ABSTRACT

Software Defined Radio (SDR) provides radio communication technology which is very important to adequate need of next generation of wireless technology. By more implementing function in software than approaching of hardware traditionally, will give more flexibility to radio system. This flexibility offers potensial solution for interoperability, more dynamic and flexible network, able to support different frequency, modulation type and bandwidth

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 on features extraction part and the K-Means clustering algorithm and tree diagram on decision part.

The research results show that K-means clustering algorithm have better performance than tree diagram. Combination of statistical parameters that give the best performance on K-means clustering algorithm are ?$_{max}$ and σ_{aa} , and ?$_{max}$, σ_{aa}, and σ_{dp} This two combination parameters have ability to detect QPSK modulation without error since SNR 0 dB, while minimum SNR required for modulation scheme16 QAM and 64 QAM is about 7-8 dB. On tree diagram method Combination of statistical parameters that give the best performance are σ^2_{aa} and σ^2_{da}. This combination have ability to detect QPSK and 16QAM modulation without error since SNR 0 dB, while minimum SNR required for modulation scheme1 64 QAM is about 7dB

Key word: Modulation Scheme Detection, Software Defined Radio, Statistical Method, Tree Diagram, K-means Clustering Algorithm.