Abstracts

Proper and Improper Modal Solutions Inhomogeneous Stripline

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A rigorous procedure is developed to determine the propagation constant for an inhomogeneous stripline, which consists of a perfectly conducting strip of infinitesimal thickness and finite width embedded in multiple dielectric layers between two perfectly conduct ing ground planes. An integral equation, formulated in terms of an electric field Green's function, is obtained by enforcing the boundary conditions on the strip. The current distribution and propagation constant are determined by solving the integral equation using a method of moments procedure. For several inhomogeneous stripline structures, both proper and improper dominant modal solutions are obtained. One of the most important practical cases, studied in detail, is that of the conventional stripline with an air-gap above the strip. This work represents the first reporting of improper modal solutions for such a stripline.

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