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Title: Analysis of the Effect of Ground Plane Size on the Performance of a Probe-fed Cavity Resonator Microstrip Antenna

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Abstract

In this paper, a probe-fed rectangular microstrip patch antenna with partially reflective superstrate at terahertz frequency (600 GHz) has been analyzed and simulated. The analysis of the partially reflective surface shows the highly reflective property of the surface over the wideband of the frequencies. The analysis of a specific configuration (rectangular patch) of partially reflective surface predicts the directivity of antenna to be the order of 24 dBi and subsequently it has been validated with the simulation. The proposed antenna has been simulated by using commercially available CST Microwave Studio simulator based on finite integral technique. Next to this, the application scenario of this kind of the antenna in the terahertz regime of the electromagnetic spectrum has been discussed and it has been obtained that this antenna is capable to establish 9 m long communication link.