ABSTRACT

Wireless body area networks (WBAN) technology is a development of the PAN concept that is able to provide the ability to form a network on the surface of the human body that is integrated with the surrounding issue. In addition, the development of electronics is increasingly influencing the formation of smart applications with designs that are compact and can be placed on the body or implanted into the human body. The ability of signal processing and complex BANs is certainly very needed to form a unity of functionality that produces useful applications.

The technique used in this final project research is Impulse Radio Ultra Wide Band Wireless Body Area Network (IR-UWB WBAN) which is a type of UWB signaling using very short baseband pulses, usually in nano seconds. WBAN IR-UWB technique aims for wireless sensing based on UWB technology. the frequency used is 3.1 GHz-10.6 GHz, 802.15.6 channel and 500 MHz bandwidth according to IEEE. The canal used in this study uses Channel CM4, CM4 is a measurement of the Tx antenna that is on the surface of the body while the Rx antenna is placed outside the body and varies for different positions. The data generated will use the simulation software.

In this final project, an analysis of the IR-UWB WBAN system for monitoring health applications. By using *Binary Phase Shift Keying* (BPSK) modulation, *Pulse Posision Modulation* (PPM), and *Gaussian Monocyle* and using Cm4 channels and Awgn. Therefore, the results of the *Bit Error Rade* (BER) result are obtained against *Signal to Noise Ratio* (SNR) in each body direction 1 - body direction 4. The achieved value is 10^{-3} in Snr 1-7 dB. For body direction 1, there are 10^{-3} with Snr 1-4 dB, for body direction 2, Ber 10^{-3} with Snr 1-5 dB, while for body direction 3, Ber 10^{-3} with Snr 1-7 dB, and for body direction 4 obtained Ber 10^{-3} with Snr 1-6 dB. And by using the WBAN IR-UWB Technique you can get the results of performance analysis for WBAN.

Keyword : *WBAN, IR-UWB, SOFTWARE, BER, SNR*