

Abstract

Software Defined Radio (SDR) brings the next communication radio technology and plays some important roles in BWA (Broadband Wireless Access) system development. By applying software function better than traditional hardware which is formerly used, radio technology offers potential solution for interoperability, reducing operational cost, flexibility and dynamically network. SDR also support system with different frequencies, modulation types and bandwidths.

Modulation schemes detection are preliminary function on Software Defined Radio (SDR). Next, receiver on Software Defined Radio (SDR) system is able to choose the best demodulation schemes for various signals with unknown modulation schemes. The algorithm of digital modulations scheme's detection used in this project is combined between Complex Shannon Wavelet Transformation and Statistical Method of feature extraction. Uses Support Vector Machine (SVM), that in many application become as state of the art in pattern recognition. QPSK, 16QAM and 64QAM are modulated digital signal which going to be detected.

The research show that $f_c = 3.8$ Hz and $f_b = 2.4$ Hz as Complex Shannon Wavelet Transformation Method's inputs produce the best complex envelope and theoretic decision's performance using Support Vector Machine (SVM). The result is classification type of digital modulation that divided each class. This system has precision 89,227 % using One Against All in SVM.

Keywords: Modulation Scheme detection, Software Defined Radio, Complex Shannon Wavelet Transformation, Statistical Method, Theoretic Decision (Tree Diagram), Optimum Threshold.