CHAPTER – VI
CONCLUSION AND FUTURE SCOPE

6.1 Conclusion

D2D communications are novel and next generation networks which can facilitate high data transmission rates with the help of direct link between two User Equipment. Though D2D communications are playing a vital role in delivering the high data transmission rates, the recent experiences have revealed that D2D also have data transmission problems, high power consumption, resource management constraints when high data rates are recorded in the communication. The UEs in D2D communications are from public. The devices used in D2D communications are not trustworthy. Hence the external attacks namely DoS attacks, Cross Layer attacks etc. are experienced by D2D communications. To attain high data rates, power control, resource management and safe and secure transmission in D2D communications, the research work has implemented three stage project implementation. In D2D communication smart mobile devices are used. Higher modulation schemes have been suggested with the help of 16QAM 64 QAM modulation schemes for D2D communication. In this research work the high modulation schemes are identified with 64 QAM modulation to achieve the lowest BER in data transmission in D2D communications. It is revealed that the higher modulation schemes deliver higher bit rate at receiver. To use higher modulation for data transmission the power control is essential. If the higher modulations are applied it may go beyond the receiver and lead to interference. To avoid interference with higher power utilization and use appropriate power for attaining desired modulation schemes the power control mechanism is needed to be incorporated. The power control mechanism is essential
with resource management for D2D communications. To provide the security, hybrid crypto systems have been suggested with the combination of Huffman coding and Binary coding. A Hybrid encryption algorithm is developed to prevent the external attacks. The results are evaluated in three stages. Every stage results proved and matched with the goals and objectives of the research work. To demonstrate the results a prototyping simulation environment is created with the help of different software technologies.

6.2 Future Scope

D2D communication is predominant for 5G networks. D2D LTE-A are developed to support 5G wireless networks. 5G is the next generation network communications. The implications and complications are not known. Once 5G is introduced the problems can be revealed. Based on the problems, admeasures can be suggested. The efficiency is not known properly for 5G networks. As soon as the next generation networks are used for D2D networks then the efficiency improvement concepts can be developed. Applications of 5G D2D communications which requires significant amount of research work to take these applications to industry standards are:

6.2.1 Local Service

In local service, user data can be directly transmitted between terminals and does not route through the network side. Local service is typically used for social apps. Social apps based on the proximity feature are a basic D2D application. With the D2D discovery and communication functions, a user can find other nearby users and share data or play games with them.

6.2.2 Emergency Communication

When natural disasters such as earthquakes occur, traditional communication network infrastructure can get damaged and the network may even collapse. This greatly
hampers rescue efforts. This problem can be solved by introducing D2D communication

6.2.3 IoT Enhancement

A typical application of D2D-based IoT enhancement is vehicle-to-vehicle (V2V) communication in the Internet of Vehicles (IoV) can be explored. When running at high speeds, a vehicle can warn nearby vehicles in D2D mode before it changes lanes or slows down. The next generation networks can pave the way for coming generation and sophisticated solutions. The future scope of the research work is predominant and exciting.