

LTE Advanced (TK412)

Prerequisites

Participants must have advanced knowledge of LTE Air Interface and LTE/EPC Network. For background knowledge, we recommend the TEKonsult course LTE Air Interface.

Target groups

Participant from all areas who wish to get an overview of the advanced LTE network

- Telecom engineers and technicians
- Project Managers
- Customer Managers
- Sales Managers

Duration

3.0 days

Course content

StandardizationHistory

- LTE/LTE-A standardization
- The IMT Advanced process
- IMT Advanced Performance Requirements

LTE Release 8/9

- LTE Channel Architecture
- OFDM basics
- LTE Radio Frames
- DL/UL Radio Channels
- DL/UL Transmission Procedures

Enhanced MIMO Support

- Transmission Mode 8 (Dual Layer Beamforming)
- Transmission Mode 9
- Non-Codebook Based Precoding
- New Reference Signals (DM-RS & CSI-RS)
- Uplink MIMO Transmission
- Other UL Features (SORTD, multi-cluster allocation)

Carrier Aggregation (CA)

- CA Concept and Options
- Carrier Combinations and Bandwidth Classes
- Primary and Secondary Serving Cells
- Impact of CA on Control Channel Usage
- New PDCCH/PUCCH Formats
- Cross-carrier Scheduling
- New UE categories for R10 and R11

Relay Architecture

- Network elements for relay operation (Relay Node, Donor eNB, embedded SGW/PGW)
- S1 and X2-Interface Proxying via D-eNB
- Mapping and multiplexing of UP bearers
- Tx/Rx timing between Relay and Donor eNB (Scheduling, HARQ and use of MBSFN Subframes)
- New control channel: the R-PDCCH
- Start up and configuration of the Relay Node

Heterogeneous Networks (HetNet)

- HetNet Deployment Scenarios
- Problems in a HetNet Deployment Scenario
- Inter-cell Interference Coordination (ICIC, R8)
- Enhanced ICIC- Frequency Domain Solution
- Enhanced ICIC- Time Domain Solution
- X2-Interface Signaling Supporting Hetnet

Coordinated Multipoint (CoMP)

- CoMP Concept
- Joint Processing
- Coordinated Scheduling/Beamforming
- New Control Channel: the E-PDCCH
- CSI Reporting for Multi-Cell Operation
- Summary of 3GPP Simulation Results for CoMP