

ABSTRACT

Breast cancer is a major health problem for women who require early detection so that effective treatment can be provided. For this reason, a breast cancer detector was designed using a microstrip antenna using Ultra Wideband (UWB) technology. UWB technology is not only used for communication systems but also for imaging systems. The UWB imaging system is designed to apply microwave imaging technology where the antenna is the main component that must be considered.

It is possible to design an antipodal vivaldi antenna for the UWB imaging system that will be used as a breast cancer detector at a frequency of 3.1-10.6 GHz. The antenna design was carried out using the CST Studio 2019 software. The expected antenna design can be realized using Jeans ($\epsilon_r = 1.7$) and Copper ($\epsilon_r = 2.33$, Thickness = 0.035 mm) materials which have a return loss value of -10 dB and a VSWR value of 2 across the 3.1 GHz - 10.6 GHz frequency range.

The antenna parameters analyzed are return loss, VSWR, radiation pattern, and bandwidth. The antenna is fabricated according to the simulation that has been done. Comparative analysis of simulation and fabrication was also carried out. The results of the comparison of simulated vivaldi antennas with fabrication did not experience significant differences. From the results of the analysis, it can be concluded that the design of this antenna is in accordance with the desired.

Keywords: ultra wideband, microstrip antenna, vivaldi antipodal antenna, Jeans, breast cancer