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Nota di contenuto	Cover; Title Page; Copyright Page; Contents; List of Figures; List of Tables; Preface; Acknowledgments; Part I - Introduction; Chapter 1 - From 3G to 4G: background and motivation of 3G evolution; 1.1 - History and background of 3G; 1.1.1 - Before 3G; 1.1.2 - Research on 3G; 1.1.3 - 3G standardization roots; 1.2 - Standardization; 1.2.1 - The standardization process; 1.2.2 - 3GPP; 1.2.3 - IMT-2000 and IMT-Advanced activities in ITU; 1.3 - Spectrum for 3G and systems beyond 3G; 1.4 - The motivations behind continuing HSPA evolution; 1.4.1 - General driving forces 1.4.1.1 - Technology advancements 1.4.1.2 - Services; 1.4.1.3 - User expectations; 1.4.1.4 - Operator business models; 1.4.1.5 - Cost; 1.4.2 - HSPA-specific evolution drivers and philosophy; References; Part II - Technologies for HSPA; Chapter 2 - High data rates in mobile communication; 2.1 - High data rates: Fundamental constraints; 2.1.1 - High data rates in noise-limited scenarios; 2.1.2 - Higher data rates in interference-limited scenarios; 2.2 - Higher data rates within a limited bandwidth: Higher-order modulation; 2.2.1 - Higher-order modulation in combination with channel coding 2.2.2 - Variations in instantaneous transmit power 2.3 - Wider

bandwidth including multi-carrier transmission; 2.3.1 - Multi-carrier transmission; References; Chapter 3 - CDMA transmission principles; 3.1 - Spread spectrum basics; 3.2 - Baseband transmitter model for a CDMA system; 3.3 - Spread spectrum in a real propagation environment; 3.4 - Receiver and equalization strategies; 3.4.1 - Time-domain linear equalization; References; Chapter 4 - Multi-antenna techniques; 4.1 - Multi-antenna configurations; 4.2 - Benefits of multi-antenna techniques; 4.3 - Multiple receive antennas 4.4 - Multiple transmit antennas 4.4.1 - Transmit-antenna diversity; 4.4.1.1 - Delay diversity; 4.4.1.2 - Diversity by means of space-time coding; 4.4.2 - Transmitter-side beamforming; 4.5 - Spatial multiplexing; 4.5.1 - Basic principles; 4.5.2 - Precoder-based spatial multiplexing; 4.5.3 - Nonlinear receiver processing; References; Chapter 5 - Scheduling, link adaptation, and hybrid-ARQ; 5.1 - Link adaptation: power and rate control; 5.2 - Channel-dependent scheduling; 5.2.1 - Downlink scheduling; 5.2.2 - Uplink scheduling 5.2.3 - Link adaptation and channel-dependent scheduling in the frequency domain 5.2.4 - Acquiring channel-state information; 5.2.5 - Traffic behavior and scheduling; 5.3 - Retransmission schemes; 5.4 - Hybrid-ARQ with soft combining; References; Part III - HSPA and its evolution; Chapter 6 - Overview of release 99 WCDMA; 6.1 - System architecture; 6.2 - Protocol architecture; 6.3 - Physical layer; downlink; 6.4 - Physical layer; uplink; 6.5 - Resource handling and packet-data session; 6.6 - UE RRC states and state transitions; References; Further Reading; Chapter 7 - Introduction to HSPA 7.1 - HSPA emerges from WCDMA: Fundamental building blocks

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## Sommario/riassunto

This book is essential reading for those wishing to obtain a systems perspective and a broad view on the background, performance and application of the latest developments in HSPA in the context of the demands on today's mobile broadband devices and networks. It takes the reader behind the scenes of 3GPP and provides an easily accessible understanding of the basic principles, the latest steps in the standard's evolution, and the motivations behind the development of standardized features. It covers important topics such as smartphone related features, multi-carrier and multi-antenna operation

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