

LTE/LTE-Advanced Parameter Optimisation & Troubleshooting on Uu Interface

Course Number: LTE4500-01EN | Duration: 5 Days

Target Audience

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

Prerequisites

- LTE/LTE-Advanced Signaling & Protocols on Uu Interface (LTE4300-01EN)

Learning Objectives

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

- Evaluate drive-tests logs and critical signaling faults as well as procedure mistakes.
- Analyse RRC parameter settings and their performance impact on LTE-Uu.
- Optimise HO procedures and their related parameters to reach better network performance.
- Debug critical system problems in UE & E-UTRAN as well as interworking with Core and IRAT.
- Improve E2E network KPI's and Subscriber's quality of experience (QoE).

Course Outline

1. System Acquisition and Network Access
 - 1.1 Overview of E-UTRAN & EPC
 - 1.2 SIB Transmission & Parameterisation
 - 1.3 Paging & Tracking Area Capacity
2. Physical Channel Planning & Optimisation
 - 2.1 PCI Planning Guideline
 - 2.2 DM-RS Planning Rules
 - 2.3 PRACH Parameter Optimisation
 - 2.4 PUCCH Parameter Analysis
 - 2.5 PDCCH Configuration & Performance
 - 2.6 HARQ & RLC Parameterisation
3. RRC Connection and Bearer Optimisation
 - 3.1 RRC Connection Setup Parameter
 - 3.2 Default EPS Bearer & DRB Parameter (BSR & PHR Optimisation)
 - 3.3 Short & Long DRX Configuration and Impact on Battery Life
 - 3.4 Dedicated Bearer Parameter (SPS Parameterisation)
4. Idle Mode Mobility in Rel. 8 – Rel. 10
 - 4.1 Measurement Types
 - 4.2 Cell (Re-)Selection & Priority with RFSP
 - 4.3 Inter RAT (Priority) Reselection & Redirection – inherited Priorities
5. Connected Mode Mobility
 - 5.1 HO Events and Trigger Parameters
 - 5.2 Intra-LTE HO Parameter Analysis
 - 5.3 Inter-RAT HO Parameter Analysis
 - 5.4 CSFB Procedure Problems & Delays
 - 5.5 SRVCC HO for CS and PS – Cipher Issue
 - 5.6 ANR Performance for CGI Reading (HeNB/CSG's)
6. Power Control and Power Setting
 - 6.1 UL Power Control for Cell Edge UE's
 - 6.2 Open vs. Closed Loop Performance
 - 6.3 SRS – Timing Advance & Power Control
 - 6.4 DL Power Boosting for 64QAM
7. NAS Problems & their Root Cause Analysis
 - 7.1 Attach Accept Fail for CS & Rejects
 - 7.2 TAU Reject Causes and Reasons
 - 7.3 Reasons for PDN Connectivity Rejects
 - 7.4 Service & Extended Service Rejects
 - 7.5 Procedure Collisions (CSFB & QoS Modifications)
 - 7.6 MOCN & EPLMN Issues
8. Radio Performance Optimisation
 - 8.1 ICIC & eICIC
 - 8.2 Connection Drop Analysis – 7 Reasons
 - 8.3 Frequency Domain Packet Scheduler (Performance Improvements)
 - 8.4 Load-based SINR Deterioration
 - 8.4 MU-MIMO vs. SU-MIMO (DL/UL)
 - 8.5 MIMO Condition Number vs. RI & CQI
9. Throughput vs. Capacity Optimisation
 - 9.1 Three Ways to throttle UE's Throughput (QoS, eNB, Backhaul)
 - 9.2 TCP Parameterisation (WS vs. RTT)
 - 9.3 S1-Backhaul Issues & Clock Stability
10. SON – Self Organising Networks
 - 10.1 Review of SON Features from Rel.8
 - 10.2 Self Optimising Features from Rel. 9
 - 10.3 Minimisation of Drivetest (MDT)
 - 10.4 Geotracing/Tracking