

## Dual Band Shared Aperture Antenna for 5G Communications

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**Abstract :** This work presents design of a dual band antenna for the 5G communications in the millimeter wave band. As opposed to conventional patch antennas which are limited to single narrow band operation a shared aperture concept is utilized for this antenna. The patch aperture is coupled through two rectangular slots etched on a thin printed circuit board (100 $\mu$ m). The patch is elevated in air thus avoiding excitation of surface waves and minimizing dielectric losses at millimeter wave frequencies. With this approach the radiator can cover lower band of 28 GHz and upper band of 37/ 39 GHz dedicated for the fifth generation communications. The simulated radiation efficiency of the antenna stays above 90%.

**Keywords :** antenna, millimeter wave, 5G, 3D

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