



Microwave Circuit Design: A Practical Approach Using ADS

By Kyung-Whan Yeom

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Microwave Circuit Design: A Practical Approach Using ADS By Kyung-Whan Yeom

Today's Up-to-Date, Step-by-Step Guide to Designing Active Microwave Circuits

Microwave Circuit Design is a complete guide to modern circuit design, including simulation tutorials that demonstrate Keysight Technologies' Advanced Design System (ADS), one of today's most widely used electronic design automation packages. And the software-based circuit design techniques that Yeom presents can be easily adapted for any modern tool or environment.

Throughout, author Kyung-Whan Yeom uses the physical interpretation of basic concepts and concrete examples—not exhaustive calculations—to clearly and concisely explain the essential theory required to design microwave circuits, including passive and active device concepts, transmission line theory, and the basics of high-frequency measurement.

To bridge the gap between theory and practice, Yeom presents real-world, hands-on examples focused on key elements of modern communication systems, radars, and other microwave transmitters and receivers.

Practical coverage includes

- Up-to-date microwave simulation design examples based on ADS and easily adaptable to any simulator
- Detailed, step-by-step derivations of key design parameters related to procedures, devices, and performance
- Relevant, hands-on problem sets in every chapter
- Clear discussions of microwave IC categorization and roles; passive device impedances and equivalent circuits; coaxial and microstrip transmission lines; active devices (FET, BJT, DC Bias); and impedance matching
- A complete, step-by-step introduction to circuit simulation using the ADS toolset and window framework
- Low noise amplifier (LNA) design: gains, stability, conjugate matching, and noise circles

- Power amplifier (PA) design: optimum load impedances, classification, linearity, and composite PAs
- Microwave oscillator design: oscillation conditions, phase noise, basic circuits, and dielectric resonators
- Phase lock loops (PLL) design: configuration, operation, components, and loop filters
- Mixer design: specifications, Schottky diodes, qualitative analysis of mixers (SEM, SBM, DBM), and quantitative analysis of single-ended mixer (SEM)

Microwave Circuit Design brings together all the practical skills graduate students and professionals need to successfully design today's active microwave circuits.

Files now updated to accommodate the latest, 2014 version of the ADS. To download the update, please visit the Downloads section on the book's site: <http://www.informit.com/title/9780134086781>.

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Editorial Review

About the Author

Kyung-Whan Yeom was born in Seoul, Korea, in 1957. He received a B.S. degree in electronics from Seoul National University in 1980 and M.S. and Ph.D. degrees in electrical engineering from the Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea, in 1982 and 1988, respectively.

From 1985 to 1991, he worked at LG Precision as a principal engineer. He worked on the MIC team as a team leader and was later involved in the military electronics division for EW Equipment. When he was at LG Precision, he received a technical achievement award for the ABEK program from Teledyne Microelectronics.

From 1991 to 1995, he worked at LTI on power amplifier modules for analog cellular phones. He joined the Chungnam National University as assistant professor in 1995 and is currently a professor in the Department of Radio Science and Engineering, Chungnam National University, Daejeon, Korea. His research interests are in the design of hybrid and monolithic microwave circuits and microwave systems.

Professor Yeom has been a member of the Korean Institute of Electromagnetic Engineering and Science (KIEES) and the Institute of Electrical and Electronics Engineers (IEEE) since 1995. He was the editor-in-chief of KIEES from 2004 to 2006. He received the IR-52 Jang Youg-Sil Prize from the Ministry of Science and Technology (MOST) of Korea for his work on cell phone power amplifiers in 1994. He received an academic award from KIEES for the design and fabrication of a novel 60 GHz GaAs pHEMT resistive double balanced star MMIC mixer in 2004. He also received the best paper award from the Korean Federation of Science and Technology Societies (KOFST) for his work, "A Novel Design Method of Direct Coupled Bandpass Filter Based on EM Simulation of Individual Resonator."

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