Abstracts

Complex Images of an Electric Dipole in Homogeneous and Layered Dielectrics Between Two Ground Planes (Short Papers)

J.J. Yang, Y.L. Chow, G.E. Howard and D.G. Fang. "Complex Images of an Electric Dipole in Homogeneous and Layered Dielectrics Between Two Ground Planes (Short Papers)." 1992 Transactions on Microwave Theory and Techniques 40.3 (Mar. 1992 [T-MTT]): 595-600.

In this paper, simple closed form expressions are derived for the vector and scalar potentials of a horizontal electric dipole in homogeneous and layered dielectrics between two ground planes. For the homogeneous dielectric case, an infinite number of dipole images due to the top and bottom ground planes are replaced by a few complex dipole images.For the layered dielectric case, the dipole images due to both the dielectric interfaces and the ground planes are replaced by a few complex dipole images. In addition, the wave guide modes of LSE and LSM types trapped by the two ground planes, and the surface wave modes of LSE and LSM type strapped by the dielectrics labs, both excited by the dipole, are included in the closed form expressions. The accuracy of the closed form expressions is confirmed by the numerical integration of spectral integrals.

❑ Return to main document.