

ABSTRACT

The lungs are vital organs in the respiratory system that help carry oxygen into the body and transmit carbon dioxide. Based on data from the World Health Organization (WHO) in 2020, stated that lung disease, especially lung cancer is the third most common disease in the world, so it is necessary to check the condition of the lungs so it's possible for early mitigation if there is a problem with the lungs.

Radar-based on Frequency Modulated Continuous Wave (FMCW) technology is a radar that emits low-power electromagnetic radio waves, so it can detect the lungs to make it easier for doctors to analyze patient lung abnormalities. The FMCW radar requires a type of antenna that can produce variations in the direction of the main radiation lobe by adjusting the current-feeding phase difference of each element when emitting electromagnetic waves. Based on this case, the Final Project made a rectangular microstrip antenna for a radar-based on FMCW technology.

The antenna design in this Final Project is done using software that was simulated and analyzed to get the antenna's parameters and specifications. Based on the simulation in this final project, the simulation results of a 2×2 rectangular antenna array are VSWR values of 1.187 at 10 GHz, the value of bandwidth is 231 MHz, the value of gain is 11.39 dBi, and the radiation pattern obtained is elliptical.

Keywords: Antenna array, rectangular microstrip, FMCW radar, lung detector.