International Journal of Applied Engineering Research
ISSN 0973-4562 Volume 10, Number 6 (2015) pp. 15899-15904

http://www.ripublication.com

Design And Analysis Of Frequency Reconfigurable Micro Strip Patch Antena For Wireless Applications

J.Janetstephy[1], A.Anusuya[2], G.Jegan[3]

[1, 2, 3]Faculty of electronics and communication, Sathyabama University, Jeppiaar nagar, RajivGandhi salai, india.
[1]jannetstephy@gmail.com, [2]anusuya21ganga@gmail.com, [3]jjsfss@gmail.com

ABSTRACT:

The Frequency Reconfigurable micro strip patch antenna is widely used for many wireless applications such as WIFI, WLAN, BLUETOOTH, and ULTRA wide band applications etc, because of its compact size, light weight and case of manufacturability. The literature survey of the existing work s we found single band micro strip patch antenna is not suitable for wide band applications. It means that it would achieve for narrow band applications. In order to improve multiple or wide band antenna using array techniques. In this regard we proposed a novel structure of Frequency reconfigurable micro strip patch antenna array with line feed, probe feed and aperture coupled feeding techniques. The radiating patch resulted with two operating frequencies to reduce patch slots. The size of slot affected with orientations of resonant frequency. It reduce patch size of frequency orientations. The proposed design structure has a rhombus-like patch shape which is embedded with unique patch slots. It was operated with different frequency, shape and size. The antenna, structured simulated and analyzed with different applications.

INTRODUCTION:

The Frequency Reconfigurable Micro strip antenna has numerous applications and offer with more versatility as compared with antennas of one function in single antenna. Reconfigurable has more attractive features such as frequency, radiation pattern, and polarization. The Reconfigurable antenna demonstrated with pervious researches of reduce the patch size with single antenna of coupled techniques with two frequencies. It was modulated with array techniques. The Micro strip patch antenna is widely effective features because it reconfigurability with low profile, compact size, light weight, conformability and easy case of fabrication properties. The array techniques is an point to point communication. It has two types of arrays that are linear phased arrays and sparse arrays. Linear phased arrays are equally spaced at

lambda by two distance. In sparse array the elements are not equally space. The sparse array is an importance at economical because of reducing the array elements. The received signal of antenna array are not limited system, it is important to absorb all the energy. Antenna array improved with directivity and compared to a single radiator antenna. The directivity of an array improved with interference effects between individual elements, spatial elements as well as phase and magnitudes of each elements tuned for optimal performance. The array reduce the patch elements of antenna in single patch elements. In previous research papers normally the patch size will be bigger size with array techniques of truncated switches to reduce the patch with single antenna. To reduce the patch two frequency operated with single antenna. It increases the patch size and elements of patch. The design structure of proposed design structure with Rhombus-like patch shape. It was furcated with RT/ Duroid 5880 and it was operated with different frequency and also shape and size. The antenna simulated and analyzed with different applications.

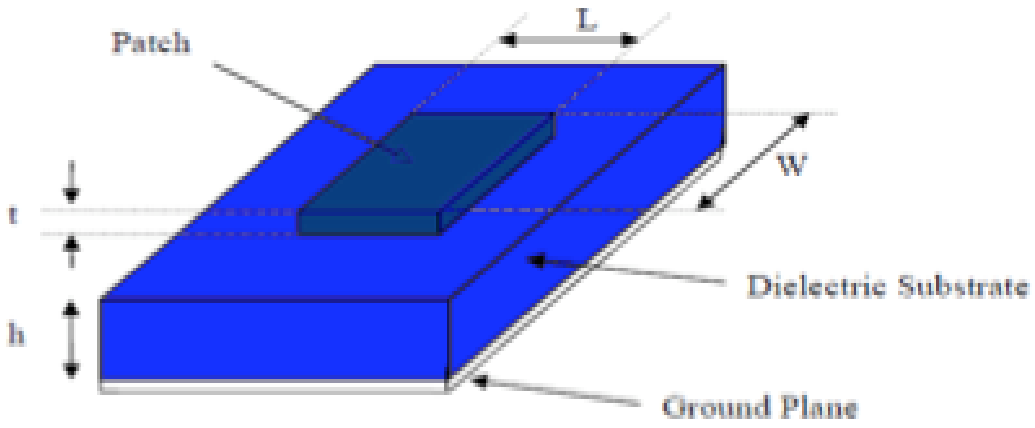
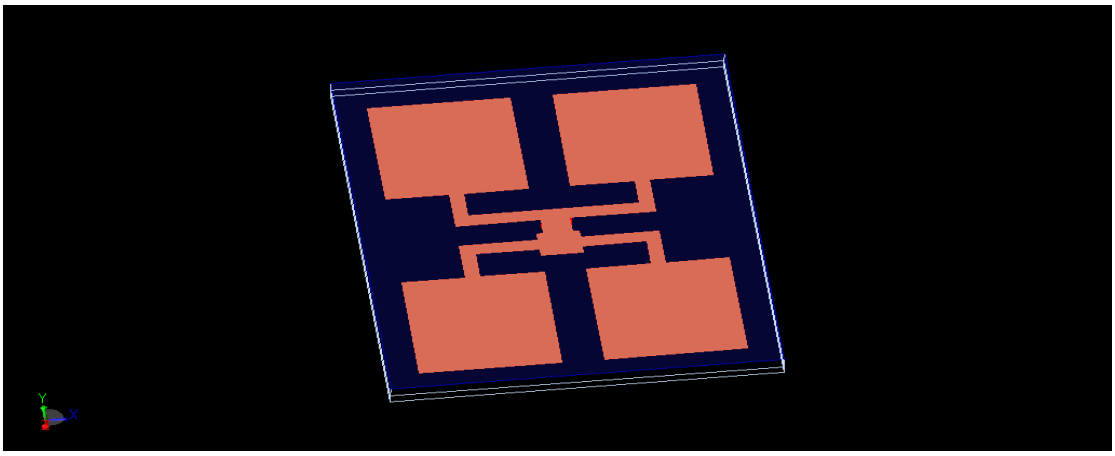


Figure Structure of a Microstrip Patch Antenna

ANTENNA DESIGN:

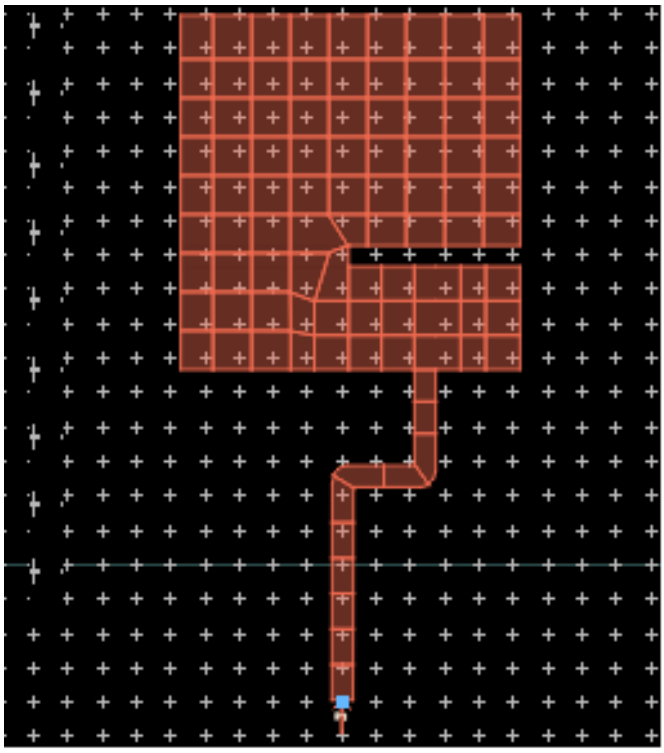
The Proposed design has a unique Rhombus-like shape structure with slotted patches. The structure consists of four radiating patches connected with same size on one single substrate. The four rectangular slots are feed with one another on the ground plane substrate with lower permittivity of RT/Duroid 5880. The slots are etched with substrate of line feed technique and the substrate emphasis with the radiation pattern. Thus, a unique W shaped slot is embedded with different orientations of a patch slot.

Etching slots on the ground plane to improve the efficiency of radiation pattern in different frequency. Therefore, the proposed antenna employs line feeding technique whereby the slots are etched with ground plane is located with substrates of permittivity ϵr=2.2 and thickness h of 0.787.

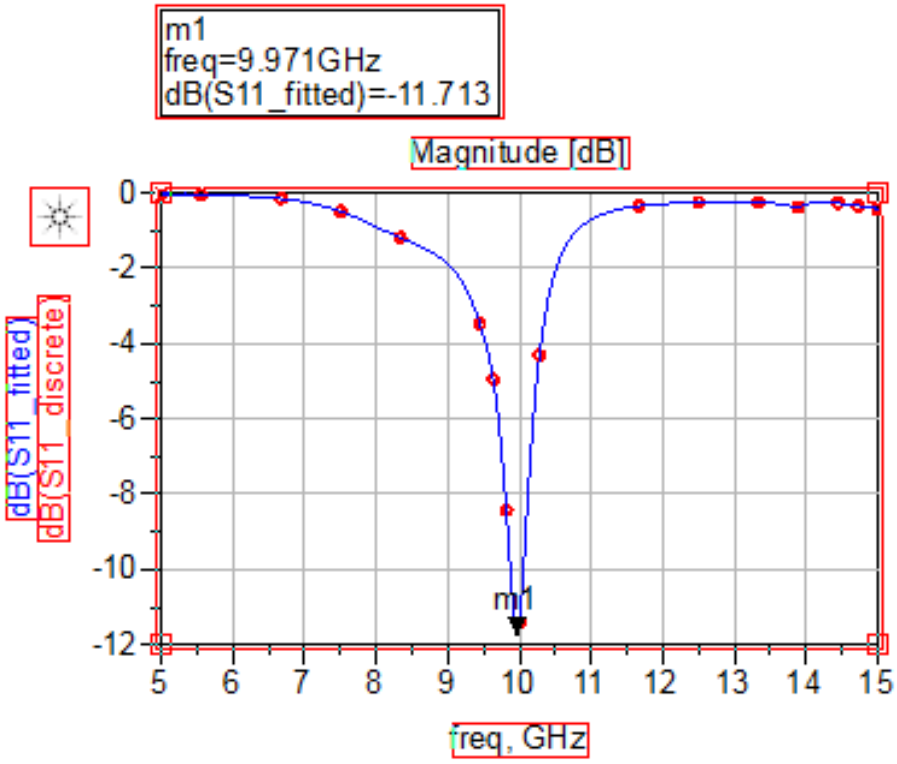


The radiating patches are connected with four patches with height(h=10mm) and weight(w=10mm) and the slot of the four patches are(slot=5mm). It increases the efficiency of all parameters. The radiation pattern increases with the gain of different frequency. The antenna array techniques connected with four patches and the switches are not connected with substrate. Without switches radiating patterns of patch slots increases with return loss.

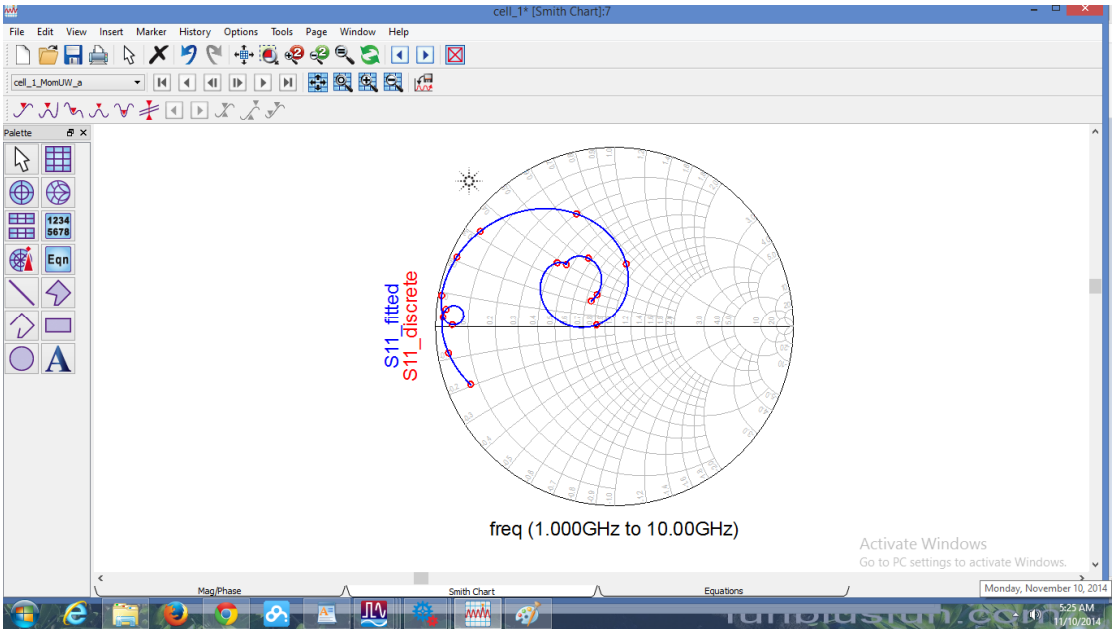
DESIGN OF FEEDING IN SUBSTRATE:



RETURN LOSS:



SMITH CHART:



RESULTS AND DISCUSSIONS:

The simulation is performed with ADS software. The antenna performance of radiation pattern and return loss are analyzed with characteristics of antenna.

CONCLUSSION:

In this paper the proposed design has been done with unique Rhombus-like patch slots. The reconfigurable frequencies are reduce the patches in early researches papers. The proposed antenna is worked with no switches and attain more efficiency of parameters and return loss. The results is the beneficial to the domain of many applications.

REFRENCES:

1. David Sinchez-Hemindez and Ian D. Robertson, 1995. Analysis and Design of a Dual-Band Circularly Polarized Micro strip Patch Antenna, IEEE Transactions on Antennas and Propagation, issue 43, No2, February, 1995.
2. F. Yang, X. Zhang, Y. Rahmat-Samii, "Wide-band E-shaped patch antennas for wireless communications", *IEEE Trans. Antennas and Propagation*, vol. 49, no. 7, pp. 1094–1100, 2001.
3. J.S. Kuo, K.L. Wong, ''A compact micro strip antenna with meandering slots in the ground plane'', Microwave Opt TechLett, Vol. 29, 2001, pp. 95–97.
4. S.L.S Yang and K.M.Luk: IEEE Trans. Antennas Propagate. VOL.54(2006), p.432-439.
5. Park, S. Y., S. J. Oh, J. K. Park, and J. S. Kim, \Dual-band antenna for WLAN/UWB applications, " *Microwave Conference, 2009, APMC 2009*, 2707{2710, Asia Panic, 2009.
6. J.T. Aberle et. al., ''Automatically tuning antenna for software-defined and cognitive radio'', Proceedings of Software Defined Radio 2005 conference, Orange County, CA, November 2005.
7. Shaoqiu Xiao, Bingzhong Wang. The preliminary discussion of the micro stripe reconfigurable antenna [J]. Chinese Journal of Radio Science, 2002, 17(4):386-390.
8. R. L. Haupt, J. J. Menozzi, and C. J.McCormack, "Thinned arrays using genetic algorithms, " *IEEE AP-S Int'l Symp.*, pp. 712-715, June 1993.
9. G. J. Foschini and M. J. Gans, "On limits of wireless communications in a fading environment when using multiple antennas, " *Wireless Personal Communication.*, vol. 6, no. 3, pp. 311–335, 1998.
10. R. Fallahi and M. Roshandel, "Effect of Mutual Coupling and Configuration of Concentric Circular Array Antenna on the Single-to-Interference Performance in CDMA systems, " Progress In Electromagnetic Research, PIER 76, pp. 427-447, 2007.

11. F. Yang and Y. Rahmat-Samii, “A reconfigurable patch antenna using switchable slots for circular polarization diversity, ” *IEEE Microw.Wireless Comp. Lett.*, vol. 12, no. 3, pp. 96–98, Mar. 2002.
12. Micro strip patch antenna array at 5.8 GHz for point to point communication “Compact Printed Multiband Antenna with Independent Setting Suitable for Fixed and Reconfigurable Wireless Communication Systems”, Hattan F. Nasr, *IEEE transactions on antennas and propagation*, vol. 60, no. 8, August 2012.
13. B. Wang and K. J. R. Liu, “Advances in cognitive radio networks: A survey”, IEEE J. Sel. Topics Signal Process., vol. 5, no. 1, Feb. 2011, pp. 5–23.
14. Ouyang, F. Y., S. W. Yang, Z. P. Nie, and Z. Q. Zhao, \A novel radiation pattern and frequency reconfigurable micro strip antenna on a thin substrate for wide-band and wide-angle scanning application, " *Progress In Electromagnetics Research*, PIER 4, 167{172, 2008.
15. Garg, R., P. Bhartia, I. Bahl, and A. Ittipiboon, *Micro strip Antenna Design Handbook*, ArtechHouse Publishers, Boston, London, 2001.