1. A certain city has an area of square miles and is covered by a cellular system using a seven-cell reuse pattern. Each cell has a radius of four miles and the city is allocated of spectrum with a full duplex channel bandwidth of . Assume a GoS of for an Erlang B system is specified. If the offered traffic per user is Erlangs, compute (a) the number of cells in the service area, (b) the number of channels per cell, (c) traffic intensity of each cell, (d) the maximum carried traffic, (e) the total number of users that can be served for GoS, (f) the number of mobiles per unique channel (where it is understood that channels are reused), and (g) the theoretical maximum number of users that could be served at one time by the system.
2. An urban area has a population of two million residents. Two competing trunked mobile networks (systems A, B) provide cellular service in this area. Systems A has cells with channels each, systems B has cells with channels each. Find the number of users that can be supported at blocking if each user averages two calls per hour at an average call duration of 2 minutes. Assuming that all trunked systems are operated at maximum capacity, compute the percentage market penetration of each cellular provider. Also calculate the total percentage of market penetration of the three systems.
3. Draw and Describe UMTS System Architecture
4. Draw and describe Subscriber Station of OFDMA Based WiMAX Network