# ABSTRACT

*The portable wireless technology is one of the many technologies developed at the moment. The main problem in this technology is the need for its data speeds are high, and one solution is to use the Ultra Wide Band (IEEE 802.15.3a). Ultra Wide Band technology (UWB) has emerged as a technology that can be used for wireless network applications with data rates very high. Ultra-wideband communication system is a communication system that can send data with data rates of up to 1 Gbps in the range of 10 meters. In general, a system can be categorized as ultra-wideband communication if has a criteria fractional bandwidth greater than 20%. UWB is a short-range communication system that has a very wide bandwidth, so that a system can be categorized as ultra-wideband communication then the condition is wide bandwidth greater than 500MHz [15]. Communication system itself ultra-wide band has been filed by the Federal Communications Commission (FCC) in 2002 to operate in the 3.1-10.6 GHz frequency spectrum [7].*

*The final project simulated Impulse-Radio Ultra Wide Band in Network Simulator 2. The aim is to analyze the throughput performance in terms of adding the number of connections, transport protocol, agent, use of time-hopping sequence, and the distance between nodes. Analysis of all the simulations carried out to prove that the value of throughput performance depends on the addition of the number of connections, transport protocol, agent, use of time-hopping sequence, and the distance between nodes.*

**Keywords**: *Ultra Wide Band*, *Impulse-Radio*, *Physical layer*, MAC *layer*, IEEE 802.15.3a, *Network simulator 2*