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(57) Abstract :

The current invention describes a new small three-band four-element patch antenna for 5G sub-6 GHz wireless applications. The antenna measures 48mm × 36mm × 1.6mm and is made of FR-4 epoxy dielectric material with a dielectric constant of 4.4 and a dielectric loss tangent of 0.02. The disclosed antenna comprises of a multi-slotted circular shaped four-element radiating patch on top side of dielectric material (or substrate) and I-shaped defected ground on the bottom side. A circle shaped slot with a diameter of 1.6mm and a crescent-moon shaped slot of 6mm are etched from the radiating patch to generate the required triple operating bands at 2.7GHz, 3.9GHz and 4.9GHz frequencies. The MIMO antenna ground plane is made up of two defected ground planes, each measuring 9mm x 36mm. The MIMO antenna's impedance and isolation performance are improved by using a rectangular stub with minor protrusions and slots. The disclosed antenna performs at 5G sub-6GHz N38 (2.6-3.0GHz), N77 (3.3-4.4GHz), and N79 (4.7-5.5GHz) with strong impedance matching and increased isolation properties.

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