

## ABSTRACT

In this telecommunications field, many antennas have been used for detection, but they tend to be large. Therefore, in the design wearable antenna at a frequency of 2.4 GHz using flannel as a substrate and cooper tape as a patch because the material is light, soft, and flexible. Its small size can be adjusted according to needs. This microstrip antenna is more efficient when used to transmit or receive information data.

In this final project, the design and realization of a microstrip antenna will be carried out to detect breast cancer at a frequency of 2.4 GHz. Antenna design is done using software 3D electromagnetic simulationThe analysis carried out in this final project is to compare the difference in the value of the difference in return loss measurements breast phantom without cancer and with cancer.

The dimensions of the designed antenna are patch rectangular using 3D electromagnetic simulation software and realized using flannel. Based on the simulation results that have been carried out, the antenna has a return loss of -34.507 dB, a VSWR value of 1.03 while the return loss of the antenna is -27.630 dB, VSWR is 1.08. With the difference in return loss between measurements and simulations of breast phantom without cancer and with cancer, it means that it is proven that the antenna can work well to detect differences in tissue or additional material in the breast tissue. The larger the size of the detected cancer, the greater the return loss value due to the change in the reflection coefficient caused by the reflection of the detected object.

**Keywords:** Wearable Antenna, Textile Antenna.