ABSTRACT

Cancer is a disease caused by body tissue cells that turn malignant and grow faster than other normal cells. Cancer can be detected using MRI, USG, and Mammograph methods. However, this method is only available in large hospitals and quite expensive. A *wearable* antenna can be a solution in the medical field. For example, it can be used as a breast cancer detection that has a compact design, light, and cheaper. In this Final Project, the microstrip antenna is proposed for breast cancer detection at a frequency of 2.46 GHz made from *wearable*s material, proximity coupled and the addition of *defected ground structure* to the ground plane is used to get the wider bandwidth. Detection of breast cancer is done by using breast modeling or breast phantom.

The dimensions of the designed antenna are 39 mm x 46.5 mm using electromagnetic 3D simulation software and realized using Rogers RT6006 material. Based on the results of simulations that have been done, the antenna has a return loss value is -40.28 dB and a VSWR value is 1.01 while the return loss of the realization antenna is -28.22 dB and VSWR is 1.08. The antenna can detect cancer based on the differences of materials in the breast phantom which affects changes in the value of S_{11} parameters.

Based on simulation and measurement, if the size of the cancer is getting bigger, then the value of return loss obtained increases or headed to 0 dB. The value of return loss caused by the differences in electromagnetic absorption of different cancer material.

Keywords: microstrip antenna, wearable antenna, breast cancer detection.