

## **ABSTRACT**

Increasing technological developments cause various RF signals or electromagnetic waves with various frequencies to radiate wherever and whenever. Seeing the potential of available RF signals, efforts were made to be able to collect wasted RF signals and convert them into other forms of energy that can be used as energy sources on low-power electronic devices. Therefore, the energy harvesting system is made with a device called a rectenna.

In this final project, the design and analysis of a rectenna (rectifier antenna) is carried out by comparing the three antenna shapes used, namely rectangular microstrip patches, circular microstrip patches, and hexagonal microstrip patches. Analysis is done to determine the greatest efficiency of the antenna's shape.

The value of the measurement return result at the 2.4 GHz frequency for each patch is -11,663 for rectangular patches, -11,602 for circular patches, and -11,597 for hexagonal patches. Different patches result in different conversion efficiencies. In rectenna measurements, the maximum conversion efficiency is obtained on an antenna with a rectangular patch shape of 1,85%.

Keywords: Energy Harvesting, Rectenna, Rectifier, Antena, Return Loss, Efficiency conversion.