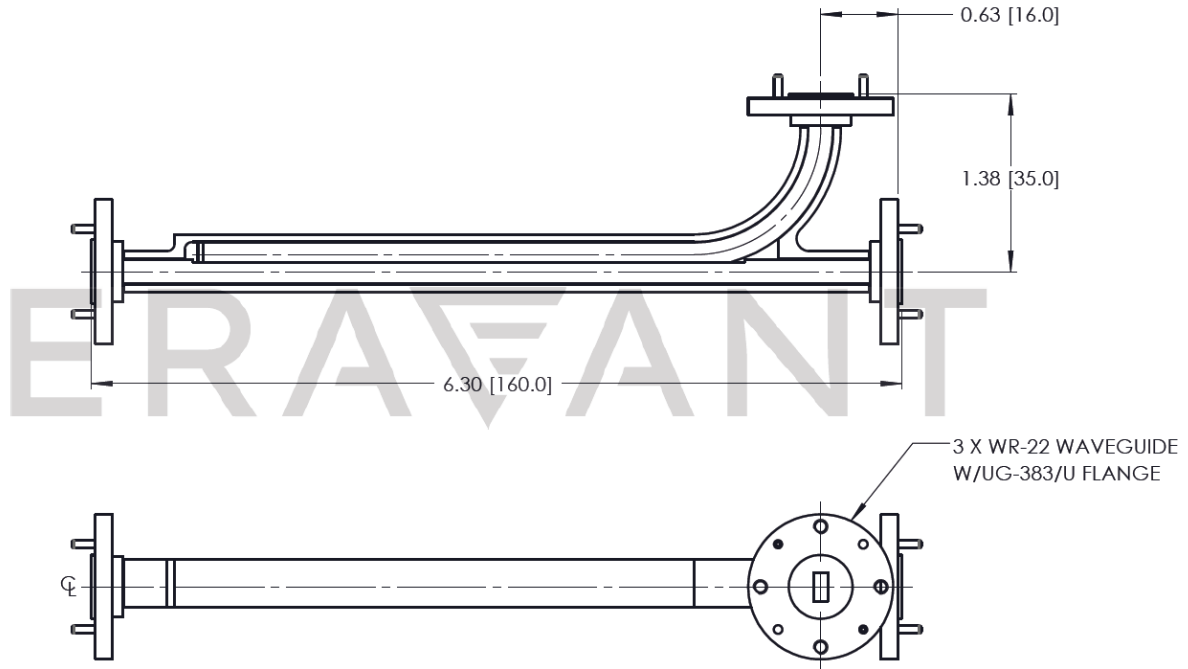
### Typical Insertion Loss and Coupling vs. Frequency





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



**Note:**

- 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.

