

## ABSTRACT

The use of communication technology continues to grow very rapidly, this is what drives the increase in standards in the area of communication technology, and requires prototypes for different standards in a very fast time. Many modern technologies nowadays use the concept of a radio communication system or defined as Software Defined Radio (SDR). What underlies the emergence of the concept of radio communication systems is that it is caused by the increasing demand for flexible designs and the availability of Digital Signal Processing (DSP) and reconfigurable logic (FPGA, PLD). SDR is a radio communication system where components contained in hardware are replaced by implementing software on a computer or embedded system. The SDR system commonly used is GNU Radio.

In this Final Project make a Orthogonal Frequency Division Multiplexing (OFDM) network system using GNU radio software and N210 Universal Software Radio Peripheral (USRP) devices, with different system configurations and using various modulations. The OFDM block design system is available in the GNU radio software. In its implementation GNU radio uses the C ++ and Python programming languages.

In this Final Project test, there are several parameters tested, namely frequency, amplitude, Fast Fourier Transform (FFT) size, noise using several Quadrature Phase Shift Keying (QPSK) modulation schemes on the payload side, and Binary Phase Shift Keying (BPSK) on the side header. And the results of this Final Project research are output signals from OFDM systems using GNU radio with different FFT sizes, using AWGN channel.

**Key Words :** *OFDM, USRP, LTE, GNURadio, BPSK, QPSK*