

1 ** **Brilliance CT, Big Bore Oncolo** 1

The Brilliance CT Big Bore oncology configuration is designed to meet the unique needs of radiation oncology focusing on accuracy, patient positioning, imaging performance and radiation oncology workflow. This configuration also has the added benefit of being ideal for use in a multipurpose environment where CT imaging procedures for trauma, bariatric or general radiology are required in addition to CT simulation.

At Philips, we understand that radiation oncology demands more from imaging systems than simply image quality. Our solutions build on customer insights to assure that accuracy and efficient workflow are a part of everything we do.

Brilliance Big Bore Key Features

- 85cm bore size and 60cm true scan field of view
- Tumor LOC simulation and patient marking application
- Pulmonary Toolkit for Oncology for respiratory correlated imaging
- Patient couch which supports a table load of up to 295 kg (650 lbs) and flat therapy table top for oncology
- Patient couch-flat therapy table top combination complies with AAPM TG-66 guidelines for positional accuracy
- iDose Iterative Reconstruction technology
- Dose management software that provides more options for achieving low dose without sacrificing image quality
- Philips MRC X-Ray Tube
- 16-Slices per rotation

Features

Tumor LOC

The Tumor Localization (Tumor LOC) application provides the tools necessary to perform accurate and efficient CT simulation and patient marking directly on the scanner console. Features and capabilities of Tumor LOC software include:

- Visualization and analysis of standard and respiratory correlated (4D) CT datasets.
- Maximum, minimum and average intensity projections.
- Routine and dynamic generation of Digitally Reconstructed Radiographs,(DRRs), Digitally Compositing Radiographs, (DCRs), and Multiplanar Reformatted Reconstruction, (MPRs), images.
- Isocenter management which supports generation of a single isocenter or separate isocenters for multiple target volumes or general regions.
- Support for absolute and relative marking as well as export of isocenters and structure sets as DICOM RT structure, DICOM RT plan and DICOM RT Image.

- Contouring and editing tools for delineation of critical structures and target volumes.
- Tools to assess organ motion, including cine and slab image display of single or multiple respiratory phases, as well as review and analysis of breathing waveform and breathing statistics for multiphase 4D CT.

Pulmonary Toolkit for Oncology

The Pulmonary Toolkit for Oncology supports three different modes of operation including:

- Prospective Axial enables the user to trigger an axial scan at a particular breath level (threshold) as the patient continues to breath regularly.
- Prospective Spiral enables the user to visualize the breathing waveform and begin a spiral scan at a desired breath level. This mode is used in conjunction with breath-hold imaging.
- Retrospective Spiral (4D CT) results in the ability to generate multiple phases allowing for visualization of motion during the respiratory cycle. The resulting images can be used to assess motion of the tumor and critical organs, make decisions about gating the radiotherapy delivery, and delineate a target volume that encompasses the entire range of tumor motion.

In addition to conventional phase-based binning during reconstruction, the 4D CT mode also features TrueImage 4D Amplitude Binning. This feature uses a proprietary algorithm that incorporates the amplitude of the respiratory signal in addition to phase information when creating retrospective 4D-CT volumes. This approach can help reduce artifacts and enhance image quality for 4D studies for patients with uneven breathing patterns.

The Pulmonary Toolkit for Oncology supports respiratory surrogate devices such as:

- The Philips bellows device which is a pneumatic mechanism placed around the patient's chest or abdomen to dynamically observe changes in pressure caused by respiratory motion via a transducer linked to the CT scanner. The bellows device is included with the Pulmonary Toolkit for Oncology.
- The video-based tracking Real-time Position Management system, from Varian, (Varian RPM), software versions 1.6 and 1.7. The Pulmonary Toolkit for Oncology includes the necessary equipment to establish and maintain an interface between the scanner and the RPM device, but the Varian RPM device itself is not included. The customer should contact their Varian Medical Systems representative to ensure their RPM configuration is correct for the Philips Brilliance CT.

MRC X-ray Tube

With its patented spiral groove bearing design, Philips' MRC tube dissipates heat as rapidly as it is collected, with an effective heat storage capacity far superior to a conventional ball bearing design. MRC X-Ray tube provides motion-free focal spot guarantees optimized image quality

Detector

Detector design is fundamental to the objective of acquiring high quality images while minimizing patient dose. Philips designs configuration-specific detectors that minimize the separation between elements to always provide the highest geometric detector efficiency. Direct-to-digital signal conversion with TACH technology reduces dose and improves image quality.

Material:	Solid State - GOS
Slip Ring:	Optical - 2.5Gbps transfer rate
Slice Collimation:	16 x 0.75mm, 16 x 1.5mm, 8 x 3.0mm, 4 x 4.5mm, 2 x 0.6mm

Generator

The Brilliance generator uses modern, low-voltage slip ring technology to provide a constant high voltage to the CT x-ray tube assembly.

Output capacity:	60 kW
kV selections:	90, 120, 140 kVp
mA selections:	20 to 500 mA

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

Reconstruction

iDose4 Iterative Reconstruction Technology

The iDose4 iterative reconstruction technique gives you control of the dial so you can personalize image quality based on your patients' clinical needs. iDose4 enhances radiation oncology capabilities on the Brilliance CT Big Bore with improved image quality at low dose. This is important for contouring target volumes and critical structures in radiation therapy planning, and helping customers to improve accuracy and treatment of disease, sparing healthy tissue.

iDose4 reconstruction is achieved in seconds rather than minutes. iDose4 features the RapidView console – hardware advances designed specifically to satisfy performance requirements and processing power needed to allow iDose4 to be used routinely.

Adaptive filtering

Adaptive filters reduce pattern noise (streaks) in non-homogenous bodies, improving overall image quality.

RapidView 4D Reconstruction

RapidView 4D reconstruction is the result of years of advanced research, and was designed to satisfy the performance requirements and processing power needed to seamlessly integrate iDose4 into your department. RapidView 4D provides dramatic improvements in multiphase Pulmonary Retrospective 4D imaging workflow by displaying reconstructed retrospective images in under 4 minutes. This performance will allow clinicians to evaluate tumor motion within the patient's allotted simulation 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 require, without compromise in image quality. The following features are a part of the RapidView reconstruction:

ConeBeam Reconstruction Algorithm – COBRA

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

Dose Management

Philips' DoseWise philosophy is a set of principles and practices that ensures the best possible outcomes with minimal risk to patients and staff. The Brilliance CT Big Bore platform employs a number of features that help provide high dose efficiency.

NEMA XR-25 (DoseCheck)

DoseCheck enables the ability to set dose thresholds and provides alerts and notifications to the scan operator when radiation dose levels will be exceeded.

There are two threshold level values:

- Notification Values
- Alert Values

Notification values apply to a single image series, and Alert values apply to an overall exam. Both CTDIvol and Dose Length Product (DLP) values can be set.

For Alert values that will be exceeded, the system requires the user provide name and password information before proceeding to scan. Also, an additional indication will appear in the Dose Info Page Series when the Notification or Alert values have been exceeded during a scan.

DICOM Structured Report for Dose (DICOM SR)

Dose SR complies with the IEC, DICOM PS and IHE standards for dose reporting. The report includes CTDIvol and DLP dose values.

DoseRight ACS (Automatic Current Selection)

Personalizes the dose for each patient based on the planned scan by suggesting the lowest mAs settings to maintain consistent image quality at low dose throughout the scan.

DoseRight Angular Dose Modulation

Automatically controls the tube current angularly, increasing the signal over areas of higher attenuation (e.g., lateral) and decreasing signal over areas of less attenuation (e.g., anteroposterior).

DoseRight Z-DOM (Longitudinal Dose Modulation)

Automatically controls the tube current, adjusting the signal along the length of the scan, increasing the signal over regions of higher attenuation (e.g., shoulders, pelvis), and decreasing the signal over regions of less attenuation (e.g., neck, legs).

Dose Displays

- Volume Computed Tomography Dose Index (CTDIvol)
- Dose-Length Product (DLP)
- Dose Efficiency

Scan and Image Acquisition

Dedicated Oncology Protocols

Developed in collaboration with top cancer centers, dedicated oncology protocols provide simplicity for the CT sim therapist and ensure optimal results.

Locking Protocols

Prevents unapproved modification of scanning protocols through password-protection.

Scan Field of View

True scan field of view: 60 cm

Extrapolated field of view: 70 cm

Multi Surview Planning

Requested by radiation oncology users where patient positioning and alignment is critical, Multi Surview allows user to repeat the AP and LAT survies until satisfied that their patient is properly aligned on the table top.

Spiral Scanning

Multiple contiguous slices acquired simultaneously with continuous table movement during scans allowing for multiple, bidirectional acquisitions

Axial Scanning

Multiple-slice scan with incremental table movement between scans.

Dynamic Focal Spot

Dynamic Focal Spot (DFS) doubles the data sampling density from the detectors effectively doubling the number of detectors and providing ultra-high spatial resolution in axial and spiral scanning.

Dedicated Pediatric Protocols

Developed in collaboration with top children's hospitals, age and weight-based infant and pediatric protocols enhance image quality at low dose.

Dual Surview Planning

Provides flexibility in exam planning with both anteroposterior and lateral survies.

Test Injection Bolus Timing

Establishes the optimum contrast injection delay time using a test injection. A real-time graph of the enhancement in a selected region of interest is displayed. The delay time is then selected to provide optimal peak contrast enhancement and reduced contrast usage.

Bolus Tracking

An automated injection planning technique that permits a user to monitor actual contrast enhancement and to initiate scanning at a pre-determined enhancement level. Combine with SAS for full automation.

Spiral Auto Start

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) while in the scan room.

Image Management, Storage, and Filming

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

- 292 GB Hard Disk
- Image Storage Capacity 512 X 512 Image Matrix = 500,000 typical number of uncompressed images

DVD-RAM Storage

Provides a solution for data storage. DVD-RAM disks are written in a proprietary Philips format and are able to be read only on Philips EBW (v3.0.1 or higher), IntelliSpace Portal, and CT scanner units (v2.3 or higher) with a DVD-RAM drive.

- 4.7 GB DVD Image Storage Capacity: 512 X 512 Image Matrix = 15,000 typical number of compressed images

Filming

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 datasets. Basic monochrome and color DICOM print capability are supported.

Networking

Network connections should be located within 10 feet of the console. The Brilliance CT supports 10/100/1000Mbps (10/100/1000BaseT) network speeds. For optimal performance, Philips recommends a minimum of 100Mbps network speed (1Gbps preferred) and for the CT network to be segmented from the rest of the hospital network.

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. Further details on connectivity and interoperability are provided within the DICOM Conformance statement.

CD Writer

A Compact Disk (CD) drive creates a CD with DICOM images plus DICOM image viewing software, on very low cost CD media. The CD Writer permits a standard PC with a built-in CD drive to view and perform basic manipulation, such as zoom, pan, and window level, on the DICOM images stored on the CD.

- Image Storage Capacity: 512 X 512 Image Matrix = 1,200 typical number of uncompressed images

Operator Console, Patient Handling, and Setup

Operator Console

The operator console is configured with a dual monitor display, keyboard and mouse connected to a CT host computer offering the Brilliance Workspace user environment which supports scan planning, acquisition, reconstruction, visualization and archiving of CT data.

Manual Scan

Places slice-by-slice scans under operator control with on-line or off-line reconstruction, background image archiving to local or remote storage devices. At any time, the operator is able to switch from automatic to manual scan and back.

Automatic Scan

Enables automatic execution of pre-planned studies, with concurrent, on-line or off-line reconstruction, background image archiving to local or remote storage devices, without operator intervention

Patient Handling System

The patient handling system is comprised of the Brilliance CT Big Bore gantry and patient couch support.

Gantry

The gantry consists of two scan control panels, one on each side of the front gantry panel, for gantry tilt, patient couch elevation and stroke. A separate gantry scan control box is located at the operator console and includes functions such as emergency stop, intercom, and scan enable/pause buttons in addition to the controls of the gantry.

- Gantry Aperture: 85 cm diameter
- Gantry Tilt: -30 degrees to +30 degrees

Intercom System and Multilingual Autovoice

The intercom system provides two-way communication between the scan room and the operator console. Additionally, a standard set of commands for patient communication before, during and after scanning is available in several pre-selected languages. Customized messages can also be created. Pre-selected languages available include-English, Hebrew, German, French, Arabic, Danish, Spanish, Russian, Swedish, Italian, Georgian, Chinese, Japanese, Turkish and Portuguese.

Automatic Procedure Selection

Maps the procedure selection from the HIS-RIS with individual scan protocol(s) simplifying the scanning process. Only the most relevant scan protocol(s) for any requested procedure are shown to the user, ensuring that only the desired scanning procedures are performed. This is especially useful for infrequent users of the CT scanner.

Patient Couch

The patient couch is designed to address positional accuracy requirements for absolute patient marking in radiation oncology and to meet the growing need to support bariatric CT imaging. The patient couch consists of a carbon-fiber table top with foot pedal and handrail control for easy positioning and quick release. The couch is designed to support a load capacity of 295kg (650 lbs). The Flat therapy table top for oncology that complies with AAPM TG-66 guidelines when installed with bariatric couch. The following components are included:

Flat Therapy Tabletop kit:

The flat therapy tabletop features a comprehensive patient positioning system including the Indexed Immobilization licensed from Varian Medical Systems, Inc. The flat therapy tabletop supports immobilization accessories that deliver precision required for conformal and stereotactic procedures. The indexed surface allows the positioning system to be locked into place according to the treatment plan specifications. The combination of the flat therapy table top for oncology and the patient couch comply with AAPM TG-66 guidelines for positional accuracy.

The flat therapy tabletop also includes a phantom holder, water level phantom and laser calibration bar phantom with two Lok bars necessary for proper use of the laser calibration phantom. The phantom holder fits over the therapy tabletop, allowing the operator to perform calibrations with the QA phantom while the therapy tabletop is attached.

Also Includes

- *Expert Protocol Planning*
- *Preset Post-Processing*
- *DICOM Modality Worklist*
- *Prefetch Study*
- *Split Study*

Applications

CT Reporting

Provides reporting capabilities for paper print of clinical results from the Philips Brilliance Workspace including display of key images and results frames. The report is available for paper or electronic distribution to referring physicians, patients, or for medical records. Each report is editable and new default templates can be easily created and included in the system configuration. The report can be saved as a PDF file for digital transfer or printed as a paper report. The CT Reporting package includes all applications-specific reports when the application itself is purchased separately

Survview Plan

Planning via interactive mouse control of multiple, independent acquisition series of any type on Survview image.

Image Processing

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

- Image viewer window: Displays a single image or a selection of images.
- Zoom & Pan: Magnification from 0.8 to 10 times
- Scroll Bar, Leaf and Cine, Invert Image, Image Parameters Display

Organ ID

Automatically isolates lung images for better 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 can be individually positioned and manipulated with the mouse:

- Text annotation
- 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 the pixel values along any line.
- Grid with adjustable spacing for distance assessment

Window Control

Eight user-defined preset windows provide fast and convenient window setting. Mouse-driven fine adjustments of the window center and width enable optimal image viewing

- Highlight Window: paints user-defined range of CT densities in color.
- Double Window: Simultaneous displays two independent CT density ranges on the same image, i.e. thorax slice with lung and mediastinum windows
- Invert Window: Ability to toggle between negative and positive image.

Also Includes

- *Quantitative CT Measurement Tool*
- *Volume Rendering*
- *Custom Image Filters*
- *CT Viewer*

ScanTools and ScanTools Pro

The ScanTools package of advanced components and productivity features streamlines routine imaging studies, and comes standard with your scanner. ScanTools Pro is a supplemental set of tools standard on your scanner that enhances productivity, workflow, and diagnostic confidence. The components of ScanTools and ScanTools Pro are located throughout the quote under the appropriate headings.

Siting information

Power Requirements

- 200/208/240/380/400/416/480/500 VAC at 100 kVA and 50/60Hz
 - Three-phase distribution source
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Clinical Education Program for Brilliance CT Big Bore Oncology

Essentials OffSite Education: Philips will provide two (2) lead simulation therapists, as selected by customer, with in-depth lectures covering basic clinical applications, Philips-specific imaging techniques, protocol optimization and scan parameters. A Brilliance CT "system emulator" is used during the lab sessions to simulate all basic scanning operations without x-ray exposure. Students will graduate from this class with an 80% understanding of the base system functionality. The remaining 20% is covered during the Handover OnSite experience. This twenty-eight (28) hour class is located in Cleveland, Ohio, and is scheduled based on your equipment configuration, geography, and availability. Due to program updates, the number of class hours is subject to change without notice. Customer will be notified of current, total class hours at the time of registration. This class is a prerequisite to your equipment handover OnSite Education, and should be attended no earlier than two weeks prior to system installation. ASRT CEU credits may be available for each participant that meets the Guidelines provided by Philips during the scheduling process. **Travel and lodging are not included, but may be purchased through Philips. It is highly recommended that 989801292078 (CT Full Travel Pkg OffSite) is purchased with all OffSite courses.**

Handover OnSite Education: Clinical Education Specialists will provide twenty-four (24) hours of education for up to three (3) dedicated Therapy staff members. This training will encompass all aspects of data acquisition for CT Simulation. Monday is reserved for acceptance testing and commissioning if required. ASRT CEU credits may be available if the participant meets the Philips Guidelines. Note: Site must be patient-ready. Philips personnel are not responsible for actual patient contact or operation of equipment during education sessions except to demonstrate proper equipment operation.

Follow-Up OnSite Education: Clinical Education Specialists will provide twenty-four (24) hours of education for up to three (3) dedicated Therapy staff members, selected by customer. This course covers Tumor LOC and Respiratory Correlated Imaging. Schedule patients based on Training Guidelines. ASRT and MDCB credits may be available if the participant meets the Philips Guidelines. Note: Philips personnel are not responsible for actual patient contact or operation of equipment during education sessions except to demonstrate proper equipment operation.

It is highly recommended that 989801292077 (CT Cross Trainer Module) and 989801292221 (CT Cross Sectional Anatomy Module) are purchased.

Note: The North America Clinical Education Specialists for Oncology are a team of Certified Medical Dosimetrists and registered Radiation Therapist with expert level knowledge of radiotherapy treatment planning and CT simulation.

Education expires one (1) year from equipment installation date (or purchase date if sold separately).

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2	**	Keyboard Language - English	1
3	**	Operator's Manual - English	1
		Operator's Manual	
		• English	
4	**	Oncology	1
		Primary Use of Scanner	
		• Oncology	

5	**	CT Simulation on Console	1
<p>This application adds the capabilities to Tumor LOC to enable CT simulation on the scanner console. This can provide workflow flexibility and productivity in situations such as emergency simulations, “Sim and Treat”, and simple simulation cases. </p> <p>Simulation capabilities include:</p> <ul style="list-style-type: none"> • Multiple radiotherapy machine characterizations • Visualization and analysis of multiple treatment beams • Beam modifiers such as blocking and MLC capabilities <p>Note: Tumor LOC is a prerequisite.</p>			
6	**	O-MAR	1
<p>Metal Artifact Reduction for Orthopedic implants reduces artifacts in image data caused by high density metal objects such as prosthetic hip replacements. This artifact reduction may aid diagnosis and help treatment planning accuracy by enhancing visualization of critical structures and target volumes</p> <p><i>Prerequisite:</i> For installed base upgrades on Brilliance CT-16-slice, Brilliance CT 64-channel, Brilliance CT 64-channel w/ Essence technology, Ingenuity family and iCT family. O-MAR requires iDose4.</p>			
7	**	LAP CARINAiso3 red(Wall)	1
<p>LAP DORADO 3 CT Simulation Laser System with three red movable lasers for identifying the isocenter location: One Ceiling-mounted Sagittal Laser, and Two (Side) Lasers mounted on the wall. The LAP laser system along with the CARINAiso software and control console completes the integration of Tumor L.O.C. CARINAiso software imports patient's surface, isocenter, MLC and field information, along with patient orientation and patient data to enable automatic movement of lasers to patient marking position. LAP will provide one (1) year warranty, preinstallation support by email and phone, and one (1) on-site visit for installation and training of two (2) days duration.</p> <p>Note: Transfer of isocenter position from Tumor LOC to CARINAiso for automatic movement of laser to patient marking position is only applicable if system has Tumor LOC and an absolute marking couch (ie. Brilliance Big Bore).</p>			
8	**	30-min Console UPS	1
<p>Uninterruptible Power Supply (UPS) provides up to 30 minutes of battery backup for computer/reconstruction system.</p>			
9	**	Teal 100kVA Isotran LM	1
10	**	Full Travel Package for OffSite Training	2
<p>Includes one (1) participant's airfare from North American customer location to Cleveland, Ohio, with modest lodging, ground transportation, and meal expenses. Breakfast/dinner provided by the hotel, and lunch/breaks are catered by Philips. All other expenses will be the responsibility of the attendee. Details are provided during the scheduling process.</p> <p>Note: Cancellation/rescheduling policy strictly enforced.</p> <p>Expires one (1) year from the earlier of equipment delivery date or purchase date.</p>			

OPTIONS

1	**	Computer Table	1	_____
		Computer Table, for the Brilliance Console or the Extended Brilliance Workspace, provides a large enough working space (120cm) to accommodate dual monitors and other peripheral devices.		
2	**	Operator's Chair	1	_____
		One (1) standard height operator's chair.		