

Design of Flexible Planar Antennas using Substrate Gap Structure for Surface Wave Reduction

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ABSTRACT

A flexible planar antennas using substrate gap structure (SG) technique to improve the performance of planar antennas in terms of reduces the reflection coefficient and the backward radiation are presented. Two types of probe-fed microstrip patch antennas are studied using FEKO software to quantify its contributions in terms of surface wave reduction, which is expected to results in reduces the reflection coefficient and the backward radiation. The choice of the microstrip patch antenna is due to its design simplicity, ease of fabrication and integration of the SG element. Simulations indicated that this technique enabled the improvements of reflection coefficients up to -32.27, 25.52 and -28.02 dB operating in the band 5.56, 6.11 and 8.73 GHz respectively. Besides that, the backward radiation is reduced to 7.28 and 27.2 dB at them resonant frequencies 3 and 7.11 GHz respectively.

KEYWORDS

Planar antennas, surface wave, substrate gap (SG) method, reflection coefficient reduction, microstrip antenna

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