Course ID	Course Title
LTE-OPT	**LTE Optimization**

Course Duration
4 days

Related Courses

- LTE Network Planning (LTE-NPC, 5 days)
- LTE RF Network Design (LTEWK, 5 days)
- 4G LTE: Next Generation Mobile Networks (LTE4, 4 days)
- HSDPA (HSDPA, 2 days)
- HSUPA (HSUPA, 2 days)

Aimed At

Technical personnel with a good LTE background who wish to enhance their understanding of LTE performance and optimization techniques.

Group Size

5-25

Prerequisites

- LTE/SAE Technology (LTE-TECH, 3 days)
- LTE Air Interface Techniques (LTEAI, 4 days)
- LTE Signaling (LTESIG, 3 days)
- LTE Functionality (LTE-FU, 4 days)
- UMTS-FDD (UMTS-FDD, 3 days)

The UMTS course, or equivalent knowledge/experience, is a required prerequisite for this course. LTE overview is a recommended prerequisite but not required.

Course in a Nutshell

This course undertakes an in-depth study of the LTE performance and optimization procedures. We begin with a review of the physical air interface and LTE eNodeB KPI's. The LTE accessibility KPI's, including a review of the 3GPP functionality procedures regarding accessibility, are studied next. This is followed by a discussion of the retainability KPI's and handover overview. The course ends with an examination of the integrity KPI's concerning throughput and delay, coordinated with appropriate cell planning tuning and optimization.

Customize It!

- If some of your participants lack the necessary WCDMA/LTE background, we can teach an extended five-day course that includes WCDMA principles, LTE overview, and LTE air interface techniques.
- Add a workshop day at the end of the course, for a total of five days, for a deeper dive into capacity planning optimization and cell coverage corrections/optimization.

- Introduction to LTE/SAE

    o Evolution of wireless networks
    o 3GPP releases to date
    o EPS (E-UTRAN and EPC) logical architecture
    o EPS interfaces
    o EPC (Evolved Packet Core) architecture
    o SAE/LTE interfaces

- Physical Layer Procedures

    o Synchronization procedures
    o Timing synchronization
    o Radio link monitoring
    o Intercell synchronization
    o Power control: Uplink/downlink
    o Random access procedures: Preample selection
    o Channel quality: Channel Quality Indication (CQI) Report
    o Precoding Matrix Indicators (PMI)
    o Rank Indicator (RI)
    o LTE eNodeB performance KPI's
    o Parameter optimizing and procedures revising
    o *Case studies: Analyzing optimization problems*

- LTE Functionality Review

    o Idle mode overview
    o Cell selection process: Criteria; normally camping
    o Cell reselection evaluation process
    o System information
    o RRC connection establishment procedure
    o RRC/NAS security procedures
    o RRC/NAS E_RAB establishment procedure
    o LTE accessibility KPI's
    o Scheduler and cell planning correlation
    o Cell planning review for accessibility optimization
    o Parameter tuning
    o *Case studies: Analyzing optimization problems*

- LTE Mobility Functionality Review

    o LTE measurements and events
    o Event triggered handovers
    o Event triggered Release with Redirect
    o Event triggered cell reselection
    o Inter System Handovers (LTE to GSM, LTE to WCDMA)
    o LTE retainability KPI's
    o VoLTE introduction
    o CS Fallback
    o 3GPP features and performance enhancements
    o LTE KPI's for optional features
    o Cell planning review for retainability optimization

- o Radio features to improve mobility performance
- o Parameter tuning
- o ***Case studies: Analyzing optimization problems***

- LTE Throughput and Integrity Review

  - o MAC protocol architecture
  - o LTE cell planning process
  - o LTE throughput evaluation non cell edge
  - o LTE average throughput calculations
  - o Link adaptation function
  - o Feedback reports (PMI, CQI)
  - o Power control
  - o LTE throughput KPI's
  - o Cell planning review for integrity optimization
  - o Parameter tuning
  - o ***Case studies: Analyzing optimization problems***

- LTE Network Optimization

  - o LTE cell capacity KPI's

  - o LTE cell operability KPI's

  - o LTE X2-S1 interface KPI's

  - o Parameter tuning

- Course Wrap-up : Recap and Discussion

DCN NTDR-Ltr-v2f