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(57) Abstract :
The present invention discloses a novel compact dual-band slotted four-element MIMO (multiple-input multiple-output) antenna designed for 5G mmWave N257/N258 and N262 band applications. The antenna of size 12 mm × 11.6 mm × 0.508 mm is designed on Rogers RT/duroid 5880 (tm) dielectric material which has the relative permittivity of 2.2 and dielectric loss tangent of 0.0009. The disclosed antenna comprises of four U-shaped radiating elements (patch) on top of the dielectric material and slotted ground on bottom. The radiating elements are fed by 50-ohm microstrip line feed. A rectangular strip of 1.3 mm × 0.2 mm and couple of rectangular slots are added to each radiating element to improve the impedance performance of the MIMO antenna. The first operating band at 27GHz from (25.9-27.8) GHz is achieved by using slotted U-shaped element. The second working band at 48.45GHz from (47.1-49.9) GHz is obtained by etching hexagonal slots on the ground plane. The isolation of the proposed MIMO antenna is enhanced by orthogonally positioned radiating elements and rectangular slots on the ground plane. The designed antenna operates at 27GHz (N257/N258) and 48.45GHz (N262) bands with better impedance matching and enhanced isolation properties.

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