

Single-feed Polarization Reconfigurable Patch Antenna

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Abstract—A novel single-feed design of a patch antenna with polarization reconfigurability is proposed in this paper. Four identical notches with parasitic elements are embedded into the design. The antenna can switch between linear polarization (LP), left hand circular polarization (LHCP) and right hand circular polarization (RHCP). The results show that the proposed antenna demonstrates an impedance bandwidth of 50 MHz ($S_{11} < -10$ dB), and a polarization bandwidth of 44.3 MHz (axial ratio < 3 dB). Also, the axial ratio is obtained in a broad angular range when the antenna is in LHCP and RHCP mode. The structure of the proposed antenna is simple and suitable for antenna array applications that require circular polarization and polarization diversity properties.