A Comparative Analysis of Asymmetrical U-Slot and Substrate Integrated Waveguide Fed Microstrip Patch Antenna

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Abstract

This paper shows a comparative study of Multi U–shaped slot antenna with the substrate integrated waveguide(SIW) fed patch antenna. By cutting four asymmetrical U-slots, we can make U-shaped patch antenna. Advantages of this structure are the simple feed, single layer structure, simple structure of antenna, one more degree of freedom can be achieved by the asymmetry of U-slot arm. The design guideline for the proposed antenna is given and the acceptability of the design is verified by other scenarios. When we create two different frequency bands with distinct polarization, two longitudinal and transverse slots on broad wall of SIW of other antenna is responsible for it. For reducing the cross polarization level of antenna, frequency selective surface (FSS) is placed on top of the microstrip patches. For getting the wider impedance bandwidth, we do close the resonance frequencies of the patch and slot to each other. Efficiency of the antenna can be increases by SIW feeding network.

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Index Terms

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Linear polarization, single-layer, single-patch, U-slot, four-band, frequency selective surfaces, patch antennas, substrate integrated waveguide.