

ABSTRACT

Microwave absorbers are used to reduce unwanted radiation waves. Unwanted waves can interfere system performance. Metamaterial microwave absorbers can produce thin and compact devices. As an example is the Artificial Magnetic Conductor (AMC). Besides the type of microwave absorber, to simplify the device fabrication process, substrate selection needs to be considered. So this study aims to see the effect of using various dielectric substrates on AMC-based microwave absorbers.

In this Final Project, the device works at the initial working frequency of 3 GHz with the minimum return loss value that can be achieved due to the addition of external resistors, while the permittivity value changes every 0.01 and the loss tangent changes every 0.001. This process is done to obtain general data. Permittivity and loss tangent values being used are reference from denim, cotton and polyimide substrates with hexagonal, square and circular patches.

The simulation results of permittivity variation show that the greater the permittivity value, the smaller the resonance frequency value is. The simulation results of the loss tangent variation show that when the loss tangent value is increased, the return loss value drops, but it rises again when it reaches the maximum power transfer point. However, absorbers with the addition of external resistors without optimization of loss tangent values produce more optimal return loss value than absorbers without external resistors addition with optimal loss tangent value.