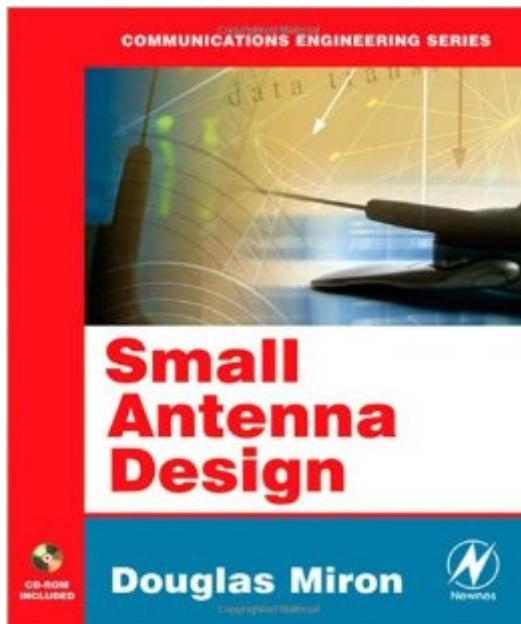


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# Small Antenna Design (Communications Engineering (Paperback))



## Synopsis

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" emphasis. Covers antenna design techniques from very low frequency (below 300 kHz) to microwave (above 1 GHz) ranges. Special attention is given to antenna design for mobile/portable applications such as cell phones, WiFi, etc.

## Book Information

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## Customer Reviews

I 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 E&M 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.

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