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uCT 820

Expand Your Access to Premium CT Applications

ABOUT UIH

At United Imaging, we develop and produce advanced medical products, digital healthcare solutions, and intelligent solutions that cover the entire process of imaging diagnosis and treatment. Founded in 2011 with global headquarters in Shanghai, our company has subsidiaries and R&D centers across China, the United States, and other parts of the world. With a cutting-edge digital portfolio and a mission of broader access to healthcare for all, we help drive industry progress and bold change.

To learn more, visit https://www.united-imaging.com

At a Glance

uCT 820 scanner is equipped with advanced AI technologies and designed with a patient-centered philosophy. It provides comprehensive tissue characterization, minimizes radiation exposure, enables rapid volumetric imaging, and streamlines exam setup for enhanced patient throughput. uCT 820 delivers an exceptional premium CT examination experience for both you and your patients.

Premium Clinical Versatility

With an AI-empowered workflow that covers the entire process from scanning to diagnosis, uCT 820 scanner provides an excellent CT examination experience that is both highly intelligent and precise. You can now deal with challenging clinical scenarios with ease

Premium Patient Care

With full-chain low-dose technology and patient-friendly design, uCT 820 brings unparalleled patient experience, allowing radiologists and technologists to focus more on the patients rather than the procedures

Premium Clinical Versatility

The challenge :

Efficient throughput management and the ability to fully focus on patient care often hindered by complicated scanner operation and cumbersome workflows, particularly in advanced clinical fields

How does premium CT improve this?

Provides fast volumetric imaging for cardiac, dynamic, and perfusion acquisitions using wide detectors or fast spiral scans

Automates exam setup to reduce human errors and improve patient throughput

ECRI [Internet]. Evaluation Background: Premium CT Systems. Available from: https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death

Designed for Ease with AI

Our AI-empowered workflow enables fast and reproducible positioning with a single click and automatically selects the scan range based on the scout, optimizing image quality and dose to the patient. This platform adapts to your growing department needs and works to support a large daily patient throughput while maintaining high image quality

Positioning

uAI Vision provides streamlined, standardized isocentric positioning for each exam

Scanning

Tailored imaging for each patient via intelligent scan planning

Reconstruction

Significantly enhances clinical image quality by employing a range of AI-empowered reconstruction algorithms

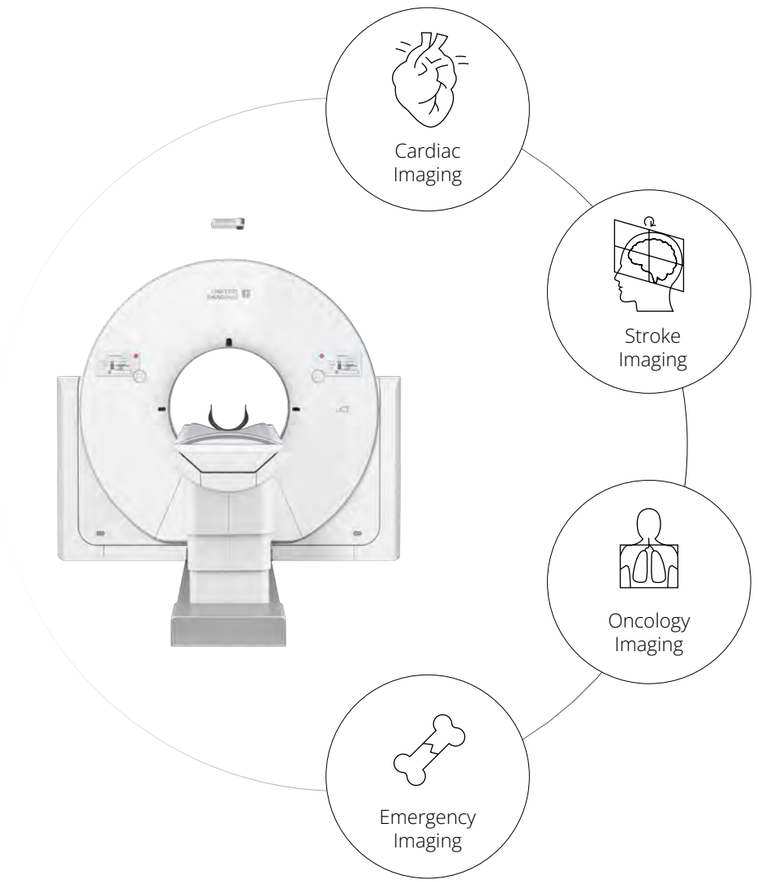
Post Processing ※

Streamlines post-processing delivering superior quality CT images for high diagnostic efficiency

※Independent of CT, separate CE certification.

Experience Premium Quality in All Fields

uCT 820 features the uAI Vision 3D camera and utilizes industry-leading AI-empowered technologies throughout the system, offering precise imaging and ease of use for routine to advanced applications, including cardiac, stroke, trauma and tumor



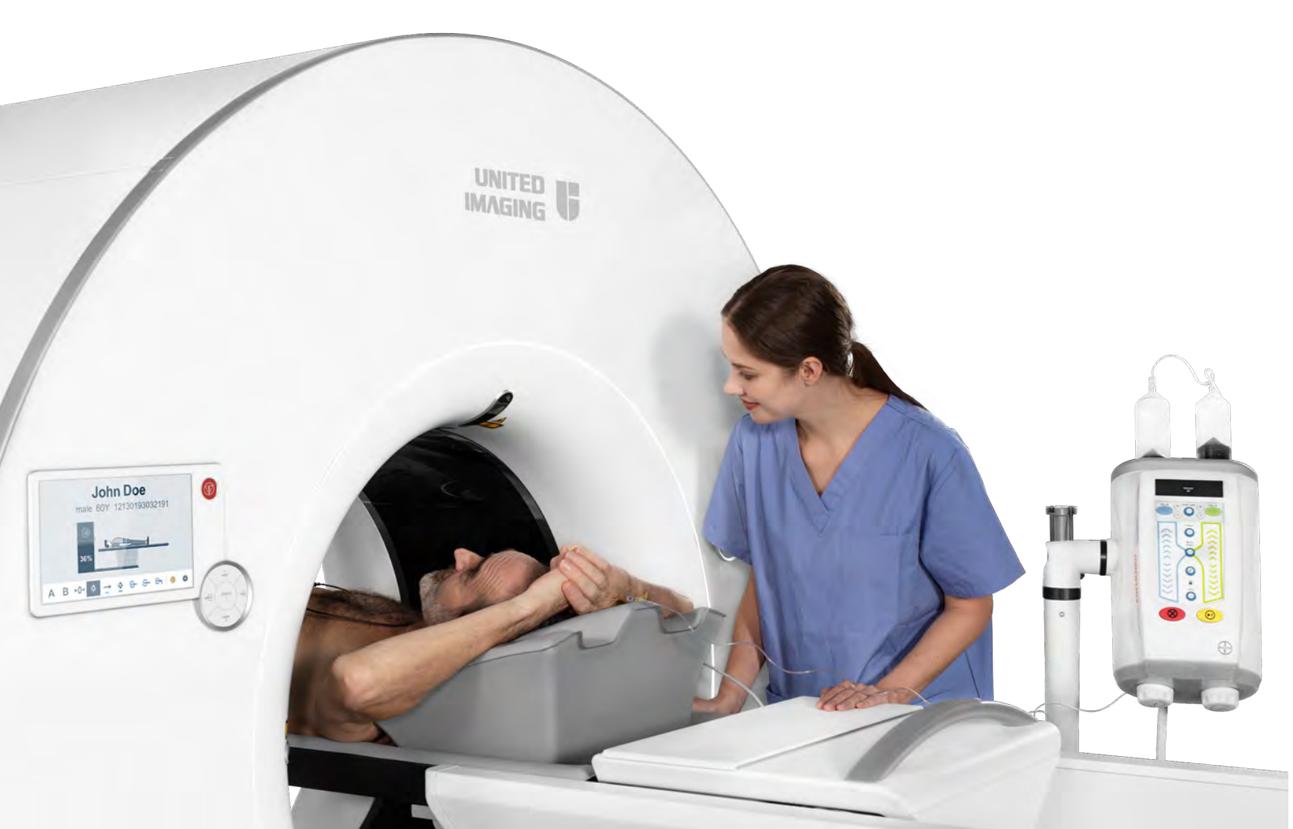
ECRI [Internet]. Evaluation Background: Premium CT Systems. Available from: https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death

Selecting a CT Scanner for Cardiac Imaging

Due to the rapid motion of the heart, and the small structures to be imaged , CCTA is one of the most challenging CT applications.In recent years, CT cardiac imaging has made great strides in improving the diagnostic accuracy for most patients. There is, however, a subset of patients that can present challenges. uCT 820 addresses these challenges by delivering significant technological enhancements tuned to each of these challenges.

The challenges

- Heart rate greater than 65 bpm
- Coronary artery stents
- Severe calcified plaques
- Arrhythmia (heart rate variation not specified)
- Coronary artery bypass grafts



Beating the Challenges

Increasing temporal resolution is essential for a CCTA scanner

The temporal resolution of CT scanners can be enhanced by various methods

Good intrinsic TR

Temporal Resolution is the most robust method of achieving motion-free images

Multi-segment reconstruction

Where data are taken from successive heartbeats to reconstruct images at a particular anatomical location

Motion correction algorithms

Another approach to improving the intrinsic TR is the use of software motion correction algorithms to correct for cardiac motion

Selecting a CT scanner for cardiac imaging: the heart of the matter ※

However, a good intrinsic temporal resolution, together with selection of the optimal cardiac phase, is currently regarded as the most robust method for eliminating coronary artery motion artifacts

※Maria A. Lewis, Ana Pascoal et al. . Selecting a CT scanner for cardiac imaging: the heart of the matter. British Institute of Radiology(2016)

Premium Cardiac Imaging

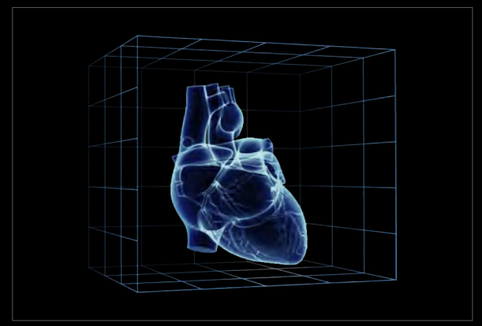
Designed to make coronary CTA imaging more robust than ever, uCT 820 is engineered with 0.25s rotation speed, unprecedented 25ms ※ temporal resolution enabled with CardioCapture and an intelligent cardiac workflow

Founded on Innovation

0.25s Rotation Speed

CardioXphase

CardioCapture



※Enabled with CardioCapture&0.25s rotation speed.

0.25s Rotation Speed

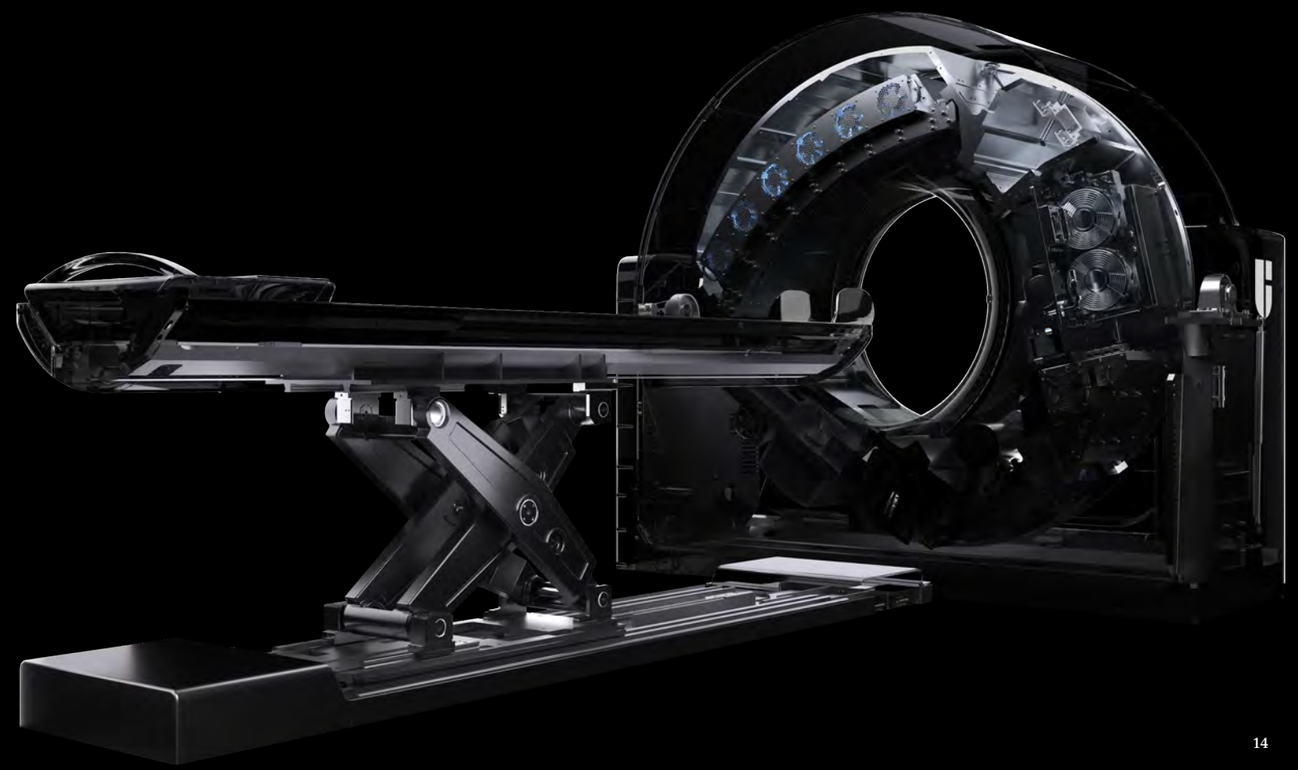
The system features a one-piece cast gantry structure integrated with a direct motor system that provides precise rotation speed control, enabling a 0.25s rotation speed and exceptional temporal resolution

Fully Integrated Digital ASIC

By utilizing the fully integrated digital ASIC, the detector is equipped with swift data readout and transmission capabilities, showing remarkable rotation speed and efficiency in achieving high data sampling rate and rapid processing.

Integrated High-strength Gantry

The rotor experiences centrifugal forces of up to 40 times the force of gravity, enabling it to reach a rotation speed of up to 0.25 s/ 360°

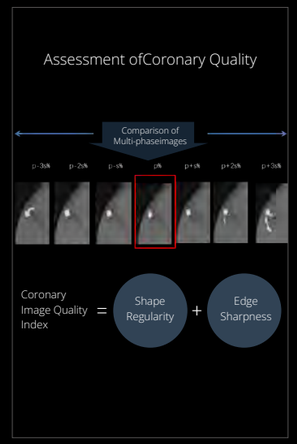


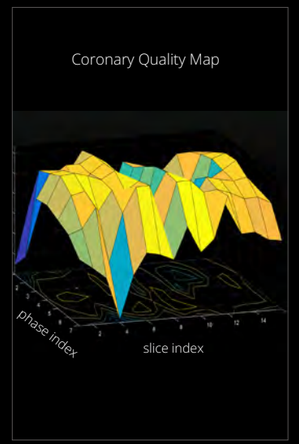
CardioXphase

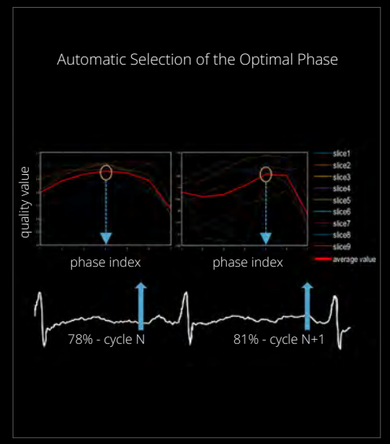
By automatically choosing the phase with the least motion artifacts, CardioXphase enables high-quality coronary CTA imaging while reducing the technologist's effort

Assessment of Coronary Image Quality

Taking into account differences in heart beats and artery positions, CardioXphase intelligently reconstructs adjacent phase coronary artery images, determines the quality index, and creates the optimal images





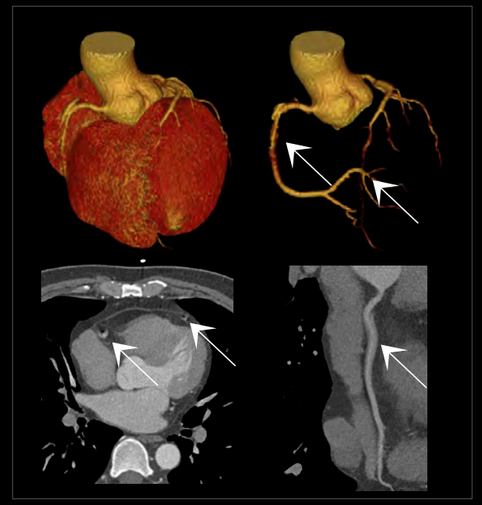


Automatic Selection of the Optimal Phase

The coronary artery quality index enables the adaptive acquisition of the optimal phase for each layer of the coronary arteries, resulting in improved visualization of intricate coronary artery features with enhanced clarity

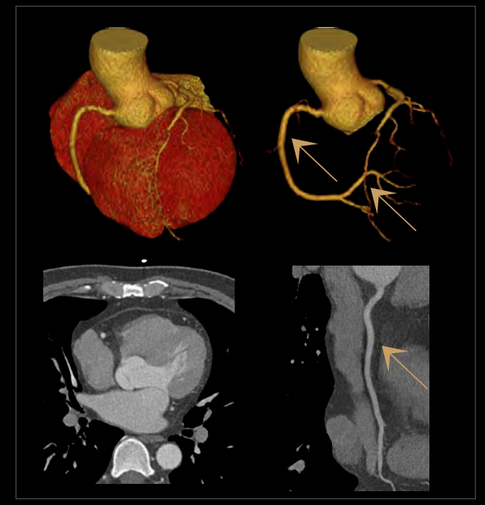
Conventional algorithm

(Default Phase 75%)



CardioXphase

(Best Phase in the Diastole)



Automatically selecting the best phase improves the quality of coronary imaging

CardioCapture

Using an intelligent motion correction with an AI-empowered coronary artery algorithm, we have improved the temporal resolution for cardiac imaging to 25 ms

Systematic Coronary Artery Motion Correction

Coronary artery motion correction requires a comprehensive and meticulous approach that involves more than just identifying and removing individual artifacts, but rather entails a systematic correction process that addresses the motion of the entire coronary artery model

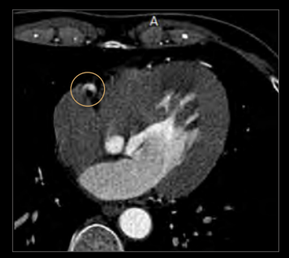
Images to be corrected

Reconstructing multiple images at consecutive time points
Extracting the motion paths

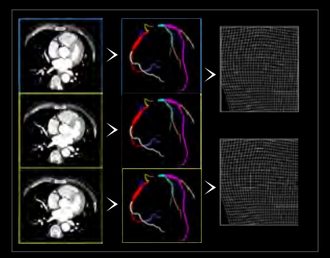
Correcting the artifacts based on the motion paths

It utilizes a deep-learning network to extract the centerlines of the neighboring multi-phase coronary arteries, accurately evaluates coronary artery motion, then corrects the motion in all phase images.

CardioCapture effectively resolves the issue of motion artifacts in coronary imaging. CardioCapture reconstructs many adjacent phases centered on the one selected by CardioXphase



Coronary image with motion artifacts



Multi-phase reconstruction
AI-based coronary extraction
Motion maps generated based on the extracted coronary arteries

Corrected images

AI Empowered Coronary Artery Motion Correction

Increasing the Temporal Resolution to 25 milliseconds

Conventional algorithm

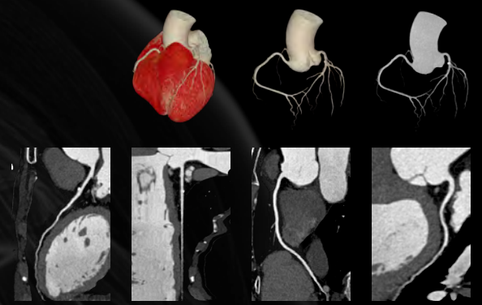
CardioCapture

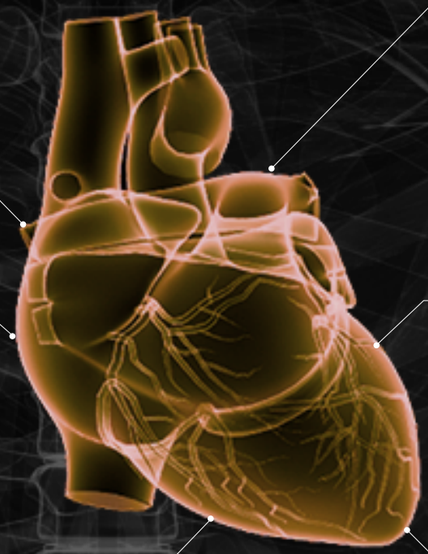
Improves coronary artery sharpnessy and reduces motion artifacts using AI algorithms

See more with ease

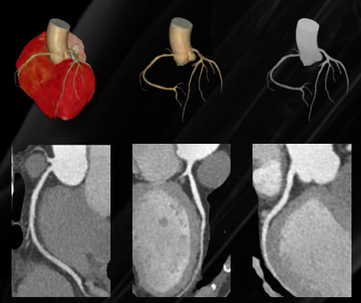
High heart rate 81-91 bpm

Irregular heart rate 51-89 bpm

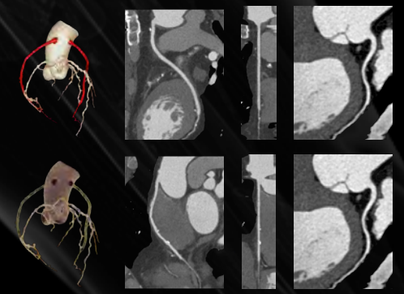




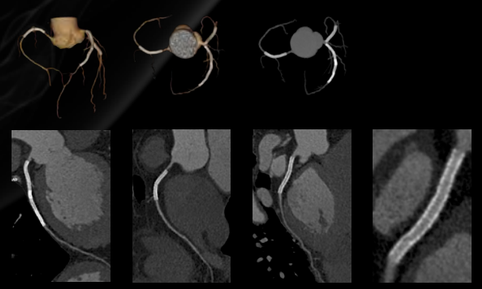
Low-dose 2.45 mSv



Multiple bypass assessment



Coronary stent

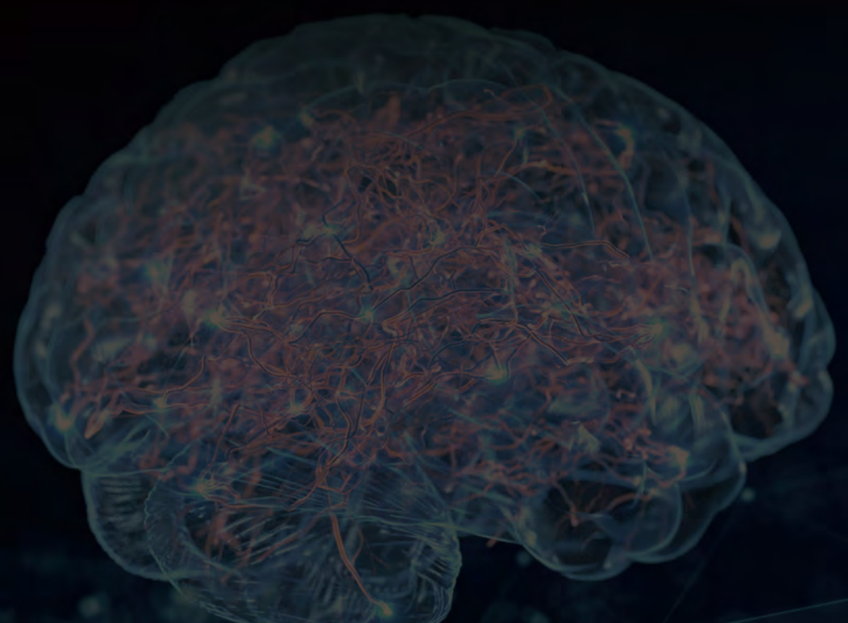


Triple rule-out

Save the Brain

Stroke is a global health problem and affects people of all ages and backgrounds. According to the World Health Organization (WHO), stroke is the 2nd leading cause of death and the 3rd leading cause of disability worldwide ※

Recent rapid advances in endovascular treatment for acute ischemic stroke highlight the crucial role of neuroimaging especially multimodal computed tomography (CT) ※※ including CT perfusion in stroke triage and management decisions. With an increasing focus on changes in cerebral physiology along with time-based matrices in clinical decisions for acute ischemic stroke, CT perfusion provides a rapid and practical modality for assessment and identification of salvageable tissue at risk and infarct core and provides a better understanding of the changes in cerebral physiology



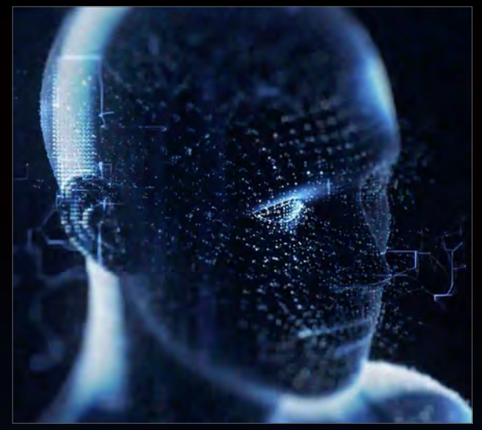
※World Health Organization [Internet]. The top 10 causes of death;2019.Available from: https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death

※※Bivard A, Levi C, Krishnamurthy V, et al. Perfusion computed tomography to assist decision making for stroke thrombolysis. Brain. 2015;138(Pt 7):1919–1931.

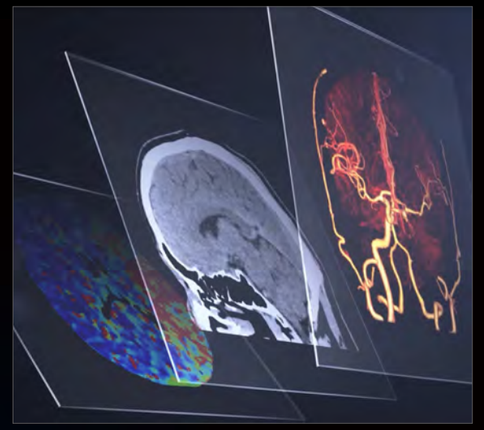
Premium Stroke Imaging

Our stroke imaging solution provides comprehensive information from anatomical structure to functional measurements, allowing physicians to deliver confident diagnosis and fast patient care.

Founded on Innovation



180mm Dynamic Cerebral Perfusion

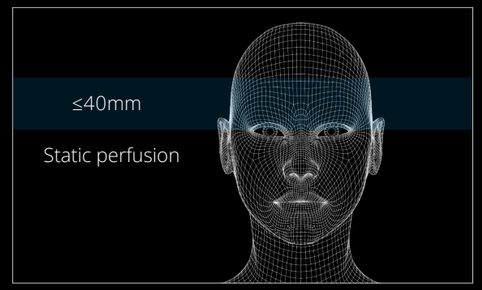


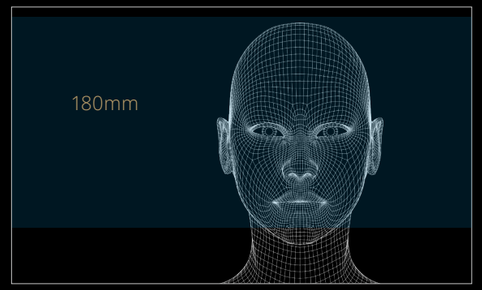
Automated Post-processing ※

※Independent of CT, separate CE certification.

180mm Dynamic Cerebral Perfusion

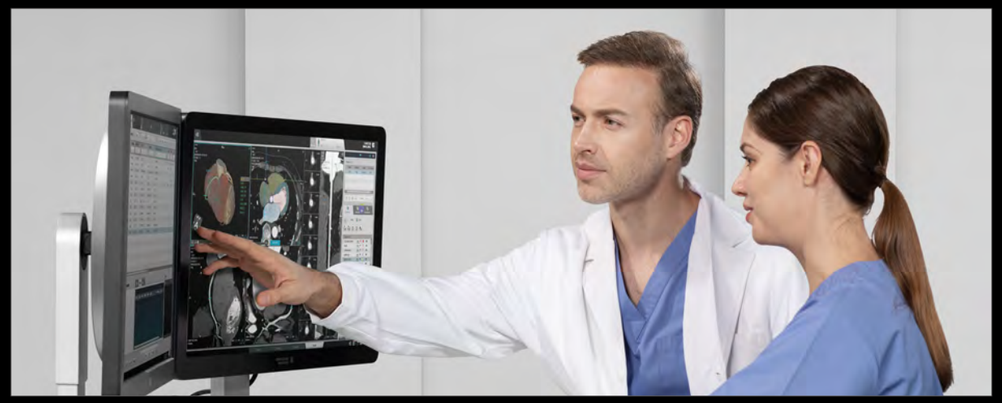
The dynamic perfusion technique provides a wider perfusion scanning range than the detector coverage and delivers full brain functional information with as little as a 2 seconds cycle time





Automated Post-processing ※

With the use of automatic bone removal, CTA images can be obtained quickly and accurately. Moreover, the CTP analysis software offers a range of functional parameters, including CBV, CBF, TTP, MTT, and Tmax, to enhance the precision of diagnosis for ischemic stroke



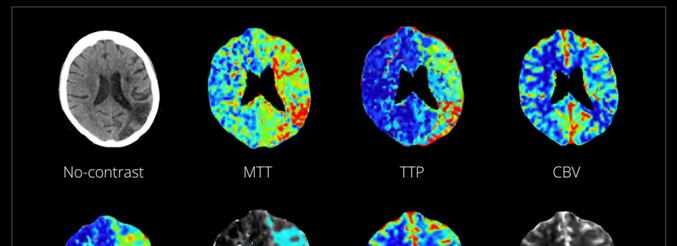
※Independent of CT, separate CE certification.

See More with Ease

Full-Brain Dynamic Perfusion

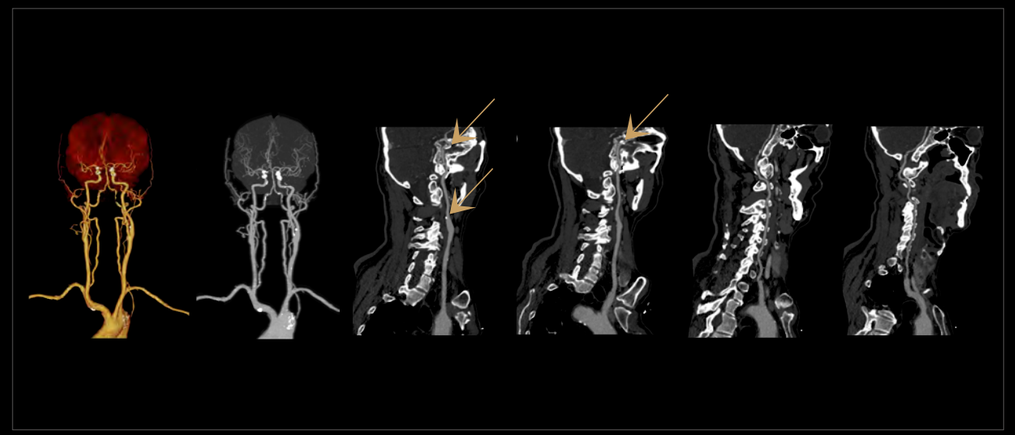
Obtains full-brain perfusion imaging beyond the width of the detector through shuttle perfusion technology

Item	Value
rCBF < 30% volume	4.59 ml
Tmax > 6s volume	106.19 ml
Mismatch volume	101.60 ml
Mismatch ratio	23.15



Automated Carotid CTA

Automatically and accurately extracts blood vessels



Race Against Time

Emergency CT scans are a critical component of emergency medical care, allowing healthcare professionals to quickly and accurately diagnose and treat life-threatening conditions

Requirements for emergency CT performance?

Fast

An emergency CT scanner should be able to scan the patient quickly, as time is of the essence in emergency situations

Availability

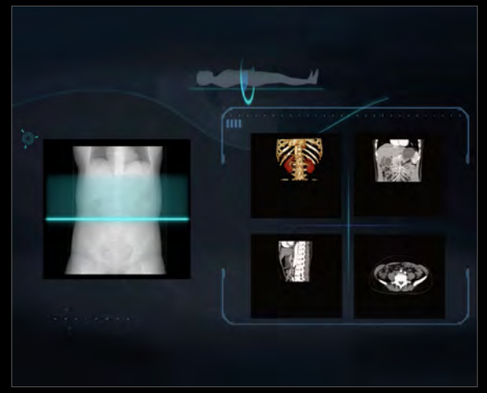
An emergency CT scanner should be available anytime to ensure that patients can receive the necessary care as quickly as possible

Premium Emergency Imaging ※

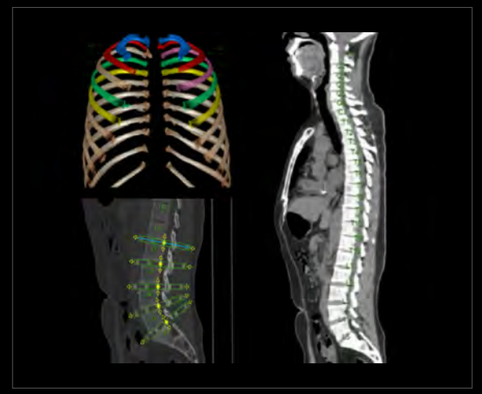
By combining a powerful hardware platform with an AI-empowered workflow, we significantly enhance the efficiency of acute care

Founded on Innovation

Equivalent 30MHU Tube Capacity/Liquid metal bearing Tube



Real Time 3D



Automated Post-processing ※

※Independent of CT, separate CE certification.

Equivalent 30MHU Tube Capacity

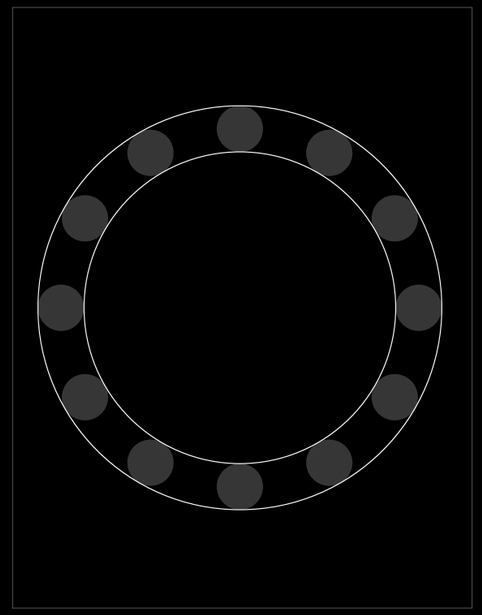
Advanced liquid metal bearing technology enables the scanner to be prepared for any type of scan at any time

Traditional Ball Bearing

Lower cooling capacity

More waiting time is required

Wear out, risk of binding and jamming

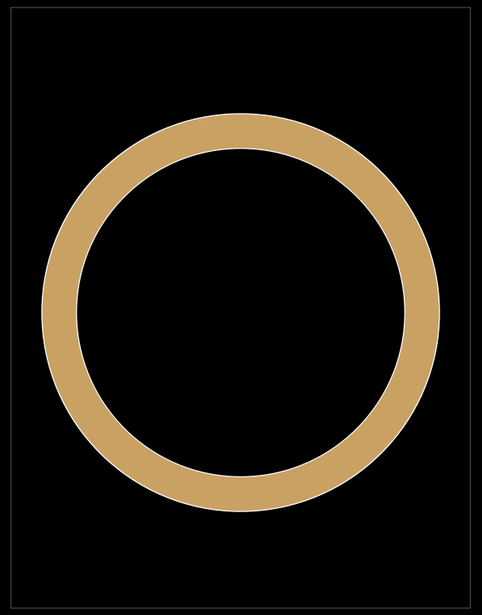


Liquid metal bearing

High Throughput

Faster Workflow

High Reliability



High Throughput

uCT 820 tube has a liquid metal instead of a conventional ball bearing between the rotor and fixed shaft of the tube. This provides much higher heat conduction and cooling capacity than traditional ball bearing tubes, resulting in high throughput

Faster Workflow

Prior to each scan, ball bearing tubes require anode rotation to start and stop. This process creates preparation time for every scan. However, liquid metal bearing tubes provide constant high-speed rotation throughout the workday, improving workflow and productivity

High Reliability

When the anode rotates, traditional ball bearings experience metal surface contact and wear, leading to reduced bearing lifespan. However, with liquid metal bearings, there is no direct contact during operation, and, as a result, virtually no wear occurs. This leads to a significant improvement in the lifespan of the tube

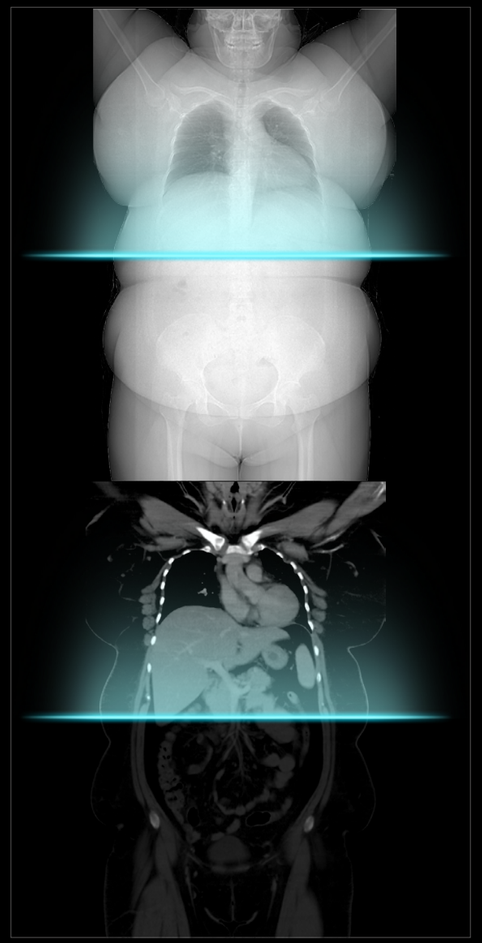
Real Time 3D

Real-time image preview enables quicker identification of lesions, making it particularly suitable for emergency departments

Traditional

Reconstruction of VRT and MPR images after scanning

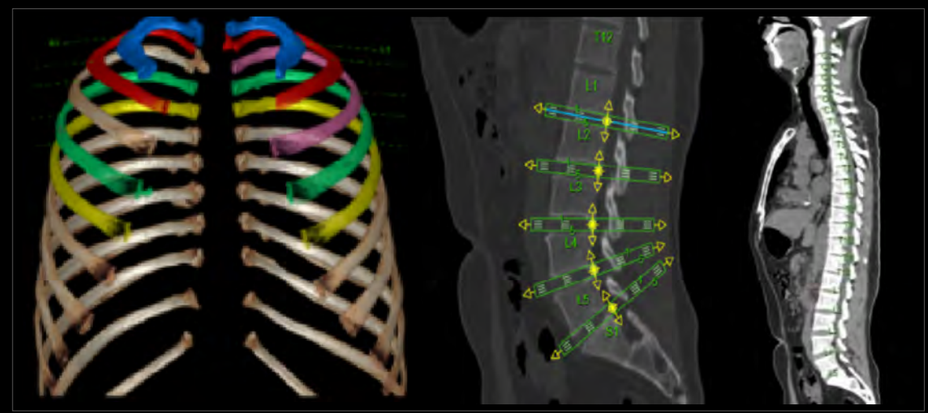
Real Time 3D



Real-time reconstruction of VRT and MPR images during scanning

Automated Post-Processing

The automatic marking of ribs and vertebral discs facilitates prompt diagnosis of bone factures



Automatic ribs marking

Automatically labels ribs on MPR and VR viewports when loading CT images

Automatic vertebral discs marking

Automatically label spines on the MPR viewport upon loading CT images

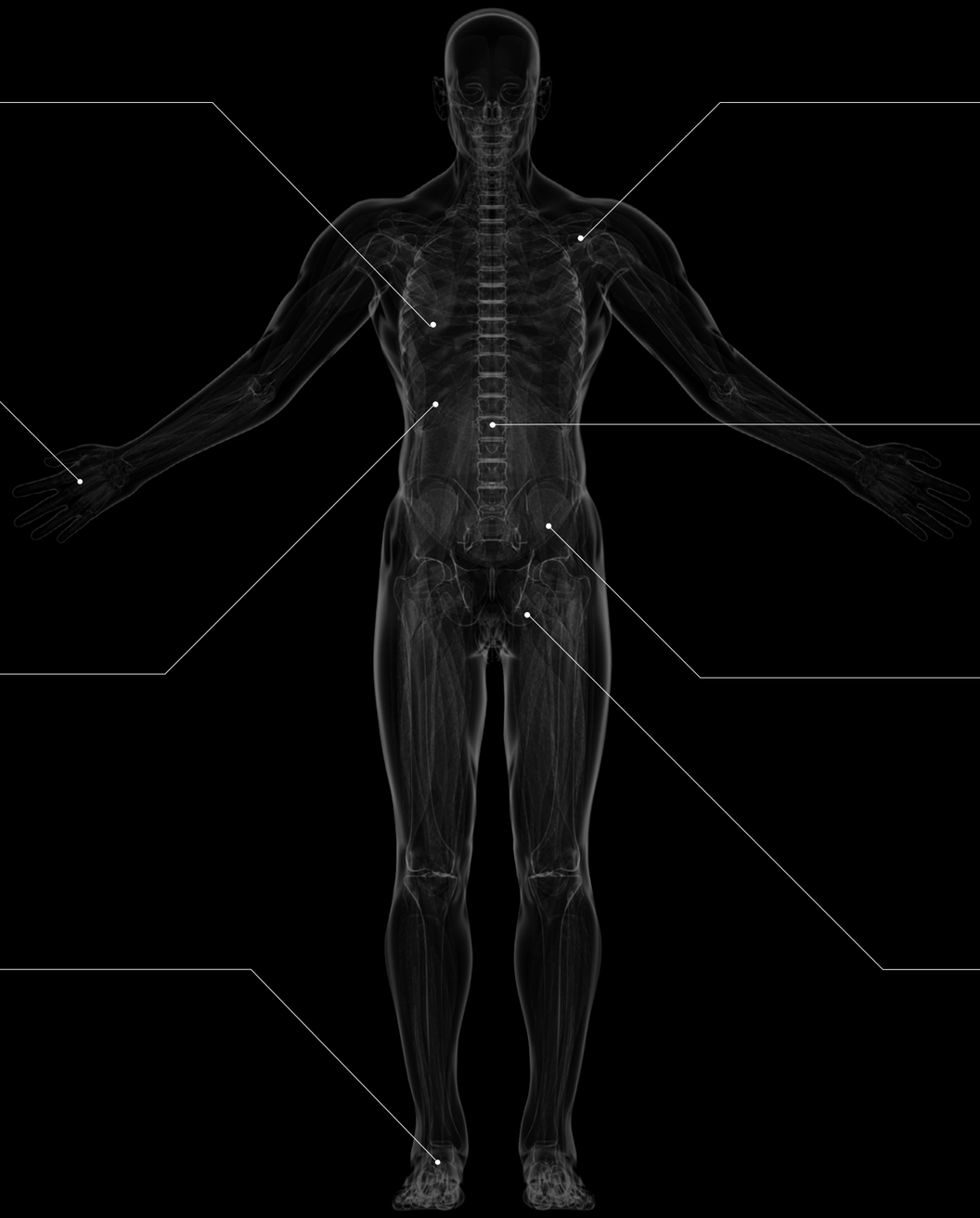
Follow-up tracking

You can input baseline and follow-up data into the application to compare the differences between two time points

See More with Ease

Ribs fractures

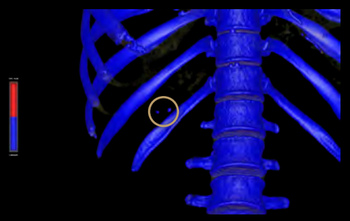
Metacarpal fracture



Clavicular fracture

Lumbar fracture

Kidney stone



Kidney stone

Kidney rupture

Iliac fracture

Detect as Early as Possible

The resolution of CT is extremely important for early screening of tumors because it allows for the detection of very small abnormalities in the body. With high-resolution CT scans, doctors are able to identify cancerous growths at their earliest stages, when treatment is most effective. The resolution of a CT scan refers to the clarity and detail of the images produced.

The higher the resolution, the clearer and more detailed the images will be. This level of detail is crucial for detecting small tumors that may not be visible on lower resolution scans. Additionally, high-resolution CT scans can also help doctors identify the location and size of tumors, which is important for determining the best course of treatment. Overall, the resolution of CT scans plays a vital role in the early detection and treatment of cancer, ultimately improving patient outcomes and saving lives.

Premium Oncology Imaging

Resolution matters for CT oncology imaging. With its small detector pixels and high-definition reconstruction matrix, uCT 820 provides our customers with the capability to delineate fine structures and detect small lesions, making it an effective tool for oncology imaging.

Founded on Innovation

0.5mm Pixels

1024 x 1024

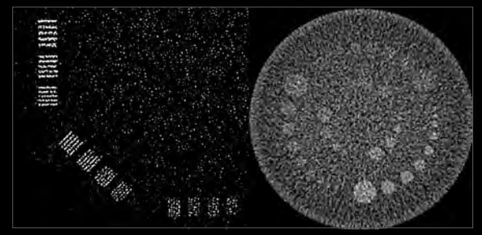
Reconstruction Matrix

0.5mm Pixels

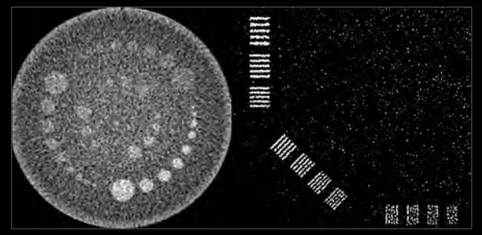
With a 0.5mm detector pixel size, finer structures can now be better visualized with every scan. The improvement of Z-axis resolution also helps to reduce partial volume effects and improve the ability to identify overlapping lesions

25%↑

improvement in Z-axis resolution ※



Conventional detector



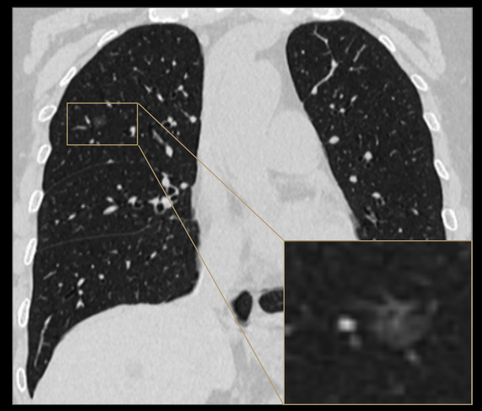
Z-detector

※Compared to traditional detectors with a thickness of 0.625mm

1024 x 1024 Reconstruction Matrix

A 1024 x 1024 Reconstruction Matrix enhances the spatial resolution and helps reveal the smallest of details for the most challenging examinations

512 x 512 Reconstruction Matrix

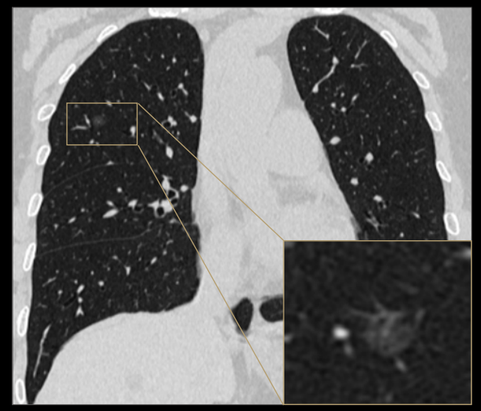


Lower image resolution

Easily miss small lesions

Poor display of lesion details

1024 x 1024 Reconstruction Matrix



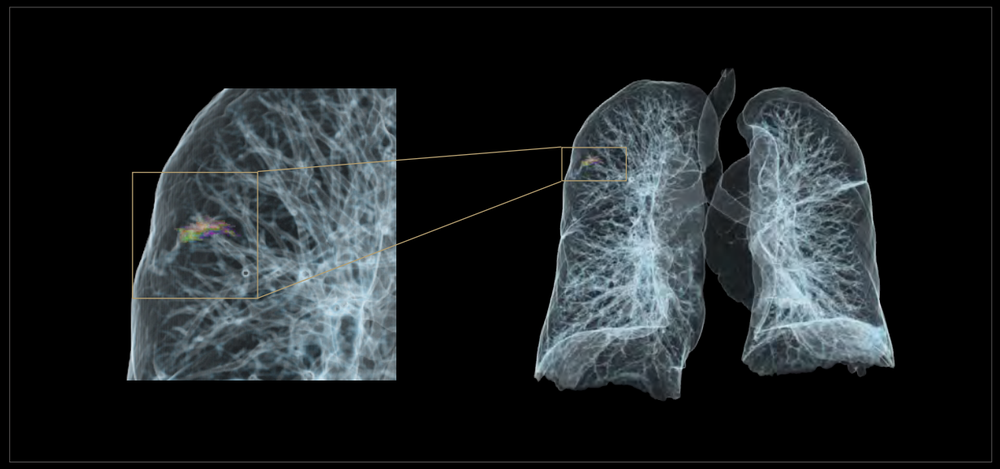
4 times as many pixels in the same area

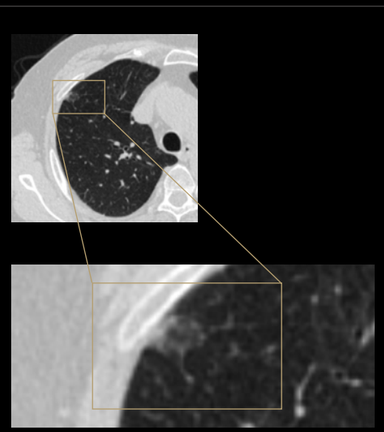
Accurate display of small lesions

Clear display of lesion details

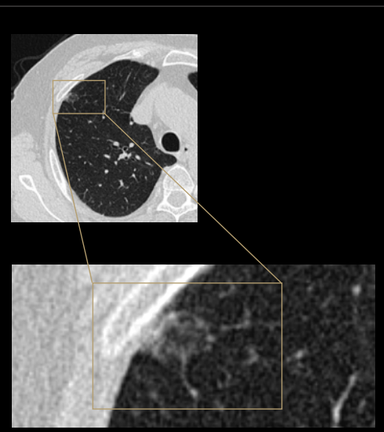
See More with Ease

High-definition reconstruction matrix
The use of a 1024 reconstruction matrix results in clearer images for displaying pulmonary nodules





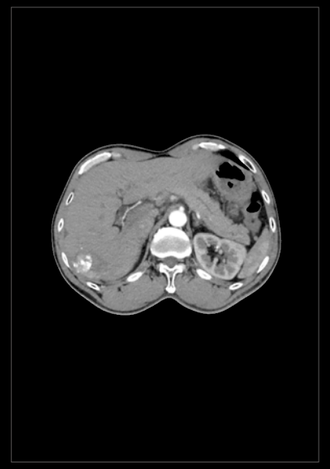
512 matrix



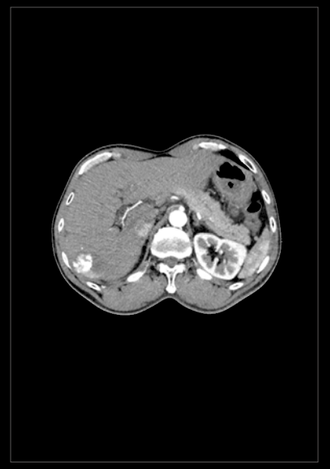
1024 matrix

Dual Energy_Follow up after TACE and RFA treatment

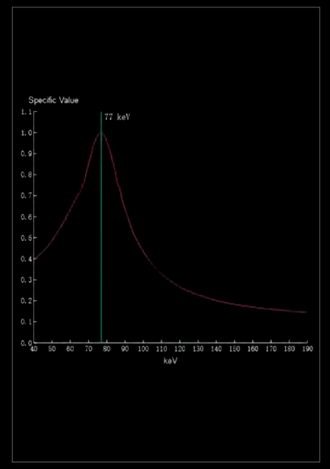
According to spectral imaging, the deposition of lipiodol in the liver can be observed. Additionally, the tissue properties can be quantitatively evaluated based on the iodine content



Original High-energy Images

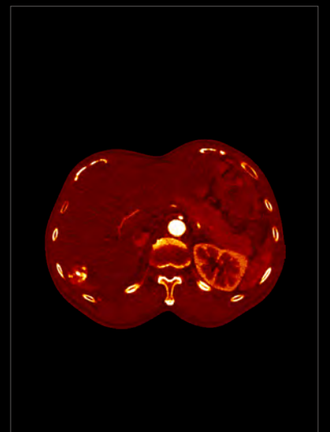


Original Low-energy Images

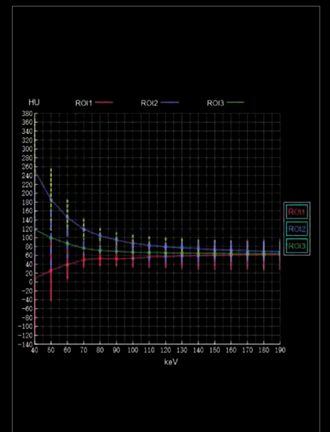


CNR Curve

CNR Images



Iodine Images



Spectral Curve

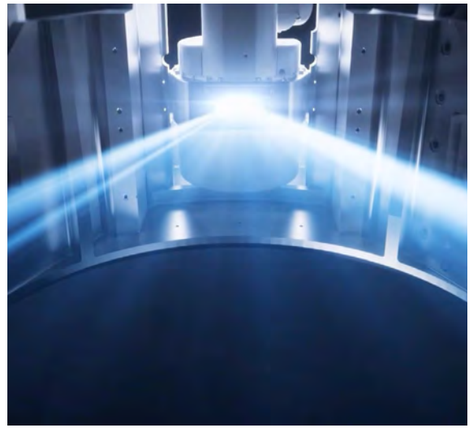
Premium Patient Care

The challenges:

Radiation exposure: CT scans use ionizing radiation, which can increase the risk of cancer in patients. Careful monitoring of radiation exposure is essential to ensure that patients receive the lowest possible dose of radiation.

Patient discomfort: CT scans can be uncomfortable, particularly for patients who have mobility issues or who are claustrophobic. Healthcare providers should take steps to ensure that patients are as comfortable as possible during the scan.

How does premium CT improve this?



Providing fast volumetric imaging for cardiac, dynamic, and perfusion acquisitions using wide detectors or fast spiral scans

Automated exam setup to reduce human errors and improve patient throughput

ECRI [Internet]. Evaluation Background: Premium CT Systems. Available from: https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death

Premium Low Dose Technology

Z-Detector

Based on through-silicon via (TSV) technology, the Z-Detector results in almost loss-free digitized signals, significantly reducing the overall image noise and reducing radiation dose

Ultra-Low-Noise Design

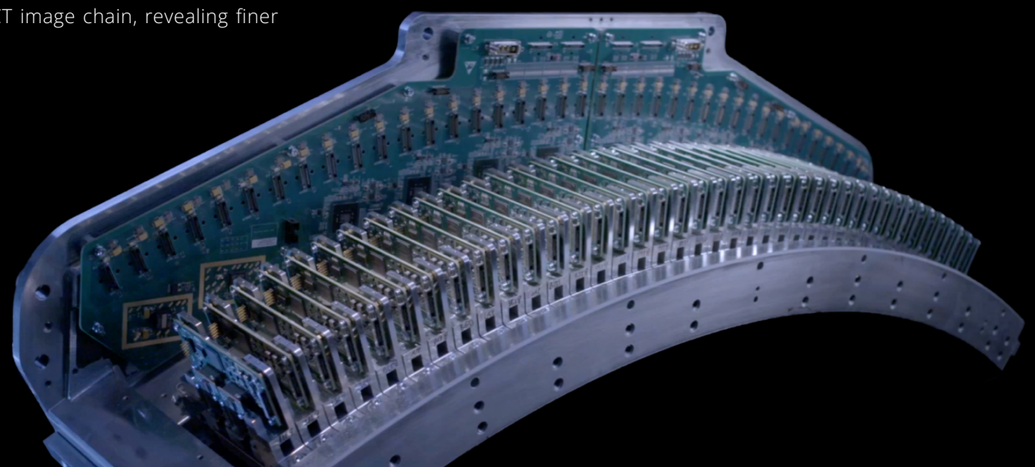
Based on through-silicon via (TSV) technology,the Z-Detector results in almost loss-free digitized signals, significantly reducing the overall image noise and reducing radiation dose

High Performance Materials

The scintillation crystal is made of high-speed rare earth ceramic materials, which greatly improves the X-ray conversion efficiency and response speed

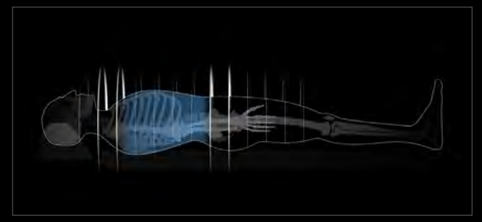
Ultra-Dense Voxel Sampling

Ultra-high-density voxels improve image quality from the source of the CT image chain, revealing finer details

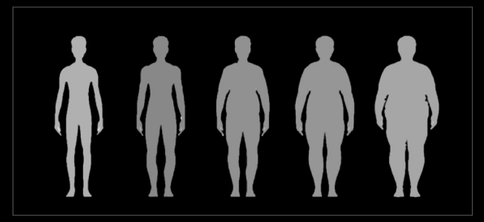


Automatic Exposure Control

Intelligent recognition of size, shape and attenuation information of different parts of the human body and automatically adjusts the radiation dose delivery



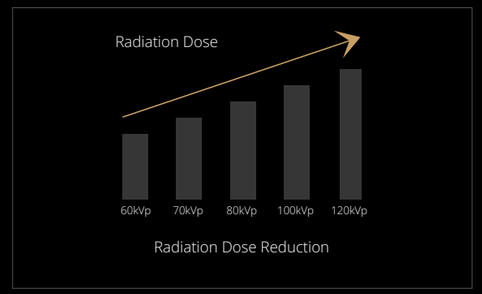
Intelligent identification of anatomical parts, modulating tube current

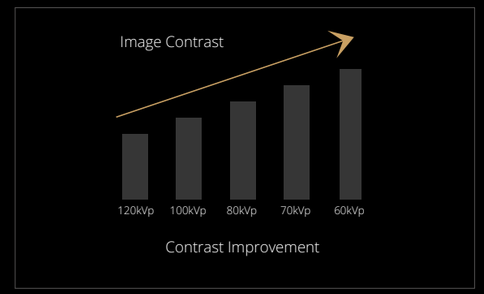


Intelligent recommended tube voltage according to different body types

60kVp Scan Mode

60kVp scans reduce radiation dose while maintaining image quality especially for smaller size adults and pediatric patients





The low tube voltage scan has the advantages of reduced radiation dose and improved image contrast※

※Yasunori Nagayama, aro Oda, et al. Radiation Dose Reduction at Pediatric CT: Use of Low Tube Voltage and Iterative Reconstruction. Radiographics(2018)

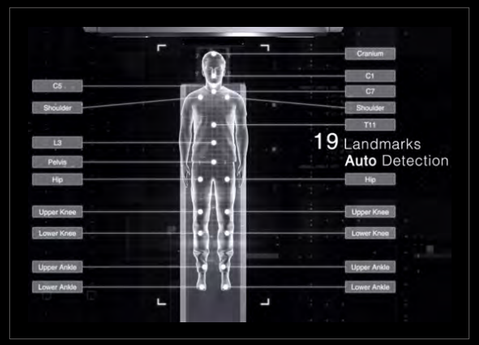
Premium Low Dose Technology

uAI Vision

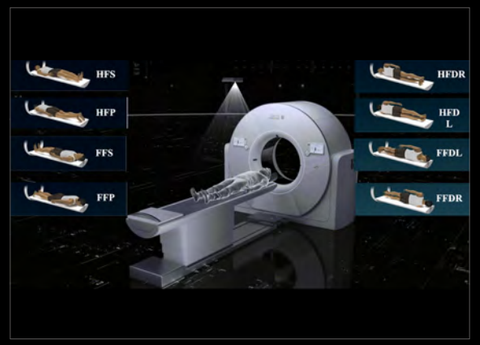
The auto ISO centering function optimizes the radiation dose and image quality without regard to the operator's skill variance

AI Guided 3D Scan Navigation Technology

Auto positioning with AI-based technology enables workflow improvement, matches all scanning protocols and covers all clinical scenarios, avoids medical errors by patient orientation identification, and provides real-time tracking and positioning based on patient movement



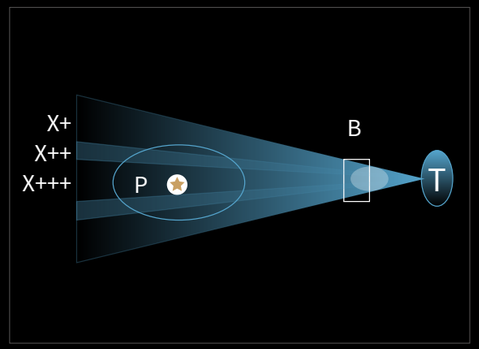
19 Landmarks



8 Poses Auto Identification

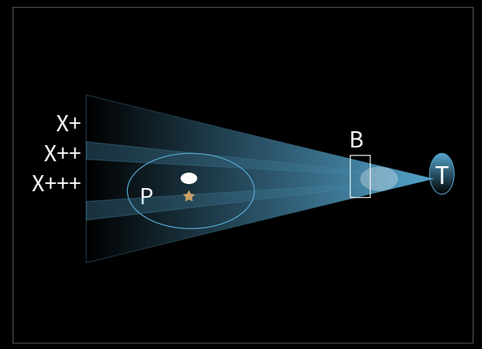
Automatic ISO-center Positioning

uAI Vision achieves precise iso-center positioning by automatically adjusting the table height and depth in response to the patient positions, resulting in high-quality CT images and reduced surface radiation dose



ISO-center Scan

Diagram shows that when patient is centered in gantry iso-center , bow-tie filters allow more X-rays to traverse thicker, central parts and fewer rays to pass through thinner, peripheral parts of patient ※



Off-center Scan

Diagram shows that with off-centering, thicker portion receives fewer X-rays image noise and that more X-rays pass through peripheral thinner parts, increasing surface and peripheral radiation doses ※

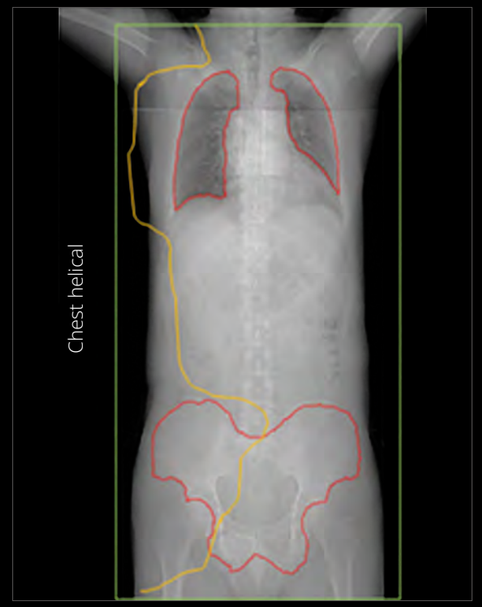
※Li J, Udayasankar UK, Toth TL et al. Automatic patient centering for MDCT: effect on radiation dose. AJR 2007; 188: 547 – 552

Premium Low Dose Technology

Organ based Auto ALARA mA

Automatic recognition of the chest and abdomen with an AI-based technology allowing optimized dose planning and image quality for the entire scan range

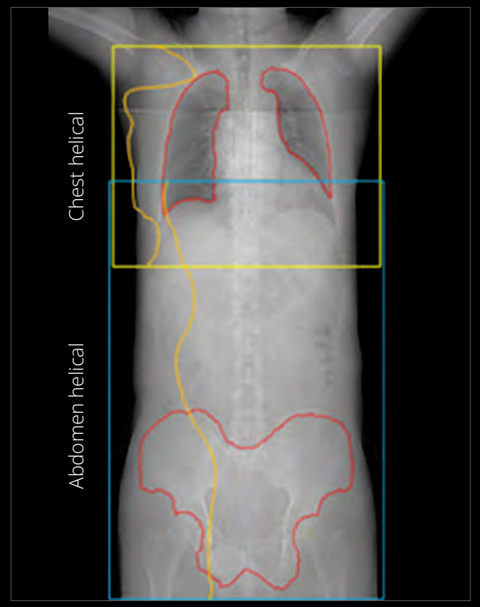
Traditional Dose Modulation:



One Protocol

Abdomen Protocol High chest dose

Chest Protocol： Insufficient abdominal dose



Two Protocols

Repeated exposure

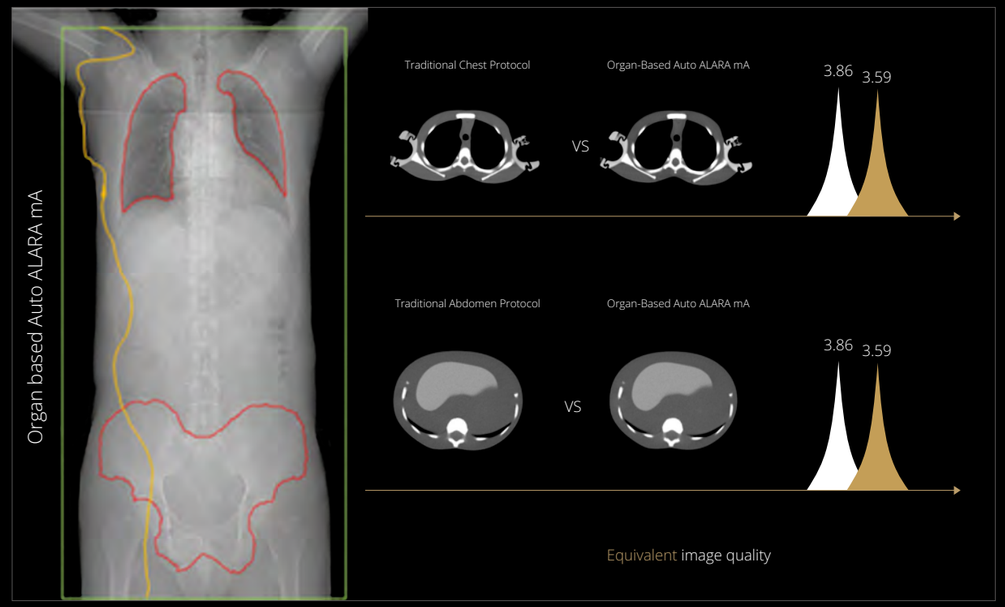
High radiation dose

Organ based Auto ALARA mA:

Compared with the traditional two protocol dose control modes ※:

20%↓

Radiation Dose Reduction



※The data is sourced from physical modeling testing data

Premium Comfort

82cm Ultra-wide Bore

The spacious 82cm bore enables a comfortable patient examination experience and a flexible operating space, while also providing enhanced imaging capabilities for bariatric patients

37%↑

improvement in scanning space*

Enhances patients comfort and help them relax

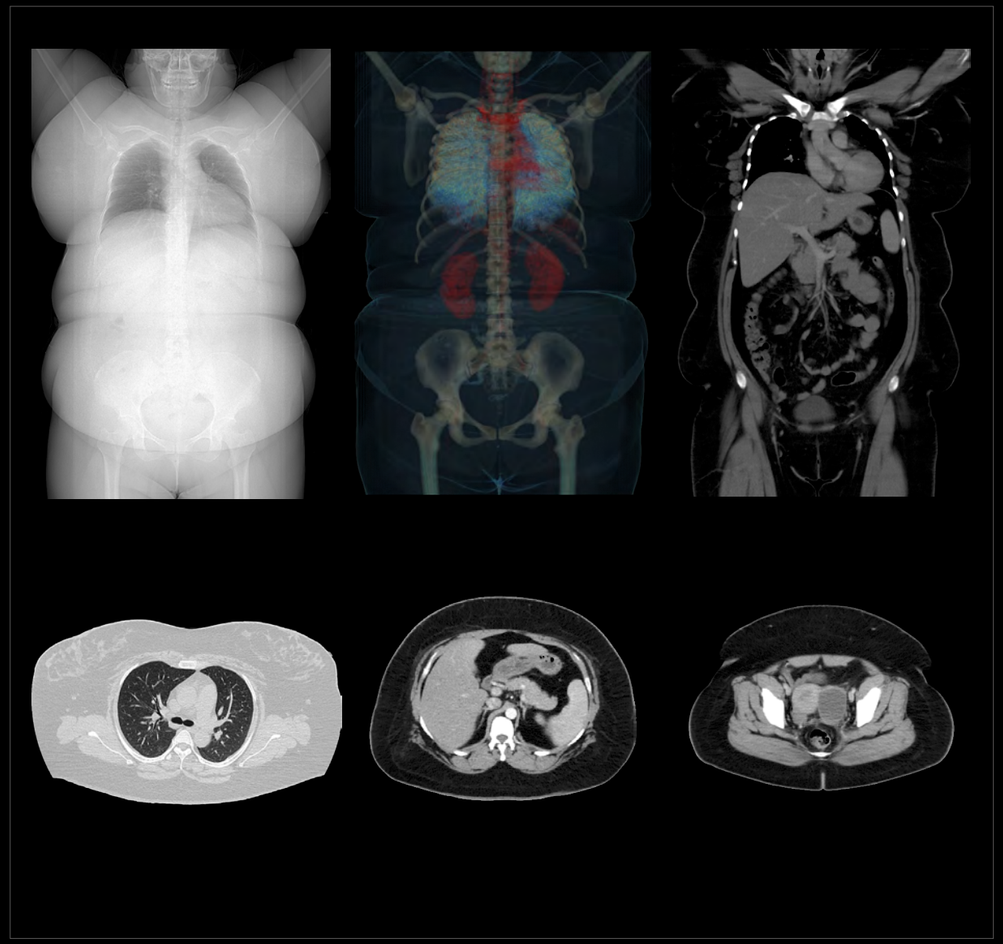
Facilitates positioning of patients with reduced mobility, e.g., trauma or elderly patients

expands bariatric imaging capabilities

See More with Ease

Expanded Bariatric Imaging Capabilities

The 82cm ultra-wide bore allowing flexible positioning for bariatric patients



Minimize Dosage

Reduces radiation dose while maintaining image quality

- Organ-Based Auto ALARA mA
- Auto ALARA mA
- 60 kVp Capability
- Auto ALARA kVp

Maximize Care

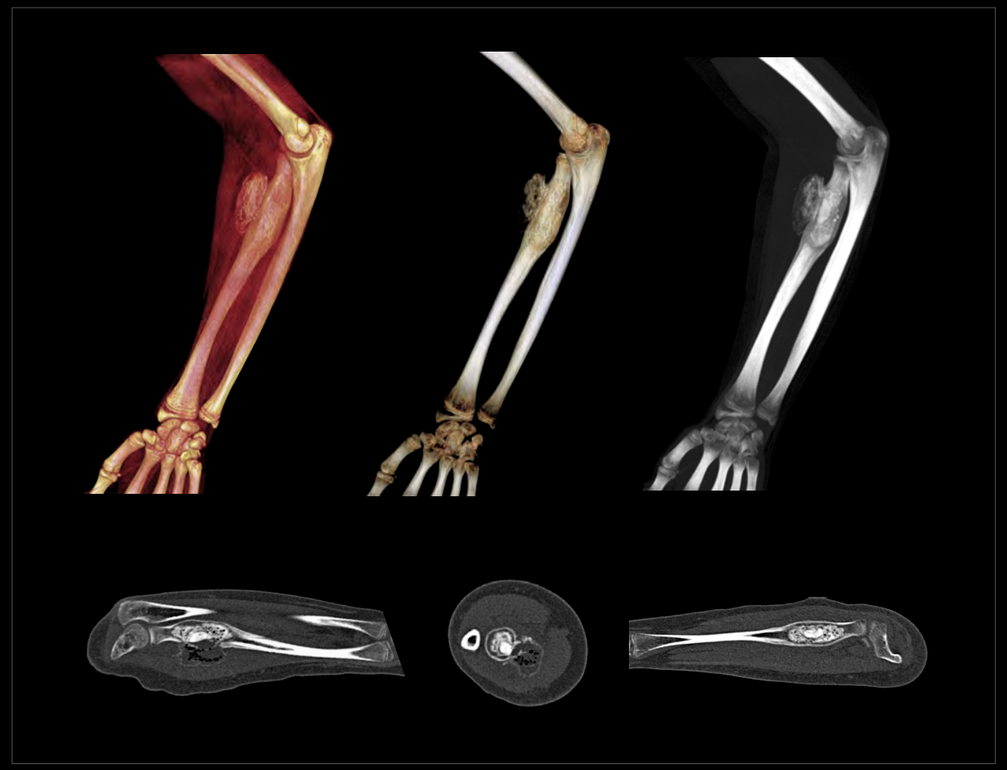
Increases patient comfort

- ± 30° Physical Gantry Tilt
- 0.25s rotation speed
- Dedicated pediatric protocols
- 82 cm ultra-wide bore

See More with Less

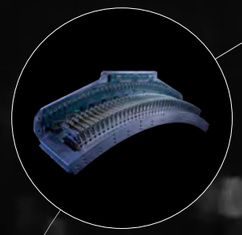
For pediatric patients who are sensitive to dosage, uCT 820 minimizes radiation dosage through its fully integrated software and hardware low-dose design

The design of uCT 820, including its large aperture and fast rotation speed, can help maximize the comfort of pediatric patients

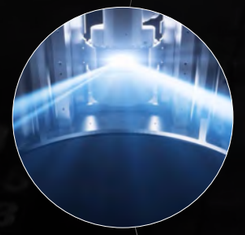


Built Upon
a Powerful Foundation

82 cm
Ultra-wide Bore

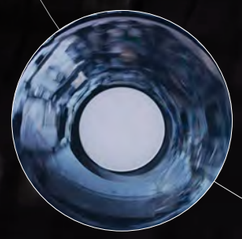


Fully Integrated
Z-Detector

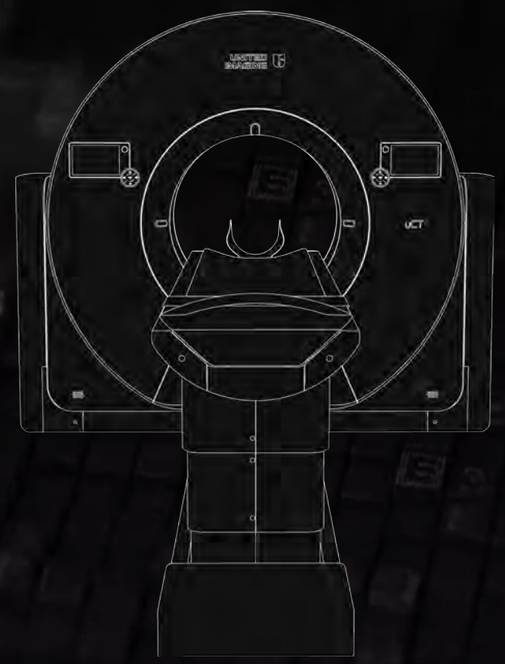


30 MHU Tube

700 lbs
Table Capacity

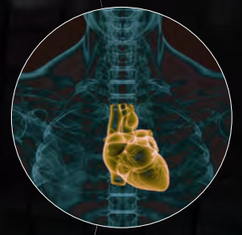


0.25 sec
Rotation Time



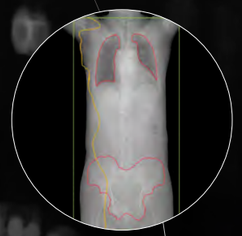
Integrated with
Advanced AI Technologies

uAI Vision

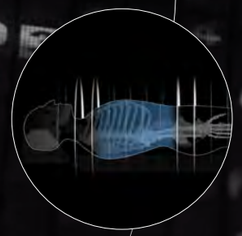


CardioCapture

CardioXphase



Organ-Based
Auto ALARA mA



Auto ALARA mA/kVp

User in Mind Design

Focusing on user experience, uCT® 820 combines accurate operation with a lightweight and artistic design. We bring aesthetic enjoyment and ease of use to the technology, delivering care, trust and respect through our design.

Pleasing Aesthetics

Our design scheme integrates oriental aesthetics with minimalism, presenting a seamless fusion of traditional and modern styling

User-Friendly Design

The product design delivers comfort, safety, efficiency and ease-of-use. By applying ergonomic principles uCT® 820 combines innovative design with optimal functionality in order to provide a better possible user experience, optimizing patient comfort during the examination

Sophisticated Craftsmanship

Driven by the tenets of precision design, we fine-tune every technological detail to embody the spirit of craftsmanship in every product