

Contents

Chapter 1: The Global Scenario for Cellular Mobile Radio

- Evolution of cellular communications
- Cellular concepts
- Frequency reuse
- Mobile network development

Chapter 2: Transition from Analog to Digital Cellular Radio

- Limitations of analog systems
- Advantages of digital communications
- Capacity improvement
- Security and service enhancements

Chapter 3: A Digital Cellular Mobile Radio System

- GSM architecture
- Network subsystems
- Mobile station functions
- Base station subsystem (BSS)
- Network switching subsystem (NSS)

Chapter 4: Layers and Signaling Principles in GSM

- GSM protocol architecture
- Signaling procedures
- Interface structure
- Layered communication model

Chapter 5: Physical Layer

- TDMA and FDMA
- Radio channels
- Burst formats
- Modulation techniques (GMSK)
- Frequency hopping
- Channel coding

Chapter 6: Data Link Layer

- LAPDm protocol
- Error detection and correction
- Frame structures

- Reliable transmission

Chapter 7: Network Layer

- Mobility management
- Call control
- Authentication
- Subscriber management
- Roaming procedures

Chapters 8–11: GSM Testing

- GSM test methodologies
- Mobile station testing
- Base station testing
- Spectrum analysis
- Protocol verification
- Performance measurements

Chapters 12–13: Other Digital Cellular Standards

- NADC (North American Digital Cellular)
- PDC (Personal Digital Cellular)
- CDMA fundamentals
- Comparison with GSM systems