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layer operation; 4.7 References; 5 HSUPA principles
 5.1 HSUPA vs Release 99 DCH; 5.2 Key technologies with HSUPA; 5.2.1 Introduction; 5.2.2 Fast L1 HARQ for HSUPA; 5.2.3 Scheduling for HSUPA; 5.3 E-DCH transport channel and physical channels; 5.3.1 Introduction; 5.3.2 E-DCH transport channel processing; 5.3.3 E-DCH dedicated physical data channel; 5.3.4 E-DCH dedicated physical control channel; 5.3.5 E-DCH HARQ indicator channel; 5.3.6 E-DCH relative grant channel; 5.3.7 E-DCH absolute grant channel; 5.3.8 Motivation and impact of two TTI lengths; 5.4 Physical layer procedures; 5.4.1 HARQ; 5.4.2 HARQ and soft handover; 5.4.3 Measurements with HSUPA; 5.5 MAC layer; 5.5.1 User plane; 5.5.2 MAC-e control message - scheduling information; 5.5.3 Selection of a transport format for E-DCH; 5.5.4 E-DCH coexistence with DCH; 5.5.5 MAC-d flow-specific HARQ parameters; 5.5.6 HSUPA scheduling; 5.5.7 HSUPA scheduling in soft handover; 5.5.8 Advanced HSUPA scheduling; 5.5.9 Non-scheduled transmissions; 5.6 Iub parameters; 5.7 Mobility; 5.7.1 Soft handover; 5.7.2 Compressed mode; 5.8 UE capabilities and data rates; 5.9 References and list of related 3GPP specifications; 6 Radio resource management
 6.1 HSDPA radio resource management; 6.1.1 RNC algorithms; 6.1.2 Node B algorithms; 6.2 HSUPA radio resource management; 6.2.1 RNC algorithms; 6.2.2 Node B algorithms; 6.3 References; 7 HSDPA bit rates, capacity and coverage; 7.1 General performance factors; 7.1.1 Essential performance metrics; 7.2 Single-user performance; 7.2.1 Basic modulation and coding performance; 7.2.2 HS-DSCH performance; 7.2.3 Impact of QPSK-only UEs in early roll-out; 7.2.4 HS-SCCH performance; 7.2.5 Uplink HS-DPCCH performance; 7.2.6 3GPP test methodology; 7.3 Multiuser system performance; 7.3.1 Simulation methodology; 7.3.2 Multiuser diversity gain

Sommario/riassunto

From the editors of the highly successful WCDMA for UMTS, this new book provides a comprehensive and up-to-date reference to High Speed Packet Access (HSPA) technologies for WCDMA. The editors cover both HSDPA and HSUPA, including an in-depth description and explanation of 3GPP standards, and expected performance based on simulations and first measurements. The text also discusses the impact of HSDPA and HSUPA on network dimensioning, covers applications and end-to-end performance in detail, and includes a section on radio frequency requirements and terminal design considerations. The