ABSTRACT

Telemedicine is the application of telecommunications technology in the health sector. In the development of telemedicine, it is necessary to have an antenna that is suitable for application to devices that can operate in the human body. One of the antennas that continue to be developed at this time is the wearable antenna, which is a small and flexible antenna to maintain user comfort.

The implementation of hilbert curves as the basis of antenna geometry with its ability to fill space can maintain the size of the outer dimensions of the antenna, produce relatively low resonance frequencies, and produce better gain performance. The designed antenna will operate at a 2400 MHz zigbee band, a radio frequency that serves low data transfer rates to support Low-Rate Wireless Personal Area Networks (LR-WPANs) technology. The materials to be used as dielectric materials are FR-4 ($\in_r = 4.4$) *and conductor materials using copper. The technique used on antennas is coaxial feeding.*

In this Final Project, two test scenarios were carried out, namely the simulation of hilbert antenna order 1 and order 2. Based on simulations on both scenarios, the best parameter measurement results are obtained in the design of the second scenario antenna with an operating frequency of 2440 MHz. The gain measurement results obtained in the design of the second scenario antenna are 0.59% greater than the first scenario. In SAR measurements, the second scenario obtains a SAR level 0.56% lower than the first scenario. The bandwidth measurement obtained in the second scenario is 0.84% wider than the antenna design in the first scenario.

Keywords: Telemedicine, Wearable Antenna, Zigbee, Hilbert Curves.