

# LTE PERFORMANCE MANAGEMENT

“I have been in dozens of trainings with different vendors during my 13 years of telecommunication career and the last training with Widermind was one of the best, definitely TOP-3 training in my list.”

Toomas Kell, Radio Network Operations Manager, Tele2 Estonia AS

## Course Description

After providing the participants an understanding of the LTE Air Interface and LTE Advanced features, different performance management measurement methods are covered. A number of applications are discussed along with various OSS aspects followed by the monitoring of Availability, Accessibility, Retainability, Cell Quality, Cell Load, Capacity, Integrity, Mobility and other important KPIs.

## Content

### INTRODUCTION

- Evolution of 3G
- Network architecture
- E-UTRAN and EPC
- eNodeB, MME, S-GW, P-GW, HSS
- Overview of LTE Air Interface
- New features introduced by LTE-Advanced



### OVERVIEW OF LTE PERFORMANCE MANAGEMENT

- Performance measurement methods – Drive test, Statistical, Tracing and Real-Time Monitoring
- Performance management applications
- OSS aspects – measurement architecture, counter types. Configuration and post-processing aspects.

### AVAILABILITY MONITORING

- Cell availability
- S1 and X2 availability
- SCTP performance

## ACCESSIBILITY MONITORING

- LTE QoS and Bearer model
- Signaling procedures
- RRC establishment KPIs
- S1, Radio Bearer and E-RAB establishment KPIs
- RRC re-establishment KPIs
- Paging performance measurements

## RETAINABILITY MONITORING

- Signaling procedures
- eNB and EPC triggered Bearer and Connection releases
- Retainability KPIs
- Overall call completion KPIs

## CELL QUALITY, LOAD AND CAPACITY MONITORING

- DL and UL PRB capacity and load measurements
- DL and UL quality measurements
- Link Adaptation and Scheduler measurements
- MIMO performance measurements
- DL control channel capacity and load measurements
- UL control channel capacity and load measurements
- RA Procedure measurements

## INTEGRITY - THROUGHPUT MONITORING

- LTE Air Interface Protocol structure
- Throughput and retransmission measurements at PDCP, RLC and MAC layers
- Service throughputs
- Cell level throughputs
- LTE Advanced Carrier Aggregation performance measurements
- Overall network integrity KPIs

## MOBILITY MONITORING

- Handover in LTE – HO types, measurement events, HO procedures
- LTE Intra-frequency HO performance
- LTE Inter-frequency HO performance
- InterRAT HO performance
- CSFB performance from LTE perspective

## Target audience

Primary target audience is e.g. network design engineers, service engineers, engineers working with Optimization, NOC, OMC or other RAN-related operational tasks.

## Pre-requisites

The participants should have working experience from Mobile Networks and basic UMTS and LTE knowledge.

## Course length

2 days

### Widermind

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