CHAPTER FIVE
Conclusion and Recommendations

5.1 Conclusion

MIMO technology is being incorporated into wireless systems to increase capacity and distance. In this work the ability of MIMO to increase distance for a given system capacity has been examined. It is shown that significant coverage increase can be achieved by MIMO systems with relatively small numbers of antennas (2×2, 3×3 and 4×4 the examples presented). It should be noted that SIMO, while clearly inferior to MIMO, capture a significant part of the range improvement of MIMO. It's shown that when operating at a capacity of 1 bits/sec/Hz we have ranges of 3700 meters, 4600 meters , 5200 meters and 5600 meters respectively, for SISO, 2 × 2 MIMO, 3 × 3 MIMO and 4 × 4 MIMO.

The analysis presented in this work is based entirely on the theoretical capacity equation (3.13), and does not take into account the inevitable implementation losses in MIMO systems. These include issues such as capacity loss due to channel estimation. These implementation losses may reduce significantly the range increase of MIMO systems from the values predicted using equation (3.13).

5.2 Recommendations

The proposed method to increase distance in this work focus in MIMO technology, another approach that can be used is the enhancements in PHY/MAC layer in 802.11n standard such as Frame Aggregation and Guard Interval.