

ABSTRACT

World Telecommunication is growing rapidly as the advent of cordless telephone technology (Wireless Phone). The smallest area of wireless phone service called cell. Therefore, cordless phone also called mobile phones. For a cell area of the device there is usually a BTS (Base Transceiver Station). Now the people in the world have a mobile phone, but the people who live in remote areas still poorly understood about how to using it. Therefore, OpenBTS is needed for people who do not get the services local mobile operators, as well as in areas of natural disasters. In addition, this OpenBTS it is good to know as a new technology in education.

In this final project implemented OpenBTS using hardware USRP (Universal Software Radio Peripheral) and transceiver antenna for transmitting radio signals at frequencies of GSM 900 MHz. OpenBTS is connected to a VoIP service. All software in this OpenBTS using Linux as operating system, the software is GNU Radio to control the USRP, OpenBTS to control the BTS operation, and the Asterisk telephone exchange as server on a VoIP service. Analysis of these implementations using TEMS Investigation Software for analysis and transmission in OpenBTS Software Wireshark to measure the QoS in VoIP services connected with OpenBTS.

From scenario testing that performed for the measurement of OpenBTS and also QoS from VoIP service, look no significant difference between the communication relationship between MS OpenBTS, OpenBTS to the VoIP client, and between a VoIP client, This is done because all signaling that the user uses the same signaling protocol called SIP. The measurement results from QoS show that the VoIP networks that are connected to OpenBTS meet QoS VoIP ITU-T standard. Meanwhile, according to standard MOS VoIP, OpenBTS has pretty good sound quality up to a radius of 20 meters with a given value of MOS on average 2.5.

Key Word : *OpenBTS, Asterisk, USRP, VoIP*