

Analysis and Design of a Novel Noncontacting Waveguide Backshort

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A new noncontacting waveguide backshort has recently been developed for millimeter- and submillimeter-wave frequencies. The design consists of a metal bar with rectangular holes cut into it, which is covered with a dielectric layer to form a snug fit with the broadwalls of a waveguide. It is mechanically rugged and can be readily fabricated for frequencies from 1-1000 GHz. This paper presents a technique for the theoretical characterization of the backshort, using an approach that combines the mode-matching method and a set of coupled space-domain integral equations. The convergence characteristics of the analysis are included, along with a set of general design guidelines.

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