

ACR CT Equipment QC

Hopkins CT and MRI Center
1632 Imaging Center Way, Lake, MN 55162
CT Room 1 - ID 11252014
February 2020

Generated: 8/4/2021
By: Beatrice DuPont

Date	WFO	AC	Mode	CT water (HU)	Noise (SD)	Artifacts	P/T	Initials
			Axial	(L=5.00 U=5.00)	(L=7.00 U=7.00)			
			Helical	(L=5.00 U=5.00)	(L=7.00 U=7.00)			
2/1/2020								
2/2/2020								
2/3/2020	P	P	Helical	5.19	3.12	Pass	✓	Bw
2/4/2020	P	P	Axial	5.42	3.12	Pass	✓	Bw
2/5/2020	P	P	Helical	5.28	3.49	Pass	✓	Bw
2/6/2020	P	P	Axial	5.26	3.03	Pass	✓	Bw
2/7/2020	P	P	Helical	5.46	3.89	Pass	✓	Bw
2/8/2020								
2/9/2020								
2/10/2020	P	P	Axial	5.42	3.43	Pass	✓	Bw
2/11/2020	P	P	Helical	5.17	3.06	Pass	✓	Bw
2/12/2020	P	P	Axial	5.16	2.83	Pass	✓	Bw
2/13/2020	P	P	Helical	5.40	2.83	Pass	✓	Bw
2/14/2020	P	P	Axial	5.35	3.42	Pass	✓	Bw
2/15/2020								
2/16/2020								
2/17/2020	P	P	Helical	5.00	3.16	Pass	✗	Bw
2/18/2020			Axial				✗	Bw
2/19/2020	P	P	Helical	5.96	3.53	Pass	✓	Bw
2/20/2020	P	P	Axial	5.22	3.32	Pass	✓	Bw
2/21/2020	P	P	Helical	5.84	3.21	Pass	✓	Bw
2/22/2020								
2/23/2020								
2/24/2020	P	P	Axial	5.40	3.03	Pass	✓	Bw
2/25/2020	P	P	Helical	5.17	2.56	Pass	✓	Bw
2/26/2020	P	P	Axial	5.28	3.33	Pass	✓	Bw
2/27/2020	P	P	Helical	5.23	2.93	Pass	✓	Bw
2/28/2020	P	P	Axial	5.18	3.93	Pass	✓	Bw
2/29/2020								

Monthly Visual Checklist		
Gantry	Table height indicator	Pass
	Table position indicator	Pass
	Angulation indicator	Pass
	Laser localization light	Pass
	High voltage cable (other cables)	Pass
CONTROL CONSOLE	Smoothness of table motion	Pass
	X-Ray on indicator	Pass
	Emergency switch	Pass
	Display window (with level)	Pass
	Panel switches (light meters)	Pass
OPERATOR	X-Ray on indicator	Pass
	Door interlocks	Pass
	Warning lights	Pass
	Interact system	Pass
	Plotting	Pass
SCANNING AREA	Service records	Pass
	Monthly Display Monitor	
	50%-100% contrast is discernible	Pass
	50%-100% contrast is discernible	Pass
	Distinct gray level steps	Pass
SCANNING AREA	High contrast patterns visible	Pass
	High contrast patterns visible	Pass
	Low contrast patterns visible	Pass
	No artifacts	Pass
	Window (L=100, W=110)	100
SCANNING AREA	Level (L=240, W=240)	110
	Date	02/24/2020
	Initials	Bw
	Monthly Large Artifact Check	
	If available, scan manufacturer's large phantom	
SCANNING AREA	Artifacts	Pass
	Date	02/24/2020
	Initials	Bw

Date of Test	Technologist	QC Test	Comments
02/17/2020	Winthrop, Brooke	Water Phantom - Helical	Feb 19 2020 9:59AM by Winthrop, Brooke Test failure was resolved automatically due to subsequent successful completion of Water Phantom - Helical test dated 02/19/2020 by Winthrop, Brooke. Feb 21 2020 9:58AM by Winthrop, Brooke (Resolution Remarks) service called Feb 21 2020 9:56AM by Winthrop, Brooke (Resolution Remarks) parts ordered
02/18/2020	Winthrop, Brooke	Water Phantom - Axial	Feb 21 2020 10:03AM by Winthrop, Brooke (Worksheet Skipped) Test not needed - Closed for Service/Preventive Maintenance
02/19/2020	Winthrop, Brooke	Water Phantom - Helical	Feb 21 2020 10:01AM by Winthrop, Brooke (Worksheet) service replaced parts, re-ran test

Acr Ct Qc Manual

Euclid Seeram



Acr Ct Qc Manual:

Rad Tech's Guide to Photon Counting Computed Tomography Euclid Seeram, 2025-06-30 Concise guide offering a thorough exploration of the transformative technology of photon counting Rad Tech's Guide to Photon Counting Computed Tomography is a comprehensive resource that enables readers to stay at the forefront of medical imaging with the first FDA cleared Photon Counting Computed Tomography PCCT scanner Ensuring compliance and cutting edge practice readers can prepare for the future with a guide that addresses upcoming educational requirements in medical imaging technology This book is designed for quick reference with precise bulleted guidance and material that aligns with international standards Rad Tech's Guide to Photon Counting Computed Tomography includes information on Essential physics of radiation attenuation in CT and the physical principles of MSCT imaging with a review of CT image quality Fundamental physical principles of PCCT including the technical design characteristics of their semiconductor sensors and associated electronics Advantages of PCCT systems compared to CT systems using EIDs with each advantage illustrated with selected anatomical areas Elements of the ACR manual for quality control of CT systems and quality assurance programs for a PCD CT imaging system Suitable for an international audience Rad Tech's Guide to Photon Counting Computed Tomography is an excellent reference for professionals and practitioners in the fields of computed tomography nuclear medicine diagnostic medical sonography magnetic resonance imaging and biomedical engineering technology

A Comprehensive Guide to Radiographic Sciences and Technology Euclid Seeram, 2021-04-06 A Comprehensive Guide to Radiographic Sciences and Technology is a concise review of radiographic physics and imaging perfect for students preparing for certification examinations such as the American Registry for Radiologic Technologists ARRT Aligned with the core radiographic science components of the current American Society of Radiologic Technologists ASRT curriculum this up to date resource covers topics including radiation production and characteristics imaging equipment digital image acquisition and display radiation protection basic principles of computed tomography and quality control The guide begins with an overview of the radiographic sciences and technology followed by detailed descriptions of the major components of digital radiographic imaging systems Subsequent sections discuss the essential aspects of diagnostic radiography and computed tomography including basic physics imaging modalities digital image processing quality control imaging informatics and basic concepts of radiobiology and radiation protection Throughout the book concise chapters summarise the critical knowledge required for effective and efficient imaging of the patient while emphasising the important yet commonly misunderstood relationship between radiation dose and image quality Written by an internationally recognised expert in the field this invaluable reference and guide Provides easy access to basic physics techniques equipment and safety guidelines for radiographic imaging Reflects the educational requirements of the American Society of Radiologic Technologists ASRT the Canadian Association of Medical Radiation Technologists CAMRT the College of Radiographers CoR and other radiography societies and associations worldwide Offers a range of pedagogical

tools such as chapter outlines key term definitions bulleted lists practical examples and links to current references and additional resources Includes charts diagrams photographs and x ray images A Comprehensive Guide to Radiographic Sciences and Technology is required reading for students in programs using ionizing radiation those preparing for the ARRT and other global radiography certification exams and practising technologists wanting to refresh their knowledge

Handbook of X-ray Imaging Paolo Russo, 2017-12-14 Containing chapter contributions from over 130 experts this unique publication is the first handbook dedicated to the physics and technology of X ray imaging offering extensive coverage of the field This highly comprehensive work is edited by one of the world s leading experts in X ray imaging physics and technology and has been created with guidance from a Scientific Board containing respected and renowned scientists from around the world The book s scope includes 2D and 3D X ray imaging techniques from soft X ray to megavoltage energies including computed tomography fluoroscopy dental imaging and small animal imaging with several chapters dedicated to breast imaging techniques 2D and 3D industrial imaging is incorporated including imaging of artworks Specific attention is dedicated to techniques of phase contrast X ray imaging The approach undertaken is one that illustrates the theory as well as the techniques and the devices routinely used in the various fields Computational aspects are fully covered including 3D reconstruction algorithms hard software phantoms and computer aided diagnosis Theories of image quality are fully illustrated Historical radioprotection radiation dosimetry quality assurance and educational aspects are also covered This handbook will be suitable for a very broad audience including graduate students in medical physics and biomedical engineering medical physics residents radiographers physicists and engineers in the field of imaging and non destructive industrial testing using X rays and scientists interested in understanding and using X ray imaging techniques The handbook s editor Dr Paolo Russo has over 30 years experience in the academic teaching of medical physics and X ray imaging research He has authored several book chapters in the field of X ray imaging is Editor in Chief of an international scientific journal in medical physics and has responsibilities in the publication committees of international scientific organizations in medical physics Features Comprehensive coverage of the use of X rays both in medical radiology and industrial testing The first handbook published to be dedicated to the physics and technology of X rays Handbook edited by world authority with contributions from experts in each field

CT of the Heart U. Joseph Schoepf, 2019-04-01 This book is a comprehensive and richly illustrated guide to cardiac CT its current state applications and future directions While the first edition of this text focused on what was then a novel instrument looking for application this edition comes at a time where a wealth of guideline driven robust and beneficial clinical applications have evolved that are enabled by an enormous and ever growing field of technology Accordingly the focus of the text has shifted from a technology centric to a more patient centric appraisal While the specifications and capabilities of the CT system itself remain front and center as the basis for diagnostic success much of the benefit derived from cardiac CT today comes from avant garde technologies enabling enhanced visualization quantitative

imaging and functional assessment along with exciting deep learning and artificial intelligence applications Cardiac CT is no longer a mere tool for non invasive coronary artery stenosis detection in the chest pain diagnostic algorithms cardiac CT has proven its value for uses as diverse as personalized cardiovascular risk stratification prediction and management diagnosing lesion specific ischemia guiding minimally invasive structural heart disease therapy and planning cardiovascular surgery among many others This second edition is an authoritative guide and reference for both novices and experts in the medical imaging sciences who have an interest in cardiac CT

X-Ray Imaging Systems for Biomedical Engineering Technology Euclid Seeram, 2023-11-27 This book addresses X Ray Imaging Systems intended for biomedical engineering technology students and practitioners and deals with the major technical components of x ray imaging modalities These modalities include film based imaging digital radiography and computed tomography Furthermore principles and concepts essential to the understanding of how these modalities function will be described These include fundamental radiation physics imaging informatics quality control and radiation protection considerations X Ray Imaging Systems for Biomedical Engineering Technology An Essential Guide is intended for biomedical engineering technologists who provide technical advice and services relating to digital radiography and CT departments not only in hospitals but in private facilities as well Students in radiological technology programs may also find this to be a useful resource

Computed Tomography Euclid Seeram, 2022-07-11 COMPUTED TOMOGRAPHY PHYSICS AND TECHNOLOGY In the newly updated second edition of *Computed Tomography Physics and Technology A Self Assessment Guide* distinguished computed tomography CT educator Euclid Seeram delivers a completely revised and expanded collection of multiple choice questions covering all relevant technological advances including the use of artificial intelligence in the field of CT In the book readers will find a focused emphasis on physics and technology an area where students of this discipline have traditionally struggled The questions are presented in a format similar to those found on the certification examinations of the American Registry of Radiologic Technologists ARRT the Canadian Association of Medical Radiation Technologists CAMRT and other professional medical imaging organizations around the world The author has also included true false questions short answer questions and relevant learning outcomes to aid students in their study of the subject Readers will also find brief notes on An introduction to computed tomography including an overview of the field and a historical perspective Digital image processing and the physics of computed tomography Data acquisition principles and technology and image reconstruction fundamentals Deep learning image reconstruction the major equipment components of a computed tomography scanner and image post processing and visualization Multislice CT Principles and Technology Image quality considerations CT Dosimetry and dose optimization strategies Quality control Perfect for radiological technology and diagnostic radiography students and practitioners *Computed Tomography Physics and Technology A Self Assessment Guide* will also earn a place in the libraries of biomedical engineering students and radiology residents in training

Quality Management in the Imaging Sciences

- **E-Book** Jeffrey Papp, 2023-09-18 Master all aspects of quality management and control in today's imaging environment. A true one of a kind text *Quality Management in the Imaging Sciences 7th Edition* provides the information you need to ensure that radiographic equipment operates properly and that it functions within accepted standards. Step by step instructions provide a guide to evaluating equipment and documenting results. Also included is coverage of the latest federal regulations, advances in technology and current QM certification requirements. Written by physics and diagnostic imaging educator Jeffrey Papp, this resource is an excellent tool to help you prepare for the ARRT Quality Management Advanced Level Examination. Coverage of quality management for all imaging sciences includes X ray equipment, fluoroscopy, CT, MRI, sonography and mammography. Step by step QM procedures include detailed instructions on how to evaluate imaging equipment and full sized sample documentation forms offer practice in recording results. Special icon and bolded type identify federal regulations important to quality management. Learning features include chapter outlines, learning objectives, key terms with definitions in the glossary, lab experiments and review questions at the end of each chapter. Useful appendix includes a review of the radiographic quality factors and a listing of agencies, organizations and committees related to quality control and assurance. Two 160 question practice exams on the Evolve website help you prepare for the ARRT advanced certification examination in Quality Management. **NEW** Updated content reflects the latest ARRT Quality Management certification requirements. **NEW** Imaging updates include new technologies, current regulations and ACR accreditation requirements.

Clinical Imaging Physics Ehsan Samei, Douglas E. Pfeiffer, 2020-04-20 *Clinical Medical Imaging Physics: Current and Emerging Practice* is the first text of its kind, a comprehensive reference work covering all imaging modalities in use in clinical medicine today. Destined to become a classic in the field, this book provides state of practice descriptions for each imaging modality followed by special sections on new and emerging applications, technologies and practices. Authored by luminaries in the field of medical physics, this resource is a sophisticated one volume handbook to a fast advancing field that is becoming ever more central to contemporary clinical medicine. Summarizes the current state of clinical medical imaging physics in one volume with a focus on emerging technologies and applications. Provides comprehensive coverage of all key clinical imaging modalities taking into account the new realities in healthcare practice. Features a strong focus on clinical application of principles and technology now and in the future. Contains authoritative text compiled by world renowned editors and contributors responsible for guiding the development of the field. Practicing radiologists and medical physicists will appreciate *Clinical Medical Imaging Physics* as a peerless everyday reference work. Additionally, graduate students and residents in medical physics and radiology will find this book essential as they study for their board exams.

Handbook of Radiotherapy Physics Philip Mayles, Alan E. Nahum, J.C. Rosenwald, 2021-12-30 From the essential background physics and radiobiology to the latest imaging and treatment modalities, the updated second edition of *Handbook of Radiotherapy Physics: Theory and Practice* covers all aspects of the subject. In Volume 1, Part A includes the Interaction of

Radiation with Matter charged particles and photons and the Fundamentals of Dosimetry with an extensive section on small field physics Part B covers Radiobiology with increased emphasis on hypofractionation Part C describes Equipment for Imaging and Therapy including MR guided linear accelerators Part D on Dose Measurement includes chapters on ionisation chambers solid state detectors film and gels as well as a detailed description and explanation of Codes of Practice for Reference Dose Determination including detector correction factors in small fields Part E describes the properties of Clinical external Beams The various methods or algorithms for Computing Doses in Patients irradiated by photon electron and proton beams are described in Part F with increased emphasis on Monte Carlo based and grid based deterministic algorithms In Volume 2 Part G covers all aspects of Treatment Planning including CT MR and Radionuclide based patient imaging Intensity Modulated Photon Beams Electron and Proton Beams Stereotactic and Total Body Irradiation and the use of the dosimetric and radiobiological metrics TCP and NTCP for plan evaluation and optimisation Quality Assurance fundamentals with application to equipment and processes are covered in Part H Radionuclides equipment and methods for Brachytherapy and Targeted Molecular Therapy are covered in Parts I and J respectively Finally Part K is devoted to Radiation Protection of the public staff and patients Extensive tables of Physical Constants Photon Electron and Proton Interaction data and typical Photon Beam and Radionuclide data are given in Part L Edited by recognised authorities in the field with individual chapters written by renowned specialists this second edition of Handbook of Radiotherapy Physics provides the essential up to date theoretical and practical knowledge to deliver safe and effective radiotherapy It will be of interest to clinical and research medical physicists radiation oncologists radiation technologists PhD and Master s students

3D Printing in Medicine

Frank J. Rybicki, Gerald T. Grant, 2017-09-27 This book describes the fundamentals of three dimensional 3D printing addresses the practical aspects of establishing a 3D printing service in a medical facility and explains the enormous potential value of rendering images as 3D printed models capable of providing tactile feedback and tangible information on both anatomic and pathologic states Individual chapters also focus on selected areas of applications for 3D printing including musculoskeletal craniomaxillofacial cardiovascular and neurosurgery applications Challenges and opportunities related to training materials and equipment and guidelines are addressed and the overall costs of a 3D printing lab and the balancing of these costs against clinical benefits are discussed Radiologists surgeons and other physicians will find this book to be a rich source of information on the practicalities and expanding medical applications of 3D printing

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