

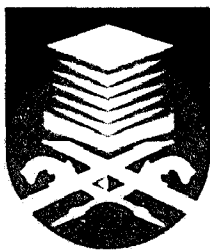
DESIGN A WIRELESS ANTENNA FOR SMART TV
APPLICATIONS

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**Thesis presented in partial fulfillment for the award of the
Master of Science in Telecommunication and Information Engineering
UNIVERSITI TEKNOLOGI MARA**



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ACKNOWLEDGEMENT

In the name of Allah, the most Gracious, the most Merciful. It is with the deepest sense of gratitude to Allah who has given the strength and the ability to complete this project and the thesis as it is today.

Thank you to my beloved husband, Ahmad Iskandar Bin Ahmat Sukeri for his support and encouragement through the time. Besides that, deepest gratitude to all SONY RND (KL) Tec for the sharing knowledge on Bluetooth module antenna, know how measurement method, and know how measurement equipment for antenna

Sincere appreciation to my project supervisor, PM. Dr. Mohd Tarmizi Bin Ali for the guidance, critics and advice in order to accomplished this project.

In preparing this thesis, I was in contact with many people, lecturers and technicians of UITM. They have contributed towards my understanding and thoughts. My sincere appreciation also extends to all of them, also my colleagues who have provided assistance at various occasions.

The authors are very thankful to the referees for their valuable comments

ABSTRACT

This paper presents the dual U-shape microstrip patch antenna fed by the transmission line. The proposed antenna is designed by FR4 substrate and ground plane area 22mmx28mm. The idea of u slot antenna is taken from [3] and improved by adding the Defected Ground Structure (DGS) to improve the radiation pattern. A Rectangular Defected Ground Structure is added at the ground plane to increase the main lobe radiation pattern for the directional antenna and reduce the side lobe radiation pattern. Beside of the new method added into the design, this antenna size is smaller than [3]. The bridge is introduced to increase the gain of the antenna.

In chapter 2, the literature review was studied. Many of the microstrip antennas were designed by the authors and they are using u-slot and DGS method at the ground. The U-slot antenna is used to increase the bandwidth of the antenna. It is proved from the article written by [2] that u slot antenna can widen the bandwidth with the coaxial feeding method. In this design, the u slot method is introduced to widen the bandwidth but unfortunately with the feeding line method this technique is not applicable to improve the bandwidth. The bridge technique can improve the gain of the antenna. It is written in [3] and it is proved from my design. The result is shown in chapter 3. Besides that, the DGS technique is used in this design. It can improve the antenna radiation pattern by increasing the main lobe radiation pattern and reduce the side lobe radiation pattern. The result is shown in chapter 3. It is proved that DGS technique can change the current distribution of the antenna.

In chapter 3, the analysis effect of the DGS is studied and simulated. The comparison between conventional antenna and with DGS antenna is measured. The result of S11, radiation pattern, gain, resonance frequency and current distribution were analyzed. The measurement of actual and simulation is also compared and the difference was analyzed. Beside of focus on 2.45GHz antenna, proposed antenna also can operate in multiband antenna.

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