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## Download File PDF Waveguide Handbook Book

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**KEY=WAVEGUIDE - GEMMA PIPER**

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**WAVEGUIDE HANDBOOK**

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**IET** Presents the equivalent-circuit parameters for a large number of microwave structures.

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**WAVEGUIDE HANDBOOK**

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The Waveguide Handbook is an unbridged reprint of the book first published in 1951 by McGrawHill as volume 10 of the MIT Radiation Laboratory Series. Although the primary aim of the book is to present the equivalent circuit parameters for a large amount of microwave structures, a brief but coherent account of the fundamental concepts necessary for their proper utilisation is included

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**WAVEGUIDE HANDBOOK**

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**WAVEGUIDE HANDBOOK. EDITED BY N. MARCUVITZ**

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**THEORY OF WAVEGUIDES AND TRANSMISSION LINES**

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**CRC Press** This book covers the principles of operation of electromagnetic waveguides and transmission lines. The approach is divided between mathematical descriptions of basic behaviors and treatment of specific types of waveguide structures. Classical (distributed-network) transmission lines, their basic properties, their connection to lumped-element networks, and the distortion of pulses are discussed followed by a full field analysis of waveguide modes. Modes of specific kinds of waveguides - traditional hollow metallic waveguides, dielectric (including optical) waveguides, etc. are discussed. Problems of excitation and scattering of waveguide modes are addressed, followed by discussion of real systems and performance.

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**WAVEGUIDE HANDBOOK**

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**RADIATION LABORATORY SERIES**

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**WAVEGUIDE HANDBOOK**

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**DIELECTRIC WAVEGUIDE HANDBOOK**

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**PRINCIPLES OF MICROWAVE CIRCUITS**

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**IET** Introduction: Electromagnetic waves. Waveguides as transmission lines. Elements of network theory. General microwave circuit theorems. Waveguide circuit elements. Resonant cavities as microwave circuit elements. Radial transmission lines. Waveguide junctions with several arms. Mode transformations. Dielectrics in waveguides. The symmetry of waveguide junctions.

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**THE DIELECTRIC WAVEGUIDE HANDBOOK**

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**THE DIELECTRIC WAVEGUIDE HANDBOOK**

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**COPLANAR WAVEGUIDE CIRCUITS, COMPONENTS, AND SYSTEMS**

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**John Wiley & Sons** Up-to-date coverage of the analysis and applications of coplanar waveguides to microwave circuits and antennas The unique feature of coplanar waveguides, as opposed to more conventional waveguides, is their uniplanar construction, in which all of the conductors are aligned on the same side of the substrate. This feature simplifies manufacturing and allows faster and less expensive characterization using on-wafer techniques. Coplanar Waveguide Circuits, Components, and Systems is an engineer's complete resource, collecting all of the available data on the subject. Rainee Simons thoroughly discusses propagation parameters for conventional coplanar waveguides and includes valuable details such as the derivation of the fundamental equations, physical explanations, and numerical examples. Coverage also includes: Discontinuities and circuit elements Transitions to other transmission media Directional couplers, hybrids, and magic T Microelectromechanical systems based switches and phase shifters Tunable devices using ferroelectric materials Photonic bandgap structures Printed circuit antennas

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**WAVEGUIDE HANDBOOK**

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**OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT, NATIONAL DEFENSE RESEARCH COMMITTEE**

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**HANDBOOK OF RF, MICROWAVE, AND MILLIMETER-WAVE COMPONENTS**

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**Artech House** This unique and comprehensive resource offers you a detailed treatment of the operations principles, key parameters, and specific characteristics of active and passive RF, microwave, and millimeter-wave components. The book covers both linear and nonlinear components that are used in a wide range of application areas, from communications and information sciences, to avionics, space, and military engineering. This practical book presents descriptions and clear examples and of the best materials and products used in the field, including laminates, prepregs, substrates; microstrip, coaxial and waveguide transmission lines; fixed and rotating connectors; matching and adjusting elements; frequency filters; phase shifters; and ferrite gates and circulators. Moreover, the book offers you in-depth discussions on microwave switches and matrices, including MEMS technology, solid state and vacuum amplifiers, mixers, modulators and demodulators, and oscillation sources. You also find coverage of the stable frequency synthesizer structure and sources of modulated or noisy signals. Greatly adding to the usefulness of this volume is the inclusion of more than 700 Internet addresses of manufacturers from across the globe.

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**WAVEGUIDE HANDBOOK, EDITED BY N. MARCUVITZ AND OTHERS, UNDER THE SUPERVISION OF THE OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT, NATIONAL DEFENSE RESEARCH COMMITTEE**


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**PRACTICAL APPROACH TO SUBSTRATE INTEGRATED WAVEGUIDE (SIW) DIPLEXER: EMERGING RESEARCH AND OPPORTUNITIES**


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**EMERGING RESEARCH AND OPPORTUNITIES**


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**IGI Global** Substrate integrated waveguide (SIW) technology is a twenty-first century transmission line that has evolved recently to open new doors to the development of efficient circuits and devices operating in the microwave and millimeter-wave frequency range. Microstrip circuits and devices are inefficient at high frequency applications and require very stringent manufacturing tolerances when used to implement microwave and millimeter-wave components. This is as a result of the fact that wavelengths are short at higher frequencies. Waveguide circuits and devices are preferred for higher frequency applications, but they are expensive and difficult to manufacture. It is also very challenging to integrate a waveguide device with planar devices in its vicinity. The SIW bridges the gap between the traditional air-filled waveguide and planar transmission lines such as microstrip. Practical Approach to Substrate Integrated Waveguide (SIW) Diplexer: Emerging Research and Opportunities is an essential reference source that discusses the development of efficient circuits and devices operating in the microwave and millimeter-wave frequency range through the use of substrate integrated waveguides. Featuring research on topics such as microstrip resonators, circuit model analysis, and quality factor extraction, this book is ideally designed for researchers, engineers, scientists, developers, scholars, practitioners, educators, policymakers, and students.

**OPTICAL WAVEGUIDE THEORY**


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**Springer Science & Business Media** This text is intended to provide an in-depth, self-contained, treatment of optical waveguide theory. We have attempted to emphasize the underlying physical processes, stressing conceptual aspects, and have developed the mathematical analysis to parallel the physical intuition. We also provide comprehensive supplementary sections both to augment any deficiencies in mathematical background and to provide a self-consistent and rigorous mathematical approach. To assist in understanding, each chapter concentrates principally on a single idea and is therefore comparatively short. Furthermore, over 150 problems with complete solutions are given to demonstrate applications of the theory. Accordingly, through simplicity of approach and numerous examples, this book is accessible to undergraduates. Many fundamental topics are presented here for the first time, but, more importantly, the material is brought together to give a unified treatment of basic ideas using the simplest approach possible. To achieve such a goal required a maturation of the subject, and thus the text was intentionally developed over a protracted period of the last 10 years.

**HANDBOOK OF MICROWAVE TECHNIQUES AND EQUIPMENT**


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Prentice Hall

**WAVEGUIDE COMPONENTS FOR ANTENNA FEED SYSTEMS**


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**THEORY AND CAD**


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**Artech House Antenna Library** This book delivers an in-depth examinations of the three basic field-theoretical methods used for the design aid of different waveguide components. You'll find CAD algorithms, examples of their applications, and operational principles of various components used in antenna feed systems.

**ENCYCLOPEDIA OF INTEGRATED OPTICS**


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**CRC Press** As optical technologies move closer to the core of modern computer architecture, there arise many challenges in building optical capabilities from the network to the motherboard. Rapid advances in integrated optics technologies are making this a reality. However, no comprehensive, up-to-date reference is available to the technologies and principles underlying the field. The Encyclopedic Handbook of Integrated Optics fills this void, collecting the work of 53 leading experts into a compilation of the most important concepts, phenomena, technologies, and terms covering all related fields. This unique book consists of two types of entries: the first is a detailed, full-length description; the other, a concise overview of the topic. Additionally, the coverage can be divided into four broad areas: A survey of the basics of integrated optics, exploring theory, practical concerns, and the fundamentals behind optical devices Focused discussion on devices and components such as arrayed waveguide grating, various types of lasers, optical amplifiers, and optoelectronic devices In-depth examination of subsystems including MEMS, optical pickup, and planar lightwave circuits Finally, systems considerations such as multiplexing, demultiplexing, 3R circuits, transmission, and reception Offering a broad and complete treatment of the field, the Encyclopedic Handbook of Integrated Optics is the complete guide to the fundamentals, principles, and applications of integrated optics technology.

**HANDBOOK OF SILICON PHOTONICS**


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**Taylor & Francis** The development of integrated silicon photonic circuits has recently been driven by the Internet and the push for high bandwidth as well as the need to reduce power dissipation induced by high data-rate signal transmission. To reach these goals, efficient passive and active silicon photonic devices, including waveguide, modulators, photodetectors,

**QUANTUM WAVEGUIDE IN MICROCIRCUITS**


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**CRC Press** Moore's Law predicts that the degree of microprocessor integration of circuits would double every 18 months in DRAM. Although the scaling of microelectronic circuit elements still follows Moore's Law, the unit density of power consumption becomes unacceptable. Therefore, on one hand, people develop continuously the microelectronic technology. On the other, people consider the developing road after Moore's rule is broken. This book introduces theories and experiments of quantum transport and intends to provide foundations of semiconductor micro- and nano electronics for after the Moore age.

**RIDGE WAVEGUIDES AND PASSIVE MICROWAVE COMPONENTS**


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**IET** The ridge waveguide, which is a rectangular waveguide with one or more metal inserts (ridges), is an important transmission line in microwave engineering, now widely used in commercial electronics and communications devices. This book collects together much of the work of Professor Helszajn, an international authority in the field, and will enable the reader to have direct access to this important work without need for exhaustive search of research papers. Generously illustrated, it is likely to become the definitive reference source on this topic.

**TRANSMISSION LINE DESIGN HANDBOOK**


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**Artech House Microwave Library** The Transmission Line Design Handbook consolidates and distills key design data from over 600 original sources. It features 800 equations, 220 illustrations, and 610 references.

**FIELD GUIDE TO OPTOELECTRONICS AND PHOTONICS**


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**SPIE-International Society for Optical Engineering** "This Field Guide covers the physics of semiconductors, from the materials used in optoelectronics and photonics to charge statistics and transport to PN junctions and their applications. It then addresses the physics of the interactions between radiation and matter at different levels--macroscopic, microscopic, and quantum level--and includes the fundamental concepts of waveguides, fiber optics, and photonics devices such as light modulators. It finally highlights important applications of the field in engineering and applied physics. The guide summarizes the scientific and engineering foundations of optoelectronics and photonics and thus can be used as a textbook for college students, although it could be useful for practicing scientists and engineers as well"--

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## PLANAR MICROWAVE ENGINEERING

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### A PRACTICAL GUIDE TO THEORY, MEASUREMENT, AND CIRCUITS

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**Cambridge University Press** Modern wireless communications hardware is underpinned by RF and microwave design techniques. This insightful book contains a wealth of circuit layouts, design tips, and practical measurement techniques for building and testing practical gigahertz systems. The book covers everything you need to know to design, build, and test a high-frequency circuit. Microstrip components are discussed, including tricks for extracting good performance from cheap materials. Connectors and cables are also described, as are discrete passive components, antennas, low-noise amplifiers, oscillators, and frequency synthesizers. Practical measurement techniques are presented in detail, including the use of network analyzers, sampling oscilloscopes, spectrum analyzers, and noise figure meters. Throughout the focus is practical, and many worked examples and design projects are included. There is also a CD-ROM that contains a variety of design and analysis programs. The book is packed with indispensable information for students taking courses on RF or microwave circuits and for practising engineers.

### PHASED ARRAY ANTENNA HANDBOOK, THIRD EDITION

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**Artech House** This completely revised third edition of an Artech House classic, Phased Array Antenna Handbook, Second Edition, offers an up-to-date and comprehensive treatment of array antennas and systems. This edition provides a wealth of new material, including expanded coverage of phased array and multiple beam antennas. New modern machine learning techniques used for analysis are included. Additional material on wideband antennas and wideband coverage in array antennas are incorporated in this book, including new methods, devices, and technologies that have developed since the second edition. A detailed treatment of antenna system noise, sections on antenna pattern synthesis, developments in subarray technology, and in-depth coverage of array architecture and components are additional new features of this book. The book explores design elements that demonstrate how to size an array system with speed and confidence. Moreover, this resource provides expanded coverage of systems aspects of arrays for radar and communications. Supported with numerous equations and illustrations, this practical book helps evaluate basic antenna parameters such as gain, sidelobe levels, and noise. Readers learn how to compute antenna system noise, design subarray geometries for given bandwidth, scan and sidelobe constraints, and choose array illumination tapers for given sidelobe levels.

### ENGINEERS' HANDBOOK OF INDUSTRIAL MICROWAVE HEATING

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**IET** A complete guide, this book presents industrial microwave heating from an engineering base and integrating the essential elements of microwave theory and heat transfer with practical design, application and operational issues.

### THEORY OF WAVEGUIDES AND TRANSMISSION LINES

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**CRC Press** This book covers the principles of operation of electromagnetic waveguides and transmission lines. The approach is divided between mathematical descriptions of basic behaviors and treatment of specific types of waveguide structures. Classical (distributed-network) transmission lines, their basic properties, their connection to lumped-element networks, and the distortion of pulses are discussed followed by a full field analysis of waveguide modes. Modes of specific kinds of waveguides - traditional hollow metallic waveguides, dielectric (including optical) waveguides, etc. are discussed. Problems of excitation and scattering of waveguide modes are addressed, followed by discussion of real systems and performance.

### CONTEMPORARY DEVELOPMENTS IN HIGH-FREQUENCY PHOTONIC DEVICES

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**IGI Global** Microwave photonics and information optics provide high bandwidth and precision along with ultrafast speed at a low cost. In order to reduce noise at the communication trans-receivers, scattering in the devices needs to be decreased, which can be achieved by replacing optoelectronic devices with photonic devices because in the latter only photons propagate electromagnetic waves. Contemporary Developments in High-Frequency Photonic Devices is a crucial research book that examines high-frequency photonics and their applications in communication engineering. Featuring coverage on a wide range of topics such as metamaterials, optoelectronic devices, and plasmonics, this book is excellent for students, researchers, engineers, and professionals.

### NATIONAL BUREAU OF STANDARDS HANDBOOK

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### NATIONAL BUREAU OF STANDARDS HANDBOOK

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### HANDBOOK OF OPTICAL SENSORS

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**CRC Press** Handbook of Optical Sensors provides a comprehensive and integrated view of optical sensors, addressing the fundamentals, structures, technologies, applications, and future perspectives. Featuring chapters authored by recognized experts and major contributors to the field, this essential reference: Explains the basic aspects of optical sensors and

### QUANTUM WAVEGUIDES

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**Springer** This monograph explains the theory of quantum waveguides, that is, dynamics of quantum particles confined to regions in the form of tubes, layers, networks, etc. The focus is on relations between the confinement geometry on the one hand and the spectral and scattering properties of the corresponding quantum Hamiltonians on the other. Perturbations of such operators, in particular, by external fields are also considered. The volume provides a unique summary of twenty-five years of research activity in this area and indicates ways in which the theory can develop further. The book is fairly self-contained. While it requires some broader mathematical physics background, all the basic concepts are properly explained and proofs of most theorems are given in detail, so there is no need for additional sources. Without a parallel in the literature, the monograph by Exner and Kovarik guides the reader through this new and exciting field.

### HANDBOOK ON HIGH POWER CAPABILITIES OF WAVEGUIDE SYSTEMS

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The high power capabilities of waveguide systems are specified, for the commonly used waveguide modes of propagation, in terms of electrical breakdown at high peak powers and excessive temperature rise at high average power. The material includes the characteristics of various gases and the effects of such factors as pulse length, repetition rate, gas temperature, harmonics, spurious modes and standing waves. Also included are the effects resulting from non-uniform conditions in electric field and gas temperature. The information is given primarily in graphical form from which the values of power can be readily obtained. A section also discusses the problems associated with reducing the likelihood of the occurrence of failures in high power waveguide systems. (Author).

### INTRODUCTION TO ELECTROMAGNETISM

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### FROM COULOMB TO MAXWELL

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**CRC Press** This edition aims to expand on the first edition and take the reader through to the wave equation on coaxial cable and free-space by using Maxwell's equations. The new chapters include time varying signals and fundamentals of Maxwell's equations. This book will introduce and discuss electromagnetic fields in an accessible manner. The author explains electroconductive fields and develops ideas relating to signal propagation and develops Maxwell's equations and applies them to propagation in a planar optical waveguide. The first of the new chapters introduces the idea of a travelling wave by considering the variation of voltage along a coaxial line. This concept will be used in the second new chapter which solves Maxwell's equations in free-space and then applies them to a planar optical waveguide in the third new chapter. As this is an area that most students find difficult, it links back to the earlier chapters to aid understanding. This book is intended for first- and second-year electrical and electronic undergraduates and can also be used for undergraduates in mechanical engineering, computing and physics. The book includes examples and homework problems. Introduces and examines electrostatic fields in an accessible manner Explains electroconductive fields Develops ideas relating to signal propagation Examines Maxwell's equations and relates them to propagation in a planar optical waveguide Martin Sibley recently retired after 33 years of teaching at the University of Huddersfield. He has a PhD from Huddersfield Polytechnic in Preamplifier Design for Optical Receivers. He started his career in academia in 1986 having spent 3 years as a postgraduate student and then 2 years as a British Telecom-funded research fellow. His research work had a strong bias to the practical implementation of research, and he taught electromagnetism and communications at all levels since 1986. Dr. Sibley finished his academic career as a Reader in Communications, School of Computing and Engineering, University of Huddersfield. He has authored five books

and published over 80 research papers.

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## INTRODUCTION TO OPTICAL WAVEGUIDE ANALYSIS

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### SOLVING MAXWELL'S EQUATION AND THE SCHRÖDINGER EQUATION

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**John Wiley & Sons** A complete survey of modern design and analysis techniques for optical waveguides. This volume thoroughly details modern and widely accepted methods for designing the optical waveguides used in telecommunications systems. It offers a straightforward presentation of the sophisticated techniques used in waveguide analysis and enables a quick grasp of modern numerical methods with easy mathematics. The book is intended to guide the reader to a comprehensive understanding of optical waveguide analysis through self-study. This comprehensive presentation includes: \* An extensive and exhaustive list of mathematical manipulations \* Detailed explanations of common design methods: finite element method (FEM), finite difference method (FDM), beam propagation method (BPM), and finite difference time-domain method (FD-TDM) \* Explanations for numerical solutions of optical waveguide problems with sophisticated techniques used in modern computer-aided design (CAD) software \* Solutions to Maxwell's equations and the Schrodinger equation. The authors provide excellent self-study material for practitioners, researchers, and students, while also presenting detailed mathematical manipulations that can be easily understood by readers who are unfamiliar with them. Introduction to Optical Waveguide Analysis presents modern design methods in a comprehensive and easy-to-understand format.

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### ELECTROMAGNETIC WAVES

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**CRC Press** Adapted from a successful and thoroughly field-tested Italian text, the first edition of Electromagnetic Waves was very well received. Its broad, integrated coverage of electromagnetic waves and their applications forms the cornerstone on which the author based this second edition. Working from Maxwell's equations to applications in optical communications and photonics, Electromagnetic Waves, Second Edition forges a link between basic physics and real-life problems in wave propagation and radiation. Accomplished researcher and educator Carlo G. Someda uses a modern approach to the subject. Unlike other books in the field, it surveys all major areas of electromagnetic waves in a single treatment. The book begins with a detailed treatment of the mathematics of Maxwell's equations. It follows with a discussion of polarization, delves into propagation in various media, devotes four chapters to guided propagation, links the concepts to practical applications, and concludes with radiation, diffraction, coherence, and radiation statistics. This edition features many new and reworked problems, updated references and suggestions for further reading, a completely revised appendix on Bessel functions, and new definitions such as antenna effective height. Illustrating the concepts with examples in every chapter, Electromagnetic Waves, Second Edition is an ideal introduction for those new to the field as well as a convenient reference for seasoned professionals.

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### MICROWAVE ENGINEERING

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

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### ANTENNA HANDBOOK

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#### THEORY, APPLICATIONS, AND DESIGN

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**Springer Science & Business Media** Techniques based on the method of modal expansions, the Rayleigh-Stevenson expansion in inverse powers of the wavelength, and also the method of moments solution of integral equations are essentially restricted to the analysis of electromagnetic radiating structures which are small in terms of the wavelength. It therefore becomes necessary to employ approximations based on "high-frequency techniques" for performing an efficient analysis of electromagnetic radiating systems that are large in terms of the wavelength. One of the most versatile and useful high-frequency techniques is the geometrical theory of diffraction (GTD), which was developed around 1951 by J. B. Keller [1,2,3]. A class of diffracted rays are introduced systematically in the GTD via a generalization of the concepts of classical geometrical optics (GO). According to the GTD these diffracted rays exist in addition to the usual incident, reflected, and transmitted rays of GO. The diffracted rays in the GTD originate from certain "localized" regions on the surface of a radiating structure, such as at discontinuities in the geometrical and electrical properties of a surface, and at points of grazing incidence on a smooth convex surface as illustrated in Fig. 1. In particular, the diffracted rays can enter into the GO shadow as well as the lit regions. Consequently, the diffracted rays entirely account for the fields in the shadow region where the GO rays cannot exist.