

DESIGN A RECONFIGURABLE RECTANGULAR MICROSTRIP PATCH ANTENNA FOR MULTIBAND COMMUNICATION

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ABSTRACT: *The paper offering a broadband microstrip patch antenna by Reconfigurable technique for remote correspondence. The fix is essentially made of a directing material like copper or gold and can take any conceivable nonstop shape. A rectangular patch antenna is utilized as principle radiator. A wifi permitted gadgets like as a PC, computer game quiet, PDA or advanced sound player can associate with Internet when inside a constrained scope of a remote system associated with Internet .There are a few benefits of this kind of broadband reception apparatus, for example, planar, little size, basic structure, less expense, and effectively manufactured, in this manner it can draw in and valuable for connected applications. This rectangular microstrip patch antenna receiving wire is gotten ready for remote correspondence application that works at 2.4 GHz. It additionally has a wide edge of shaft having radiation example and in this way helpful for multiband correspondence resolves.*

Keywords: *Microstrip reception apparatus, Reconfigurable method, Wireless fidelity, Frequency.*

I.INTRODUCTION

This reports records the plan, create and testing of microstrip patch antenna utilizing high recurrence structure test system Software. A patch antenna normally more extensive than a strip and its shape and measurements are critical highlights of the receiving wire. Microstrip patch antenna have pulled in much consideration because of their position of safety, light weight and simple creation. They are typically intended for single mode activity that emanates for the most part direct polarization. In certain applications, for example, satellite correspondence frameworks, collector introductions. Creating patch antenna having high dielectric substrates is of developing interest. Fix radio wires having high dielectric steady substrates have the upside of diminished component measure because of the shorter wavelengths in such materials and thunderous nature of fix radiator. Other than the primary drive of diminished component measure, having the capacity to coordinate a fix reception apparatus straightforwardly on a solid microwave incorporated circuit (MMIC) substrate disentangles interconnection of the radio wire with the hardware and creation.

A.FREQUENCY BANDWIDTH

The recurrence transmission capacity of the patch antenna states to the sort of the frequencies in which the reception apparatus can work. By and large, in remote interchanges, the receiving wire is required to give an arrival misfortune not exactly - 10 db over its recurrence transfer speed. Scientifically, the reception apparatus transfer speed is characterized as:

$$BW=(f_h-f_l)/f_c$$

Where, f_h alludes to higher cut off recurrence, f_l alludes to bring down cut off recurrence and f_c is the inside recurrence.

B. RADIATION PATTREN

Radiation properties of the reception apparatus can be spoken to by radiation design. It is resolved in the far-field district in a large portion of the situations where the conveyances of the transmitted power are free to the separation. The patch antenna radiation examples can be spoken to in 2-D and furthermore 3-D. The opposite and parallel polarization is called straight polarization. For a straightly enraptured reception apparatus, its execution is regularly depicted as far as its rule E-plane and H-plane examples.

II. LITERATURE SURVEY :

With reference to past papers a recurrence reconfigurable dielectric resonator radio wire (DRA) served by a strong coplanar waveguide (CPW)- to-opening line serving structure. The opposite and parallel polarizations of the DRA are energized by CPW feed and space line feed, which are swapped by two stick diodes. The structure plane is approved by reenactments. The - 15dB impedance transmission capacity of the radio wire is 22.4% for opposite polarization, and 18% for parallel polarization, separately. The recreated radiation example and increase of the proposed patch antenna are likewise exhibited, and key parameters are examined in this paper also. An electronically reconfigurable miniaturized scale strip reception apparatus with roundabout and straight polarization exchanging is displayed. The model manufactured on a substrate of dielectric steady 4.5 and stature (h) 1.7 mm is nourished by a closeness feed created utilizing a similar substrate. By checking the inclination voltage of two PIN diodes, the polarization of the reception apparatus can be exchanged between three states; two states for straight polarization and one state for round polarization (RHCP). Entertainment and new outcomes demonstrate that the proposed microstrip patch antenna has a cross polar dimension superior to anything 10 dB in the direct polarization state and 18 MHz pivotal proportion transfer speed in the round polarization state. The recurrence and polarization scopes of this plan could improve the consistency of remote correspondence frameworks.

III. PROPOSED METHOD

With the regularly expanding requests of the cutting edge remote correspondence organize and the multiplication of remote gadgets and applications, novel advances in rectangular antenna configuration are fundamental. As of late the requests of the remote correspondence industry have constrained radio wires to be progressively versatile because of different imperatives, for example, reception apparatus measure, geometry, polarization and spatial assorted variety, radiation design, impedance transmission capacity and working recurrence. Such structure imperatives have constrained radio wire originators to consider reconfigurable patch antenna. so their conduct can adjust with changing framework necessities or natural conditions, along these lines improving the gadget execution and killing a few limitations while giving extra usefulness to the framework.

IV. DESIGN OF RECTANGULAR MICROSTRIP PATCH ANTENNA

A patch antenna apparatus is a narrowband, wide-shaft patch antenna created by carving radio wire component design in metal follow attached to a protecting dielectric substrate with a ceaseless metal layer clung to the contrary side of the substrate which frames a ground plane.

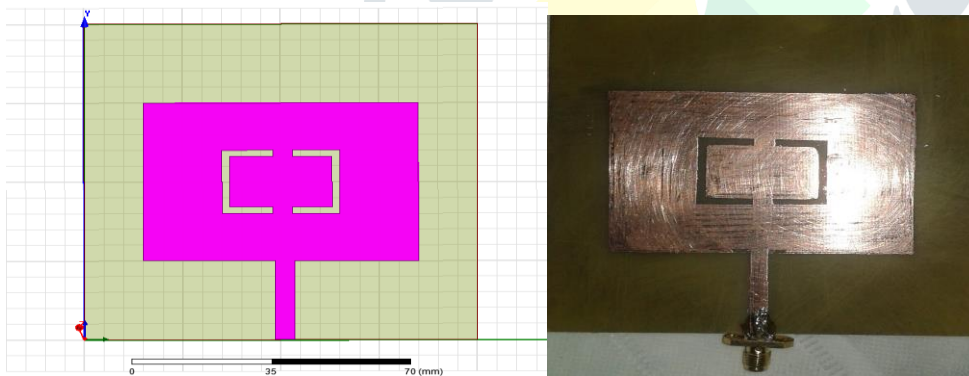


Fig: Rectangular Microstrip Patch antenna

The structure of rectangular microstrip patch antenna apparatus comprise of a conductive segment of width (W) and thickness "t" and a more extensive ground plane, isolated by a dielectric layer of thickness "H" as appeared in the above figure.

Reception apparatus encouraging is an essential plan factor and it straightforwardly influences radio wire properties, framework level execution, and reasonable prototyping. Among many bolstering techniques, three are progressively appropriate for opening antenna. The three bolstering techniques are Straightforward test, Coplanar Waveguide and Microstrip Line feeding.

At last the microstrip line feed is utilized in light of the fact that it is basic and simplicity in coordinating. The space reception apparatus geometry is as per the following: the ground plane is supported by a cavity loaded up with a substrate with require relative permittivity. Ansoft's High Frequency Structure Simulator (HFSS) was utilized to plan and study radio wire properties.

V.SIMULATION AND RESULTS

The arrival misfortune is another method for communicating bungle. It is a logarithmic proportion estimated in dB which thinks about the power reflected by the radio wire to the power that is encouraged into the recieving wire from the transmission line. The connection among SWR and return misfortune is given as pursues:

$$\text{Return misfortune (in dB)} = 20\log_{10} (\text{SWR}/\text{SWR} \square 1)$$



Fig: scattering parameters of rectangular patch antenna

POLARIZATION

The vitality emanated by any radio wire is contained in a transverse electromagnetic wave that is involved an electric and an attractive field. These fields are constantly symmetrical to each other and symmetrical to the course of engendering. The electric field of the electromagnetic wave is utilized to portray its polarization and consequently, the polarization of the radio wire. By and large, all electromagnetic waves are circularly energized. In this general case, the all out electric field of the wave is involved two straight parts, which are symmetrical to each other. For the most part the polarization is classified into two kinds, for example,

- ✓ Linear polarization
 - Horizontal and Vertical polarization
- ✓ Circular polarization
 - Left hand side and right hand side polarization

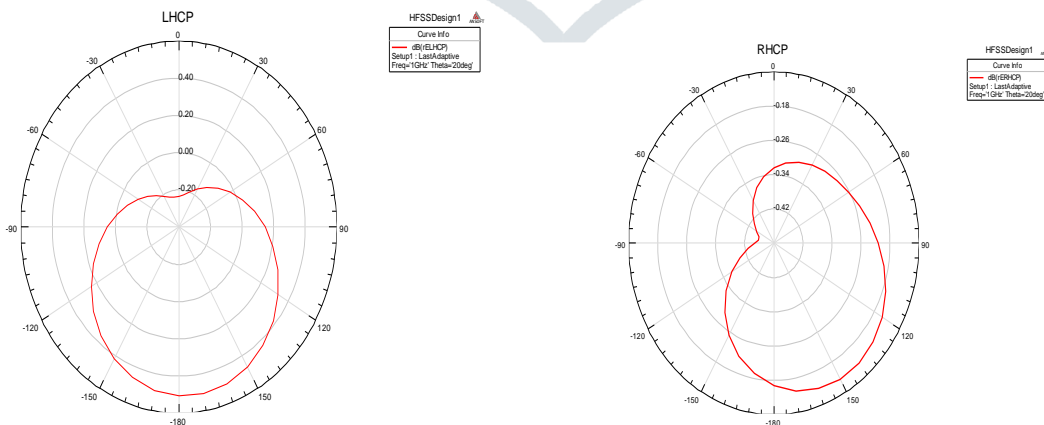


Fig: Left Hand Side Circular Polarization Fig: Right Hand Side Circular Polarization

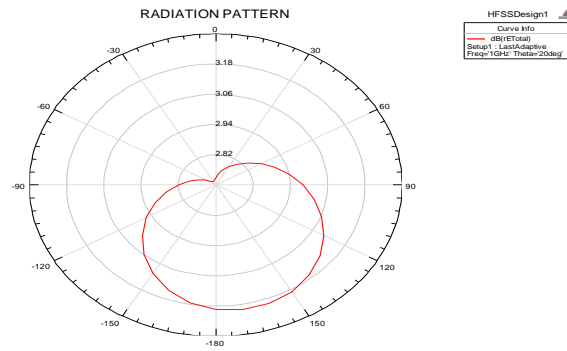


Fig: Radiation pattern for rectangular microstrip patch antenna.



GAIN AND VSWR

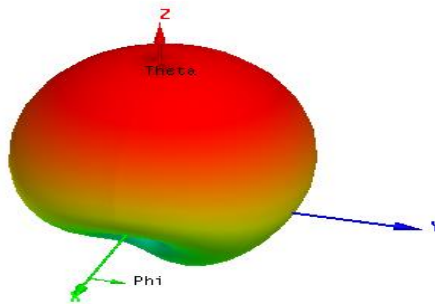
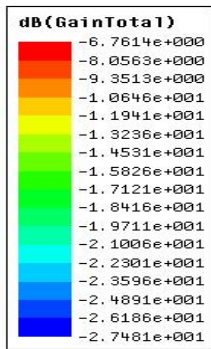


Fig: Total Gain in 3D of rectangular microstrip patch antenna

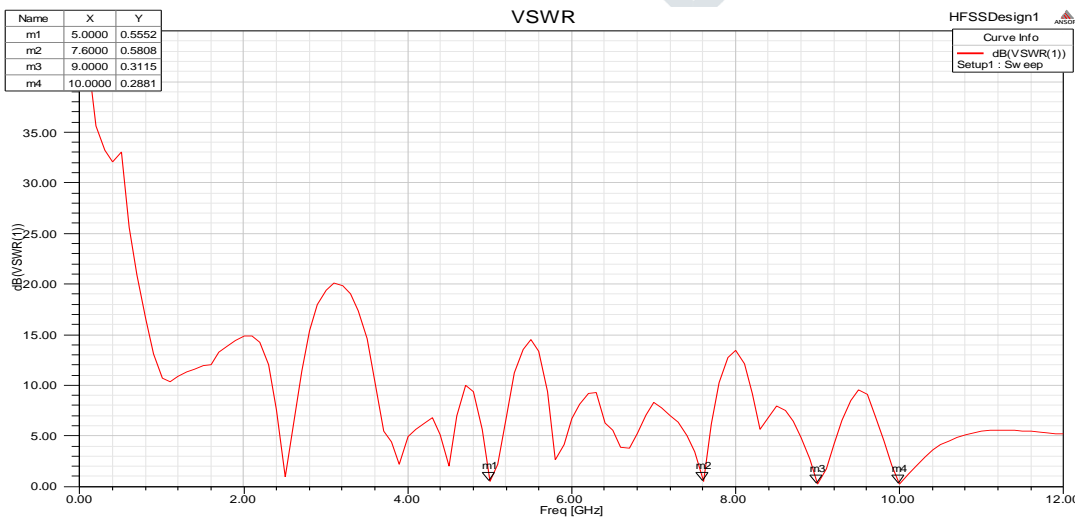


Fig: VSWR of rectangular microstrip patch antenna

VI. CONCLUSION AND FUTURE WORK

A reconfigurable microstrip patch antenna with switchable spaces for polarization assorted varieties has been exhibited in this correspondence. The radio wire can create both straight and round polarization by controlling the inclination states of two PIN diodes. The proposed structure accomplishes a cross polar dimension superior to 10 dB in both direct and round polarization broadside radiation qualities and moderate increase. The main stage is examine and comprehends the parameter that demonstrated the conduct and how it tends to be utilized and interfaces with other circuit. The microstrip patch antenna comprise four noteworthy parts: the conductive fix, the dielectric substrate, the ground plane and the feed line. The most generally utilized fix conductive for minimal effort, low-profile patch antenna is coppers. To plan and reenact fix radio wire by utilizing high recurrence structure test system. There are three strategies that are generally utilized in the examination, structure, and displaying of fix reception apparatus is transmission, depression and full-wave models.

In future, we are going to manufacturing patch radio wire by utilizing FR4. To test and examine fix reception apparatus by utilizing signal generator, arrange analyzers and so on.

VII. REFERENCES

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