

(54) Title of the invention : DESIGN OF A RECTANGULAR MICROSTRIP PATCH ANTENNA AT 45GHZ FOR V-BAND APPLICATIONS

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(57) Abstract :
The article describes the design and simulation of Microstrip Rectangular Patch Antenna operating at a resonant frequency of 45 GHz, intended for use in V band communication systems. The antenna are constructed using Rogers RO4730G3 dielectric substrate, which has a dielectric constant of 2.98. The antenna has dimensions of 6.23 mm x 6.49 mm x 0.7 mm and features a straightforward geometric configuration. Simulation of the design was performed using the CST Studio Suite software package to evaluate the performance. To achieve satisfactory results for Voltage Standing Wave Ratio , Return Loss, Gain, Bandwidth , and Radiation patterns, the dimensions of the antenna were thoroughly examined and optimized. The proposed antenna was designed to have a Bandwidth of 4.6 GHz, a VSWR of 1.15, a gain of 7.31dB, and a directivity of 7.55dB. The results indicate that both antenna designs are effective and suitable for a wide range of applications in the V band and for 5G communication systems.

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