

CDMA Network Planning

This two-day course presents the network planning principles applicable to modern wireless RF systems and a thorough yet easy-to-follow introduction to CDMA and CDMA2000 network planning with its unique RF considerations. The course is an effective pathway for engineers and technical personnel from other backgrounds or technologies who want to come up to speed quickly in CDMA network planning and RF engineering.

This two day course is for anyone involved in the network deployment process that needs to learn about network planning principles as applied to CDMA networks.

At conclusion, participants should be familiar with the key principles of signal physics and interference principles, RF propagation in the wireless environment, antennas for wireless systems, traffic engineering and wireless capacity considerations, as well as the key operational and design issues of CDMA systems.

Network planning course will give the technical professional the required knowledge and background to perform RF network planning activities for a CDMA network. The course is intended for those individuals familiar with the CDMA Air Interface Standard, either IS-95 or cdma2000, but desiring to understand the basic concepts behind planning a CDMA and CDMA2000 1x network.

Who Should Attend

Engineers and Technicians responsible for designing, maintaining, monitoring, and/or optimizing performance of CDMA systems

Objectives

After successful completion of this course, attendees will have a good technical understanding of:

- CDMA and CDMA2000 Network Planning Principles
- Link Budgets
- Propagation Models
- Traffic Modeling
- CDMA Traffic Engineering
- Network considerations
- Initial Planning
- Tools Overview
- PN Planning
- Input Parameters
- Spectrum Planning
- Handoff Planning
- Site Selection Criteria

- Summary and Conclusion

Outline

Wireless Industry Background:

- Technologies and Current Deployment
- Signal Principles
- Modulation, Bandwidth, Interference, Performance
- Multiple Access Methods and Comparative Capacities
- Wireless System Architectures CDMA RF Propagation Principles
- Physics and Propagation Mechanisms
- Propagation Models and Link Budgets
- Practical System Design Considerations: Margins, Penetration
- Propagation Prediction Tools and Measurement Tools

Antennas for Wireless Systems

- Antenna types, composition and operational principles
- Antenna gains, patterns, and selection principles
- Other RF devices used in transmission systems
- Antenna system testing

CDMA Traffic Engineering

- Terms, Principles and Units of Measurement
- Special considerations for wireless systems

CDMA Air Interface Overview

- CDMA Spread-Spectrum Basics and Signal RF Characteristics
- CDMA Spreading Sequences and Code Channels, forward and reverse links
- How it all works: decoding individual CDMA signals
- Capacity Implications of the Air Interface

Basic CDMA and CDMA2000 Network Architecture and Hardware Capacity Implications Basic CDMA Handset Architecture Key CDMA Performance Parameters and their Significance

- E_c/I_o , FER, E_b/N_o , Receive Power, Transmit Power, Transmit Gain Adjust

Call Processing from Perspective of the Subscriber Handset

- RF Section, Digital Section, Correlators (rake fingers)
- Operation of the Pilot Searcher
- Operational States, from wakeup through end of a call

CDMA Handoffs

- CDMA Pilot Sets, number of members, promotion and demotion
- Handoff Parameters, Handoff Messaging
- How phone limitations and propagation delays affect handoff processing
- Hard handoff and inter-network considerations

Introduction to CDMA Layer 3 Messaging System Traffic Engineering and Design System Growth Management CDMA call processing events playback