

Design of Microstrip Log Periodic Patch Antenna with The Help of HFSS Software

Ashish Goyani
Electronics & Communication
Engineering
SVIT, VASAD, Vasad, India
E-Mail:
ashish.120410111088@gmail.com

Hardik Goti
Electronics & Communication
Engineering
SVIT, VASAD, Vasad,India
E-Mail:
hardik.120410111071@gmail.com

Rutik Choksi
Electronics & Communication
Engineering
SVIT, VASAD, Vasad, India
E-Mail: er.choksirutik@gmail.com

Sameep Dave (Guide)
Electronics & Communication Engineering
SVIT, VASAD, Vasad,India
E-Mail: sameepdave.ec@svitvasad.ac.in

Abstract— The Micro strip Log Periodic Patch Antenna design with help of HFSS Software. The Micro strip Antenna have operates on lower bands and low gain. Using that we can increase bandwidth of Microstrip Log Periodic Patch Antenna using log periodic antenna. By that we can use it for satellite communication, amateur radio broadcasting, providing Wi-Fi channels, guided missile, etc.

Keywords-bluetooth,wi-fi,satellite communication,gsm,

I. INTRODUCTION

The growing demand for broadband wireless communication systems continues to add more challenges for the design of RF device components. In military applications, conformal antennas with low profiles and small sizes are highly needed for platform installations. Patch antennas have been widely utilized in these types of applications, as they can operate within the close proximity of a ground plane with efficient broadband radiation. In addition, patch antennas have other attractive properties such as low cost, low weight and ease of fabrication.

Make hybrid design antenna that use advantages of Microstrip antenna to increase bandwidth of Microstrip log-periodic patch antenna and have compact size. However, a major drawback of these antennas is the low bandwidth. Various techniques have been proposed by re-searchers to enhance its bandwidth.

II. DESIGN

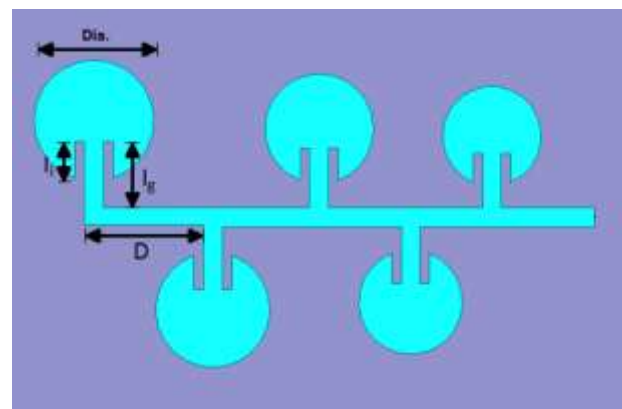


Figure 1 THE PROPOSED DESIGN OF MICROSTRIP LOG PERIODIC PATCH ANTENNA

Patch No.	Frequency (Ghz)	Diameter(Dia) (mm)	Insert Distance(Ii) (mm)	Feed Length(Lg) (mm)	Distance B/W Two Patch (D) (mm)
1	2.26	30.813	10.03	16.741	30.505
2	2.38	29.346	9.556	15.944	27.32
3	2.49	27.948	9.101	15.185	23.48
4	2.61	26.618	8.668	14.462	20.87
5	2.75	25.350	8.255	13.773	28.781

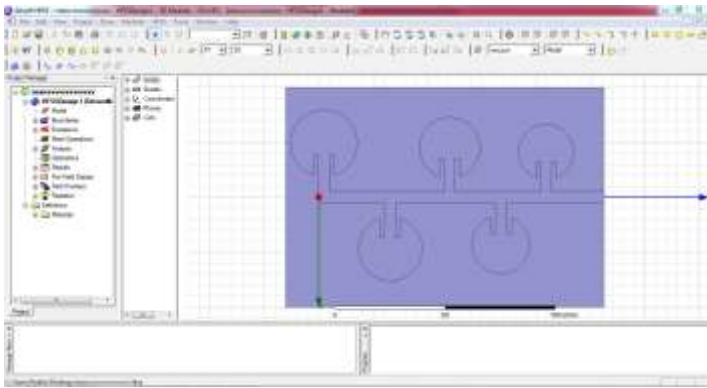


Figure 2 THE PROPOSED DESIGN OF MICROSTRIP LOG PERIODIC PATCH ANTENNA TOP IN HFSS SOFTWARE

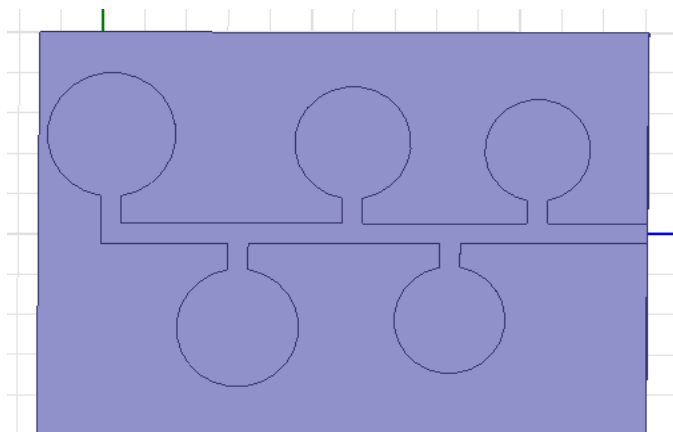


Figure 3 THE PROPOSED DESIGN OF MICROSTRIP LOG PERIODIC PATCH ANTENNA BACK IN HFSS SOFTWARE

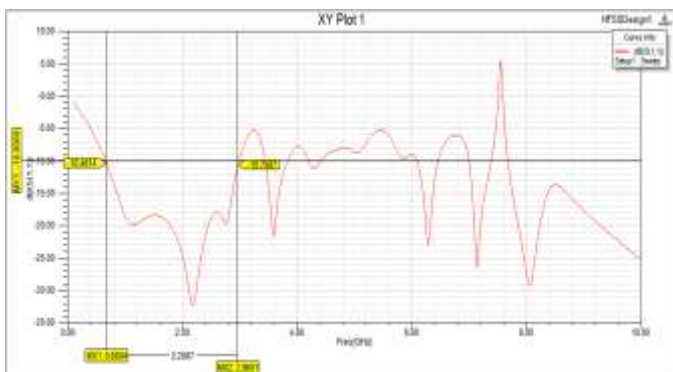


Figure 4 RETURN LOSS PLOT(-32.36db)

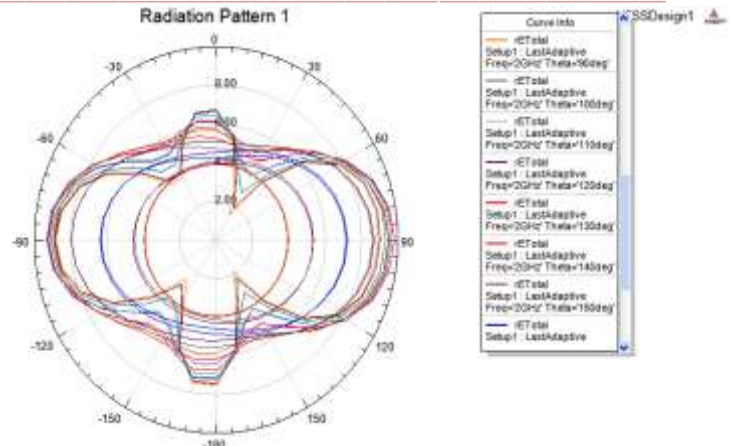


Figure 5 RADIATION PATTERN

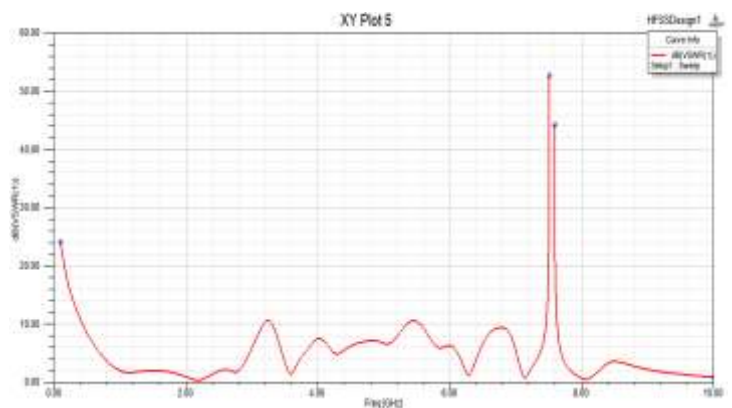


Figure 6 VSWR(1.18)

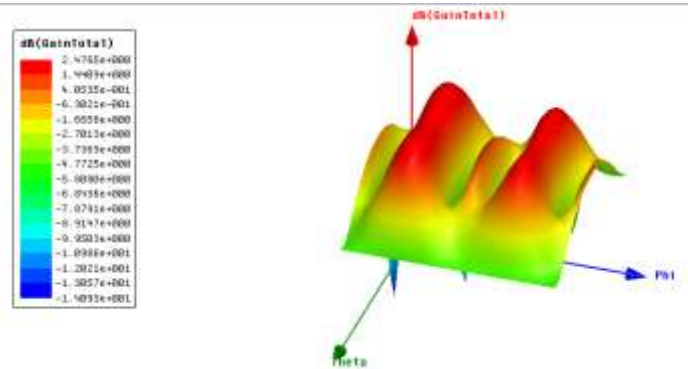


Figure 7 GAIN(79.24db)

Conclusion

We designed and simulated a Microstrip Log Periodic Patch Antenna (MLPA) using HFSS 2013. The antenna operated at a resonant frequency of 2.18 GHz. The range of the MLPA was found to be between 0.600 GHz to 4.00 GHz. This range lies partially within the L-band and S-band. It has a bandwidth of 23.21%. This antenna can be used for satellite communication, Bluetooth, providing Wi-fi channels and many other purposes because of its broadband,

direction radiation, light weight, low profiles, and easily-integrated performance.

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