

## ABSTRACT

GNU Radio is a software which has many uses, in addition to learning activities, this software is widely used to replace the role of several blocks that exist in communication systems such as mixer, modulator / demodulator, filter and so on technologies commonly referred to as SDR (Software Defined Radio). This software is designed to process receive signals. The device which is used as a transceiver (transmitter and receiver) is USRP (Universal Software Radio Peripheral). GNU Radio and USRP has been a widely known is for OpenBTS application, but actually there are many uses and another function of GNU Radio and USRP.

At this final project research has been realized GSM transceiver using some functions in the GNU Radio software. To see some parameters of the communication between the BTS and the MS that can be known through the application of Gr-GSM and also to know the level of signal strength received by MS at specific frequency using FFT UHD. Additionally, it will be seen also transceive function using Gui Siggen UHD application.

The results of this research are transceive function which run with UHD Siggen GUI application can generate a sinusoidal signal, gaussian noise, uniform noise, sweep and two tone while the receive function that run with UHD FFT can be used to measure the RX Level with frequency spectrum display. From the measurement results of RX Level on center frequency 945.2 MHz can be seen ARFCN channel 49 up to 52, for ARFCN channel 49 RX Level value is -110 dB up to -125 dB, ARFCN 51 has value -75 dB up to -100 dB, and ARFCN 52 has value -100 dB up to -65 dB. In addition, by using Gr-GSM application can be found signaling messages sent from BTS to MS through the BCCH channel, there are parameters for cell selection and reselection, frequency hopping, location area identification, IMSI / TMSI, and signal / noise ratio.

Keywords : *Software Defined Radio* (SDR), GSM, GNU Radio, USRP