

The third part of the book consists of three chapters devoted to description of important voice- and data-oriented wireless WANs.

CHAPTER 7 GSM AND TDMA TECHNOLOGY

GSM is a complete standard that includes specifications of the air-interface as well as fixed wired infrastructure to support the services. Other TDMA digital cellular standards, such as IS-136 or JTC, are very similar to GSM. Chapter 7 is devoted to detailed description of the GSM standard. The study of this chapter introduces the reader with the complexity and diversity of the issues involved in development of a wireless standard, including elements of the network architecture; mobility support mechanisms such as registration, call establishment, handoff, and security; and details of formation and transmission of packets.

CHAPTER 8 CDMA TECHNOLOGY, IS-95, AND IMT-2000

W-CDMA air-interface is the favorite choice for the IMT-2000 3G standard. The only 2G CDMA standard is the IS-95 air-interface, which is the foundation of the W-CDMA technology. Chapter 8 is devoted to the IS-95 and W-CDMA technology used in IMT-2000. First, we provide a brief description of North American interim standards IS-41 and IS-634, used for MSC-BSC and MSC-MSC communications, respectively. Then we describe details of the IS-95 air interface standard followed by the 3G W-CDMA air interfaces used in IMT-2000.

CHAPTER 9 MOBILE DATA NETWORKS

During the evolution of 2G systems, mobile data or data-oriented wireless WANs emerged as independent connectionless networks serving mobile computers over a large geographical area. As we got closer to the 3G systems, mobile data services became integrated with the cellular voice services. Chapter 9 is devoted to various aspects of this fragmented technology. We first provide an overview of the major mobile data networks and classify them into logical groups. Then we provide details of CDPD and GPRS networks to demonstrate the operation of two popular methods for implementation of the mobile data services. The last sections in the chapter describe SMS and wireless data applications.