

Antenna Engineering H Fourth Edition John Volakis

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RFID-based Sensor Networking Springer
With the progress and rapid increase in mobile terminals, the design of antennas for these small systems is becoming more and more important. This forward-looking volume offers professionals current and comprehensive coverage of the design, development, and implementation of small, compact, and lightweight antennas in mobile communication terminals. The book discusses a wide range of communication systems, from Radio-frequency identification (RFID), and near field communications (NFC), to wireless power transmission (WPT) and broadband wireless networks. Engineers learn how to use small antennas in mobile phones, wearable systems, laptop computers, radio watches, and broadband wireless networks such as WLAN and WiMAX. This definite reference covers the critical applications today’s professionals need to understand, from antennas for IoT and antenna design for 5G mm-wave devices, to body-centric communication systems and antennas for unmanned aerial vehicles.
Antenna Theory CRC Press
Transmission Lines and Wave Propagation, Fourth Edition helps readers develop a thorough understanding of transmission line behavior, as well as their advantages and limitations. Developments in research, programs, and concepts since the first edition presented a demand for a version that reflected these advances. Extensively revised, the fourth edition of this bestselling text does just that, offering additional formulas and expanded discussions and references, in addition to a chapter on coupled transmission lines. What Makes This Text So Popular? The first part of the book explores distributed-circuit theory and presents practical applications. Using observable behavior, such as travel time, attenuation, distortion, and reflection from terminations, it analyzes signals and energy traveling on transmission lines at finite velocities. The remainder of the book reviews the principles of electromagnetic field theory, then applies Maxwell’s equations for time-varying electromagnetic fields to coaxial and parallel conductor lines, as well as rectangular, circular, and elliptical cylindrical hollow metallic

waveguides, and fiber-optic cables. This progressive organization and expanded coverage make this an invaluable reference. With its analysis of coupled lines, it is perfect as a text for undergraduate courses, while graduate students will appreciate it as an excellent source of extensive reference material. This Edition Includes: An overview of fiber optic cables emphasizing the principle types, their propagating modes, and dispersion Discussion of the role of total internal reflection at the core/cladding interface, and the specific application of boundary conditions to a circularly symmetrical propagating mode A chapter on coupled transmission lines, including coupled-line network analysis and basic crosstalk study More information on pulse propagation on lines with skin-effect losses A freeware program available online Solutions manual available with qualifying course adoption
Transmission Lines and Wave Propagation Artech House
Detailing the active and passive aspects of microwaves, *Microwave Engineering: Concepts and Fundamentals* covers everything from wave propagation to reflection and refraction, guided waves, and transmission lines, providing a comprehensive understanding of the underlying principles at the core of microwave engineering. This encyclopedic text not only encompasses nearly all facets of microwave engineering, but also gives all topics—including microwave generation, measurement, and processing—equal emphasis. Packed with illustrations to aid in comprehension, the book: Describes the mathematical theory of waveguides and ferrite devices, devoting an entire chapter to the Smith chart and its applications Discusses different types of microwave components, antennas, tubes, transistors, diodes, and parametric devices Examines various attributes of cavity resonators, semiconductor and RF/microwave devices, and microwave integrated circuits Addresses scattering parameters and their properties, as well as planar structures including striplines and microstrips Considers the limitations of conventional tubes, behavior of charged particles in different fields, and the concept of velocity modulation Based on the author ’ s own class notes, *Microwave Engineering: Concepts and Fundamentals* consists of 16 chapters featuring homework problems, references, and numerical examples. PowerPoint® slides and MATLAB®-based solutions are available with qualifying course adoption.
High Throughput Satellites Artech House
This exciting new book discusses the motivation for the evolution of a new breed of High Throughput Satellites (HTS) that have emerged from traditional communications satellites. It explores the commercial sectors and technical context that have shaped HTS. The historical underpinnings of HTS are provided to highlight the requirements that dimension these satellites. A survey of operational GEO HTS systems is also included. Readers will understand the technical, operational and commercial context of HTS systems, as well as the performance of the current HTS system. This initial breed of satellites was limited to geostationary satellites, but it is quickly projecting into low earth orbit (LEO) constellations, often referred to as mega-constellations. The industrial and operational facets of LEO constellations are challenging. The characteristics of GEO and LEO systems are presented to understand the differences between the two systems. The book also explores the evolution of the current HTS payload architectures, as well as theoretical methodology is presented for the capacity estimation for both the FORWARD link and RETURN link, which can be used for preliminary HTS dimensioning and can be adapted to practical scenarios.
Communications Receivers, Fourth Edition John Wiley & Sons
Wireless communication has emerged as an independent discipline in the past decades. Everything from cellular voice telephony to wireless data transmission using wireless sensor networks has profoundly impacted the safety, production, and productivity of industries and our lifestyle as well. After a decade of exponential growth, the wireless industry is one of the largest industries in the world. Therefore, it would be an injustice if the wireless communication is not explored for mining industry. Underground mines, which are characterized by their tough working conditions and hazardous environments, require fool-proof mine-wide communication systems for smooth functioning of mine workings and ensuring better safety. Proper and re- able communication systems not only save the machine breakdown time but also help in immediate passing of messages from the vicinity of underground working area to the

surface for day-to-day normal mining operations as well as for speedy rescue operations in case of disaster. Therefore, a reliable and effective communication system is an essential requisite for safe working, and maintaining requisite production and productivity of underground mines. Most of the existing systems generally available in underground mines are based on line (wired) communication principle, hence these are unable to withstand in the disaster conditions and difficult to deploy in inaccessible places. Therefore, wireless communication is an indispensable, reliable, and convenient system and essential in case of day-to-day normal duty or disaster situations.

Antenna Engineering Handbook, Fourth Edition

Springer Science & Business Media

The steady evolution of wireless communication technologies continues to pave the way for the implementation of innovative services and devices in modern vehicles. These include analog and digital audio broadcasting radio, satellite radio, GPS, cell phones, and short range communication devices. Such applications require the use of multiple antennas operating in different frequency ranges. Automotive Antenna Design and Applications thoroughly examines traditional and new advanced automotive antennas, including the principles, designs, and techniques used to reduce antenna dimensions without significant degradation of communication quality. The contents of this book are based on cutting-edge data collected from numerous technical papers, patents, and patent applications. It presents an overview of many commercially available automotive antennas and covers features that have become standard in automotive applications, such as printed-on car glass antennas, reduced-size helical antennas, multiband compact, printed-on dielectric and patch designs in a single package. Includes simulation examples of antenna parameters that significantly speed up the design process using software packages such as FEKO, NEC, IE3D, and Genesys. Highlighting the practical aspects of antenna design, the authors present passive and active designs and describe the entire design process, including antenna simulation, prototype sample fabrication, and laboratory test measurements. The book also covers the production adjustments that can result from the demands of the real car environment. The presentation of numerous examples of passive and active automotive antennas greatly enhances this reference's value to professionals, students, and anyone else working in the ever-evolving field of antenna design and application.

A Handbook for Wireless/ RF, EMC, and High-Speed Electronics McGraw Hill Professional

This timely new book is a cutting edge resource for engineers involved in the electric utility industry. This one-of-a-kind resource explores the planning, design, and deployment of communications networks, including fiber, microwave, RF,

and Ethernet in electric utility spaces as related to Smart Grid. Readers are presented with an introduction to power utility communications, providing a thorough overview of data transmission media, electrical grid, and power grid modernization. Communication fundamentals and fiber-optic radio system design are also covered. Network performance and reliability considerations are discussed including channel protection, system latency, and cyber and grid security. Clear examples and calculations are presented to demonstrate reliability and availability measures for fiber-optic systems.

Polarization in Electromagnetic Systems, Second Edition

Artech House

The move toward worldwide wireless communications continues at a remarkable pace, and the antenna element of the technology is crucial to its success. With contributions from more than 30 international experts, the Handbook of Antennas in Wireless Communications brings together all of the latest research and results to provide engineering professionals and students with a one-stop reference on the theory, technologies, and applications for indoor, hand-held, mobile, and satellite systems. Beginning with an introduction to wireless communications systems, it offers an in-depth treatment of propagation prediction and fading channels. It then explores antenna technology with discussion of antenna design methods and the various antennas in current use or development for base stations, hand held devices, satellite communications, and shaping beams. The discussions then move to smart antennas and phased array technology, including details on array theory and beamforming techniques. Space diversity, direction-of-arrival estimation, source tracking, and blind source separation methods are addressed, as are the implementation of smart antennas and the results of field trials of systems using smart antennas implemented. Finally, the hot media topic of the safety of mobile phones receives due attention, including details of how the human body interacts with the electromagnetic fields of these devices. Its logical development and extensive range of diagrams, figures, and photographs make this handbook easy to follow and provide a clear understanding of design techniques and the performance of finished products. Its unique, comprehensive coverage written by top experts in their fields promises to make the Handbook of Antennas in Wireless Communications the standard reference for the field.

Introduction to Power Utility

Communications Walter de Gruyter GmbH & Co KG

Based on familiar circuit theory and basic physics, this book serves as an invaluable reference for both analog and digital engineers alike. For those who work with analog RF, this book is a must-have resource. With computers and networking equipment of the 21st century running at such high frequencies, it is now crucial for digital designers to understand electromagnetic fields, radiation and transmission lines. This knowledge is necessary for maintaining signal integrity and achieving EMC compliance. Since many digital designers are lacking in analog design skills, let alone electromagnetics, an easy-to-read but informative book on electromagnetic topics should be considered a welcome addition to their professional libraries. Covers topics using conceptual explanations and over 150 lucid figures, in place of complex mathematics. Demystifies antennas, waveguides, and transmission line phenomena. Provides the foundation necessary to thoroughly understand signal integrity issues associated with high-speed digital design.

Antenna Engineering Handbook, Fourth Edition McGraw Hill Professional

Finally - a completely revised, updated, and expanded edition of the Artech House classic, Handbook of Antennas for EMC. The second edition features a wealth of brand new material, including chapters on recent techniques, standards, and measurements. This invaluable resource provides a thorough understanding of the practical aspects and underpinnings of antennas in EMC systems. Professionals find summaries of important underlying mathematics without the heavy theoretical emphasis that characterizes much of the existing literature. Professionals discover which antennas to choose for electromagnetic (EM) compatibility and compliance. Moreover, this authoritative book offers a solid understanding of the main characteristics of an antenna in a qualitative manner. Essential reading for EMC engineers, this volume provides the knowledge needed to determine the right antenna for specific applications and offers guidance in conducting EMC testing.

Handbook of Reflector Antennas and Feed Systems Volume I: Theory and Design of Reflectors CRC Press

Antennas systems play a critical role in modern electronic warfare communications and radar. Today's EW engineers need to have a solid

understanding of the design principles of this technology and how antenna systems are used in the field. This comprehensive book serves as a one-stop resource for practical EW antenna system know-how. Supported with over 700 illustrations and nearly 1,700 equations, this authoritative reference offers professionals detailed explanations of all the important foundations and aspects of this technology. Moreover, engineers get an in-depth treatment of a wide range of antenna system applications. The book presents the key characteristics of each type of antenna, including dipoles, monopoles, loops, arrays, horns, and patches. Practitioners also find valuable discussions on the limitations of antennas system performance in EW applications.

Transmission Loss Predictions for Tropospheric Communication Circuits

McGraw-Hill Professional Pub

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

Antenna Theory Elsevier

This is the first truly comprehensive and most up-to-date handbook available on modern reflector antennas and feed sources for diversified space and ground applications. There has never been such an all-encompassing reflector handbook in print, and no currently available title offers coverage of such recent research developments. The Handbook consists of three volumes. Volume I provides a unique combination of theoretical underpinnings with design considerations and techniques. The need for knowledge in reflector antennas has grown steadily over the last two decades due to increased use in space and ground applications, as well as their high gain and wide bandwidth capabilities at relatively low cost. This volume brings you to the leading edge of developments in the field related to numerical techniques, classical reflector geometries, adaptive reflector antennas, shaped reflectors, bifocal and bicollimated dual reflectors, advanced reflectors, and reflect arrays. A must-have reference for both practicing engineers as well as academic researchers.

Cable Shielding for Electromagnetic Compatibility Artech House

State-of-the-art communications receiver technologies and design strategies This thoroughly updated guide offers comprehensive explanations of the science behind today’s radio receivers along with practical guidance on designing, constructing, and maintaining

real-world communications systems. You will explore system planning, antennas and antenna coupling, amplifiers and gain control, filters, mixers, demodulation, digital communication, and the latest software defined radio (SDR) technology. Written by a team of telecommunication experts, *Communications Receivers: Principles and Design, Fourth Edition*, features technical illustrations, schematic diagrams, and detailed examples. Coverage includes: • Basic radio considerations • Radio receiver characteristics • Receiver system planning • Receiver implementation considerations • RF and baseband techniques for Software-Defined Radios • Transceiver SDR considerations • Antennas and antenna coupling • Mixers • Frequency sources and control • Ancillary receiver circuits • Performance measurement

Antenna Engineering Handbook, Fourth Edition Artech House

The book presents basic and advanced concepts of circularly polarized antennas, including design procedure and recent applications. Cross dipole antennas, microstrip antennas, helical antennas, quadrifilar helix antennas, frequency independent antennas, horn antennas, omnidirectional circularly polarized antennas and radial line array antennas are discussed. With abundant examples, the book is an essential reference for researchers and engineers.

Transmission Loss Predictions for Tropospheric Communication Circuits Springer Science & Business Media
Written by one of the world’s leading experts in the field, this book is intended as an advanced text for courses in antennas, with a focus on the mature but vital background field of aperture antennas. It is aimed at final year, MSc, PhD and post-doctoral students, as well as readers who are moving from academia into industry, beginning careers as wireless engineers, system designers, in R&D, or for practising engineers. It assumes the reader has undertaken an earlier course of study on Maxwell’s equations, fields and waves. Some of these topics are summarized in the early few chapters in order to provide continuity and background for the remaining chapters. The aperture antennas covered include the main types of horns, reflectors and arrays as well as microstrip patches, reflectarrays and lenses. To provide more than a superficial treatment of arrays, the topic of mutual coupling is covered in greater detail compared to most similar books in this area. Also included is an introduction to arrays on non-planar surfaces, which are important in

applications that involve curved surfaces such as in aerodynamics or for making aperture antennas unobtrusive. A chapter is included on some modern aperture antennas to illustrate design techniques beyond the most common types of aperture antennas described in the early chapters. This is to show where advances have recently been made and where they could be improved in the future. Also included are selective topics that are practical in nature for aperture antennas, namely fabrication and measurement.

Handbook of Antennas in Wireless Communications Artech House

The Latest Resource for the Study of Antenna Theory! In a discipline that has experienced vast technological changes, this text offers the most recent look at all the necessary topics. Highlights include: *

- * New coverage of microstrip antennas provides information essential to a wide variety of practical designs of rectangular and circular patches, including computer programs.
- * Applications of Fourier transform (spectral) method to antenna radiation.
- * Updated material on moment methods, radar cross section, mutual impedances, aperture and horn antennas, compact range designs, and antenna measurements.

A New Emphasis on Design! Balanis features a tremendous increase in design procedures and equations. This presents a solid solution to the challenge of meeting real-life situations faced by engineers. Computer programs contained in the book-and accompanying software-have been developed to help engineers analyze, design, and visualize the radiation characteristics of antennas.

Antenna Engineering Handbook Springer Science & Business Media

This very comprehensive and practical textbook presents a clear, systematic and comprehensive introduction to the relevant mathematics and physics of linear and nonlinear oscillations and waves. It explains even the most complicated cases clearly, with numerous illustrations for further clarification.

Handbook of Antennas for EMC, Second Edition Artech House

Antenna Engineering Handbook, Fourth Edition McGraw-Hill Professional Pub

Handbook of Reflector Antennas and Feed Systems Volume II: Feed Systems IGI Global

This title provides a current, comprehensive overview of the design and analysis of radomes. The second edition includes a wealth of new material, including three new chapters on radome measurement techniques, environmental effects on radomes, and new radome technology. This unique book helps you to design radomes for top performance, understand the effect a radome has on a particular antenna's operation, and

become knowledgeable about how to specify acceptable radome equipment. Over 130 illustrations and more than 250 equations support key topics throughout the book."