SIEMENS

Artis Zee (VC21 or Higher) / Zeego / Q / Q Zen

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)
- FD calibration
- DEXI adjustment

Acquisition programs

The acquisiton programs/3D protocols for the phantom acquisitions are described in the respective subsections in the following chapters.
Depending on the type of stand, the geometry and registration accuracy tests have to be repeated for all "system positions".

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

- Head end/Table 0˚

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

- Left side/Table 0˚
- Head end/Table 0˚
- Right side/Table 0˚

With an Artis 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)

SIEMENS

Fast wire-test

Acquisition program
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	
Small FD (20 cm x 20 cm)	25 cm	Zoom 0
Large FD (30 cm x 40 cm)	42 cm	Zoom 1

Acquisition procedure

SIEMENS

⬜ For the Fast Wire Test, use very thin wires, with a diameter of less than 0.5 mm, that are placed in the longitudinal direction.

- Register a new patient on the Artis zee/zeego.
- Place some long, thin wires on the patient table parallel to the patient axis. In this example, we have used four very thin metal wires with a diameter of less than 0.5 mm. Use stainless steel or similar wires, do not use plastic wires.

Fig. 2: Thin metal wires

- 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 of data to the syngo X Workplace / LEONARDO Workstation is started automatically!.
- Select Patient > InSpace Reconstruction

SIEMENS

Fig. 3:

n 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

- Viewing Pre-set: Vessel 2

n Start the reconstruction.

3D Calibration - Artis Zee (VC21 or Higher) / Zeego / Q / Q Zen

SIEMENS

Evaluation in InSpace

n 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.)

n The wires should be well visible in Volume Rendering. Their profile shall be well defined, with sharp edges

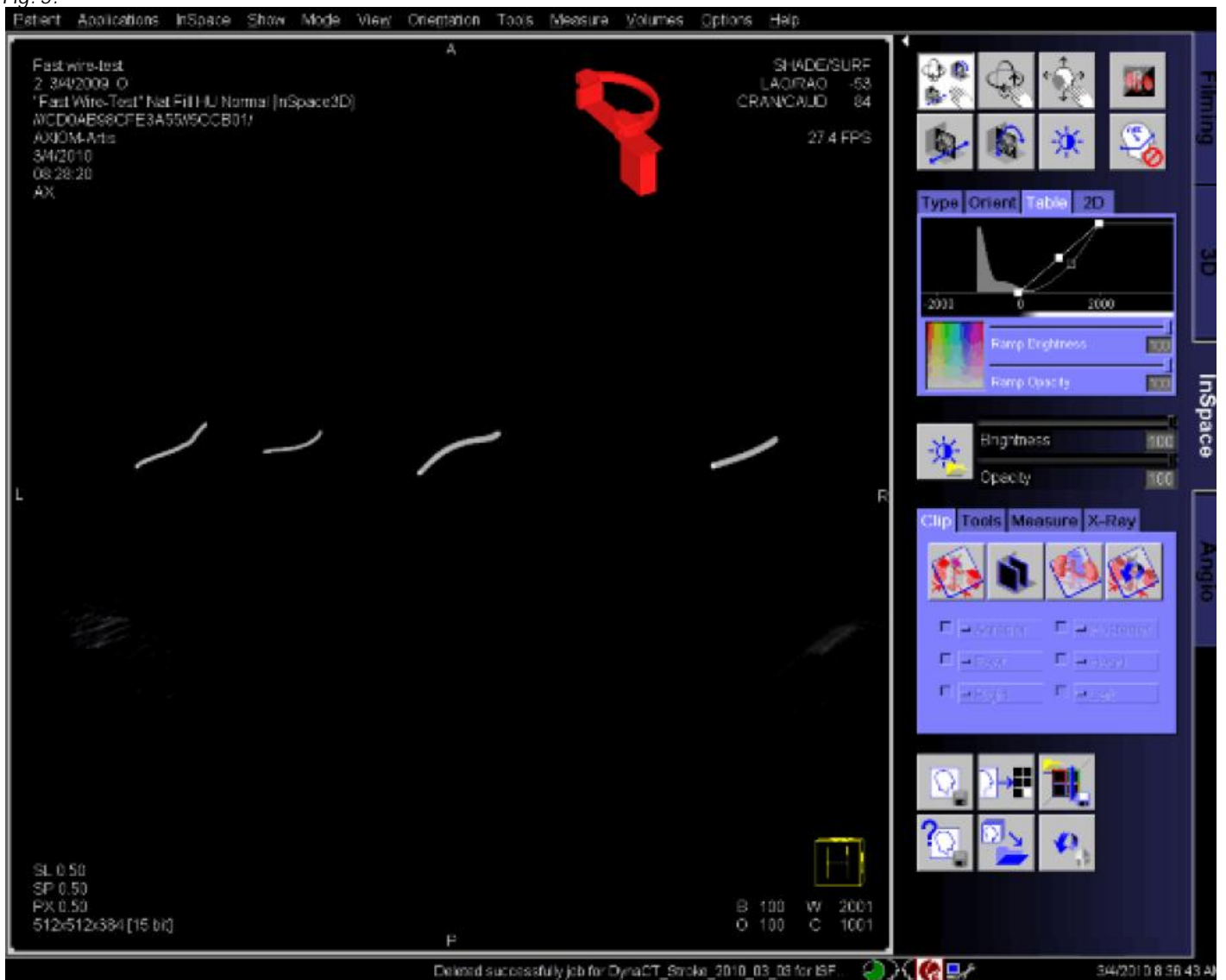A typical transfer function setting is B=100, O=100, W=2000, C=1000 (see Fig. 4)

Fig. 4:
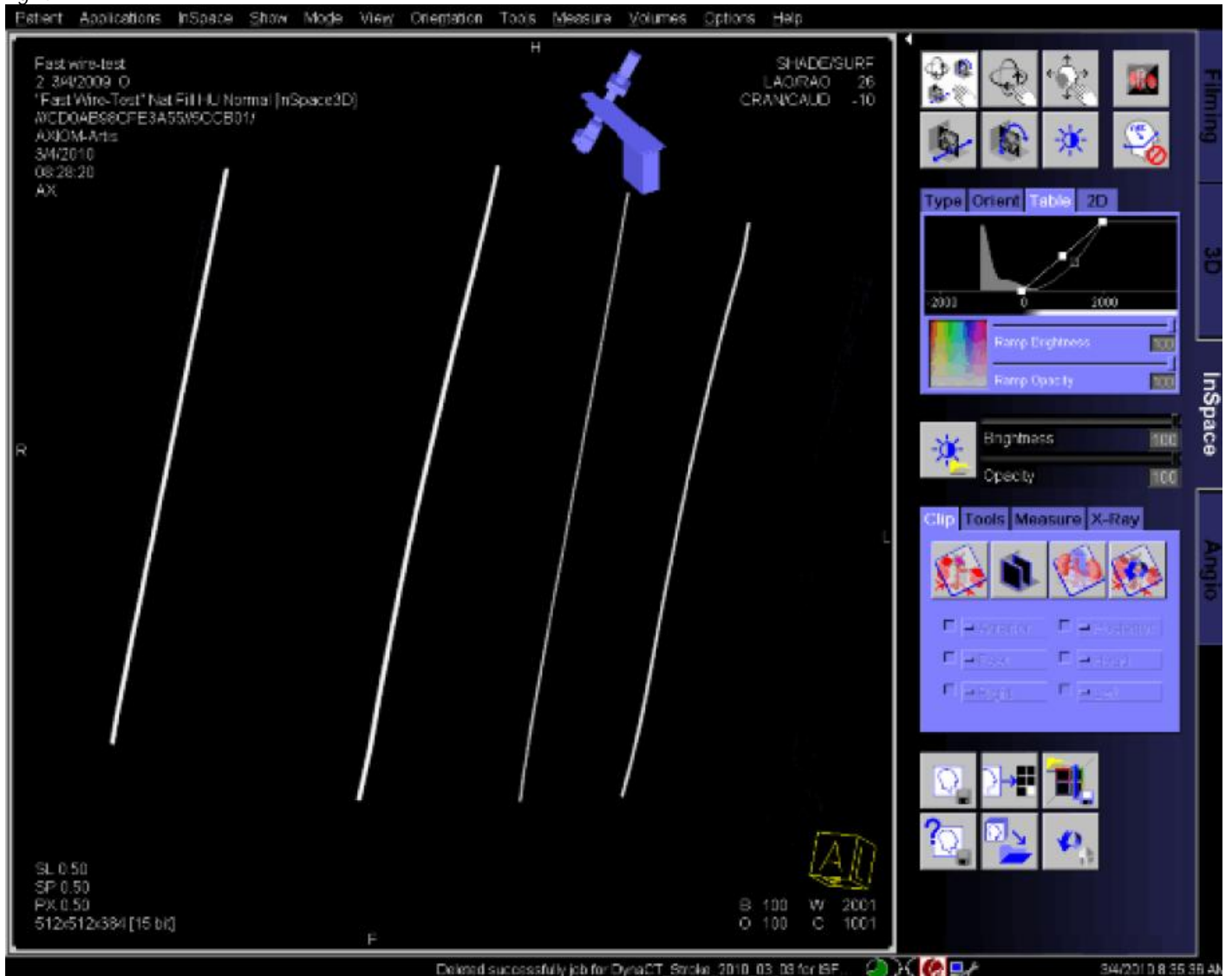
n Also turn reconstructed volume. Wire profiles shall be round again.

3D Calibration - Artis Zee (VC21 or Higher) / Zeego / Q / Q Zen

SIEMENS

*Fig. 5:*

n Now switch to MPR (InSpace/Type/MPR view mode).
n It may be necessary to slightly readjust the position of the orthogonal planes.
n Click into lower left window (slices). Readjust windowing with middle mouse button.
n Move blue reference line in top windows head side. The wire profiles shall be round
A typical window setting in the MPRs is W= 2000, C= -500, see (Fig. 6)
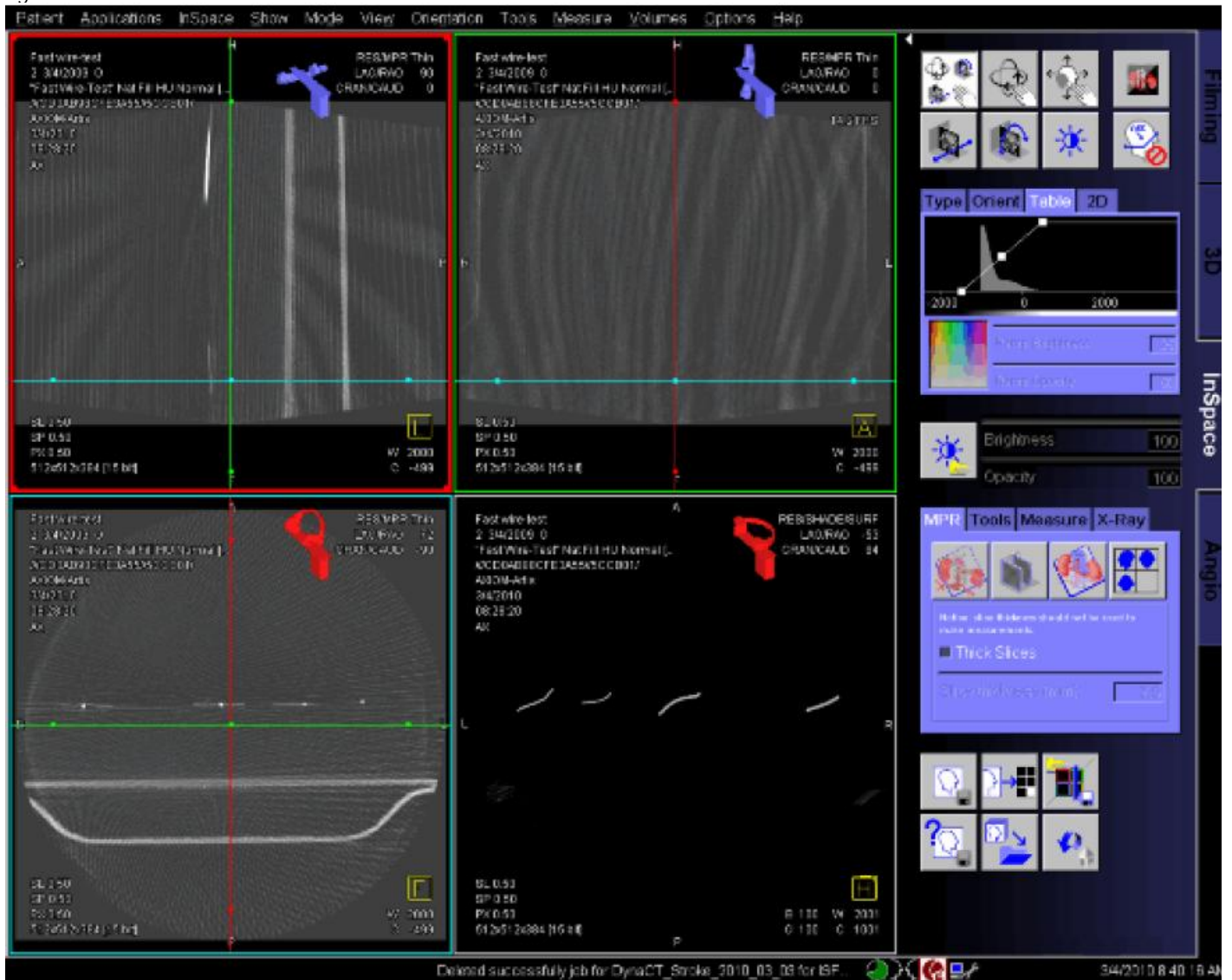
SIEMENS

Fig. 6:
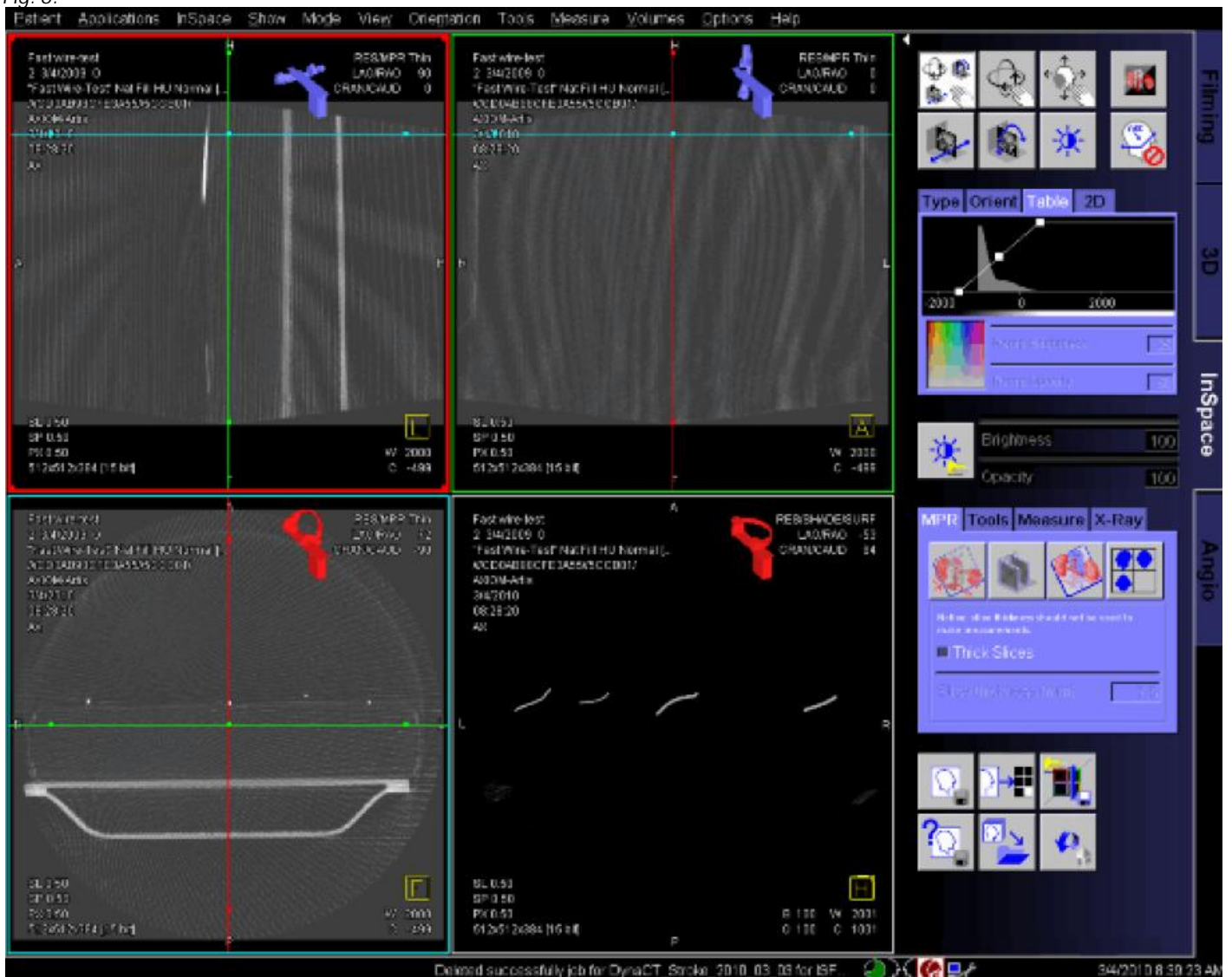
n Move blue reference line in top windows feet side. The wire profiles shall be round.
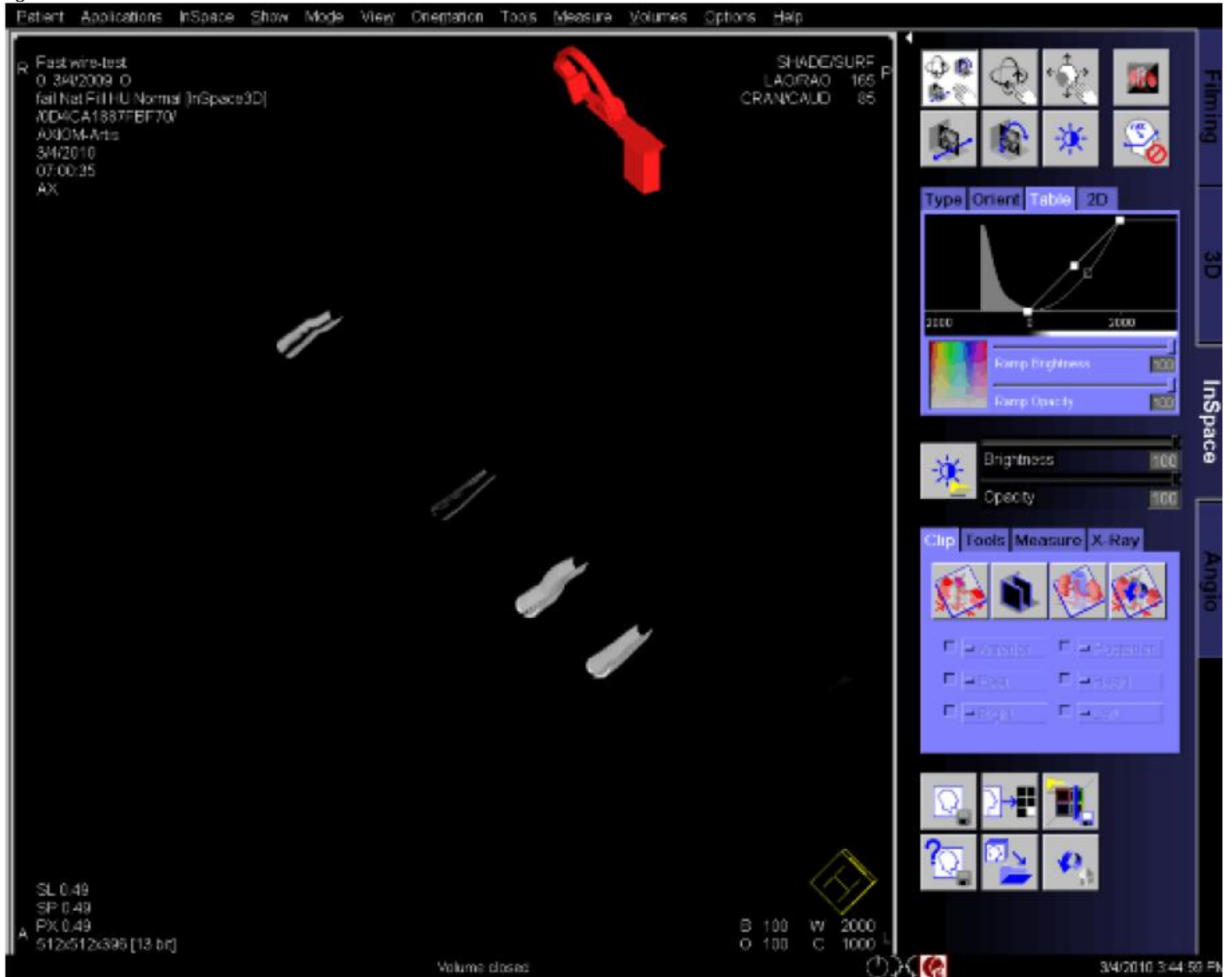
SIEMENS

Fig. 7:

3D Calibration - Artis Zee (VC21 or Higher) / Zeego / Q / Q Zen

SIEMENS

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

Fig. 8:

Instead of round wires we see U-shaped profiles.

3D Calibration - Artis Zee (VC21 or Higher) / Zeego / Q / Q Zen

SIEMENS

The MPR view looks like

Fig. 9:
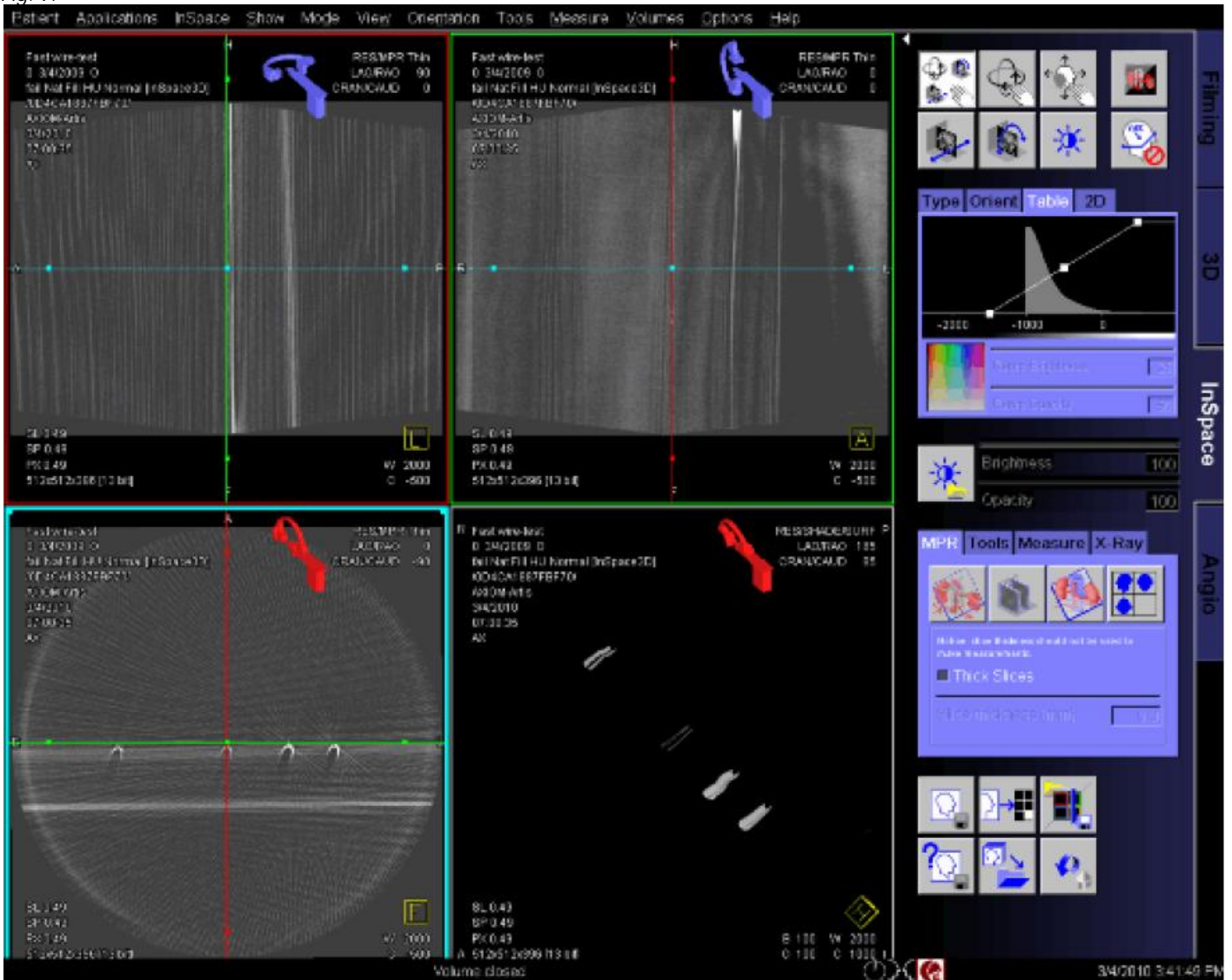
Instead of round wires we see a U profile (or moon or horseshoe). In this case, either the data set were not properly acquired (table tilt, table cradle or table rotation not in 0 position, C-Arm not properly pivoted into the 0 position, C-Arm not properly moved to the 3D start position before acquisition), or the calibration of the system is no longer appropriate.

3D Calibration - Artis Zee (VC21 or Higher) / Zeego / Q / Q Zen