

Abstract

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A Novel Ku-Band Microstrip Antenna

This paper presents a novel design of compact microstrip patch antenna for 79% utilization of the Ku-band satellite communication applications. The propounded design comprises of a rectangular patch with internal (built-in) resonator mounted on FR-4 single layer substrate with full ground plane fed by microstrip transmission line. The overall microstrip antenna's patch dimensions are $9 \times 12.75 \text{ mm}^2$. The proposed antenna design has been simulated a n d optimized using the commercial CST studio. The obtained results show that a wide operating band of 2.8 GHz (from 11.2 to 14.0 GHz) has been achieved. The recorded average gain a n d total efficiency across the band are $4.65 \pm 1 \text{ dB}$ a n d 82.0 % respectively at center frequency.