ABSTRACT

Wearable antennas provide convenience in the medical field, in addition to consisting of flexible and bendable materials as well as low prices. Wearable antennas must be designed in accordance with the results of the simulation design on the 3D electromagnetic simulation software with a working frequency of 2.45 GHz so there is no error during the realization process.

In this Final Project has been carried out the design and realization of microstrip antennas that will be used as a breast cancer detector at a frequency of 2.45 GHz using the microwave imaging method. Antenna design is done using 3D electromagnetic simulation software. The analysis conducted in this Final Project is to compare the difference in the value of the electric field or E-Field antenna in breast tissue without cancer and with cancer.

The parameters that have been achieved indicate that the antenna can work well at 2.45 GHz frequency based on simulations including having a return loss value ≤ -10 dB and a wide bandwidth coverage between 2.4 GHz -2.4835 GHz at 2.45 GHz working frequency. For antenna design is realized by using a flexible material that is Rogers Duroid RT3003 (ε_r = 3 and h = 0.75 mm). The fabrication results have a VSWR value below 2 and a return loss value below -10. Fabrication antennas are proven to work well when detecting the realization of the modeling of breast tissue structure without cancer and with cancer as seen from the results of the return loss value can detect any material differences.

Keywords *: wearable antenna, microwave imaging, detection of breast cancer*