

Digital Microwave Communication Engineering Point To Point Microwave Systems

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Fundamentals of Wireless Communication - David Tse 2005-05-26

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.

Digital Transmission Engineering - John B. Anderson 2006-02-17

This introduction to digital data transmission, modulation, and error-correction coding, together with the underlying communication and information theory is an all-inclusive text suitable for all those connected with Mechanical Engineering or Computer Science. Equal emphasis is given to underlying mathematical theory and engineering practice. Not meant to be an encyclopedic treatise, the book offers strong, accessible pedagogy. This Second Edition presents enhanced explanations of key ideas as well as additional examples and problems. It also provides greatly expanded coverage of wireless communication, which has seen exponential growth since the release of the first edition. A pedagogical approach aimed at the 5th year EE student A balance of theory with engineering and design Integration of important topics such as synchronization, radio channels, and wireless communication, which are left out of competing books, or lost in more lengthy formats.

Introduction to Digital Communications - Anis Grami 2015-02-25

Introduction to Digital Communications explores the basic principles in the analysis and design of digital communication systems, including design objectives, constraints and trade-offs. After portraying the big picture and laying the background material, this book lucidly progresses to a comprehensive and detailed discussion of all critical elements and key functions in digital communications. The first undergraduate-level textbook exclusively on digital communications, with a complete coverage of source and channel coding, modulation, and synchronization. Discusses major aspects of communication networks and multiuser communications Provides insightful descriptions and intuitive explanations of all complex concepts Focuses on practical applications and illustrative examples. A companion Web site includes solutions to end-of-chapter problems and computer exercises, lecture slides, and figures and tables from the text

Microwave Mobile Communications (An IEEE Press Classic Reissue) - William C Jakes 1994-05-16

This is an IEEE classic reissue of the book published by John Wiley & Sons in 1974. This definitive text and reference covers all aspects of microwave mobile systems design. Encompassing ten years of advanced research in the field, it reviews basic microwave theory, explains how cellular systems work and presents useful techniques for effective systems development. Key features include: complete coverage of microwave propagation techniques to design successful cellular systems, extensive chapters covering the broad fundamentals of microwave usage in mobile radio propagation and the functions of mobile radio antennas, comprehensive treatment of modulation methods, interference, noise, layout and control of high-capacity systems, and more! The return of this classic volume should be welcomed by all those seeking an authoritative and complete source of information on this emerging technology.

Microwave Line of Sight Link Engineering - Pablo Angueira 2012-07-25

A comprehensive guide to the design, implementation, and operation of line of sight microwave link systems The microwave Line of Sight (LOS) transport network of any cellular operator requires at least as much planning effort as the cellular infrastructure itself. The knowledge behind this design has been kept

private by most companies and has not been easy to find. Microwave Line of Sight Link Engineering solves this dilemma. It provides the latest revisions to ITU reports and recommendations, which are not only key to successful design but have changed dramatically in recent years. These include the methodologies related to quality criteria, which the authors address and explain in depth. Combining relevant theory with practical recommendations for such critical planning decisions as frequency band selection, radio channel arrangements, site selection, antenna installation, and equipment choice, this one-stop primer: Describes the procedure for designing a frequency plan and a channel arrangement structure according to ITU current standards, illustrated with specific application examples Offers analytical examples that illustrate the specifics of calculations and provide order of magnitude for parameters and design factors Presents case studies that describe real-life projects, putting together the puzzle pieces necessary when facing a real design created from scratch Microwave Line of Sight Link Engineering is an indispensable resource for radio engineers who need to understand international standards associated with LOS microwave links. It is also extremely valuable for students approaching the topic for the first time.

Microwave Transmission Networks, Second Edition - Harvey Lehpamer 2010-06-22

Up-to-Date Coverage of Microwave Transmission Networks Fully revised for the latest North American and ITU standards, Microwave Transmission Networks, Second Edition covers all stages of terrestrial point-to-point microwave network build-out, from planning and feasibility studies to system deployment and testing. This definitive volume is thoroughly updated with new information, including details on the impact of Ethernet and IP communications on microwave links. Useful formulas for solving microwave design-related problems are contained in this practical resource. Find out how to: Plan, design, and build microwave point-to-point networks Determine network capacity, dimensions, architecture, budget, schedules, and work force requirements Understand microwave link engineering Calculate loss/attenuation, fading and fade margins, and link quality and availability Perform interference analysis Determine, procure, and install required hardware and power systems Manage the microwave project and its regulatory issues, ethical dilemmas, logistical concerns, and organizational challenges Test the microwave system throughout every stage of development and deployment Handle maintenance, troubleshooting, and upgrades

Microwave Engineering - David M. Pozar 2011-11-22

Pozar's new edition of Microwave Engineering includes more material on active circuits, noise, nonlinear effects, and wireless systems. Chapters on noise and nonlinear distortion, and active devices have been added along with the coverage of noise and more material on intermodulation distortion and related nonlinear effects. On active devices, there's more updated material on bipolar junction and field effect transistors. New and updated material on wireless communications systems, including link budget, link margin, digital modulation methods, and bit error rates is also part of the new edition. Other new material includes a section on transients on transmission lines, the theory of power waves, a discussion of higher order modes and frequency effects for microstrip line, and a discussion of how to determine unloaded.

Communication systems - Athol Bruce Carlson 1981

Digital Telephony and Network Integration - Bernhard E. Keiser 2012-12-06

What is "digital telephony"? To the authors, the term digital telephony denotes the technology used to provide a completely digital point-to-point voice communication system from end to end. This implies the

use of digital technology from one end instrument through the transmission facilities and switching centers to another end instrument. Digital telephony has become possible only because of the recent and ongoing surge of semiconductor developments allowing microminiaturization and high reliability along with reduced costs. This book deals with both the future and the present. Thus, the first chapter is entitled, "A Network in Transition." As baselines, Chapters 2, 3, and 10 provide the reader with the present status of telephone technology in terms of voice digitization as well as switching principles. The book is an outgrowth of the authors' continuing engineering education course, "Digital Telephony," which they have taught since January, 1980, to attendees from business, industry, government, common carriers, and telephony equipment manufacturers. These attendees come from a wide variety of educational backgrounds, but generally have the equivalent of at least a bachelor's degree in electrical engineering. The book has been written to provide both the engineering student and the practicing engineer a working knowledge of the principles of present and future voice communication systems based upon the use of the public switched network. Problems or discussion questions have been included at the ends of the chapters to facilitate the book's use as a senior level or first year graduate level course text.

Digital Microwave Communication - George Kizer 2013-06-24

The first book to cover all engineering aspects of microwave communication path design for the digital age. Fixed point-to-point microwave systems provide moderate-capacity digital transmission between well-defined locations. Most popular in situations where fiber optics or satellite communication is impractical, it is commonly used for cellular or PCS site interconnectivity where digital connectivity is needed but not economically available from other sources, and in private networks where reliability is most important. Until now, no book has adequately treated all engineering aspects of microwave communications in the digital age. This important new work provides readers with the depth of knowledge necessary for all the system engineering details associated with fixed point-to-point microwave radio path design: the why, what, and how of microwave transmission; design objectives; engineering methodologies; and design philosophy (in the bid, design, and acceptance phase of the project). Written in an easily accessible format, Digital Microwave Communication features an appendix of specialized engineering details and formulas, and offers up chapter coverage of: A Brief History of Microwave Radio Microwave Radio Overview System Components Hypothetical Reference Circuits Multipath Fading Rain Fading Reflections and Obstructions Network Reliability Calculations Regulation of Microwave Radio Networks Radio Network Performance Objectives Designing and Operating Microwave Systems Antennas Radio Diversity Ducting and Obstruction Fading Digital Receiver Interference Path Performance Calculations Digital Microwave Communication: Engineering Point-to-Point Microwave Systems will be of great interest to engineers and managers who specify, design, or evaluate fixed point-to-point microwave systems associated with communications systems and equipment manufacturers, independent and university research organizations, government agencies, telecommunications services, and other users.

Digital Front-End in Wireless Communications and Broadcasting - Fa-Long Luo 2011-09-29

Covering everything from signal processing algorithms to integrated circuit design, this complete guide to digital front-end is invaluable for professional engineers and researchers in the fields of signal processing, wireless communication and circuit design. Showing how theory is translated into practical technology, it covers all the relevant standards and gives readers the ideal design methodology to manage a rapidly increasing range of applications. Step-by-step information for designing practical systems is provided, with a systematic presentation of theory, principles, algorithms, standards and implementation. Design trade-offs are also included, as are practical implementation examples from real-world systems. A broad range of topics is covered, including digital pre-distortion (DPD), digital up-conversion (DUC), digital down-conversion (DDC) and DC-offset calibration. Other important areas discussed are peak-to-average power ratio (PAPR) reduction, crest factor reduction (CFR), pulse-shaping, image rejection, digital mixing, delay/gain/imbalance compensation, error correction, noise-shaping, numerical controlled oscillator (NCO) and various diversity methods.

Electromagnetics, Microwave Circuit and Antenna Design for Communications Engineering - Peter Russer 2003

If you're looking for a clear, comprehensive overview of basic electromagnetics principles and applications

to antenna and microwave circuit design for communications, this authoritative book is your best choice. Including concise explanations of all required mathematical concepts needed to fully comprehend the material, the book is your complete resource for understanding electromagnetics in current, emerging and future broadband communication systems, as well as high-speed analogue and digital electronic circuits and systems.

RF and Microwave Wireless Systems - Kai Chang 2004-04-05

A comprehensive introduction to the hardware, parameters, and architectures of RF/microwave wireless systems. As the basis for some of the hottest technologies of the new millennium, radio frequency (RF) and microwave wireless systems rapidly propel us toward a future in which the transmission of voice, video, and data communications will be possible anywhere in the 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 wireless systems, including general hardware components, system parameters, and architectures. Renowned authority Kai Chang covers both communication and radar/sensor systems and extends the discussion to other intriguing topics, from global positioning systems (GPS) to smart highways and smart automobiles. With an emphasis on basic operating principles, Dr. Chang reviews waves and transmission lines, examines modulation and demodulation and multiple-access techniques, and helps bridge the gap between RF/microwave engineering and communication system design. Ample practical examples of components and system configurations and nearly 300 illustrations and photographs complete this timely and indispensable resource. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

High Frequency and Microwave Engineering Ed Da Silva 2001

CD-ROM contains: PUFF 2.1 for construction and evaluation of circuits.

Antennas and Propagation for Wireless Communication Systems - Simon R. Saunders 2007-05-07

Antennas and propagation are of fundamental importance to the coverage, capacity and quality of all wireless communication systems. This book provides a solid grounding in antennas and propagation, covering terrestrial and satellite radio systems in both mobile and fixed contexts. Building on the highly successful first edition, this fully updated text features significant new material and brand new exercises and supplementary materials to support course tutors. A vital source of information for practising and aspiring wireless communication engineers as well as for students at postgraduate and senior undergraduate levels, this book provides a fundamental grounding in the principles of antennas and propagation without excessive recourse to mathematics. It also equips the reader with practical prediction techniques for the design and analysis of a very wide range of common wireless communication systems. Including: Overview of the fundamental electromagnetic principles underlying propagation and antennas. Basic concepts of antennas and their application to specific wireless systems. Propagation measurement, modelling and prediction for fixed links, macrocells, microcells, picocells and megacells. Narrowband and wideband channel modelling and the effect of the channel on communication system performance. Methods that overcome and transform channel impairments to enhance performance using diversity, adaptive antennas and equalisers. Key second edition updates: New chapters on Antennas for Mobile Systems and Channel Measurements for Mobile Radio Systems. Coverage of new technologies, including MIMO antenna systems, Ultra Wideband (UWB) and the OFDM technology used in Wi-Fi and WiMax systems. Many new propagation models for macrocells, microcells and picocells. Fully revised and expanded end-of-chapter exercises. The Solutions Manual can be requested from http://www.wiley.com/go/saunders_antennas_2e

Principles of Communications - Rodger E. Ziemer 1976

Microwave Circuit Design Using Linear and Nonlinear Techniques George D. Vendelin 2005-10-03

The ultimate handbook on microwave circuit design with CAD. Full of tips and insights from seasoned industry veterans, Microwave Circuit Design offers practical, proven advice on improving the design quality of microwave passive and active circuits while cutting costs and time. Covering all levels of microwave circuit design from the elementary to the very advanced, the book systematically presents computer-aided methods for linear and nonlinear designs used in the design and manufacture of microwave amplifiers, oscillators, and mixers. Using the newest CAD tools, the book shows how to design transistor and diode

circuits, and also details CAD's usefulness in microwave integrated circuit (MIC) and monolithic microwave integrated circuit (MMIC) technology. Applications of nonlinear SPICE programs, now available for microwave CAD, are described. State-of-the-art coverage includes microwave transistors (HEMTs, MODFETs, MESFETs, HBTs, and more), high-power amplifier design, oscillator design including feedback topologies, phase noise and examples, and more. The techniques presented are illustrated with several MMIC designs, including a wideband amplifier, a low-noise amplifier, and an MMIC mixer. This unique, one-stop handbook also features a major case study of an actual anticollision radar transceiver, which is compared in detail against CAD predictions; examples of actual circuit designs with photographs of completed circuits; and tables of design formulae.

Electronic Communication Systems George Kennedy 1984

Reference Manual for Telecommunications Engineering, 2 Volume Set - Roger L. Freeman 2002

Contains a compendium of the most frequently used data in day-to-day telecommunications engineering work: tables, graphs, figures, formulae, nomograms, performance curves, standards highlights, constants and statistics. Designed for easy and rapid access. Comprehensive reference for designing, building, purchasing, using or maintaining all kinds of telecommunications systems. Central source of information on transmission, switching, traffic engineering, numbering, signaling, noise, modulation and forward error correction.

Microwave and RF Design, Volume 1 - Michael Steer 2019-09

Microwave and RF Design: Radio Systems is a circuits- and systems-oriented approach to modern microwave and RF systems. Sufficient details at the circuits and sub-system levels are provided to understand how modern radios are implemented. Design is emphasized throughout. The evolution of radio from what is now known as 0G, for early radio, through to 6G, for sixth generation cellular radio, is used to present modern microwave and RF engineering concepts. Two key themes unify the text: 1) how system-level decisions affect component, circuit and subsystem design; and 2) how the capabilities of technologies, components, and subsystems impact system design. This book is suitable as both an undergraduate and graduate textbook, as well as a career-long reference book. Key Features * The first volume of a comprehensive series on microwave and RF design * Open access ebook editions are hosted by NC State University Libraries at <https://repository.lib.ncsu.edu/handle/1840.20/36776> * 31 worked examples * An average of 38 exercises per chapter * Answers to selected exercises * Coverage of cellular radio from 1G through 6G * Case study of a software defined radio illustrating how modern radios partition functionality between analog and digital domains * A companion book, Fundamentals of Microwave and RF Design, is suitable as a comprehensive undergraduate textbook on microwave engineering

Microwave Devices, Circuits and Subsystems for Communications Engineering Glover 2006-05-01

Microwave Devices, Circuits and Subsystems for Communications Engineering provides a detailed treatment of the common microwave elements found in modern microwave communications systems. The treatment is thorough without being unnecessarily mathematical. The emphasis is on acquiring a conceptual understanding of the techniques and technologies discussed and the practical design criteria required to apply these in real engineering situations. Key topics addressed include: Microwave diode and transistor equivalent circuits Microwave transmission line technologies and microstrip design Network methods and s-parameter measurements Smith chart and related design techniques Broadband and low-noise amplifier design Mixer theory and design Microwave filter design Oscillators, synthesizers and phase locked loops Each chapter is written by specialists in their field and the whole is edited by experienced authors whose expertise spans the fields of communications systems engineering and microwave circuit design. Microwave Devices, Circuits and Subsystems for Communications Engineering is suitable for senior electrical, electronic or telecommunications engineering undergraduate students, first year postgraduate students and experienced engineers seeking a conversion or refresher text. Includes a companion website featuring: Solutions to selected problems Electronic versions of the figures Sample chapter

Satellite Communications Systems Engineering Ippolito, Jr. 2017-02-28

The first edition of Satellite Communications Systems Engineering (Wiley 2008) was written for those concerned with the design and performance of satellite communications systems employed in fixed point to

point, broadcasting, mobile, radio navigation, data relay, computer communications, and related satellite based applications. This welcome Second Edition continues the basic premise and enhances the publication with the latest updated information and new technologies developed since the publication of the first edition. The book is based on graduate level satellite communications course material and has served as the primary text for electrical engineering Masters and Doctoral level courses in satellite communications and related areas. Introductory to advanced engineering level students in electrical, communications and wireless network courses, and electrical engineers, communications engineers, systems engineers, and wireless network engineers looking for a refresher will find this essential text invaluable.

Transmission Systems Design Handbook for Wireless Networks - Harvey Lehpamer 2002

This practical new resource gives you a comprehensive understanding of the design and deployment of transmission networks for wireless applications. From principles and design, to equipment procurement, project management, testing, and operation, it's a practical, hands-on engineering guide with numerous real-life examples of turn-key operations in the wireless networking industry. This book, written for both technical and non-technical professionals, helps you deal with the costs and difficulties involved in setting up the local access with technologies that are still in the evolutionary stage. Issues involved in the deployment of various transmission technologies, and their impact on the overall wireless network topology are discussed. Strategy and approach to transmission network planning, design and deployment are explored. The book offers practical guidelines and advice derived from the author's own experience on projects worldwide. You gain a solid grounding in third generation wireless networks with increased capacity requirements, while learning all about packet data architecture, and how it will impact future transmission network design and deployment.

Microwave Radio Transmission Design Guide - Trevor Manning 2009

This newly revised second edition provides a current, comprehensive treatment of the subject with a focus on applying practical knowledge to real-world networks. It includes a wealth of important updates, including discussions on backhaul capacity limitations, ethernet over radio, details on the latest cellular radio standards (2.5G, 3G, and 4G). You also learn about recent changes in spectrum management, including the availability of unlicensed bands and new mm band frequencies between 70 and 90 GHz. Additionally, you find more details on the fundamentals of antennas, especially at VHF/UHF levels. Written in an easy-to-understand style, the author provides practical guidelines based on hands-on experience. You find valuable assistance in designing and planning SDH/SONET broadband networks, wireless local loop networks, and backhaul for mobile radio networks. Moreover, this authoritative volume covers frequency planning for radio networks, digital radio equipment characteristics, and fading in radio systems. Using practical case studies, Microwave Radio Transmission Design Guide, Second Edition gives you proven advice that helps you save time and money when developing new networks, and reduces your risk of encountering problems during design and planning.

Principles of Digital Communication - Robert G. Gallager 2008-02-28

The renowned communications theorist Robert Gallager brings his lucid writing style to the study of the fundamental system aspects of digital communication for a one-semester course for graduate students. With the clarity and insight that have characterized his teaching and earlier textbooks, he develops a simple framework and then combines this with careful proofs to help the reader understand modern systems and simplified models in an intuitive yet precise way. A strong narrative and links between theory and practice reinforce this concise, practical presentation. The book begins with data compression for arbitrary sources. Gallager then describes how to modulate the resulting binary data for transmission over wires, cables, optical fibers, and wireless channels. Analysis and intuitive interpretations are developed for channel noise models, followed by coverage of the principles of detection, coding, and decoding. The various concepts covered are brought together in a description of wireless communication, using CDMA as a case study.

Microwave Electronics - Giovanni Ghione 2018

A self-contained guide to microwave electronics, covering passive and active components, linear, low-noise and power amplifiers, microwave measurements, and CAD techniques. It is the ideal text for graduate and senior undergraduate students taking courses in microwave and radio-frequency electronics, as well as

professional microwave engineers.

Mobile and Wireless Communications - Salma Ait Fares 2010-01-01

Mobile and wireless communications applications have a clear impact on improving the humanity wellbeing. From cell phones to wireless internet to home and office devices, most of the applications are converted from wired into wireless communication. Smart and advanced wireless communication environments represent the future technology and evolutionary development step in homes, hospitals, industrial, vehicular and transportation systems. A very appealing research area in these environments has been the wireless ad hoc, sensor and mesh networks. These networks rely on ultra low powered processing nodes that sense surrounding environment temperature, pressure, humidity, motion or chemical hazards, etc. Moreover, the radio frequency (RF) transceiver nodes of such networks require the design of transmitter and receiver equipped with high performance building blocks including antennas, power and low noise amplifiers, mixers and voltage controlled oscillators. Nowadays, the researchers are facing several challenges to design such building blocks while complying with ultra low power consumption, small area and high performance constraints. CMOS technology represents an excellent candidate to facilitate the integration of the whole transceiver on a single chip. However, several challenges have to be tackled while designing and using nanoscale CMOS technologies and require innovative idea from researchers and circuits designers. While major researchers and applications have been focusing on RF wireless communication, optical wireless communication based system has started to draw some attention from researchers for a terrestrial system as well as for aerial and satellite terminals. This renewed interest in optical wireless communications is driven by several advantages such as no licensing requirements policy, no RF radiation hazards, and no need to dig up roads besides its large bandwidth and low power consumption. This second part of the book, *Mobile and Wireless Communications: Key Technologies and Future Applications*, covers the recent development in ad hoc and sensor networks, the implementation of state of the art of wireless transceivers building blocks and recent development on optical wireless communication systems. We hope that this book will be useful for students, researchers and practitioners in their research studies.

Digital Microwave Communication - George Kizer 2013-05-22

The first book to cover all engineering aspects of microwave communication path design for the digital age. Fixed point-to-point microwave systems provide moderate-capacity digital transmission between well-defined locations. Most popular in situations where fiber optics or satellite communication is impractical, it is commonly used for cellular or PCS site interconnectivity where digital connectivity is needed but not economically available from other sources, and in private networks where reliability is most important. Until now, no book has adequately treated all engineering aspects of microwave communications in the digital age. This important new work provides readers with the depth of knowledge necessary for all the system engineering details associated with fixed point-to-point microwave radio path design: the why, what, and how of microwave transmission; design objectives; engineering methodologies; and design philosophy (in the bid, design, and acceptance phase of the project). Written in an easily accessible format, *Digital Microwave Communication* features an appendix of specialized engineering details and formulas, and offers up chapter coverage of: A Brief History of Microwave Radio Microwave Radio Overview System Components Hypothetical Reference Circuits Multipath Fading Rain Fading Reflections and Obstructions Network Reliability Calculations Regulation of Microwave Radio Networks Radio Network Performance Objectives Designing and Operating Microwave Systems Antennas Radio Diversity Ducting and Obstruction Fading Digital Receiver Interference Path Performance Calculations *Digital Microwave Communication: Engineering Point-to-Point Microwave Systems* will be of great interest to engineers and managers who specify, design, or evaluate fixed point-to-point microwave systems associated with communications systems and equipment manufacturers, independent and university research organizations, government agencies, telecommunications services, and other users.

Fiber-optic Communication Systems - Govind P. Agrawal 2004

The Institute of Optics, University of Rochester * ".readers searching for a wide ranging and up-date view of fibre optic communication systems would do well to purchase this book."--International Journal of Electrical Engineering Education (on the Second Edition) * This comprehensive, up-to-date account of fiber-optic

communication focuses on the physics and technology behind fiber-optic communication systems while covering both the systems and components aspects * Provides extensive details on the WDM technology and system design issues that have developed since the last edition.

RF and Microwave Engineering Frank Gustrau 2012-06-22

This book provides a fundamental and practical introduction to radio frequency and microwave engineering and physical aspects of wireless communication. In this book, the author addresses a wide range of radio-frequency and microwave topics with emphasis on physical aspects including EM and voltage waves, transmission lines, passive circuits, antennas, radio wave propagation. Up-to-date RF design tools like RF circuit simulation, EM simulation and computerized Smith charts, are used in various examples to demonstrate how these methods can be applied effectively in RF engineering practice. Design rules and working examples illustrate the theoretical parts. The examples are close to real world problems, so the reader can directly transfer the methods within the context of their own work. At the end of each chapter a list of problems is given in order to deepen the reader's understanding of the chapter material and practice the new competences. Solutions are available on the author's website. Key Features: Presents a wide range of RF topics with emphasis on physical aspects e.g. EM and voltage waves, transmission lines, passive circuits, antennas. Uses various examples of modern RF tools that show how the methods can be applied productively in RF engineering practice. Incorporates various design examples using circuit and electromagnetic (EM) simulation software. Discusses the propagation of waves: their representation, their effects, and their utilization in passive circuits and antenna structures. Provides a list of problems at the end of each chapter. Includes an accompanying website containing solutions to the problems (http://www.fh-dortmund.de/gustrau_rf_textbook) This will be an invaluable textbook for bachelor and masters students on electrical engineering courses (microwave engineering, basic circuit theory and electromagnetic fields, wireless communications). Early-stage RF practitioners, engineers (e.g. application engineer) working in this area will also find this book of interest.

Synchronization in Digital Communication Systems - Fuyun Ling 2017-06-22

This practical guide helps readers to learn how to develop and implement synchronization functions in digital communication systems.

Principles of Communication Systems Simulation with Wireless Applications - William H. Tranter 2004

This volume presents an overview of computer-based simulation models and methodologies for communication systems. Topics covered include probability, random process, and estimation theory and roles in the design of computer-based simulations.

Simulation of Communication Systems - Michel C. Jeruchim 2006-04-11

Since the first edition of this book was published seven years ago, the field of modeling and simulation of communication systems has grown and matured in many ways, and the use of simulation as a day-to-day tool is now even more common practice. With the current interest in digital mobile communications, a primary area of application of modeling and simulation is now in wireless systems of a different flavor from the 'traditional' ones. This second edition represents a substantial revision of the first, partly to accommodate the new applications that have arisen. New chapters include material on modeling and simulation of nonlinear systems, with a complementary section on related measurement techniques, channel modeling and three new case studies; a consolidated set of problems is provided at the end of the book.

Software-Defined Radio for Engineers - Alexander M. Wyglinski 2018-04-30

Based on the popular Artech House classic, *Digital Communication Systems Engineering with Software-Defined Radio*, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to quickly prototype wireless designs using SDR for real-world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing technologies. Moreover, this volume includes chapters on timing estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about

HDL code generation and deployment are provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source code are included to assist readers with their projects in the field.

Microwave Engineering and Systems Applications - Edward A. Wolff 1988-03-03

Systems. Microwave transmission, control, detection, and generation. Microwave measurements. Microwave subsystems.

An Introduction To Analog And Digital Communications - Haykin 2009-07

An introductory treatment of communication theory as applied to the transmission of information-bearing signals with attention given to both analog and digital communications. Chapter 1 reviews basic concepts. Chapters 2 through 4 pertain to the characterization of signals and systems. Chapters 5 through 7 are concerned with transmission of message signals over communication channels. Chapters 8 through 10 deal with noise in analog and digital communications. Each chapter (except chapter 1) begins with introductory remarks and ends with a problem set. Treatment is self-contained with numerous worked-out examples to support the theory. · Fourier Analysis · Filtering and Signal Distortion · Spectral Density and Correlation · Digital Coding of Analog Waveforms · Intersymbol Interference and Its Cures · Modulation Techniques · Probability Theory and Random Processes · Noise in Analog Modulation · Optimum Receivers for Data Communication

Transceiver and System Design for Digital Communications Scott R. Bullock 2000

This system-level approach to transceiver design covers digital communications principles for military applications and translating those concepts for commercial applications. Topics include link budget, receiver and transmitter specifications, modulation, and spread spectrum.

Radio-Frequency and Microwave Communication Circuits - Devendra K. Misra 2012-04-12

The products that drive the wireless communication industry, such as cell phones and pagers, employ circuits that operate at radio and microwave frequencies. Following on from a highly successful first edition, the second edition provides readers with a detailed introduction to RF and microwave circuits. Throughout, examples from real-world devices and engineering problems are used to great effect to illustrate circuit concepts. * Takes a top-down approach, describing circuits in the overall context of communication systems. * Presents expanded coverage of waveguides and FT mixers. * Discusses new areas such as oscillators design and digital communication. *An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Microwave and RF Design of Wireless Systems - David M. Pozar 2000-11-29

David Pozar, author of *Microwave Engineering*, Second Edition, has written a new text that introduces students to the field of wireless communications. This text offers a quantitative and, design-oriented

presentation of the analog RF aspects of modern wireless telecommunications and data transmission systems from the antenna to the baseband level. Other topics include noise, intermodulation, dynamic range, system aspects of antennas and filter design. This unique text takes an integrated approach to topics usually offered in a variety of separate courses on topics such as antennas and propagation, microwave systems and circuits, and communication systems. This approach allows for a complete presentation of wireless telecommunications systems designs. The author's goal with this text is for the student to be able to analyze a complete radio system from the transmitter through the receiver front-end, and quantitatively evaluate factors. Suitable for a one-semester course, at the senior or first year graduate level. Note certain sections have been denoted as advanced topics, suitable for graduate level courses.

Microwave Engineering - Gérard Barué 2008-07-25

Everything readers need to implement and support a wireless point-to-point communications environment In order to cope with the tremendous explosion of the telecommunications market, the field of wireless communications has greatly expanded in the past fifty years, especially in the domains of microwave radio systems including line-of-sight, satellites, and tropospheric-scatter. Now, *Microwave Engineering: Land & Space Radio-communications* answers the growing worldwide demand for an authoritative book on this important and emerging subject area. In five succinct chapters, the book introduces students and practicing engineers to the main propagation phenomena that are encountered and that must be considered in the design and planning for any given system type and frequency of operation: Electromagnetic wave propagation—An introduction to the fundamental theory of radiation and propagation of electromagnetic waves, polarization, antenna properties, free space attenuation, atmospheric refractivity, diffraction, reflection, multipath and scattering mechanisms, hydrometeor effects, and probability distributions Principles of digital communication systems—Modulation techniques, signal processing, error probability, spectral characteristics, spectrum efficiency, thermal noise, intermodulation, jamming, and interference Microwave line-of-sight systems—Path profile, flat fading and frequency-selective fading, interferometric method for space and frequency diversity techniques, International Standards and ITU Recommendations, optimization of the frequency-plan resource, link budget, quality, reliability, and availability Microwave transhorizon systems—Design of beyond-the-horizon communication systems, properties of scattering and diffraction modes, multipath statistical relations, long-term and short-term field strength variations, quality of service, optimization of antenna alignment, and experimental analysis of various diversity and combining methods Satellite communications—Design of satellite communications systems, orbital parameters, Earth-satellite geometry, uplink and downlink budgets for both space and Earth segments, and total system noise temperature *Microwave Engineering: Land & Space Radiocommunications* is suitable for engineers involved in wireless telecommunications, as well as for students and members of various seminars and workshops.