

## ABSTRACT

That can be predicted if traffic for mobile communication system will growth rapidly. It caused by the increasing number of user and services in high bit rate data. In cellular communication system, the increasing of capacity can be gain from decreasing co-channel interference.

The technology of adaptive antenna for mobile communications has receive enormous interest in recent years. Adaptive antenna is the most promising technique to increase capacity of cellular system. General definition of adaptive antenna is antenna with dynamic radiation pattenen.

The objective of this final assignment is to study the capacity gain on GSM using adaptive antenna on base station. When the cluster size decrease, for example from 7 to 4, to achieve capacity gain, co-channel interference will increasing. It is impossible to implemented since no technique to control co-channel interference applied. Adaptive antenna used to decrease the increasing of co-channel interference. Beside the capacity gain, the performance like outage probability, dropping probability and number of channel reassignment request equal with system performance using larger cluster size desired.

Overall, system using adaptive antenna and decreasing cluster size better than reference system with cluster size  $N = 7$  and 3 sectoring. By the capacity gain up to 400 % it have equal performance with reference system due to outage probability.

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