Advanced Electromagnetics

Volume 2, Issue 3, 2013, Pages 19-21

Resonance of High T_c Superconducting Microstrip Patch in a Substrate-Superstrate Configuration

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Abstract: The effect of a protecting dielectric superstrate on the resonance of a high Tc superconducting microstrip patch is investigated. The analysis approach is based on the spectral-domain method of moments in conjunction with the complex resistive boundary condition. The complex surface impedance of the superconducting thin film is determined using London's equation and the two-fluid model of Gorter and Casimir. Numerical results show that the resonant frequency of the high Tc superconducting rectangular patch decreases monotonically with increasing superstrate thickness, the decrease being greater for high permittivity loading.

Keywords : Resonance, Microstrip antenna, Superstrate