PHILIPS

Computed Tomography

Spectral CT 7500 RT

Target with spectral certainty

Specifications

Groundbreaking innovation in CT simulation

Targeting with spectral certainty is the next big leap for radiation oncology treatment planning.

For the first time, you can have spectral insights and true conventional results in a single scan, on a system designed specifically for radiation oncology. Philips Spectral CT 7500 RT promotes accuracy in planning, while fitting right into your current radiation oncology workflow so you can continue to enhance patient care.

Spectral accuracy in planning

Delineation certainty

Improved visualization and assessment of tumors and organs at risk

Accuracy in photon and proton dose calculation

Improve dose calculation and delivery by creating the stopping-power ratio (SPR) map and direct electron density (ED) results

Personalized planning

Quantitatively assess physiologically active tumor regions for treatment planning and response assessment

Easy radiation oncology workflow

Always on spectral

Layers of rich spectral results – on demand, with no special protocols

Single scan

True conventional and spectral results in a single scan, potentially minimizing the need for additional imaging modalities

Advanced RadOnc capabilities

Perform spectral respiratory gated scans with the world's-first spectral 4D CT

Contents

Spectral CT 7500 RT highlights	3
Key features and specifications	6
Gantry	8
Imaging chain	10
Image quality	11
Reconstruction	12
Clinical enhancements	14
Accessories	17
User interface	18
Networking and storage	20
Site planning	21
EcoPassport	23

Key features

Setting a new standard for radiation therapy planning powered by detector based spectral technology design enabling high visibility and accuracy

Specifications: **General**

Generator power	120 kW
Slices	512
Coverage	80 mm x 2 (double coverage)
Rotation speed	0.27 s
Maximum scannable range (axial)	2,000 mm
Bore size	800 mm
Reconstruction	- IPS: 126* - iDose[4]: All reference protocols* under 1 minute - IMR: Majority of reference protocols* under 1 minute** - Spectral: Majority of reference protocols* under 1 minute***
Spectral temporal resolution	Simultaneous in the same time and space
kVp stations	Conventional: 80, 100, 120, 140; Spectral: 100, 120, 140
Scan field of view	500 mm
Extended field of view****	800 mm

Specifications: **Spectral capabilities**

MonoE range	40 keV to 200 keV	
Noise – MonoE images	70-200 keV – less than 0.27% 60 keV – less than 0.35% 50 keV – less than 0.40%	40 keV – less than 0.45% 120 kV, 250 mAs, 10 mm slice thickness
FOV with spectral results	500 mm	
Dose modulation tools available with spectral	DoseRight Z-DOM (longitudinal dose modulation) 3D-DOM (combines angular and longitudinal information) ECG Dose Modulation	
Spectral results creation	The first and most common method to obtain spectral results on the Spectral CT 7500 RT is by adding the desired results into the Exam Card, resulting in automatic generation and transfer of the images every time the Exam Card is used. The second method is by performing changes to the Exam Card prior to the scan. The third method is the retrospective creation of spectral results from the scanner console, Advanced Visualization Workspace 15, and even from PACS through the spectral Magic Glass on PACS feature. All these are made possible due to spectral detector design, which ensures spectral is always on	
Fastest rotation speed available for spectral cardiac acquisitions	0.27 s	
Both spectral and conventional results	Results available with 100 kVp, 120 kVp and 140 kVp acquisitions	

Specifications: **Spectral results**

MonoE	High MonoE results reduce image artifacts, including beam hardening artifacts in the pelvis and abdomen allowing for improved tumor delineation. Combining high MonoE with O-MAR significantly reduces metal artifacts especially in areas surrounding the pelvis and prostate where large metal hip implants can cause significant artifacts. Low monoE results improve visualization of iodine-enhanced tissues, providing improved CNR when compared to low kVp. Spectral CT 7500 RT has the largest range of monoE imaging (40-200 keV) for ultimate clinical flexibility in oncology imaging
Electron density	Allows for the calculation of accurate proton stopping-power ratio (SPR). Electron density (ED) values of the tissues in the image are relative to the electron density of water. Using direct ED results and eliminate need for developing or using HU calibration curves required with conventional CT images
Virtual non-contrast	Allows for visualization and measurement of Hounsfield units (HU) from virtual non-contrast scans. Spectral results are comparable to true non-contrast scans for the majority of the organs, allowing VNC results to replace a true non-contrast scan. This result is created by removing the iodine component from the image. Non-contrast scans are typically used for dosimetry calculation in RT
Iodine no water	Allows for improved visualization of iodine-enhanced tissues. This result provides accurate iodine quantification in mg/ml and can help determine treatment response to therapy
Iodine density	Allows for improved visualization of iodine-enhanced tissues. This result provides accurate iodine quantification in mg/ml and can help determine treatment response to therapy
Z-effective	Allows for characterization of different tissues for example, tumor delineation versus surrounding healthy tissue, by generating a color map based on atomic number of tissues in the image. Applying the Z-effective and Iodine fused results allows more accurate assessment and quantify a patient's response to treatment
Contrast-enhanced structures	Allows for better visualization in the vascular lumen and enhancement of structures that contain iodinated contrast while removing bones and calcium
Iodine removed	Allows for generation of non-enhanced structures while removing the enhanced structures depending on various factors, some of the enhanced structures can still appear in the image
Calcium-suppressed	Allows additional information to be provided to the clinician, which may help in better assessment of intervertebral disc herniation, and the visualization of bone marrow involvement when bone fractures are present. In this result, voxels containing calcium are suppressed and replaced by virtual HU values as similar as possible to the expected HU without calcium contribution to the attenuation.

*iDose[4]: Reference protocols: Including clinical protocols : 18% Abdomen & Pelvis, 27% brain, 9% calcium scoring, 9% cardiac, 3% chest, 15% head & neck, 5% upper/lower extremities, 8% spine and 15% trauma
**IMR: 80% done in 1 min
***Spectral: 79% of reference protocols done in 1 min
**** Spectral Info and IMR are not applicable with EFOV..

Gantry

Key features

- Gantry control panels
- 80 cm gantry
- RTP table top compliant with AAPM TG66 guidelines
- Multi-directional control for fast movement
- Fine movement in/out control
- Visual countdown
- Zero table location

Audio notification 10 seconds before X-ray on so that operator and staff can exit room before X-ray on.

Specifications: **AirGlide gantry**

Aperture	800 mm
Focus-isocenter distance	570 mm
Focus-detector distance	1040 mm
Rotation times	0.27, 0.3, 0.33, 0.375, 0.4, 0.5, 0.75, 1, 1.5 seconds for full 360° scans Scan time for partial angle 240° scans: 0.18, 0.2 seconds
Intercom system	Two-way connection between the gantry and console area
Breathing lights	Visual communication to facilitate patient compliance

AutoVoice

A standard set of commands for patient communication before, during, and after scanning.
Customized messages can also be created.

Operator's console control panel

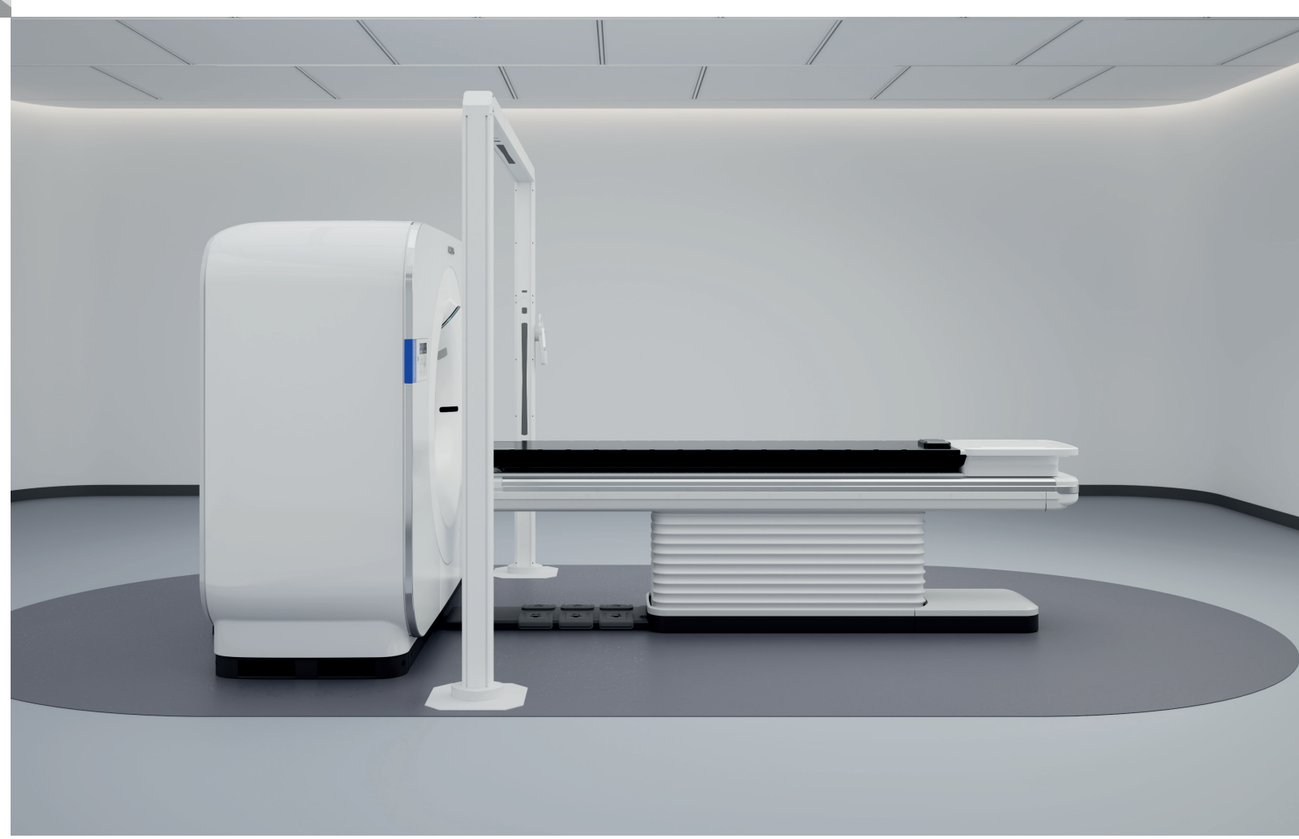
- Table in/out/up/down
- Emergency stop
- X-ray indicator
- Start button
- Pause button
- Controls disabling for cleaning and disinfection

Console computer

- CPU performance: no less than four CPU cores and clock frequency no less than 3.5 GHz
- Memory size: no less than 128GB
- Image storage capacity: 7.6 GTB

Specifications: **Patient table**

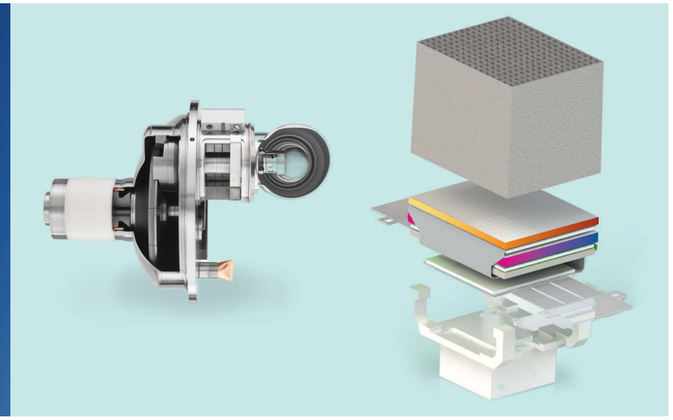
Feature	Patient table is compliant with AAPM TG66 guidelines
Maximum travel range	2,100 mm
Axial scan range	2,000 mm
Pitch	0.014-1.48
Z-position accuracy	+/- 0.25 mm
Longitudinal speed	1-600 mm/s
Lowest table height	430 mm
Highest table height	1080 mm
Table top width	470 mm
Maximum load capacity	Table: 307 kg (677 lb) Table with RTP flat table top: 285 kg (628 lb)



Imaging chain

Key features

- The segmented anode and direct liquid cooling of the iMRC X-ray tube allow high-throughput scanning
- Low-energy photons get absorbed in the top layer, while the high-energy photons go through it and get absorbed in the lower layer. The spectral separation at the detector ensures that the low- and high-energy photons are acquired at the same time and space



Specifications: **X-ray tube**

Focal spot sizes, quoted to IEC 60336 Ed.4	Small: 0.6 x 0.7 Large: 1.1 x 1.2
Anode cooling	Direct cooling; spiral-groove bearing
Target angle	8°
Maximum helical exposure time	110 s
Smart focal spot	x- and z-deflection

Specifications: **Generator**

Power rating	120 kW
kVp stations	80, 100, 120, 140
mA range (step size)	10-1,000 (1 mA)

Specifications: **NanoPanel Prism detector**

Data acquisition	Always spectral
Spectral temporal resolution	Instantaneous
Material	Solid-state yttrium-based scintillator; GOS
Number of detector rows	128 x 2 layers
Number of elements per row	672 detectors per physical row per energy layer
Anti-scatter grid (ASG)	2D tungsten-based for efficient scatter rejection
Energy separation	Top scintillator thickness is optimized for energy separation and image noise
Data sampling rate	Up to 4,800 views/revolution/element
Collimations available (2x is due to two energy layers)	2x (128 x 0.625, 112 x 0.625, 96 x 0.625, 64 x 0.625, 32 x 0.625,16 x 0.625, 8 x 0.625, 4 x 0.625, 2 x 0.625)
Slice thickness (helical mode)	0.67 mm – 10 mm
Slice thickness (axial mode)	0.625 mm – 10 mm
Scan angles	240°, 360°, 420°

Image quality

Specifications: **Spatial resolution**

Spatial resolution	Cut-off (+/- 2 lp/cm)
High mode (lp/cm)	16
Standard mode (lp/cm)	13

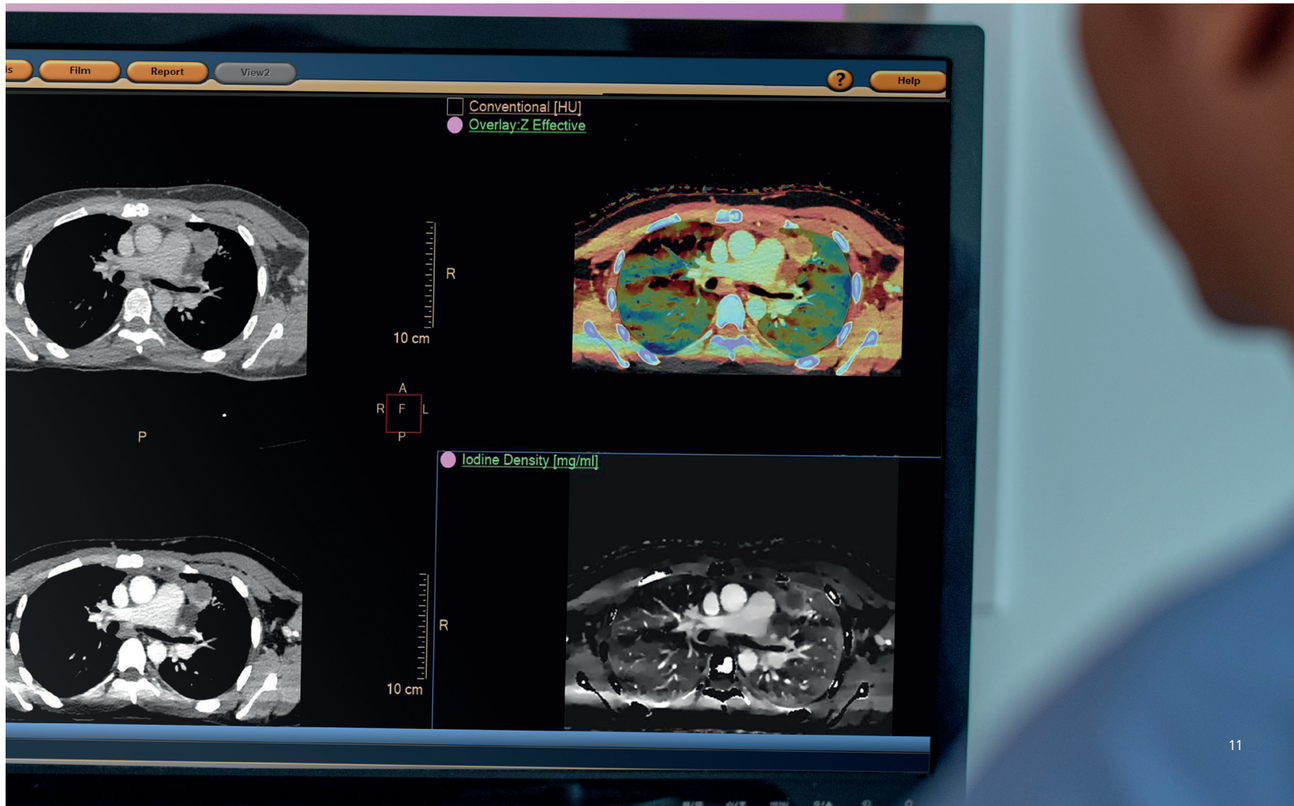
Specifications: **Low-contrast resolution**

Low-contrast resolution*	4 mm @ 0.3% @ 25 mGy $CTDI_{vol}$
Low-contrast resolution with IMR**	2 mm @ 0.3% @ 10.4 mGy $CTDI_{vol}$

* 20 cm Catphan phantom; 10 mm slice thickness
** 20 cm Catphan phantom; 7 mm slice thickness body CTDI phantom (IEC 60601-2-44, Ed. 3); at 120 kvp

Specifications: **Other**

Absorption range	-1,024 to +3,071 Hounsfield units
Noise	120 keV-less then 0.31% kV, 250 mAs, 10 mm slice thickness 75 keV should be less than 0.45% when irradiating with no more than 50 mGy $CTDI_{vol}$.



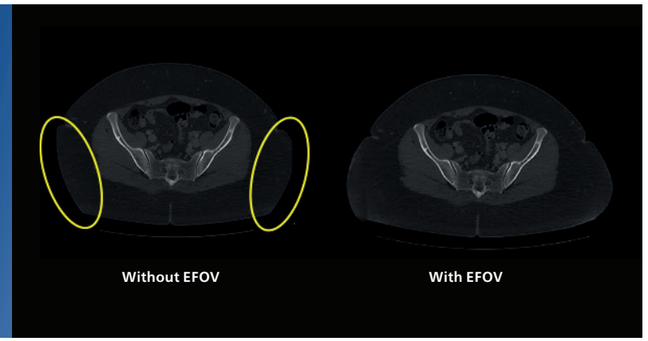
Reconstruction

Key features

Extended field of view (EFOV)

Enable visualization and dose planning of structures outside the scan field of view, up to 80 cm.*

EFOV is an advanced algorithm that provides a high level of HU accuracy.*



*The HU in the EFOV was tested on phantom for soft tissue. The HU error of water as measured on a 30 cm diameter water phantom positioned at 800 mm was -20 ± 20 HU (mean error +/- 2 x standard deviation, resulting in a 90% confidence interval on normal distribution).

Specifications: **Reconstruction speed**

Reconstruction

- IPS: 126*
- iDose⁴: All reference protocols* under 1 minute
- IMR: Majority of reference protocols* under 1 minute**
- Spectral: Majority of reference protocols* under 1 minute***

*iDose⁴: Reference protocols: Including clinical protocols : 18% Abdomen & Pelvis, 27% brain, 9% calcium scoring, 9% cardiac, 3% chest, 15% head & neck, 5% upper/lower extremities, 8% spine and 15% trauma
**IMR: 80% done in 1 min
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IMR

Iterative Model Reconstruction (IMR) sets a new direction in CT image quality with virtually noise-free images and industry-leading low-contrast resolution. Moreover, for the first time physicians are also able to simultaneously combine image quality improvements with significantly lower doses.* This improvement is a breakthrough made possible through Philips first iterative reconstruction built on knowledge-based models.

* In clinical practice, the use of IMR may reduce CT patient dose depending on the clinical task, patient size, anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task. Lower image noise, improved spatial resolution, improved low-contrast detectability, and/or dose reduction, were tested using reference body protocols. All metrics were tested on phantoms. Dose reduction assessments were performed using 0.8 mm slices and tested on the MITA CT IQ Phantom (CCT183, The Phantom Laboratory), using human observers. Data on file.

iDose⁴

This leading technology can improve image quality.

- iDose⁴ improves image quality* through artifact prevention and increased spatial resolution at low dose. The design seamlessly integrates into your CT department, and provides you the look and feel of conventional, higher- dose images without long processing times.

* Improved image quality is defined by improvements in spatial resolution and/or noise reduction as measured in phantom studies.

O-MAR

This leading technology can improve image quality.

- Metal artifact reduction for large orthopedic implants (O-MAR) works on both conventional and spectral images. Combining virtual high monoE spectral images with O-MAR significantly reduces metal artifacts.

Workflow Boost Spectral Reconstructor

Workflow Boost Spectral Reconstructor is specifically designed to address the reconstruction, performance and throughput needs of high throughput. The accelerated throughput is enabled by utilization of additional hardware for parallel processing of images.

Cone Beam Reconstruction Algorithm – COBRA

Philips patented Cone Beam Reconstruction Algorithm (COBRA) enables true three-dimensional data acquisition and reconstruction in both axial and helical spiral scanning.

ClearRay reconstruction

A revolutionary solution pre-computes and stores beam hardening and scatter corrections in a database later referenced to create a correction that is personalized to each individual patient. As a fully three-dimensional technique, contrast scale stability is preserved across different patient sizes, image uniformity is improved, and organ boundaries are better visualized.

Adaptive multicycle reconstruction

Image data can be prospectively gated or retrospectively tagged. Automatically delivers the best temporal resolution possible for the current scan (as low as 27 ms).

Image matrix

512 x 512 • 768 x 768* • 1024 x 1024*

* Available for conventional only.

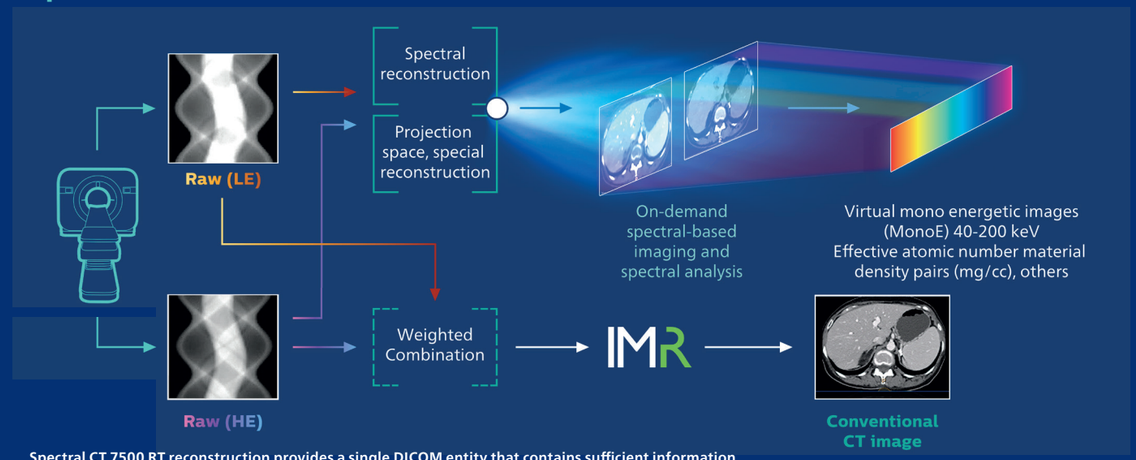
Off-line reconstruction

Off-line (batch) background image reconstruction of user-defined groups of raw data files with automatic image storage.

Preview images

Real-time 512² matrix image reconstruction and 5 mm x 5 mm contiguous slice display with helical acquisition.

Spectral CT 7500 RT reconstruction



Spectral CT 7500 RT reconstruction provides a single DICOM entity that contains sufficient information for retrospective analysis, known as the Spectral Base Image (SBI). The SBI contains spectral results with no need for additional reconstruction or post-processing. Spectral applications create various spectral results from the SBI..

Clinical enhancements

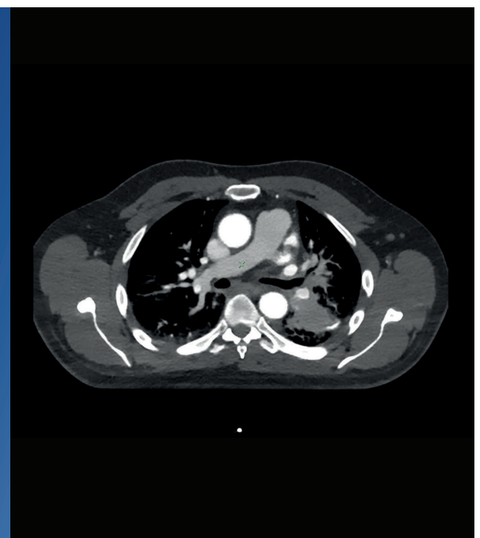
Key features

Spectral 4D CT

Pulmo Gating helps reduce image artifacts caused by breathing motion. Used in radiation therapy treatment planning:

- Can create a dataset which represents anatomy at a reproducible breath level.
- Can create multi-phase datasets, which show motion of the entire thorax throughout the breathing cycle.
- The retrospective helical mode (4D CT) is used for continuous volumetric acquisition of the thorax to capture the entire breath cycle.

Both spectral and conventional 4D can be gated. Spectral 4D data can be generated, including Z-effective, electron density, iodine density, calcium suppression, with different keV levels at full field of view (50 cm).



SyncRight

The Philips CT SyncRight option enables easy and efficient communication between the CT system and the injector in order to facilitate delivering appropriate contrast dose and consistent image quality.

Bolus tracking

An automated injection planning technique to monitor actual contrast enhancement and initiate scanning at a predetermined level.

Spiral Auto Start (SAS)

Spiral Auto Start allows the injector to communicate with the scanner. This allows the technologist to monitor the contrast injection and to start the scan (with a predetermined delay).

Patient centering on surview

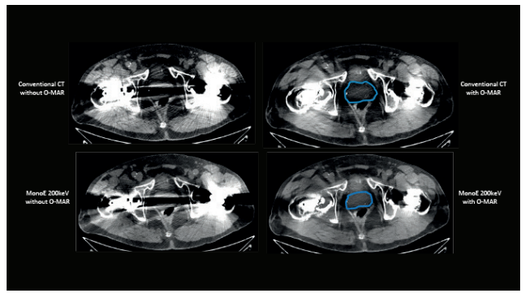
Traditionally, patients are centered using the gantry laser lights; with this feature it is possible to improve patient centering using the lateral surview with real-time feedback.

Clinical applications

- Spectral CT Viewer
- CT Viewer
- Calcium Scoring
- CT Reporting
- Filming
- Cardiac Viewer

Metal artifact reduction with O-MAR

Metal from orthopedic implants can cause artifacts in image data, impairing visualization of anatomy and making it very difficult and time-consuming to generate contours of critical structures and target volumes. Philips metal artifact reduction for orthopedic implants (O-MAR), makes it possible to separately identify this type of artifact and reduce its effect on image data. O-MAR-corrected images are more suitable for the entire treatment planning process by offering better anatomical structure visualization, improving radiation oncologists' confidence in target delineation and avoiding subjective density overrides.



High MonoE and O-MAR combined

Combining high MonoE with O-MAR significantly reduces metal artifacts especially in areas surrounding the pelvis and prostate where large metal hip implants can cause significant artifacts.

Spectral electron density

Allows for the calculation of accurate proton stopping-power ration (SPR). Electron density values of the tissues in the image are relative to the electron density of water. Using direct ED results and eliminate need for developing or using HU calibration curves required with conventional CT images.

Z-effective

Z-effective allows for characterization of different tissues – for example, renal calculi characterization –by generating a color map based on atomic number of tissues in the image.

Stopping-power ratio (SPR)

ED and Z-effective maps can be send fully automatically from the CT console to Philips MultiModality Simulation Workspace (MM SIM)*. SPR can be directly calculated using the Bethe Bloch equation based on three different parameter sets.

Extended field of view (EFOV)

EFOV is an advanced algorithm that provides a high level of HU accuracy.*

*The HU in the EFOV was tested on phantom for soft tissue. The HU error of water as measured on a 30 cm diameter water phantom positioned at 800 mm was -20 ± 20 HU (mean error +/- 2 x standard deviation, resulting in a 90% confidence interval on normal distribution).

MultiModality Simulation Workspace (MM SIM)*

MM SIM* supports conversion of spectral CT images to Stopping-power ratio (SPR) image maps and DICOM export the SPR images.

ED and Z-effective maps can be send fully automatically from the CT console to Philips MultiModality Simulation Workspace (MM SIM)*. SPR can be directly calculated using the Bethe Bloch equation based on three different parameter sets.

Advanced Visualization Workspace 15, automated and AI-enabled[1,2]

Now all of your advanced analysis needs are in one comprehensive solution. This is an intelligent, automated and connected advanced visualization solution.

- Quantify the iodine concentration with iodine maps
- Visualize virtual non-contrast images to reduce the need for true non-contrast acquisitions
- Review images at different energy levels
  - Enhance contrast visualization within vascular structures, and brain gray-white matter, with low monoE
  - Reduce impact of image artifacts and improve stents visualization with high monoE
- AV spectral insights integrated into primary reading via spectral Magic Glass on PACS retrospective spectral results alway available

1. Specktor B. Preprocessing prediction of advanced algorithms for medical imaging, J Digit Imaging 31:42-50, 2018
2. Applications may not be available in all markets. Please Contact your Philips representative for more details.
*Not available in all geographies

Clinical enhancements

Spectral Cardiac Plus Toolkit (option)

Enables cardiac imaging and includes an ECG monitor, retrospective tagging for helical scans, and prospective gating for axial scans (calcium scoring and Step & Shoot). Spectral CT 7500 RT uses several Philips proprietary algorithms for the acquisition and reconstruction of the images.

- Philips proprietary beat-to-beat algorithm automatically finds the best phase for cardiac imaging (in both helical and axial), including arrhythmia detection and management
- Philips exclusive adaptive multi-cycle reconstruction algorithm enhances temporal resolution of helical scans for both spectral and conventional images resulting in temporal resolution as high as 34 ms
- Step & Shoot acquisition mode enables low-dose, prospectively ECG-triggered, axial thoracic imaging. This allows gated, sub-millimeter, isotropic imaging of the entire thorax (up to 50 cm transaxial field of view), including the coronary arteries. Step & Shoot Complete is well suited for patients with heart rates below 75 bpm.

In addition to acquisition and reconstruction capabilities, the toolkit also includes Cardiac Viewer and Heartbeat-CS applications for post processing, as well as CT Reporting application.

Spectral Cardiac Pro (option)

The Spectral Cardiac Premium package includes Precise Cardiac, Dynamic Myocardial Perfusion and electron density.
Precise Cardiac is an AI-enabled smart algorithm to improve image quality by reducing motion artifacts impacting the coronary arteries. Dynamic Myocardial Perfusion enables a special acquisition mode.

Spectral Neuro Essentials (option)

Spectral Neuro essentials includes Jog Scan, Advanced Brain Perfusion and spectral electron density.
Jog Scan provides up to 160 mm of organ coverage for perfusion studies. An axial scan is taken in one location, the couch translates to another location within a few seconds, and another axial scan is taken. These multiple data sets are registered automatically to provide the extended coverage.
Advanced Brain Perfusion application on console enables reviewing the perfusion image.
Spectral electron density values of the tissues in the image are relative to the electron density of water. electron density accurately measures electron density of tissues/voxel within the image.

CT Interventional Pro (option)

The CT Interventional Pro bundle enables you to expand spectral capabilities to interventional procedures with flexible and easy-to-use tools that fit your unique workflow needs and enhance your operational efficiency during interventional procedures.

- New table control kit enables you to save multiple table locations and easily move between them
- Ability to move the table in fine increments aids you in visualizing the needle tip, especially during complex procedures
- Virtual Tilt Viewer allows you to view the needle in your desired plane
- Flexible image displays available (1:1. 3:1 or volumetric)
- Reference series display to provide intra-procedural needle guidance
- Flexible interface changes parameters during scan, recognizing that no two procedures are the same
- Dual monitors allow comprehensive visualization and easy operation from the scanner room directly
- Table control kit can be mounted via the table or on a cart, depending on your preference

Offers three scan modes for interventional procedures and comes with dual monitor configuration.

- **Single** – one scan each time the scan pedal is pressed.
- **Continuous** – sequential scans as long as the scan pedal is pressed. This scan mode enables each exposure of 240° while the X-ray tube is centered beneath the patient to shield the clinician's hands from direct radiation.
- **Fluoroscopy** – continuous X-ray exposure during the time scan pedal is pressed. This scan mode allows real-time guidance of up to 8 frames/sec.

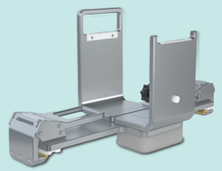
During the entire procedure, scan time and dose are always displayed, keeping the interventional user aware of radiation exposure throughout the procedure. The images can be viewed using a display of 1, 3 or volume mode per exposure. There is also the ability to display a reference image on the monitor.
The new dual-monitor configuration duplicates the display of the two console monitors in the control room.

Note: Dual monitors included in this configuration are compliant with the DIN6868-157 standard specifications.

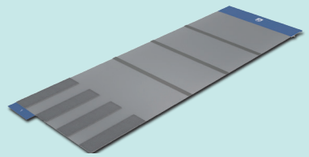
Accessories

Standard accessories

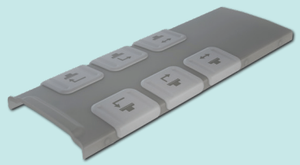
Phantom holder



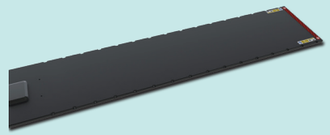
Restraining straps



Foot pedal



Radio-therapy planning (RTP) flat table top kit



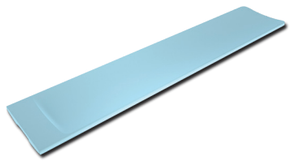
Optional accessories

IV pole

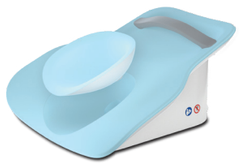
Paper roller

Arm rest

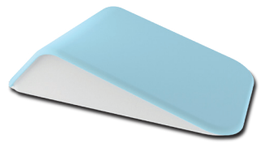
Tabletop mattress



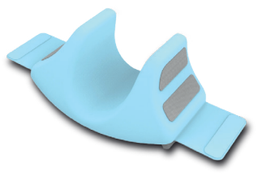
Arm-over headrest



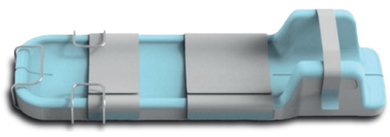
Leg-raising device



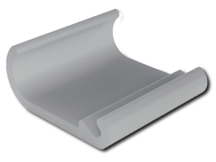
Head holder (on tabletop)



Infant cradle



Scan line marker



User interface

Imagine personalized, patient-centered imaging that puts you in control of crucial advancements in dose management and workflow, designed to make every day more productive. Philips iPatient helps you do all of this, and more.

iPatient key benefits

- Plan the results, not the acquisition
- Up to 24%* faster time to results; up to 66%* fewer clicks
- Facilitates optimal** management of image quality and radiation dose with patient-specific methods
- Easy and efficient communication between the CT system and the injector in order to facilitate delivering appropriate contrast dose and consistent image quality with SyncRight
- Optimizes collimation, pitch, and rotation time automatically
- Automates routine tasks
- Increases your ability to do complex and advanced procedures
- Enables advanced capabilities such as IMR.

Exam cards

ExamCards are the evolution of the scanning protocol. With Exam Cards, the results are planned, not the acquisition as traditionally done in CT; this reduces decision points and clicks, saves time and improves scan-to-scan consistency. Exam Cards can include axial, coronal, and sagittal images, multiplanar reformation (MPR), maximum intensity projection (MIP), iDose[4], and IMR, all of which will be automatically reconstructed and can be sent off to where they will be read with no additional work required by the operator. Spectral CT 7500 RT enables you to pre-set spectral results into your exam cards, and/or change them on-the fly during scan planning, and lastly you can create the spectral results post scan.

ScanRuler

An interactive timeline of the study that provides the operator a quick overview of important events such as Surview, acquisition, bolus tracking, AutoVoice, and injection.

*In a study done using multiphasic liver CT exams, the iPatient software platform reduced time-to-results by 24% and clicks per exam by 66%. Impact of workflow tools in reducing total exam and user interaction time – four-phase liver computed tomography exams. Nicholas Ardley, Southern Health; Kevin Buchan, Philips Healthcare; Ekta Dharaiya, Philips Healthcare.

**Optimal refers to the use of strategies and techniques that facilitate the management and control of both image quality and dose.and future technologies

iPatient

Locking protocols

Unauthorized protocol modifications may be prevented through password-protected access.

Dedicated pediatric protocols

Age- and weight-based child protocols provide high-quality images at low doses tailored to the patient's size and the clinical indication. Spectral results are available from pediatric protocols utilizing 100 kVp.

Dose display and reports

Philips CT scanners include intuitive reporting and recording of estimated dose indices and dose efficiency. Dose estimates are displayed on the operator's console for all scan protocols prior to and throughout the examination. Volume computed tomography dose index ($CTDI_{vol}$) and dose-length product (DLP) are automatically updated as the operator plans the scan. Also, a dose report may be included as a DICOM dose structured report and/or DICOM secondary capture with the reconstructed data set.

Dose performance data

$CTDI_{vol}$ Measurement		
	64 x 0.625 mm collimation	
	Head	15.72 mGy/100 mAs
	Body	8.19 mGy/100 mAs
	128 x 0.625 mm collimation	
	Head	14.75 mGy/100 mAs
	Body	7.69 mGy/100 mAs

Measured on head and body CTDI phantoms (IEC 60601-2-44 ed.3) at 120 kVp.

Size-specific dose estimate (SSDE [mGy]) is an estimate of the average absorbed dose to the scan volume that takes into account the anatomy of the patient being scanned and the radiation output of the CT scanner. It displays for information only and cannot be modified.

Eclipse DoseRight collimator

Manages patient exposure during helical scanning.

Networking and storage

Key features

Spectral CT 7500 RT uses the Windows 10 operating system across the entire CT system with a state-of-the-art cybersecurity design.

Networking

Supports 10/100/1000 Mbps (10/100/1000 BaseT) networks. For optimal performance, Philips recommends a minimum 100 Mbps network (1 Gbps preferred) and for the CT network to be segmented from the rest of the hospital network.

DICOM

DICOM 3.0-compliant image format. Lossless image compression/decompression is used during image storage/retrieval to/from all local storage areas. Images can be auto-stored to selected archive media.

Includes the following DICOM functionality:

- Service class user and profile (CT, MR, NM, Secondary Capture)
- DICOM Print
- DICOM Modality Worklist
- Query/Retrieve User and Provider
- Modality Performed Procedure Step User
- Storage Commitment User
- Removable Media

DICOM connectivity

Full implementation of the DICOM 3.0 communications protocol allows connectivity to DICOM 3.0-compliant scanners, workstations, and printers; supports IHE requirements for DICOM connectivity.

DICOM DVD/CD writer

Stores DICOM images and associated image viewing software on DVD/CD media. Images on these DVD/CDs can be viewed and manipulated on PCs meeting the minimum specifications. Suited for individual result storage and referring physician support.

Filming

This function allows the user to set up and store filming parameters. Pre-stored protocols can be set to include auto-filming. The operator can film immediately after each image, at the end of a series, or after the end of a study, and review images before printing. The operator can also automatically film the study at three different windows and incorporate “Combine Images” functionality to manage large data sets. Basic monochrome and color DICOM print capability are supported.

Local hard drive for image storage

Spectral CT 7500 RT is equipped with a 7.6 TB hard drive to facilitate the local storage of spectral results.

Site planning

Power requirements

- 380, 400, 415, 440 or 480 VAC
- 50/60 Hz
- 25 kVA long-time/175 kVA momentary
- Three-phase distribution source
- Reduced power consumption compared to predecessor – up to 100 W

Console Uninterrupted Power Supply (UPS)

Provides up to 30 minutes of backup power for host and reconstruction system

Isolation transformer (optional)

May be used in conjunction with a full-system UPS to provide voltage correction; or, may be used stand-alone when an isolated ground is not present or when a Wye supply is not available.

Environmental requirements

Temperature	Gantry room	18° to 24° C (64° to 75° F)
	Control room	15° to 24° C (59° to 75° F)
	Technical room	15° to 24° C (59° to 75° F)
	Storage and transport	-20° to +50° C (-4° to +122° F)
Humidity	Gantry and control rooms	35% to 70% non-condensing
	Technical room	20-80% non-condensing
	Storage and transport	20% to 85% non-condensing
Heat dissipation	Gantry	32,888 BTU/hour
	PDU	8,086 BTU/hour
	Air compressor	5,093 BTU/hour
	Host	2,339 BTU/hour
	Workflow Boost Spectral rack*	13,073 BTU/hour

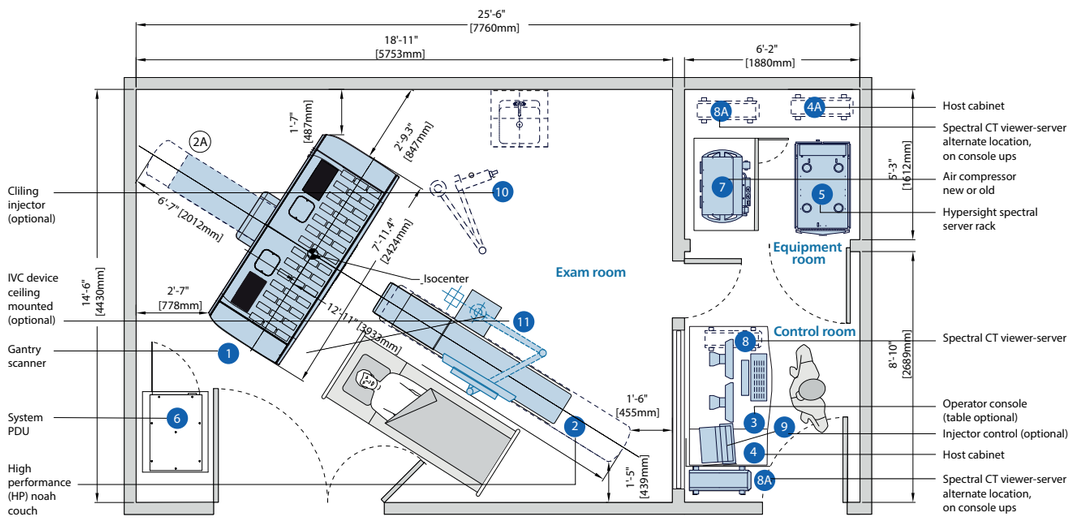
* All reconstruction servers are housed in the same rack, minimizing storage space requirements.

System requirements

This minimum room layout will accommodate a 2,100 mm travel range.

Legend

1 Gantry scanner
2 High performance (hp) noah couch (see note 2)
2a Couch in fully extended position
3 Operator console (table optional)
4 Host cabinet
5 Hypersight spectral server rack (see note 3)
6 System PDU
7 Air compressor new or old (see note 4).
8 Spectral ct viewer-server (see note 1)
8a Spectral ct viewer-server alternate location, or console ups
9 Injector control (optional)
10 Ceiling injector (optional)
11 Ivc device ceiling mounted (optional)



Notes
- This layout represents minimum space for equipment installation and service access. Local codes may require additional space for electrical safety and patient access.
- Optional Advanced Visualization Workspace 15 and client's own workstation can be remotely located in hospital computer room.
- These room dimensions are based on the high-performance table dimensions shown and provide full 2,100 mm axial travel range coverage.
- Air compressor is to be located in equipment/technical room, located a maximum distance of 21 usable cable meters (69') from the PDU and 26.5 usable hose length meters (87') from the gantry.
- Extended cable kit will allow for host rack to be located in equipment room. Verify availability of kit and floor space.

Actual equipment dimensions and weights, per unit

	Length	Width	Height	Weight
Gantry scanner	2424 mm (95.5")	1013 mm (39.9")	2032mm (80")	2497 kg (5505 lb)
High-performance table	5945 mm (234")	516 mm (20.3")	1088 mm (42.8")	622 kg (1371 lb)
Operator console (table optional)	1,200 mm (47.2")	905 mm (35.6")	1,164 mm (45.8")	88 kg (194 lb)
Host cabinet	331 mm (13")	896 mm (35.3")	759 mm (29.9")	84 kg (185 lb)
Workflow Boost Spectral rack	600 mm (23.6")	1,110 mm (43.7")	2,026 mm (79.8")	365 kg (804.7 lb)
System PDU with DC-DC	705mm (27.8")	820 mm (32.2")	1700 mm (66.4")	574 kg (1264 lb)
Air compressor	990 mm (39")	690 mm (27.2")	1160 mm (45.6")	191 kg (421 lb)

EcoPassport

As a company committed to doing business sustainably, we are keen to help our customers make responsible choices. We offer solutions that aim to improve people's health and well-being while reducing impact on the environment.

Our EcoPassports summarize the environmental benefits our products offer in one or more of our focal areas. For example, increased energy efficiency, more sustainable packaging, or a circular-ready product design; optimized for repair, refurbishing and recycling.

In this way, we want to help ensure that each purchase decision is the right one for our customer's needs and the planet.

Energy

Ready to scan	21 kW
Standby mode	6 kW
On / Scan mode	up to 149 kW
Energy usage/year[1]	43928 kWh

Weight

Product	4371 kg (9636 lb)

Packaging

Total weight	1227 kg (2705 lb)

Substances

As per regulatory requirements	• RoHS 2 compliant[2] • REACH compliant

Circularity

- Circular program available[3]
- Service & spare parts available

1 Based on the standard use case scenario defined by COCIR: a mix of 20 scans (5 abdomen, 9 head, 3 spine, 3 chest) over a 12-hour period.
2 EU Directive 2011/65/EU plus amendment 2015/863
3 Philips responsibly repurposes pre-owned equipment at the end of usage to high-quality systems and parts by applying our state-of-the art refurbishment and/or remanufacturing innovations or to raw materials by responsible recycling

The Spectral CT 7500 RT is a computed tomography X-ray system intended to produce cross-sectional images of the body by computer reconstruction of X-ray transmission data taken at different angles and planes. This device may include signal analysis and display equipment, patient and equipment supports, component parts, and accessories.

The Spectral CT 7500 RT system acquires one CT data set – composed of data from a higher-energy detected X-ray spectrum and a lower-energy detected X-ray spectrum. The two spectrums may be used to analyze the differences in the energy dependence of the attenuation coefficient of different materials. This allows for the generation of images at energies selected from the available spectrum and to provide information about the chemical composition of the body materials and/or contrast agents.

Additionally, materials analysis provides for the quantification and graphical display of attenuation, material density, and effective atomic number. This information may be used by a trained healthcare professional as a diagnostic tool for the visualization and analysis of anatomical and pathological structures.

The images and descriptions contained herein provide technical specifications and optional features which may not be included with the standard system configuration. Contact your local Philips Representative for complete specific system details.

Some or all of the products, features, and accessories shown or described herein may not be available in your market.
Please contact your local Philips Representative for availability.

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