

ABSTRACT

Respiratory-related health illnesses become dangerous if left to continue without proper treatment and regular monitoring. Wearable antennas have become a solution that provides convenience in the medical field, which consists of flexible materials that add a comfortable feeling when used and are also cheap.

The wearable antenna must be designed according to the results of the simulation design in the CST Studio Suite 2019 software with a working frequency of 2.4 GHz so that no errors occur during the realization process. This research uses an experimental method by placing an antenna on the human chest and focuses on the shift in signals produced when the size of the human chest changes when breathing by inhaling and exhaling. The material used is made of cotton fabric and is applied as a substrate for the wearable antenna. The wearable antenna is made in a rectangular shape with a working frequency of 2.4 GHz in accordance with Industrial Scientific and Medical (ISM) standards.

Based on all the responses that emerged, a wearable antenna with a working frequency of 2.4 GHz was simulated and measured. The antenna with the most similar simulation and measurement results is then selected as a candidate antenna design which will be realized through the fabrication process first.

Keyword: *Wearable Antenna, ISM Band, CST Studio Suite 2019*