

PURPOSE

This document is a review of the basic workflow concepts available on the FDX Console V11.0 software release.

NOTE: Please review the operational manuals for expanded information on the new features.

PROCEDURE

1.0 FDX Console Workflow Features and Functions

1.1 Register Patient Information

1.1.1 In the “List” screen mode, select the “RIS” icon to view all of the scheduled studies.



1.1.2 Select the “Registration” icon to access the Registration screen to manually enter patient information if needed.



1.1.3 Select the “Return to the list screen” icon if on the Registration Screen to return to the “List” mode.



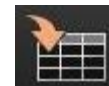
1.1.4 Select the “Next” icon to go to the “Anatomical Region” page to select the specific views for the exam.



1.1.5 Select the “Start Study” icon to start the study
Or



Select the “Reserve a study” icon to suspend it to the “Local WL” tab to start later.



1.1.6 Select the Application “Menu” icon, and then select the “Switch the user” icon to place the tech initials in the study.



1.2 Available Exposure Menu functions in the Study Folder

1.2.1 Select the “Add menus” icon to pick menus not already on the list.



1.2.2 Select the “Change menus” icon to change the highlighted menu to a different menu choice. **NOTE:** When an image is changed, all previous QA functions are reset except **Shadow Masking (Shuttering) and Trimming.**



1.2.3 Select the “Add exposures” icon to create a duplicate of the highlighted menu.



1.2.4 Select the “Setting for improperly exposed images” icon to “Fail” the image. This prevents the image from being sent to the PACS or Print destination.



1.3 Obtain the Clinical Images

- 1.3.1 Select proper exposure techniques on the X-Ray Generator.
- 1.3.2 Select the desired Exam menu on the FDX console.
- 1.3.3 For **FDR**, ensure the “Ready” light is Green, and then take the X-Ray exposure.

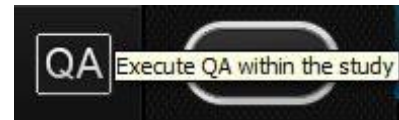


- 1.3.4 For **Cassette-based CR** – Scan the barcode window of the cassette (may not be required for all CR systems). Insert the cassette into the CR Reader Unit.
- 1.3.5 Evaluate the image on the FDX Console. Modify only if needed.
QA the images as needed using the QA shortcut toolbar below the image.

NOTE: QA Shortcuts are configurable and may not reflect the icons displayed below.



- 1.3.6 You can also select the “Execute QA within the study” icon to go to the detailed QA mode.



- 1.3.7 After entering the QA Mode, the “All Reset” button just to the left of the “OK” button can be used to reset some QA functions. The following functions can **NOT** be reset with this button: Changing exposure menus, Shadow Masking (Shuttering), Trimming and Stitching.



- 1.3.8 Once you are in the QA mode, you can repeat a function on more than one image by selecting the “Next image” icon

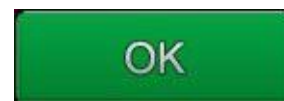


Or




















“Previous image” icon to scroll through the images in the exam. **NOTE:** If any changes are made to an image, if you go to another image using this function, the “All Reset” function will not work on the prior image.



- 1.3.9 When finished with **all** QA functions on **all** images, select the “QA Completed” icon to return to the acquisition screen.

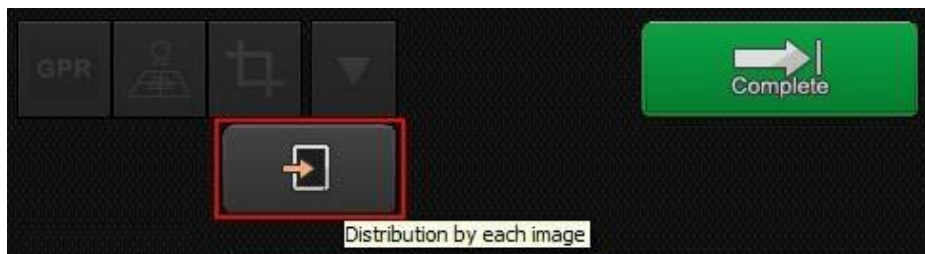


*** QA Shortcut Icon descriptions**

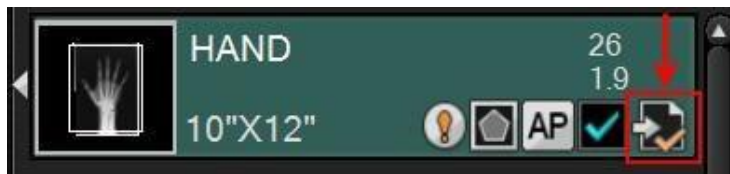
Rotate 90 degrees to the left		Modify S value / L value to change Density or Contrast	
Rotate 90 degrees to the right		Image Magnification	
Rotate 180 degrees		Full Screen Display	
Horizontal Flipping (Left to Right)		Fit in Window Display	
Marker and Free Text Annotation		Smart-QA (Configurable)	
Shutter or Blackening Processing		1-Up or 6-Up Display Toggle	
Imaging Trimming		Image Overlay Toggle (Display or Hide)	 
Copy Image function		Highlight Parameter Display	  

1.4 Individual Image Distribution

1.4.1 After image acquisition, to send an image prior to completing the study, highlight the menu (it will turn green), select the “Distribution by each image” icon and the image will be distributed to PACS and/or Print Destinations.



1.4.2 The menu will display the “Delivered” icon to show which images have been distributed prior to study completion.



1.5 Study Completion and Distribution

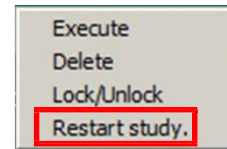
1.5.1 Upon exam completion, select the “Study Completed” icon and the study will be distributed to PACS and/or Print Destinations.



1.5.2 To restart an already completed study from any tab, highlight the study to be reopened and select the green “Restart study” icon at the top of the screen.

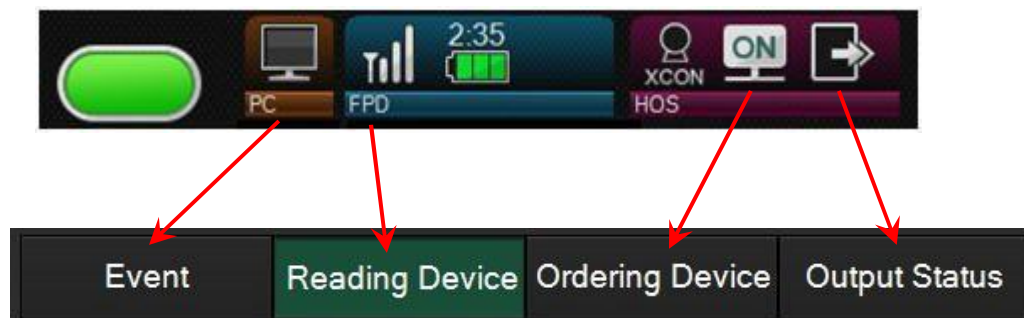


1.5.3 You can also restart a completed study from any tab by right-clicking on the study and select “Restart study” from the pop-up menu.



1.5.4 The information for Events, Reading Device, Ordering Device and the Output Status are accessed by selecting any of the following icons

NOTE: These icons are configurable.



2.0 Detailed descriptions for all QA Functions

2.1 Shadow-Masking Processing (Shuttering)

2.1.1 Select the “Shadow-Masking Processing” icon to shutter around the image to prevent excess white areas in the image.



2.1.2 Select the “Input Rectangular Region” icon for square or rectangular shuttering. Left click the top left of the image and bottom right of the image to complete the rectangle.



2.1.3 Select the “Input Polygonal Region” icon to manually draw the shutter around the desired area. Click all points of the desired shape making sure to finish where you started.



2.1.4 Select the “Deleting one of the input points” icon if needed.



2.1.5 Select the “Deleting all input points” icon to erase all points and start over.



2.1.6 Select the “Preview” icon to see the shutter area selected above.



2.1.7 Select the “Clear preview” icon if the Auto Shuttering masked any anatomy of interest. **NOTE:** By selecting “Clear preview,” you can preview the image so that the blackened area has been cleared. By selecting “Apply” during preview display, the clearing of the blackened area is confirmed. By selecting “Clear preview” again without selecting “Apply,” the preview display is cancelled.



2.1.8 Select the “Invert the region (outside)” icon in order to change it to “Invert the region (inside)” if needed to input a black mask over an inadvertent lead marker in the image.



2.1.9 Select the “QA Home” icon to **save** the changes and continue performing other QA functions.



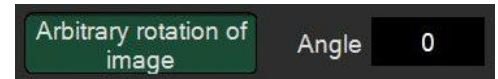
2.2 Image Trimming Function

2.2.1 Select the “Trimming” icon to manually trim the image size as needed to ensure the correct size image is sent to PACS. This function can change the Auto-Trimming size.



2.2.2 Auto-Trimming is set to automatically see X-ray collimation and adjust the size of the image sent to PACS based on that data. This allows for a larger size image to be viewed on the PACS monitors.

2.2.3 The “Trimming” section has the “Arbitrary rotation of image” button at the bottom & since it will end up in this area even if you choose the function from the “Rotation” pop-up menu, it is quicker to just pick the function from the “Trimming” section. When you first select the icon, it will show a “dash” as the “Angle” then, once you start to rotate the image (either from the two-point selection or the real-time rotation with the mouse), the “0” will change to a number to show the new angle compared to the original angle. After the rotation function has been completed, if you need to undo the rotation, choose the “All Reset” button just to the left of the “OK” button.



NOTE: If an image is rotated by an arbitrary angle (except 0°, 90°, 180° or 270°), the image may look different after the rotation than it did before the rotation since the pixels are interpolated. For an image rotated arbitrarily, if it is then rotated 90° to left or right, 180°, or reversed vertically or horizontally, the adjusted angle will be reset and then rotated based on the original angle.

2.3 Image Rotation and Flipping (Reversal)

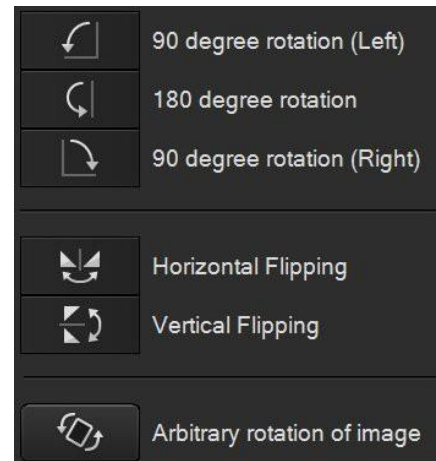
2.3.1 Select the “Image Rotation/Reversal” icon to perform any Rotation or Flipping action on the image.



2.3.2 Select the individual rotation or flipping icon to perform the appropriate action.

NOTE: The “Arbitrary rotation of image” (Free Rotation) icon can be chosen from the choice of buttons available on this pop-up, but after selecting this choice, it will take you to the “Trimming” screen since the image may need to be trimmed or centered differently after rotation.

NOTE: See the “Trimming” section for more information on the “Arbitrary rotation of image” (Free Rotation) function.



2.4 Markers and Free Text Annotation

2.4.1 Select the “Markers” icon to add electronic markers or type in custom free text annotations.



2.4.2 Left click on the desired marker, move the mouse pointer into the image and left click to insert the marker. Multiple lines of text can be created in a single text marker using the “Enter” key for the next line.

2.4.3 Select the “TEXT” icon to access the Free Text area. Select the desired font size and left click the black box (turns white when selected). Left click on the anatomical area where the text is to be located. Left click on the text box to move as needed, or to edit an existing text annotation.



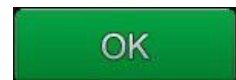
2.4.4 DICOM tags can be used as custom annotations on the “TEXT” tab. These custom tags provide quick access to certain information, instead of manually typing in the data.



2.4.5 To remove a marker or annotation, left click on the marker or text box and select the “Trash can” icon to remove the marker or annotation from the image.



2.4.6 Select the “QA Completed” icon when all QA functions have been completed.



NOTE: Multiple QA functions can be completed (such as Markers & Shuttering) without leaving the QA process.

2.5 Changing the “S” Value and / or “L” Value of an Image

2.5.1 Select the “S value/L value” icon to modify the Density (S value) or Contrast (L value) of an image.



2.5.2 **PRECAUTION** – routine modification of the “S” and “L” is not a recommended QA procedure. Utilization of the GA and GS buttons is the preferred method.



2.6 Make a copy of an existing image using the “Image Copy” function

2.6.1 Acquired images can be copied into another menu during study acquisition. For example, this allows “standard” Chest images to be copied into pre-existing PICC Line or Inverted Image menus.

2.6.2 To copy an image, choose the image to be copied (thumbnail image with a white triangle to the left of it, pointing to the left side of the screen).



2.6.3 Next, select the destination menu where you want the copied image to appear.



2.6.4 Next, select the “Image Copy” button.

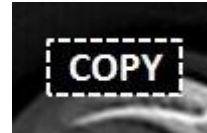


2.6.5 The copied image will take on the processing parameters of the menu that it is copied to; however, Exposure Results cannot be copied from a source image.

NOTE: Images cannot be copied to menus with existing images or IP registered CR exposure menus.

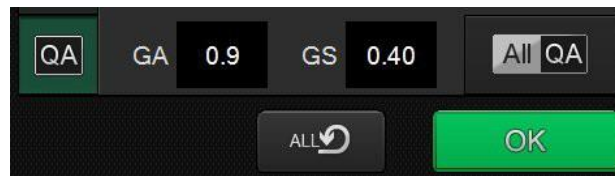
NOTE: In six-image display mode, the “Image Copy” button cannot be selected.

2.6.6 A “Copy” marker will automatically be placed in the image. The “Copy” marker can be edited or moved, but not deleted.



2.7 Using GA (Contrast) and GS (Density) to change Image Contrast and Density

2.7.1 Use the image contrast and density (GA and GS) to modify parameters using a mouse.



2.7.2 After the GA & GS adjustment function has been completed, if you need to undo the GA & GS adjustment, choose the “All Reset” button just to the left of the “OK” button to go back to the original processing parameters.

NOTE: Depending on what QA functions were previously performed, use of the “All Reset” button may reset other functions in addition to the GA & GS.

2.8 Smart-QA Functions (“S” Value & EI/DI)

2.8.1 If an exposure menu has any of the Smart-QA factors that are out of range, such as the “S” Value or the EI/DI Value, then there will be an exclamation point on the menu.



2.8.2 Select the Smart-QA icon to see what factors are out of range.



2.8.3 This example shows the “S” Value (895) is out of range for this image.

Analysis results overview

Item	Result	
S value/L value	895/2.23	!
EI value/DI value	704/-0.9	OK

Description

S/L-value warning function

It judges whether the S value and the L value are within the range that includes the min./max. value set to exposure menu. Please correct the S value and L value if they are outside of the range, as necessary.

Analysis result details

Analytical items	S value/L value
Judge	Confirmation required
Overview	S:895 L:2.23 (S:100~600 L:1.00~3.00)

Result details

There is a possibility that EDR may not perform correctly or the exposure dose may be inappropriate.

Coping method

Please confirm the image, and adjust the S value or the L value as necessary.

2.9 Other QA Functions

2.9.1 Select the “Exposure List” icon to display all images in the exam. This will make it easy to quickly do QA on all of the images in a study.



2.9.2 Select the “Order information” icon to display the Exposure Menu name.



By selecting the “three dots” icon next to the Exposure Menu name, it is possible to “Change Exposure Menu.” This is useful if the view had been processed under an incorrect exposure menu. **NOTE:** When an image is changed, all previous QA functions are reset except **Shadow Masking (Shuttering) and Trimming.**



2.9.3 Select the “Redeliver Study” icon to redeliver a completed study to the default destination.



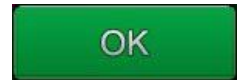
2.9.4 Select the “Print” icon to reprint individual images in a completed study.



2.9.5 Select the “All QA” icon to enable all QA functions to be displayed.



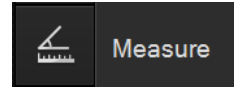
2.9.6 Select the “QA Completed” icon to leave the QA function.



2.9.7 Select the “Highlight Parameter Display” function by clicking on the “Image processing type (Single)” icon to change to the “Image processing type (Left)” processing parameters, then click on the “Image processing type (Left)” icon to change to the “Image processing type (Right)” processing parameters. Each click of the icon will cycle through the three processing parameter choices (Single, Left & Right).



2.9.8 Select the “Measurement & Angle” function by clicking on the “Measure” icon to perform either the Measurement or the Angle function.



2.9.9 Select the “Move Image” icon to move images from one folder to another. For additional information, refer to the Quick Guide on the “Move Image” function.



2.9.10 Virtual Grid is a function that eliminates the need for a grid. This is an optional feature. Starting with FDX V9.0, Virtual Grid is available for all menus and can be used with Fujifilm CR Readers (excluding FCR-5000 generation CR Readers).



3.0 Memory Exposure Mode:

3.1 FDR D-EVO II detectors are required when using “Memory Exposure Mode”.

3.2 FDR AQRO: refer to “Quick Guide on FDR Memory Mode”. The workflow for dose review and capture are different from the options available on the FDX console.

3.3 For more information, refer to the FDX V9.0 Reference Guide, # 897N102771D, section 4.3, for details.

4.0 One-touch Quick Start:

- 4.1 The Quick Start option is used during urgent situations where clinical information such as Patient Name, Patient ID or Accession Numbers is not available.
- 4.2 The Quick Start icon is available at the top of the Patient Registration screen.

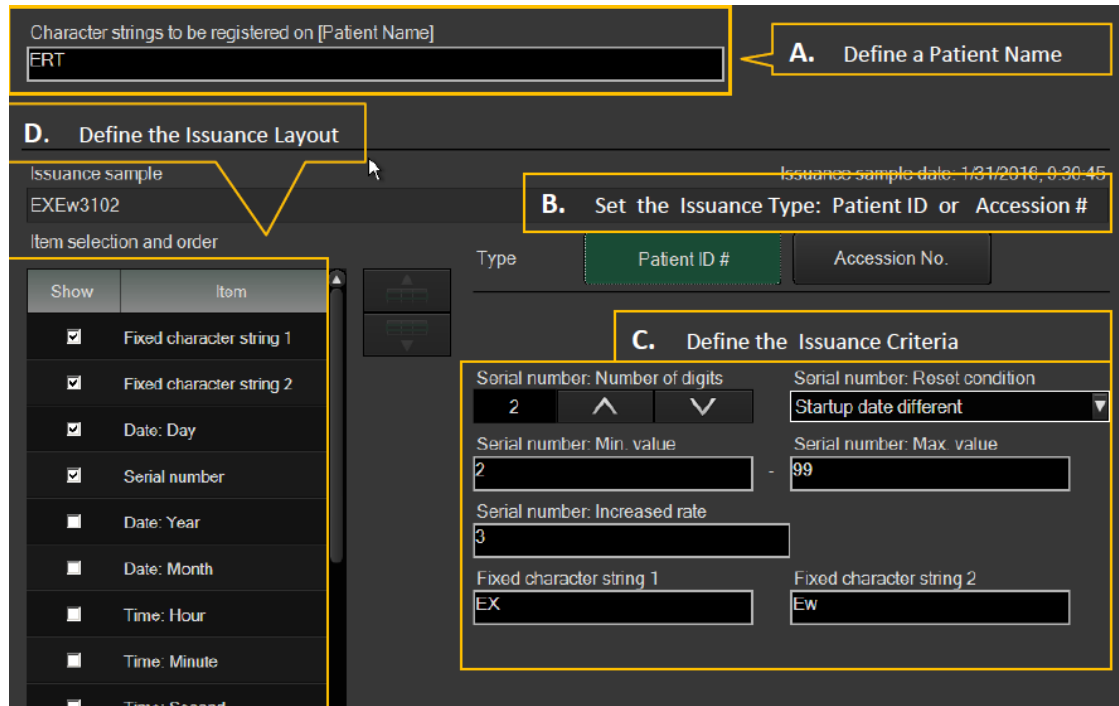


5.0 Quick Start – Issuance Setting:

- 5.1 The Quick Start Issuance setting tool is used to establish default parameters for Patient Name, Patient ID or Accession Number.

6.0 Quick Start Issuance - Workflow:

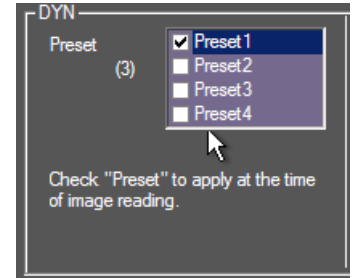
- 6.1 **A.** Enter a Patient Name.
- 6.2 **B.** Select Patient ID or Accession number to define which field will display the temporary data.
- 6.3 **C.** The Issuance Criteria section defines the parameters that will determine the format of the Issuance Sample.
- 6.4 **D.** The Layout section determines the items that will be included in the Issuance Sample and the display order.



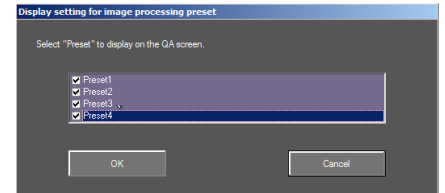
7.0 Image Presets:

7.1 Image presets are preconfigured processing options available when Dynamic Visualization II processing is installed.

7.2 Each preset option has image processing parameters assigned. Selecting a Preset from the DYN section defines the default image processing for the selected menu.



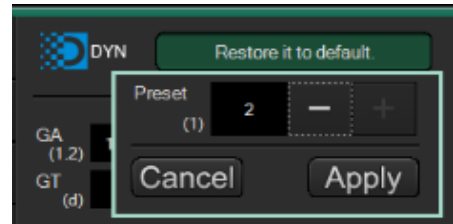
7.3 Each exposure menu can be assigned up to (4) image preset options. This is a global setting. ALL exposure menus will have the same number of presets assigned.



7.4 The default image preset number assigned to the image will display as "Preset ()".

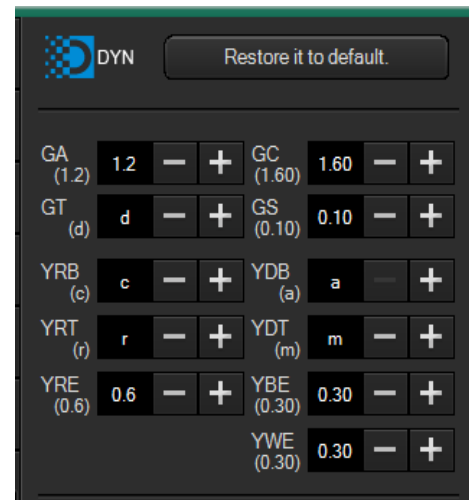


7.5 Select "Restore it to Default". This will display a dialogue box which contains ALL of the registered image presets. Each image preset is identified by the numbers (1- 4).



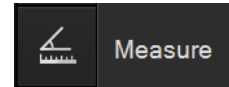
7.6 Use the plus (+) and minus (-) buttons to display the required image preset number.

7.7 When the preset number is displayed, select Apply to assign the image preset to the selected image. The image processing parameters assigned to the preset are automatically applied.



8 Measurement Tool:

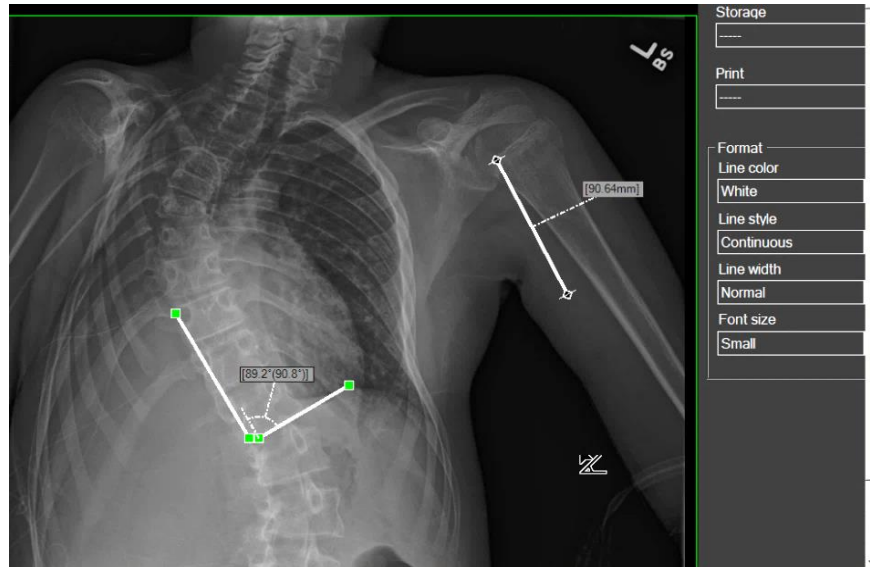
- 8.1 Image measurements sent to PACS are embedded in the image.
- 8.2 Upon distribution, image measurements are no longer available on the FDX workstation.
- 8.3 Select the Measure button to activate the Measurement tool.
The image and the measurement tool will options will display.



- 8.4 Set the distribution options for Storage and Print.

8.5 Distance Measurement

- 8.5.1 This is the default measurement tool. The tool is automatically activated.
- 8.5.2 Move the mouse over the image. Left Click and drag to create a distance measurement.

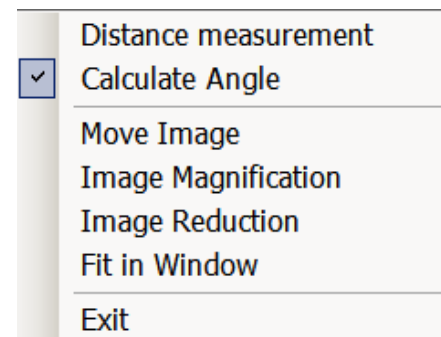


8.6 Angle Measurement

- 8.6.1 RT Click on the image.
- 8.6.2 Select Calculate Angle from the dialogue box.
- 8.6.3 Left click and drag to create the angle measurements.
- 8.6.4 Formatting options for Line color, style, and width and font size are available.

8.7 Measurement Options:

- 8.7.1 Right Click on the image to display the options dialogue box.
- 8.7.2 Note: selecting Exit will close the measurement tool. The image is not sent to PACS. The current measurements are deleted from the image.



8.8 Image Send

- 8.8.1 Select OK to confirm the distribution settings. The image will be sent to PACS.

9 Security Activation:

- 9.1 Activation of security is no longer available under Image Modality # 37.
- 9.2 **New Location:** Image Modality # 364: Enable User Security Function
- 9.3 Select Option 1: ID/Password. This option is used when a Smart Card has not been installed.
- 9.4 Log in via a Smart Card is now supported.
- 9.5 This option requires installation of an approved Smart Card reader.



10 Image Stitching Function (Optional)

- 10.1 Select the “Stitching” icon to perform automatic stitching or the “Undo Stitching” icon to separate a stitched image in order to redo the automating stitching process.
- 10.2 Select the “Manual Stitching” icon, which can be performed on stitched Scoliosis or Long Leg images from a CR Reader using a Long View Cassette or FDR D-EVO system.
- 10.3 Starting with FDX V9.0, S/L adjustments made to the composite (stitched) image are now also reflected in the source images upon output.
- 10.4 The S/L adjustment results to images in CR long view are reflected also on the original image.
- 10.5 For more information, refer to FDX V9.0 Options Reference Guide, #897N102772E, and see the appropriate section for FCR, FDR D-EVO for details.

