QuantorVet+

User Manual *Veterinary*

Acquisition and diagnostic software

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3DISC IMAGING

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1. System Requirements and Startup

1.1. Environment

1.1.1. Recommended Computer Requirement

Operating System	Microsoft Windows 7, 8
CPU	Intel CORE i5
Memory	RAM 4 GB or more
Hard Disk	500 GB Free Hard Disk Space
Network	1 Gbps Ethernet
Video	32-bit Color Display
Video Resolution	1920 x 1080, 1440 x 900

1.1.2. Minimum Computer Requirement

Operating System	Microsoft Windows XP
CPU	Intel Processor
Memory	RAM 2 GB or more
Hard Disk	80 GB Free Hard Disk Space
Network	1 Gbps Ethernet
Video	32-bit Color Display
Video Resolution	1366 x 768, 1280 x 800, 1600 x 900, 1280 x 1024

1.2. *Start and Termination*

1.2.1. *System Start*

1. Turn on the ***FireCR*** CR Reader.
2. Turn on the monitor and PC.

WARNING

Do not run any application software other than ***QuantorVet+*** during operation of the scanner. This may slow the scanner response.

1.2.2. *Start Program*

After Windows is successfully booted, you can launch the ***QuantorVet+*** program by double clicking the ***QuantorVet+*** icon on your desktop as shown in **Figure 1.1**.

QuantorVet+

Figure 1.1. Short Cut Icon

1.2.3. *Terminate Program*

Select the System button as shown in Figure 1.2 on the Home Window.

Figure 1.2. System Button

Now you can exit the application by selecting "Exit" in the System Menu.

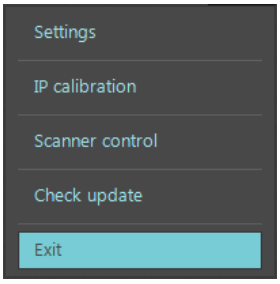


Figure 1.3. System Menu

2. Screens

2.1. Supported Resolutions

Landscape resolutions with 16:9, 4:3 and 5:4 ratios are supported. Portrait ratios are not supported. The horizontal resolution of the monitor must be at least 1280 pixels, and the vertical resolution of the monitor must be at least 768 pixels. Recommended resolutions are listed in **Table 2-1.**

Table 2-1

Screen Ratio	Screen Resolution
16:9	1366 x 768 1280 x 800 1400 x 900 1600 x 900 1920 x 1080
4:3, 5:4	1280 x 1024

2.2. Home

The Home screen is the first screen that appears when the program is run. From the Home screen, you can create a new study or view existing studies.

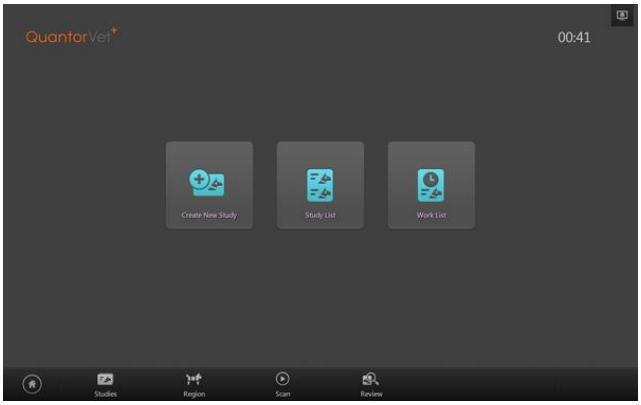


Figure 2.1. Home Screen

2.3. *Navigation Bar*

The Navigation Bar is located at the bottom of the screen. The Navigation Bar is always displayed while the program is running, allowing the user to easily switch screens during a task.

Figure 2.2. Navigation Bar

① Home
② Studies
③ Region Selection
④ Scan
⑤ Review

2.4. *Studies*

The Studies screen shows a collection of windows that are related to the studies. You can enter the Studies screen by clicking the Studies button in the Navigation Bar. The Sub-Navigation Bar is located on the left of the screen. In the Sub-Navigation Bar, you can select a Study List, Work List or Transport windows that are related to the study.

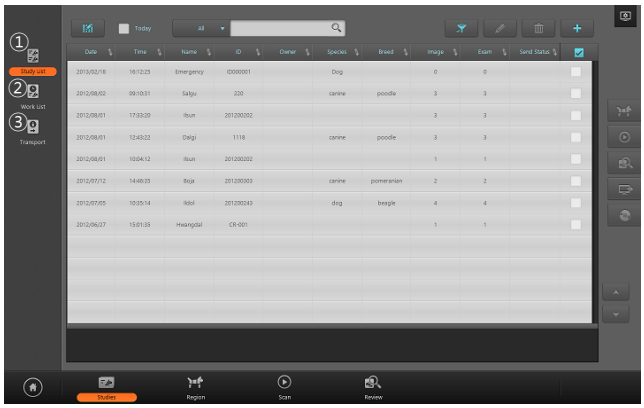


Figure 2.3. Studies Screen

① Study List: You can perform various tasks by searching existing studies and selecting a study.
② Work List: You can query the work list from the PACS work list server, select the desired study and immediately begin image acquisition.
③ Transport: You can confirm the transmission results of the acquired images.

2.5. *New Study*

The New Study screen is the first page for performing a scan. After entering the necessary patient information and study information, and adding a new study, you can begin a scan.

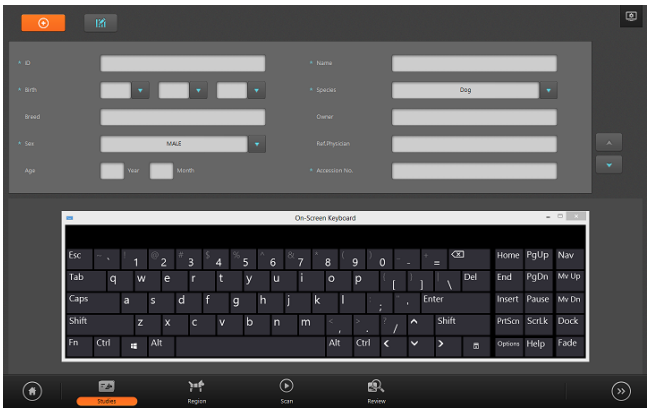


Figure 2.4. New Study

2.6. *Region Selection*

In the Region Selection screen, you can select the region to scan and add it to the Task List.

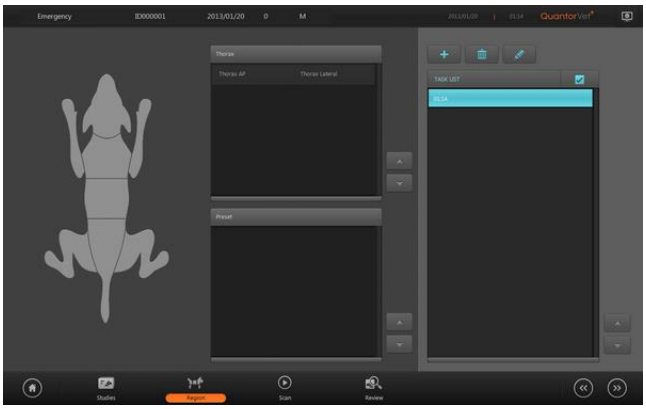


Figure 2.5. Region Selection

2.7. *Patient Information*

The Patient Information Bar is displayed at the top of all the screens, with the exception of the Home screen and the New Study screen. The Patient Information Bar displays patient information and other related information.

Figure 2.6. Patient Information

① Patient Name

② Patient ID

③ Patient's Date of Birth

④ Patient's Age

⑤ Patient's Sex (M: Male, F: Female, O: Other, SM: Sterile Male, SF: Sterile Female, S: Sterile)

⑥ Current Time

⑦ Model Name

⑧ System

2.8. *Scan*

In the Scan screen, you can insert a cassette into the ***FireCR*** and acquire images.

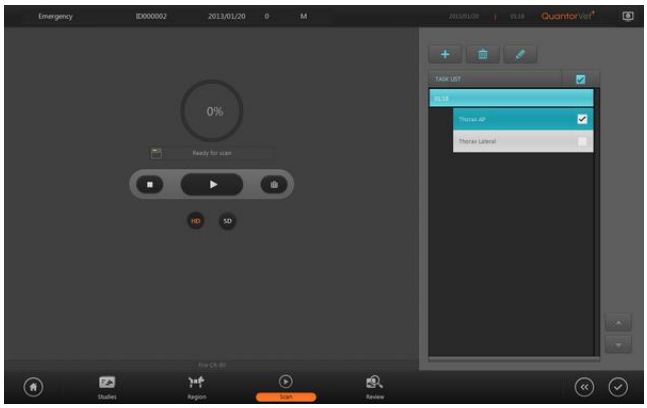


Figure 2.7. Scan Screen

2.9. *Review*

In the Review screen, you can query scanned images in the identical manner as the PACS Viewer. The Review screen is very useful for conducting diagnosis after acquiring the images.

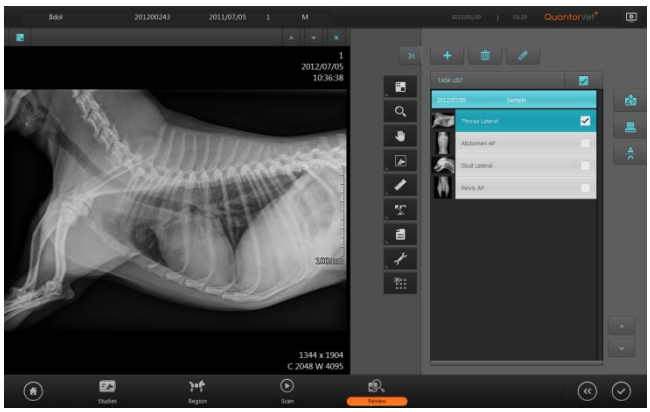


Figure 2.8. Review Screen

3. New Study

3.1. Screen Layout

The New Study screen is the first page when performing a scan. Enter the necessary patient and study information. You can easily switch to the next input field by using the Tab key. Fields marked by * are mandatory DICOM fields that must be filled in.

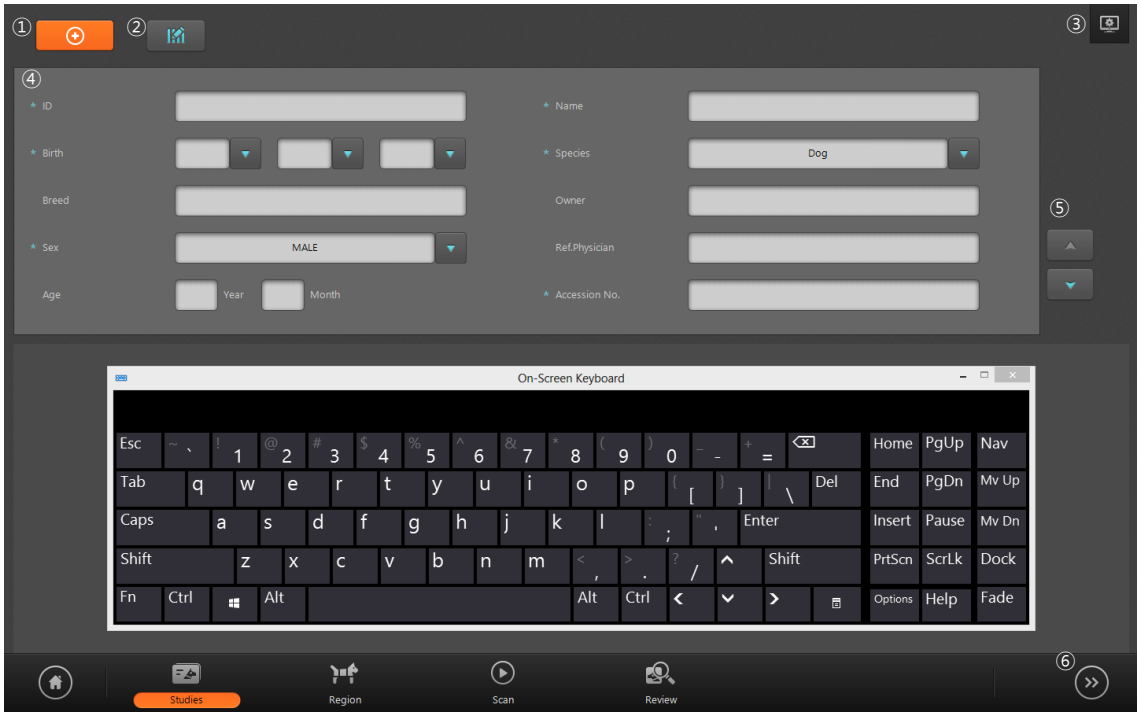


Figure 3.1. New Study

- Emergency: Mandatory fields are filled in automatically. This function is used in emergencies where patient information has not been identified to perform a scan first and fill in the patient data later.
- Edit Input Field: Bring up Input Field Edit dialog. In the Input Field Edit dialog, you can change the order of the input fields, and add or remove input fields.
- System Menu: Display the System menu.
- Input Field: Details about each input field are described in **Table 3-1.**

Table 3-1. Input Field

Title	Description	Mandatory
Name	Enter patient name.	O
ID	Enter patient ID.	O
Birth	Enter patient's date of birth. You can select a date from the drop-down box or manually enter numbers. When only the date of birth is entered and not the age, age is calculated automatically.	O
Sex	Select patient's sex. (Male, Female, NA, Sterile Male, Sterile Female, Sterile)	O
Age	Enter patient's age. Leave the Year field blank if the patient is less than 1 year old. When only the age is entered and not the date of birth, date of birth is calculated automatically. When it does, month and date are automatically entered as January 1.	X
Ref. Physician	Enter the name of the referring physician.	X
Description	Enter study description.	X
Accession No.	Enter accession number. Entering an accession number is mandatory. If not entered, a new number will be generated automatically.	O
Size	Enter patient length.	
Species	Select patient species. (Dog, Cat, Rabbit, Small Rodent, Bird, Exotics, Horse, Cow)	
Breed	Enter patient breed.	
Owner	Enter patient owner.	

- Page Up/Down: Go to another page.
- Next: Go to the Region Selection screen, which is the next step.

4. Region Selection

4.1. Screen Layout

In the Region Selection screen, you can select the region to scan and add it to the Task List.

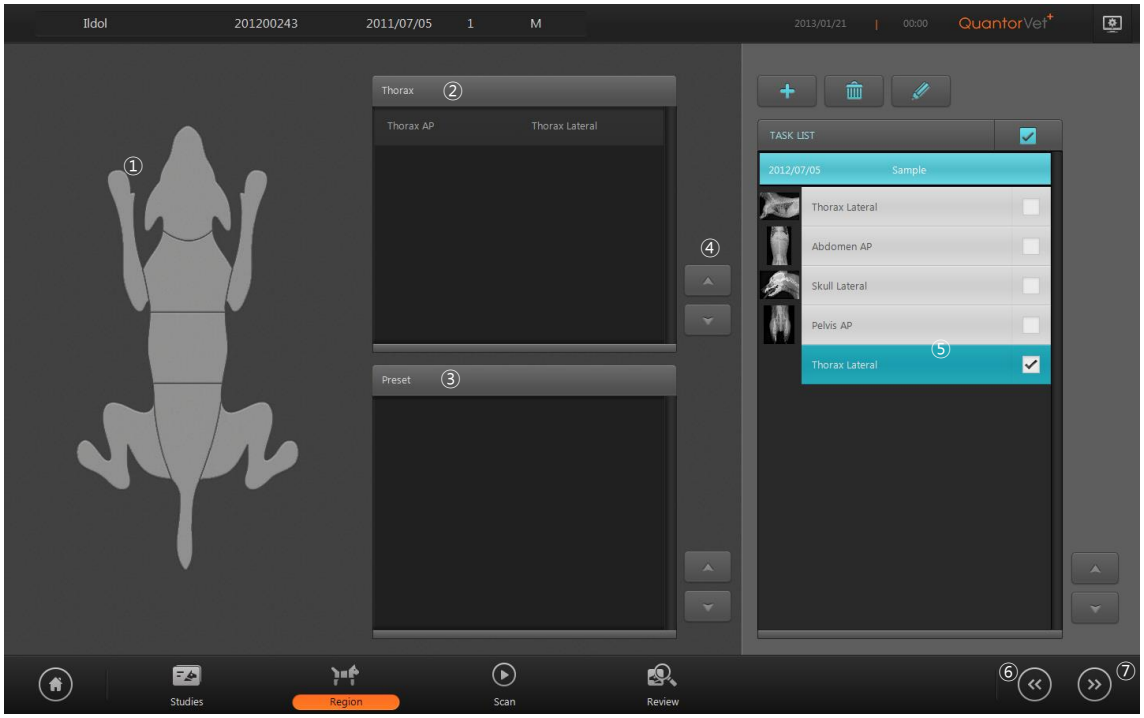


Figure 4.1. Region Selection

① Body Part: The region to be scanned will be displayed on the figure of the animal body. When you move the mouse cursor over the figure, the region to be selected will be marked by a different color. Select the desired region and the View Position List will be updated.

② View Position: Displays view positions that correspond with the selected region for scanning. Click on the region to scan and the region will be added to the Task List.

③ Preset: Displays view position presets. When a certain setting is used frequently, you can easily automatically add multiple view positions by selecting a preset instead of adding separate view positions each time.

④ Page Up/Down: Button for switching pages.

⑤ Task List: List of view positions added from View Position or Preset fields.

⑥ Previous: Go back to New Study screen.

⑦ Next: Proceed to scan screen.

5. Image

5.1. Screen Layout

When an IP scan has been completed, the acquired image is displayed on the Scan window as shown in **Figure 5.1.**

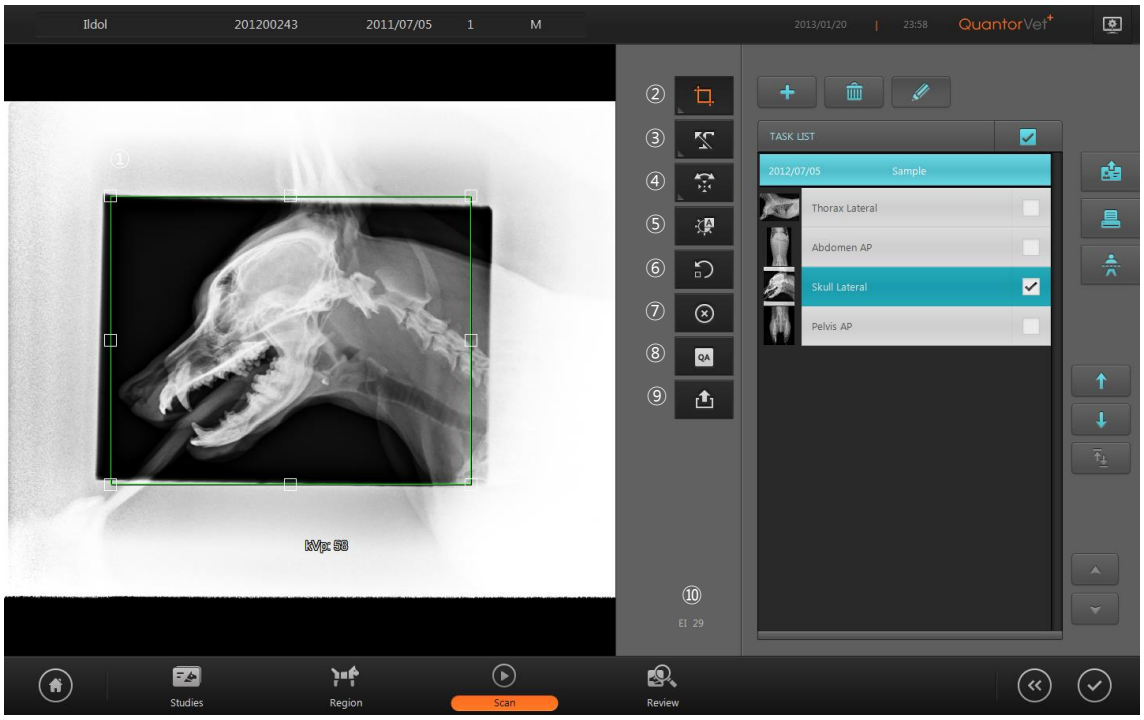


Figure 5.1. Image

① ROI Box: A tool for cropping the valid region of the scanned image.

② ROI: ROI-related tools

③ Marking: Add markings on the image.

④ Rotate Flip: Rotate/flip the image.

⑤ Auto Window: Automatically adjust the image brightness and contrast.

⑥ Repeat: Scan the image again.

⑦ Reject: Reject the image.

⑧ QA: Bring up tools for adjusting image details.

⑨ Send Image: Transmit the image.

⑩ Exposure Index: Show the exposure index value of the scanned image.

5.2. *ROI*

When a scan is completed, the image is displayed and the ROI Box of the predefined size for each scanned region is automatically displayed as shown in Figure 8-1. When you drag the ROI Box to the desired location and double-click the ROI Box or click on the ROI button, the ROI is cropped and fitted to the screen as shown in Figure 8-2. To adjust the size of the ROI Box, drag the small rectangles at each corner of the ROI. When transmitting or printing the image, only the ROI are used.

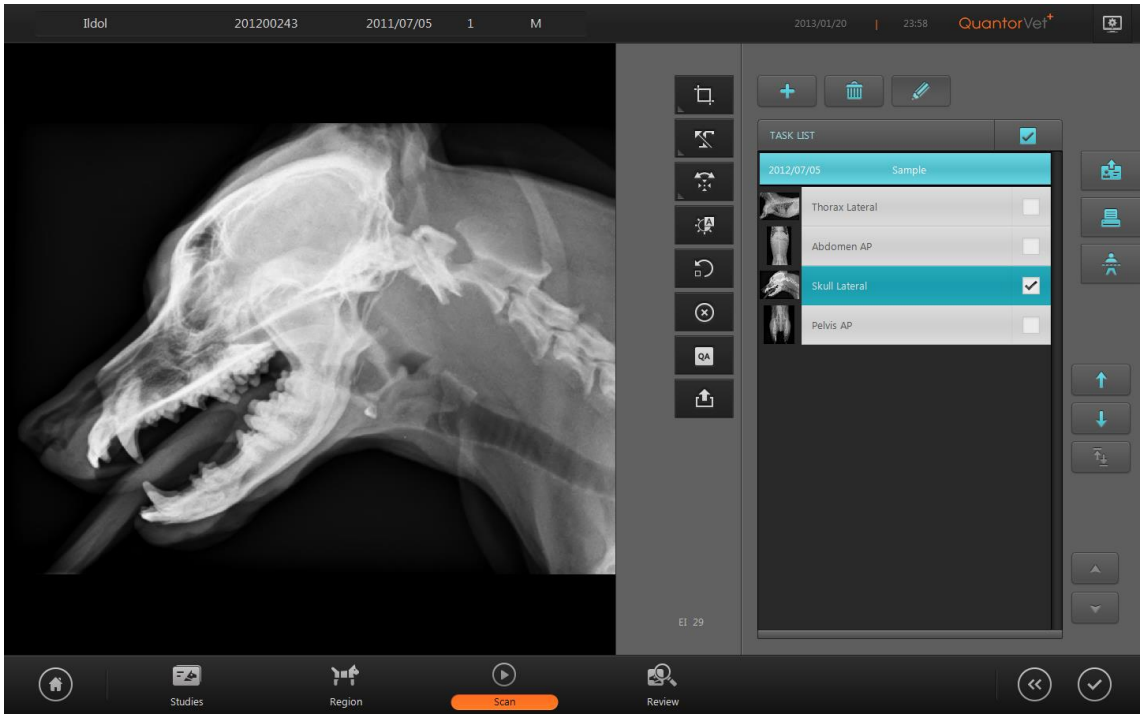


Figure 5.2. ROI Cropped Image

To bring up the ROI Box again, double-click on the image or click on the ROI button. When you click on the ROI button, the film sizes listed below will be displayed on the screen. When you select one of the given sizes, the ROI Box will be adjusted to that size.

- 8 x 10, 10 x 12, 14 x 14, 14 x 17, 10 x 8, 12 x 10, 17 x 14

5.3. *Marking*

The Marking feature is used to add markings on the image. Markings can be added to the image by selecting a predefined marking or manually typing in text.

Add Predefined Markings

① Click on the Marking button.

② Select a marking.

③ Click on the image.

Predefined markings can be edited in Settings under [Overlay-Marking].

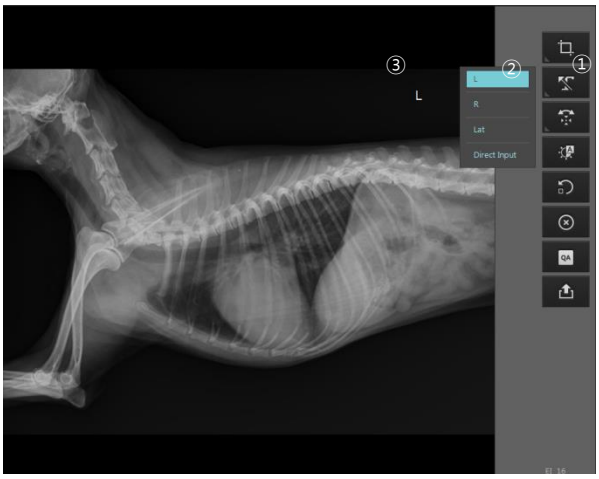


Figure 5.3. Add Predefined Markings

Manually Enter Markings

① Click on the Marking button.

② Select Direct Input.

③ Click on the position where you want to add the marking and a text input box will appear. Enter your text. Click outside the text input box when you are done.

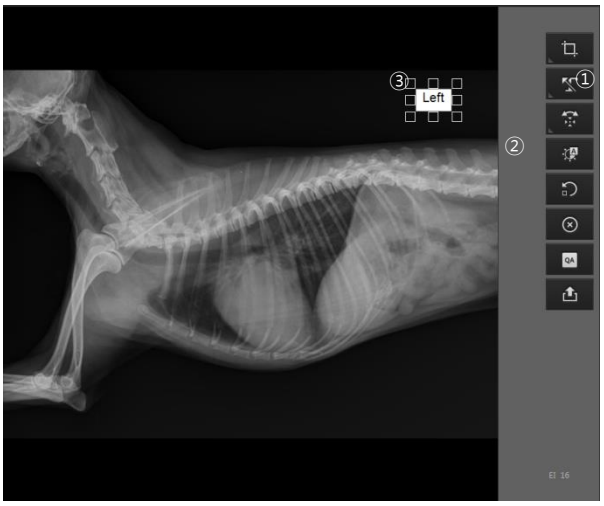


Figure 5.4. Manually Enter Markings

5.4. *Rotate/Flip*

Used to rotate or flip images.

Icon	Action
	Rotate Left
	Rotate Right
	Flip Horizontally
	Flip Vertically

5.5. *Auto Window*

Automatically adjust the image brightness and contrast.

5.6. *Repeat*

Used when the quality of the scanned image is insufficient and requires a rescan. Remember that the current image will be deleted.

5.7. *Reject*

When the quality of the scanned image is insufficient, Reject preserves the current image with a “Reject” marking without rescanning. When the Reject button is clicked, a “Reject’ marking is added on the upper left corner of the image as shown below, and a “Reason” input field appears on the screen. Type in the reason for rejection, and click outside the input box when you are done. You can cancel a rejection by clicking the Reject button again.

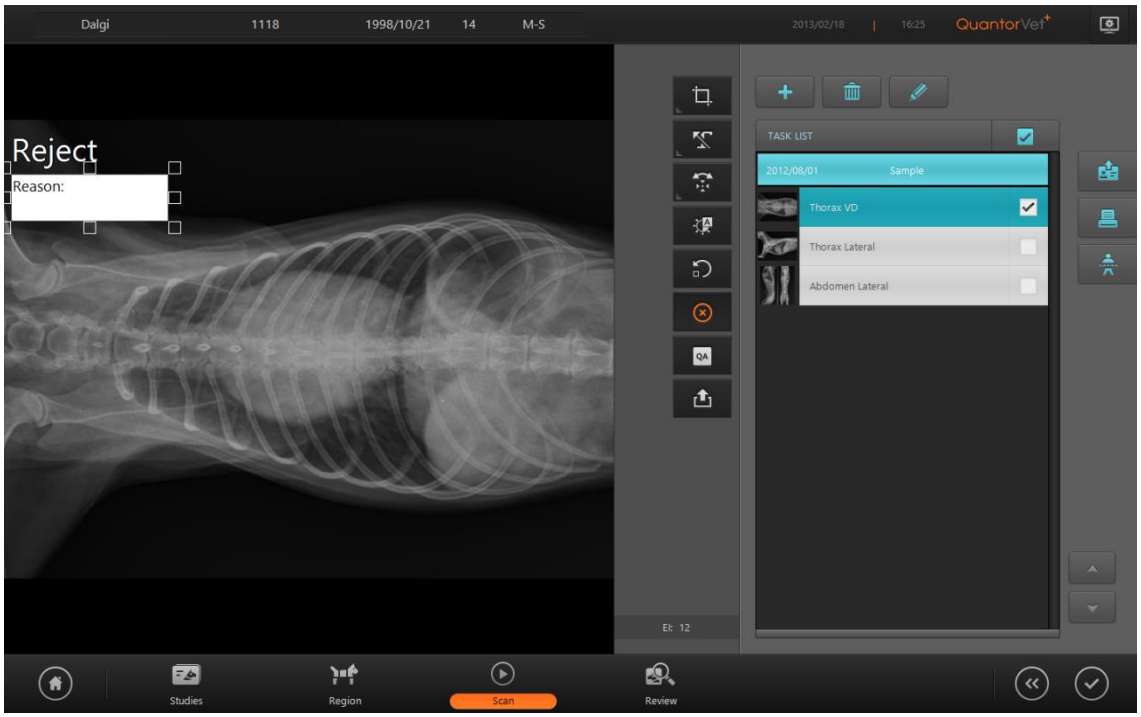


Figure 5.5. Reject

5.8. *Send Image*

Immediately transmits current image to the image server designated in Settings. If [Network/Export – Options – Show Destination] is checked under Settings, a dialog box for choosing the destination will be displayed as shown in Figure 5.6. and the user can designate a destination.

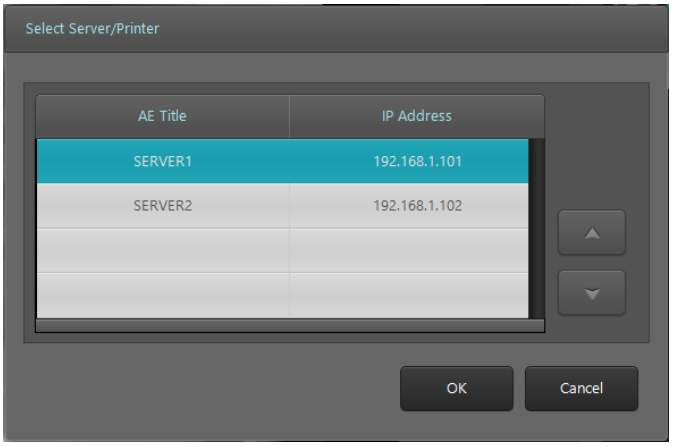


Figure 5.6. Destination Select

5.9. *Exposure Index*

The recommended EI value is between 1800 and 2200.

- 1800 < Dose < 2200: Dose is optimal
- Dose < 1800: Dose is too low
- Dose > 2200: Dose is too high

6. Task List

6.1. Screen Layout

The Task List is a list of scans to be performed. Tasks are group by studies, and arranged in chronological order. The user can select the desired region and perform a scan. The Task List consists of a list of studies, and each study consists of a list of tasks. The check boxes located to the right of the task bar is used to select tasks.

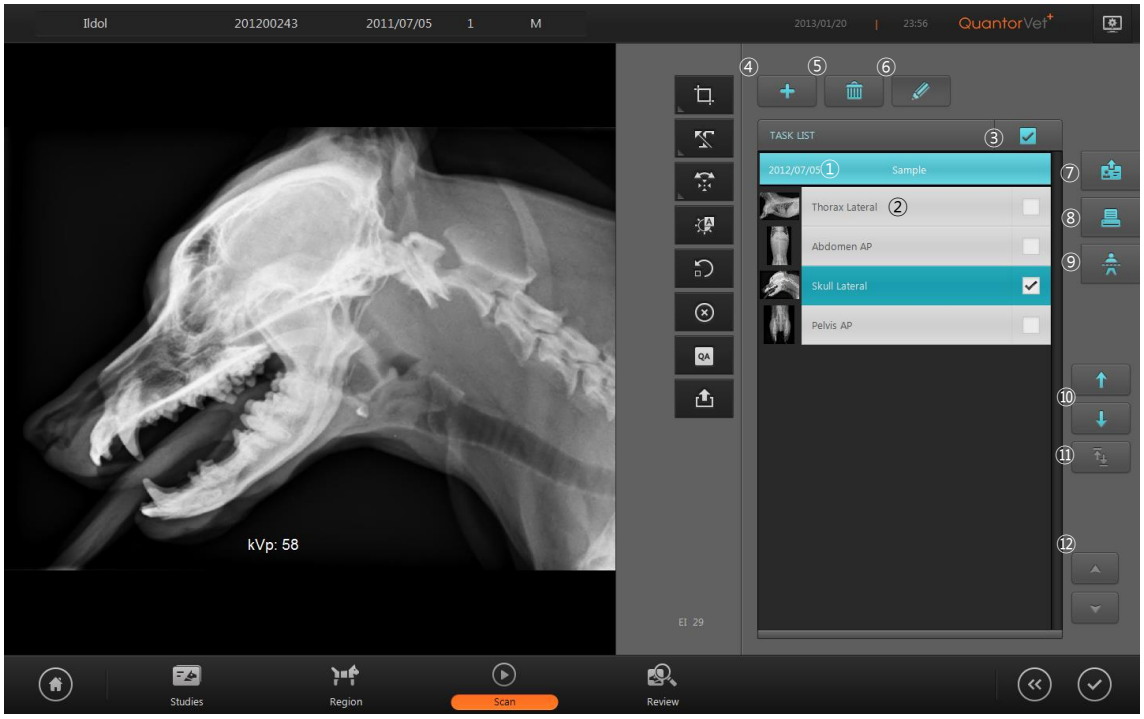


Figure 6.1. Task List

① Study Bar: Displays study date, study time, and study description. Only time is displayed for studies conducted on the same day. Only dates are displayed for studies conducted on any prior dates.

② Task Bar: Displays thumbnail images, body part, and view position.

③ Select all: Select all the tasks.

④ Add Preset: Add the selected study to the preset. When added to the preset, the added study will be displayed on the Preset List in the Region Selection screen.

⑤ Delete: Delete selected tasks.

⑥ Edit: Show/hide Move and Switch buttons.

⑦ Send Study: Transmit the selected study. Destination of the transmission can be added

in Settings.

⑧ Print: Print the selected images using a DICOM printer or a Windows printer.

⑨ Stitch: Used to stitch multiple images into one when long bones are scanned. To stitch images, all the images must have the identical scan resolution. Images scanned in SD resolution and in HD resolution cannot be stitched. Up to three images can be stitched into one.

⑩ Move: Change the order of the tasks. Change the order of the task by pressing the Up/Down buttons.

⑪ Switch: Switch the images of two tasks. The button is only activated when two tasks are selected.

⑫ Page Up/Down: Button for switching pages.

6.2. *Stitch*

The Stitch function is optional. A Stitch Dongle is required to use the Stitch function. When stitching begins, a screen shown in Figure 6.2. will be displayed on the screen and the selected images will be displayed vertically according to the order in the Task Bar. When you adjust the position and angle of the images and begin stitching, the two images will be stitched into one and added to the Task List.

Figure 6.2. Stitch

① Zoom: Used to zoom in and out of the image. Drag the mouse over the image to control the zoom. It does not zoom in/out on a single image and zooms in/out on the entire screen.

② Pan: Pan the image. Drag the mouse over the image to control the zoom. The selected image pans separately.

③ Fit to Page Size: Adjust zoom to fit the image to the height of the screen.

④ Fit to Page Width: Adjust zoom to fit the width of the screen.

⑤ Clip: Show/hide clip adjustment line in the image. Clip lines are displayed as dotted lines. Drag the dotted line using the mouse to clip the desired region.

⑥ Show Guide Line: Show/hide horizontal dotted line to check horizontal level of the scanned image. The position of the guide line can be adjusted by dragging it using the mouse.

⑦ Rotate Left: Rotate the selected image counter-clockwise.

⑧ Rotate Right: Rotate the selected image clockwise.

⑨ Rotate Angle: The angle to rotate the image.

⑩ Reset: Reset images.

⑪ Cancel: Return to the previous screen.

⑫ Stitch: Stitch images and return to the previous screen.

7. Review

7.1. Screen Layout

The View offers the identical functions as a PACS Viewer. It supports various image comparison, processing and measurement tools for performing a diagnosis. The screen displaying the image consists of multiple views. Each view consists of multiple images. The user can customize the view layout and image layout according to their needs.

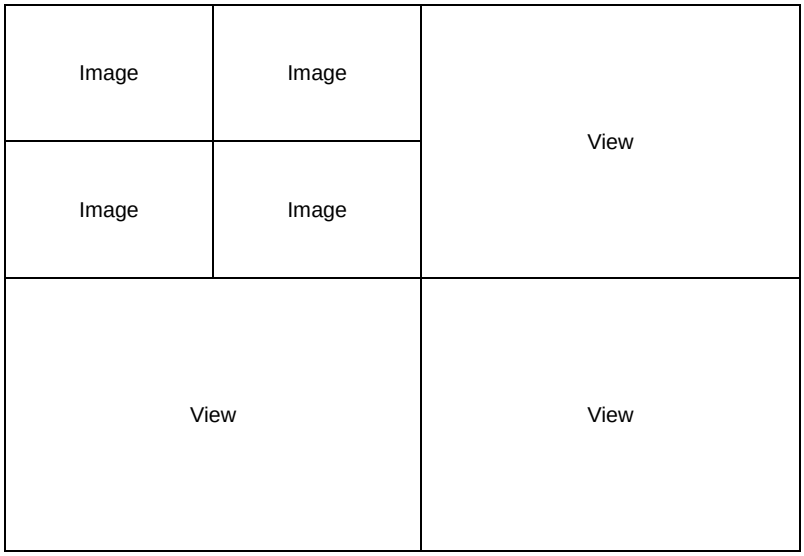


Figure 7.1. View – Image Layout

To display an image in the view, all you have to do is simply drag the image from the Task Bar. When an image is dragged from the Task Bar, only the image is displayed in the view. When a Study Bar is dragged, all the images included the study are displayed in the view.

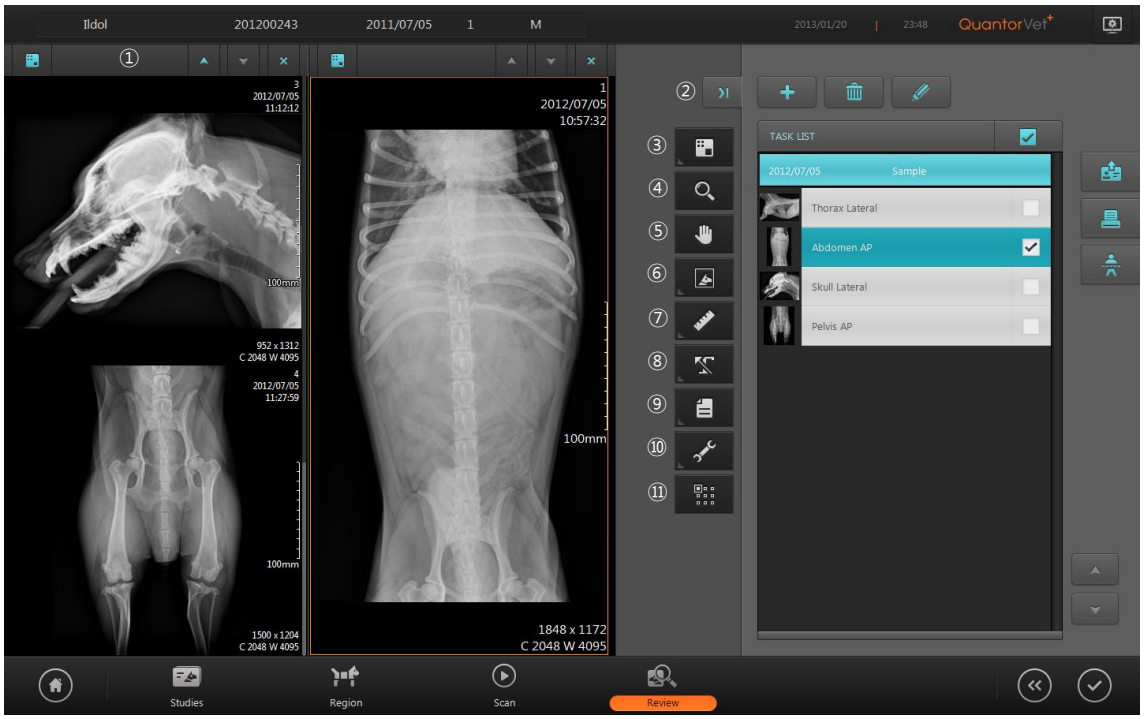


Figure 7.2. Review Screen

① View Caption Bar: The caption bar of the view.

② Full Screen: Show the review screen in full-screen mode.

③ View Window Layout: Change the layout of the view.

④ Zoom: Used to zoom in and out of the image. Drag the image left, right, up, or down using the mouse.

⑤ Pan: Pan the image. Drag the image left, right, up, or down using the mouse.

⑥ Image Manipulation: Open image manipulation tools for rotating, flipping and inverting images.

⑦ Measurement: Provides various measurement tools for measuring distance and angle.

⑧ Marking: Provides marking tools.

⑨ File: Display DICOM file on the screen.

⑩ Tools: Provides other tools.

⑪ Apply: Designate the range in which image adjustments will apply.

7.2. *View Caption Bar*

Figure 7.3. View Caption Bar

① Image Layout: Change image layout. When you click on the Image Layout button, a 3x3 grid shown in Figure 7.4 will appear on the screen. Select your desired layout. The largest image layout available 3x3.

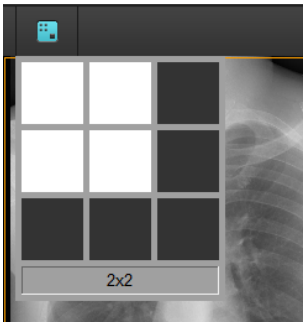


Figure 7.4. Image Layout

② Page Up: Go back to the previous page.

③ Page Down: Go to the next page.

④ Close: Close all images.

7.3. *Full Screen*

Expands the Review screen to full-screen mode as shown in Figure 7-5.

Figure 7.5. Full Screen

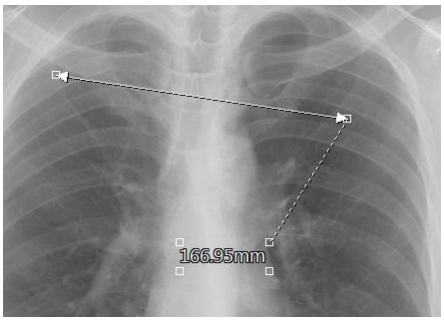
7.4. *Image Manipulation*

Icon	Action
	Rotate Left
	Rotate Right
	Flip Horizontally
	Flip Vertically
	Reset image to initial state
	Negative image

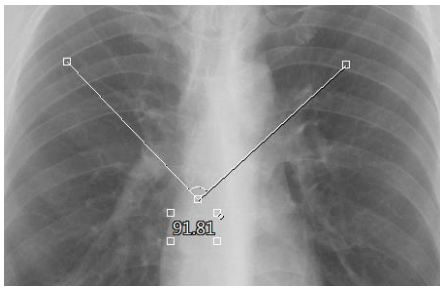
7.5. *Measurement*

Icon	Action
	Distance
	Angle
	Rectangle
	Ellipse
	Polygon
	Free Draw
	Pixel View
	Cardiac Thorax Ratio
	Profile

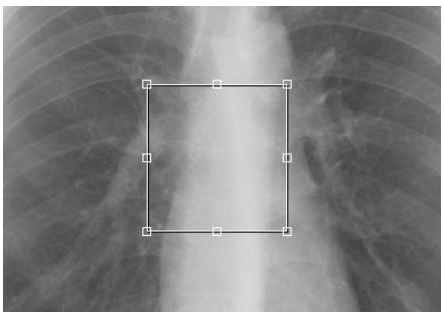
① Distance: Measures distance. Click the start and end point of the measurement. A straight line is displayed between the two points and the measurement value is displayed at the end of the straight line. You can move the measuring line by dragging it. You can move either one of the two control points by dragging them with your mouse. You can also move the position of the measurement values by dragging it with your mouse.



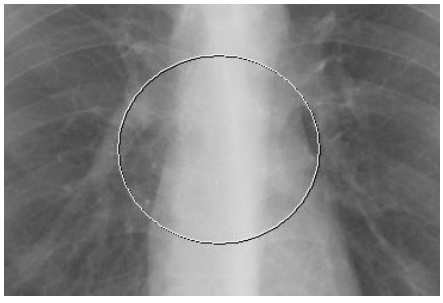
② Angle: Measures angle. Click on the center point of the angle you wish to measure, and then click on two control points. You can move both lines at once by dragging. You can also move either one of the two control points. You can also move the position of the measurement values by dragging them with your mouse.



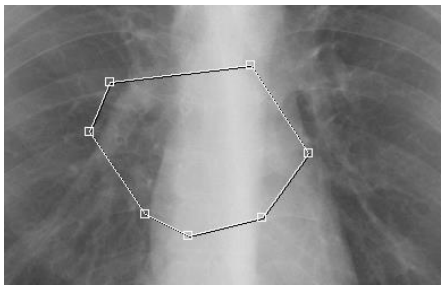
③ Rectangle: Draws a rectangle. Click the mouse at the desired position of the upper left corner of the rectangle, and then drag the mouse to the desired position of the lower right corner of the rectangle and release the mouse button. Click on an area within the rectangle to move it. Drag the control points to resize the rectangle.



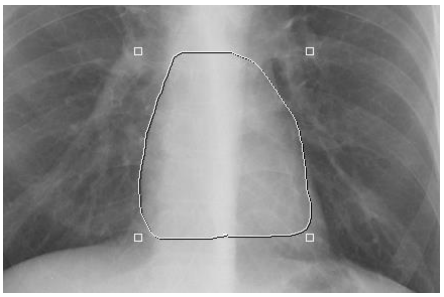
④ Ellipse: Draws an ellipse. Click the mouse at the desired position where the top and left-most point of the ellipse would intersect, drag the mouse toward the bottom right and release the mouse after reaching a desired size and shape. Click on an area within the ellipse to move it. Drag the control points to resize the ellipse.



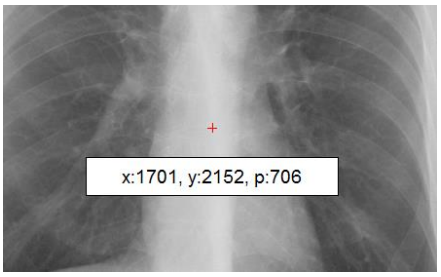
⑤ Draws a polygon. A control point is added every time you click the mouse. Double-click when you are done drawing the polygon. Click on an area within the polygon to move it. Drag the control points to change the corners of the polygon.



⑥ Creates a free draw selection. Click and drag the mouse to the desired shape. Release the mouse when you are done drawing. You can click inside the selection to move the free draw selection.

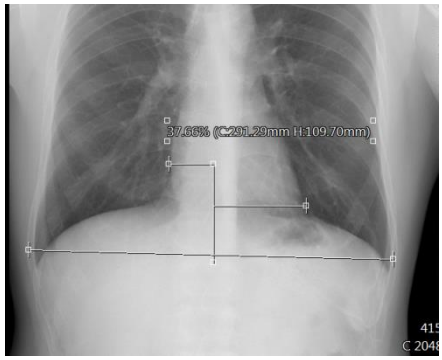


⑦ Measures pixel value. Click and drag the mouse and the coordinates (x, y) and pixel values (p) of the pixel at the cursor position will be displayed on the screen.



⑧ Measures cardiac thorax ratio.

1. Click on the left end point of the thorax.
2. Click on the right end point of the thorax.
3. Move the upper left control point to the left end point of the heart.
4. Move the upper right control point to the right end point of the heart.
5. The measurement value will be displayed in percent.



⑨ Profile: Draw a straight line in the same manner as measuring a distance, and a profile dialog box will be displayed automatically.

1. Distance: Distance between two points
2. Start Point: Start point information
3. End Point: End point information
4. Min: Minimum value
5. Max: Maximum value
6. Mean: Average value
7. Current Value: Pixel value of the current position when the mouse was clicked over the graph

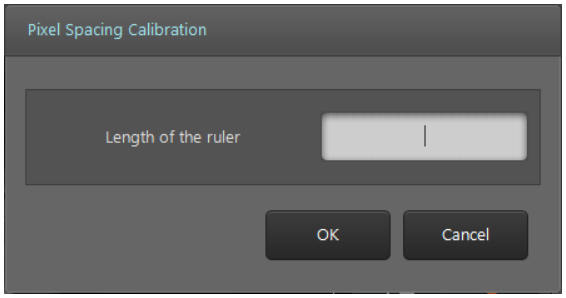
`Marking

Icon	Action
	Arrow
	Text

7.6. *File*

Icon	Action
	Open DICOM File
	Open Image File

7.7. *Tools*

Icon	Action
	Copy to clipboard: Copies the active image to the Windows clipboard.
	Sets pixel size. 1. Scan a measuring tool with a determined length. 2. Select the scanned image and click on the Pixel Calibration button. 3. The following dialog box will be displayed on the screen. Enter the actual length of the measuring tool.  4. Click on the start point of the measuring tool over the image and start dragging. 5. Release the mouse at the end point of the measuring tool to complete the calibration.

7.8. *Apply Range*

Sets the range in which image processing will be applied. When comparing two images, you can apply the same filters to both windows for easier comparison.

Icon	Action
	Active: The image that was clicked last is the active image. The active image is marked by an orange border.
	Select: You can select multiple images by clicking on images while holding down the Ctrl key. The selected images are marked by a blue border.
	Study: Applies image filters to all images in the study that contain the active image.
	All: Applies image filters on all the images.

Image filters that can be used with Apply Range are as follows.

- Zoom, Pan, Rotate, Flip, Window

7.9. *Export*

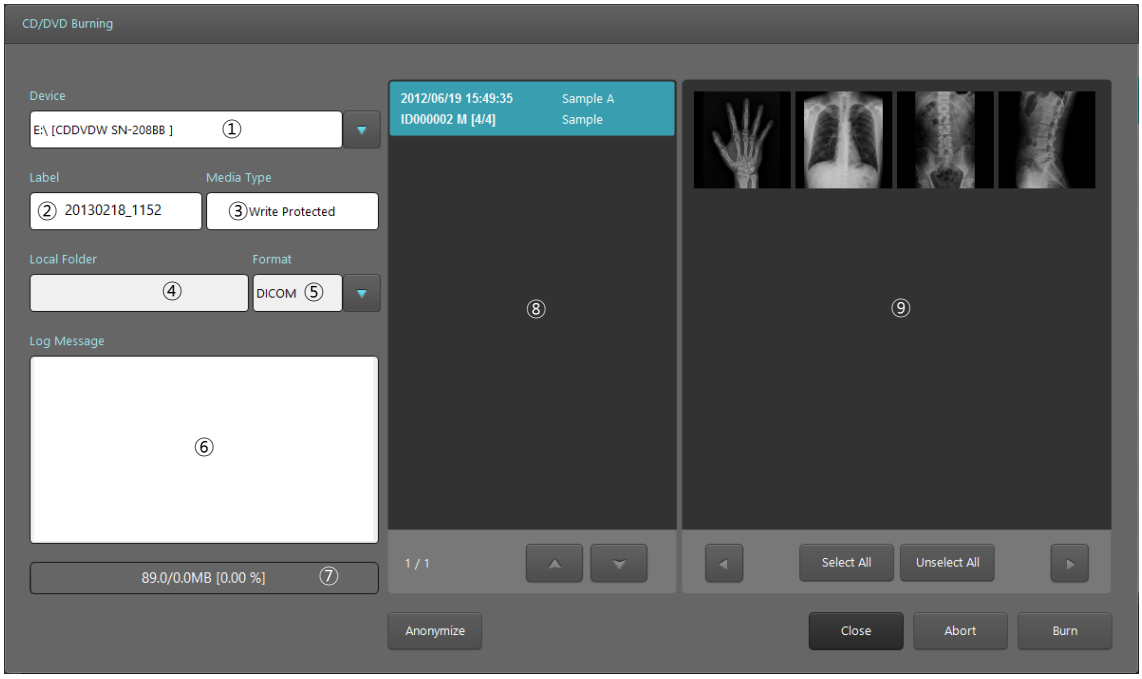


Figure 7.2. Export

① Device: Select the storage device to export the images to. Optical disc drives connected to the PC will be listed. If you select Local, you can use other storage devices connected to the PC.

② Label: Label to be displayed on disc.

③ Media Type: Displays the type of the media inserted in the drive.

④ Local Folder: Activated only when Local is selected in the Device field. Select a destination folder to save images.

⑤ Format: Select format to save images. Supported formats are as follows.

A. DICOM

B. Bitmap: Windows Bitmap file

C. Raw: RAW file

D. Jpg: JPEG

E. Tiff: TIFF

⑥ Log Message: Shows the progress when recording to an optical disc.

⑦ Progress Bar: Shows the image export progress.

⑧ Study List: Shows the list of selected studies.

⑨ Image List: Shows images selected in the Study List. To not export a certain image,

click and unselect the image.

⑩ Select All: Select all images.

⑪ Unselect All: Unselect all images.

⑫ Anonymize: Delete patient name and ID when saving as DICOM images.

⑬ Close: Close the dialog box.

⑭ Abort: Stop recording.

⑮ Burn: Start recording.