Ellingson

Radio Systems Engineering

Using a systems framework, this textbook provides a clear and comprehensive introduction to the performance, analysis, and design of radio systems for students and practicing engineers. Presented within a consistent framework, the first part of the book describes the fundamentals of the subject: propagation, noise, antennas, and modulation. The analysis and design of radios including RF circuit design and signal processing is covered in the second half of the book. The former is presented with minimal involvement of Smith charts, enabling students to grasp the fundamentals more readily. Both traditional and software-defined/direct sampling technology are described, with pros and cons of each strategy explained. Numerous examples within the text involve realistic analysis and design activities, and emphasize how practical experiences may differ from theory or taught procedures. End-of-chapter problems are provided, as are a password-protected solutions manual and lecture slides to complete the teaching package for instructors.

Steven W. Ellingson is an Associate Professor at Virginia Tech. He received his PhD in Electrical Engineering from the Ohio State University. He held senior engineering positions at Booz-Allen & Hamilton, Raytheon, and the Ohio State University ElectroScience Laboratory before joining the faculty of Virginia Tech. His research focuses on wireless communications and radio frequency instrumentation, with funding from the National Science Foundation, the National Aeronautics and Space Administration, the Defense Advanced Research Projects Agency, and the commercial communications and aerospace industries. Professor Ellingson serves as a consultant to industry and government on topics pertaining to RF system design and is an avid amateur radio operator (call sign AK4WY).

"*Radio Systems Engineering* offers a comprehensive introduction to the architecture and components of radio systems. It reviews all the fundamentals that students need to understand today's wireless communication systems, including modern modulation schemes, radio wave propagation, and noise impact. It also covers all the blocks of modern radio transmitter and receiver systems, such as antennas, filters, amplifiers, and signal processing. This textbook gives engineering students a complete overview of radio systems and provides practicing wireless engineers with a convenient comprehensive reference."

Patrick Roblin, *Ohio State University*

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CONTENTS