

## ABSTRACT

In recent years, wireless communications technology has grown rapidly and attracted the attention of the telecommunications industry, especially in the field of Orthogonal Frequency Division Multiplexing (OFDM). The identification of transmitted multicarrier signals using different modulation schemes and parameters makes OFDM impact the development of the Software Defined Radio (SDR) system transmission efficiency. One of solution to overcome this problem is the application of Automatic Modulation Classification (AMC). Even AMC can be used while transmitter does not add any additional information that aims to recognize modulation scheme on OFDM signal. There is another method of using AMC, which is classifying OFDM signals in the Cooperative Communication scheme. It uses the way some signal receivers separately execute the AMC algorithm by combining classification decisions.

In this final assignment, the application of Automatic Modulation Classification to OFDM signal uses Order Moment statistical characteristics, Tree diagrams classification and Decision Fusion on Cooperative Communication scheme. OFDM signal uses several modulation type are QPSK, 16 QAM and 64 QAM. OFDM signal simulation over the Multipath fading channel with standard LTE channel model Advanced release 12 Extended Typical Urban and Additive White Gaussian Noise (AWGN) for SNR variation of 0 dB to 30 dB.

The result shows the extraction of the Order Moment statistics selected to separate the different modulations at order 7 and 13. The accuracy of the QPSK modulation classification is 100%, the minimum accuracy of the 16 QAM classification is 77% and the minimum accuracy of 64 QAM classification is 99%. The average classification accuracy of QPSK modulation, 16 QAM and 64 minimum QAM is 92.333% at SNR 0 dB.

**Keywords:** OFDM, *Cooperative Communication*, *Automatic Modulation Classification*, *Statistical characteristic*, *Decision Fusion*, QPSK, 16 QAM, and 64 QAM.