

5.1 Conclusion

As the demand of radio spectrum increased in the past few years and the licensed bands are used inefficiently, improvement in the existing spectrum access policy is expected. Dynamic spectrum access is imagine to resolve the spectrum shortage by allowing unlicensed users to dynamically utilize spectrum holes across the licensed spectrum on noninterfering basis.

This research work was aimed towards the detection of primary user's waveform in cognitive radio networks usingenergy detection and matched filter detection spectrum sensing techniques.

In this thesisMATLAB program was used to simulate the spectrum sensing techniques: energy detection and matched filter. Different scenarios were carried out to show how the two spectrum sensing techniques operate under different signal to noise ratio. In each scenario two cases were considered; Case1, where the primary user is using the channel. Case 2, where the channel is a spectrum hole. The results showed that the energy detection algorithm work properly for SNR greater than -60 dB whilethe matched filter algorithm work properly for SNR only greater than 10dB.The performance of these spectrum sensing techniques was limited due to the uncertainty in the noise level.

5.2Recommendation

Here are some recommendations that can improve the performance of the cognitive radio:

- In this thesis the simulated cognitive radio environment used energy detection and matched filter detection as sensing techniques, it is

advisable to use the other sensing techniques and compare their performance.

- The simulated cognitive radio environment ignored the problems that the cognitive radio suffers from such as multipath fading, shadowing effect and hidden node problem. It is recommended that these problems should be added into the cognitive radio environment.