

Delve into the Heart of Modern Wireless Communication

RF AND MICROWAVE APPLICATIONS AND SYSTEMS

Edited by Mike Gollo • HVVI Semiconductors, Inc., Phoenix, Arizona, USA



A volume in the Electrical Engineering Handbook series • Edited by Richard C. Dorf, University of California, Davis, USA

FOCUSED COVERAGE MAKES INFORMATION EASY TO FIND

Ubiquitous. That's a word commonly used when discussing cell phones, GPS navigation, and many other objects that use RF and microwave technology. Items that used to be considered unusual have become a part of everyday life, so much so that most people can't imagine doing without them. As essential as these items seem, soon they too will be obsolete and a new range of products will be available. Helping you design for the future, RF and Microwave Applications and Systems discusses the fundamentals, technologies, and applications at the heart of modern wireless communications.

New Chapters, Copious Illustrations, and A Special Emphasis

In addition to new chapters on WiMAX and broadband cable, nearly every chapter features extensive updates and several were completely rewritten to reflect the massive changes areas such as radio navigation and electronic warfare. The book contains 304 illustrations, 93 tables, and 372 equations as well as contributions by leading experts from industry and academia. The coverage places particular emphasis on electromagnetic field theory through Maxwell's equations, free-space and guided-wave propagation, fading and multipath effects in wireless channels, and electromagnetic interference effects.

Comprehensive Coverage From Expert Contributors

The book begins with a discussion of system-level considerations with an application specific focus. It examines typical applications ranging from nomadic communications and cellular systems, wireless local-area networks, analog fiber-optic links, satellite communication networks, navigational aids and avionics, to radar, medical therapies, and electronic warfare applications. Chapters cover system-level considerations from the viewpoint of system integration and with a focus on issues such as thermal management, cost modeling, manufacturing, and reliability. An exploration of the fundamental physical principles that govern the operation of devices and microwave and RF systems rounds out the coverage.

FEATURES

- Discusses the fundamentals, technologies, and applications at the heart of modern wireless communications
- Includes new chapters on WiMAX and broadband cable in addition to new and updated material throughout
- Contains 304 illustrations, 93 tables, and 372 equations
- Offers contributions by leading experts from industry and academia
- Covers the latest developments and technologies impacting the wireless field, including the underlying physics

CONTENTS

INTRODUCTION

Definitions
General Applications
Frequency Bands
Overview of Microwave Engineering

MICROWAVE AND RF PRODUCT APPLICATIONS

Cellular
Mobile Communications
Broadband Wireless Access
Wireless LANs
Wireless PANs
WiMAX
Satellite Systems
Satellite Cellular
Radio Navigation
Avionics
Radar
Electronic Warfare
Automotive Radar

Medical Therapy Applications
Broadband Cable
SYSTEMS
CONSIDERATIONS
Thermal Management
Biological Issues
Modulation
Cost Modeling
Power Supply Management
Low Voltage RF Electronics
Manufacturability
Hardware Reliability
UNDERLYING PHYSICS
Maxwell's Equations
Propagation in Free Space
Guided Wave Propagation
Fading and Multipath
EMI
Material Properties
Appendices
Index