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Artis Zee/Zeego (until VC14) / Axiom Artis

3D Calibration Test

Necessary tools for performing these tests

The following tools are used to perform these tests:

- Very thin metal wires with a diameter of less than 0.5 mm

General Prerequisites

Be sure that the Artis zee / zeego is adjusted according to the appropriate IQAP specifications.

Most important parameters are

- Dose (Check with "Indirect dose" in the Artis IQAP)
- Iris diaphragm (check with "Dynamic test" in the Artis IQAP), (for I.I. systems only)
- Resolution (check with "CTF" in the Artis IQAP), (for I.I. systems only)
- FD calibration
- DEXI adjustment

Acquisition programs

The acquisition programs/3D protocols for the phantom acquisitions are described in the respective subsections in the following chapters.

System	Installed options	Acquisition program
Artis FA/BA/FC/BC	with High Speed option	5s-1k DR (5s-1k DS)
	without High Speed option	13s1k DR (13s1k DS)
Artis TA	with High Speed option	5s-1k DR (5s-1k DS)
	without High Speed option	13s1k DR (13s1k DS)
Artis MP	with High Speed option	5s-1k DR (5s-1k DS)
	without High Speed option	13s1k DR (13s1k DS)
Artis dFA/dBA/dFC/dBC/dT C/dTA/dMP		5sDR (5sDSA)
Artis zee and zeego		5sDR (5sDSA)

Fast wire-test

Acquisition program

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Depending on acquisition system and installed options, one of the following acquisition programs must be used for the image quality test.

System	Acquisition program
Artis zee and zeego	5sDR (5sDSA)
Artis zee and Zeego (VC21 and higher)	5sDR Head (5sDSA Head)

Depending on the type of stand, the geometry tests have to be repeated for all "system positions".

With a floor stand, the test must be performed on:

- „Head end/Table 0°

With a ceiling stand, the tests must be performed on:

- „Left side
- „Head end
- „Right side

With a Multi-axis (zeego) system, the test must be performed on:

- „Left side/Table 0°
- „Head end/Table 0°
- „Right side/Table 0°
- „Left side/Table rotated 15° (if configured)
- „Left side/Table rotated 30° (if configured)

Zoom format

Depending on the installed detector (image intensifier or flat detector), one of the following zoom formats must be set.

Detector Zoom format

Detector	Zoom format	
I.I. 33 cm	33 cm	Zoom 0
I.I. 40 cm	28 cm	Zoom 1
Small FD (20 cm x 20 cm)	25 cm	Zoom 0
Large FD (30 cm x 40 cm)	42 cm	Zoom 1

Acquisition procedure

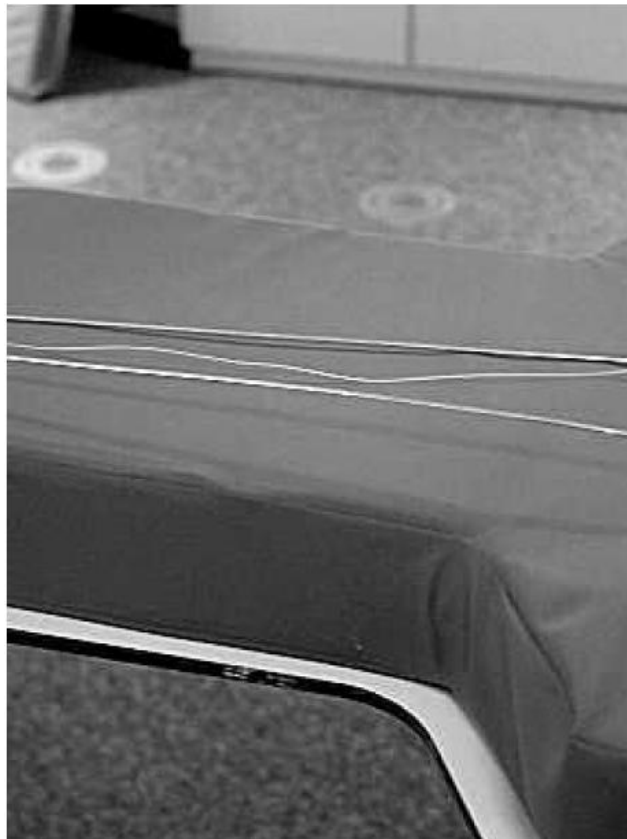
- „Register a new patient on the AXIOM Artis and Artis zee/zeego.

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„Place some long, thin wires on the patient table parallel to the patient axis. In this example, we have used two metal wires with a diameter of about 1.5 mm and stainless steel GDC delivery wire (attached to a GDC coil).

Do not use a catheter, it should be a very thin metal wire!

Fig. 1:



„Adjust the table height and the table position so that the wires are in the isocenter.

„Acquire a 3D acquisition scene with the settings mentioned above.

„Transfer data to the syngo X Workplace / LEONARDO Workstation using **Image > Send to 3D** in the main menu of the **PostProc** task card on the Artis Imaging System (with **AXIS**, the transfer is started automatically!).

- Select Patient > InSpace Reconstruction

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Fig. 2:



„Set the following reconstruction parameters:

- Pre-set: DynaCT (up to VB14) / DynaCT Body (beginning with VB15)
- VOI: Full
- Kernel Type: HU
- Slice Matrix: 512x512
- Image Characteristics: Normal
- Reconstruction mode: Native



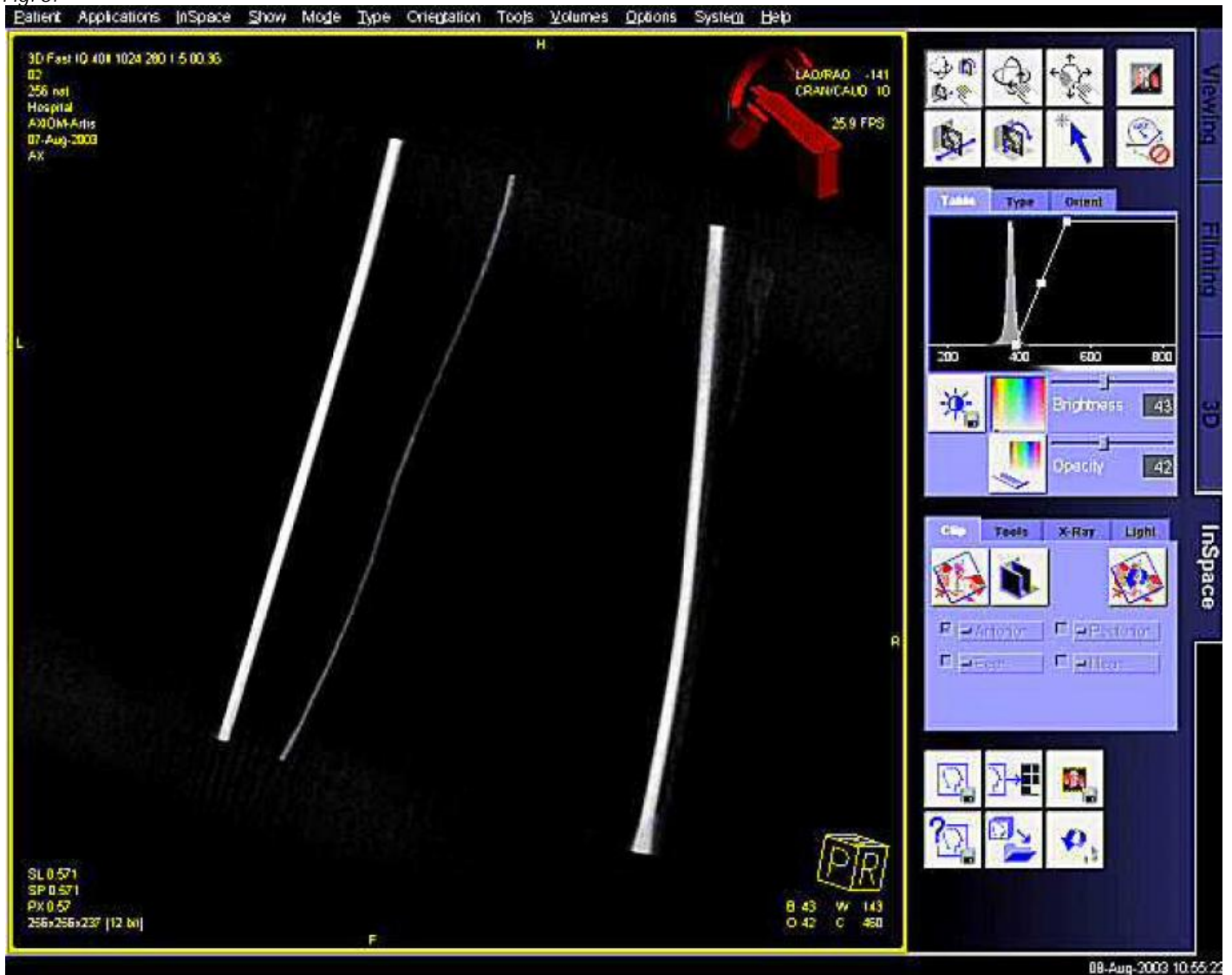
„Start the reconstruction.

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Evaluation in InSpace

- „Load the data set using the Patient Browser into an application that is able to process MPR images, e.g. into the InSpace or 3D task card. (As an example, the procedure is explained for InSpace, the procedure for 3D is similar.)
- „The wires should be well visible in Volume Rendering. Their profile shall be well defined, with sharp edges

Fig. 3:



„Also turn reconstructed volume. Wire profiles shall be round again.

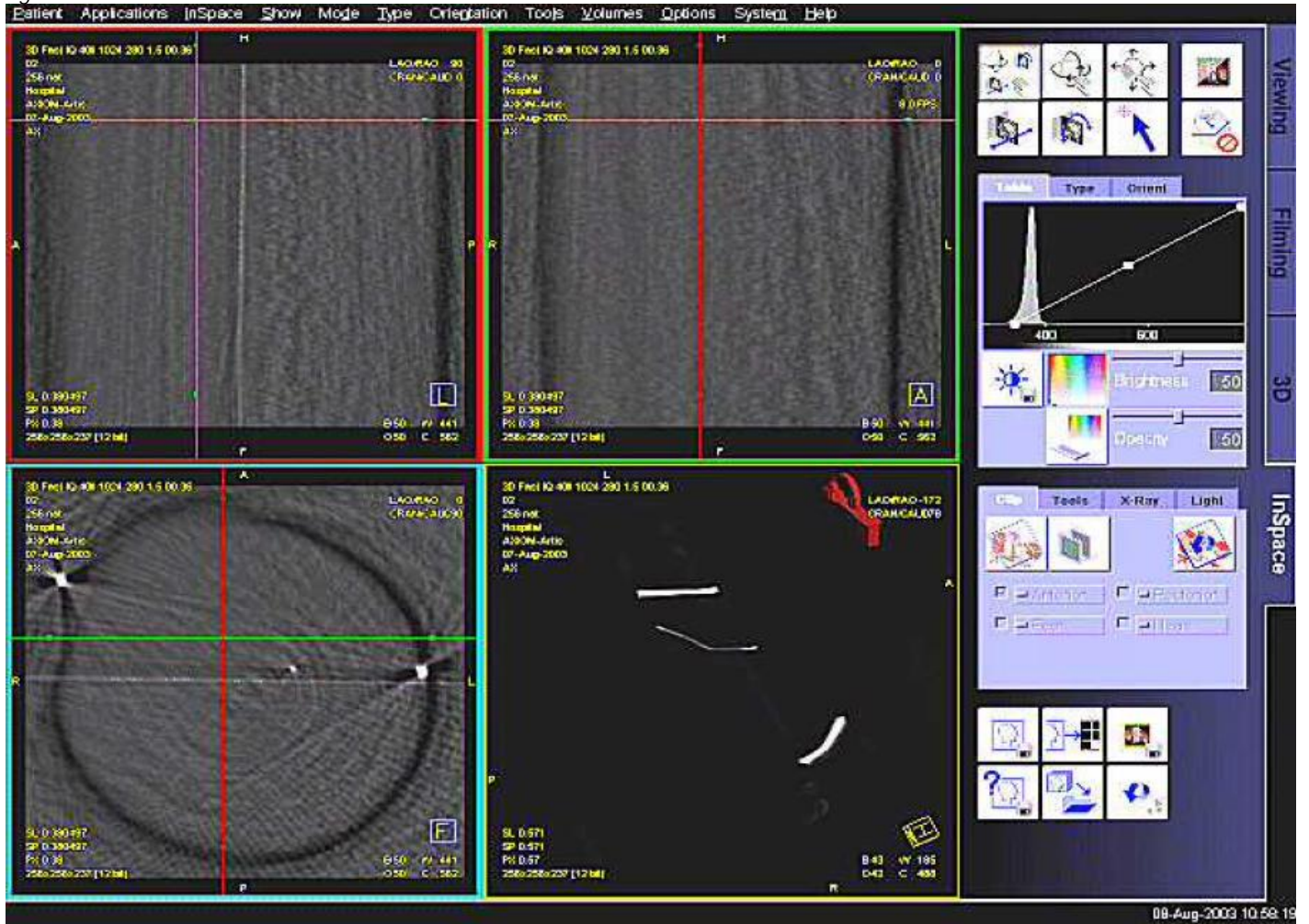
Fig. 4:



- „Now switch to MPR (InSpace/Type/MPR view mode).
- „It may be necessary to slightly readjust the position of the orthogonal planes.
- „Click into lower left window (slices). Readjust windowing with middle mouse button.
- „Move blue reference line in top windows head side. The wire profiles shall be round

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Fig. 5:



„Move blue reference line in top windows feet side. The wire profiles shall be round.

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Fig. 6:

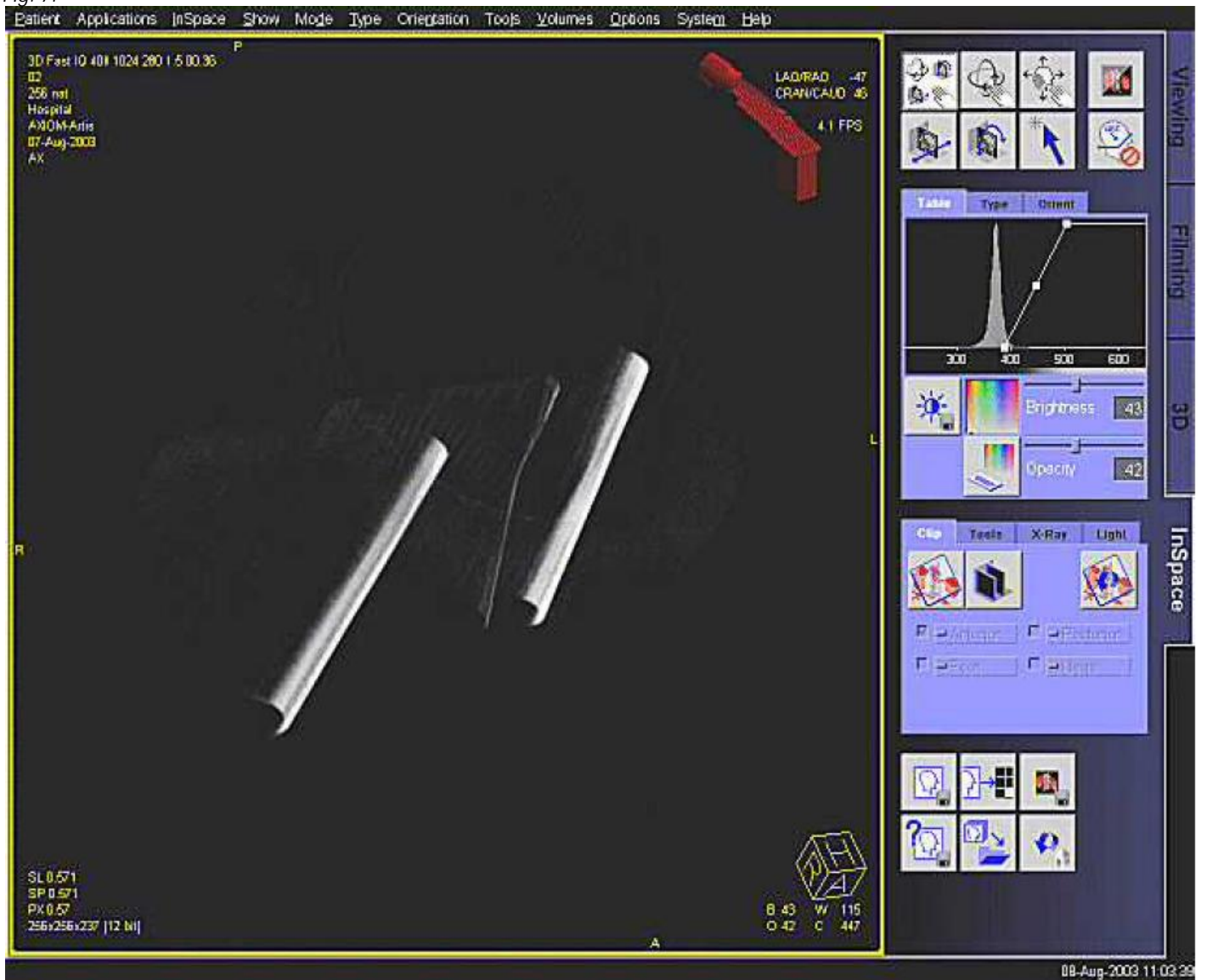


For I.I. systems: Here, the dark rings (two semicircles) are unavoidable and are caused by the edges of the semitransparent collimators.

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If there is a problem, the images appear as follows:

Fig. 7:



Instead of round wires we see U-shaped profiles.

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The MPR view looks like

Fig. 8:



Instead of round wires we see a U profile (or moon or horseshoe).

In this case, either the data set were not properly acquired (table tilt, table cradle or table rotation not in 0 position, C-Arm not properly pivoted into the 0 position, C-Arm not properly moved to the 3D start position before acquisition), or the calibration of the system is no longer appropriate.