Abstract Submitted
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Magnetoelectric Composites for 1.3 GHz Antennas[1] R.V. PETROV, A.S. TATARENKO, G. SRINIVASAN, Oakland University, Rochester, MI, M.I. BICHURIN, Novgorod State University, Russia — A microstrip miniaturized antenna based on magnetoelectric composite has been designed and characterized. Theoretical estimates of antenna properties are given. To miniaturize UHF antennas, one needs slow-wave topologies and magneto-electric (ME) materials with equal and high permeability and permittivity. Nickel Zinc Ferrites ($Ni_{1-x}Zn_xFe_2O_4$, x=0-0.5, NZFO) are potential candidates for use as the magnetic phase in the composite since they have high permeability, in the range 4-50, and low magnetic loss tangent. The dielectric phase use is bismuth strontium titanates ($Sr_{1-1.5x}Bi_xTiO_3$, $0.04<x<0.25$, BST) that have high permittvity and low dielectric loss tangent. A sample with nickel zinc ferrite and 2% BST is used. A microstrip dipole element of 47 mm in length and 2 mm in width is placed on a composite substrate with dimensions 65 x 40 x 2.2 mm^3. The other side of the substrate has a metal ground plane. Measurements of transfer scattering parameter S_{21} are made. A miniaturization factor of 5-10 is achieved. The miniaturization methodology discussed here is useful for mobile communication platforms, radar systems, and remote-controlled ground based systems.

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