

ABSTRACT

The demand for a global system that supports interactive multimedia services with high speed data has give birth to the new technology of Broadband Wireless Access (BWA), which is known as Worldwide Interoperability for Microwave Access (WiMAX) IEEE 802.16. Broadband, multi-carrier, Software Defined Radio (SDR) mobile wireless network infrastructure is directly applicable to the emerging WiMAX 802.16 technology, particularly the 802.16e mobile high-speed data requirements.

Modulation scheme detection is one of SDR early important function, because receiver used for this kind of system should be able to select a correct demodulation scheme for various signals with unknown modulation scheme. Modulation scheme detection algorithm that used in this research is a combination between statistic method and K-Means clustering algorithm.

The research results three combination of statistical parameters that give the best performance, γ_{max} , σ_{aa} and σ_{dp} ; γ_{max} and σ_{aa} ; and γ_{max} and σ_{dp} . This three combination parameters have ability to detect QPSK modulation without error since SNR 0 dB, while minimum SNR required for modulation scheme 16 QAM and 64 QAM is about 10-14 dB. For simulation that has been done at SNR 0-50 dB, the percentages of acuration are 100% for QPSK modulation detection, and $\pm 80\%$ for 16 QAM and 64 QAM modulation detection.

Key word: Modulation Scheme Detection, WiMAX IEEE 802.16e, Statistical Method, K-means Clustering Algorithm.