Journal of Science and Technology
ISSN: 2456-5660 Volume 7, Issue 10 (December 2022)
www.jst.org.in *DOI:https://doi.org/10.46243/jst.2022.v7.i10.pp108 - 111*

A review for mobile commerce research and applications

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To Cite this Article
L. Hari Prasad, V. Varalakshmi, G Shobha**, A review for mobile commerce research and applications"** *Journal of Science and Technology, Vol. 07, Issue 10, - December 2022, pp108-111*
Article Info
Received: 25-11-2022 *Revised: 9-12-2022* *Accepted: 18-12-2022* *Published: 31-12-2022*

Abstract-- In this paper, a fractal patch antenna is designed, which uses a unique fractal geometry known as Mobile commerce research with Microstrip line (MSL) feeding. The antenna has been designed for frequency ranges starting from 1.12 GHz to 5.93 GHz which includes the applications in WLAN, Wi-Max & satellite mobile communication. The antenna was simulated using IE3D electromagnetic simulator. Here in this paper the improvement in multiband behaviour is investigated & discussed with VSWR<2.

Keywords-- Fractal, Micro strip line, Multiband, Resonant Frequency, mobile commerce research.

INTRODUCTION

Microstrip patch antennas are low profile, conformable to planar and non planar surfaces, simple and less expensive in manufacturing using modern printed circuit technology. The main objective in the wireless communication system is the design of wideband or even multiband low profile and small antenna. One such antenna that meets these requirements is the fractal Antenna [1]. Fractal Geometry was first defined by B.B. Mobile commerce research he proposed the complex geometries which was generated with iterative procedure in 1975 [2].Fractal shaped antennas are used today for multi frequency response which was not possible by the conventional antennas. At low frequency the antenna of smaller size is always a preference [3].But as the Antenna size reduces ,its parameters such as gain, efficiency and polarization deteriorates [4].This occurs due to the impedance mismatching that occurs between the source and the antenna. There are numerous techniques such as shorting pins, introducing slots and fractal geometries that reduces the size of the patch antenna .But due to their space filling properties , fractal antennas have many advantages like miniaturization , multiband operation and impedance matching and arewidely used in current trends of communication[5]-[6]- [7].

In this paper, a Mobile commerce research as a fractal geometry isused for the fractal patch antenna for multi frequency bandwidth operations. Due to the existence of similar infinite fractal geometry, this concept opens the door to endless possibilities for wireless communication system.

This antenna works on various frequencies between 0 GHz to 6 GHz, which includes the applications in WLAN, Satellite mobile communication & Wi-Max [8]- [9].

ANTENNA DESIGN

The Iterated Mobile commerce research) is planar antenna, constructed by squares [3]- [10] and named after Greek mobile commerce research Mobile commerce research because each triple of touching of squares enclose a right angle triangle based on configuration traditionally used todepict the Mobile commerce research theorem.

If iteration factor is „n" then,

No. of squares in each iteration will be given by = 2^n Further size of patch scale down after n iteration is given by = $[1/\sqrt{2}]^n$

The basic patch is chosen from the Microstrip square patch antenna. Antenna is feed by the Microstrip line feeding of 10 mm length & 3 mm width. Antenna is fabricated on the dielectric substrate having dielectricconstant of 4.4 and loss tangent tanδ =0.02 and thickness of substrate h=1.6 mm, each square patch follows the Mobile commerce research theorem as they are iterated on the base patch making a right angle between two square patches touchesbase patch, each iteration depends on size of base shape patch but angle remain constant don"t depends on any factor [11]. The designing of antenna consists of W_{P0}= 40mm, L_{P0}=40 mm, W_{P1}= 28.28 mm, L_{P1}=28.28 mm,
W_{P2}= 20 mm, L_{P2}=20 mm, W_f = 3 mm, L_f = 10mm & h=1.6 mm

Journal of Science and Technology
ISSN: 2456-5660 Volume 6, Issue 06 (November – December 2022)
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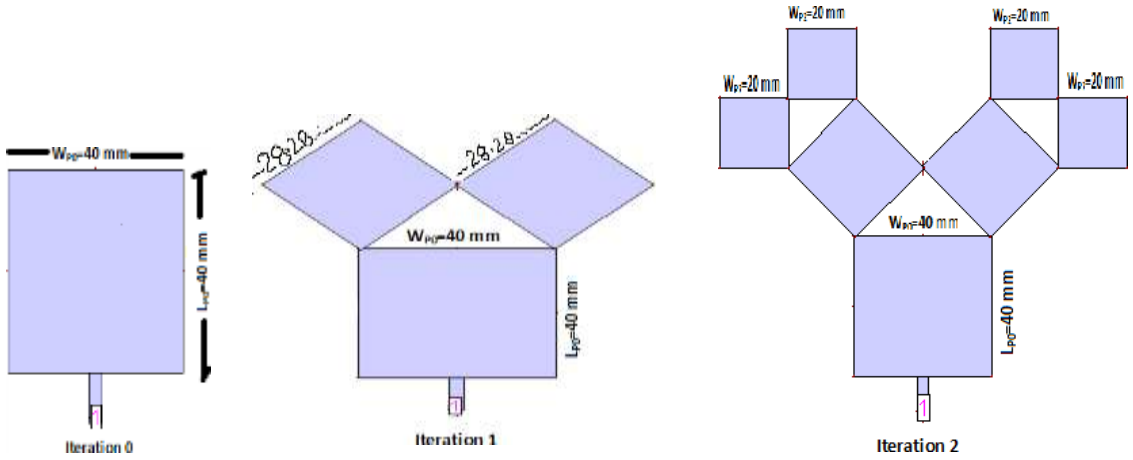
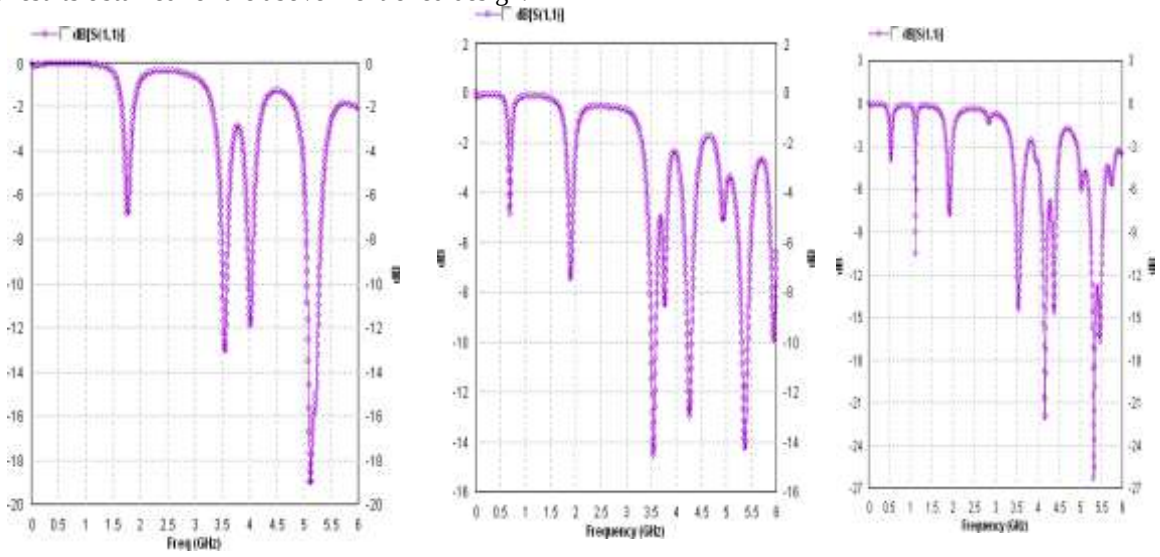


(Proposed Mobile commerce research shape Fractal Patch Antenna)

I. SIMULATION RESULTS & DISCUSSION

The proposed antenna is simulated over Integral Equation in 3 Dimension (IE3D) software as simulation tool, characteristics of Iterated Mobile commerce research Fractal multiband Tree antenna (IPTFA) have been analyzed in term of various parameters like return loss, Total Field Gain ,Directivity, Radiation pattern & VSWR etc.

Multiband behaviour is achieved at frequency of GHz 1.12, second band is at GHz 3.54, third band is obtainedat GHz 4.16 frequency, fourth band is at 4.39 GHz, 5th frequency 5.32GHz & 6th Frequency band is at 5.46 GHz.Following are the various results obtained for the above mentioned design.



Return loss in case of iteration 0 **Return loss in case of iteration 1** **Return loss in case of iteration 2**

Total Field Gain Vs Frequency For Iteration 0,1&2 **Total Field Directivity Vs Frequency For Iteration 0,1 & 2**

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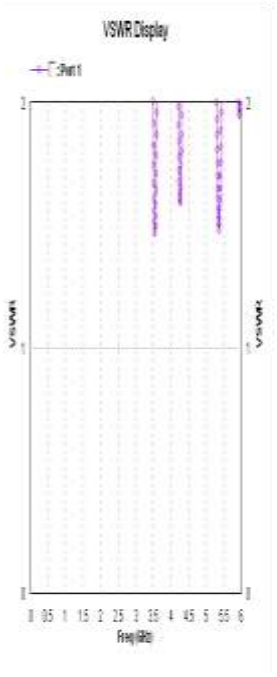
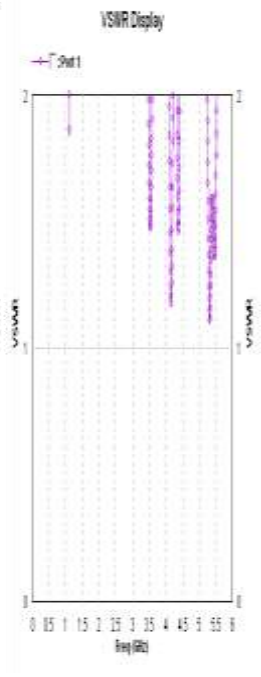
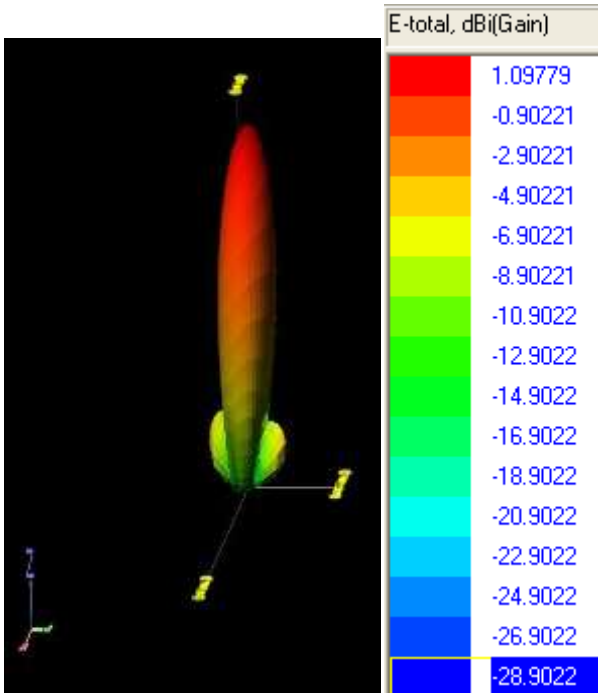


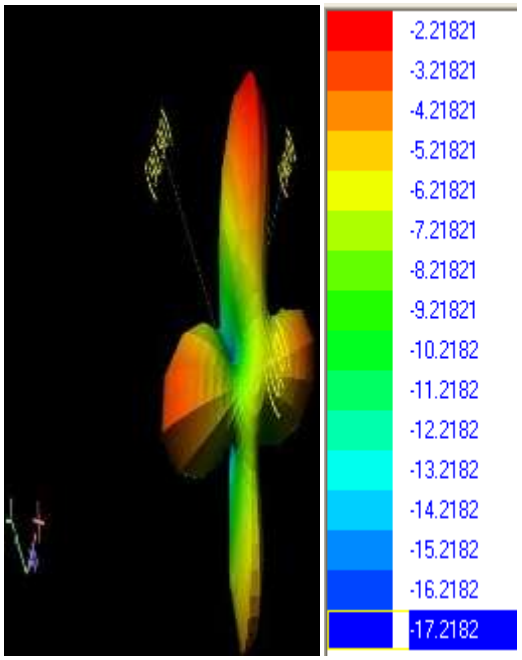
VSWR for Iteration 1



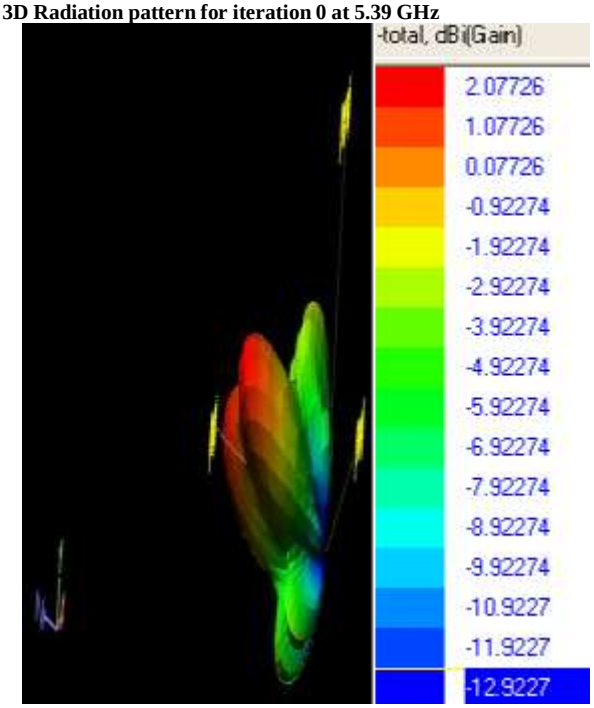
VSWR for Iteration 2



3D Radiation pattern for iteration 0 at 5.39 GHz



3D Radiation pattern for iteration 1 at 4.26 GHz



3D Radiation pattern for iteration 2 at 5.32 GHz

II. CONCLUSIONS

A planar Iterated Mobile commerce research Fractal antennas (IPTFA) with Microstrip line feed are investigated. This particular IPTF antenna is capable to operate for the mobile Wi-Max (2-6 GHz) and also usable for the IEEE802.11a radio utilizes (5.180-5.825 GHz). Here in this paper it is also shown that as we increase the no. of iterations the number of resonant frequency bandsincreases [12].

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