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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1. Introduction -- A short history of antennas -- Radio systems and antennas -- Necessary mathematics -- Complex numbers -- Vectors and vector operation -- Coordinates -- Basics of electromagnetics -- Electric field -- Magnetic field -- Maxwell's equations -- Boundary conditions -- Summary -- References -- Problems -- 2. Circuit Concepts and Transmission Lines -- Circuit concepts -- Lumped and distributed element systems -- Transmission line theory -- Transmission line model -- Solutions and analysis -- Terminated transmission line -- The Smith chart and impedance matching -- The Smith chart -- Impedance matching -- Quality factor and bandwidth -- Various transmission lines -- Two-wire transmission line -- Coaxial cable -- Microstrip line -- Stripline -- Co-planar waveguide (CPW) -- Waveguide -- Connectors -- Summary -- References -- Problems -- 3. Field Concepts and Radiowaves -- Wave equation and solutions -- Discussion on wave solutions -- Plane wave, intrinsic impedance and polarisation -- Plane wave and intrinsic impedance -- Polarisation -- Radio wave propagation mechanisms -- Reflection and transmission -- Diffraction and Huygens's principle -- Scattering -- Radio wave

propagation characteristics in media -- Media classification and attenuation -- Radio wave propagation models -- Free space model -- Two-ray model/plane earth model -- Multipath models -- Comparison of circuit concepts and field concepts -- Skin Depth -- Summary -- References -- Problems --
4. Antenna Basics -- Antennas to radio waves -- Near field and far field -- Antenna parameters from the field point of view -- Antennas to transmission lines -- Antenna parameters from the circuit point of view -- Summary -- References -- Problems -- 5. Popular Antennas -- Wire-type antennas -- Dipoles -- Monopoles and image theory -- Loops and duality principle -- Helical antennas -- Yagi-Uda antennas -- Log-periodic antennas and frequency independent antennas -- Aperture-type antennas -- Fourier transforms and the radiated field -- Horn antennas -- Reflector and lens antennas -- Slot antennas and Babinet's principle -- Microstrip antennas -- Antenna arrays -- Basic concept -- Isotropic linear arrays -- Pattern multiplication principle -- Element mutual coupling -- Some practical considerations -- Transmitting and receiving antennas: reciprocity -- Balun and impedance matching -- Antenna polarisation -- Radomes, housings and supporting structures -- Summary -- References -- Problems --
6. Computer- Aided Antenna Design and Analysis -- Introduction -- Computational electromagnetics for antennas -- Method of moments (MoM) -- Finite element method (FEM) -- Finite difference time domain (FDTD) method -- Transmission line modelling (TLM) method -- Comparison of numerical methods -- High frequency methods -- Examples of computer-aided design and analysis -- Wire-type antenna design and analysis -- General antenna design and analysis -- Summary -- References -- Problems --
7. Antenna Manufacturing and Measurements -- Antenna manufacturing -- Conducting materials -- Dielectric materials -- New materials for antennas -- Antenna measurement basics -- Scattering parameters -- Network analysers -- Impedance, S11, VSWR, and return loss measurement -- Can I measure these parameters in my office? -- Effects of a small section of a transmission line or a connector -- Effects of packages on antennas -- Radiation pattern measurements -- Far-field condition -- Open-area test sites (OATS) -- Anechoic chambers -- Compact antenna test ranges (CATR) -- Planar and cylindrical near-field chambers -- Spherical near-field chambers -- Gain measurements -- Comparison with a standard-gain horn -- Two-antenna measurement -- Three-antenna measurement -- Miscellaneous topics -- Efficiency measurements -- Reverberation chambers -- Impedance de-embedding techniques -- Probe array in near-field systems -- Summary -- References -- Problems -- 8. Special Topics -- Electrically small antennas -- The Basics and impedance bandwidth -- Antenna size-reduction techniques -- Mobile Antennas, Antenna Diversity and Human Body Effects -- Introduction -- Mobile antennas -- Antenna diversity -- User interaction -- Multiband and ultra-wideband antennas -- Introduction -- Multiband antennas -- Wideband antennas -- RFID antennas -- Introduction -- Near-field systems -- Far-field systems -- Reconfigurable antennas -- Introduction -- Switching and variable-component technologies -- Reasonant mode switching/tuning -- Feed network switching/tuning -- Mechanical reconfiguration -- Summary -- References.

Sommario/riassunto

Practical, concise and complete reference for the basics of modern antenna design Antennas: from Theory to Practice discusses the basics of modern antenna design and theory. Developed specifically for engineers and designers who work with radio communications, radar and RF engineering, this book offers practical and hands-on treatment

of antenna theory and techniques, and provides its readers the skills to analyse, design and measure various antennas. Key features: . Provides thorough coverage on the basics of transmission lines, radio waves and propagation, and antenna analysis and design . Discusses industrial standard design software tools, and antenna measurement equipment, facilities and techniques . Covers electrically small antennas, mobile antennas, UWB antennas and new materials for antennas . Also discusses reconfigurable antennas, RFID antennas, Wide-band and multi-band antennas, radar antennas, and MIMO antennas . Design examples of various antennas are provided . Written in a practical and concise manner by authors who are experts in antenna design, with experience from both academia and industry This book will be an invaluable resource for engineers and designers working in RF engineering, radar and radio communications, seeking a comprehensive and practical introduction to the basics of antenna design. The book can also be used as a textbook for advanced students entering a profession in this field.