

LTE/LTE-Advanced Radio Planning

Course Number: LTE4400-01EN | Duration: 3 Days

Target Audience

- Network Planning/Performance Engineering Staff
- System Test/IOT Test Engineers and Optimisation Personnel

Prerequisites

- LTE/LTE-Advanced Overview (LTE4000-01EN) and LTE/LTE-Advanced Air Interface (LTE4200) or Equivalent Knowledge

Learning Objectives

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

- Name the fundamental approach to design the LTE radio network.
- Evaluate radio propagation and related phenomena.
- Understand the concept of coverage analysis by means of link budget and planning tools.
- Analyse capacity and dimensioning related aspects.
- State initial parameter tuning steps.
- Recall inter-frequency and inter-RAT related topics.
- Understand specific aspects of indoor and in-house deployment.

Course Outline

1. Introduction
 - 1.1 Generic Network Design
 - 1.2 Greenfield Approach
 - 1.3 Re-use of Existing Grids
2. Radio Propagation
 - 2.1 Fundamentals
 - 2.2 Pathloss Models
 - 2.3 Antenna Aspects
 - 2.4 Fading and Shadowing
 - 2.5 Indoor
3. Coverage Analysis
 - 3.1 UL/DL Link Budget and MAPL
 - 3.2 Cell Range Estimation
 - 3.3 Tool-supported Coverage Planning
4. Capacity Analysis
 - 4.1 Peak Data Rate vs. Practical T-Put
 - 4.2 Spectral Efficiency
 - 4.3 Capacity Estimation by Means of SINR, CQI, MCS
 - 4.4 Multi Antenna Deployment
 - 4.5 Capacity Enhancing Features
 - 4.6 Simulation Tools
5. Traffic Modeling
 - 5.1 QoS-Aspects
 - 5.2 Time Variations
 - 5.3 Spatial Distribution
 - 5.4 Traffic Simulation
 - 5.5 Traffic Forecasting
6. Dimensioning
 - 6.1 Coverage Requirements
 - 6.2 Capacity Based Approach
 - 6.3 Verification and Related KPI
7. Initial Parameter Settings
 - 7.1 PCI
 - 7.2 DMRS
 - 7.3 PRACH/RACH
 - 7.4 PUCCH
8. Inter-Frequency and Inter-RAT
 - 8.1 RF Considerations
 - 8.2 Load Aspects
 - 8.3 Idle Mode Mobility
 - 8.4 Connected Mode Mobility
9. Indoor/In-house Planning
 - 9.1 Indoor Propagation Models
 - 9.2 Additional Losses
 - 9.3 Coverage Calculation
 - 9.4 Capacity Estimation
 - 9.5 In-house Deployments