Project Report On Antenna Design Simulation And Fabrication

KLINE MALDONADO

Dynamic Response of Lattice Towers and Guyed Masts Springer
Microstrip patch antennas have become the favorite of antenna designers because of their versatility and having the advantages of planar profile, ease of fabrication, compatibility with integrated circuit technology, and conformability with a shaped surface. There is a need for graduate students and practicing engineers to gain an in depth understanding of this subject. The first edition of this book, published in 2011, was written with this purpose in mind. This second edition contains approximately one third new materials. The authors, Prof KF Lee, Prof KM Luk and Dr HW Lai, have all made significant contributions in the field. Prof Lee and Prof Luk are IEEE Fellows. Prof Lee was the recipient of the 2009 John Kraus Antenna Award of the IEEE Antennas and Propagation Society while Prof. Luk receives the same award in 2017, both in recognition of their contributions to wideband microstrip antennas.
The S-46 satellite Artech House on Demand
Microstrip antennas that radiate or receive circularly polarized (CP) signals are very attractive for wireless communication systems. Circular polarization can improve performance by reducing power loss due to the misalignment of the transmitting and receiving antennas. A significant amount of research has been ongoing to find new and improved techniques for designing patch antennas with CP. The subject of this project report is developing a proximity-coupled, circularly polarized microstrip antenna operating at 2 GHz and designing an array with four elements based on it. The single antenna element and the array have been designed and simulated using the electromagnetic simulation software, Feko. An axial ratio of 0.25 dB, a gain of 3.0 dBi, and a reflection coefficient of -18.9 dB are the results of simulations of the single antenna element in Feko. The array elements had reflection coefficient values very close to the individual antenna. An axial ratio of 1.85 dB and a gain of 11 dBi were achieved with the simulated array. In addition, tests and measurements have been performed on a fabricated version of the single

antenna element. The fabricated antenna had acceptable measured values of -15.0 dB and 4.0 dB, for the reflection coefficient and the gain, respectively. However, the measured 9.0 dB axial ratio for this antenna was out of the acceptable range. In order to find acceptable values for all of the three parameters, the initial design of the antenna was modified. A value of reflection coefficient of -13 dB, an axial ratio of 2.8 dB, and a gain of 2.0 dBi were the optimal results after these modifications.

Microstrip Patch Antennas (Second Edition) John Wiley & Sons

Presents an overview of CubeSat antennas designed at the Jet Propulsion Laboratory (JPL) CubeSats—nanosatellites built to standard dimensions of 10cm x 10 cm x cm—are making space-based Earth science observation and interplanetary space science affordable, accessible, and rapidly deployable for institutions such as universities and smaller space agencies around the world. CubeSat Antenna Design is an up-to-date overview of CubeSat antennas designed at NASA's Jet Propulsion Laboratory (JPL), covering the systems engineering knowledge required to design these antennas from a radio frequency and mechanical perspective. This authoritative volume features contributions by leading experts in the field, providing insights on mission-critical design requirements for state-of-the-art CubeSat antennas and discussing their development, capabilities, and applications. The text begins with a brief introduction to CubeSats, followed by a detailed survey of low-gain, medium-gain, and high-gain antennas. Subsequent chapters cover topics including the telecommunication subsystem of Mars Cube One (MarCO), the enabling technology of Radar in a CubeSat (RainCube), the development of a one-meter mesh reflector for telecommunication at X- and Ka-band for deep space missions, and the design of multiple metasurface antennas. Written to help antenna engineers to enable new CubeSate NASA missions, this volume: Describes the selection of high-gain CubeSat antennas to address specific mission requirements and constraints for instruments or telecommunication Helps readers learn how to develop antennas for future CubeSat missions Provides key information on the effect of space environment on antennas to inform design steps Covers patch and patch array antennas, deployable reflectarray antennas, deployable mesh reflector, inflatable antennas, and metasurface antennas CubeSat Antenna Design is an important resource for antenna/microwave engineers, aerospace systems engineers, and advanced graduate and postdoctoral students wanting to learn how to design and fabricate their own antennas to address clear mission requirements.

Project Report Wiley

The Latest Resource for the Study of Antenna Theory! In a discipline that has experienced vast technological changes, this text offers the most recent look at all the necessary topics. Highlights include: * New coverage of microstrip antennas provides information essential to a wide variety of practical designs of rectangular and circular patches, including computer programs. * Applications of Fourier transform (spectral) method to antenna radiation. * Updated material on moment methods, radar cross section, mutual impedances, aperture and horn antennas, compact range designs, and antenna measurements. A New Emphasis on Design! Balanis features a tremendous increase in design procedures and equations. This presents a solid solution to the challenge of meeting real-life situations faced by engineers. Computer programs contained in the book-and accompanying software-have been developed to help engineers analyze, design, and visualize the radiation characteristics of antennas.

Energy Research Abstracts John Wiley & Sons

This book highlights technology trends and challenges that trace the evolution of antenna design, starting from 3rd generation phones and moving towards the latest release of LTE-A. The authors explore how the simple monopole and whip antenna from the GSM years have evolved towards what we have today, an antenna design that is compact, multi-band in nature and caters to multiple elements on the same patch to provide high throughput connectivity. The scope of the book targets a broad range of subjects, including the microstrip antenna, PIFA antenna, and the monopole antenna to be used for different applications over three different mobile generations. Beyond that, the authors take a step into the future and look at antenna requirements for 5G communications, which already has the 5G drive in place with prominent scenarios and use-cases emerging. They examine these, and put in place the challenges that lie ahead for antenna design, particularly in mm-Wave design. The book provides a reference for practicing engineers and under/post graduate students working in this field.

Antenna Measurements at Super-high Frequencies John Wiley & Sons

Vol. I: United States support of the International Geophysical Year program included making Juno II rocket vehicles available for earth satellite launchings. This volume describes the first satellite flight unit lofted by a Juno II in an orbital attempt -- the Explorer VII.

Juno II Summary Project Report ASCE Publications

Vol. I: United States support of the International Geophysical Year program included making Juno II rocket vehicles available for earth satellite launchings. This volume describes the first satellite flight unit lofted by a Juno II in an orbital attempt -- the Explorer VII.

Summary of Results of Antenna Design Cost Studies World Scientific

This comprehensive resource presents antenna fundamentals balanced with the design of printed antennas. Over 70 antenna projects, along with design dimensions, design flows and antenna performance results are discussed, including antennas for wireless communication, 5G antennas and beamforming. Examples of smartphone antennas, MIMO antennas, aerospace and satellite remote sensing array antennas, automotive antennas and radar systems and many more printed antennas for various applications are also included. These projects include design dimensions and parameters that incorporate the various techniques used by industries and academia. This book is intended to serve as a practical microstrip and printed antenna design guide to cover various real-world applications. All Antenna projects discussed in this book are designed, analyzed and simulated using full-wave electromagnetic solvers. Based on several years of the author's research in antenna design and development for RF and microwave applications, this book offers an in-depth coverage of practical printed antenna design methodology for modern applications.

Large Antennas of the Deep Space Network John Wiley & Sons

This special report focuses on the emerging legal regime for orbital debris mitigation. It contains an overview of the relevant laws, policies, and regulations on orbital debris mitigation and aims to serve as a useful reference for the space community.

CubeSat Antenna Design IGI Global

In the first chapter there is given a basis and account of the method of measurement of basic parameters of shf antennas, typical circuits applied here and also methods of processing and estimating error of measurements. In the second chapter seven laboratory projects of

antenna practical work are described. The practical work permits us to subject to graphic experimental proof a series of very important theoretical propositions expounded in the course on shf antennas; to illustrate the method of measurements of parameters of antennas with practical examples; to acquaint students with the design and certain methods of engineering calculation of basic types of shf antennas. Description of every practical project contains information on designing the proper laboratory installation, assignment for conducting experiments and calculations, and also a list of materials which should be presented in the report on the finished project. Selection of problems for practical work and the character of assignments are aimed at development in students of a desire for independent investigation. Everywhere where possible, comparison of theory with experiment and estimation of its accuracy are required. In the third chapter there is given a description of a series of samples of typical equipment applied during shf antenna measurements. This facilitates home preparation of students for doing assignments of antenna practical work and can serve as a brief reference book on frequently used equipment. (Author).

Antenna Fundamentals for Legacy Mobile Applications and Beyond Artech House

The Discrete Address Beacon System (DABS) will provide the primary Air Traffic Control (ATC) surveillance information for the 1980-1990 time period as it is introduced gradually as a replacement for the present Air Traffic Control Radar Beacon System (ATCRBS). This report discusses and summarizes the results of two DABS antenna system design-cost trade off studies performed by industrial concerns with substantial design, fabrication and field maintenance experience related to similar antenna systems now in the field. The data from these studies, was to be used to support other Lincoln Laboratory DABS studies leading to the definition and specification of a cost-effective system design.

Special Project ReportMEO/LEO Constellations : U.S. Laws, Policies, and Regulations on Orbital Debris Mitigation Provides information on smart antenna technologies featuring contributions with in-depth descriptions of terminologies, concepts, methods, and applications related to smart antennas in various wireless systems.

The Square Kilometre Array: An Engineering Perspective Artech House

Special Project ReportMEO/LEO Constellations : U.S. Laws, Policies, and Regulations on Orbital Debris MitigationAmer Inst of Aeronautics &

Bibliography of Scientific and Industrial Reports Amer Inst of Aeronautics &

An important historical look at the space program's evolvingtelecommunications systems Large Antennas of the Deep Space Network traces the development ofthe antennas of NASA's Deep Space Network (DSN) from the network'sinception in 1958 to the present. It details the evolution of thelarge parabolic dish antennas, from the initial 26-m operation atL-band (960 MHz) through the current Ka-band (32 GHz) systems.Primarily used for telecommunications, these antennas also supportradar and radio astronomy observations in the exploration of thesolar system and the universe. In addition, the author also offersthorough treatment of the analytical and measurement techniquesused in design and performance assessment. Large Antennas of the Deep Space Network represents a vitaladdition to the literature in that it includes NASA-funded researchthat significantly impacts on deep space telecommunications. Partof the prestigious JPL Deep Space Communications and NavigationSeries, it captures fundamental principles and practices developedduring decades of deep space exploration, providing informationthat will enable antenna professionals to replicate radiofrequencies and optics designs. Designed as an introduction for students in the field as well as areference for advanced practitioners, the text assumes a basicfamiliarity with engineering and mathematical concepts andtechnical terms. The Deep Space Communications and Navigation Series is authored byscientists and engineers with extensive experience in astronautics,communications, and related fields. It lays the foundation forinnovation in the areas of deep space navigation and communicationsby disseminating state-of-the-art knowledge in key technologies.

Monthly Catalogue, United States Public Documents Springer Science & Business Media

Prepared by the Task Committee on the Dynamic Response of Lattice Towers of the Technical Committee on Special Structures and the Technical Administrative Committee on Metals of the Structural Engineering Institute of ASCE. This report is a compilation and clarification of current methodologies for the dynamic response of communication towers in a single source. The information regarding the dynamic response of lattice towers is currently scattered throughout the literature, making it difficult for the practicing engineer to obtain the information necessary for design purposes. Both self-supporting lattice towers and guyed lattice masts (guyed lattice towers) are included. Topics include: Ødynamics of cables and towers, Ødynamic analysis, Øwind loads and response, Øseismic input and response, and Øvibration control.

Modern Antenna Design IGI Global

Concurrently with other instrumentation efforts, studies have been conducted leading to the development of antenna systems to be used on aerospace research vehicles. The report describes primarily those antennas developed for UHF telemetry applications that are used with instrumented research rocket payloads. Other antennas associated with tracking systems are also included. Several unique design techniques are described that have resulted in significant electrical and aerodynamic improvements.

MEO/LEO Constellations : U.S. Laws, Policies, and Regulations on Orbital Debris Mitigation CRC Press

The Square Kilometre Array (SKA) Project is a global project to design and c- struct a revolutionary new radio telescope with of order 1 million square meters of collecting area in the wavelength range from3mto1cm.It will have two - ders of magnitude greater sensitivity than current telescopes and an unprecedented large instantaneous ?eld-of-view. These capabilities will ensure the SKA will play a leading role in solving the major astrophysical and cosmological questions of the day (see the science case at www.skatelescope.org/pages/page astronom.htm). The SKA will complement major ground- and space-based astronomical facilities under construction or planned in other parts of the electromagnetic spectrum (e.g. ALMA, JWST, ELT, XEUS,...). The current schedule for the SKA foresees a decision on the SKA site in 2006, a decisiononthedesignconceptin2009,construction ofthe?rstphase(international path?nder)from2010to2013,andconstructionofthefullarrayfrom2014to2020. The cost is estimated to be about 1000 M . TheSKAProjectcurrentlyinvolves45institutesin17countries,manyofwhich are involved in nationally- or regionally-funded state-of-the-art technical devel- ments being pursued ahead of the 2009 selection of design concept. This Special Issue of Experimental Astronomy provides a snapshot of SKA engineering act- ity around the world, and is based on presentations made at the SKA meeting in

Penticton,BC,CanadainJuly2004.Topicscoveredincludeantennaconcepts,so- ware, signal transport and processing, radio frequency interference mitigation, and reports on related technologies in other radio telescopes now under construction. Further information on the project can be found at www.skatelescope.org.

Microfilm Index; Summary Technical Report of NDRC.

The steady evolution of wireless communication technologies continues to pave the way for the implementation of innovative services and devices in modern vehicles. These include analog and digital audio broadcasting radio, satellite radio, GPS, cell phones, and short range communication devices. Such applications require the use multiple antennas operating in different frequency ranges. Automotive Antenna Design and Applications thoroughly examines traditional and new advanced automotive antennas, including the principles, designs, and techniques used to reduce antenna dimensions without significant degradation of communication quality. The contents of this book are based on cutting-edge data collected from numerous technical papers, patents, and patent applications. It presents an overview of many commercially available automotive antennas and covers features that have become standard in automotive applications, such as printed-on car glass antennas, reduced-size helical antennas, multiband compact, printed-on dielectric and patch designs in a single package. Includes simulation examples of antenna parameters that significantly speed up the design process using software packages such as FEKO, NEC, IE3D, and Genesys Highlighting the practical aspects of antenna design, the authors present passive and active designs and describe the entire design process, including antenna simulation, prototype sample fabrication, and laboratory test measurements. The book also covers the production adjustments that can result from the demands of the real car environment. The presentation of numerous examples of passive and active automotive antennas greatly enhances this reference's value to professionals, students, and anyone else working in the ever-evolving field of antenna design and application.

Juno II Summary Project Report

A system concept has been developed by Viasat, Inc. and Woods Hole Oceanographic Institution for improving the data telemetry bandwidth available on ocean buoys. This concept utilizes existing communications satellites as data relay stations and mechanically steered antenna arrays to achieve increased data rates and improved power efficiency needed for ocean applications. This report describes an initial feasibility and design study to determine if a mechanically steered antenna array can meet the requirements of open ocean buoy applications. To meet the system requirements, an 18-element microstrip antenna (9-element transmit, 9-element receive) was designed and fabricated under subcontract by Seavey Engineering Associates, Inc. It operates in the 4-6 GHz frequency band (C-band) and provides 14 dB of gain. The % power beamwidth is j150 in azimuth and elevation. This antenna design, in conjunction with a simple rotating mount, was used to evaluate the potential of this approach to keep a geostationary satellite in view when mounted on an ocean buoy. The evaluation is based on laboratory measurements using a magnetic compass and a small stepper motor to maintain antenna orientation while the complete assembly was rotated and tilted at speeds similar to what would be expected on an offshore buoy equipped with a stabilizing wind vane.

Analysis and Design

JPL spacecraft antennas-from the first Explorer satellite in 1958 to current R & D Spaceborne Antennas for Planetary Exploration covers the development of Jet Propulsion Laboratory (JPL) spacecraft antennas, beginning with the first Explorer satellite in 1958 through current research and development activities aimed at future missions. Readers follow the evolution of all the new designs and technological innovations that were developed to meet the growing demands of deep space exploration. The book focuses on the radio frequency design and performance of antennas, but covers environmental and mechanical considerations as well. There is additionally a thorough treatment of all the analytical and measurement techniques used in design and performance assessment. Each chapter is written by one or more leading experts in the field of antenna technology. The presentation of the history and technology of spaceborne antennas is aided by several features: * Photographs and drawings of JPL spacecraft * Illustrations to help readers visualize concepts and designs * Tables highlighting and comparing the performance of the antennas * Bibliographies at the end of each chapter leading to a variety of primary and secondary source material This book complements Large Antennas of the Deep Space Network (Wiley 2002), which surveys the ground antennas covered in support of spacecraft. Together, these two books completely cover all JPL antenna technology, in keeping with the JPL Deep Space Communications and Navigation Series mission to capture and present the many innovations in deep space telecommunications over the past decades. This book is a fascinating and informative read for all individuals working in or interested in deep space telecommunications.

Related with Project Report On Antenna Design Simulation And Fabrication:
• Doki Doki Literature Club Sayori : click here