3G RF Planning & Optimization (2 days)

3G

Designing a UMTS cellular system with both Macrocellular and Microcellular networks is a delicate balancing exercise. The goal is to achieve optimum use of resources and maximum revenue potential whilst maintaining a high level of system quality. This course provides a good understanding of UMTS concepts, UMTS planning process & Optimization details. A good knowledge of telecommunication & GSM/UMTS technology would be beneficial for anyone attending this course.

Who Should Attend

This is advanced level course and suitable for telecom professionals including design, testing , support & sales engineers requiring good RF planning & optimization knowledge.

Objective

After completing this course, the audience will be able to:

- Understand UMTS architecture & concept
- Describe RF wave & antenna properties
- Define RF planning process
- Explain optimization

Course Contents

UMTS Overview

UMTS Air Interface

- Physical Radio channel
- Spreading
- OVSF code generation
- Scrambling codes
- UL/DL Physical Channels
- Physical Layer Procedures
- RLC/MAC/RRC

UTRAN Architecture & Functions

UTRAN Iu/Iur/Iub Interfaces

RF Wave Propagation

- Coverge Area
- Propagation Environnent
- Propagation Models
- Wave Propagation Effects
- Multipath, Fading
- Diversity

Antenna Operations Fundamentals

- Radio Link
- Antenna Types
- Radiation Pattern
- Antenna Gain / Antenna Characteristics

3G RF Planning overview

- Differences compared to 2G
- Air Interface WCDMA Vs GSM
- Service Classes in UMTS
- Planning Vs Optimization

WCDMA & UTRAN concepts

- Frequency Allocation
- Spreading
- Radio resource management
- Power Control Objectives
- Power Control
- Handover control
- Handover in network planning
- Congestion and Admission Control
- Packet Scheduler

3G RF Planning Process

- High level objectives for Planning
- Radio Network Planning Process
- Pre-planning Phase
- Traffic dimensioning
- WCDMA Link Budget
- Code & frequency planning
- Planning Antenna Height
- Planning Antenna tilt
- Transmission powers
- Pilot pollution
- Neighbor cell relations

3G Optimization process

- WCDMA Radio Network Optimization
- SHO optimization
- Packet Scheduling Optimization
- Power & Admission Control
- Tools For Planning Optimization & Data Post Processing

Drive Testing

- Drive Test Plan
- Drive Test Procedure
- Drive Testing and Analysis
- Drive Test Equipment