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

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