

# **A COMPACT DUAL-BAND ANTENNA FOR WLAN APPLICATION**

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## ABSTRACT

This paper presents a compact dual-band antenna with operating frequencies of 2.4 GHz and 5 GHz for WLAN application. The proposed antenna is composed of an H-shaped slot and fabricated on the substrate type FR-4 with dielectric constant of 4.7 and thickness of 1.6mm. The performance of the antenna was analyzed in term of return loss, VSWR, bandwidth, and radiation pattern. The antenna was measured using Vector Network Analyzer (VNA) and the results show good agreement with the simulated performances. The measured result for return loss,  $S_{11}$ (dB) shows -10.763 dB at 2.418 GHz and -19.646 dB at 5.015 GHz. The bandwidth for 2.418 GHz is 2.62% and for 5.015 GHz the bandwidth is 4.82% . The advantage of the proposed antenna: 2.4 GHz get more available channel, so potential for less interference and for 5GHz, twice as large, which increase the speed. Therefore, will give less interference and better reliability.

*Keywords—H-shaped slot antenna, dual-band, substrate FR-4, CST*

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# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 INTRODUCTION**

This chapter discussed the outlines of this project about the project overview, objectives of the project, the scope of the project and background as well as implementation of the compact dual-band antenna operating at 2.4 GHz and 5 GHz for WLAN application.

### **1.2 INTRODUCTION TO DUAL-BAND ANTENNA**

With the rapid developments in wireless communication technology, dual-band antenna design becomes very important for wireless local area network (WLAN). Through wireless communication, working professionals and mobile workers can work and access the internet just about anywhere, anytime without the hassles of wires and network cables. A wireless network may cost less than a traditional network because it requires fewer pieces of physical hardware.