

ABSTRACT

CDMA WIRELESS NETWORK PLANNING

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This project describes three fundamental concepts of CDMA, Wireless Network & Planning. It starts with the basic idea of Wireless system layout, fundamentals & the operation of cellular system. Layout of cellular communications system deals in depth study of cellular systems. Multiple access techniques are used to define various techniques used in cellular systems & also channelization defines the channeling techniques used in the system.

After the basic idea of communication system it then deals with the concept of RF planning & what are the various stages involved in RF planning & design & also what are the factors for RF planning. There are various considerations like Antenna systems which includes Basic Antenna parameters, Antenna Gain and different types of antennas. After that we talk about RF Propagation which includes, Free space propagation, Propagation & Obstruction, Different types of Propagation modes and Multi-path effects.

Frequency planning draws the idea of Interference vs Noise, Reuse efficiency & interference. Traffic planning conceptualize basic traffic units, grade of service, offered & carried traffic & difference between loss systems vs delayed systems. Optimization and Quality of service in wireless networks discuss about various factors for the optimization of network like Access failures, dropped calls & blocked calls. It also talks about coverage holes, degraded call quality, excessive handoff & various optimization techniques that are required to overcome those problems.

Finally we describe a model which consists describe the factors influencing QoS in next generation networks by using OPNET as a simulation tool. Next generation networks (NGN's) handle a wide variety of traffic types that compete for resources. As a result, there is a lot of

interest in modeling Quality of Service (QoS) in NGN's, both wire line and wireless. QoS in these networks depends on a number of factors such as traffic utilization level, source traffic profile, and scheduling and shaping mechanisms. The present work investigates some of these issues by making use of OPNET simulations of both General Packet Radio Service (GPRS) and next generation wire line networks. GPRS server nodes are built by modifying IP Routers from OPNET library, based on appropriate GPRS Core Network standards. The base station and GPRS terminal models available in the contributed OPNET model library are used with QoS capabilities added. The network was simulated using existing OPNET models of workstations and IP routers.