

ABSTRACT

Mobile technology plays vital role for users in remote areas or areas that experienced natural disasters such as floods. They still need cellular service, while the cellular network provided by the service died because of the absence of electrical energy . To serve the disaster areas and remote areas with cellular technology, implementing of OpenBTS is suited to maintain economic development and education in remote areas as well as the distribution of aid in the disaster area can be run optimally. OpenBTS technology chosen because investment cost is relatively much cheaper than conventional base stations. OpenBTS is a GSM mini-BTS (Base Transceiver Station Global System Mobile) based open source software that is possible to receive and make calls without using an existing network service provider.

At this final assignment to design a rural mobile telecommunications system using OpenBTS in Dayeuhkolot village along Citarum river. As a parameter, this scheme takes into account the number of potential users (user forecast), Cell Dimensioning (coverage), maximum emittance power of USRP and the radio link budget. Okumura-Hata for GSM frequency bands 900 MHz is used for Propagation model and . Simulation of the design using software Atoll.

The results obtained from this design are the number of cells needed for high-rate condition are 61 cell, for low-rate condition required 32 cells using single USRP Trx, which has a radius of cells ranged from 39.662 to 100.303 meters for high-rate conditions, from 56.02 to 115.82 meters for low-rate conditions. Maximum Allowable Path Loss (MAPL) value obtained at 98.924 dB and it fit standard service availability at the cell edge, which is 75%. Large maximum base station transmits power of 20,781dBm obtained under conditions of high-rate, 22.98 dBm at *Low-Rate* conditions, for a system that has created. And obtained an average value of RSL on Low-rate condition is -64,31 dBm. In the high-rate conditions obtained an average value of RSL is -69,34 dBm. At Coverage Planning without considering the capacity obtained, my system requires an additional signal booster amplifier 25.42 dB. And my system is much cheaper than conventional base stations.

Key words : *Open BTS, BTS, GSM, Link Budget, Coverage, User Forecast, Atoll, Receive Signal Level*