

**DESIGN AND ANALYSIS OF RECTANGULAR PATCH ARRAY
ANTENNA USING HFSS**

*A project report submitted in partial fulfillment of the requirements for the award of the Degree
of*

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

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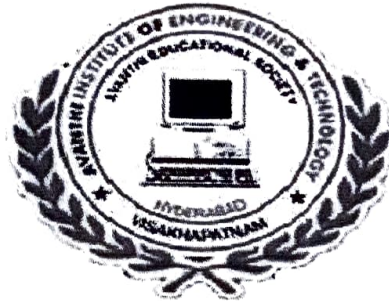
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AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY

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CERTIFICATE

This is to certify that the project entitled “DESIGN AND ANALYSIS OF RECTANGULAR PATCH ARRAY ANTENNA” in partial fulfilment for the degree of Bachelor of Technology in ELECTRONICS AND COMMUNICATION ENGINEERING. at AVANTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY, MAKAVARAPALEM, VISAKHAPATNAM is an bonafied work carried out by B.TEJASWI (18811A0404), K.MANIKANTA (18811A0415), M.TULASI (19815A0431), CH.MAHESH (18811A0405) under the guidance and supervision during 2018-2022.



PROJECT GUIDE

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ABSTRACT

Microstrip patch antennas were chosen because of antenna design their properties are appropriate wireless for commercial use applications. Microstrip antenna arrays are used in aircraft, spacecraft, and missile applications because of their low volume, low cost, low profile, smaller weight, cheap cost dimensions, and ease of installation. Corporate feed is a typical feed technique for microstrip array antennas. For uniform distribution in the corporate feed network, the power is evenly distributed at each junction of the microstrip patch array antenna. The major objectives of this project are to increase the bandwidth, efficiency, and directivity of a Microstrip patch antenna made from a rectangle corporate feed patch array antenna, as well as to use cutting holes or slots in the patch. 2.25GHz has been chosen as the resonance frequency, which is optimal for wireless communication. The HFSS software environment is used to create and compare antenna performance. According to the findings analysis, the corporate feed rectangle patch array antenna outperforms the rectangular Microstrip antenna in terms of bandwidth, radiation efficiency, and directivity. The MSPA has been proposed as a wireless communication protocol. To boost the gain, an array antenna is proposed. In addition, the rectangular Microstrip antenna has a smaller return loss than the corporate feed rectangle patch array. Because of its great performance and minimal limitations, microstrip antennas have become prominent in wireless power transmission applications. The purpose of creating a four-element microstrip array antenna is to increase antenna gain and efficiency. Wireless communication is the most widely used means of communication. Understanding the operation and application of many different types of antennas is crucial to understanding communication systems. Microstrip patch antennas can be made on a variety of substrates, with dielectric constants ranging from 2.2 to 12 in most cases.

Keywords: Rectangular patch Array antenna, cutting of holes in patch array, FR4_Epoxy substrate material, HFSS tool.