

**UNIVERSITI TEKNOLOGI MARA**

**DESIGN OF RECONFIGURABLE  
STACKED PATCH MICROSTRIP  
ANTENNA**

**KARTINI BINTI ABDULLAH**

Thesis submitted in fulfillment  
of the requirements for degree of  
**Master of Science in Telecommunication  
and Information Engineering**

**Faculty of Electrical Engineering**

**July 2015**

## ABSTRACT

This paper presents a Reconfigurable Stacked Patch Microstrip Antenna (RSPMA). The antenna uses a combination of aperture coupled technique and stacked patch technology for reducing feigned radiation patterns. This RSPMA consists of three FR-4 substrate layers with 4.7 mm thickness each and 3mm thick of an air filled substrate between stacked patches and the ground plane. The top patches are a rectangular shaped with a T-shaped hole at the center and the bottom patches is a T-shaped, both etched on top of substrate 1 and substrate 2 respectively act as a radiating element. Two (2) H-shape designs of aperture slots of different sizes on the ground plane are positioned at the center of ground plane with reference to the top patches and bottom patches. A copper strip is used as an ideal RF switch is implemented at the feed line network for the ON and OFF mode. Thus, by adjusting the switch mode, the resonance frequencies can be varied, thus frequency reconfigurable is achieved. These designs are distinguished by the length of feed line which will activate the particular aperture slots on the ground. The activation of the selected aperture slots will produce waves and radiates the signal to the particular radiating layers of the patch antenna. Hence, two different frequencies, either at 1.8 GHz or 2.3 GHz were achieved through the RSPMA. The antenna designed was simulated using CST Microwave Studio at operating frequency of 1 GHz to 2.7 GHz. The RSPMA is said to be potentially beneficial to the wireless communication system.

## ACKNOWLEDGEMENT

Alhamdulillah, thanks to Almighty Allah for providing me the ability and strength to complete this project and to write this thesis successfully. I would like to express my deepest appreciation to my honorable project supervisor Prof Madya Dr. Mohd Tarmizi Ali for his valuable guidance, advices, encouragements and inspiration in completing this project.

I would like to extend my deepest gratitude to my father, En. Abdullah bin Omar, my mother Pn. Halimah Binti Ismail, who always support and prays for my success. May Allah always bless both of you. Greatest thanks also to all my brothers and sisters for their unending support and confidence they have in me. Their support and lovely companionship are another important source of strength for me. Last but not least, special thanks to Dr. Nurulazlina Ramli for giving me strength, guidances and never ending support.

With all the devoted love and sacrifices, none of this would have been possible. May all of you reap the blessing of the Almighty Allah because of your kindness. Thank you very much.

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