



THE PkZ®: A UNIQUE INTERFACE FOR UNIQUE PERFORMANCE

In the realm of aerospace and telecommunications, the interface between components can often be the linchpin of operational success or failure.

The PkZ Blindmate Microwave contact, developed by The Phoenix Company of Chicago, stands out as a paradigm-shifting solution in an industry where reliability, performance, and precision are non-negotiable.

This article delves into **why the PkZ contact interface is distinct from standard connectors**, highlighting its *unique advantages* and *technological innovations*.

Overcoming Mating Challenges with Innovative Design

The inception of the PkZ contact in the 1980s was driven by a need to address mating challenges caused by tolerance stack-up in multiport applications.

Recognizing the limitations of existing technologies, The Phoenix Company introduced the PkZ contact, which was quickly adopted as the standard power amplifier I/O contact by leaders in the cellular industry, such as Motorola and Northern Telecom.

Over the past three decades, the PkZ technology has been continuously refined to accommodate a wide range of cable selections, termination styles, and contact housings, delivering consistent performance beyond **60 GHz**, depending on the series and cable.

The PkZ vs. Traditional Connectors: A Comparative Analysis

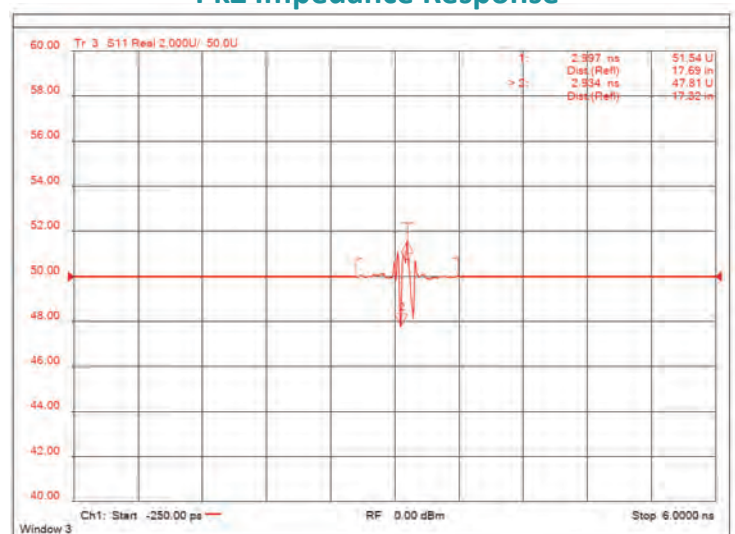
Constant Impedance Without Compromise:

One of the hallmark features of the PkZ contact is its ability to achieve constant impedance over the **widest axial mating tolerance in the industry**.

Unlike traditional RF contacts that rely on spring pressure to ensure full mating, the PkZ contact maintains matched impedance through meticulous control of the contact's inner and outer conductor diameter ratio and a strategic selection of dielectric materials.

This design philosophy ensures superior performance in microwave transmission *without* the need for an engagement spring, eliminating a potential single point of failure and reducing mating force requirements.

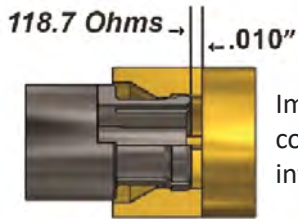
PkZ Impedance Response



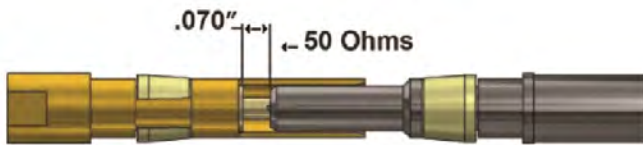
The PkZ® Difference

The PkZ Microwave contact maintains constant impedance over the industry's widest axial mating tolerance, allowing the design to overcome typical system tolerance stack-ups that disrupts standard contact performance.

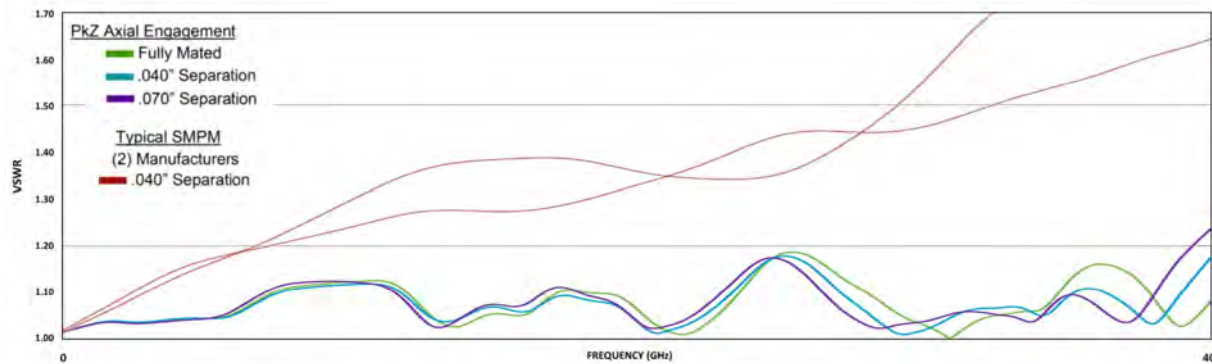
Continuous High Performance Whether Fully or Partially Mated



Impedance changes in a standard SMPM coaxial connector interface as a gap is introduced due to mating tolerances.



The unique PkZ design provides constant impedance even as much larger gaps are introduced in the mating interface.



The PkZ's design accommodates complex, high-density environments where traditional connectors struggle.

Simplified Connection and True Blindmate Capability:

The absence of an engagement spring in the PkZ design simplifies the connection process within multiport applications, offering *low insertion forces* and a *true blindmate contact design*.

This contrasts sharply with systems that utilize connectors as contacts, such as the SMPM, which cannot match the performance and precision of a blindmate microwave contact designed for multiport use.

Customization and Support for Demanding Applications:

The Phoenix Company's ability to customize the PkZ design to meet unique requirements further sets it apart from standard connectors.

The company's full in-house engineering staff and vertically integrated manufacturing capabilities located in the U.S. allow for the incorporation of special properties, footprints, and features to tackle specific challenges.

This level of support is critical in aerospace and defense applications, where signal integrity and performance cannot be compromised.

Impact on Aerospace and Defense

The PkZ contact's low insertion forces, constant impedance, and true blindmate capabilities have made it a preferred choice for: **ARINC**, **LRM**, **MIL-DTL-38999**, and **Mighty Mouse** connector housings in demanding aerospace and defense applications.

The technology's reliability and high performance are essential for systems where failure is not an option, making it a cornerstone of modern aerospace connectivity solutions.

Conclusion:

The PkZ contact interface by The Phoenix Company represents a significant departure from traditional connector technologies.

Its innovative design addresses the inherent limitations of standard connectors, offering enhanced performance, reliability, and customization options.

As the aerospace and defense industries continue to evolve, the PkZ contact stands as a testament to the importance of innovation in ensuring the integrity and success of critical communication systems.