Digital Satellite Communications Systems And Technologies Military And Civil Applications

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Design of Controller and Processor for Digital Satellite Communication Systems
Handbook on Satellite Communications
Digital Satellite Communications

DURHAM LACEY

Direct Broadcast Satellite Communications McGraw-Hill Professional Publishing
An invaluable working tool for professional engineers in telecommunications, this volume describes and explains the latest methods in digital satellite communications, much of it unavailable in other books. Numerous problems and examples of practical systems also make thhe delay analysis of FDMA (Frequency Division) and TDMA (Time Division) channels for packet transmission access.
Satellites and the BISDN: An Overview of NASA R/D John Wiley & Sons
Brings together theories, tradeoffs and implications for system design for digital communications by satellites, with emphasis on modulation, multiple access and coding techniques. The book includes tables and worked examples with emphasis on practical design parameters; also over 130 problems. Presents much new material, including over-all digital satellite system design equations; carrier and clock recovery of burst moderns; an introduction to integrated coding and modulation techniques; a complete survey of TDMA satellite systems with emphasis on synchronization problems; an introduction to packet satellite networks; ARQ for satellite channel; detailed treatment of Viterbi and sequential decoding; and a unified treatment of threshold decoding for both block and convolutional codes.
Digital Satellite Communications Springer Science & Business Media
Since the publication of the best-selling first edition of The Satellite Communication Applications Handbook, the satellite communications industry has experienced explosive growth. Satellite radio, direct-to-home satellite television, satellite telephones, and satellite guidance for automobiles are now common and popular consumer products. Similarly, business, government, and defense organizations now rely on satellite communications for day-to-day operations. This second edition covers all the latest advances in satellite technology and applications including direct-to-home broadcasting, digital audio and video, and VSAT networks. Engineers get the latest technical insights into operations, architectures, and systems components.
Satellite Communications Payload and System CRC Press
Extensive revision of the best-selling text on satellite communications — includes new chapters on cubesats, NGSO satellite systems, and Internet access by satellite There have been many changes in the thirty three years since the first edition of Satellite Communications was published. There has been a complete transition from analog to digital communication systems, withanalog techniques replaced by digital modulation and digital signal processing. While distribution of television programming remains the largest sector of commercial satellite communications, low earth orbit constellations of satellites for Internet access are set to challenge that dominance. In the third edition, chapters one through three cover topics that are specific to satellites, including orbits, launchers, and spacecraft. Chapters four through seven cover the principles of digital communication systems, radio frequency communications, digital modulation and multiple access techniques, and propagation in the earth's atmosphere, topics that are common to all radio communication systems. Chapters eight through twelve cover applications that include non-geostationary satellite systems, low throughput systems, direct broadcast satellite television, Internet access by satellite, and global navigation satellite systems. The chapter on Internet access by satellite is new to the third edition, and each of the chapters has been extensively revised to include the many changes in the field since the publication of the second edition in 2003. Two appendices have been added that cover digital transmission of analog signals, and antennas. An invaluable resource for students and professionals alike, this book: Focuses on the fundamental theory of satellite communications Explains the underlying principles and essential mathematics required to understand the physics and engineering of satellite communications Discusses the expansion of satellite communication systems in areas such as direct-broadcast satellite TV, GPS, and internet access Introduces the rapidly advancing field of small satellites, referred to as SmallSats or CubeSats Provides relevant practice problems based on real-world satellite systems Satellite Communications is required reading for undergraduate and postgraduate students in satellite communications courses and an authoritative reference for engineers working in communications, systems and networks, and satellite operations and management.
Satellite Communications Pearson Education
An undeniably rich and thorough guide to satellite communication engineering, Satellite Communication Engineering, Second Edition presents the fundamentals of information communications systems in a simple and succinct way. This book considers both the engineering aspects of satellite systems as well as the practical issues in the broad field of information transmission. Implementing concepts developed on an intuitive, physical basis and utilizing a combination of applications and performance curves, this book starts off with a progressive foundation in satellite technology, and then moves on to more complex concepts with ease. What's New in the Second Edition: The second edition covers satellite and Earth station design; global positioning systems; antenna tracking; links and communications systems; error detection and correction; data security; regulations and procedures for system modeling; integration; testing; and reliability and performance evaluation. Provides readers with the systems building blocks of satellite transponders and Earth stations, as well as the systems engineering design procedure Includes the tools needed to calculate basic orbit characteristics such as period, dwell time, coverage area, propagation losses;

antenna system features such as size, beamwidth, aperture-frequency product, gain, tracking control; and system requirements such as power, availability, reliability, and performance Presents problem sets and starred sections containing basic mathematical development Details recent developments enabling digital information transmission and delivery via satellite Satellite Communication Engineering, Second Edition serves as a textbook for students and a resource for space agencies and relevant industries.

Satellite Communications Springer Science & Business Media

Discusses long-term developments Addresses advanced physical layer techniques designed for broadband communications, for fixed and mobile terminals Considers 4G evolutions and possible convergence between different technologies

Satellite Communications John Wiley & Sons

Discusses long-term developments Addresses advanced physical layer techniques designed for broadband communications, for fixed and mobile terminals Considers 4G evolutions and possible convergence between different technologies

Satellite Communication Systems Design IET

This useful reference book addresses the specific needs of satellite systems, including link calculations, the terrestrial interface, baseband systems and signal processing, modulation techniques, coding, synchronization, TDMA and onboard processing. AUTHOR'S COMMENTS By mastering this book, the reader acquires the tools and skills necessary to analyze and design elements of modern satellite communications systems. This book is for engineers and managers, for the advanced student who wants a solid understanding of this field and for the researcher who needs a consolidated, comprehensive up-to-date reference text of digital communications systems. PUBLISHER'S COMMENTS This text is an essential reference book in this field, one of the few books dedicated solely to satellite technology. It has been made available once again to serve the information needs of engineers who are building and operating the satellite systems of today and tomorrow.

Satellite Communications Systems Springer Science & Business Media

The first edition of Satellite Communications Systems Engineering (Wiley 2008) was written for those concerned with the design and performance of satellite communications systems employed in fixed point to point, broadcasting, mobile, radio navigation, data relay, computer communications, and related satellite based applications. This welcome Second Edition continues the basic premise and enhances the publication with the latest updated information and new technologies developed since the publication of the first edition. The book is based on graduate level satellite communications course material and has served as the primary text for electrical engineering Masters and Doctoral level courses in satellite communications and related areas. Introductory to advanced engineering level students in electrical, communications and wireless network courses, and electrical engineers, communications engineers, systems engineers, and wireless network engineers looking for a refresher will find this essential text invaluable.

Digital Communications by Satellite Springer Science & Business Media

Since the publication of the best-selling first edition of the Satellite Communication Applications Handbook, the satellite industry has experienced explosive growth thanks to a flood of innovations in consumer electronics, broadcasting, the Internet, transportation, and broadband telecommunications. This second edition covers all the latest advances in satellite technology and applications and features new chapters on mobile digital audio radio and VSAT networks. It updates and expands upon the engineering and management topics that made the first edition a must-have for every satellite communications professional as well as network architects. Engineers get the latest technical details into operations, architectures, and systems components. Managers are brought up to date with the latest business applications as well as regulatory and legal decisions affecting domestic and international markets. the treatment is also of value to marketing, legal, regulatory, and financial and operations professionals who must gain a clear understanding of the capabilities and issues associated with satellite space and ground facilities and services.

Satellite Communications Systems John Wiley & Sons

Highlighting satellite and earth station design, links and communication systems, error detection and correction, and regulations and procedures for system modeling, integrations, testing, and evaluation, Satellite Communication Engineering provides a simple and concise overview of the fundamental principles common to information communications. It

Satellite Communication Engineering Prentice Hall

Writing a comprehensive book on satellite communications requires the com mand of many technical disciplines and the availability of up-to-date information on international recommendations, system architectures, and equipment stand ards. It is therefore necessary to involve many authors, each possessing a good level of knowledge in a particular discipline. The problem of using a coherent and unambiguous set of definitions and basic terms has been solved by including in the book all the background information needed for understanding satellite communication systems, without any major reference to other textbooks specializing in particular disciplines. The obvious consequence of this approach has been the large size of the book, with the advantages, however, of practically complete independence from other books, more systematic discussion of the subject matter, and better readability. After the required background information, emphasis has been placed on the discussion of techniques and system design criteria rather than on specific equipment implementation or description of particular systems. The book may be divided in five parts as follows: • The first five chapters provide most of the required background information. • Chapter 6 is an introductory outline of satellite communication systems. • Chapters 7 to 13 deal with the various aspects of technical system design. • Chapter 14 discusses system economics. • Chapter 15 provides a brief insight into some foreseeable future develop ments of satellite communications.

Satellite Communication Systems Computer Science Press, Incorporated

Updates from unremarked dates material used in the Institute's vacation schools at Surrey University, which over the past 15 years have become the de-facto industry standard in satellite communications. The approach concentrates on the design and planning of systems, includes little theory, and just quotes equations rather than deriving them. New material has been added on the history and background of the field; the business aspects of satellite communications; and on new applications in mobile and personal communication systems, multimedia systems, military business and small satellites, navigation, and positioning. Graduate, undergraduate, and practicing engineers

should benefit from the treatment. Annotation copyrighted by Book News, Inc., Portland, OR

Satellite Communications in the 5G Era Artech House

With its higher power and superior video and audio quality, Direct Broadcast Satellite (DBS) communications is proliferating worldwide. Many new DBS systems are evolving and with the introduction of HDTV, DBS technology is predicted to become even more prevalent. Written by a leading DBS authority, this book is required reading for anyone involved in this burgeoning field. This comprehensive reference describes the history and structure of DBS systems, the regulatory environment, the subsystems that support it, and the underlying compression technology that makes it commercially feasible. Direct Broadcast Satellite Communications can be read as a broad overview of DBS systems or can serve as a detailed technical description. In particular, the author thoroughly explains how MPEG compression standards are used to implement modern satellite broadcast systems. You will find complete information on key topics such as: International and FCC regulations Radio frequency components of DBS systems, including the shaped reflector antenna Forward error correction, looking at block codes, interleaving, and Viterbi decoding The use of cryptography for conditional access to subscription services MPEG system and transport layer MPEG-2 video and audio compression Connecting terrestrial systems and DBS uplinks The Integrated Receiver Decoder In addition, the book explores future developments, including the Spaceway and the Global Broadcast Service, as well as the MPEG-4 compression standards. Numerous case studies involving DIRECTV(TM) and the European DVB standard appear throughout the book. For other books in this series, see http://www.awl.com/cseng/wirelessseries/

The Satellite Communication Applications Handbook Prentice Hall

Signal quantizing and multiplexing. Satellite communications. Modulation and coding in distorted channels. Worldwide timing by satellite relay.

Satellite Communication Systems Engineering IET

Satellites are increasingly used for global communications, as well as for radio and television transmissions. With the growth of mobile communications, and of digital technology, the use of satellite systems is set to expand substantially and already all students of electronics or communications engineering must study the subject. This book steers a middle path between offering a basic understanding of the process of communication by satellite and the methodology used; and the extensive mathematical analysis normally adopted in similar texts. It presents the basic concepts, using as much mathematical content as is necessary to make the process understandable. The principles introduced are backed up by examples of actual applications showing how professional systems engineers have achieved the required system performance capabilities. The practical systems chosen are representative of modern day applications and comprise an international communications system, an international maritime system and a regional system.

Satellite Communications, Fourth Edition Springer

Satellite Communications and Navigation Systems publishes the proceedings of the 2006 Tyrrhenian International Workshop on Digital Communications. The book focuses on the integration of communication and navigation systems in satellites.

Satellite Communications John Wiley & Sons

SATELLITE COMMUNICATIONS PAYLOAD AND SYSTEM A valuable reference on communications satellite systems This book presents the state of the art in commercial communications satellite systems, thoroughly and in detail not to be found in any other book. These systems provide the television and some of the telephone and Internet services in use every day. The book focuses on the satellite payload, which consists of antennas, receivers, and transmitters. The book discusses the what, the how, and the why of various choices that have been made in currently operating systems. The book is organized into three parts: In-depth description of various payload units, not requiring specialist knowledge. For each unit and the payload as a whole, the architectures, the theory of operation, analysis, performance, and specifications are presented. End-to-end system context in which the payload operates. Digital communications theory and satellite communications protocols are introduced. The time-varying properties of satellite-to-ground links are explored. Tips on system simulation are given. Current commercial end-to-end satellite communications systems, in their grand variety. Emphasis is placed on the satellite payload and its interactions with the satellite bus, ground stations, and user terminals. The second edition adds the third part of the book. Payload unit descriptions have been updated and enlarged. The communications theory chapter has been upgraded and the protocols chapter added to briefly describe all the elements mentioned in part 3. Non-geostationary satellite considerations have been included throughout the book. If you are a payload systems engineer, this book can serve as a valuable tool for expanding your knowledge base. If you’re a graduate student, it will guide your introductory learning. As an industry professional, you can make this book a go-to reference.

Digital Communications Systems John Wiley & Sons

Among the space activities of the last three decades satellite communications (SATCOM) has found the widest application in meeting both civil and military communications requirements. Several international, regional and national SATCOM systems of increasing capacity, capability and complexity have been and are being implemented over the years. The latest versions are utilizing such concepts as spot beams, processing transponders in SS-TDMA and operations in different frequency bands including the EHF band. On the military side, the United States of America, the United Kingdom, France and NATO (the North Atlantic Treaty Organisation) have been the only owners and operators of military SATCOM systems in the West. The systems in being and under development use satellites and ground terminals with characteristics which differ from the civilian ones with respect to frequency bands utilised and survivability and interoperability. The SATCOM has given the military users the potential of having much-needed mobility, flexibility and survivability in strategic and tactical communications for land, sea and air operations. It must, however, be said particularly for the military SATCOM systems that they have been evolved in big jumps, both in time and capability, each jump involving the deployment of two or three often specially designed large satellites, large expenses and rather traumatic transition between jumps. Despite these undesirable features these systems did not have the required degree of suevivability and flexibility.

Satellite Communication Engineering Springer Science & Business Media

Now thoroughly updated, this edition covers all the fundamentals of satellites, ground control systems, and earth stations as well as digital communications, digital processing, and engineering of satellite systems.