

ABSTRACT

OpenBTS is a package of software modules which there are modules to make infrastructure changes in the standard GSM network with the infrastructure of base stations upward. OpenBTS is still very rarely used by telecommunication operators in Indonesia. In fact, in its implementation, OpenBTS costs only 15-25 million rupiah for a power of 100mW and coupled with the cost ranging amplifier worth 10 million rupiah. The number of experiments that still fail in this OpenBTS system becomes a major obstacle to the implementation of this technology. The implementation has not led to a mini PC as a server so as to encourage the writer to try OpenBTS system implementation in mini pc.

This final project is trying to implement OpenBTS that use Beaglebone Black as a OpenBTS server. This experiment was done to see how the system is running on the mini pc as OpenBTS server. USRP (Universal Serial Radio Peripheral) that is used is USRP B210 that is connected directly to USB port on the mini pc, with UHD (USRP Hardware Driver) as a software driver.

Testing of the system is done in two parts, VoIP and OpenBTS system testing. The results obtained in testing VoIP system, the throughput obtained 0.171 Mbit / s, with an average delay of 0.01 seconds and 1.621 ms jitter. VoIP testing performed 10 times with a laptop and an IP Phone as a clients. For testing OpenBTS system, it has already detected signal OpenBTS created in the system using OpenBTS 2.8. However, for testing Rx and Tx gain still can not be done because the handset can not lock the GSM network signal. OpenBTS system is already running but experienced problems in connection to the handset transceiver so that said not successful.

Keywords: OpenBTS, USRP, GNU Radio, VoIP, Asterisk, Delay, Jitter, Throughput.