

## ABSTRACT

Today, District of Sumedang is one area that requires large-capacity data communication services with characteristics of a hilly area. Within fulfilling customer demand, the telecommunication service provider in this case PT. Telkom should respond as quickly as possible on the basis of customer value while considering the time and cost efficiency in network implementation. And in this case, the implementation of wireless technology has more value when if it is compared with wired technology implementations.

Therefore, a wireless technology that is WiMAX (Worldwide Interoperability for Microwave Access) is selected as the media access to cover the area because it can provide broadband communication services with wide coverage, has the ability to implement QoS, Line of Sight (LOS) and non Line of Sight (NLOS). In this Final Project, performed designing WiMAX 802.16d network about coverage (meters) and capacity (Mbps) for District Sumedang. Propagation model used are ECC-33 propagation model and Erceg propagation model, for further propagation models compared to determine which one is better represents the real condition of WiMAX 802.16d in this suburban area. The parameters The parameters studied include pathloss (dB), the cell radius (meter), the capacity of base station (Mbps), and the receive signal level (dBm).

The results of the designing of WiMAX 802.16d network that has been performed, obtained by using ECC-33 model propagation in accordance with the environmental conditions in the suburban of District Sumedang. With bandwidth channel of 3,5 MHz is used, the maximum base station capacity is 8,12 Mbps at the best modulation is 64 QAM 3/4 with a maximum radius as far as 900 meters, and the minimum base station capacity is 0,9 Mbps at the lowest modulation is BPSK 1/2 with maximum radius as far as 3000 meters. This is because the consequences between coverage and capacity, which is to obtain a large capacity will be reduc the coverage and vice versa.

Keyword : network design, WiMAX 802.16d, coverage, and capacity.