ABSTRACT

The information technology with High speed access also known as Broadband Wireless Access (BWA) are becoming research topic in Various country. WiMAX IEEE 802.16 are the future candidate for the BWA services. This technology have to be able to give high speed data services, guarantied Qos, reliable onto the fading environment, and so on. the standard technology from this family are the IEEE 802.16 (LOS communications), IEEE 802.16a (NLOS communications), IEEE 802.16d (the development From a, not mobility support yet), IEEE 802.16e (Already support mobility), etc.

This research are focused to WiMAX IEEE 802.16e. One of the disadvantage from this standard is some asymmetric coverage between subscriber station (SS) and Base transceiver Station (BTS) due to the limit of power from SS. Beside that, will be doing research about increasing bandwidth efficiency .

One of ways of overcome asymmetric coverage are the implementation of sub-channelization on the SS side (up-link). This tehqnique will be concentration of power for certain sub-channel, so hopefully coverage are remain symmetrical. The mechanism of adaptive number sub-carrier based on fading characteristic are the topic of this research. The technique to increase bandwidth efficiency are with implementation of

adaptive modulation which able to work following the fading characteristic. The similarity of both technique are to be able to worked in fading environment, so integration of sub-channelization and adaptive modulation technique are very possible to be done.

The scope of this reaserch are integration of the sub-channelization and adaptive modulations technique for the standard IEEE 802.16e. This research are expect to give solutions the asymmetric coverage problem and increase of bandwidth efficiency.

Key word: Broadband wireless access, WiMAX IEEE 802.16e, Asymmetric coverage, spectral efficiency, Adaptive modulations, Sub-channelization.