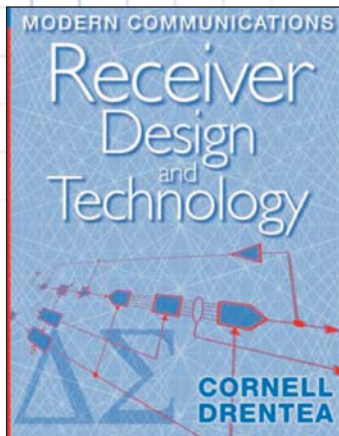


## DESIGN NOTES



### **Modern Communications Receiver Design and Technology**

*Cornell Drentea*

ISBN-13: 978-1-59693-309-5

Artech House, 2010

[www.artechhouse.com](http://www.artechhouse.com)

This comprehensive sourcebook explores the state-of-the-art in communications receivers, providing detailed practical guidance for constructing an actual high dynamic range receiver from system design to packaging. You also find clear explanations of the technical underpinnings that you need to understand for your work in the field. This cutting-edge reference presents the latest information on modern superheterodyne receivers, dynamic range, mixers, oscillators, complex coherent synthesizers, automatic gain control, DSP and software radios.

You'll find in-depth discussions on system design, including coverage of all pertinent data and tools. Moreover, the book offers you a solid understanding of packaging and mechanical considerations, as well as a look at tomorrow's receiver technology, including new Bragg-cell applications for ultra-wideband electronic warfare receivers. This one-stop resource is packed with over 300 illustrations supporting critical topics.

### **Chapters**

- 1 Introduction to Receivers
- 2 History of Radio
- 3 The Superheterodyne Receiver
- 4 Implementing Single Conversion Superheterodynes
- 5 Implementing Double Conversions
- 6 Implementing Multiple Conversions
- 7 Implementing Direct Conversions
- 8 Special Conversions and Their Implementation
- 9 Drift Cancelling Loops and the Barlow-Wadley Receiver
- 10 High Probability of Intercept (HPOI) and the Ideal Receiver
- 11 The Role of the Receiver in a Communications Link
- 12 System Design Considerations for Modern Receivers
- 13 Dynamic Range
- 14 High Performance Receiver Front End Design Example
- 15 Mixers
- 16 Frequency Synthesizers
- 17 Intermediate Frequency (IF) Receivers
- 18 Automatic Gain Control (AGC)
- 19 Product Detectors and Beat Frequency Oscillators (BFO)
- 20 Audio and Baseband Amplifier Design Considerations
- 21 The Power Supply
- 22 Putting It All Together
- 23 Radio Astronomy and the Search for Extraterrestrial Intelligence (SETI) Receivers
- 24 Digital Signal Processing (DSP) and Software Defined Radio (SDR)
- 25 Electronic Warfare (EW) Receivers
- 26 Conclusions
- Index

### **June 2011 "Most Downloaded" from the Archives**

1. G. Breed, "Analyzing Signals with the Eye Diagram," Nov. 2005 tutorial.
2. G. Breed, "Bit Error Rate: Fundamental Concepts and Measurement Issues," Jan. 2003 tutorial.
3. G. Breed, "The Fundamentals of Patch Antenna Design and Performance," Mar. 2009 tutorial.
4. J. Hancock, "Jitter—Understanding it, Measuring it, Eliminating it; Part 1: Jitter Fundamentals," Apr. 2004.

### **Reader Feedback**

April 2011 "Design Notes" referred to an archived article on using the eye diagram for testing digital signals. I wanted to see it, but hesitated because oftentimes trying to navigate a site for archived materials can be frustrating. Your site was easy to use, and I was able to find the article within seconds!

Thank you!

*Al Martin, Segue Services, Inc.*