

STUDY ON OPTIMIZING THE ANTENNA PARAMETERS OF A PATCH ANTENNA FOR OBTAINING DESIRED PERFORMANCE

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ABSTRACT

This paper investigates the optimization of microstrip patch antenna parameters to achieve maximum efficiency, focusing on dimensions, substrate materials, and operating frequencies. Microstrip antennas, widely used in wireless communication systems due to their low profile and ease of fabrication, are highly sensitive to design parameters that influence their efficiency, gain, and bandwidth. This study employs simulation tools and mathematical modeling to evaluate the performance of antennas under varying conditions. By analyzing the effects of substrate permittivity, patch dimensions, and feed mechanisms, the research aims to establish guidelines for achieving optimal antenna performance. Results indicate significant improvements in efficiency through precise parameter tuning, offering insights into designing antennas for next-generation communication systems

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