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Rectangular Dielectric Resonator Antenna with Stacked $\text{Ba}_x\text{Sr}_{1-x}\text{TiO}_3$ Ceramic film

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Abstract : In this communication, we propose a new dielectric resonator antenna loaded with rectangular ceramic of the BST material. The high permittivity of the material allows the shifting of the antenna resonant frequency from 10.77 GHz to 8 GHz, achieving a size reduction of the resonator antenna about 67% compared to an ordinary DRA for the same resonant frequency. The numerical analysis was carried out using two electromagnetic simulators including the CST Microwave Studio in the time domain and the HFSS (High-frequency Structure Simulator) in the frequency domain. The numerical results issued from simulations are presented and compared in terms of the resonant frequency, antenna size, reflection coefficient, and radiation patterns.

Keywords : Dielectric resonator antenna DRA, BST ceramic, Numerical analysis.