

A Reconfigurable Microstrip Patch Antenna with Polyphase Filter for Polarization Diversity and Cross Polarization Filtering Operation

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Abstract : A reconfigurable microstrip patch antenna with polyphase filter for polarization diversity and cross polarization filtering operation is presented in this paper. In our approach, a polyphase filter is used to obtain the four 90° phase shift outputs to feed a square microstrip patch antenna. The antenna can be switched between four states of polarization in transmission as well as in receiving mode. Switches are interconnected with the polyphase filter network to produce left-hand circular polarization, right-hand circular polarization, horizontal linear polarization, and vertical linear polarization. Additional advantage of using polyphase filter is its filtering capability for cross polarization filtering in right-hand circular polarization and left-hand circular polarization operation. The theoretical and simulated results demonstrated that polyphase filter is a good candidate to drive microstrip patch antenna to accomplish polarization diversity and cross polarization filtering operation.

Keywords : active antenna, polarization diversity, patch antenna, polyphase filter

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