

➤ **Define MIROI**

A tool that allows you to graphically represent density changes in a single area over time. This tool is useful for graphing a change in contrast enhancement over time through a designated area.

➤ **Enter the Timing Bolus Rx**

MIROI requires multiple images from a single series with the same location, gantry tilt, pixel size, and DFOV center. Once these scans are taken, the MIROI feature can be used.

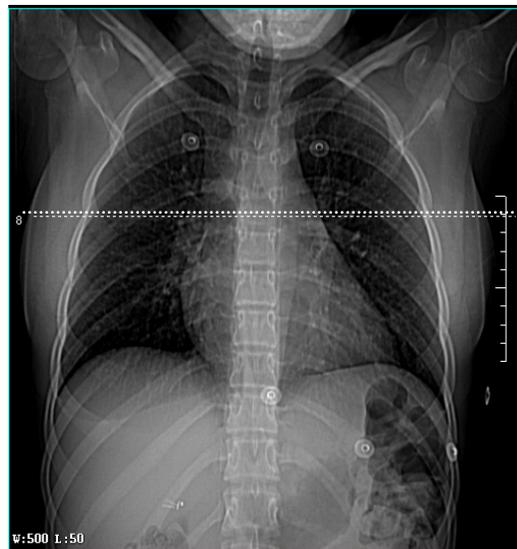
The Scan Type for a timing bolus is set to Axial.

The location for the Timing Bolus may be determined from a Scout image, or a previously scanned series with the same anatomical reference.

Enter the location in both the [Start Location] and [End Location] fields.

The [No. of Images] should be set to 12-14.

The [Thick/Speed] is typically set to 5mm at 1i.



Images	Scan Type	Start Location	End Location	No. of Images	Thick Speed	Interval (mm)	Gantry Tilt	SFOV	kV	mA	Total Exposure Time
1-14	Axial Full 1.0 sec.	I100.000	I100.000	14	5.0 1i	0.000	S0.0	Small Body	120	80	14.0

The [Interval (mm)] must have a 0 entered to achieve scans that will all be at the same location.

Enter a low mA to for low dose scans.

Images	Scan Type	Start Location	End Location	No. of Images	Thick Speed	Interval (mm)	Gantry Tilt	SFOV	kV	mA	Total Exposure Time
1-14	Axial Full 1.0 sec.	I100.000	I100.000	14	5.0 1i	0.000	S0.0	Small Body	120	80	14.0



➤ **Enter the Timing Bolus Rx**

**Prep Group (sec):** A delay entered here will occur after pressing [Start Scan] and starting the Injection, but before the actual scans begin.

**ISD (sec):** The Interscan Delay is the time between Scans, or sampling rate.



**Contrast:** Perform the test scans with a small bolus of contrast. 20ml of contrast is an average dose, and should be injected at the same rate that will be used for the actual study. A flush should also be used if it will be performed during the actual study.

➤ **Explain MIROI Analysis**



**Image Range:** You may enter the image range if you do not wish to use the entire timing bolus series.

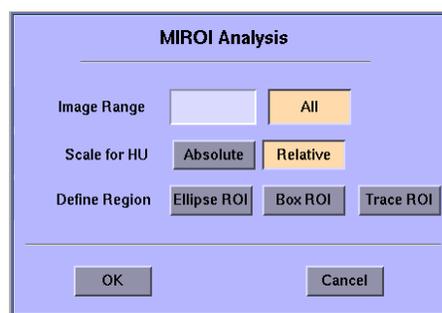
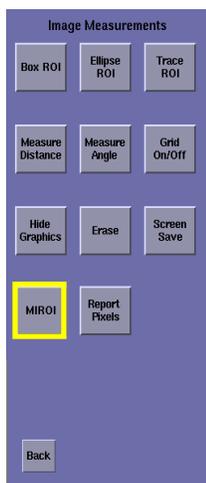
**All:** Click all to use the entire timing bolus series.

**Scale for HU:**

**Absolute:** Selecting Absolute gives you an actual Hounsfield Unit # for each ROI plotted on the graph.

**Relative:** For Relative, the ROI measured for the first image is set to zero and then the change from zero is plotted for the rest of the images.

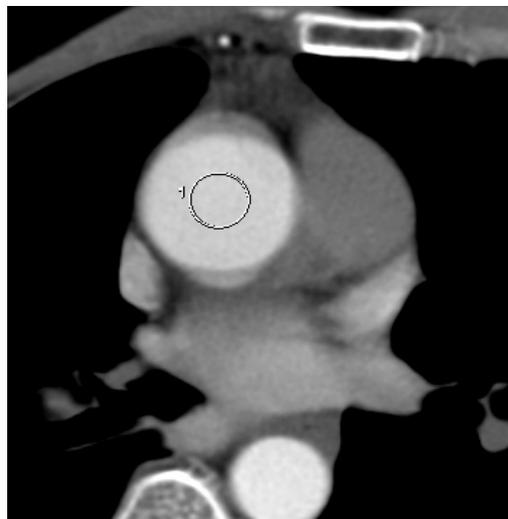
**Define Region:** To define the ROI area to be analyzed and plotted, you may choose to use an [Ellipse ROI], a [Box ROI] or [Trace ROI]. Typically the Ellipse is used.



➤ **Explain MIROI Analysis**

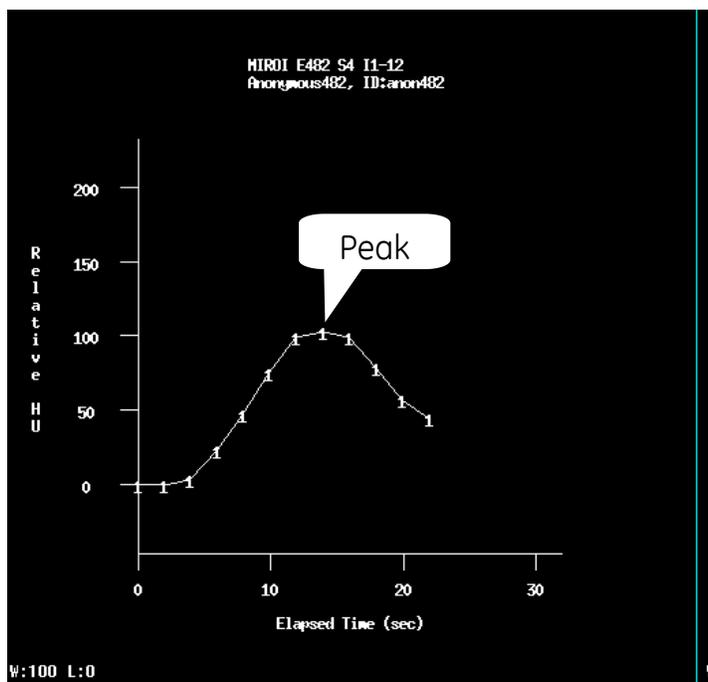
This image is an example of a timing bolus performed on the ascending aorta at the level of the left main artery.

An ellipse ROI has been placed on the aorta. Notice that it is not sized to include near the wall of the vessel to be sure the sample stays over the contrast as the vessel moves with the pulsing of the vessel.



**To determine the time to peak...**

1. Count the number of tic marks to the peak. Each one of the tics represents an image taken.
2. Multiple the number of tic counted times the ISD seconds that was entered in the Rx.
3. Add on the additional seconds from the Prep Group Delay to get the time to peak.



**Example:**

1. 7 (tick marks)
2. 7 (tick marks) x 2 (ISD) = 14
3. 14 + 5 (Prep Group Delay) = 19 sec.

**Prep Group (sec):** The delay is now entered in the [Prep Group (sec)] field for the study. Some protocols include additional seconds added to the time to peak total.

Be sure to use the same injection rate for the study as you used for the timing bolus.

Prep Group (sec)	ISD (sec)	Breath Hold (sec)	Breathe Time (sec)	Voice Lights Timer	Cine Duration (sec)
19	1.0	N	N	2	2.0

