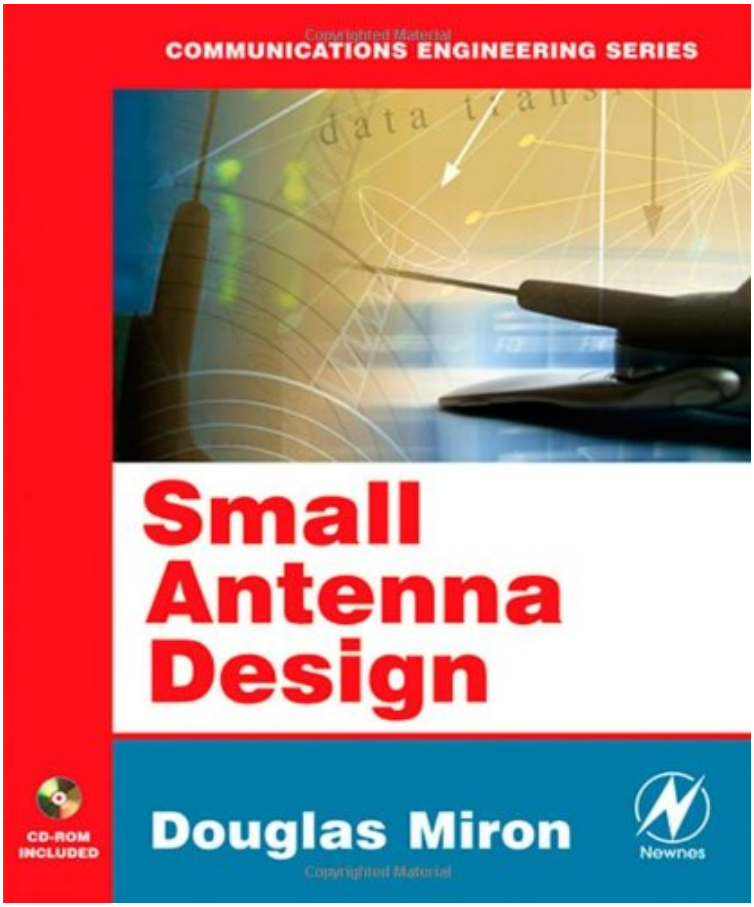
Small Antenna Design (Communications Engineering (Paperback))

Douglas B. Miron
*DOC | *audiobook | ebooks | Download PDF | ePub*



#3613092 in Books 2006-03-07Original language:EnglishPDF # 1 9.22 x .80 x 7.28l, 1.46 #File Name: 0750678615304 pages | File size: 19.Mb

Douglas B. Miron : Small Antenna Design (Communications Engineering (Paperback)) before purchasing it in order to gage whether or not it would be worth my time, and all praised Small Antenna Design (Communications Engineering (Paperback)):

2 of 2 people found the following review helpful. very practical information for small antenna analysis and designBy pidloopI found this book an excellent resource both as a thorough review of the mathematical techniques and the use of NEC to analyze small antenna ideas and as a compendium of both typical and novel small antenna designs.The book starts with an overview of the problem and a brisk review of EM from Faraday onward. Mathematical techniques are reviewed for setting up integrals for the calculation of gain and radiation resistance. Vector calculus and basic related math are covered in an appendix if a refresher is required. Then a thorough discussion of how NEC2 and NEC4 work is next, including a comprehensive list of limitations to be aware of.Once this background and the tools are in place, there is a thorough discussion of the small dipole in many forms, followed by a similar treatise for the small loop. Small dipoles are first analyzed as flared ends of a transmission line. Then techniques for lowering the large capacitive reactance are covered including top, volume and coil loading as well as the effect of radials over average

ground. Small loops are discussed in many forms including thick, doughnut, barrel and solenoid formats, contrawound toroids and finally the folded spherical helix. In all cases the math and models are covered thoroughly but the results are tabulated and reviewed so even if one chooses to skim over the math one can still come away with valuable trends, maxims and conclusions for each variation. In most cases, the total practical system is included in the discussion including losses due to matching network and average grounds, not just the ideal antenna itself. Many complete examples are given, most are targeted towards two primary application domains: small hand-held devices in the UHF spectrum such as cell phones, and wire antennas for the HF amateur radio bands. Each chapter ends in a set of problems, making it functional a textbook also.The book comes with a supplementary CD. It includes many NEC card decks, c++ programs that are used to generate complex wire lists for these decks, and several Matlab (Octave works fine also) programs for calculations such as plotting frequency responses and designing matching networks.The book is written in the first person giving the feel of listening to a professor lecturing. Indeed, Dr Miron has been a professor of EE for some twenty years, and this text suggests he must have been a good one.Note: I purchased the version for the Kindle so I could read it as I travel. I found the formatting was well done, and all figures in the book can be zoomed full screen so I had no difficulty reading everything. However at the time I purchased it did not include the accompanying CD with the Kindle purchase. I found that the publisher will email you the CD contents as a zip file for no extra charge by just sending an inquiry to usbkinfo@elsevier.com.3 of 3 people found the following review helpful. An excellent book for users willing to spend time to learnBy M. Logistic LtdThis book links antenna theory with NEC and MATLAB simulations in a way I have not seen before. It does this in a very transparent way, largely avoiding complicated math, so you can really understand the underlying principles and applied math if you are willing to invest some time.The key here is that the book read together with the included CD, with scores of small utility programs, MATLAB m-files (Functions) and NEC examples, very clearly shows the underlying physics and calculations so they can be understood. Admittedly you get this only when you really use the CD but it is well worth doing.With the book you also get the free 4NEC2 program and a public domain graphic interface so you can try all the NEC examples. These examples are then the perfect starting point for your own antenna experiments.MATLAB is very good but also expensive (unless you are a university student)so I think the readers should try to download GNU Octave as that is a public domain software largely compatible with MATLAB. This should allow the reader to try the MATLAB functions without cost.This is not an easy to read introduction to antennas or a complete mathematical treatment of the subject but if you are looking for a book that can be used to improve your ability to design and optimize workable antennas I think it is excellent.3 of 3 people found the following review helpful. Gap filler engineering book.By CustomerThis book will fill the gaps that others left out. It has just the right amount of math and theory to cover what I could not find in other books. This is a great companion book and can stand on its own.

As wireless devices and systems get both smaller and more ubiquitous, the demand for effective but small antennas is rapidly increasing. Small Antenna Design describes the theory behind effective small antenna design and give design techniques and examples for small antennas for different operating frequencies. Design techniques are given for the entire radio spectrum, from a very hundred kilohertz to the gigahertz range.Unlike other antenna books which are heavily mathematical and theoretical, Douglas Miron keeps mathematics to the absolute minimum required to explain design techniques. Ground planes, essential for operation of many antenna designs, are extensively discussed.Author's extensive experience as a practicing antenna design engineer gives book a strong "hands-on" emphasisCovers antenna design techniques from very low frequency (below 300 kHz) to microwave (above 1 GHz) rangesSpecial attention is given to antenna design for mobile/portable applications such as cell phones, WiFi, etc

The book is written in a conversational style, with many first-person descriptions, historical notes and explanations. The casual language gives way to more formal explanations where appropriate. The effect is that the reader can easily visualize him- or herself in a classroom lecture environment with a knowledgeable and personable professor. High Frequency Electronics, May 2006"the book is a good one that I recommend. It is heavy on the math, but none of it is overly exotic and all of it is easily dealt with. Even though I already have a dozen antenna books in my personal library, I like this one as it adds another dimension. The author has obviously had the experience to create this unique book." - Electronic Design, April 2006From the Back CoverNeed To Design Antennas That Are Small In Size Yet Big In Performance? Here is the Design Guide Youve Been Waiting For!As mobile RF/wireless devices shrink in size, there is a growing need for antennas that are physically small without excessively sacrificing performance. To design such antennas, wireless engineers need a thorough understanding of basic antenna theory (including the inescapable limitations of physically small antennas), a knowledge of the tradeoffs between antenna size and performance, and proven techniques for optimization of small antennas. That is the information Dr. Douglas Miron provides in this book.Dr. Miron reviews the essentials of antenna theory and then discusses different types of antennas, including their performance, strengths and weaknesses compared to other antenna types, and their design. Numerical modeling techniques are extensively discussed along with methods of optimizing designs. Because mobile wireless devices are often hand-held or otherwise used in close proximity to the human body, Dr. Miron explores the interaction between

physically small antennas and the human body and how this can impact performance. The CD accompanying this book includes useful software tools to help in the design and modeling of small antennas.A knowledge of small antenna theory and design techniques should be part of every RF/wireless engineers professional tool kit. This book will provide you with the knowledge to successfully design physically small antennas for a wide range of mobile and portable applications.Key Features Discusses efficiency, bandwidth, polarization, and tuning/impedance matching for widely-used types of small antennas. Extensive coverage of the popular multi-turn coil and helix antenna designs. Special attention is given to receive-only antenna designs. Examines techniques for validating antenna models. Explores the impact of grounds, counterpoises, and ground effects on small antenna performance.