List Of Acronyms Keysight

Building upon the success of the first edition (2007), Wireless Transceiver Design 2nd Edition is an accessible textbook that explains the concepts of wireless transceiver design in detail. The architectures and the detailed design of both traditional and advanced all-digital wireless transceivers are discussed in a thorough and systematic manner, while carefully watching out for clarity and simplicity. Many practical examples and solved problems at the end of each chapter allow students to thoroughly understand the mechanisms involved, to build confidence, and enable them to readily make correct and practical use of the applicable results and formulas. From the instructors' perspective, the book will enable the reader to build courses at different levels of depth, starting from the basic understanding, whilst allowing them to focus on particular elements of study. In addition to numerous fully-solved exercises, the authors include actual exemplary examination papers for instructors to use as a reference format for student evaluation. The new edition has been adapted with instructors/lecturers, graduate/undergraduate students and RF engineers in mind. Non-RF engineers looking to acquire a basic understanding of the main related RF subjects will also find the book invaluable.
This book presents the fundamental concepts, recent advancements, and opportunities for future research in various key enabling technologies in next-generation wireless communications. The book serves as a comprehensive source of information in all areas of wireless communications with a particular emphasis on physical (PHY) layer techniques related to 5G wireless systems and beyond. In particular, this book focuses on different emerging techniques that can be adopted in 5G wireless networks. Some of those techniques include massive-MIMO, mm-Wave communications, spectrum sharing, device-to-device (D2D) and vehicular to anything (V2X) communications, radio-frequency (RF) based energy harvesting, and NOMA. Subsequent chapters cover the fundamentals and PHY layer design aspects of different techniques that can be useful for the readers to get familiar with the emerging technologies and their applications.
5G Physical Layer: Principles, Models and Technology Components explains fundamental physical layer design principles, models and components for the 5G new radio access technology – 5G New Radio (NR). The physical layer models include radio wave propagation and hardware impairments for the full range of frequencies considered for the 5G NR (up to 100 GHz). The physical layer technologies include flexible multi-carrier waveforms, advanced multi-antenna solutions, and channel coding schemes for a wide range of services, deployments, and frequencies envisioned for 5G and beyond. A MATLAB-based link level simulator is included to explore various design options. 5G Physical Layer is very suitable for wireless system designers and researchers: basic understanding of communication theory and signal processing is assumed, but familiarity with 4G and 5G standards is not required. With this book the reader will learn: The fundamentals of the 5G NR physical layer (waveform, modulation, numerology, channel codes, and multi-antenna schemes). Why certain PHY technologies have been adopted for the 5G NR. The fundamental physical limitations imposed by radio wave propagation and hardware impairments. How the fundamental 5G NR physical layer functionalities (e.g., parameters/methods/schemes) should be realized. The content includes: A global view of 5G development – concept, standardization, spectrum allocation, use cases and requirements, trials, and future commercial deployments. The fundamentals behind the 5G NR physical layer specification in 3GPP. Radio wave propagation and channel modeling for 5G and beyond. Modeling of hardware impairments for future base stations and devices. Flexible multi-carrier waveforms, multi-antenna solutions, and channel coding schemes for 5G and beyond. A simulator including hardware impairments, radio propagation, and various waveforms. Ali Zaidi is a strategic product manager at Ericsson, Sweden. Fredrik Athley is a senior researcher at Ericsson, Sweden. Jonas Medbo and Ulf Gustavsson are senior specialists at Ericsson, Sweden. Xiaoming Chen is a professor at Xi'an Jiaotong University, China. Giuseppe Durisi is a professor at Chalmers University of Technology, Sweden, and a guest researcher at Ericsson, Sweden.
An integrated language arts approach to literacy development that brings early childhood perspectives on how children learn in pre-kindergarten though grade three, together with explicit teaching of literacy skills and strategies teachers need to make it all work. Pre-service and in-service teachers get a wealth of valuable information for making children active participants in the process of literacy development with this integrated approach to language arts. The book encourages teaching reading, writing, listening, thinking, and viewing at the same time, using each skill to develop the others, and discusses both constructivist problem-solving teaching and more explicit systematic instruction. Through both theoretical and research-based rationales, plus extensive practical applications, renowned author Lesley Mandel Morrow presents literacy development as an active process between children and adults to create meaning and real purpose-and helps pre- and in-service teachers grasp the scope and complexity of early literacy development. This comprehensive, balanced approach to literacy teaching and learning covers oral language development, word study, phonological awareness, phonics, comprehension, listening and writing. The reader is provided with a complete picture of early literacy development.
Mastering the Design of Modern Wireless Equipment and Systems
Customizing Applications, Technologies and Deployment Techniques
Long Term Evolution
Proceedings of HUMENS 2021
Applications in Electronics Pervading Industry, Environment and Society
LTE and the Evolution to 4G Wireless
Noise Coupling in Integrated Circuits

The book provides an overview of both circuit-level and architectural techniques used in low power radio design, with a comprehensive study of state-of-the-art examples.
LIG is a revolutionary technique that uses a common CO2 infrared laser scriber, like the one used in any machine shop, for the direct conversion of polymers into porous graphene under ambient conditions. This technique combines the preparation and patterning of 3D graphene in a single step, without the use of wet chemicals. The ease in the structural engineering and excellent mechanical properties of the 3D graphene obtained have made LIG a versatile technique for applications across many fields. This book compiles cutting-edge research on LIG by different research groups all over the world. It discusses the strategies that have been developed to synthesize and engineer graphene, including controlling its properties such as porosity, composition, and surface characteristics. The authors are pioneers in the discovery and development of LIG and the book will appeal to anyone involved in nanotechnology, chemistry, environmental sciences, and device development, especially those with an interest in the synthesis and applications of graphene-based materials.
A comprehensive, hands-on review of the most up-to-date techniques in RF and microwave measurement, including practical advice on deployment challenges.
The Sales & Marketing Policies and Procedures Manual - Easily Create your Growth Policy Manual Using a Process Approach to Manage Sales Strategies and Marketing Tactics Procedures. This Manual is the foundation of any business and can help you take control of your Sales & Marketing processes and improve key facets like lead generation and sales closing. Thoroughly researched and reviewed by experts, these pre-written policies and procedures are based on the continually improving process philosophy, and they incorporate best practices and proven techniques that provide results. Creating clear policies and procedures can help align your sales and marketing efforts, which dramatically improves your sales pipeline management. They also assist in determining which efforts and practices produce tangible results; leading to improved cost per lead and cost per sale performance. This new edition also includes updated and complete job descriptions for every job referenced in the text. Designed for busy professionals like Sales Managers, Marketing Managers, Sales & Marketing VPs, and Business Owners, the Sales & Marketing Policies and Procedures Manual can save you hundreds of hours in researching and writing the procedures you need to standardize efforts and practices in areas such as developing strategies and tactics, administration, lead management and lead qualification, customer life cycle management, training, and product launch. There is no need to start from scratch. It has already been done for you.
An Introduction
5G and Beyond Wireless Systems
5G NR: The Next Generation Wireless Access Technology
Terabit-Rate Transmission Using Optical Frequency Comb Sources
Innovative Mobile and Internet Services in Ubiquitous Computing
Parasitic Substrate Coupling in High Voltage Integrated Circuits
Principles, Models and Technology Components

This book includes proceedings of the 15th International Conference on Innovative Mobile and Internet Services in Ubiquitous Computing (IMIS-2021), which took place in Asan, Korea, on July 1-3, 2021. With the proliferation of wireless technologies and electronic devices, there is a fast-growing interest in Ubiquitous and Pervasive Computing (UPC). The UPC enables to create a human-oriented computing environment where computer chips are embedded in everyday objects and interact with physical world. Through UPC, people can get online even while moving around, thus, having almost permanent access to their preferred services. With a great potential to revolutionize our lives, UPC also poses new research challenges. The aim of the book is to provide the latest research findings, methods, development techniques, challenges, and solutions from both theoretical and practical perspectives related to UPC with an emphasis on innovative, mobile, and Internet services.
While 3G has been an outstanding success, the ever-growing demand for higher data rates and higher quality mobile communication services continues to fuel conflict between the rapidly growing number of users and limited bandwidth resources. In the future, a 100-fold increase in mobile data traffic is expected. That will necessitate further improvements to 3GPP LTE (Long-Term Evolution) and create limitless opportunities for engineers who understand the technology and how to apply it to deliver enhanced services. Long Term Evolution: 3GPP LTE Radio and Cellular Technology outlines the best way to position yourself now for future success. With coverage ranging from basic concepts to current research, this comprehensive reference contains technical information about all aspects of 3GPP LTE. It details low chip rate, high-speed downlink/uplink packet access (HSxPA)/TDSCDMA EV 1x, LTE TDD, and 3G TDD. It introduces new technologies and covers methodologies to study the performance of frequency allocation schemes. The authors also discuss the proposed architecture of Mobile IPRR and distributed dynamic architecture in wireless communication, covering performance evaluation of the TD-SCDMA LTE System. With each passing day, more and more users are demanding mobile broadband data access everywhere, to facilitate synchronization of e-mails, Internet access, specific applications, and file downloads to mobile devices such as cell phones, smart phones, PDAs, and notebooks. LTE, successor to the 3G mobile radio network, is essential to creating radio coverage in the rollout phase and high capacity all over the radio cell in the long term. The 3GPP LTE will become increasingly crucial to supporting the high demand of data traffic rates generated by future mobile user terminals. Authored by international experts in the field, this practical book is an extremely valuable guide that addresses emerging current and future technologies associated with LTE and its future direction.
"This book is a ready reference on RF & microwave measurements - a balance of theory, mathematics, applications and measurement techniques - all at one place. Coming from a true engineer, RF & µWave Measurements is a timeless desktop reference for every practicener." Prof. V.D. Vankar, Adjunct Professor Netaji Subhas University of Technology New Delhi & Ex. Professor Indian Institute of Technology Delhi "Shiv Prasad Tripathy knows his subject well. I am delighted he is summarizing his knowledge in the form of a book RF & µWave Measurements that shall benefit professionals as well as students." Arpit Mittal, Senior Engineer, Qualcomm ..... can be read selectively as a ready-reference but the reader is recommended to go through the complete book when reading it first time. The book is useful to anyone who works on RF & microwave ..... [from book Foreword] RF & µWave Measurements covers concepts, applications, and measurement techniques for widely used RF measurement parameters. The contents follow a top-down approach and are introduced within a measurement framework that provides a structure, orderliness and coherence to this vast subject. RF & µWave Measurements covers signal properties & modulation, linear & non-linear device models, measurement techniques, plus instrument families; all with a balanced mix of theory and practical information, ample illustrations, mathematical treatment and practical examples. The book is organized as follows: Chapter 1 RF & µWave Overview Chapter 2 Measurement Framework Chapter 3 Measurement Insights - I Chapter 4 Measurement Insights - II Chapter 5 Signal Measurement & Analysis Chapter 6 Signal Sources Chapter 7 Network Characterization Chapter 8 Measurement of Power Chapter 9 Time Domain Measurements Chapter 10 Measurement Solutions Appendix - Smith Chart Further, more than 30 measurement parameters are covered that include AM-AM, sensitivity, passive intermodulation, crosstalk, isolation, harmonic distortion, gain compression, noise figure, directivity, PAE, IP2, IQ modulation, power gain, phase noise, AM-PM, phase delay, IP3, load pull, permittivity, TDR, plus many other regularly encountered by RF engineers. Instrumentation discussion includes theory of operation, measurement principles and features for signal sourcing, signal analysis, network characterization and power measurements. Techniques for 50+ measurement scenarios are provided that cover frequency and time domain measurements. Measurement solutions are exemplified to encourage reader to build their own test solutions. RF & µWave Measurements is a much-needed bridge between conventional textbooks and reference handbooks and is a useful desktop ready-reference for engineers, researchers, product organizations and educators. Shiv Prasad Tripathy is a hands-on engineering practitioner, who provides consulting & knowledge services to people in the academics and industry. More information about him is on the author's page.
This book introduces a new approach to model and predict substrate parasitic failures in integrated circuits with standard circuit design tools. The injection of majority and minority carriers in the substrate is a recurring problem in smart power ICs containing high voltage, high current switching devices besides sensitive control, protection and signal processing circuits. The injection of parasitic charges leads to the activation of substrate bipolar transistors. This book explores how these events can be evaluated for a wide range of circuit topologies. To this purpose, new generalized devices implemented in Verilog-A are used to model the substrate with standard circuit simulators. This approach was able to predict for the first time the activation of a latch-up in real circuits through post-layout SPICE simulation analysis. Discusses substrate modeling and circuit-level simulation of parasitic bipolar device coupling effects in integrated circuits; Includes circuit back-annotation of the parasitic lateral n-p-n and vertical p-n-p bipolar transistors in the substrate; Uses Spice for simulation and characterization of parasitic bipolar transistors, latch-up of the parasitic p-n-p-n structure, and electrostatic discharge (ESD) protection devices; Offers design guidelines to reduce couplings by adding specific protections.
APPLEPIES 2019
Human-Centered Technology for a Better Tomorrow
CEH Certified Ethical Hacker All-in-One Exam Guide
Laser-induced Graphene
Development of high-temperature superconductor cables for high direct current applications
Radio Systems Engineering
Minority and Majority Carriers Propagation in Semiconductor Substrate

The semiconductor industry is a fundamental building block of the new economy, there is no area of modern life untouched by the progress of nanoelectronics. The electronic chip is becoming an ever-increasing portion of system solutions, starting initially from less than 5% in the 1970 microcomputer era, to more than 60% of the final cost of a mobile telephone, 50% of the price of a personal computer (representing nearly 100% of the functionalities) and 30% of the price of a monitor in the early 2000's. Interest in utilizing the (sub-)mm-wave frequency spectrum for commercial and research applications has also been steadily increasing. Such applications, which constitute a diverse but sizeable future market, span a large variety of areas such as health, material science, mass transit, industrial automation, communications, and space exploration. Silicon-Germanium Heterojunction Bipolar Transistors for mm-Wave Systems Technology, Modeling and Circuit Applications provides an overview of results of the DOTSEVEN EU research project, and as such focusses on key material developments for mm-Wave Device Technology. It starts with the motivation at the beginning of the project and a summary of its major achievements. The subsequent chapters provide a detailed description of the obtained research results in the various areas of process development, device simulation, compact device modeling, experimental characterization, reliability, (sub-)mm-wave circuit design and systems.
This book introduces the reader to a number of challenges for the operation of electronic devices in various harsh environmental conditions. While some chapters focus on measuring and understanding the effects of these environments on electronic components, many also propose design solutions, whether in choice of material, innovative structures, or strategies for amelioration and repair. Many applications need electronics designed to operate in harsh environments. Readers will find, in this collection of topics, tools and ideas useful in their own pursuits and of interest to their intellectual curiosity. With a focus on radiation, operating conditions, sensor systems, package, and system design, the book is divided into three parts. The first part deals with sensing devices designed for operating in the presence of radiation, commercials of the shelf (COTS) products for space computing, and influences of single event upset. The second covers system and package design for harsh operating conditions. The third presents devices for biomedical applications under moisture and temperature loads in the frame of sensor systems and operating conditions.
5G Physical LayerPrinciples, Models and Technology ComponentsAcademic Press
A comprehensive introduction to the hardware, parameters, andarchitectures of RF/microwave wireless systems As the basis for some of the hottest technologies of the newmillennium, radio frequency (RF) and microwave wireless systemsrapidly propel us toward a future in which the transmission ofvoice, video, and data communications will be possible anywhere inthe world through the use of simple, handheld devices. This book provides scientists and engineers with clear, thorough,up-to-date explanations of all aspects of RF and microwave wirelesssystems, including general hardware components, system parameters,and architectures. Renowned authority Kai Chang covers bothcommunication and radar/sensor systems and extends the discussionto other intriguing topics, from global positioning systems (GPS)to smart highways and smart automobiles. With an emphasis on basicoperating principles, Dr. Chang reviews waves and transmissionlines, examines modulation and demodulation and multiple-accesstechniques, and helps bridge the gap between RF/microwaveengineering and communication system design. Ample practicalexamples of components and system configurations and nearly 300illustrations and photographs complete this timely andindispensable resource. An Instructor's Manual presenting detailed solutions to all theproblems in the book is
available from the Wiley editorialdepartment
5G Mobile Communications
Deformation and Fracture Properties of the Soft Magnetic Composite Somaloy 700 3P on Different Length Scales
The Dark Side of 5G
PHY Layer Perspective
GaN-Based Tri-Gate High Electron Mobility Transistors.
Bridging the Gap Between Theory and Practice
Design and Measurement Challenges

Get complete coverage of all the objectives included on the EC-Council's Certified Ethical Hacker exam inside this comprehensive resource. Written by an IT security expert, this authoritative guide covers the vendor-neutral CEH exam in full detail. You'll find learning objectives at the beginning of each chapter, exam tips, practice exam questions, and in-depth explanations. Designed to help you pass the exam with ease, this definitive volume also serves as an essential on-the-job reference. COVERS ALL EXAM TOPICS, INCLUDING: Introduction to ethical hacking Cryptography Reconnaissance and footprinting Network scanning Enumeration System hacking Evasion techniques Social engineering and physical security Hacking web servers and applications SQL injection Viruses, trojans, and other attacks Wireless hacking Penetration testing Electronic content includes: Two practice exams Bonus appendix with author's recommended tools, sites, and references
Femtocells are low-power wireless access points used in the home and office. They operate in licensed spectrum to connect standard mobile phones (WCDMA, LTE, WiMAX, CDMA and GSM) and other mobile devices to a mobile operator's network via standard broadband internet connections. This technology is of high interest for mobile operators and for millions of users who will benefit from enhanced access to mobile broadband services. Femtocells outlines how wireless access points can be used by mobile operators to provide high-speed wireless access, enhancing coverage and capacity and delivering entirely new services, while maximising the benefits of licensed spectrum. The book examines the market, exploring commercial and technical factors which are critical in the initial deployment and long-term success of femtocells. Business, standards and regulatory aspects are also considered to provide a complete but concise overview. One of the first authoritative texts to concentrate on femtocells Written by expert authors from industry including leading analysts, femtocell and system vendors Covers both technology and business aspects in detail Provides overview of the relevant standards across WCDMA, LTE, CDMA, WiMAX and GSM air interfaces
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-Advance 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
5G NR: The Next Generation Wireless Access Technology follows the authors' highly celebrated books on 3G and 4G by providing a new level of insight into 5G NR. After an initial discussion of the background to 5G, including requirements, spectrum aspects and the standardization timeline, all technology features of the first phase of NR are described in detail. Included is a detailed description of the NR physical-layer structure and higher-layer protocols, RF and spectrum aspects and co-existence and interworking with LTE. The book provides a good understanding of NR and the different NR technology components, giving insight into why a certain solution was selected. Content includes: Key radio-related requirements of NR, design principles, technical features Details of basic NR transmission structure, showing where it has been inherited from LTE and where it deviates from it, and the reasons why NR Multi-antenna transmission functionality Detailed description of the signals and functionality of the initial NR access, including signals for synchronization and system information, random access and paging LTE/NR co-existence in the same spectrum, the benefits of their interworking as one system The different aspects of mobility in NR RF requirements for NR will be described both for BS and UE, both for the legacy bands and for the new mm-wave bands Gives a concise and accessible explanation of the underlying technology and standards for 5G NR radio-access technology Provides detailed description of the NR physical-layer structure and higher-layer protocols, RF and spectrum aspects and co-existence and interworking with LTE Gives insight not only into the details of the NR specification but also an understanding of why certain solutions look like they do
A Tutorial Approach
5G Radio Access Network Architecture
Millimeter Wave Wireless Communications
Silicon-Germanium Heterojunction Bipolar Transistors for mm-Wave Systems: Technology, Modeling and Circuit Applications
Wireless Communications Systems
For Design, Verification and Quality Control
Literacy Development in the Early Years: Helping Children Read and Write

Written by an industry insider with state of the art research at their fingertips, this book describes the Radio Access Network (RAN) architecture, starting with currently deployed 4G, followed by the description of 5G requirements and why re-thinking of the RAN architecture is needed to support these. Based on these considerations, it explains how 5G network architecture, which is currently being defined, is likely to evolve. The aim is not merely to cover relevant standards and technologies as a purely academic exercise (although a significant part of the book will be dedicated to these), but to augment these by practical deployment, to illustrate why the RAN architecture is changing and where it is going. With 5G deployments on the horizon, there is a desire within companies to both re-think the RAN architecture and to change the proprietary nature of the RAN. Correspondingly, there is increased interest in academia, standards bodies and commercial entities involved in the area.
A comprehensive introduction to the fundamentals of design and applications of wireless communications Wireless Communications Systems starts by explaining the fundamentals needed to understand, design, and deploy wireless communications systems. The author, a noted expert on the topic, explores the basic concepts of signals, modulation, antennas, and propagation with a MATLAB emphasis. The book emphasizes practical applications and concepts needed by wireless engineers. The author introduces applications of wireless communications and includes information on satellite communications, radio frequency identification, and offers an overview with practical insights into the topic of multiple input multiple output (MIMO). The book also explains the security and health effects of wireless systems concerns on users and designers. Designed as a practical resource, the text contains a range of examples and pictures that illustrate many different aspects of wireless technology. The book relies on MATLAB for most of the computations and graphics. This important text: Reviews the basic information needed to understand and design wireless communications systems Covers topics such as MIMO systems, adaptive antennas, direction finding, wireless security, internet of things (IoT), radio frequency identification (RFID), and software defined radio (SDR) Provides examples with a MATLAB emphasis to aid comprehension Includes an online solutions manual and video lectures on selected topics Written for students of engineering and physics and practicing engineers and scientists, Wireless Communications Systems covers the fundamentals of wireless engineering in a clear and concise manner and contains many illustrative examples.
The rapidly-growing data throughput rates in a wide range of wireless communication applications are pushing the established semiconductor device technologies to their limits. Considerably higher levels of solid-state output power will therefore be needed to meet the demand in the next generation satellite communications as well as the RADAR systems. Owing to their superior material properties such as high breakdown fields and peak electron velocities, GaN-based high electron mobility transistors (HEMTs) have recently prevailed in high-power systems operating in the microwave frequency bands. On the other hand at the millimetre-wave (MMW) and sub-MMW frequencies, highly-scaled GaN HEMTs are prone to experiencing deteriorated high frequency characteristics which severely limit the high-power performance. In an attempt to overcome this, 3-dimensional GaN HEMT devices featuring the Tri-gate topology are developed in this work, exhibiting enhanced performance in terms of both off- and on-state figures of merit. The demonstrated results promote the great potential of Tri-gate GaN HEMTs for both MMW power amplifier and high-speed logic applications.
This book acts as a compilation of papers presented in the Human Engineering Symposium (HUMENS 2021). The symposium theme, "Human-centered Technology for A Better Tomorrow," covers the following research topics: ergonomics, biomechanics, sports technology, medical device and instrumentation, artificial intelligence / machine learning, industrial design, rehabilitation, additive manufacturing, modelling and bio-simulation, and signal processing. Fifty-nine articles published in this book are divided into four parts, namely Part 1—Artificial Intelligence and Biosimulation, Part 2—Biomechanics, Safety and Sports, Part 3—Design and Instrumentation, and Part 4—Ergonomics.
Concepts and Technologies
Data Management, Analytics and Innovation
Ultra-Low Power Fm-Uwb Transceivers for Iot
Femtocells
Sales & Marketing Policies and Procedures Manual
Opportunities and Challenges for Business and Technology

This book is a valuable resource to deeply understand the technology used in 3D cameras. In this book, the authors summarize and compare the specifications of the main 3D cameras available in the mass market. The authors present a deep metrological analysis of the main camera based on the three main technologies: Time-of-Flight, Structured-Light and Active Stereoscopy, and provide qualitative results for any user to understand the underlying technology within 3D camera, as well as practical guidance on how to get the most of them for a given application.
A comprehensive text to an understanding the next generation mobile broadband and wireless Internet of Things (IoT) technologies 5G Verticals brings together in one comprehensive volume a group of visionaries and technical experts from academia and industry. The expert authors discuss the applications and technologies that comprise 5G verticals. The earlier network generations (2G to 4G) were designed as on-size-fits-all, general-purpose connectivity platforms with limited differentiation capabilities. 5G networks have the capability to demand customizable mobile networks and create an ecosystem for technical and business innovation involving vertical markets such as automotive, healthcare, manufacturing, energy, food and agriculture, city management, government, public transportation, media and more. 5G will serve a large portfolio of applications with various requirements ranging from high reliability to ultra-low latency going through high bandwidth and mobility. In this book, the authors explore applications and usages of various 5G verticals including a set of key metrics for these uses and their corresponding target requirements. The book also examines the potential network architectures and enabling technologies to meet the requirements of 5G verticals. This important book: Offers a comprehensive resource to the promise of 5G Verticals Provides a set of key metrics for the uses and target requirements Contains illustrative examples of the technology and applications Includes contributions from experts in the field and professionals that developed the 5G standards Provides an analysis of specific vertical industries which have the potential to be among the first industries to use 5G Written for industry practitioners, engineers and researchers, 5G Verticals discusses the technology that enables the 5G system to be flexibly deployed and scaled.
The Definitive, Comprehensive Guide to Cutting-Edge Millimeter Wave Wireless Design "This is a great book on mmWave systems that covers many aspects of the technology targeted for beginners all the way to the advanced users. The authors are some of the most credible scholars I know of who are well respected by the industry. I highly recommend studying this book in detail." —Ali Sadri, Ph.D., Sr. Director, Intel Corporation, MCG mmWave Standards and Advanced Technologies Millimeter wave (mmWave) is today's breakthrough frontier for emerging wireless mobile cellular networks, wireless local area networks, personal area networks, and vehicular communications. In the near future, mmWave products, systems, theories, and devices will come together to deliver mobile data rates thousands of times faster than today's existing cellular and WiFi networks. In Millimeter Wave Wireless Communications, four of the field's pioneers draw on their immense experience as researchers, entrepreneurs, inventors, and consultants, empowering engineers at all levels to succeed with mmWave. They deliver exceptionally clear and useful guidance for newcomers, as well as the first complete desk reference for design experts. The authors explain mmWave signal propagation, mmWave circuit design, antenna designs, communication theory, and current standards (including IEEE 802.15.3c, Wireless HD, and ECMA/WiMedia). They cover comprehensive mmWave wireless design issues, for 60 GHz and other mmWave bands, from channel to antenna to receiver, introducing emerging design techniques that will be invaluable for research engineers in both industry and academia. Topics include Fundamentals: communication theory, channel propagation, circuits, antennas, architectures, capabilities, and applications Digital communication: baseband signal/channel models, modulation, equalization, error control coding, multiple input multiple output (MIMO) principles, and hardware architectures Radio wave propagation characteristics: indoor and outdoor applications Antennas/antenna arrays, including on-chip and in-package antennas, fabrication, and packaging Analog circuit design: mmWave transistors, fabrication, and transceiver design approaches Baseband circuit design: multi–gigabit-per-second, high-fidelity DAC and ADC converters Physical layer: algorithmic choices, design considerations, and impairment solutions; and how to overcome clipping, quantization, and nonlinearity Higher-layer design: beam adaptation protocols, relaying, multimedia transmission, and multiband considerations 60 GHz standardization: IEEE 802.15.3c for WPAN, Wireless HD, ECMA-387, IEEE 802.11ad, Wireless Gigabit Alliance (WiGig)
A practical guide to LTE design, test and measurement, this new edition has been updated to include the latest developments This book presents the latest details on LTE from a practical and technical perspective. Written by Agilent's measurement experts, it offers a valuable insight into LTE technology and its design and test challenges. Chapters cover the upper layer signaling and system architecture evolution (SAE). Basic concepts such as MIMO and SC-FDMA, the new uplink modulation scheme, are introduced and explained, and the authors look into the challenges of verifying the designs of the receivers, transmitters and protocols of LTE systems. The latest information on RF and signaling conformance testing is delivered by authors participating in the LTE 3GPP standards committees. This second edition has been considerably revised to reflect the most recent developments of the technologies and standards. Particularly important updates include an increased focus on LTE-Advanced as well as the latest testing specifications. Fully updated to include the latest information on LTE 3GPP standards Chapters on conformance testing have been majorly revised and there is an increased focus on LTE-Advanced Includes new sections on testing challenges as well as over the air MIMO testing, protocol testing and the most up-to-date test capabilities of instruments Written from both a technical and practical point of view by leading experts in the field
A Practical Approach to Analysis, Modeling, and Suppression
Optical Interconnects for Future Data Center Networks
High-density Digital Recording
Proceedings of ICDMAI 2020, Volume 2
3GPP LTE Radio and Cellular Technology
Pearson New International Edition
Nanometer Design for Testability

This book provides a thorough overview of cutting-edge research on electronics applications relevant to industry, the environment, and society at large. It covers a broad spectrum of application domains, from automotive to space and from health to security, while devoting special attention to the use of embedded devices and sensors for imaging, communication and control. The book is based on the 2019 ApplePies Conference, held in Pisa, Italy in September 2019, which brought together researchers and stakeholders to consider the most significant current trends in the field of applied electronics and to debate visions for the future. Areas addressed by the conference included information communication technology; biotechnology and biomedical imaging; space; secure, clean and efficient energy; the environment; and smart, green and integrated transport. As electronics technology continues to develop apace, constantly meeting previously unthinkable targets, further attention needs to be directed toward the electronics applications and the development of systems that facilitate human activities. This book, written by industrial and academic professionals, represents a valuable contribution in this endeavor.
The first book on optical OFDM by the leading pioneers in the field The only book to cover error correction codes for optical OFDM Gives applications of OFDM to free-space communications, optical access networks, and metro and log haul transports show optical OFDM can be implemented Contains introductions to signal processing for optical engineers and optical communication fundamentals for wireless engineers This book gives a coherent and comprehensive introduction to the fundamentals of OFDM signal processing, with a distinctive focus on its broad range of applications. It evaluates the architecture, design and performance of a number of OFDM variations, discusses coded OFDM, and gives a detailed study of error correction codes for access networks, 100 Gb/s Ethernet and future optical networks. The emerging applications of optical OFDM, including single-mode fiber transmission, multimode fiber transmission, free space optical systems, and optical access networks are examined, with particular attention paid to passive optical networks, radio-over-fiber, WiMAX and UWB communications. Written by two of the leading contributors to the field, this book will be a unique reference for optical communications engineers and scientists. Students, technical managers and telecom executives seeking to understand this new technology for future-generation optical networks will find the book invaluable. William Shieh is an associate professor and reader in the electrical and electronic engineering department, The University of Melbourne, Australia. He received his M.S. degree in electrical engineering and Ph.D. degree in physics both from University of Southern California. Ivan Djordjevic is an Assistant Professor of Electrical and Computer Engineering at the University of Arizona, Tucson, where he directs the Optical Communications Systems Laboratory (OCSL). His current research interests include optical networks, error control coding, constrained coding, coded modulation, turbo equalization, OFDM applications, and quantum error correction. "This wonderful book is the first one to address the rapidly emerging optical OFDM field. Written by two leading researchers in the field, the book is structured to comprehensively cover any optical OFDM aspect one could possibly think of, from the most fundamental to the most specialized. The book adopts a coherent line of presentation, while striking a thoughtful balance between the various topics, gradually developing the optical-physics and communication-theoretic concepts required for deep comprehension of the topic, eventually treating the multiple optical OFDM methods, variations and applications. In my view this book will remain relevant for many years to come, and will be increasingly accessed by graduate students, accomplished researchers as well as telecommunication engineers and managers keen to attain a perspective on the emerging role of OFDM

in the evolution of photonic networks." -- Prof. Moshe Nazarathy, EE Dept., Technion, Israel Institute of Technology * The first book on optical OFDM by the leading pioneers in the field * The only book to cover error correction codes for optical OFDM * Applications of OFDM to free-space communications, optical access networks, and metro and log haul transports show optical OFDM can be implemented * An introduction to signal processing for optical communications * An introduction to optical communication fundamentals for the wireless engineer

Optical Interconnects in Future Data Center Networks covers optical networks and how they can be used to provide high bandwidth, energy efficient interconnects for future data centers with increased communication bandwidth requirements. This contributed volume presents an integrated view of the future requirements of the data centers and serves as a reference work for some of the most advanced solutions that have been proposed by major universities and companies. Collecting the most recent and innovative optical interconnects for data center networks that have been presented in the research community by universities and industries, this book is a valuable reference to researchers, students, professors and engineers interested in the domain of high performance interconnects and data center networks. Additionally, Optical Interconnects in Future Data Center Networks provides invaluable insights into the benefits and advantages of optical interconnects and how they can be a promising alternative for future data center networks.

Advanced Antenna Systems for 5G Network Deployments: Bridging the Gap between Theory and Practice provides a comprehensive understanding of the field of advanced antenna systems (AAS) and how they can be deployed in 5G networks. The book gives a thorough understanding of the basic technology components, the state-of-the-art multi-antenna solutions, what support 3GPP has standardized together with the reasoning, AAS performance in real networks, and how AAS can be used to enhance network deployments. Explains how AAS features impact network performance and how AAS can be effectively used in a 5G network, based on either NR and/or LTE Shows what AAS configurations and features to use in different network deployment scenarios, focusing on mobile broadband, but also including fixed wireless access Presents the latest developments in multi-antenna technologies, including Beamforming, MIMO and cell shaping, along with the potential of different technologies in a commercial network context Provides a deep understanding of the differences between mid-band and mm-Wave solutions

RF and Microwave Wireless Systems

System-on-Chip Test Architectures

5G Physical Layer

Joint Source-Channel Coding

OFDM for Optical Communications

Wireless Transceiver Design

A Survey on 3D Cameras: Metrological Comparison of Time-of-Flight, Structured-Light and Active Stereoscopy Technologies

Modern electronics testing has a legacy of more than 40 years. The introduction of new technologies, especially nanometer technologies with 90nm or smaller geometry, has allowed the semiconductor industry to keep pace with the increased performance-capacity demands from consumers. As a result, semiconductor test costs have been growing steadily and typically amount to 40% of today's overall product cost. This book is a comprehensive guide to new VLSI Testing and Design-for-Testability techniques that will allow students, researchers, DFT practitioners, and VLSI designers to master quickly System-on-Chip Test architectures, for test debug and diagnosis of digital, memory, and analog/mixed-signal designs. Emphasizes VLSI Test principles and Design for Testability architectures, with numerous illustrations/examples. Most up-to-date coverage available, including Fault Tolerance, Low-Power Testing, Defect and Error Tolerance, Network-on-Chip (NOC) Testing, Software-Based Self-Testing, FPGA Testing, MEMS Testing, and System-In-Package (SIP) Testing, which are not yet available in any testing book. Covers the entire spectrum of VLSI testing and DFT architectures, from digital and analog, to memory circuits, and fault diagnosis and self-repair from digital to memory circuits. Discusses future nanotechnology test trends and challenges facing the nanometer design era; promising nanotechnology test techniques, including Quantum-Dots, Cellular Automata, Carbon-Nanotubes, and Hybrid Semiconductor/Nanowire/Molecular Computing. Practical problems at the end of each chapter for students.

This book is intended for readers who already have knowledge of devices and circuits for radio-frequency (RF) and microwave communication and are ready to study the systems engineering-level aspects of modern radio communications systems. The authors provide a general overview of radio systems with their components, focusing on the analog parts of the system and their non-idealities. Based on the physical functionality of the various building blocks of a modern radio system, block parameters are derived, which allows the examination of their influence on the overall system performance. The discussion is complemented by tutorial exercises based on the Agilent SystemVue electronic system-level (ESL) design software. With these tutorials, readers gain practical experience with realistic design examples of radio transmission systems for communications and radar sensing. The tutorials cover state-of-the-art system standards and applications and consider the characteristics of typical radio-frequency hardware components. For all tutorials, a comprehensive description of the tasks, including some hints to the solutions, is provided. The readers are then able to perform these tasks independently. A complete set of simulation models and solutions to the tutorial exercises is given.

A design process for HTS DC cables was developed for high current applications. Based on the design process, a 35 kA HTS DC cable demonstrator was developed. The superconducting elements of the demonstrator were manufactured and tested individually at 77 K. Afterwards, the demonstrator cable was assembled and tested at 77 K. The assembled demonstrator successfully reached 35 kA at 77 K and self_field conditions.

Consolidating knowledge on Joint Source-Channel Coding (JSCC), this book provides an indispensable resource on a key area of performance enhancement for communications networks Presenting in one volume the key theories, concepts and important developments in the area of Joint Source-Channel Coding (JSCC), this book provides the fundamental material needed to enhance the performance of digital and wireless communication systems and networks. It comprehensively introduces the joint source-channel coding technologies for communications systems, including the coding and decoding algorithms, and its emerging applications in current wireless communications. Beginning with introductory material on the topic, the content also covers the full range of theoretical and technical areas before concluding with a section considering emerging applications and designs for source-channel coding. Presents the material needed to understand how to obtain high performance in communication systems and networks Consolidates important material only previously available from many sources Methodical approach makes the book an ideal reference for graduate-level courses on digital or wireless communications, as well as courses on information theory Also targets professionals involved with digital and wireless communications and networking systems An ideal reference for Academic and industrial researchers; Development engineers, system engineers, system architects and software engineers.

RF and MWave Measurements

Modern RF and Microwave Measurement Techniques

Advanced Antenna Systems for 5G Network Deployments

Semiconductor Devices in Harsh Conditions

5G Verticals

Proceedings of the 15th International Conference on Innovative Mobile and Internet Services in Ubiquitous Computing (IMIS-2021)

This book presents the latest findings in the areas of data management and smart computing, big data management, artificial intelligence and data analytics, along with advances in network technologies. Gathering peer-reviewed research papers presented at the Fourth International Conference on Data Management, Analytics and Innovation (ICDMAI 2020), held on 17–19 January 2020 at the United Services Institute (USI), New Delhi, India, it addresses cutting-edge topics and discusses challenges and solutions for future development. Featuring original, unpublished contributions by respected experts from around the globe, the book is mainly intended for a professional audience of researchers and practitioners in academia and industry.