

GSM/EGPRS Overview

Course Number: GSM2000-01EN | Duration: 3 Days

Target Audience

- MS & GERAN Development Staff
- Network Engineering & Optimisation Personnel
- System Design Engineering Staff, IOT & System Test Engineers
- Technical Sales and Marketing people

Prerequisites

- None

Learning Objectives

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

- Describe the services offered by GSM and GPRS/EGPRS.
- Understand the differences between dedicated and shared timeslot.
- Explain the necessary overhead and need for QoS once resources are shared.
- Understand what delays involved to get an IP-frame transmitted/received.
- Why is there different handling of connected mode mobility between CS and PS?
- Estimate the maximum cell size for speech and EGPRS services.

Course Outline

1. Introduction to GSM Network
 - 1.1 Services offered by GSM & GPRS
 - 1.2 Network Elements & Interfaces
 - 1.3 MS Classes & Network Modes
 - 1.4 GERAN Networks
2. Radio Frequency Transmission & Reception
 - 2.1 Transmit Power and Receive Level
 - 2.2 Pathloss and Coverage
 - 2.3 Bit Error Detection & Correction
3. Frames & Timeslots – Traffic Theory
 - 3.1 TDMA Frame & Timeslots
 - 3.2 Erlang B – Offered & Blocked Traffic
 - 3.3 Beacon, Signaling & Traffic Timeslots
 - 3.4 Multiframe & Channels
4. Physical Layer Fundamentals
 - 4.1 GSM Bands & ARFCN's
 - 4.2 Bursts Transmission
 - 4.3 Interleaving
 - 4.4 Frequency Hopping
 - 4.5 RXLEV & RXQUAL Measurement
5. CS Idle Mode & Connected Mode Procedures
 - 5.1 PLMN / Cell Selection
 - 5.2 Location Update
 - 5.3 Call Setup & Release (MTC/MOC)
6. EGPRS Frames & Timeslots Handling
 - 6.1 Timeslot Sharing & Overhead
 - 6.2 TBF Allocation & Release
 - 6.3 RLC/MAC Block Transmission
 - 6.4 Modulation & Coding Scheme
 - 6.5 Multiframe & Channels
7. GPRS Mobility & Session Management
 - 7.1 GPRS Attach & Routing Area Update
 - 7.2 PDP Context & IP Address Allocation
 - 7.3 Need for QoS ?
 - 7.4 GPRS Suspend & Resume
8. RLC/MAC Functionality
 - 8.1 Block Transmission & Retransmission
 - 8.2 Sequence Numbering & Window Size
 - 8.3 LLC Frame Segmentation & Reassembly
9. GSM / GPRS Mobility
 - 9.1 Reselection & Handover (CS)
 - 9.2 Reselection & Cell Update(PS)