Abstracts

Tapered stripline embedded in inhomogeneous media as microwave matching line

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A novel design method for a stripline microwave matching line is developed in this paper. Striplines considered have a tapered inner conductor embedded in an inhomogeneous dielectric material with continuous spatial variation of the relative permittivity. The employment of this kind of waveguide, as it is shown in this paper, ensures good matching properties in a wide frequency range. These matching properties can be controlled by means of two different factors: the taper of the stripline inner conductor and the relative permittivity spatial variation of the dielectric material filling the stripline. Starting from the nonuniform transmission-line theory, a novel closed analytical form for the input reflection coefficient of such lines is derived, and design formulas for the matching line are carried out. Finally, several applications that show the capability, flexibility, and fastness of the developed synthesis method are presented.

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