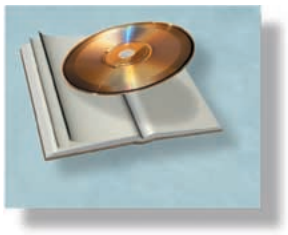


Book/Software Reviews

■ **Alfy Riddle**

Microwave and RF Design of Wireless Systems

by David Pozar

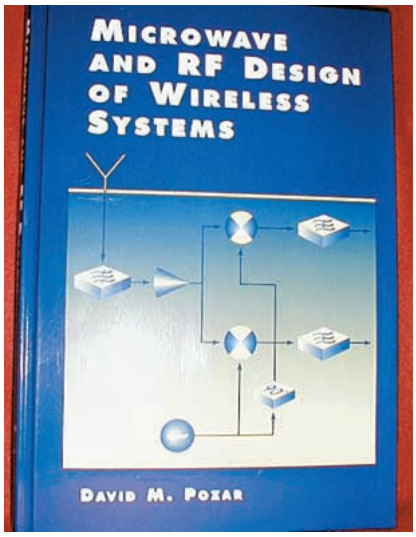
Microwave and RF Design of Wireless Systems by David Pozar is a thin book with a big claim. At first, I worried this might be another broad summary that would be too shallow to be useful. That said, I do have many memorable thin books on my shelf, Skilling's *Fundamentals of Electric Waves* being one I just recommended to a friend. Pozar's book is ambitious and largely successful. The preface has suggestions for how the material might be arranged into a one-semester course according to the student's abilities.

The material in chapters 2, 5, 6, and 7 come mostly from Pozar's *Microwave Engineering*, but it's needed to make this volume coherent. This text is easy to read, pulls together a lot of useful information, and has well-thought-out problems at the end of each chapter.

This book covers everything from component design to system bit-error-rate analysis and tries to provide a comprehensive guide to wireless system design. The chapters cover an introduction, transmission line networks, noise and distortion, antennas and propagation, filters, amplifiers, mixers, oscillators and synthesizers, modulation, receiver design, and appendices. The only obviously missing area is transmitter design and power amplifiers. Helpful computer codes are given at www.wiley.com/college/pozar.

Microwave and RF Design of Wireless Systems is, first of all, intended as a textbook. The analysis always starts with fundamentals and covers key points. This text is not just a summary of important equations, but a good distillation of the basics of wireless design. For the most part, the book is very practical and contains good references. At times, the book seems a bit academic, such as when it gives tables of 3-dB ripple filter values when 0.1 dB would be actually useful and when it limits bipolar transistor models to hybrid-Pi and power amplifiers to Class A. In a book that covers this much ground, there is bound to be bare spots. I am sure every teacher will have areas they want to expand upon in this subject. An important point is that this book provides a good foundation.

The introduction discusses system performance measures, wireless standards, components, and typical systems, such as PCS, WLANs, DBS, GPS, LMDS, and RFID. The second chapter sets the foundation for transmission lines and microwave networks with a derivation of the Smith Chart and matrix analysis methods. The third chapter covers basic cascade system analysis of noise, distortion, and bit error rate. The fourth chapter covers antennas and propagation, with attention to system parameters and fading. The chapter on filters focuses on distributed realizations but ends with some more-useful mixed topologies. A fairly standard overview of amplifiers is given in the sixth chapter. Diode and active mixers are presented in the seventh chapter. The mixer analysis is well grounded in fundamentals but more focused on system aspects than component realization. The eighth chapter covers oscillators and frequency synthesizers. This chapter does a good job of covering much ground but also shows the book's emphasis on discrete, instead of integrated circuit, realizations. The next chapter presents a useful overview of modulation techniques. Finally, the book concludes with a chapter on receivers that includes some real-world examples.



Microwave and RF Design of Wireless Systems by David M. Pozar, ISBN 0-471-32282-2, ©2001, John Wiley &Sons, 384 pages, US $89.95

This book is useful for courses and handy as a professional reference. Its strongest point is that it always starts with fundamentals and provides both students and professionals with a foundation to work from instead of a collection of formulas to abuse.