Recommended Operating Environment Indoor Measuring Range

Due to progress in the development of communication systems, it is now possible to develop low-cost wearable communication systems. A wearable antenna is meant to be a part of the clothing or close to the body and used for communication purposes, which include tracking and navigation, mobile computing and public safety. Examples include smartwatches (with integrated Bluetooth antennas), glasses (such as Google Glass with Wi-Fi and GPS antennas), GoPro action cameras (with Wi-Fi and Bluetooth antennas), etc. They are increasingly common in consumer electronics and for healthcare and medical applications. However, the development of compact, efficient wearable antennas is one of the major challenges in the development of wearable communication and medical systems. Technologies such as printed compact antennas and miniaturization techniques have been developed to create efficient, small wearable antennas which are the main objective of this book. Each chapter covers enough mathematical detail and explanations to enable electrical, electromagnetic and biomedical engineers and students and scientists from all areas to follow and understand the topics presented. New topics and design

methods are presented for the first time in the area of wearable antennas, metamaterial antennas and fractal antennas. The book covers wearable antennas, RF measurements techniques and measured results in the vicinity of the human body, setups and design considerations. The wearable antennas and devices presented in this book were analyzed by using HFSS and ADS 3D full-wave electromagnetics software. Explores wearable medical systems and antennas Explains the design and development of wearable communication systems Explores wearable reconfigurable antennas for communication and medical applications Discusses new types of metamaterial antennas and artificial magnetic conductors (AMC) Reviews textile antennas Dr. Albert Sabban holds a PhD in Electrical Engineering from the University of Colorado at Boulder, USA (1991), and an MBA from the Faculty of Management, Haifa University, Israel (2005). He is currently a Senior Lecturer and researcher at the Department of Electrical and Electronic Engineering at Kinneret and Ort Braude Engineering Colleges.

Measurement and Instrumentation introduces undergraduate engineering students to the measurement principles and the range of sensors and instruments that are used for measuring physical variables. Based on Morris's Measurement and Instrumentation Principles, this brand new text has been fully

updated with coverage of the latest developments in such measurement technologies as smart sensors, intelligent instruments, microsensors, digital recorders and displays and interfaces. Clearly and comprehensively written, this textbook provides students with the knowledge and tools, including examples in LABVIEW, to design and build measurement systems for virtually any engineering application. The text features chapters on data acquisition and signal processing with LabVIEW from Dr. Reza Langari, Professor of Mechanical Engineering at Texas A&M University. Early coverage of measurement system design provides students with a better framework for understanding the importance of studying measurement and instrumentation Includes significant material on data acquisition, coverage of sampling theory and linkage to acquisition/processing software, providing students with a more modern approach to the subject matter, in line with actual data acquisition and instrumentation techniques now used in industry. Extensive coverage of uncertainty (inaccuracy) aids students' ability to determine the precision of instruments Integrated use of LabVIEW examples and problems enhances students' ability to understand and retain content

If youre involved with the design, installation or maintenance of mobile antenna systems, this thoroughly revised and updated edition of a classic Artech book

offers you the most current and comprehensive coverage of all the mandatory measurement techniques you need for your work in the field. This Second Edition presents critical new material in key areas, including radiation efficiency measurement, mobile phone usage position, and MIMO (multiple-input/multiple-output) antennas. This unique resource provides in-depth examinations of all relevant mobile antenna measurement theories, along with practical measurement procedures and examples to show you how its done. Topics include propagation measurement, antenna characteristics measurement, radiation power measurement, human interaction measurement, base station siting and maintenance, and fading and field simulator systems. Supported with over 130 illustrations and more than 135 equations.

The Light Metals symposia at the TMS Annual Meeting & Exhibition present the most recent developments, discoveries, and practices in primary aluminum science and technology. The annual Light Metals volume has become the definitive reference in the field of aluminum production and related light metal technologies. The 2018 collection includes papers from the following symposia: 1.Alumina and Bauxite2.Aluminum Alloys, Processing, and Characterization3.Aluminum Reduction Technology4.Cast Shop Technology5. Cast Shop Technology: Energy Joint Session6. Cast Shop Technology:

Fundamentals of Aluminum Alloy Solidification Joint Session7. Cast Shop Technology: Recycling and Sustainability Joint Session8. Electrode Technology for Aluminum Production9. Perfluorocarbon Generation and Emissions from Industrial Processes10. Scandium Extraction and Use in Aluminum Alloys
Proceedings of the NATO Advanced Research Workshop, Smolenice, Slovakia, May 4-8, 1997

This book constitutes the thoroughly refereed post-proceedings of the Second International IFIP Workshop on Autonomic Communication, WAC 2005, held in Athens, Greece in October 2005. The 22 revised full papers presented together with one keynote paper, three invited papers and two panel summaries were carefully selected during two rounds of reviewing and improvement from numerous submissions. The papers discuss the principles of Autonomic Communication (AC).

This classic, definitive reference work for all those involved in environmental health is now available in its 19th edition. Significant changes include those made to chapters on food safety and hygiene, environmental protection, the organisation and management of environmental health in the UK, port health, and waste management. New chapters have been added on health development, an introduction to health and housing, contaminated land, and environmental health in emergency planning, as well as a new

glossary of abbreviations and acronyms. New material on training and standards, IT, practical risk assessment, and investigatory powers is also included. Each chapter reflects the wider background against which the subjects must be studied and the new concepts and approaches that have emerged over the past few years.

Wearable antennas are meant to be incorporated as part of clothing or placed close to the body. Wearable antennas can be used in countless communication applications including tracking and navigation, medical applications, imaging and detection, RFID, mobile computing and public safety. The book "Novel Wearable Antennas for Communication and Medical Systems" discusses the challenges and technology to develop compact, efficient, wearable antennas. The book begins by presenting elementary communication, electromagnetics and antenna topics needed for engineers and students that do not have a background in design, principles, and features of antennas, printed antennas, wearable antennas, and compact antennas for communication and medical applications. Throughout the book each chapter also covers sufficient mathematical details, physical details and explanations to enable the reader to follow and understand the topics presented. New topics and design methods in the area of wearable antennas, metamaterial antennas, active printed antennas and fractal antennas for communication and medical systems are presented and discussed throughout the book. The book presents computed and measured results in the vicinity of the human body. The book also covers topics such as RF measurement techniques,

measurement setups and design considerations. The antennas developed and analyzed in this book were designed and optimized by using 3D full-wave electromagnetics software.

The first encyclopedia in the field, the International Encyclopedia of Ergonomics and Human Factors provides a comprehensive and authoritative compendium of current knowledge on ergonomics and human factors. It gives specific information on concepts and tools unique to ergonomics. About 500 entries, published in three volumes and on CD-ROM, are pre

The discipline of antenna theory has experienced vast technological changes. In response, Constantine Balanis has updated his classic text, Antenna Theory, offering the most recent look at all the necessary topics. New material includes smart antennas and fractal antennas, along with the latest applications in wireless communications. Multimedia material on an accompanying CD presents PowerPoint viewgraphs of lecture notes, interactive review questions, Java animations and applets, and MATLAB features. Like the previous editions, Antenna Theory, Third Edition meets the needs of electrical engineering and physics students at the senior undergraduate and beginning graduate levels, and those of practicing engineers as well. It is a benchmark text for mastering the latest theory in the subject, and for better understanding the technological applications. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department.

Despite policy directives, standards and guidelines, indoor environmental quality is still poor in many cases. The Healthy Indoor Environment, winner of the 2016 IDEC Book Award, aims to help architects, building engineers and anyone concerned with the wellbeing of building occupants to better understand the effects of spending time in buildings on health and comfort. In three clear parts dedicated to mechanisms, assessment and analysis, the book looks at different indoor stressors and their effects on wellbeing in a variety of scenarios with a range of tools and methods. The book supports a more holistic way of evaluating indoor environments and argues that a clear understanding of how the human body and mind receive, perceive and respond to indoor conditions is needed. At the national, European and worldwide level, it is acknowledged that a healthy and comfortable indoor environment is important both for the quality of life, now and in the future, and for the creation of truly sustainable buildings. Moreover, current methods of risk assessment are no longer adequate: a different view on indoor environment is required. Highly illustrated and full of practical examples, the book makes recommendations for future procedures for investigating indoor environmental quality based on an interdisciplinary understanding of the mechanisms of responses to stressors. It forms the basis for the development of an integrated approach towards assessment of indoor environmental quality.

Trade magazines and review articles describe MWD in casualterms, e.g., positive versus negative pulsers, continuous wavesystems, drilling channel noise and

attenuation, in very simpleterms absent of technical rigor. However, few trulyscientific discussions are available on existing methods, let alonethe advances necessary for high-data-rate telemetry. Withouta strong foundation building on solid acoustic principles, rigorousmathematics, and of course, fast, inexpensive and efficient testingof mechanical designs, low data rates will impose unacceptablequality issues to real-time formation evaluation for years tocome. This book promises to change all of this. The lead authorand M.I.T. educated scientist, Wilson Chin, and Yinao Su,Academician, Chinese Academy of Engineering, and other teammembers, have written the only book available that developsmud pulse telemetry from first principles, adapting sound acousticprinciples to rigorous signal processing and efficient wind tunneltesting. In fact, the methods and telemetry principlesdeveloped in the book were recently adopted by one of theworld's largest industrial corporations in its mission toredefine the face of MWD. The entire engineering history for continuous wave telemetry iscovered: anecdotal stories and their fallacies, original hardwareproblems and their solutions, different noise mechanisms and theirsignal processing solutions, apparent paradoxes encountered infield tests and simple explanations to complicated questions, andso on, are discussed in complete "tell all" detail forstudents, research professors and professional engineersalike. These include signal processing algorithms, signalenhancement methods, and highly efficient "short" and"long wind tunnel" test methods, whose results can bedynamically re-scaled to real muds flowing at any

speed. Amust read for all petroleum engineering professionals!

When we think of indoor pollution, we usually think of conditions originating from faulty ventilation systems, second hand smoke, and other air borne pollutants. Taking an in-depth, hard science look at the problems of indoor environmental pollution, Indoor Environmental Quality covers all the major indoor contaminants - inorganic, organic, and bio

TRB's Transit Cooperative Research Program (TCRP) Report 141: A Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry explores the use of performance measurement and benchmarking as tools to help identify the strengths and weaknesses of a transit organization, set goals or performance targets, and identify best practices to improve performance.

The indoor environment affects occupants' health and comfort. Poor environmental conditions and indoor contaminants are estimated to cost the U.S. economy tens of billions of dollars a year in exacerbation of illnesses like asthma, allergic symptoms, and subsequent lost productivity. Climate change has the potential to affect the indoor environment because conditions inside buildings are influenced by conditions outside them. Climate Change, the Indoor Environment, and Health addresses the impacts that climate change may have on the indoor environment and the resulting health effects. It finds that steps taken to mitigate climate change may cause or exacerbate harmful indoor environmental conditions. The book discusses the role the Environmental Protection Agency (EPA) should take in informing the public, health professionals, and those in the building industry about potential risks and what can be done to address them. The study also recommends that building codes account for climate change projections; that federal agencies join to develop or refine protocols and testing

standards for evaluating emissions from materials, furnishings, and appliances used in buildings; and that building weatherization efforts include consideration of health effects. Climate Change, the Indoor Environment, and Health is written primarily for the EPA and other federal agencies, organizations, and researchers with interests in public health; the environment; building design, construction, and operation; and climate issues.

The Healthy Indoor EnvironmentHow to assess occupants' wellbeing in buildingsRoutledge

Competing in both high and low-cost operating environments can present a number of unique challenges. In light of global competition and the changing scope of various industries due to technological advancement, these challenges must be addressed in order to ensure business success. Global Perspectives on Achieving Success in High and Low Cost Operating Environments features a collection of research and case studies addressing contemporary issues surrounding operational success in various regions. Business professionals, managers, academics, and upper-level students will find this publication an essential resource for the latest tools and solutions for managing operations in diverse operating environments.

Trade magazines and review articles describe MWD in casual terms, e.g., positive versus negative pulsers, continuous wave systems, drilling channel noise and attenuation, in very simple terms absent of technical rigor. However, few truly scientific discussions are available on existing methods, let alone the advances necessary for high-data-rate telemetry. Without a strong foundation building on solid acoustic principles, rigorous mathematics, and of course, fast, inexpensive and efficient testing of mechanical designs, low data rates will impose unacceptable quality issues to real-time formation evaluation for years to come. This all-new revised second edition of an instant classic promises to change all of this. The lead author and

M.I.T.-educated scientist, Wilson Chin, has written the only book available that develops mud pulse telemetry from first principles, adapting sound acoustic principles to rigorous signal processing and efficient wind tunnel testing. In fact, the methods and telemetry principles developed in the book were recently adopted by one of the world's largest industrial corporations in its mission to redefine the face of MWD. The entire engineering history for continuous wave telemetry is covered: anecdotal stories and their fallacies, original hardware problems and their solutions, different noise mechanisms and their signal processing solutions, apparent paradoxes encountered in field tests and simple explanations to complicated questions, and so on, are discussed in complete "tell all" detail for students, research professors and professional engineers alike. These include signal processing algorithms, signal enhancement methods, and highly efficient "short" and "long wind tunnel" test methods, whose results can be dynamically re-scaled to real muds flowing at any speed. A must read for all petroleum engineering professionals!

Low-visibility antennas have many attractive features, such as being low-profile, flexible, lightweight, small-volume, and low-cost. Low-Visibility Antennas for Communication Systems provides explicit guidelines for the development of these antennas. Offering valuable insight into emerging antenna technologies, the book:Introduces the fundamental t

Presents wideband RF technologies and antennas in the microwave band and millimeter-wave band This book provides an up-to-date introduction to the technologies, design, and test procedures of RF components and systems at microwave frequencies.

The book begins with a review of the elementary electromagnetics and antenna topics needed for students and engineers with no basic background in electromagnetic and antenna theory. These introductory chapters will allow readers to study and understand the basic design principles and features of RF and communication systems for communications and medical applications. After this introduction, the author examines MIC, MMIC, MEMS, and LTCC technologies. The text will also present information on meta-materials, design of microwave and mm wave systems, along with a look at microwave and mm wave receivers, transmitters and antennas. Discusses printed antennas for wireless communication systems and wearable antennas for communications and medical applications Presents design considerations with both computed and measured results of RF communication modules and CAD tools Includes end-of-chapter problems and exercises Wideband RF Technologies and Antennas in Microwave Frequencies is designed to help electrical engineers and undergraduate students to understand basic communication and RF systems definition, electromagnetic and antennas theory and fundamentals with minimum integral and differential equations. Albert Sabban, PhD, is a Senior Researcher and Lecturer at Ort Braude College Karmiel Israel. Dr. Sabban was RF and antenna specialist at communication and Biomedical Hi-tech Companies. He designed wearable compact antennas to medical systems. From 1976 to 2007, Dr. Albert Sabban worked as a senior R&D scientist and project leader in RAFAEL.

Industrial Ventilation Design Guidebook, Volume 2: Engineering Design and Applications brings together researchers, engineers (both design and plants), and scientists to develop a fundamental scientific understanding of ventilation to help engineers implement state-of-the-art ventilation and contaminant control technology. Now in two volumes, this reference contains extensive revisions and updates as well as a unique section on best practices for the following industrial sectors: Automotive; Cement; Biomass Gasifiers; Advanced Manufacturing; Industrial 4.0); Non-ferrous Smelters; Lime Kilns; Pulp and Paper; Semiconductor Industry; Steelmaking; Mining. Brings together global researchers and engineers to solve complex ventilation and contaminant control problems using state-of-the-art design equations Includes an expanded section on modeling and its practical applications based on recent advances in research Features a new chapter on best practices for specific industrial sectors
The radio-frequency environment has an obvious and direct influence on the performance of electronic systems that depend upon the transfer of energy through space for their operation. Examples of such systems include radio communications, radio navigation, radar, and commercial AM, FM, and television broadcast systems. Less obvious, but nonetheless significant, is the influence the radio-frequency environment can have on electronic systems that ostensibly do not depend on the transfer of energy through space, for example, the degradation caused by electromagnetic fields generated by citizens band radios, radars, lightning, power lines,

and electrostatic discharges on the performance of computers, process control equipments, automotive elec tronics and biomedical instrumentation. The beneficial and deleterious effects of man-made and naturally occurring electromagnetic fields on biological systems, including human beings, although little understood at present, may have more important long-term consequences than upon in the operation of equipment. As the radio-frequency environment evolves with the progression of the electronic age, the necessity to monitor, measure, and characterize it assumes greater importance. The purpose of this book is to provide, in a single self contained volume, the necessary background and methodology needed to execute a survey of the RF environment. We have included representative data on natural and man-made ambients in a variety of settings, wave propagation fundamentals, instrumentation descriptions, survey procedures, and data ana lysis techniques. Much experimental effort has been expended during this century to es tablish an adequate body of knowledge on the radio-frequency environment.

Climate change is believed to be a great challenge to built environment professionals in design and management. An integrated approach in delivering a sustainable built environment is desired by the built environment professional institutions. The aim of this book is to provide an advanced understanding of the key subjects required for the design and management of modern built environments to meet carbon emission reduction targets. In Design and Management of Sustainable Built Environments, an

international group of experts provide comprehensive and the most up-to-date knowledge, covering sustainable urban and building design, management and assessment. The best practice case studies of the implementation of sustainable technology and management from the BRE Innovation Park are included. Design and Management of Sustainable Built Environments will be of interest to urban and building designers, environmental engineers, and building performance assessors. It will be particularly useful as a reference book for undergraduate and postgraduate students in the built environment field.

HVAC systems, load shifting, indoor climate, and energy and ventilation performance analyses are the key topics when improving energy performance in new and renovated buildings. This development has been boosted by the recently established nearly zero energy building requirements that will soon be in use in all EU Member States, as well as similar long-term zero energy building targets in Japan, the US, and other countries. The research covered in this Special Issue provides evidence of how new technical solutions have worked, in practice, in new or renovated buildings, and also discusses problems and how solutions should be further developed. Another focus is on the more detailed calculation methods needed for the correct design and sizing of dedicated systems, and for accurate quantification of energy savings. Occupant behavior and building operation is also examined, in order to avoid common performance gaps between calculated and measured performance. These topics demonstrate the

challenge of high performance buildings as, in the end, comfortable buildings with good indoor climate which are easy and cheap to operate and maintain are expected by end customers. Ventilation performance, heating and cooling, sizing, energy predictions and optimization, load shifting, and field studies are some of the key topics in this Special Issue, contributing to the future of high performance buildings with reliable operation.

Covering the fundamentals of air-borne particles and settled dust in the indoor environment, this handy reference investigates: * relevant definitions and terminology, * characteristics, * sources, * sampling techniques and instrumentation, * exposure assessment, * monitoring methods. The result is a useful and comprehensive overview for chemists, physicists and biologists, postgraduate students, medical practitioners, occupational health professionals, building owners and managers, building, construction and air-conditioning engineers, architects, environmental lawyers, government and regulatory professionals.

Published in 1986: This book tells the story of how various persons and groups have successfully dealt with a type of problem which may threaten the lives and health of every group of humans – every community. The problem is that of a polluted environment.

This book deals with indoor environmental quality (IEQ), which encompasses

diverse factors that affect human life inside a building. These factors include indoor air quality (IAQ), lighting, acoustics, drinking water, ergonomics, electromagnetic radiation, and so on. Enhanced environmental quality can improve the quality of life and productivity of the occupants, increase the resale value of the building, and minimize the penalties on building owners. The book covers an overview of IEQ and its research progress, IAQ and its monitoring, the best indoor illumination scenes, IEQ in healthcare buildings, and acoustic comfort in residential buildings and places of worship. This book is expected to benefit undergraduate and postgraduate students, researchers, teachers, practitioners, policy makers, and every individual who has a concern for healthy life.

This book focuses on non-GNSS positioning systems and approaches. Although it addresses both theoretical and practical aspects, the primary focus is on engineering practice. This is achieved by providing in-depth studies on a number of major topics such as tracking system architecture, link budget, system design, implementation, testing, and performance evaluation. It studies four positioning application cases in detail: covert vehicle tracking, horse racing, rowing, and tracking for field sports. Its comprehensive and systematic treatment of practical issues in wireless positioning makes the book particularly suitable for readers who are interested in learning about practical wireless positioning solutions. It will

also benefit researchers, engineers and graduate students in fields such as positioning and navigation, geospatial engineering and telecommunications. Ground Based Wireless Positioning provides an in-depth treatment of non-GPS based wireless positioning techniques, with a balance between theory and engineering practice. The book presents the architecture, design and testing of a variety of wireless positioning systems based on the time-of-arrival, signal strength, and angle-of-arrival measurements. These techniques are essential for developing accurate wireless positioning systems which can operate reliably in both indoor and outdoor environments where the Global Positioning System (GPS) proves to be inadequate. The book covers a wide range of issues including radio propagation, parameter identification, statistical signal processing, optimization, and localization in large and multi-hop networks. A comprehensive study on the state-of-the-art techniques and methodologies in wireless positioning and tracking is provided, including anchor-based and anchor-free localisation in wireless sensor networks (WSN). The authors address real world issues such as multipath, non-line-of-sight (NLOS) propagation, accuracy limitations and measurement errors. Presenting the latest advances in the field, Ground Based Wireless Positioning is one of the first books to cover non-GPS based technologies for wireless positioning. It serves as an indispensable

reference for researchers and engineers specialising in the fields of localization and tracking, and wireless sensor networks. Provides a comprehensive treatment of methodologies and algorithms for positioning and tracking Includes practical issues and case studies in designing real wireless positioning systems Explains non-line-of-sight (NLOS) radio propagation and NLOS mitigation techniques Balances solid theory with engineering practice of non-GPS wireless systems This book presents WHO guidelines for the protection of public health from risks due to a number of chemicals commonly present in indoor air. The substances considered in this review, i.e. benzene, carbon monoxide, formaldehyde, naphthalene, nitrogen dioxide, polycyclic aromatic hydrocarbons (especially benzo[a]pyrene), radon, trichloroethylene and tetrachloroethylene, have indoor sources, are known in respect of their hazardousness to health and are often found indoors in concentrations of health concern. The guidelines are targeted at public health professionals involved in preventing health risks of environmental exposures, as well as specialists and authorities involved in the design and use of buildings, indoor materials and products. They provide a scientific basis for legally enforceable standards.