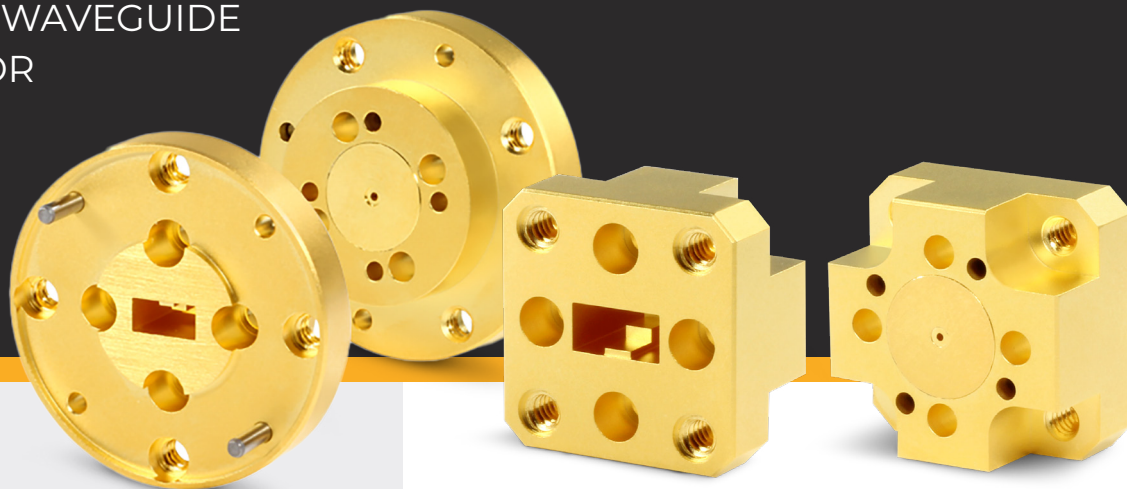


# UNI-GUIDE™

## PATENTED WAVEGUIDE CONNECTOR

**ERAVANT**  
FORMERLY SAGE MILLIMETER



Waveguides are often used instead of coaxial cables to transport millimeter-wave signals because of their lower attenuation and higher power-handling capabilities. However, waveguide interfaces are typically much more complicated and more costly to produce. Branded as Uni-Guide™ waveguide connectors, the newly patented devices are compatible with existing coaxial interfaces. They greatly reduce the effort and cost of providing waveguide signal ports on hermetically sealed components. By using Uni-Guide™ waveguide connectors, component manufacturers can offer a wide range of waveguide sizes and orientations using a reduced number of package designs. As drop-in replacements for existing industry-standard coaxial connectors, they are field-replaceable and field-configurable. When customers require a specific waveguide size and orientation on an electronic component, Uni-Guide™ waveguide connectors reduce or eliminate the need for non-recurring engineering and its associated costs and delays. By reducing the size and complexity of their package design libraries, component manufacturers can slash their inventory costs while streamlining their manufacturing operations. The result is greater customer value and faster delivery times in a market characterized by high levels of customization. Ultimately, Uni-Guide™ waveguide connectors enable Eravant and other millimeter-wave electronics manufacturers to respond faster and more favorably to customer inquiries and orders.

### FEATURES

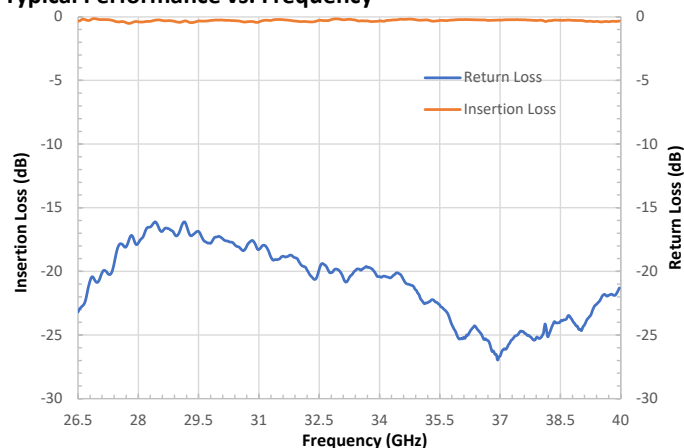
- Full Waveguide Band Operation
- Low Insertion Loss and High Return Loss
- Field Replaceable
- Hermetical Package Preservation

### APPLICATIONS

- Microwave Components and Subsystems with Waveguide Interface
- System Integration
- Various Port Configurations

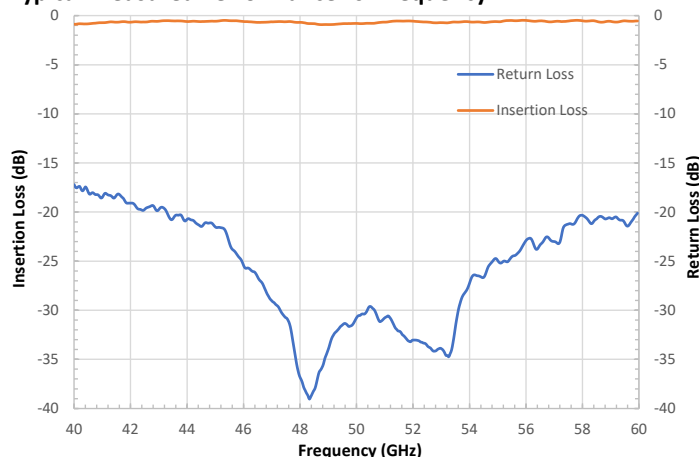
### Ka-Band

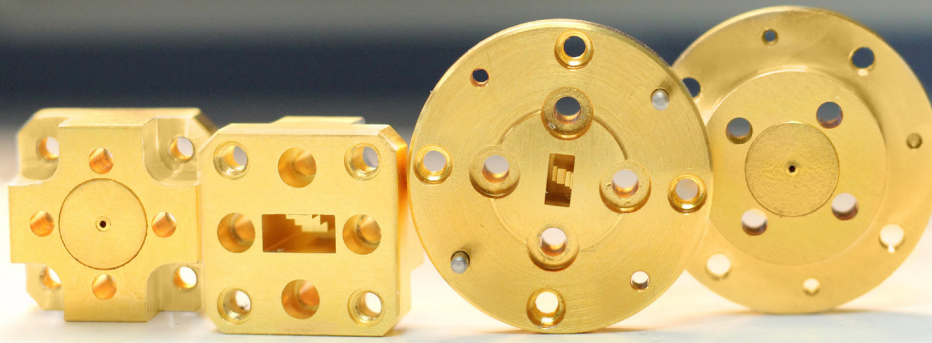
Typical Performance vs. Frequency



### U-Band

Typical Measured Performance vs. Frequency





# UNI-GUIDE™

## A NEW PATH TO SUCCESS FOR WAVEGUIDE COMPONENT DESIGN

Many microwave and mm-wave components contain parts that must be protected from environmental factors such as humidity and dust. A common solution is to package components in a hermetically sealed case, where signals penetrate a protective barrier through coaxial feedthroughs. Inside the package, signal paths typically transition to a circuit board with a microstrip, stripline or coplanar geometry. A “glass bead” soldered into the metal case provides both a coaxial signal path and a hermetic seal. This arrangement is compatible with several different types of coaxial connector that can be attached to the package wall. It’s all straightforward, as long as waveguide interfaces aren’t needed.

Significant challenges can arise when signals must be routed through waveguide connections. If a glass bead and a coaxial connector have adequate bandwidth, they can provide a hermetic seal while a coaxial-to-waveguide transition is added externally. In many cases this approach is neither complicated nor risky, but it doesn’t always achieve the best results. One drawback is that signals must pass through a pair of mated coaxial connectors. The connectors add insertion loss, they can increase reflections, and they can become loose or disconnected over time.

A different approach, one that completely avoids coaxial signal paths, is to directly transition between planar circuits and waveguide interfaces. Such designs are commonly found where environmental barriers aren’t needed. With careful design, insertion loss and reflections can be minimized. Unfortunately direct transitions are problematic when a hermetic seal is

required and a dielectric window must be added to the waveguide interface. The design of a dielectric barrier is not trivial when it must operate over a wide bandwidth. A tapered profile or multiple layers may be required to control reflections. Further, the dielectric barrier must be metallized along its perimeter so that it can be soldered into the package wall. Adhesives may be used instead but they often carry a higher risk of failure, they may constrain the temperature range of the component, or they may out-gas in a vacuum environment.

Uni-Guide™ waveguide connectors offer a promising new path to success when designing hermetically sealed components with waveguide interfaces. They use the same glass beads as industry-standard coaxial connectors, as well as the same fastener types and configurations. As a result, they are field-replaceable drop-in replacements for commonly used microwave and millimeter-wave coaxial connectors. By eliminating the external coaxial connectors that are necessary when using coaxial-to-waveguide transitions, Uni-Guide™ waveguide connectors improve signal quality and reliability overall. They also provide design flexibility by enabling different waveguide orientations when they are attached to the package. Best of all, they provide a fast, easy and economical way to add waveguide interfaces to existing coaxial component packages. They control inventory growth, and they slash the risks, costs and delays associated with designing and manufacturing components with sealed waveguide interfaces.