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domain equalisation; 2.3.2 Frequency domain equalisation; 2.3.3 Code/multi-user domain equalisation; 2.4 Single Carrier and Multi Carrier; 2.4.1 Spread spectrum; 2.4.2 Orthogonal frequency division multiplexing; 2.4.3 Orthogonal frequency-code division multiplexing; 2.4.4 Transmission power fluctuation; 2.5 Diversity Reception; 2.5.1 Diversity combining methods; 2.5.2 Selection combining 2.5.3 Maximum ratio combining 2.6 Channel Coding; 2.6.1 Turbo codes; 2.6.2 LDPC codes; 2.6.3 Coding rate; 2.7 From Circuit Switched to Packet Switched; 2.7.1 Shared channels; 2.7.2 Packet scheduling; 2.7.3 Header compression; 2.7.4 Wireless VoIP; 2.7.5 Quality of service; 2.8 System Capacity; 2.8.1 Shannon theorem; 2.8.2 Trunking efficiency; 2.9 Coverage; 2.9.1 Link budget; 2.9.2 Multi-hop; Further Reading; 3 Enhancing Technologies; 3.1 Frequency Reuse; 3.1.1 Noise limited; 3.1.2 Interference limited; 3.2 Capacity Limit; 3.2.1 Capacity in the presence of interference 3.3 Signal and Interference 3.3.1 Downlink; 3.3.2 Uplink; 3.4 Advanced Antennas; 3.4.1 Directional antennas; 3.4.2 Adaptive array antennas; 3.5 Coverage Extension; 3.5.1 Coverage extension using adaptive array antennas; 3.6 Interference Reduction; 3.6.1 Interference cancellation; 3.6.2 Joint detection; 3.6.3 Interference avoidance; 3.7 Hybrid ARQ; 3.7.1 Chase combining; 3.7.2 Incremental redundancy; 3.8 MIMO Antennas; 3.9 Voice Coding; Further Reading; 4 Cellular Topologies; 4.1 Cell Structure; 4.1.1 Macro-cell; 4.1.2 Micro-cell; 4.1.3 Pico-cell; 4.1.4 Umbrella structure; 4.1.5 Repeaters 4.1.6 Distributed antenna systems 4.2 Wireless LAN Cellular Structure; 4.3 Distributed Base Stations; 4.3.1 Uplink distributed base stations; 4.3.2 Downlink distributed base stations; 4.3.3 Public-private multi-hop; 4.4 Mini-cell Structure; 4.5 Handover; 4.6 Ad hoc Networking; Further Reading; 5 Cost of Spectrum; 5.1 Voice Systems; 5.1.1 FDMA systems; 5.1.2 TDMA systems; 5.1.3 CDMA systems; 5.2 Data Systems; 5.2.1 Peak throughput; 5.2.2 Average throughput; 5.2.3 Minimum throughput; 5.3 Data Throughput Efficiency; 5.3.1 WCDMA HSDPA; 5.3.2 WCDMA uplink; 5.3.3 TD-CDMA HSDPA; 5.3.4 WiMAX 5.3.5 DoCoMo test system

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## Sommario/riassunto

With the emergence of broadband wireless communication systems, new business opportunities have appeared for operators, content providers, and manufacturers. Broadband wireless communications technologies promise the freedom of constant access to the Internet at high speeds, without the limitation of connection cables. Broadband Wireless Communications Business provides comprehensive coverage of the present status and future evolution of these technologies, giving vital practical cost and benefit advice on design, construction and implementation. The author focuses on the costs

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