Analysis of Cylindrical Coplanar Waveguide

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ABSTRACT

In the thesis, cylindrical coplanar waveguides are studied. Inthe structure under consideration, the number of cylindrical dielectriclayers is arbitrary. Amagnetic field integral equation is formulatedusing a rigorous full wave analysis, in conjunction with the equivalenceprinciple. The spectral Green''s function needed in the integral equationis derived upon matching the boundary conditions for the tangentialelectric and magnetic fields cross all interfaces. This Green''s functionrepresents the magnetic field produced by a surface magnetic current. In numerical computation, linear combinations of someknown basis functions that incorporate the edge conditions are used to approximate the unknown surface magnetic currents.Numerical results,including effective dielectric constants, magnetic current distributions,and characteristic impedances, for many coplanar waveguides are presented and, where possible, are compared with data available in the literature.

Keywords : 柱狀共面波導 ; 特性阻抗 ; 等效界電常數 ; 譜域格林函數 ; 磁場積分方程式

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