

Reconfigurable Printed Phased Array Antennas

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Abstract

This work presents a reconfigurable printed 1x4 rectangular patch antenna array at 10 GHz for two distinguished functionalities. First, we investigate the effect of bending on the performance of this antenna array as a conformal antenna. Both convex and concave bending profiles are studied. The maximum gain of the array is reduced from the flat case level by 34.41% and 34.48% for convex and concave bending, respectively. The degraded gain is recovered using a novel tunable left handed transmission line (LHTL) phase shifter based on barium strontium titanate (BST)/polymer composite. Simulations indicate that the lost gain of the bent antenna array can be recovered by 63.8% and 68% for convex and concave bending, respectively. Second, we exploit this phase shifter further to realize beam steering for the planar 1x4 patch antenna array, thus realizing a printed phased array antenna.