Incisive CT

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Contents

1  Introductions .................................................................................... 1-1
2  Updates ............................................................................................ 2-1
3  Improvements .................................................................................. 3-1
4  Startup, shut down and daily service ............................................... 4-1
   4.1  Startup and shut down ................................................................. 4-1
   4.2  Daily service ................................................................................ 4-1
5  Caution ............................................................................................. 5-1
6  Warning............................................................................................ 6-1
7  Open issues ...................................................................................... 7-1
   7.1  General.......................................................................................... 7-1
   7.2  Scan.............................................................................................. 7-1
   7.3  Post processing ............................................................................. 7-1
   7.4  Dose info...................................................................................... 7-2
1 Introduction

- Thank you for selecting Philips Incisive CT!
- This document is applicable for Incisive CT Rev. 4.5.1.
- Please operate the Incisive CT Rev. 4.5.1 in strict compliance with the following notes.
- Refer to Instructions for Use of Incisive CT for more instructions and information.
2 Updates

- The isocenter line, Average Water Equivalent Diameter (AWED) and mAs profile are displayed on the surview.
- The couch height can now be changed after a surview. The horizontal couch position no longer changes with couch height.
- Storage capacity is increased. Pop-up of messages asking the operator to delete patient data to free space for the next scan is reduced. The system automatically makes space available for the next scan by deleting the earliest patient raw data from the system.
- The user can now delete raw data separately for a scan series.
- Emergency log-in is supported. The user can log in without a password and perform scans for 5 patients.
- Noisy ECG is now resolved! Online arrhythmia handling is available for Step&Shoot. In addition, arrhythmia handling with auto-detection of atrial and ventricular premature beats is available for cardiac helical scanning.
- The operator is now able to plan other helical or axial scan(s) after a cardiac helical scan.
- Liver and Brain boost is available! Right click on the surview and select to show brain/liver boost to visualize the dose boost area.
- When 3D Dose modulation is checked, mAs, CTDIvol and DLP values in the Show All page display the average values calculated for the scan.
- Auto ROI is available for bolus tracking scan. The HU-time graph and the last tracker image of the bolus tracking scan is saved as a Secondary DICOM.
- Auto Launch: Selecting auto launch allows a series to directly launch for review from the scan page. It is also possible to review and edit iMPRs from Auto Launch.
- It is now possible to select the thin slice thickness for iMPR during planning of a scan.
- The 0.35s rotation speed is now available for some non-cardiac scans: Carotid CTA, Chest PE, Infant Thorax, Chest Helical and Trauma. (Optional)
- Different rotation speeds are now available for multiphase scanning.
- For every scan with OMAR, a duplicate series without OMAR is reconstructed to support image comparison. The OMAR tag will be automatically added in the series description.
- The scanner will now save images to local and remote devices simultaneously. In addition, multiple remote devices can be selected simultaneously.
- Additional reference pediatric protocols are available for brain scans. Please note: child and pediatric protocols have unique logos to separate them from adult protocols.
- It is now possible to delete images in Film before printing; this includes images sent from the Dental Planning Application.
- Recon enhancement (named in UI-User Interface as Enhancement) can now be defined for each scan series during planning of the scan and off line reconstruction.
- New shortcuts and hotkeys are available, including: A=axial, S=sagittal, and C=coronal. The operator can use hot keys (1-9) to apply a window preset for image(s).
- The maximum horizontal couch speed for the patient release button on the iStation is increased to 200mm/s.
- The mark position/save position function will only save the Z-couch position and move to this position irrespective of change in couch height.
- The Incisive CT Rev. 4.5.1 comes with Windows 10 64-bit operation system.
- The display monitor complies with DIN6868-157 standard. (Optional)
- For Computer Based Training (CBT) on Incisive CT, please visit this link:
3  Improvements

- It is now possible to set a default patient orientation for an exam card.
- The Zero button on the gantry panel is larger and more vivid.
- The 0.4s rotation speed is available for cardiac, brain and carotid CTA scans.
- It is now possible to double click to edit an exam card or send a study/series to review.
- Scrolling through the images from previous cycle(s) in CCT is now possible.
- Image quality is improved for thin slice images.
- The glaring artifact seen at the brain-bone interface is reduced.
- The white line artifact over the sternoclavicular joint and adjoining region when scanning both chest and neck is resolved.
- The artifacts related to dental implants are reduced.
- ROI information is no longer missing while saving a brain perfusion result table irrespective of number of ROIs.
- The user can now go back to Definition phase from the Navigation phase and edit the entire centerline without reconnecting the colon segments in CT Colonoscopy application.
- It is now possible to review a movie created in the post-processing application if the movie is saved in Local.
- The recon priority order has been modified. The evolving and current scan are assigned highest priority. The current patient recon has priority over the offline recon.
4 Startup, shut down and daily service

4.1 Startup and shut down

- When operating the scanner for 24 hours, please restart the software each morning.
- Reboot the Computer every day.
- After start-up, wait 5 minutes before using system.
- Do not turn off the wall power switch until the tube heat storage is less than 23%.
- In order to maintain the DMS temperature, it is recommended to keep the system powered on. If the wall switch was turned off and the system started from a cold state, it is advised to wait for 60 minutes before scanning.

4.2 Daily service

Short Tube Conditioning

- Please perform the Short Tube Conditioning daily before scanning any patients.
- Before performing the Short Tube Conditioning, please make sure no one is in the scanner room and the scanner room door is closed.
- Please perform the Short Tube Conditioning if no scans have been performed for more than 8 hours.

Air calibration

Air calibration is a part of normal system maintenance. In order to ensure proper operation of the scanner and image quality, this procedure should be performed at least once per week.

- A complete air calibration procedure takes approximately 30 minutes.
- Before the procedure, please make sure that no one is in the scanner room and the scanner room door is closed.
- No objects should be in the scanner bore during the procedure.
- Couch height should not be lower than 300mm during the air calibration.
Image quality assurance

Quality assurance (QA) is an automatic system self-check, which is recommended to be performed once per week. Please refer to Incisive CT Instructions for Use for more information.
5 Caution

- The maximum number of scans within one study is 10 with the surview included.
- The maximum number of phases in a multi-phase scan is 5, the locator and tracker excluded.
- The maximum number of additional recons after a series: 10.
- In the event of online reconstruction failure, use Offline Reconstruction.
- Different parameters affect the reconstruction speed in different ways:
  - When OMAR is turned on, the reconstruction slows down. If the patient’s body contains metal, the reconstruction will be slow. The greater the amount of metal in the patient’s body, the slower the reconstruction speed.
  - When scanning large patients, a larger FOV is used. In this situation the recon speed will decrease. The Recon center is also an important factor that may affect recon speed. If the recon center is off the scan center, the recon speed decreases.
  - Reconstruction speed is slower for the head protocol. Do not use the head protocol to program a body scan.
  - When using iDose, the reconstruction speed slows down. The higher the level of iDose, the slower the reconstruction speed.
  - When other parameters and the total number of images are same, reconstruction will slow down if using a large slice thickness, large increment or lower pitch.
- Head scan protocols should only use the head scan type. Scanning heads using body protocol will cause beam hardening artifacts.
- Occasionally the maximum and minimum mAs values are not displayed in the surview mAs profile when 3D DOM is used. These values may be located in between the mAs displayed slice, and thus are not viewable.
- When the ECG signal is not displayed but the PIM light is on, please restart the gantry to recover the ECG signal.
- The cardiac Step&Shoot scan will stop if the ECG signal is interrupted during a scan. Ensure that the ECG leads are secure and well connected before initiating a scan.
- Verify that all studies are transferred successfully before deleting.
- Batch presets with duplicate names are permitted. It is recommended to save preset under distinctive names to avoid confusion.
- Confirm the vessel centerline and contour in VA or CAA before proceeding to vessel calculation.
- It is not possible to define a curve in VR, but it is possible to define a curve from the MPR images in Endo.
- Occasionally, continuously playing a VR batch for multiple times may cause it to disappear. Reset and redefine the batch.
- iBatch is not supported for derived data with a different image matrix.
- When the data source is other than Local and any batch/image(s) are saved to this data source, the newly saved batch/image(s) are not listed in the completed page. To view the newly saved images in the completed page, re-select the data source after selecting another data source.
- The Remove Couch function is not implemented for FOV less than 200mm.
- In Quick review, if the scan overlay is not displayed over a surview for a scan with dual surview, just scroll to the next surview to view it.
- If the user aborts a surview prior to acquiring the entire length and chooses to replan another surview, the length of the re-planned surview would be equal to the length of aborted scan.
- Using the intercom to give patient instructions while the auto-voice is playing will cause both voices to get mixed up, and the patient may not hear any of the instruction clearly.
- Do not position a patient with the patient’s head sticking out of the head holder while doing a head scan with gantry tilt. It may result in artifact when higher tilt angles are chosen.
- iPlanning is not applicable for infant and children studies.
- When the increment of a batch is changed by manually inputting a number, occasionally the windowing of the image may change due to conflicts with the hotkey.
- When you save a batch/image(s) as Derived DICOM (viewport size) with an image enhancement(IE), the image(s) is saved with enhancement. The enhancement cannot be removed afterwards. But when you save a batch/image(s) as Derived DICOM (original size) with an image enhancement, the enhancement can be modified later.
- The labels in iBatch images may get cut off when zoomed, as both the image and the label are zoomed together. Use cautions while zooming iBatch images in Film.
- Annotation is not supported for AIP mode in 3D image.
- Use the right click menu if you want to delete an annotation after double clicking and enlarging an image in Film.
- When using Compare mode, only a single batch can be created.
- The centerline appears thick and may obscure the vessel when a vessel centerline is saved along with the vessel in Vessel Analysis and Coronary Artery Analysis.
- The CT value for an auto ROI should be 0-400HU to enable the scan.
- A Cardiac Step&Shoot followed by another helical scan cannot be planned with the same time line, but is possible to complete the helical scan as non-timed.
- The scan range will change with the change in couch height. Please be mindful of this implementation when the desired scan length is long or the intended scan area lies at the edge of the scanable range.
- Ensure that the liver/brain boost area is defined correctly before proceeding to scan. Right click on the surview and select to show brain/liver boost to visualize the boost area.
6 Warning

Biopsy CCT

- To avoid contaminating the patient or sterile field, the physician should not touch the panel or any other surface that is not sterile when performing a procedure.
- Use disposable sterile gloves.
- Ask the assistant to operate the panel.
- Perform operations on the console only according to the biopsy operator’s instructions.

General

- For your safety, please be aware of cables that may be lying on the floor while working in the scanner/gantry room.
- After using bone removal, verify that desired anatomy was not removed as well.
- During Bolus tracking, be alert to the CT values displayed on images.
- When using SAS injector - Start the injection only after the message “Start Injection” appears on the scanner screen.
- Keep the Gantry, patient table, and accessories clean at all times. Any contrast material left on these surfaces will create image artifacts.
- During all movements of the gantry (automatic and manual) and the patient table, keep the patient under continuous observation to avoid pressing the patient against the gantry or between table parts and to avoid disconnecting any infusion or respiratory apparatus.
- After changing the Scan Type in the Exam Card Manager, verify all scan parameters.

Contrast scans

- The scans followed by a bolus tracking series should not be changed to non-timed.
7 Open issues

7.1 General

- After making changes to Exam cards, please ask your Service Engineer to use the Backup tool to back up the User Exam Cards.
- Adjusting the couch height after the surview may cause the scan plan box to be inaccurate. Define larger FOV to ensure that the images reconstructed afterwards are not truncated.
- If the couch stops moving before reaching the intended position when moving the couch from the external laser to internal laser, or from internal laser to external laser, or moving the couch to the previously saved position, take your finger off and press the blinking tab again in the gantry panel to complete couch movement.
- If a pop up message is hidden behind another message box after screen has become locked, use alt + tab buttons in keyboard to switch between the message boxes.

7.2 Scan

- When changing the scan direction for a surview by pausing an already initiated surview acquisition, the system automatically fills in the start and end position; this may cause the surview to be acquired in the wrong location.

  **Work around:** After pausing a scan, change scan direction and then change the numerical values to an asterisk “*” for start position and press Go to initialize the surview.

- For cardiac studies, use thickness setting equal or larger than 0.9mm for better image quality.
- When choosing Pause in manual axial scan, do not move the couch manually to avoid x-ray exposure in the wrong couch location.
- If a scan is aborted during a dual energy scan, the number of images shown in the Show All page may differ from the actual number of images being reconstructed.

  **Work around:** Perform an offline recon to get a consistent image count.

7.3 Post processing

- Occasionally, Manual Remove Bone doesn’t provide an ideal result.
Work Around: You can adjust the Threshold. Also multiple tools like Remove Bone Residue, Cut Tissue as Bone, Cut Tissue as Volume, Cut Selected are available to enhance your result.

- If an image is saved as derived image after defining a curve in MPR, the curve line is also saved.

Work Around: Save the image as Original DICOM or choose not to show curve before saving.

- Extend Brain Vessel function available in Vessel Analysis application is only designed to extend the intracranial vessels or aortic curve when all the neck vessels are already extracted up to the Circle of Willis and the common carotids. If you intend to extend the upper and lower end of a brain vessel use the functions:
  1. Extend Upper End
  2. Extend Lower End

- Phase information for a cardiac scan is not displayed in series list in Coronary Artery Analysis application.

Work Around: Input the phase information in label for a cardiac series while performing the scan. The content input in label will be displayed as series description after completion of scan.

- In filming, pasting an image to a blank space is not permitted. To paste an image, click on the image to get the right click menu.

### 7.4 Dose info

- When using DoseRight, always confirm that the protocol is appropriate for the patient size.
- If a power failure occurs during a scan, the study is ended automatically and the Dose Info page will not be generated.
- Dose information displayed in plan scan user interface maybe different than that reported in the Dose Info page. The Dose Info page will display the actual dose.