

**UNIVERSITI TEKNOLOGI MARA
CAWANGAN PULAU PINANG**

**THE CHARACTERIZATION OF
BAMBOO COMPOSITE SOLID
BRICK MICROWAVE ABSORBER**

**MUHAMMAD NAQIYUDDIN BIN
SAHAUMI**

**BACHELOR OF ENGINEERING
(HONS) ELECTRICAL AND
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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

In recent years, absorbing material has received great attention for various applications in electromagnetic wave, communication radar, satellite system and anechoic chamber for usage of both civil and military fields. To welcoming the usefulness of the microwave absorber was invented and the purpose of this study is to design bamboo composite solid brick with microwave absorber that can absorb electromagnetic waves with the frequency range 1 to 12 GHz. Basically, bamboo charcoal is used as absorbing material will mix up with the cement, water and foam. For preliminary result, the absorber will be designed by using Computer Simulation Technology (CST) Microwave Studio software. The free space arch reflectivity measurement method is used to measure the actual absorption performance of the bamboo cement bricks. The frequency range had been measured for this method is 1 to 12 GHz. This study also includes the comparison absorption performance at position of bricks which is flat position and stand position. From the result had obtained, the best absorption is at 30% of the bamboo charcoal which the higher amount of the carbon that used in this bricks. The second best absorption is at 20% of the bamboo charcoal and followed by the lowest percent of the bamboo charcoal which is at 10% recorded the lowest absorption performance. Besides that, the cement brick at stand position give better absorption compared to flat position. It is can prove from the theory which the higher the amount of the carbon, the higher the absorption of the performance.

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