Power and productivity

Philips Brilliance CT Big Bore oncology specifications
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Brilliance CT Big Bore

At Philips, simplicity means providing products and services that allow you to focus on your patient throughout the entire cycle of care. This philosophy is exemplified by our Brilliance CT family of products.

The Brilliance CT Big Bore adapts this clinical excellence to oncology, with a system design and workflow tailored specifically for radiation oncology CT simulation.

**Designed for treatment planning**
- Positioning flexibility for complex simulation setups with an 85 cm bore
- CT simulation capabilities with Tumor LOC on the console
- Comprehensive 4D respiratory correlated imaging in prospective and retrospective modes with phase binning as well as amplitude sorting to aid in analysis of organ motion
- Metal artifact reduction for large orthopedic implants with O-MAR for improved visualization of structures and organs
- Positional accuracy for absolute patient marking with less than 2 mm deviation of the patient couch based upon test guidelines recommended in AAPM TG66 document
- Power for situations where speed and throughput are especially critical
- Advanced technologies focused on throughout, including RapidView 4D reconstruction capable of delivering complete multiphase images in less than five and a half minutes
Metal from orthopedic implants can cause artifacts in image data impairing visualization of anatomy, making it very difficult and time-consuming to generate contours of critical structures and target volumes. With Philips metal artifact reduction for orthopedic implants (O-MAR), it is possible to separately identify this type of artifact and reduce its affect on the image data – improving visualization of anatomic structures and target volumes for increased workflow in contouring those structures as part of simulation and patient marking.

- O-MAR improves image quality and visualization of critical structures and target volumes
- O-MAR is automatic and is performed in conjunction with normal image reconstruction providing comparison of image data with and without O-MAR for clinician review
- O-MAR improves workflow in simulation and treatment planning with enhanced visualization of anatomic structures where metal from large orthopedic implants are present
Pulmonary Toolkit

The Pulmonary Toolkit for oncology is a comprehensive set of tools for evaluation of targeted organ motion. The toolkit provides flexibility to meet your clinical needs by offering three different acquisition modes as well as phase and TrueImage 4D amplitude binning in order to aid in making clinical decisions regarding patient positioning and gated treatment delivery.

Prospective axial mode triggers an axial scan at a threshold breath level. This reduces artifacts due to respiratory motion in patients who are not able to hold their breath during the scan.

Prospective spiral mode enables visualization of the breathing waveform beginning a spiral scan at a desired breath level. This mode is used in conjunction with breath-hold imaging.

Retrospective spiral (4D CT) mode generates multiphase images, providing visualization of motion during the full respiratory cycle. The resulting images are used to assess motion of tumor or critical organs and to delineate a target volume that encompasses the entire range of tumor motion.

TrueImage 4D amplitude binning

- Employs a proprietary algorithm that utilizes the amplitude of the respiratory signal in addition to phase-based information when creating 4D CT volumes
- Compensates for uneven breathing patterns and can be used to improve image quality in patients who have difficulty breathing regularly.
Pulmonary Viewer
The Philips bellows device is a pneumatic device that measures change in pressure caused by respiratory motion via a transducer that is connected from the patient’s chest or abdomen to the scanner. Alternatively, Philips provides an interface to the Real-Time Position Management (RPM) Respiratory Gating system* from Varian Medical Systems. This system uses an infrared tracking camera and follows a reflective marker placed on the patient’s chest or abdomen.

Following acquisition of 4D CT, the Pulmonary Viewer provides the ability to visualize one or multiple respiratory phases, analyze and determine extent of motion, and review the patient’s respiratory waveform. The viewer also provides the ability to adjust cine mode speed for visualizing motion over time, interactive slab tools, and patient breathing statistics. Breathing statistics may help determine if a patient could be a candidate for gated therapy by demonstrating consistency of breath rate and depth as well as maximum inhale and exhale phases across all breaths acquired.

* Real-Time Position Management (RPM) Respiratory Gating system is a registered trademark of Varian Medical Systems.
Oncology applications

The Tumor LOC application provides accurate and efficient workflow in therapy simulation by enabling scan to plan functionality directly on the scanner console. Tumor LOC with CT Sim tools are available to assist in absolute isocenter localizations and fast CT simulations with blocking and MLC capabilities and machine characterizations. In addition to standard studies, these tools are available for respiratory correlated studies, including all phase information.

Tumor LOC provides these capabilities for CT simulation

- Increased productivity and improved workflow
- Visualization and analysis of routine CT as well as respiratory-correlated datasets
- Routine and dynamic DRR, DCR and MPR generation
- Maximum, minimum, and average intensity projection generation for routine and respiratory correlated phases
- Review and analysis of breathing waveform and statistics
- Absolute localization of treatment center isocenter
- Contouring for critical structures and target volumes
- Visualization and analysis of treatment beam geometry and beam modifiers MLC/blocks
- Efficient, advanced machine characterization preparation for radiotherapy CT simulation
CT diagnostic capabilities

Excellent performance for diagnostic radiology procedures with image examples of diagnostic CT procedures below.
Improving everyday workflow

The flexibility of this high-performance large bore scanner includes features designed to automate clinical tasks, ease post-processing and reconstruction, and facilitate diagnosis. Above all, the speed of the Brilliance Big Bore configuration impacts your everyday workflow and increases patient throughput.

**Brilliance is designed to enhance clinical performance**

- Patient handling and setup
- Scan and image acquisition
- Dose management
- Reconstruction and display
- Tumor localization, segmentation, and CT simulation
- Post-processing and communication

**Philips CT Big Bore overall imaging**

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<th>Image quality</th>
<th>Dose efficiency</th>
<th>Throughput</th>
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</thead>
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<td>8.0 MHU (26 MHU effective) high power MRC X-ray tube</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>RapidView 4D reconstruction</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Slice acquisition modes: 16 x 0.75 mm, 16 x 1.5 mm, 8 x 3 mm, 4 x 4.5 mm, 2 x 0.6 mm</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>0.44 second rotation time</td>
<td>•</td>
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<td>•</td>
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<tr>
<td>Tach technology</td>
<td>•</td>
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</tr>
<tr>
<td>Dynamic focal spot (DFS) for up to 16 lp/cm high spatial resolution</td>
<td>•</td>
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<td>DoseRight, DoseRight Z-DOM, and DoseRight angular dose modulation</td>
<td>•</td>
<td>•</td>
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<tr>
<td>Metal Artifact Reduction for large orthopedic implants</td>
<td>•</td>
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</tbody>
</table>
CT user environment

Brilliance Workspace is a flexible and user-friendly environment, rich in applications and scalable to your needs. It includes some of the most powerful CT applications on the market today, improving productivity by working the way you do.

All scanning, visualization, localization, and archiving can be done at the scanner console. In addition, most of these functions are also available with Extended Brilliance Workspace and Intellispace Portal, which can be sited away from the CT gantry.

Brilliance Workspace provides:
• Outstanding user flexibility for viewing, performing advanced clinical applications, filming, and reporting
• Oncology protocols and specific oncology applications
• Scalable platform for growth and future applications, making Brilliance CT a secure, long-term investment

Brilliance Workspace leads the industry in four major areas
• Guided flow and ease of use
• Image quality
• Powerful performance
• Advanced clinical applications

Guided flow
Logical guided flow graphical user interface increases productivity.
• Features and functions are visible, not hidden
• Most common operations are shown most prominently

With a top-level workflow bar that directs you through important tasks and permits free movement between functions without losing any current work, you have exceptional flexibility for scanning, viewing, performing applications, filming, and reporting.

Brilliance Workspace guided flow
Brilliance has many innovative features for easy patient setup, including scan planning and protocol development for improved departmental efficiency.

Scan planning
Brilliance Workspace provides intuitive registration and easy entry of patient information and clinical procedure selection, using anatomic graphical display and sample images.

Expert protocol planning
Flexible selection of protocol parameters for enhanced scanning allows you to tailor protocols to your specific needs.
• Predefined and user-programmable scan protocols, including multiprotocol procedures, can be stored and retrieved. Scan parameters may be easily modified before and during the study to meet specific clinical requirements.
• Multiprotocol with timing allows you to easily and precisely program acquisitions of varying slice thickness, breathing or scan delay pauses, and table speeds. Efficient planning decreases exam times, increasing throughput and patient satisfaction.

Preset post-processing
User-defined presets improve workflow by automatically opening the relevant post-processing applications for a specific type of exam. For example, you can automatically launch CTA studies in MIP or spine studies in MPR.

Survview plan
This feature allows planning via interactive mouse control of multiple, independent acquisition series of any type on the survview image.
Viewing angles 90°, 180°
Longitudinal speed 100 mm per second
Measurement increment 0.1 mm
Scan length up to 1800 mm
Scan width 600 mm

Dual survview plan
Planning patient scans with two orthogonal survviews provide flexibility in exam planning and execution.

Multi-surview planning
Requested by radiation oncology users where patient positioning and alignment are critical, multi-surview allows you to repeat the AP and LAT survviews until satisfied that your patients are properly aligned on the tabletop.

Manual scan
This feature places slice-by-slice scans under operator control with online or offline reconstruction and background image archiving to local or remote storage devices. At any time the operator can switch between automatic and manual scan.

Automatic scan
Automatic scan enables automatic execution of preplanned studies, with concurrent, online or offline reconstruction, and background image archiving to local or remote storage devices without operator intervention.

Productivity tools
• Enhanced tools for ACR testing
• One touch enable for scan planning
Patient handling and setup

Our “Design for Life” approach provides high levels of flexibility for users and comfort for patients. Philips helps improve your productivity during patient handling and setup through a variety of features, making patients comfortable and improving workflow.

Gantry
Scan control panels
Controls and displays for gantry tilt, patient couch elevation and stroke are located on both sides at the front and rear of the gantry.

Scan control box
Gantry and patient couch controls and displays are located conveniently at the operator’s console. Additional functions include emergency stop, intercom, scan enable, and pause buttons.
Gantry aperture: 850 mm diameter
Gantry tilt: -30° to +30°; 0.5 inc

Multilingual AutoVoice
A set of commands for patient communication in multiple languages, including English, French, Spanish, Italian, Japanese, Hebrew, Arabic, Russian, and Georgian.
• Record customized messages up to 25 seconds per message.

Intercom system
Two-way intercom which allows patient monitoring and communication.

Table

<table>
<thead>
<tr>
<th>Longitudinal motion</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>1907 mm</td>
</tr>
<tr>
<td>Maximum surview length</td>
<td>1800 mm</td>
</tr>
<tr>
<td>Maximum axial scan length</td>
<td>1860 mm</td>
</tr>
<tr>
<td>Maximum helical scan length</td>
<td>1730 mm</td>
</tr>
<tr>
<td>Speed</td>
<td>0.5-100 mm per second</td>
</tr>
<tr>
<td>Z-position accuracy</td>
<td>±0.25 mm</td>
</tr>
<tr>
<td>Fine motion</td>
<td>0.5 mm increment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vertical motion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
</tr>
<tr>
<td>Speed</td>
</tr>
</tbody>
</table>

Table load capacity (bariatric couch)
295 kg (650 lb.) capacity table

Positional accuracy for absolute patient marking
The positioning, movement, and couch deflection have been qualified according to the recommendations of the report of the AAPM Radiation Therapy Committee Task Group No. 66. The table exhibits less than 2 mm of deviation between scan plane and marking plane with a 75 kg (165 lb) distributed table load, facilitating positional accuracy for absolute patient marking.
• Less than 2 mm of deviation with combined horizontal, lateral, and longitudinal displacement
• 500 mm longitudinal distance between the marking lasers and the scan plane

Slice position indicator
• Internal slice plane laser marker
• External positioning, triple-axis laser marker

X-ray indicator
On scan control panels and on the gantry.

AutoVoice
A standard set of commands for patient communication before, during and after scanning.
**Floating tabletop**
Carbon-fiber tabletop with foot pedal and hand control for easy positioning and quick release.

**Therapy Tabletop Kit**
A comprehensive patient positioning system, the Brilliance Therapy Tabletop Kit is designed to enhance treatment effectiveness and facilitate maximum clinical efficiency. Featuring Varian’s Indexed Immobilization,* patient setup time is reduced, and positioning for subsequent scans and treatment is easily duplicated. The Therapy Tabletop Kit supports immobilization accessories for conformal and stereotactic procedures to enhance positioning accuracy and patient comfort. The indexed surface allows the positioning system to be locked into place according to the treatment plan’s specifications.

The Therapy Tabletop Kit includes a phantom holder, water level phantom, and laser calibration phantom with two Lok bars necessary for proper use of the laser calibration phantom. The phantom holder fits over the therapy tabletop, allowing you to run calibrations with the QA phantom while the therapy tabletop is still attached.

**Accessory**
Therapy tabletop

* Indexed Immobilization is a trademark of Varian Medical Systems.
Scan and image acquisition

Brilliance CT Big Bore combines power and flexibility to improve image quality, speed, and throughput.

System
Rotate-rotate architecture with enhanced geometry for low-dose imaging.

Generator
The Brilliance generator uses modern, low-voltage slip ring technology to provide constant high voltage to the CT X-ray tube assembly.
Output capacity  60 kW
kVp  90, 120, 140 kVp
mA  20-500 mA; 1 mA increment

MRC X-ray tube
The exceptional heat management demands of multislice imaging calls for an exceptional tube. With its patented spiral groove bearing design, the Philips MRC tube dissipates heat as rapidly as it is collected, with an effective heat storage capacity superior to a conventional ball bearing design. Additional features include:
• Virtually motion-free focal spot provides high image quality
• Noiseless design helps calm patients
• Second generation MRC tube technology built on a proven record of performance and reliability
Equivalent anode heat capacity  26 MHU
Anode heat capacity  8.0 MHU
Anode max cooling rate  1608 kHU/min
Focal spot sizes
(per IEC 336/93 standard)
  Large  1.0 mm x 1.0 mm
  Small  0.5 mm x 1.0 mm
Anode diameter  200 mm
Anode rotation speed  105 Hz (6300 rpm)
Target angle  7°
Focus-detector distance  1183 mm
Focus-isocenter distance  645 mm
Dynamic focal spot enables ultra-high spatial resolution in axial and spiral scanning by sampling two fan beams alternately, doubling the reconstruction data samples.

Detector
Our patented detector design enables high-quality images and low dose.
Material  Solid-state GOS
No. of elements  19,584; 39,168 effective with DFS
Dynamic range  1,000,000 to 1
Slip ring  Optical – 2.5 Gbps transfer rate

Data sampling rate
Up to 5280 views/revolution/element
Slice collimation  2 x 0.6 mm, 16 x 0.75 mm, 16 x 1.5 mm, 8 x 3.0 mm, 4 x 4.5 mm

Slice thickness
Spiral mode  0.65–7.5 mm variable
Axial mode  0.75–12 mm
Scan angles  240°, 360°, 420°
Scan field of view  250, 350, 500, 600 mm

Tach technology
Our patented Tach technology is a complete, high-speed, multichannel data acquisition system (DAS) in a single 8 mm x 8 mm chip. The chip replaces multiple cables and large computer cards seen in conventional multislice CT detector assemblies, and delivers an exceptional direct-digital signal.

Image quality
Spatial resolution
High resolution  16.0 lp/cm at cut-off
Standard resolution  13.0 lp/cm at cut-off

Noise
0.27% as measured on the Philips system phantom
(21.6 cm water equivalent phantom, 120 kVp, 250 mAs, 10 mm, 0.75 sec, 250 mm FOV, UA filter)

Low contrast resolution
4.0 mm at 0.3% as measured at the surface of 32 cm phantom
(120 kVp, 250 mAs, 10 mm, 0.75 sec, 250 mm FOV)

Absorption range
-1024 to +3071 Hounsfield units (HU)
-1024 to +64511 HU (exportable with expanded 16-bit range)
**Scanning modes**

**Spiral scanning**
- Multiple contiguous slices acquired simultaneously with continuous table movement during scans
- Multiple, bi-directional acquisitions
- Spiral exposure: up to 120 seconds
- Spiral pitch: 0.04 to 1.7 and user-selectable

**Axial scanning**
- Multiple-slice scan with up to 16 contiguous slices acquired simultaneously with incremental table movement between scans
- Fused modes for reconstructing partial volume virtually artifact-free thick slices from thin slice acquisition

**Scan times**
- 0.44, 0.5, 0.75, 1, 1.5, 2 seconds for full 360° scans
- 0.29, 0.33 seconds for partial angle 240° scans

**Clinical enhancements**

**Test injection bolus timing**
By using a test injection, a real-time graph of the enhancement in the selected region of interest is displayed. The delay time is then selected to provide peak contrast enhancement and reduce contrast usage ideal for CTA.

Bolus tracking is an automated injection planning technique that permits the user to monitor actual contrast enhancement and initiate scanning at a pre-determined enhancement level. Combine with Spiral Auto Start for full automation and efficacy.

**Spiral Auto Start (SAS)**
Spiral Auto Start integrates the injector with the scanner, allowing the technologist to monitor the contrast injection to check for extravasation and to initiate and stop the scan (with the pre-determined delay) while in the scan room.

**0.44-second rotation**
0.44-second 360° rotation provides outstanding temporal resolution in advanced clinical applications. The higher speed especially benefits prospective gating, with up to 20% improvement in temporal resolution compared to 0.5 second rotation.
Options

Continuous CT package
This application provides visual guidance for interventional procedures using a foot pedal and a remote monitor. Exposures, taken once per rotation, in either single or continuous mode, are limited to a 240° axial centered beneath the patient to shield the clinician’s hands from direct X-ray exposure. The package is available in ceiling-mounted and cart-mounted configurations.

CT Fluoroscopy package
This application provides near real-time guidance for interventional procedures (up to 8 fps) using a foot pedal and a remote monitor. The fluoro mode is particularly useful in complicated procedures involving breathing and abdomen motion. The package also includes the Single and Continuous modes, and is available in ceiling-mounted and cart-mounted configurations.

Typical imaging protocols

<table>
<thead>
<tr>
<th>Application</th>
<th>Collimation</th>
<th>Rotation (sec)</th>
<th>Pitch</th>
<th>Slice width (mm)</th>
<th>Coverage (mm)</th>
<th>On-time (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdomen and pelvis</td>
<td>16 x 1.5 mm</td>
<td>0.5</td>
<td>0.9</td>
<td>3</td>
<td>450</td>
<td>9</td>
</tr>
<tr>
<td>Chest high-res spiral</td>
<td>16 x 1.5 mm</td>
<td>0.5</td>
<td>0.9</td>
<td>2</td>
<td>300</td>
<td>7</td>
</tr>
<tr>
<td>Whole body</td>
<td>16 x 1.5 mm</td>
<td>0.5</td>
<td>1.3</td>
<td>2</td>
<td>1200</td>
<td>19</td>
</tr>
</tbody>
</table>
Dose management

Philips is continually looking for ways to enhance patient care while taking advantage of the benefits of using radiation. The result is a family of multislice CT scanners where patients are exposed to low radiation dose without any compromise in image quality.

DoseWise
DoseWise is a philosophy, a set of principles and practices that are based on the As Low As Reasonably Achievable (ALARA) principle, but is so much more. It includes creative thinking and smart solutions in three far-reaching strategic areas:

- SmartBeam management
- Reduced radiation time
- Increased dosage awareness

SmartBeam Management
In Philips multislice CT scanners, specific SmartBeam Management innovations have been developed to block out X-rays that do not contribute to image quality. Through the use of Philips Healthcare’s patented asymmetrix detectors, IntelliBeam filtration, and Tach technology, dose can be managed to limit the exposure specifically to the location of interest.

Less radiation time
DoseRight
Calculates the dose for each patient based on the planned scan and suggests the lowest mAs settings to maintain constant image quality at low dose throughout the exam.

DoseRight angular dose modulation
Automatically controls the tube current rotationally, increasing the signal over areas of higher attenuation (lateral) and decreasing signal over areas of less attenuation (AP).

DoseRight Z-DOM
Longitudinal dose modulation (Z-DOM) automatically controls the tube current, increasing the signal along the length of the scan, increasing the signal over regions of higher attenuation (shoulders, pelvis) and decreasing the signal over regions of less attenuation (neck, legs).

Increased dosage awareness
Through Philips exclusive design elements, DoseWise gives you easy-to-read, at-a-glance information, keeping you aware of dose levels at all times.

Dose displays include:
- CTDI volume
- Dose length product (DLP)

<table>
<thead>
<tr>
<th>CTDI vol</th>
<th>Dose levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>10.61 mGy/100 mAs, 120 kVp, 16 cm phantom</td>
</tr>
<tr>
<td>Body</td>
<td>5.92 mGy/100 mAs, 120 kVp, 32 cm phantom</td>
</tr>
</tbody>
</table>

Using IEC standard phantoms
Reconstruction and display

Fast reconstruction is vitally important when rapid imaging and viewing is a priority, for example, when scanning patients in extreme pain or discomfort because of their disease process.

**RapidView 4D reconstruction**
RapidView 4D reconstruction is the result of years of advanced research, and was designed to remove the bottleneck between CT scan acquisition and image visualization. RapidView 4D provides dramatic improvements in Pulmonary Retrospective 4D imaging workflow by displaying complete multiphase images in under four minutes. This improvement will allow the clinicians to evaluate tumor motion within the patient’s simulation allotted time slot.

The RapidView 4D system employs true cone beam reconstruction algorithms and Philips-patented back projection hardware to provide the user with the images they desire, along with best-in-class reconstruction speeds, without compromise to image quality.

**Reconstruction rate**
Up to 30 images per second

**Reconstruction field of view (FOV)**
50 to 700 mm continuous

**Cone beam reconstruction**
Philips Healthcare’s multi-patented Cone Beam Reconstruction Algorithm (COBRA) enables true three-dimensional data acquisition and reconstruction in both axial and spiral scanning.

**Reconstruction modes**
Concurrent reconstruction

Concurrent reconstruction enables image reconstruction in line with acquisition.

**Offline reconstruction**
This feature enables offline (batch) background image reconstruction of user-defined groups of raw data files with automatic image storage.

**Evolving reconstruction**
Real-time 256x256 matrix image reconstruction and display in step with spiral acquisition or offline allows images to be modified for window width and level, zoom, and pan prior to larger matrix reconstruction. At the end of the acquisition, all images are updated with the desired viewing settings.

**Add reconstruction**
Add reconstruction enables quick and easy unplanned or modified reconstructions of part or all of the images prospectively or retrospectively planned.

**Extended display field of view**
This feature offers extrapolated reconstruction for visualization of anatomy out to 70 cm, which may be useful in radiation oncology for avoidance in treatment planning. Data outside of 60 cm shall not be considered diagnostic quality; CT numbers may not be accurate and image quality may be degraded in this region.

**Reconstruction parameters**
Any study can be set up to automatically reconstruct using various reconstruction parameters. Exams can be tailored online while planning the scan, or during offline reconstruction. Up to six different reconstruction assignments are possible for each study.

Image reconstruction parameters include:
- Image matrix: 512x512, 768x768, and 1024x1024
- Filters: Choice of six different filters
- Zoom and pan: Real-time, mouse-controlled with magnification from 0.8 to 10 (can be redefined during the study)
- Archive: Online image archiving to any installed storage device

**Ultra-high reconstruction (UHR) matrices**
Exclusive to Philips, 768x768 and 1024x1024 image reconstruction matrices display high-resolution data acquired in applications, such as inner ear, spine and high-resolution lung imaging. As resolution increases, larger matrices are required to display the full resolution for the reconstructed FOV.

**Ultraimage**
Ultraimage includes proprietary pre-processing and post-processing hardware and software for enhanced visualization of soft tissue structures. Ultraimage improves image quality for accurate representation of even the most difficult-to-image anatomic areas. The full clinical impact of Ultraimage is best appreciated in the brain, long bones, spine, pelvis, or shoulder, where subtle soft tissue structures can be obscured by adjacent high contrast bone.

**Adaptive filtering**
Adaptive filters reduce pattern noise (streaks) in non-homogenous bodies, improving overall image quality.
Post-processing and communication

Brilliance makes post-processing easy. Through intuitive and flexible tools on Brilliance Workspace, you can quickly produce the high-quality results you desire. Brilliance takes you through advanced applications and efficiently communicates information – working the way you do.

Image processing

The interactive image viewer is designed for fast, efficient, and simple image review and filming. Images can be handled individually or in user-selected groups.

- Image viewer window displays a single image or a selection of images
- Zoom and pan magnification from 0.8x to 10x
- Scroll bar, Leaf and cine, Invert Image, image parameters display

Organ ID

Organ ID automatically isolates lung images for enhanced viewing, including lung limit detection, zoom and pan setting, lung windowing, image enhancement, and image filming.

Image graphics

To help interpret clinical images, a variety of text and graphic aids may be individually positioned and manipulated with the mouse.

- Text annotations
- Cursors for pixel value measurements
- Regions of Interest (ROI) – elliptical, rectangular, curved or freehand – with instantaneous calculation and display of area, average pixel value and standard deviation (values of several ROIs may be added or subtracted)

- Lines, grid, and scales for distance measurements
- Curved and freehand lines for measuring any shape
- Arrows for pointing to features
- Angle measurements
- Histogram of pixel values in a user-defined region of interest
- Profile of pixel values along any line

Window control

- Eight user-defined preset windows provide fast and convenient window setting. Mouse-driven fine adjustments of the window center and width enable exceptional image viewing.
- Highlight window: paints user-defined range of CT densities in color.
- Double window: simultaneously displays two independent CT density ranges on the same image, for example, thorax slice with lung and mediastinum windows.
- Invert window: toggles between negative and positive image.

Host computer

Computer architecture: Windows XP, Dell®

Main memory

4.0 GB RAM

Monitors

19 inch, 1,280 x 1,024 flat panel LCD

Dual monitor configuration

Expands Brilliance Workspace across two monitors. One side is for scanning operations while the other is used for post-processing.

Optional slave monitor

Slave monitor allows you to view images generated on the main console in a remote location, such as the oncologist’s office or physics work area.
Effective data management

The Brilliance operating system provides a user-friendly interface and the performance and archiving, filming, and networking capabilities necessary to effectively manage multislice datasets.

Archiving
Image archiving is organized according to the DICOM 3.0 hierarchical model, in a DICOM 3.0-compliant image format. Lossless image compression and decompression algorithms are used during image storage and retrieval. Images can be auto-archived to selected archive media.

<table>
<thead>
<tr>
<th>Type</th>
<th>Hard drive</th>
<th>DVD</th>
<th>CD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>292 GB</td>
<td>9.1 GB</td>
<td>620 MB</td>
</tr>
<tr>
<td>Images(^1)</td>
<td>514,242</td>
<td>19,000</td>
<td>1,228</td>
</tr>
<tr>
<td>Exams(^2)</td>
<td>1,714</td>
<td>63</td>
<td>4</td>
</tr>
</tbody>
</table>

1\(^512 \times 512\) matrix uncompressed
2\(\)Based on 300 images per study

DVD-RAM
DVD-RAM is an archive solution for storing CT datasets. DVD-RAM supports multi-session writing in order to store multiple patients added to the disk at different times. DVD-RAM disks are written with proprietary Philips format and are only readable on Philips EBW (v3.0.1 or higher) and CT scanner units (v2.3 or higher) with DVD-RAM.

CD Writer
CD Writer stores DICOM images along with viewing software on CD media. CD Writer provides a low cost and flexible alternative for archiving images and for providing images to referring physicians. These images are used for presentations and teaching files or to give to patients.

Filming
This function allows you 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 film after the end of a study and review images prior to print. The operator can also automatically film the study at three different windows and incorporate Combine Images functionality to manage large datasets. Basic monochrome and color DICOM print capability are supported. An optional AMC Film server is available for non-DICOM printers.

Networking
Network connections should be located within 10 feet of the console. Brilliance CT supports 10/100 Mbps (10/100 BaseT) network speeds. For optimal performance, Philips recommends 100 Mbps network speed and that the CT network be segmented from the rest of the hospital network.

Optional Ethernet switch
A 10/100/1000 Mbps switch delivers power, performance, and reliability in a space-saving package for ultra-fast image transfer from the Brilliance Workspace.

DICOM
Brilliance Workspace’s full implementation of the DICOM 3.0 communications protocol allows connectivity to DICOM 3.0 compliant scanners, workstations, and printers, and supports IHE requirements for DICOM connectivity.

Brilliance Big Bore Workspace includes DICOM service classes to communicate with the following modalities:
• Computed tomography
• Magnetic resonance imaging
• Nuclear medicine
• Computed radiography
• Radiography and fluoroscopy (R/F)
• Secondary capture of frozen images (for display only)

Brilliance Workspace includes the following DICOM functionality:
• Service class user and provider
• DICOM print
• Modality worklist
• Query/retrieve
• Perform procedure step
• Storage commitment
• Removable media
• RT structure set
• RT plan
• RT image
ScanTools

This package of advanced components and productivity features streamlines routine imaging studies, and is standard on all Brilliance configurations.

<table>
<thead>
<tr>
<th>Patient handling and setup</th>
<th>Scan and image</th>
<th>Dose management</th>
<th>Reconstruction and display</th>
<th>Post-processing and communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Scan control box</td>
<td>• Dynamic focal spot</td>
<td>• DoseRight</td>
<td>• Window control</td>
<td>• CT Viewer</td>
</tr>
<tr>
<td>• AutoVoice</td>
<td>• Test injection bolus timing</td>
<td>• DoseRight angular dose modulation</td>
<td>• Volume rendering</td>
<td>• Image processing</td>
</tr>
<tr>
<td>• Multilingual AV</td>
<td>• Bolus tracking</td>
<td>• DoseRight Z-DOM</td>
<td>• 3D, 3D small volume analysis</td>
<td>• Image graphics</td>
</tr>
<tr>
<td>• Expert protocol planning</td>
<td>• Spiral auto-start</td>
<td>• CTDI display</td>
<td>• MIP, MPR</td>
<td></td>
</tr>
<tr>
<td>• Preset post-processing</td>
<td></td>
<td>• DLP display</td>
<td>• Q-CTA</td>
<td></td>
</tr>
<tr>
<td>• Dual surview plan</td>
<td></td>
<td>• Dedicated pediatric protocols</td>
<td>• RelateSlice</td>
<td></td>
</tr>
<tr>
<td>• QuickStart QuickSetup</td>
<td></td>
<td></td>
<td>• MasterCut</td>
<td></td>
</tr>
<tr>
<td>• DICOM Modality Worklist</td>
<td></td>
<td></td>
<td>• Custom image filters</td>
<td></td>
</tr>
<tr>
<td>• Prefetch study</td>
<td></td>
<td></td>
<td>• Dual monitor configuration</td>
<td></td>
</tr>
<tr>
<td>• Automatic procedure selection</td>
<td></td>
<td></td>
<td>• CD Writer</td>
<td></td>
</tr>
</tbody>
</table>

ScanTools Pro

Supplemental set of tools standard on Big Bore that enhance productivity, workflow, and diagnostic confidence.
Brilliance CT Big Bore gantry and site planning

**Power requirements**
- 200/208/240/380/400/415/480/500 VAC
- 50/60 Hz, 100 kVA
- Three-phase distribution source

**Environmental requirements**

**Temperature**
- Gantry room: 15° to 24° C (59° to 75° F)
- Control room: 15° to 24° C (59° to 75° F)
- Storage/transport: -5° to +35° C (23° F to 90° F)

**Humidity**
- Gantry/control: 35% to 70% non-condensing
- Storage/transport: 10% to 90% non-condensing

**Heat dissipation**
- Gantry: 18,000 BTU/hr
- Computer: 2,559 BTU/hr
- Reconstruction: 5,293 BTU/hr

**Optional console uninterrupted power supply (UPS)***
Provides up to 30 minutes of backup power for host computer, reconstruction, and monitors.

**Dimensions and weights**

<table>
<thead>
<tr>
<th></th>
<th>Weight</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gantry</td>
<td>2025 kg</td>
<td>199 cm</td>
<td>251 cm</td>
</tr>
<tr>
<td></td>
<td>(4464 lb.)</td>
<td>(78.5&quot;)</td>
<td>(99&quot;)</td>
<td>(97 cm)</td>
</tr>
<tr>
<td>2</td>
<td>Patient table</td>
<td>385 kg</td>
<td>101 cm</td>
<td>69 cm</td>
</tr>
<tr>
<td></td>
<td>(850 lb.)</td>
<td>(40&quot;)</td>
<td>(27&quot;)</td>
<td>(249 cm)</td>
</tr>
<tr>
<td>3</td>
<td>Console table*</td>
<td>56 kg</td>
<td>76 cm</td>
<td>119 cm</td>
</tr>
<tr>
<td></td>
<td>(125 lb.)</td>
<td>(30&quot;)</td>
<td>(47&quot;)</td>
<td>(91 cm)</td>
</tr>
<tr>
<td>4</td>
<td>LCD monitor**</td>
<td>7 kg</td>
<td>36 cm</td>
<td>44 cm</td>
</tr>
<tr>
<td></td>
<td>19&quot;</td>
<td>(14&quot;)</td>
<td>(17&quot;)</td>
<td>(6 cm)</td>
</tr>
<tr>
<td>5</td>
<td>Computer cabinet</td>
<td>150 kg</td>
<td>76 cm</td>
<td>58 cm</td>
</tr>
<tr>
<td></td>
<td>(331 lb.)</td>
<td>(30&quot;)</td>
<td>(23&quot;)</td>
<td>(91 cm)</td>
</tr>
<tr>
<td>6</td>
<td>XFRM/Filter</td>
<td>151 kg</td>
<td>76 cm</td>
<td>61 cm</td>
</tr>
<tr>
<td></td>
<td>(332 lb.)</td>
<td>(30&quot;)</td>
<td>(24&quot;)</td>
<td>(86 cm)</td>
</tr>
<tr>
<td>7</td>
<td>Console UPS*</td>
<td>34 kg</td>
<td>51 cm</td>
<td>38 cm</td>
</tr>
<tr>
<td></td>
<td>(75 lb.)</td>
<td>(20&quot;)</td>
<td>(15&quot;)</td>
<td>(56 cm)</td>
</tr>
</tbody>
</table>

*Optional
**Dimensions and weights for one unit

Contact the Philips Site Planning department for specific requirements pertaining to optional imaging, viewing, power equipment, floor space and electrical, mechanical, structural, or environmental specifications.
Your Philips imaging system is designed to be reliable and efficient. Our commitment is to provide you with high quality service so that it remains so from day one forward.

Philips SmartPath is a way to give you easy access to the latest updates, upgrades and innovations throughout the cycle of product ownership. By maintaining your equipment at peak performance, you can realize your full clinical and operational potential and be ready to quickly benefit from next-generation solutions.

From small enhancements to major system conversions, we help you enhance your investment, for success today and into the future.

**Philips SmartPath** provides you easy access to solutions and innovations for the full life of your computed tomography system, so you can boost your clinical and operational potential and achieve your organizational goals.

- **Optimize**
  - Optimize your system’s performance both now and in the future with regular and ongoing updates, including functionality improvements and remote technical support.

- **Enhance**
  - Enhance your equipment with regular technology upgrades, and take advantage of the newest features and capabilities.

- **Transform**
  - Transform your investment at the end of your system’s life by transitioning seamlessly to a next-generation solution or refurbished option.
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