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Passive Microwave Components and Antennas - Vitaliy Zhurbenko 2010-04-01

Modelling and computations in electromagnetics is a quite fast-growing research area. The recent interest in this field is caused by the increased demand for designing complex microwave components, modeling electromagnetic materials, and rapid increase in computational power for calculation of complex electromagnetic problems. The first part of this book is devoted to the advances in the analysis techniques such as method of moments, finite-difference time-domain method, boundary perturbation theory, Fourier analysis, mode-matching method, and analysis based on circuit theory. These techniques are considered with regard to several challenging technological applications such as those related to electrically large devices, scattering in layered structures, photonic crystals, and artificial materials. The second part of the book deals with waveguides, transmission lines and transitions. This includes microstrip lines (MSL), slot waveguides, substrate integrated waveguides (SIW), vertical transmission lines in multilayer media as well as MSL to SIW and MSL to slot line transitions.

Microwave Circuit Modeling Using Electromagnetic Field Simulation - Daniel G. Swanson 2003

Annotation This practical "how to" book is an ideal introduction to electromagnetic field-solvers. Where most books in this area are strictly theoretical, this unique resource provides engineers with helpful advice on selecting the right tools for their RF (radio frequency) and high-speed digital circuit design work [International Youth Conference on Electronics, Telecommunications and Information Technologies](#) - Elena Velichko 2020-11-27

This volume presents peer reviewed and selected papers of the International Youth Conference on Electronics, Telecommunications and Information Technologies (YETI-2020), held in Peter the Great St. Petersburg Polytechnic University, St. Petersburg on July 10–11, 2020. It discusses current trends and major advances in electronics, telecommunications, optical and information technologies, focusing, in particular, on theoretical and practical aspects of developing novel devices and materials, improving data processing methods and technologies. The conference brings together young researchers and early-career scientists participating in a series of lectures and presentations, establishing contacts with potential partners, sharing new project ideas and starting new collaborations.

Advanced Millimeter-wave Technologies - Duixian Liu 2009-03-03

This book explains one of the hottest topics in wireless and electronic devices community, namely the wireless communication at mmWave frequencies, especially at the 60 GHz ISM band. It provides the reader with knowledge and techniques for mmWave antenna design, evaluation, antenna and chip packaging. Addresses practical engineering issues such as RF material evaluation and selection, antenna and packaging requirements, manufacturing tolerances, antenna and system interconnections, and antenna One of the first books to discuss the emerging research and application areas, particularly chip packages with integrated antennas, wafer scale mmWave phased arrays and imaging Contains a good number of case studies to aid understanding Provides the antenna and packaging technologies for the latest and emerging applications with the emphases on antenna integrations for practical applications such as wireless USB, wireless video, phase array, automobile collision avoidance radar, and imaging

Antenna Engineering Handbook - John Volakis 2018-11-05

The gold-standard reference on the design and application of classic and modern antennas—fully updated to reflect the latest advances and technologies This new edition of the “bible of antenna engineering” has been updated to provide start-to-finish coverage of the latest innovations in antenna design and application. You will find in-depth discussion of antennas used in modern communication systems, mobile and personal wireless technologies, satellites, radar deployments, flexible electronics, and other emerging technologies, including 5G, terahertz, and wearable electronics. *Antenna Engineering Handbook, Fifth Edition*, is bolstered by real-world examples, hundreds of illustrations, and an emphasis on the practical aspects of antennas. Featuring 60 chapters and contributions from more than 80 renowned experts, this acclaimed resource is edited by one of the world’s leading antenna authorities. This edition features all of the classic antenna types, plus new and emerging designs, with 13 all-new chapters and important updates to nearly all chapters from past editions. *Antenna Engineering Handbook, Fifth Edition*, clearly explains cutting-edge applications in WLANs, automotive systems, PDAs, and handheld devices, making it an indispensable companion for today’s antenna practitioners and developers. Coverage includes: •Antenna basics and classic antennas•Design approaches for antennas and arrays•Wideband and multiband antennas•Antennas for mobile devices and PDAs, automotive applications, and aircraft•Base station and smart antennas•Beamforming and 5G antennas•Millimeter-wave and terahertz antennas•Flexible, wearable, thin film, origami, dielectric, and on-chip antennas•MIMO antennas and phased arrays•Direction-finding and GPS antennas•Active antennas•Low-profile wideband antennas•Nanoantennas•Reflectors and other satellite and radio-telescope antennas•Low-frequency, HF, VHF, UHF, ECM, and ESM antennas•Impedance-matching techniques and material characteristics•Metastructured and frequency selective surfaces•Propagation and guided structures•Computational techniques and toolsets•Indoor and outdoor measurements

[Smart Antennas](#) - Praveen Kumar Malik 2022

This book presents the latest techniques for the design of antenna, focusing specifically on the microstrip antenna. The authors discuss antenna structure, defected ground, MIMO, and fractal design. The book provides the design of microstrip antenna in terms of latest applications and uses in areas like IoT and device-to-device communication. The book also provides the current methods and techniques used for the enhancement of the performance parameters of the microstrip antenna. Chapters enhance the knowledge and skills of students and researchers in the latest in the communications world like IoT, D2D, satellite, wearable devices etc. The authors discuss applications such as microwave imaging, medical implants, hyperthermia treatments, and wireless wellness monitoring and how a decrease in size of antenna help facilitate application potential. Provides the latest techniques used for the design of antenna in terms of its structure, defected ground, MIMO and fractal design; Outlines steps to resolve issues with designing antenna, including the latest design and design parameters for microstrip antenna; Presents the design of conformal and miniaturized antenna structures for various applications.

Advances in Ubiquitous Networking 2 - Rachid El-Azouzi 2016-11-03

This volume offers the proceedings of the 2nd UNet conference, held in Casablanca May 30 - June 1, 2016. It presents new trends and findings in hot topics related to ubiquitous computing/networking, covered in

three tracks and three special sessions: Main Track 1: Context-Awareness and Autonomy Paradigms Track Main Track 2: Mobile Edge Networking and Virtualization Track Main Track 3: Enablers, Challenges and Applications Special Session 1: Smart Cities and Urban Informatics for Sustainable Development Special Session 2: Unmanned Aerial Vehicles From Theory to Applications Special Session 3: From Data to Knowledge: Big Data applications and solutions

Advanced Techniques for IoT Applications - Jyotsna Kumar Mandal 2021-08-02

This book includes original, unpublished contributions presented at the Sixth International Conference on Emerging Applications of Information Technology (EAIT 2020), held at the University of Kalyani, Kalyani, West Bengal, India, on November 2020. The book covers the topics such as image processing, computer vision, pattern recognition, machine learning, data mining, big data and analytics, information security and privacy, wireless and sensor networks, and IoT. It will also include IoT application-related papers in pattern recognition, artificial intelligence, expert systems, natural language understanding, image processing, computer vision, applications in biomedical engineering, artificial neural networks, fuzzy logic, evolutionary optimization, data mining, Web intelligence, intelligent agent technology, virtual reality, and visualization.

Antenna-in-Package Technology and Applications - Duixian Liu 2020-03-03

A comprehensive guide to antenna design, manufacturing processes, antenna integration, and packaging Antenna-in-Package Technology and Applications contains an introduction to the history of AiP technology. It explores antennas and packages, thermal analysis and design, as well as measurement setups and methods for AiP technology. The authors—well-known experts on the topic—explain why microstrip patch antennas are the most popular and describe the myriad constraints of packaging, such as electrical performance, thermo-mechanical reliability, compactness, manufacturability, and cost. The book includes information on how the choice of interconnects is governed by JEDEC for automatic assembly and describes low-temperature co-fired ceramic, high-density interconnects, fan-out wafer level packaging-based AiP, and 3D-printing-based AiP. The book includes a detailed discussion of the surface laminar circuit-based AiP designs for large-scale mm-wave phased arrays for 94-GHz imagers and 28-GHz 5G New Radios.

Additionally, the book includes information on 3D AiP for sensor nodes, near-field wireless power transfer, and IoT applications. This important book: • Includes a brief history of antenna-in-package technology • Describes package structures widely used in AiP, such as ball grid array (BGA) and quad flat no-leads (QFN) • Explores the concepts, materials and processes, designs, and verifications with special consideration for excellent electrical, mechanical, and thermal performance Written for students in electrical engineering, professors, researchers, and RF engineers, Antenna-in-Package Technology and Applications offers a guide to material selection for antennas and packages, antenna design with manufacturing processes and packaging constraints, antenna integration, and packaging.

2021 5th International Conference on Computer, Communication and Signal Processing (ICCCSP) - 2021

Micro Molding of Polymeric Antennas and Energy Harvesters - Yiin-Kuen Fuh 2009

WiMAX - Syed A. Ahson 2018-10-08

As the demand for broadband services continues to grow worldwide, traditional solutions, such as digital cable and fiber optics, are often difficult and expensive to implement, especially in rural and remote areas. The emerging WiMAX system satisfies the growing need for high data-rate applications such as voiceover IP, video conferencing, interactive gaming, and multimedia streaming. WiMAX deployments not only serve residential and enterprise users but can also be deployed as a backhaul for Wi-Fi hotspots or 3G cellular towers. By providing affordable wireless broadband access, the technology of WiMAX will revolutionize broadband communications in the developed world and bridge the digital divide in developing countries. Part of the WiMAX Handbook, this volume focuses on the technologies behind WiMAX, its performance capabilities, and its control mechanisms. The book introduces programmable baseband processors suited for WiMAX systems, describes an innovative methodology for the design of multi-band WiMAX antennas, addresses space-time block codes, and reviews space-frequency/space-time-frequency code design criteria. It also proposes a combined call admission control and scheduling scheme, focuses on the performance

analysis of the IEEE 802.16 mesh mode, and analyzes the performance of both single-input-single-output and space-time-block-coded OFDM systems in mobile environments. The final section establishes a framework of an ideal reservation period controller, examines the ecosystem in which scheduling for IEEE 802.16e systems must be performed, and presents a fuzzy logic controller for admission control. With the revolutionary technology of WiMAX, the lives of many will undoubtedly improve, thereby leading to greater economic empowerment.

Rectangular Dielectric Resonator Antennas - Rajveer S. Yaduvanshi 2015-09-24

This book covers resonating modes inside device and gives insights into antenna design, impedance and radiation patterns. It discusses how higher-order modes generation and control impact bandwidth and antenna gain. The text covers new approaches in antenna design by investigation hybrid modes, H_z and E_z fields available simultaneously, and analysis and modelling on modes with practical applications in antenna design. The book will be prove useful to students, researchers and professionals alike.

VLSI, Microwave and Wireless Technologies - Brijesh Mishra

This book comprises the proceedings of the International Conference on VLSI & Microwave and Wireless Technologies (ICVMWT-2021). The book includes peer-reviewed papers on the core technological developments in emerging fields like wireless communication, RF microwave/radar, VLSI, optical communication, etc. The book will serve as a valuable reference resource for academics and researchers across the globe.

Compact and Broadband Microstrip Antennas - Kin-Lu Wong 2004-04-07

Compact microstrip antennas are of great importance in meeting the miniaturization requirements of modern portable communications equipment This book is a comprehensive treatment of design techniques and test data for current compact and broadband microstrip designs Summarizes the work of the author and his graduate students who have published over 80 refereed journal articles on the subject in the past few years Advanced designs reported by various other prestigious antenna designers are incorporated as well

IEEE Antennas and Propagation Society International Symposium - IEEE Antennas and Propagation Society 1996

Compact Slot Array Antennas for Wireless Communications - Alan J. Sangster 2018-11-11

This book describes and provides design guidelines for antennas that achieve compactness by using the slot radiator as the fundamental building block within a periodic array, rather than a phased array. It provides the basic electromagnetic tools required to design and analyse these novel antennas, with sample calculations where relevant. The book presents a focused introduction and valuable insights into the relevant antenna technology, together with an overview of the main directions in the evolving technology of compact planar arrays. While the book discusses the historical evolution of compact array antennas, its main focus is on summarising the extensive body of literature on compact antennas. With regard to the now ubiquitous slot radiator, it seeks to demonstrate how, despite significant antenna size reductions that at times even seem to defy the laws of physics, desirable radiation pattern properties can be preserved. This is supported by an examination of recent advances in frequency selective surfaces and in metamaterials, which can, if handled correctly, be used to facilitate physics-defying designs. The book offers a valuable source of information for communication systems and antenna design engineers, especially thanks to its overview of trends in compact planar arrays, yet will also be of interest to students and researchers, as it provides a focused introduction and insights into this highly relevant antenna technology.

Progress in Compact Antennas - Laure Huitema 2014-09-10

Compact antennas are a subject of growing interest from industry and scientific community to equip wireless communicating objects. The need for high performance small antennas and RF front ends is the challenge for future and next generation mobile devices. This book brings the body of knowledge on compact antennas into a single comprehensive volume. It is designed to meet the needs of electrical engineering and physics students to the senior undergraduate and beginning graduate levels, and those of practicing engineers.

Substrate-Integrated Millimeter-Wave Antennas for Next-Generation Communication and Radar

Systems - Zhi Ning Chen 2021-04-29

Substrate-Integrated Millimeter-Wave Antennas for Next-Generation Communication and Radar Systems
The first and only comprehensive text on substrate-integrated mmW antenna technology, state-of-the-art antenna design, and emerging wireless applications Substrate-Integrated Millimeter-Wave Antennas for Next-Generation Communication and Radar Systems elaborates the most important topics related to revolutionary millimeter-wave (mmW) technology. Following a clear description of fundamental concepts including substrate-integrated waveguides and loss analysis, the text treats key design methods, prototyping techniques, and experimental setup and testing. The authors also highlight applications of mmW antennas in 5G wireless communication and next-generation radar systems. Readers are prepared to put techniques into practice through practical discussions of how to set up testing for impedance matching, radiation patterns, gain from 24GHz up to 325 GHz, and more. This book will bring readers state-of-the-art designs and recent progress in substrate-integrated mmW antennas for emerging wireless applications. Substrate-Integrated Millimeter-Wave Antennas for Next-Generation Communication and Radar Systems is the first comprehensive text on the topic, allowing readers to quickly master mmW technology. This book: Introduces basic concepts such as metamaterials Huygens's surface, zero-index structures, and pattern synthesis Describes prototyping in the form of fabrication based on printed-circuit-board, low-temperature-co-fired-ceramic and micromachining Explores applications for next-generation radar and imaging systems such as 24-GHz and 77-GHz vehicular radar systems Elaborates design methods including waveguide-based feeding network, three-dimensional feeding structure, dielectric loaded aperture antenna element, and low-sidelobe synthesis The mmW is one of today's most important emerging technologies. This book provides graduate students, researchers, and engineers with the knowledge they need to deploy mmW systems and develop new antenna designs with low cost, low loss, and low complexity.

Conference Proceedings - 2003

Advancement in Microstrip Antennas with Recent Applications - Ahmed Kishk 2013-03-06

The book discusses basic and advanced concepts of microstrip antennas, including design procedure and recent applications. Book topics include discussion of arrays, spectral domain, high Tc superconducting microstrip antennas, optimization, multiband, dual and circular polarization, microstrip to waveguide transitions, and improving bandwidth and resonance frequency. Antenna synthesis, materials, microstrip circuits, spectral domain, waveform evaluation, aperture coupled antenna geometry and miniaturization are further book topics. Planar UWB antennas are widely covered and new dual polarized UWB antennas are newly introduced. Design of UWB antennas with single or multi notch bands are also considered. Recent applications such as, cognitive radio, reconfigurable antennas, wearable antennas, and flexible antennas are presented. The book audience will be comprised of electrical and computer engineers and other scientists well versed in microstrip antenna technology.

Recent Innovations in Computing - Pradeep Kumar Singh 2022

This book features selected papers presented at the 4th International Conference on Recent Innovations in Computing (ICRIC 2021), held on June 8-9, 2021 by Eötvös Loránd University (ELTE), Budapest, Hungary in association with many Universities; WSG Poland, Knowledge University, ERBIL. The book is divided into two volumes, and it includes the latest research in the areas of software engineering, cloud computing, computer networks and Internet technologies, artificial intelligence, information security, database and distributed computing, and digital India.

Communications, Signal Processing, and Systems - Qilian Liang 2020-04-04

This book brings together papers from the 2019 International Conference on Communications, Signal Processing, and Systems, which was held in Urumqi, China, on July 20-22, 2019. Presenting the latest developments and discussing the interactions and links between these multidisciplinary fields, the book spans topics ranging from communications to signal processing and systems. It is chiefly intended for undergraduate and graduate students in electrical engineering, computer science and mathematics, researchers and engineers from academia and industry, as well as government employees.

Antenna Design for Narrowband IoT: Design, Analysis, and Applications - Pattanaik, Balachandra 2022-03-11

In internet of things (IoT) applications, wireless connectivity is a key factor, particularly those that need to be in transition, or where wired communication is not effective or practicable. For top-notch connectivity of the Narrowband IoT (NB-IoT) standard, the 900MHz frequency is generally used by most of the vendors. The radiation quality not only depends on the antenna geometry but on immediate surroundings. Additionally, the IoT product itself and the user of the product can strongly affect the resulting radiation pattern and other characteristics of the antenna. On the other hand, a suitable antenna should also have high efficiency and adequate bandwidth covering the desired frequency range. To take these effects into consideration, the whole IoT product must be included in the antenna simulations. Antenna Design for Narrowband IoT: Design, Analysis, and Applications provides the antenna design concept for narrowband internet of things applications, performs a detailed analysis of the antenna, and discusses the various antenna design concepts and structures. Covering a range of topics such as antenna design and antenna measurement systems, this book is ideal for industry professionals, research scholars, academicians, professors, and students.

Fundamentals of 5G Mobile Networks - Jonathan Rodriguez 2015-04-27

Fundamentals of 5G Mobile Networks provides an overview of the key features of the 5th Generation (5G) mobile networks, discussing the motivation for 5G and the main challenges in developing this new technology. This book provides an insight into the key areas of research that will define this new system technology paving the path towards future research and development. The book is multi-disciplinary in nature, and aims to cover a whole host of intertwined subjects that will predominantly influence the 5G landscape, including the future Internet, cloud computing, small cells and self-organizing networks (SONs), cooperative communications, dynamic spectrum management and cognitive radio, Broadcast-Broadband convergence, 5G security challenge, and green RF. This book aims to be the first of its kind towards painting a holistic perspective on 5G Mobile, allowing 5G stakeholders to capture key technology trends on different layering domains and to identify potential inter-disciplinary design aspects that need to be solved in order to deliver a 5G Mobile system that operates seamlessly.

Foundations for Microstrip Circuit Design - Terry C. Edwards 2016-02-01

Building on the success of the previous three editions, Foundations for Microstrip Circuit Design offers extensive new, updated and revised material based upon the latest research. Strongly design-oriented, this fourth edition provides the reader with a fundamental understanding of this fast expanding field making it a definitive source for professional engineers and researchers and an indispensable reference for senior students in electronic engineering. Topics new to this edition: microwave substrates, multilayer transmission line structures, modern EM tools and techniques, microstrip and planar transmission line design, transmission line theory, substrates for planar transmission lines, Vias, wirebonds, 3D integrated interposer structures, computer-aided design, microstrip and power-dependent effects, circuit models, microwave network analysis, microstrip passive elements, and slotline design fundamentals.

Passive RF Component Technology - Guo'an Wang 2012

Focusing on novel materials and techniques, this pioneering volume provides engineers with a solid understanding of the design and fabrication of smart RF passive components. Professionals find comprehensive details on LCP, metal materials, ferrite materials, nanomaterials, high aspect ratio enabled materials, green materials for RFID, and on-chip silicon techniques. Moreover, this practical book offers expert guidance on how to apply these materials and techniques to design a wide range of cutting-edge RF passive components, from MEMS switch-based tunable passives and 3D passives, to metamaterial-based passives and on-chip passives. Supported with over 145 illustrations, this forward-looking resource summarizes the growing trend of smart RF passive component design and serves as a guide to the performance-improving and cost-down solutions this technology offers the next generation of wireless communications.

Phased Array Antenna Handbook - Robert J. Mailloux 2005-01-01

"This thoroughly revised edition of the Artech House classic, Phased Array Antenna Handbook, offers the most up-to-date and broadest view of array antennas and systems. Supported with over 350 equations and more than 270 illustrations, the book offers complete design details that allow practitioners to size an array system with speed and confidence."--BOOK JACKET.Title Summary field provided by Blackwell North

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Advances in Signal Processing and Communication - Banmali S. Rawat 2018-11-19

This book is a collection of selected peer-reviewed papers presented at the International Conference on Signal Processing and Communication (ICSC 2018). It covers current research and developments in the fields of communications, signal processing, VLSI circuits and systems, and embedded systems. The book offers in-depth discussions and analyses of latest problems across different sub-fields of signal processing and communications. The contents of this book will prove to be useful for students, researchers, and professionals working in electronics and electrical engineering, as well as other allied fields.

Substrate Integrated Antennas and Arrays - Yu Jian Cheng 2018-09-03

Substrate Integrated Antennas and Arrays provides a single source for cutting-edge information on substrate integrated circuits (SICs), substrate integrated waveguide (SIW) feeding networks, SIW slot array antennas, SIC traveling-wave antennas, SIW feeding antennas, SIW monopulse antennas, and SIW multibeam antennas. Inspired by the author's extensive research, this comprehensive book: Describes a revolutionary SIC-based antenna technique with the potential to replace existing antenna technologies Examines theoretical and experimental results connected to electrical and mechanical performance Explains how to overcome difficulties in meeting bandwidth, gain, and efficiency specifications Substrate Integrated Antennas and Arrays offers valuable insight into the state of the art of SIC and SIW antenna technologies, presenting research useful to the development of wireless communication base station antennas, portable microwave point-to-point systems, collision avoidance radars, conformal antennas, and satellite antennas.

Planar Antennas - Praveen Kumar Malik 2021-10-21

This comprehensive reference text discusses fundamental concepts, applications, design techniques, and challenges in the field of planar antennas. The text focuses on recent advances in the field of planar antenna design and their applications in various fields of research, including space communication, mobile communication, wireless communication, and wearable applications. This resource presents planar antenna design concepts, methods, and techniques to enhance the performance parameters and applications for IoTs and device-to-device communication. The latest techniques used in antenna design, including their structures defected ground, MIMO, and fractal design, are discussed comprehensively. The text will be useful for senior undergraduate students, graduate students, and academic researchers in fields including electrical engineering, electronics, and communication engineering.

Electromagnetic Mixing Formulas and Applications - A. H. Sihvola 1999

This book covers the homogenization principles and mixing rules for determining the macroscopic dielectric and magnetic properties of different types of media. Sihvola (electromagnetics, Helsinki U. of Technology, Finland) discusses subjects such as the characteristic differences between a mixture and its parts, and ways that mixing results are applied to different materials in geophysics and biology. Distributed by INSPEC. Annotation copyrighted by Book News, Inc., Portland, OR

Dielectric Resonator Antennas - Kwai Man Luk 2003

The use of dielectric resonator as a resonant antenna was proposed in 1983. Due to the absence of metallic loss, the dielectric resonator antenna (DRA) is highly efficient when operated at millimetre wave frequencies. With the use of high dielectric constant material, the DRA can also be used as a small and low profile antenna operated at low microwave frequencies. Low cost dielectric materials are now easily available commercially, encouraging more antenna engineers to design communication systems with DRAs.

Issues in Electronic Circuits, Devices, and Materials: 2013 Edition - 2013-05-01

Issues in Electronic Circuits, Devices, and Materials: 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Microwave Research. The editors have built Issues in Electronic Circuits, Devices, and Materials: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Microwave Research in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Electronic Circuits, Devices, and Materials: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at

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Substrate-Integrated Millimeter-Wave Antennas for Next-Generation Communication and Radar Systems - Zhi Ning Chen 2021-04-08

Substrate-Integrated Millimeter-Wave Antennas for Next-Generation Communication and Radar Systems The first and only comprehensive text on substrate-integrated mmW antenna technology, state-of-the-art antenna design, and emerging wireless applications Substrate-Integrated Millimeter-Wave Antennas for Next-Generation Communication and Radar Systems elaborates the most important topics related to revolutionary millimeter-wave (mmW) technology. Following a clear description of fundamental concepts including substrate-integrated waveguides and loss analysis, the text treats key design methods, prototyping techniques, and experimental setup and testing. The authors also highlight applications of mmW antennas in 5G wireless communication and next-generation radar systems. Readers are prepared to put techniques into practice through practical discussions of how to set up testing for impedance matching, radiation patterns, gain from 24GHz up to 325 GHz, and more. This book will bring readers state-of-the-art designs and recent progress in substrate-integrated mmW antennas for emerging wireless applications. Substrate-Integrated Millimeter-Wave Antennas for Next-Generation Communication and Radar Systems is the first comprehensive text on the topic, allowing readers to quickly master mmW technology. This book: Introduces basic concepts such as metamaterials Huygens's surface, zero-index structures, and pattern synthesis Describes prototyping in the form of fabrication based on printed-circuit-board, low-temperature-co-fired-ceramic and micromachining Explores applications for next-generation radar and imaging systems such as 24-GHz and 77-GHz vehicular radar systems Elaborates design methods including waveguide-based feeding network, three-dimensional feeding structure, dielectric loaded aperture antenna element, and low-sidelobe synthesis The mmW is one of today's most important emerging technologies. This book provides graduate students, researchers, and engineers with the knowledge they need to deploy mmW systems and develop new antenna designs with low cost, low loss, and low complexity.

Modern Small Antennas - Kyohei Fujimoto 2014-01-09

If you are involved in designing and developing small antennas, this complete cutting-edge guide covers everything you need to know. From fundamentals and basic theory to design optimization, evaluation, measurements and simulation techniques, all the essential information is included. You will also get many practical examples from a range of wireless systems, whilst a glossary is provided to bring you up to speed on the latest terminology. A wide variety of small antennas is covered, and design and practice steps are described for each type: electrically small, functionally small, physically constrained small and physically small. Whether you are a professional in industry, a researcher, or a graduate student, this is your essential guide to small antennas.

Machine Vision and Augmented Intelligence—Theory and Applications - Manish Kumar Bajpai 2021-11-10

This book comprises the proceedings of the International Conference on Machine Vision and Augmented Intelligence (MAI 2021) held at IIIT, Jabalpur, in February 2021. The conference proceedings encapsulate the best deliberations held during the conference. The diversity of participants in the event from academia, industry, and research reflects in the articles appearing in the volume. The book theme encompasses all industrial and non-industrial applications in which a combination of hardware and software provides operational guidance to devices in the execution of their functions based on the capture and processing of images. This book covers a wide range of topics such as modeling of disease transformation, epidemic forecast, COVID-19, image processing and computer vision, augmented intelligence, soft computing, deep learning, image reconstruction, artificial intelligence in healthcare, brain-computer interface, cybersecurity, and social network analysis, natural language processing, etc.

Microstrip Patch Antennas (Second Edition) - Kai Fong Lee 2017-07-10

Microstrip patch antennas have become the favorite of antenna designers because of their versatility and having the advantages of planar profile, ease of fabrication, compatibility with integrated circuit technology, and conformability with a shaped surface. There is a need for graduate students and practicing engineers to gain an in depth understanding of this subject. The first edition of this book, published in

2011, was written with this purpose in mind. This second edition contains approximately one third new materials. The authors, Prof KF Lee, Prof KM Luk and Dr HW Lai, have all made significant contributions in the field. Prof Lee and Prof Luk are IEEE Fellows. Prof Lee was the recipient of the 2009 John Kraus Antenna Award of the IEEE Antennas and Propagation Society while Prof. Luk receives the same award in 2017, both in recognition of their contributions to wideband microstrip antennas.

Antenna Theory and Design - Warren L. Stutzman 2012-05-22

Stutzman's 3rd edition of Antenna Theory and Design provides a more pedagogical approach with a greater emphasis on computational methods. New features include additional modern material to make the text more exciting and relevant to practicing engineers; new chapters on systems, low-profile elements and base station antennas; organizational changes to improve understanding; more details to selected important topics such as microstrip antennas and arrays; and expanded measurements topic.

Analysis and Design of Substrate Integrated Waveguide Using Efficient 2D Hybrid Method - Xuan Hui Wu 2022-06-01

Substrate integrated waveguide (SIW) is a new type of transmission line. It implements a waveguide on a piece of printed circuit board by emulating the side walls of the waveguide using two rows of metal posts. It inherits the merits both from the microstrip for compact size and easy integration, and from the waveguide for low radiation loss, and thus opens another door to design efficient microwave circuits and antennas at a low cost. This book presents a two-dimensional fullwave analysis method to investigate an SIW circuit composed of metal and dielectric posts. It combines the cylindrical eigenfunction expansion and the method of moments to avoid geometrical discretization of the posts. The method is presented step-by-step, with all the necessary formulations provided for a practitioner who wants to implement this method by himself. This book covers the SIW circuit printed on either homogeneous or inhomogeneous substrate, the microstrip-to-SIW transition and the speed-up technique for the simulation of symmetrical SIW circuits. Different types of SIW circuits are shown and simulated using the proposed method. In addition, several slot antennas and horn antennas fabricated using the SIW technology are also given. Table of Contents: Introduction / SIW Circuits Composed of Metallic Posts / SIW Circuits with Dielectric Posts / Even-Odd Mode Analysis of a Symmetrical Circuit / Microstrip to SIW Transition and Half Mode SIW / SIW Antennas