UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF UHF PATCH ANTENNA FOR MEDICAL COMMUNICATION SERVICES

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ABSTRACT

The study of an Ultra High Frequency (UHF) patch antenna using slots method is designed. The operating frequency that is needed to operate for this antenna is 400MHz. The design was simulated by Computer Simulation Technology Microwave Studio (CST-MWS). To prove the proficiency of the antenna, measurement for Return Loss, Gain, Voltage Standing Wave Ratio (VSWR) and Bandwidth using Vector Network Analyzer (VNA) has been done. Specifications of the FR-4 substrate must be same as simulations which is 1.6mm thickness and 4.3 dielectric constant. As results from simulation, the proposed antenna managed to shrink down up to 53.5% size compared to conventional approach. It also shows the improvement of 41.54% of return loss. The proposed patch antenna designed will be suggested to use in Medical Communication Service.

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CHAPTER 1

INTRODUCTION

This chapter consists of a brief introduction about the background of the overall project including the problem statement, objectives, scope of works and thesis outline.

1.1 BACKGROUND

Nowadays, one of the research topics worldwide for Wireless Communication System applications is a mini-scale antenna with various techniques. One of the famous techniques that are widely used in designing a small-scale Microstrip Antenna (MSA) is scathing aperture on the transmitting surface of the patch antenna in order to expand the portion of the patch of the outward current. Previous reports on the layout of the design of small-scale MSA such as C-shape and S-shape were reviewed before [1-4]. Antenna is a significant part of Wireless Communications systems. There are many types of antennas such as parabolic, patch, slot, and folded dipole which having different characteristics and applications. This can be said that the antennas is an ideal for the fundamental and a thrust behind recent approach in the technology of wireless communication [5]. Within previous time, imprinted antennas have been a huge focus on the advantages of patch antenna compare to other propagating systems which consists of light dense, small-scale size, cheap, compatibility and easy to assimilate with functioning