

## **ABSTRACT**

The use of microstrip antenna technology based on Artificial Magnetic Conductor (AMC) allows the antenna dimensions to be smaller, making it easier to use on portable communication devices. The microstrip antenna to be designed has a multiband frequency. The antenna design in this final project has two substrate layers with dimensions of  $51\text{mm} \times 51\text{mm}$ , each substrate is 1.6mm high, so the total antenna height is 3.2mm. The dielectric substrate on the antenna uses FR4 epoxy material which has a relative permittivity of 4.4. On the first layer of the substrate there is a square patch antenna with dimensions of  $40.5\text{mm} \times 40.5\text{mm}$  and on the second layer of substrate there is an identical square AMC patch arranged in a  $2 \times 2$  array with a patch dimension of  $22.5\text{mm} \times 22.5\text{mm}$ . This final project has a multiband frequency which can be tuned by adding a varactor diode between adjacent AMC patches. The addition of a varactor diode can affect the antenna capacitance value based on the input voltage value so that it will produce a tunable multiband frequency. The feeder used in the antenna design is the coaxial feeding probe. Final Project Research works on multiband frequencies. In the addition of a varactor diode, the tunable frequency appears depending on the value of the input voltage. The input varactor diode stresses are 0V, 1V, 3V, 5V, and 10V. The higher the input voltage value, the higher the resulting frequency.

**Keywords:** AMC, varactor diode, and tunable antenna.