Mobile Network Drive Testing and QoS Optimization Training Course

21 - 25 Dec 2026

Sharm El-Sheikh

4100 € (Per Person)

Ref: #TEL4921_285330

Course Introduction / Overview:

This comprehensive course provides an in-depth exploration of mobile network performance analysis, focusing on the critical methodologies of drive testing and Quality of Service (QoS) optimization. In today's hyper-connected world, ensuring a seamless user experience is paramount for network operators. This program is meticulously designed to equip participants with the skills needed to measure, analyze, and enhance network quality from the ground up. We will delve into the foundational principles of cellular communication, referencing the pioneering work of academics like Theodore S. Rappaport, whose book "Wireless Communications: Principles and Practice" remains a cornerstone in the field. Participants will transition from understanding theoretical concepts to mastering the practical execution of drive tests for 2G, 3G, 4G/LTE, and the latest 5G NR technologies. BIG BEN Training Center has structured this curriculum to address real-world challenges, covering everything from test planning and data collection to advanced post-processing and network parameter tuning. The course emphasizes not just identifying problems like dropped calls or low throughput but implementing effective solutions to elevate network performance and guarantee superior Quality of Experience (QoE) for end-users, ensuring participants become invaluable assets in the telecommunications industry.

Target Audience / This training course is suitable for:

- RF Optimization Engineers.
- Network Performance Specialists.
- Drive Test Technicians and Analysts.
- Telecommunication Project Managers.
- Network Operations Center (NOC) Staff.
- Wireless Network Planners.
- Quality Assurance and QoS Engineers.
- Technical Managers overseeing network performance.
- Recent graduates in telecommunications or related fields.

Target Sectors and Industries:

- Telecommunication Service Providers.
- Mobile Network Operators (MNOs).
- Network Infrastructure Vendors.
- Managed Service Providers.
- Information Technology and Services.
- Governmental Telecommunication Regulatory Authorities.
- Public Safety and Emergency Services Communications.
- Large enterprises with private cellular networks.
- Consulting firms specializing in network performance.

Target Organizations Departments:

- Radio Network Planning and Optimization.
- Network Operations and Maintenance.
- Quality Assurance and Service Management.
- Engineering and Technology Development.
- Technical Support and Troubleshooting.
- Project Management Office (PMO).
- Corporate Performance and Strategy.
- Research and Development (R&D).

Course Offerings:

By the end of this course, the participants will have able to:

- Develop a comprehensive drive test plan for various network technologies including 5G and LTE.
- Execute drive tests using standard methodologies for data collection and network benchmarking.
- Analyze drive test log files to identify network coverage, capacity, and quality issues.
- Interpret key performance indicators (KPIs) such as RSRP, SINR, MOS, and throughput.
- Troubleshoot common network problems like call drops, handover failures, and poor data speeds.
- Implement RF optimization techniques to enhance network performance and user experience.
- Evaluate and optimize Quality of Service (QoS) for services like VoLTE and video streaming.
- Generate detailed technical reports and provide actionable recommendations for network improvement.
- Understand the specific challenges and optimization strategies for 5G NR networks.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, practical, and engaging, ensuring that participants not only learn the theory but can also apply it effectively in real-world scenarios. Our approach moves beyond traditional lectures to foster a dynamic learning environment. The course incorporates a blend of expert-led presentations, detailed case studies from actual network optimization projects, and hands-on simulation exercises for drive test data analysis. Participants will work in teams on practical assignments, encouraging collaborative problem-solving and the exchange of ideas. Interactive sessions, group discussions, and Q&A segments are integrated throughout the five days to address specific queries and deepen understanding of complex topics like interference analysis and parameter tuning. We emphasize a learn-by-doing philosophy, where participants will post-process sample log files to diagnose network faults and propose optimization solutions. Continuous feedback from the instructor ensures that every participant remains on track and masters the critical skills required for enhancing mobile network quality and performance. This immersive methodology guarantees a robust and lasting learning outcome.

Course Agenda (Course Units):

Unit One: Fundamentals of Mobile Networks and Drive Testing

- Introduction to cellular communication generations (2G, 3G, 4G, 5G).
- Core principles of Radio Frequency (RF) propagation and behavior.
- Understanding the concepts of Quality of Service (QoS) vs. Quality of Experience (QoE).
- The role and importance of drive testing in the network lifecycle.
- Key Performance Indicators (KPIs) for voice and data services.
- Overview of drive test tools and equipment.
- Safety protocols and best practices for field testing.

Unit Two: Planning and Executing a Drive Test

- Defining drive test objectives and scope (SSV, cluster, benchmarking).
- Pre-planning activities including route selection and baseline data collection.
- Equipment setup, calibration, and software configuration.
- Data collection methodologies for different technologies (LTE, 5G NR).
- Conducting scanner measurements for interference analysis.
- Best practices for logging data and documenting field observations.
- Understanding different test scenarios like stationary, mobility, and load testing.

Unit Three: Drive Test Data Post-Processing and Analysis

- Introduction to post-processing software and workflows.
- Importing and managing large drive test log files.
- Analyzing Layer 3 messages and event triggers.
- Plotting KPIs on maps for coverage and quality visualization.
- Identifying and diagnosing common network issues from log data.
- Techniques for call drop analysis and root cause identification.
- Evaluating handover performance and identifying failure points.

Unit Four: RF Network Optimization Techniques

- Fundamentals of RF optimization and parameter tuning.
- Optimizing coverage through antenna tilt and power adjustments.
- Strategies for interference management and reduction.
- Handover parameter optimization for seamless mobility.
- Techniques for improving Call Setup Success Rate (CSSR).
- Throughput optimization for UL and DL data services.
- VoLTE and ViLTE performance analysis and enhancement.

Unit Five: Advanced QoS Optimization and Future Trends

- End-to-end QoS analysis for different applications.
- Deep dive into 5G NR drive testing and specific KPIs.
- Optimization strategies for 5G features like beamforming and network slicing.
- Benchmarking against competitor networks to identify performance gaps.
- Introduction to automated and AI-driven network optimization.
- Reporting and presentation of findings and recommendations.
- Final project: Analyzing a complete drive test dataset and proposing solutions.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

As networks evolve towards 6G and incorporate AI-driven optimization, how might the traditional role of drive testing transform from a reactive diagnostic tool to a proactive, predictive one?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by offering a holistic and practical journey into network optimization, moving far beyond a superficial overview of tools and software. Its core strength lies in cultivating a deep-seated engineering mindset focused on problem-solving and analytical thinking. While other courses may focus on specific vendor equipment, our curriculum is vendor-agnostic, teaching universal principles of RF behavior, data analysis, and optimization that are applicable across any network environment. We bridge the critical gap between data collection and actionable intelligence, emphasizing how to interpret complex log files to tell a story about network performance. The curriculum is uniquely structured to cover the entire lifecycle, from meticulous planning to advanced 5G NR optimization techniques and future trends like AI integration. By incorporating case studies drawn from real-world network challenges and fostering an interactive learning environment, the course ensures that participants do not just learn what KPIs are, but why they matter and how to strategically improve them to directly impact the end-user's Quality of Experience.