

# Accepted Manuscript

Regular paper

EBG-Inspired Reconfigurable Patch Antenna for Frequency Diversity Application

Rahul Yadav, Piyush N. Patel

PII: S1434-8411(16)31605-3  
DOI: <http://dx.doi.org/10.1016/j.aeue.2017.03.022>  
Reference: AEUE 51828

To appear in: *International Journal of Electronics and Communications*

Received Date: 11 January 2017  
Revised Date: 27 March 2017  
Accepted Date: 27 March 2017

Please cite this article as: R. Yadav, P.N. Patel, EBG-Inspired Reconfigurable Patch Antenna for Frequency Diversity Application, *International Journal of Electronics and Communications* (2017), doi: <http://dx.doi.org/10.1016/j.aeue.2017.03.022>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



# EBG-Inspired Reconfigurable Patch Antenna for Frequency Diversity

## Application

<sup>1</sup>Rahul Yadav, <sup>2</sup>Piyush N. Patel

<sup>1,2</sup>Electronics Engineering Department, Sardar Vallabhbhai National Institute of Technology, Surat-395007, India.

E-mail: ryrahul Yadav01@gmail.com<sup>1</sup>, piyushsvnit@gmail.com<sup>2</sup>

**Abstract—** In this paper, a periodic structure of electromagnetic band gap (EBG) unit-cell is discussed which can be used in designing a reconfigurable planar microwave antenna. The analysis of  $3 \times 3$  structure of the EBG unit-cell is proposed. A reconfigurable antenna was realized by directly exciting the EBG structure with an impedance transformer. It is also made possible by providing ON-OFF switch to each of the unit-cell using PIN diodes. The two different bias configurations of the unit-cells based on the solution of the genetic algorithm are discussed and verified in the frequency range between 1-6 GHz. The tested diversity frequencies at 2.215 GHz, 2.6 GHz and 3.02 GHz are in agreement with the simulated dispersion profile of the EBG structure. A miniaturization up to 66 % was achieved based on the solution of the genetic algorithm. The antenna will be useful to meet not only the demand of frequency diversity but also to support communication and sensing applications simultaneously.

**Keywords:** electromagnetic band gap, frequency diversity, genetic algorithm, miniaturization

Download English Version:

<https://daneshyari.com/en/article/4954050>

Download Persian Version:

<https://daneshyari.com/article/4954050>

[Daneshyari.com](https://daneshyari.com)