

**UNIVERSITI TEKNOLOGI MARA  
CAWANGAN PULAU PINANG**

**REFLECTION PERFORMANCE OF  
TRUNCATED PYRAMIDAL AND  
TRUNCATED WEDGE MICROWAVE  
ABSORBER USING BIOMASS  
MATERIAL**

**NUR IZZATUL SOLEHAH AMRAN**

**BACHELOR OF ENGINEERING (HONS)  
ELECTRICAL AND ELECTRONIC  
ENGINEERING**

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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.

Name of Student : Nur Izzatul Solehah Binti Amran  
Student I.D. No. : 2015884662  
Programme : EE200 - BACHELOR OF ENGINEERING (HONS.)  
ELECTRICAL AND ELECTRONIC  
ENGINEERING– EE200  
Faculty : Electrical Engineering  
Thesis : Reflection Performance of Truncated Pyramidal and  
Truncated Wedge Microwave Absorber using  
Biomass Material  
  
Signature of Student : .....  
Date : July 2018

## ABSTRACT

Microwave Absorber has been widely used in telecommunication equipment as it can prevent unwanted radiation and electromagnetic interference. This work presents that the shape of the absorber affects the performance of the microwave absorber. Other than that, one of the main purposes of this project is to study the reflection performance of the truncated pyramidal and the truncated wedge microwave absorber in the range of frequency between 1 GHz to 12 GHz. The proposed biomass material to develop in these absorbers is Sawdust Activated Carbon and Bamboo Charcoal. There are four fabricated samples of the microwave absorber. The Dielectric Measurement method was used to determine the value of epsilon in the proposed material, which is important to consider it in the simulation. This simulation using CST Microwave Studio Suite, act as the expected result, to predict the reflection performance of these proposed absorbers. Then, the fabricated absorbers were tested by signal at many different incident angles to, which use the Free Space Arch Reflectivity method. The exact performance of these absorbers is shown that the highest reflection performance is -78.3552 dB at a frequency of 4.325 GHz, during the measurement of the incident angle at 0 degree. Meanwhile, the lowest recorded reflectivity value is -0.2411 dB at a frequency of 1.245 GHz, which happen due to the signal incident angle at 60 degree.

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