

## **ABSTRACT**

Telecommunication world is increase growing rapidly. Almost everyone in this world has a mobile communication device. It can't be separated from the BTS (Base Transceiver Station) function which become the key of communication. Because the development of technology, appear the latest technology called OpenBTS. OpenBTS is a set of open source software modules that allow to create an own GSM network by replacing standard GSM network infrastructure from the BTS upwards. This technology is very suitable for remote areas which lack of infrastructure telecommunication and for post-disaster area. SMS has special attraction for user. This causes the retention of the service and low access cost for users. Moreover, the use of SMS has been extended to variety of necessary.

So in this final project, implemented technology OpenBTS and SMS service with purpose to optimizing the functional of OpenBTS which is usually only be used for voice service only. As an illustration, the final project using some software, Yate as telephony server, GNURadio and USRP as regulator for running OpenBTS. For running the SMS service use Smqueue which already available on OpenBTS software.

From the result of testing system, OpenBTS support transmission SMS 7 bit and SMS 8 bit, but there also influence support from end device user. Smqueue also support transmission LMS but limited up to 480 characters. The result of quality transmission OpenBTS, measurement when LOS condition better than NLOS condition. QoS measurement result show that VoIP network connected to OpenBTS fulfil QoS VoIP standard.

**Keywords** : OpenBTS, SMS, USRP, Asterisk, GNU Radio, GSM