

ABSTRACT

Not all regions in Indonesia can experience the internet, especially in Cipanganten village. Cipanganten Village is a village that is far from the center of the crowd and it is quite difficult to get internet access. In Cipanganten village there is an elementary school and an Integrated Service Post (Posyandu), and the majority of Cipanganten villagers work as cultivators and sell field produce. With internet access in Cipanganten village, teaching and learning activities at elementary schools, health activities at Posyandu, and local community economic activities will be made easier..

The method used in this design is signal quality measurement, optical design and cellular design. First, a location survey was carried out and signal quality testing was carried out using the Net Monitor application. From the measurement results, data was obtained indicating that the Cipanganten village location had poor signal quality which indicated that the design could be carried out. Then an optical design is carried out to calculate the attenuation value and the optical devices needed in this design. Optical design is carried out with the help of an optical design simulator and Google Earth. After the optical design is carried out, cellular design is carried out which aims to design the BTS construction and calculate the signal strength and quality obtained from this design. This cellular design is done with the help of a signal design simulator.

The results of this design, the standard total attenuation value is 44.35 dB and the simulation results using optisystem, the total attenuation value is 61.028 dB. The condition of the network is not according to specifications because the total attenuation value of the measurement results is greater than the total attenuation that has been calculated previously. On cellular, a reference signal received power and a reference signal received quality are calculated to determine the quality and signal strength received by the user. From the simulation, the average received reference signal quality is 15.71 dB, meaning that it has very good signal quality and the received power is -94.89 dBm, which means it is still quite sufficient but it is possible to experience a decrease in performance when the reference value is signal received power is close to -100 dBm.

Keywords: BTS, Optik, Cellular.