

The Effects of the Uniaxial Anisotropy and the Loss Tangent on the Resonant Frequencies in Stacked Rectangular Patches Configuration

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Abstract : Dielectric substrates have an important attention in the fabrication of microstrip patch antennas. The effects of the uniaxial anisotropy and the loss tangent on resonant frequencies of microstrip patches consist of two perfectly conducting rectangular patches in stacked and offset configuration, embedded in a bilayer medium containing isotropic or uniaxial anisotropic materials. The Green's functions are discussed in detail and numerical results are validated by comparing the computed results with previously published data. The numerical results show, that the uniaxial anisotropy has more effects on resonant frequencies according to the optical axis. However, the loss tangent of dielectric substrates has almost no effect on resonant frequencies, but it strongly affects the imaginary parts of the resonant frequencies of the antenna. The dielectric constant has no effect on the separation in terms of frequencies.

Keywords : resonant frequencies, loss tangent, microstrip patches, stacked, anisotropic materials, optical axis

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