

A cylindrical Barium Strontium Titanate (BST) dielectric resonator antenna for 5.0 GHz wireless LAN application

Abstract

This paper presents a dielectric resonator antenna (DRA) suitable for wireless communication applications at 5.0 GHz. The proposed DRA utilizes a ferroelectric material, Barium Strontium Titanate (BST) in cylindrical form with dielectric constant of $\epsilon_r = 250$. The antenna is fed with 50 Ω microstrip transmission lines. The physical parameters of the antenna, including radius (r), height (h), position (p) of BST, and ground plane dimensions, are studied. The influence of various parameters on antenna characteristics has been investigated and optimized by extensive numerical simulations by Microwave Studio, Computer Simulation Technology (CST) package. By understanding the effect each parameter, a better design of DRA producing desired bandwidth and frequencies can be accomplished. The size of this antenna makes it ideally suitable for handheld wireless LAN communicators.