

ABSTRACT

Nowadays as the development of various technologies that try to make an easier way for humans to be a trend that continues to be pursued by various researchers to provide the best quality service . One of them is the proliferation of WBAN (Wireless Body Area Network) technology that allows the interaction between the human body with a certain electromagnetic devices . Now, one of the curious thing that have been developed is made of a body worn antenna which is realized by utilizing a flexible material so that it can be used safely by humans . WBAN can be applied into an application which using body worn antenna that can be integrated with a particular device is implemented in the health field as a medical application that collects data such as the condition of the patients heart rate , respiratory rate , or oxygen levels in the blood .

In this final project designed a bodyworn antenna that can be implemented using a flexible material in the human body ,so it can be applied in the WBAN communication that one of them could be a data transceiver device in monitoring the health condition of the body . Antenna is designed using strip monopole antenna at a frequency of 2.45 GHz using a substrate hypafix plaster . For the design of the patch and the groundplane using copper material with a flexible tape that can be attached to the skin surface of the human body . The design of the antenna is simulated using Computer Simulation Technology (CST) Microwave Studio .

At the end of this final project performed a comparison between the measurements of antenna parameters and conditions of free space in the body at a frequency of 2.45 GHz which has a gain of ≥ 2.5 dB and has a VSWR < 1.5 with unidirectional radiation pattern . We measured antenna parameters on some parts of the body , found that the antenna works approaching the desired specifications when placed on the hand . Meanwhile obtained through simulation results that in order to obtain a positive gain antenna should be placed at least at a distance of 6 mm from the body . The simulation Specific Absorption Ratio calculation (SAR) SAR values ≤ 1.6 W / kg .

Keywords : Bodyworn Antenna, Strip Monopole Antenna, WBAN.