

## **Abstract**

WiMAX is a new technology being used to overcome the weakness on existing Wi-Fi technology. It can provide high speed data services through 120 Mbps with maximum cell radius around 40 – 50 km. WiMAX using IEEE 802.16a standard and IEEE 802.16d for fixed wireless, IEEE 802.16e for mobile wireless. After a short trial period and certification session, WiMAX technology could be implemented in Indonesian around 2006.

Frequencies used in implementation for fixed wireless are between 10 to 66 GHz with LOS condition prerequisite and between 2 to 11 GHz for NLOS condition. Two allocation frequencies that used for Asia Pacific region (Indonesian included) are 5.8 GHz band frequency commonly unlicensed and 3.5 GHz band frequency must be licensed. In the the NLOS condition, there are a few problems at the transmitted signals, i.e reflections, scattering, diffractions, etc. Solutions than can be implemented for that problems are using adaptive modulation, OFDM technology and sub channelization, directional antenna, power control, etc. All solutions do for increasing received signal quality (QoS) and BER.

In this final project will be explained about adaptive modulation technique that used in WiMAX. Focused in each modulation technique performances depend on frequency allocation that used, region modeling, attenuation, and fading that effecting link reliability and QoS.

The expected result from WiMAX adaptive modulation in the WMAN is getting optimum modulation characteristic for WiMAX network with area topology in Indonesian. Optimum parameters are cell coverage, cell capacity, BER, QoS, and budget. This final project expected can be a reference for WiMAX implementation in Indonesian.

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