

# Radio-Frequency Electronics

## Circuits and Applications

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This second, much updated edition of the best-selling *Radio-Frequency Electronics* introduces the basic concepts and key circuits of radio-frequency systems. It covers the fundamental principles applying to all radio devices, from wireless single-chip data transceivers to high-power broadcast transmitters.

### New to this edition:

- Extensively revised and expanded throughout, including new chapters on radar, digital modulation, GPS navigation, and *S*-parameter circuit analysis.
- New worked examples and end-of-chapter problems aid and test understanding of the topics covered.
- Numerous extra figures provide a visual aid to learning, with over 400 illustrations throughout the book.

Key topics covered include filters, amplifiers, oscillators, modulators, low-noise amplifiers, phase lock loops, transformers, waveguides, and antennas. Assuming no prior knowledge of radio electronics, this is a perfect introduction to the subject. It is an ideal textbook for junior or senior courses in electrical engineering, as well as an invaluable reference for professional engineers in this area.

### Praise for the first edition:

This book is wonderfully informative, and refreshingly different from the usual rehash of standard engineering topics. Hagen has put his unique insights, gleaned from a lifetime of engineering and radio science, into this volume and it shows. There's an insight per page, at least for me, that makes it truly enjoyable reading, even for those of us who think we know something about the field! *Paul Horowitz, Harvard University*

**Jon B. Hagen** was awarded his Ph.D. from Cornell University in 1972, where he went on to gain 30 years' experience as an electronic design engineer, as well as establishing and teaching a Cornell electrical engineering course on RF electronics. Now retired, he has held positions as Principal Engineer at Raytheon, Electronics Department Head at the Arecibo Observatory in Puerto Rico, and Director of the NAIC Support Laboratory at Cornell.



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Second Edition

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