

Design and Development of Microstrip Antenna for Wireless Applications

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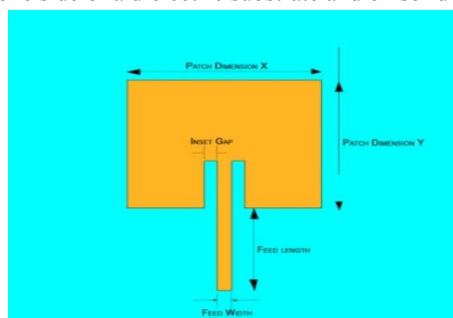
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Abstract: *The plan of microstrip Antenna with conservative size is recommended for remote correspondence. the microstrip recieving wire is a minimized variety of customary microstrip radio wire. The electromagnetically coupled feed from the lower layer is utilized to energize the proposed recieving wire. The full recurrence of the proposed recieving wire is lower than that of the customary microstrip recieving wire of same actual size. The addition of the recieving wire can be expanded by utilizing a parasitic component over the fundamental radiator and fixed with the spacer of ideal level. The reenactment investigation of different boundaries of the planned recieving wire is finished in Advance Design System electromagnetic EM test system.*

Keywords: Microstrip Antenna

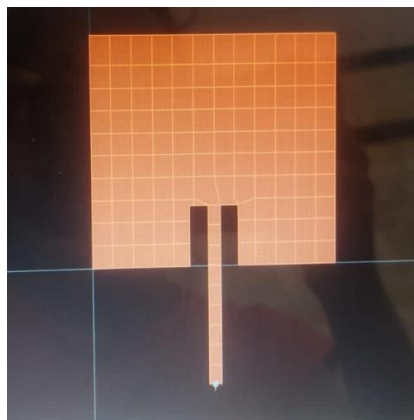
I. INTRODUCTION

In media transmission, a microstrip recieving wire (otherwise called a printed radio wire) typically implies a recieving wire create utilizing photolithographic methods on a printed circuit board (PCB). It is a sort of interior recieving wire. They are for the most part utilized at microwave frequencies. An individual microstrip recieving wire comprises of a fix of metal foil of different shapes (a fix recieving wire) on the outer layer of a PCB (printed circuit load up), with a metal foil ground plane on the opposite side of the load up. Most microstrip recieving wires comprise of different patches in a two-layered cluster. The radio wire is typically associated with the transmitter or beneficiary through foil microstrip transmission lines. The radio recurrence current is applied (or in getting recieving wires the got signal is created) between the radio wire and ground plane. Microstrip recieving wires have become exceptionally famous in late a long time because of their slim planar profile which can be integrated into the surfaces of shopper items, airplane and rockets; their simplicity of manufacture utilizing printed circuit procedures; the simplicity of coordinating the recieving wire on a similar load up with the remainder of the circuit, and the chance of adding dynamic gadgets, for example, microwave coordinated circuits to the recieving wire itself to make dynamic radio wires A microstrip fix recieving wire comprises of an emanating patch on one side of a dielectric substrate and on solid land plane on the opposite side



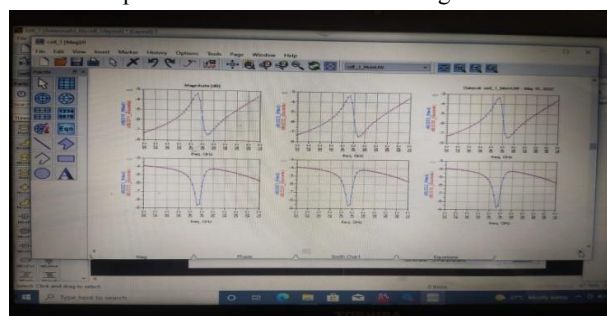
The Microstrip recieving wires are reproduced utilizing the Advance Design System(ADS) programming. The proposed radio wire transmits from 2.2GHz-2.7GHz. The proposed conservative recieving wires have substrate Layer Setup comprise of air as Dielectric then layer of wonderful Conductor again Dielectric layer of Rogers and afterward Cover and copper (tempered) as a leading material. It can deliver exceptionally low pinnacles of S11 with sensible increase at low cost. With out the utilization of extra electronic circuits for exchanging or utilization of unique substrate material these exhibitions can be acheived. An advertisements programming apparatus is utilized for displaying and recreation

to decide S11 versus recurrence reaction. The consequences of reproduction and displaying are tentatively checked utilizing network analyzer and tracked down great arrangement. the microstrip recieving wire will have applications in remote correspondence..

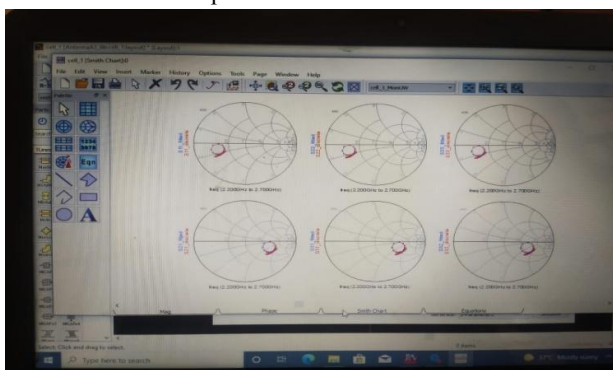


II. RESULTS AND DISCUSSION

The model is reproduced and acquired results for the radio wire boundaries, S11, VSWR, Gain, Efficiency and Bandwidth, are contrasted and those expected for the plan Specifications. In the Initial run, the reenactment results for the recieving wire Parameters don't coordinate well with the radio wire boundaries of the plan Specifications. Accordingly, the recieving wire model is worked on by changing any of the radio wire model boundaries, the fix aspects or ground aspects or the feed area and the subsequent model is mimicked and acquired results are contrasted once more and the recieving wire boundaries required. The last microstrip fix recieving wire model aspects and feed area, got utilizing the strategy of iteratively further developing radio wire model, is given in the Table-2. At aspects $L=30.55\text{mm}$ and $W=48.4\text{mm}$ and at feed point $X=24.3$ and $Y=-21.3$ We got $S_{11} = -155\text{dB}$.



S parameter of Antenna



Smith chart of antenna result

2.1 Fabrication Steps

1. The design is painted black by using any drawing software.
2. The black footprint of the antenna is printed on a transparent film
3. Two chemicals are used developer for developing and etcher for etching .
4. Etcher should be heated for approximately 20 min
5. Meanwhile the film is rectangularly cut .
6. Marks are drawn on the FR4 material .
7. Then FR4 is cut at marked dimensions.
8. When FR4 is cut we remove the sticker from the layer .
9. Then we carefully attach the film on the top of FR4.
10. The black part of the film will act as a shielding mask during the photo exposure process.
11. The masked FR4 is inserted in the UV-Light exposure.
12. UV exposure should last for approximately 2 min
13. We remove the sticker from the ground plane the FR4
14. The chemical process begins by inserting the board in the developer for 1 min.
15. The board is washed in the water.
16. The board is inserted into the etcher where copper will be etched by all UV-exposed areas for 4 to 5 mins.
17. Copper has been etched according to the desired design.
18. Antenna is washed under water
19. Photoresister is removed from copper.
20. Antenna is ready.



III. CONCLUSION

A Rectangular Microstrip Patch Antenna, full at recurrence $f_0=2.2\text{GHz}$, is planned also, The microstrip fix aspects acquired from the reenactment are utilized to create the receiving wire. The reenactment of rectangular Microstrip Patch radio wire with coaxial taking care of strategy is performed by involving ADS programming for the particular recurrence of 2.2GHz - 2.7GHz . The feed point was differed to show up at the mark of least return misfortune and at the feed area of $X=24.3$ and $Y=-21.3$, the S_{11} esteem was gotten and the equivalent was contrasted with the deliberate upsides of the reenacted receiving wire.

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