

## ABSTRACT

*Cognitive radio is one of novel solution to overcome the underutilization of frequency spectrum. In cognitive radio networks, secondary users (SU) are allowed to access the frequency band when it is not being used by primary users (PU). In order to avoid interference, secondary users needs to know that the frequency band is being used or not. This process called spectrum sensing.*

*In this final project, we compare two methods between double threshold based detector and single based detector based on maximum-minimum eigenvalue (MME) algorithm. These methods based on the eigenvalues of covariance matrix of the received signals and use the ratio of the maximum eigenvalue to minimum eigenvalue as test statistics. The compared parameters in this simulation are probability of detection and achievable throughput.*

*The result of this simulation showed that double threshold based detector has higher detection probability than single threshold based detector, tests are performed on various SNR and number of sample. Furthermore, double threshold based detector has higher maximum achievable throughput than single threshold based detector and it requires less sensing time or number of sample to achieve maximum throughput.*

**Keywords :** *cognitive radio; spectrum sensing; eigenvalue; double threshold;*