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KEY=ANTENNA - WILLIAMS AUTUMN

HANDBOOK OF ANTENNA TECHNOLOGIES

Springer *The Handbook of Antenna Technologies aims to present the rapid development of antenna technologies, particularly in the past two decades, and also showcasing the newly developed technologies and the latest applications. The handbook will provide readers with the comprehensive updated reference information covering theory, modeling and optimization methods, design and measurement, new electromagnetic materials, and applications of antennas. The handbook will widely cover not only all key antenna design issues but also fundamentals, issues related to antennas (transmission, propagation, feeding structure, materials, fabrication, measurement, system, and unique design challenges in specific applications). This handbook will benefit the readers as a full and quick technical reference with a high-level historic review of technology, detailed technical descriptions and the latest practical applications.*

ANTENNA DESIGN CHALLENGES AND FUTURE DIRECTIONS FOR MODERN TRANSPORTATION MARKET

Springer Nature *This book is focused on wireless infrastructure deployment in modern transportation markets, where the wireless infrastructure co-exists with the existing structure. It details the challenges this deployment may face and explores the mitigation measures to overcome the challenges. The book proposes a smart antenna structure to overcome airspace congestion, which improves the overall wireless performance and deployment cost. With the combination of practical know-how and theoretical estimation, this book provides insight on how the modern smart antenna techniques that support most cutting-edge wireless technology can be adopted into the existing infrastructure whilst minimising the distraction to the existing system. This book is suitable for industrial and academic researchers, practising engineers within the field of smart antennae, and wireless infrastructure designers and developers.*

MICROSTRIP AND PRINTED ANTENNA DESIGN, 2ND EDN

IET *Offering extensive coverage of microstrip antennas, from rectangular and circular to broadband and dual-band, this text gives a complete introduction to useful designs and the implementation aspects of these types of antennas.*

TECHNOLOGIES FOR SPACECRAFT ANTENNA ENGINEERING DESIGN

Springer Nature *This book focuses on engineering design approaches for spacecraft antennas. Based on their functions in spacecraft, it discusses practical antenna design, measurement and testing. Most of the antennas covered originated at the China Academy of Space Technology (CAST), which has launched almost 300 satellites into orbit. The book presents antenna systems for seven existing spacecraft designs, while also introducing readers to new antenna technologies for spacecraft. This book is intended for researchers, graduate students, and engineers in various fields of aerospace technology and astronautics, especially spacecraft design, communication engineering and related areas.*

ANTENNA DESIGN FOR MOBILE DEVICES

John Wiley & Sons *Expanded and updated, this practical guide is a one-stop design reference containing all an engineer needs when designing antennas • Integrates state-of-the-art technologies with a special section for step-by-step antenna design • Features up-to-date bio-safety and electromagnetic compatibility regulation compliance and latest standards • Newly updated with MIMO antenna design, measurements and requirements • Accessible to readers of many levels, from introductory to specialist • Written by a practicing expert who has hired and trained numerous engineers*

ELECTROMAGNETICS AND ANTENNA TECHNOLOGY

Artech House Written by a leading expert in the field, this practical new resource presents the fundamentals of electromagnetics and antenna technology. This book covers the design, electromagnetic simulation, fabrication, and measurements for various types of antennas, including impedance matching techniques and beamforming for ultrawideband dipoles, monopoles, loops, vector sensors for direction finding, HF curtain arrays, 3D printed nonplanar patch antenna arrays, waveguides for portable radar, reflector antennas, and other antennas. It explores the essentials of phased array antennas and includes detailed derivations of important field equations, and a detailed formulation of the method of moments. This resource exhibits essential derivations of equations, providing readers with a strong foundation of the underpinnings of electromagnetics and antennas. It includes a complete chapter on the details of antenna and electromagnetic test and measurement. This book explores details on 3D printed non-planar circular patch array antenna technology and the design and analysis of a planar array-fed axisymmetric gregorian reflector. The lumped-element impedance matched antennas are examined and include a look at an analytic impedance matching solution with a parallel LC network. This book provides key insight into many aspects of antenna technology that have broad applications in radar and communications.

ANTENNA DESIGN FOR NARROWBAND IOT

DESIGN, ANALYSIS, AND APPLICATIONS

Engineering Science Reference "The purpose of this book is to provide an antenna design concept for Narrowband Internet of Things Applications and to discuss the variety of antenna design concepts and structures for various industrial requirements"--

DESIGN TECHNOLOGY OF SYNTHETIC APERTURE RADAR

John Wiley & Sons An authoritative work on Synthetic Aperture Radar system engineering, with key focus on high resolution imaging, moving target indication, and system engineering technology Synthetic Aperture Radar (SAR) is a powerful microwave remote sensing technique that is used to create high resolution two or three-dimensional representations of objects, such as landscapes, independent of weather conditions and sunlight illumination. SAR technology is a multidisciplinary field that involves microwave technology, antenna technology, signal processing, and image information processing. The use of SAR technology continues grow at a rapid pace in a variety of applications such as high-resolution wide-swath observation, multi-azimuth information acquisition, high-temporal information acquisition, 3-D terrain mapping, and image quality improvement. Design Technology of Synthetic Aperture Radar provides detailed coverage of the fundamental concepts, theories, technology, and design of SAR systems and sub-systems. Supported by the author's over two decades of research and practice experience in the field, this in-depth volume systematically describes SAR design and presents the latest research developments. Providing examination of all topics relevant to SAR—from radar and antenna system design to receiver technology and signal and image information processing—this comprehensive resource: Provides wide-ranging, up-to-date examination of all major topics related to SAR science, systems, and software Includes guidelines to conduct grounding system designs and analysis Offers coverage of all SAR algorithm classes and detailed SAR algorithms suitable for enabling software implementations Surveys SAR and computed imaging literature of the last sixty years Emphasizes high resolution imaging, moving target indication, and system engineering Design Technology of Synthetic Aperture Radar is indispensable for graduate students majoring in SAR system design, microwave antenna, signal and information processing as well as engineers and technicians involved in SAR system techniques.

ADVANCED ANTENNA TECHNOLOGY DESIGN

CUBESAT ANTENNA DESIGN

John Wiley & Sons Presents an overview of CubeSat antennas designed at the Jet Propulsion Laboratory (JPL) CubeSats—nanosatellites built to standard dimensions of 10cm x 10 cm x cm—are making space-based Earth science observation and interplanetary space science affordable, accessible, and rapidly deployable for institutions such as universities and smaller space agencies around the world. CubeSat Antenna Design is an up-to-date overview of CubeSat antennas designed at NASA's Jet Propulsion Laboratory (JPL), covering the systems engineering knowledge required to design these antennas from a radio frequency and mechanical perspective. This authoritative volume features contributions by leading experts in the field, providing insights on mission-critical design requirements for state-of-the-art CubeSat antennas and discussing their development, capabilities, and applications. The text begins with a brief introduction to CubeSats, followed by a detailed survey of low-gain, medium-gain, and high-gain antennas. Subsequent chapters cover topics including the telecommunication subsystem of Mars Cube One (MarCO), the enabling technology of Radar in a CubeSat (RainCube), the development of a one-meter mesh reflector for telecommunication at X- and Ka-band for deep space missions, and the design of multiple metasurface antennas. Written to help antenna engineers to enable new CubeSat NASA missions, this volume: Describes the selection of high-gain CubeSat antennas to address specific mission requirements and constraints for instruments or telecommunication

Helps readers learn how to develop antennas for future CubeSat missions Provides key information on the effect of space environment on antennas to inform design steps Covers patch and patch array antennas, deployable reflectarray antennas, deployable mesh reflector, inflatable antennas, and metasurface antennas CubeSat Antenna Design is an important resource for antenna/microwave engineers, aerospace systems engineers, and advanced graduate and postdoctoral students wanting to learn how to design and fabricate their own antennas to address clear mission requirements.

ANTENNA-IN-PACKAGE TECHNOLOGY AND APPLICATIONS

John Wiley & Sons 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.

ANTENNAS DESIGNS FOR NFC DEVICES

John Wiley & Sons Near-field communication (NFC) enables the exchange of information between close devices. The antenna is the indispensable element to transform an electronic device into an NFC system. For both theory and practice, this book presents in detail the design technologies of different antennas. They must meet the NFC ISO 18 092 and 21 481 standards as well as specifications by the NFC Forum for industrial applications, by EMVCo for banking applications and payments, and by CEN for public transport. In a particularly pedagogic way, Antenna Designs for NFC Devices enables designers of communicating object systems and the Internet of Things (IoT) to have access to the mysteries of the design of NFC antennas.

ANTENNA-ON-CHIP: DESIGN, CHALLENGES, AND OPPORTUNITIES

Artech House Antennas are essential part of every wireless communication system. The increasing trend of applications in the radio frequency (RF) and millimeter wave frequency spectrum has reduced the antenna sizes to only a few millimeters, which makes it practical for on-chip implementations. Integrated Circuit (IC) designers who have traditionally remained isolated from antenna design now need to understand its design process and trade-offs. This comprehensive resource addresses the challenges, benefits and trade-offs of on-chip antenna implementation. It presents practical design and integration considerations of the IC and antenna combination and how both ends of the system can be utilized in a complimentary way. The book includes on-chip antenna layout considerations, layout for testability and various methods of their characterization. A look at the future trends and utilization of on-chip antennas for different applications concludes the book.

PRINTED ANTENNAS

THEORY AND DESIGN

CRC Press Printed antennas have become an integral part of next-generation wireless communications and have been found to be commonly used to improve system capacity, data rate, reliability, etc. This book covers theory, design techniques, and the chronological regression of the printed antennas for various applications. This book will provide readers with the basic conceptual knowledge about antennas along with advanced techniques for antenna design. It covers a variety of analytical techniques and their CAD applications and discusses new applications of printed antenna technology such as sensing. The authors also present special reconfigurable antennas such as ME dipole, polarization, feeding, and DGS. The book will be useful to students as an introduction to design and applications of antennas. Additionally, experienced researchers in this field will find this book a ready reference and benefit from the techniques of research in printed antennas included in this book. Following are some of the salient features of this book: Covers a variety of analytical techniques and their CAD applications Discusses new applications of printed antenna technology such as sensing Examines the state of design techniques of printed antenna Presents special reconfigurable antennas such as ME dipole, polarization, feeding, and DGS

ADVANCED TECHNOLOGY IN SATELLITE COMMUNICATION ANTENNAS

ELECTRICAL AND MECHANICAL DESIGN

Artech House Antenna Library S From the experts at the Antenna Section of Mitsubishi Electric Corporation, comes this practical reference that details design and analysis methods, mechanical design, and product assurance. The only sourcebook to cover every aspect of satellite communication antenna technology, this is the first comprehensive book on multireflector antennas based on beam mode theory.

MICROSTRIP PATCH ANTENNAS: A DESIGNER'S GUIDE

Springer Science & Business Media This useful tool provides the reader with a current overview of where microstrip patch antenna technology is at, and useful information on how to design this form of radiator for their given application and scenario. Practical design cases are provided for each goal.

MICROSTRIP AND PRINTED ANTENNAS: APPLICATIONS-BASED DESIGNS

Artech House 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.

ANTENNAS FOR PORTABLE DEVICES

John Wiley & Sons Offers a comprehensive and practical reference guide to antenna design and engineering for portable devices Antennas are often the most bulky components in many portable wireless devices such as mobile phones. Whilst the demand for ever smaller and more powerful wireless devices increases, as does the importance of designing and engineering smaller antennas to fit these devices. *Antennas for Portable Devices* provides a complete and cutting-edge guide to the design and engineering of small antennas for portable electronic devices such as mobile phone handsets, laptop computers, RFID (radio frequency identification), microwave thermal therapies devices, wearable devices, and UWB (ultra-wideband) based consumer devices. The book addresses practical engineering issues that antenna professionals have to deal with. It explains the immediate demands for existing systems; discusses the antenna technology for the latest and emerging applications, and gives comprehensive coverage of hot topics in the wireless industry. Issues including design considerations, engineering design, measurement setup and methodology, and practical applications are all covered in depth. *Antennas for Portable Devices: Covers antennas for all modern portable wireless devices from handsets, RFID tags, laptops, wearable sensors, UWB-based wireless USB dongles and handheld microwave treatment devices* Explains how to design and engineer applications for miniaturization of antenna technology, utilising practical case studies to provide the reader with an understanding of systems and design skills Links the basic antenna theory, with design methodology, and engineering design Is amply illustrated with numerous figures and data tables of antenna designs to aid understanding Features contributions from industry and research experts in antenna technology and applications This invaluable resource will provide a comprehensive overview of miniaturizing antenna technology for antenna engineers in industry, and R&D organizations, graduate students, consultants, researchers, RF professionals, technical managers, as well as practitioners working in the area of consumer electronics, RF systems, wireless communications, or bio-medical devices.

ANTENNA OPTIMIZATION AND DESIGN BASED ON BINARY CODING

Springer This book investigates in detail the antenna optimization method with binary coding and their applications to antenna design. It introduces the binary coding principle and optimization method, the method of binary coding corresponding to geometry structure. In further, the designs by binary coding optimization method of following items are introduced, including multi-frequency antenna based on binary coding, low profile RFID tag antenna on metal, wideband directional antenna with low profile, mmWave antenna and UWB antenna. Additionally, improved hexagon unit to antenna optimization by binary coding method is given, and a new method of antenna design based on optimization of linear motion trajectory is presented in the end. This book proposes an automatic optimization method of meshed antenna based on binary coding, reduce the artificial a priori influence and find the best antenna. The book is intended for undergraduate and graduate students who are interested in antenna technology, researchers investigating high performance antenna, and antenna design engineers working on new antenna and the applications.

ANTENNAS FOR BASE STATIONS IN WIRELESS COMMUNICATIONS

McGraw Hill Professional *Design Antennas for Modern Wireless Communications Systems* Written by a global team of expert contributors, this book offers complete details on the wide range of antennas used in today's wireless communication networks. Coverage includes the most popular applications in WWAN (GSM, CDMA, and WCDMA), WLAN (Bluetooth and WiFi), WMAN (WiMAX), and WPAN (UWB and RFID). *Antennas for Base Stations in Wireless Communications* presents a full picture of modern base station antenna technology--from fundamentals and parameters to engineering and advanced solutions--and highlights new technologies in antenna design with enhanced performance. Real-world case studies provide you with practical examples that can be applied to your own system designs. Apply measurement techniques for various parameters Enable frequency re-use and channel capacity optimization in mobile radio networks Design antennas for mobile communications-CDMA, GSM, and WCDMA Implement advanced antenna technologies for GSM base stations Facilitate enhanced system capacity Design unidirectional antennas, including directed dipole, wideband patch, and complementary antennas Optimize antenna designs for WLAN (WiFi) applications Design antennas for Wireless Personal Area Network (WPAN) applications, including RFID and UWB

MICROSTRIP ANTENNA DESIGN FOR WIRELESS APPLICATIONS

CRC Press This book focuses on recent advances in the field of microstrip antenna design and its applications in various fields including space communication, mobile communication, wireless communication, medical implants and wearable applications. Scholars as well as researchers and those in the electronics/ electrical/ instrumentation engineering fields will benefit from this book. The book shall provides the necessary literature and techniques using which to assist students and researchers would design antennas for the above- mentioned applications and will ultimately enable users to take measurements in different environments. It is intended to help scholars and researchers in their studies, by enhancing their the knowledge and skills in on the latest applications of microstrip antennas in the world of communications such as world like IoT, D2D, satellites and wearable devices, to name a few. **FEATURES** Addresses the complete functional framework workflow in printed antenna design systems Explores the basic and high-level concepts, including advanced aspects in planer design issues, thus serving as a manual for those in the the industry while also assisting beginners Provides the latest techniques used for antennas in terms of structure, defected ground, MIMO and fractal designs Discusses case studies related to data-intensive technologies in microchip antennas in terms of the most recent applications and similar uses for the Internet of Things and device-to-device communication

PRINTED ANTENNAS FOR WIRELESS COMMUNICATIONS

John Wiley & Sons Printed antennas, also known as microstrip antennas, have a variety of beneficial properties including mechanical durability, conformability, compactness and cheap manufacturing costs. As such, they have a range of applications in both the military and commercial sectors, and are often mounted on the exterior of aircraft and spacecraft as well as incorporated into mobile radio communication devices. *Printed Antennas for Wireless Communications* offers a practical guide to state-of-the-art printed antenna technology used for wireless systems. Contributions from renowned global experts within both academia and industry enable the reader to design printed antennas and associated technologies, and offer valuable insights into important breakthroughs in these areas. Divided into 3 sections covering fundamental wideband printed radiating elements for wireless systems, small printed antennas for wireless systems, and advanced concepts and applications in wireless systems. Provides experimental data and applies theoretical models to present design performance trends and to give the reader an in-depth coverage of the area. Presents summaries of different approaches used in solving wireless systems such as WPAN (wireless personal area network) and MIMO (multi-input/ multi-output), offering the reader an overall perspective of the pros and cons of each. Focuses on practical design, examples and 'real world' solutions. *Printed Antennas for Wireless Communications* offers an excellent insight on printed antennas from the theoretical to the practical; hence it will appeal to practicing design engineers within commercial and governmental/ military organistations, as well as postgraduate students and researchers in communications technology

DESIGN OF ULTRA WIDEBAND ANTENNA MATCHING NETWORKS

VIA SIMPLIFIED REAL FREQUENCY TECHNIQUE

Springer Science & Business Media *Design of Ultra Wideband Antenna Matching Networks: via Simplified Real Frequency Technique (SRFT)* will open up a new horizon for design engineers, researchers, undergraduate and graduate students to construct multi-band and ultra wideband antenna matching networks for antennas which in turn will push the edge of technology to manufacture new generation of complex communication systems beyond microwave frequencies both in commercial and military line. In *Design of Ultra Wideband Antenna Matching Networks*, many real life examples are presented to design antenna matching networks over HF and cellular commercial multi-band frequencies. For each example, open MatLab source codes are provided so that the reader can easily generate and verify the results of the examples included in the book.

PROCEEDINGS OF INTERNATIONAL CONFERENCE ON ANTENNA TECHNOLOGIES

Allied Publishers

COMPACT SLOT ARRAY ANTENNAS FOR WIRELESS COMMUNICATIONS

Springer 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.

BROADBAND PLANAR ANTENNAS

DESIGN AND APPLICATIONS

John Wiley & Sons The increasing demand for wireless communications has revolutionised the lifestyle of today's society and one of the key components of wireless technology is antenna design. Broadband planar antennas are the newest generation of antennas boasting the attractive features required, such as broad operating bandwidth, low profile, light weight, low cost and ease of integration into arrays or Radio Frequency (RF) circuits, to make them ideal components of modern communications systems. Research into small and broadband antennas has been spurred by the rapid development of portable wireless communication devices such as cell phones, laptops and personal digital assistants. This all-encompassing volume, *Broadband Planar Antennas: Design and Applications*, systematically describes the techniques for all planar antennas from microstrip patch antennas, suspended plate antennas and planar inverted-L/F antennas to planar dipole antennas. Also discussed are some of the most recent outcomes such as broadband antenna issues in promising ultra-wideband applications. Clearly describes the fundamentals of planar antennas and categorises them according to their radiation characteristics. Introduces the advanced progress in broadband planar antennas for modern wireless communications. Includes a wealth of case studies, design guidelines, figures and tables. This text is essential reading for antenna, RF and microwave engineers and manufacturers within the telecommunications industry. Its highly accessible approach will also appeal to researchers, postgraduate students and academic lecturers.

TERAHERTZ ANTENNA TECHNOLOGY FOR IMAGING AND SENSING APPLICATIONS

Springer Nature This book covers terahertz antenna technology for imaging and sensing, along with its various applications. The authors discuss the use of terahertz frequency and photoconductive antenna technology for imaging applications, such as biological and bio-medical applications, non-destructive inspection of fabrics and plastics, analysis of hydration levels or detecting the presence of metallic components in samples, and detecting a variety of materials with unique spectral fingerprints in the terahertz frequency range, such as different types of explosives or several compounds used in the fabrication of medicines. Provides a comprehensive review of terahertz source and detector for imaging and sensing; Discusses photoconductive antenna technology for imaging and sensing; Presents modalities for improving the photoconductive dipole antenna performance for imaging and sensing; Explores applications in tomographic imaging, art conservation and the pharmaceutical and aerospace industries.

ANTENNA AND SENSOR TECHNOLOGIES IN MODERN MEDICAL APPLICATIONS

John Wiley & Sons A guide to the theory and recent development in the medical use of antenna technology. *Antenna and Sensor Technologies in Modern Medical Applications* offers a comprehensive review of the theoretical background, design, and the latest developments in the application of antenna technology. Written by two experts in the field, the book presents the most recent research in the burgeoning field of wireless medical telemetry and sensing that covers both wearable and implantable antenna and sensor technologies. The authors review the integrated devices that include various types of sensors wired within a wearable garment that can be paired with external devices. The text covers important developments in sensor-integrated clothing that are synonymous with athletic apparel with built-in electronics. Information on implantable devices is also covered. The book explores technologies that utilize both inductive coupling and far field propagation. These include minimally invasive

microwave ablation antennas, wireless targeted drug delivery, and much more. This important book: Covers recent developments in wireless medical telemetry Reviews the theory and design of in vitro/in vivo testing Explores emerging technologies in 2D and 3D printing of antenna/sensor fabrication Includes a chapter with an annotated list of the most comprehensive and important references in the field Written for students of engineering and antenna and sensor engineers, *Antenna and Sensor Technologies in Modern Medical Applications* is an essential guide to understanding human body interaction with antennas and sensors.

26TH ESA ANTENNA TECHNOLOGY WORKSHOP ON SATELLITE ANTENNA MODELLING AND DESIGN TOOLS

PROCEEDINGS, 12-14 NOVEMBER 2003, ESTEC, NOORDWIJK, THE NETHERLANDS

MICROSTRIP PATCH ANTENNAS

A DESIGNER'S GUIDE

MODERN ANTENNA DESIGN

John Wiley & Sons A practical book written for engineers who design and use antennas The author has many years of hands on experience designing antennas that were used in such applications as the Venus and Mars missions of NASA The book covers all important topics of modern antenna design for communications Numerical methods will be included but only as much as are needed for practical applications

NEXT-GENERATION ANTENNAS

ADVANCES AND CHALLENGES

John Wiley & Sons Antenna design and wireless communication has recently witnessed their fastest growth period ever in history, and these trends are likely to continue for the foreseeable future. Due to recent advances in industrial applications as well as antenna, wireless communication, and 5G technology, we are witnessing a variety of developing and expanding new technologies. Compact and low-cost antennas are increasing the demand for ultra-wide bandwidth in next-generation (5G) wireless communication systems and the Internet of Things (IoT). Enabling the next generation of high-frequency communication, various methods have been introduced to achieve reliable high data rate communication links and enhance the directivity of planar antennas. 5G technology can be used in many applications, such as in smart city applications and in smartphones. This technology can satisfy the fast rise in user and traffic capacity in mobile broadband communications. Therefore, different planar antennas with intelligent beamforming capability play an important role in these areas. The purpose of this book is to present the advanced technology, developments, and challenges in antennas for next-generation antenna communication systems. This book covers advances in next-generation antenna design and application domain in all related areas. It is a detailed overview of cutting-edge developments and other emerging topics and their applications in all areas of engineering that have achieved great accuracy and performance with the help of the advancement and challenges in next generation antennas. Whether a refresher for veteran engineers hoping to stay abreast of the latest advances and developing concepts in the field, an introduction to new engineers moving into the field, or a textbook for students and faculty, this groundbreaking new volume is a must-have for any library.

MICROSTRIP PATCH ANTENNAS: A DESIGNER'S GUIDE

Springer This useful tool provides the reader with a current overview of where microstrip patch antenna technology is at, and useful information on how to design this form of radiator for their given application and scenario. Practical design cases are provided for each goal.

ULTRAWIDEBAND PHASED ARRAY ANTENNA TECHNOLOGY FOR SENSING AND COMMUNICATIONS SYSTEMS

MIT Press Practical ultrawideband phased array technology used in airborne and ground-based systems applications.

SPACE ANTENNA HANDBOOK

John Wiley & Sons This book addresses a broad range of topics on antennas for space applications. First, it introduces the fundamental methodologies of space antenna design, modelling and analysis as

well as the state-of-the-art and anticipated future technological developments. Each of the topics discussed are specialized and contextualized to the space sector. Furthermore, case studies are also provided to demonstrate the design and implementation of antennas in actual applications. Second, the authors present a detailed review of antenna designs for some popular applications such as satellite communications, space-borne synthetic aperture radar (SAR), Global Navigation Satellite Systems (GNSS) receivers, science instruments, radio astronomy, small satellites, and deep-space applications. Finally it presents the reader with a comprehensive path from space antenna development basics to specific individual applications. Key Features: Presents a detailed review of antenna designs for applications such as satellite communications, space-borne SAR, GNSS receivers, science instruments, small satellites, radio astronomy, deep-space applications Addresses the space antenna development from different angles, including electromagnetic, thermal and mechanical design strategies required for space qualification Includes numerous case studies to demonstrate how to design and implement antennas in practical scenarios Offers both an introduction for students in the field and an in-depth reference for antenna engineers who develop space antennas This book serves as an excellent reference for researchers, professionals and graduate students in the fields of antennas and propagation, electromagnetics, RF/microwave/millimetrewave systems, satellite communications, radars, satellite remote sensing, satellite navigation and spacecraft system engineering, It also aids engineers technical managers and professionals working on antenna and RF designs. Marketing and business people in satellites, wireless, and electronics area who want to acquire a basic understanding of the technology will also find this book of interest.

ANTENNAS FOR GLOBAL NAVIGATION SATELLITE SYSTEMS

John Wiley & Sons This book addresses the fundamentals and practical implementations of antennas for Global Navigation Satellite Systems (GNSS) In this book, the authors discuss the various aspects of GNSS antennas, including fundamentals of GNSS, design approaches for the GNSS terminal and satellite antennas, performance enhancement techniques and effects of user's presence and surrounding environment on these antennas. In addition, the book will provide the reader with an insight into the most important aspects of the GNSS antenna technology and lay the foundations for future advancements. It also includes a number of real case studies describing the ways in which antenna design can be adapted to conform to the design constraints of practical user devices, and also the management of potential adverse interactions between the antenna and its platform. Key Features: Covers the fundamentals and practical implementations of antennas for Global Navigation Satellite Systems (GNSS) Describes technological advancements for GPS, Glonass, Galileo and Compass Aims to address future issues such as multipath interference, in building operation, RF interference in mobile Includes a number of real case studies to illustrate practical implementation of GNSS This book will be an invaluable guide for antenna designers, system engineers, researchers for GNSS systems and postgraduate students (antennas, satellite communication technology). R&D engineers in mobile handset manufacturers, spectrum engineers will also find this book of interest.

ULTRAWIDEBAND ANTENNAS

DESIGN AND APPLICATIONS

World Scientific Ultrawideband (UWB) technology, positioned as the cutting edge of research and development, paves the way to meet the emerging demands set by broadband wireless applications, such as high-speed data transmission, medical imaging, short-range radars, electromagnetic testing, etc. This breathtaking resource builds upon the basics of UWB technology to provide a complete compilation of figures of merit along with a vital state-of-the-art of the different antenna alternatives that are to be employed according to the specific application. Without excessive recourse to mathematics, this volume emphasizes on the UWB antenna design and equips readers with practical prediction techniques based on simple formulas and models. The big picture of UWB antenna technology would not be complete without addressing its applications, and this will serve to provide consultants with key clues for slot market searching. Containing over 150 supporting illustrations and figures, this comprehensive overview of UWB technology, antenna design and applications is a vital source of information and reference for R&D organizations, researchers, practitioners, consultants, RF professionals and communication engineers.

LTE COMMUNICATIONS AND NETWORKS

FEMTOCELLS AND ANTENNA DESIGN CHALLENGES

John Wiley & Sons A comprehensive resource to the latest developments of system enhancement techniques of Femtocells, power management, interference mitigation and antenna design LTE Communications and Networks fills a gap in the literature to offer a comprehensive review of the most current developments of LTE Femtocells and antennas and explores their future growth. With contributions from a group of experts that represent the fields of wireless communications and mobile communications, signal processing and antenna design, this text identifies technical challenges and presents recent results related to the development, integration and enhancement of LTE systems in portable devices. The authors examine topics such as application of cognitive radio with efficient sensing mechanisms, interference mitigation and power management schemes for the LTE systems. They also provide a comprehensive account of design challenges and approaches, performance enhancement techniques and effects of user's presence on the LTE antennas. LTE Communications and Networks also highlights the promising technologies of multiband, multimode and reconfigurable

antennas for efficient design of portable LTE devices. Designed to be a practical resource, this text: Explores the interference mitigation, power control and spectrum management in LTE Femtocells and related issues Contains information on the design challenges, different approaches, performance enhancement and application case scenarios for the LTE antennas Covers the most recent developments of system enhancement techniques in terms of Femtocells, power management, interference mitigation and antenna design Includes contributions from leading experts in the field Written for industry professionals and researchers, LTE Communications and Networks is a groundbreaking book that presents a comprehensive treatment to the LTE systems in the context of Femtocells and antenna design and covers the wide range of issues related to the topic.

EMERGING MATERIALS AND ADVANCED DESIGNS FOR WEARABLE ANTENNAS

IGI Global Bendable wearable materials like conductive strands, fluid metallic mixes, and polymer in paper are generally utilized as a part of the current adaptable electronic gadgets. Extra necessities are implemented in wearable applications. Characteristic elastic, for example, is an appealing exchange adaptable material that is biocompatible and offers high conductivity, low loss, simplicity to make, and most importantly, it is water/climate safe and condition amicable. The wearable antenna is one of the key components to establish body area network (BAN) for wireless communication, which is why it has become such an important part of antenna research. Wearable antennas are being applied successfully in various parts of life such as health monitoring, physical training, navigation, RFID, medicine, military, and more. Emerging Materials and Advanced Designs for Wearable Antennas explores how wearable antenna technology is being employed to enhance the quality of life in various industries. The technologies implemented and success of these antenna technologies is essential in the emerging field of wearable computing and is discussed in detail within the contents of this book. While covering essential topics such as the optimization of antenna material, improvement in flexible antenna performance, synthesis and design aspects of antennas, and transmission and receiving of the bendable antenna, this book is ideal for the military field, scientists, the medical field, practitioners, stakeholders, researchers, academicians, and students looking for the most advanced and updated research on the technology and implementation of wearable antennas spanning multiple industries.

SUBSTRATE-INTEGRATED MILLIMETER-WAVE ANTENNAS FOR NEXT-GENERATION COMMUNICATION AND RADAR SYSTEMS

John Wiley & Sons 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.