Electromagnetics Research Symposium

Volume 4, Issue 5, 2009, Pages 350-354

Air gap tuning effect on the resonant frequency and half-power bandwidth of superconducting microstrip patch

Tarek FORTAKI, Siham BENKOUDA, Mounir AMIR, Abdelmadjid BENGHALIA

Abstract: An accurate analysis of an air gap tuned high T_c superconducting microstrip antenna is presented. To include the effect of the superconductivity of the microstrip patch in the Full wave analysis of the tunable rectangular microstrip patch, a surface complex impedance is considered. This impedance is determined by using London's equation and the model of Gorter and Casimir. Numerical results obtained are found to be in excellent agreement with the theoretical and experimental data available in the literature. Finally, numerical results for the air gap tuning effect on the operating frequency and bandwidth of the high T_c superconducting microstrip antenna are also presented.

Keywords : Bandwidth, natural frequencies, Accurate analysis, Air gap tuning effect, Full wave analysis, Numerical results, Operating frequency, Rectangular microstrip patch, Superconducting microstrip antennas, Superconducting microstrips