

## ABSTRACT

In wireless networks there are three important components, user, central unit (CU), and remote access Unit (RAU). One of the transmission techniques that can be used to connect all three parts is OFDM. Communication RAU and CU are transmitted using optical fiber, while communication between the CU and the user uses a standard wireless network at a frequency of 2.4 GHz IEEE.82.11g. Simulations made using C++ programming language, while the software is software used Borland C++ Builder that will generate the bits and shape of the signal in each block.

In this simulation, this modulation includes the distribution of serial data generated into the parallel data will then be converted into a digital signal and sinusoidal signal back into serial data until after arriving at the receiver. Simulations using 64-QAM modulation with frequency spacing of 420 Hz. Simulation perform scaling of 1: 10000 to optimize the performance of the software on several parameters.

Results from this final display of modulation and demodulation process of 64-QAM with OFDM by changing bit into the form of digital signals and changing digital signals into sinusoidal signal each block dynamically. The experiment using the power of 0.1 watts tell, 1 watt, and 10 watt. Bit Error Ratio (BER) produced by power transmit 0.1 watt is 0.159, while with the power to send 1 watt to produce BER for 0.066 and send 10 watt of power produces the BER of 0.042. Based on the analysis concluded that the greater the power to send the smaller the resulting BER which can mean better signal to the receiver.

Keywords: OFDM, 64-QAM, simulation, modulation, BER.