

Redes Móveis (60 hs)

Livros-texto:

Book 1: Mobile communications, Jochen Schiller, Addison-Wesley Longman Publishing Co., Inc., Boston, MA.

Book 2: Wireless Communications: Principles and Practice, Theodore Rappaport, 2nd ed. New York: IEEE Press, 2001

1 Introduction

1.1 Applications

1.1.1 Vehicles

1.1.2 Emergencies

1.1.3 Business

1.1.4 Replacement of wired networks

1.1.5 Infotainment and more

1.1.6 Location dependent services

1.1.7 Mobile and wireless devices

1.2 A short history of wireless communication

1.3 A market for mobile communications

1.4 Some open research topics

1.5 A simplified reference model

2 Wireless transmission

2.1 Frequencies for radio transmission

2.1.1 Regulations

2.2 Signals

2.3 Antennas

2.4 Signal propagation

2.4.1 Path loss of radio signals

Chapter 4 (book 2)

4. Mobile Radio Propagation: Large-Scale Path Loss

4.1. Introduction to Radio Wave Propagation

4.2. Free Space Propagation Model

4.3. Relating Power to Electric Field

4.4. The Three Basic Propagation Mechanisms

4.5. Reflection

4.5.1. Reflection from Dielectrics

4.5.2. Brewster Angle

4.5.3. Reflection from Perfect Conductors

4.6. Ground Reflection (Two-Ray) Model

4.7. Diffraction

4.7.1. Fresnel Zone Geometry

4.7.2. Knife-edge Diffraction Model

4.7.3. Multiple Knife-edge Diffraction

4.8. Scattering

4.8.1. Radar Cross Section Model

- 4.9. Practical Link Budget Design Using Path Loss Models
 - 4.9.1. Log-distance Path Loss Model
 - 4.9.2. Log-normal Shadowing
 - 4.9.3. Determination of Percentage of Coverage Area
- 4.10. Outdoor Propagation Models
 - 4.10.1. Longley–Rice Model
 - 4.10.2. Durkin’s Model—A Case Study
 - 4.10.3. Okumura Model
 - 4.10.4. Hata Model
 - 4.10.5. PCS Extension to Hata Model
 - 4.10.6. Walfisch and Bertoni Model
 - 4.10.7. Wideband PCS Microcell Model
- 4.11. Indoor Propagation Models
 - 4.11.1. Partition Losses (same floor)
 - 4.11.2. Partition Losses between Floors
 - 4.11.3. Log-distance Path Loss Model
 - 4.11.4. Ericsson Multiple Breakpoint Model
 - 4.11.5. Attenuation Factor Model
- 4.12. Signal Penetration into Buildings
- 4.13. Ray Tracing and Site Specific Modeling

- 2.4.2 Additional signal propagation effects
- 2.4.3 Multi-path propagation
- 2.5 Multiplexing 41 *Visto em outras disciplinas*
 - 2.5.1 Space division multiplexing
 - 2.5.2 Frequency division multiplexing
 - 2.5.3 Time division multiplexing
 - 2.5.4 Code division multiplexing
- 2.6 Modulation
 - 2.6.1 Amplitude shift keying
 - 2.6.2 Frequency shift keying
 - 2.6.3 Phase shift keying
 - 2.6.4 Advanced frequency shift keying
 - 2.6.5 Advanced phase shift keying
 - 2.6.6 Multi-carrier modulation
- 2.7 Spread spectrum
 - 2.7.1 Direct sequence spread spectrum
 - 2.7.2 Frequency hopping spread spectrum
- 2.8 Cellular systems

Chapter 3 (book 2)

- 3. The Cellular Concept—System Design Fundamentals
 - 3.1. Introduction
 - 3.2. Frequency Reuse
 - 3.3. Channel Assignment Strategies
 - 3.4. Handoff Strategies
 - 3.4.1. Prioritizing Handoffs
 - 3.4.2. Practical Handoff Considerations

- 3.5. Interference and System Capacity
 - 3.5.1. Co-channel Interference and System Capacity
 - 3.5.2. Channel Planning for Wireless Systems
 - 3.5.3. Adjacent Channel Interference
 - 3.5.4. Power Control for Reducing Interference
- 3.6. Trunking and Grade of Service
- 3.7. Improving Coverage and Capacity in Cellular Systems
 - 3.7.1. Cell Splitting
 - 3.7.2. Sectoring
 - 3.7.3. Repeaters for Range Extension
 - 3.7.4. A Microcell Zone Concept

3 Medium access control

- 3.1 Motivation for a specialized MAC
 - 3.1.1 Hidden and exposed terminals
 - 3.1.2 Near and far terminals
- 3.2 SDMA
- 3.3 FDMA
- 3.4 TDMA
 - 3.4.1 Fixed TDM
 - 3.4.2 Classical Aloha
 - 3.4.3 Slotted Aloha
 - 3.4.4 Carrier sense multiple access
 - 3.4.5 Demand assigned multiple access
 - 3.4.6 PRMA packet reservation multiple access
 - 3.4.7 Reservation TDMA
 - 3.4.8 Multiple access with collision avoidance
 - 3.4.9 Polling
 - 3.4.10 Inhibit sense multiple access
- 3.5 CDMA
 - 3.5.1 Spread Aloha multiple access
- 3.6 Comparison of S/T/F/CDMA

4 Telecommunications systems

- 4.1 GSM
 - 4.1.1 Mobile services
 - 4.1.2 System architecture
 - 4.1.3 Radio interface
 - 4.1.4 Protocols
 - 4.1.5 Localization and calling
 - 4.1.6 Handover
 - 4.1.7 Security
 - 4.1.8 New data services
- 4.2 DECT 130 Não visto
 - 4.2.1 System architecture
 - 4.2.2 Protocol architecture
- 4.3 TETRA 130 Não visto

4.4 UMTS and IMT-2000 Não Visto

4.4.1 UMTS releases and standardization

4.4.2 UMTS system architecture

4.4.3 UMTS radio interface

4.4.4 UTRAN

4.4.5 Core network

4.4.6 Handover

5 Satellite systems Visto em outra disciplina ->sistemas de telecomunicações

5.1 History

5.2 Applications

5.3 Basics

5.3.1 GEO

5.3.2 LEO

5.3.3 MEO

5.4 Routing

5.5 Localization

5.6 Handover

5.7 Examples