

**ANKE - The Reliable Medical Equipment Manufacturer**



## **ANATOM 64 Clarity & Precision**



## ANATOM 64 Multi-slice Spiral CT Scanner proposal



As Chinese advanced CT technology leader, ANKE has been committed to innovation and adhering to the "bring technology to healthcare. We are devoted to provide high-quality, efficient and reliable new technologies and products for users. The Chinese first low dose single - row CT, the first Chinese mobile CT, the world first non-contact slip ring 16-slice and the precision platform of 64-slice CT, ANKE has always been at the forefront of the development of new technology of CT in China, leading the technology innovation of Chinese CT trend and direction.

Adhering to service concept of accurate imaging and accurate diagnosis for doctors and patients, Our world's leading research team, by virtue of unremitting efforts in CT technology innovation, made a successful launch of a new precision platform of 64-slice CT - ANATOM 64. All implementations of design aim to provide efficient, stable, high performance and cost-low operation of medical service. The newly designed ANATOM 64 adopted a world leading precision technology platform. The latest OptiWave detector and innovative precision fast scanning technology combined with Admir<sup>3D</sup> iterative technology to achieve lower dose and lower consumption to get high quality images. And also, It allows to obtain high resolution images under ultra low dose scanning conditions. At the same time, intelligent interface and workflow and superior comprehensive clinical functions greatly improve efficiency and patient satisfaction and achieve a win-win economic and social benefits.

### The main hardware features of ANATOM 64 system

#### —— AccuGantry design

The rotary positioning of ANATOM Precision 64 adopts high precision and double closed-loop feedback system. One million feedback signal will be obtained in a single circle,



which ensures precise control of the system for rotary motion with a resolution of 0.00036 degrees. At the same time, the rotating drive control part can adjust the speed according to the feedback data, and guarantee the system to run smoothly in the 5/1000 deviation range. In addition, the system can adjust the position of the scanning frame in real time according to the read position feedback information, so as to ensure accuracy of the rotation angle.

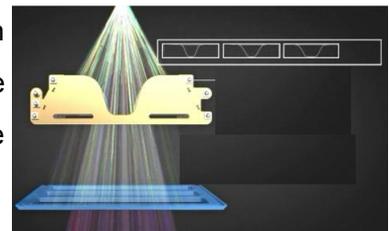
ANATOM 64 has been designed to retain the safety factor of 12 times, providing more than 10 years of service life. The measured speed can reach 0.32s per rotation, which provides a strong foundation for equipment upgrades.

—— AccuSlip-ring structure

AccuSlip-ring of ANATOM 64 with a new design and new material, compared with the traditional CT, is more stable and abrasion resistance, so that the service life of the carbon brush is 1.5 times higher than the traditional techniques. The slip-ring & carbon brush structure of the traditional design need to be replaced within 2 years, while as replacement cycle of ANATOM 64 can reach more than three years, greatly reducing the hospital daily maintenance cost. AccuSlip-ring of excellent performance, not only to fully guarantee the stability of power and data transmission between fixed part and the rotating part, but also ensure the normal operation of the equipment cycle and create greater economic benefits for the user.

—— AccuShape collimator

According to the different scanning position, scanning protocols and scanning VOI, AccuShape collimator make automatic selection of filter with different shapes, not only to ensure the efficiency of the use of X rays, but also shield the soft X ray useless, to minimise radiation.



—— AccuSaving



ANATOM 64 is equipped with a totally new AccuSaving energy saving technology, in the daily work, the system will automatically enter the "dormant" low carbon mode after the busy work. When revival of work, it can be activated by one button and automatically carries out pre-warm and preparation for coming scanning. AccuSaving technology can reduce 30% operation and standby power consumption by using different operation

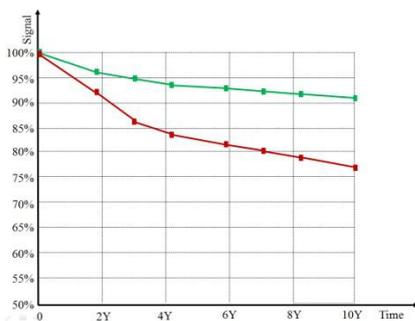
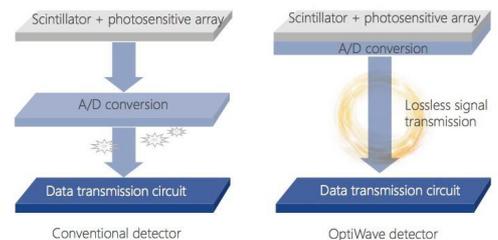
modes for working time and non-working time.

## —OptiWave detector

As is known to us, the detector technology is the driving force to promote the development of multi layer CT. ANATOM 64 uses a high performance OptiWave wave detector which is completely independent research and development of ANKE, to achieve the highest spatial resolution 0.24mm of 64-slice CT of industry.

Spatial resolution (high contrast resolution) and density resolution (low contrast resolution) are the key indicators to evaluate the quality of CT images, which are directly related to the quantum efficiency and SNR of CT detectors. In the design process of OptiWave detector, our R & D team has made full use of in-depth understanding of physical process of signal, and established the most perfect signal quantisation simulation model. Further, An optimisation design has been worked out on the basis of the detector quantum efficiency and SNR, which is not only to provide hardware support and technical support for ANATOM Precision 64 to obtain the best spatial resolution and density resolution, but also to ensure the balance between spatial resolution and density resolution at low dose condition.

Compared with the traditional detector, OptiWave detector has simplified the detector module and subsequent circuit connection and communication by using the compact module design of digital readout circuit combined analog digital conversion. Without high density analog signal cables or flexible circuit boards which is used by traditional detectors, thereby OptiWave detector has greatly improved the anti-interference ability of the module.



Field replaceable unit (FRU) design, the key parts be easily disassembled, all are in order to achieve the purpose of simplifying the maintenance operation and reducing the maintenance time. Each detector module can be independent of disassembly and replacement which makes the detector module maintenance and system upgrades completed quickly at the scene. It can reduce the user's operation and maintenance costs, on the other hand, ensure

the equipment with continuous upgrading ability. Under the same conditions, the service life of the CT detector depends on the decay amplitude of the output signal induced by accumulated exposure dose over time. OptiWave detector has been designed of the optimal structure, even after 10 years of use, the radiation damage caused by signal attenuation is less than 8%. It not only prolongs the service life of the detector but also ensures the users's maximum return on investment.

## —AccuTilt dual-mode gantry tilt technology



In order to meet the needs of some parts and special type of patients with large angle tilt scanning, ANATOM 64 provides an unique dual mode gantry tilt technology, mechanical tilt mode and digital tilt mode. Doctors can select according to their habits and special parts of the application requirements.



## Technology Features

### —Admir<sup>3D</sup> iterative reconstruction technology

ANATOM 64 uses the world leading Admir<sup>3D</sup> iterative reconstruction technology, through innovative designs of data sampling technology, original data reconstruction technology, post-processing technology and others, Admir<sup>3D</sup> not only can fully extract the effective data information, but also the data information In the original data field, the corrected projection field and the image field three different data space for multiple recycling, processing, to increase the number of original data reconstruction. That can reduce the X-ray dose and the image noise but Improve the image quality, while access to various parts of high-resolution, low dose of clinical images.

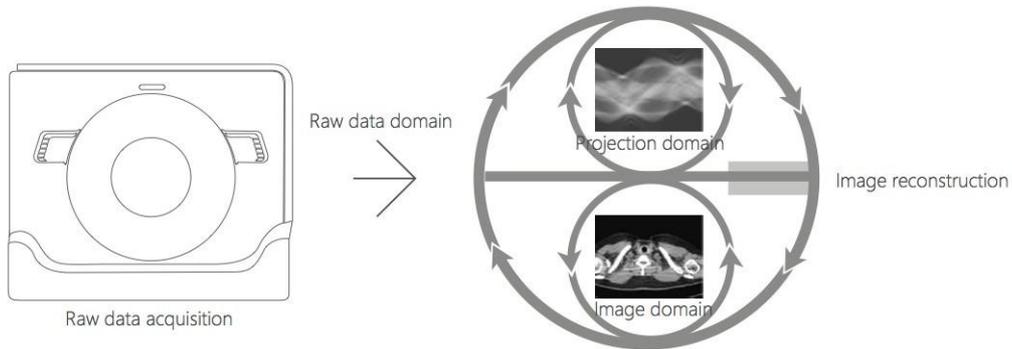
#### Admir<sup>3D</sup> noise reduction of raw data

According to the characteristics of electronic noise, a specific mathematical model is established. During the process of data acquisition, signals of different frequencies are repetitively and selectively processed. Then, the signals are intelligently amplified to improve the signal quality from the original data sources to obtain more balanced and effective images.

#### Admir<sup>3D</sup> iterative reconstruction technique

Traditional CT in order to improve the image quality can only be achieved by increasing the dose of X-ray, but at the same time the patient's radiation dose will also be greatly increased. In order to better solve the problem of image quality and radiation dose, Admir<sup>3D</sup> accurately constructs and describes the photon characteristics of the signal through a unique mathematical model, iterates it in the original data domain, the corrected projection domain and the image domain. The dose can be reduced by 40% to 50% but without compromise of image quality. Admir<sup>3D</sup> processing effect can be performed from 1 to 100 levels, corresponding to the noise reduction requirements.

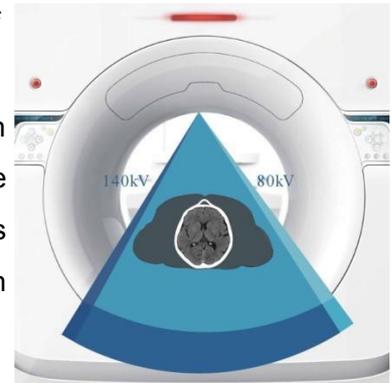
#### Admir<sup>3D</sup> fast reconstruction engine technology



Admir<sup>3D</sup> iteration technology is based on the original data field, the projection field after correction and image field, which will no doubt greatly increase the system's computing load. According to this feature, Admir<sup>3D</sup> platform is equipped with Intel 8-core dual-CPU parallel processor and 64G RAM, combined with multi-core processor-based fast-channel interconnect technology to achieve greater data processing bandwidth and higher data processing efficiency. Its powerful data processing capability allows the system to mass data processing speed increased nearly 5 times.

### —Ahead head dual-energy imaging technology

In order to eliminate the shortcomings of conventional CT image hardening artifacts, and obtain good imaging results in craniocerebral imaging and post-embolization of intracranial aneurysm which provide effective information for clinical diagnosis, ANATOM 64 creatively uses 80kV And 140kV swing scan mode. The low-energy X-ray is weak in penetrating, but strong in the image contrast, high-energy is better in penetrating and less hardening artifacts. Through Ahead post-processing, Our system can provide high Contrast to Noise Ratio (CNR) of head imaging.



### —Aheart cardiac coronary angiography



Conventional CT coronary angiography often uses multi-sector technology. Multiple exposures are taken at the same location and combined several cardiac cycle images into one image. In order to avoid patients receiving more radiation damage and achieve lower dose imaging of coronary artery, ANATOM 64 utilizes the Aheart non-sector helical scan mode (including prospective ECG-gated and retrospective ECG-gated helical scanning). Also, we adopt real-time dynamic regulation of current through kV swing

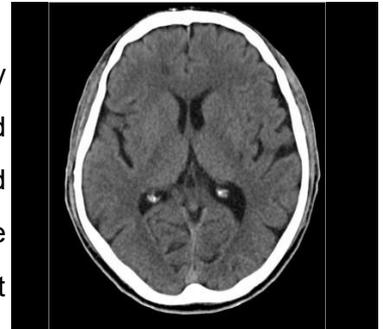


technology to ensure cardiac scan time within 10 seconds.

### —AccuHead gray & white matter enhancement technology

The new AccuHead gray & white enhancement technology dramatically improves the image quality of the skull scan, especially the distinction between gray and white matter.

The head image data includes high frequency signal, middle frequency signal and low frequency signal, wherein the low frequency signal and the middle frequency signal are associated with tissue information, and the high frequency signal is associated with noise. Treatment of middle frequency and low frequency signals can improve tissue contrast without amplifying noise, so as to obtain better gray & white matter contrast resolution.



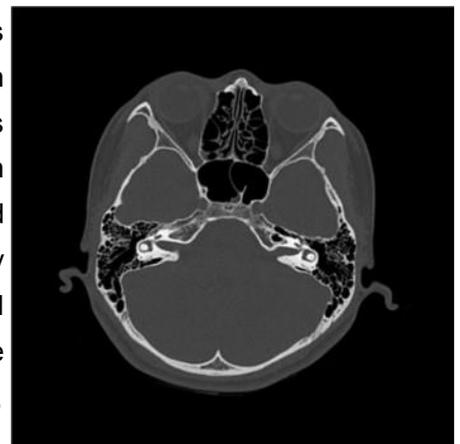
### —AccuLung lung high resolution imaging



Traditional HRCT lung scans are based on the conventional scanning protocol to re-select the scan parameters, then apply a large matrix, high voltage, thin layer and bone reconstruction algorithm to obtain good images. Although it can be relatively satisfactory clinical images, but increases scanning time and radiation dose. AccuLung high-resolution lung imaging technology can get excellent lung high-resolution images only with 30% to 40% of conventional radiation dose.

### —AccuOtica high - resolution imaging of the inner ear

As the inner ear structure is fine, the anatomical morphology and adjacent relationship are complex, different structures interpenetrate each other. In the past, the image inspection technology can not fully display its fine structure. ANATOM 64 is an accurate 64-slice CT with AccuOtica inner ear high resolution imaging technology to achieve a clear image at any angle and position. This allows the complex inner ear structure to be clearly displayed and realises the true meaning of the anatomical imaging. So that, clinicians have a deeper and more intuitive understanding of the anatomical structure, lesion area, morphology and adjacent relationship of the inner ear. It provides

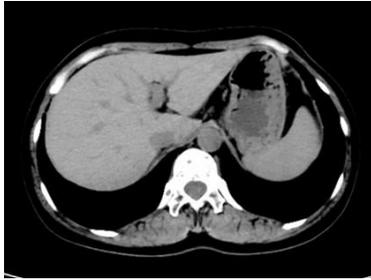


more accurate image information for diagnosis of disease, development of surgical approach and



design of correct surgical plan.

#### —AccuBody body high resolution imaging



The thinnest thickness of the ANATOM 64 is only 0.3125mm, maximizing the volumetric effect and increasing the isotropic resolution of the image. Unique AccuBody high-resolution algorithm combined with Acculmage micro-imaging technology has significantly improved abdominal microstructure and morphological display and more accurate image information for early detection of small lesions, differential diagnosis.

#### —AccuBone bone high-resolution imaging technology

ANKE's unique thin-layer AccuBone high-resolution imaging technology provides physicians with high-spatial resolution clinical images that enhance the contrast of the edge of the lesion and provide an accurate anatomical relationship to facilitate X-ray easy to miss early under the articular surface of bone destruction, cystic lesions and articular cartilage calcification. In particular, MIP images significantly increased the details of sacroiliac joint disease, such as minor invasion of the articular surface, micro cystic changes.



#### —Acculmage microscopic imaging technology

The continuous development of multi-slice CT technology has been making clinical CT quantitative and qualitative diagnosis requirements of increasingly high. It not only requires early detection of lesions, but also requires a clear diagnosis as soon as possible. Traditional CT image reconstruction matrix is mostly  $512 \times 512$ , resolution and detail display is relatively limited, for the early detection of small lesions, differential diagnosis is extremely difficult. Our unique Acculmage microscopic imaging technology can increase image quality by 4 times and display more details of the lesion which provides a reliable basis for early detection, early diagnosis and early treatment of clinical disease.

#### —Abast bony artifact suppression technology

Artifacts caused by the density and structure of the brain have been a blind spot in the brainstem and cerebellar structures and lesions diagnosed by conventional CT. For example, infarcts such as brainstem and cerebellum are not easily displayed due to the influence of artifacts. Of course, these artifacts

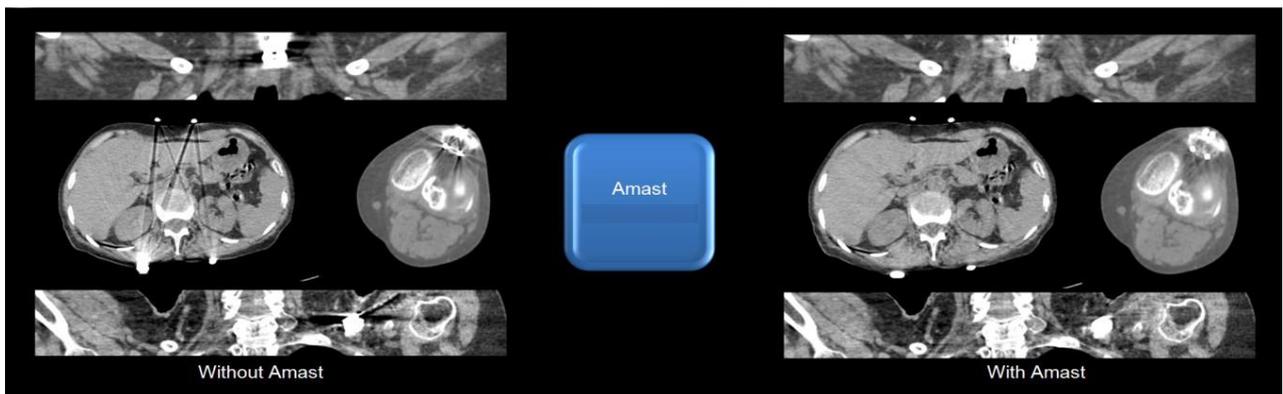




will also affect the a small amount of hemorrhagic lesions of the diagnosis in posterior cranial fossa. Abast can eliminate the x-ray hardening effect to the cerebellum, brain stem and other parts, clearly to show the structure and improve the reliability of diagnosis

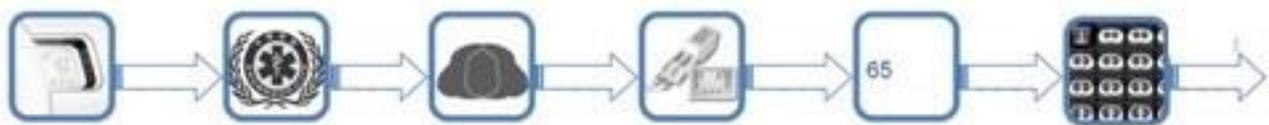
—Amast Metal artifact suppression technology

Metal implants in the human body can lead to metal artifacts in CT reconstructed images. The traditional method uses the interpolation technique to replace the metal contaminated data in the original projection data, so as to achieve the purpose of removing metal artifacts, but easy to produce secondary artifacts. In order to solve the shortcomings of traditional methods, Amast provides a metal artifact elimination method based on iterative correction. Firstly, a preprocessed image is obtained by using the interpolation correction method. Then, iterative correction is performed on the basis of the preprocessed image, and the total image quality is optimised in each iteration process. After several iterations, the final image is obtained. Experiments show that compared with the traditional interpolation method, Amast technology can more effectively remove metal artifacts, and better suppress the generation of secondary artifacts.



Other features

—The most efficient examination process



AccuOrientation—Intelligent positioning

Preset intelligent positioning procedures, one click for positioning, greatly saving time



AccuEmergency——Emergency mode

New emergency interface, free of registration, quick to start scanning for emergency patients

AccuScanning —— Accurate scanning

Default AccuScanning scanning protocol, easy to get high resolution images

AccuTracking—— Accurate trigger

Dynamic monitoring of contrast agents in the region of interest, provide accurate scanning delay time to make enhanced scan easy and reduce the repetitive scan

AccuReconstruction —— High-speed reconstruction

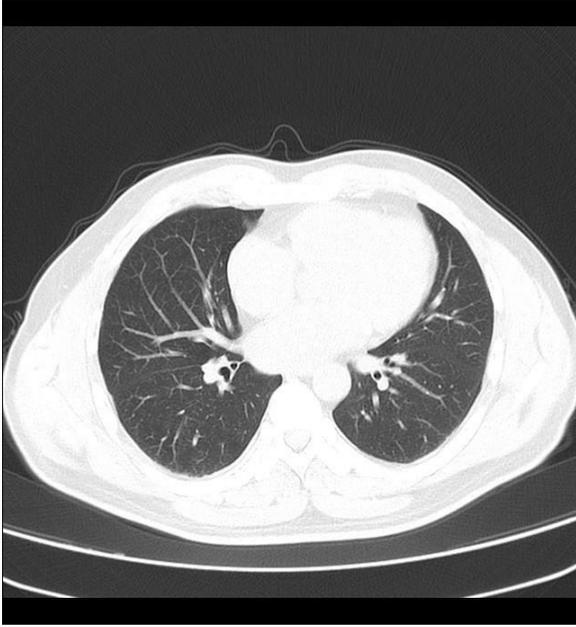
Up to 65f/second reconstruction speed, 10 times the speed of traditional CT reconstruction, significantly improve the efficiency

AccuPrinting——Quick print

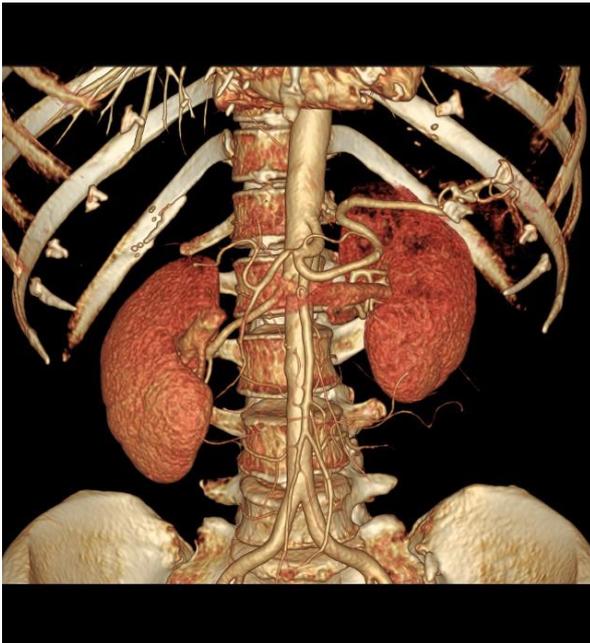
Smart layout and flexible adjustment for printing, automatic printing mode for time saving

## Comprehensive clinical applications

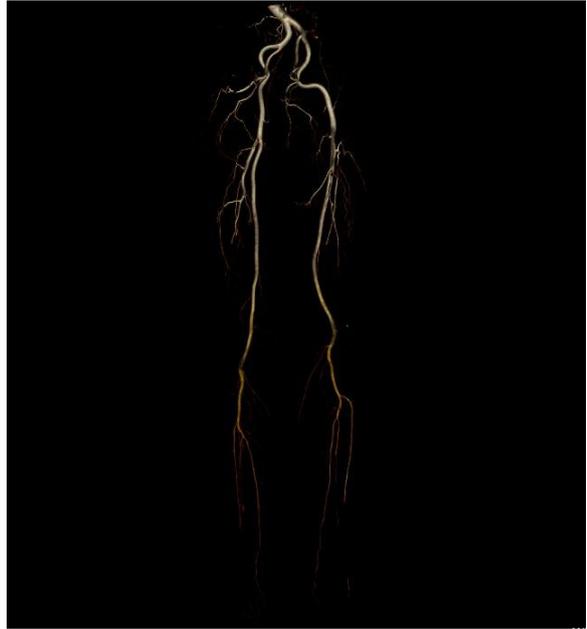
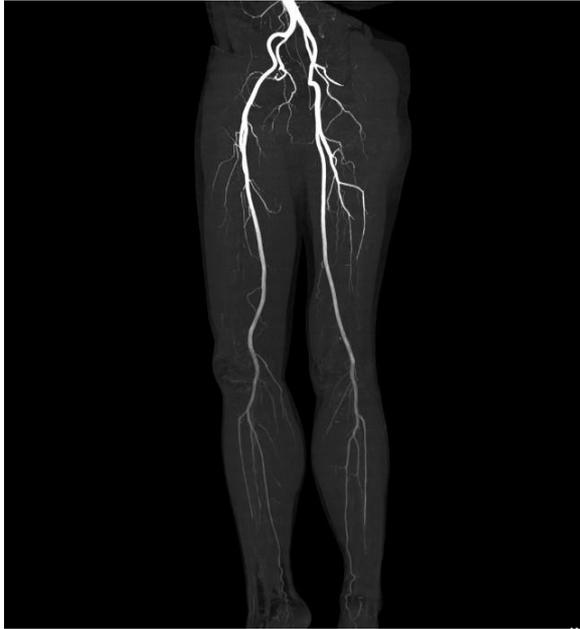
Image quality and clinical application are the standards to test the quality of imaging equipment, CT is also the development of focusing clinical needs of continuous innovation and change. Anke has always been adhering to the "Bring science and technology to healthcare" concept to promote the CT technology to leading position in the domestic industry's, and continue to expand the clinical application of new areas. The ANATOM 64 has the most complete clinical applications in the industry. The newest features of the ANATOM 64 include a variety of functions including neurology, orthopaedics, gastroenterology, respiratory, internal medicine, and so on.



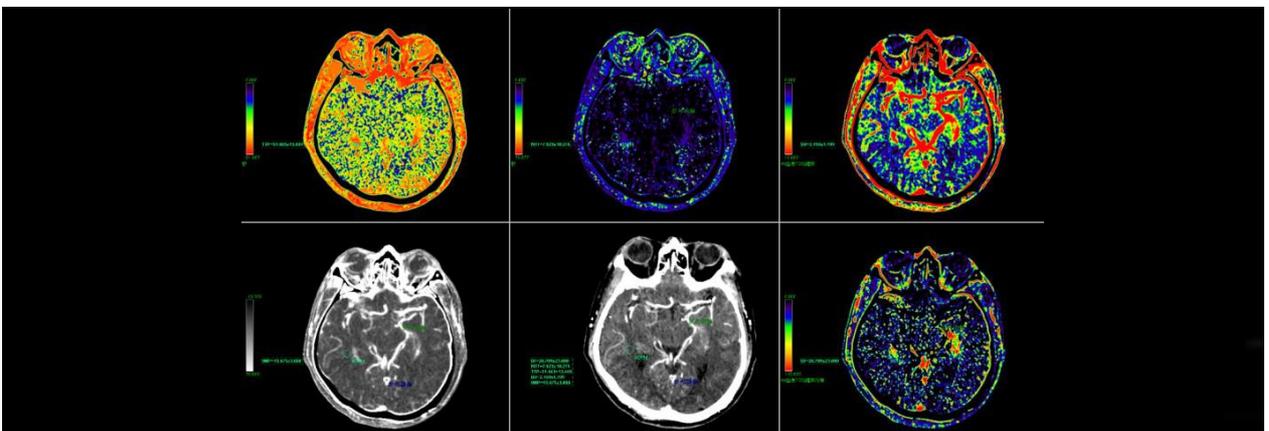
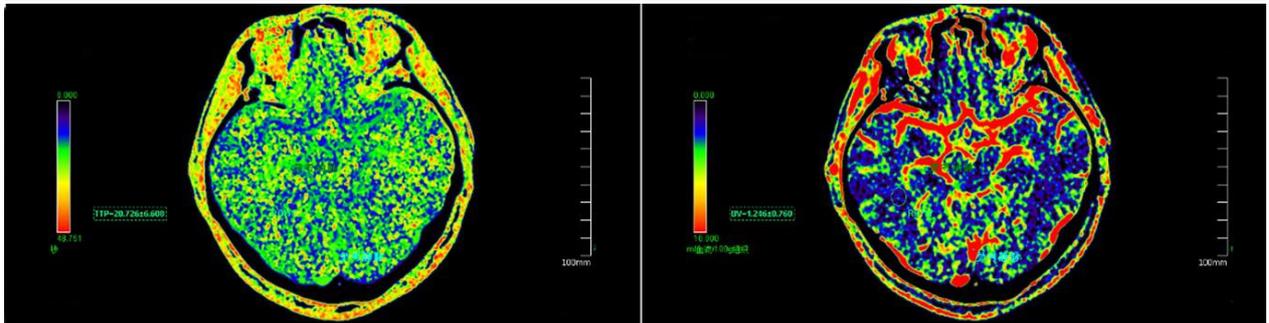
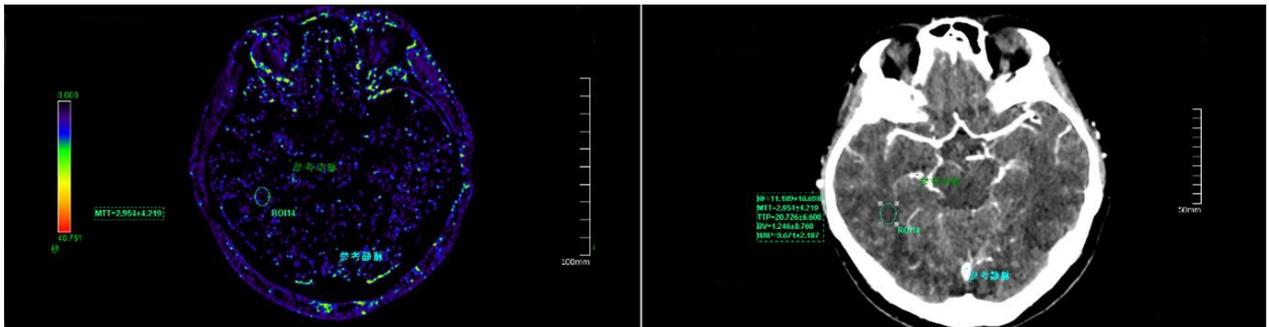
High resolution lung imaging



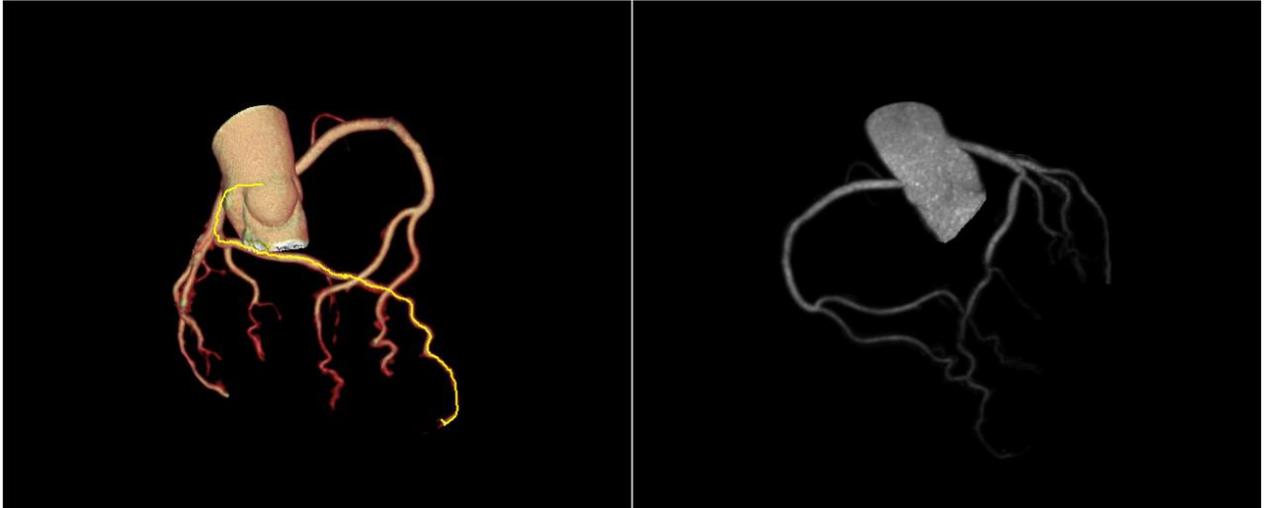
Abdomen CTA



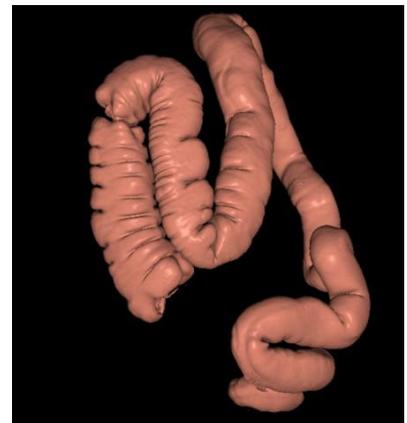
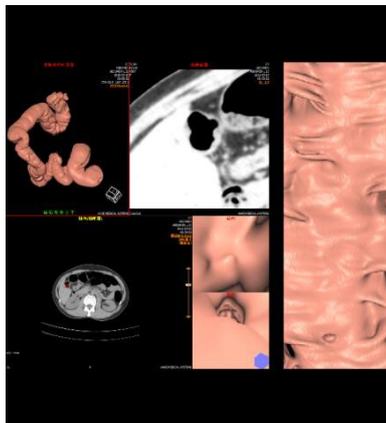
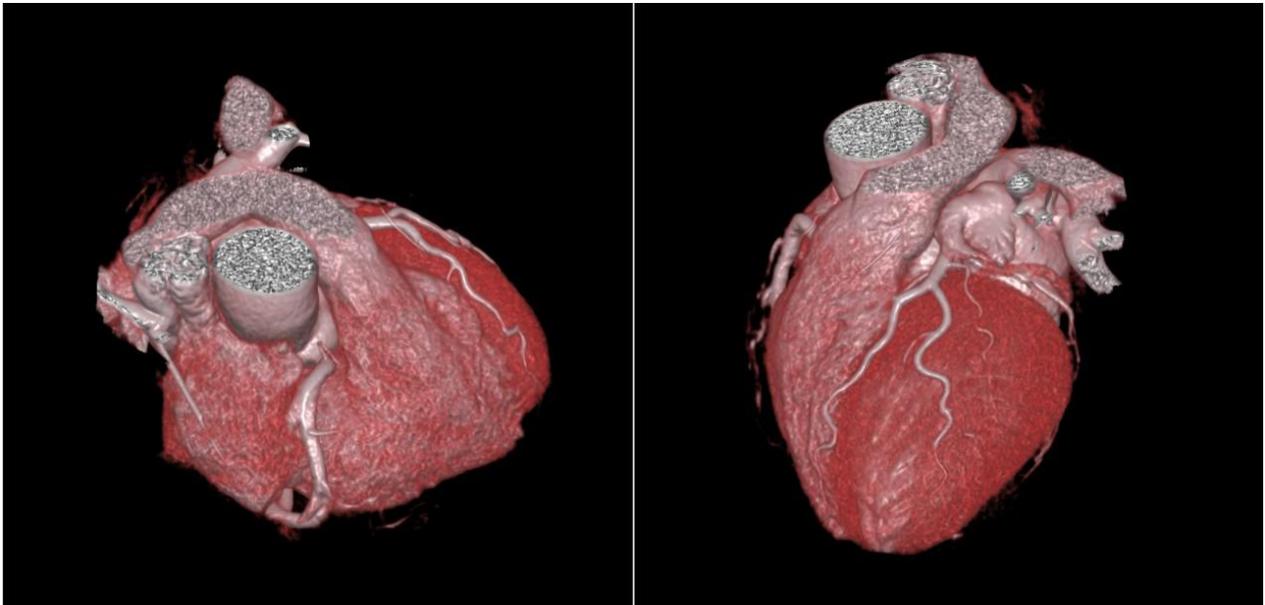
Extremity CTA



Perfusion imaging



Coronary angiography



Colonography