

Compact Wideband Dual Polarized Microstrip Patch Antenna

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.

Reviews advances in the design and deployment of antenna arrays for the next generation of cellular technology, offering new solutions for the telecommunications industry. Advanced Antenna Arrays for 5G and Beyond addresses the challenges in designing and deploying antennas which deliver 5G performance, can be collocated with 4G antennas, and are immune to interference caused by future 6G antennas mounted on airborne and spaceborne platforms. This timely and authoritative volume presents innovative solutions for developing integrated communications networks of high-gain, individually-scannable, multi-beam antennas that are reconfigurable and conform to all platforms. The text begins with an up-to-date discussion of the engineering issues facing future wireless communications systems, followed by detailed review of different beamforming networks for multi-beam antennas. Subsequent chapters address problems of 4G/5G antenna collocation, discuss differentially-fed antenna arrays, explore conformal transmit arrays for airborne platforms, and more. Based primarily on the authors' extensive work in the field, including original research never before published, this important new volume: Reviews multi-beam feed networks for 5G, array decoupling and de-scattering methods, and advances in 2D Butler matrix configurations. Offers cost-effective solutions for deploying multi-beam massive antenna arrays and improving antenna pattern distortion. Provides a systematic study on differentially fed antenna arrays that are resistant to interference caused by future multifunctional/multi-generation systems. Features previously unpublished material on reconfigurable leaky wave antennas. Includes novel algorithms for synthesizing and optimizing thinned massive arrays, conformal arrays, frequency invariant arrays, and other future arrays. Advanced Antenna Arrays for 5G and Beyond is an invaluable resource for antenna engineers and researchers, as well as graduate and senior undergraduate students in the field.

This book will provide a comprehensive technical guide covering fundamentals, recent advances and open issues in wireless communications and networks to the readers. The objective of the book is to serve as a valuable reference for students, educators, scientists, faculty members, researchers, engineers and research strategists in these rapidly evolving fields and to encourage them to actively explore these broad, exciting and rapidly evolving research areas.

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.

This comprehensive resource presents antenna fundamentals balanced with the design of printed antennas. Over 70 antenna projects, along with design dimensions, design flows and antenna performance results are discussed, including antennas for wireless communication, 5G antennas and beamforming. Examples of smartphone antennas, MIMO antennas, aerospace and satellite remote sensing array antennas, automotive antennas and radar systems and many more printed antennas for various applications are also included. These projects include design dimensions and parameters that incorporate the various techniques used by industries and academia. This book is intended to serve as a practical microstrip and printed antenna design guide to cover various real-world applications. All Antenna projects discussed in this book are designed, analyzed and simulated using full-wave electromagnetic solvers. Based on several years of the author's research in antenna design and development for RF and microwave applications, this book offers an in-depth coverage of practical printed antenna design methodology for modern applications.

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.

This book presents the papers included in the proceedings of the 5th International Conference of Reliable Information and Communication Technology 2020 (IRICT 2020) that was held virtually on December 21-22, 2020. The main theme of the book is Innovative Systems for Intelligent Health Informatics. A total of 140 papers were submitted to the conference, but only 111 papers were published in this book. The book presents several hot research topics which include health informatics, bioinformatics, information retrieval, artificial intelligence, soft computing, data science, big data analytics, Internet of things (IoT), intelligent communication systems, information security, information systems, and software engineering. .

This book constitutes the refereed proceedings of the Second International Conference on Smart Trends in Information Technology and Computer Communications, SmartCom 2017, held in Pune, India, in August 2017. The 38 revised papers presented were carefully reviewed and selected from 310 submissions. The papers address issues on smart and secure systems; smart and service computing; smart data and IT innovations.

"This anthology combines 15 years of microstrip antenna technology research into one significant volume and includes a special introductory tutorial by the co-editors. Covering theory, design and modeling techniques and methods, this source book is an excellent reference tool for engineers who want to become more familiar with microstrip antennas and microwave systems.

Proven antenna designs, novel solutions to practical design problems and relevant papers describing the theory of operation and analysis of microstrip antennas are contained within this convenient reference."

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.

The book discusses the recent research trends in various sub-domains of computing, communication and control. It includes research papers presented at the First International Conference on Emerging Trends in Engineering and Science. Focusing on areas such as optimization techniques, game theory, supply chain, green computing, 5g networks, Internet of Things, social networks, power electronics and robotics, it is a useful resource for academics and researchers alike.

This book commemorates four decades of research by Professor Magdy F. Iskander (Life Fellow IEEE) on materials and devices for the radiation, propagation, scattering, and applications of electromagnetic waves, chiefly in the MHz-THz frequency range as well on electromagnetics education. This synopsis of applied electromagnetics, stemming from the life and times of just one person, is meant to inspire junior researchers and reinvigorate mid-level researchers in the electromagnetics community. The authors of this book are internationally known researchers, including 14 IEEE fellows, who highlight interesting research and new directions in theoretical, experimental, and applied electromagnetics.

Omnidirectional antenna with high gain, low profile, vertical polarization, even CP polarization is very difficult to design, although it is from the dipole. In this book, a novel idea that the running wave in the coaxial wire is disturbed by the orthogonal slot array on the cylindrical metal shell is introduced, which radiates the CP wave in omni-direction. When feeding on two ends of the coaxial wire respectively, there will appear left hand circularly polarized (LHCP) omnidirectional radiation or right hand circularly polarized (RHCP) omnidirectional radiation. By introducing the T-shaped feed structure, the coaxial wire with slot array can conveniently produce the LHCP and RHCP radiation diversity with one end feeding. In the further, combining with the directional antenna, it will generate the pattern diversity in the half-sphere space. The antenna of the coaxial wire with slot array can further transform into conical CP beam antenna if the coaxial wire becomes into a conical frustum. By introducing the PIN diode into the slot, the antenna of the coaxial wire with slot array can radiate the reconfigurable directional beam by switching the states of the PIN diodes. By introducing a novel switchable microwave circuit, the omnidirectional /directional pattern switchable antenna can be realized easily. This book proposes a continues method to develop the potentialities of the omnidirectional antenna. And the readers can study the method or ideas of the omnidirectional slots antenna, even graft the CP or diversity methods to other antennae.

Compact Antennas for Wireless Communications and Terminals deals with compact microwave antennas and, more specifically, with the planar version of these antennas. Planar antennas are the most appropriate type of antenna in modern communication systems and more generally in all applications requiring miniaturization, integration and conformation such as in mobile phone handsets. The book is suitable for students, engineers and scientists eager to understand the principles of planar and small antennas, their design and fabrication issues, and modern aspects such as UWB antennas, reconfigurable antennas and diversity issues.

Annotation Microstrip antennas are lightweight and small volume, can be made conformal to the host surface, and are manufactured using printed-circuit technology so can be mass produced at low cost, but alas, say Kumar and Ray (Indian Institute of Technology, Bombay) their use has been restricted by their inherently narrow bandwidth. Over the past few decades, however, reports have surfaced of broadband configurations, and they detail the most promising, compiling material from scattered journals, conference proceedings, and books. They explain concepts of several techniques, and describe examples without bogging down in mathematical detail. Annotation copyrighted by Book News, Inc., Portland, OR.

This book presents innovative ideas, cutting-edge findings, and novel techniques, methods, and applications in a broad range of cybersecurity and cyberthreat intelligence areas. As our society becomes smarter, there is a corresponding need to secure our cyberfuture. The book describes approaches and findings that are of interest to business professionals and governments seeking to secure our data and underpin infrastructures, as well as to individual users.

This book highlights cutting-edge research on various aspects of human-computer interaction (HCI). It includes selected research papers presented at the Third International Conference on Computing, Communication and Signal Processing (ICCCSP 2018), organized by Dr. Babasaheb Ambedkar Technological University in Lonere-Raigad, India on January 26–27, 2018. It covers pioneering topics in the field of computer, electrical, and electronics engineering, e.g. signal and image processing, RF and microwave engineering, and emerging technologies such as IoT, cloud computing, HCI, and green computing. As such, the book offers a valuable guide for all scientists, engineers and research students in the areas of engineering and technology.

Provides systematic coverage of the theory, physics, functional designs, and engineering applications of advanced electromagnetic surfaces.

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.

In the last 40 years, the microstrip antenna has been developed for many communication systems such as radars, sensors, wireless, satellite, broadcasting, ultra-wideband, radio frequency identifications (RFIDs), reader devices etc. The progress in modern wireless communication systems has dramatically increased the demand for microstrip antennas. In this book some recent advances in microstrip antennas are presented.

This book comprises select proceedings of the international conference ETAEERE 2020, and primarily focuses on renewable energy resources and smart grid technologies. The book provides valuable information on the technology and design of power grid integration on microgrids of green energy sources. Some of the topics covered include solar PV array, hybrid microgrid, daylight harvesting, green computing, photovoltaic applications, nanogrid applications, AC/DC/AC converter for wind energy systems, solar photovoltaic panels, PEM fuel cell system, and biogas run dual-fueled diesel engine. The

contents of this book will be useful for researchers and practitioners working in the areas of smart grids and renewable energy generation, distribution, and management.

This book comprises select proceedings of the 4th International Conference on Optical and Wireless Technologies (OWT 2020). The contents of this volume focus on research carried out in the areas of Optical Communication, Optoelectronics, Optics, Wireless Communication, Wireless Networks, Sensors, Mobile Communications and Antenna and Wave Propagation. The volume also explores the combined use of various optical and wireless technologies in next generation applications, and their latest developments in applications like photonics, high speed communication systems and networks, visible light communication, nanophotonics, wireless and MIMO systems. This book will serve as a useful reference to scientists, academicians, engineers and policy-makers interested in the field of optical and wireless technologies.

This book gathers selected papers presented at the 7th International Conference on Innovations in Electronics and Communication Engineering, held at Guru Nanak Institutions in Hyderabad, India. It highlights contributions by researchers, technocrats and experts regarding the latest technologies in electronic and communication engineering, and addresses various aspects of communication engineering, including signal processing, VLSI design, embedded systems, wireless communications, and electronics and communications in general. Covering cutting-edge technologies, the book offers a valuable resource, especially for young researchers.

? This book investigates the design of devices, systems, and circuits for medical applications using the two recently established frequency bands: ultra-wideband (3.1-10.6 GHz) and 60 GHz ISM band. These two bands provide the largest bandwidths available for communication technologies and present many attractive opportunities for medical applications. The applications of these bands in healthcare are wireless body area network (WBAN), medical imaging, biomedical sensing, wearable and implantable devices, fast medical device connectivity, video data transmission, and vital signs monitoring. The recent technological advances and developments proposed or used in medicine based on these two bands are covered. The book introduces possible solutions and design techniques to efficiently implement these systems in medical environment. All individual chapters are written by leading experts in their fields. Contributions by authors are on various applications of ultra-wideband and the 60 GHz ISM band including circuit implementation, UWB and 60 GHz signal transmission around and in-body, antenna design solution, hardware implementation of body sensors, UWB transceiver design, 60 GHz transceiver design, UWB radar for contactless respiratory monitoring, and ultra-wideband based medical Imaging. The book will be a key resource for medical professionals, bio-medical engineers, and graduate and senior undergraduate students in computer, electrical, electronic and biomedical engineering disciplines.

This volume comprises the proceedings of the International Conference on Recent Cognizance in Wireless Communication & Image Processing. It brings together content from academicians, researchers, and industry experts in areas of Wireless Communication and Image Processing. The volume provides a snapshot of current progress in computational creativity and a glimpse of future possibilities. The proceedings include two kinds of paper submissions: (i) regular papers addressing foundation issues, describing original research on creative systems development and modeling; and (ii) position papers describing work-in-progress or research directions for computational creativity. This work will be useful to professionals and researchers working in the core areas of wireless communications and image processing.

This book proposes new technologies and discusses future solutions for ICT design infrastructures, as reflected in high-quality papers presented at the 4th International Conference on ICT for Sustainable Development (ICT4SD 2019), held in Goa, India, on 5–6 July 2019. The conference provided a valuable forum for cutting-edge research discussions among pioneering researchers, scientists, industrial engineers, and students from all around the world. Bringing together experts from different countries, the book explores a range of central issues from an international perspective.

This book examines mechatronics and automatic control systems. The book covers important emerging topics in signal processing, control theory, sensors, mechanic manufacturing systems and automation. The book presents papers from the 2013 International Conference on Mechatronics and Automatic Control Systems in Hangzhou, held in China during August 10-11, 2013.

This six volume set LNCS 11063 – 11068 constitutes the thoroughly refereed conference proceedings of the 4th International Conference on Cloud Computing and Security, ICCCS 2018, held in Haikou, China, in June 2018. The 386 full papers of these six volumes were carefully reviewed and selected from 1743 submissions. The papers cover ideas and achievements in the theory and practice of all areas of inventive systems which includes control, artificial intelligence, automation systems, computing systems, electrical and informative systems. The six volumes are arranged according to the subject areas as follows: cloud computing, cloud security, encryption, information hiding, IoT security, multimedia forensics.

This book focuses on the emerging advances in distributed communication systems, big data, intelligent computing and Internet of Things, presenting state-of-the-art research in frameworks, algorithms, methodologies, techniques and applications associated with data engineering and wireless distributed communication technologies. In addition, it discusses potential topics like performance analysis, wireless communication networks, data security and privacy, human computer interaction, 5G Networks, and smart automated systems, which will provide insights for the evolving data communication technologies. In a nutshell, this proceedings book compiles novel and high-quality research that offers innovative solutions for communications in IoT networks.

This book is a collection of papers from the 2009 International Conference on Signals, Systems and Automation (ICSSA 2009). The conference at a glance: - Pre-conference Workshops/Tutorials on 27th Dec, 2009 - Five Plenary talks - Paper/Poster Presentation: 28-29 Dec, 2009 - Demonstrations by SKYVIEWInc, SLS Inc., BSNL, Baroda Electric Meters, SIS -

