**DESIGN AND DEVELOPMENT OF MICROSTRIP PATCH ANTNENNA WITH NANOFERRITE MATERIAL**

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**ABSTRACT**

In this paper, a rectangular microstrip patch antenna is designed using HFSS software. The designed antenna has a resonating frequency of 2.4 GHz which is applicable to Wireless Local Area Network (WLAN). This paper shows the design considerations of the proposed antenna as well as the simulated results of the same. The design is made on Dysprosium copper ferrite material used as a dielectric material with its dielectric constant = 4.4 and thickness of 1.6mm.

The studies were taken on the basis of the simulated design in HFSS simulation software. Using ferrite material, the patch size reduced to 37% compare to antenna printed on dielectric substrate. Comparing the values of return loss radiation power, gain, quality factor and VSWR for antenna on ferrite substrate which is better than the antenna on dielectric substrate but the bandwidth and directivity of antenna was much affected negatively. For this work we have synthesized the polycrystalline copper ferrite by the solid-state reaction technique (SSRT) and characterized their electric and magnetic properties.