Abstracts

Asymptotic Eigenequations and Analytic Formulas for the Dispersion Characteristics of Open Wide Microstrip Lines

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Through the matched asymptotic expansions technique, asymptotic eigenequations for the even and odd modes of an open wide microstrip transmission line are derived. The eigenequations, and simplifications thereof which do not involve integration, can he solved easily for the effective permittivity. Even though d/W is assumed to be small, the solutions are good even if d/ W/spl cong/0.8 when compared with the numerical results of Jansen. From these eigenequations, asymptotic formulas for the effective permittivity can be derived which are excellent when d/ W/spl cong/0.2. When the frequency goes to zero, we reproduced the asymptotic formula derived under the quasi-TEM approximation in [8]. The asymptotic analysis provides good physical insight into the problem, otherwise unavailable from numerical analysis.

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