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(57) Abstract :
A new small microstrip line feed Four-element MIMO (multiple input multiple output) antenna for 5G sub-6GHz N79 bands with a defined size of 39.5mm x 39.5mm x 1.6mm is disclosed in the current invention. The described antenna is built on a FR4 substrate with relative permittivity of 4.4, thickness of 1.6mm, and loss tangent values of 0.02. The disclosed MIMO architecture includes four circular slotting triangle-shaped antenna elements on top and defective ground with 12-sided polygon-shaped ground elements on the bottom layer of the substrate. To increase impedance matching, each triangle-shaped antenna element features a circular slit. The ground plane is made up of a rectangular ground patch with a 12-sided ground element which enhances the gain and is located underneath each antenna element. The orthogonal structure of the MIMO antenna elements and the defective substrate have increased the isolation between neighboring elements and also improves the gain. The designed antenna has a operating frequency of 4.5GHz between 4.2 and 5.5GHz, with more than 15dB isolation, and it supports the 5G sub-6GHz N79 band.

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