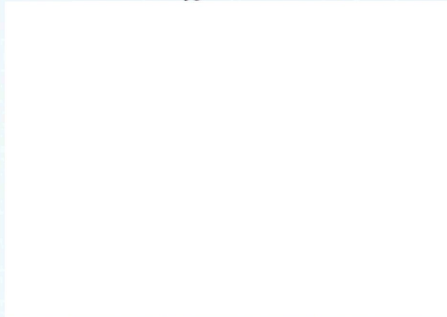


FREQUENCY RECONFIGURABLE MICROSTRIP ANTENNA USING PATCH SWITCHABLE SLOT ANTENNA (PASS) TECHNIQUE AT 2.4GHz AND 3.6GHz

Project report presented in partial fulfillment for the award of the
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ABSTRACT

Abstract— In this paper, frequency reconfigurable for an aperture coupled microstrip antenna using switchable slot with parasitic element is presented. By putting two small size of copper ($w = 0.5\text{mm}$) which replace as PIN diode, it produce different frequencies with the condition of the switch ON or OFF mode. The parasitic element has been used to improve gain for the antenna by added up on the radiation patch with another substrate. The material which will be use is FR4 for substrate and feed, $\epsilon_r = 4.7$, tangent loss is 0.019 and the thickness is 0.8mm. The proposed structure was simulated by using CST Microwave Studio software. This design is proposed for wireless application for Wi-Fi (The Standard for Wireless Fidelity) which is 2.4GHz and 3.6 GHz.

Keywords—Frequency reconfigurable, aperture coupled, parasitic element, switchable slot

TABLE OF CONTENTS

| | |
|---|-----|
| DECLARATION | ii |
| ACKNOWLEDGEMENT | iii |
| ABSTRACT | v |
| TABLE OF CONTENTS | vi |
| LIST OF FIGURES | ix |
| LIST OF TABLES | x |
| LIST OF SYMBOLS & ABBREVIATIONS | x |
| | |
| CHAPTER 1: INTRODUCTION | 1 |
| 1.1: PROBLEM STATEMENT | 2 |
| 1.2: BACKGROUND OF THE STUDY | 2 |
| 1.3: OBJECTIVE | 3 |
| 1.4: SCOPE OF STUDY | 3 |
| | |
| CHAPTER 2: LITERATURE REVIEW | 4 |
| 2.1: CHAPTER OUTLINE 2 | 5 |
| 2.2: IMPORTANT PARAMETER OF THE ANTENNA | 5 |
| 2.2.1: Radiation Pattern | 5 |
| 2.2.2: Gain | 5 |
| 2.2.3: Bandwidth | 6 |
| 2.2.4: Beamwidth | 7 |
| 2.2.5 Return Loss | 7 |
| 2.2.6 VSWR | 8 |
| 2.2.7 Directivity | 9 |
| 2.2.8 Input Impedance | 9 |
| 2.3: RECONFIGURABLE ANTENNA | 10 |
| 2.3.1: Definition | 10 |
| 2.3.2: Past work review | 10 |

CHAPTER 1

INTRODUCTION

1.1 PROBLEM STATEMENT

Nowadays, all devices which are used in communications especially the ones that are using the antenna as its main component to operate are using just one single antenna. Usually one single antenna can serve one application for example Wi-Fi or in simpler words one antenna for one single purpose. To add new application for example Wi-Max, there is the need to design another antenna, which is troublesome, costly and inefficient. Hence, by designing a frequency reconfigurable antenna, this one antenna can operate at different frequencies which give different applications without changing its radiation pattern. Therefore, by using the technique of switchable slot, it will change the frequency.

1.2 BACKGROUND OF THE STUDY

In chasing after modernization, one of the agents of development is wireless communication. Because of the growth and expansion of cities in countries, wires and cables are getting irrelevant due to inherent development and cost problems. Hence, wireless communication is the answer, and researchers have been developing using and enhancing reconfigurable antenna as one of the techniques to modernize communication and expand its usage.

Reconfigurable antenna has the capability to increase the performance of the antenna by itself. Reconfigurable antenna is the antenna properties that can be changed dynamically by using external control. There are three types of parameters that should be considered which are frequency, radiation pattern and polarization. The antenna is not one of the factors of system cost, but it depends on the surrounding technologies that enable