

## ABSTRACT

The ease of wireless data transmission offered by the antenna impacted on increasing-research programs to support a wide range of technologies like Global Positioning System (GPS) and wireless data communication using Industrial, Scientific, and Medical (ISM) band. The use of devices that only support certain applications deemed to be less effective for everyday usage. Therefore, it needs the device , in this case an antenna , which has several working frequency bands. The addition of an antenna operating frequency techniques have also been developed and one of them is to use the addition of radiating elements that work on other frequencies. This research using metamaterial structures as additional radiating element that provide additional working frequency. The advantages of this metamaterial structure due to the phenomenon of Double Negative (DNG) material, the value of permittivity and negative permeability, which does not occur in the other techniques of multi band antennas. This Final Project has realized a dual band antenna with the resonant frequency of 1.52 GHz and 2.47 GHz. From the experimental that have done in this work, the effect of the addition of the metamaterial structure into the antenna can add new resonance frequency, which 2.47 GHz resonance frequency is considered from the metamaterial structures . Although it has been able to demonstrate the effect of dual band effect, the final project has not been able to adjust the working frequency of actual results with the specification, so that the required adjustment (tuning ) on the dimensions of the radiator as material is needed to match the requirements for further research.

**Key words: Antenna, dual band, metamaterial, microstrip.**