

The Lte Advanced Deployment Handbook The Planning Lines For The Fourth Generation Networks

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Advanced Antenna Systems for 5G Network Deployments Academic Press

A comprehensive guide to 5G technology, applications and potential for the future 5G brings new technology solutions to the 5G mobile networks including new spectrum options, new antenna structures, new physical layer and protocols designs and new network architectures. 5G Technology: 3GPP New Radio is a comprehensive resource that offers explanations of 5G specifications, performance evaluations, aspects of device design, practical deployment considerations and illustrative examples from field experiences. With contributions from a panel of international experts on the topic, the book presents the main new technology components in 5G and describes the physical layer, radio protocols and network performance. The authors review the deployment aspects such as site density and transport network and explore the 5G performance aspects including data rates and coverage and latency. The book also contains illustrative examples of practical field measurement. In addition, the book includes the most recent developments in 4G LTE evolution and offers an outlook for the future of the evolution of 5G. This important book: Offers an introduction to 5G technology and its applications Contains contributions from international experts on the topic Reviews the main technology components in 5G Includes information on the optimisation of the Internet of things Presents illustrative examples of practical field measurements Written for students and scientists interested in 5G technology, 5G Technology: 3GPP New Radio provides a clear understanding of the underlying 5G technology that promotes the opportunity to take full benefit of new capabilities.

Heterogeneous Networks in LTE-Advanced CRC Press

This book provides a clear, concise, complete and authoritative introduction to System Architecture Evolution (SAE) standardization work and its main outcome: the Evolved Packet Core (EPC), including potential services and operational scenarios. After providing an insightful overview of

SAE's historical development, the book gives detailed explanations of the EPC architecture and key concepts as an introduction. In-depth technical descriptions of EPC follow, including thorough functional accounts of the different components of EPC, protocols, network entities and procedures. Case studies of deployment scenarios show how the functions described within EPC are placed within a live network context, while a description of the services that are predicted to be used shows what EPC as a core network can enable. This book is an essential resource for professionals and students who need to understand the latest developments in SAE and EPC, the 'engine' that connects broadband access to the internet. All of the authors have from their positions with Ericsson been actively involved in GPRS, SAE and 3GPP from a business and technical perspective for many years. Several of the authors have also been actively driving the standardization efforts within 3GPP. "There is no doubt that this book, which appears just when the mobile industry starts its transition away from legacy GSM/GPRS and UMTS networks into the future will become the reference work on SAE/LTE. There are no better qualified persons than the authors of this book to provide both communication professionals and an interested general public with insights into the inner workings of SAE/LTE. Not only are they associated with one of the largest mobile network equipment vendors in the world, they have all actively contributed to and, in some cases, been the driving forces behind the development of SAE/LTE within 3GPP." - from the foreword by Dr. Ulf Nilsson, TeliaSonera R&D, Mobility Core and Connectivity "The authors have done an excellent job in writing this book. Their familiarity with the requirements, concepts and solution alternatives, as well as the standardization work allows them to present the material in a way that provides easy communication between Architecture and Standards groups and Planning/ Operational groups within service provider organizations." - from the foreword by Dr. Kalyani Bogineni, Principal Architect, Verizon Up-to-date coverage of SAE including the latest standards development Easily accessible overview of the architecture and concepts defined by SAE Thorough description of the Evolved Packet Core for LTE, fixed and other wireless accesses Comprehensive explanation of SAE key concepts, security and Quality-of-Service Covers potential service and operator scenarios including interworking with

existing 3GPP and 3GPP2 systems Detailed walkthrough of network entities, protocols and procedures Written by established experts in the SAE standardization process, all of whom have extensive experience and understanding of its goals, history and vision

LTE for 4G Mobile Broadband John Wiley & Sons

This book provides an insight into the key practical aspects and best practice of 4G-LTE network design, performance, and deployment Design, Deployment and Performance of 4G-LTE Networks addresses the key practical aspects and best practice of 4G networks design, performance, and deployment. In addition, the book focuses on the end-to-end aspects of the LTE network architecture and different deployment scenarios of commercial LTE networks. It describes the air interface of LTE focusing on the access stratum protocol layers: PDCP, RLC, MAC, and Physical Layer. The air interface described in this book covers the concepts of LTE frame structure, downlink and uplink scheduling, and detailed illustrations of the data flow across the protocol layers. It describes the details of the optimization process including performance measurements and troubleshooting mechanisms in addition to demonstrating common issues and case studies based on actual field results. The book provides detailed performance analysis of key features/enhancements such as C-DRX for Smartphones battery saving, CSFB solution to support voice calls with LTE, and MIMO techniques. The book presents analysis of LTE coverage and link budgets alongside a detailed comparative analysis with HSPA+. Practical link budget examples are provided for data and VoLTE scenarios. Furthermore, the reader is provided with a detailed explanation of capacity dimensioning of the LTE systems. The LTE capacity analysis in this book is presented in a comparative manner with reference to the HSPA+ network to benchmark the LTE network capacity. The book describes the voice options for LTE including VoIP protocol stack, IMS Single Radio Voice Call Continuity (SRVCC). In addition, key VoLTE features are presented: Semi-persistent scheduling (SPS), TTI bundling, Quality of Service (QoS), VoIP with C-DRX, Robust Header Compression (RoHC), and VoLTE Vocoders and De-jitter buffer. The book describes several LTE and LTE-A advanced features in the evolution from Release 8 to 10 including SON, eICIC, CA, CoMP, HetNet, Enhanced MIMO, Relays, and LBS. This book can be used as a reference for best practices in LTE networks design and deployment, performance analysis, and evolution strategy. Conveys the theoretical background of 4G-LTE networks Presents key aspects and best practice of 4G-LTE networks design and deployment Includes a realistic roadmap for evolution of deployed 3G/4G networks Addresses the practical aspects for designing and deploying commercial LTE networks. Analyzes LTE coverage and link budgets, including a detailed comparative analysis with HSPA+. References the best practices in LTE networks design and deployment, performance analysis, and evolution strategy Covers infrastructure-sharing scenarios for CAPEX and OPEX saving. Provides key practical aspects for supporting voice services over LTE, Written for all 4G engineers/designers working in networks design for operators, network deployment engineers, R&D engineers, telecom consulting firms, measurement/performance tools firms, deployment subcontractors, senior undergraduate students and graduate students interested in understanding the practical aspects of 4G-LTE networks as part of their classes, research, or projects.

Driving the Mobile Broadband Revolution John Wiley & Sons

Describing the essential aspects that need to be considered during the deployment and operational

phases of 3GPP LTE/SAE networks, this book gives a complete picture of LTE systems, as well as providing many examples from operational networks. It demystifies the structure, functioning, planning and measurements of both the radio and core aspects of the evolved 3G system. The content includes an overview of the LTE/SAE environment, architectural and functional descriptions of the radio and core network, functionality of the LTE applications, international roaming principles, security solutions and network measurement methods. In addition, this book gives essential guidelines and recommendations about the transition from earlier mobile communications systems towards the LTE/SAE era and the next generation of LTE, LTE-Advanced. The book is especially suitable for the operators that face new challenges in the planning and deployment phases of LTE/SAE, and is also useful for network vendors, service providers, telecommunications consultancy companies and technical institutes as it provides practical information about the realities of the system. Presents the complete end-to-end planning and measurement guidelines for the realistic deployment of networks Explains the essential and realistic aspects of commercial LTE systems as well as the future possibilities An essential tool during the development of transition strategies from other network solutions towards LTE/SAE Contains real-world case studies and examples to help readers understand the practical side of the system

The Telecommunications Handbook John Wiley & Sons

A comparative introduction to major global wireless standards, technologies and their applications From GSM to LTE-Advanced Pro and 5G: An Introduction to Mobile Networks and Mobile Broadband, 3rd Edition provides technical descriptions of the various wireless technologies currently in use. It explains the rationales behind their differing mechanisms and implementations while exploring the advantages and limitations of each technology. This edition has been fully updated and substantially expanded to reflect the significant evolution in mobile network technology occurring over the past several years. The chapter on LTE has been extensively enhanced with new coverage of current implementations of LTE carrier aggregation, mobility management, cell reselection and handover procedures, as well as the latest developments in 5G radio and core networks in 3GPP. It now features additional information on the TD-LTE air interface, IPv6 in mobile networks, Network Function Virtualization (NFV) and Narrowband Internet of Things (NB-IOT). Voice-over-LTE (VoLTE) is now treated extensively in a separate chapter featuring coverage of the VoLTE call establishment process, dedicated bearer setup, header compression, speech codec and bandwidth negotiation, supplementary service configuration and VoLTE emergency calls. In addition, extensive coverage of Voice-over-Wifi and mission critical communication for public safety organizations over LTE has been added. The WLAN chapter now provides coverage of WPA2-Professional with certificates for authentication in large deployments, such as the global Eduroam network and the new WLAN 60 GHz air interface. Bluetooth evolution has been addressed by including a detailed description of Bluetooth Low Energy (BLE) in the chapter devoted to Bluetooth. Describes the different systems based on the standards, their practical implementation and design assumptions, and the performance and capacity of each system in practice is analyzed and explained Questions at the end of each chapter and answers on the accompanying website make this book ideal for self-study or as course material.

Engineering Guidelines for Fixed, Mobile and Satellite Systems John Wiley & Sons

Written by experts actively involved in the 3GPP standards and product development, LTE for UMTS, Second Edition gives a complete and up-to-date overview of Long Term Evolution (LTE) in a systematic and clear manner. Building upon on the success of the first edition, LTE for UMTS, Second Edition has been revised to now contain improved coverage of the Release 8 LTE details, including field performance results, transport network, self optimized networks and also covering the enhancements done in 3GPP Release 9. This new edition also provides an outlook to Release 10, including the overview of Release 10 LTE-Advanced technology components which enable reaching data rates beyond 1 Gbps. Key updates for the second edition of LTE for UMTS are focused on the new topics from Release 9 & 10, and include: LTE-Advanced; Self optimized networks (SON); Transport network dimensioning; Measurement results.

Deploying IPv6 in 3GPP Networks Apress

The Definitive Guide to LTE Technology Long-Term Evolution (LTE) is the next step in the GSM evolutionary path beyond 3G technology, and it is strongly positioned to be the dominant global standard for 4G cellular networks. LTE also represents the first generation of cellular networks to be based on a flat IP architecture and is designed to seamlessly support a variety of different services, such as broadband data, voice, and multicast video. Its design incorporates many of the key innovations of digital communication, such as MIMO (multiple input multiple output) and OFDMA (orthogonal frequency division multiple access), that mandate new skills to plan, build, and deploy an LTE network. In Fundamentals of LTE, four leading experts from academia and industry explain the technical foundations of LTE in a tutorial style—providing a comprehensive overview of the standards. Following the same approach that made their recent Fundamentals of WiMAX successful, the authors offer a complete framework for understanding and evaluating LTE. Topics include Cellular wireless history and evolution: Technical advances, market drivers, and foundational networking and communications technologies Multicarrier modulation theory and practice: OFDM system design, peak-to-average power ratios, and SC-FDE solutions Frequency Domain Multiple Access: OFDMA downlinks, SC-FDMA uplinks, resource allocation, and LTE-specific implementation Multiple antenna techniques and tradeoffs: spatial diversity, interference cancellation, spatial multiplexing, and multiuser/networked MIMO LTE standard overview: air interface protocol, channel structure, and physical layers Downlink and uplink transport channel processing: channel encoding, modulation mapping, Hybrid ARQ, multi-antenna processing, and more Physical/MAC layer procedures and scheduling: channel-aware scheduling, closed/open-loop multi-antenna processing, and more Packet flow, radio resource, and mobility management: RLC, PDCP, RRM, and LTE radio access network mobility/handoff procedures

EPC and 4G Packet Networks Academic Press

The LTE-Advanced Deployment Handbook The Planning Guidelines for the Fourth Generation Networks John Wiley & Sons

Essentials of LTE and LTE-A John Wiley & Sons

The first comprehensive guide to the design and implementation of security in 5G wireless networks and devices Security models for 3G and 4G networks based on Universal SIM cards worked very well. But they are not fully applicable to the unique security requirements of 5G networks. 5G will face additional challenges due to increased user privacy concerns, new trust and service models and

requirements to support IoT and mission-critical applications. While multiple books already exist on 5G, this is the first to focus exclusively on security for the emerging 5G ecosystem. 5G networks are not only expected to be faster, but provide a backbone for many new services, such as IoT and the Industrial Internet. Those services will provide connectivity for everything from autonomous cars and UAVs to remote health monitoring through body-attached sensors, smart logistics through item tracking to remote diagnostics and preventive maintenance of equipment. Most services will be integrated with Cloud computing and novel concepts, such as mobile edge computing, which will require smooth and transparent communications between user devices, data centers and operator networks. Featuring contributions from an international team of experts at the forefront of 5G system design and security, this book: Provides priceless insights into the current and future threats to mobile networks and mechanisms to protect it Covers critical lifecycle functions and stages of 5G security and how to build an effective security architecture for 5G based mobile networks Addresses mobile network security based on network-centricity, device-centricity, information-centricity and people-centricity views Explores security considerations for all relative stakeholders of mobile networks, including mobile network operators, mobile network virtual operators, mobile users, wireless users, Internet-of things, and cybersecurity experts Providing a comprehensive guide to state-of-the-art in 5G security theory and practice, A Comprehensive Guide to 5G Security is an important working resource for researchers, engineers and business professionals working on 5G development and deployment.

Radio Protocols for LTE and LTE-Advanced John Wiley & Sons

A concise introduction to IMT-Advanced Systems, including LTE-Advanced and WiMAX There exists a strong demand for fully extending emerging Internet services, including collaborative applications and social networking, to the mobile and wireless domain. Delivering such services can be possible only through realizing broadband in the wireless. Two candidate technologies are currently competing in fulfilling the requirements for wireless broadband networks, WiMAX and LTE. At the moment, LTE and its future evolution LTE-Advanced are already gaining ground in terms of vendor and operator support. Whilst both technologies share certain attributes (utilizing Orthogonal Frequency Division Multiple Access (OFDMA) in downlink, accommodating smart antennas and full support for IP-switching, for example), they differ in others (including uplink technology, scheduling, frame structure and mobility support). Beyond technological merits, factors such as deployment readiness, ecosystem maturity and migration feasibility come to light when comparing the aptitude of the two technologies. LTE, LTE-Advanced and WiMAX: Towards IMT-Advanced Networks provides a concise, no-nonsense introduction to the two technologies, covering both interface and networking considerations. More critically, the book gives a multi-faceted comparison, carefully analyzing and distinguishing the characteristics of each technology and spanning both technical and economic merits. A “big picture” understanding of the market strategies and forecasts is also offered. Discusses and critically evaluates LTE, LTE-Advanced and WiMAX (Legacy and Advanced) Gives an overview of the principles and advances of each enabling technology Offers a feature-by-feature comparison between the candidate technologies Includes information which appeals to both industry practitioners and academics Provides an up-to-date report on market and industry status

A Practical Approach John Wiley & Sons

LTE-Advanced is the new Global standard which is expected to create a foundation for the future wireless broadband services. The standard incorporates all the latest technologies recently developed in the field of wireless communications. Presented in a modular style, the book provides an introductory description for beginners as well as practical guidelines for telecom specialists. It contains an introductory module that is suitable for the initial studies of the technology based on the 3GPP Release 10, 11 and beyond of LTE and SAE. The latter part of the book is suitable for experienced professionals who will benefit from the practical descriptions of the physical core and radio network planning, end-to-end performance measurements, physical network construction and optimization of the system. The focus of the book is in the functioning, planning, construction, measurements and optimization of the radio and core networks of the Release 10 and beyond of the 3GPP LTE and SAE standards. It looks at the practical description of the Advanced version of the LTE/SAE, how to de-mystify the LTE-Advanced functionality and planning, and how to carry out practical measurements of the system. In general, the book describes "how-to-do-it" for the 4G system which is compliant with the ITU-R requirements.

5G for the Connected World John Wiley & Sons

A complete and practical guide to WCDMA/UMTS cellular network deployment. After introducing the network architecture of such a system, the WCDMA (UMTS) Deployment Handbook defines the coverage and capacity concepts associated with the dimensioning and design phases. Progressing to a discussion of the main system parameters associated with network optimization and detailing optimization techniques for the main services supported by UMTS, and includes the specifics of indoor deployment and HSDPA networks evolution. Covers all stages from planning to optimization with sufficient details as required on a day-to-day basis, and thorough reference information for the reader who wants to understand the concepts in more detail Relevant for daily tasks: The approach taken in this book is similar to the work flow of network planner and optimization engineers, allowing such personnel to easily find the relevant information Written by the company which made CDMA a household name: QUALCOMM was the first company to use CDMA technology for cellular application and is a technical leader in this domain Based on industry feedback: All the contributors to this book have been working in direct interaction with WCDMA operators, throughout the world, since the early days of WCDMA commercial deployment Looking to the future: This book addresses the next level of challenge that WCDMA operators will face - deployment of indoor systems and HSDPA Providing a complete introduction and reference guide to everything associated with the life cycle of a WCDMA/UMTS cellular network, from initial dimensioning through to the successful deployment of indoor solutions, or migration to HSDPA, this book is a must-have for network planners and optimization engineers as well as Telecommunication Engineering students.

5G Technology Cambridge University Press

The book presents the proceedings of the 2nd International Conference on 5G for Ubiquitous Connectivity (5GU 2018), which took place on December 4-5, 2018 in Nanjing, People's Republic of China. The aim of this conference is to bring together researchers and developers as well as regulators and policy makers to present their latest views on 5G, including new networking, new wireless communications, resource control & management, future access techniques, new emerging applications, and latest findings in key research activities on 5G. The book is applicable to

researchers, academics, students, and professionals. Features practical, tested applications in 5G for ubiquitous connectivity; Includes discussion of 5G for ubiquitous connectivity in relation to wireless communications, resource control & management, and future access techniques; Applicable to researchers, academics, students, and professionals.

Cellular Communications John Wiley & Sons

Deploying IPv6 in 3GPP Networks - Evolving Mobile Broadband from 2G to LTE and Beyond A

practical guide enabling mobile operators to deploy IPv6 with confidence The most widely used cellular mobile broadband network technology is based on the 3GPP standards. The history and background of the 3GPP technology is in the Global Mobile Service (GSM) technology and the work done in European Telecommunications Standards Institute (ETSI). This primary voice service network has evolved to be the dominant mobile Internet access technology. Deploying IPv6 in 3GPP Networks covers how Internet Protocol version 6 (IPv6) is currently defined in the industry standards for cellular mobile broadband, why and how this route was taken in the technology, and what is the current reality of the deployment. Furthermore, it offers the authors' views on how some possible IPv6 related advances 3GPP networks may be improved during the coming years. It gives guidance how to implement and deploy IPv6 correctly in the Third Generation Partnership Project (3GPP) mobile broadband environment, and what issues one may face when doing so. The book covers 3GPP technologies from 2G to LTE, and offers some ideas for the future. Key features written by highly respected and experienced authors from the IPv6 / mobile world Provides an explanation of the technical background for some not-so-obvious design choices, what to concentrate on, and what transition strategies should be used by the vendors and the operators Offers a useful reference guide for operators and vendors entering into IPv6 business

The LTE / SAE Deployment Handbook John Wiley & Sons

Understand the new technologies of the LTE standard and their impact on system performance improvements with this practical guide.

Advanced Cellular Network Planning and Optimisation Academic Press

This book will help readers comprehend technical and policy elements of telecommunication particularly in the context of 5G. It first presents an overview of the current research and standardization practices and lays down the global frequency spectrum allocation process. It further lists solutions to accommodate 5G spectrum requirements. The readers will find a considerable amount of information on 4G (LTE-Advanced), LTE-Advanced Pro, 5G NR (New Radio); transport network technologies, 5G NGC (Next Generation Core), OSS (Operations Support Systems), network deployment and end-to-end 5G network architecture. Some details on multiple network elements (end products) such as 5G base station/small cells and the role of semiconductors in telecommunication are also provided. Keeping trends in mind, service delivery mechanisms along with state-of-the-art services such as MFS (mobile financial services), mHealth (mobile health) and IoT (Internet-of-Things) are covered at length. At the end, telecom sector's burning challenges and best practices are explained which may be looked into for today's and tomorrow's networks. The book concludes with certain high level suggestions for the growth of telecommunication, particularly on the importance of basic research, departure from ten-year evolution cycle and having a 20-30 year plan. Explains the conceivable six phases of mobile telecommunication's ecosystem that

includes R&D, standardization, product/network/device & application development, and burning challenges and best practices Provides an overview of research and standardization on 5G Discusses solutions to address 5G spectrum requirements while describing the global frequency spectrum allocation process Presents various case studies and policies Provides details on multiple network elements and the role of semiconductors in telecommunication Presents service delivery mechanisms with special focus on IoT

A Comprehensive and Practical Guide John Wiley & Sons

Do you have wireless deployment questions? This book can help. How do you make the transition into wireless telecom? How do you deploy small cells? How do you deploy DAS? How do you deploy CRAN? Do you understand the issues with macro sites? If you're curious about LTE deployment, for carrier grade LTE systems, take a look and learn. Based on real world experience of carrier deployments. Get the inside information that could help you avoid all the mistakes I made! Learn what CRAN really is? The deployment of LTE small cells, CRAN, DAS, and mini macros can be challenging. By preparing for all of the phases of deployment you can predict the problems and minimize them prior to sending anyone in the field. This preparation will be necessary to make the field work as cost effective as possible. This is where many companies get in trouble. They do not realize the complexity of the deployment nor do they look at all the phases required to make it a success. Planning is the key! Learn the carrier's wireless deployment phases step by step and how to build partnerships to grow business.

Femtocell Communications and Technologies: Business Opportunities and Deployment Challenges Wiley

As telecommunications operators and network engineers understand, specific operational requirements drive early network architectural and design decisions for 4G networks. But they also know that because technology, standards, usage practices, and regulatory regimes change on a continuous basis, so do best practices. 4G: Deployment Strategies and Operational Implications helps you stay up to date by providing the latest innovative and strategic thinking on 4G and LTE deployments. It evaluates specific design and deployment options in depth and offers roadmap evolution strategies for LTE network business development. Fortunately, as you'll discover in this book, LTE is a robust and flexible standard for 4G communications. Operators developing 4G deployment strategies have many options, but they must consider the tradeoffs among them in order to maximize the return on investment for LTE networks. This book will show operators how to develop detailed but flexible deployment road maps incorporating business requirements while allowing the agility that expected and unexpected network evolution require. Such road maps help you avoid costly redeployment while leveraging profitable traffic. Telecommunications experts and authors Trichy Venkataraman Krishnamurthy and Rajaneesh Shetty examine various architectural options provided by the flexibility of LTE and their effect on the general current and future capability of the designed network. They examine specific features of the network, while covering specific architectural deployment strategies through example and then assessing their implications on both near- and long-term operations as well as potential evolutionary paths. Besides helping you understand and communicate network upgrade and architectural evolution road maps (with options), you will learn: How to plan for accessibility, retainability, integrity, availability, and mobility

How to balance loads effectively How to manage the constraints arising from regulation and standardization How to manage the many disruptive factors affecting LTE networks 4G: Deployment Strategies and Operational Implications also outlines specific network strategies, which network features and deployment strategies support those strategies, and the trade-offs in business models depending on the strategies chosen. Best of all you will learn a process for proactive management of network road map evolution, ensuring that your network—and your skills—remain robust and relevant as the telecommunications landscape changes.

Indoor Radio Planning John Wiley & Sons

A comprehensive reference on the call procedures of 4G RAN and Core networks, LTE Signaling, Troubleshooting and Optimization describes the protocols and procedures of LTE. It explains essential topics from basic performance measurement counters, radio quality and user plane quality to the standards, architecture, objectives and functions of the different interfaces. The first section gives an overview of LTE/EPC network architecture, reference points, protocol stacks, information elements and elementary procedures. The proceeding parts target more advanced topics to cover LTE/EPC signalling and radio quality analysis. This book supplements the information provided in the 3GPP standards by giving readers access to a universal LTE/EPC protocol sequence to ensure they have a clear understanding of the issues involved. It describes the normal signaling procedures as well as explaining how to identify and troubleshoot abnormal network behavior and common failure causes. Enables the reader to understand the signaling procedures and parameters that need to be analyzed when monitoring UMTS networks Covers the essential facts on signaling procedures by providing first hand information taken from real LTE/EPC traces A useful reference on the topic, also providing sufficient details for test and measurement experts who need to analyze LTE/EPC signaling procedures and measurements at the most detailed level Contains a description of LTE air interface monitoring scenarios as well as other key topics up to an advanced level LTE Signaling, Troubleshooting and Optimization is the Long Term Evolution successor to the previous Wiley books UMTS Signaling and UMTS Performance Measurement.

Paving the way towards 5G Pearson Education

Provides a unique focus on radio protocols for LTE and LTE-Advanced (LTE-A) Giving readers a valuable understanding of LTE radio protocols, this book covers LTE (Long-Term Evolution) Layer 2/3 radio protocols as well as new features including LTE-Advanced. It is divided into two sections to differentiate between the two technologies' characteristics. The authors systematically explain the design principles and functions of LTE radio protocols during the development of mobile handsets. The book also provides essential knowledge on the interaction between mobile networks and mobile handsets. Among the first publications based on the 3GPP R10 specifications, which introduces LTE-A Beginning with an overview of LTE, topics covered include: Idle Mode Procedure; Packet Data Convergence Protocol and Public Warning Systems Presents the LTE radio interface protocol layers in a readable manner, to enhance the material in the standards publications From an expert author team who have been directly working on the 3GPP standards It is targeted at professionals working or intending to work in the area and can also serve as supplementary reading material for students who need to know how theory on the most extensively used mobile radio interface today is put into practice