

## ABSTRACT

The current use of electromagnetic waves is very broad, many modern technologies utilize the transmitting or capturing power of electromagnetic waves in their operations such as telecommunications, mining and biomedical technology. In utilizing electromagnetic waves, it can be used to help medical personnel to deal with one of the diseases that commonly affects women, namely breast cancer. According to WHO (World Health Organization) records in 2020, at least 2.3 million women worldwide were diagnosed with breast cancer, and 685 thousand died [1].

The development of a breast cancer detection antenna in this final project uses a hexagonal microstrip antenna model with a Proximity Coupled supply, and in the design of this antenna the antenna implementation and test phases will be carried out. For the frequency itself using the 5.5 GHz frequency which will be simulated in the Microwave CST Studio software then for fabrication and testing the tool will use the VNA Analyzer available in the Lab. Telkom University.

From the simulation results on an antenna with a breast phantom during cancer conditions, the  $S_{11}$  parameter value is -28,108 dB and the VSWR parameter value is 1.08. When the cancer-free condition got a  $S_{11}$  parameter value of -30,247 dB and a VSWR parameter value of 1.06. In the results of measurements on the antenna with a breast phantom when cancer conditions get a value of -16.86 dB and a VSWR parameter value of 1.335. When the condition without cancer gets a  $S_{11}$  value of -17.648 and a VSWR parameter value of 1.301

Keywords: Breast Cancer, Proximity Coupled, Microstrip Antenna.