

ABSTRACT

The development of wireless technology is growing at an alarming rate inversely proportional to the availability of resources in the form of allocation of sufficient frequency spectrum. Frequency spectrum is used as a means of data transmission has not been effective and efficient. Therefore, cognitive radio technology developed with spectrum sensing function to detect unused spectrum can then be used for other users to be more efficient and effective. Sensing algorithm such that there is a matched filter and the energy detector.

The persistence of the shortcomings inherent in the energy detector, which is very sensitive to the uncertainty of noise power, it established a new method based on Covariance Matrix of the received signal. Covariance Matrices signal and noise are generally different. Thus, these differences exploited in the proposed method to distinguish the signal components of the background noise. Obtained sensing method is not sensitive to the uncertainty of the expected noise power.

In this final project analysis on cognitive radio spectrum sensing method Covariance Matrix Signal and Energy Detector. Signal generated by space time block coding (STBC) as the primary signal user (PU) randomly generated and transmitted through the channel geometrically-Based Single Bounce (GBSB). After that, the detection is done using two methods. The simulation results show the weakness of Energy Detector and Signal Covariance Matrix advantage when the noise power is not fixed, or to experience the uncertainty of noise (noise uncertain)

Keywords : *Cognitive Radio*, Energy Detector, GBSB, *Spectrum Sensing*, STBC, Signal Covariance Matrices.