All-Digital Frequency Synthesizer in Deep-Submicron CMOS

By Robert Bogdan Staszewski, Poras T. Balsara

All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara

A new and innovative paradigm for RF frequency synthesis and wireless transmitter design

Learn the techniques for designing and implementing an all-digital RF frequency synthesizer. In contrast to traditional RF techniques, this innovative book sets forth digitally intensive design techniques that lead the way to the development of low-cost, low-power, and highly integrated circuits for RF functions in deep submicron CMOS processes. Furthermore, the authors demonstrate how the architecture enables readers to integrate an RF front-end with the digital back-end onto a single silicon die using standard ASIC design flow.

Taking a bottom-up approach that progressively builds skills and knowledge, the book begins with an introduction to basic concepts of frequency synthesis and then guides the reader through an all-digital RF frequency synthesizer design:

- Chapter 2 presents a digitally controlled oscillator (DCO), which is the foundation of a novel architecture, and introduces a time-domain model used for analysis and VHDL simulation
- Chapter 3 adds a hierarchical layer of arithmetic abstraction to the DCO that makes it easier to operate algorithmically
- Chapter 4 builds a phase correction mechanism around the DCO such that the system's frequency drift or wander performance matches that of the stable external frequency reference
- Chapter 5 presents an application of the all-digital RF synthesizer
- Chapter 6 describes the behavioral modeling and simulation methodology used in design

The final chapter presents the implementation of a full transmitter and experimental results. The novel ideas presented here have been implemented and proven in two high-volume, commercial single-chip radios developed at Texas Instruments: Bluetooth and GSM.

While the focus of the book is on RF frequency synthesizer design, the techniques can be applied to the design of other digitally assisted analog circuits

as well. This book is a must-read for students and engineers who want to learn a new paradigm for RF frequency synthesis and wireless transmitter design using digitally intensive design techniques.

All-Digital Frequency Synthesizer in Deep-Submicron CMOS

By Robert Bogdan Staszewski, Poras T. Balsara

All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara

A new and innovative paradigm for RF frequency synthesis and wireless transmitter design

Learn the techniques for designing and implementing an all-digital RF frequency synthesizer. In contrast to traditional RF techniques, this innovative book sets forth digitally intensive design techniques that lead the way to the development of low-cost, low-power, and highly integrated circuits for RF functions in deep submicron CMOS processes. Furthermore, the authors demonstrate how the architecture enables readers to integrate an RF front-end with the digital back-end onto a single silicon die using standard ASIC design flow.

Taking a bottom-up approach that progressively builds skills and knowledge, the book begins with an introduction to basic concepts of frequency synthesis and then guides the reader through an all-digital RF frequency synthesizer design:

- Chapter 2 presents a digitally controlled oscillator (DCO), which is the foundation of a novel architecture, and introduces a time-domain model used for analysis and VHDL simulation
- Chapter 3 adds a hierarchical layer of arithmetic abstraction to the DCO that makes it easier to operate algorithmically
- Chapter 4 builds a phase correction mechanism around the DCO such that the system's frequency drift or wander performance matches that of the stable external frequency reference
- Chapter 5 presents an application of the all-digital RF synthesizer
- Chapter 6 describes the behavioral modeling and simulation methodology used in design

The final chapter presents the implementation of a full transmitter and experimental results. The novel ideas presented here have been implemented and proven in two high-volume, commercial single-chip radios developed at Texas Instruments: Bluetooth and GSM.

While the focus of the book is on RF frequency synthesizer design, the techniques can be applied to the design of other digitally assisted analog circuits as well. This book is a must-read for students and engineers who want to learn a new paradigm for RF frequency synthesis and wireless transmitter design using digitally intensive design techniques.

All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara Bibliography

- Sales Rank: #2521527 in Books
- Published on: 2006-09-11
- Original language: English
- Number of items: 1
- Dimensions: 9.29" h x .97" w x 6.42" l, 1.28 pounds

- Binding: Hardcover
- 261 pages

Download and Read Free Online All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara

Editorial Review

From the Back Cover
A new and innovative paradigm for RF frequency synthesis and wireless transmitter design

Learn the techniques for designing and implementing an all-digital RF frequency synthesizer. In contrast to traditional RF techniques, this innovative book sets forth digitally intensive design techniques that lead the way to the development of low-cost, low-power, and highly integrated circuits for RF functions in deep submicron CMOS processes. Furthermore, the authors demonstrate how the architecture enables readers to integrate an RF front-end with the digital back-end onto a single silicon die using standard ASIC design flow.

Taking a bottom-up approach that progressively builds skills and knowledge, the book begins with an introduction to basic concepts of frequency synthesis and then guides the reader through an all-digital RF frequency synthesizer design:

- Chapter 2 presents a digitally controlled oscillator (DCO), which is the foundation of a novel architecture, and introduces a time-domain model used for analysis and VHDL simulation
- Chapter 3 adds a hierarchical layer of arithmetic abstraction to the DCO that makes it easier to operate algorithmically
- Chapter 4 builds a phase correction mechanism around the DCO such that the system's frequency drift or wander performance matches that of the stable external frequency reference
- Chapter 5 presents an application of the all-digital RF synthesizer
- Chapter 6 describes the behavioral modeling and simulation methodology used in design

The final chapter presents the implementation of a full transmitter and experimental results. The novel ideas presented here have been implemented and proven in two high-volume, commercial single-chip radios developed at Texas Instruments: Bluetooth and GSM.

While the focus of the book is on RF frequency synthesizer design, the techniques can be applied to the design of other digitally assisted analog circuits as well. This book is a must-read for students and engineers who want to learn a new paradigm for RF frequency synthesis and wireless transmitter design using digitally intensive design techniques.

About the Author
ROBERT BOGDAN STASZEWSKI, PhD, is a Distinguished Member of Technical Staff with the Digital RF Processor Group of Texas Instruments, where he co-invented and developed the Digital RF Processor (DRPTM), a novel, all-digital transmitter and digitally intensive direct-sampling receiver architecture. Before joining Texas Instruments, Dr. Staszewski worked with Alcatel Network Systems as a design engineer.

PORAS T. BALSARA, PhD, is Professor of Electrical Engineering at the Erik Jonsson School of Engineering and Computer Science, The University of Texas at Dallas, where he teaches and conducts research in high-speed, low-power circuit design, VLSI circuits and architectures for signal processing and communication, and reconfigurable systems. He is also the Director of the University's Center for Integrated Circuits and Systems.

Users Review

From reader reviews:

Maria Vanness:

Here thing why this particular All-Digital Frequency Synthesizer in Deep-Submicron CMOS are different and trustworthy to be yours. First of all examining a book is good nonetheless it depends in the content of computer which is the content is as delightful as food or not. All-Digital Frequency Synthesizer in Deep-Submicron CMOS giving you information deeper since different ways, you can find any publication out there but there is no guide that similar with All-Digital Frequency Synthesizer in Deep-Submicron CMOS. It gives you thrill examining journey, its open up your own personal eyes about the thing in which happened in the world which is might be can be happened around you. You can bring everywhere like in recreation area, café, or even in your way home by train. For anyone who is having difficulties in bringing the branded book maybe the form of All-Digital Frequency Synthesizer in Deep-Submicron CMOS in e-book can be your substitute.

Allison Price:

Information is provisions for anyone to get better life, information these days can get by anyone with everywhere. The information can be a knowledge or any news even an issue. What people must be consider if those information which is in the former life are hard to be find than now's taking seriously which one is suitable to believe or which one the resource are convinced. If you find the unstable resource then you understand it as your main information there will be huge disadvantage for you. All those possibilities will not happen with you if you take All-Digital Frequency Synthesizer in Deep-Submicron CMOS as your daily resource information.

June Slater:

The guide with title All-Digital Frequency Synthesizer in Deep-Submicron CMOS posesses a lot of information that you can find out it. You can get a lot of help after read this book. This particular book exist new know-how the information that exist in this book represented the condition of the world right now. That is important to yo7u to understand how the improvement of the world. This book will bring you inside new era of the internationalization. You can read the e-book on your smart phone, so you can read the item anywhere you want.

Chelsie Salls:

That publication can make you to feel relax. This kind of book All-Digital Frequency Synthesizer in Deep-Submicron CMOS was bright colored and of course has pictures around. As we know that book All-Digital Frequency Synthesizer in Deep-Submicron CMOS has many kinds or type. Start from kids until teens. For example Naruto or Investigator Conan you can read and think you are the character on there. So , not at all of book usually are make you bored, any it makes you feel happy, fun and chill out. Try to choose the best book in your case and try to like reading which.

Download and Read Online All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara #15HOLUA68RS

Read All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara for online ebook

All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara books to read online.

Online All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara ebook PDF download

All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara Doc

All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara Mobipocket

All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara EPub

15HOLUA68RS: All-Digital Frequency Synthesizer in Deep-Submicron CMOS By Robert Bogdan Staszewski, Poras T. Balsara