

Ofdm Wireless Lans A Theoretical And Practical Guide

The topic of "Energy Efficiency in Communications and Networks" attracts growing attention due to economical and environmental reasons. The amount of power consumed by information and communication technologies (ICT) is rapidly increasing, as well as the energy bill of service providers. According to a number of studies, ICT alone is responsible for a percentage which varies from 2% to 10% of the world power consumption. Thus, driving rising cost and sustainability concerns about the energy footprint of the IT infrastructure. Energy-efficiency is an aspect that until recently was only considered for battery driven devices. Today we see energy-efficiency becoming a pervasive issue that will need to be considered in all technology areas from device technology to systems management. This book is seeking to provide a compilation of novel research contributions on hardware design, architectures, protocols and algorithms that will improve the energy efficiency of communication devices and networks and lead to a more energy proportional technology infrastructure.

Multi-carrier modulation, in particular orthogonal frequency division multiplexing (OFDM), has been successfully applied to a wide variety of digital communications applications for several years. Although OFDM has been chosen as the physical layer standard for a diversity of important systems, the theory, algorithms, and implementation techniques remain subjects of current interest. This book is intended to be a concise summary of the present state of the art of the theory and practice of OFDM technology. This book offers a unified presentation of OFDM theory and high speed and wireless applications. In particular, ADSL, wireless LAN, and digital

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broadcasting technologies are explained. It is hoped that this book will prove valuable both to developers of such systems, and to researchers and graduate students involved in analysis of digital communications, and will remain a valuable summary of the technology, providing an understanding of new advances as well as the present core technology.

A thoroughly up-to-date resource on IEEE 802 wireless standards Readers can turn to this book for complete coverage of the current and emerging IEEE 802 wireless standards/drafts, including: 802.11 Wireless LANs 802.15.1 Bluetooth and 801.15.2 802.15.3 Wireless PANs 802.15.4 and 802.15.5 Wireless PANs 802.16 Wireless MANs Emerging Wireless LANs, Wireless PANs, and Wireless MANs is a unique, convenient resource for engineers, scientists, and researchers in academia and industry. It also serves as a valuable textbook for related courses at the upper-undergraduate and graduate levels.

This brief presents the novel PHY layer technique, attachment transmission, which provides an extra control panel with minimum overhead. In addition to describing the basic mechanisms of this technique, this brief also illustrates the challenges, the theoretical model, implementation and numerous applications of attachment transmission. Extensive experiments demonstrate that attachment transmission is capable of exploiting and utilizing channel redundancy to deliver control information and thus it can provide significant support to numerous higher layer applications. The authors also address the critical problem of providing cost-effective coordination mechanisms for wireless design. The combination of new techniques and implementation advice makes this brief a valuable resource for researchers and professionals interested in wireless penetration and communication networks.

With 40% new material the new edition of Advanced Wireless

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Networks provides a comprehensive representation of the key issues in 4G wireless networks. Focussing on cognitive, cooperative and opportunistic paradigms to provide further increase in network efficiency, the book explores and addresses issues in wireless internet, mobile cellular and WLAN, as well as sensor, ad hoc, bio-inspired, active and cognitive networks. It examines the problem of cross-layer optimisation and network information theory as well as adaptability and reconfigurability in wireless networks. This book is an integral description of future wireless networks and the interconnection between their elements. The information is presented in a logical order within each chapter making it ideal for all levels of reader including researchers involved in modelling and analysis of future networks as well as engineers working in the area. Each chapter starts with introductory material and gradually includes more sophisticated models and mathematical tools concluding with a comprehensive list of references. Fully updated throughout with five new chapters on Opportunistic Communications; Relaying and Mesh Networks; Topology Control; Network Optimization; and Cognitive Radio Resource Management Unifies the latest research on cognitive, cooperative and opportunistic paradigms in wireless communications Provides efficient analytical tools for network analysis Discusses security issues, an essential element of working with wireless networks Supports advanced university and training courses in the field Companion website containing extra appendix on Queuing theory

High speed data wireless networks in multipath environments suffer channel impairment from many sources such as thermal noise, path loss, shadowing, and fading. In particular, short-term fading caused by mobility imposes irreducible error floor bounds on system performance. We study the effect of fading on the performance of the widely used TCP/UDP

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protocol, and investigate how to improve TCP performance over fading channels. Our solutions target upcoming mobile wireless systems such as IEEE 802.16e wireless MANs "Metropolitan Area Networks" where adaptive modulation is enabled and the underlying medium access scheme is On-Demand Time Division Multiple Access "On-Demand TDMA". Adaptive modulation is used in the new generation of wireless systems to increase the system throughput and significantly improve spectral efficiency by matching parameters of the physical layer to the time-varying fading channels. Most high-rate applications for such wireless systems rely on the reliable service provided by TCP protocol. The effect of adaptive modulation on TCP throughput is investigated. A semi-Markov chain model for TCP congestion/flow control behavior and a multi-state Markov chain model for Rayleigh fading channels are used together to derive the steady state throughput of TCP Tahoe and Reno. The theoretical prediction based on our analysis is consistent with simulation results using the network simulator NS2. The analytical and simulation results triggered the idea of cross-layer TCP protocol design for single-user scenarios. The fading parameters of wireless channels detected in the physical layer can be used to dynamically tune the parameters "such as packet length and advertised receiver window size" of the TCP protocol in the transport layer so that TCP throughput is improved. For multi-user scenarios, we study how multi-user diversity can be used to improve th.

International Conference on Remote Sensing and Wireless Communications (RSWC 2014) will be held from February 22nd to 23rd, 2014 in Shanghai, China. RSWC 2014 will bring together top researchers from Asian Pacific areas, North America, Europe and around the world to exchange research results and address open issues in all aspects of Remote Sensing and Wireless Communications. The RSWC

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2014 welcomes the submission of original full research papers, short papers, posters, workshop proposals, tutorials, and industrial professional reports.

A self-contained guide to the state-of-the-art in cooperative communications and networking techniques for next generation cellular wireless systems, this comprehensive book provides a succinct understanding of the theory, fundamentals and techniques involved in achieving efficient cooperative wireless communications in cellular wireless networks. It consolidates the essential information, addressing both theoretical and practical aspects of cooperative communications and networking in the context of cellular design. This one-stop resource covers the basics of cooperative communications techniques for cellular systems, advanced transceiver design, relay-based cellular networks, and game-theoretic and micro-economic models for protocol design in cooperative cellular wireless networks. Details of ongoing standardization activities are also included. With contributions from experts in the field divided into five distinct sections, this easy-to-follow book delivers the background needed to develop and implement cooperative mechanisms for cellular wireless networks.

The wireless medium is a shared resource. If nearby devices transmit at the same time, their signals interfere, resulting in a collision. In traditional networks, collisions cause the loss of the transmitted information. For this reason, wireless networks have been designed with the assumption that interference is intrinsically harmful and must be avoided. This book, a revised version of the author's award-winning Ph.D. dissertation, takes an alternate approach: Instead of viewing interference as an inherently counterproductive phenomenon that should to be avoided, we design practical systems that transform

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interference into a harmless, and even a beneficial phenomenon. To achieve this goal, we consider how wireless signals interact when they interfere, and use this understanding in our system designs. Specifically, when interference occurs, the signals get mixed on the wireless medium. By understanding the parameters of this mixing, we can invert the mixing and decode the interfered packets; thus, making interference harmless. Furthermore, we can control this mixing process to create strategic interference that allow decodability at a particular receiver of interest, but prevent decodability at unintended receivers and adversaries. Hence, we can transform interference into a beneficial phenomenon that provides security. Building on this approach, we make four main contributions: We present the first WiFi receiver that can successfully reconstruct the transmitted information in the presence of packet collisions. Next, we introduce a WiFi receiver design that can decode in the presence of high-power cross-technology interference from devices like baby monitors, cordless phones, microwave ovens, or even unknown technologies. We then show how we can harness interference to improve security. In particular, we develop the first system that secures an insecure medical implant without any modification to the implant itself. Finally, we present a solution that establishes secure connections between any two WiFi devices, without having users enter passwords or use pre-shared secret keys.

The field of visible light communication (VLC) has diverse applications to the end user including streaming audio, video, high-speed data browsing, voice over

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internet and online gaming. This comprehensive textbook discusses fundamental aspects, research activities and modulation techniques in the field of VLC. Visible Light Communication: A Comprehensive Theory and Applications with MATLAB® discusses topics including line of sight (LOS) propagation model, non-line of sight (NLOS) propagation model, carrier less amplitude and phase modulation, multiple-input-multiple-output (MIMO), non-linearities of optical sources, orthogonal frequency-division multiple access, non-orthogonal multiple access and single-carrier frequency-division multiple access in depth. Primarily written for senior undergraduate and graduate students in the field of electronics and communication engineering for courses on optical wireless communication and VLC, this book: Provides up-to-date literature in the field of VLC Presents MATLAB codes and simulations to help readers understand simulations Discusses applications of VLC in enabling vehicle to vehicle (V2V) communication Covers topics including radio frequency (RF) based wireless communications and VLC Presents modulation formats along with the derivations of probability of error expressions pertaining to different variants of optical OFDM

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This textbook introduces the advanced topics of: (i) wireless communications, (ii) free-space optical (FSO) communications, (iii) indoor optical wireless (IR) communications, and (iv) fiber-optics communications and presents these different types of communication

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systems in a unified fashion for better practical use. Fundamental concepts, such as propagation principles, modulation formats, channel coding, diversity principles, MIMO signal processing, multicarrier modulation, equalization, adaptive modulation and coding, detection principles, and software defined transmission are first described and then followed up with a detailed look at each particular system. The book is self-contained and structured to provide straightforward guidance to readers looking to capture fundamentals and gain theoretical and practical knowledge about wireless communications, optical communications, and fiber-optics communications, all which can be readily applied in studies, research, and practical applications. The textbook is intended for an upper undergraduate or graduate level course in optical communication. It features problems, an appendix with all background material needed, and homework.

This book allows readers to gain an in-depth understanding of resource allocation problems in wireless networks and the techniques used to solve them.

This book presents theoretical research between wireless communications, networking, and economics using the framework of contract theory. This work fills a void in the literature by closely combining contract theoretical approaches with wireless networks design problems. Topics covered include classification in contract theory, reward design, adverse selection, and moral hazard. The authors also explore incentive mechanisms for device-to-device communication in

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cellular networks, insurance plans for service assurance in cloud computing markets with incomplete information, multi-dimensional incentive mechanisms and tournament based incentive mechanisms in mobile crowdsourcing. Financial applications include financing contracts with adverse selection for spectrum trading in cognitive radio networks and complementary investment of infrastructure and service providers in wireless network visualization. This book offers a useful reference for engineers and researchers in the wireless communication community who seek to integrate the notions from contract theory and wireless engineering, while emphasizing on how contract theory can be applied in wireless networks. It is also suitable for advanced-level students studying information systems or communications engineering.

Theory and Applications of OFDM and CDMA is an ideal foundation textbook for those seeking a sound knowledge of this fast-developing field of wideband communications. The advanced transmission techniques of OFDM, applied in wireless LANs and in digital and video broadcasting, and CDMA, the foundation of 3G mobile communications, have been part of almost every communication system that has been designed in recent years, with both offering a high degree of flexibility in adjusting the system to the requirements of the application and to the impairments caused by the transmission channel. Starting from the basics of digital transmission theory, the reader gains a comprehensive overview of the underlying ideas of these techniques and their strengths and weaknesses under various

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conditions. In this context, the specific requirements of the mobile radio channel and their relevance for the design of digital transmission systems are discussed and related to the items of channel coding and modulation.

Clear explanation of the basics of digital communications, mobile radio channels, coding and modulation, OFDM as a multicarrier system and CDMA as an application of spread spectrum techniques
Discusses the most important mobile radio and digital broadcasting systems that use OFDM and CDMA, and explains in detail the underlying ideas for the choice of system parameters
Progresses from the fundamentals of wideband communication through to modern applications
Includes a Companion Website featuring a solutions manual, electronic versions of the figures and other useful resources
This volume will be an invaluable resource to advanced undergraduate students and first/second year postgraduates of electrical and engineering and telecommunications. It will also appeal to practising engineers, researchers and those in academia who wish to expand their knowledge on modern aspects of digital communications and systems in a mobile radio environment.

Conclusions and Future Research.

OFDM Wireless LANs: A Theoretical and Practical Guide explores OFDM WLAN basics, including components of OFDM and multi-carrier WLAN standards. This book also provides a practical approach to OFDM by including software and hardware examples and detailed implementation

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explanations. And it defines and explains the mathematical concepts behind OFDM necessary for successful OFDM WLAN implementations.

The major expectation from the fourth generation (4G) of wireless communication networks is to be able to handle much higher data rates, allowing users to seamlessly reconnect to different networks even within the same session. *Advanced Wireless Networks* gives readers a comprehensive integral presentation of the main issues in 4G wireless networks, showing the wide scope and inter-relation between different elements of the network. This book adopts a logical approach, beginning each chapter with introductory material, before proceeding to more advanced topics and tools for system analysis. Its presentation of theory and practice makes it ideal for readers working with the technology, or those in the midst of researching the topic. Covers mobile, WLAN, sensor, ad hoc, bio-inspired and cognitive networks as well as discussing cross-layer optimisation, adaptability and reconfigurability. Includes hot topics such as network management, mobility and hand-offs, adaptive resource management, QoS, and solutions for achieving energy efficient wireless networks. Discusses security issues, an essential element of working with wireless networks. Supports the advanced university and training courses in the field and includes an extensive list of references. Providing comprehensive

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coverage of the current status of wireless networks and their future, this book is a vital source of information for those involved in the research and development of mobile communications, as well as the industry players using and selling this technology. Companion website features three appendices: Components of CRE, Introduction to Medium Access Control and Elements of Queueing Theory

Containing essays from leading experts in the industry that discuss academic theories and practical applications of wireless communications, this book focuses on the latest wireless technologies and advancements. A diverse volume, it seeks to shed light on such topics as business strategies and current trends while combining the perspectives of many specialists across the nation.

The Newnes Know It All Series takes the best of what our authors have written to create hard-working desk references that will be an engineer's first port of call for key information, design techniques and rules of thumb. Guaranteed not to gather dust on a shelf! RF (radio frequency) and wireless technologies drive communication today. This technology and its applications enable wireless phones, portable device roaming, and short-range industrial and commercial application communication such as the supply chain management wonder, RFID. Up-to-date information regarding software defined RF, using frequencies

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smarter, and, using more of the spectrum, with ultrawideband technology is detailed. Chapter 1: Survey of RF and Wireless Technology Chapter 2: Communications Protocols and Modulation Chapter 3: Transmitters Chapter 4: Receivers Chapter 5: Radio Propagation Chapter 6: Antenna Fundamentals I Chapter 7: Antenna Fundamentals II. Chapter 8: Basics of Wireless Local Area Networks Chapter 9: Outdoor Networks. Chapter 10: Voice Over Wi-Fi and Other Wireless Technologies Chapter 11: Security in Wireless Local Area Networks Chapter 12: System Planning Chapter 13: System Implementation, Testing, and Optimization Chapter 14: Next Generation Wireless Networks Chapter 15: Mobile Ad Hoc Networks Chapter 16: Wireless Sensor Networks Chapter 17: Reliable Wireless Networks for Industrial Networks Chapter 18: Software-Defined Radio Chapter 19: The Basics of Radio Frequency Identification (RFID) Technology Chapter 20: UWB Spectrum and Regulation Chapter 21: Interference and Coexistence Chapter 22: Direct Sequence UWB Chapter 23: "Multiband Approach to UWB Chapter 24: History and Background of Cognitive Radio Chapter 25: The Software Defined Radio as a Platform for Cognitive Radio Chapter 26: Cognitive Radio: The Technologies Chapter 27: Spectrum Awareness Chapter 28: Direct Sequence and Frequency Hopping Spread Spectrum Chapter 29: RF Power Amplifiers Chapter 30: Phase Locked

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Loop Techniques in Modern Communications Systems Chapter 31 Orthogonal Frequency Division Multiplexing (OFDM) *A 360 degree view from best-selling authors including Roberto Aiello, Bruce Fette, and Praphul Chandra *Hot topics covered including ultrawideband and cognitive radio technologies *The ultimate hard-working desk reference: all the essential information, techniques, and tricks of the trade in one volume

With this groundbreaking text, discover how wireless artificial intelligence (AI) can be used to determine position at centimeter level, sense motion and vital signs, and identify events and people. Using a highly innovative approach that employs existing wireless equipment and signal processing techniques to turn multipaths into virtual antennas, combined with the physical principle of time reversal and machine learning, it covers fundamental theory, extensive experimental results, and real practical use cases developed for products and applications. Topics explored include indoor positioning and tracking, wireless sensing and analytics, wireless power transfer and energy efficiency, 5G and next-generation communications, and the connection of large numbers of heterogeneous IoT devices of various bandwidths and capabilities. Demo videos accompanying the book online enhance understanding of these topics. Providing a unified framework for wireless AI, this is an excellent text for

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graduate students, researchers, and professionals working in wireless sensing, positioning, IoT, machine learning, signal processing and wireless communications.

Annotation Deploy and optimize your wireless LAN using the new standard for broadband wireless communication, OFDM. A comprehensive reference written by two experts who helped create the OFDM specifications. A detailed, practical guide to OFDM WLANs does not exist, requiring readers to seek out multiple sources of information, such as white papers and research notes. Detailed explanations of the concepts and algorithms behind OFDM-context that is missing from the two OFDM books currently available. This book explains OFDM WLAN basics, including components of OFDM and multicarrier WLAN standards. It provides a practical approach to OFDM by including software and hardware examples and detailed implementation explanations. OFDM Multicarrier Wireless Networks: A Practical Approach defines and explains the mathematical concepts behind OFDM necessary for successful OFDM WLAN implementations. Juha Heiskala is a research engineer at Nokia Research Center in Irving, TX. Heiskala is active in the IEEE 802.11 standards bodies and has been tasked with developing the 802.11a system simulation on several software platforms. He is the inventor/co-inventor of three pending patents in the area of

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OFDM LANs and co-designed with Dr. John Terry the modulation and coding scheme for achieving 100 Mbps speeds within currently allocated band specifications for OFDM WLANs. John Terry, Ph.D. is a senior research engineer at Nokia Research Center. He is currently managing the OFDM modulation and coding project in the HSA group. Dr. Terry has published several white papers, given numerous presentations on wireless communications, and generated four patents related to OFDM WLANs. He has 10 years of experience working in wireless communications, including tenures at NASA Glen Research Center and Texas Instruments.

"Where this book is exceptional is that the reader will not just learn how LTE works but why it works"

Adrian Scrase, ETSI Vice-President, International Partnership Projects Following on the success of the first edition, this book is fully updated, covering the latest additions to LTE and the key features of LTE-Advanced. This book builds on the success of its predecessor, offering the same comprehensive system-level understanding built on explanations of the underlying theory, now expanded to include complete coverage of Release 9 and the developing specifications for LTE-Advanced. The book is a collaborative effort of more than 40 key experts representing over 20 companies actively participating in the development of LTE, as well as

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academia. The book highlights practical implications, illustrates the expected performance, and draws comparisons with the well-known WCDMA/HSPA standards. The authors not only pay special attention to the physical layer, giving an insight into the fundamental concepts of OFDMA-FDMA and MIMO, but also cover the higher protocol layers and system architecture to enable the reader to gain an overall understanding of the system. Key New Features: Comprehensively updated with the latest changes of the LTE Release 8 specifications, including improved coverage of Radio Resource Management RF aspects and performance requirements Provides detailed coverage of the new LTE Release 9 features, including: eMBMS, dual-layer beamforming, user equipment positioning, home eNodeBs / femtocells and pico cells and self-optimizing networks Evaluates the LTE system performance Introduces LTE-Advanced, explaining its context and motivation, as well as the key new features including: carrier aggregation, relaying, high-order MIMO, and Cooperative Multi-Point transmission (CoMP). Includes an accompanying website containing a complete list of acronyms related to LTE and LTE-Advanced, with a brief description of each

(http://www.wiley.com/go/sesia_theumts) This book is an invaluable reference for all research and development engineers involved in implementation

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of LTE or LTE-Advanced, as well as graduate and PhD students in wireless communications. Network operators, service providers and R&D managers will also find this book insightful.

This book constitutes the refereed proceedings of the IFIP-TC6 8th International Conference on Personal Wireless Communications, PWC 2003, held in Venice, Italy in September 2003. The 49 revised papers presented together with 6 special track papers, 1 invited paper, 11 project descriptions, 7 work in progress reports, and 8 novel ideas reports were carefully reviewed and selected from 115 submissions. The papers are organized in topical sections on mobile computing, wireless access, sensor networks, transport protocols, performance models, WCDMA, ad-hoc networks, wireless and mobile systems, cellular networks, IPv6, Bluetooth, and security and cooperations in ad-hoc networks. A technological overview of LTE and WiMAX LTE, WiMAX and WLAN Network Design, Optimization and Performance Analysis provides a practical guide to LTE and WiMAX technologies introducing various tools and concepts used within. In addition, topics such as traffic modelling of IP-centric networks, RF propagation, fading, mobility, and indoor coverage are explored; new techniques which increase throughput such as MIMO and AAS technology are highlighted; and simulation, network design and performance analysis are also examined. Finally, in the latter part of the book Korowajczuk gives a step-by-step guide to network design, providing readers with the capability to build reliable and robust data networks. By focusing on LTE and WiMAX

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this book extends current network planning approaches to next generation wireless systems based on OFDMA, providing an essential resource for engineers and operators of fixed and wireless broadband data access networks. With information presented in a sequential format, LTE, WiMAX and WLAN Network Design, Optimization and Performance Analysis aids a progressive development of knowledge, complementing latter graduate and postgraduate courses while also providing a valuable resource to network designers, equipment vendors, reference material, operators, consultants, and regulators. Key Features: One of the first books to comprehensively explain and evaluate LTE Provides an unique explanation of the basic concepts involved in wireless broadband technologies and their applications in LTE, WiMAX, and WLAN before progressing to the network design Demonstrates the application of network planning for LTE and WiMAX with theoretical and practical approaches Includes all aspects of system design and optimization, such as dynamic traffic simulations, multi-layered traffic analysis, statistical interference analysis, and performance estimations This textbook takes a unified view of the fundamentals of wireless communication and explains cutting-edge concepts in a simple and intuitive way. An abundant supply of exercises make it ideal for graduate courses in electrical and computer engineering and it will also be of great interest to practising engineers.

This text provides the basic understanding of the underlying techniques related to PHY-MAC design of future wireless systems. It includes basic concepts related to single- and multi-carrier transmissions together with MIMO techniques. This is one of the first books on the emerging research topic of digital compensation of RF imperfections. The book presents a new multidisciplinary vision on the design of wireless communication systems. In this approach the

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imperfections of the RF front-ends are accepted and digital signal processing algorithms are designed to suppress their impact on system performance. The book focuses on multiple-antenna orthogonal frequency division multiplexing (MIMO OFDM).

(Preliminary): The Orthogonal Frequency Division Multiplexing (OFDM) digital transmission technique has several advantages in broadcast and mobile communications applications. The main objective of this book is to give a good insight into these efforts, and provide the reader with a comprehensive overview of the scientific progress which was achieved in the last decade. Besides topics of the physical layer, such as coding, modulation and non-linearities, a special emphasis is put on system aspects and concepts, in particular regarding cellular networks and using multiple antenna techniques. The work extensively addresses challenges of link adaptation, adaptive resource allocation and interference mitigation in such systems. Moreover, the domain of cross-layer design, i.e. the combination of physical layer aspects and issues of higher layers, are considered in detail. These results will facilitate and stimulate further innovation and development in the design of modern communication systems, based on the powerful OFDM transmission technique.

Awarded by the International Calabria's Prize! This multidisciplinary volume originates from lectures presented at a short course on wireless communications in Capri, Italy. This globally attended conference has produced an exceptional book written by pioneers in the field. Lecturers at Capri included pillars in the fields of electromagnetics, communications, information technology and mathematics. As communications technology becomes increasingly wireless, an interdisciplinary viewpoint is necessary for professionals to correct problems and avoid others before

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they occur. Wireless Networks covers critical technology within WLAN, ad hoc networks, data distribution, TV, radio, and personal mobile devices. As networks become wireless, engineers face increased difficulty securing its malleable boundaries. This book discusses security solutions such as sensor technology that prevent unwanted intrusion.

Connectivity is also addressed, featuring chapters on antennas, bandwidth and frequencies. Editors Franceschetti and Stornelli have done a great service to the wireless communications community in creating a compendium that delivers this spectrum of essential information in one reference. *Presents a uniquely panoramic view of wireless networks with viewpoints from engineering, computing, and mathematics *The technology is discussed in theory as well as in practice to help engineers design and modify networks *Globally recognized experts share their critical insight on sensor technology, transferring protocol, ad-hoc networks, and more

The next generation mobile communication networks (4G) has the challenging target of providing a peak data rate of 1 Gigabit per second in the local area and 100 Megabit per second in a wide area. The ability to offer such high data rates in the 100 MHz bandwidth requires a very high overall spectral efficiency, and hence the need for multi-antenna techniques (MIMO) with spatial multiplexing, fast dynamic link adaptation and packet scheduling, wideband access techniques, and most likely non-contention based spectrum sharing among multiple operators. Many of these required technology components and techniques are well researched and established. Adaptive PHY-MAC Design for Broadband Wireless Systems explains how one can integrate and optimize their use in providing the target cell data rates with high availability. The authors address the ability to cope with interference and enhanced physical layer processing, and

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simultaneously, multifaceted system level design. The focus is also on the selection of technology components and techniques which leads to the highest spectral efficiency and peak data rate availability with reasonable Quality of Service (QoS) support, such as improved outage scenario, reduced delay and guaranteed bit rate. In short, this book will answer questions such as how individual techniques relate to each other, how we can improve the gains by suitable combinations of different technologies and how to choose different technological solutions in different scenarios, and so on. Adaptive PHY-MAC Design for Broadband Wireless Systems can be used for lectures in graduate level courses in universities. PhD level students will also find it useful as this book will outline the fundamental concepts and design methods for PHY and MAC layers of future wireless systems. It can also be used as a reference by engineers and developers in the industry as well as by researchers in academia. For professionals, system architects and managers who play a key role in the selection of a baseline system concept for future wireless standards, such as IMT-Advanced type architecture, discussions, analysis and guidelines to highlight overall system level perspective are included.

Communications represent a strategic sector for privacy protection and for personal, company, national and international security. The interception, damage or lost of information during communication can generate material and non material economic damages from both a personal and collective point of view. The purpose of this book is to give the reader information relating to all aspects of communications security, beginning at the base ideas and building to reach the most advanced and updated concepts. The book will be of interest to integrated system designers, telecommunication designers, system engineers, system

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analysts, security managers, technicians, intelligence personnel, security personnel, police, army, private investigators, scientists, graduate and postgraduate students and anyone that needs to communicate in a secure way. The International Conference on Signals, Systems and Automation (ICSSA 2011) aims to spread awareness in the research and academic community regarding cutting-edge technological advancements revolutionizing the world. The main emphasis of this conference is on dissemination of information, experience, and research results on the current topics of interest through in-depth discussions and participation of researchers from all over the world. The objective is to provide a platform to scientists, research scholars, and industrialists for interacting and exchanging ideas in a number of research areas. This will facilitate communication among researchers in different fields of Electronics and Communication Engineering. The International Conference on Intelligent System and Data Processing (ICISD 2011) is organized to address various issues that will foster the creation of intelligent solutions in the future. The primary goal of the conference is to bring together worldwide leading researchers, developers, practitioners, and educators interested in advancing the state of the art in computational intelligence and data processing for exchanging knowledge that encompasses a broad range of disciplines among various distinct communities. Another goal is to promote scientific information interchange between researchers, developers, engineers, students, and practitioners working in India and abroad.

MIMO-OFDM is a key technology for next-generation cellular communications (3GPP-LTE, Mobile WiMAX, IMT-Advanced) as well as wireless LAN (IEEE 802.11a, IEEE 802.11n), wireless PAN (MB-OFDM), and broadcasting (DAB, DVB, DMB). In MIMO-OFDM Wireless Communications with

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MATLAB®, the authors provide a comprehensive introduction to the theory and practice of wireless channel modeling, OFDM, and MIMO, using MATLAB® programs to simulate the various techniques on MIMO-OFDM systems. One of the only books in the area dedicated to explaining simulation aspects Covers implementation to help cement the key concepts Uses materials that have been classroom-tested in numerous universities Provides the analytic solutions and practical examples with downloadable MATLAB® codes Simulation examples based on actual industry and research projects Presentation slides with key equations and figures for instructor use MIMO-OFDM Wireless Communications with MATLAB® is a key text for graduate students in wireless communications. Professionals and technicians in wireless communication fields, graduate students in signal processing, as well as senior undergraduates majoring in wireless communications will find this book a practical introduction to the MIMO-OFDM techniques. Instructor materials and MATLAB® code examples available for download at www.wiley.com/go/chomimo

Annotation "This resource takes professionals step by step from the basics of MIMO through various coding techniques, to critical topics such as multiplexing and packet transmission. Practical examples are emphasized and mathematics is kept to a minimum, so readers can quickly and thoroughly understand the essentials of MIMO. The book takes a systems view of MIMO technology that helps professionals analyze the benefits and drawbacks of any MIMO system."--BOOK JACKET.Title Summary field provided by Blackwell North America, Inc. All Rights Reserved.

This book introduces key modulation and predistortion techniques for approaching power and spectrum-efficient transmission for wireless communication systems. The book

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presents a combination of theoretical principles, practical implementations, and actual tests. It focuses on power and spectrally efficient modulation and transmission techniques in the portable wireless communication systems, and introduces currently developed and designed RF transceivers in the latest wireless markets. Most materials, design examples, and design strategies used are based on the author's two decades of work in the digital communication fields, especially in the areas of the digital modulations, demodulations, digital signal processing, and linearization of power amplifiers. The applications of these practical products and equipment cover the satellite communications on earth station systems, microwave communication systems, 2G GSM and 3G WCDMA mobile communication systems, and 802.11 WLAN systems.>

Do you need to know how to develop more efficient digital communication systems? Based on the author's experience of over thirty years in industrial design, this practical guide provides detailed coverage of synchronization subsystems and their relationship with other system components. Readers will gain a comprehensive understanding of the techniques needed for the design, performance analysis and implementation of synchronization functions for a range of different modern communication technologies. Specific topics covered include frequency-locked loops in wireless receivers, optimal OFDM timing phase determination and implementation, and interpolation filter design and analysis in digital resamplers. Numerous implementation examples help readers to develop the necessary practical skills, and slides summarizing key concepts accompany the book online. This is an invaluable guide and essential reference for both practicing engineers and graduate students working in digital communications.

This 2006 book describes the fundamental theory and

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practical aspects of using ASP, and ISP, to improve receiver performance.

Provides the key practical considerations for deploying wireless LANs and a solid understanding of the emerging technologies.

This book covers the key technologies associated with the physical transmission of data on fifth generation (5G) mobile systems. Following an overview of these technologies, a high-level description of 3GPP's mobile communications standard (5G NR) is given and it is shown how the key technologies presented earlier facilitate the transmission of control data and very high-speed user data. In the final chapter, an overview and the physical layer aspects of 5G NR enabled Fixed Wireless Access (FWA) networks is presented. This book is intended for those practicing engineers and graduate and upper undergraduate engineering students who have an interest in 3GPP's 5G enabled mobile and or FWA networks and want to acquire, where missing, the necessary technology background in order to understand 3GPP's physical layer specifications and operation. Provides a comprehensive covering of key 3GPP 5G NR physical layer technologies, presented in a clear, tractable fashion, with sufficient mathematics to make it technically coherent; Addresses all key 5G NR technologies, including digital modulation, LDPC and Polar coding, multicarrier based multiple access techniques, and multiple antenna techniques including MIMO and beamforming; Presents an overview of 5G NR Radio Access Network (RAN) architecture and a detailed understanding of how user and control data is transported in the physical layer by the application of the technologies presented; Provides an overview and addresses physical layer aspects of 5G NR enabled Fixed Wireless Access networks.

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