

ULTRASONIX

SonixOP Ultrasound System User Manual



Ultrasonix Medical Corporation

SonixOP Ultrasound System User Manual

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ULTRASONIX

CHAPTER 1: INTRODUCTION

1.1 AUDIENCE

This user manual is a reference for operators using a SonixOP ultrasound system. It is designed for a reader familiar with ultrasound imaging techniques; it does not provide training in sonography or clinical practices. Before using the system the operator must have ultrasound training.

Note: This is not a service manual. The SonixOP Service Manual is available for qualified service personnel.

1.1.1 Prescription Device

Caution: United States law restricts this device to sale or use by, or on the order of a Physician.

1.2 CONVENTIONS

The following conventions are used in this manual:

- cross-references for such things as tables, page numbers, sections and chapters are in blue, bold face, non-italic type (e.g., [Chapter 2: SONIX Introduction](#)) and are active hyperlinks when the manual is in Portable Document Format (PDF)
- words that are **bold italic** refer to items on the LCD display and touch screen
- icons are used to represent operator console buttons. Keyboard items are represented in **BOLD UPPER CASE** (e.g., **SHIFT** or **TAB**)
- "Press" and "Turn" indicate the actions required to activate the operator console buttons and dials
- "Tap" indicates the action required to activate a touch screen item
- "Select" directs the operator to choose an item(s) from onscreen pages, menus, dialogs, etc., using the console trackball and onscreen cursor or tapping the touch screen to make the selection
- a **Warning** describes precautions necessary to prevent injury or loss of life
- a **Caution** describes precautions necessary to protect the Sonix system and its associated products
- a **Note** contains helpful information and hidden functionality
- items marked **IMPORTANT** contain vital information that must be understood and followed, but which will not endanger either people or equipment
- bulleted lists present information in list format, but do not imply a sequence
- when operating instructions must be performed in a specific order, the steps are numbered
- instructions separated by ">" indicate that multiple items must be selected (e.g., "Select **Administrator** > **Status Bar**" indicates that the user must first select the "**Administrator**" option, then when the next dialog is presented, select the "**Status Bar**" option).



1.3 UPDATES

Updated user manuals will be available for all future Sonix ultrasound system updates.

1.4 VOLTAGE DISCLAIMER

The system voltage setting is configured in the factory.

It is the user's responsibility to ensure the system is used only under the electrical conditions dictated by Ultrasonix Medical Corp. Failure to comply with these conditions may result in damage to the system which is not covered by the Ultrasonix warranty.

Caution: For users running the 100V–120V system, always ensure the utility supply voltage is 100V–120V @ 50/60 Hz.

For users running the 200V–240V system, always ensure the utility supply voltage is 200V–240V @ 50/60 Hz.

1.5 CONNECTIVITY DISCLAIMER

Caution: System networking options are intended for use inside your organization's firewall. Organizations that elect to configure/use the networking functionality provided by Ultrasonix are assuming all liabilities and risks associated with that decision.

1.6 PRIVACY DISCLAIMER

To protect patient data, Ultrasonix strongly recommends regular patient/image file back-up and purging of older patient files stored on the system. Refer to [Chapter 9: Image Storage, Review, Transfer and Print](#) for details on transferring patient data.

IMPORTANT: The contents of the system hard drive may include Personal Health Information that must be protected as dictated by local or state laws (for example, Federal Privacy Act or the Health Insurance Portability & Accountability Act (HIPAA)). In order to ensure regulatory compliance, Ultrasonix will not remove the system hard drive — and the patient data it contains — from the customer site.

In the event the hard drive must be removed from the system, it will be returned to the customer. Final disposition of the hard drive and its data will remain the customer's responsibility.

1.7 GENERAL DISCLAIMER

Certain licensed features, hardware options and transducers may not be certified in all markets. Consult your local Ultrasonix Authorized Distributor or Sales Representative to determine availability in your area.

1.8 LICENSE AGREEMENT

Portions of the Sonix computer programs have been patented by Ultrasonix Medical Corporation (Ultrasonix) or are patent pending, and are licensed under the following software license agreement:

Ultrasonix, or its suppliers, retain(s) ownership of and title to any computer program supplied with the Equipment and to the trade secrets embodied in such computer programs. Subject to the Buyer's acceptance and fulfillment of the obligations in this paragraph, Ultrasonix grants the Buyer a personal, non-transferable, perpetual, non-exclusive license to use any computer program supplied with the Equipment that is necessary to operate the Equipment solely on the medium in which such program is delivered for the purpose of operating the Equipment in accordance with the instructions set forth in the operator's manuals supplied with the Equipment and for no other purpose whatsoever. Buyer may not reverse – assemble, reverse – compile or otherwise reverse – engineer such computer programs nor may Buyer make a copy of such program or apply any techniques to derive the trade secrets embodied therein. In the event of a failure by Buyer to comply with the terms of this license, the license granted by this paragraph shall terminate. Further, because unauthorized use of such computer programs will leave Ultrasonix without an adequate remedy at law, Buyer agrees that injunctive or other equitable relief will be appropriate to restrain such use, threatened or actual. Buyer further agrees that (i) any of the Ultrasonix suppliers of software is a direct and intended beneficiary of this end-user sublicense and may enforce it directly against Buyer with respect to software supplied by such supplier, and (ii) NO SUPPLIER OF ULTRASONIX SHALL BE LIABLE TO BUYER FOR ANY GENERAL, SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL INCIDENTAL OR OTHER DAMAGES ARISING OUT OF THE SUBLICENSE OF THE COMPUTER PROGRAMS SUPPLIED WITH THE EQUIPMENT.

1.9 WARRANTY REGISTRATION

To protect your investment, ensure the warranty registration card included with your system has been completed and returned to Ultrasonix (using the envelope provided) or register online at www.ultrasonix.com/register.

Note: *Warranty registration will ensure uninterrupted Technical Support and system updates.*



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1.10 TRADEMARKS AND PATENTS

Ultronix Sonix systems are protected under US Patents 6,216,029 - 6,325,759 - 6,558,326 - 6,911,008 - 7,274,325 - 8,088,070 - D654,178.

The following are trademarks of Ultronix Medical Corporation: SonixGPS™, SonixShine™, SonixTablet™ and SonixTouch™.

Windows® is a trademark of Microsoft Corporation.

DICOM® (Digital Imaging and Communications in Medicine) is the registered trademark of the National Electrical Manufacturers Association (NEMA) for its standards publications relating to digital communications of medical information.

All other products and brand names mentioned in this document are trademarks of their respective companies.

CHAPTER 2: Sonix INTRODUCTION

Congratulations on your purchase of the Ultrasonix Sonix Ultrasound system. The Sonix is a high quality, easy to use diagnostic ultrasound system that is stable, highly mobile and designed to be convenient and comfortable to operate.

The various system components, including the LCD display, operator console with touch screen, cart, and transducers, may be configured to better support system use.

2.1 SYSTEM COMPONENTS

Figure 2-1: SonixOP System Components



Note: The front wheels on the SonixOP lock completely (i.e., when locked, no movement is allowed in any direction), while the rear wheels lock directionally.



Table 2-1: System Components

1	LCD Display
2	Speakers
3	Touch Screen
4	Operator Console
5	Front Connectivity Panel (USB ports)
6	Front Pull Handles
7	Transducer Holders
8	System Case with Three (3) Transducer Ports
9	Optional Uninterruptible Power Supply (UPS) with External Breaker Access (Not available on this platform)
10	Foot Rest
11	Wheel Base with Four (4) Locking Wheels
12	Rear Pull Handles
13	Foot Pedal

2.2 OPERATOR CONSOLE

The operator console comprises a panel with patient management, system setup and ultrasound imaging controls: trackball, buttons, dials, toggle buttons, touch screen and keyboard. These operator controls enable Sonix functions (e.g., changing imaging modes and adjusting parameters such as **Time Gain Compensation (TGC)**, **Depth**, etc.).

Figure 2-2: Operator Console



Note: Many features are licensed options and may not be active on all systems. Refer to [8.2.22 Licensing](#) to determine what features are active and [Appendix B: System Specifications](#) for details on available options.



Table 2-1: Operator Console Controls

Item	Icon	System Control	Functionality
1		Power Button	System ON/OFF button, located on the console support beneath the LCD display. Refer to 8.2.10 System Settings to configure Shutdown Options . Refer to 2.5.2 Powering the System ON/OFF for the exact location of the power button.
2		Trackball	Used to position the onscreen arrow graphic, flashing text cursor, arrow cursor, calipers, etc.
3		QSONIX Button	Provides access to: <ul style="list-style-type: none"> Quick exam start-up Sonix Operator Console Tutorial Remote Support.
Print Controls	4	1 Button (<i>Custom Key 1</i>)	One of four (4) programmable buttons (8.2.13) used to: <ul style="list-style-type: none"> auto-store/print images or Cine loops to a configured printer, archive, etc. access certain functions such as Exam Review and Measurement Packages.
	5	2 Button (<i>Custom Key 2</i>)	One of four (4) programmable buttons (8.2.13) used to: <ul style="list-style-type: none"> auto-store/print images or Cine loops to a configured printer, archive, etc. access certain functions such as Exam Review and Measurement Packages.
	6	ARCHIVE Button (<i>Custom Key 3</i>)	One of four (4) programmable buttons used to: <ul style="list-style-type: none"> auto-store/print images or Cine loops to a configured printer, archive, etc. set to provide access to the Exam Management/Image Review system.
7		SELECT Button	Provides a wide variety of functions depending on the imaging state (e.g., selects/sets measurements, selects onscreen menu items, etc.) as well as left-click mouse button functionality.
8		UPDATE Button	Provides a wide variety of functions depending on the imaging state (e.g., toggle between image fields on Dual/Quad image, toggle between 2D and Doppler Trace image fields, toggles the active caliper, etc.) as well as right-click mouse button functionality.
9		FREEZE Button	Pause/resume a live image. Additionally, using Custom Key settings (8.2.13) the console button can be configured to move directly to Measure .



Item	Icon	System Control	Functionality
10		MEASURE Button	Initiates/closes the Measurement Package touch screen. Removes measurements from frozen image field. <hr/> Note: <i>Application-specific measurement tabs are available on the touch screen.</i>
11		DELETE (Measurement) Button	In Measure mode, deletes most recently saved measurement. Deletes selected thumbnail image.
12	ABC	TEXT Button	Activates the keyboard for Text entry and displays Application-specific Annotation buttons on the touch screen.
13		DELETE (Text) Button	Deletes the most recent Text or Annotation entry. Provides "delete character" functionality during data entry mode (Exam Management page).
14		Keyboard	QWERTY keyboard used for text entry (e.g., patient data, system setup, image text, etc.).
15		PICTOGRAM Button	Turns on/off application-specific Pictogram graphics. Tap Pictogram and dial through the various icons. <ul style="list-style-type: none"> • trackball positions orientation marker • touch screen Rotate dial pivots orientation marker.
16		ARROW Button	Turns on/off Arrow graphic on the image field. Trackball positions and rotates the Arrow graphic.
17		EXAM MGMT Button	Provides access to the Exam Management page.
18		TRANSDUCER Button	Provides access to transducer selection keys on touch screen.
19		MENU Button	Provides access to setup menus.



Item	Icon	System Control	Functionality
B-Mode/2D and M-Mode Controls	20	B-MODE/2D Button/Dial	Activates (press dial) 2D/B-Mode imaging mode and controls 2D Gain (turn dial) and M-Mode Gain .
	21	DUAL/QUAD Button	Activates Dual (press once) and Quad (press twice) split screen imaging. toggles between image fields. Press to return to single screen imaging.
	22	M-MODE Button	Activates M-Mode imaging. B-Mode dial controls M-Mode Gain . activates M-Mode Sweep .
	23	FOCUS Rocker Switch	Adjusts the location of the image focal zone UP or DOWN on the image field.
	24	DEPTH Rocker Switch	Adjusts the 2D imaging Depth UP (less Depth) or DOWN (more Depth).
	25	ZOOM Rocker Switch	Adjusts the 2D magnification UP (more magnification) or DOWN (less magnification). Trackball used to pan image.
26	FREQUENCY Rocker Switch	Adjusts the 2D image Frequency UP or DOWN: <ul style="list-style-type: none"> • Harmonics (if available) • Resolution (high frequency) • General • Penetration (low frequency) • EPI (Extended Pulse Imaging) (greater penetration). 	
Color Doppler Controls	27	COLOR Doppler Button/Dial	Activates (press dial) Color Doppler imaging mode and controls Color Doppler Gain (turn dial). Controls Power Doppler Gain .
	28	POWER DOPPLER Button	Activates/deactivates the Color Power Doppler imaging mode. The dial controls the Color Power Gain .
	29	INVERT Button	Reverses the direction of the Color Doppler Map .
	30	PRF PRF Rocker Switch	Adjusts the Color Doppler PRF (Pulse Repetition Frequency) UP (higher PRF) or DOWN (lower PRF).
	31	WF WF Rocker Switch	Adjusts the Color Doppler Wall Filter UP (more filtering) or DOWN (less filtering).
32	STEER Rocker Switch	Adjusts the steering angle depending on the active imaging mode: <ul style="list-style-type: none"> • Color Doppler Region of Interest (ROI) box • PW Doppler sample line • B-Mode/2D beam on linear transducers. 	



Item	Icon	System Control	Functionality
PW Doppler Controls	33	 PULSED DOPPLER Button/Dial	Activates/deactivates (press dial) Pulsed Wave (PW) Doppler imaging mode and controls PW Doppler Gain (turn dial).  switches between Trace and 2D image. Note: To adjust the PW gate size on full screen 2D/Doppler cursor, turn the  dial.
	34	 CW Button	Activates/deactivates Continuous Wave (CW) Doppler function. PW button/dial adjusts CW Gain .
	35	 ANGLE CORRECT Button/Dial	Activates (press dial) PW/CW angle correct feature. Each subsequent press toggles through 0, +60, -60 degrees. Turn dial right or left to adjust angle correct in 2 degree increments up or down.
	36	 INVERT Button	Reverses direction of PW/CW Doppler Trace .
	37	PRF PRF Rocker Switch	Adjusts PW/CW Doppler PRF UP (higher PRF) or DOWN (lower PRF).
	38	 BASE Rocker Switch	Adjusts PW/CW Doppler Trace Baseline UP or DOWN.
39	 RESEARCH Button	Activates/deactivates optional Research imaging package. Not available on this platform.	
40	 WORKSHEET Button	Presents the active Worksheet on the LCD display with associated options on the touch screen.	
41	 ELASTOGRAPHY Button	Activates/deactivates Elastography imaging mode.	
42	 SPATIAL COMPOUND Button	Activates/deactivates Spatial Compounding imaging mode.	
43	 3D/4D Button	Activates/deactivates optional Standard and Advanced 3D/4D imaging modes.	
44	AUTO OPTIMIZE Button	Adjusts scale and Gain of Doppler spectrum to optimal.	
45	 ACOUSTIC POWER Button/Dial	Adjusts (turn dial) Acoustic Power and toggles (press dial) MI , TIS , TIC , TIB display depending on the active imaging mode.  Warning: Refer to A.1.1 ALARA Principle and Output Displays .	



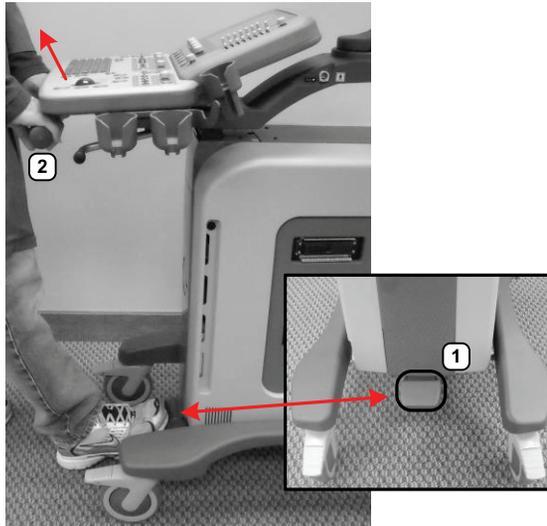
Item	Icon	System Control	Functionality
46–50		Touch Screen Dials	Five (5) dials that control touch screen options which change depending on the imaging mode/state. Once the touch screen option is tapped, turn the dial to make the relevant adjustments. <hr/> Note: <i>In measure mode, if the Method button is available on the touch screen (i.e., not grayed out), the measurement can be performed in two or more ways. After selecting a measurement, tap Method and turn the relevant touch screen dial to page through the various choices available. The Method selected appears in an information bubble to the bottom right of the image screen. Refer to Chapter 6: Clinical Analysis for further details on measurements.</i>
51		Touch Screen	Displays touch screen menus which change depending on the imaging mode/state. <hr/> Note: <i>The active tab on a touch screen menu is indicated by a "dot" pattern around the tab name.</i>
52		TGC Slide Pods	Adjusts TGC (Time Gain Compensation) curve.
53		AUDIO VOLUME Dial	Adjusts Doppler signal volume.

2.3 CONSOLE HEIGHT, ANGLE AND SWIVEL ADJUSTMENT

The console has three (3) adjustments: height, angle and swivel.

To Adjust the Console Height:

1. Depress the system foot pedal (1).



Note: Keep the foot pedal depressed until the height adjustment is complete.

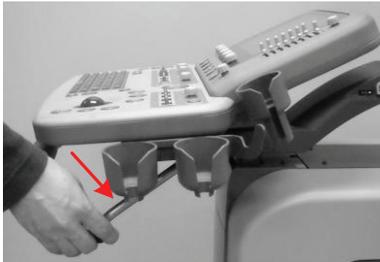
2. Pull up or push down on the front pull handles (2) to raise or lower the console.

Caution: Use only the front pull handles to make the height adjustment. Do not apply pressure anywhere else on the console.



To Adjust the Console Angle:

1. Push forward on the lever under the right side of the console.



2. Use the front pull handles to gently rock the console forward or backward until the desired tilt is achieved.
3. Pull backward on the lever under the right side of the console to lock the console in place.

To Swivel the Console:

1. Push forward on the lever under the left side of the console.



2. Use the front pull handles to gently swivel the console from side to side until the desired position is achieved.
3. Pull backward on the lever under the left side of the console to lock the console in place.

2.4 SYSTEM CASE

The system case contains the system PC and the (optional) UPS. Three (3) transducer ports are located on the right side.

Refer to the *SonixOP Service Manual* for complete details about the contents of the system case.

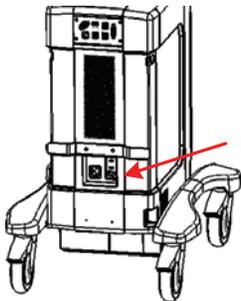


Warning: Do not touch the patient and the transducer ports simultaneously.

2.5 POWER PANEL

The Power Panel is located on the back lower portion of the system case. It includes the power cord, main power switch and fuse.

Figure 2-3: System Power Panel



Caution: **DO NOT** turn off the main power switch when the system is turned on. Turn off the system using the console **POWER** button, then turn off the main power switch. Failure to follow the correct procedure may result in loss of patient data and/or hard drive failure.

Note: If the system does not power up, ensure the power cord is plugged in and the main power switch on the system case is turned to the ON position. The Main Power switch is not required for regular power shut downs and should remain in the ON position.

2.5.1 Powering the System

Before turning the system on, connect the power cord.

To Connect the Power Cord:

1. Connect the power cord to a wall outlet (hospital-grade electrical outlet recommended).



2.5.2 Powering the System ON/OFF

After initial installation, it is important to correctly power the system ON/OFF. Failure to follow proper shutdown procedures may result in data corruptions and/or hard drive failure.

Properly powering OFF any system will protect the integrity of patient data. Properly powering OFF a system with a UPS will put it into Sleep Mode, enabling the system to be unplugged from the wall without depleting the battery while the system remains powered off.

Properly powering ON a system with a UPS will wake it from Sleep Mode and ensure the UPS is functioning correctly.

Caution: *NEVER* shutdown the system by simply unplugging it from the wall:

- even if the battery is fully depleted (applies only to systems with a UPS)
- regardless of whether the system was configured with or without a UPS.

Either of these actions may result in data corruptions and/or hard drive failure.

To Power the System ON:

1. Ensure the power cord is connected.
2. Press and hold the console **POWER** button for one (1) second.



Note: *For systems running with a UPS, powering ON correctly will wake the UPS from Sleep Mode and ensure it is functioning correctly.*

To Power the System OFF:

1. Press the console **POWER** button.
2. If **Shutdown Options** have been configured to request confirmation, select **Yes** when presented with the message **Do you really want to shutdown the system?**

Caution: *Failure to properly shut down any system may result in data corruptions and/or hard drive failure.*

Notes:

*If **Shutdown Options** have not been configured to request confirmation, the system will simply shut down.*

2.6 BACK CONNECTIVITY PANEL

The Back Connectivity Panel is located on the back of the system case. Refer to [10.1](#) for connectivity details.

2.7 CONSOLE CONNECTIVITY

The system is equipped with two (2) USB ports on the left edge of the console. Refer to [10.2 Console Connectivity](#) for details.

2.8 SonixGPS

When ordered with the **SonixGPS (Guidance Positioning System)** license, the system is delivered with the **SonixGPS** hardware attached to the system case.



Warning: *This user manual does not include a comprehensive discussion of the SonixGPS option. For complete details on using SonixGPS, read and follow all instructions and warnings in the most recent SonixGPS User Manual.*

2.9 FOOTSWITCH (DUAL OR TRIPLE)

The system supports an optional, (dual or triple) USB **Footswitch** ([8.2.14.4 Footswitch](#)).

Refer to [10.6 Connecting the USB Footswitch \(Dual or Triple\)](#) for details on connecting the **Footswitch** to the various hardware platforms.



ULTRASONIX

CHAPTER 3: GETTING STARTED

This chapter provides a quick, step-by-step guide through the basic operation of the Sonix Ultrasound System as well as details on general touch screen layout.

3.1 TURNING ON SYSTEM

To Turn on the System:

1. Ensure the power cord is connected (2.5.1).
2. Press and hold the console **POWER** button for one (1) second. Refer to 2.5.2 **Powering the System ON/OFF** to view the button's exact location.

Caution: *DO NOT use main power switch for regular power shut downs. Refer to 2.5.2 for instructions on correctly powering the system OFF. Failure to follow the correct procedure may result in loss of patient data and/or hard drive failure.*

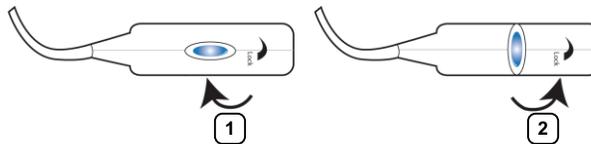
Note: *If the system does not power up, ensure the Main Power switch on the back of the system case is turned to the ON position ("—"). Refer to Figure 2-3 for main power switch location.*

3.2 CONNECTING TRANSDUCERS

The connection ports for the Ultrasonix transducers are located on the side of the system case (Figure 2-1).

To Connect/Disconnect a Transducer:

1. Turn the latch counter-clockwise to the Open or Unlock position (2).



2. Insert the transducer connector into the connection port with the transducer identification label (e.g., L14-5/38) facing up.
3. Ensure the connector is properly seated and turn the latch clockwise to lock it in place (1).
4. Turn the latch counter-clockwise to unlock (open) and remove the transducer.

Note: *When a new exam is initiated, the transducer used in the most recent exam will still be selected if it is still connected. If it's no longer connected, the system will default to the first available transducer. This default transducer selection is not affected even if the system is turned off between exams.*

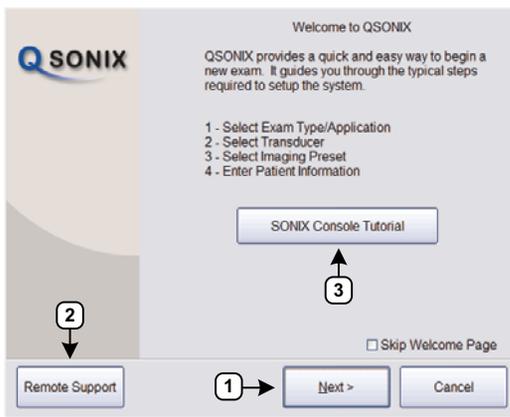


3.3 QSonix FEATURE

The **Q** button provides the following basic functions:

- Quick Exam Start-up (1)
- **Remote Support** Access (2)
- Sonix Console Tutorial (3)

Figure 3-1: QSonix



Note: By default, the **Welcome to QSonix** screen will appear the first time the **Q** button is pressed. If desired, after initial access to the **QSonix** feature, use the trackball and  button to select the **Skip Welcome Page** checkbox in order to hide this page.

3.3.1 Quick Exam Start-Up

The Quick Exam Start-up feature provides a series of dialogs which guide the user through the steps required to begin an exam. Once the **Q** button is selected, users have the choice to navigate through the Quick Exam Start-up using the touch screen or with the trackball and  button on the LCD display:

1. Select the **Exam Type/Application**.
2. Select the transducer.
3. Select the **Imaging Preset**.
4. Enter basic **Patient Information**.
5. Begin the exam.

To Begin the Quick Exam Start-up:

1. Press the console **Q** button.
2. If the **Welcome to QSonix** page appears, select **Next**.



Note: If the **Welcome to QSonix** page has been set to skip, it can be reset to appear by selecting the **Welcome Page** button. Select **Skip Welcome Page** to prevent it from appearing the next time the **Q** button is selected.



3. Select the desired **Exam Type/Application** and the system will automatically move to the next page.



Note: QSonix selections can also be made on the LCD display using the trackball and button.

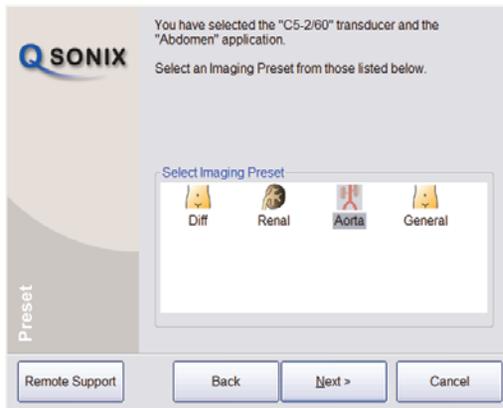
4. Select the desired transducer and the system will automatically move to the next page.



Note: Only transducers currently connected to the system and applicable to the previously-selected **Exam Type/Application** will be available. If the selected **Application** is not compatible with the currently connected transducers, the system will prompt for a different transducer.

Users can also select **Back** and select a different **Application**.

5. Select the desired **Imaging Preset** and the system will automatically move to the next page.



Note: User-defined **Presets** will be included here.

If a **Preset** has been hidden, it will not be available for selection from **QSonix**. Refer to [8.2.1.1 Show/Hide Imaging Presets](#) for details.

6. Use the console keyboard to enter data in the **Input Patient Information** fields. Press the keyboard the **Tab** key to move through the data fields.



Notes:

If additional patient information is required select **More...** to open the full **Exam Management** data entry page. This will also enable the **Operator** to find and load (if they exist on the system) previous exams for the patient.

Refer to [Chapter 4: Patient Management](#) for complete details on **Exam Management** data entry and manipulation.

Insert (Symbol) enables the insertion of text symbol(s) not available on the keyboard (e.g., punctuation, symbols and letters from other languages).

Reuse Active Patient allows **Operators** to change **Applications** while continuing to scan the current patient (i.e., the data acquired after switching to a different **Application** continues to be saved to the same patient but under a new exam).

7. Select **Start Exam** to begin imaging.

3.3.2 Operator Console Tutorial

This feature provides a brief overview of the functionality of the operator console buttons, toggle buttons, dials, etc.

To Access the Operator Console Tutorial:

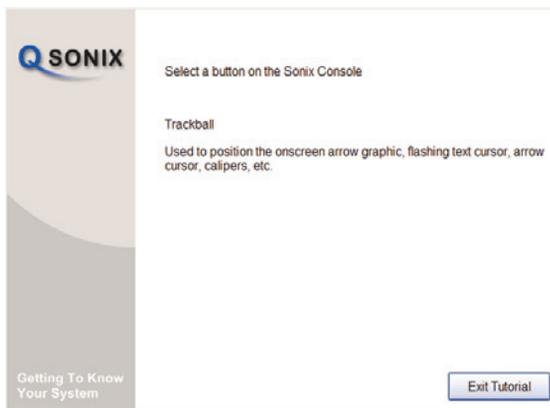
1. Press the console **Q** button.



Note: If the *Welcome to QSonix* page does not appear, select the *Welcome Page* button.



2. Select **Sonix Console Tutorial** and a brief, onscreen description will be presented when any console button, dial or knob is activated.



3. Select **Exit Tutorial** to return to the *Welcome to QSonix* page.

3.3.3 Documentation Access

Operators can access PDF documentation via the  button. This includes a cross-referenced version of the **User Manual**.

Note: *It is not possible to view a PDF when a Sonix dialog (e.g., **Exam Management**) or Windows dialog (e.g., **Date and Time Properties**) is open.*

To Access a PDF:

Note: *PDFs must be loaded before they can be accessed. Refer to [8.2.20 Documentation Settings](#) for details on adding/deleting documents.*

1. Ensure the main touch screen is visible and that all dialogs are closed.
2. Press the console  button.
3. Select **Documentation**.
4. From the list presented, select the relevant PDF.



Note: *If only one (1) PDF document has been added, it will be opened automatically.*

5. The selected document will open in a PDF viewer.

To Close the PDF:

1. Select the "X" in the upper right corner of the PDF viewer window.





3.4 REMOTE SUPPORT

Remote Support allows Ultrasonix Technical Support to view and control a system for diagnostic purposes.

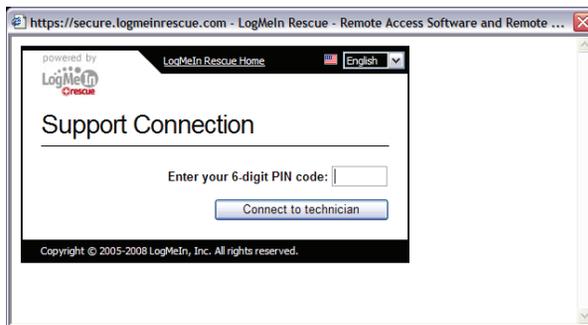
In order to use **Remote Support**, the **Network** must be configured ([8.2.11 Network](#)) and a **PIN (Personal Identification Number)** must be obtained from Ultrasonix Technical Support.

Note: The **PIN** is valid for 20 minutes only, so be sure to use it right away.

To Access Remote Support:

Note: **Remote Support** can also be accessed from the  button. Refer to [8.1.2](#) for details.

1. Press the console  button.
2. Select the **Remote Support...** button.



Note: If **Remote Support** does not appear to be available, contact your IT Department and have them check to make sure the network connection is active and the **Remote Support** option has been configured for use.

3. Enter the **PIN (Personal Identification Number)** provided by Ultrasonix Technical Support.

Note: The **PIN** is valid for 20 minutes only, so be sure to use it right away.

4. When prompted, select **Download > Run > Run** in order to install the required programs.
5. The system can now be remotely controlled.

3.5 TOUCH SCREEN LAYOUT

Although **B-Mode** will always be the first touch screen presented after initialization, the touch screens for all modes are presented in the same format.

Note: The options available in sections 2 and 3 (Figure 3-2) will vary from mode to mode.

Once an image is frozen, some of the mode-specific touch screen options may be altered, for example **Cine** options will be available.

3.5.1 Main Touch Screen

Figure 3-2: Layout of Main Touch Screen (B-Mode Example)





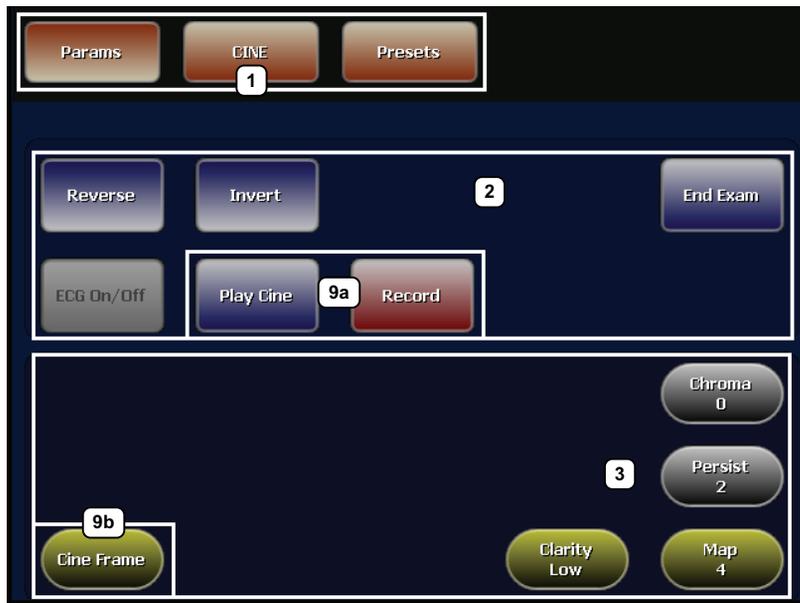
Table 3-1: Main Touch Screen Buttons

1	Touch Screen Tabs	Tap to access additional options. <hr/> Note: <i>Tab availability depends on the current imaging mode.</i> <hr/>
2	Mode Action Buttons	Enable the application of certain actions to an image (e.g., Invert). Mode Action Buttons are toggle buttons. For example, tap Biopsy to view the Biopsy Guides on the LCD display. Tap it again to remove them. When active, a Mode Action Button will be a graduated green color. The exception to this Layout —which always remains blue as it is tapped to toggle through the various Layout options. <hr/> Note: <i>The actions available are mode and/or transducer-specific.</i> <hr/>
3	Imaging Parameter Buttons	Enable adjustments to be made to the available imaging parameters for the selected mode. <hr/> Note: <i>Most parameters are mode-specific, although some (such as Steer) are transducer-dependant.</i> <hr/> Turn/press the relevant touch screen dial to adjust an active imaging parameter. If an imaging parameter button is a pale gray/white color, that particular parameter is currently active (e.g., Zoom , Figure 3-2). Turn/press the dial directly to the right of the active button to make adjustments. <hr/> Note: <i>To adjust an imaging parameter that is <u>not</u> currently active, tap the desired imaging parameter button then turn/press the dial directly to its right (e.g., Clarity, Figure 3-2).</i> <hr/>

3.5.2 Main Touch Screen – Frozen

Once an image has been acquired and frozen, the touch screen will be updated. While many buttons stay the same, some are removed and others are added so that only relevant buttons remain.

Figure 3-3: Layout of Main Touch Screen – Frozen (B-Mode Example)



Note: For details on the other touch screen buttons, refer to [Table 3-1](#).



Table 3-2: Main Touch Screen – Frozen (B-Mode)

1	Touch Screen Tabs	May change, depending on the imaging mode (e.g., B-Mode is no longer available).
2	Mode Action Buttons	May change, depending on the imaging mode (e.g., HD Zoom is no longer available).
3	Imaging Parameter Buttons	May change, depending on the imaging mode (e.g., imaging parameters have been limited to four (4) options, down from the original 10 (Figure 3-2)).
9a	Play Cine and (Cine) Record Button	Available only when an image has been frozen. To access all Cine options, tap the touch screen Cine tab. Note: Refer to 5.10 for details on Cine .
9b	(Cine) Action Buttons Cine Frame	Available only when an image has been frozen. This button can also be used in conjunction with the associated touch screen dial. To access all Cine options, tap the touch screen Cine tab. Note: Refer to 5.10 for more details on Cine .

Note: Fields that will accept data entry via the keyboard will also accept data scanned with the barcode reader. Simply ensure that the cursor is located in the required field then scan the relevant barcode.



Table 4-1: Exam Management Page Options

	Saves the changes made to the Exam Management page and returns to imaging.
OK	Note: If a unique Patient ID is not entered manually the system will create one automatically (e.g., {C9B3F82B-BE52-4C79-8C45-28375D69F8C9}).
Cancel	Cancels any changes made to the Exam Management page and returns to live imaging. Cancel will not undo the End Exam function.
End Exam	Ends the current exam session, clears the Patient , Application and Exam data fields and prints/clears the printer queue (e.g., if printer image sheet is set for 2x2 and only two (2) images were saved, ending the exam signals the system that no more images are coming to fill up the sheet and sends the image sheet to the printer). All measurements visible on the LCD display are cleared. Note: Before ending an exam, ensure the active image has been saved/printed using the console 1 or 2 button (8.2.13 Custom Keys) in order to be able to recall it via the Review button on the Exam Management page or the Exam Review button on the touch screen.
Clear	Clears the Patient and Exam data fields. Clear will also "end" the current exam if one is open, however, it does not delete the file.
Search Worklist	Enables a DICOM or ERM Worklist search.
Insert (Symbol)	Enables the insertion of text symbol(s) not available on the keyboard (e.g., punctuation, symbols and letters from other languages).
Import/Export	Use to Export data to an alternate storage device. Deleting the exported data from the local drive is optional. If the data was deleted during the Export phase, it can be reinstalled at a later date using the Import option.
Review	Opens the Exam Review page for the current patient or patient(s) selected from Patient file storage.
Delete	Removes the currently selected patient(s) from Patient file storage.
Update Worklist	Updates a DICOM or ERM Worklist search. Note: This button will only be available if the system is configured for DICOM (8.2.12.3 DICOM Worklist Settings). In order to actually update Worklist data, the system must also have an active connection to a DICOM server.
Tabs	<ul style="list-style-type: none"> • Patients: list of Patients/Exams currently available on the system • DICOM <ul style="list-style-type: none"> • Worklist: if enabled in DICOM • Store Queue: if enabled in DICOM • Print Queue: if enabled in DICOM • Hide: hides data to preserve privacy. <p>Note: Refer to 4.8 Storage/Database Tabs for more details.</p>

Figure 4-2: Exam Management Page Touch Screen

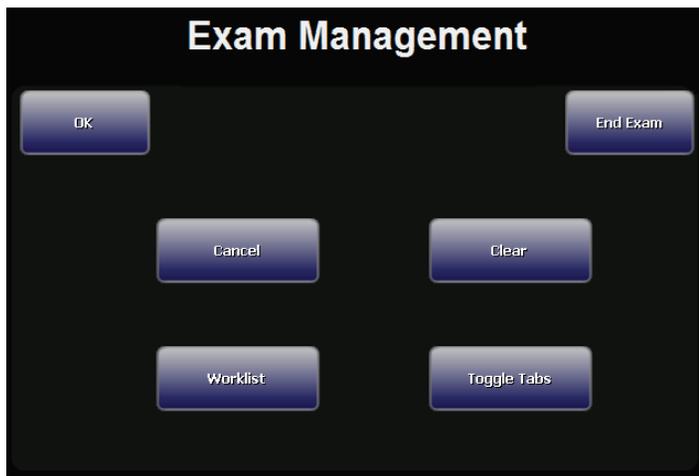


Table 4-2: Exam Management Touch Screen Controls (tap to activate)

OK	Saves the changes made to the Exam Management page and returns to imaging. <i>Note: If a unique Patient ID is not entered manually the system will create one automatically (e.g., {C9B3F82B-BE52-4C79-8C45-28375D69F8C9}).</i>
End Exam	Ends the current exam session, clears the Patient , Application and Exam data fields and prints/clears the printer queue (e.g., if printer image sheet is set for 2x2 and only two (2) images were saved, ending the exam signals the system that no more images are coming to fill up the sheet and sends the image sheet to the printer). All measurements visible on the LCD display are cleared. <i>Note: Before ending an exam, ensure the active image has been saved/printed using the console 1 or 2 button (8.2.13 Custom Keys) in order to be able to recall it via the Review button on the Exam Management page or the Exam Review button on the touch screen.</i>
Cancel	Cancels any changes made to the Exam Management page and returns to live imaging. Cancel will not undo the End Exam function.
Clear	Clears the Patient and Exam data fields. Clear will also "end" the current exam if one is open, however, it does not delete the file.
Worklist	Enables a DICOM or ERM Worklist search.
Toggle Tabs	Toggles between the available Storage/Database tabs. Refer to 4.8 for more details.

To Access the Exam Management Page:

1. Press the console  button.

4.1.1 Patient Information

Figure 4-3: Data Fields for Patient Information



The screenshot shows a form titled "Patient Information" with the following fields:

- Patient ID: Text input field
- DOB (mm/dd/yyyy): Text input field with a date format hint
- Age: Two separate input fields for years (y) and months (m)
- Last Name: Text input field
- Sex: Dropdown menu with "Unknown" selected
- First Name: Text input field
- Accession #: Text input field
- Middle Name: Text input field
- Insurance #: Text input field

Table 4-3: Patient Information Fields

Patient ID	Enter the Patient Identifier using letters and/or numbers. The system automatically creates a unique Patient ID if one is not entered manually (e.g., {C9B3F82B-BE52-4C79-8C45-28375D69F8C9}). Note: The Patient ID cannot be changed after the patient file has been created (i.e., an exam has begun).
Last Name First Name Middle Name	Enter the patient's Last , First and Middle Names —any of which can be modified at any point during the exam.
DOB (Date Of Birth)	Enter the patient's Date of Birth in the required format (e.g., mm/dd/yyyy) which is controlled through the Regional Settings options selected in 8.2.10 System Settings . Note: A DOB entry will auto-populate the Age field.
Age	Rather than entering a specific DOB , enter the patient's actual Age . Note: The Age field will auto-populate if a DOB is entered.
Sex	Select the patient's gender: Female , Male , Other or Unknown .
Accession #	Enter the exam's Accession Number . Note: This field auto-populates when the DICOM Worklist is used.
Insurance #	Enter the patient's Insurance Number .

Notes:

During imaging, if **Patient ID**, **Name**, **LMP**, etc. are not displayed at the top of the image screen, the system may be setup to hide this patient data. For details, refer to **General Options (Table 8-35)** in **8.2.16 Patient Settings**.

All these fields can be completed using the barcode reader. Simply ensure the cursor is in the required field and scan the relevant barcode.

To Enter Patient Information Manually:

1. Press the console  button.
2. Use the keyboard, trackball and console  button to enter the patient information as required.

Patient Information			
Patient ID	<input type="text"/>	DOB (mm/dd/yyyy)	<input type="text" value="mm/dd/yyyy"/> Age <input type="text"/> y <input type="text"/> m
Last Name	<input type="text"/>	Sex	<input type="text" value="Unknown"/> ▼
First Name	<input type="text"/>	Accession #	<input type="text"/>
Middle Name	<input type="text"/>	Insurance #	<input type="text"/>

Note: The **Tab** key may be used to move through the various data fields and the **Enter** key to make drop-down menu selections.

To Enter Patient Information with the Barcode Reader:

1. Press the console  button.
2. With the cursor in the **Patient ID** field, scan the relevant patient barcode with the barcode reader.
3. Continue entering the patient/exam data as required.

Note: Fields that will accept data entry via the keyboard will also accept data scanned with the barcode reader. Simply ensure that the cursor is located in the required field then scan the relevant barcode.



4.1.2 Application Information

Use this section of the **Exam Management** page to select the appropriate **Application** in order to enter **application**-specific data (e.g., for **Abdomen**, enter **Height** and **Weight**).

Note: The **Application** selected here is not tied to an **Imaging Preset** or **Exam Type/ Application**.

Table 4-4: Application Information Fields

- Abdomen
- Biliary
- Bladder
- Foreign Bodies
- Generic
- Lower Extremity
- MSK
- Nerve Block
- Procedure
- Renal
- Small Parts
- Thoracic
- Trauma (FAST)
- Urology
- Vascular
- Vascular Access

- **Height** and **Weight** have both metric and imperial measurement options
- **BSA (Body Surface Area)** is calculated and displayed when **Height/Weight** is entered.

- OB 1st Trimester
- OB 2nd–3rd Trimester

- **LMP (Last Menstrual Period)** auto-calculates **GA (Gestational Age)** and **EDD (Estimated Date of Delivery)**

- **GA** auto-calculates **EDD**

Note: When either **OB** option is selected as the **Application**, **GA** will automatically be presented on the Patient Information Bar during imaging.

- **EDD** auto-calculates **GA**

Note: **LMP** or **GA** will display at the top of the image field in the selected Windows date format (e.g., **mm/dd/yyyy**). Both **weeks (w)** and **days (d)** are used to auto-calculate **EDD**. If the **GA** and **EDD** are entered manually, they will override the **LMP** field entry.

- **Gravida**, **Para** and **Aborta** fields

- **Fetus #** defaults to 1. Enter up to 8 for multiple gestations



Warning: In order to record measurements on multiple—but separate—fetuses, enter a **Fetus #** between 2 and 8 (i.e., to activate the **Fetus** toggle button in **OB Measurement Packages and Reports** (where 1 = A, 2 = B, etc.)).

OB 1st Trimester
OB 2nd–3rd
Trimester

- **BBT (Basal Body Temperature)** can be entered in °C (Celsius) or °F (Fahrenheit)

Note: **BBT** is only available if it was selected in **8.2.16 Patient Settings**.

- **Previous Exam** enables the entry of previous **OB** exam data for **Fetal Trending** (refer to **4.1.2.1 OB Previous Exam (Fetal Trending)** for details).

Pelvic

- **LMP**
- **Exp. Ovul. (Expected Date of Ovulation)**
- **Day of Cycles**
- **Gravida, Para** and **Aborta** fields.

Note: When **Pelvic** is selected as the **Application**, **LMP** will automatically be presented on the **Patient Information Bar** during imaging.



To Enter Application-Specific Data:

1. Press the console  button.
2. Tab to the **Application** drop-down menu on the right side of the **Application Information** section.
3. Select the desired **Application** from the drop-down menu.



Warnings:

*In order to record measurements on multiple—but separate—fetuses, enter a **Fetus #** between 2 and 8 (i.e., to activate the **Fetus** toggle button in **OB Measurement Packages** and **Reports** (where **1 = A**, **2 = B**, etc.)).*

*In addition to entering the correct **Fetus #** on the **Exam Management** page, be sure to label each **Fetus** using the console **ABC** button.*

Notes:

*The **Application**-related data entry fields to the right of the **Application Information** section change with the selection of the various **Applications** (refer to [Table 4-4](#) to view examples of the various options available).*

*Once the cursor is placed in a data entry field, the **Tab** key may be used to move through the various data fields and the **Enter** key may be used to toggle through drop-down menu selections.*

4.1.2.1 OB Previous Exam (Fetal Trending)

Previous Exam allows users to manually enter data from previous OB exams in order to track **Fetal Trending** details for up to three (3) **Fetuses**.

Figure 4-4: Previous Exam (Fetal Trending)

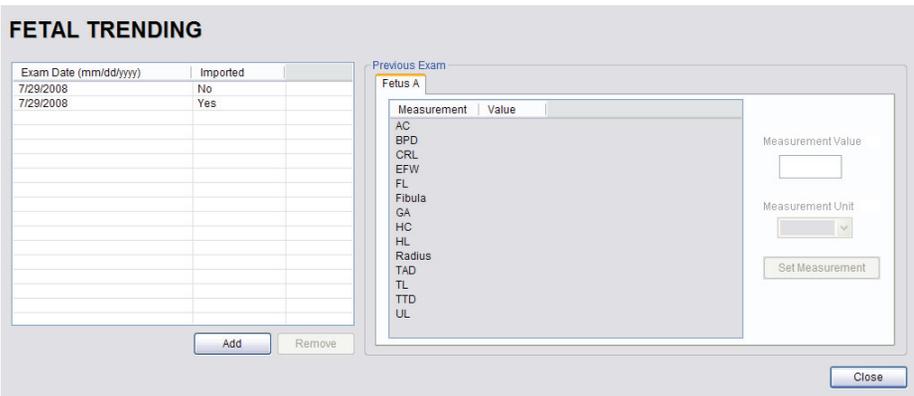


Table 4-5: Previous Exam (Fetal Trending)

Exam Date (mm/dd/yyyy)	Indicates the date of the exam, if the exam is on the system or the date of the exam for which data was manually entered.
Imported	Yes or No indicates whether or not exam data is being read from the system (Imported = No) or has been entered manually (Imported = Yes).
Add	Select to manually enter Previous Exam data.
Remove	Select to remove Previous Exam data. Note: This option is only available for Imported data. Exams that exist on the system cannot be removed from the Fetal Trending page.
Previous Exam	Fetus A, B, C Selects the Fetus for which the exam data is applicable. Note: The number of Fetus tabs will correspond exactly to the Fetus # entered on the Exam Management page, e.g., if the Fetus # is "2" only the Fetus A and Fetus B tabs will be available.
	Measurement Lists the type of Measurement for which data will be entered.
	Value Lists the Value of the entered Measurement .
	Measurement Value Measurement Value data entry field. Note: Measurements can be edited while the exam remains active. Once it has been closed, the exam would have to be deleted and the data re-entered in order to make any edits.
Measurement Unit	Shows the relevant Measurement Unit , e.g., days , cm or g (grams) .
Set Measurement	Accepts the Measurement once it has been entered.



To Enter Previous OB Exam Data for Fetal Trending:

1. Press the console button.
2. Select a **Patient** from the **Patient Database**.
3. Select **Previous Exam** from the **Application Information** data entry section to access the **Fetal Trending** page.

4. If required, select the relevant **Fetus** tab (**Fetus A**, **Fetus B** or **Fetus C**).

Note: The number of **Fetus** tabs will correspond exactly to the **Fetus #** entered on the **Exam Management** page, e.g., if the **Fetus #** is "2" only the **Fetus A** and **Fetus B** tabs will be available.

5. Select the **Add** button to access the **Exam Date** selector.

Note: The system will only allow the addition of one (1) exam per date.

6. Select the relevant date for the **Previous Exam**.

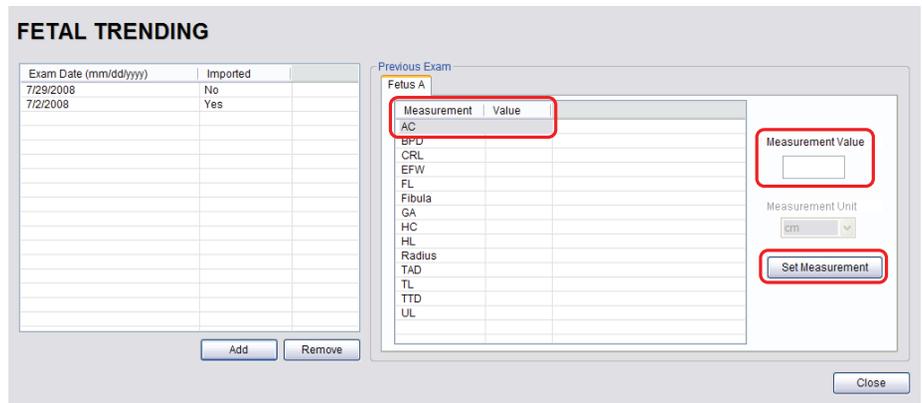
Note: The current date is always enclosed in a red box.

To change the current month, uses the arrow selectors on either side of the calendar header

7. Select **OK** to accept the changes or **Cancel** to exit without saving.

Note: The newly added exam date will be highlighted under **Exam Date (mm/dd/yyyy)** on the left hand side of the **Fetal Trending** page.

8. Under **Previous Exam**, highlight the desire **Measurement** and enter the relevant data in the **Measurement Value** data entry field.



9. Select the **Set Measurement** button.
10. Continue adding **Measurements** in the same manner until all data has been entered for the current **Fetus**.
11. Repeats step 4 to 10 for any additional **Fetus(es)**.
12. Select **Close** to accept the data and return to the **Exam Management** page.
13. The data entered is plotted on the growth graphs as part of the OB report package.

4.1.3 Exam Information

Figure 4-5: Exam Information Fields



Table 4-6: Exam Information Fields

Attending Physician	Enter name of the Attending Physician manually or select from drop-down menu of previously entered and currently active physician names.
Referring Physician	Enter name of the Referring Physician manually or select from drop-down menu of previously entered and currently active physician names. Referring Physician auto-populates when the patient is selected from DICOM Worklist .
Operator ID	Enter name or initials of the Operator or select from drop-down menu of previously entered and currently active Operator IDs . Operator ID appears at the top of the screen during imaging.
Clinical Indication	Enter Clinical Indication manually or select from drop-down menu of previously entered and currently active Clinical Indications . Clinical Indication auto-populates when the patient is selected from DICOM Worklist , but can be modified.
Custom Label 1, 2, 3, 4	Enter user-defined data manually or select from drop-down menu of previously entered and currently active data.

Notes:

Refer to [8.2.16 Patient Settings](#) for details on adding, editing and maintaining data for these fields.

Attending Physicians and Operator IDs can also be added via [3.3.1 Quick Exam Start-Up](#).

All these fields can be completed using the barcode reader. Simply ensure the cursor is in the required field and scan the relevant barcode.

To Enter Exam Information Manually:

1. Press the console  button.
2. Enter **Exam Information** as required. Once entered, the text is available for recall from the drop-down menu.

Note: Use the **Tab** or **Enter** key to move around the **Exam Information** fields. Drop-down menu selections can be made with the trackball and  button.

To Enter Exam Information with the Barcode Reader:

1. Press the console  button.
2. With the cursor in the **Attending Physician** field, scan the relevant patient barcode with the barcode reader.
3. Continue entering the patient/exam data as required.

Note: Fields that will accept data entry via the keyboard will also accept data scanned with the barcode reader. Simply ensure that the cursor is located in the required field then scan the relevant barcode.

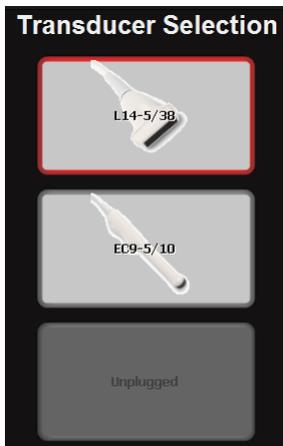


4.2 SELECTING A TRANSDUCER

Each transducer is restricted to a specific set of **Exam Type/Applications**. Refer to section **C.3 Ultrasound Indications For Use Tables** for **Clinical Application** details on each transducer type.

To Select/Change a Transducer:

1. Press the console  button.
2. Tap the desired **Transducer** and the system will present the **Applications/Imaging Presets** touch screen.



Note: If an **Exam Type/Application** is active at the time the  button is pressed, any connected transducer that does not support the active **Application** will be shown with a line through the transducer name—temporarily removing it from the pool of currently selectable transducers.

4.3 SELECTING AN APPLICATION AND IMAGING PRESET COMBINATION

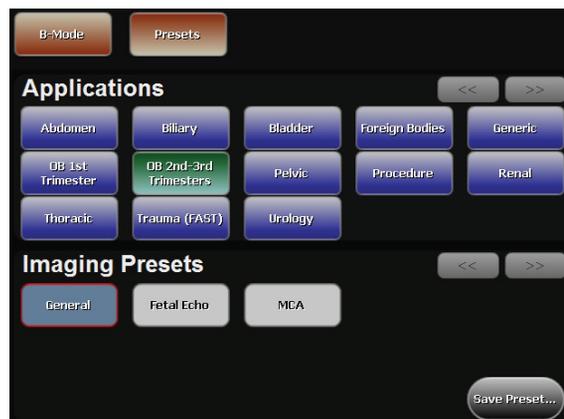
Imaging Presets specific to each **Application** are available with each of the system transducers. The **Applications** and **Presets** vary depending on the transducer type (refer to 4.2 for details on transducer selection). Additional user-defined **Imaging Presets** (4.9) may be created and stored with the factory installed or default **Presets**. Due to space limitations, **Applications** and **Presets** may continue on to another page. Use the page selector buttons to move forward and back through the available options.

Refer to C.3 **Ultrasound Indications For Use Tables** for **Clinical Application** details on each transducer type.

Note: Always tap the **Preset** last as the system automatically moves to imaging after **Preset** selection.

To Select/Change an Application or Preset:

1. Ensure the relevant transducer has been selected (4.2 **Selecting a Transducer**).
2. A divided **Presets** touch screen is presented. The upper section lists the **Applications** available for the selected transducer and the lower section lists the associated **Imaging Presets**. Tap the desired **Application**.



Note: If the connected transducers do not support the selected **Application**, a message to that effect will be presented (e.g., "The connected transducers do not support the Cardiac Application.").

3. Tap the desired **Imaging Preset** and the system will move to live imaging.

Note: If an **Imaging Preset** has been hidden, it will not be available for selection from the touch screen (or **QSonix**). This option applies to both default and user-defined **Imaging Presets**. Refer to 8.2.1.1 **Show/Hide Imaging Presets** for more details.



4.4 BEGINNING AN EXAM FOR A NEW PATIENT

Note: Refer to [4.8.1.1](#) for details on beginning an exam with an existing patient.

To Begin an Exam for a New Patient (Manual Entry):

1. Press the console  button.

Note: The text cursor defaults to the **Patient ID** field unless a current exam is open. To end the current exam session, select the **End Exam** button near the top right corner of the page.

2. Enter **Patient Information** as required.

Note: The **Patient ID** cannot be edited once the exam is underway.

3. Under **Application Information**, select the appropriate **Application** in order to access the **Application**-specific data fields (e.g., for **Cardiac**, complete the **Height** and **Weight** fields).

4. Enter **Exam Information** as required.

5. To save the changes and move to live imaging, select **OK** on the **Exam Management** page or tap **OK** on the touch screen.

Note: The **Patient ID**, **Name** and **Operator ID** details appear at the top of the image field during an exam. When applicable, **GA** will also be displayed.

If the above-listed fields are relevant to the imaging session but are not displayed, the system may be configured to hide patient data. Refer to [General Options \(Table 8-35\)](#) for details.

To Begin an Exam for a New Patient (Barcode Reader):

1. Press the console  button.
2. With the cursor in the **Patient ID** field, scan the relevant patient barcode with the barcode reader.
3. Continue entering the patient/exam data as required.

Note: Fields that will accept data entry via the keyboard will also accept data scanned with the barcode reader. Simply ensure that the cursor is located in the required field then scan the relevant barcode.

4.5 BEGINNING AN EXAM WITH NO PATIENT SELECTED

It is possible to begin an exam without first entering any patient data on either the **Exam Management** page or via **QSonix**. With an unassigned exam, if a measurement is taken or an image is saved, **Operators** will be required to assign or discard the data before being permitted to end the exam.

Note: *If no data was saved, the exam cannot be assigned to a Patient.*

Before attempting to begin an exam with no Patient assigned, ensure that **Enable Unassigned Exam** has been selected in the **Patient Settings** dialog (under **General Options** in [Table 8-35](#)).



Warning: *Exams that are assigned to a Patient after images have been saved do not include identifying Patient data (such as **Patient ID** or **Name**).*

*Organizations that elect to configure/use the **Enable Unassigned Exam** functionality provided by Ultrasonix are assuming all liabilities and risks associated with that decision.*

There are three (3) methods to assign data to a Patient. On the touch screen, tap:

- **End Exam:** After assigning a Patient the exam will end.
- : After assigning a Patient the **Operator** has the option of continuing the exam.

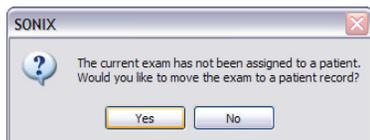
Note: *If the **Operator** continues with the exam, all subsequent data saved to the exam will include identifying Patient data (such as **Patient ID**).*

On the console, press:

- **Q:** After assigning a Patient the **Operator** can continue imaging.

To Assign an Exam to a Patient after Tapping End Exam:

1. Ensure **Enable Unassigned Exam** was selected in the **Patient Settings** dialog (under **General Options** in [Table 8-35](#)).
2. Ensure no Patient is currently selected.
3. Begin an exam and ensure that at least one (1) measurement is taken or one (1) image is saved.
4. Ensure the system is at the main touch screen (e.g., if the touch screen is at **Measurement Packages**, press the console  button to return to the main touch screen) .
5. Tap the touch screen **End Exam** button and select **Yes** to assign the exam to a Patient or **No** to discard the data.



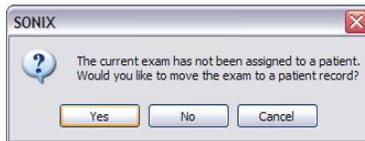
6. If **Yes** was selected in **step 5**, the **Assign Exam** page will be presented.
7. Enter the relevant data for a new patient or select an existing one.

Note: *The **Assign Exam** page contains all the same fields and options as the **Exam Management** page (4.1).*

8. Tap **OK** to exit.

To Assign an Exam to a Patient after Tapping Exam Mgmt:

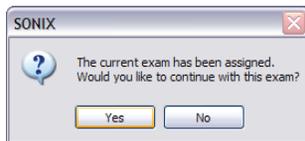
1. Ensure **Enable Unassigned Exam** was selected in the **Patient Settings** dialog (under **General Options** in **Table 8-35**).
2. Ensure no **Patient** is currently selected.
3. Begin an exam and ensure that at least one (1) measurement is taken or one (1) image is saved.
4. Ensure the system is at the main touch screen (e.g., if the touch screen is at **Measurement Packages**, press the console  button to return to the main touch screen) .
5. Press the console  button and select **Yes** to assign the exam to a Patient, **No** to discard the data and move to the **Exam Management** page or **Cancel** to return to imaging.



6. If **Yes** was selected in **step 5**, the **Assign Exam** page will be presented.
7. Enter the relevant data for a new patient or select an existing one.

Note: *The **Assign Exam** page contains all the same fields and options as the **Exam Management** page (4.1).*

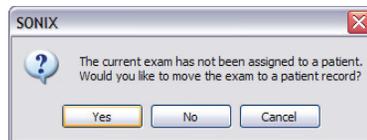
8. Select **OK** to exit.
9. When prompted, select **Yes** to continue imaging or **No** to end the exam.



Note: *If the **Operator** continues with the exam, all subsequent data saved to the exam will include identifying Patient data (such as **Patient ID**).*

To Assign an Exam to a Patient after Pressing Q:

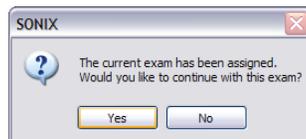
1. Ensure **Enable Unassigned Exam** was selected in the **Patient Settings** dialog (under **General Options** in [Table 8-35](#)).
2. Ensure no **Patient** is currently selected.
3. Begin an exam and ensure that at least one (1) measurement is taken or one (1) image is saved.
4. Ensure the system is at the main touch screen (e.g., if the touch screen is at **Measurement Packages**, press the console  button to return to the main touch screen) .
5. Press the console **Q** button and select **Yes** to assign the exam to a Patient, **No** to discard the data and enter **QSonix** or **Cancel** to return to imaging.



6. If **Yes** was selected in [step 5](#), the **Assign Exam** page will be presented.
7. Enter the relevant data for a new patient or select an existing one.

Note: *The **Assign Exam** page contains all the same fields and options as the **Exam Management** page ([4.1](#)).*

8. Select **OK** to exit.
9. When prompted, select **Yes** to continue imaging or **No** to end the exam.



Note: *If the **Operator** continues with the exam, all subsequent data saved to the exam will include identifying Patient data (such as **Patient ID**).*



4.6 ENDING AN EXAM

To End the Current Exam Session:

1. Press the console  button.
2. Tap **End Exam** on the touch screen or select **End Exam** from the **Exam Management** page.

Note: **End Exam** ends the current exam session, clears the **Patient** and **Exam** data fields and clears the printer queue (i.e., if printer image sheet is set for **2x2** and only two (2) images were saved, **End Exam** signals the system that no more images are coming to fill up the sheet).

Before ending an exam, ensure the active image has been saved/printed using the console **1** or **2** button ([8.2.13 Custom Keys](#)) in order to be able to recall it via the **Review** button on the **Exam Management** page or the **Exam Review** button on the touch screen.

4.7 EXAM IMPORT/EXPORT

Exam Import/Export enables data to be copied to and from the system, allowing users to make backups that can be imported again at a later date.

Note: *The data to be backed up can be configured using either **Date** or **Patient-specific** criteria.*

When first entering the **Exam Import/Export** page, the default action will always be **Export**. In order to import patient data, simply select any **Source** other than **Local Patient Data** and the button will change from **Export** to **Import**.

Figure 4-6: Exam Import/Export

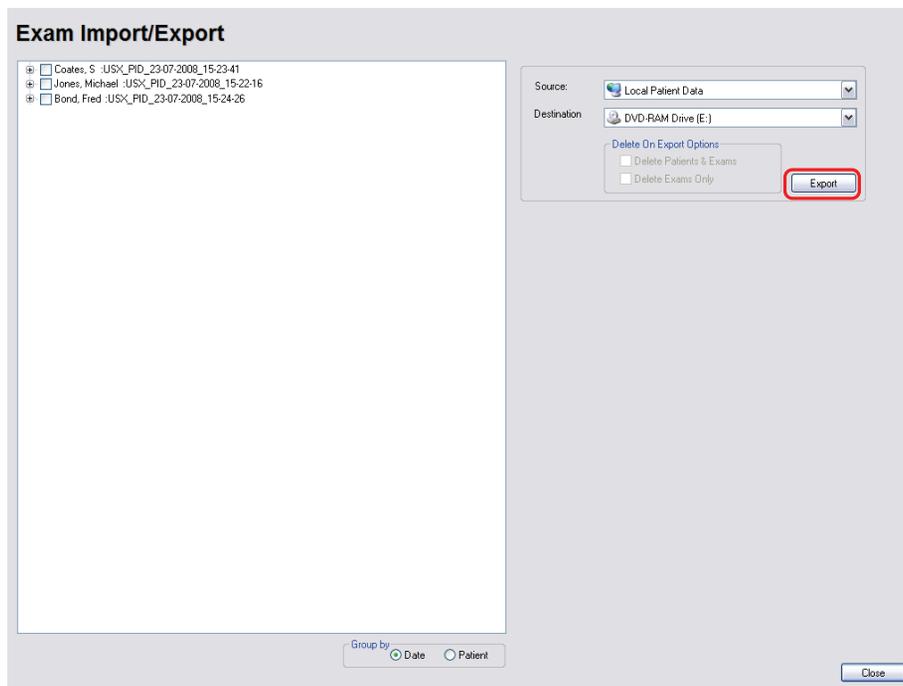




Table 4-7: Exam Import/Export

		When importing, select a Source location.
Source	Note: Only currently available Sources will be presented. If the required data is not accessible, ensure the correct media has been connected to the system.	
	For Export , the Source must be Local Patient Data .	
		For Import , the Destination must be Local Patient Data .
		When exporting, select a Destination for the Patient/Exam data.
Destination	Note: Only currently available Destination locations will be presented.	
Delete On Export Options	Enables users to decide which exams—if any—to auto-delete after the Exam Export is complete.	
	Delete Patient and Exams	Select to delete both the Patients and Exams selected for Export . The deletion will auto-complete after the Export is finished. Note: Once exported, deleted Patients and Exams can be imported at a later date using the Exam Import function.
	Delete Exams Only	Select to delete only the Exams selected for Export . The deletion will auto-complete after the Export is finished. Note: Once exported, deleted Exams can be imported at a later date using the Exam Import function.
Group by	Date	Groups the available Exams by Date .
	Patient	Groups the available Exams by Patient . Note: This is the default setting.

To Access Exam Import/Export:

1. Press the console  button.
2. Select the **Import/Export** button.

To Export Exam Data:

1. Press the console  button.
2. Select the **Import/Export** button.
3. If desired, change the **Group by** option from **Patient** to **Date**.
4. Select the desired **Patients** and/or **Exams**.



5. From the **Source** drop-down menu, select **Local Patient Data**.

Note: *Local Patient Data* is the only **Source** for exporting data.

6. From the **Destination** drop-down menu, select the **Export Destination**.

Note: *The Delete On Export Options* will not be available for selection until a valid **Destination** location is selected.

*To create a backup without removing the data from the system, leave both **Delete On Export Options** unselected.*

7. Select the **Export** button to begin the backup.
8. When the **Export** is complete, the following message will be presented.

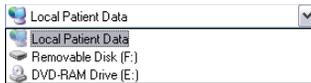


Note: *If Delete On Export Options* were selected, the data will be deleted before the **Export process is complete** message is presented.



To Import Exam Data:

1. Press the console  button.
2. Select the **Import/Export** button.
3. From the **Source** drop-down menu, select the **Source** of the data to be imported.



Note: The following actions will auto-complete once the data **Source** is changed from **Local Patient Data**:

- **Destination** drop-down menu will change to **Local Patient Data**
- **Export** button will change to **Import**.

4. From the list presented on the left hand side of the **Exam Import/Export** page, select the data to be imported.
5. Select the **Import** button to begin the procedure.
6. When the **Import** is complete, the following message will be presented.



Note: If the data selected for **Import** is already available on the system, it will not be imported, i.e., it will not overwrite the existing data.

4.8 STORAGE/DATABASE TABS

To the bottom right of the **Exam Management** page is a series of up to three (3) vertical **Storage** tabs. These tabs can be accessed with the trackball and  button or use the **Exam Management** touch screen **Toggle Tabs** button to move to the appropriate database.

Table 4-8: Storage/Database Tabs

Patients	Select to display a list of patients stored in local memory.
DICOM	Worklist Select to display the patient list recently retrieved from the DICOM or EMR Worklist server. <i>Note: This tab is available only when the system is configured for DICOM (8.2.12) or EMR (8.2.16.1).</i>
	Store Queue Select to display the current DICOM Storage Queue . <i>Note: This tab is available only if DICOM is licensed and a Storage Server has been configured (8.2.12.1).</i>
	Print Queue Select to display the current DICOM Print Queue . <i>Note: This tab is available only if DICOM is licensed and a Print Server has been configured (8.2.12.2).</i>
Hide	Select to blank out patient data on the Exam Management page. This feature provides data privacy.

4.8.1 Patients

Using data entered in [4.1.1 Patient Information](#), the system maintains and displays a database containing patient details.

Figure 4-7: Patients Database

Patient ID ↕	Last Name	First Name	Middle Name	Birthdate	Sex	Last Exam	Images	
PID_20-10-2010_02-...	Smith	J		12/15/1981	F	10/20/2010	0	

Table 4-9: Patients Database

(Patient) ID	Patient Identifier as entered in the Patient Information section.
Last Name First Name Middle Name	Patient's Last , First and Middle Names as entered in the Patient Information section.
Birthdate	Patient's Birthdate as entered in the Patient Information section.
Sex	Patient's Sex as entered in the Patient Information section.
Insurance (#)	Patient's Insurance Number (if applicable) as entered in the Patient Information section.
Last Exam	Date of the Last Exam performed on the patient (if applicable).
(Number of) Images	Total number of Images stored for the patient's most recent exam.

4.8.1.1 Manipulating the Patients Database

To Manually Select a Previously Stored Patient from the Patients Database:

1. Press the console  button.
2. Select the **Patients** tab near the bottom of the **Exam Management** page to display a list of locally stored (on the system hard drive) patients or use the **Exam Management** touch screen **Toggle Tabs** button to move to the appropriate database.

Patient ID	Last Name	First Name	Middle Name	Birthdate	Sex	Last Exam	Images
PID_20-10-2010_02-...	Smith	J		12/15/1981	F	10/20/2010	0

3. Select a patient and auto-populate the data fields.
4. Modify patient and exam data fields as required.

Note: The **(Patient) ID** cannot be modified.

5. Select **OK** to save the data and move to live imaging.

Note: When a new exam is initiated, the transducer used in the most recent exam will still be selected if it is still connected. If it's no longer connected, the system will default to the first available transducer. This default transducer selection is not affected even if the system is turned off between exams.

To Search the Patients Database for a Previously Stored Patient:

1. Press the console  button.
2. Select the **Patients** tab near the bottom of the **Exam Management** page to display a list of locally stored (on the system hard drive) patients or use the **Exam Management** touch screen **Toggle Tabs** button to move to the appropriate database.
3. Select the **Field Header** of the data to searched (e.g., **Last Name**).
4. Use the keyboard to enter the patient search data (**Patient ID** or **Name**, etc.).

Note: The **Patients Database** narrows the list of patients to those that match entered search criteria.

5. When the list has been narrowed sufficiently (e.g., to one **Patient ID** or all patients with the desired **Last Name**), select the desired patient.



To Change the Layout of the Patient Data Columns:

1. Press the console button.
2. Position the arrow cursor over the **Field Header** to be moved.

Patient ID	Last Name	First Name	Middle Name	Birthdate	Sex	Last Exam	Images
PID_20-10-2010_02...	Smith	J		12/15/1981	F	10/20/2010	0

3. Hold down the button and simultaneously use the trackball to drag the column to the desired location.

Note: o change the order of the list (e.g., from numerical by **Patient ID** number to alphabetical by **Last Name**), position the cursor over the relevant **Field Header** and press . To reverse the order press again.

Figure 4-9: DICOM Worklist Search

WORKLIST SEARCH

Search Criteria

Patient ID Start Date (mm/dd/yyyy) Station AE Title

Last Name End Date (mm/dd/yyyy) Station Location

First Name Exam Type Modality Type

Accession # Procedure ID

ID	Accession #	Last Name	First Name	Exam Type	Date/Time	Procedure Description
PD321	acc_full	Lfull	Ffull	Abdomen	4/12/2011	Abdomen
PD322		LastN	FirstN	Cardiac	4/12/2011	Cardiac
PD323	acc_nodob	Lnodob	Fnodob	Pelvic	4/12/2011	Pelvic

4.8.2.1 Manipulating the DICOM Worklist Database

To Perform a DICOM Worklist Search:

1. Press the console  button.
2. Select **Search Worklist**.
3. When the **Worklist Search** page appears on the screen enter the patient **Search Criteria** data (**Patient ID** or **Name**, etc.).

WORKLIST SEARCH

Search Criteria

Patient ID Start Date (mm/dd/yyyy) Station AE Title

Last Name End Date (mm/dd/yyyy) Station Location

First Name Exam Type Modality Type

Accession # Procedure ID

Note: *Worklist text fields can be searched with wildcards, e.g., entering **SMI*** in the **Last Name** field will find all names beginning with **SMI**.*

4. Select **Search** to update the **Worklist** with the results of the advanced search.

Notes:

The parameters from the last search will be retained for the duration of the current (computer-defined) date.

Worklist Search results are limited to a maximum of 100 records. Any result list longer than 100 records will be truncated.

To Select a Patient from the DICOM Worklist:

1. Press the console  button.
2. Select the **Worklist** tab to display the **DICOM Worklist** database or use the **Exam Management** touch screen **Toggle Tabs** button to move to the appropriate database.
3. If the desired patient is not available on the list, select **Update Worklist** to refresh the data.

Note: *Updates will be based upon the last search performed.*

4. Select the desired patient and the patient data fields will auto-populate.
5. Modify patient and exam data fields as required.

Note: *The **Patient ID** cannot be modified.*

*Modifications to auto-populated **Worklist** fields (**Name** and **Accession #**) are not recommended.*

6. Select **OK** to save the data, create a patient in the **Patient** database and move to live imaging.

Note: *The patient file is automatically deleted at the end of the exam if no images or measurements are stored to the system for this patient.*

Note: *When a new exam is initiated, the transducer used in the most recent exam will still be selected if it is still connected. If it's no longer connected, the system will default to the first available transducer. This default transducer selection is not affected even if the system is turned off between exams.*

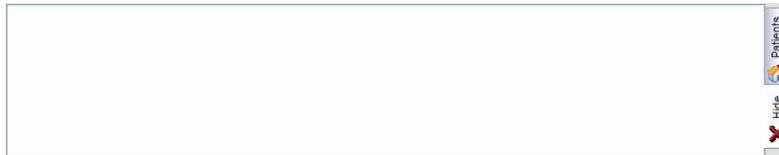


4.8.3 Hide

Selecting the **Hide** tab will instantly blank all patient data visible in the **Patients** or **Worklist** database. This is very useful when an **Operator** needs to quickly protect the privacy of patient data that would otherwise be visible to anyone within viewing distance.

To reveal patient data, simply select another database tab or use the **Exam Management** touch screen **Toggle Tabs** button to move to the appropriate database.

Figure 4-10: Hide Tab



4.9 USER-DEFINED PRESETS FOR NON-3D/4D FORMATS

User-defined **PRESETS** may be created and saved to the selected **Application**. They are presented for selection along with factory defaults when selecting **Transducer**, **Application** and **Preset**. Refer to [8.2.1 Presets](#) for more details on user-defined **PRESETS**.

Note: When saving user-defined **PRESETS** in  or , the actual mode is also saved as part of the **Preset**.

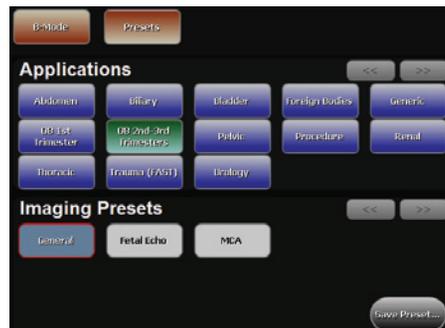
In addition to standard **PRESETS**, the system also allows users to create and save user-defined **3D/4D Presets**. Refer to [5.12.9 3D/4D Presets](#) for details.

During imaging, a user-defined **Preset** name is shown on the LCD display in square brackets (e.g., [**User-Defined Preset**]).

Note: When configuring a user-defined **Preset** for **M**, **PW** or **Triplex** mode, be sure to move to the desired **Layout** as this setting will be saved with the **Preset**. Refer to sections [5.1.7](#), [5.3](#) and [5.3.3](#) for more details.

To Save User-Defined Presets:

1. Ensure the relevant transducer has been selected ([4.2 Selecting a Transducer](#)).
2. Tap the desired **Application–Preset** combination where the **Preset** is similar to the required user-defined **Preset**.



3. Once the system moves to live imaging, adjust the imaging parameters (e.g., **Depth**, **Dynamic Range**, **Gain**, **Sector Size**, etc.) and **TGC** settings.
4. Tap the touch screen **Presets** tab.
5. Tap **Save Preset....**



- When the **Save Preset** dialog is presented, chose the appropriate **Application** under which the new **Preset** will be stored from the **Select Application** drop-down menu.

SAVE PRESET

Select Application
Abdomen

Preset Name

OK Cancel

Note: If a user-defined **Preset** with the same name already exists, the system will present a message requiring the user to overwrite (**Yes**), save with a new name (**No**) or exit without saving (**Cancel**).

- Use the console keyboard to enter a **Preset Name**.
- Select **OK** to save the **Preset** or **Cancel** to exit without saving.
- The user-defined **Preset** will now be available on the **Imaging Presets** page under the selected **Application**.

Note: Refer to [8.2.1 Presets](#) for more details on **Imaging Presets**,

CHAPTER 5: IMAGING

The Sonix buttons controlling key imaging modes are organized into specific sections on the Operator console (i.e., **2D**, **Color**, **Doppler**, etc.). Refer to **2.2 Operator Console** for layout details.

Additional imaging controls are accessible on the touch screen when a specific imaging mode is active. Touch screen imaging controls are organized by tab for each active imaging modes.

5.1 BASIC 2D IMAGING

2D or **B-Mode** is the system's default imaging mode. Any time a user toggles out of an imaging mode (other than the combined mode of **Color/PW**) the system will default back to **B-Mode**.

The system's broadband transducers provide a range of imaging **Frequencies**:

- **Harmonics**: artifact reduction (not available with all transducers)
- **Resolution**: highest frequency
- **General**: standard imaging frequency
- **Penetration**: lowest frequency
- **EPI**: greater penetration and improved contrast resolution for the technically difficult patient.

Note: *EPI is a licensed option available for use with the C5-2/60 curved array transducer.*

Figure 5-1: 2D/B-Mode Field Locations During Imaging

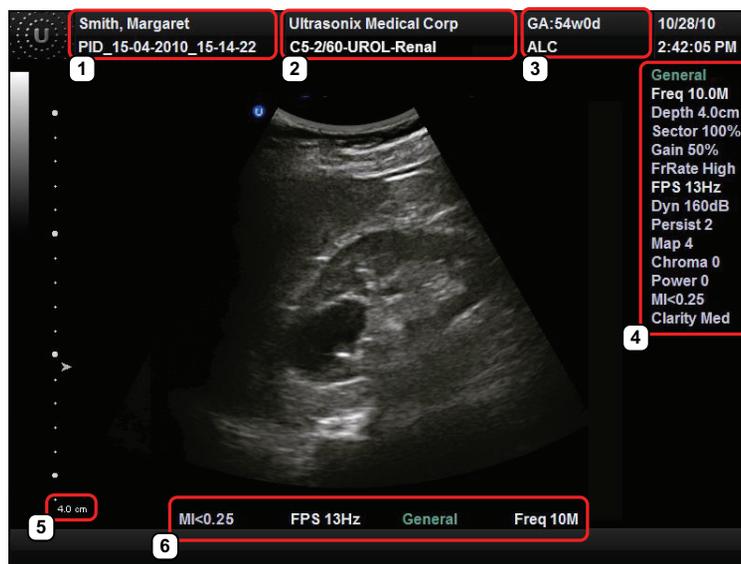




Table 5-1: 2D/B-Mode Field Locations During Imaging

1		<ul style="list-style-type: none"> • 1: Patient Name and ID • 2: Institution Name and Transducer–Application–Preset • 3: GA (for OB), LMP (for Pelvic) and Operator ID.
2	Patient/Exam Information	
3		Note: Refer to Chapter 4 and Chapter 8 for more details on Patient/Exam Information .
4	2D/B-Mode Imaging Parameters	Refer to Figure 5-2 and Appendix E for details.
Note: If items 5 and 6 exist, then item 4 will not be visible. Refer to Parameters in Table 8-34 for more details.		
5	Depth	When Parameters is set to Subset , a Depth value will be placed under the Depth markers.
6	2D/B-Mode Imaging Parameter Subset	When Parameters is set to Subset , only four (4) imaging parameters will be displayed: MI/TI , FPS , Resolution and Freq .

Figure 5-2: 2D/B-Mode Onscreen Imaging Parameters

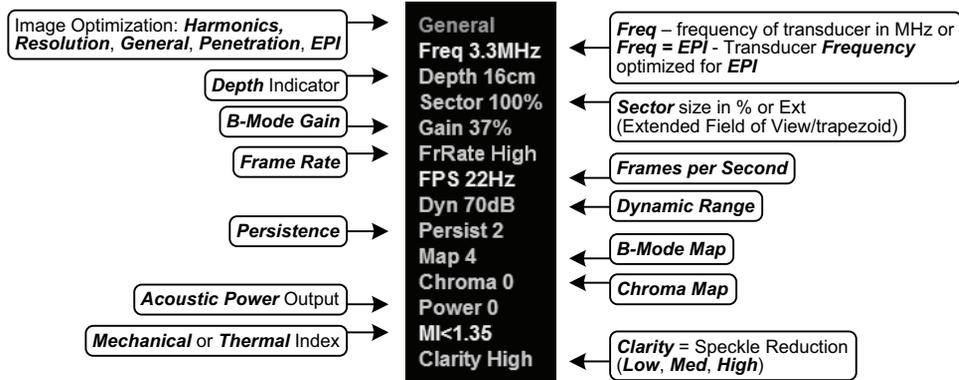


Table 5-1: 2D/B-Mode Imaging Console Controls

	Turn to adjust overall Gain . Press to exit other imaging modes and return to 2D imaging.
	Press up or down to adjust the transducer Frequency: Penetration, General, Resolution, Harmonics and EPI . Note: The Harmonics setting is not supported by all transducers.
	Press up or down to Zoom the image in or out. Use the trackball to pan the zoomed image. Press [B] to exit Zoom .
	Press up or down to adjust the imaging Depth up or down.
	Press up or down to adjust focal zone position up or down.
	Press once to activate Dual and twice to activate Quad imaging.
	Press to steer the 2D beam on linear transducers.
	Turn to adjust Acoustic Power . Note: Pressing the dial will not affect the Index setting.
	Warning: Refer to A.1.1 ALARA Principle and Output Displays.
Note: Refer to Appendix E for details on touch screen Mode Action and Imaging Parameters buttons.	

The **TGC** slide pods located to the right of the touch screen are used to adjust the **Time Gain Compensation**. Ultrasonix recommends setting the **TGC** slide pods in the center position.

Note: Press the console [B] button/dial to exit other imaging modes (Color, PW Doppler, M-Mode, Panoramic, etc.) at any time during the imaging session and return to 2D imaging.

Additional **2D** imaging parameters are available on the touch screen under the **B-Mode** tab.



To Select/Adjust Touch Screen 2D Imaging Parameters:

1. Ensure the touch screen **B-Mode** tab is active.
2. Tap the desired imaging parameter on the touch screen, e.g., **Persist(ence)**.
3. Turn the associated touch screen dial to adjust the imaging parameter (e.g., turn dial left to decrease **Persistence** or right to increase **Persistence**).

To Adjust the Imaging Frequency (Image Optimization):

1. Press the console  rocker switch.

Note: To increase the **Frequency** from **General**, press the rocker switch up once for **Resolution** and twice for **Harmonics**. (The latter option is transducer dependant.)

To decrease the **Frequency**, press the rocker switch down once for **Penetration** and twice for **EPI**.

5.1.1 Clarity (Speckle Reduction)

Clarity imaging mode enhances the **2D** image by performing adaptive filtering of the image. It provides improved visibility of real structures with various levels of speckle reduction.

To Adjust the Clarity (Speckle Reduction) Imaging Mode:

1. Ensure the touch screen **B-Mode** tab is active.
2. Tap the touch screen **Clarity** button.
3. Turn the associated touch screen dial to adjust the level of speckle reduction.

5.1.2 Spatial Compound Imaging

To Activate Spatial Compound Imaging:

1. Press the console  button.

Notes:

*Spatial Compound imaging is available as an option with some transducers, but is not available during **Color** imaging.*

*If another mode(s) is selected while in **Compound** imaging (e.g., **Color Mode**), when exiting that mode(s), the **Operator** will be returned to **Compound** imaging, not **B-Mode**.*

5.1.3 2D Zoom Imaging

To Activate the Zoom Feature:

1. On a live or frozen image, press the console  rocker switch up or down to the desired level of magnification.
2. Use the trackball to reposition the magnified **FOV**.

***Note:** Repositioning of the **Zoom FOV** is only possible after the image has been magnified to a size that is larger than the image field.*

3. To exit the **Zoom** feature, press .

5.1.4 Dual Imaging Format

Refer to **Split Imaging (Table 8-38)** for details on configuring the default active image (**Left Side** or **Right Side**) and the **Auto-Switch on Start** setting.

Figure 5-3: Dual Imaging



Table 5-2: Dual Imaging

	Indicates Active image:
Active Image	<ul style="list-style-type: none"> • Active LT: left • Active RT: right.

To Activate Dual Imaging:

1. With an active **B-Mode** image, press the console  button once.
2. When a live image appears on the left side of the LCD display (**Active LT**), press  to freeze the **Active LT** image and unfreeze (i.e., make active) the **Active RT** image in one step.

Note: As an alternative, press  to freeze the right image. Pressing  will then toggle between the frozen images. Press  again at any time to activate the current image.

3. Press  to toggle back and forth between the dual images, freezing the inactive image and unfreezing the newly active image.
4. Press  twice or  to exit **Dual** imaging.

Note: **Color Doppler** is available during **Dual** but not **Quad** imaging.

5.1.5 Quad Imaging Format

Figure 5-4: Quad Image

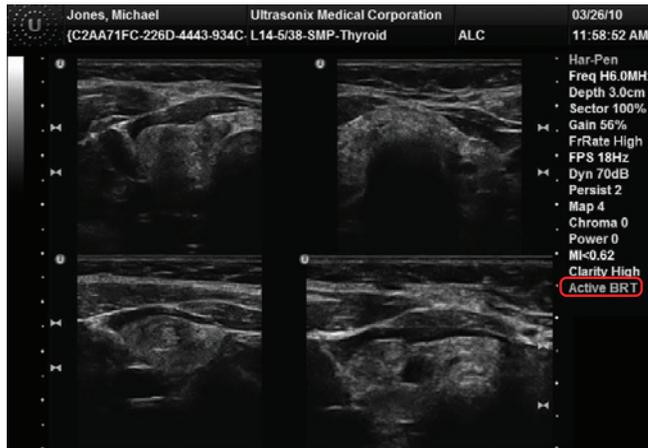


Table 5-3: Quad Imaging

	Indicates Active quadrant:
Active Image	<ul style="list-style-type: none"> • Active ULT: upper left • Active URT: upper right • Active BLT: bottom left • Active BRT: bottom right.

To Activate the Quad Imaging Format:

1. With an active **B-Mode** image, press the console  button twice.
2. When a live image appears on the upper left side of the LCD display (**Active ULT**), press  to freeze the **Active ULT** image and unfreeze (i.e., make active) the upper right (**URT**) quadrant in one step.

Note: As an alternative, press  to freeze the active image. Press  to move to the next quadrant which will also contain a frozen image. Press  to activate it or  to move to the next quadrant.

3. Press  again to freeze the current image and move to the next quadrant.

Note:  toggles through the images sequentially: **ULT, URT, BLT, BRT**.

4. Continue pressing  to move through the four (4) images as required. Depending on the method selected above— only or  and —the images will be active or frozen, respectively.
5. Press  or  to exit **Quad** imaging.

Note: **Color Doppler** is available during **Dual** but not **Quad** imaging.

5.1.6 Brachytherapy and the BPC8-4/10 Transducer

When the BPC8-4/10 transducer is active and **B-Mode** has been selected, users will be presented with additional Mode Action and Imaging Parameter buttons. These options enable the use of the grid created for **Brachytherapy**.

Figure 5-5: Brachytherapy Grid Enabled on the Imaging Screen



Note: Refer to [Appendix E](#) for details on touch screen Mode Action and Imaging Parameters buttons.

5.1.7 M-Mode Imaging

When first entering **M-Mode**, all factory supplied **Imaging Presets** will default to the maximum **Zoom** setting.

Note: This will not affect *user-defined Presets*.

During **M-Mode** imaging, the following imaging parameters are available on the touch screen.

Table 5-4: 2D/B-Mode Imaging Console Controls

	Turn to adjust overall Gain . Press to exit other imaging modes and return to 2D imaging.
	Press up or down to adjust the transducer Frequency: Penetration, General, Resolution, Harmonics and EPI . Note: The Harmonics setting is not supported by all transducers.
	Press up or down to Zoom the image in or out. Use the trackball to pan the zoomed image. Press  to exit Zoom .
	Press up or down to adjust the imaging Depth up or down.
	Press up or down to adjust focal zone position up or down.
	Press once to activate Dual and twice to activate Quad imaging.
	Press to activate M-Mode imaging.
	Press to steer the 2D beam on linear transducers.
	Turn to adjust Acoustic Power . Note: Pressing the dial will not affect the Index setting.
	Warning: Refer to A.1.1 ALARA Principle and Output Displays .

Note: Refer to [Appendix E](#) for details on touch screen Mode Action and Imaging Parameters buttons.



To Activate M-Mode Imaging:

1. Press the console **[M]** button.
2. A live full screen **2D** image appears with an **M-Mode** cursor.

Note: Refer to **Layout in Table E-1** and **8.2.19 Imaging Modes** to customize the **M-Mode** display settings and screen layouts.

3. Press **(⏏)**.
4. Press **[M]** or **[B]** to exit **M-Mode** and return to **2D** imaging.

To Select/Adjust Touch Screen M-Mode Imaging Parameters:

1. While in **M-Mode** imaging, ensure the touch screen **M-Mode** tab is active.
2. On the touch screen, tap the desired imaging parameter button to make any required adjustments. (e.g., **MapM** or **ChromaM**).
3. Turn the associated touch screen dial to adjust the imaging parameter.

5.1.7.1 Anatomic M-Mode Imaging

To Activate Anatomic M-Mode Imaging:

1. Press the console **[M]** button.
2. A live full screen **2D** image appears with an **M-Mode** cursor.

Note: Refer to **Layout in Table E-1** and **8.2.19 Imaging Modes** to customize the **M-Mode** display settings and screen layouts.

3. Press the console **(⏏)** button.
4. Tap the touch screen **Anatomic** button.
5. Press **[M]** or **[B]** to exit **M-Mode** and return to **2D** imaging.

To Select/Adjust Touch Screen Anatomic M-Mode Imaging Parameters:

1. While in **Anatomic M-Mode** imaging, ensure the touch screen **M-Mode** tab is active.
2. On the touch screen, tap the desired imaging parameter button to make any required adjustments. (e.g., **MapM** or **ChromaM**).
3. Turn the associated touch screen dial to adjust the imaging parameter.

5.1.7.2 Color M-Mode Imaging

To Activate Color M-Mode Imaging:

1. Press the console **[M]** button.
2. A live full screen **2D** image appears with an **M-Mode** cursor.

Note: Refer to **Layout in Table E-1** and **8.2.19 Imaging Modes** to customize the **M-Mode** display settings and screen layouts.

3. Press the console **(↻)** button.
4. Press the console **[C]** button.
5. Press **[M]** or **[B]** to exit **M-Mode** and return to **2D** imaging.

To Select/Adjust Touch Screen Color M-Mode Imaging Parameters:

1. While in **Color M-Mode** imaging, ensure the touch screen **M-Mode** tab is active.
2. On the touch screen, tap the desired imaging parameter button to make any required adjustments. (e.g., **MapM** or **ChromaM**).
3. Turn the associated touch screen dial to adjust the imaging parameter.



5.2 COLOR/POWER DOPPLER

Color Doppler is used to detect blood flow and determine flow direction. **Power Doppler** is more sensitive to low flow rate in small vessels, but offers no directional information. **Color Power Doppler** is **Power Doppler** with a red/blue color map providing directional flow information.

Figure 5-6: Color Doppler Image

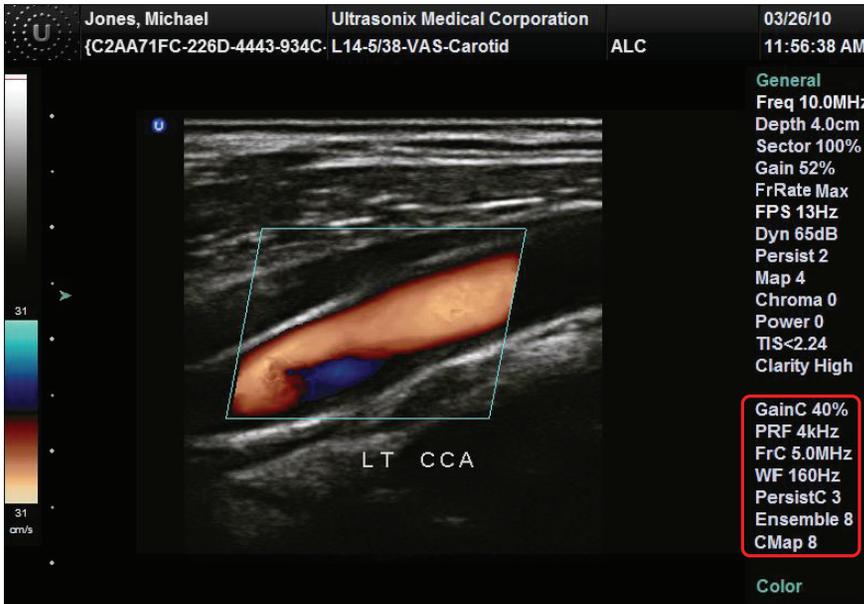
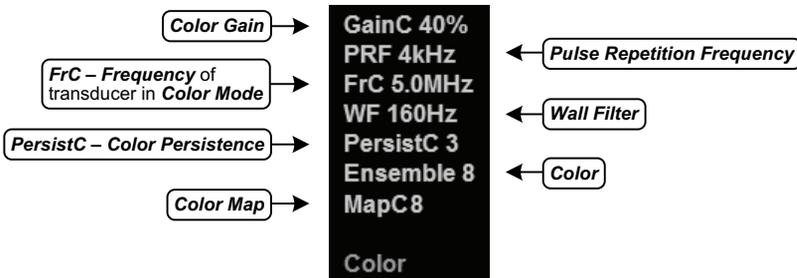


Figure 5-7: Color Doppler Imaging Parameters



Note: Refer to [Appendix E](#) for details on touch screen Mode Action and Imaging Parameters buttons.

The key **Color/Power Doppler** imaging controls are located in the upper center position of the operator console.

Table 5-5: Color Doppler Console Controls

	Press to select Color Doppler imaging. Turn to adjust Color Gain .
	Press to activate Power Doppler imaging.
WF	Press up or down to adjust the Color Wall Filter higher or lower.
PRF	Press up or down to adjust the Color Doppler Pulse Repetition Frequency up or down.
	Press to Invert the direction of the Color Map .
	Press to Steer the Color ROI box right or left.

Additional **Color/Power Doppler** image optimization controls are available on the touch screen **Color** tab when the **Color** imaging mode is active.

5.2.1 Color Doppler Imaging Mode

To Activate Color Doppler Imaging Mode:

1. Press the console  button.
2. Use the trackball to position the **Color ROI** box to the area of interest.
3. Press  to toggle control of the trackball to resize the **Color ROI** box.
4. Use the trackball to resize the **Color ROI** box or use the touch screen controls to make the horizontal and vertical **Color ROI** box adjustments.

Note: During multiple mode imaging (e.g., **2D/Color/PW Doppler**) use the  button to toggle control of the trackball for **Color ROI** box positioning, **Color** box resizing and **PW** cursor/Gate positioning. Alternate controls are available on the **Color** tab to resize the **Color ROI** box. The **Color ROI** box moves with the **PW** cursor.

5. Press  to exit **Color Doppler** imaging.

To Select/Adjust Touch Screen Color Imaging Parameters:

1. While in **Color** imaging, ensure the touch screen **Color Mode** tab is active.
2. On the touch screen, tap the desired imaging parameter button to make any required adjustments. (e.g., **PersistC**).
3. Turn the associated touch screen dial to adjust the imaging parameter (e.g., turn dial left to decrease the amount of **Persistence**/turn dial right to increase the amount of **Persistence**).



5.2.2 Power Doppler Imaging Mode

To Activate Power Doppler Imaging Mode (Method 1):

1. Press the console **[PD]** button.
2. Use the trackball to position the **Color Power** ROI box to the area of interest.
3. Press **↖** to toggle control of the trackball to resize the **Color Power** ROI box.
4. Use the trackball to resize the **Color Power** ROI box or use the touch screen controls to make the horizontal and vertical **Color Power** ROI box adjustments.

Note: During multiple mode imaging (e.g., **2D/Color/PW Doppler**) use the **↖** button to toggle control of the trackball for **Color** ROI box positioning, **Color** ROI box resizing and **PW** cursor/Gate positioning. Alternate controls are available on the **Color** tab to resize the **Color** ROI box. The **Color** ROI box moves with the **PW** cursor.

5. Press **[PD]** to exit **Color Doppler** imaging.

To Activate Power Doppler Imaging Mode (Method 2):

1. While in **Color** imaging, ensure the touch screen **Color Mode** tab is active.
2. Tap the touch screen **Method** button and turn the associated dial to cycle through the options: **Color**, **Power** and **TDI (Tissue Doppler Imaging)**.

Note: The console options **[PD]** or **[C]** will only be selected (orange) when the selected mode action matches. For example, when **Color** is selected as the **Method**, the console **[C]** button will be selected and the **[PD]** button will be unselected (blue). If **TDI** is selected as the **Method**, both the **[PD]** and **[C]** buttons will be unselected.

5.2.3 Tissue Doppler Imaging (TDI)

To Activate Tissue Doppler Imaging:

1. While in **Color** imaging, ensure the touch screen **Color Mode** tab is active.
2. Tap the touch screen **Method** button and turn the associated dial to cycle through the options: **Color**, **Power** and **TDI**.

Note: The console options **[PD]** or **[C]** will only be selected (orange) when the selected mode action matches. For example, when **Color** is selected as the **Method**, the console **[C]** button will be selected and the **[PD]** button will be unselected (blue). If **TDI** is selected as the **Method**, both the **[PD]** and **[C]** buttons will be unselected.

5.2.4 Simultaneous 2D/Color

To Activate Split Screen with Simultaneous Live 2D/Color and Live 2D:

1. While in **Color** imaging, ensure the touch screen **Color Mode** tab is active.
2. Tap **Simultaneous 2D Color**.

Note: The live, **2D** image with **Color** is displayed on the left side of the image field and the same live, **2D** image without **Color** is simultaneously displayed on the right side of the image field. Freezing the image will freeze both sides simultaneously.

Cine review will review both sides simultaneously.

3. Use the trackball to position the **Simultaneous 2D/Color** ROI box to the area of interest or to resize the **Simultaneous 2D/Color** ROI box.

Note: Use the  button to toggle control of the trackball for **Color** ROI box positioning, **Color** ROI box resizing and **PW** cursor/**Gate** positioning.

The **Color** ROI box moves with the **PW** cursor.

4. Tap **Color Mode** to exit **Simultaneous 2D/Color** and return to **Color** imaging.



5.3 PULSED AND CONTINUOUS WAVE DOPPLER (PW AND CW) AND TRIPLEX

Notes:

*Triplex is not available when **Cardiac** is selected as the **Application**.*

ECG is not available on this platform.

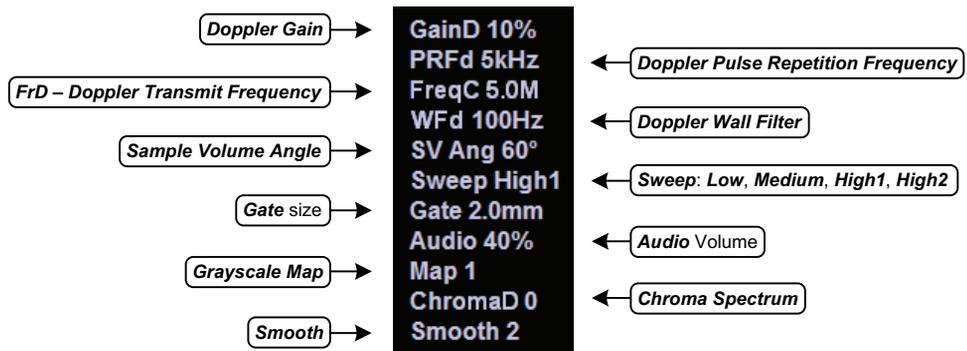
Figure 5-8: PW Doppler Imaging (Combined with Triplex)



Table 5-6: PW Doppler Imaging (Combined with Triplex)

1 PW Doppler Imaging Parameters	Refer to Figure 5-9 and Appendix E for details.
2 Cine Frame Mode	<p>Indicates Cine frames actively available for each imaging mode:</p> <ul style="list-style-type: none"> • PW (Doppler Trace) • PW (Doppler Trace) • B (2D with and without Color). <p>Press  to toggle control between modes.</p>
3 Active Imaging Mode	<p>Indicates active imaging mode(s) when unfrozen:</p> <ul style="list-style-type: none"> • Active PW (Doppler Trace) • Active CW (Doppler Trace) • Active B (B-Mode or 2D) • Active B/PW (Simultaneous 2D and Doppler Trace) • Active B/C (2D with Color) • Triplex. <p>Press  to toggle control between modes.</p>

Figure 5-9: PW/CW Doppler Imaging Parameters





The key **PW Doppler** imaging controls are positioned to the upper left portion of the operator console:

Table 5-7: PW/CW Doppler Console Controls

	Press to activate PW Doppler mode/turn to adjust PW Doppler Gain .
	Press to activate CW Doppler mode.
	Press up or down to adjust the Doppler Trace Baseline up or down.
PRF	Press up or down to adjust the Doppler PRF up or down.
	Press to Invert the direction of the Doppler Trace .
	Press to toggle between +60, -60 and 0 degree Doppler Angle Correct selections. Turn the dial to make angle corrections in 2 degree increments.
	Press to Steer Doppler cursor angle right or left. Also used to steer Color ROI box and 2D linear image field.
	Turn to increase/decrease audio volume. Note: <i>The volume control is located on the upper right side of the touch screen.</i>

Additional **PW/CW Doppler** imaging parameters are available on the touch screen to optimize the **Live Doppler Trace**.

Note: Refer to [Appendix E](#) for details on touch screen Mode Action and Imaging Parameters buttons.

5.3.1 PW Imaging Mode

To Activate PW Doppler Imaging Mode:

1. Press the console **PW** button.

Note: Refer to *Layout* in [Table E-1](#) and [8.2.19 Imaging Modes](#) to customize the **Doppler** display settings and screen layouts.

To adjust the **Sample Volume Gate** size in full screen **2D/PW** cursor, press the console **↻** button and turn the **PW** button/dial.

2. Use the trackball to position the **Doppler** cursor/**Gate** to the area of interest.
3. Press the console **↻** button to display a live **Doppler Trace** and a frozen **2D** image/cursor.
4. Press **↻** to toggle back and forth between **PW Trace** and **2D**/cursor.
5. Press **PW** or **B** to exit **PW** imaging mode.

To Select/Adjust Touch Screen PW Doppler Imaging Parameters:

1. While in **PW Doppler**, ensure the touch screen **PW Doppler Mode** tab is active.
2. Tap the desired selection (e.g., **Chroma**).
3. Turn the associated touch screen dial to adjust the imaging parameter (e.g., turn dial left to decrease setting/turn dial right to increase setting).



5.3.2 CW Imaging Mode

To Activate CW Doppler Imaging Mode:

1. Press the console **[CW]** button.

Note: Refer to **Layout in Table E-1** and **8.2.19 Imaging Modes** to customize the **Doppler** display settings and screen layouts.

2. Use the trackball to position the **Doppler** cursor in the area of interest.

Note: Use the **[PW]** button/dial to control the **CW Gain**.

3. Press the console **[D]** button to display a live **Doppler Trace** on the bottom of the image field and a frozen **2D** image/cursor on the top of the image field.
4. Press **[D]** to toggle between **CW Trace** and **2D** cursor both in live or frozen imaging states.
5. Press **[CW]** to return to full screen **2D/CW** cursor.
6. Press **[B]** to exit **CW** imaging mode.

To Select/Adjust Touch Screen CW Doppler Imaging Parameters:

1. While in **CW Doppler**, ensure the touch screen **CW Doppler Mode** tab is active.
2. Tap the desired selection (e.g., **GainD**).
3. Turn the associated touch screen dial to adjust the imaging parameter (e.g., turn dial left to decrease setting/turn dial right to increase setting).

5.3.3 Triplex Imaging Mode

Triplex imaging mode combines live **2D/Color Doppler** with live **PW Doppler** imaging, allowing the user to image with **2D/Color** and **PW Doppler** modes simultaneously.

Caution: *Triplex* imaging may diminish the quality of the **2D/Color** image and may cause **Doppler** artifacts.

Notes:

Triplex is not available when **Cardiac** is selected as the **Application**.

Refer to **Appendix E** for details on touch screen Mode Action and Imaging Parameters buttons.

To Activate Triplex Imaging Mode:

Note: *Triplex* is not available when **Cardiac** is selected as the **Application**.

1. Activate **Color** and **Pulsed Doppler** imaging modes.
2. Press the console  button.
3. Tap the touch screen **Triplex** button.

Note: Once **Triplex** is active, press the console  button to toggle through **Active PW**, **Active B/C** and **Triplex** imaging modes.

4. If required, tap **Layout** to move to the appropriate **Split Imaging** selection.

Note: Refer to **Layout** in **Table E-1** and **8.2.19 Imaging Modes** to customize the display settings and screen layouts.

5. Tap **Triplex** again to return to **Duplex** imaging.



5.4 AUTO-GAIN/B

Auto-Gain/B automatically optimizes image brightness for the following modes:

- *B*
- *Dual/Quad*
- *Compound (Spatial Compounding)*
- *Color*
- *PW Doppler*
- *Triplex.*

To Initiate Auto-B Functionality:

1. With an active image in any of the supported modes, press the console **AUTO** button.

5.5 ELASTOGRAPHY

Elastography is used to measure tissue stiffness.

Figure 5-10: Elastography Imaging

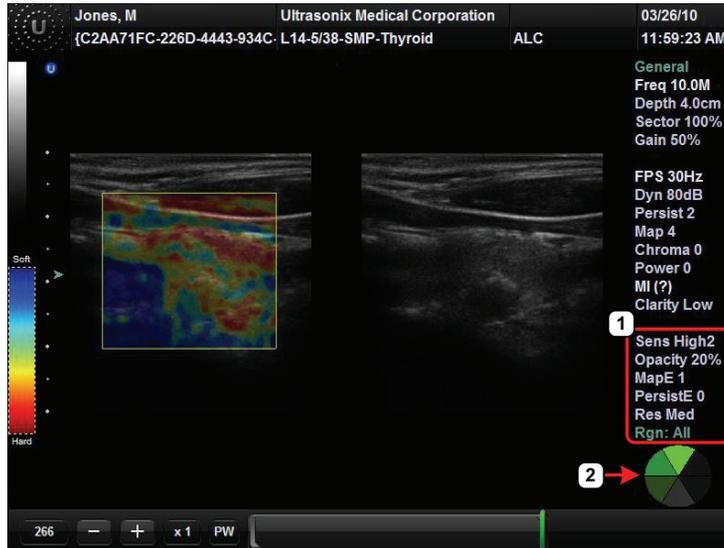


Table 5-8: Elastography Imaging

1	Elastography Imaging Parameters	Refer to Figure 5-11 and Appendix E for details.
2	Compression Feedback Indicator	Tracks the amount of pressure being placed on the transducer. When the bright green indicator is at the <u>top</u> , compression has been adjusted to the correct level.

Figure 5-11: Elastography Imaging Parameters

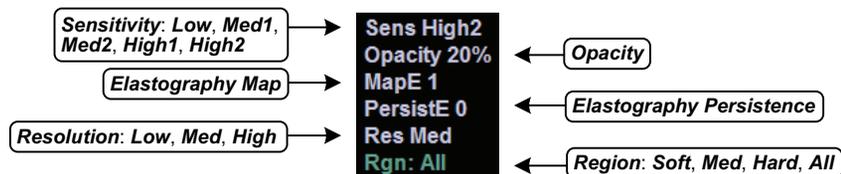




Table 5-9: Elastography Imaging Console Controls

	Press to activate Elastography mode.
	Turn to adjust overall Gain . Press to exit other imaging modes and return to 2D imaging.
	Press up or down to adjust the transducer Frequency: Penetration, General, Resolution, Harmonics and EPI . Note: The Harmonics setting is not supported by all transducers.
	Press up or down to Zoom the image in or out. Use the trackball to pan the zoomed image. Press to exit Zoom .
	Press up or down to adjust the imaging Depth up or down.
	Press up or down to adjust focal zone position up or down.
	Press to steer the 2D beam on linear transducers.
	Turn to adjust Acoustic Power . Note: Pressing the dial will not affect the Index setting.
	Warning: Refer to A.1.1 ALARA Principle and Output Displays.

Note: Refer to [Appendix E](#) for details on touch screen Mode Action and Imaging Parameters buttons.

To Activate Elastography Imaging Mode:

1. Ensure a transducer is both connected to the system and currently active.

Note:

2. Press the console button.

5.6 SonixShine

SonixShine mode enhances in-plane needle visibility during needle insertion. Depending on the **Shine Angle** selected, the needle will track from either the left or right side of the image (**Figure 5-10**).

Caution: Be sure to keep the needle perpendicular to the angle marker.

Note: **SonixShine** is available only:

- with the L14-5/38 transducer
 - from **B-Mode** and **Compound Imaging**.
-

Figure 5-12: SonixShine Imaging

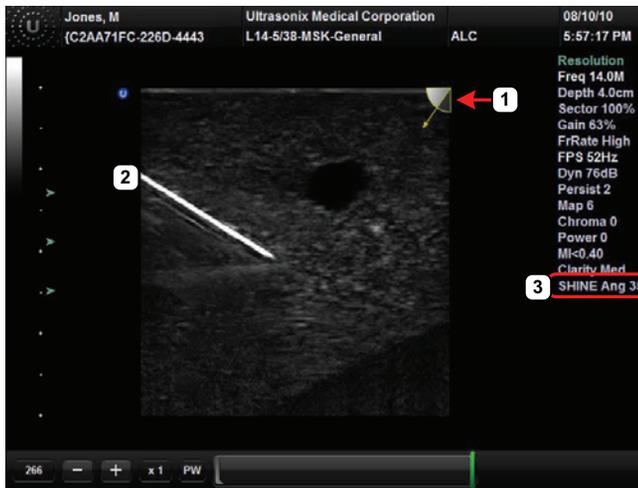


Table 5-10: SonixShine Imaging

		Marks the Shine Angle .
1	SonixShine Angle Marker	Note: The marker is displayed in the top right corner for positive angles and the top left corner for negative angles.
		Angle range: 15° to 40°.
		Angle range: -40° to -15°.
2	In-Plane Needle	Enhanced visibility of the in-plane needle.
3	Shine Ang	SonixShine Angle imaging parameter.



Table 5-11: SonixShine Imaging Console Controls

	Turn to adjust overall Gain . Press to exit other imaging modes and return to 2D imaging.
	Press up or down to adjust the transducer Frequency: Penetration, General, Resolution, Harmonics and EPI . Note: The Harmonics setting is not supported by all transducers.
	Press up or down to Zoom the image in or out. Use the trackball to pan the zoomed image. Press  to exit Zoom .
	Press up or down to adjust the imaging Depth up or down.
	Press up or down to adjust focal zone position up or down.
	Turn to adjust Acoustic Power . Note: Pressing the dial will not affect the Index setting.  Warning: Refer to A.1.1 ALARA Principle and Output Displays.

Note: Refer to [Appendix E](#) for details on touch screen Mode Action and Imaging Parameters buttons.

To Activate SonixShine Imaging:

1. Ensure **B-Mode** or **Compound Imaging** is active.
2. Tap the touch screen **SonixShine** button.

To Select/Adjust SonixShine Imaging Parameters:

1. Ensure **B-Mode** or **Compound Imaging** is active.
2. Tap the touch screen **SonixShine** button.
3. Tap the **Shine Ang** button and the turn the associated dial to set the required angle.
4. Adjust the remaining imaging parameters as required.

5.7 SonixGPS



Warning: This user manual does not include a comprehensive discussion of the SonixGPS option. For complete details on using SonixGPS, read and follow all instructions and warnings in the most recent SonixGPS User Manual.

SonixGPS enables **Operators** to plan, then view the needle route as it enters the patient. Spatial positioning of the needle—with respect to the ultrasound image—is updated in real-time.



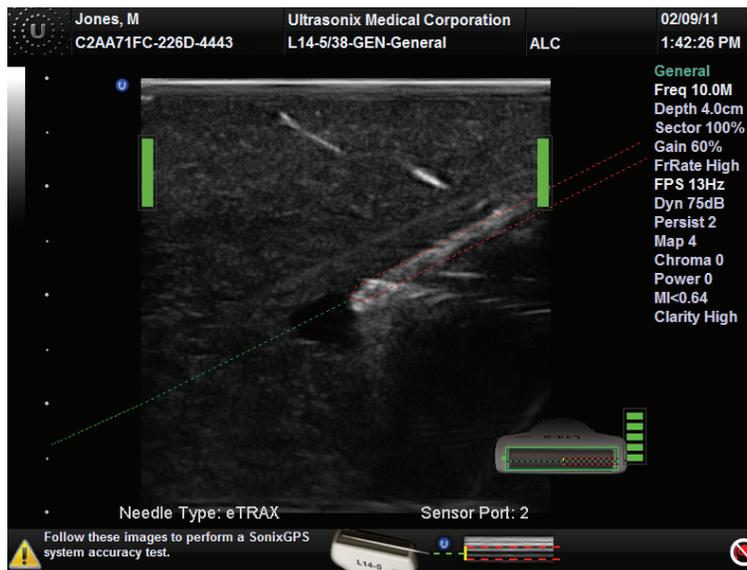
Warnings:

SonixGPS is a guidance system. It is intended to be used only as an aid for qualified, experienced medical personnel in order to verify the correct needle path. Metallic interference, needle deflection, as well as various other factors, will affect the accuracy of tracking the needle.

Before attempting to use the SonixGPS option, carefully read and follow all warnings, precautions and directions detailed in this manual. In addition to helping ensure safe operation, this will aid the Operator in achieving optimal operating conditions.

When used under optimal operating conditions by an experienced medical professional, **SonixGPS** can achieve an accuracy rating as high as ± 2 mm.

Figure 5-13: SonixGPS Imaging



Warning: Some **SonixGPS** components may interfere with nearby electrical systems or anyone relying on life-sustaining equipment, such as a pacemaker or defibrillator.





5.8 PANORAMIC IMAGING MODE

Panoramic imaging enables the user to generate a panoramic view of the **2D** ultrasound image field, which is much wider than the typical transducer field of view.

Panoramic images are composed of several standard ultrasound images acquired as the transducer is moved along the anatomical area of interest in a direction parallel to the transducer array. The resulting compound or composite image displays a large cross section of the area of interest which can then be viewed, measured, labeled and archived.

Figure 5-14: Panoramic Image



Warning: Measurements performed on the acquired **Panoramic** image may be inaccurate as the accuracy of the geometric re-composition is very user-dependent. Measurements performed on the acquired **Panoramic** image should be used for informational purposes only.

Table 5-12: 2D/B-Mode Imaging Console Controls

	<p>Turn to adjust overall Gain. Press to exit other imaging modes and return to 2D imaging.</p>
	<p>Press up or down to adjust the transducer Frequency: Penetration, General, Resolution, Harmonics and EPI. Note: The Harmonics setting is not supported by all transducers.</p>
	<p>Press up or down to Zoom the image in or out. Use the trackball to pan the zoomed image. Press [B] to exit Zoom.</p>
	<p>Press up or down to adjust the imaging Depth up or down.</p>
	<p>Press up or down to adjust focal zone position up or down.</p>
	<p>Press to steer the 2D beam on linear transducers.</p>
	<p>Turn to adjust Acoustic Power. Note: Pressing the dial will not affect the Index setting.</p> <p> Warning: Refer to A.1.1 ALARA Principle and Output Displays.</p>

Note: Refer to [Appendix E](#) for details on touch screen Mode Action and Imaging Parameters buttons.



To Activate the Panoramic (Pano) Imaging Mode:

Note: The **Pano** ROI box can only be vertically resized and/or repositioned.

1. Tap the touch screen **Pano** button during live **2D** imaging.
2. A progress bar with the message **Loading Panoramic Tables...** will be presented onscreen.

Note: This may take a few seconds. The **Panoramic** feature is ready to use when a white **Pano** ROI box appears on the **2D** image and **Pano Ready** appears in the lower left corner of the image field.

3. Use the trackball to vertically position the **Pano** ROI box.

Note: The edge of the **Pano** ROI box will be marked with a solid line.

4. Use the trackball to vertically resize the **Pano** ROI box.

Note: To switch back and forth between positioning (solid line) and resizing (dotted line) the **Pano** ROI box, press the  button.

5. To begin acquiring a **Panoramic** image, position the left side of the anatomical area of interest within the **Pano** ROI box.
6. Press the console  button or tap **Pano Start/Stop** on the touch screen to begin the **Panoramic** acquisition.
7. Move the transducer along a path parallel to the transducer array in the area of interest. For best results move the transducer at a slow and steady pace.
8. When a suitable **Pano** image is acquired, press  or  or tap **Pano Start/Stop** on the touch screen.
9. The generated **Panoramic** image appears in the image field.
10. Tap **Pano Exit** to exit **Panoramic** imaging mode and return to **2D** imaging.

Caution: Measurements performed on the acquired **Panoramic** image may be inaccurate as the accuracy of the geometric re-composition is very user-dependent. Measurements performed on the acquired **Panoramic** image should be used for informational purposes only.

5.9 SonixDVR RECORDING

Once configured, a **SonixDVR Recording** can be made of any imaging session.

Note: A physical recording device is not required.

Once configured and activated a red recording icon (REC) will flash at the bottom right of the imaging screen and an **MPG** video will be created. All system actions initiated during the recording session will be captured in the **MPG**.

Each time a **SonixDVR Recording** is started/stopped, a message will be displayed in the bottom left of the imaging screen.

Note: A **SonixDVR Recording** cannot be transferred via **DICOM**. Use the **Image Transfer process (9.3)** to export these files.

There are two ways to create a **SonixDVR** recording:

- via **Custom Keys (8.2.13)**, so an **Operator** can start/stop a recording at will
- automatically, via **Capture Settings (8.2.18)**, so a recording starts every time a new exam is initiated.



5.10 2D CINE OPTIONS

5.10.1 2D Cine Frame Indicators

Figure 5-15: 2D Cine Frame Indicators

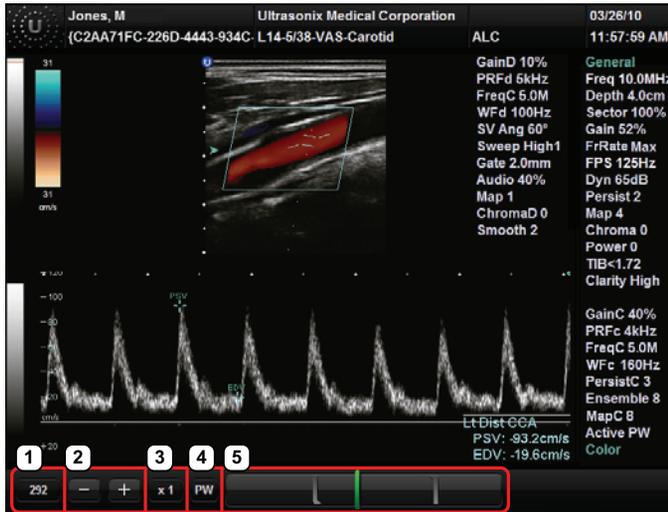


Table 5-13: 2D Cine Frame Indicators

1	Cine Frame	Marks the current Cine frame (number coincides with green marker in 5).
2	Cine Advance/Reverse	Advances (+) or reverses (-) the Cine loop , one frame at a time.
3	Cine Play Speed	Activates Cine Play Speed (1/8, 1/4, 1/2, Full (1) or Double (2)).
4	Active Imaging Cine	Marks the Active imaging Cine . Refer to Table 5-6 for more details. Allows the Operator to select the: <ul style="list-style-type: none"> • start frame • end frame • single (current) frame. Cine loop start and end markers are gray, while the green marker denotes the current Cine frame (item 1 lists the corresponding frame number).
5	Cine Loop Slider	Use the trackball and cursor to drag the start and/or end markers to define Cine loop limits. Once defined, the Cine loop can be saved using Custom Keys (8.2.13) . Note: <i>When an image is frozen, the slider will always be set with the start/end markers to the far left/right with the green marker at the end of the loop (far right).</i>

Note: Use the trackball and cursor to change any of the settings.

5.10.2 2D Cine Options

For details on **4D Cine** options, refer to [5.12.1.1 4D Cine Options](#).

Figure 5-16: 2D Cine Touch Screen Options



Table 5-14: Cine Mode Action Buttons (tap to activate)

End Exam	Tap to end the current exam.
Play Cine Reverse	Select to play the available Cine frames in reverse.
Play Cine	Select to play the available Cine .
Stop Cine	Select to stop the Cine playback.
Record	Tap to store the selected Cine frames to the system or press the appropriate Custom Key button (8.2.13).



Table 5-15: Cine Imaging Parameters (tap to activate, dial/press to adjust/trigger)

	Tap to activate, then turn the associated dial to trigger the action:
Cine Frame Fast	• Cine Frame Fast selects the currently displayed frame and moves 10 frames at a time.
Cine Frame	• Cine Frame selects the currently displayed frame and moves one (1) frame at a time.

	When creating a Cine clip from a Cine loop :
Cine Start Fast	• Cine Start/Cine End selects the start/end frame of the clip, moving one (1) frame at a time.
Cine Start	
Cine End Fast	• Cine Start Fast/Cine End Fast selects the start/end frame of the clip, moving 10 frames at a time.
Cine End	

Cine Play Speed	Tap to activate, then turn the associated dial to select the Cine Play Speed (1/8, 1/4, 1/2, Full (1) or Double (2)).
------------------------	------------------------------------------------------------------------------------------------------------------------------

Notes:

*Changes made to **Depth**, **Gain**, etc., will reset the number of frames available for review or storage.*

***Cine loop** storage is a retrospective acquisition.*

5.10.3 Cine Clip Storage

To Store a 2D or 2D/Color Cine Clip:

1. Ensure a suitable image is visible on the LCD display.
2. Press the console  button.
3. If not currently active, tap the touch screen **Cine** tab.

Note: Refer to [5.12 Standard and Advanced 3D/4D Imaging](#) for details on capturing a **3D/4D** image.

To Select/Adjust Touch Screen Cine Controls:

1. Tap the touch screen **Cine** tab.
2. Tap desired selection (e.g., **Cine Start Fast**).

5.10.4 Raw Cine Manipulation

Once saved, a raw **Cine loop** can be edited as if it the exam was still currently active. Any frozen editing option available to an **Operator** during an exam will also be available to manipulate the saved raw **Cine** data (e.g., **Measurements**, imaging parameter changes, etc.).

To save raw **Cine** data for future manipulation, configure a **Custom Key** with the **Record Raw Cine** option (8.2.13).

To access a raw **Cine loop**, open an exiting Patient/exam using the **Exam Management** page **Review** button or via **Exam Review** (Chapter 9).

A raw **Cine loop** thumbnail will be marked with the word **RAW**.

Note: While there is no time limit on the ability to edit raw **Cine** data, once a **Software Update** is performed (8.2.21), previously existing raw **Cine loops** will cease to be available for manipulation (i.e., raw **Cine loops** can only be saved and edited with the same software version).

5.10.5 Stored Thumbnail Review

The **Stored Thumbnail Review** is displayed at the bottom of the LCD display.

Note: **Cine loops** can also be accessed via **Exam Review** (Chapter 9).

To Review a Thumbnail Image/Cine Clip During an Exam:

1. Move the trackball arrow over the desired thumbnail and press the console  button.

Note: Once the trackball arrow is over a thumbnail, a red **X** will be presented in the top right hand corner. Select the **X** and press  to delete the thumbnail.

2. Press  again to return to imaging mode.



5.11 FREEHAND 3D IMAGING (ALL NON-4D SONIX TRANSDUCERS)

Freehand 3D is designed to enable users to determine the type of imaging (*Parallel* or *Fan*) after an image is acquired.



Warning: Measurements performed on an acquired *Freehand 3D* image may be inaccurate as the accuracy of the **Multiplanar Reconstruction** is very user-dependent. Measurements performed on an acquired *Freehand 3D* image should be used for informational purposes only.

Figure 5-17: Freehand 3D Configuration Options

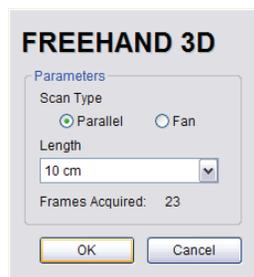


Table 5-16: Freehand 3D Imaging Console Controls

	Press to activate <i>Freehand 3D</i> .
--	----------------------------------------

Table 5-17: Freehand 3D Configuration Options

Scan Type	Parallel	Select Parallel as the Scan Type to measure the Length of a linear path in centimeters.
	Fan	Select Fan as the Scan Type to measure a pivot Angle in degrees.
Length/Angle	When Scan Type = Parallel , the Length selection range is 1 cm to 25 cm, with adjustments available in 1 cm increments.	
	When Scan Type = Fan , the Angle selection range is 5° to 90°, with adjustments available in 5° increments.	
Frames Acquired	Lists the number of Frames Acquired during imaging. These Frames are used to form the Freehand 3D image.	

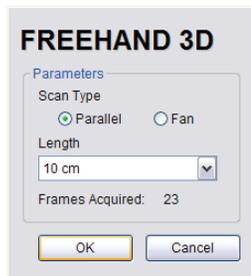
To Acquire a Freehand 3D Image:

1. Select the appropriate **Transducer, Application, Preset** combination.

Note: The **Imaging Preset** selected at this point will provide underlying **2D/B-Mode** imaging parameters. Once the image is acquired and the system moves to **3D** imaging, the **2D/B-Mode** imaging parameters cannot be changed.

If desired, a user-defined **Preset** can be created in order to optimize the **2D/B-Mode** imaging parameters used to acquire a **Freehand 3D** image.

2. Press the console  button.
3. Position the transducer to one side of the anatomical area of interest.
4. Press  to begin the acquisition.
5. Move the transducer over the area of interest in either a **Parallel** or **Fan** motion.
6. Press  or  to complete the acquisition.
7. Select the **Freehand 3D Scan Type**.



Note: The **Scan Type** selected should match the motion used to acquire the image: **Parallel** or **Fan**.

8. Select the appropriate **Length** or **Angle** setting from the drop-down menu.
9. Select **OK** to complete the configuration.
10. The acquired image will be rendered to the **3D/4D** LCD display in the **A|VR** format.

Note: Use **Standard 3D/4D** imaging options to optimize the **Freehand 3D Volume** (refer to [5.12.1](#) for details).

11. Press  to exit **Freehand 3D**.



5.12 STANDARD AND ADVANCED 3D/4D IMAGING

Standard or **Advanced 3D/4D Imaging** are only available to customers who have purchased the relevant license and transducer(s) for this option.

Note: Only **Standard 3D** imaging options will be available to **Operators using Freehand 3D**.

5.12.1 3D/4D Touch Screen Layout

These options are only available once a **Freehand 3D** image has been acquired.

Note: Many touch screen options are also available from the LCD display.

For details on **Freehand 3D** image acquisition, refer to [5.11](#).

Figure 5-18: 3D and Frozen 4D Touch Screen Layout



Note: Where applicable, the numbering corresponds to [Figure 3-2](#), [Figure 3-3](#), [Table 3-1](#) and [Table 3-2](#). Refer to these sections for more details on general touch screen layout.

Multislice is not available with **Freehand 3D** or **Standard 3D/4D**.



Table 5-18: 3D (or Frozen 4D) Touch Screen Controls (tap to activate, dial/press to adjust)

2	Mode Action Buttons	<p>Enable the application of certain actions to an image (e.g., Sculpt...).</p> <hr/> <p>Note: Only Reset is available during the acquisition of a 4D image.</p> <p>As an alternative to tapping the touch screen Measure button, press the console  button.</p> <p>Multislice and Save Volume are not available with Freehand 3D or Standard 3D.</p>
3	Imaging Parameter Buttons	<p>Enable adjustments to be made to the available imaging parameters.</p> <p>Turn/press the relevant touch screen dial to adjust the active imaging parameter.</p> <p>If an imaging parameter button is a pale gray/white color, that particular parameter is currently active (e.g., VR Orient). Turn/press the dial directly to the right of the active button to make adjustments.</p> <hr/> <p>Note: To adjust an imaging parameter that is <u>not</u> currently active, tap the desired imaging parameter button then turn/press the dial directly to its right (e.g., Zoom).</p> <p>Imaging parameter availability is based on image type (3D or 4D) and the state of image acquisition. For example, FOV (Field of View) and Quality are only available during 4D image acquisition, not once the acquired 4D image has been frozen).</p>
9	Cine	<p>Tap to access the Cine touch screen.</p> <hr/> <p>Note: Cine options are only available when a 4D image has been frozen.</p> <p>Cine options are not available with Freehand 3D or Standard 3D.</p>
9	Cine Frame Cine Start Cine End	<p>Enable Cine manipulation. These buttons are also available on the Cine touch screen (Table 5-19).</p> <hr/> <p>Note: Refer to 5.12.1.1 for more details on 4D Cine.</p>
10	Display Mode Options	<p>ABC VR ABC MPR ROI VR A VR C VR A B C VR</p> <p>Touch screen layout defaults to Display Mode options. Refer to Table 5-21 for details on these options.</p> <p>To access Sculpt... touch screen layouts, refer to item 2, above.</p> <hr/> <p>Note: Display Mode options are also available from the LCD display. For details, refer to 5.12.2.1.</p>



5.12.1.1 4D Cine Options

The **Cine** button (Table 5-18) is only available if a **4D** image has been frozen.

Figure 5-19: 4D Cine Options

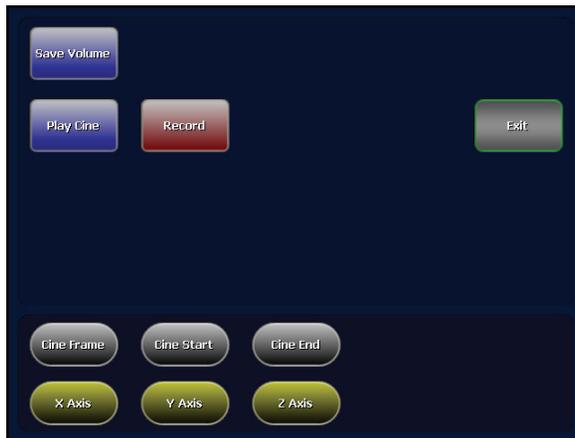


Table 5-19: 4D Cine Options (tap to activate)

Save Volume	<p>Tap to save the Volume data. This allows Operators to reopen the 3D image (and manipulate its settings) during the exam, as long as it remains the Current exam. It can also be reopened later using the Review option on the Exam Management page.</p> <p>Images that have been saved using the Save Volume option will be marked with a 3D box icon.</p> <p>Note: To access the 3D version of the image press the console  button and select the relevant patient/exam from the Patients tab. Select OK to review the exam session. Select the appropriate image from the thumbnails at the bottom of the exam screen and configure the 3D image as desired.</p> <p><i>This option is not available for Freehand 3D.</i></p>
Play/Stop Cine	Tap to start or stop the Cine loop .
Record	Tap to Record a Cine loop .
Exit	Tap to Exit the Cine touch screen.

To Store a 4D Cine:

1. Ensure a suitable image is visible on the LCD display.
2. Press the console  button.
3. If not currently active, tap the touch screen **Cine** button.

Once an image has been frozen, the **Cine** controls discussed in Table 5-19 are available on the touch screen.

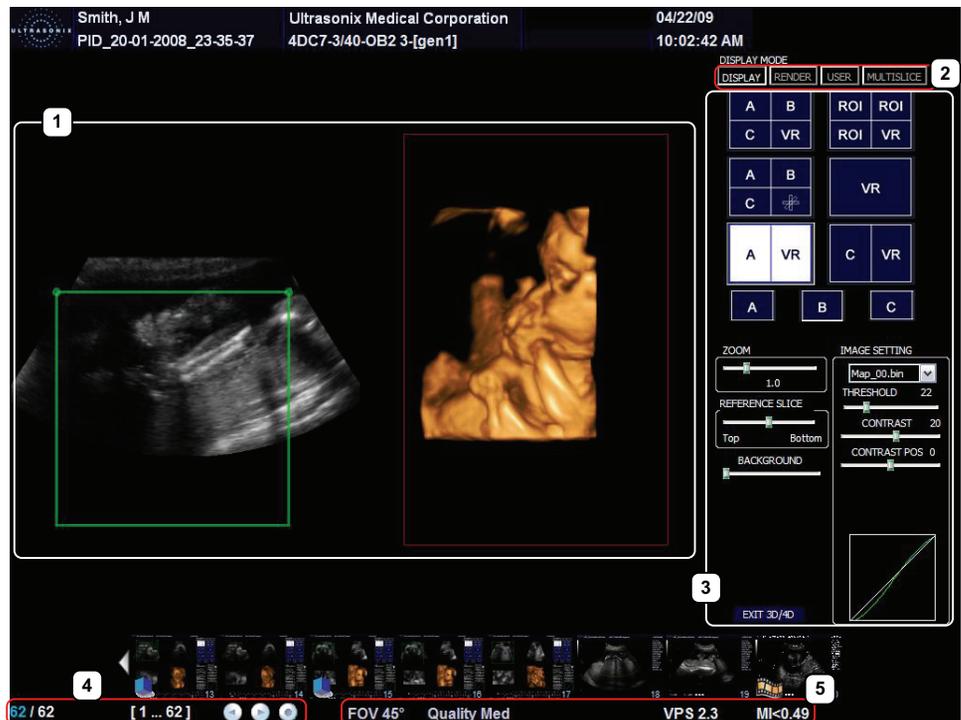
5.12.2 3D/4D LCD Display Layout

The LCD display is divided into two (2) major sections:

- imaging on the left
- editing functionality on the right.

Note: On the LCD display, use the trackball, cursor and  button to change **Display Mode** options. To move a slider to a new position, position the mouse arrow over the slider, press the console  button then use the trackball to move the slider.

Figure 5-20: 3D/4D Display Mode LCD Display



Note: Multislice is not available with Freehand 3D or Standard 3D/4D.



Table 5-20: 3D/4D LCD Display Options

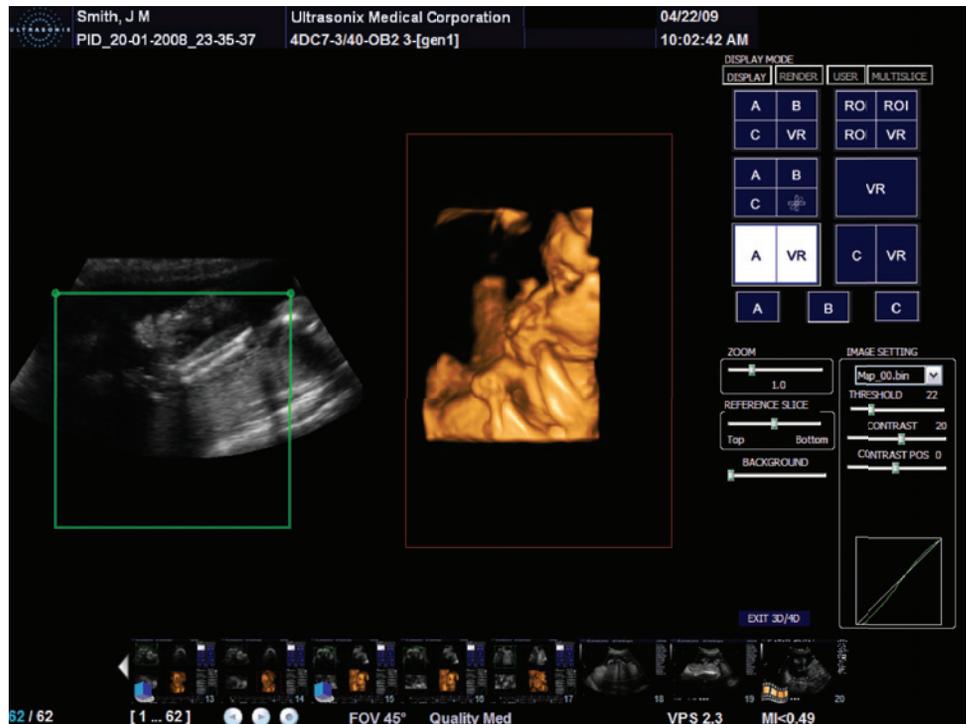
1	Imaging	Displays the selected image format.
2	Mode Selection Buttons	Allow the Operator to change between the various 3D/4D modes: Display, Render, User and Multislice . <i>Note: Display and Multislice options are also available from the touch screen.</i>
3	Mode Options and Imaging Parameters	Enable the application of certain actions to an image. For example, in Display Mode , the Operator can select image presentation (A B C VR) as well as edit imaging parameters (Zoom, Map, Threshold , etc) to adjust the image as desired.
4	Cine Frame Indicators	
5	Additional LCD Display Details	Refer to 5.12.3 for details.

5.12.2.1 3D/4D Display Mode (LCD Display and Touch Screen Options)

Once a **3D** image has been acquired or a **4D** image has been frozen, the following LCD display and touch screen will be presented.

Note: *Cine controls will be inaccessible (i.e., grayed out) for all 3D images.*

Figure 5-21: 3D/4D Display Mode LCD Display



Note: *On the LCD display, use the trackball, cursor and  button to change **Display Mode** options. To move a slider to a new position, position the mouse arrow over the slider, press the console  button then use the trackball to move the slider. Press  again to anchor the slider in the new position.*

Figure 5-22: 3D/4D Display Mode Touch Screen



Table 5-21: 3D/4D Display Mode Options (Touch Screen and/or LCD Display)

ABC VR	<p>Displays A, B (<i>Transverse</i>) and C (<i>Coronal</i>) Plane images with a 3D/4D VR (<i>Volume Rendering</i>) image and allows the repositioning of both the A, B and C Plane ROI boxes and the MPR Plane intersection point.</p> <p>Operators also have the ability to edit the position of the top line of the ROI box (spline editing).</p> <p>Note: Refer to the following sections for more details:</p> <ul style="list-style-type: none"> 5.12.6 Spline Editing of 3D/4D Images 5.12.7 Repositioning the ROI Box 5.12.8 Repositioning the MPR Plane Intersection Point.
ABC MPR	<p>Displays A, B and C Plane images with a 3D/4D MPR (<i>Multiplanar Reconstruction</i>) image and allows the ROI (on the A, B and C Planes) to be repositioned.</p> <p>Operators also have the ability to edit the position of the top line of the ROI box (spline editing).</p> <p>Note: On the LCD display, MPR is replaced with the symbol \oplus.</p> <p>Refer to the following sections for more details:</p> <ul style="list-style-type: none"> 5.12.6 Spline Editing of 3D/4D Images 5.12.7 Repositioning the ROI Box 5.12.8 Repositioning the MPR Plane Intersection Point.
A	<p>Displays the A Plane image and allows the ROI to be repositioned.</p> <p>Operators also have the ability to edit the position of the top line of the ROI box (spline editing).</p> <p>Note: Refer to the following sections for more details:</p> <ul style="list-style-type: none"> 5.12.6 Spline Editing of 3D/4D Images 5.12.7 Repositioning the ROI Box.



	Displays A , B and C Plane images along with a 3D/4D VR image and allows the repositioning of the A , B and C Plane ROI boxes. Tap the touch screen Reset button to return the repositioned ROI to its original state.
ROI VR	Note: Refer to the following sections for more details: 5.12.6 Spline Editing of 3D/4D Images 5.12.7 Repositioning the ROI Box.
	Displays the B Plane image and allows the repositioning of the B Plane ROI box. Operators also have the ability to edit the position of the top line of the ROI box (spline editing).
B	Note: Refer to the following sections for more details: 5.12.6 Spline Editing of 3D/4D Images 5.12.7 Repositioning the ROI Box.
	Displays side-by-side, split-screen view of the A Plane image with a 3D/4D VR of the image and allows the repositioning of the A Plane ROI box. Operators also have the ability to edit the position of the top line of the ROI box (spline editing).
A VR	Note: Refer to the following sections for more details: 5.12.6 Spline Editing of 3D/4D Images 5.12.7 Repositioning the ROI Box.
	Displays the C Plane image and allows the repositioning of the C Plane ROI box. Operators also have the ability to edit the position of the top line of the ROI box (spline editing).
C	Note: Refer to the following sections for more details: 5.12.6 Spline Editing of 3D/4D Images 5.12.7 Repositioning the ROI Box.
	Displays side-by-side, split-screen view of the C Plane image with a 3D/4D VR image and allows the repositioning of the C Plane ROI box. Operators also have the ability to edit the position of the top line of the ROI box (spline editing).
C VR	Note: Refer to the following sections for more details: 5.12.6 Spline Editing of 3D/4D Images 5.12.7 Repositioning the ROI Box.
VR	Displays only the Volume Rendering of the 3D/4D image.

Note: On the touch screen, tap to activate. On the LCD display, use the trackball, cursor and button to change **Display Mode** options.
All options in this table are available from both the touch screen and the LCD Display.



Table 5-22: 3D/4D Touch Screen Mode Action Buttons (tap to activate)

Save Volume	<p>Tap to save the Volume data. This allows Operators to reopen the 3D image (and manipulate its settings) during the exam, as long as it remains the Current exam. It can also be reopened later using the Review option on the Exam Management page.</p> <p>Images that have been saved using the Save Volume option will be marked with a 3D box icon.</p> 
Reset	<p>Returns many settings to their defaults, including settings on the various LCD display menus, imaging parameters, etc.</p>
Cine	<p>Tap to access 4D Cine options.</p>
Sculpt...	<p>Tap to access Sculpt options.</p> <p>Note: Refer to 5.12.2.4 for more details on Sculpt...</p>
Exit	<p>Tap to exit 3D/4D imaging.</p>

Table 5-23: 3D/4D Imaging Parameters (Touch Screen and LCD Display)

Note: The column to the far left indicates where an option is available:

- **TS:** Touch screen only
- **LCD:** LCD display only
- **TS/LCD:** Both the LCD display and touch screen. Note that changes to a setting from the touch screen will be mirrored on the LCD display.

The touch screen **Reset** button applies to all settings in this table.

TS/LCD	Cntrst/Contrast	Adjusts the Cntrst/Contrast settings of the VR on the LCD display. Initially, Cntrst/Contrast adjustments are based on the center of the image. To change this, change the Cntrst Pos/Contrast Pos setting.
TS/LCD	Cntrst Pos/Contrast Pos(ition)	Adjusts the Cntrst Pos/Contrast Pos of the VR on the LCD display. Once moved from the default center position, Cntrst/Contrast adjustments will be centered on the new Cntrst Pos/Contrast Pos setting.
TS/LCD	Zoom	Adjusts the Zoom setting. The range is 0.5 (50%) to 3.0 (300%) in 0.1 (10%) increments.
TS/LCD	Bkgnd/Background	Adjusts the grayscale coloration of the VR Bkgnd/Background on the LCD display.
TS/LCD	Map	Adjusts the coloration of the VR image using pre-defined color Maps . The range for this setting is 0 to 17, inclusive (for all Presets).
TS/LCD	Thresh/Threshold	Use to suppress image artifacts or noise. This setting has a range of 0 to 100, inclusive, where 0 is no noise suppression and 100 is as much noise suppression as possible. Note: The Dynamic Range of the image will be optimized automatically based on the selected Thresh/Threshold setting.
LCD	Reference Slice	Enables users to choose the position of the Slice to be viewed from the active plane.
TS	X-axis	Rotates the selected image about the X-axis .
TS	Y-axis	Rotates the selected image about the Y-axis .
TS	Z-axis	Rotates the selected image about the Z-axis .
TS	VR Orient	Sets the Orientation of the VR .

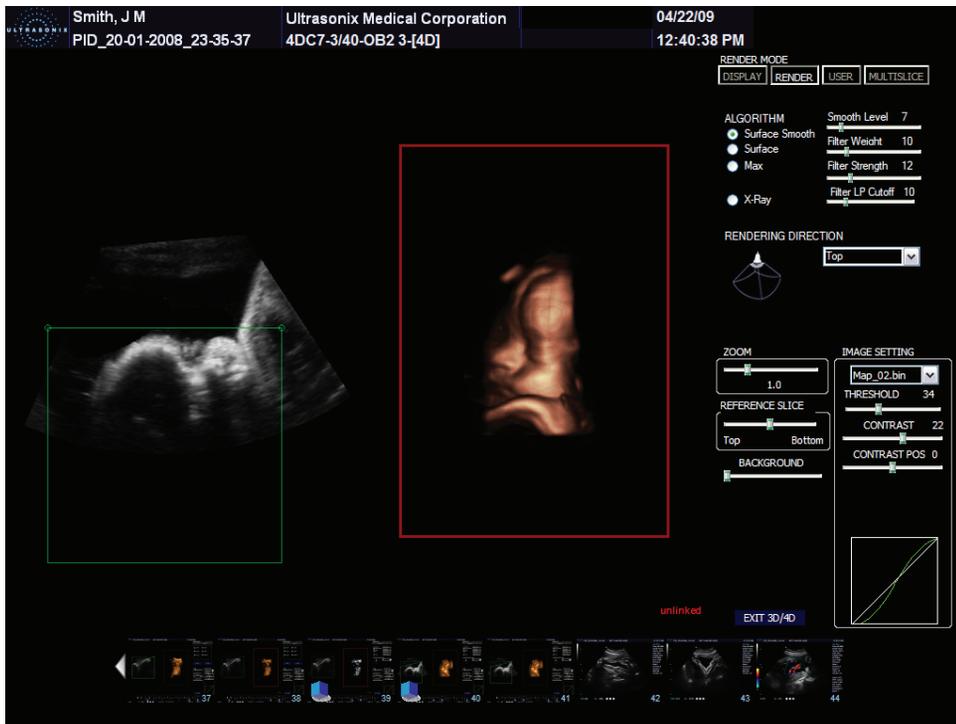
Note: Refer to [5.12.1.1](#) for details on **Cine** controls.

5.12.2.2 3D/4D Render Mode (LCD Display Options Only)

Render Mode enables users to configure image style (grayscale or negative), surface settings (**Smooth**, **X-ray**, etc) and image direction (**Top**, **Bottom**, etc).

Note: Some **Render Mode** options are available only with **Advanced 3D/4D**. Refer to the individual fields in [Table 5-24](#) for details.

Figure 5-23: Render Mode LCD Display Options



Note: On the LCD display, use the trackball, cursor and  button to change **Render Mode** options. To move a slider to a new position, position the mouse arrow over the slider, press the console  button then use the trackball to move the slider.

Table 5-24: Render Mode LCD Display Options

Algorithm	Surface Smooth	Select to smooth the surface rendering of the image in Advanced 3D/4D . Note: This is the default setting for Advanced 3D/4D and is not available in Freehand 3D.
	Surface	Surface rendering of the VR . Note: This is the default setting for Standard 3D/4D.
	Max	Renders voxels with Maximum intensity along the visualization plane.
	X-ray	Provides X-ray -like representation of the Volume model.
	Smooth Level	Adjusts the amount of smoothing applied to Surface Smooth . The range is 0 to 50 in increments of 10, with a default setting of 7. Note: This setting is not available in Freehand 3D.
	Filter Weight	Adjusts sharpness (as applied to Surface Smooth). The range is 0 to 50 in increments of 10, with a default setting of 12. Note: This setting is not available in Freehand 3D
	Filter Strength	Adjusts contrast (as applied to Surface Smooth). The range is 0 to 50 in increments of 10, with a default setting of 12. Note: This setting is not available in Freehand 3D.
	Filter LP (Low Pass) Cutoff	Adjusts the spatial range of the previous three (3) fields: Smooth Level , Filter Weight and Filter Strength . The range is 0 to 50 in increments of 10, with a default setting of 10. A setting of 50 will result in the smallest available spatial range while 0 will result in the greatest range. Note: This setting is not available in Freehand 3D.
Rendering Direction	Selects the direction from which the image is rendered: Front , Back , Left , Right , Top or Bottom .	
Zoom	Adjusts the Zoom setting. The range is 0.5 (50%) to 3.0 (300%) in 0.1 (10%) increments.	
Reference Slice	Enables users to choose the Slice to be viewed from the active plane.	
Background	Adjusts the grayscale coloration of the VR Bkgnd/Background on the LCD display.	



Image Settings	Map	Adjusts the coloration of the active VR using pre-defined color Maps . The range for this setting is 0 to 17, inclusive (for all Presets).
	Threshold	Use to suppress image artifacts or noise. This setting has a range of 0 to 100, inclusive, where 0 is no noise suppression and 100 is as much noise suppression as possible. <hr/> Note: The Dynamic Range of the image will be optimized automatically based on the selected Thresh/Threshold setting.
	Contrast	Adjusts the Contrast settings of the active image(s). Initially, Contrast adjustments are based on the center of the image. To change this, change the Contrast Pos setting. To make this adjustment the new default setting, save it to a 3D/4D Preset (refer to 5.12.9 for details on 3D/4D Presets).
	Contrast Pos(ition)	Adjusts the Contrast Pos of the VR on the LCD display. Once moved from the default center position, Contrast adjustments will be centered on the new Contrast Pos setting.

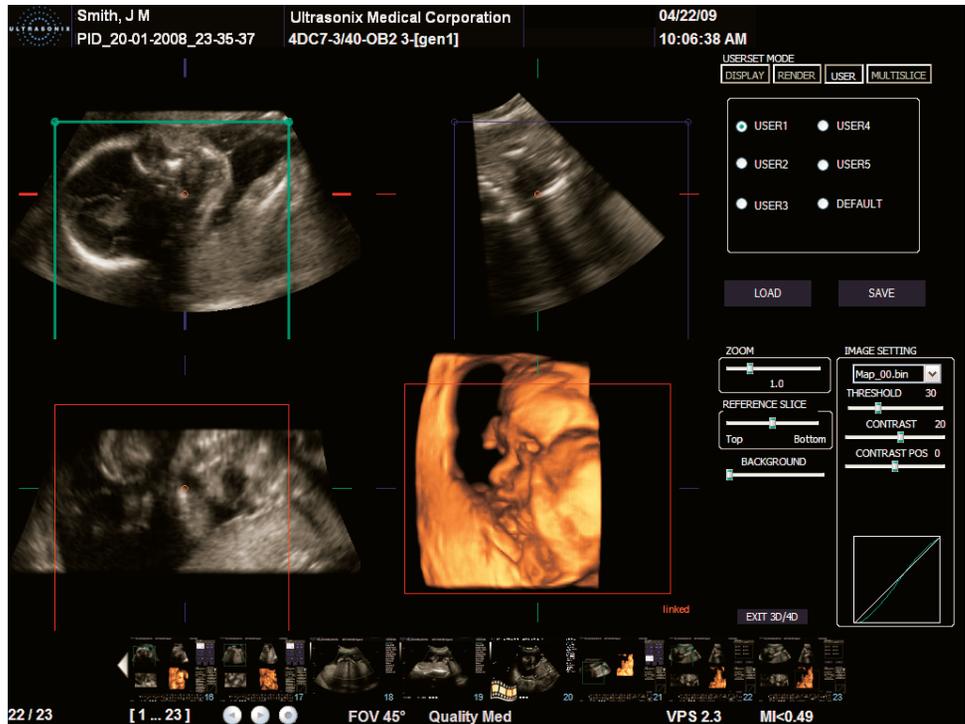
5.12.2.3 3D/4D User Mode (LCD Display Options Only)

User Mode enables the users to:

- return system **Presets** to factory defaults
- create/edit user-defined **Presets**
- select a default **Preset**
- load different **Presets** as required.

Note: There are no **User Mode**-specific touch screen buttons.

Figure 5-24: User Mode LCD Display



Note: On the LCD display, use the trackball, cursor and  button to change **User Mode** options. To move a slider to a new position, position the mouse arrow over the slider, press the console  button then use the trackball to move the slider.



Table 5-25: 3D/4D User Mode LCD Display Options

User1		
User2		
User3	The five (5) available 3D/4D Presets can be reconfigured but they cannot be renamed.	
User4		
User5		
Default		Default Preset for all images after initial acquisition. If desired, users can convert (save) the settings of one of the five (5) User Presets into the Default Preset (5.12.9.1).
Load		Allows users to Load a different Preset as required.
Save	After making changes to one of the three (3) editable Presets (User3 , 4 , or 5), select the Save button to save the edits as a user-defined Preset .	
Zoom	Adjusts the Zoom setting. The range is 0.5 (50%) to 3.0 (300%) in 0.1 (10%) increments.	
Reference Slice	Enables users to choose the Slice to be viewed from the active plane.	
Background	Adjusts the color of the Background on the LCD display.	
Image Settings	Map	Adjusts the coloration of the active VR using pre-defined color Maps . The range for this setting is 0 to 17, inclusive (for all Presets).
	Threshold	Use to suppress image artifacts or noise. This setting has a range of 0 to 100, inclusive, where 0 is no noise suppression and 100 is as much noise suppression as possible. <i>Note: The Dynamic Range of the image will be optimized automatically based on the selected Thresh/Threshold setting.</i>
	Contrast	Adjusts the Contrast settings of the active image(s). Initially, Contrast adjustments are based on the center of the image. To change this, change the Contrast Pos setting. To make this adjustment the new default setting, save it to a 3D/4D Preset (refer to 5.12.9 for details on 3D/4D Presets).
	Contrast Pos(ition)	Adjusts the Contrast Pos of the VR on the LCD display. Once moved from the default center position, Contrast adjustments will be centered on the new Contrast Pos setting.

5.12.2.4 3D/4D Sculpt (Touch Screen Options Only)

Sculpt is used to edit image contents after acquisition.

Figure 5-25: 3D/4D Sculpt Touch Screen Controls



Table 5-26: 3D/4D Sculpt Touch Screen Controls (tap to activate, dial to adjust)

Lasso Inside	Traces a freehand Lasso around the desired area and deletes all items inside the shape.
Lasso Outside	Traces a freehand Lasso around the desired area and deletes all items outside the shape.
Undo All	Undoes all the edits made to an image at any time within the first 24 hours after the image is saved.
Undo Last	Undoes the edits made to an image at any time within the first 24 hours after the image is saved, one at a time, in reverse order.
Exit Sculpt	Exits Sculpt ...
X-axis	Rotates the selected image about the X-axis .
Y-axis	Rotates the selected image about the Y-axis .
Z-axis	Rotates the selected image about the Z-axis .

Note: While in **Sculpt**, use the trackball, cursor and  button to change the various **Mode** options available from the LCD display.



5.12.3 Additional 3D/4D LCD Display Details

Once an image has been acquired, the LCD display will have an additional line of information across the bottom of the screen.

Figure 5-26: Additional 3D/4D LCD Display Details



Table 5-27: Additional 3D/4D LCD Display Details

FOV (Field of View)	Adjusts the Field of View (FOV) of the rendered 3D/4D image. This setting ranges from 10° to 70° (in 5° increments).
	Note: FOV is used in conjunction with Quality, to auto-calculate Volumes per Second (VPS).
Quality	Adjusts image Quality: Low, Medium and High .
	Note: FOV is used in conjunction with Quality, to auto-calculate Volumes per Second (VPS).
VPS (Volumes per Second)	VPS is auto-calculated based on the FOV and Quality settings. It cannot be edited.
MI (Mechanical Index)	The MI is displayed for informational purposes only.

5.12.4 3D/4D Image Acquisition

3D and **4D** images are acquired in similar manners, although the final outcome is different. A **3D** acquisition results in a single **Volume** while a **4D** acquisition results in a **Cine loop**.

Once a **3D** or **4D** image has been acquired, the operator has the ability to edit or optimize the image (5.12.5) using the settings discussed in sections 5.12.2.1 to 5.12.2.4.

Figure 5-27: Acquisition Diagram

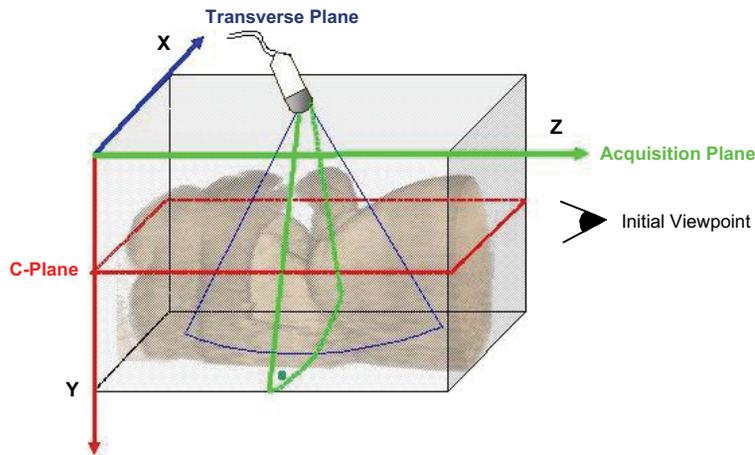


Figure 5-26 demonstrates the various planes and axis of an acquired **3D** image in its original state. Remember that once an image has been edited or optimized (5.12.5 **Optimization of Acquired Images**), the positions of the planes shown here will have been altered as well.

Note: *Where applicable, once changes have been made use the touch screen **Reset** button to return the image to its original geometric position and ROI.*

For clarity, color is used to highlight the **A**, **B** and **C Planes**.

Figure 5-28: Image Quadrants

Green: Acquisition Plane (A)	Blue: Transverse Plane (B) Perpendicular to the Acquisition Plane
Red: Coronal Plane (C)	Volume Rendering (VR)



5.12.4.1 3D Imaging

To Acquire a 3D Image with an Ultrasonix 4D Transducer:

1. Ensure a **4D** transducer is connected to the system.

Note: The **4D** transducer must be inserted into the upper most transducer connection port to ensure proper function.

Only one (1) **4D** transducer can be connected at a time.

Refer to [3.2 Connecting Transducers](#) for connection details.

2. Ensure a patient is active.

Note: Refer to [4.4 Beginning an Exam for a New Patient](#) for details on entering data for a new patient or [4.8.1.1](#) to select an existing patient.

3. Press the console  button.

4. Select a **4D** transducer.

5. Select the appropriate underlying **B-Mode Application–Preset** combination.

Note: If desired, users can select either **OB 1st Trimester** or **OB 2nd–3rd Trimester** as the **Application** then the factory installed **OB4D Preset**.

While this will not affect the actual **3D/4D Presets** available in **4D** mode, it will configure the underlying **2D** imaging parameters.

As an alternative, users can also create their own user-defined **2D Preset (4.9)** to configure the underlying **2D** imaging parameters.

6. Press the console  button.

7. Tap the touch screen **3D** mode action button.

8. Position the transducer over the area of interest.

9. Use the trackball and console  button to position and adjust the size of the ROI.

10. Press the console  button to begin the acquisition the **3D Volume**.

Note: Hold the transducer steady while the image is being acquired.

11. The acquired **3D** rendering will be presented on the LCD display in the default format A|VR.

5.12.4.2 4D Imaging

To Acquire a 4D Image:

1. Ensure a **4D** transducer is connected to the system.

Note: The **4D** transducer must be inserted into the upper most transducer connection port to ensure proper function.

Only one (1) **4D** transducer can be connected at a time.

Refer to [3.2 Connecting Transducers](#) for connection details.

2. Ensure a patient is active.

Note: Refer to [4.4 Beginning an Exam for a New Patient](#) for details on entering data for a new patient or [4.8.1.1](#) to select an existing patient.

3. Press the console  button.
4. Select a **4D** transducer.
5. Select the appropriate underlying **B-Mode Application–Preset** combination.

Note: If desired, users can select either **OB 1st Trimester** or **OB 2nd–3rd Trimester** as the **Application** then the factory installed **OB4D Preset**.

While this will not affect the actual **3D/4D Presets** available in **4D** mode, it will configure the underlying **2D** imaging parameters.

As an alternative, users can also create their own user-defined **2D Preset (4.9)** to configure the underlying **2D** imaging parameters.

6. Press the console  button.
7. Position the transducer over the area of interest.
8. Tap the touch screen **4D** mode action button.
9. Use the trackball and console  button to position and adjust the size of the ROI.
10. Press the console  button to begin the acquisition.
11. Slowly move the transducer over the area of interest.
12. Press the console  or  button to complete the acquisition.
13. The final image of the acquired **4D Cine** file will be presented on the LCD display in the default format **A|VR**.

5.12.5 Optimization of Acquired Images

A **3D** or **4D Volume** can only be optimized after it has been acquired. Both the image and its environment can be optimized in several ways, including: **Map**, **Background** and **Threshold**.

For a comprehensive list of options, refer to sections [5.12.2.1](#) to [5.12.2.4](#).

Images saved with the touch screen **Save Volume** option can be accessed for editing during the 24 hours immediately after acquisition.

Select the images from the **3D/4D** LCD display using the trackball and  button or follow the instructions below ([To Select a Saved 3D/4D Volume for Optimization/Editing \(via Exam Management\)](#)) or [To Select a Saved 3D/4D Volume for Optimization/Editing \(via Exam Review\)](#)).

Note: Once 24 hours have passed, the images can be viewed, but not edited.

Save Volume is not available for **Freehand 3D** images.

When selecting a saved image for optimization, ensure the original **4D** transducer is connected to the system (i.e., if the original image was acquired with the **4DC-7** transducer, ensure the **4DC-7** transducer is connected to the system).

To Select a Saved 3D/4D Volume for Optimization/Editing (via Exam Management)

1. Press the console  button.
2. From the **Exam Management** page, select the relevant patient and select **OK**.



Note: If there are any images less than 24 hours old that were created using the **Save Volume** method, they will be presented as thumbnails with a box icon. Refer to [Table 5-22](#) for more details on **Save Volume**.

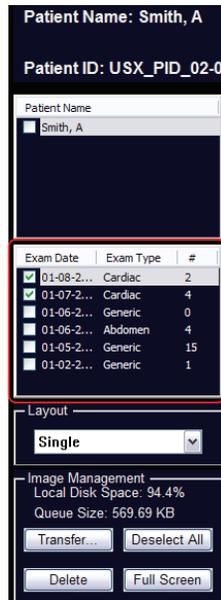
3. **Select** the desired thumbnail to open the image for editing.

To Select a Saved 3D/4D Volume for Optimization/Editing (via Exam Review)

1. Ensure the relevant Patient is active.
2. Press the console  button.

Note: Alternatively, press the console  button if it has been configured with the **Programmable Action: Exam Review**. Refer to [8.2.13](#) for details on this **Custom Key setting**.

3. Highlight the relevant **Exam** and the associated thumbnails will be displayed onscreen.



Note: If there are any images less than 24 hours old that were created using the **Save Volume** method, they will be presented as thumbnails with a box icon. Refer to [Table 5-22](#) for more details on **Save Volume**.

4. **Select** on the desired thumbnail to open the image for editing.



5.12.6 Spline Editing of 3D/4D Images

Once an image has been acquired, the user has the ability to edit it by changing the layout of the top of the **A (Acquisition)** and/or **B (Transverse) Planes**, enabling users to remove things from the top of the image (spline editing).

This option is available only on single **Volumes** and can be accessed from **Display, Render** and **User Modes**.

Spline editing can be done in two ways, both of which are mirrored across all **Planes** and the **VR**:

- single point redrawing of the top line of the **A** and/or **B Planes**
- multi-point redrawing of the top line of the **A** and/or **B Planes**.

Figure 5-29: Single Point Spline Editing

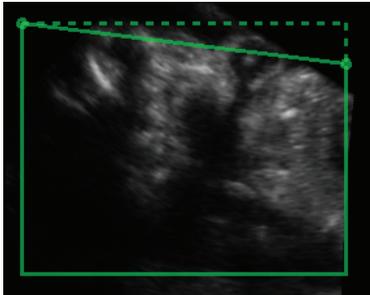
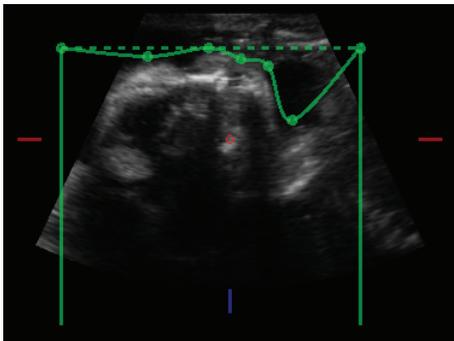
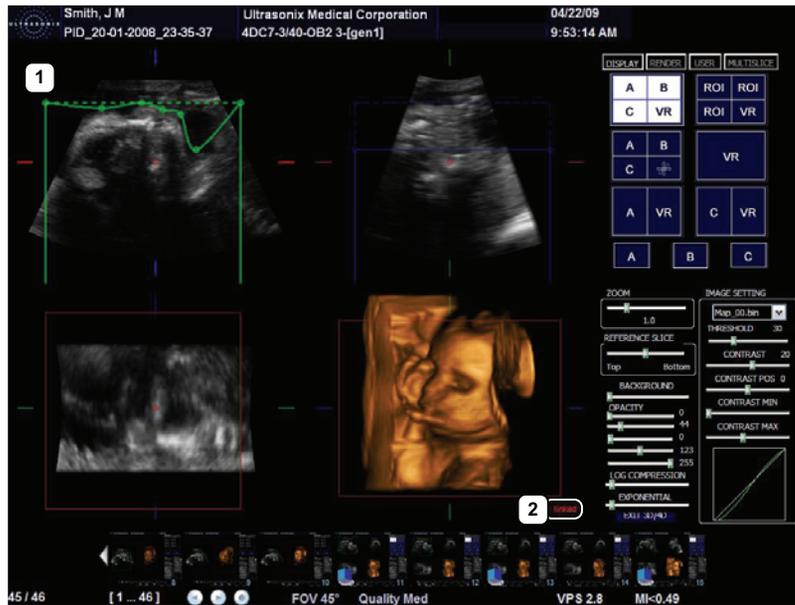


Figure 5-30: Multi-Point Spline Editing



Note: As the touch screen **Reset** button applies to any changes made, be sure to use **Save Volume** or the relevant **Custom Key** option (1 or 2) to print/save relevant images.

Figure 5-31: 3D or Frozen 4D Image with A Plane Spline Editing



Note: The **A Plane** ROI box has been moved. Refer to 5.12.7 for details on repositioning the ROI box from the various **Display Modes**.

Table 5-28: 3D or Frozen 4D Image with A Plane Spline Editing

- | | |
|---|----------------------------------------------------|
| 1 | Multi-point spline editing in the A Plane . |
| 2 | VR marked as linked . |

Depending on the state of the image(s) being displayed, the **VR** will be labeled **linked** or **unlinked**.

A **linked VR** means that at least one **Plane** is visible and is the active image on the LCD display, thus enabling either spline editing or ROI repositioning (5.12.7).

When **unlinked**, the **VR** is the active image.



To Move the Top Line of a Plane (Single or Multi-Position Spline Editing):

1. With a **3D** or frozen **4D Volume**, select the relevant **Display Mode: A|B|C|VR, ROI|VR A|B|C|MPR, A|VR or C|VR**.
2. Place the cursor in the **A, B or C Plane** and press the console  button to activate spline editing for that **Plane**.
3. Move the cursor to the desired place on the top line of the ROI box.

Note: *The cursor will change to a single arrow.*

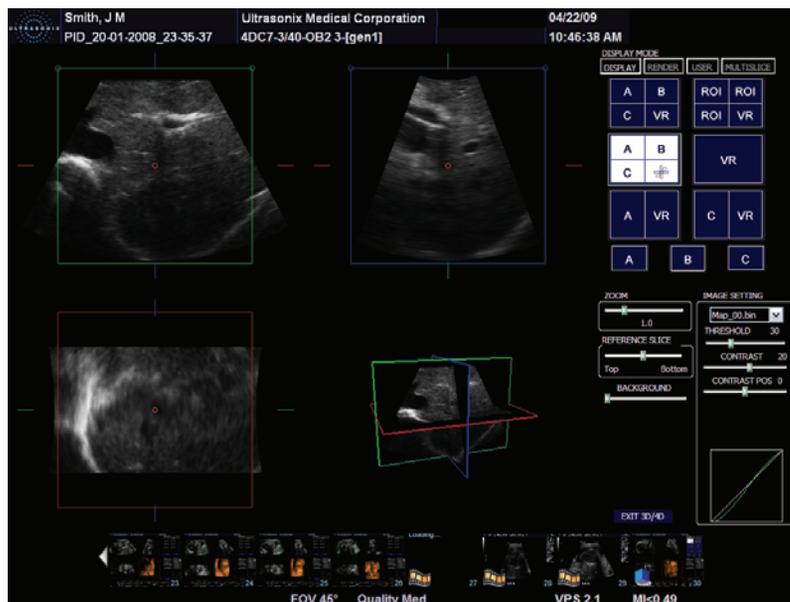
4. Press  again then move the arrow as required.
5. Press  again to anchor the line in place.
6. Repeat **step 3** to **step 5** as many times as necessary.

Note: *As the touch screen **Reset** button applies to any changes made, be sure to use the relevant **Custom Key** option (**1, 2** and ) to print/save relevant images.*

5.12.7 Repositioning the ROI Box

The ROI box can be repositioned from all **Display Modes** except **VR**.

Figure 5-32: A|B|C|VR Image with Repositioned ROI Box



To Reposition the ROI:

1. With a **3D** or frozen **4D Volume**, select the relevant **Display Mode**.
 2. Place the cursor in the **A**, **B** or **C Plane** and press the console  button to activate the ROI repositioning cursor.
-
- Note:** *The ROI repositioning cursor has four sides, each of which terminates in an arrow.*
3. Move the cursor to move the ROI box to the desired position.
 4. Press  again to anchor the ROI box in place.
 5. Repeat **step 2** to **step 4** as many times as necessary.

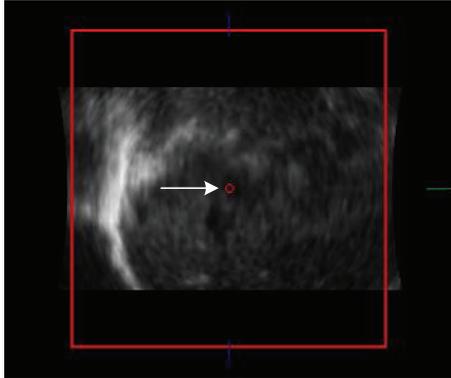
Note: *As the touch screen **Reset** button applies to any changes made, be sure to use **Save Volume** or the relevant **Custom Key** option (1 or 2) to print/save relevant images.*



5.12.8 Repositioning the MPR Plane Intersection Point

The **MPR Plane** intersection point can only be repositioned from **A|B|C|VR** and **A|B|C|MPR**. This is controlled by the presence of a small red circle initially in the center of each **Plane**.

Figure 5-33: Figure 531: MPR Plane Intersection Point



To Reposition the MPR Plane Intersection Point:

1. With a **3D** or frozen **4D Volume**, select the relevant **Display Mode: A|B|C|VR** or **A|B|C|MPR**.
2. Place the cursor over the red circle in the center of the **A, B** or **C Plane** and press the console  button to activate the repositioning cursor.

Note: *Once placed over the red circle, the cursor will change to a cross (+).*

3. Move the cursor to move the **MPR Plane** intersection point to the desired position.
4. Press  again to anchor the **MPR Plane** intersection point in place.
5. Select **A|B|C|MPR** to check the repositioning.
6. Repeat **step 2** to **step 5** as many times as necessary until the **MPR Plane** intersection point is in the desired place.

Note: *As the touch screen **Reset** button applies to any changes made, be sure to use **Save Volume** or the relevant **Custom Key** option (1 or 2) to print/save relevant images.*

5.12.9 3D/4D Presets

Standard and **Advanced 3D/4D** are delivered with five (5) Factory-installed **3D/4D Presets**. As well as the **2D Preset, OB4D**, for use with the **Applications OB 1st Trimester** or **OB 2nd–3rd Trimester**. This **Preset** is designed to configure the underlying **2D** imaging parameters before the **Operator** enters **3D** or **4D** imaging.

If desired, users can also create their own user-defined **2D Preset(s)** (4.9) to configure the underlying **2D** imaging parameters.

The five (5) **Presets (User1 to User5)** are available through **User Mode (5.12.2.3)** after **3D/4D** image acquisition. The **Default Preset** will always be applied to every image immediately after acquisition. If desired, **User1, 2, 3, 4** or **5** can be saved to the **Default Preset**.

Note: For details on reconfiguring the **Default Preset**, refer to 5.12.2.2.

Refer to 5.12.2.3 **3D/4D User Mode (LCD Display Options Only)** for more details on **3D/4D Presets**.

5.12.9.1 Selecting a Default 3D/4D User (Preset)

For convenience, Ultrasonix has configured **3D/4D Imaging** to enable the user to select a default **Preset** to be applied to every image immediately after acquisition. If the current **Default Preset** is not appropriate, the user has the option to load a different one (5.12.9.2).

To Configure the Default User Preset on Entry:

1. Ensure an image has been acquired.
2. Select **User Mode** on the LCD display.



3. Select the radio button for the desired **Default User Preset** to be defaulted to upon entry.
4. Select **Load**.
5. Select **Default**.
6. Select **Save**.

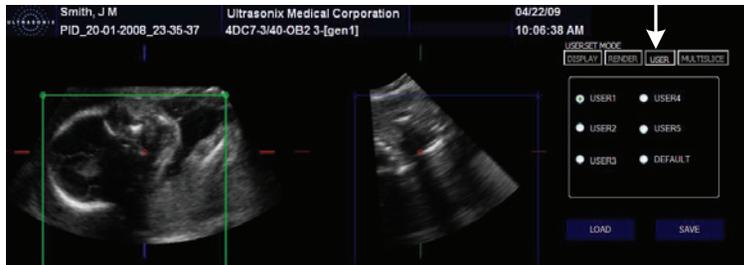


5.12.9.2 User-Defined 3D/4D Presets

While all **Presets** have a pre-defined factory setting, they can be edited to suit the needs of each **Operator**.

To Create a User-Defined 3D/4D Preset:

1. Ensure an image has been acquired.
2. Move through the touch screen and LCD display options, making changes as required (refer to [5.12.2.1](#) and [5.12.2.4](#) for details on the available parameters).
3. Select **User Mode** on the LCD display.



4. Select the radio button for the desired **User Preset**.

Note: *Ultronix does not recommend editing the Preset parameters for Users 1, 2 and 3.*

5. To save the parameters of the new **Preset**, select **Save**.

5.12.9.3 Loading 3D/4D Presets

In order to apply the parameters of a **Preset**, it must first be loaded. Simply selecting the radio button next to the desired **User Preset** will not apply that **Preset's** parameters to the current image.

To Load a User Preset:

1. Ensure an image has been acquired.
2. Select **User Mode** on the LCD display.



3. Select the radio button for the desired **User Preset**.
4. Select **Load** to activate the selected **Preset**.

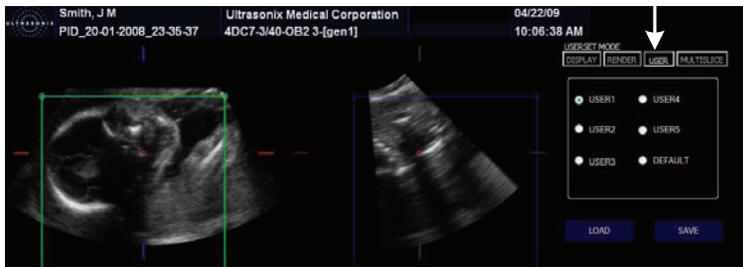


5.12.9.4 Resetting Factory Defaults

If desired, an **Operator** can erase all edits to a given **Preset** by resetting it to the factory default configuration.

To Reset a Preset to Factory Defaults:

1. Ensure an image has been acquired.
2. Select **User Mode** on the LCD display.



3. Select the radio button for the desired **User Preset**.
4. Select **Load**.
5. Tap the touch screen **Reset** button.

CHAPTER 6: CLINICAL ANALYSIS

Measurements provide the user with the functionality to perform clinical analysis on an ultrasound image. They range from simple measurements that calculate **Length**, **Circumference**, **Area**, **Volume**, etc., to **Measurement Packages** that use calculation formulas to determine **Fetal Age**, **Heart Rate**, etc.

The reporting feature takes the **Application**-specific measurement values and generates a **Worksheet/Report** that includes patient and facility information, labeled measurement values and calculation results. Some reports contain auto-generated graphs.

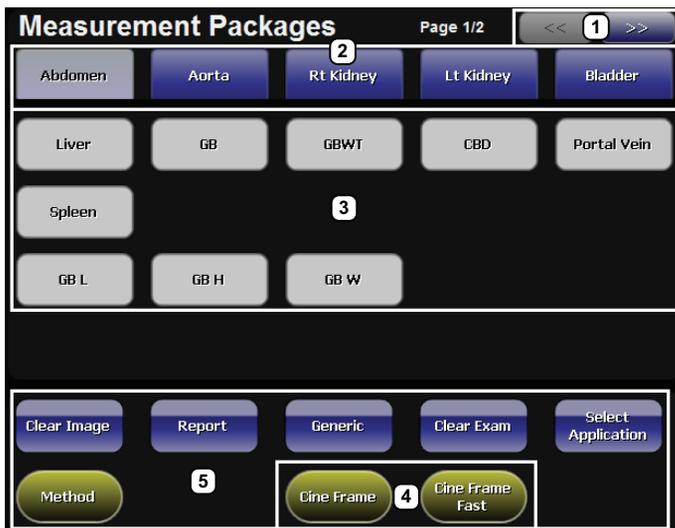
The system provides a wide range of **Application**-specific measurement/calculation packages.

Note: The availability of measurement/calculation packages is dependant upon a combination of licensed options (8.2.22), currently connected transducers and **Preset** settings (8.2.1).

The measurement/calculation package defaults to the **Exam Type/Application** selected. For example, the **Obstetrical** calculation package is the default when an **OB Application** is selected. To access measurements specific to an alternate **Application**, tap the touch screen **Presets...** button and change the **Application-Transducer-Preset** settings as required.

To access **Measurement Packages**, press the console  button.

Figure 6-1: Measurement Packages Touch Screen



Note: This example uses the **Application-Transducer-Preset** combination **Abdomen-L14-5/38-Superficial**.



Table 6-1: Measurement Packages Touch Screen Options

1	Page selector buttons	Use if more than one page of Measurement Package options exists. If there is only one (1) page available, the selectors will be inaccessible (i.e., grayed out).
2	Measurement Packages	These tabs represent the actual Measurement Packages available for the current Application–Transducer–Preset combination. Note: <i>If the page selector buttons are active, there are more Measurement Packages available than what is visible on the current touch screen.</i>
3	Measurement Options	The specific measurement options available for the active Measurement Package tab.
4	Cine Controls	Standard Cine control buttons. Refer to 5.10 for details on Cine .
5	Measurement Controls	Measurement touch screen control options. Refer to Table 6-2 for more details.

Table 6-2: Console Measurement Buttons

	Initiates/closes the Measurements Package touch screen. On a frozen image with measurements already recorded, press  to remove all the measurements on the frozen image screen. Note: <i>Pressing  does not delete the measurements from the Report.</i>
	Removes measurements from the LCD display (located to the left of the  button). If saved to a Worksheet/Report , it will also remove the measurement from the Report . Continue to press  for each of the measurements to be deleted. Note: <i>To delete a specific measurement when more than one is visible onscreen, move the cursor closest to the measurement to be deleted and press the console  button to select it. Press  to delete it.</i>
	Selects, sets and activates calipers, ellipse, etc.
	Toggles between the calipers prior to finalizing (setting) the measurement.

Table 6-3: Measurement Packages Touch Screen Controls (tap to activate, dial to adjust)

Clear Image	Tap to Clear any measurements currently on the image.
	Note: This will not remove the measurements on the Worksheet/Report .
Clear Exam	Tap to Clear all measurements from both the LCD display and the Worksheet/Report .
	Note: Confirm this action when the message Clear Exam? Yes No is presented.
Method	Tap to change measurements types, e.g., from B Distance to Curved Distance . The method selected appears in a message bubble on the lower right corner of the LCD display. Tap as many times as necessary to advance to the desired measurement option.
	Note: Not all measurements have more than one measurement option.
Select Application	Tap to select a different Application .
Generic/Calcs	Tap to move to the Generic/General Application/Preset .
	Note: After tapping Generic , the button name changes to Calcs . This indicates that the system is now using Generic measurements. Tap Calcs to exit Generic measurements and return to standard Measurement Packages .
	Generic measurements are not written to the Worksheet/Report .
Report	Tap to move to the relevant Report (6.8) . Tap Exit to return to Measurement Packages .
	Note: The touch screen will change to the Report Worksheet touch screen. Tap Exit to return to the measurements touch screen.



6.1 GENERIC 2D MEASUREMENTS

During imaging, measurements are accessible by pressing the console  button and tapping the desired touch screen tab and measurement.

For the purposes of the following examples, all measurements have been taken using the **Generic** option.

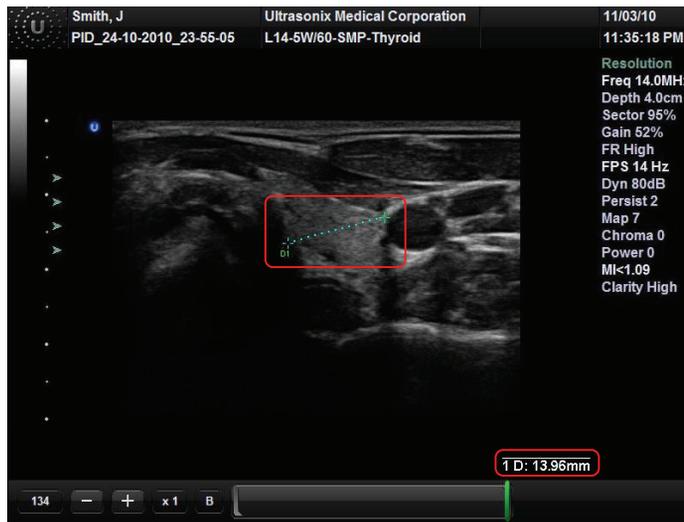
Note: **Generic** measurements are not written to the **Worksheet/Report**.

Once the first version of a measurement has been taken, the relevant touch screen button will be prefaced by (1). If additional versions of that measurement are taken, the number will increment accordingly. Unless the measurement(s) is **Generic**, it will also have been saved to the **Worksheet/Report**.

Note: *Onscreen measurement labels are placed at or near the location of the first caliper. In order to avoid overlapping measurement labels, whenever possible, take care not to overlap measurement starting points.*

6.1.1 2D Linear Measurement

Figure 6-2: 2D Image with Linear Measurement



To Perform a Linear Measurement:

1. With a frozen **2D** image, press the console  button.
2. Tap **Generic** then **Distance** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Distance set to 'B Distance'**.
4. Use the trackball to position the first caliper.
5. Press  to set the first caliper and activate the second caliper.
6. Use the trackball to position the second caliper.

Note: Pressing  will toggle control between the calipers enabling either or both to be repositioned.

7. Press  to set the measurement and record it onscreen and (for non-**Generic** measurements) to the **Worksheet/Report**.

To Perform a 2D Curved Distance Measurement:

1. With a frozen **2D** image, press the console  button.
2. Tap **Generic** then **Distance** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Distance set to 'Curved Distance'**.
4. Use the trackball to position the first caliper.
5. Press  to set the first caliper and activate the second caliper.
6. Use the trackball to trace the caliper to the desired position.

Note: Prior to pressing , use the keyboard **BACKSPACE** key to delete the line. (Each time the **BACKSPACE** key is pressed, another dot in the line is erased.) Alternatively, use the  button (located next to the  button).

7. Press  to set the measurement and record it onscreen and (for non-**Generic** measurements) to the **Worksheet/Report**.



6.1.2 Area or Circumference Measurement

There are four (4) **Generic** methods of performing the **Area/Circumference** measurement: **Ellipse**, **Continual**, **Point by Point** and **Cross**.

6.1.2.1 Ellipse Method Area or Circumference Measurement

To Perform an Ellipse Method Area or Circumference Measurement:

1. With a frozen **2D** image, press the console  button.
2. Tap **Generic** then **Area** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Area set to 'Ellipse'**.
4. Use the trackball to position the first caliper.
5. Press  to set the first caliper and activate the second caliper.
6. Use the trackball to position the second caliper.
7. Press  to set the second caliper position and activate the **Ellipse** sides.
8. Use the trackball to increase/decrease the sides of the **Ellipse**.

Note: Pressing  will toggle control between the calipers enabling either or both to be repositioned.

9. Press  to set the final caliper position.
10. The **Area** and **Circumference** values are presented on the bottom right of the LCD display.

6.1.2.2 Continual Method Area or Circumference Measurement

To Perform a Continual Method Area or Circumference Measurement:

1. With a frozen **2D** image, press the console  button.
2. Tap **Generic** then **Area** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Area set to 'Continual'**.
4. Use the trackball to position the first caliper.
5. Press  to set the first caliper.
6. Use the trackball to trace the caliper around the desired area.

Note: If the traced **Area** is not closed (i.e., the caliper start and end positions are not at the same point), the system will automatically fill in the space with a straight line in order to be able to calculate **Area** and **Circumference**.

Prior to pressing  use the keyboard **BACKSPACE** key to delete the dots in the traced line one at a time, in reverse order. Alternatively, use the  button (located next to the  button).

7. Press  to set the final caliper position.
8. The **Area** and **Circumference** values are presented on the bottom right of the LCD display.



6.1.2.3 Point by Point Area or Circumference Measurement

To Perform a Point by Point Method Area or Circumference Measurement:

1. With a frozen **2D** image, press the console  button.
2. Tap **Generic** then **Area** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Area set to 'Point by Point'**.
4. Use the trackball to position the first caliper.
5. Press  to set the first caliper.
6. Use the trackball to position the second caliper.
7. Press  to set the second caliper.
8. Use the trackball to position the third caliper.

Note: Prior to pressing , use the keyboard **BACKSPACE** key to delete the line. (Each time the **BACKSPACE** key is pressed, another dot in the line is erased.) Alternatively, use the  button (located next to the  button).

9. Press  to set the final caliper.
10. The system will automatically join the first and last caliper positions in order to calculate the **Area** and **Circumference** and display them onscreen.

6.1.2.4 Cross Area or Circumference Measurement

To Perform a Cross Method Area or Circumference Measurement:

1. With a frozen **2D** image, press the console  button.
2. Tap **Generic** then **Area** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Area set to 'Cross'**.
4. Use the trackball to position the first caliper.
5. Press  to set the first caliper.
6. Use the trackball to position the second caliper.
7. Press  to set the second caliper.
8. Use the trackball to position the third caliper.
9. Press  to set the third caliper.
10. Use the trackball to position the fourth caliper.

Note: Prior to pressing , use the keyboard **BACKSPACE** key to delete the line. (Each time the **BACKSPACE** key is pressed, another dot in the line is erased.) Alternatively, use the  button (located next to the  button).

11. Press  to set the final caliper.
12. The **Area** and **Circumference** values are presented on the bottom right of the LCD display.



6.1.3 Volume Calculation

To Perform a Volume Calculation:

Note: *L (Length) measurements can be performed using either linear (B) or Curved Distance.*

1. With a frozen **2D** image, press the console  button.
2. Tap **Generic** then the **Volume** tab to access the **L (Length)**, **H (Height)** and **W (Width)** options.

Note: *By default, the touch screen Length option will be selected for the first measurement, Height will always be second and Width, last.*

3. Tap **Method** and turn the associated dial to select the **L** method: '**B Distance**' or '**Curved Distance**'.
4. Use the track ball to position the first caliper.
5. Press  to set the caliper position and activate the second caliper.
6. Use the trackball to position the second caliper.

Note: *Pressing  will toggle control between the calipers enabling either or both to be repositioned.*

7. Press  to set the second caliper position and complete the measurement.
8. Repeat [step 4](#) through [step 7](#) until all three (3) linear measurements have been completed. The three (3) measurement values with auto-calculated **Volume** results are presented on the bottom right of the LCD display.

Notes:

*All three (3) measurements must be completed to calculate the **Volume**.*

*Only the three (3) most recent measurements (**L**, **H**, **W** and their **Volume** calculation) will be visible onscreen at any one time.*

6.1.4 Percent Diameter Reduction Calculation (% Diam Red)

To Perform a % Diameter Reduction:

1. With a frozen **2D** image, press the console  button.
2. Tap **Generic** then **Diam Red** (under the **General** tab).
3. Use the trackball to position the first caliper of the outer measurement.
4. Press  to set the caliper position and activate the second caliper of the outer measurement.
5. Use the trackball to position the second caliper of the outer measurement.
6. Press  to set the second caliper.
7. Use the trackball to position the first caliper of the inner measurement.
8. Press  to set the caliper position and activate the second caliper of the inner measurement.
9. Use the trackball to position the second caliper of the inner measurement.

Note: Prior to pressing , use the keyboard **BACKSPACE** key to delete the line. (Each time the **BACKSPACE** key is pressed, another dot in the line is erased.) Alternatively, use the  button (located next to the  button).

10. Press  to set the second caliper.
11. The resulting **% Diameter Reduction** is presented on the bottom right of the LCD display along with the inner (**I**) and outer (**O**) diameter measurements that were used in the calculation.



6.1.5 Percent Area Reduction Calculation (% Area Red)

When combined, the two (2) methods of performing the outer and inner **Area Reduction** measurements—**Ellipse** and **Trace**—result in a total of three (3) options.

Note: *The first caliper set is used for the outer measurement of the **Area Reduction** and the second caliper set is used for the inner measurement.*

Table 6-4: Percent Area Reduction Calculation Methods

Ellipse/Ellipse	Uses the Ellipse method for both outer and inner measurements.
Ellipse/Trace	Uses the Ellipse method for the outer measurement and the Trace method for the inner measurement.
Trace/Trace	Uses the Trace method for both outer and inner measurements.

6.1.5.1 Ellipse/Ellipse Method of Area Reduction Calculation

To Perform an Ellipse/Ellipse Method Area Reduction:

1. With a frozen **2D** image, press the console button.
2. Tap **Generic** then **Area Red** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Area Red set to 'Area Reduction Ellipse/Ellipse'**.
4. Use the trackball to position the first caliper of the outer **Ellipse**.
5. Press to set the caliper position and activate the second caliper of the outer **Ellipse**.
6. Use the trackball to position the second caliper.
7. Press to set the second caliper position and activate the outer **Ellipse** sides.
8. Use the trackball to increase/decrease the sides of the outer **Ellipse**.

Note: *Pressing will toggle control between the calipers enabling either or both to be repositioned.*

9. Press to complete the outer measurement.
10. Use the trackball to position the first caliper of the inner **Ellipse**.
11. Press to set the caliper position and activate the second caliper of the inner **Ellipse**.
12. Use the trackball to position the second caliper.
13. Press to set the second caliper position and activate the inner **Ellipse** sides.
14. Use the trackball to increase/decrease the sides of the inner **Ellipse**.
15. Press to complete the inner measurement.
16. The resulting **% Area Reduction** is presented on the bottom right of the LCD display along with the inner (**I**) and outer (**O**) measurements that were used in the calculation.

6.1.5.2 Ellipse/Trace Method of Percent Area Reduction Calculation

To Perform an Ellipse/Trace Method Area Reduction:

1. With a frozen **2D** image, press the console  button.
2. Tap **Generic** then **Area Red** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Area Red set to 'Area Reduction Ellipse/Trace'**.
4. Use the trackball to position the first caliper of the outer **Ellipse**.
5. Press  to set the caliper position and activate the second caliper of the outer **Ellipse**.
6. Use the trackball to position the second caliper.
7. Press  to set the second caliper position and activate the outer **Ellipse** sides.
8. Use the trackball to increase/decrease the sides of the outer **Ellipse**.

Note: Pressing  will toggle control between the calipers enabling either or both to be repositioned.

9. Press  to complete the outer measurement.
10. Use the trackball to position the caliper at the start position of the inner **Trace** measurement.
11. Press  to set the second caliper.
12. Use the trackball to trace the caliper around the desired area.
13. Press  to set the second caliper position.
14. The resulting **% Area Reduction** is presented on the bottom right of the LCD display along with the inner (**I**) and outer (**O**) measurements that were used in the calculation.



6.1.5.3 Trace/Trace Method of Percent Area Reduction Calculation

To Perform a Trace/Trace Method Area Reduction:

1. With a frozen **2D** image, press the console  button.
2. Tap **Generic** then **Area Red** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Area Red set to 'Area Reduction Trace/Trace'**.
4. Use the trackball to position the first caliper at the start position of the outer **Trace** measurement.
5. Press  to set the first caliper.
6. Use the trackball to trace the circumference around the desired area.

Note: Prior to pressing , use the keyboard **BACKSPACE** key to delete the line. (Each time the **BACKSPACE** key is pressed, another dot in the line is erased.) Alternatively, use the  button (located next to the  button).

7. Press  to set the **Trace**.
8. Use the trackball to position the second caliper at the start position of the inner **Trace** measurement.
9. Press  to set the second caliper.
10. Use the trackball to trace the circumference the area of interest.
11. Press  to set the second caliper position.
12. The resulting % **Area Reduction** is presented on the bottom right of the LCD display along with the inner (**I**) and outer (**O**) measurements that were used in the calculation.

6.2 M-MODE MEASUREMENTS

For the purposes of the following examples, all measurements have been taken using the **Generic** option.

Note: *Generic measurements are not written to the **Worksheet/Report**.*

6.2.1 M-Mode Heart Rate Measurement

To Perform an M-Mode Heart Rate Measurement:

1. With a frozen **M-Mode** image, press the console  button.
2. Tap **Generic** then **HR** (under the **General** tab).
3. Use the trackball to position the caliper on the **M-Mode Sweep** to the first beat.
4. Press  to set the first cursor and activate a second caliper.
5. Use the trackball to position the second caliper to the next beat.

Note: *The default **Heart Rate** measurement requires one heart beat. Refer to [8.2.6 Measurements](#) to change the number of beats required for the **HR** calculation.*

Pressing  will toggle control between the calipers enabling either or both to be repositioned.

-
6. Press  to set the measurement.
 7. The **Heart Rate** value is presented on the bottom right of the LCD display.



6.2.2 M-Mode Slope Measurement (Time, Distance and Slope)

To Perform an M-Mode Slope Measurement:

1. With a frozen **M-Mode** image, press the console  button.
2. Tap **Generic** then **Time/Slope** (under the **General** tab).
3. Use the trackball to position the first caliper on the **M-Mode Sweep**.
4. Press  to set the first cursor and activate a second caliper.
5. Use the trackball to position the second caliper to the desired location.
6. Press  to set the measurement.
7. The **Time**, **Distance** and **Slope** values is presented on the bottom right of the LCD display.

6.2.3 M-Mode Distance Measurement

To Perform an M-Mode Distance Measurement:

1. With a frozen **M-Mode** image, press the console  button.
2. Tap **Generic** then **Distance** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Distance set to 'M Distance'**.
4. Use the trackball to position the first caliper.
5. Press  to set the second caliper.
6. Use the trackball to position the second caliper.

Note: Pressing  will toggle control between the calipers enabling either or both to be repositioned.

7. Press  to set the second caliper.

Note: When using the **Cardiac Measurement Package RV/LV (M)**, both diastolic and systolic **M-Mode Distance** measurements must be completed.

8. The **Distance** value is presented on the bottom right of the LCD display.

6.3 PW/CW DOPPLER MEASUREMENTS

For the purposes of the following examples, all measurements have been taken using the **Generic** option.

Note: *Generic measurements are not written to the **Worksheet/Report**.*

6.3.1 Velocity Measurements

Velocity measurements can be performed using either a single or double caliper method.

Note: *Available/visible measurements/calculations depend upon the selections made in [8.2.1.1 Show/Hide Imaging Presets](#) and [8.2.6.2 Show/Hide Applications, Measurement Packages and Measurements](#).*

To Perform a Single Caliper Velocity Measurement:

Note: *ECG is not available on this platform.*

1. With a frozen **Doppler Trace**, press the console  button.
2. Tap **Generic** then **Velocity** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Velocity set to '1 Cal. Velocity'**.
4. Use the trackball to position caliper.
5. Press  to set the caliper.
6. **Velocity** values are presented on the bottom right of the LCD display.

Note: *If no measurement is selected from the touch panel, a generic **Velocity** measurement value will be displayed depending on the application selected. For example, for **Vascular**, the **Velocity** will be **cm/sec** but for **Cardiac** it may be **m/sec**.*



To Perform a Double Caliper Velocity Measurement:

Note: *ECG is not available on this platform.*

1. With a frozen **Doppler Trace**, press the console  button.
2. Tap **Generic** then **Velocity** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Velocity set to '2 Cal. Velocity'**.
4. Use the trackball to position the caliper to the peak velocity. A **Peak Systolic Velocity (PSV)** value is presented on the LCD display.
5. Press  to set the first caliper and activate a second caliper.
6. Use the trackball to position the second caliper.
7. Press  to set the caliper.
8. An **End Diastolic Velocity (EDV)** value with associated **Resistive Index (RI)** and **Systolic/Diastolic Ratio (SD)** is presented on the bottom right of the LCD display.

6.3.2 Doppler Manual Trace Measurement

Note: Available/visible measurements/calculations depend upon the selections made in [8.2.1.1 Show/Hide Imaging Presets](#) and [8.2.6.2 Show/Hide Applications, Measurement Packages and Measurements](#).

6.3.2.1 Doppler Manual Trace Measurement – Continual Method

Note: To ensure the most accurate results, position the first caliper at the start of the waveform and set the last caliper at end diastole for manual **Doppler Traces**.

To Perform a Manual Doppler Trace, Using the Continual Method:

1. With a frozen **Doppler Trace**, press the console  button.
2. Tap **Generic** then **Trace** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Trace set to 'Spectrum Continual'**.
4. Use the trackball to position the first caliper at the start of the desired **Doppler Waveform**.

Note: Prior to pressing , use the keyboard **BACKSPACE** key to delete the line. (Each time the **BACKSPACE** key is pressed, another dot in the line is erased.) Alternatively, use the  button (located next to the  button).

5. Press  to set the start position.
6. Use the trackball to draw the trace along the desired **Waveform** right up to the point of end diastole.
7. Press **SELECT** to end and set the **Trace**.
8. Press  to end and set the **Trace**.
9. The **Trace** values are presented on the LCD display.



6.3.2.2 Doppler Manual Trace Measurement – Point by Point Method

Note: To ensure the most accurate results, position the first caliper at the start of the waveform and set the last caliper at end diastole for manual **Doppler Traces**.

To Perform a Manual Doppler Trace, Using the Point by Point Method:

1. With a frozen **Doppler Trace**, press the console  button.
2. Tap **Generic** then **Trace** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Trace set to 'Spectrum Point by Point'**.
4. Use the trackball to position the first caliper at the start of the desired **Doppler Waveform**.

Note: Prior to pressing , use the keyboard **BACKSPACE** key to delete the line. (Each time the **BACKSPACE** key is pressed, another dot in the line is erased.) Alternatively, use the  button (located next to the  button).

5. Press  to set the first caliper and activate the second.
6. Use the trackball to position the next trace position.
7. Press  to set the second caliper and activate the third.
8. Use the trackball to position the third caliper at the last trace position.
9. Press  to end and set the **Trace**.
10. The **Doppler Trace** values are presented on the LCD display.

6.3.3 Doppler Auto-Trace Measurement (Spectrum Range)

To Perform an Auto Doppler Trace (D-Range):

1. With a frozen **Doppler Trace**, press the console  button.
2. Tap **Generic** then **Trace** (under the **General** tab).
3. Tap **Method** and turn the associated dial to select **Sonix Calcs—Trace set to 'Spectrum Range'**.
4. Use the trackball to position the first caliper.
5. Press  to set the first caliper and activate the second.
6. Use the trackball to position the second caliper.

Note: Pressing  will toggle control between the calipers enabling either or both to be repositioned.

7. Press  to set it.

6.3.4 Doppler Heart Rate Measurement

To Perform a Doppler Heart Rate:

1. With a frozen **Doppler Trace**, press the console  button.
2. Tap **Generic** then **HR** (under the **General** tab).
3. Use the trackball to position the caliper on the **Doppler Trace** to the first beat.

Note: The default **Heart Rate** measurement requires one heart beat. Refer to [8.2.6 Measurements](#) to change the number of beats required for the **HR** calculation.

4. Press  to set the first caliper and activate the second.
5. Use the trackball to position the second caliper to the desired next beat.

Note: Pressing  will toggle control between the calipers enabling either or both to be repositioned.

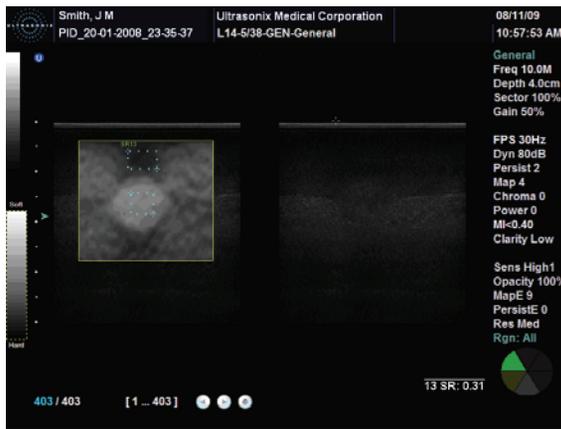
6. Press  to set the measurement.
7. The **Heart Rate** value is presented on the bottom right of the LCD display.



6.4 ELASTOGRAPHY MEASUREMENTS

The *Elastography Strain Ratio* measures the relative stiffness of two (2) regions on the image.

Figure 6-3: Strain Ratio Measurement



To Perform an Elastography Strain Ratio Measurement:

Note: The *Strain Ratio* measurement provided is part of the **General Measurement Package** and therefore will not be saved to the **Report**.

1. With a frozen *Elastography* image, press the console  button.
2. Tap **Generic** then **Strain Ratio** (under the **General** tab).
3. Use the trackball to position the first caliper of the first **Strain Ratio** box.
4. Press  to set the caliper position and activate the second caliper of the first **Strain Ratio** box.
5. Use the trackball to position the second caliper of the first **Strain Ratio** box.
6. Press  to set the second caliper and complete the first half of the measurement.
7. Use the trackball to position the first caliper of the second **Strain Ratio** box.
8. Press **SELECT** to set the caliper position and activate the second caliper of the second **Strain Ratio** box.
9. Press  to set the caliper position and activate the second caliper of the second **Strain Ratio** box.
10. Use the trackball to position the second caliper of the second **Strain Ratio** box.
11. Press  to set the second caliper and complete the measurement.
12. Repeat **step 3** to **step 11** as many times as required.

6.5 3D/4D MEASUREMENTS



Warning: Measurements performed on an acquired **Freehand 3D** image may be inaccurate as the accuracy of the **Multiplanar Reconstruction** is very user-dependent. Measurements performed on an acquired **Freehand 3D** image should be used for informational purposes only.

6.6 OB-SPECIFIC MEASUREMENTS/CALCULATIONS

In the case of multiple fetuses (e.g., twins or triplets), be sure to enter the correct **Fetus #** (**Table 4-4**) on the **Exam Management** page. This will ensure that the **Fetus A/B** button will be active in both **OB Measurement Packages** and **Reports** (where **1 = A**, **2 = B**, etc.).



Warning: In addition to entering the correct **Fetus #** on the **Exam Management** page, be sure to label each **Fetus** using the console **ABC** button.

Note: The **Fetus A/B** button will change based on the number of fetuses entered. For example, for eight (8) fetuses, the button would be **Fetus A/H**. Tap this button as many times as necessary to cycle through to the correct **Fetus #**.

Additionally, to ensure that each measurement is labeled correctly (e.g., **A NT**, **B NT**, **F BPD**, where **A**, **B**, **F**, etc., reflect the **Fetus #** for the measurement), after changing the **Fetus #**, always reselect the relevant measurement.



Warnings:

Various factors may affect the accuracy of **Obstetrical** measurements.

Ensure the system **Date/Time** is configured correctly.

Ensure the desired **Obstetrical** calculation author has been selected for each parameter.

In order to record measurements on multiple—but separate—fetuses, enter a **Fetus #** between 2 and 8 (i.e., to activate the **Fetus** toggle button in **OB Measurement Packages** and **Reports** (where **1 = A**, **2 = B**, etc.)).

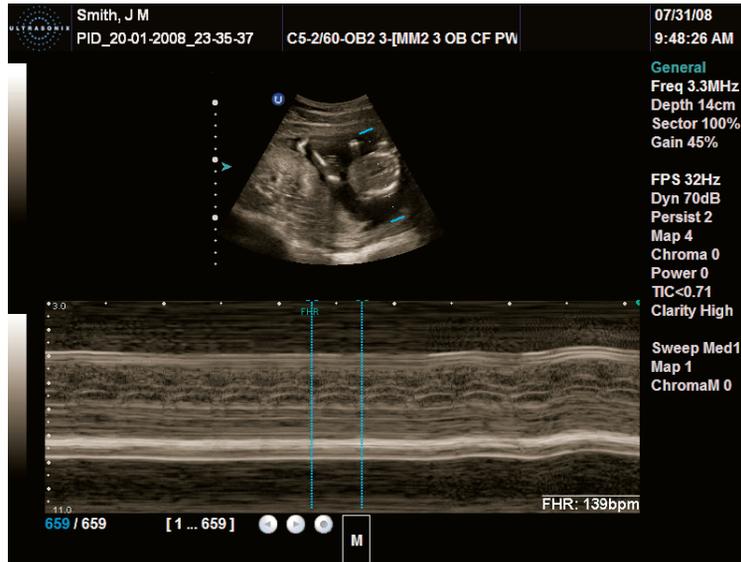
Notes:

Selection of **OB Doppler** measurements **MCA** (**Middle Cerebral Artery**) and **Umb A** (**Umbilical Artery**) enable a two (2) caliper velocity measurement to be made which displays **PSV**, **EDV**, **RI** and **SD** ratio results. To obtain a **PI** (**Pulsatility Index**) measurement for **MCA** or **Umb A**, select **MCA-PI** or **Umb A-PI** to enable a **Doppler Trace** measurement which displays **PSV**, **EDV**, **RI**, **SD** and **PI** results.

Once the first instance of a measurement has been taken, the relevant touch screen button will be prefaced by (1). If additional versions of that measurement are taken, the number will increment accordingly. Unless the measurement(s) is **Generic**, it will be displayed in the **Report Worksheet**.



Figure 6-4: Sample OB-Specific Measurement



6.7 FERTILITY-SPECIFIC MEASUREMENTS/CALCULATIONS

To select the number of follicles to be used in the **Follicle Volume** calculation, refer to **Fertility Cascade #** in **Table 8-10: Measurement Options**.

Follicle Volumes are calculated as $V=(\text{average of all diameters})^3 * \pi/6$. For example:

- if two (2) diameter measurements (e.g., D1 and D2) are made for a Follicle (e.g., F1) then: Volume of $F1=((D1+D2)/2)^3 * \pi/6$
- if four (4) diameter measurements (e.g., D1, D2, D3 and D4) are made for a Follicle (e.g., F2), then: Volume of $F2=((D1+D2+D3+D4)/4)^3 * \pi/6$.

6.8 REPORTS AND WORKSHEETS

Reports/Worksheets have been created as an electronic documentation tool. Identifying patient/exam information is included in the **Report** header on every page.

Applications are linked to a **Report/Worksheet** that can be viewed/edited during an exam via the touch screen **Report/Worksheet** button. **Worksheets** can also be accessed via the console  button.

Note: Files saved to a USB storage device during data transfer will be printed to a PDF in the relevant **Patient** directory under **Patientinfo**. Refer to [9.3](#) for more details.

Reports contain the information from a **Worksheet** but are formatted in a slightly different manner.

Certain aspects (such as measurements) of some **Worksheets** can be edited but only on the same calendar day as they were created. Once the system date rolls past midnight, these fields can no longer be edited. The exception to this is the **Notes** field.

Note: In order for the **Worksheet** to be available for editing, the **Application** used to create the original **Worksheet** must have a custom **Measurement Package**. For details on the **Applications** that qualify, refer to [8.2.6.2 Show/Hide Applications, Measurement Packages and Measurements](#)).

Any measurement that is edited will be marked with an asterisk (*).



Warning: Ultrasonix does not endorse user-defined measurements for diagnostic purposes. All user-defined measurements are used at the operator's discretion and risk only.

Note: The touch screen **Report/Worksheet** button is only available if a patient has been selected.

It is not possible to edit **Calculations**.

6.8.1 Accessing Reports/Worksheets

During an exam, when in **Measurement Packages**, press/tap the **Report/Worksheet** button at any time to access the current **Report/Worksheet** on the LCD display. While no information can be typed into the open **Report/Worksheet**, using the trackball and  button, certain checkboxes and drop down menu selections can be made. Touch screen options will reflect the fact that a **Report/Worksheet** is now open.

Note: Only four (4) **Report/Worksheet** touch screen buttons are common to all **Applications**: **Print...**, **Print Default**, **Exit** and **Pages**. The other options will only be available when imaging is underway for the relevant **Application**.

Table 6-5: Console Report/Worksheet Button

	Initiates/closes the Reporting (Worksheet) touch screen.
-------------------------------------------------------------------------------------	-----------------------------------------------------------------



Table 6-6: Reporting (Report/Worksheet) Touch Screen Options

Print...	Tap to open the Windows Print dialog. This enables users to configure the print job using the available Print dialog parameters.
Print Default	Tap to send the job to the default printer (if one has been configured).
Exit	Tap to save and close the Report/Worksheet , returning the user to Measurement Packages .
Final Report	Tap to view Final Report layout. Note: <i>This option is available only in Cardiac.</i>
Worksheet	Tap to view the current Worksheet . Edits made to Worksheet Measurements the same calendar day they were taken will be saved and used in final calculations. Note: <i>This option is available only in Cardiac. Any changes to measurements will be auto-calculated within the Worksheet/Report. The actual Calculations cannot be edited. Any measurement that is edited will be marked with an asterisk (*).</i>
Biometrics	Tap to move to the Biometrics page of the Report . Note: <i>This option is available only for OB Applications.</i>
Anatomy	Tap to move to the Anatomy page of the Report . Note: <i>This option is available only for OB Applications.</i>
Pages	Turn the dial directly to the right of Pages to move the Report from page to page.
Graph	Use the Pages button (above) to move to the Graph page of the Report then turn the Graph dial to cycle through the available Graphs .
Fetus A/B to Fetus A/H	Turn the Fetus button dial as many times as necessary to move to the Report for the relevant Fetus (e.g., A, B, C , etc.). Note: <i>This button is only available if Fetus # (Table 4-3) was set to a number other than 1 (options are 1 to 8 which correspond with A to H).</i>
HR	Not available on this platform.

To Access a Report Worksheet while In Measurement Packages:

1. With a frozen image, press the console button.
2. Tap **Report** or press .
3. Turn the dial directly to the right of the **Pages** button to move through the pages of the **Report Worksheet**.
4. Use the trackball and button to make any required checkbox or drop-down menu selections.
5. Tap **Exit** to close the **Report Worksheet** or use the trackball and button to select the **X** in the upper right corner.

Note: *Exiting the **Report Worksheet** will not end the current exam.*

6.8.2 Obstetrics Report

As with other **Reports**, the **OB Report** allows the user to edit/delete measurements, providing the edit/deletion is done on the same calendar day as the measurements were taken.

To Delete Obstetrical Biometry Measurements from a Worksheet/Report:

Note: Report data can only be edited the same calendar day it was created.

1. With a frozen **OB** image, press the console  button.
2. Tap **Report** or press .
3. Tap **Pages** and turn the associated dial until the desired page appears.
4. Use the trackball and  button to insert the cursor at the end of the measurement/data to be deleted.

Caution: In the case of two (2) or more fetuses, ensure the correct fetus is selected prior to deleting the **OB** parameter measurement.

Note: Only some fields are available for editing.

5. Use the keyboard **BACKSPACE** key and delete the relevant data.
6. Repeat **step 3** to **step 5** as many times as necessary.
7. Tap **Exit** to close the **Report Worksheet** and return to imaging or use the trackball and  button to select the **X** in the upper right corner.

Figure 6-5: Sample Page from an Obstetrical Report Worksheet



Date of Exam: 11/5/2010 Page 1/6
Exam Type: OB 2nd-3rd Trimesters

Name: Smith, J Per. Phys. Dr Fred Jones
Pat. ID: PID_24 10 2010_23 55 05 DOB: 12/8/1975 Ref. Phys. Dr Jane Doe
Indication: Sex: F Operator: ALC

LMP: 3/15/2010 GA(LMP): 33w3d EDD(LMP): 12/20/2010 G: Ab:
DOC: GA(AUA): EDD(AUA): P: Ec:

FFW Value Range Age Range Growth
Hadlock AC(BPD)/FL/HC 39.07g 5.70g 10w2d Doublet: <5%

2D Measurements	AUA	Value	m1	m2	m3	Meth.	Age	Range
DPD (Hadlock)		0.07mm	8.19	8.53	7.50	avg		
OFD (HC)		10.27mm	11.19	9.74	9.89	avg		
HC (Hadlock)		29.78mm	30.01	20.04	30.40	avg		
AC (Hadlock)		27.48mm	20.10	30.13	24.14	avg		
FL (Hadlock)		5.83mm	4.70	6.52	6.20	avg		

OB Ratios

FL/DPD 73% 67%-91% 20% 19%-23%

Thumbnail:

6.8.3 Vascular Reports

Figure 6-6: Sample Page from a Vascular Report Worksheet

REPORT WORKSHEET		Date of Exam: 8/22/2008		Page 1/4				
		Exam Type: Vascular						
Name	Jones, Michael	Perf. Phys.	Dr Smith					
Pat. ID	USX_PID_23-07-2008_15-22-16	DOB	3/15/1969					
Ref. Phys.	Dr Frank							
Indication		Sex	M		Operator			
			ALC					
Measurements	Value	m1	m2	m3	m4	m5	m6	Meth.
Stenosis D - Rt Prox ICA								
D1	1.04cm	1.04						max
D2	0.38cm	0.38						max
%	63.21%	63.21						max
Rt Carotid - Rt Dist CCA								
PSV	69.6cm/s	69.6						max
EDV	22.3cm/s	22.3						max
Rt Carotid - Rt Prox ICA								
PSV	79.0cm/s	79.0						max
EDV	29.0cm/s	29.0						max

6.8.4 Billing and QA Review Report/Worksheet Options

If desired, **Billing** details can be included in the **Billing** section.

Note: Ensure **Enable QA Review** has been selected (Table 8-10).

Any **Report/Worksheet** opened/created during/prior to this setting being selected will not include the **Billing** and **QA** options.

QA Review enables a **Reviewer** to make note of any **Follow-up Findings**, record their **QA** results, **Agree/Disagree** with the results determined by the **Operator** associated with the exam in question as well as enter any relevant **Notes** they may wish to make.

Figure 6-7: Billing and QA Review

Billing:

No Attending
 Attending reviewed / agreed
 Attending reviewed / disagreed

No US charge
 US charge #1
 US charge #2
 US charge #3

QA Review:

Follow-up Findings

Adequate US image Yes
 No
 Accurate Interpretation Yes
 No
 Exam Results: Agree
 Disagree

TP
 TN
 FP
 FN
 TLS

QA Notes:

Table 6-7: Billing and QA Review Fields

No Attending	Select if no Attending Physician is present during the exam.
Attending Reviewed/Agreed	Select when an Attending Physician is present during the exam and Agrees with the Operator .
Attending Reviewed/Disagreed	Select when an Attending Physician is present during the exam and Disagrees with the Operator .
No US Charge US Charge #1 US Charge #2 US Charge #3	The names of these four (4) Ultrasound (US) fields can be edited to reflect billing codes relevant to the Exam Type/Application and/or individual institutions. Note: <i>Ultronix recommends "blanking out" any unused billing code fields.</i>
Follow-up Findings	Enables Reviewers to comment on Follow-up Findings as necessary. Note: <i>This field will accept approximately 75 characters.</i>
Adequate US Image	Accepts a Yes or No answer.
Accurate Interpretation	Accepts a Yes or No answer.
Exam Results	Agree/Disagree Allows Reviewers to Agree/Disagree with the Operator's results.
	TP True Positive
	TN True Negative
	FP False Positive
	FN False Negative
TLS Technically Limited Study	
QA Notes	Enables Reviewers to add whatever comments they feel are necessary. Note: <i>This field will accept approximately 400 characters.</i>



To Access Billing and QA Review Details:

1. Press the console  button.
2. Turn the **Pages** dial to move to the relevant page.

REPORT WORKSHEET Page 2/2

Name: Date: 9/18/2009 Patient ID:

Operator ID: Attending Physician:

Notes:

Billing:

No Attending Attending reviewed / agreed Attending reviewed / disagreed

No US charge US charge #1 US charge #2 US charge #3

QA Review:

Follow-up Findings

Adequate US image Yes No Accurate Interpretation Yes No Exam Results: Agree Disagree

TP TN FP FN TLS

QA Notes:

Note: Any **Report/Worksheet** opened/created during/prior to this setting being selected will not include the **Billing** and **QA** options.

3. Use the trackball, console keyboard and  button to complete the **Billing** and **QA Review** fields as required.

CHAPTER 7: TEXT, ANNOTATIONS AND PICTOGRAMS

Text, **Annotations** and **Pictograms** enable the user to label images prior to image transfer and storage.

Note: **Annotation** and **Pictogram** options are controlled via [8.2.2](#) and [8.2.3](#), respectively. Refer to [8.2.5](#) for details on global **Annotation** settings.

Text, **Annotations** and **Text Arrows** can also be added to **3D/4D** images.

Table 7-1: Console Text, Annotation and Pictogram Buttons

	Turns on/off Application -specific Pictogram graphics. Tap Pictogram and dial through the various icons. <ul style="list-style-type: none"> • trackball positions orientation marker • touch screen Rotate dial pivots orientation marker.
	Turns on/off Arrow graphic on the image field. Trackball positions and rotates the Arrow graphic.
ABC	Activates the keyboard for Text entry and displays Application -specific Annotation buttons on the touch screen.
	Deletes the most recent Text or Annotation entry. Provides delete character functionality during data entry mode (Exam Management page).
	Selects/sets onscreen options.



7.1 TEXT AND ANNOTATIONS

The system enables users to add **Text** or **Preset Annotations** to the image field. **Annotations** are predefined by **Application** but can also be customized by users (8.2.2). A **Text Arrow** is available as well as an **Auto-Complete** text feature that anticipates the word being entered (8.2.5).

Figure 7-1: Annotations Touch Screen

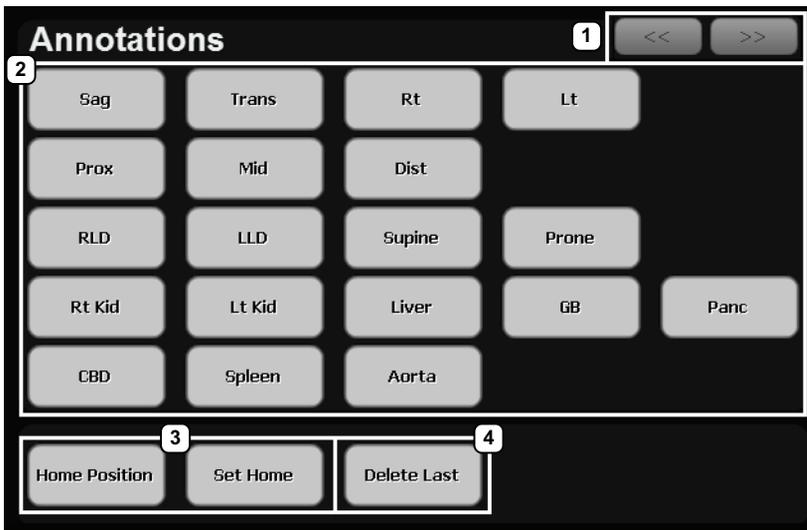


Table 7-2: Annotations Touch Screen

1	Page Selector Buttons	Annotation page selector buttons for use when there are multiple pages of Application -specific Annotations .
2	Annotation Buttons	Application -specific Annotations controlled via 8.2.2 Presets – Annotations .
3	Home Position Buttons	Home Position configuration buttons (common to all Annotations touch screens). <i>Note: Refer to 7.1.1 for details on setting the Home Position.</i>
4	Delete Last	Tap Delete Last (or use the keyboard Backspace key) to remove the letter(s) to the left of the Text cursor.

To Access the Annotations Touch Screen:

1. Press the console **ABC** button.

7.1.1 Set Text Home Position

The **Home Position** button enables users to automatically reposition the cursor to the previously-defined **Text Home Position**. Once a **Text/Annotation** cursor **Home Position** has been set, it will remain until/unless it is reset.

To Set the Text Home Position:

1. Press the console **ABC** button.
2. Use the trackball to position the cursor in the desired **Home Position**.
3. Tap **Set Home** to set the **Home Position**.

4. Press **ABC** to exit **Text/Annotation** mode.

7.1.2 Annotations (Keyboard Text)

To Enter Annotation Text:

1. Press the console **ABC** button.
2. A **Text** cursor is presented on the imaging screen.
3. Use the trackball to position the **Text** cursor as required.
4. Use the console keyboard to enter the desired text.

Note: When the **Auto-Complete** function is active ([8.2.5 Annotations](#)), enter the first letter(s) of the preset word and the rest of the word will be presented in blue. If more than one preset word with the same first letter exists, use the **Tab** key to cycle through all the preset words beginning with that letter. To set the selected preset word, press **Enter** on the keyboard.

5. Press **ABC** to exit **Text/Annotation** mode.



7.1.3 Application-Specific Annotations

To Enter Application-Specific Annotations:

1. Press the console **ABC** button.
2. Once the **Text/Annotation** cursor location is presented on the imaging screen, use the trackball to reposition the cursor as required.
3. Tap the desired **Annotation** from the selection presented on the touch screen.

Note: To modify the preset **Annotations**, refer to section [8.2.2 Presets – Annotations](#).

4. Repeat [step 2](#) and [step 3](#) as many times as required.
5. Press **ABC** to exit **Text/Annotation** mode.

7.1.4 Deleting Text/Annotations

To Delete All Text/Annotations:

1. Press the console **ABC** button.
2. Press  (below the console **ABC** button) to delete all user-entered Text/Annotations from the image field.

Note: Alternatively, move the cursor to the desired position and use the keyboard **BACKSPACE** arrow to remove the letter(s) to the left of the **Text** cursor.

To remove the most recently entered **Annotation**, tap **Delete Last** while in the **Annotations** touch screen. Repeating this action will delete each subsequent entry in reverse order.

3. Press **ABC** to exit **Text/Annotation** mode.

7.1.5 Text Arrows

Operators can enter one (1) or multiple **Text Arrows** on a single image.

If required, Operators can also customize the length of the **Text Arrow** (8.2.5.1).

To Enter Text Arrows:

1. Press the console  button.
2. When the arrow appears on the image screen, use the trackball to position/rotate it.
3. Press the console  button to place the positioned arrow on the image.
4. Repeat **step 2** and **step 3** as many times as necessary.
5. Archive the image to save it with the arrows visible.

Note: To archive, press the console **1** or **2** button, depending on the system's printing setup (as configured in 8.2.13 Custom Keys).

6. Press  (below the console **ABC** button) to remove all arrows from the image.

Note: Once the console  button is pressed—either before or after the **Text Arrows** are added—pressing it again (i.e., unfreezing the image) will remove the **Text Arrows** without having to press .

To Enter the Customized Text Arrow:

1. Ensure a customized **Text Arrow** has been configured (8.2.5).
2. During imaging, press the console  button.
3. When the arrow appears on the image screen, use the trackball to position the tip of the **Text Arrow**.
4. Press  to lock the **Text Arrow** tip in place on the image.
5. Use the trackball to rotate the tail of the **Text Arrow** so it does not block any of the image.
6. Press  to lock the entire **Text Arrow** tip in place on the image.
7. Repeat **step 2** to **step 6** as many times as necessary.

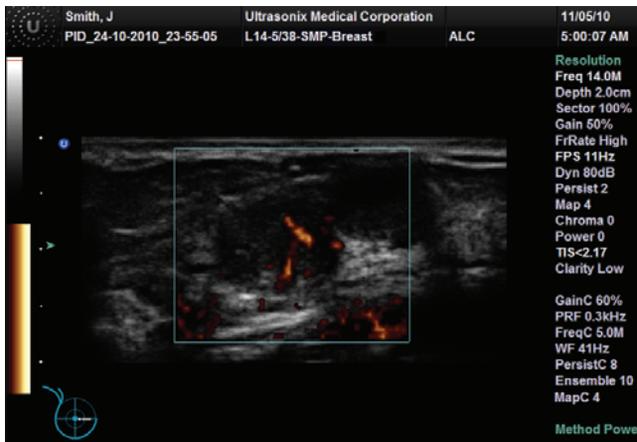


7.2 PICTOGRAMS

Pictograms are predefined, **Application**-specific icons that enable users to label the imaging feature. Customizing the availability of specific **Pictograms** is controlled through [8.2.3 Presets – Pictograms](#).

To Activate a Pictogram:

1. Press the console  button.
2. Rotate the associated **Pictogram** dial to move through the various **Pictograms** available.



3. Use the trackball to position the **Pictogram** orientation marker to the desired location on the **Pictogram**.
4. Tap the touch screen **Rotate** button and turn the associated dial to attain the desired position.
5. Press the console  button to set the marker's position and orientation.
6. To adjust the **Pictogram** orientation marker after setting it, move the cursor until it is close to the marker and press  again. Repeat [step 3](#) to [step 5](#) to re-set the marker.

Note: To hide the **Pictogram** from view, tap the touch screen **Hide** button.

CHAPTER 8: SYSTEM SETUP

The various features and settings of the system can be customized via one of the three (3) **System Setup** menus: **User**, **Administrator** and **Service**. Menu-level password protection applies as follows:

- **Users Settings:** no password protection
- **Administrator Settings:** optional password protection
- **Service Settings:** always password protected. Only qualified Ultrasonix Medical Corporation service personnel can access this menu.

To access any of the following functions, press the console  button.

The following tables provide a quick overview of the system's setup menus. Refer to the related sections later in this chapter for details on any particular setup option.

Note: *Unlicensed and/or inactive **Menu** options will be inaccessible (i.e., grayed out).*

Table 8-1: User Settings Menu

Setup	SonixLive	Not available on this platform.
	Administrator	Access the Administrator Settings menu.
Support	Remote Support	Access the Remote Support option. Note: <i>Remote Support is configured via 8.2.11 Network.</i>
	Chat Support	Access the Chat Support option Note: <i>Chat Support is configured via 8.2.11 Network.</i>
	Documentation	View a PDF version of the User Manual on the LCD display.

Note: *The software version number is displayed across the bottom of this menu.*



Table 8-2: Administrator Settings Menu

Application Setup	Presets	View and manage Presets with their associated Annotations , Pictograms , Measurements and Imaging Presets .
	Annotations	Toggle on/off the three (3) global Annotation settings. Note: <i>Customization of Preset-specific Annotations is handled through Presets.</i>
	Measurements	Configure measurement Graphics , Measurement and Worksheet settings.
	Training Tutorials	Download, copy or view training materials in a variety of file formats.
	SonixGPS	Select/deselect SonixGPS needle type.
	Biopsy Guide	Configure Single Guideline Biopsy option.
System Setup	System	Configure/customize basic System Settings : Institution Name , Regional options, Shutdown Options , Auto-Freeze , User Data , Master Volume and Admin Password . Reset system to Factory Defaults .
	Network	Configure settings for: Network (LAN (Local Area Network) or dialup), TCP/IP (Transmission Control Protocol/Internet Protocol), E-mail and Chat Support . Caution: <i>System networking options are intended for use <u>inside</u> your organization's firewall. Organizations that elect to configure/use the networking functionality provided by Ultrasonix are assuming all liabilities and risks associated with that decision.</i> Note: <i>Dialup access requires an external USB modem. Talk to your local dealer or Ultrasonix Technical Support for details.</i>
	DICOM	Enable and configure DICOM Storage , Print and Worklist .
	Custom Keys	Set the Store , Print , Archive parameters for the console Custom Key buttons (1 , 2 and )
	Peripherals	Configure Peripherals : Paper Printer , LCD Display , VCR/Photo , Footswitch , (Image) Brightness/Contrast and Touch Screen settings.
	Display	Configure Appearance options for the LCD display.
	Patient	Customize entry of Patient information using a variety of options, including: show/hide fields, create new fields, allow/disallow editing of specific fields, and selection of gender and application defaults.
	Status Bar	Configure which Status Bar icons are visible on the LCD display.
	Capture	Configure Capture Settings for still images, video output and Cine loop storage.
	Imaging Modes	Configure a variety of Imaging Mode options including Split Imaging and Initial Active Display .
System Maintenance	Documentation	Add/Delete user documentation for viewing on the system Note: <i>All documents must be in PDF format.</i>
	Software Updates	Update system software via the Internet or a USB medium.
	Licensing	View and add License details.
	Service...	Access the Service Mode dialog.

Table 8-3: Service Settings Menu

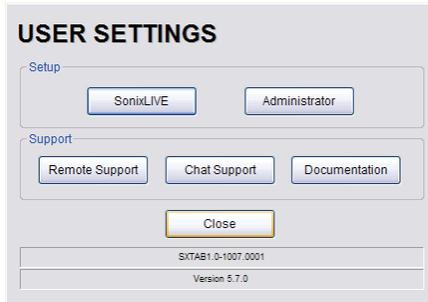
Service Settings	The system is delivered with this option under Password protection.
	Note: Only qualified Ultrasonix Medical Corporation service personnel can access this menu.

Note: Use the trackball and  button to close each menu and exit the menu system, one menu at a time. To exit the entire menu system in one step, press the console **Q** button.

Be sure to save whatever edits are in progress before exiting, otherwise changes may be lost.

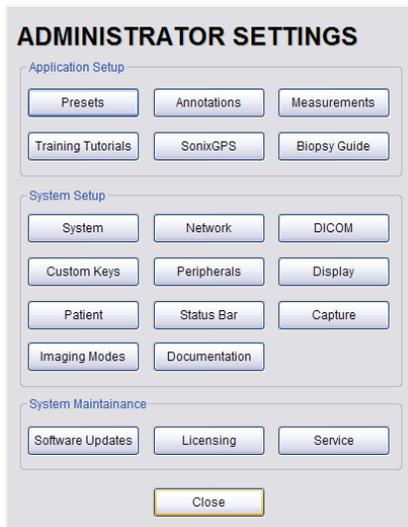
To Access the System Menus:

1. Press the console  button and the **User Settings** menu will be presented.



Note: The **Software Version** number is displayed on the **User Settings** menu.

2. From the **User Settings** menu, select **Administrator** to access **Administrator Settings**.



3. From the **Administrator Settings** menu, select **Service...** to access the **Service Mode** dialog.



Note: To exit the entire menu system in one step, press the console  button.

8.1 USER SETTINGS

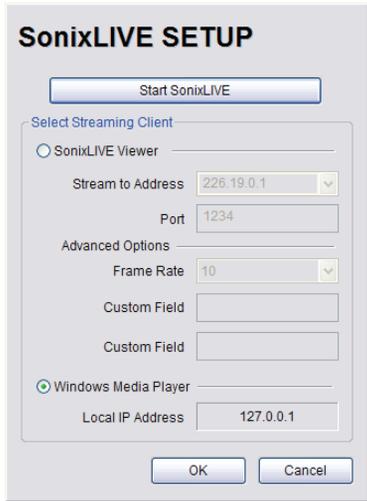
8.1.1 SonixLive Setup

SonixLive allows remote users to view live imaging as **Streaming Video** using **VLC Media Player** or **Windows Media Player (WMP)**. When both SonixLive and the **Status Bar** icon are activated and **Streaming Video** is underway, the SonixLive icon will appear on the imaging screen (refer to [8.2.17 Status Bar](#) for details on the SonixLive icon).

Note: Because **Streaming Video** may cause a noticeable decrease in overall system performance, Ultrasonix recommends activating SonixLive only when video streaming is required ([8.1.1.4 Activating/Deactivating SonixLive](#)).

The **VLC Media Player** is freeware available from VideoLAN. The Sonix system is delivered with the server-side software ready for use. Client-side software must be downloaded from the VideoLAN website. Refer to [8.1.1.1 SonixLive and VLC Media Player](#) for details on downloading and setup.

Figure 7-1: SonixLive Setup



SonixLIVE SETUP

Start SonixLIVE

Select Streaming Client

SonixLIVE Viewer

Stream to Address: 226.19.0.1

Port: 1234

Advanced Options

Frame Rate: 10

Custom Field:

Custom Field:

Windows Media Player

Local IP Address: 127.0.0.1

OK Cancel

Note: A **Network** connection ([8.2.11](#)) must be configured and active in order to use SonixLive.



Table 8-4: SonixLive Settings

		After configuring SonixLive (both for the Sonix system and the receiving PC), use Start/Stop SonixLive to ensure it is running only when necessary.	
Start/Stop SonixLive		Note: Because Streaming Video may cause a noticeable decrease in overall system performance, Ultronix recommends activating SonixLive only when video streaming is required.	
SonixLive Viewer	Stream to Address	Select from the drop-down menu (for multicasting) or type in the relevant Stream to IP Address of the client. Two (2) multicast IP Addresses are provided (226.19.0.1 and 226.19.0.2) for selection from the drop-down menu. If this is not sufficient, use an IP Address from the following range: 224.0.0.0 to 239.255.255.255 .	
	Port	The default Stream to Port (1234) should not need to be changed.	
	Advanced Option	Frame Rate	The default Frame Rate is 10 which should be sufficient for most applications. If the setting must be changed, select from the drop-down menu (1–20) or type in the relevant number.
		Custom Field Custom Field	Use these fields for VLC options, e.g., type of encoding.
Windows Media Player		Note: It is not possible to multicast (i.e., broadcast SonixLive to more than one client PC) with the Windows Media Player .	
	Local IP Address	This setting auto-completes using the system's Local IP Address . Note: A Network connection (8.2.11) must be configured and active in order for the Local IP Address to auto-complete.	

To Access SonixLive Settings:

1. Press the console  button.
2. Select SonixLive.

8.1.1.1 SonixLive and VLC Media Player

To Download the VLC Media Player Software for use on the Remote Computer:

Note: Each remote computer must have a configured copy of the **VLC** software.

1. Open the web browser and go to the website: <http://www.videolan.org/vlc/>.
2. Follow the links to download the most recent self-extracting Windows version of the **0.8.6** VLC software.

Note: The Sonix will only support remote viewing with the **VLC Media Player** on a PC running Windows XP.

*When planning to multicast, Ultrasonix recommends downloading the **VLC** software to a USB key to simplify the multi-PC installation process.*

To Install VLC Software on the Remote PC:

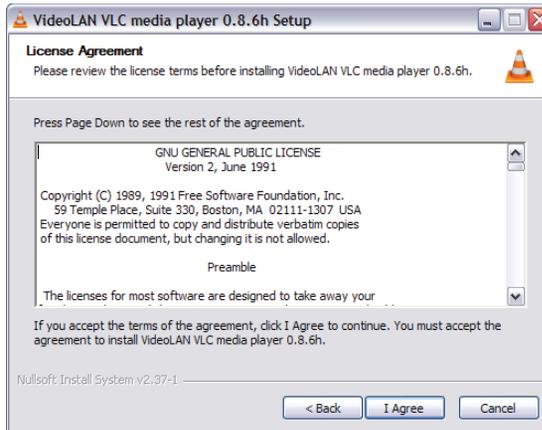
1. Open **Windows Explorer** and move to the directory containing the downloaded **VLC** software.
2. Open (or run) the self-extracting **VLC** installation software.
3. When prompted, select **English** as the **Installer Language** and select **OK**.



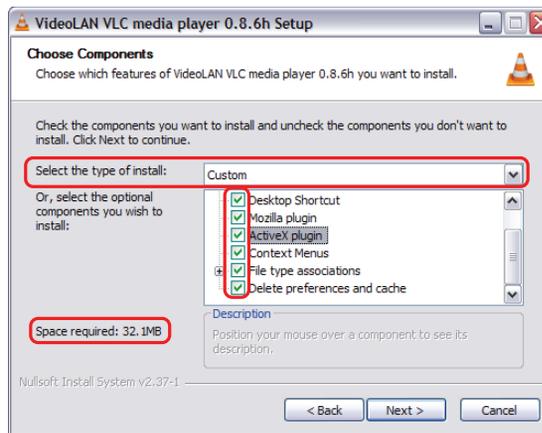
4. Select **Next** to continue past the **Welcome** screen.



5. Read the **License Agreement** and select **I agree** to continue.



6. On the **Choose Components** dialog, select **Custom** as the type of installation.



7. Select the checkboxes for all available optional components and select **Next**.

Note: Ensure the target PC has enough space to complete the installation.

8. Select **Install** to accept the default Destination Folder and begin the install.



Note: To change the **Destination Folder** location/name, select **Browse** and follow the instructions.

9. When the installation is done, select **Finish**.

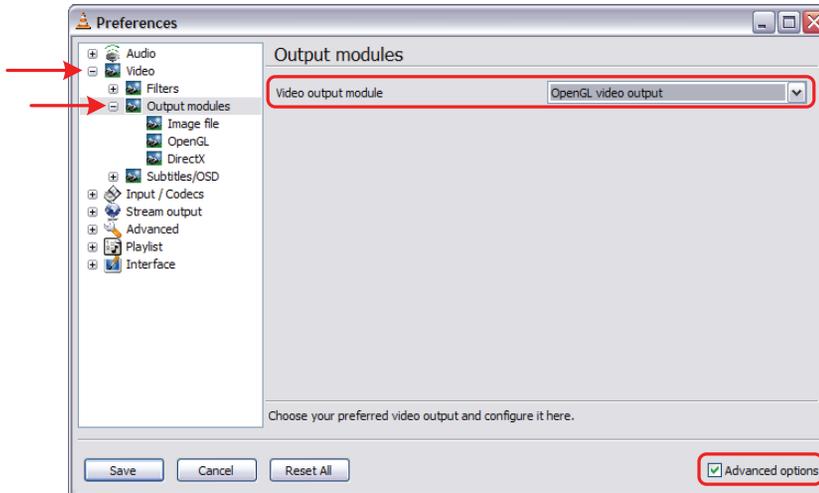


To Configure VLC Software on the Remote PC:

1. Launch the **VLC Media Player** software.
2. Select the **Settings** menu and select **Preferences....**

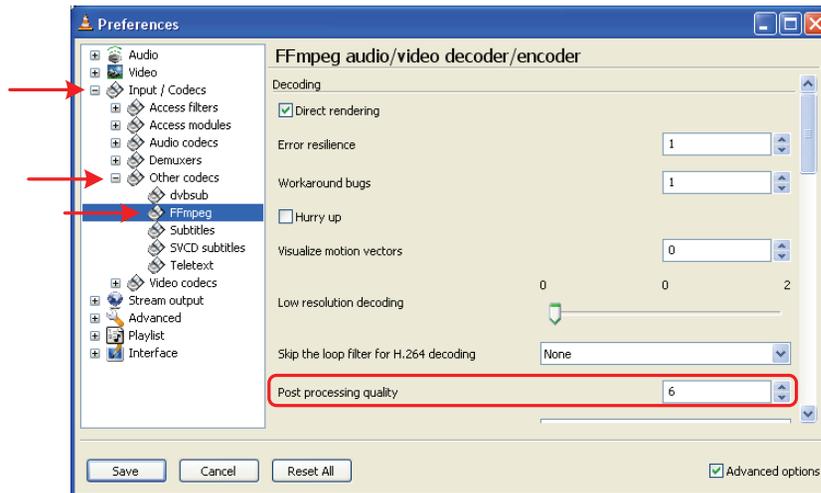


3. Select the + (plus) signs to expand **Video** and **Output modules**.



4. Select **Advanced options**.
5. From the **Video output module** drop-down menu select **OpenGL video output**.
6. Select the - (minus) sign to close **Output modules** and **Video**.

7. Select the **+** (plus) sign to expand **Input/Codecs** and **Other codecs**.

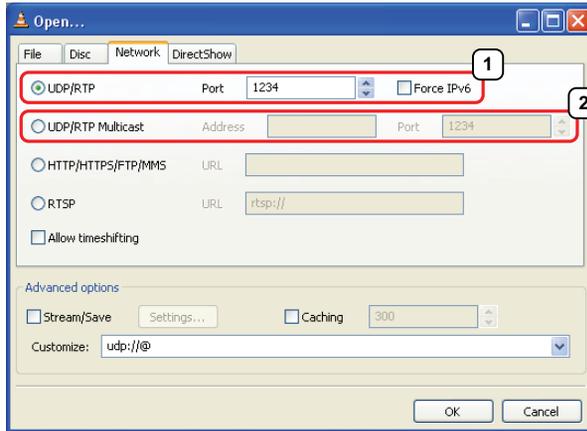


8. Select **FFmpeg**.
9. Set the **Post processing quality** field to **6**.
10. Select **Save**.
11. Select the **Open** button.



12. Select the **Network** tab.

13. Select the appropriate **UDP/RTP** radio button.



Note: For unicasting, select (1) **UDP/RTP**.

For multicasting, select (2) **UDP/RTP Multicast** and enter the multicast **IP Address** in the **Address** field.

14. Ensure the **Port** is set to **1234**.
15. Select **OK**.

To Configure SonixLive Streaming Video for VLC Media Player on the Sonix:

1. Press the console  button.
2. Select SonixLive.
3. Select the **SonixLive Viewer** radio button.
4. Select a **Stream to Address** from the drop-down menu or type one in using the keyboard.
5. If required, edit the **Frame Rate**.
6. Select the **Start** SonixLive button.

Note: Relevant message bubbles will be displayed whenever SonixLive is activated or deactivated.



The SonixLive icon will only be visible if it has been enabled (refer to [8.2.17 Status Bar](#) for more details).

7. Select **OK** to accept the changes or **Cancel** to exit without saving.

8.1.1.2 SonixLive and Windows Media Player

To Configure SonixLive Streaming Video for Windows Media Player on the Sonix:

1. Press the console  button.
2. Select SonixLive.
3. Select the **Windows Media Player** radio button.

Note: A **Network** connection (8.2.11) must be configured and active in order for the **Local IP Address** to auto-complete.

4. Select the **Start** SonixLive button.

Note: Relevant message bubbles will be displayed whenever SonixLive is activated or deactivated.



The SonixLive icon will only be visible if it has been enabled (refer to 8.2.17 Status Bar for more details).

5. Select **OK** to accept the changes or **Cancel** to exit without saving.

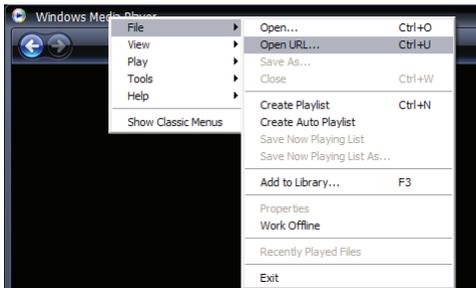
To Configure SonixLive Streaming Video for the Windows Media Player on the Remote Computer:

Note: Be sure to have the **SonixLive IP Address** handy before beginning this process.

1. After turning on the remote computer, open the **Windows Media Player** program.



2. With the cursor in the **Title Bar**, right click and select **File > Open URL....**



3. In the **Open URL** dialog, enter the **SonixLive IP Address** followed by :8080. For example, if the relevant **IP Address** is 127.0.0.1, type in `http://127.0.0.1:8080`.



4. Select the **OK** button and the SonixLive video stream will be displayed in the **Windows Media Player**.

8.1.1.3 SonixLive Status Bar Settings

Status Bar settings apply to both the **VLC** and **Windows Media Players**.

Note: Refer to [8.2.17 Status Bar](#) for more details on **Status Bar** settings.

To Configure SonixLive Status Bar Settings:

1. Press the console  button.
2. Select **Administrator > Status Bar**.



3. Select the SonixLive and **SonixLive IP Address** options.

Note: Selecting the **SonixLive IP Address** will write the actual **IP Address** to the LCD display. If privacy/security is a concern, do not select this option. To determine the relevant **IP Address**, refer to the **Local IP Address** field in [8.2.11 Network](#).

4. Select **OK** to accept the changes or **Cancel** to exit without saving.



8.1.1.4 Activating/Deactivating SonixLive

To Activate/Deactivate SonixLive:

Note: Before activating SonixLive, be sure to:

- install/configure the relevant media player settings ([8.1.1.1](#) or [8.1.1.2](#))
 - enable SonixLive ([8.2.17 Status Bar](#)).
-

1. Press the console  button.
2. Select SonixLive.
3. Select the **Start/Stop** SonixLive button.

Note: Relevant message bubbles will be displayed whenever SonixLive is activated or deactivated.



The SonixLive icon will only be visible if it has been enabled (refer to [8.2.17 Status Bar](#) for more details).

4. Select **OK** to accept the changes or **Cancel** to exit without saving.

8.1.2 Remote Support

Remote Support is a licensed option that allows a member of the Ultrasonix Technical Support to view and control the system for diagnostic purposes.

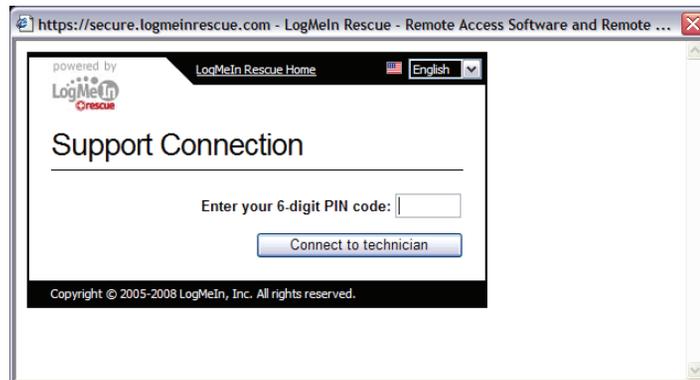
In order to use **Remote Support**, the **Network** must be configured ([8.2.11 Network](#)) and a **PIN** (**Personal Identification Number**) must be obtained from Ultrasonix Technical Support.

Note: *The PIN is valid for 20 minutes only, so be sure to use it right away.*

Remote Support can also be accessed from **QSonix**. Refer to [3.4](#) for details.

To Access Remote Support:

1. Press the console  button.
2. Select **Remote Support**.



Note: *If Remote Support does not appear to be available, contact your IT Department and have them check to make sure the network connection is active and the **Remote Support** option has been configured for use.*

3. Enter the **PIN** (**Personal Identification Number**) provided by Ultrasonix Technical Support.

Note: *The PIN is valid for 20 minutes only, so be sure to use it right away.*

4. When prompted, select **Download > Run > Run** in order to install the required programs.
5. The system can now be remotely controlled.



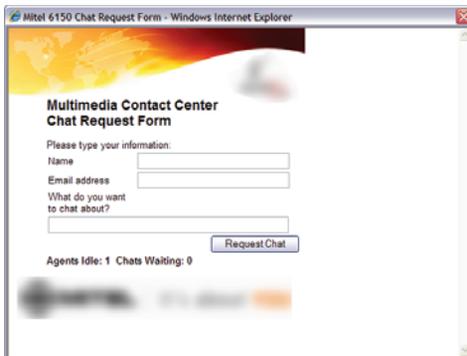
8.1.3 Chat Support

Chat Support enables a real-time discussion with a member of the Ultronix Technical Support team. In order to use **Chat Support**, it must first be configured in [8.2.11 Network](#).

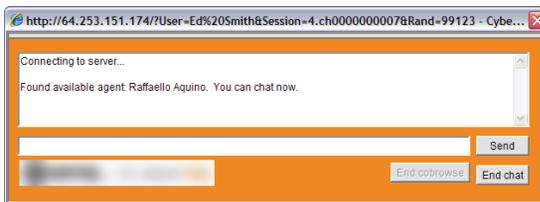
Note: If **Chat Support** is not available, contact the IT Department and have them check to ensure the network connection is active and that **Chat Support** has been configured for use ([8.2.11.3](#)).

To Access Live Chat Support:

1. Press the console  button.
2. Select **Chat Support...**



3. If an **Agent** is logged on, use the keyboard to complete the **Chat Request Form**.
4. Select **Request Chat**, then wait while the system connects to the server.
5. When the message **Found available Agent:...** is presented, use the keyboard to enter the inquiry in the **Send** line.



6. Select **Send** to post the message.
7. Select **End Chat** when the chat is complete.
8. Select **Yes** to continue.



8.2 ADMINISTRATOR SETTINGS

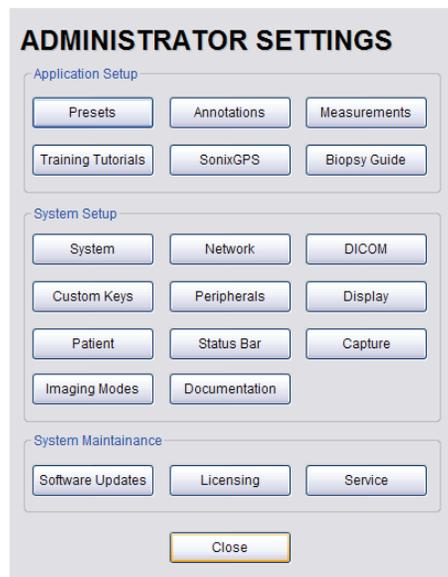
Administrator Settings allow the system administrator to configure high level **Application** and **System** settings as well as perform certain **System Maintenance** functions.

Typically, the **System** parameters are set during initial installation and only require limited access and adjustment. By default, **Administrator Settings** are not delivered with an active **Password**, however, at their discretion, each institution has the option to apply **Password** protection (8.2.10.1).



Warning: *Application parameters should be configured by a qualified medical practitioner.*

Figure 8-2: Administrator Settings Menu



To Access Administrator Settings:

1. Press the console  button.
2. Select **Administrator** to access the **Administrator Settings** menu.

8.2.1 Presets

Presets Setup enables users to manage factory default and user-defined **Imaging Presets**.

Each **Preset** can be selected/deselected via the **Presets Setup** options. Refer to [8.2.1.1 Show/Hide Imaging Presets](#) for details on hiding **Presets**.

Notes:

Only the active transducer tree will be expanded upon entry to **Presets Setup**.

3D/4D Presets are controlled from within **3D/4D Mode**.

Figure 8-3: Presets Setup

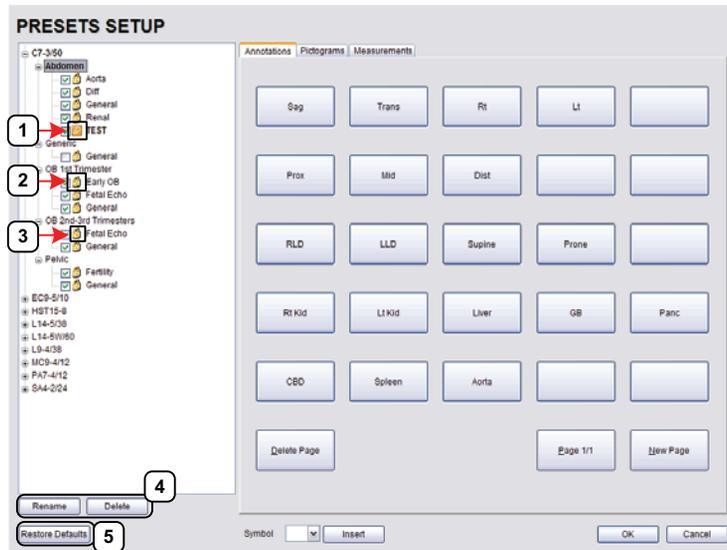


Table 8-5: Presets Setup

1	Key Icon	
2	Lock Icon	
3	Preset Checkbox	
4	Rename and Delete	Note: <i>Rename</i> and <i>Delete</i> are only available if a user-defined Preset has been selected.
5	Restore Defaults	Caution: <i>Restore Defaults</i> restores all Presets Setup changes to their factory settings.

Default settings are locked (as indicated by the lock icon adjacent to the **Preset** name). Additional user-definable aspects of the default settings are available through the three (3) tabs on the **Presets Setup** page: **Annotations**, **Pictograms** and **Measurements**.

User-defined **Presets** are marked with a key icon. These cannot be locked.

The left hand menu displays all currently available **Presets**, both default and user-defined. Each **Application** is delivered with at least one default **Preset**.

To Access the Presets Setup Page:

1. Press the console  button.
2. Select **Administrator > Presets**.

To Rename a Previously Created User-Defined Preset:

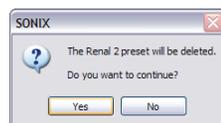
1. Press the console  button.
2. Select **Administrator > Presets**.
3. Select the user-defined **Preset** to be renamed.
4. Select the **Rename** button.
5. Type a new, unique name in the **Rename Preset** message box.



6. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

To Delete a User-Defined Imaging Preset:

1. Press the console  button.
2. Select **Administrator > Presets**.
3. Select  the user-defined **Preset** to be deleted.
4. Select the **Delete** button.
5. Select **Yes** to confirm the deletion or **No** to cancel the operation.



Note: The message will specify the name of the user-defined **Preset** selected for deletion.



8.2.1.1 Show/Hide Imaging Presets

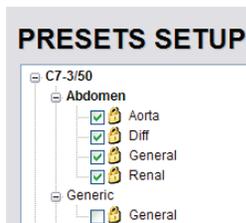
Preset availability can be controlled using its associated checkbox. When selected, as indicated by the presence of the green checkmark, the **Preset** will be available from both the touch screen and **QSonix** (providing the applicable transducer is connected).

To hide **Presets** on the touch screen and in **QSonix**, all versions of that **Preset** must be deselected (i.e., deselect every Preset of the same name under every Application for every transducer).

Note: *The show/hide function applies to both default and user-defined Presets.*

To Show/Hide Imaging Presets:

1. Press the console  button.
2. Select **Administrator > Presets**.
3. Select/deselect the relevant checkboxes.



Note: *Deselecting **General** under **C5-2/60-Abdomen** will only hide the **General Preset** when **Abdomen** is selected for the **C5-2/60** transducer.*

*Deselecting **General** under **Abdomen** for all applicable transducers will hide that **Preset** from view on both the touch screen and in **QSonix**.*

4. Select **OK** to accept the changes or **Cancel** to exit without saving.

8.2.2 Presets – Annotations

The ability to manipulate the text of a specific **Annotation** attached to either a user-defined or default **Presets** is handled through the **Annotations** tab on the **Presets Setup** page. **Annotation** text appears by **Application** on the console touch screen.

Note: Refer to 8.2.5 for details on global **Annotation** settings.

Figure 8-4: Presets Setup – Annotations

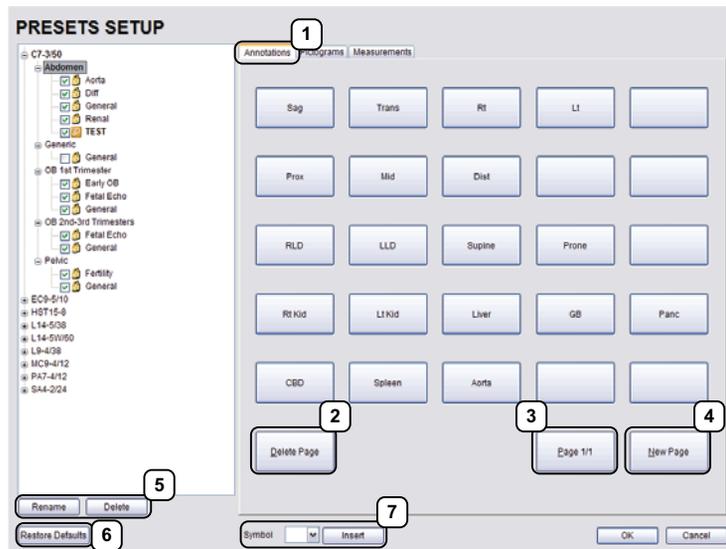


Table 8-6: Presets Setup – Annotations

1	Annotations Tab	
2	Delete Page	
3	Page Selector	
4	New Page	
5	Rename and Delete	Note: Rename and Delete are only available if a user-defined Preset has been selected.
6	Restore Defaults	Caution: Restore Defaults restores <u>all</u> Presets Setup changes to their factory settings.
7	Insert (Symbol)	

Note: The order in which **Annotations** are presented is matched on the touch screen during **Text entry (7.1 Text and Annotations)**.



8.2.2.1 Modify Annotations

Changes can only be made to the **Annotations** of one **Exam Type/Application** at a time. Additionally, the system allows users to define/change the **Home Position** for the **Annotation** cursor. Once set, whenever the **Home Position** touch screen button is tapped, the **Text** cursor will move directly to that spot.

Note: Refer to [7.1.1 Set Text Home Position](#) to define the **Text/Annotation** cursor **Home Position**.

To Modify a Preset's Annotations:

1. Press the console  button.
2. Select **Administrator > Presets**.
3. Highlight the relevant **Preset** from the left hand menu.
4. Select  the relevant **Annotation** space on the right hand side of the LCD display.
5. Use the console keyboard to type in the new **Annotation**.

Note: If multiple pages of **Annotations** are required, select the **New Page** button as often as necessary to create the desired number of **Annotation** spaces.

Alternatively, if multiple pages already exist, move through them using the onscreen page selection button, making changes as required.

6. Press **ENTER** on the keyboard to accept the changes or **ESC** to delete the entry.

8.2.3 Presets – Pictograms

The ability to attach/detach specific **Pictograms** to both user-defined and default **Presets** is handled via the **Pictograms** tab in **Presets Setup**. Re-ordering the sequence in which they will appear on the touch screen during a scanning session is managed here as well.

Figure 8-5: Presets Setup – Pictograms

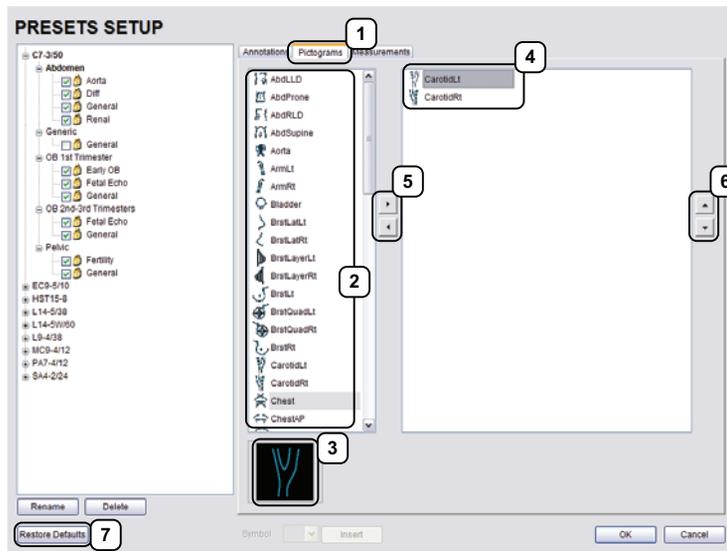


Table 8-7: Presets Setup – Pictograms

1	Pictograms Tab
2	List of available Pictograms
3	List of Pictograms attached to the selected Preset
4	Selected Pictogram
5	Pictogram Selectors
6	Pictogram Order Selectors
7	Restore Defaults
	Caution: Restore Defaults restores <u>all</u> Presets Setup changes to their factory settings.



8.2.3.1 Modify the Pictograms Attached to Presets

To Add Pictograms to an Imaging Preset:

1. Press the console  button.
2. Select **Administrator > Presets**.
3. On the **Presets Setups** page, select the **Pictograms** tab.
4. Highlight the relevant **Preset** in the left hand column.
5. From the list of available **Pictograms**, highlight the relevant **Pictogram**.
6. Use the right facing selector button to move the item to the list of selected **Pictograms**.
7. Repeat [step 5](#) and [step 6](#) as many times as required.
8. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

To Delete Pictograms from an Imaging Preset:

1. Press the console  button.
2. Select **Administrator > Presets**.
3. On the **Presets Setups** page, select the **Pictograms** tab.
4. Highlight the relevant **Preset** in the left hand column.
5. Highlight the relevant **Pictogram** in the list of selected **Pictograms**.
6. Use the left facing selector button to delete the item from the list of selected **Pictograms**.
7. Repeat [step 5](#) and [step 6](#) as many times as required.
8. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

To Reorder Selected Pictograms Attached to an Imaging Preset:

1. Press the console  button.
2. Select **Administrator > Presets**.
3. On the **Presets Setups** page, select the **Pictograms** tab.
4. Highlight the relevant **Preset** in the left hand column.
5. Highlight the relevant **Pictogram** in the list of selected **Pictograms**.
6. Use the order (up/down) selector buttons to move the item to another place in the list of selected **Pictograms**.
7. Repeat [step 5](#) and [step 6](#) as many times as required.
8. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

8.2.4 Presets – Measurements

Based on *Exam Type*, **Presets – Measurements** allows users to select/deselect the available touch screen **Measurement Package** options. It also enables users to edit the default imaging **Measurement Package** for a specific *Exam Type*.

Figure 8-6: Presets – Measurements

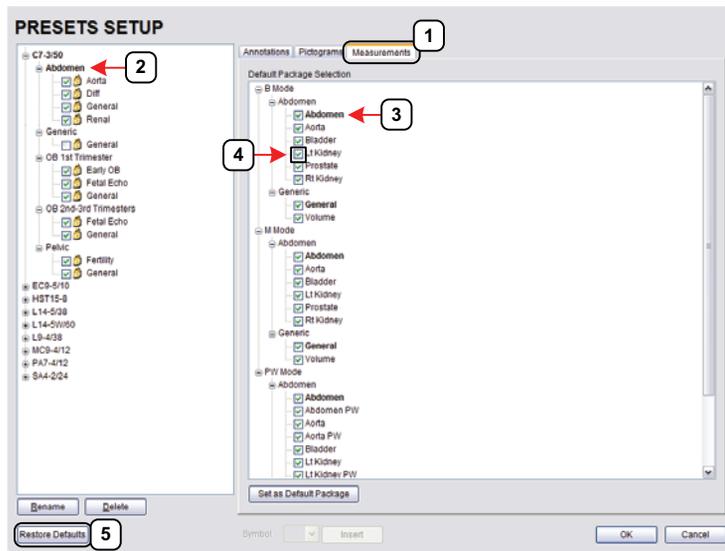


Table 8-8: Presets – Measurements

1	Measurements Tab
2	Exam Type
3	Default Imaging Measurements Package (labelled in bold face type)
4	Measurements checkbox
5	Restore Defaults

Caution: Restore Defaults restores all Presets Setup changes to their factory settings.



8.2.4.1 Modify the Available Touch Screen Measurements Packages

To Edit the List of Measurements Packages Available on the Touch Screen:

1. Press the console  button.
2. Select **Administrator > Presets**.
3. On the **Presets Setups** page, select the **Measurements** tab.
4. Highlight the relevant **Exam Type** in the left hand column.
5. From the available **Default Package Selection** list, select/deselect the checkbox for the relevant **Measurements Package**.
6. Repeat [step 4](#) and [step 5](#) as many times as required.
7. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

To Edit the Default Touch Screen Measurements Package:

1. Press the console  button.
2. Select **Administrator > Presets**.
3. On the **Presets Setups** page, select the **Measurements** tab.
4. Highlight the relevant **Exam Type** in the left hand column.
5. From the available **Default Package Selection** list, highlight the desired **Measurements Package**.
6. Select the **Set as Default Package** button.
7. Repeat [step 5](#) and [step 6](#) as many times as required.

Note: *There can be only one (1) default Measurements Package for each Exam Type.*

8. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

8.2.5 Annotations

There are five (5) global **Annotation** settings available.

Figure 8-7: (Global) Annotations Settings

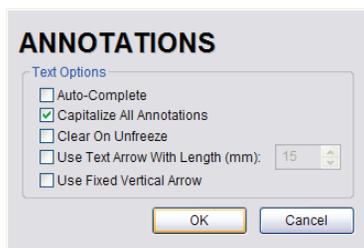


Table 8-9: (Global) Annotation Settings

Auto-Complete	Select to automatically fill in a word when the first letter(s) is entered on the LCD display. If more than one Preset begins with the same letter use the Tab key to move through the list or continue typing the Preset name. When enough of the name has been completed in order to jump to the correct entry, the desired Preset name will appear onscreen and can be selected.
Capitalize All Annotations	Select to automatically force the first letter of each word in the Annotation to be typed as an upper case character.
Clear on Unfreeze	Select to automatically clear the Annotations from the image field with unFREEZE. If this option is not selected, the text will remain on the image field until the user deletes it.
Use Text Arrow with Length (mm)	Select to override the standard system Text Arrow . This enables the user to define the Text Arrow length in mm. The range is 5–30 mm with a default setting of 15 mm.
Use Fixed Vertical Arrow	Select to override the standard system Text Arrow with an arrow that is always in a vertical position. When selected, this arrow will use the length setting from the previous field (Use Text Arrow with Length (mm)).

To Access the Global Annotation Settings Dialog:

1. Press the console  button.
2. Select **Administrator > Annotations**.

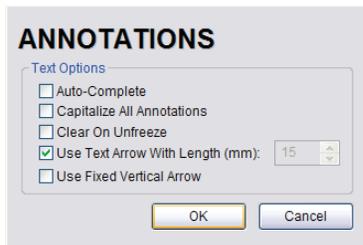
Note: Refer to [8.2.2 Presets – Annotations](#) for details on configuring **Preset-specific Annotations**.



8.2.5.1 Text Arrow Customization

To Customize the Text Arrow:

1. Press the console  button.
2. Select **Administrator > Annotations**.
3. Select **Use Text Arrow with Length (mm)**.



4. Enter the appropriate **Length** in millimeters.
5. Select **OK** to accept the setting and exit or **Cancel** to exit without saving.

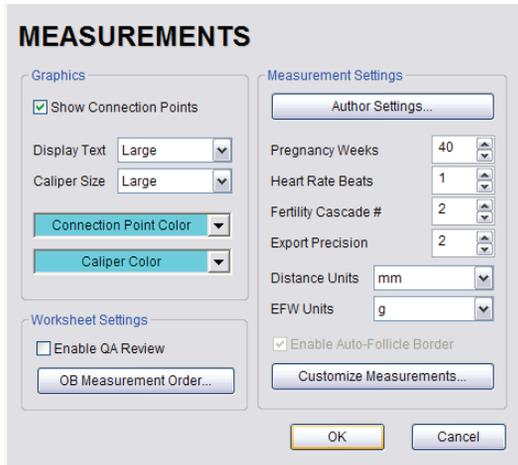
8.2.6 Measurements

The **Measurements** dialog enables users to customize the onscreen appearance of calipers, caliper labels and certain display details of the measurement/calculation packages. When the touch screen **Measure** button is pressed, **Measurements** are available on the touch screen based on clinical **Application**.

Users are also able to create customized **Measurement Packages** (8.2.6.3 Managing Custom Measurements).

Note: It is not possible to edit factory-installed **Measurement Packages**.

Figure 8-8: Measurements Settings




Warning: Ultrasonix does not endorse user-defined **Measurements, Calculations and Tables** for diagnostic purposes. All user-defined **Measurements, Calculations and Tables** are used at the **Operator's** discretion and risk only.

Table 8-10: Measurement Options

Graphics	Show Connection Points	Select to display the connection points (dotted line) between the linear calipers.
	Display Text	Allows the selection of one (1) of three (3) measurement label font size options: Small , Medium and Large .
	Caliper Size	Allows the selection of one (1) of three (3) caliper size options: Small , Medium and Large .
	Connection Point Color	Allows the selection of the color of the caliper connection points (dots) between the linear calipers. The default is turquoise.
	Caliper Color	Allows the selection of the color of the caliper end points. The default is turquoise.
	<p>Caution: Some caliper sizes/colors, font sizes or dot colors may not appear clearly on the image screen, stored image or printed/recorded image. To ensure clear visualization of the caliper, label font and connection points, Ultrasonix recommends setting the caliper graphics to at least Medium.</p> <p>Note: To ensure the caliper modifications have been activated, switch imaging modes after exiting the Setup menus.</p>	
Worksheet Settings	Worksheet Settings apply to the Report Worksheet .	
	Enable QA Review	Appends editable Billing and QA Review fields to all Reports . Note: Any Report/Worksheet opened/created during/prior to this setting being selected will not include the Billing and QA options.
	OB Measurement Order...	Allows user to change the order in which OB Measurements are presented on the touch screen, in a Worksheet (onscreen) and in a Report (printed). OB Measurements available for reordering are: BPD, OFD, HC, AC, FL, HL, GS, CRL, NT, YS, CxLength, UL, TL, TTD, CEREB, APTD, FTA, FHR, Umb A, Umb A-PI, MCA and MCA-PI . Note: Refer to Appendix H: Glossary for details on these acronyms.
Measurement Settings	Author Settings...	Refer to Appendix F for a complete list of Author Settings . Note: It is not possible to create user-defined Cardiac tables, nor can factory default tables be modified or deleted.
	Pregnancy Weeks	Defines the number of weeks used to calculate the EDD based on LMP . Range: 35–45 weeks.
	Heart Rate Beats	Number of beats used to measure the HR and FHR on an M-Mode and Doppler Trace . Range: 1–7 beats.
	Fertility Cascade #	Defines the number of times the user must repeat a follicle measurement before the system automatically moves to the next follicle. Range: 1–3 measurements.
	Export Precision	Sets the decimal placement for some types of third party reporting packages. Range: 0–6. The default is 2 decimal places.



Measurement Settings – cont'd	Distance Units	Unit used to display Distance calculation: Use default, μm, cm, in, m or mm. <hr/> Caution: Changing Distance Units during an exam will result in anomalous measurement labeling. <hr/> Note: Use default will use the default set on a per measurement basis in Customize Measurements...
	EFW Units	Unit used to display EFW calculation: g, kg, lbs or oz.
	Enable Auto-Follicle Border	Draws a border around the edges of an Auto-Follicle measurement. By default, this setting is disabled. <hr/> Note: Auto-Follicle is only available on the SonixTouch and will only be accessible if the Auto-Follicle package has been licensed.
	Customize Measurements...	Enables the user to make the following changes to measurements: <ul style="list-style-type: none"> • create custom Measurement Packages and Measurements • re-order Measurements • show/hide Applications, Measurement Packages and Measurements for the Display/Touch Screen, Worksheet or Report. <hr/> Note: A Measurement must be performed in order to appear on the Worksheet or Report .
		Warning: <i>Ultronix does not endorse user-defined Measurements, Calculations and Tables for diagnostic purposes. All user-defined Measurements, Calculations and Tables are used at the Operator's discretion and risk only.</i>

To Access Measurement Settings:

1. Press the console  button.
2. Select **Administrator > Measurements**.



To Configure Measurement Graphics:

1. Press the console  button.
2. Select **Administrator > Measurements**.
3. Configure the **Graphics** settings as required: **Show Connection Points**, **Display Text**, **Caliper Size**, **Connection Point Color** and **Caliper Color**.
4. Select **OK** to accept the settings and exit or **Cancel** to exit without saving.

To Configure Basic Measurement Settings:

1. Press the console  button.
2. Select **Administrator > Measurements**.
3. Configure **Pregnancy Weeks**, **Heart Rate Beats**, **Fertility Cascade #**, **Export Precision**, **Distance Units** and **EFW Units** as required.
4. Select **OK** to accept the settings and exit or **Cancel** to exit without saving.

Note: Refer to [8.2.6.3](#) for details on **Customizing Measurements**.

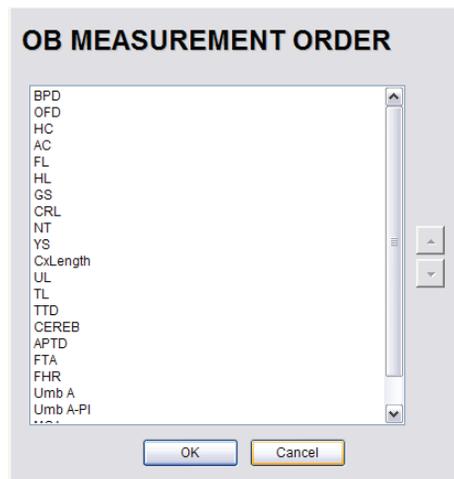
8.2.6.1 Managing Worksheet Settings

To Enable QA Review Details in Reports/Worksheets:

1. Press the console  button.
2. Select **Administrator > Measurements**.
3. Under **Worksheet Settings**, select the **Enable QA Review** checkbox.

To Configure OB Measurement Order:

1. Press the console  button.
2. Select **Administrator > Measurements > OB Measurement Order...**
3. Select an **OB Measurement**.
4. Select the up or down selector button to move the **OB Measurement** to the desired position.



5. Repeat **step 3** and **step 4** as often as necessary to re-order the **OB Measurements** as required.
6. Select **OK** to accept the settings and exit or **Cancel** to exit without saving.

8.2.6.2 Show/Hide Applications, Measurement Packages and Measurements

The manner in which the show/hide options are applied have consequences for the availability of **Applications**, **Measurement Packages** and **Measurement** and/or the way in which **Measurement** data is saved:

- hiding an **Application** ensures that the **Application** cannot be accessed/viewed from within the measurement function (i.e., it will not be visible—and therefore not selectable—on the LCD display or the touch screen)
- hiding a **Measurement Package** ensures the **Measurement Package** cannot be used (i.e., it will not be visible—and therefore not selectable—on the LCD display or the touch screen)
- leaving a **Measurement** available on the LCD display and touch screen and selecting only **Visible in Report** ensures it can be used but cannot be viewed on the **Worksheet** during the exam. It will, however, be printed on the **Report**
- leaving a **Measurement** available on the LCD display and touch screen and selecting only **Visible in Worksheet** ensures it can be used and viewed on **the** Worksheet during the exam. It will not, however, be printed on the **Report**.

Note: The last two (2) options apply only to Measurements, not Measurement Packages.

Show/hide options apply to both factory-installed and customized measurements.

Figure 8-9: Customize Measurements

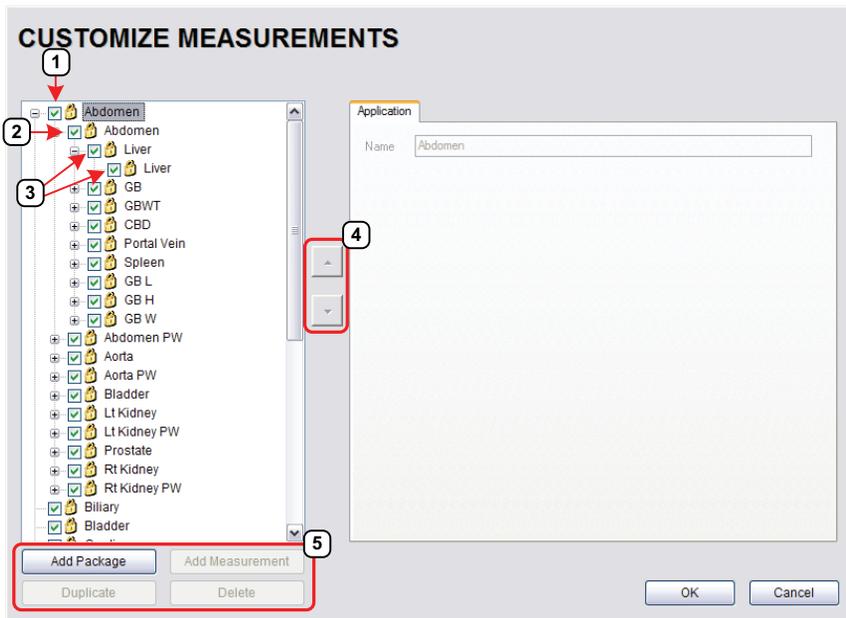
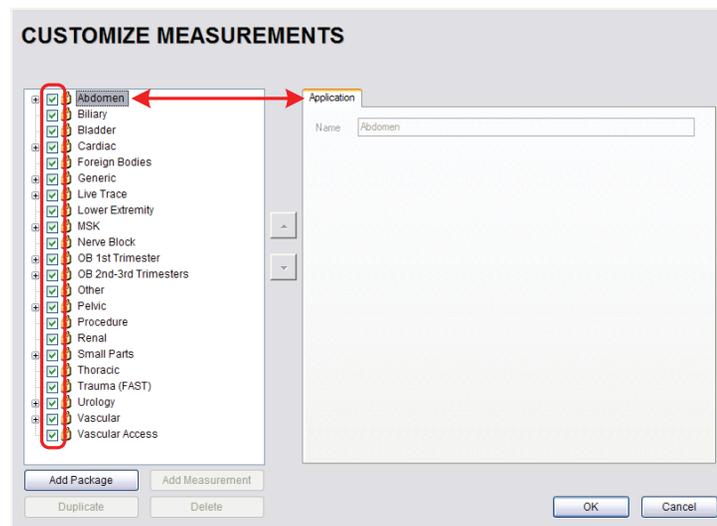


Table 8-11: Customize Measurements

1	Application Checkbox
2	Measurement Package Checkbox
3	Measurement Checkboxes
4	Measurement Selectors
5	Action Buttons

To Show/Hide Applications:

1. Press the console  button.
2. Select **Administrator > Measurements > Customize Measurements....**
3. To show/hide an **Application** on the LCD display and touch screen (within the measurement function) select/deselect the **Application** checkbox.

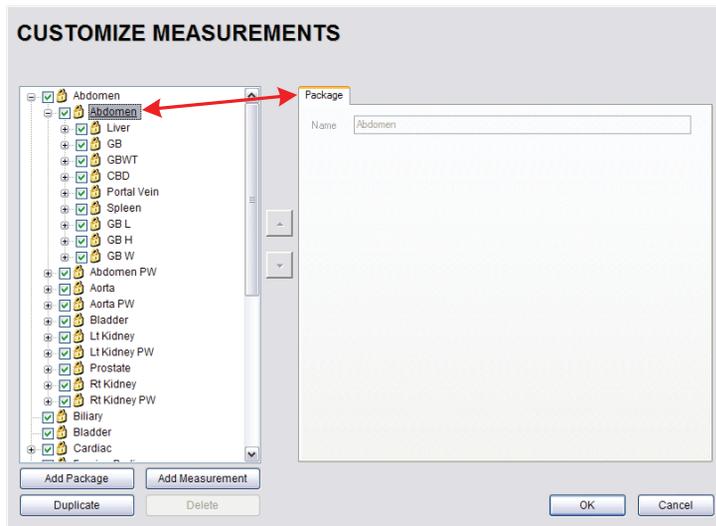


4. Repeat [step 3](#) as many times as required.
5. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.



To Show/Hide Measurement Packages:

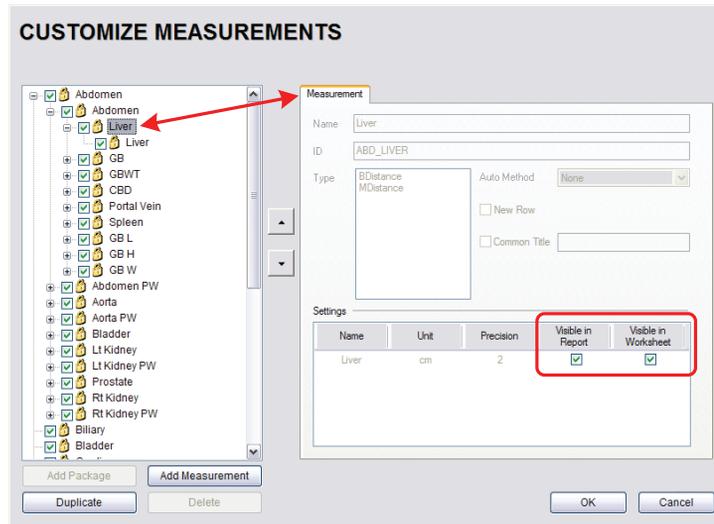
1. Press the console  button.
2. Select **Administrator > Measurements > Customize Measurements...**
3. Expand the relevant **Application** tree by selecting the appropriate plus (+) sign (e.g., select the plus (+) sign next to **Abdomen**).
4. To show/hide a **Measurement Package** on the LCD display and touch screen select/deselect the relevant **Measurement Package** checkbox.



5. Repeat **step 3** and **step 4** as many times as required.
6. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

To Show/Hide Measurements:

1. Press the console  button.
2. Select **Administrator > Measurements > Customize Measurements....**
3. Expand the relevant **Application** tree by selecting the appropriate plus (+) sign (e.g., select the plus (+) sign next to **Abdomen**).



4. Select a measurement from within the **Measurement Package** and the **Visible in Report** and **Visible in Worksheet** options will be presented on the right side of the dialog.
5. Select the appropriate checkbox(es): **Visible in Report** and/or **Visible in Worksheet**.

Name	Unit	Precision	Visible in Report	Visible in Worksheet
Liver	cm	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Note: Additional options will be available for user-created **Measurements**. Refer to [8.2.6.3 Managing Custom Measurements](#) for more details.

6. Repeat **step 3** to **step 5** as many times as required.
7. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.



8.2.6.3 Managing Custom Measurements

Use **Customize Measurements...** to add/edit/delete user-defined (custom) measurements and **Measurement Packages**.

Figure 8-10: Customize Measurements

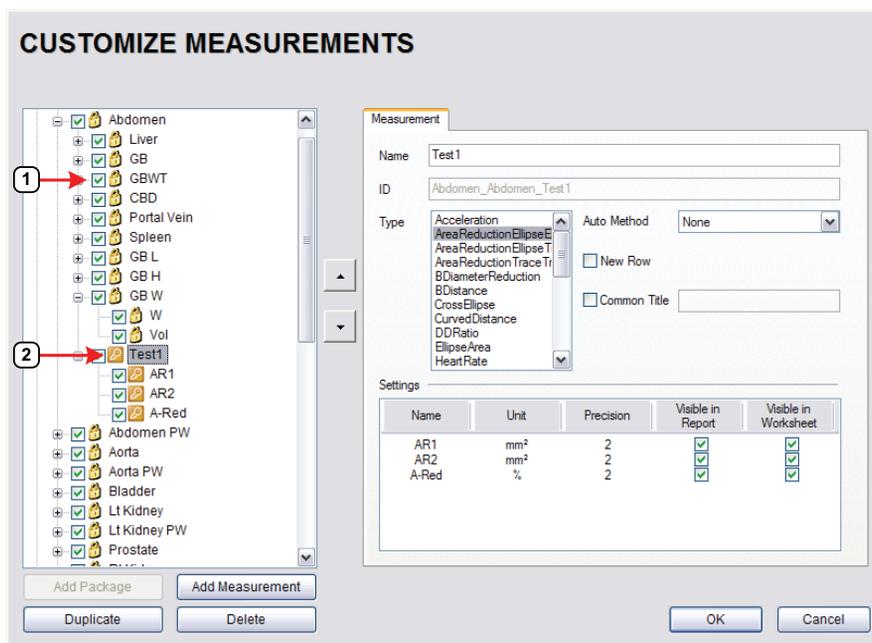


Table 8-12:

- 1 Lock Icon
- 2 Key Icon

Default or factory-installed **Measurement Packages** and **Measurements** are locked (as indicated by the associated lock icon) and cannot be edited or deleted.

Customized **Measurements** are marked with a key icon indicating that are user-created and can be edited or deleted.



Warning: Ultrasonix does not endorse user-defined **Measurements**, **Calculations** and **Tables** for diagnostic purposes. All user-defined **Measurements**, **Calculations** and **Tables** are used at the **Operator's** discretion and risk only.

Note: As it is not possible to edit/delete default **Measurement Packages**, follow the instructions in 8.2.6.2 to hide any unwanted packages from view/use.

Table 8-13: Customize Measurement Options

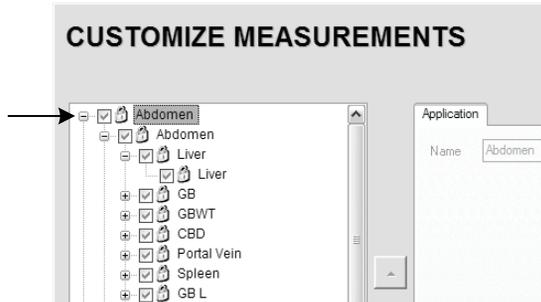
Name	<p>The Name of the custom measurement.</p> <hr/> <p>Note: Place the cursor in this field and use the touch screen keyboard to enter a new Name.</p>
ID	<p>This is not an editable field. Data in this field is auto-populated and is for information purposes only.</p>
Type	<p> <i>Acceleration</i> <i>AreaReductionEllipseEllipse</i> <i>AreaReductionEllipseTrace</i> <i>AreaReductionTraceTrace</i> <i>BDiameterReduction</i> <i>BDistance</i> <i>CrossEllipse</i> <i>CurvedDistance</i> <i>DDRatio</i> <i>EllipseArea</i> <i>HeartRate</i> <i>HipAngle</i> <i>MDiameterReduction</i> <i>MDistance</i> <i>Pisa</i> <i>PointsArea</i> <i>PointsSpectrum</i> <i>RectArea</i> <i>RTSA</i> <i>SimpsonsTrace</i> <i>SpectrumRange</i> <i>Time</i> <i>TimeSlope</i> <i>TraceArea</i> <i>TraceAreaSolid</i> <i>TraceSpectrum</i> <i>Velocity1</i> <i>Velocity2</i> </p> <p>Selecting a pre-defined measurement Type will populate the Type attributes—which can be edited within pre-determined parameters.</p> <p>Once a Type has been selected, any attempt to change that Type for the specified measurement will result in an overwrite confirmation message.</p>



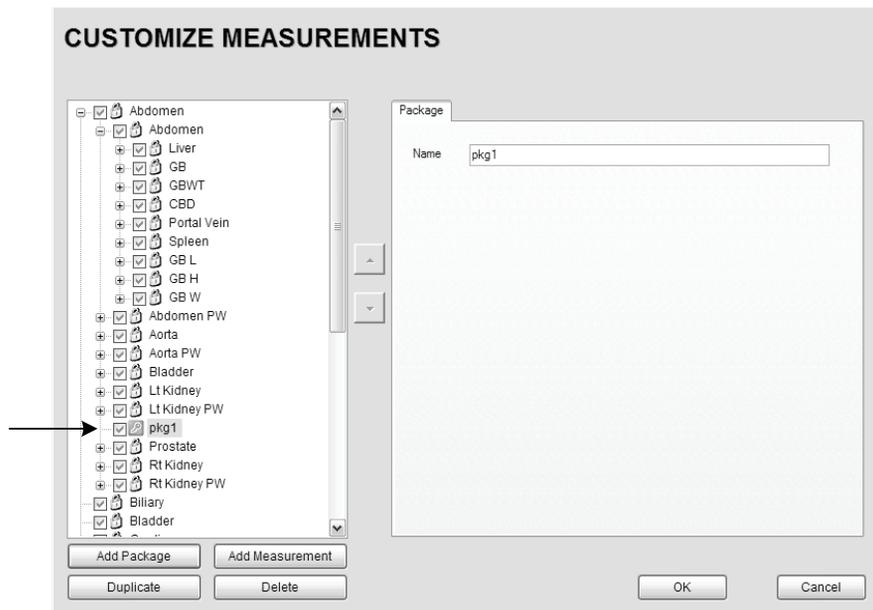
Auto-Method	Auto-Method refers to manner in which the system automatically cycles through measurements.
	None There is no pre-selected measurement/caliper auto-selection method.
	Next Measurement When measuring something that requires multiple measurements to create the final measurement (e.g., L , H , W to capture a Volume measurement) this method will automatically move to the next required measurement as each measurement is completed.
	Repeat Measurement Use to keep taking the selected measurement over and over until a new measurement is manually selected on the touch screen.
	Place Caliper for Next Mmt Use to force the system to move sequentially through the measurement options once the first measurement is taken. The first caliper for each sequential measurement will be placed automatically. Note: This option is for Cardiac only.
New Row	Forces the measurement to wrap to a New Row on the Measurement Packages touch screen.
Common Title	To group a series of measurement together, give each of the relevant measurements a Common Title . For example, under Abdomen , Abdomen , the three (3) measurements GB L , GB H and GB W , each have the Common Title , GB Vol indicating that these three (3) separate measurements actually form a single measurement: GB Volume .
Settings	Name Options available for the Type chosen (above). If desired, rename the measurement.
	Unit Measurement options available for the Type/Name chosen. Note: The Unit option is dependant upon the combination of the Type and Name. For example, In and Out Unit options for BDiameterReduction are cm, m, mm, in, ft and µm. But the D-Red Unit options for the same Type are % and ratio.
	Precision Defines the number of decimal places included in a given measurement result.
	Visible in Report Determines whether or not a measurement will be included in a Report . Refer to 8.2.6.2 for more details.
	Visible in Worksheet Determines whether or not a measurement will be included in a Worksheet . Refer to 8.2.6.2 for more details.

To Add a Custom Measurement Package:

1. Press the console  button.
2. Select **Administrator > Measurements > Customize Measurements....**
3. Expand the relevant **Application** tree by selecting the appropriate plus (+) sign (e.g., select the plus (+) sign next to **Abdomen**).



4. Select the **Add Package** button and **pkg1** will be added (alphabetically) to the list of **Measurement Packages**.

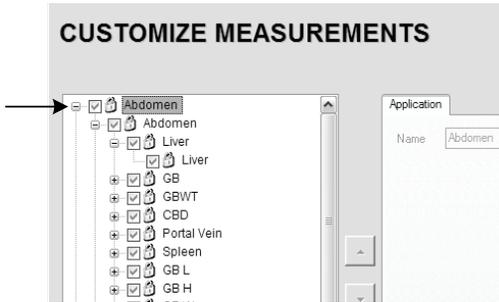




To Add a Custom Measurement:

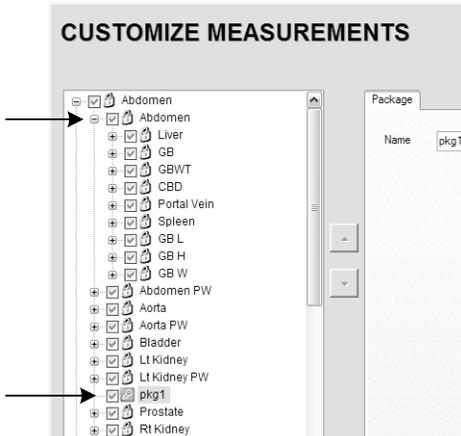
Note: Measurements can be added to both custom and default Measurement Packages.

1. Press the console button.
2. Select **Administrator > Measurements > Customize Measurements....**
3. Expand the relevant **Application** tree by selecting the appropriate plus (+) sign (e.g., select the plus (+) sign next to **Abdomen**).



Note: If the custom Measurement is to be added a custom Measurement Package, ensure that package has been created.

4. Ensure the relevant **Measurement Package** is selected (e.g., **Abdomen** or **pkg1**).

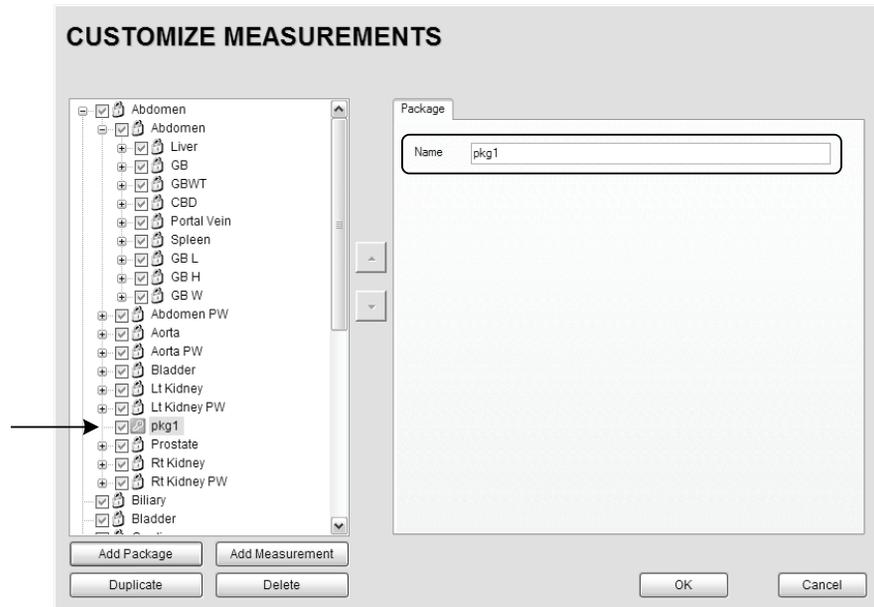


Note: If pkg1 is selected, the custom Measurement will be created one level below pkg1. If Abdomen is selected, the custom Measurement will be created at the same level as Abdomen.

5. Select the **Add Measurements** button and mmt1 will be added.

To Rename a Custom Measurement Package or Measurement:

1. Press the console  button.
2. Select **Administrator > Measurements > Customize Measurements....**
3. Select the custom **Measurement Package** or **Measurement**.
4. Place the cursor in the **Name** field on the right hand side of the dialog.

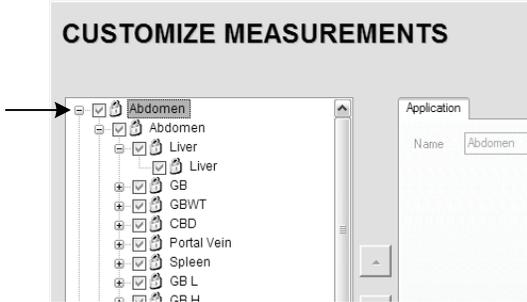


5. Use the touch screen keyboard to erase and type in a new **Measurement Package** or **Measurement Name**.

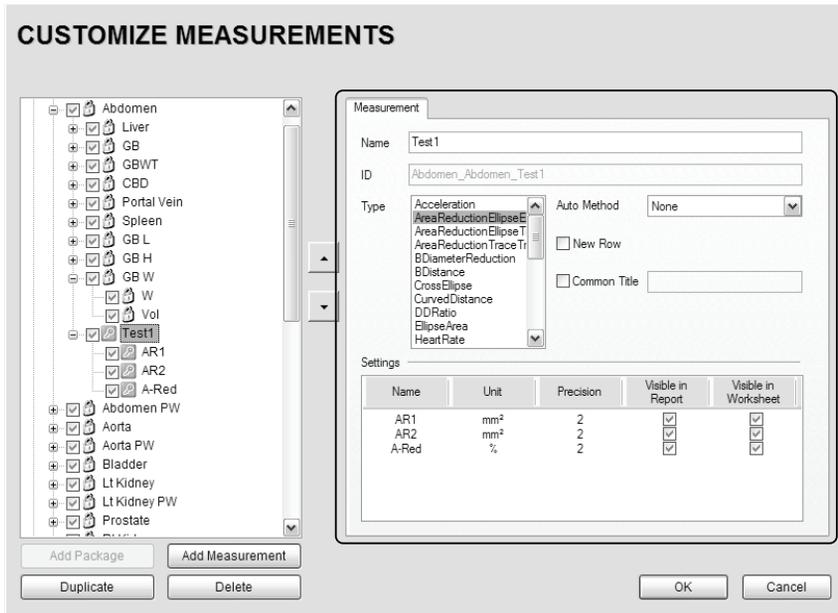


To Edit a Custom Measurement:

1. Press the console button.
2. Select **Administrator > Measurements > Customize Measurements...**
3. Expand the relevant **Application** tree by selecting the appropriate plus (+) sign (e.g., select the plus (+) sign next to **Abdomen**).



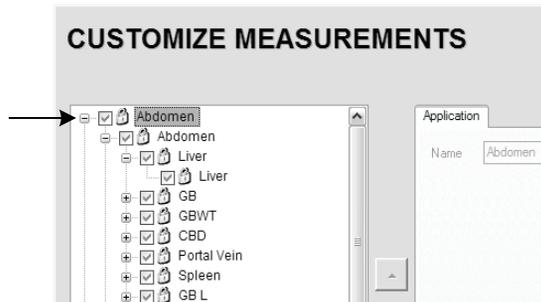
4. Select the custom **Measurement** to be edited.
5. Make the appropriate changes in the **Measurement** tab on the right hand side of the dialog.



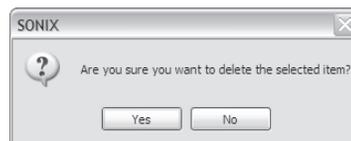
6. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

To Delete a Custom Measurement Package or Measurement:

1. Press the console  button.
2. Select **Administrator > Measurements > Customize Measurements....**
3. Expand the relevant **Application** tree by selecting the appropriate plus (+) sign (e.g., select the plus (+) sign next to **Abdomen**).



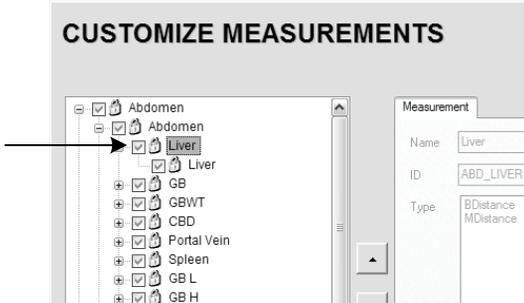
4. Select the custom **Measurement Package** or **Measurement** to be deleted.
5. Select the **Delete** button.
6. Select **Yes** to confirm the deletion or **No** to cancel the operation.





8.2.6.4 Reordering Measurements

Figure 8-11: Measurement Packages

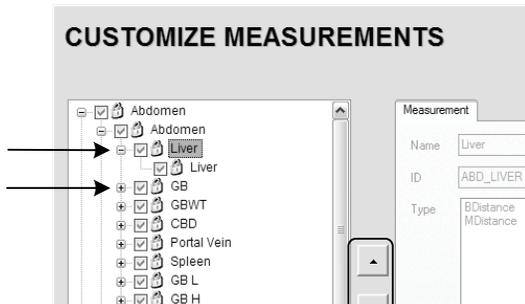


Note: Only **Measurement Packages** at the level marked in **Figure 8-11** can be reordered.

The reorder option applies to both custom and default **Measurement Packages**.

To Reorder Measurements:

1. Press the console button.
2. Select **Administrator > Measurements > Customize Measurements....**
3. Expand the relevant **Application** tree by selecting the appropriate plus (+) signs (e.g., select the plus (+) sign next to **Abdomen**).



4. Highlight the relevant **Measurement** in the left hand column.
5. Use the (up/down) selector buttons to move the item to another place in the list.
6. Repeat **step 4** and **step 5** as many times as required.
7. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

8.2.6.5 Managing Author Settings

To Select the Cardiac Author:

1. Press the console  button.
2. Select **Administrator > Measurements > Author Settings....**



AUTHOR SETTINGS

OB Author Selection

Fetal Age

AC Hadlock

Fetal Growth

AC Hadlock

Estimated Fetal Weight

Hadlock AC/BPD/FL/HC

Birth Weight

Doublet

OB Table Setup...

Cardiac Author Selection

Teichholz

OK Cancel

3. Select the **Cardiac Author** from the drop-down menu.

Note: Refer to [Table F-6 in Appendix F](#) for a complete list of **Cardiac Author Settings**.

4. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.



To Select OB Authors:

1. Press the console  button.
2. Select **Administrator > Measurements > Author Settings....**

AUTHOR SETTINGS

OB Author Selection

Fetal Age

AC Hadlock

Fetal Growth

AC Hadlock

Estimated Fetal Weight

Hadlock AC/BPD/FL/HC

Birth Weight

Doubilet

OB Table Setup...

Cardiac Author Selection

Teichholz

OK Cancel

3. Select author/measurement options for **Fetal Age** and **Fetal Growth** from the drop-down menus.
4. Select **Estimated Fetal Weight** and **Birth Weight** authors from the drop-down menus.
5. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.



Warning: Various factors may affect the accuracy of **Obstetrical** measurements. Ensure:

- system **Date** and **Time** are configured correctly.
- desired **Obstetrical** calculation author has been selected for each parameter.

8.2.6.6 Managing OB Tables



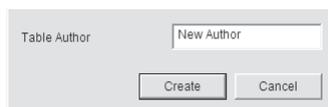
Warning: Ultrasonix does not endorse user-defined **Measurements**, **Calculations** and **Tables** for diagnostic purposes. All user-defined **Measurements**, **Calculations** and **Tables** are used at the **Operator's** discretion and risk only.

To Create New Obstetrical Calculation Authors and Look-up Tables:

1. Press the console  button.
2. Select **Administrator > Measurements > Author Settings... > OB Table Setup....**
3. Select **Create Author**.



4. Enter a new **Table Author** and select **Create** to save the name to the author list.

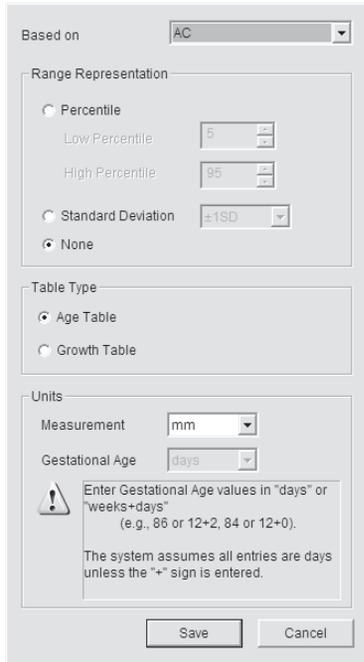


5. Highlight the newly created author and select **Create Table**.



Note: Default **Tables** are locked (as indicated by the lock icon adjacent to the **Table** name) and cannot be edited/deleted. User-created **Tables** are marked with a key icon and can be edited/deleted.

- From the **Based on** drop-down menu, select the desired parameter (**BPD**, **HC**, etc.).



Based on: AC

Range Representation:

- Percentile
 - Low Percentile: 5
 - High Percentile: 95
- Standard Deviation: ±1SD
- None

Table Type:

- Age Table
- Growth Table

Units:

Measurement: mm

Gestational Age: days

! Enter Gestational Age values in "days" or "weeks+days" (e.g., 86 or 12+2, 84 or 12+0).
The system assumes all entries are days unless the "+" sign is entered.

Save Cancel

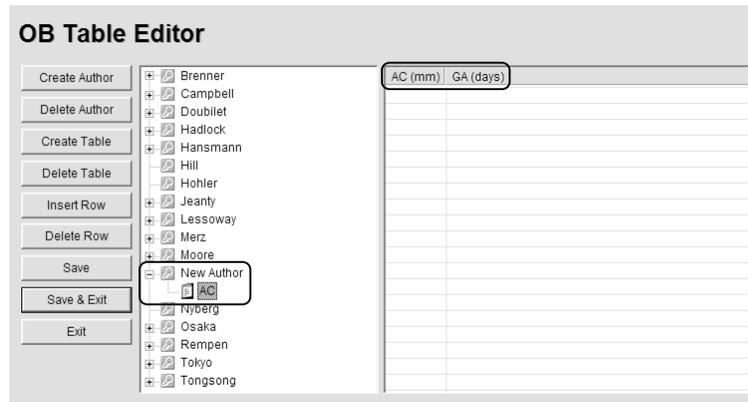
- Select the desired table **Range Representation: Percentile, Standard Deviation** or **None**.
- Select the desired **Table Type: Age Table** or **Growth Table**.
- From the **Measurement** drop-down menu, select the desired unit: **cm**, **cm²**, **g**, **mm**, **mm²** or **ratio**.

Note: **AC** and **HC** are assumed to be **Circumference** measurements.

- Select **Save** to accept the changes and return to the **OB Table Editor** or **Cancel** to exit without saving.

To Enter Data into a New OB table:

1. Press the console  button.
2. Select **Administrator > Measurements > Author Settings... > OB Table Setup...**
3. Select the newly created **Table** (listed under the user-defined author).



Note: The right hand section of the screen will show the columns for the previously-defined **Table** parameters. For example, this **Table** was configured as follows:

Based on = AC, Range Representation = None, Table Type = Age Table and Measurement = mm.

4. Enter **Table** data as required. Use **Insert Row** and **Delete Row** buttons to simplify this process.



Warning: When entering **Gestational Age** values, use **days** or **weeks+days**:

e.g., 86 (days) = 12+2 (or 12 weeks + 2 days), 84 (days) = 12+0 (or 12 weeks).

The system assumes all entries are in days unless a plus (+) sign is entered, in which case the number is assumed to be in weeks and is converted to the equivalent number of days.

5. Select the **Save & Exit** button to save any newly entered/edited data and exit the page, **Save** to save any newly entered/edited data but remain in the **OB Table Editor** or **Exit** to cancel any newly entered/edited data and exit the page.



8.2.7 Training Tutorials

This option enables organizations to load and view a variety of different video, audio or PowerPoint files on the system in order to provide training to their staff.

The training files may be provided by Ultronix, but they can also be created by each organization, as long as they are created in one of the accepted digital formats.

Figure 8-12: Training Tutorials Dialog

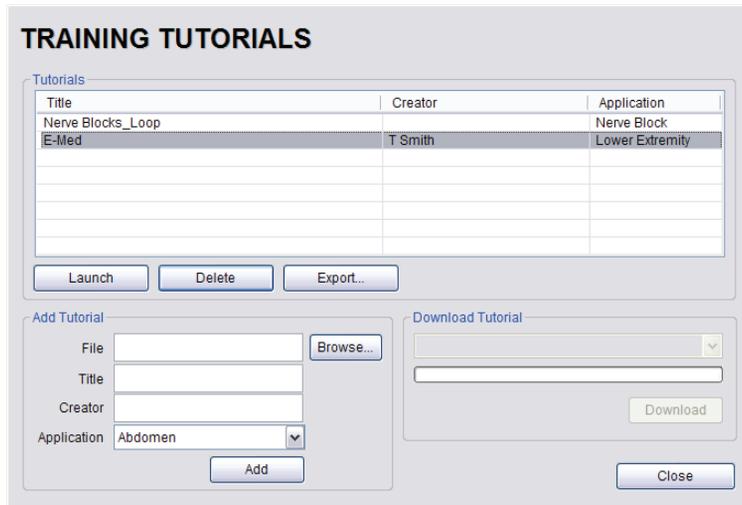


Table 8-14: Supported Training Tutorial File Formats

Video	AVI, MPG, MPEG and WMV.
Audio	MP3 and WMA.
PowerPoint	PPT.
	Note: Video files embedded in PowerPoint presentations are not supported.
Adobe® Flash	SWF.

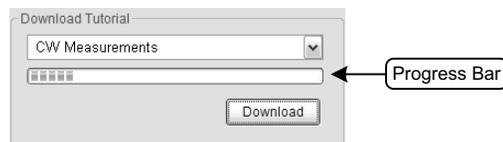
Table 8-15: Training Tutorial Options

Tutorials		The Tutorials section lists files that are currently available for viewing.
	Title	Lists the Titles of the available Tutorials .
	Creator	Lists the Creator of the specific Title .
	Application	Lists the Exam Type/Application associated with the specific Title .
	Launch	Plays the selected Title .
	Delete	Deletes the selected Title .
	Export...	Exports the selected Title .
Add Tutorial		Add Tutorial options enable organizations to add user-created Tutorials .
	File	Displays the name of the File selected with the Browse button.
	Title	Enter a descriptive Title that will immediately reveal the Tutorial's purpose.
	Creator	Enter the name of the File's Creator . This might be an individual, an outside company or the name of the host organization.
	Application	Select an Application which best describes the clinical relevance of the Tutorial .
	Browse...	Enables the user to browse the available drives for a Tutorial file.
	Add	Adds the selected Tutorial .
Download	Launches the Download sequence for the selected Title .	

8.2.7.1 Manipulating Training Tutorials

To Download a Training Tutorial from the Network:

1. Press the console  button.
2. Select **Administrator > Training Tutorials**.
3. Select a file from the drop-down menu in the **Download Tutorial** section of the dialog.



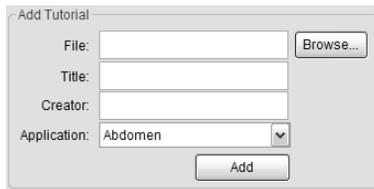
4. Select the **Download** button.
5. Follow the status of the progress bar to see how far along the download is.
6. When the download is complete, the **Title** will be added to the list of available **Tutorials**.



To Add a Training Tutorial from External Media:

Note: External media includes USB devices such as a key, drive or CD/DVD reader/writer. When using this type of media, ensure that the relevant item is loaded into the appropriate device before attempting the download.

1. Press the console  button.
2. Select **Administrator > Training Tutorials > Browse....**



The screenshot shows a dialog box titled "Add Tutorial". It has four input fields: "File:" with a "Browse..." button to its right, "Title:", "Creator:", and "Application:" with a dropdown menu showing "Abdomen". There is an "Add" button at the bottom center.

3. From the dialog presented, find and select the relevant (file) **Type** and **File** name to be added.
4. Enter a **Title** and **Creator** in the fields provided.
5. Select a clinically relevant **Application** type from the drop-down menu.
6. Select the **Add** button.
7. Once the addition is complete, the **Title** will be added to the list of available **Tutorials**.

Note: As a precaution, test each file to ensure it displays properly.

To Launch a Training Tutorial:

1. Press the console  button.
2. Select **Administrator > Training Tutorials**.
3. Highlight a **Title** from the list of **Tutorials**.
4. Select the **Launch** button and the tutorial will be presented on the LCD display.



5. Select the red **X** in the top right corner of the **Tutorial** screen to stop/exit the tutorial.

Notes:

*If the presentation is in PPT format, press the **Q** button to exit.*

*For files with an audio component, the volume can be adjusted with the audio slide on the right hand side of the tutorial screen. **Master Volume** control is adjusted from the **System Settings** dialog (8.2.10).*

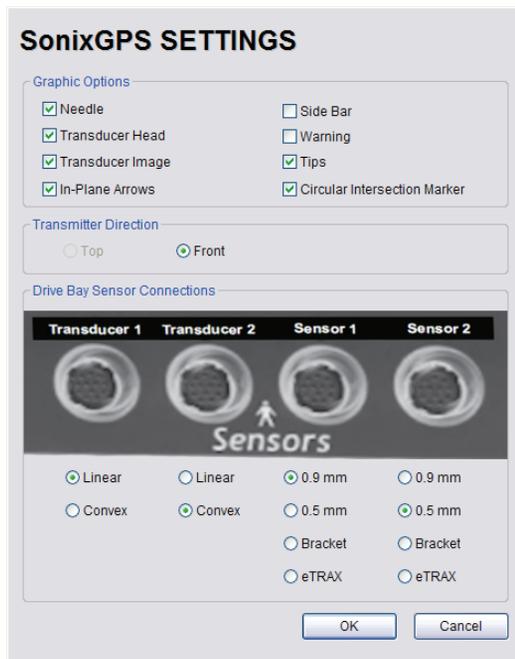
8.2.8 SonixGPS

Use this option to select the appropriate needle to be used with the **SonixGPS** option.



Warning: This user manual does not include a comprehensive discussion of the **SonixGPS** option. For complete details on using **SonixGPS**, read and follow all instructions and warnings in the most recent **SonixGPS** User Manual.

Figure 8-13: SonixGPS Settings



8.2.9 Biopsy Guide

Users can configure the system with the **Single Guideline Biopsy** option.

Figure 8-14: Biopsy

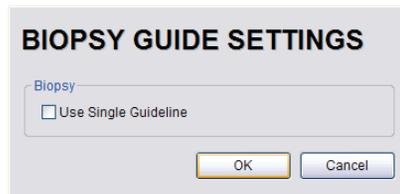


Table 8-16: Biopsy

Use Single Guideline	Select to default to a single Biopsy guideline. When left unselected, the system will use the double line guides.
-----------------------------	--------------------------------------------------------------------------------------------------------------------------

To Configure the Biopsy Guide Settings:

1. Press the console  button.
2. Select **Administrator > Biopsy Guide**.
3. Select/deselect the checkbox for **Use Single Guideline**.
4. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

8.2.10 System Settings

System Settings are used to configure the **Institution Name**, **Regional** parameters, **Shutdown Options**, **Auto-Freeze**, **Auto-Shutdown**, **User Data** settings and **Admin Password**.

Figure 8-15: System Settings



Table 8-17: System Settings Configuration Options

<i>Institution Name</i>	Enter the <i>Institution Name</i> using the keyboard. The text entered here appears at the top of the image field.
<i>Insert (Symbol)</i>	Enables the insertion of text symbol(s) not available on the keyboard (e.g., punctuation, symbols and letters from other languages).



Regional	Language Settings	Interface Language	Select the desired language for the user interface.
		Keyboard Layout	<p>Select the desired keyboard language.</p> <p>During imaging, tap Shift+Del to toggle access between English and the non-English Keyboard Layout language.</p> <p>Note: <i>There is no correlation between Interface Languages and Keyboard Layout. For example, when English is used as the Interface Language, it is possible to select Turkish or Korean as the language for Keyboard Layout.</i></p> <p><i>Additionally, because Keyboard Layout selections are controlled by Windows rather than Ultrasonix, there are many more Keyboard Layouts to choose from than there are Interface Languages.</i></p>
	Internal Settings...		Select country-specific parameters, including Date and Time formats and Number display modes.
	Date/Time...		Configure the actual Date and Time (based on the Date/Time format selected in Internal Settings...).
Shutdown Options	Confirm Shutdown		Forces the system to request confirmation when powering down.
System Configuration	About		<p>Contains (non-editable) system information, for example, Software Version and ECG Part Number (when applicable).</p> <p>Note: <i>ECG is not available on this platform.</i></p>
Auto-Freeze	Enable		Enables Auto-Freeze , which deactivates any transducer that is connected but not currently in use.
	Wait (minutes)		<p>Once Auto-Freeze is enabled, Wait controls the number of minutes a stationary transducer will remain active before Auto-Freeze is triggered. Deactivating/freezing transducer usage will help to prolong its life span.</p> <p>Select a setting of 5 to 120 minutes. The default is Auto-Freeze Enabled, with a 10 minute Wait time.</p> <p>Note: <i>To reactivate (or unfreeze) the transducer/imaging session, simply press the console  button.</i></p>
Touch Screen	Enable Customization		Not available on this platform.



User Data	Export	Exports user-configured System Settings to an external storage device (e.g., USB medium).		
		Note: The Export function can also be used to reset all but three (3) User Data options (Settings, System Logs and Licenses) to their factory defaults.		
		Imaging Presets	Exports all user-defined Imaging Preset data.	
		3D/4D Presets	Exports all user-defined 3D/4D Preset data.	
		DICOM Server Configuration	Exports DICOM configuration data.	
		Settings	Exports all user-defined Settings that are not explicitly specified in any other Export option (e.g., DICOM, Network, Peripherals, Patient, ECG HR Precedence , etc).	
		Measurement Order	Exports the Measurement Order data defined under Worksheet Settings on the Measurements dialog.	
		Obstetrical Tables	Exports all user-defined OB Tables .	
		Exam Management Field Lists	Exports all user-defined Exam Management page data (e.g, Attending Physician, Operator ID , etc).	
		Protocols	General	<p>Protocols refer to the various specialized applications that can be purchased for use on the SonixTouch (e.g., EMED and, Anesthesia. All other products have only the default General Protocol),).</p> <p>Exporting settings must be done for each separate Protocol.</p> <p>Note: Only active Protocols (i.e., Protocols that have been licensed and installed) with changes to default Preset, Measurement and Worksheet settings will be available for Export.</p>
	Preset Assignments			Exports all Preset data as configured under Menu > Administrator > Presets (e.g., Annotations and Pictograms). Note: Presets are Protocol-specific.
	Measurement Customization			Exports settings defined under Customize Measurements... on the Measurements dialog. Note: Measurement Customization is Protocol-specific.
	Worksheets			Exports Worksheet settings. Note: Worksheets are only available for the EMED, Anesthesia and Endocrinology Protocols.
	Touch Screen Customization			Exports customized touch screen settings (e.g., Favorites). Note: Available only on SonixTouch and SonixTablet.
	Banners			Not available in this release.
System Logs		Exports copies of all current System Logs . Note: These cannot be imported.		



User Data	Export	<p>Licenses Copies existing license settings into licenses.key.</p> <p>Note: To re-import licensing details, refer to 8.2.22.</p>	
	User Data	Import	<p>Imports user-configured System Settings from an external storage device (e.g., USB medium). Settings must have been previously exported from a Sonix system.</p> <p>Caution: Ultrasonix does <i>not</i> recommend importing user-defined Presets created with a previous software version as they may not be compatible for use with a more recent software update.</p>
<p>Imaging Presets Imports all user-defined Imaging Preset data.</p>			
<p>3D/4D Presets Imports all user-defined 3D/4D Preset data.</p>			
<p>DICOM Server Configuration Imports DICOM configuration data.</p>			
<p>Settings Imports all user-defined Settings that are not explicitly specified in any other Import option (e.g., DICOM, Network, Peripherals, Patient, ECG HR Precedence, etc).</p>			
<p>Measurement Order Imports the Measurement Order data defined under Worksheet Settings on the Measurements dialog.</p>			
<p>Obstetrical Tables Imports all user-defined OB Tables.</p>			
<p>Exam Management Field Lists Imports all user-defined Exam Management page data (e.g. Attending Physician, Operator ID, etc).</p>			
Protocols		General	<p>Protocols refer to the various specialized applications that can be purchased for use on the SonixTouch (e.g., EMED, Anesthesia and General).</p> <p>Importing settings must be done for each separate Protocol.</p> <p>Note: Only active Protocols (i.e., Protocols that have been licensed and installed) with <u>previously exported Preset, Measurement and Worksheet settings</u> will be available for Import.</p>
			<p>Preset Assignments Imports all Preset data as configured under Menu > Administrator > Presets (e.g., Annotations and Pictograms).</p> <p>Note: Presets are Protocol-specific.</p>
			<p>Measurement Customization Imports settings defined under Customize Measurements... on the Measurements dialog.</p> <p>Note: Measurement Customization is Protocol-specific.</p>
			<p>Worksheets Imports Worksheet settings.</p> <p>Note: Worksheets are only available for the EMED, Anesthesia and Endocrinology Protocols.</p>
			<p>Touch Screen Customization Imports customized touch screen settings (e.g., Favorites).</p> <p>Note: Available only on SonixTouch and SonixTablet.</p>
	<p>Banners Not available in this release.</p>		



User Data	Import	SonixHUB Worksheets	Available only for new Worksheet formats created with SonixHUB . <hr/> Note: SonixHUB Worksheets are Protocol-specific.
		Restore Factory	Resets the system to the default settings installed during manufacturing.
		Master Volume	Controls the master setting for Sonix audio volume.
		Admin Password...	Creates/removes a global, administration level Password in order to protect Administrator Settings configuration.

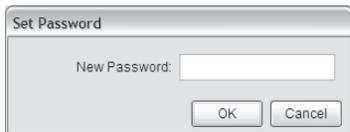
To Access System Settings:

1. Press the console  button.
2. Select **Administrator > System**.

8.2.10.1 Password Protection

To Password Protect Administrator Settings Access:

1. Press the console  button.
2. Select **Administrator > System > Admin Password...**
3. Enter a **Password** when prompted by the dialog.

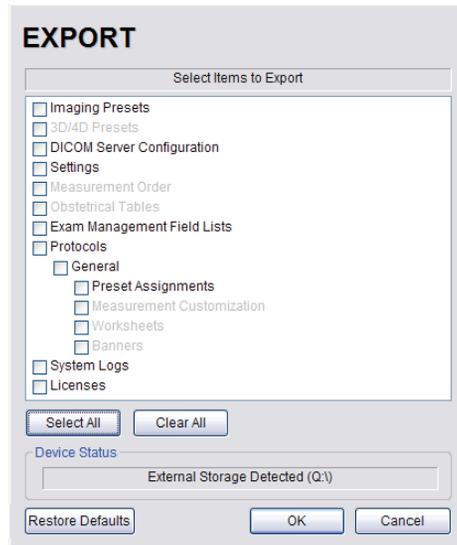


4. Select **OK** to accept the **Password** and exit or **Cancel** to exit without saving.

8.2.10.2 Export/Import User Data

To Export User Data:

1. Connect the external USB storage device on which the **Export** will be saved.
2. Press the console  button.
3. Select **Administrator > System > Export....**
4. Select the item(s) to be exported.



Note: Use **Select All** to select all items at one time and **Clear All** to clear all checkboxes.

*Only active **Protocols** with changes to default **Presets**, **Measurement** and **Worksheet** settings will be available for **Export**.*

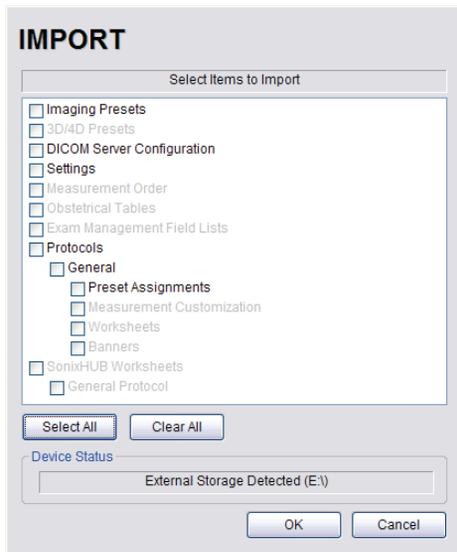
5. Select **OK** to begin the export process or **Cancel** to exit without exporting.
6. If **OK** is selected in the previous step, a completion dialog will be presented when the export process has finished (this will take approximately 15–45 seconds).



To Import User Data:

Caution: *Ultrasonix does not recommend importing user-defined **Presets** created with a previous software version as they may not be compatible for use with a more recent software update.*

1. Plug the previously-created removable disk (e.g., USB key) into one of the USB ports at the front of the console.
2. Press the console  button.
3. Select **Administrator > System > Import...**
4. Select the item(s) to be imported.



Note: Use **Select All** to select all items at one time and **Clear All** to clear all checkboxes.

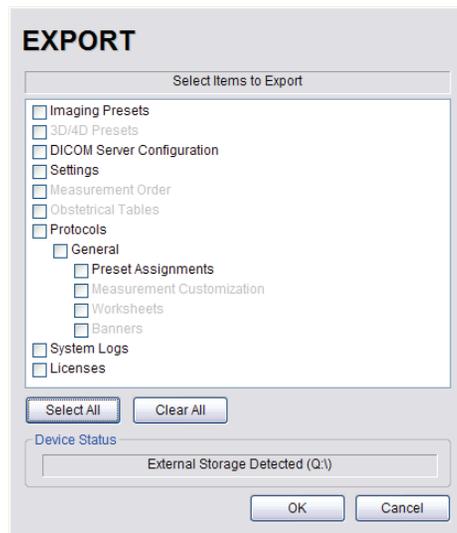
*Only active **Protocols** with changes to default **Presets**, **Measurement** and **Worksheet** settings will be available for **Import**.*

5. Select **OK** to begin the import process or **Cancel** to exit without importing.

8.2.10.3 Reset User Data Settings to Factory Defaults

To Reset User Data:

1. Press the console  button.
2. Select **Administrator > System > Export....**
3. Select the relevant item(s).



Note: Factory defaults will be restored to all selected options (except **Settings**, **System Logs** and **Licenses**).

4. Select **Restore Defaults**.



8.2.11 Network

The **Network** setup dialog allows users to configure the system's network, either through a hard-wired LAN or Dialup connection.

Note: A dialup connection requires a third-party, USB modem. Contact your dealer or Ultrasonix Technical Support to learn more about this option.

Remote Support is a licensed option that allows a member of the Ultrasonix Technical Support to view and control the system for diagnostic purposes. Ultrasonix Technical Support will help configure this option should it ever be required.

Chat Support enables a real-time discussion with a member of the Ultrasonix Technical Support team.

Caution: System networking options are intended for use *inside* your organization's firewall. Organizations that elect to configure/use the networking functionality provided by Ultrasonix are assuming all liabilities and risks associated with that decision.

Figure 8-16: Network Dialog

NETWORK

Network Setup

Internet Connection using LAN
 Dialup Internet Connection

Account Information

Phone Number
User Name
Password

Options

Timeout (seconds)

Online Support

Chat Support Enabled

Local IP Address

E-Mail Setup

Server Address (SMTP)
Server Port (SMTP)

Note: A network connection is required to use any of the following: **DICOM**, **Chat Support**, **Remote Support** and **SonixLive**.

Table 8-18: Network Settings

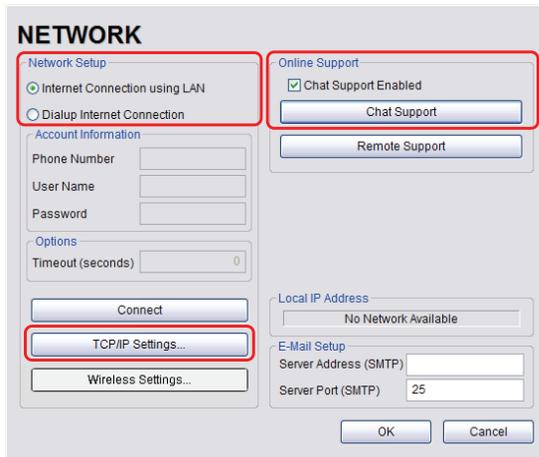
Network Setup	Internet Connection Using LAN		
	OR Select Internet Connection type: LAN or Dialup .		
	Dialup Internet Connection		
	Account Information	Phone Number	If Dialup was selected in the previous step, enter the telephone number for the Internet Service Provider (ISP) .
		User Name	Enter the User Name for the Dialup ISP account.
		Password	Enter the Password that will protect the Dialup connection to the Internet.
	Timeout (Seconds)	Enter the Timeout limitation (in number of seconds). Note: If the system fails to connect within the prescribed time limit, it will stop trying.	
	Connect	Select to Connect using the Dialup settings.	
TCP/IP Settings...	Select to configure TCP/IP Settings . Refer to 8.2.11.1 Ethernet (LAN) Network Configuration for details.		
Wireless Settings...	Not available on this platform.		
Chat Support Enabled		Select this checkbox to enable Chat Support .	
Remote Support		After receiving a PIN (Personal Identification Number) from Ultrasonix, use this option to connect to the Internet. This will allow an Ultrasonix Support technician to remotely access the system to resolve any issues that may have arisen.	
Local IP Address		When using Streaming Video , it is necessary to advise the recipient of the system's Local IP Address . Note: During Streaming Video, this Local IP Address can be accessed temporarily by selecting the Streaming Video icon on the LCD display. For details on Streaming Video and its associated icon, refer to 8.1.1 SonixLive Setup . If the system is not connected to a network, instead of a Local IP Address , the field will read No Network Available .	
E-Mail Setup	Server Address	Enter the Outgoing (SMTP) Server Address here.	
	Server Port	Enter the Outgoing Server Port number here.	
Note: Ultrasonix recommends that Network connections be configured using the settings provided by your IT Department.			



8.2.11.1 Ethernet (LAN) Network Configuration

To Configure an Ethernet (LAN) Connection (If Available):

1. Connect an RJ45 cable to the LAN port located on the Back Connectivity Panel.
2. Press the console  button.
3. Select **Administrator > Network > Internet Connection using LAN**.



4. Under **Chat Support**, ensure the **Chat Support Enabled** checkbox has been selected.
5. Select **TCP/IP Settings...**
6. Under **General**, select **Obtain an IP address automatically** or **Use the following IP address** and enter the assigned static **IP address**, **Subnet mask**, and **Default gateway**.



7. Select **OK** and exit the **Menu** system.

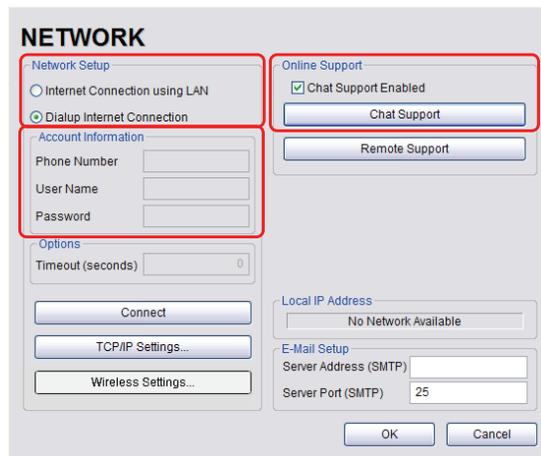
Note: It may be necessary to restart in order for the changes to take affect.

8.2.11.2 Dialup Network Configuration

Note: A dialup connection requires a third-party, USB modem. Contact your dealer or Ultrasonix Technical Support to learn more about this option.

To Configure a Dial-up Connection (If Available):

1. Connect the modem's USB connector to connection point 7.
2. Connect the other end of the modem to a telephone jack in the wall.
3. Press the console  button.
4. Select **Administrator > Network > Dialup Internet Connection**.
5. Under **Chat Support**, ensure the **Chat Support Enabled** checkbox has been selected.
6. Complete the **Account Information** and **Options** sections: **Phone Number**, **Username**, **Password** and **Timeout**.



7. Select **OK** and exit the **Menu** system.

Note: While the system is dialing out, the current dialing status to the ISP will be displayed.



8.2.11.3 Chat Support

Chat Support enables a real-time discussion with a member of the Ultronix Technical Support team. To access **Chat Support**, refer to [8.1.3](#).

Note: A network connection is required for **Chat Support**.

8.2.11.4 Remote Support

Remote Support is a licensed option that allows a member of the Ultronix Technical Support to view and control the Sonix for diagnostic purposes.

Note: A network connection is required for **Remote Support**.

To access **Remote Support**, refer to [8.1.2](#) or [3.4](#).

8.2.12 DICOM Configuration

The system uses the **Digital Imaging and Communications in Medicine (DICOM)** standard to share medical information with other digital imaging systems. The system, by means of the **DICOM** protocol, communicates with **Storage**, **Print** and **Modality Worklist Service Class Providers**.

Note: *DICOM Structured Reporting is supported. Refer to [Table 8-20](#) for **Structured Reporting** data transfer options.*

Refer to [8.2.11 Network](#) to configure the system for network connectivity.

Note: *When using a hard-wired network connection, ensure the network is connected via a CAT5 cable at the back of the system. (Check with the local IT Department to ensure that the jack from the wall is live.)*

When using a wireless network connection, ensure the wireless network is configured properly and that the system has a live wireless connection.

Figure 8-17: DICOM Configuration



Note: *Global Settings for the Local Host apply to DICOM Storage, Print and Worklist.*



Table 8-19: DICOM Configuration – Global Settings

Local Host	Station Name	General DICOM Station Name .
	AE Title	AE (Application Entity) Title of the Sonix system.
	IP Address	Unique identifier of the Sonix system (informational only).
	Storage Commitment AE	Port
Listening Port		Listening Port receives incoming Storage Commitment responses (N-Event).
Settings	Storage... Print... Worklist...	Use to access specific DICOM Storage, Print and Worklist settings.

To Configure the Global DICOM Settings:

1. Press the console button.
2. Select **Administrator > DICOM**.
3. Configure the global settings as required.

8.2.12.1 DICOM Storage Settings

The **DICOM Storage Settings** dialog offers basic and advanced settings for configuring the system for **DICOM** image storage.

To Configure the DICOM Storage Setting:

1. Press the console button.
2. Select **Administrator > DICOM > Storage**.
3. An onscreen dialog with four (4) tabs will be presented: **AE Configuration, Global Storage Settings, Brightness/Contrast** and **SonixHUB Settings**.
4. Create/select a **Device Name**. Edit the **Application Entity (AE)** settings for the selected **Device**.
5. Repeat **step 4** as many times as required.
6. Configure settings as required.

Note: In addition to the four (4) tabbed settings options, select the **Settings...** button to access **Storage Settings**.

The **DICOM Storage AE Configuration** dialog enables configuration of **AE** properties.

Figure 8-18: DICOM Storage Settings – AE Configuration

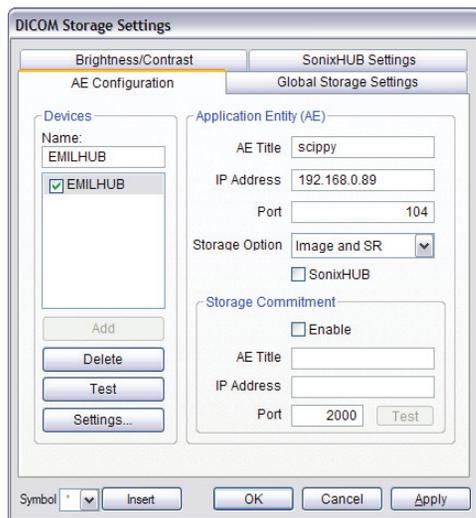


Table 8-20: DICOM Storage Settings – AE Configuration

Devices	Use the Devices option to add as many DICOM Storage Servers as required.
	Note: If more than one DICOM Storage Server is configured, during data transfer the Operator has the option of selecting which Storage Server(s) will receive the data (9.3).
	Name Enter/select the Name of an AE Storage Device and populate the four (4) AE fields: Structured Report Only , AE Title , IP Address and Port .
	Add Select to Add the new AE Storage Device .
	Delete Select to Delete the selected AE Storage Device .
	Test Select to send verification request to DICOM Storage Device (ping to verify connection).
Settings... Select to access Storage Settings (Figure 8-19 and Table 8-21).	



Application Entity (AE)	Note: <i>The data entered/edited in the following fields is specific to the selected Device Name.</i>		
	AE Title	AE Title of the Storage SCP .	
	IP Address	Unique identifier of Storage SCP .	
	Port	Listening Port of the Storage SCP .	
	Storage Options	Select the Storage Option to be used during data transfer (Chapter 9). <ul style="list-style-type: none"> • Image and SR: transfers both Images and Structured Report • Image: transfers only Images • SR (Structured Report): transfers only the Structured Report. 	
	SonixHUB	Select to enable/disable SonixHUB . Note: <i>This setting is only available if SonixHUB is licensed.</i>	
	Storage Commitment	Enable	Select to enable Storage Commitment functionality.
		AE Title	AE Title of the Storage Commitment SCP .
		IP Address	Unique identifier of Storage Commitment SCP .
		Port	Listening Port of the Storage Commitment SCP .
Test		Select to send verification request to DICOM Storage Commitment Device (ping to verify connection).	
Insert (Symbol)	Enables the insertion of text symbol(s) not available on the keyboard (e.g., punctuation, symbols and letters from other languages).		

The **DICOM Storage Settings** dialog specifies how images are stored.

Figure 8-19: DICOM Storage Settings – Storage Settings

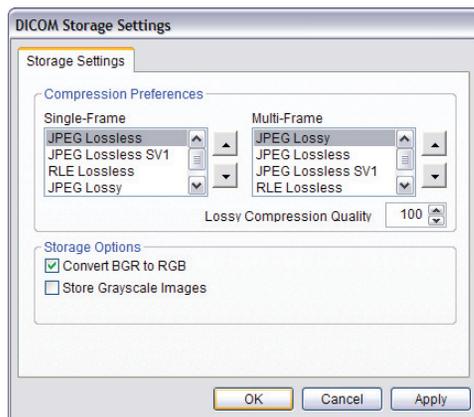


Table 8-21: DICOM Storage Settings – Storage Settings

Compression Preferences	Single-Frame	<p>JPEG Lossless JPEG Lossless SV1 RLE Lossless JPEG Lossy No Compression</p>	<p>Set DICOM image format storage order for single frame images.</p> <p>Note: Refer to the DICOM Standard for details on image formats.</p>
	Multi-Frame	<p>JPEG Lossy JPEG Lossless JPEG Lossless SV1 RLE Lossless No Compression</p>	<p>Set DICOM image format storage order for Cine loops.</p> <p>Note: Refer to the DICOM Standard for details on image formats.</p>
		<p>Lossy Compression Quality</p>	<p>Select the quality (1–100%) of image compression.</p>
Storage Options		<p>Convert BGR to RGB</p>	<p>Select to swap the color components of the image pixel data—the blue colors are swapped with the red colors.</p>
		<p>Store Grayscale Images</p>	<p>Select to store images in grayscale format.</p>
	<p>Insert (Symbol)</p>		<p>Enables the insertion of text symbol(s) not available on the keyboard (e.g., punctuation, symbols and letters from other languages).</p>

The **DICOM Global Storage Settings** dialog specifies global image storage parameters.

Figure 8-20: DICOM Storage Settings – Global Storage Settings

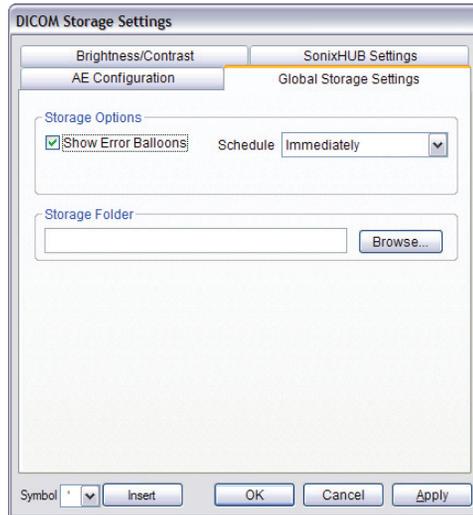


Table 8-22: DICOM Storage Settings – Global Storage Settings

Storage Options	Show Error Balloons	Select to enable the display of DICOM Storage error messages (e.g., Failed to connect to DICOM).
	Schedule	Select an auto-transfer setting: End of Exam , Immediate , On Idle .
Storage Folder		Select the location (local or remote) where the images will be stored.
Insert (Symbol)		Note: <i>If a value is specified, the AE Configuration and Storage Commitment dialogs are disabled—images can not be stored to an SCP.</i>
		Enables the insertion of text symbol(s) not available on the keyboard (e.g., punctuation, symbols and letters from other languages).

The **DICOM Storage Brightness/Contrast** dialog changes the **Brightness** and **Contrast** settings. These settings are applied to the images that are sent to the **SCP**, not the images stored locally.

The effects of these settings can be seen in the **Before** and **After** images.

Figure 8-21: DICOM Storage Settings – Brightness/Contrast

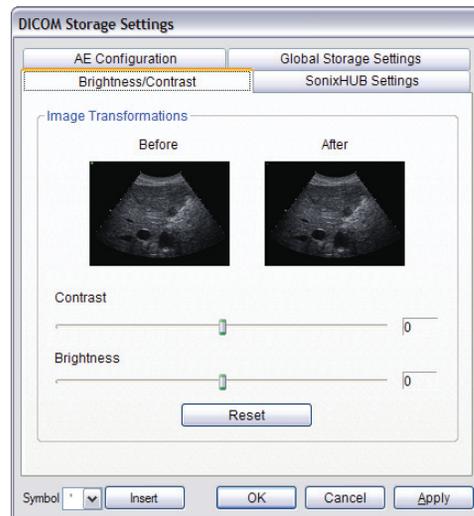


Table 8-23: DICOM Storage Settings – Brightness/Contrast

Contrast	Adjusts the level of Contrast applied to the images.
Brightness	Adjusts the level of Brightness applied to the images.
Reset	Resets the values of DICOM Storage Brightness and Contrast back to zero. <i>Note: To adjust the Brightness/Contrast settings, position the trackball arrow over the Brightness or Contrast slider. Press and hold the  button while moving the trackball left or right to the desired position.</i>

The **DICOM SonixHUB Settings** dialog specifies **SonixHUB** parameters.

Note: These settings are only available if **SonixHUB** is licensed.

Figure 8-22: DICOM Storage Settings – SonixHUB Settings

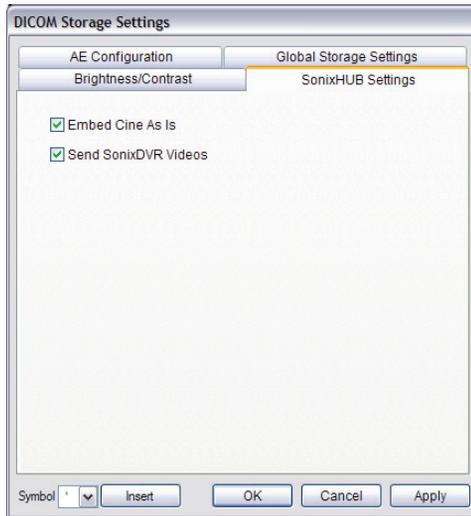


Table 8-24: DICOM Storage Settings – Global Storage Settings

Embed Cine As Is	Select to send Cine files in AVI format. When deselected, Cine files will be sent in DICOM format.
Send SonixDVR Videos	Select/deselect in order to include/exclude SonixDVR videos in the SonixHUB transfer.

8.2.12.2 DICOM Print Settings

DICOM Print Settings offer basic and advanced settings for configuring the system for *DICOM Print*.

To Configure DICOM Print Settings:

1. Press the console  button.
2. Select **Administrator > DICOM > Print**.
3. An onscreen dialog with two (2) tabs will be presented: **AE Configuration** and **Brightness/Contrast**.
4. Create/select a **Device Name**. Edit the **Application Entity (AE)** settings for the selected **Device**.
5. Repeat **step 4** as many times as required.
6. Configure **AE Configuration** and **Brightness/Contrast** as required.

Note: *In addition to the two (2) tabbed settings options, select the **Settings...** button to access **Print Settings** and **Advanced Print Settings**.*

The **DICOM Print AE Configuration** dialog enables configuration of **AE** properties.

Figure 8-23: DICOM Print Settings – AE Configuration

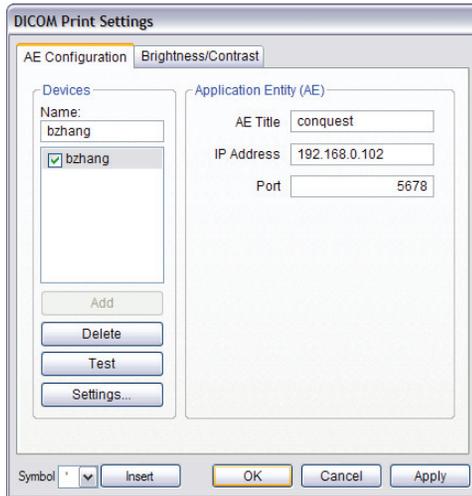


Table 8-25: DICOM Print Settings – AE Configuration

Devices	Use the Devices option to add as many DICOM Print Servers as required.
	Note: If more than one DICOM Print Server is configured, during data transfer the Operator has the option of selecting which Print Server(s) will receive the data (9.3).
	Name Enter/select the Name of an AE Print Device and populate the three (3) AE fields: AE Title , IP Address and Port .
	Add Select to Add the new AE Print Device .
	Delete Select to Delete the selected AE Print Device .
	Test Select to send verification request to DICOM Print Device (ping to verify connection).
Settings... Select to access Print Settings (Figure 8-24 and Table 8-26) and Advanced Print Settings (Figure 8-25 and Table 8-27).	
Application Entity (AE)	Note: The data entered/edited for the next three (3) fields is specific to the selected Device Name .
	AE Title AE Title of the Print SCP .
	IP Address Unique identifier of Print SCP .
	Port Listening Port of the Print SCP .
Insert (Symbol)	Enables the insertion of text symbol(s) not available on the keyboard (e.g., punctuation, symbols and letters from other languages).

The **DICOM Print Settings** dialog enables configuration of general print properties.

Figure 8-24: DICOM Print Settings – Print Settings

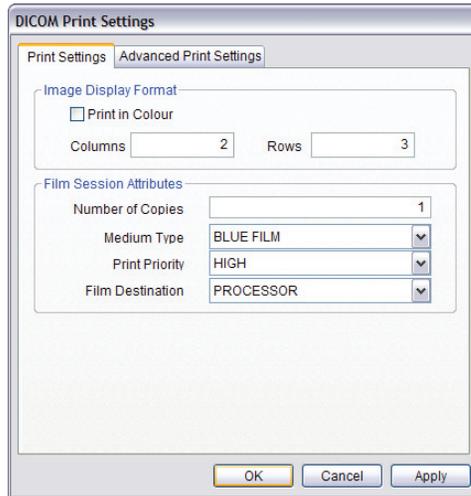


Table 8-26: DICOM Print Settings – Print Settings

Image Density Format	Print in Color	Select to print images in color. Deselect to print grayscale (default).
	Columns	Select the number of Columns per page.
	Rows	Select the number of Rows per page.
Film Session Attributes	Number of Copies	Select the Number of Copies of each page to be printed.
	Medium Type	Select the type of medium on which the images will be printed: Paper , Clear Film or Blue Film .
	Print Priority	Select the print job priority: High , Medium or Low .
	Film Destination	Select the location to which the print job will be sent: Processor or Magazine .

The **Advanced Print Settings** dialog enables configuration of advanced printing options.

Figure 8-25: DICOM Print Settings – Advanced Print Settings

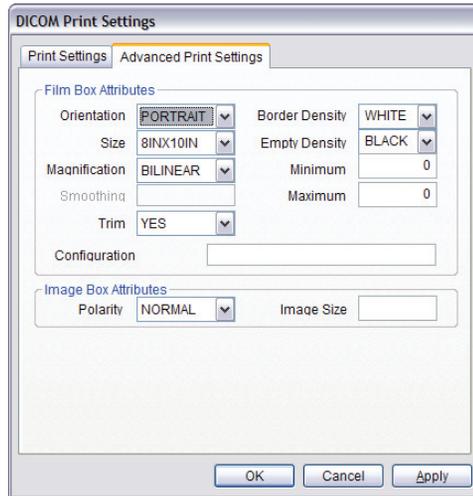


Table 8-27: DICOM Print Settings – Advanced Print Settings

Film Box Attributes	Orientation	Select the Orientation of the print page: Portrait or Landscape .
	Size	Select the Size of the print page.
	Magnification	Select the method of Magnification : Replicate , Bilinear , Cubic or None .
	Smoothing	Select the Smoothing .
		Note: <i>This option is printer-specific and only available if Cubic Magnification is selected in the previous field.</i>
	Trim	Select Yes or No to use a border (Trim) on each page.
	Configuration	Enter printer-specific Configuration information.
	Border Density	Select the Border Density : Black or White .
	Empty Density	Select the Empty Density : Black or White .
	Minimum Density	Enter the minimum image density in hundredths of OD (Optical Density) .
Maximum Density	Enter the maximum image density in hundredths of OD .	
Image Box Attributes	Polarity	Select the Polarity : Normal or Reverse .
	Image Size	Enter the printer-specific Image Size in mm.
Insert (Symbol)		Enables the insertion of text symbol(s) not available on the keyboard (e.g., punctuation, symbols and letters from other languages).

The **DICOM Print Brightness/Contrast** dialog changes the **Brightness** and **Contrast** settings. These settings are applied to the images that are sent to the **SCP**, not to the images stored locally.

The effect of these settings can be seen in the **Before** and **After** images.

Figure 8-26: DICOM Print Settings – Brightness/Contrast

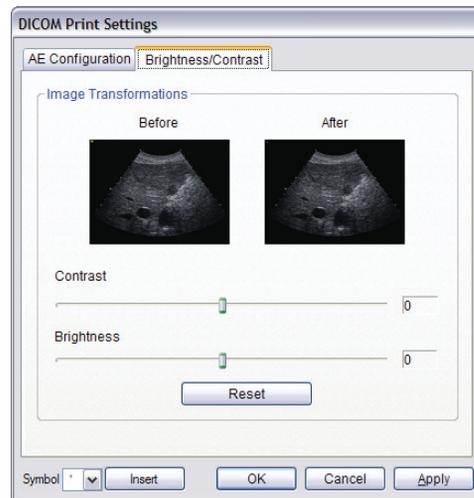


Table 8-28: DICOM Print Settings – Brightness/Contrast

Contrast	Adjusts the level of Contrast applied to the images.
Brightness	Adjusts the level of Brightness applied to the images.
Reset	Resets the values of DICOM Print Brightness and Contrast back to zero. <i>Note: To adjust the Brightness/Contrast settings, position the trackball arrow over the Brightness or Contrast slider. Press and hold the  button while moving the trackball left or right to the desired position.</i>



8.2.12.3 DICOM Worklist Settings

DICOM Worklist Settings offer advanced settings for configuring the *DICOM Worklist SCU*.

To Configure DICOM Worklist Settings:

1. Press the console  button.
2. Select **Administrator > DICOM > Worklist**.
3. Create/select a **Device Name**. Edit the **Application Entity (AE)** settings for the selected **Device**.
4. Repeat **step 3** as many times as required.
5. Configure the dialog as required.

The **DICOM Worklist AE Configuration** dialog enables configuration of **AE** properties.

Figure 8-27: DICOM Worklist Settings – AE Configuration

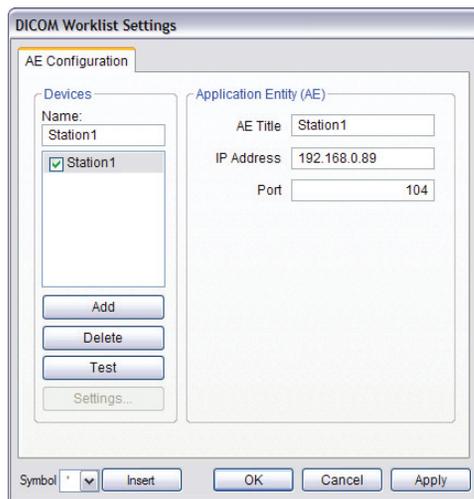


Table 8-29: DICOM Worklist Settings – AE Configuration

Devices		Use the Devices option to add as many DICOM Worklist Servers as required.
	Name	Enter/select the Name of an AE Worklist Device and populate the three (3) AE fields: AE Title , IP Address and Port .
	Add	Select to Add the new AE Worklist Device .
	Delete	Select to Delete the selected AE Worklist Device .
	Test	Select to send verification request to DICOM Worklist Device (ping to verify connection).
	Settings...	Not available in this release.
Application Entity (AE)		Note: The data entered/edited for the next three (3) fields is specific to the selected Device Name .
	AE Title	AE Title of the Worklist SCP .
	IP Address	Unique identifier of Worklist SCP .
	Port	Listening Port of the Worklist SCP .
	Insert (Symbol)	Enables the insertion of text symbol(s) not available on the keyboard (e.g., punctuation, symbols and letters from other languages).

8.2.13 Custom Keys

Custom Keys allow users to configure four (4) console buttons: **1**, **2**, , and .

The **Custom Key** setup dialog has a tab that corresponds to each of the **Custom Key** console buttons. Once configured, pressing one of these buttons will produce the defined action.

Figure 8-28: Custom Keys

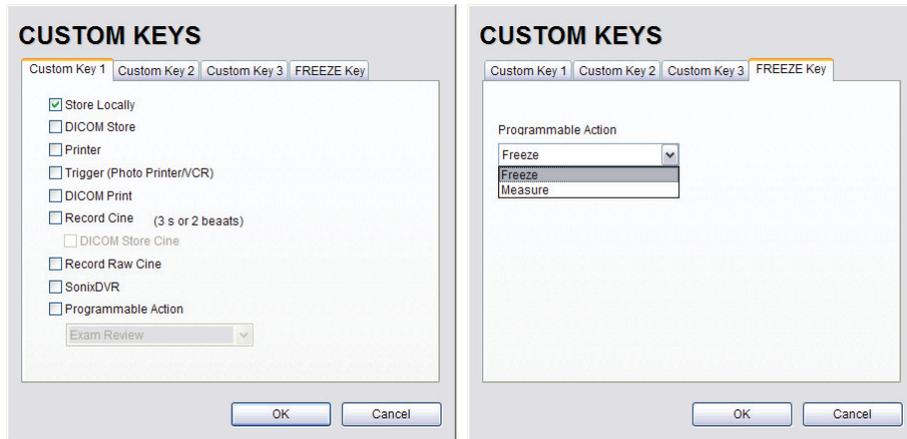


Table 8-30: Custom Key Settings

Custom Key 1, Custom Key 2, Custom Key 3	Store Locally	<p>This setting is always selected by default and can only be deselected (or reselected) if all options except Trigger are deselected.</p> <p>When selected, regardless of other settings, images will always be saved to the system's local storage.</p> <p>Note: Access locally stored images through the Exam Management page or the touch screen Exam Review button</p>
	DICOM Store	<p>Sends images to a DICOM archive. Refer to 8.2.12 DICOM Configuration for more setup details.</p>
	Printer	<p>Sends output to a Paper Printer. Refer to 8.2.14 Peripherals for details on printer setup.</p>
	Trigger (Photo Printer/VCR)	<p>Sends a Trigger signal to attached video printers (e.g., Thermal Printer).</p> <p>Note: To select Store Locally (above), all other options must be deselected.</p>
	DICOM Print	<p>Sends images to a DICOM printer. Refer to 8.2.12 DICOM Configuration for more setup details.</p>



Custom Key 1, Custom Key 2, Custom Key 3, cont'd	Record Cine	Enables the system to be configured to record a Cine loop . Loop duration is configured through 8.2.18 Capture Settings .
		DICOM Store Cine Enables the user to send animated DICOM to a DICOM archive (8.2.12 DICOM Configuration).
	Record Raw Cine	Saves Cine loops in raw format, enabling future manipulation (5.10.4 Raw Cine Manipulation).
	SonixDVR Recording	Enables SonixDVR Recording (i.e., a physical recording device is <u>not</u> required). Note: SonixDVR Recordings cannot be transferred via DICOM. Use the Image Transfer process (9.3) to export these files.
	Programmable Action	Enables the user to configure the Custom Key(s) to one (1) of three (3) specific actions—unrelated to printing.
Exam Review Toggles access between imaging and Exam Review page.		
Measure Activates Measurement Packages touch screen (i.e., achieves the same result as pressing the console Measure button) .		
Report	Toggles access between imaging and current Report (i.e., achieves the same result as tapping the Report button on the Measurement Packages touch screen).	
FREEZE Key Programmable Action	Enables the user to customize the action of the  button.	
	Freeze Toggles access between live and frozen imaging. This setting is the system default.	
	Measure Toggles access between live imaging and the Measurements Package touch screen. This enables the user to determine their preferred workflow.	

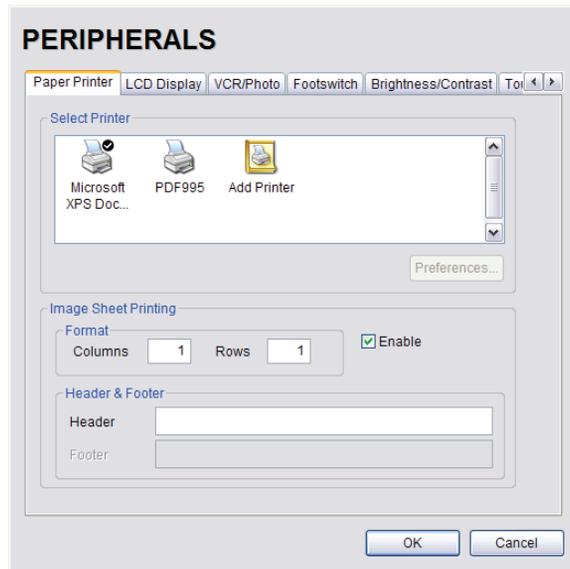
To Configure Custom Keys:

1. Press the console  button.
2. Select **Administrator > Custom Keys**.
3. Select the desired **Custom Key** tab.
4. Configure the individual **Custom Keys** as required.
5. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

8.2.14 Peripherals

The **Peripherals** setup dialogs enable software configuration for the various peripherals that are approved for connection to the system. For installation details of the specific connections involved, refer to [Chapter 10: Connectivity, Peripherals and Software](#).

Figure 8-29: Peripherals



To Access the Peripherals Dialog:

1. Press the console  button.
2. Select **Administrator > Peripherals**.
3. Select the relevant **Peripherals** dialog tab.

8.2.14.1 Paper Printer

The **Paper Printer** dialog is used to configure a laser or inkjet paper printer connected to the system. If the printer is connected via a parallel or USB port, the system will recognize the printer and subsequently list it as a recognized printer in the **Select Printer** section of the dialog.

Figure 8-30: Peripherals – Paper Printer

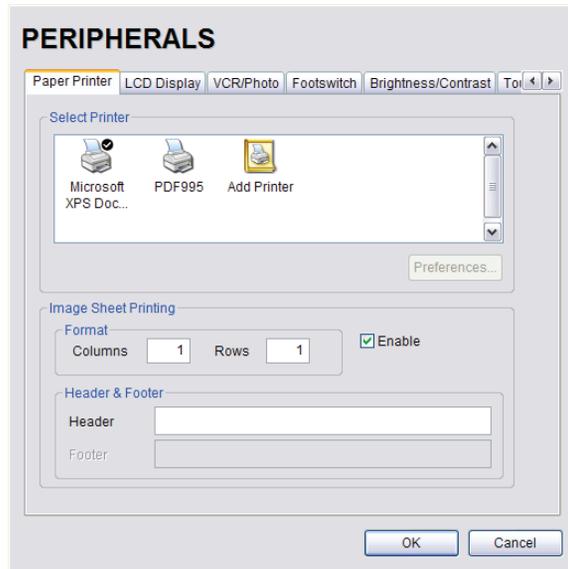


Table 8-31: Paper Printer Settings

Select Printer		Select a Paper Printer from the options presented.
Preferences		Select this button to configure Preferences for the selected printer.
Image Sheet Printing	Format	Columns Select the number of print Columns .
		Rows Select the number of print Rows .
		Enable Select to allow Image Sheet Printing .
	Header & Footer	Header Enter text to be printed in each Header .
		Footer <u>Note: This field is always disabled.</u>



To Configure the System for a Paper Printer:

1. Press the console  button.
2. Select **Administrator > Peripherals**.
3. Select the **Paper Printer** tab.
4. Select the printer from the list of recognized printers. For multiple printers, press the console  button and select **Set as Default Printer** from the onscreen menu.

Note: The selected printer can be a network or a local printer and can be configured for specific formats by selecting **Preferences**.

5. To select/deselect **Image Sheet Printing** (e.g., **2x3** image sheets), select/deselect the **Enable** box.
6. Enter the number of **Columns** and **Rows** desired in the text boxes provided.
7. To add an optional **Header** to the image sheet (or to supply special commands, as required), enter the desired text in the space provided.

Note: To configure the console **1, 2** or  button to send images to the default printer, refer to **8.2.13 Custom Keys**.

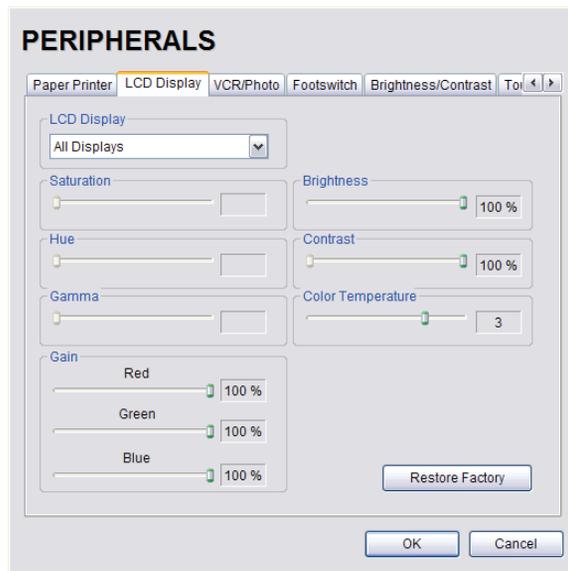
To send partial print pages (e.g., 3 images remaining on a 4 image/sheet format) at the end of an exam, tap the touch screen **End Exam** button.

8.2.14.2 LCD Display

Adjust the following LCD display settings as required: **Saturation**, **Hue**, **Gamma**, **Brightness**, **Contrast**, **Color Mode** and **Gain (Red, Green and Blue)**.

Note: Select the **Restore Factory** button to reconfigure **LCD Display** to factory settings.

Figure 8-31: Peripherals – LCD Display



To Adjust the LCD Display Settings:

1. Press the console  button.
2. Select **Administrator > Peripherals**.
3. Select the **LCD Display** tab.
4. Position the trackball arrow over the desired setting slider.
5. Press and hold the  button while moving the trackball to the desired position.
6. Repeat **step 4** and **step 5** as many times as required.
7. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.



8.2.14.3 VCR/Photo

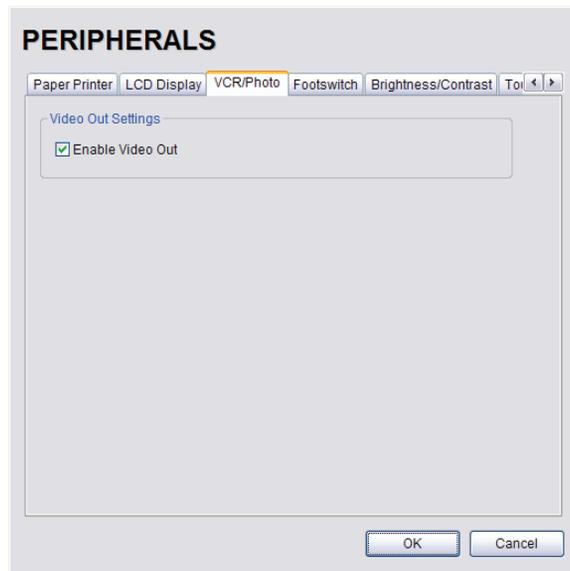
Output video includes only the image area (or full screen when a dialog such as the **Exam Management** page or **Image Review** pages are displayed on the screen). The output video does not include the thumbnail images.

Use the **VCR/Photo** dialog to enable/disable the live output video (**Video Out**).

Note: To create a **SonixDVR Recording** of an exam session, refer to [8.2.13 Custom Keys](#) and/or [8.2.18 Capture Settings](#).

A physical recording device is not required for **SonixDVR Recording**. However, the option must be configured in [8.2.13 Custom Keys](#) before an exam session can be recorded to an **MPG** file.

Figure 8-32: Peripherals – VCR/Photo



To Enable VCR/Photo Functionality:

1. Press the console  button.
2. Select **Administrator > Peripherals**.
3. Select the **VCR/Photo** tab.
4. Select/deselect **Enable Video Out** as required.
5. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

8.2.14.4 Footswitch

The **Footswitch** dialog allows the user to configure the desired operation for as many as three (3) footswitches. There are seven (7) options: **None**, **Print**, **Freeze**, **Quick Cine Record**, **Exam Management**, **Measurement** and **Exam Review**.

Figure 8-33: Peripherals – Footswitch

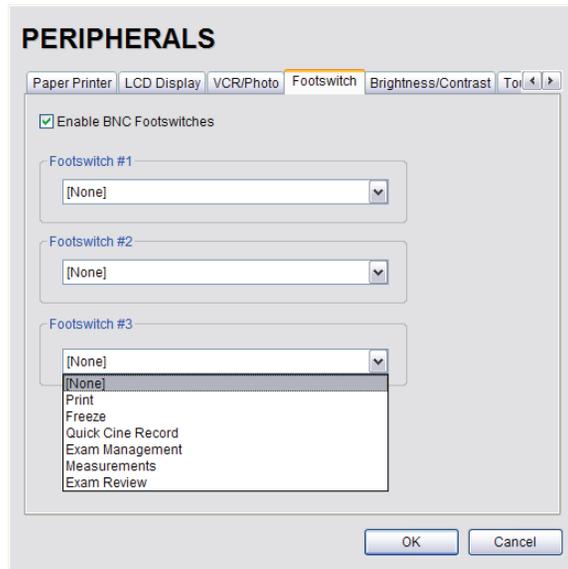


Table 8-32: Footswitch Options

Enable BNC Footswitches

Footswitch #1, #2, #3	None	Select the action to be performed when a specific footswitch is pressed.
	Print	
	Freeze	
	Quick Cine Record	
	Exam Management	
	Measurements	
	Exam Review	



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To Configure the Footswitch Settings:

1. Press the console  button.
2. Select **Administrator > Peripherals**.
3. Configure the **Footswitch** options as required.
4. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

8.2.14.5 Brightness/Contrast

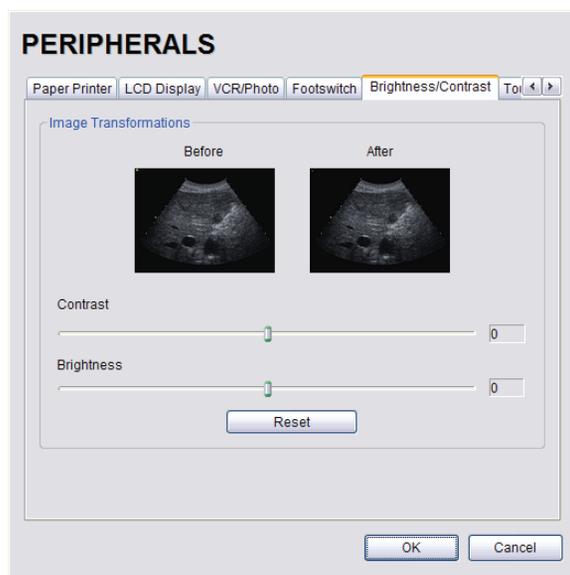
The **Brightness/Contrast** dialog allows users to change the **Brightness/Contrast** of images transferred to peripherals to ensure optimum quality.

Note: The **Brightness/Contrast** values set on this tab are not applied to the image on the screen or images stored to the system.

The effects of the **Brightness/Contrast** settings are seen in the **Before** and **After** images.

Note: Select the **Reset** button to restore **Brightness/Contrast** settings to factory defaults.

Figure 8-34: Peripherals – Brightness/Contrast



To Adjust the Brightness/Contrast Settings:

1. Press the console  button.
2. Select **Administrator > Peripherals**.
3. Select the **Brightness/Contrast** tab.
4. Position the trackball arrow over the **Brightness** or **Contrast** slider.
5. Press and hold the  button while moving the trackball to the desired position.
6. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.



8.2.14.6 Touch Screen

The **Touch Screen** dialog allows users to change the **Brightness/Contrast** of images transferred to peripherals to ensure optimum quality. The effects of the **Brightness/Contrast** settings are seen in the **Before** and **After** images.

Note: The **Brightness/Contrast** values set on this tab are not applied to the image on the screen or images stored to the system.

Figure 8-35: Peripherals – Touch Screen

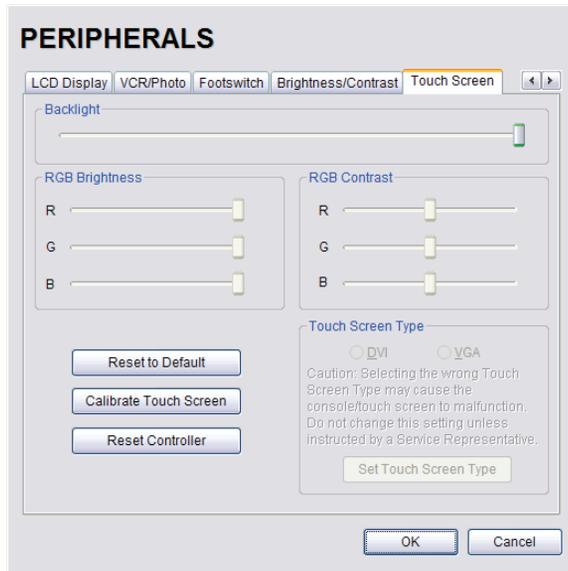


Table 8-33: Touch Screen Settings

Backlight	Adjusts the Backlight intensity.
RGB Brightness	Adjusts the Brightness intensity of the Red , Green and Blue spectrums.
RGB Contrast	Adjusts the Contrast intensity of the Red , Green and Blue spectrums.
Reset to Default	Restores all settings to the factory defaults.
Calibrate Touch Screen	Recalibrates the touch screen.
Reset Controller	Not available in this release.
Touch Screen Type	Not available on this platform.

To Adjust the Touch Screen Settings:

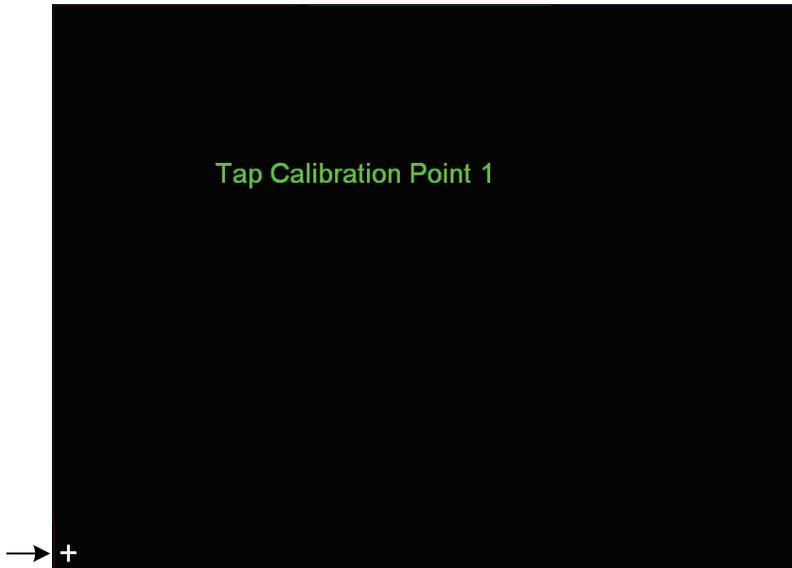
1. Press the console  button.
2. Select **Administrator > Peripherals> Touch Screen**.
3. Position the trackball arrow over any of the sliders.
4. Press and hold the  button while moving the trackball to the desired position.
5. Select **Reset to Default** to restore factory settings.
6. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.



To Calibrate the Touch Screen:

Note: *The touch screen is very robust so this will not need to be performed often.*

1. Press the console  button.
2. Select **Administrator > Peripherals > Touch Screen**.
3. Select **Calibrate** and follow the touch screen prompts.



Note: *Tap the places indicated with a quick, light touch.*

4. Once the calibration is complete, select **OK** to exit.

8.2.15 Display Settings

Display Settings allows users to configure the various LCD display options.

Figure 8-36: Display Settings

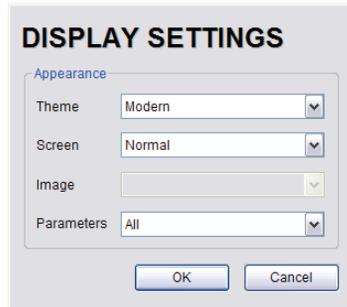


Table 8-34: Display Settings

Appearance	Theme	Classic Modern	Configure the basic settings for the LCD display using either Advanced or Classic features.
	Screen	Normal Full	Configure imaging Layout .
	Image	Right Left	Not available on this platform.
	Parameters	All Subset	Configures the system to display All available or a specific Subset of imaging parameters: Subset consists of: MII/TI , FPS , Resolution and Freq (refer to Table E-1 for imaging parameter details). Note: When Subset is selected, a Depth value will be placed under the Depth markers.

To Configure Display Settings:

1. Press the console  button.
2. Select **Administrator > Display**.
3. Configure **Display Settings** as required.
4. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

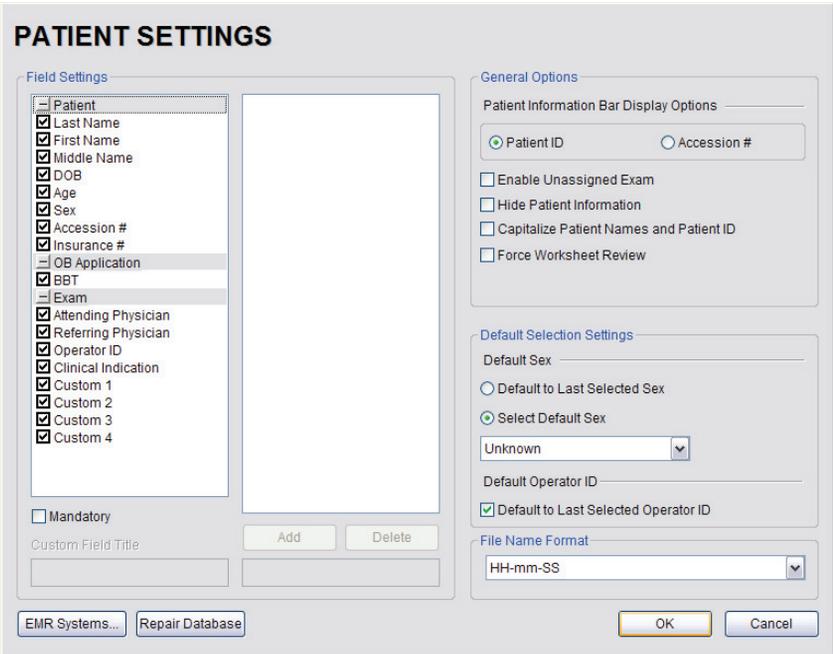
8.2.16 Patient Settings

Patient Settings allows users to configure options for the **Exam Management** page, the onscreen display of patient data and **EMR Systems**.

The following configuration options are available with the **EMR System EHealthConx**:

- **Operators** must be selected from a predetermined list (see also [3.3.1 Quick Exam Start-Up](#))
- **Worksheets** must be reviewed prior to ending an exam (not relevant to this platform)
- **FTP** transfers are automatically initiated once an exam is ended ([8.2.17 Status Bar](#)).

Figure 8-37: Patient Settings



PATIENT SETTINGS

Field Settings

- [-] Patient
 - Last Name
 - First Name
 - Middle Name
 - DOB
 - Age
 - Sex
 - Accession #
 - Insurance #
 - [-] OB Application
 - BBT
 - [-] Exam
 - Attending Physician
 - Referring Physician
 - Operator ID
 - Clinical Indication
 - Custom 1
 - Custom 2
 - Custom 3
 - Custom 4

Mandatory

Custom Field Title

Add Delete

EMR Systems... Repair Database

General Options

Patient Information Bar Display Options

Patient ID Accession #

Enable Unassigned Exam

Hide Patient Information

Capitalize Patient Names and Patient ID

Force Worksheet Review

Default Selection Settings

Default Sex

Default to Last Selected Sex

Select Default Sex

Unknown

Default Operator ID

Default to Last Selected Operator ID

File Name Format

HH-mm-SS

OK Cancel

Figure 8-38: EMR System Settings and Operators

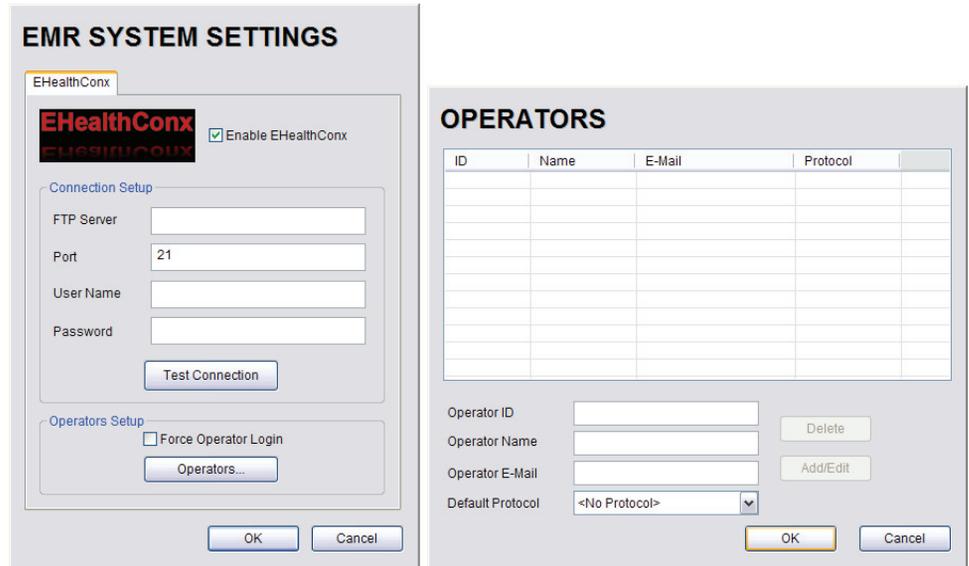


Table 8-35: Patient Settings

Field Settings	<p>Select/deselect the Field Setting data entry fields as required. Selected fields will appear on the Exam Management page and, where applicable, in the relevant databases (as described in 4.8 Storage/Database Tabs).</p>
	<p>Last Name First Name Middle Name DOB Age Sex Accession # Insurance #</p> <p>When selected, these fields will be available under Patient Information (4.1.1).</p>
	<p>BBT</p> <p>When selected, BBT will be available under Application Information (4.1.2).</p> <p>Note: BBT is only applicable when the Application is set to OB.</p>
<p>Note: Users are able to add/edit/delete data in the following fields. Deleting data does not affect existing patients.</p> <p>Once deleted, the data can be added again at a later date either here or on the Exam Management page (4.1.3).</p>	



Field Settings, cont'd	Attending Physician Referring Physician Operator ID Clinical Indication	When selected, these fields will be available under Exam Information (4.1.3) .	
	Custom 1, 2, 3, 4	Use these four (4) user-defined data entry fields to create the desired label in the Field Title text entry box (e.g., Nationality). The customized label appears as one of the data entry fields under Exam Information (4.1.3) .	
	Mandatory	Forces Operators to complete specific Patient data fields. If an Operator tries to begin an exam using either the Exam Management page or QSonix before all Mandatory fields have been completed, an Input Required message will be presented.	
General Options	General Options control the ability to include/exclude or display/hide certain fields in the Patient Bar on the imaging screen.		
	Patient Information Bar Display Options	Patient ID OR Accession #	The selected option (Patient ID or Accession #) will be displayed in the Patient Information Bar along the top of the LCD display during an exam.
	Enable Unassigned Exam	Select/deselect to enable/disable the ability to begin an exam <u>without</u> selecting a patient. Refer to 4.5 for more details.  Warning: Exams that are assigned to a Patient <u>after</u> images have been saved do not include identifying Patient data (such as Patient ID or Name). Organizations that elect to configure/use the Enable Unassigned Exam functionality provided by Ultronix are assuming all liabilities and risks associated with that decision.	
	Hide Patient Information	Select/deselect to display/hide the Patient Information during an exam.	
	Capitalize Patient Names and Patient ID	Select to capitalize all letters in a patient's name or identification number.	
Force Worksheet Review	Not relevant to this platform.		



Default Selection Settings	Default Sex	<p>When Default to last selected sex is chosen, opening a fresh Exam Management page will result in the Sex field being populated with the same gender that was selected in the last Exam Management page.</p> <p>OR</p> <p>When Select default sex is chosen, the user must select a specific Sex from the drop-down menu. The Sex selected will then become the default and be automatically entered in the Sex field of every new patient record that is created. There are four (4) choices available: Female, Male, Other and Unknown.</p>	
	Default Operator ID	<p>When Default to last selected Operator ID is chosen, opening a fresh Exam Management page will result in the Operator ID field being populated with the same Operator that was selected in the last Exam Management page.</p> <p>Note: This option is especially useful if the same Operator will be using the system for an extended period of time.</p>	
	File Name Format	Not available in this release.	
EMR Systems...	<p>Selecting an EMR (Electronic Medical Record) System setting enables that EMR System. It will also enable the configuration/control of Operator IDs.</p>		
	EHealthConx	Connection Setup	<p>Enable EHealthConx Select/deselect to enable/disable EHealthConx.</p> <p>FTP Server Port Enter the relevant data as provided by EHealthConx.</p> <p>User Name Password Note: If desired, the FTP (File Transfer Protocol) transfer status icon can be configured to appear on the LCD display during file transfer (8.2.17 Status Bar).</p> <p>Test Connection After entering the Connection Setup data, select this button to test the FTP connection.</p>
		Operators Setup	<p>Note: Operator IDs entered here are specific to EHealthConx, but they will also:</p> <ul style="list-style-type: none"> • be used in Quick Exam Start-up (3.3.1) if Force Operator Login was enabled • form part of the list of Operator IDs available from Exam Information (4.1.3). <p>Force Operator Login Select to force Operators to log in when using QSonix. Note: The Operator ID must have already been entered here using the Operators... option (i.e., they cannot be added during the QSonix process).</p>
		Operators...	<p>Operator ID Enter the relevant data in each field.</p> <p>Operator Name Note: The Operator E-Mail address must be valid as it is used by EHealthConx to identify the Operator involved in each specific exam.</p> <p>Operator E-Mail</p> <p>Default Protocol</p>



Repair Database	Performs basic database file compression which can improve system performance.
	Caution: <i>This operation is best performed by or under the supervision of a Service Representative.</i>

To Access the Patient Settings Dialog:

1. Press the console  button.
2. Select **Administrator > Patient**.

To Configure Patient Settings:

1. Press the console  button.
2. Select **Administrator > Patient**.
3. Configure **Patient Settings** as required.
4. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

To Create Mandatory Settings:

1. Press the console  button.
2. Select **Administrator > Patient**.
3. Select the desired **Field Setting** (e.g., **Last Name**).
4. Select the **Mandatory** checkbox.
5. Repeat [step 3](#) and [step 4](#) as required.
6. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

8.2.16.1 EMR Settings

To Configure EMR System Settings:

1. Press the console  button.
2. Select **Administrator > Patient > EMR Systems,,,.**
3. Select **Enable EHealthConx** and configure the **Connection Setup** options as required.

Note: *Ultrasonix recommends that **Connection Setup** options be configured using the settings provided by your IT Department.*

4. Select **Operators....**
5. Enter the required data in each field and select the **Add/Edit** button.
6. Repeat [step 5](#) as many times as required.
7. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

8.2.17 Status Bar

When **Status** indicators are enabled, the system will present the relevant icons at the bottom right of the LCD display. Read the definitions carefully as not all icons will always be visible—even if the relevant option has been activated.

By default, all **Status Bar** options are unselected.

Figure 8-39: Status Bar

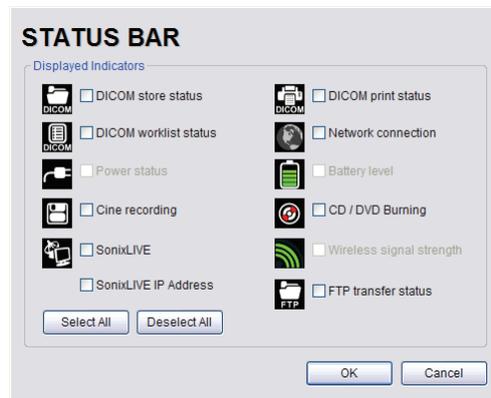


Table 8-36: Status Bar – Displayed Indicators

<p>DICOM Store status</p>	<p>Indicates the system is connected to a DICOM Storage server. This icon will be visible for only a short period of time. When a user accesses the DICOM Storage server, the icon will be presented while the operation is underway.</p>
 <p>Active Success Failure</p>	<p>Note: A Network connection must exist in order to have access to a DICOM network.</p>
<p>DICOM Print status</p>	<p>Indicates the system is connected to a DICOM Print device. This icon will be visible for only a short period of time. When the DICOM Print device is in use, the icon will be presented while the job is printing.</p>
 <p>Active Success Failure</p>	<p>Note: A Network connection must exist in order to have access to a DICOM network.</p>
<p>DICOM Worklist status</p>	<p>Indicates the system is connected to a DICOM Worklist server. This icon will be visible only when the DICOM Worklist server is being accessed.</p>
 <p>Success Failure</p>	<p>Note: A Network connection must exist in order to have access to a DICOM network.</p>

Network connection



Connected Not Connected

Indicates whether or not a hard-wired network connection is available.

Power status



Wall Plug Battery

Specifies the power source in use: **Wall Plug** (AC power) or **Battery (UPS)**.

The **Battery (UPS)** option is not available on this platform.

Battery level

Not available on this platform.

Cine recording



When **Cine Recording** is underway, this icon will be visible during the recording process.

CD/DVD Burning



Indicates that a CD or DVD is being burned.

Note: *The system does not have a built-in CD/DVD player/burner. Refer to System Specifications for details on the recommended USB CD/DVD player/burner.*

Wireless signal strength

Not available on this platform.

SonixLive



Connected Not Connected

When SonixLive is activated, the **Connected** icon will be visible on the LCD Display.

SonixLive IP Address

When **Streaming Video** is underway, selecting the icon will display the **IP Address** at which remote users can view the video.

Note: *If the relevant staff has been informed of a fixed IP Address, activating this option is unnecessary.*

*If a dynamic IP Address is used, enable this option to access the address from the LCD display during **Streaming Video**.*

*Alternatively, to maintain data privacy, do not enable this option and direct staff to view the current **Local IP Address** (fixed or dynamic) via **Menu > Administrator > Network** dialog.*

FTP transfer status



Connected Not Connected

If an **EMR System** is configured, this icon will be visible when the **FTP** connection is live (refer to **EMR Systems...** in **Table 8-35** for more detail).

Note: *Once an **FTP** connection is configured under **EMR Systems...** (**Table 8-35**), ensure the **FTP transfer status** option is selected.*

Select All

Enables the selection of all options in one step.

Deselect All

Enables the deselection of all options in one step.



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To Access Status Bar Indicators:

1. Press the console  button.
2. Select **Administrator > Status Bar**.

To Configure Status Bar Indicators:

1. Press the console  button.
2. Select **Administrator > Status Bar**.
3. Select/deselect **Displayed Indicators** as required.
4. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

8.2.18 Capture Settings

The **Capture Settings** dialog allows the user to select between **Image** and **Full Screen** for image storage and to configure the loop storage record time.

Figure 8-40: Capture Settings

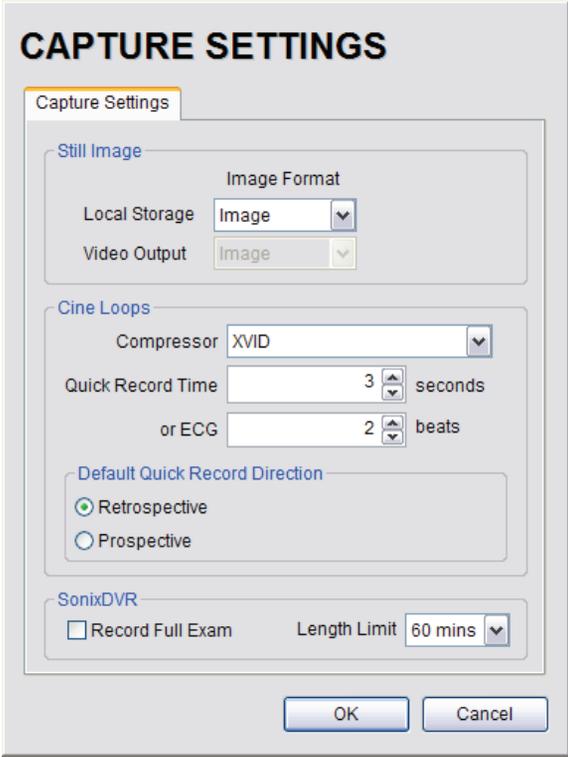


Table 8-37: Capture Settings

Still Image	Local Storage	Select between Full Screen and Image for still image storage. Note: <i>Image</i> includes image field, imaging parameters and patient data bar. <i>Thumbnail</i> images are not included. <i>Full screen</i> includes the entire display, including thumbnails.
	Video Output	Not available in this release.



Cine Loops	Compressor		Select the AVI movie Compressor type. XVID is the default. Caution: This setting should not be changed without a thorough understanding of Compressor types .
	Quick Record Time		Select the Quick Record Time (1 to 30 seconds) for post recording (retrospective acquisition). Refer to 8.2.13 Custom Keys to configure the console 1, 2 or  button for Quick Record . Quick Record is only available for 2D or 2D/Color imaging. Note: Selecting a longer record time may slow down system performance.
	or ECG (number of (heart) beats)		Cine capture length during an ECG is based on the number heart beats selected here. Refer to 8.2.13 Custom Keys to configure the console 1, 2 or  button. The default setting is 2 beats . Note: ECG is not available on this platform.
Cine Loops	Default Quick Record Direction	Retrospective	Select to record history, i.e., the previous X seconds, where X is the number of seconds selected in Quick Record Time .
		Prospective	Select to record the next X seconds, where X is the number of seconds selected in Quick Record Time .
SonixDVR	Note: Refer to 5.9 SonixDVR Recording for more details on SonixDVR .		
	Record Full Exam		Select to record every exam from start to finish.
	Length Limit		If Record Full Exam is selected, set the maximum record time for each exam: 5, 10, 20, 30, 40, 50 or 60 minutes . Once the Length Limit is reached, the exam will automatically stop recording and create an MPG file saved to the current Patient/Exam. Note: If the Length Limit is reached before the exam is finished, the recording will end (after being saved to the Patient/Exam). If additional recording is required, start a MPG using the Custom Key (8.2.13) configured for SonixDVR .

To Configure Capture Settings:

1. Press the console  button.
2. Select **Administrator > Capture**.
3. Configure **Capture Settings** as required.
4. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.

8.2.19 Imaging Modes

The *Imaging Modes* dialog allows the configuration of a variety of *Imaging Mode* options.

Figure 8-41: Imaging Modes and Color Settings

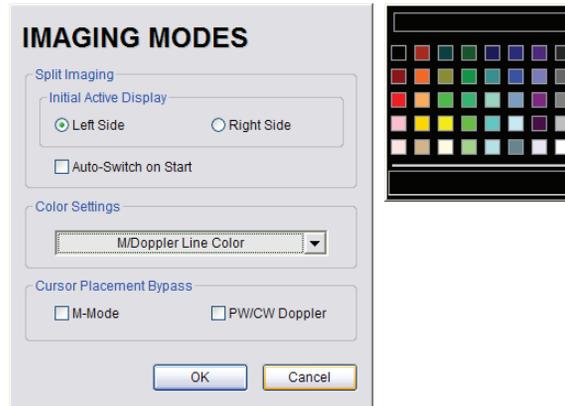


Table 8-38: Imaging Modes

Split Imaging	Initial Active Display	Left Side	When scanning in <i>B-Mode</i> , selecting Left Side will ensure the left image is the active image when the console Dual/Quad button is pressed. Left Side is the default setting.
		Right Side	When scanning in <i>B-Mode</i> , selecting Right Side will ensure the right image is the active image when the console Dual/Quad button is pressed.
	Auto-Switch on Start	Selecting this option will ensure that the selected side is active after the console Dual/Quad button is pressed, but then that image will immediately freeze and the active image will move to the opposite side. For example, if Left Side is set as Initial Active Display and Auto-Switch on Start is selected, after pressing the console Dual/Quad button, the Left Side image will be presented as active, then immediately freeze and active imaging will move to the Right Side .	
Color Settings	M/Doppler Color Line	Select/edit the M-Mode line color.	



Cursor Placement Bypass	M-Mode	<p>M-Mode automatically displays the split-screen 2D/M-Mode Sweep immediately after M-Mode is activated.</p> <p>Deselecting M-Mode displays a full screen 2D image with an M-Mode cursor line immediately after M-Mode is activated.</p> <p> activates the M-Mode Sweep.</p>
	PW/CW Doppler	<p>PW/CW Doppler automatically displays the split-screen 2D/Doppler Trace immediately after Doppler is activated.</p> <p>Deselecting PW/CW Doppler displays a full screen 2D image with the Doppler SV (Sample Volume) cursor immediately after Doppler is activated.</p> <p> activates the Doppler Trace.</p>

To Configure Imaging Modes:

1. Press the console  button.
2. Select **Administrator > Imaging Modes**.
3. Configure settings as required.
4. Select **OK** to accept the changes and exit or **Cancel** to exit without saving.
5. If **OK** is selected in **step 4**, a message will be presented.
6. Select **OK** to continue.

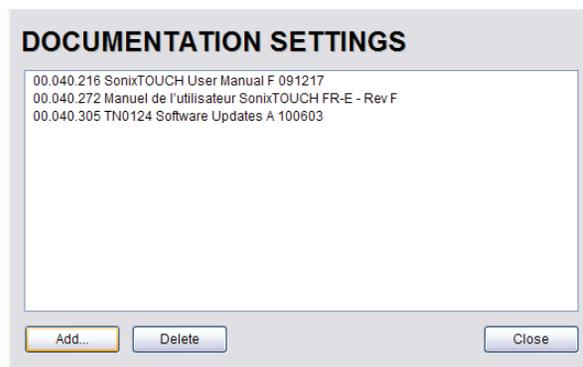
8.2.20 Documentation Settings

This option enables users to **Add/Delete** user documentation for viewing on the system.

Note: All documents must be in PDF format.

Refer to [3.3.3](#) for details on accessing the PDFs.

Figure 8-42: Documentation Settings



Note: To view documentation (in PDF format only) on the system, refer to [3.3.3 Documentation Access](#).

To Add a (PDF) Document:

1. Press the console  button.
2. Select **Administrator > Documentation**.



3. Ensure the appropriate media containing the relevant **User Manual** PDF(s) is connected to the system (e.g., a USB key).
4. Select the **Add...** button.

5. Select the **Documentation Location** from the drop-down menu.



6. Select the relevant PDF from the **Available Documentation** drop-down menu.



7. Select **OK** and the system will copy the PDF to the system.

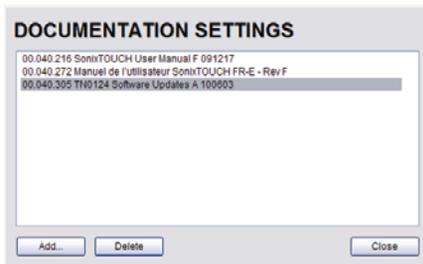


Note: This may take a few moments, depending on the size of the PDF.

8. Repeat [step 4](#) to [step 7](#) as many time as required.

To Delete a (PDF) Document:

1. Press the console  button.
2. Select **Administrator > Documentation**.
3. Highlight the PDF to be deleted.



4. Select **Delete**.

8.2.21 Software Update

This option allows users to install software updates via the Internet or with a USB key.

Note: Access to **Software Update** is available only with a valid warranty license.

Figure 8-43: Software Updates

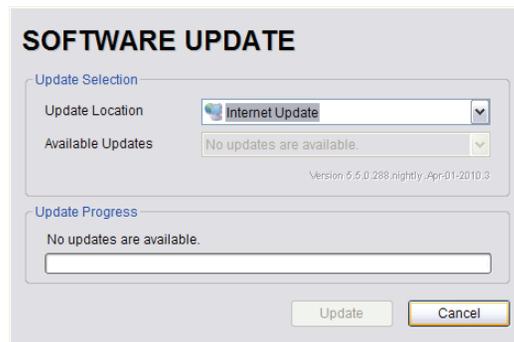


Table 8-39: Software Updates

Update Selection	Update Location	Internet Update	If the system is connected to the Internet, an automatic search for available software updates occurs. If successful, the Available Updates drop-down menu auto-populates with the software revisions available for download. The most recent revision is automatically selected but older software revisions may also be available.
		DVD-RAM Drive (E:)	If the update is located on a CD or DVD, it can be accessed via a USB DVD-RAM Drive which can be selected from the Available Updates drop-down menu. Note: <i>SonixTouch, SonixMDP/SP/OP and SonixTablet do not have a built-in CD/DVD player/burner. Refer to System Specifications for details on the recommended USB CD/DVD player/burner.</i>
		Removable Disk	If a removable disk (e.g., USB key or thumb drive) containing the update has been inserted in a USB port on the Front or Back Connectivity Panel, it will be available for selection from the Available Updates drop-down menu.
	Available Updates	Select to choose the appropriate update. Options in this drop-down menu are limited by the selection made in the Update Location drop-down menu.	
Update Progress		Lets the user know when the update is complete or Ready .	



To Perform a Software Update:

1. Press the console  button.
2. Select **Administrator > Software Updates**.
3. Select an **Update Location** from the drop-down menu.

Note: *In order to be available in the **Update Location** drop-down menu, the USB key must be inserted prior to selecting the **Software Update** option from the **Administrator Settings** menu.*

4. Select **Update** to begin the update process or **Cancel** to exit without updating.

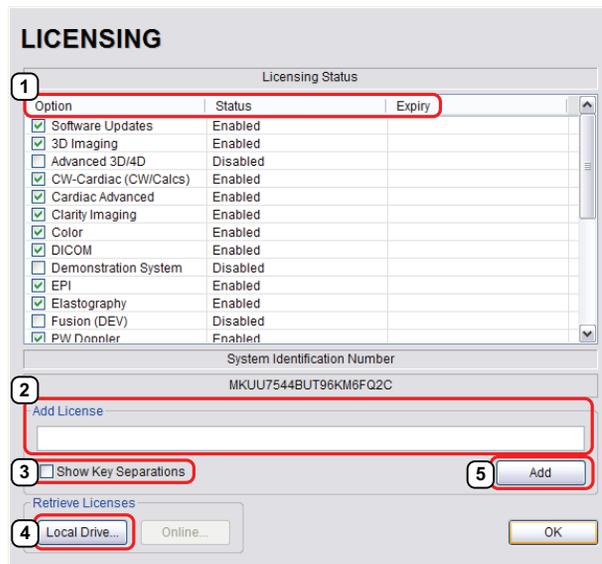
Note: *The **Update Progress** bar displays the download progress. Upon completion, the **Software Update** will be auto-installed and the system will restart automatically.*

8.2.22 Licensing

Licensing displays the **Options** available on the Sonix system. **Status** and **Expiry** dates (when applicable) of enabled features are also displayed.

Ultrasonix recommends including the *license.key* file in a regular backup, using the **Export** option under **8.2.10 System Settings**.

Figure 8-44: Licensing



Note: *Options that are not licensed at the time of purchase will not be visible in the Licensing dialog. To Enable a new Option, call your local dealer or Ultrasonix Technical Support.*



Table 8-40: Licensing Status

	Enabled	License is Enabled and has more than 30 days remaining.
	Enabled (with Expiry Date)	License is Enabled and will expire in less than 30 days. Note: The exact numbers of days remaining will be listed, e.g., Expires in 27 days.
1	Expired	License was Enabled but is now Expired. Note: To restore an Expired license, call your local dealer or Ultrasonix Technical Support.
	Disabled	Operator has deselected a licensed Option. Note: To Enable the Option , check it then select OK to save and exit.
2	Add License Text Box	When <i>license.key</i> is received in an electronic format that lends itself to the standard copy and paste method, do not select Show Key Separations . Simply copy and paste <i>license.key</i> into Add License .
3	Show Key Separations Checkbox	When entering <i>license.key</i> manually, select Show Key Separations checkbox to enable block-by-block key entry.
4	Local Drive... Button	If <i>license.key</i> is available on the local hard drive, select Local Drive... and choose the appropriate file (*.key) to import/enable the new license.
5	Add License Button	Select to add the license.

To Access the Licensing Dialog:

1. Press the console  button.
2. Select **Administrator > Licensing**.

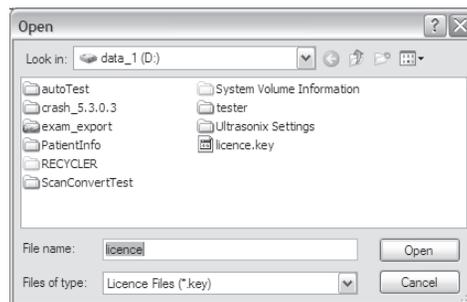
To Enter a New Licensing Key:

1. Press the console  button.
2. Select **Administrator > Licensing**.
3. Enter the new license key in the **Add License** text box.
4. Select **Add** to add the new license key.
5. Check to ensure the new license has been added then select **Close** to exit the **Licensing** dialog.

To Re-Import License.key:

Note: This process presumes the license.key file is stored on a USB device.

1. Insert the USB device with license.key file into one of the system's USB drives.
2. Press the console  button.
3. Select **Administrator > Licensing**.
4. Select **Local Drive**.
5. Under the **Look in** drop-down menu, select the relevant drive/device and locate *license.key*.



6. Select **Open** to re-import *license.key*.

Note: If there are any problems, clear all menus, return to the **Licensing** dialog and contact **Ultrasonix Technical Support** for assistance.



ULTRASONIX

8.3 SERVICE MENU

Access to **Service** is password protected and restricted to certified, Ultronix Service representatives.

CHAPTER 9: IMAGE STORAGE, REVIEW, TRANSFER AND PRINT

The SonixOP includes a (local) patient/exam management system with image storage, review, transfer and print which can be accessed from:

- the **Exam Management** page via the **Review** button. This allows the **Operator** to select one or multiple patients and their associated exam(s)
- a **Custom Key**, providing that **Custom Key** was configured to access the **Exam Review** page (8.2.13)
- the console  button on the main touch screen, which offers access only to the current Patient and their associated exam(s).

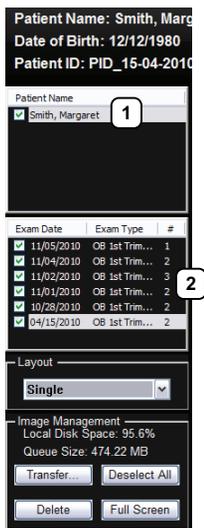
9.1 IMAGE STORAGE

Each time a new patient is entered into the system, a local file is created for that patient. All saved images and **Cine** clips are stored in the patient file and organized by exam date and type. This image/**Cine** data may be retrieved at any time and transferred to a printer, **DICOM** archive, etc.

Hard drive capacity for patient data storage is at least 160 gigabytes. Depending on the number/type of images involved, the system can store more than 50,000 exams.

Note: *Ultrasonix recommends regular patient/image file back-up and purging of older patient files stored on the system.*

Figure 9-2: Sample Exam Review Page (Methods 1 and 2)



Note: For methods 1 and 2, images for the current exam will be presented first, but all exams for the current Patient will be available for review.

Table 9-1: Sample Exam Review Page (Methods 1 and 2)

1	Current Patient.
2	Multiple exams for the current Patient.

To Access the Exam Review Page (Method 1 – Current Patient):

1. During an exam, press the console **1**, **2** or  button (whichever was configured to access **Exam Review**) to view the images for the current exam.

Note: Refer to [8.2.13](#) for details on configuring a **Custom Key** to access **Exam Review**.

To Access the Exam Review Page (Method 2 – Current Patient):

1. During a patient exam, press the console  button.
2. On the **Exam Management** page, select **Review** to view the current exam images.



Figure 9-3: Sample Exam Review Page (Method 3 – with Multiple Patients)

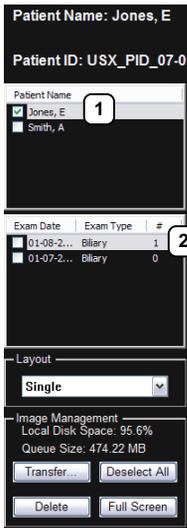


Table 9-2: Sample Exam Review Page (Method 3 – with Multiple Patients)

1	First Patient.
2	Multiple exams for the first Patient.

To Access the Exam Review Page (Method 3 – with Multiple Patients) :

1. During a patient exam, press the console button.
2. Select the **Patient** tab.
3. Select the desired Patient(s) from the **Patient** database.

Note: To select multiple Patients at the same time use the trackball and button in conjunction with the **SHIFT** or **CTRL** keyboard buttons to highlight the relevant Patients.

4. Select **Review** and the **Image Review** page will be presented with the exam files for the selected Patient(s).

Figure 9-4: Exam Review Page



Table 9-3: Exam Review Page

1	Patient data for currently displayed image file.
2	Check Patient and Exam file(s) for image transfer or deletion.
3	
4	Check to select individual images for image transfer or deletion.
5	White arrow indicates more images. The trackball arrow cursor triggers scrolling of thumbnails both to the right and left.



Table 9-4: Exam Review Page

Patient Name	Patient(s) selected from the Exam Management page.
Exam Date/Exam Type	Displays the exam files/images for the Patient selected (above). The number of images and Cine clips stored appears in the far right column of this section. By default, if only one patient file is listed under Patient Name , the system will display the images from that patient's most recent exam. If multiple Patients Names are listed, select each of the patients individually to access a list the exam dates for that patient.
Layout	Sets up the image display area: Single, 2x2, 3x3, 4x4, 5x5, 6x6. Note: The default Layout is Single . However, if the default Layout is changed (e.g., to 2x2), the next time Exam Review is entered the system will default to the last Layout selection (in this example, 2x2).

Image Management	Local Disk Space: %	Lists the amount of available space on the system (where % equals the amount of free space available).
	Queue Size: x Kb	Lists the size of selected items (where x equals the total number of kilobytes in the queue).
	Transfer...	Transfers items to the selected destination.
	Deselect All	Deselects All selected patients/exams.
	Delete	Deletes the selected items from the system hard drive.
	Full Screen	Displays the selected image on a Full Screen . Note: Press the console  button to exit Full Screen and return to the Exam Review page.

Note: Stored **Cine** clips are identified by a small movie symbol on the lower right of the image thumbnail. Once selected, the movie will replay in the **Review** window.



Stored **MPG** files (**SonixVCR Recordings**) are identified by a small **REC** symbol on the lower left of the image thumbnail. Once selected, the **MPG** will replay on the **Review** page.



Raw **Cine** loops (5.10.4) are labelled with the icon **RAW**.



The image thumbnails on the bottom of the screen represent all the available images for the exam under review. To scroll through the thumbnails, use the trackball to move the cursor over to the right or left side of the thumbnails.

Table 9-5: Exam Review Touch Screen Controls (tap to activate)

Select All	Tap to Select All patients/patient files/images for image transfer or deletion.
Deselect All	Tap to Deselect All patients/patient files/images marked for image transfer or deletion.
Add Patient	Tap to add the next patient to the queue (selected via checkboxes).
Add Exam	Tap to add the next exam to the queue (selected via checkboxes).
Add Image	Tap to add the next image to the queue (selected via checkboxes).
Transfer...	Tap to initiate image transfer and display the Select Storage Destination page.
Delete...	Tap to Delete the patient(s), patient exam file(s) and/or image(s) selected via checkboxes.
Exit	Tap to Exit the Exam Review page.

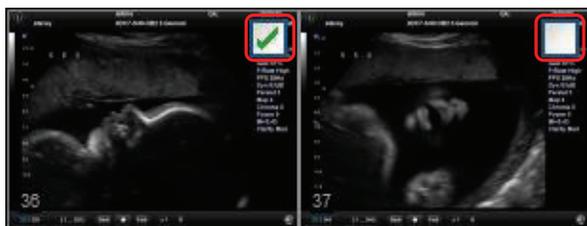
Table 9-6: Exam Review Touch Screen Controls (tap to activate, dial to adjust)

Image	Tap Image then use the associated touch screen dial to select the image(s) displayed. Dial right to select the next image available. Dial left to select the previous image.
Thumbnail	Tap Thumbnail then use the associated touch screen dial to move through the thumbnail images. Dial right to select the next thumbnail. Dial left to select the previous thumbnail.
Layout	Tap Layout then use the associated touch screen dial to change the display Layout : (Single , 2x2 , 3x3 , etc.).
Exam	Tap Exam then use the associated touch screen dial to page through the list of available exams. Press  to select the highlighted exam file.
Patient	Tap Patient then use the associated touch screen dial to page through the list of available patients. Press  to select highlighted patient.

Table 9-7: Cine Review Touch Screen Controls (tap to activate, dial to adjust)

FrmByFrm	Use to select currently displayed frame, one (1) frame at a time.
Speed	Use to select Cine review play speed: 1/8, 1/4, 1/2, Full (1/1) or Double (2/2).

Figure 9-5: Image Selection/Deselection



9.2.1 Deleting Image(s)/Exam(s)

To Delete Individual Images:

1. Select the desired patient and exam date to display the images.
2. To select the desired image(s), use the trackball and  button to place a mark in the associated checkbox(es) (as shown in [Figure 9-5](#)).
3. Tap the touch screen **Delete...** button or select **Delete** from the menu on the LCD display.

Note: Select **Deselect All** to reset the screen and deselect the patient(s), exam(s) and image(s).

To Delete a Complete Exam:

1. Select the desired **Patient** and **Exam Date**.



2. Tap the touch screen **Delete...** button or select **Delete** from the menu on the LCD display.

Note: Select **Deselect All** to reset the screen and deselect the patient(s), exam(s) and image(s).

9.3 IMAGE TRANSFER

The image management system enables users to transfer stored images and **Cine** clips to a storage medium: **DICOM** archive or **Printer** or USB medium, etc.

Files saved to a USB storage device (e.g., **[E:] (Removable Device)**) during data transfer will be printed to a PDF in the relevant **Patient** directory under **Patientinfo**.

Notes:

To select an entire exam, select the checkbox for the desired exam.

To select all exams for a patient, select the checkbox for the desired patient.

To select only the desired image(s) open each exam and select the individual checkbox(es) for the desired image(s).

Figure 9-6: Storage Destination Dialog



STORAGE DESTINATION

DICOM Print Server(s)
DICOM Storage Server(s)

Storage Options

Include Meta-Data Hide Patient ID

Folder Name: UltrasonixExam

Image Format: PNG

DICOMDIR Profile:

Transfer Progress

Save Settings Send Close

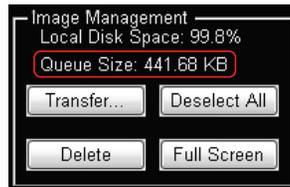


Table 9-8: Storage Destination Options

Storage Destination		<p>All available storage options will be listed here, including all printers currently attached to the system, either locally or via the network: DICOM archive or Printer or USB medium.</p> <p>Note: A removable USB device must be connected to the system in order to have it appear in the list of Storage Destinations.</p>	
Storage Options	Include All Patient Data	Creates a backup of images, reports (PDFs) and Cine files (database and measurement data are not included). If multiple patients are selected with this option, all images will generally be exported in one (1) file.	
	Hide Patient ID	Removes Patient information (Patient Name and ID) from the image, rendering the data anonymous.	
	Folder Name	<p>Images written to a removable USB device will be written into the Folder Name entered here. The default is UltrasonixExam.</p> <p>Note: This field is only available if the selected Storage Destination will create a digital copy of the file e.g., a removable USB device.</p>	
	Image Format		<p>Enables the selection of five (5) different image formats.</p> <p>Note: Selecting anything other than the default (PNG) will extend the image transfer time as PNG images will have to be converted to the new format. Bitmap and DICOM images in particular will take significantly more time to transfer.</p>
		PNG	<p>Portable Network Graphics image format. This is the default selection.</p> <p>The average PNG image size is 100Kb.</p>
		JPEG	Joint Photographic Experts Group image format.
		Bitmap (BMP)	<p>Converting the image to a Bitmap (BMP) increases the image size as follows:</p> <ul style="list-style-type: none"> 800 x 600 Bitmap image = approximately 2Mb 1024 x 768 Bitmap image = approximately 3Mb.
		GIF	Graphics Interchange File or Format image.
		DICOM	DICOM image format.
		DICOMDIR	
			Note: DICOMDIR enables users to copy images to an alternate media if—for whatever reason—it is not possible to transfer the images directly to the DICOM server. They can then be copied to the DICOM server at a later date.
DICOMDIR Profile	Select the appropriate DICOMDIR Profile (DICOMDIR Profiles are defined in the DICOM Standard .)		
Transfer Progress		<p>Displays the file transfer progress.</p> <p>Note: If multiple DICOM Storage or Print Servers have been configured (8.2.12.1 and 8.2.12.2) and DICOM Storage Server(s) or DICOM Print Server(s) is selected as the transfer medium, after selecting Send the Operator will be able to select the specific Server (or set of Servers) to which the data will be transferred.</p>	
Save Settings		Select to save the transfer settings as the default for future use.	
Send		Select to complete the image transfer.	
Close		Select to clear the dialog and exit without transferring the images.	

To Transfer Patient Exams:

1. Select the desired **Patient(s)**, **Exam Date** and/or images.



Note: The amount of space required is listed under **Image Management** as **Queue Size**.

Select **Deselect All** to reset the screen and deselect the patient(s), exam(s) and image(s).

2. Select **Transfer....**
3. Select the desired **Storage Destination**.



Note: All connected Ultrasonix-approved digital storage peripherals will appear in the list of **Storage Destinations**.

If a **DICOM Storage** or **Print Server** is connected, it will also be available for selection.

Files saved to a USB storage device (e.g., [E:] (**Removable Device**)) during data transfer will be printed to a PDF in the relevant **Patient** directory under **Patientinfo**.

4. If required, select **Include All Patient Data** and/or **Hide Patient ID**.
5. If required, change the default **Folder Name (UltrasonixExam)** using the console keyboard.

Note: This field is only available if the selected **Storage Destination** will create a digital copy of the file (e.g., a removable USB device).



6. Select the desired **Image Format (Default (PNG), JPEG, Bitmap (BMP) or GIF)**.

Note: *Selecting anything other than the default (PNG) will extend the image transfer time as PNG images will have to be converted to the new format. Bitmap and DICOM images in particular will take significantly more time to transfer.*

7. If desired, select **Save Settings** to save the current transfer settings as the default.
8. Select **Send** to transfer the files and/or images or **Close** to exit without transferring.

Notes:

If multiple DICOM Storage or Print Servers have been configured (8.2.12.1 and 8.2.12.2) and DICOM Storage Server(s) or DICOM Print Server(s) is selected as the transfer medium, after selecting Send the Operator will be able to select the specific Server (or set of Servers) to which the data will be transferred.

The original files will remain unchanged on the local hard drive.

The Update Progress bar displays the transfer progress.

CHAPTER 10: CONNECTIVITY, PERIPHERALS AND SOFTWARE

The system includes a wide range of connectivity features that allow the user to simultaneously connect a variety of peripherals. Refer to [8.2.14 Peripherals](#) and the *SonixOP Service Manual* for further details on peripheral connectivity.



Warning: Do not touch the patient and the transducer ports simultaneously.

10.1 BACK CONNECTIVITY PANEL

The Back Connectivity Panel can be accessed from the rear of the system. The connectors are routed internally to the System Case Connectivity Panel which enables easy configuration.

Figure 10-1: SonixMDP/SP/OP Back Connectivity Panel (A)

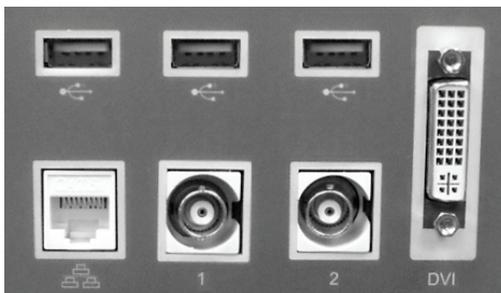


Figure 10-2: SonixMDP/SP/OP Back Connectivity Panel (B)

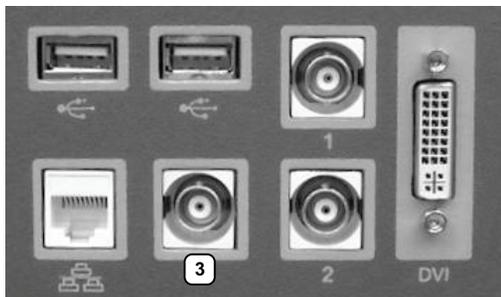




Table 10-1: Back Connectivity Panels (A and B)

	USB (x2)	Use to connect Ultrasonix-approved USB devices (e.g., printer, barcode reader, memory stick, etc.).
	LAN	Use to connect the system to a network. This port supports 10Mb/100Mb.
1	BNC (Input) Connector	Connected to the console 1 button, use to connect an Ultrasonix-approved peripheral (including a Footswitch). Note: <i>The device connected to this BNC is controlled by the settings configured for the console (Custom) 1 button (refer to 8.2.13 to configure Custom Keys or to Chapter 8 in the most recent User Manual).</i>
2	BNC (Output) Connector	Connected to the console 2 button, use to connect an Ultrasonix-approved peripheral. Note: <i>The device connected here is controlled by the settings configured for Custom Key 2 (8.2.13).</i>
(3)	BNC (Output) Connector (Back Connectivity Panel B only)	Use to connect a non-USB Black & White (B&W) printer. If this connector is used, it will be controlled by the console (Custom) 1 button and BNC (Input) Connector (1) above, will be disabled. Note: <i>If this connector is in use a Footswitch cannot be connected. This connector on Back Connectivity Panel B may or may not be labeled with the number 3.</i>
DVI	DVI Connector	Use to connect a second (DVI-compatible) LCD display or television. Caution: <i>Do not plug the extra (DVI-compatible) LCD display into the peripheral receptacle (Figure 10-4). For details on connecting an external TV, refer to 10.3.1.</i>

10.2 CONSOLE CONNECTIVITY

The system provides two (2) USB ports at the front of the operator console. The USB ports can be used to connect Ultrasonix-approved USB devices such as a USB thumb drive.

Figure 10-3: Console Connectivity



10.3 ULTRASONIX-APPROVED DEVICES



Warning: Only Ultrasonix-approved peripheral devices may be connected to the peripheral receptacle.

Refer to the most recent price list to determine the exact make(s)/model(s) of Ultrasonix-approved devices.

The following peripherals have been approved for use with the system:

- SONY USB printer
- USB media (memory stick, external hard drive, etc.).
- dual or triple footswitch
- extra (DVI-compatible) LCD display.

Caution: *Do not* plug the extra (DVI-compatible) LCD display into the peripheral receptacle (Figure 10-4).

For details on connecting an external TV, refer to 10.3.1.

10.3.1 Connecting an External Television to the System

Note: While a selection of televisions were tested against the following instructions, Ultrasonix cannot guarantee that all TVs will function as an external monitor.

The two (2) methods by which an external TV can be connected to the system are:

- via the TV's HDMI (High Definition Multimedia Interface) or DVI input
- via the TV's PC IN connector, providing this connection is either DVI or HDMI.

Caution: When connecting an external TV, be sure to follow all instructions carefully.

Do not plug the external TV into the peripheral receptacle (Figure 10-4).



10.3.1.1 Method 1: Via the TV's HDMI or DVI Input

Search the TV manufacturer's user guide to determine whether or not the TV's **HDMI** or **DVI Input** will accept the required signal format.

Table 10-2: Required Signal Format

Format	Resolution	V. Frequency
XGA	1024 x 768	60 Hz

Determine the type of connector available on the TV in order to source the correct cable:

- DVI connection > DVI to DVI cable
- HDMI connection > HDMI to DVI cable.

To Connect the TV via the DVI Input:

1. With both the TV and the system powered off, connect one end of the DVI cable to **DVI** on the system's Back Connectivity Panel.
2. Connect the other end of the DVI cable to **DVI Input** on the TV.
3. Ensure the TV is plugged in.

Caution: *Do not plug the external TV into the peripheral receptacle (Figure 10-4).*

4. Power on the TV.
5. Power on the system.
6. If necessary, once there is an image on the TV, configure the TV aspect ratio setting to **4:3** (not **16:9**).

To Connect the TV via the HDMI Input:

1. With both the TV and the system powered off, connect the DVI end of the cable to **DVI** on the system's Back Connectivity Panel.
2. Connect the HDMI end of the cable to **HDMI Input** on the TV.
3. Ensure the TV is plugged in.

Caution: *Do not plug the external TV into the peripheral receptacle (Figure 10-4).*

4. Power on the TV.
5. Power on the system.
6. If necessary, once there is an image on the TV, configure the TV aspect ratio setting to **4:3** (not **16:9**).

10.3.1.2 Method 2: Via the TV's PC IN Connector

Search the TV manufacturer's user guide to determine whether or not the TV's **PC IN** connector will accept the required signal format.

Table 10-3: Required Signal Format

Format	Resolution	V. Frequency
XGA	1024 x 768	60 Hz

Determine the type of connector required by the TV's **PC IN** connector in order to source the correct cable:

- DVI connection > DVI to DVI cable
- HDMI connection > HDMI to DVI cable.

To Connect the TV via PC IN with a DVI Cable:

1. With both the TV and the system powered off, connect one end of the DVI cable to **DVI** on the system's Back Connectivity Panel.
2. Connect the other end of the DVI cable to **PC In** on the TV.
3. Ensure the TV is plugged in.

Caution: *Do not plug the external TV into the peripheral receptacle (Figure 10-4).*

4. Power on the TV.
5. Power on the system.
6. If necessary, once there is an image on the TV, configure the TV aspect ratio setting to **4:3** (not **16:9**).

To Connect the TV via PC IN with an HDMI to DVI Cable:

1. With both the TV and the system powered off, connect the DVI end of the cable to **DVI** on the system's Back Connectivity Panel.
2. Connect the HDMI end of the cable to **PC In** on the TV.
3. Ensure the TV is plugged in.

Caution: *The external TV may not be plugged into the peripheral receptacle (Figure 10-4).*

4. Power on the TV.
5. Power on the system.
6. If necessary, once there is an image on the TV, configure the TV aspect ratio setting to **4:3** (not **16:9**).

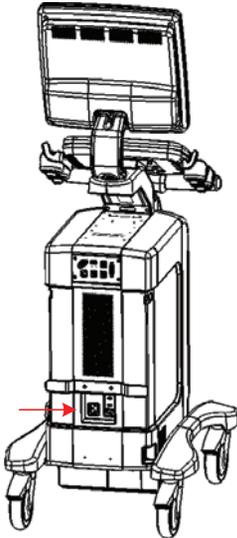


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10.4 PERIPHERAL RECEPTACLE

The system is delivered with one peripheral receptacle that is to be used only with Ultrasonix-approved peripheral devices. The connector is clearly labeled **Only Ultrasonix-approved peripheral devices may be connected to this power receptacle** and is to be used to connect only Ultrasonix-approved, third-party peripherals to the system.

Figure 10-4: Peripheral Receptacle Location



10.5 SonixGPS

The system is delivered with the optional **SonixGPS** attached to the system case.



Warning: *This user manual does not include a comprehensive discussion of the SonixGPS option. For complete details on using SonixGPS, read and follow all instructions and warnings in the most recent SonixGPS User Manual.*

10.6 CONNECTING THE USB FOOTSWITCH (DUAL OR TRIPLE)

Connect the USB footswitch to the Back Connectivity Panel (10.1) and configure it via [8.2.14.4 Footswitch](#).

Figure 10-5: Dual and Triple USB Footswitches



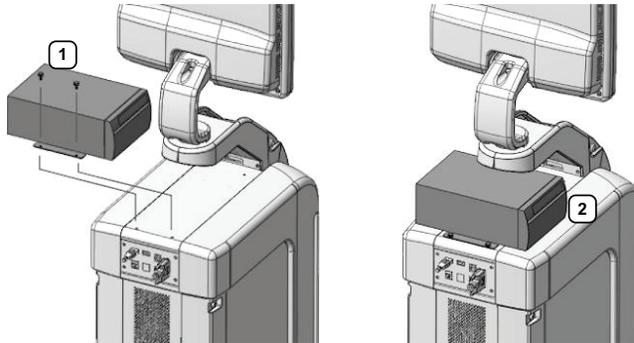


10.7 USB PRINTER MOUNTING KIT

Clients wishing to use a USB printer without the peripheral tray have the option of mounting it directly to the system. The printer will be delivered with the mounting plate already attached.

To Mount the USB Printer Directly to the System:

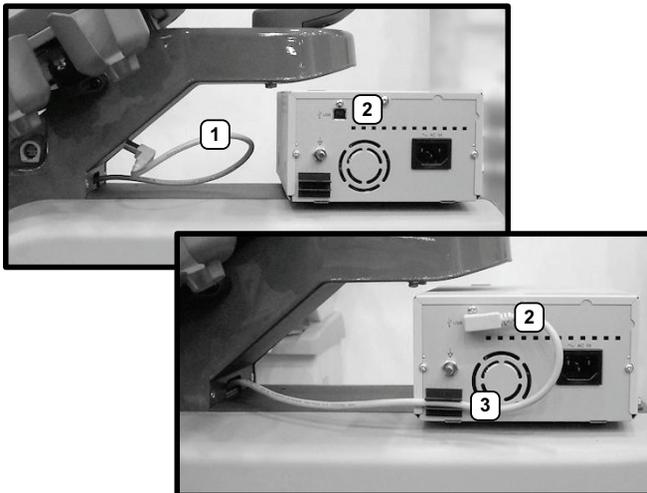
1. Using the two (2) supplied thumbscrews (1), attach the printer mounting plate to the system.



Note: Ensure the printer front (2) faces in the correct direction.

If the system order included a USB printer, it will be delivered with the appropriate USB cable already installed.

2. Plug the USB cable extending from the system's cable chase (1) into the USB connector on the printer (2).



3. To minimize cable clutter, press the USB cable into the cable retaining clip (3).

10.8 PERIPHERAL TRAY

If the system order included the peripheral tray it will come pre-installed—with the exception of the peripheral tray basket. The basket will have to be installed after delivery.

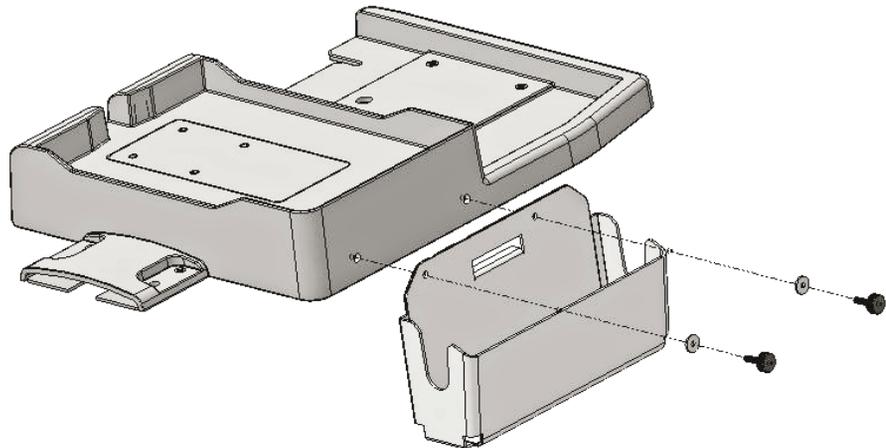
Note: For best results, Ultrasonix recommends removing the peripheral tray basket before cleaning (D.4.8). This will allow the operator to clean all the various curves and folds in a more effective manner.

If a USB printer has also been installed, it should be removed as well (10.8.1).

The peripheral tray is not available for systems that have **SonixGPS** installed.

To Attach the Peripheral Tray Basket to the Peripheral Tray

1. Using the two (2) sets of supplied nylon washers and thumbscrews, attach the peripheral tray basket to the peripheral tray while the tray is attached to the system.





10.8.1 USB Printer Mounted on the Peripheral Tray

If the system order included the peripheral tray and a USB printer, the printer will have to be installed after delivery.

Note: For best results, Ultrasonix recommends removing the USB printer before cleaning (D.4.8) the peripheral tray. This will allow the operator to clean all the various curves and folds in a more effective manner.

Figure 10-6: USB Printer Mounted on the Peripheral Tray

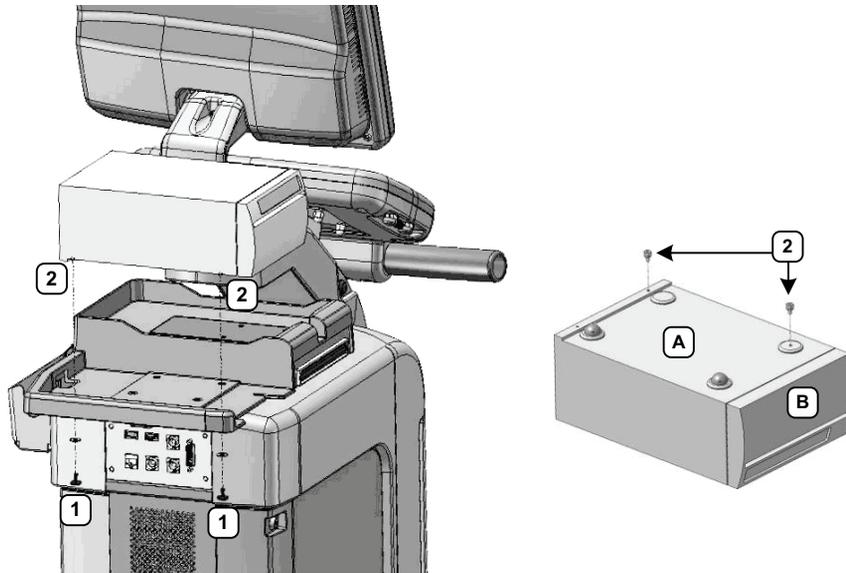


Table 10-4: USB Printer Mounted on the Peripheral Tray

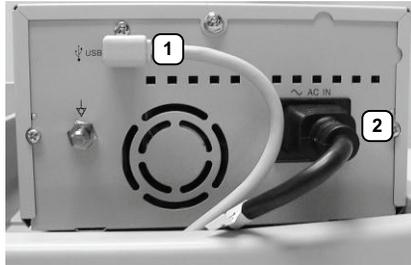
1	Thumbscrews
2	Threaded Standoffs
A	Printer bottom
B	Printer front

To Attach the Peripheral Tray Basket to the Peripheral Tray

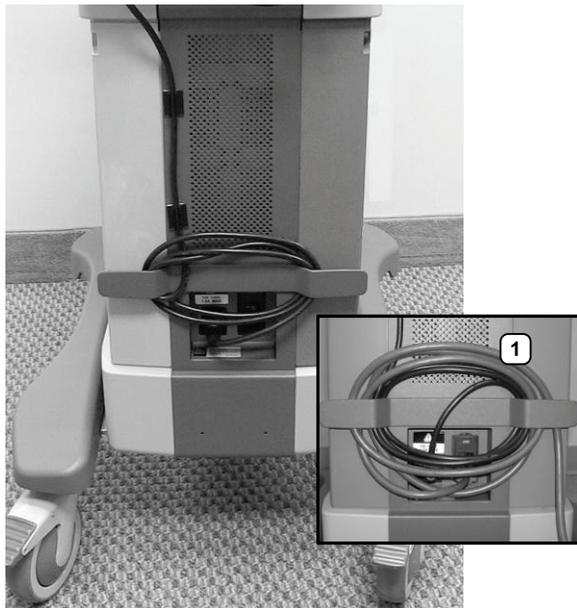
1. From underneath the back of the peripheral tray, fasten the two (2) thumbscrews (1) through the holes provided into the two (2) "threaded standoffs" (2) (already attached to the base of the USB printer).

Note: Refer to [Figure 10-6](#) and [Table 10-4](#) for a detailed view of the installation.

2. The USB (1) and Power cable (2) are pre-installed and will only need to be connected.



3. To help prevent cable clutter, the power cable is held in place with self-adhesive cable clips with enough slack to connect it to the system. If desired, during use, excess slack in the system power cable can also be secured (1).



Note: The system will arrive with the power cable already connected as shown above (1).



10.9 TRANSDUCER HOLDERS AND CABLE HOOKS

The transducer holders and cable hooks are connected with one (1) simple thumbscrew that is hand-tightened. No tools are required to remove them.

Note: For best results, Ultrasonix recommends removing the transducer holders and cable hooks before cleaning (D.4.6). This will allow the operator to clean all the various curves and folds in a more effective manner.

Figure 10-7: Transducer Holders and Cable Hooks

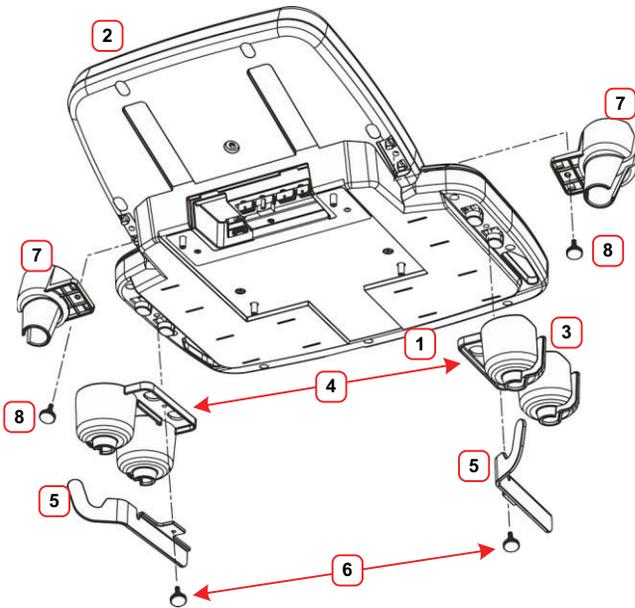
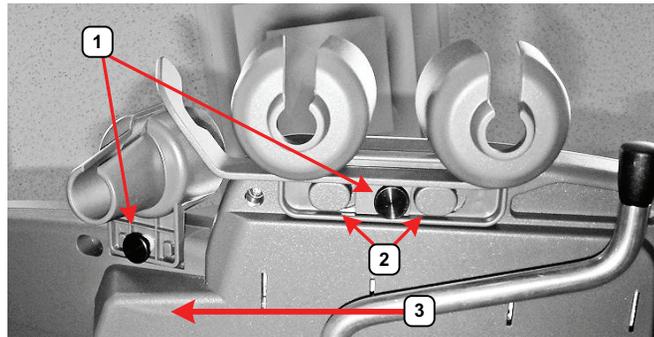


Table 10-5: Transducer Holders and Cable Hooks

1	Console Front
2	Console Rear
3	Transducer Holders
4	Connecting Flange for Thumbscrew (faces inward)
5	Cable Hooks (hook faces rear)
6	Thumbscrews (for Cable Hooks)
7	Endocavity Transducer Holders
8	Thumbscrews (for Endocavity Transducer Holders)

To Remove Transducer Holders and Cable Hooks:

1. Remove all transducers from the transducer holders.
2. Undo the thumbscrews (1) holding the endocavity transducer holders and the ones holding the transducer holder and cable hooks to the console (four (4) in total).



3. Remove the cable hook.
4. The transducer holder is held in place by two (2) tapered mounting flanges (2). Pushing the holder toward the back of the console (3) will loosen it from these flanges, allowing it to be pulled down and removed.

Note: View from underneath the console.

10.10 SOFTWARE

10.10.1 Anti-Virus Protection

Sonix software includes a 12 month subscription to anti-virus software that is delivered pre-installed and activated.

Caution: Anti-virus updates will only be available to users with systems connected to the Internet.

Users wishing to run their own anti-virus software—or those who do not want to run anti-virus software at all—must disable/uninstall the existing software. Contact your IT department or Ultrasonix Technical Support for more details.



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APPENDIX A: SAFETY

A.1 SAFETY

This section contains important information about the safe use of the Sonix ultrasound system. Much of the information is required by various regulatory agencies and should be read prior to using the Sonix ultrasound system.



Warning: For safety details on the mTEE8-3/5 transducer, refer to 00.040.314 mTEE8-3/5 User Manual.

A.1.1 ALARA Principle and Output Displays

The Acoustic Power Output Display for the Sonix ultrasound system meets FDA requirements and the guidance standards set out by AIUM and NEMA: *Standard for Real-Time Display of Thermal and Mechanical Acoustic Output Indices on Diagnostic Ultrasound Equipment*.

The Sonix system provides real-time **Mechanical Index (MI)** and **Thermal Index (TI)** acoustic power output display values depending on the transducer and imaging mode.

- **MI: Mechanical Index (2D imaging)**
- **TIB: Thermal Index – Bone**
- **TIC: Thermal Index – Cranial**
- **TIS: Thermal Index – Soft Tissue.**

To Change the Index Value Displayed:

1. Turn the console  dial.
2. Toggle through the **MI**, **TIS**, **TIC** and **TIB** values available depending on the imaging mode.

Note: The **MI** and **TI** values are displayed to the right of the image field and are updated as changes—which affect the acoustic power output—are made to the system.

The ALARA principle, provided by AIUM in *Ultrasound Medical Safety – Implementing ALARA*, guides the ultrasound user on the prudent use of diagnostic ultrasound. Display of the acoustic power output value enables the ultrasound user to better implement the ALARA principle. The ultrasound user can determine the right balance of ultrasound exposure benefits to risks by using acoustic power output levels that are **As Low As Reasonably Achievable (ALARA)**. Without compromising diagnostic quality, patient ultrasound exposure should be kept to a minimum while using the lowest output power possible.



A.2 BASIC PRECAUTIONS

DO NOT operate the Sonix Ultrasound System in the presence of flammable anesthetics.

NEVER allow water or other liquids onto the keyboard, operator console or interior of the system case.

ALWAYS handle transducers with care. Dropping the transducer or allowing it to strike a hard surface can damage the transducer elements and the acoustic lens. Such a collision can also crack the transducer housing and destroy its electrical safety features.

The device is not intended for ophthalmic use or any use causing the acoustic beam to pass through the eye.

The device is not intended for any application in which the transducer might come in direct contact with brain tissue or the central nervous system.

To avoid the risk of electrical shock, before using the transducer, inspect the transducer face, housing and cable. DO NOT use the transducer if the transducer or cable is damaged.

Failure to repair/replace damaged parts may result in degraded image quality and therefore may impact diagnostic interpretations.

ALWAYS turn off the system before cleaning or changing fuses.

To avoid the risk of electrical shock and fire hazard, inspect the power supply, AC power cord and plug on a regular basis. Ensure they are not damaged.

Follow local governing ordinances and recycling plans regarding disposal or recycling of device components.

Keep the system clean. Carefully follow the procedures described later in this manual for cleaning the system, transducers and cooling fans.

ALWAYS **FREEZE** (❄️) the system when not imaging to prevent the transducer from overheating or use the **Auto-Freeze** function to ensure the system freezes after a specified period of inactivity ([8.2.10 System Settings](#)).

Ensure the LCD display and operator console are secure when imaging is being done or when the system is left unattended.

ALWAYS choose the appropriate transducer and parameters for the type of clinical application.

When scanning subjects, always work to use As Low As Reasonably Achievable (ALARA) acoustic scanning energies. Refer to [A.1.1 ALARA Principle and Output Displays](#) before using the system. Do not use more than the minimum energy necessary to conduct an ultrasound exam. This is especially necessary where fetal and cephalic scans are being conducted.

DO NOT remove panels or covers from the system.

ALWAYS power the system from a grounded outlet.

Ultronix does not recommend the use of transducer covers/sheaths containing natural rubber latex and talc as these ingredients are known to cause an allergic reaction in some individuals. Refer to *21 CFR 801.437* user labeling for more details on latex use.

DO NOT use transcranial (**TCD**) **Presets** for anything other than transcranial imaging.



Where any transducer (including, but not limited to, an intracavity transducer) is used in a clinical application of a semi-critical nature (including, but not limited to, intraoperative, transrectal, transvaginal, transesophageal, etc.), ensure the transducer is covered with the appropriate STERILE transducer cover/sheath which has received regulatory clearance for use.



Warning: *The Sonix ultrasound system may produce physiological effects of ultrasound which may cause danger to the patient and operator.*

Cautions:

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure to ultrasonic energy.

Contact Ultrasonix if repairs are needed on the system. Repairs and component maintenance must be carried out by Ultrasonix authorized personnel only.

A.3 SONIXGPS PRECAUTIONS



Warning: *This user manual does not include a comprehensive discussion of the SonixGPS option. For complete details on using SonixGPS, read and follow all instructions and warnings in the most recent SonixGPS User Manual.*



A.4 SYMBOL DEFINITIONS

Table A-1: System Symbols

Symbol	Location	Meaning
	On serial plate that indicates the serial number and electrical rating.	Alternating current.
	On transducers.	Patient applied part meets the isolation requirements for type B applied part.
	On SonixGPS transmitter and the LCD display during SonixGPS imaging.	Warning: To prohibit entry of a person wearing a pacemaker into an area where the operation of the pacemaker may be negatively influenced or the pacemaker damaged.
	On footswitch (dual or triple).	Indicates compliance with UL 60601-1 and CSA Std C22.2 No. 601.1 standards for medical use.
	On System Label (rear of system) and/or warning/caution labels.	Warning: Dangerous Voltage. Electric Shock Hazard. Do not remove cover or back. Refer servicing to qualified service personnel.
	General warning sign located in a variety of places, including: System Label (rear of system), User Manual and Service Manual.	Warning: Consult accompanying documents. The accompanying explanation will describe a precaution(s) necessary to prevent injury or loss of life.
	On System Label (rear of system).	This product has been tested and meets IEC 60601-1 standards for safety and/or performance, including the applicable standards written or administered by the <i>American National Standards Institute (ANSI)</i> , <i>Underwriters Laboratories (UL)</i> , <i>Canadian Standards Association (CSA)</i> , <i>National Sanitation Foundation (NSF)</i> and others.
	When applicable, the CE Mark is located in a variety of places, including: System Label (rear of system), User Manual and Service Manual.	When affixed to the product, the CE Label testifies to its compliance with Council Directive 93/42/EEC concerning medical devices.
	On System Label (rear of system).	<i>Waste Electrical and Electronic Equipment (WEEE)</i> symbol indicates this device must not be disposed of as unsorted municipal waste. It must be disposed of in accordance with all local laws and regulations. Contact Ultronix Technical Support for more information on the decommissioning of this equipment.

A.5 ELECTRICAL SAFETY REQUIREMENTS

A.5.1 System

The SonixOP Ultrasound System is classified in accordance with the IEC 60601–1, the standard for Medical Electrical Equipment as follows.

Table A-2: System Electrical Safety

Standard	IEC 60601–1
Type of protection against electrical shock	Class I
Degree of protection against electrical shock	Type BF
Degree of protection against ingress of water	Ordinary



Warning: Accessory equipment connected to the analog and digital interfaces must be certified according to their respective IEC standards (e.g., IEC 60950 for data processing equipment and IEC 60601–1 for medical equipment). Furthermore, all configurations shall comply with the system standard IEC 60601–1. Any person who connects additional equipment to the signal input part or signal output part configures a medical system and is therefore responsible for ensuring that the system complies with the requirements of the system standard IEC 60601–1–1. If in doubt, consult Ultrasonix Technical Support.

A.5.2 Additional Hardware

Table A-3: SonixGPS Components Electrical Safety

Standard	EN60601–1
Type of protection against electrical shock	Class I
Degree of protection against electrical shock	Type B Applied Part
Unsuitable for use in the presence of flammable gas	Not AP/APG



A.6 EMC (ELECTROMAGNETIC COMPATIBILITY) REQUIREMENTS

A.6.1 System

The SonixOP Ultrasound System has special precautions regarding EMC. Always install and use according to the EMC information provided in the relevant Service Manual.

Portable and mobile RF communications equipment can affect the Sonix Ultrasound System.

Transducer cables must be raised above the ground during scanning.



Warning: *The use of accessories, transducers and cables other than those specified by Ultrasonix may result in increased emissions or decreased immunity of the system.*

A.6.2 Additional Hardware

Table A-4: SonixGPS Components

Electromagnetic Compatibility	Class B: FCC Part 15 ICES-003 European Union Directive 89/336/EEC
Operation is subject to these conditions	1. This device may not cause harmful interference, and 2. This device must accept any interference received, including interference that may cause undesired operation.

Table A-5: Footswitch (Dual or Triple)

Electromagnetic Compatibility	Class B: FCC Part 15 and Industry Canada European Union: En 55022, En 61000-3-1/3, EN 60601-1-2
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A.7 ENVIRONMENTAL CONDITIONS

A.7.1 System

Table A-6: System Operating Environment

Operational Temperature	50° to 104° F (10° to 40° C)
Operational Humidity	30 to 75% relative humidity
Shipping/Storage Conditions	+5° to +122° F (-15° to +50° C)
Shipping/Storage Humidity	10% to 90% (non-condensing)
Shipping/Storage Pressure (kilopascal)	50 kPa to 106 kPa (kilopascal)



Warning: Operate in an indoor environment only, free from moisture, flammable liquids, gases, corrosive substances, strong electrical or magnetic fields and equipment that generates high frequency waves.

Ultrasonix cannot guarantee the proper performance of the system if used in the above-listed conditions.

A.8 LIMITING TRANSDUCER SURFACE HEATING

Ultrasonix has ensured that the transducer surface temperature in still air does not exceed 50°C and applied on tissue does not exceed 43°C.

Surface heating may be created by transmitting energy on the same area of a transducer at a high rate. This heating may occur, for example, during Pulsed Wave Doppler or Color Doppler imaging. The only Ultrasonix transducer where this surface heating issue could be an issue is the EC9-5/10 transducer. To limit the surface heating, Sonix software conditions are used to prevent the same area on the transducer from being excited to a rate of less than 100us. Thorough testing has shown no noticeable EC9-5/10 transducer surface heating. For added security the Sonix system high voltage excitation power circuit contains "Polyswitches" that ensure no more than a specified current can be drawn from these high-voltages circuits.

A.9 LATEX

Ultrasonix does not recommend the use of transducer covers containing natural rubber latex and talc as these ingredients are known to cause an allergic reaction in some individuals. Refer to 21 CFR 801.437 user labeling for more details on latex use.



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APPENDIX B: SYSTEM SPECIFICATIONS

Notes:

Talk to your Ultrasonix dealer for details on standard and optional features.

Ultrasonix Medical Corporation reserves the right to alter system specifications at any time.

√ – Standard ◆ – Optional Ø – Not Available

Table B-1: System Specifications

	TAB	TCH	MDP	SP	OP	LGY ⁵
CLINICAL APPLICATIONS						
Abdominal	√	√	√	√	√	√
Biliary	√	√	√	√	√	√
Bladder	√	√	√	√	√	√
Cardiac	◆	◆	√	√	◆	Ø
<i>Note: Access to Cardiac is controlled through licensing. If CW is not licensed and active, then the Cardiac Application is not available.</i>						
Foreign Bodies	√	√	√	√	√	√
Generic	√	√	√	√	√	√
Lower Extremities	√	√	√	√	√	√
Musculoskeletal (MSK)	√	√	√	√	√	√
Nerve Block	√	√	√	√	√	√
OB 1st Trimester ¹	√	√	√	√	√	√
OB 2nd–3rd Trimester ¹	√	√	√	√	√	√
Other	√	√	√	√	√	√
Pelvic	√	√	√	√	√	√
Procedure	√	√	√	√	√	√
Renal	√	√	√	√	√	√
Small Parts	√	√	√	√	√	√
Thoracic	√	√	√	√	√	√
Trauma (FAST)	√	√	√	√	√	√
Urology	√	√	√	√	√	√
Vascular	√	√	√	√	√	√
Vascular Access	√	√	√	√	√	√
MEASUREMENTS AND ANALYSIS						
Obstetrical calculation and report package	√	√	√	√	√	√
Abdominal calculation and report package	√	√	√	√	√	√
Gyn/Fertility calculation and report package	√	√	√	√	√	√
Cardiac calculation and report package	◆	◆	√	√	◆	Ø
<i>Note: Access to Cardiac calculations is controlled through licensing. If CW is not licensed and active, the Cardiac Application—and therefore the Cardiac calculation and report package—is not available.</i>						
Vascular calculation and report package	√	√	√	√	√	√
Auto-Follicle calculation and report package	Ø	√	Ø	Ø	Ø	Ø



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	TAB	TCH	MDP	SP	OP	LGYS ⁵
BROADBAND TRANSDUCERS²						
SA4-2/24 broadband (2–4 MHz), 24 mm, 80.5/90.55" (2.05 m/2.30 m) cable, phased array	◆	◆	◆	◆	◆	∅
EC9-5/10 broadband (5–9 MHz), 10 mm radius, 75" (1.90 m) cable, endocavity microconvex array	◆	◆	◆	◆	◆	◆
C5-2/60 and C5-2/60 GPS broadband (2–5 MHz), 60 mm radius, 75" (1.90 m) cable, curved array	◆	◆	◆	◆	◆	◆
L9-4/38 broadband (4–9 MHz), 38 mm, 75" (1.90 m) cable, linear array	◆	◆	◆	◆	◆	◆
L14-5/38 and L14-5/38 GPS broadband (5–14 MHz), 38 mm, 75" (1.90 m) cable, linear array	◆	◆	◆	◆	◆	∅
L14-5W/60 broadband (5–14 MHz), 60 mm, 75" (1.90 m) cable, wide linear array	◆	◆	◆	◆	◆	∅
HST15-8/20 broadband (10 MHz) 20 mm, 75" (1.90 m) cable, hockey stick linear array	◆	◆	◆	◆	◆	∅
4DC7-3/40 broadband (3–7 MHz), 40 mm radius, 75" (1.90 m) cable, 4D motor-driven electronic curved array	∅	◆	◆	◆	◆	∅
PRESETS						
Default presets	√	√	√	√	√	√
User-defined presets	√	√	√	√	√	√
PHYSICAL CHARACTERISTICS						
Footprint: 53.5 cm x 71 cm (21" x 28") 53.5 cm x 91.5 cm (21" x 36")	∅ ∅	√ ∅	∅ √	∅ √	∅ √	√ ∅
System Size: 45 cm wide x 17 cm deep x 41 cm high (17.7" x 6.9" x 16.1")	√	∅	∅	∅	∅	∅
Weight, with UPS: 88.5 kg (195 lbs) 102 kg (225 lbs) 108 kg (238)	∅ ∅ ∅	√ ∅ ∅	∅ √ ∅	∅ √ ∅	∅ ∅ ∅	∅ ∅ √
Weight, without UPS: 63.6 kg (140 lbs) 77 kg (170 lbs) 75 kg (166 lbs)	∅ ∅ ∅	√ ∅ ∅	∅ √ ∅	∅ √ ∅	∅ √ ∅	∅ ∅ √
System Weight: 15 kg (33 lbs)	√	∅	∅	∅	∅	∅
Power Pack Size: 10.4 cm wide x 40 cm long x 5.8 cm high (4.1" x 15.75" x 2.3")	√	∅	∅	∅	∅	∅
Power Pack Weight: 2.7 kg (5.95 lbs)	√	∅	∅	∅	∅	∅
Height, System (Measured from top of LCD display to floor): Static Position: 137 cm (54") Highest Position: 152.5 cm (60") Lowest Position: 137 cm (54")	∅ ∅ ∅	√ ∅ ∅	∅ √ √	∅ √ √	∅ ∅ ∅	∅ ∅ ∅
Height, System (Measured from top of LCD display to floor): Highest Position: 155 cm (61") Lowest Position: 142 cm (56")	∅ ∅ ∅	∅ ∅ ∅	∅ ∅ ∅	∅ ∅ ∅	∅ ∅ ∅	√ √ ∅
Height, Transport Mode (LCD display folded flat over console): 108 cm (42.5")	∅	√	√	√	√	∅
Tilt, Console (Measured from trackball position to floor): Highest Position: 97.2 cm (38.3") Lowest Position: 78.5 cm (30.9")	∅	√	∅	∅	∅	∅
Tilt/Lift, Console (Combination of tilt and lift, measured from trackball position to floor): Highest Position: 100 cm (39.5") Lowest Position: 82 cm (32.25")	∅	∅	√	√	√	∅
Tilt Angle, Console (Measured by degrees (°) off horizontal position): 0–40° down 0–10° down	∅ ∅	√ ∅	∅ √	∅ √	∅ √	∅ ∅
Swivel Range, Console (Measured by degrees (°) off center position): ± 45°	∅	∅	√	√	√	∅
Tilt Angle, LCD Display (Measured by degrees (°) from the "Transport Mode position): 0 to 115°	∅	√	√	√	√	∅
Swivel Range, LCD Display (Measured by degrees (°) off center position): ± 90°	∅	√	√	√	√	∅
TFT (Active Matrix) LCD display: 17" 19" with SAW (Surface Acoustic Wave) touch screen	∅ √	√ ∅	√ ∅	√ ∅	√ ∅	√ ∅
Touch Screen: 10.4" LCD display with resistive touch screen 8.4" LCD display with resistive touch screen 5.5" LCD display with resistive touch screen	∅ ∅ ∅	√ ∅ ∅	∅ √ ∅	∅ √ ∅	∅ √ ∅	∅ ∅ √



	TAB	TCH	MDP	SP	OP	LGY ⁵
Transducer connectors	2	3	3	3	3	3
USER INTERFACE³						
QSonix Quick Exam Start-up Operator Console Tutorial Remote Support Access ⁴	√	√	√	√	√	√
Universal language option	◆	◆	◆	◆	◆	◆
Touch Screen Controls Imaging Parameters (Maps, Persistence, Dynamic Range, PRF, etc.) Mode Actions (Reverse, Invert, Biopsy, Layout, etc.) Cine	√	√	√	√	√	√
Easy-to-use Interface	√	√	√	√	√	√
User-programmable Custom Keys	√	√	√	√	√	√
Text, Annotations, Pictograms, Arrows	√	√	√	√	√	√
CINE MEMORY						
Up to seven (7) minutes of data (Transducer/sector size dependant)	√	√	√	√	√	√
Total available memory: >8,000 fr	√	√	√	√	√	√
REMOTE SUPPORT⁴						
Real-time live chat support	√	√	√	√	√	√
Ultronix remote system diagnostic capability	√	√	√	√	√	√
1-Step Software upgrades (CD-ROM or Internet)	√	√	√	√	√	√
STORAGE AND CONNECTIVITY						
DICOM service classes (Print/Store/Worklist)	◆	◆	◆	◆	◆	√
Patient data hard drive storage (at least 160 Gb)	√	√	√	√	√	√
Still image storage (PNG, JPEG, BMP, GIF)	√	√	√	√	√	√
Cine loop storage & trim (AVI)	√	√	√	√	√	√
USB ports 2 on Console, 2 on Back Connectivity Panel 2 on Console, 3 on Back Connectivity Panel 6 on Side Connectivity Panel 2 on Console front	∅ ∅ √ ∅	√ ∅ ∅ ∅	∅ √ ∅ ∅	∅ √ ∅ ∅	∅ √ ∅ ∅	∅ ∅ ∅ √
Built-in Firewall	√	√	√	√	√	√
2 Programmable BNCs for Input/Output	∅	√	√	√	√	√
DVI (Digital video) output	∅	√	√	√	√	∅
USB printer output	√	√	√	√	√	∅
Hard-wired Network (LAN) connection	√	√	√	√	√	√
Wireless Network connection	◆	◆	◆	◆	∅	∅
Streaming video (SonixLive) ⁴	◆	◆	◆	◆	∅	◆
PERIPHERALS						
USB printer with direct-to-system mounting kit	◆ ∅	◆ √	◆ √	◆ √	◆ √	∅ ∅
Peripheral Tray, with optional: CD/DVD R/W drive USB Printer	∅ ∅ ∅	◆ ◆ ◆	√ ◆ ◆	◆ ◆ ◆	◆ ◆ ◆	∅ ∅ ∅
UPS (Uninterruptible Power Supply)	∅	◆	◆	◆	∅	∅/∅/◆
Barcode Reader (Pre-programmed to support the following barcode symbologies: UPC, EAN, Interleaved 2 of 5, Codabar, Code 3 of 9, Code 93, Code 128)	◆	◆	◆	◆	∅	◆
Wireless Adapter (802.11b/g compatible)	◆	◆	◆	◆	∅	∅/◆/◆
SonixGPS Hardware	∅	◆	◆	◆	◆	∅
ECG Hardware	∅	◆	◆	∅	∅	∅
USB footswitches (Kinesis, Savant™ Elite™): Triple: (Manufacturer's Part Number: FS30A) (UXID: 00.032.242) Dual: (Manufacturer's Part Number: FS20A) (UXID: 00.032.243)	◆ ◆	◆ ◆	◆ ◆	◆ ◆	◆ ◆	◆ ◆
Hand-held Stylus with Tether (UXID: 00.032.321)	√	∅	∅	∅	∅	∅



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	TAB	TCH	MDP	SP	OP	LGY ⁵
ACCESSORIES						
ULTRASONIX MEDICAL CORPORATION						
SonixGPS Needle Kits and Accessories:						
SonixGPS Vascular Access Starter Kit (contains 1x 00.037.047 and 1x 00.037.041) (UXID: 00.037.050)	∅	◆	◆	◆	◆	∅
SonixGPS 0.9mm Needle Sensor (non-sterile, reusable) (UXID: 00.037.047)	∅	◆	◆	◆	◆	∅
SonixGPS Vascular Access Needle Kits (Single use, Sterile Pack of 10, Ga 17 x 70mm L) (UXID: 00.037.041)	∅	◆	◆	◆	◆	∅
SonixGPS Nerve Block Starter Kit (contains 1x 00.037.048, 1x 00.037.055) (UXID: 00.037.051)	∅	◆	◆	◆	◆	∅
SonixGPS 0.5mm Needle Sensor (non-sterile, reusable) (UXID: 00.037.048)	∅	◆	◆	◆	◆	∅
SonixGPS Nerve Block Needle Kits (Single use, Sterile Pack of 10, Ga 19 x 80mm L) (UXID: 00.037.055)	∅	◆	◆	◆	◆	∅
THIRD PARTY						
SonixGPS™ Needle Kits and Accessories:						
eTRAX™ Needle Starter Kit, Manufactured by CIVCO, Part Number 610-1055 (UXID: 00.037.034)		◆	◆	◆	◆	
Civco eTRAX™ Needle Kit, Manufactured by CIVCO, (Pack of 10), 16GA x 17.7cm (7") and 7.6 tapered to 3.8 x 147cm (3" tapered to 1.5" x 58") CIV-Flex needle cover, Part Number 610-1057 (UXID: 00.037.039)		◆	◆	◆	◆	
Sterile ATEC vacuum-assisted breast biopsy Tracking Bracket, Manufactured by CIVCO, (Pack of 12) Part Number 653-002 (UXID: 00.037.037) (Supported models: 9 gauge Standard, Part Number 0909-20; 12 gauge Standard, Part Number 1209-20; 9 gauge Long, Part Number 0912-20; 12 gauge Long, Part Number 1212-20).		◆	◆	◆	◆	
Note: Only the Tracking Bracket is available from Ultrasonix Medical Corporation. Contact ATEC to purchase the needles.	∅					∅
Sterile Celero vacuum-assisted breast biopsy Tracking Bracket, Manufactured by Civco, (Pack of 12) Part Number 653-001 (UXID: 00.037.036) (Supported model: Celero-12)		◆	◆	◆	◆	
Note: Only the Tracking Bracket is available from Ultrasonix Medical Corporation. Contact Hologic to purchase the needles.						
Non-sterile reusable General Purpose Electromagnetic Sensor driveBAY trakSTAR 8mm, Manufactured by CIVCO, Part Number 610-1066 (UXID: 00.037.035)		◆	◆	◆	◆	
Blue Phantom, Branched 4-Vessel Ultrasound Training Block Model, Part Number BPBV110 (UXID: 00.032.185)		◆	◆	◆	◆	
mTEE8-3/5 Transducer Sheath/Cover Kit with Gel, Applicator and Bite Guard. Manufactured by Palmedic (TOE/TEE kit non-Sterile Part Number: REF 1280-01) UXID: 00.032.189	◆	◆	◆	◆	◆	∅
Recommended ECG Electrode: Kendall Medi-Trace 200 and 230 Foam Electrode	∅	◆	◆	∅	∅	∅
Biopsy Start Kits						
EC9-5/10, Manufactured by Protek, Part Number: 7544 and CIVCO, Part Number: 610-986	◆	◆	◆	◆	◆	◆
C5-2/60, Manufactured by CIVCO, Part Number: 684-003	◆	◆	◆	◆	◆	◆
C5-2/60 and C7-3/50, Manufactured by Protek, Part Number: 7462	◆	◆	◆	◆	◆	◆
L14-5W/60, Manufactured by CIVCO, Part Number: 684-004	◆	◆	◆	◆	◆	∅
L9-4/38, Manufactured by CIVCO, Part Number: 684-005	◆	◆	◆	◆	◆	∅
L14-5/38, Manufactured by CIVCO, Part Number: 684-005	◆	◆	◆	◆	◆	◆
4DEC-5/10, Manufactured by CIVCO, Part Number: 610-666	∅	◆	◆	◆	◆	∅

- 1 Ultrasonix Medical Corporation is not responsible for misdiagnosis from customized measurements.
- 2 Certain transducers may not be available in all markets. Consult your local Ultrasonix Authorized Distributor or Sales Representative to determine availability in your area.
- 3 Specific User Interface options are dependant upon licensed features.
- 4 Where available. Requires Internet connection and ISP.
- 5 Some LGY (Legacy) options are specific to the OP/SP platform, while others apply only to the CEP. If the options are different on the three (3) LGY hardware platforms, then three (3) options will be marked, one each for OP, SP and CEP (e.g., ∅/◆/◆).

APPENDIX C: TRANSDUCER SPECIFICATIONS

C.1 TRANSDUCER DISCLAIMER

Certain transducers may not be available in all markets. Consult your local Ultrasonix Authorized Distributor or Sales Representative to determine availability in your area.

C.2 ACOUSTIC OUTPUT RECORDING TABLES

Below are copies of the **Acoustic Output Reporting Tables for Track 3** for all transducers and all modes (provide data where global maximum displayed index exceeds 1.0).

The following notes apply to **ALL** Acoustic Output Reporting Tables for **ALL** transducers/modes:

- This index is not required for this operating mode; see section 4.1.3.1 of the *Standard for real-time display of thermal and mechanical acoustic output indices on diagnostic ultrasound equipment (AIUM/ NEMA 1998b)*
 - This probe is not intended for trans-cranial or neonatal cephalic uses
 - This formulation for TIS is less than that for an alternate formulation in this mode
- # No data are reported for this operating condition since the global maximum index value is not reported for the reason listed.

Table C-1: Transducer Model SA4-2/24 (Operating Mode: B)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
				$A_{\text{aprt}} \leq 1$	$A_{\text{aprt}} > 1$			
Global Maximum Index Value		1.37	(a)	(a)	(a)	(a)	(a)	
Assoc. Acoustic Param.	Pr.3	[MPa]	1.93					
	W_0	[mW]		(a)		(a)	(a)	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$	[mW]			(a)			
	Z_1	[cm]			(a)			
	z_{bp}	[cm]			(a)			
	z_{sp}	[cm]	4.58				(a)	
	$d_{eq}(z_{sp})$	[cm]					(a)	
	f_c	[MHz]	2.00	(a)	(a)	(a)	(a)	(a)
	Dim of A_{aprt}	X [cm]		(a)	(a)	(a)	(a)	(a)
		Y [cm]		(a)	(a)	(a)	(a)	(a)
Other Information	PD	[µsec]	0.58					
	PRF	[Hz]	31.553					
	$p_r @ PII_{\text{max}}$	[MPa]	2.65					
	$d_{eq} @ PII_{\text{max}}$	[cm]					(a)	
	Focal Length	FL_x [cm]		(a)	(a)	(a)		(a)
		FL_y [cm]		(a)	(a)	(a)		(a)
	$I_{PA,3} @ MI_{\text{max}}$	[W/cm ²]	0.08					
Operating Control Conditions	Control 1 Depth	800	[mm]					
	Control 2 Focus	46	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	ABD-Aorta (SA4-2/20mm) - HarRes						

$$ISPTA.3 [mW/cm^2] = 44.0766$$



Table C-2: Transducer Model SA4-2/24 (Operating Mode: Color and Power Doppler)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
Global Maximum Index Value		1.01		3.13	(c)	(c)	(a)	4.77
Assoc. Acoustic Param.	Pr.3 [MPa]	1.75						
	W ₀ [mW]		219.13	(c)		(a)	324.69	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				(c)			
	Z ₁ [cm]				(c)			
	z _{bp} [cm]				(c)			
	z _{sp} [cm]	4.02				(a)		
	d _{eq} (z _{sp}) [cm]					(a)		
	f _c [MHz]	3.00	3.00	(c)	(c)	(a)	3.00	
	Dim of A _{aprt}	X [cm]	1.63	(c)	(c)	(a)	1.63	
		Y [cm]	1.40	(c)	(c)	(a)	1.40	
Other Information	PD [µsec]	1.26						
	PRF [Hz]	15.282						
	p _r @P _{II} _{max} [MPa]	2.65						
	d _{eq} @P _{II} _{max} [cm]					(a)		
	Focal Length	FL _x [cm]		5.60	(c)	(c)		5.60
		FL _y [cm]		5.60	(c)	(c)		5.60
I _{PA,3} @M _{max} [W/cm ²]	0.09							
Operating Control Conditions	Control 1 Depth	800 [mm]						
	Control 2 Focus	56 [mm]						
	Control 3 Gate	- [mm]						
	Control 4 Preset	CAR-Diff (SA4-2/20mm) - Pen						

ISPTA.3 [mW/cm²] = 115.098

Table C-3: Transducer Model SA4-2/24 (Operating Mode: M)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
Global Maximum Index Value		1.37		0.46	(a)	(a)	(a)	1.29
Assoc. Acoustic Param.	Pr.3 [MPa]	1.93						
	W ₀ [mW]		48.51	(a)		(a)	88.10	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				(a)			
	Z ₁ [cm]				(a)			
	z _{bp} [cm]				(a)			
	z _{sp} [cm]	4.58				(a)		
	d _{eq} (z _{sp}) [cm]					(a)		
	f _c [MHz]	2.00	2.00	(a)	(a)	(a)	2.00	
	Dim of A _{aprt}	X [cm]	1.63	(a)	(a)	(a)	1.63	
		Y [cm]	1.40	(a)	(a)	(a)	1.40	
Other Information	PD [µsec]	0.58						
	PRF [Hz]	65						
	p _r @P _{II} _{max} [MPa]	2.65						
	d _{eq} @P _{II} _{max} [cm]					(a)		
	Focal Length	FL _x [cm]		4.60	(a)	(a)		4.60
		FL _y [cm]		4.60	(a)	(a)		4.60
I _{PA,3} @M _{max} [W/cm ²]	0.16							
Operating Control Conditions	Control 1 Depth	800 [mm]						
	Control 2 Focus	46 [mm]						
	Control 3 Gate	- [mm]						
	Control 4 Preset	ABD-Aorta (SA4-2/20mm) - HarRes						

ISPTA.3 [mW/cm²] = 90.7986

Table C-4: Transducer Model SA4-2/24 (Operating Mode: PW Doppler)

Index Label		MI	TIS		TIB		TIC	
			scan	non-scan		non-scan		
Global Maximum Index Value		0.22	(a)	1.07	0.8631	1.24	1.10	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.38						
	W_0 [mW]		(a)	72.93		72.93	72.93	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				7.36			
	Z_1 [cm]				4.66			
	Z_{bp} [cm]				2.49			
	z_{sp} [cm]	4.66				4.66		
	$d_{eq}(z_{sp})$ [cm]					6.13		
	f_c [MHz]	3.07	(a)	3.07	3.07	3.07	3.07	
	Dim of A_{aprt}	X [cm]		(a)	1.54	1.54	1.54	1.54
		Y [cm]		(a)	1.40	1.40	1.40	1.40
Other Information	PD [μ sec]	3.06						
	PRF [Hz]	5000						
	$p_r@P_{II_{max}}$ [MPa]	0.63						
	$d_{eq}@P_{II_{max}}$ [cm]					2.77		
	Focal Length	FL _X [cm]		(a)	5.00	5.00		3.07
		FL _Y [cm]		(a)	5.00	5.00		3.07
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.02							
Operating Control Conditions	Control 1 Depth	80	[mm]					
	Control 2 Focus	50	[mm]					
	Control 3 Gate	10	[mm]					
	Control 4 Preset	GEN-GEN						

$$ISPTA.3 [mW/cm^2] = 91.68118$$

Table C-5: Transducer Model SA4-2/24 (Operating Mode: PW+B)

Index Label		MI	TIS		TIB		TIC	
			scan	non-scan		non-scan		
Global Maximum Index Value		0.22	0.00	1.72	0.8631	0.02	1.77	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.38						
	W_0 [mW]		0.07	117.32		117.32	117.32	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				7.36			
	Z_1 [cm]				4.66			
	Z_{bp} [cm]				2.49			
	z_{sp} [cm]	4.66				4.66		
	$d_{eq}(z_{sp})$ [cm]					7.78		
	f_c [MHz]	3.07	3.07	3.07	3.07	3.07	3.07	
	Dim of A_{aprt}	X [cm]		1.54	1.54	1.54	1.54	1.54
		Y [cm]		1.40	1.40	1.40	1.40	1.40
Other Information	PD [μ sec]	3.06						
	PRF [Hz]	5000						
	$p_r@P_{II_{max}}$ [MPa]	0.63						
	$d_{eq}@P_{II_{max}}$ [cm]					3.52		
	Focal Length	FL _X [cm]		5.00	5.00	5.00		5.00
		FL _Y [cm]		5.00	5.00	5.00		5.00
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.03							
Operating Control Conditions	Control 1 Depth	80	[mm]					
	Control 2 Focus	50	[mm]					
	Control 3 Gate	10	[mm]					
	Control 4 Preset	GEN-GEN						

$$ISPTA.3 [mW/cm^2] = 106.3303$$



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Table C-6: Transducer Model SA4-2/24 (Operating Mode: CW Doppler)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan				
Global Maximum Index Value		0.06		1.34E-04	1.61E-04	0.0001	2.05E-03	4.81E-04
Assoc. Acoustic Param.	Pr.3 [MPa]	0.07						
	W ₀ [mW]		0.02	0.02		0.02	0.02	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				0.01			
	Z ₁ [cm]				3.80			
	Z _{bp} [cm]				1.63			
	zsp [cm]	3.80				3.80		
	d _{eq} (z _{sp}) [cm]					0.10		
	f _c [MHz]	1.62	1.62	1.62	1.62	1.62	1.62	
	Dim of A _{aprt}	X [cm]		0.66	0.66	0.66	0.66	0.66
		Y [cm]		1.40	1.40	1.40	1.40	1.40
Other Information	PD [µsec]	0.00						
	PRF [Hz]	12500						
	p _r @PII _{max} [MPa]	0.09						
	d _{eq} @PII _{max} [cm]					0.01		
	Focal Length	FL _x [cm]		5.00	5.00	5.00		5.00
		FL _y [cm]		5.00	5.00	5.00		5.00
I _{PA,3} @MI _{max} [W/cm ²]	0.16							
Operating Control Conditions	Control 1 Depth	80	[mm]					
	Control 2 Focus	50	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	CAR-Gen						

ISPTA.3 [mW/cm²] = 155.3387

Table C-7: Transducer Model SA4-2/2 (Operating Mode: Triplex (B/Color/PW))

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan				
Global Maximum Index Value		0.22		0.00	1.72	0.86311	0.02	1.77
Assoc. Acoustic Param.	Pr.3 [MPa]	0.38						
	W ₀ [mW]		0.07	117.32		117.32	117.32	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				0.00			
	Z ₁ [cm]				4.66			
	Z _{bp} [cm]				2.49			
	zsp [cm]	4.66				4.66		
	d _{eq} (z _{sp}) [cm]							
	f _c [MHz]	3.07	3.07	3.07	3.07	3.07	3.07	
	Dim of A _{aprt}	X [cm]		1.54	1.54	1.54	1.54	1.54
		Y [cm]		1.40	1.40	1.40	1.40	1.40
Other Information	PD [µsec]	3.06						
	FPS [Hz]	9						
	PRFd [Hz]	3333						
	p _r @PII _{max} [MPa]	0.63						
	d _{eq} @PII _{max} [cm]					635.20		
	Focal Length	FL _x [cm]		5.00	5.00	5.00		5.00
FL _y [cm]			5.00	5.00	5.00		5.00	
I _{PA,3} @MI _{max} [W/cm ²]	0.02							
Operating Control Conditions	Control 1 Depth	80	[mm]					
	Control 2 Focus	50	[mm]					
	Control 3 Gate	10	[mm]					
	Control 4 Preset	GEN-GEN						

ISPTA.3 [mW/cm²] = 68.44

Table C-8: Transducer Model EC9-5/10 (Operating Mode: B)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
Global Maximum Index Value		0.57	(a)	(a)	(a)	(a)	(a)	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.40						
	W_0 [mW]		(a)	(a)		(a)	(a)	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(a)			
	Z_1 [cm]				(a)			
	Z_{bp} [cm]				(a)			
	z_{sp} [cm]	2.62				(a)		
	$d_{eq}(z_{sp})$ [cm]					(a)		
	f_c [MHz]	6.00	(a)	(a)	(a)	(a)	(a)	
	Dim of A_{aprt}	X [cm]		(a)	(a)	(a)	(a)	(a)
		Y [cm]		(a)	(a)	(a)	(a)	(a)
Other Information	PD [μ sec]	0.25						
	PRF [Hz]	60.774						
	$p_r@P_{II_{max}}$ [MPa]	2.42						
	$d_{eq}@P_{II_{max}}$ [cm]					(a)		
	Focal Length	FL _X [cm]		(a)	(a)	(a)		(a)
		FL _Y [cm]		(a)	(a)	(a)		(a)
$I_{PA,3}@M_{I_{max}}$ [W/cm ²]	0.01							
Operating Control Conditions	Control 1 Depth	700	[mm]					
	Control 2 Focus	27	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	PEL-General (EC9-5/10mm) - General						

ISPTA.3 [mW/cm²] = 2.88

Table C-9: Transducer Model EC9-5/10 and (Operating Mode: Color and Power Doppler)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
Global Maximum Index Value		0.50	1.35	(a)	(a)	(a)	1.31	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.29						
	W_0 [mW]		42.49	(a)		(a)	73.48	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(a)			
	Z_1 [cm]				(a)			
	Z_{bp} [cm]				(a)			
	z_{sp} [cm]	2.46				(a)		
	$d_{eq}(z_{sp})$ [cm]					(a)		
	f_c [MHz]	6.67	6.67	(a)	(a)	(a)	6.67	
	Dim of A_{aprt}	X [cm]		1.00	(a)	(a)	(a)	2.57
		Y [cm]		0.60	(a)	(a)	(a)	0.60
Other Information	PD [μ sec]	0.60						
	PRF [Hz]	13.341						
	$p_r@P_{II_{max}}$ [MPa]	2.27						
	$d_{eq}@P_{II_{max}}$ [cm]					(a)		
	Focal Length	FL _X [cm]		2.70	(a)	(a)		2.70
		FL _Y [cm]		2.70	(a)	(a)		2.70
$I_{PA,3}@M_{I_{max}}$ [W/cm ²]	0.02							
Operating Control Conditions	Control 1 Depth	700	[mm]					
	Control 2 Focus	27	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	PEL-General (EC9-5/10mm) - Gen						

ISPTA.3 [mW/cm²] = 10.4397



Table C-10: Transducer Model EC9-5/10 (Operating Mode: M)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan				
Global Maximum Index Value		0.57	0.57	(c)	(c)	(c)	0.90	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.40						
	W ₀ [mW]		19.96	(c)		(c)	50.56	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				(c)			
	Z ₁ [cm]				(c)			
	Z _{bp} [cm]				(c)			
	zsp [cm]	2.62				(c)		
	d _{eq} (z _{sp}) [cm]					(c)		
	f _c [MHz]	6.00	6.00	(c)	(c)	(c)	6.00	
	Dim of A _{aprt}	X [cm]		1.00	(c)	(c)	(c)	2.57
		Y [cm]		0.60	(c)	(c)	(c)	0.60
Other Information	PD [µsec]	0.41						
	PRF [Hz]	65						
	p _r @P _{II} max [MPa]	2.42						
	d _{eq} @P _{II} max [cm]					(c)		
	Focal Length	FL _x [cm]		2.70	(c)	(c)		2.70
		FL _y [cm]		2.70	(c)	(c)		2.70
I _{PA,3} @MI _{max} [W/cm ²]	0.01							
Operating Control Conditions	Control 1 Depth	700	[mm]					
	Control 2 Focus	27	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	PEL-General (EC9-5/10mm) - HarRes						

ISPTA.3 [mW/cm²] = 3.08

Table C-11: Transducer Model EC9-5/10 (Operating Mode: PW Doppler)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan				
Global Maximum Index Value		0.29	(c)	0.40	0.281	1.33	0.48	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.75						
	W ₀ [mW]		(c)	12.59		12.59	12.59	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				7.52			
	Z ₁ [cm]				2.42			
	Z _{bp} [cm]				0.99			
	zsp [cm]	2.42				2.42		
	d _{eq} (z _{sp}) [cm]					2.47		
	f _c [MHz]	6.67	(c)	6.67	6.67	6.67	6.67	
	Dim of A _{aprt}	X [cm]		(c)	0.57	0.57	0.57	0.57
		Y [cm]		(c)	0.60	0.60	0.60	0.60
Other Information	PD [µsec]	1.33						
	PRF [Hz]	6666.7						
	p _r @P _{II} max [MPa]	1.31						
	d _{eq} @P _{II} max [cm]					-		
	Focal Length	FL _x [cm]		(c)	(c)	2.70		6.67
		FL _y [cm]		(c)	(c)	2.70		6.67
I _{PA,3} @MI _{max} [W/cm ²]	0.25							
Operating Control Conditions	Control 1 Depth	700	[mm]					
	Control 2 Focus	27	[mm]					
	Control 3 Gate	20.00	[mm]					
	Control 4 Preset	PEL-General (EC9-5/10mm) - Pen						

ISPTA.3 [mW/cm²] = 332.93

Table C-12: Transducer Model EC9-5/10 (Operating Mode: PW+B)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.27	0.19	(c)	(c)	0.84		
Assoc. Acoustic Param.	Pr.3 [MPa]	0.70						
	W_0 [mW]		5.92	(c)		47.27		
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(c)			
	Z_1 [cm]				(c)			
	Z_{bp} [cm]				(c)			
	z_{sp} [cm]	2.64				(c)		
	$d_{eq}(z_{sp})$ [cm]					(c)		
	f_c [MHz]	6.67	6.67	(c)	(c)	(c)	6.67	
	Dim of A_{aprt}	X [cm]		1.00	(c)	(c)	(c)	2.57
		Y [cm]		0.60	(c)	(c)	(c)	0.60
Other Information	PD [μ sec]	1.33						
	PRF [Hz]	19.298						
	$p_r@P_{II_{max}}$ [MPa]	1.28						
	$d_{eq}@P_{II_{max}}$ [cm]					(c)		
	Focal Length	FL_X [cm]		2.70	(c)	(c)	2.70	
		FL_Y [cm]		2.70	(c)	(c)	2.70	
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.14							
Operating Control Conditions	Control 1 Depth	700	[mm]					
	Control 2 Focus	26.95	[mm]					
	Control 3 Gate	20	[mm]					
	Control 4 Preset	PEL-General (EC9-5/10mm) - General						

$$ISPTA.3 [mW/cm^2] = 181.00$$

Table C-13: Transducer Model EC9-5/10 (Operating Mode: Triplex (B/Color/PW))

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.27	0.19	(c)	(c)	0.84		
Assoc. Acoustic Param.	Pr.3 [MPa]	0.70						
	W_0 [mW]		5.92	(c)		47.27		
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(c)			
	Z_1 [cm]				(c)			
	Z_{bp} [cm]				(c)			
	z_{sp} [cm]	2.64				(c)		
	$d_{eq}(z_{sp})$ [cm]					(c)		
	f_c [MHz]	6.67	6.67	(c)	(c)	(c)	6.67	
	Dim of A_{aprt}	X [cm]		1.00	(c)	(c)	(c)	1.00
		Y [cm]		0.60	(c)	(c)	(c)	0.60
Other Information	PD [μ sec]	1.33						
	FPS [Hz]	7.00						
	PRFd [Hz]	4000						
	$p_r@P_{II_{max}}$ [MPa]	1.28						
	$d_{eq}@P_{II_{max}}$ [cm]					(c)		
	Focal Length	FL_X [cm]		2.70	(c)	(c)	2.70	
FL_Y [cm]			2.70	(c)	(c)	2.70		
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.19							
Operating Control Conditions	Control 1 Depth	700	[mm]					
	Control 2 Focus	26.95	[mm]					
	Control 3 Gate	20	[mm]					
	Control 4 Preset	PEL-General (EC9-5 10mm) - General						

$$ISPTA.3 [mW/cm^2] = 249.02$$



Table C-14: Transducer Model C5-2/60 and C5-2/60 GPS (Operating Mode: B)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
				$A_{aprt} \leq 1$	$A_{aprt} > 1$			
Global Maximum Index Value		0.93	(a)	(a)	(a)	(a)	(a)	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.48						
	W_G [mW]		(a)	(a)		(a)	(a)	
	min of $[W_{.3}(z_1) : I_{TA.3}(z_1)]$ [mW]				(a)			
	Z_1 [cm]				(a)			
	z_{bp} [cm]				(a)			
	z_{sp} [cm]	4.56				(a)		
	$d_{eq}(z_{sp})$ [cm]					(a)		
	f_c [MHz]	2.50	(a)	(a)	(a)	(a)	(a)	
	Dim of A_{aprt}	X [cm]		(a)	(a)	(a)	(a)	(a)
		Y [cm]		(a)	(a)	(a)	(a)	(a)
Other Information	PD [µsec]	0.71						
	PRF [Hz]	41						
	$p_r @ P_{II_{max}}$ [MPa]	2.19						
	$d_{eq} @ P_{II_{max}}$ [cm]					(a)		
	Focal Length	FL _x [cm]		(a)	(a)	(a)		(a)
		FL _y [cm]		(a)	(a)	(a)		(a)
$I_{PA.3} @ MI_{max}$ [W/cm ²]	0.02							
Operating Control Conditions	Control 1 Depth	80	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	GEN-GEN						

$ISPTA.3 [mW/cm^2] = 67.11$

Table C-15: Transducer Model C5-2/60 and C5-2/60 GPS (Operating Mode: Color and Power Doppler)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
				$A_{aprt} \leq 1$	$A_{aprt} > 1$			
Global Maximum Index Value		0.83	0.00	(a)	(a)	(a)	0.05	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.31						
	W_G [mW]		0.06	(a)		(a)	5.84	
	min of $[W_{.3}(z_1) : I_{TA.3}(z_1)]$ [mW]				(c)			
	Z_1 [cm]				(c)			
	z_{bp} [cm]				(a)			
	z_{sp} [cm]	4.20				(a)		
	$d_{eq}(z_{sp})$ [cm]					(a)		
	f_c [MHz]	2.50	2.50	(a)	(a)	(a)	2.50	
	Dim of A_{aprt}	X [cm]		6.40	(a)	(a)	(a)	6.40
		Y [cm]		1.20	(a)	(a)	(a)	1.20
Other Information	PD [µsec]	1.07						
	PRF [Hz]	6700						
	$p_r @ P_{II_{max}}$ [MPa]	1.88						
	$d_{eq} @ P_{II_{max}}$ [cm]					(a)		
	Focal Length	FL _x [cm]		3.00	(a)	(a)		3.00
		FL _y [cm]		3.00	(a)	(a)		3.00
$I_{PA.3} @ MI_{max}$ [W/cm ²]	0.00							
Operating Control Conditions	Control 1 Depth	80	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	GEN-GEN						

$ISPTA.3 [mW/cm^2] = 17.83$

Table C-16: Transducer Model C5-2/60 and C5-2/60 GPS (Operating Mode: M)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.93	0.00	A _{aprt} ≤1 (a)	A _{aprt} >1 (a)	0.21	0.00	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.48						
	W ₀ [mW]		0.15	(a)		(a)	(a)	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				(c)			
	Z ₁ [cm]				(c)			
	Z _{bsp} [cm]				(a)			
	zsp [cm]	4.56				(a)		
	d _{eq} (zsp) [cm]					(a)		
	f _c [MHz]	2.50	2.50	(a)	(a)	(a)	2.50	
	Dim of A _{aprt}	X [cm]		6.40	(a)	(a)	(a)	6.40
Y [cm]			1.20	(a)	(a)	(a)	1.20	
Other Information	PD [μsec]	0.71						
	PRF [Hz]	41						
	p _r @P _{II} max [MPa]	2.19						
	d _{eq} @P _{II} max [cm]					(a)		
	Focal Length	FL _X [cm]		3.00	(a)	(a)		3.00
		FL _Y [cm]		3.00	(a)	(a)		3.00
I _{PA,3} @MI _{max} [W/cm ²]	0.02							
Operating Control Conditions	Control 1 Depth	80	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	GEN-GEN						

 ISPTA.3 [mW/cm²] = 67.11

Table C-17: Transducer Model C5-2/60 and C5-2/60 GPS (Operating Mode: PW Doppler)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.30	(a)	A _{aprt} ≤1 1.82	A _{aprt} >1 1.29	2.13	1.22	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.48						
	W ₀ [mW]		(a)	152.91		152.91	152.91	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				10.15			
	Z ₁ [cm]				2.81			
	Z _{bsp} [cm]				4.69			
	zsp [cm]	2.81					2.81	
	d _{eq} (zsp) [cm]						10.07	
	f _c [MHz]	2.50	(a)	2.50	2.50	2.50	2.50	
	Dim of A _{aprt}	X [cm]		(a)	6.40	6.40	6.40	6.40
Y [cm]			(a)	1.20	1.20	1.20	1.20	
Other Information	PD [μsec]	5.89						
	PRF [Hz]	12500						
	p _r @P _{II} max [MPa]	0.61						
	d _{eq} @P _{II} max [cm]					3.88		
	Focal Length	FL _X [cm]		(a)	4.00	4.00		2.50
		FL _Y [cm]		(a)	4.00	4.00		2.50
I _{PA,3} @MI _{max} [W/cm ²]	0.16							
Operating Control Conditions	Control 1 Depth	80	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	10	[mm]					
	Control 4 Preset	GEN-GEN						

 ISPTA.3 [mW/cm²] = 633.22



Table C-18: Transducer Model C5-2/60 and C5-2/60 GPS (Operating Mode: PW+B)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
Global Maximum Index Value		0.30		0.00	$A_{aprt} \leq 1$		$A_{aprt} > 1$	0.12
Assoc. Acoustic Param.	Pr.3 [MPa]	0.48						
	W_0 [mW]		0.12	325.36		325.36	325.36	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				10.15			
	Z_1 [cm]				2.81			
	z_{bp} [cm]				4.69			
	z_{sp} [cm]	2.81				2.81		
	$d_{eq}(z_{sp})$ [cm]					14.70		
	f_c [MHz]	2.50	2.50	2.50	2.50	2.50	2.50	
	Dim of A_{aprt}	X [cm]		6.40	6.40	6.40	6.40	6.40
		Y [cm]		1.20	1.20	1.20	1.20	1.20
Other Information	PD [µsec]	5.89						
	PRF [Hz]	12500						
	$p_r @ PII_{max}$ [MPa]	0.61						
	$d_{eq} @ PII_{max}$ [cm]					5.66		
	Focal Length	FL _X [cm]		3.00	3.00	3.00		3.00
		FL _Y [cm]		3.00	3.00	3.00		3.00
$I_{PA,3} @ MI_{max}$ [W/cm ²]	0.16							
Operating Control Conditions	Control 1 Depth	80	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	10	[mm]					
	Control 4 Preset	GEN-GEN						

$ISPTA.3 [mW/cm^2] = 654.59$

Table C-19: Transducer Model C5-2/60 and C5-2/60 GPS (Operating Mode: Triplex (B/Color/PW))

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
Global Maximum Index Value		0.53		0.00	$A_{aprt} \leq 1$		$A_{aprt} > 1$	0.12
Assoc. Acoustic Param.	Pr.3 [MPa]	0.83						
	W_0 [mW]		0.10	140.14		140.14	140.14	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				11.71			
	Z_1 [cm]				3.74			
	z_{bp} [cm]				4.69			
	z_{sp} [cm]	3.74				3.74		
	$d_{eq}(z_{sp})$ [cm]					9.27		
	f_c [MHz]	2.50	2.50	2.50	2.50	2.50	2.50	
	Dim of A_{aprt}	X [cm]		6.40	6.40	6.40	6.40	6.40
		Y [cm]		1.20	1.20	1.20	1.20	1.20
Other Information	PD [µsec]	2.46						
	FPS [Hz]	8						
	PRFd [Hz]	3333						
	$p_r @ PII_{max}$ [MPa]	1.15						
	$d_{eq} @ PII_{max}$ [cm]					3.32		
	Focal Length	FL _X [cm]		3.00	3.00	3.00		3.00
FL _Y [cm]			3.00	3.00	3.00		3.00	
$I_{PA,3} @ MI_{max}$ [W/cm ²]	0.07							
Operating Control Conditions	Control 1 Depth	80	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	10	[mm]					
	Control 4 Preset	GEN-GEN						

$ISPTA.3 [mW/cm^2] = 280.66$

Table C-20: Transducer Model L9-4/38 (Operating Mode: B)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
Global Maximum Index Value		0.60	(a)	(a)	(a)	(a)	(a)	
Assoc. Acoustic Param.	Pr.3 [MPa]	2.62						
	W_0 [mW]		(a)	(a)		(a)	(a)	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(a)			
	Z_1 [cm]				(a)			
	Z_{bp} [cm]				(a)			
	z_{sp} [cm]	2.79				(a)		
	$d_{eq}(z_{sp})$ [cm]					(a)		
	f_c [MHz]	4.77	(a)	(a)	(a)	(a)	(a)	
	Dim of A_{aprt}	X [cm]		(a)	(a)	(a)	(a)	(a)
		Y [cm]		(a)	(a)	(a)	(a)	(a)
Other Information	PD [μ sec]	1.61						
	PRF [Hz]	55						
	$p_r@P_{II_{max}}$ [MPa]	4.14						
	$d_{eq}@P_{II_{max}}$ [cm]					(a)		
	Focal Length	FL _X [cm]		(a)	(a)	(a)		(a)
		FL _Y [cm]		(a)	(a)	(a)		(a)
$I_{PA,3}@M_{I_{max}}$ [W/cm ²]	0.56							
Operating Control Conditions	Control 1 Depth	35 [mm]						
	Control 2 Focus	27.5 [mm]						
	Control 3 Gate	- [mm]						
	Control 4 Preset	GEN-General						

$$ISPTA.3 [mW/cm^2] = 98.37$$

Table C-21: Transducer Model L9-4/38 (Operating Mode: Color and Power Doppler)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
Global Maximum Index Value		0.36	0.00	(a)	(a)	(a)	0.01	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.91						
	W_0 [mW]		0.00	(a)		(a)	0.40	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(a)			
	Z_1 [cm]				(a)			
	Z_{bp} [cm]				(a)			
	z_{sp} [cm]	3.03				(a)		
	$d_{eq}(z_{sp})$ [cm]					(a)		
	f_c [MHz]	6.40	6.40	(a)	(a)	(a)	6.40	
	Dim of A_{aprt}	X [cm]		3.84	(a)	(a)	(a)	3.84
		Y [cm]		0.70	(a)	(a)	(a)	0.70
Other Information	PD [μ sec]	0.77						
	PRF [Hz]	6700						
	$p_r@P_{II_{max}}$ [MPa]	1.77						
	$d_{eq}@P_{II_{max}}$ [cm]					(a)		
	Focal Length	FL _X [cm]		3.00	(a)	(a)		3.00
		FL _Y [cm]		3.00	(a)	(a)		3.00
$I_{PA,3}@M_{I_{max}}$ [W/cm ²]	0.00							
Operating Control Conditions	Control 1 Depth	55 [mm]						
	Control 2 Focus	30 [mm]						
	Control 3 Gate	- [mm]						
	Control 4 Preset	GEN-General						

$$ISPTA.3 [mW/cm^2] = 10.6$$



Table C-22: Transducer Model L9-4/38 (Operating Mode: M)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan				
Global Maximum Index Value		0.60	0.00	(a)	(a)	0.10	0.00	
Assoc. Acoustic Param.	Pr.3 [MPa]	2.62						
	W ₀ [mW]		0.01	(a)		(a)	(a)	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				(c)			
	Z ₁ [cm]				(c)			
	Z _{bp} [cm]				(a)			
	zsp [cm]	2.79				(a)		
	d _{eq} (z _{sp}) [cm]					(a)		
	f _c [MHz]	4.77	4.77	(a)	(a)	(a)	4.77	
	Dim of A _{aprt}	X [cm]		3.84	(a)	(a)	(a)	3.84
		Y [cm]		0.70	(a)	(a)	(a)	0.70
Other Information	PD [µsec]	1.61						
	PRF [Hz]	62						
	p _r @P _{II} _{max} [MPa]	4.14						
	d _{eq} @P _{II} _{max} [cm]					(a)		
	Focal Length	FL _x [cm]		3.00	(a)	(a)		3.00
		FL _y [cm]		3.00	(a)	(a)		3.00
I _{PA,3} @MI _{max} [W/cm ²]	1.23							
Operating Control Conditions	Control 1 Depth	35	[mm]					
	Control 2 Focus	27.5	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	GEN-General						

ISPTA.3 [mW/cm²] = 110.89

Table C-23: Transducer Model L9-4/38 (Operating Mode: PW Doppler)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan				
Global Maximum Index Value		0.21	(a)	3.25	1.69	5.50	1.44	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.37						
	W ₀ [mW]		(a)	106.48		106.48	106.48	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				6.94			
	Z ₁ [cm]				3.41			
	Z _{bp} [cm]				2.77			
	zsp [cm]	3.41				3.41		
	d _{eq} (z _{sp}) [cm]					6.51		
	f _c [MHz]	6.40	(a)	6.40	6.40	6.40	6.40	
	Dim of A _{aprt}	X [cm]		(a)	3.84	3.84	3.84	3.84
		Y [cm]		(a)	0.70	0.70	0.70	0.70
Other Information	PD [µsec]	2.16						
	PRF [Hz]	6700						
	p _r @P _{II} _{max} [MPa]	0.79						
	d _{eq} @P _{II} _{max} [cm]					3.03		
	Focal Length	FL _x [cm]		(a)	3.50	3.50		6.40
		FL _y [cm]		(a)	3.50	3.50		6.40
I _{PA,3} @MI _{max} [W/cm ²]	0.04							
Operating Control Conditions	Control 1 Depth	55	[mm]					
	Control 2 Focus	35	[mm]					
	Control 3 Gate	10	[mm]					
	Control 4 Preset	GEN-General						

ISPTA.3 [mW/cm²] = 176.99

Table C-24: Transducer Model L9-4/38 (Operating Mode: PW+B)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.21	0.00	4.73	1.69	0.04	2.10	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.37						
	W_0 [mW]		0.06	155.24		155.24	155.24	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				6.94			
	Z_1 [cm]				3.41			
	Z_{bp} [cm]				2.77			
	z_{sp} [cm]	3.41				3.41		
	$d_{eq}(z_{sp})$ [cm]					7.86		
	f_c [MHz]	6.40	6.40	6.40	6.40	6.40	6.40	
	Dim of A_{aprt}	X [cm]		3.84	3.84	3.84	3.84	3.84
		Y [cm]		0.70	0.70	0.70	0.70	0.70
Other Information	PD [μ sec]	2.16						
	PRF [Hz]	6700						
	$p_r@P_{II_{max}}$ [MPa]	0.79						
	$d_{eq}@P_{II_{max}}$ [cm]					3.66		
	Focal Length	FL_X [cm]		3.00	3.00	3.00		3.00
		FL_Y [cm]		3.00	3.00	3.00		3.00
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.05							
Operating Control Conditions	Control 1 Depth	55 [mm]						
	Control 2 Focus	35 [mm]						
	Control 3 Gate	10 [mm]						
	Control 4 Preset	GEN-General						

$$ISPTA.3 [mW/cm^2] = 210.97$$

Table C-25: Transducer Model L9-4/38 (Operating Mode: Triplex (B/Color/PW))

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.21	0.00	5.40	1.69	0.05	2.40	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.37						
	W_0 [mW]		0.07	177.24		177.24	177.24	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				19.90			
	Z_1 [cm]				3.41			
	Z_{bp} [cm]				2.77			
	z_{sp} [cm]	3.41				3.41		
	$d_{eq}(z_{sp})$ [cm]					8.40		
	f_c [MHz]	6.40	6.40	6.40	6.40	6.40	6.40	
	Dim of A_{aprt}	X [cm]		3.84	3.84	3.84	3.84	3.84
		Y [cm]		0.70	0.70	0.70	0.70	0.70
Other Information	PD [μ sec]	2.16						
	FPS [Hz]	7						
	PRFd [Hz]	4000						
	$p_r@P_{II_{max}}$ [MPa]	0.79						
	$d_{eq}@P_{II_{max}}$ [cm]					2.31		
	Focal Length	FL_X [cm]		3.00	3.00	3.00		3.00
FL_Y [cm]			3.00	3.00	3.00		3.00	
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.06							
Operating Control Conditions	Control 1 Depth	55 [mm]						
	Control 2 Focus	35 [mm]						
	Control 3 Gate	10 [mm]						
	Control 4 Preset	GEN-General						

$$ISPTA.3 [mW/cm^2] = 248.85$$



Table C-26: Transducer Model L14-5/38 and L14-5/38 GPS (Operating Mode: B)

Index Label		MI	TIS		TIB	TIC	
			scan	non-scan			non-scan
Global Maximum Index Value		0.80	(a)	(a)	(a)	(a)	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.99					
	W_G [mW]		(a)	(a)		(a)	
	min of $[W_{.3}(z_1) : I_{TA.3}(z_1)]$ [mW]				(a)		
	Z_1 [cm]				(a)		
	z_{bp} [cm]				(a)		
	z_{sp} [cm]	1.95				(a)	
	$d_{eq}(z_{sp})$ [cm]					(a)	
	f_c [MHz]	6.23	(a)	(a)	(a)	(a)	(a)
	Dim of A_{aprt}	X [cm]		(a)	(a)	(a)	(a)
Y [cm]			(a)	(a)	(a)	(a)	
Other Information	PD [µsec]	0.00					
	PRF [Hz]	29					
	$p_r@PII_{max}$ [MPa]	3.03					
	$d_{eq}@PII_{max}$ [cm]					(a)	
	Focal Length	FL _x [cm]		(a)	(a)	(a)	(a)
		FL _y [cm]		(a)	(a)	(a)	(a)
$I_{PA.3}@MI_{max}$ [W/cm ²]	0.03						
Operating Control Conditions	Control 1 Depth	80	[mm]				
	Control 2 Focus	33	[mm]				
	Control 3 Gate	-	[mm]				
	Control 4 Preset	Gen-Gen (L14-5 38mm) - Pen					

$ISPTA.3 [mW/cm^2] = 66.32$

Table C-27: Transducer Model L14-5/38 and L14-5/38 GPS (Operating Mode: Color and Power Doppler)

Index Label		MI	TIS		TIB	TIC	
			scan	non-scan			non-scan
Global Maximum Index Value		0.43	0.00	(a)	(a)	0.02	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.12					
	W_G [mW]		0.01	(a)		1.41	
	min of $[W_{.3}(z_1) : I_{TA.3}(z_1)]$ [mW]				(c)		
	Z_1 [cm]				(c)		
	z_{bp} [cm]				(a)		
	z_{sp} [cm]	2.10				(a)	
	$d_{eq}(z_{sp})$ [cm]					(a)	
	f_c [MHz]	6.66	6.66	(a)	(a)	(a)	6.66
	Dim of A_{aprt}	X [cm]		3.84	(a)	(a)	3.84
Y [cm]			0.70	(a)	(a)	0.70	
Other Information	PD [µsec]	2.21					
	PRF [Hz]	5000					
	$p_r@PII_{max}$ [MPa]	1.81					
	$d_{eq}@PII_{max}$ [cm]					(a)	
	Focal Length	FL _x [cm]		3.00	(a)	(a)	3.00
		FL _y [cm]		3.00	(a)	(a)	3.00
$I_{PA.3}@MI_{max}$ [W/cm ²]	0.01						
Operating Control Conditions	Control 1 Depth	80	[mm]				
	Control 2 Focus	33	[mm]				
	Control 3 Gate	-	[mm]				
	Control 4 Preset	Gen-Gen (L14-5 38mm) - Pen					

$ISPTA.3 [mW/cm^2] = 54.12$

Table C-28: Transducer Model L14-5/38 and L14-5/38 GPS (Operating Mode: M)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.80	0.00	(a)	(a)	0.00	0.23	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.99						
	W_0 [mW]		0.00	(a)		(a)	16.71	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(c)			
	Z_1 [cm]				(c)			
	Z_{bp} [cm]				(a)			
	z_{sp} [cm]	1.95				(a)		
	$d_{eq}(z_{sp})$ [cm]					(a)		
	f_c [MHz]	6.23	6.23	(a)	(a)	(a)	6.23	
	Dim of A_{aprt}	X [cm]		3.84	(a)	(a)	(a)	3.84
		Y [cm]		0.70	(a)	(a)	(a)	0.70
Other Information	PD [μ sec]	0.00						
	PRF [Hz]	33						
	$p_r@P_{II_{max}}$ [MPa]	3.03						
	$d_{eq}@P_{II_{max}}$ [cm]					(a)		
	Focal Length	FL _X [cm]		3.00	(a)	(a)		3.00
		FL _Y [cm]		3.00	(a)	(a)		3.00
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.04							
Operating Control Conditions	Control 1 Depth	80	[mm]					
	Control 2 Focus	33	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	Gen-Gen (L14-5 38mm) - Pen						

$$ISPTA.3 [mW/cm^2] = 75.47$$

Table C-29: Transducer Model L14-5/38 and L14-5/38 GPS (Operating Mode: PW Doppler)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.39	(a)	0.59	0.37	0.10	0.25	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.02						
	W_0 [mW]		(a)	18.54		18.54	18.54	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				6.14			
	Z_1 [cm]				2.40			
	Z_{bp} [cm]				2.77			
	z_{sp} [cm]	2.40				2.40		
	$d_{eq}(z_{sp})$ [cm]					3.00		
	f_c [MHz]	6.67	(a)	6.67	6.67	6.67	6.67	
	Dim of A_{aprt}	X [cm]		(a)	3.84	3.84	3.84	3.84
		Y [cm]		(a)	0.70	0.70	0.70	0.70
Other Information	PD [μ sec]	1.93						
	PRF [Hz]	5000						
	$p_r@P_{II_{max}}$ [MPa]	1.77						
	$d_{eq}@P_{II_{max}}$ [cm]					0.37		
	Focal Length	FL _X [cm]		(a)	3.00	3.00		6.77
		FL _Y [cm]		(a)	3.00	3.00		6.77
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.16							
Operating Control Conditions	Control 1 Depth	60	[mm]					
	Control 2 Focus	30	[mm]					
	Control 3 Gate	20	[mm]					
	Control 4 Preset	GEN-General						

$$ISPTA.3 [mW/cm^2] = 622.80$$



Table C-30: Transducer Model L14-5/38 and L14-5/38 GPS (Operating Mode: PW+B)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan				
Global Maximum Index Value		0.39	0.00	0.92	0.37	0.00	0.39	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.02						
	W ₀ [mW]		0.02	29.03		29.03	29.03	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				9.61			
	Z ₁ [cm]				2.40			
	Z _{bp} [cm]				2.77			
	zsp [cm]	2.40				2.40		
	d _{eq} (z _{sp}) [cm]					3.76		
	f _c [MHz]	6.67	6.67	6.67	6.67	6.67	6.67	
	Dim of A _{aprt}	X [cm]		3.84	3.84	3.84	3.84	3.84
		Y [cm]		0.70	0.70	0.70	0.70	0.70
Other Information	PD [µsec]	1.93						
	PRF [Hz]	5000						
	p _r @P _{II} _{max} [MPa]	1.77						
	d _{eq} @P _{II} _{max} [cm]					0.46		
	Focal Length	FL _x [cm]		3.00	3.00	3.00		3.00
		FL _y [cm]		3.00	3.00	3.00		3.00
I _{PA,3} @M _I _{max} [W/cm ²]	0.17							
Operating Control Conditions	Control 1 Depth	60	[mm]					
	Control 2 Focus	30	[mm]					
	Control 3 Gate	20	[mm]					
	Control 4 Preset	GEN-General						

ISPTA.3 [mW/cm²] = 661.68

Table C-31: Transducer Model L14-5/38 and L14-5/38 GPS (Operating Mode: Triplex (B/Color/PW))

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan				
Global Maximum Index Value		0.39	0.00	0.92	0.37	0.00	0.39	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.02						
	W ₀ [mW]		0.02	29.03		29.03	29.03	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				9.61			
	Z ₁ [cm]				2.40			
	Z _{bp} [cm]				2.77			
	zsp [cm]	2.40				2.40		
	d _{eq} (z _{sp}) [cm]					3.76		
	f _c [MHz]	6.67	6.67	6.67	6.67	6.67	6.67	
	Dim of A _{aprt}	X [cm]		3.84	3.84	3.84	3.84	3.84
		Y [cm]		0.70	0.70	0.70	0.70	0.70
Other Information	PD [µsec]	1.93						
	FPS [Hz]	4.00						
	PRFd [Hz]	3333						
	p _r @P _{II} _{max} [MPa]	1.77						
	d _{eq} @P _{II} _{max} [cm]					0.93		
	Focal Length	FL _x [cm]		3.00	3.00	3.00		3.00
FL _y [cm]			3.00	3.00	3.00		3.00	
I _{PA,3} @M _I _{max} [W/cm ²]	0.13							
Operating Control Conditions	Control 1 Depth	60	[mm]					
	Control 2 Focus	30	[mm]					
	Control 3 Gate	20	[mm]					
	Control 4 Preset	GEN-General						

ISPTA.3 [mW/cm²] = 521.73

Table C-32: Transducer Model L14-5W/60 (Operating Mode: B)

Index Label		MI	TIS		TIB	TIC	
			scan	non-scan			non-scan
Global Maximum Index Value		0.32	(a)	(a)	(a)	(a)	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.82					
	W_0 [mW]		(a)	(a)		(a)	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(a)		
	Z_1 [cm]				(a)		
	Z_{bp} [cm]				(a)		
	z_{sp} [cm]	3.90				(a)	
	$d_{eq}(z_{sp})$ [cm]					(a)	
	f_c [MHz]	6.60	(a)	(a)	(a)	(a)	
	Dim of A_{aprt}	X [cm]		(a)	(a)	(a)	(a)
		Y [cm]		(a)	(a)	(a)	(a)
Other Information	PD [μ sec]	0.45					
	PRF [Hz]	34					
	$p_r@PII_{max}$ [MPa]	2.00					
	$d_{eq}@PII_{max}$ [cm]					(a)	
	Focal Length	FL _X [cm]		(a)	(a)	(a)	(a)
		FL _Y [cm]		(a)	(a)	(a)	(a)
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.01						
Operating Control Conditions	Control 1 Depth	70	[mm]				
	Control 2 Focus	40	[mm]				
	Control 3 Gate	-	[mm]				
	Control 4 Preset	GEN-General					

$$ISPTA.3 [mW/cm^2] = 22.76$$

Table C-33: Transducer Model L14-5W/60 (Operating Mode: Color and Power Doppler)

Index Label		MI	TIS		TIB	TIC	
			scan	non-scan			non-scan
Global Maximum Index Value		0.16	0.00	(a)	(a)	0.15	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.41					
	W_0 [mW]		0.04	(a)		13.75	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(c)		
	Z_1 [cm]				(c)		
	Z_{bp} [cm]				(a)		
	z_{sp} [cm]	4.16				(a)	
	$d_{eq}(z_{sp})$ [cm]					(a)	
	f_c [MHz]	6.60	6.60	(a)	(a)	(a)	6.60
	Dim of A_{aprt}	X [cm]		5.88	(a)	(a)	5.88
		Y [cm]		0.70	(a)	(a)	0.70
Other Information	PD [μ sec]	0.79					
	PRF [Hz]	6700					
	$p_r@PII_{max}$ [MPa]	1.05					
	$d_{eq}@PII_{max}$ [cm]					(a)	
	Focal Length	FL _X [cm]		3.00	(a)	(a)	3.00
		FL _Y [cm]		3.00	(a)	(a)	3.00
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.00						
Operating Control Conditions	Control 1 Depth	70	[mm]				
	Control 2 Focus	45	[mm]				
	Control 3 Gate	-	[mm]				
	Control 4 Preset	GEN-General					

$$ISPTA.3 [mW/cm^2] = 15.67$$



Table C-34: Transducer Model L14-5W/60 (Operating Mode: M)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan				
Global Maximum Index Value		0.32	0.00	(a)	(a)	(a)	0.00	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.82						
	W ₀ [mW]		0.02	(a)		(a)	(a)	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				(c)			
	Z ₁ [cm]				(c)			
	Z _{bp} [cm]				(a)			
	zsp [cm]	3.90				(a)		
	d _{eq} (z _{sp}) [cm]					(a)		
	f _c [MHz]	6.60	6.60	(a)	(a)	(a)	6.60	
	Dim of A _{aprt}	X [cm]		5.88	(a)	(a)	(a)	5.88
		Y [cm]		0.70	(a)	(a)	(a)	0.70
Other Information	PD [µsec]	0.45						
	PRF [Hz]	41						
	p _r @P _{II} max [MPa]	2.00						
	d _{eq} @P _{II} max [cm]					(a)		
	Focal Length	FL _X [cm]		3.00	(a)	(a)		3.00
		FL _Y [cm]		3.00	(a)	(a)		3.00
I _{PA,3} @MI _{max} [W/cm ²]	0.01							
Operating Control Conditions	Control 1 Depth	70	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	GEN-General						

ISPTA.3 [mW/cm²] = 27.45

Table C-35: Transducer Model L14-5W/60 (Operating Mode: PW Doppler)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan				
Global Maximum Index Value		0.16	(a)	1.12	0.48	0.38	0.39	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.41						
	W ₀ [mW]		(a)	35.70		35.70	35.70	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				4.52			
	Z ₁ [cm]				3.18			
	Z _{bp} [cm]				3.43			
	zsp [cm]	3.18				3.18		
	d _{eq} (z _{sp}) [cm]					3.82		
	f _c [MHz]	6.60	(a)	6.60	6.60	6.60	6.60	
	Dim of A _{aprt}	X [cm]		(a)	5.88	5.88	5.88	5.88
		Y [cm]		(a)	0.70	0.70	0.70	0.70
Other Information	PD [µsec]	2.20						
	PRF [Hz]	6700						
	p _r @P _{II} max [MPa]	0.84						
	d _{eq} @P _{II} max [cm]					2.21		
	Focal Length	FL _X [cm]		(a)	5.00	5.00		6.60
		FL _Y [cm]		(a)	5.00	5.00		6.60
I _{PA,3} @MI _{max} [W/cm ²]	0.03							
Operating Control Conditions	Control 1 Depth	70	[mm]					
	Control 2 Focus	50	[mm]					
	Control 3 Gate	20	[mm]					
	Control 4 Preset	GEN-General						

ISPTA.3 [mW/cm²] = 120.91

Table C-36: Transducer Model L14-5W/60 (Operating Mode: PW+B)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.16	0.00	1.94	0.48	0.03	0.67	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.41						
	W_0 [mW]		0.00	61.61		61.61	61.61	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				4.52			
	Z_1 [cm]				3.18			
	Z_{bp} [cm]				3.43			
	z_{sp} [cm]	3.18				3.18		
	$d_{eq}(z_{sp})$ [cm]					5.02		
	f_c [MHz]	6.60	6.60	6.60	6.60	6.60	6.60	
	Dim of A_{aprt}	X [cm]		5.88	5.88	5.88	5.88	5.88
		Y [cm]		0.70	0.70	0.70	0.70	0.70
Other Information	PD [μ sec]	2.20						
	PRF [Hz]	6700						
	$p_r@P_{II_{max}}$ [MPa]	0.84						
	$d_{eq}@P_{II_{max}}$ [cm]					2.90		
	Focal Length	FL_X [cm]		3.00	3.00	3.00		3.00
		FL_Y [cm]		3.00	3.00	3.00		3.00
	$I_{PA,3}@MI_{max}$ [W/cm ²]	0.03						
Operating Control Conditions	Control 1 Depth	70 [mm]						
	Control 2 Focus	50 [mm]						
	Control 3 Gate	20 [mm]						
	Control 4 Preset	GEN-General						

$$ISPTA.3 [mW/cm^2] = 133.63$$

Table C-37: Transducer Model L14-5W/60 (Operating Mode: Triplex (B/Color/PW))

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.16	0.00	1.94	0.48	0.03	0.67	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.41						
	W_0 [mW]		0.07	61.61		61.61	61.61	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				3.25			
	Z_1 [cm]				3.18			
	Z_{bp} [cm]				3.43			
	z_{sp} [cm]	3.18				3.18		
	$d_{eq}(z_{sp})$ [cm]					5.02		
	f_c [MHz]	6.60	6.60	6.60	6.60	6.60	6.60	
	Dim of A_{aprt}	X [cm]		5.88	5.88	5.88	5.88	5.88
		Y [cm]		0.70	0.70	0.70	0.70	0.70
Other Information	PD [μ sec]	2.20						
	FPS [Hz]	6						
	PRFd [Hz]	3333						
	$p_r@P_{II_{max}}$ [MPa]	0.84						
	$d_{eq}@P_{II_{max}}$ [cm]					3.42		
	Focal Length	FL_X [cm]		3.00	3.00	3.00		3.00
		FL_Y [cm]		3.00	3.00	3.00		3.00
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.02							
Operating Control Conditions	Control 1 Depth	70 [mm]						
	Control 2 Focus	50 [mm]						
	Control 3 Gate	20 [mm]						
	Control 4 Preset	Penetration						

$$ISPTA.3 [mW/cm^2] = 83.64$$



Table C-38: Transducer Model HST15-8/20 (Operating Mode: B)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
				$A_{aprt} \leq 1$	$A_{aprt} > 1$			
Global Maximum Index Value		0.20	(a)	(a)	(a)	(a)	(a)	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.51						
	W_0 [mW]		(a)	(a)		(a)	(a)	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(a)			
	Z_1 [cm]				(a)			
	z_{bp} [cm]				(a)			
	z_{sp} [cm]	3.32				(a)		
	$d_{eq}(z_{sp})$ [cm]					(a)		
	f_c [MHz]	6.60	(a)	(a)	(a)	(a)	(a)	
	Dim of A_{aprt}	X [cm]		(a)	(a)	(a)	(a)	(a)
		Y [cm]		(a)	(a)	(a)	(a)	(a)
Other Information	PD [µsec]	0.34						
	PRF [Hz]	55						
	$p_r @ P_{II_{max}}$ [MPa]	1.10						
	$d_{eq} @ P_{II_{max}}$ [cm]					(a)		
	Focal Length	FL _X [cm]		(a)	(a)	(a)		(a)
		FL _Y [cm]		(a)	(a)	(a)		(a)
$I_{PA,3} @ MI_{max}$ [W/cm ²]	0.00							
Operating Control Conditions	Control 1 Depth	55	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	GEN-General						

$ISPTA.3 [mW/cm^2] = 5.5$

Table C-39: Transducer Model HST15-8/20 (Operating Mode: Color and Power Doppler)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan		non-scan		
				$A_{aprt} \leq 1$	$A_{aprt} > 1$			
Global Maximum Index Value		0.19	0.00	(a)	(a)	(a)	1.10	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.48						
	W_0 [mW]		0.03	(a)		(a)	64.75	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(a)			
	Z_1 [cm]				(a)			
	z_{bp} [cm]				(a)			
	z_{sp} [cm]	3.32				(a)		
	$d_{eq}(z_{sp})$ [cm]					(a)		
	f_c [MHz]	6.60	6.60	(a)	(a)	(a)	6.60	
	Dim of A_{aprt}	X [cm]		2.85	(a)	(a)	(a)	2.85
		Y [cm]		0.60	(a)	(a)	(a)	0.60
Other Information	PD [µsec]	0.87						
	PRF [Hz]	10000						
	$p_r @ P_{II_{max}}$ [MPa]	1.03						
	$d_{eq} @ P_{II_{max}}$ [cm]					(a)		
	Focal Length	FL _X [cm]		4.20	(a)	(a)		4.20
		FL _Y [cm]		4.20	(a)	(a)		4.20
$I_{PA,3} @ MI_{max}$ [W/cm ²]	0.01							
Operating Control Conditions	Control 1 Depth	55	[mm]					
	Control 2 Focus	42	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	GEN-General						

$ISPTA.3 [mW/cm^2] = 28.22$

Table C-40: Transducer Model HST15-8/20 (Operating Mode: M)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.42	0.00	A _{aprt} ≤1 (a)	A _{aprt} >1 (a)	(a)	0.32	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.51						
	W ₀ [mW]		0.01	(a)		(a)	19.07	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				(a)			
	Z ₁ [cm]				(a)			
	Z _{bsp} [cm]				(c)			
	zsp [cm]	3.32				(a)		
	d _{eq} (z _{sp}) [cm]					(a)		
	f _c [MHz]	6.60	6.60	(a)	(a)	(a)	6.60	
	Dim of A _{aprt}	X [cm]		2.85	(a)	(a)	(a)	2.85
		Y [cm]		0.60	(a)	(a)	(a)	0.60
Other Information	PD [µsec]	0.34						
	PRF [Hz]	63						
	p _r @P _{II} _{max} [MPa]	1.10						
	d _{eq} @P _{II} _{max} [cm]					(a)		
	Focal Length	FL _X [cm]		4.00	(a)	(a)		4.00
		FL _Y [cm]		4.00	(a)	(a)		4.00
I _{PA,3} @MI _{max} [W/cm ²]	0.00							
Operating Control Conditions	Control 1 Depth	55 [mm]						
	Control 2 Focus	40 [mm]						
	Control 3 Gate	- [mm]						
	Control 4 Preset	GEN-General						

$$ISPTA.3 [mW/cm^2] = 6.3$$

Table C-41: Transducer Model HST15-8/20 (Operating Mode: PW Doppler)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.19	(a)	A _{aprt} ≤1 0.44	A _{aprt} >1 0.22	0.86	0.16	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.61						
	W ₀ [mW]		(a)	9.20		9.20	9.20	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				3.45			
	Z ₁ [cm]				1.42			
	Z _{bsp} [cm]				2.21			
	zsp [cm]	1.42				1.42		
	d _{eq} (z _{sp}) [cm]					2.18		
	f _c [MHz]	9.98	(a)	9.98	9.98	9.98	9.98	
	Dim of A _{aprt}	X [cm]		(a)	2.85	2.85	2.85	2.85
		Y [cm]		(a)	0.60	0.60	0.60	0.60
Other Information	PD [µsec]	1.45						
	PRF [Hz]	12500						
	p _r @P _{II} _{max} [MPa]	0.99						
	d _{eq} @P _{II} _{max} [cm]					0.90		
	Focal Length	FL _X [cm]		(a)	4.00	4.00		9.98
		FL _Y [cm]		(a)	4.00	4.00		9.98
I _{PA,3} @MI _{max} [W/cm ²]	0.28							
Operating Control Conditions	Control 1 Depth	55 [mm]						
	Control 2 Focus	40 [mm]						
	Control 3 Gate	20 [mm]						
	Control 4 Preset	GEN-General						

$$ISPTA.3 [mW/cm^2] = 276.03$$



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Table C-42: Transducer Model HST15-8/20 (Operating Mode: PW+B)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.19	0.00	0.56	0.22	0.01	0.20	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.61						
	W ₀ [mW]		0.00	11.82		11.82	11.82	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				4.44			
	Z ₁ [cm]				1.42			
	z _{bp} [cm]				2.21			
	z _{sp} [cm]	1.42				1.42		
	d _{eq} (z _{sp}) [cm]					2.48		
	f _c [MHz]	9.98	9.98	9.98	9.98	9.98	9.98	
	Dim of A _{aprt}	X [cm]		2.85	2.85	2.85	2.85	2.85
		Y [cm]		0.60	0.60	0.60	0.60	0.60
Other Information	PD [µsec]	1.45						
	PRF [Hz]	12500						
	p _r @P _{II} _{max} [MPa]	0.99						
	d _{eq} @P _{II} _{max} [cm]					1.02		
	Focal Length	FL _x [cm]		3.00	3.00	3.00		3.00
		FL _y [cm]		3.00	3.00	3.00		3.00
I _{PA,3} @M _I _{max} [W/cm ²]	0.28							
Operating Control Conditions	Control 1 Depth	55	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	20	[mm]					
	Control 4 Preset	GEN-General						

ISPTA.3 [mW/cm²] = 277.21

Table C-43: Transducer Model HST15-8/20 (Operating Mode: Triplex (B/Color/PW))

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.08	0.00	0.62	0.21	0.01	0.33	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.21						
	W ₀ [mW]		0.08	19.75		19.75	19.75	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				1.18			
	Z ₁ [cm]				3.32			
	z _{bp} [cm]				2.21			
	z _{sp} [cm]	3.32				3.32		
	d _{eq} (z _{sp}) [cm]					2.80		
	f _c [MHz]	6.60	6.60	6.60	6.60	6.60	6.60	
	Dim of A _{aprt}	X [cm]		2.85	2.85	2.85	2.85	2.85
		Y [cm]		0.60	0.60	0.60	0.60	0.60
Other Information	PD [µsec]	1.39						
	FPS [Hz]	6						
	PRFd [Hz]	4000						
	p _r @P _{II} _{max} [MPa]	0.44						
	d _{eq} @P _{II} _{max} [cm]					3.16		
	Focal Length	FL _x [cm]		3.00	3.00	3.00		3.00
FL _y [cm]			3.00	3.00	3.00		3.00	
I _{PA,3} @M _I _{max} [W/cm ²]	0.01							
Operating Control Conditions	Control 1 Depth	55	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	24.5	[mm]					
	Control 4 Preset	GEN-General						

ISPTA.3 [mW/cm²] = 21.51

Table C-44: Transducer Model 4DC7-3/40 (Operating Mode: B)

Index Label		MI	TIS		TIB	TIC	
			scan	non-scan			non-scan
Global Maximum Index Value		0.49	(a)	(a)	(a)	(a)	
Assoc. Acoustic Param.	Pr.3 [MPa]	1.05					
	W_0 [mW]		(a)	(a)		(a)	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(a)		
	Z_1 [cm]				(a)		
	Z_{bp} [cm]				(a)		
	z_{sp} [cm]	3.97				(a)	
	$d_{eq}(z_{sp})$ [cm]					(a)	
	f_c [MHz]	4.50	(a)	(a)	(a)	(a)	
	Dim of A_{aprt}	X [cm]		(a)	(a)	(a)	(a)
		Y [cm]		(a)	(a)	(a)	(a)
Other Information	PD [μ sec]	0.45					
	PRF [Hz]	37					
	$p_r@PII_{max}$ [MPa]	1.94					
	$d_{eq}@PII_{max}$ [cm]					(a)	
	Focal Length	FL _X [cm]		(a)	(a)	(a)	(a)
		FL _Y [cm]		(a)	(a)	(a)	(a)
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.00						
Operating Control Conditions	Control 1 Depth	90	[mm]				
	Control 2 Focus	40	[mm]				
	Control 3 Gate	-	[mm]				
	Control 4 Preset	GEN-General					

$$ISPTA.3 [mW/cm^2] = 9.47$$

Table C-45: Transducer Model 4DC7-3/40 (Operating Mode: Color and Power Doppler)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.39	0.00	(a)	(a)	0.01		
Assoc. Acoustic Param.	Pr.3 [MPa]	0.83						
	W_0 [mW]		0.01	(a)		0.85		
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				(c)			
	Z_1 [cm]				(c)			
	Z_{bp} [cm]				(a)			
	z_{sp} [cm]	5.12				(a)		
	$d_{eq}(z_{sp})$ [cm]					(a)		
	f_c [MHz]	4.50	4.50	(a)	(a)	(a)	4.50	
	Dim of A_{aprt}	X [cm]		6.40	(a)	(a)	(a)	6.40
		Y [cm]		1.20	(a)	(a)	(a)	1.20
Other Information	PD [μ sec]	1.08						
	PRF [Hz]	5000						
	$p_r@PII_{max}$ [MPa]	1.84						
	$d_{eq}@PII_{max}$ [cm]					(a)		
	Focal Length	FL _X [cm]		3.00	(a)	(a)	3.00	
		FL _Y [cm]		3.00	(a)	(a)	3.00	
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.00							
Operating Control Conditions	Control 1 Depth	90	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	GEN-General						

$$ISPTA.3 [mW/cm^2] = 1.76$$



Table C-46: Transducer Model 4DC7-3/40 (Operating Mode: M)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan				
Global Maximum Index Value		0.49		0.00	(a)	(a)	(a)	0.00
Assoc. Acoustic Param.	Pr.3 [MPa]	1.05						
	W ₀ [mW]		0.03	(a)		(a)	(a)	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				(c)			
	Z ₁ [cm]				(c)			
	Z _{bp} [cm]				(a)			
	zsp [cm]	3.97				(a)		
	d _{eq} (z _{sp}) [cm]					(a)		
	f _c [MHz]	4.50	4.50	(a)	(a)	(a)	4.50	
	Dim of A _{aprt}	X [cm]		6.40	(a)	(a)	(a)	6.40
		Y [cm]		1.20	(a)	(a)	(a)	1.20
Other Information	PD [µsec]	0.45						
	PRF [Hz]	41						
	p _r @P _{II} _{max} [MPa]	1.94						
	d _{eq} @P _{II} _{max} [cm]					(a)		
	Focal Length	FL _X [cm]		3.00	(a)	(a)		3.00
		FL _Y [cm]		3.00	(a)	(a)		3.00
I _{PA,3} @M _I _{max} [W/cm ²]	0.00							
Operating Control Conditions	Control 1 Depth	90	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	-	[mm]					
	Control 4 Preset	GEN-General						

ISPTA.3 [mW/cm²] = 10.5

Table C-47: Transducer Model 4DC7-3/40 (Operating Mode: PW Doppler)

Index Label		MI	TIS			TIB	TIC	
			scan	non-scan				
Global Maximum Index Value		0.32		(a)	4.98	2.73	4.03	1.86
Assoc. Acoustic Param.	Pr.3 [MPa]	0.69						
	W ₀ [mW]		(a)	232.23		232.23	232.23	
	min of [W ₃ (z ₁) : I _{TA,3} (z ₁)] [mW]				6.22			
	Z ₁ [cm]				3.27			
	Z _{bp} [cm]				4.69			
	zsp [cm]	3.27				3.27		
	d _{eq} (z _{sp}) [cm]					10.87		
	f _c [MHz]	4.50	(a)	4.50	4.50	4.50	4.50	
	Dim of A _{aprt}	X [cm]		(a)	6.40	6.40	6.40	6.40
		Y [cm]		(a)	1.20	1.20	1.20	1.20
Other Information	PD [µsec]	4.08						
	PRF [Hz]	6700						
	p _r @P _{II} _{max} [MPa]	1.15						
	d _{eq} @P _{II} _{max} [cm]					5.35		
	Focal Length	FL _X [cm]		(a)	4.00	4.00		4.50
		FL _Y [cm]		(a)	4.00	4.00		4.50
I _{PA,3} @M _I _{max} [W/cm ²]	0.10							
Operating Control Conditions	Control 1 Depth	90	[mm]					
	Control 2 Focus	40	[mm]					
	Control 3 Gate	10	[mm]					
	Control 4 Preset	GEN-General						

ISPTA.3 [mW/cm²] = 415.94

Table C-48: Transducer Model 4DC7-3/40 (Operating Mode: PW+B)

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.32	0.005	5.74	2.73	0.06	2.14	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.69						
	W_0 [mW]		0.22	268.04		268.04	268.04	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				6.22			
	Z_1 [cm]				3.27			
	Z_{bp} [cm]				4.69			
	z_{sp} [cm]	3.27				3.27		
	$d_{eq}(z_{sp})$ [cm]					11.68		
	f_c [MHz]	4.50	4.50	4.50	4.50	4.50	4.50	
	Dim of A_{aprt}	X [cm]		6.40	6.40	6.40	6.40	6.40
		Y [cm]		1.20	1.20	1.20	1.20	1.20
Other Information	PD [μ sec]	4.08						
	PRF [Hz]	6700						
	$p_r@P_{II_{max}}$ [MPa]	1.15						
	$d_{eq}@P_{II_{max}}$ [cm]					5.74		
	Focal Length	FL_X [cm]		3.00	3.00	3.00		3.00
		FL_Y [cm]		3.00	3.00	3.00		3.00
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.11							
Operating Control Conditions	Control 1 Depth	90 [mm]						
	Control 2 Focus	40 [mm]						
	Control 3 Gate	10 [mm]						
	Control 4 Preset	GEN-General						

$$ISPTA.3 [mW/cm^2] = 420.8$$

Table C-49: Transducer Model 4DC7-3/40 (Operating Mode: Triplex (B/Color/PW))

Index Label		MI	TIS		TIB	TIC		
			scan	non-scan			non-scan	
Global Maximum Index Value		0.32	0.005	5.74	2.73	0.06	2.14	
Assoc. Acoustic Param.	Pr.3 [MPa]	0.69						
	W_0 [mW]		0.23			268.04	238.04	
	min of $[W_3(z_1) : I_{TA,3}(z_1)]$ [mW]				26.90			
	Z_1 [cm]				3.27			
	Z_{bp} [cm]				4.69			
	z_{sp} [cm]	3.27				3.27		
	$d_{eq}(z_{sp})$ [cm]					11.68		
	f_c [MHz]	4.50	4.50	4.50	4.50	4.50	4.50	
	Dim of A_{aprt}	X [cm]		6.40	6.40	6.40	6.40	6.40
		Y [cm]		1.20	1.20	1.20	1.20	1.20
Other Information	PD [μ sec]	4.08						
	FPS [Hz]	7						
	PRFd [Hz]	5000						
	$p_r@P_{II_{max}}$ [MPa]	1.15						
	$d_{eq}@P_{II_{max}}$ [cm]					2.76		
	Focal Length	FL_X [cm]		3.00	3.00	3.00		3.00
FL_Y [cm]			3.00	3.00	3.00		3.00	
$I_{PA,3}@MI_{max}$ [W/cm ²]	0.13							
Operating Control Conditions	Control 1 Depth	90 [mm]						
	Control 2 Focus	40 [mm]						
	Control 3 Gate	10 [mm]						
	Control 4 Preset	GEN-General						

$$ISPTA.3 [mW/cm^2] = 500.52$$



C.3 ULTRASOUND INDICATIONS FOR USE TABLES

**TABLE C-50: SONIXOP ULTRASOUND SCANNER
DIAGNOSTIC ULTRASOUND INDICATIONS FOR USE FORMS**

Intended use: Diagnostic ultrasound imaging or fluid flow analysis of the human body as follows:

Clinical Application	Mode of Operation							
	B	M	PW Doppler	CW Doppler	Color Doppler	Power Doppler	Combine Modes ¹²	Other [Notes]
Ophthalmic								
Fetal	◆	◆	◆	◆	◆	◆	◆	◆ [3-8,11]
Abdominal	◆	◆	◆	◆	◆	◆	◆	◆ [3-8,11]
Intraoperative ¹	◆	◆	◆		◆	◆	◆	◆ [3-8]
Intraoperative Neurological	◆	◆	◆		◆	◆	◆	◆ [3-8]
Pediatric	◆	◆	◆	◆	◆	◆	◆	◆ [3-8,11]
Small Organ ²	◆	◆	◆	◆	◆	◆	◆	◆ [3-6,8,11]
Neonatal Cephalic	◆	◆	◆	◆	◆	◆	◆	◆ [3-6,8,11]
Adult Cephalic (excluding Transcranial)	◆	◆	◆	◆	◆	◆	◆	◆ [3-6,8,11]
Cardiac	◆	◆	◆	◆	◆	◆	◆	◆ [3-6,8]
Transesophageal	◆	◆	◆	◆	◆	◆	◆	◆ [3-6,8]
Transrectal	◆	◆	◆	◆	◆	◆	◆	◆ [3-8,11]
Transvaginal	◆	◆	◆	◆	◆	◆	◆	◆ [3-8,11]
Transurethral								
Transcranial	◆	◆	◆	◆	◆	◆	◆	◆ [3-6,8]
Peripheral Vascular	◆	◆	◆	◆	◆	◆	◆	◆ [3-8,11]
Laparoscopic								
MSK Conventional	◆	◆	◆	◆	◆	◆	◆	◆ [3-8,11]
MSK Superficial	◆	◆	◆	◆	◆	◆	◆	◆ [3-8,11]
Vascular Access (excluding Transcranial)	◆	◆	◆	◆	◆	◆	◆	◆ [3-8,10,11]
Nerve Block	◆	◆	◆	◆	◆	◆	◆	◆ [3-9,11]
Other								

◆ = Cleared for use

Notes:

1. Abdominal organs and vascular
2. Breast, Thyroid, Testicle
3. Elastography
4. Panoramic Imaging
5. Compound Imaging
6. Freehand 3D Imaging
7. Live 3D/4D Imaging
8. Imaging for guidance of biopsy
9. Imaging for guidance of nerve block injections
10. Imaging for guidance of central or peripheral lines
11. Volume Navigation/Image Fusion/GPS (available only with the GPS transducer)
12. B/M, B/PW Doppler or CW Doppler, B/C/PW Doppler (Triplex) or CW Doppler (Triplex CW), B/Power Doppler/PW Doppler or CW Doppler, Simultaneous Color Doppler or Power Doppler.

DIAGNOSTIC ULTRASOUND INDICATIONS FOR USE FORM

Table C-51: SA4-2/24 Phased Array Transducer

Intended use: Diagnostic ultrasound imaging or fluid flow analysis of the human body as follows:

Clinical Application	Mode of Operation							
	B	M	PW Doppler	CW Doppler	Color Doppler	Power Doppler	Combined Modes ¹²	Other [Notes]
Ophthalmic								
Fetal								
Abdominal	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8]
Intraoperative ¹								
Intraoperative Neurological								
Pediatric	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8]
Small Organ ²								
Neonatal Cephalic	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Adult Cephalic (excluding Transcranial)	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8]
Cardiac	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8]
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial								
Peripheral Vascular								
Laparoscopic								
MSK Conventional								
MSK Superficial								
Vascular Access (excluding Transcranial)								
Nerve Block								
Other								

♦ = Cleared for use

Notes:

1. Abdominal organs and vascular
2. Breast, Thyroid, Testicle
3. Elastography
4. Panoramic Imaging
5. Compound Imaging
6. Freehand 3D Imaging
7. Live 3D/4D Imaging
8. Imaging for guidance of biopsy
9. Imaging for guidance of nerve block injections
10. Imaging for guidance of central or peripheral lines
11. Volume Navigation/Image Fusion/GPS (available only with the GPS transducer)
12. B/M, B/PW Doppler or CW Doppler, B/C/PW Doppler (Triplex) or CW Doppler (Triplex CW), B/Power Doppler/PW Doppler or CW Doppler, Simultaneous Color Doppler or Power Doppler.



ULTRASONIX

DIAGNOSTIC ULTRASOUND INDICATIONS FOR USE FORM

Table C-52: EC9-5/10 Microconvex Endocavity Radius Transducer

Intended use: Diagnostic ultrasound imaging or fluid flow analysis of the human body as follows:

Clinical Application	Mode of Operation							
	B	M	PW Doppler	CW Doppler	Color Doppler	Power Doppler	Combined Modes ¹²	Other [Notes]
Ophthalmic								
Fetal								
Abdominal								
Intraoperative ¹								
Intraoperative Neurological								
Pediatric								
Small Organ ²								
Neonatal Cephalic								
Adult Cephalic (excluding Transcranial)								
Cardiac								
Transesophageal								
Transrectal	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Transvaginal	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Transurethral								
Transcranial								
Peripheral Vascular								
Laparoscopic								
MSK Conventional								
MSK Superficial								
Vascular Access (excluding Transcranial)								
Nerve Block								
Other								

♦ = Cleared for use

Notes:

1. Abdominal organs and vascular
2. Breast, Thyroid, Testicle
3. Elastography
4. Panoramic Imaging
5. Compound Imaging
6. Freehand 3D Imaging
7. Live 3D/4D Imaging
8. Imaging for guidance of biopsy
9. Imaging for guidance of nerve block injections
10. Imaging for guidance of central or peripheral lines
11. Volume Navigation/Image Fusion/GPS (available only with the GPS transducer)
12. B/M, B/PW Doppler or CW Doppler, B/C/PW Doppler (Triplex) or CW Doppler (Triplex CW), B/Power Doppler/PW Doppler or CW Doppler, Simultaneous Color Doppler or Power Doppler.

DIAGNOSTIC ULTRASOUND INDICATIONS FOR USE FORM

Table C-53: C5-2/60 and C5-2/60 GPS Convex Radius Transducer

Intended use: Diagnostic ultrasound imaging or fluid flow analysis of the human body as follows:

Clinical Application	Mode of Operation							
	B	M	PW Doppler	CW Doppler	Color Doppler	Power Doppler	Combined Modes ¹²	Other [Notes]
Ophthalmic								
Fetal	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Abdominal	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Intraoperative ¹								
Intraoperative Neurological								
Pediatric	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Small Organ ²	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Neonatal Cephalic								
Adult Cephalic (excluding Transcranial)								
Cardiac								
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial								
Peripheral Vascular	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Laparoscopic								
MSK Conventional	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
MSK Superficial	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Vascular Access (excluding Transcranial)								
Nerve Block								
Other								

♦ = Cleared for use

Notes:

13. Abdominal organs and vascular
14. Breast, Thyroid, Testicle
15. Elastography
16. Panoramic Imaging
17. Compound Imaging
18. Freehand 3D Imaging
19. Live 3D/4D Imaging
20. Imaging for guidance of biopsy
21. Imaging for guidance of nerve block injections
22. Imaging for guidance of central or peripheral lines
23. Volume Navigation/Image Fusion/GPS (available only with the GPS transducer)
24. BB/M, B/PW Doppler or CW Doppler, B/C/PW Doppler (Triplex) or CW Doppler (Triplex CW), B/Power Doppler/PW Doppler or CW Doppler, Simultaneous Color Doppler or Power Doppler.



ULTRASONIX

DIAGNOSTIC ULTRASOUND INDICATIONS FOR USE FORM

Table C-54: L9-4/38 Linear Transducer

Intended use: Diagnostic ultrasound imaging or fluid flow analysis of the human body as follows:

Clinical Application	Mode of Operation							
	B	M	PW Doppler	CW Doppler	Color Doppler	Power Doppler	Combined Modes ¹²	Other [Notes]
Ophthalmic								
Fetal	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Abdominal	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Intraoperative ¹								
Intraoperative Neurological								
Pediatric	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Small Organ ²	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Neonatal Cephalic	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Adult Cephalic (excluding Transcranial)	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Cardiac								
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial								
Peripheral Vascular	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Laparoscopic								
MSK Conventional	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
MSK Superficial	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Vascular Access (excluding Transcranial)	♦	♦	♦		♦	♦	♦	♦ [3-6,8,10]
Nerve Block	♦	♦	♦		♦	♦	♦	♦ [3-6,8,9]
Other								

♦ = Cleared for use

Notes:

1. Abdominal organs and vascular
2. Breast, Thyroid, Testicle
3. Elastography
4. Panoramic Imaging
5. Compound Imaging
6. Freehand 3D Imaging
7. Live 3D/4D Imaging
8. Imaging for guidance of biopsy
9. Imaging for guidance of nerve block injections
10. Imaging for guidance of central or peripheral lines
11. Volume Navigation/Image Fusion/GPS (available only with the GPS transducer)
12. B/M, B/PW Doppler or CW Doppler, B/C/PW Doppler (Triplex) or CW Doppler (Triplex CW), B/Power Doppler/PW Doppler or CW Doppler, Simultaneous Color Doppler or Power Doppler.

DIAGNOSTIC ULTRASOUND INDICATIONS FOR USE FORM

Table C-55: L14-5/38 and L14-5/38 GPS Linear Transducer

Intended use: Diagnostic ultrasound imaging or fluid flow analysis of the human body as follows:

Clinical Application	Mode of Operation							
	B	M	PW Doppler	CW Doppler	Color Doppler	Power Doppler	Combined Modes ¹²	Other [Notes]
Ophthalmic								
Fetal	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Abdominal	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Intraoperative ¹								
Intraoperative Neurological								
Pediatric	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Small Organ ²	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Neonatal Cephalic	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Adult Cephalic (excluding Transcranial)	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Cardiac								
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial								
Peripheral Vascular	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Laparoscopic								
MSK Conventional	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
MSK Superficial	♦	♦	♦		♦	♦	♦	♦ [3-6,8,11]
Vascular Access (excluding Transcranial)	♦	♦	♦		♦	♦	♦	♦ [3-6,8,10,11]
Nerve Block	♦	♦	♦		♦	♦	♦	♦ [3-6,8,9,11]
Other								

♦ = Cleared for use

Notes:

1. Abdominal organs and vascular
2. Breast, Thyroid, Testicle
3. Elastography
4. Panoramic Imaging
5. Compound Imaging
6. Freehand 3D Imaging
7. Live 3D/4D Imaging
8. Imaging for guidance of biopsy
9. Imaging for guidance of nerve block injections
10. Imaging for guidance of central or peripheral lines
11. Volume Navigation/Image Fusion/GPS (available only with the GPS transducer)
12. B/M, B/PW Doppler or CW Doppler, B/C/PW Doppler (Triplex) or CW Doppler (Triplex CW), B/Power Doppler/PW Doppler or CW Doppler, Simultaneous Color Doppler or Power Doppler.



ULTRASONIX

DIAGNOSTIC ULTRASOUND INDICATIONS FOR USE FORM

Table C-56: L14-5W/60 Wide Linear Transducer

Intended use: Diagnostic ultrasound imaging or fluid flow analysis of the human body as follows:

Clinical Application	Mode of Operation							
	B	M	PW Doppler	CW Doppler	Color Doppler	Power Doppler	Combined Modes ¹²	Other [Notes]
Ophthalmic								
Fetal	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Abdominal	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Intraoperative ¹								
Intraoperative Neurological								
Pediatric	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Small Organ ²	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Neonatal Cephalic	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Adult Cephalic (excluding Transcranial)	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Cardiac								
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial								
Peripheral Vascular	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Laparoscopic								
MSK Conventional	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
MSK Superficial	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Vascular Access (excluding Transcranial)	♦	♦	♦		♦	♦	♦	♦ [3-6,8,10]
Nerve Block	♦	♦	♦		♦	♦	♦	♦ [3-6,8,9]
Other								

♦ = Cleared for use

Notes:

1. Abdominal organs and vascular
2. Breast, Thyroid, Testicle
3. Elastography
4. Panoramic Imaging
5. Compound Imaging
6. Freehand 3D Imaging
7. Live 3D/4D Imaging
8. Imaging for guidance of biopsy
9. Imaging for guidance of nerve block injections
10. Imaging for guidance of central or peripheral lines
11. Volume Navigation/Image Fusion/GPS (available only with the GPS transducer)
12. B/M, B/PW Doppler or CW Doppler, B/C/PW Doppler (Triplex) or CW Doppler (Triplex CW), B/Power Doppler/PW Doppler or CW Doppler, Simultaneous Color Doppler or Power Doppler.

DIAGNOSTIC ULTRASOUND INDICATIONS FOR USE FORM

Table C-57: HST15-8/20 Linear Transducer

Intended use: Diagnostic ultrasound imaging or fluid flow analysis of the human body as follows:

Clinical Application	Mode of Operation							
	B	M	PW Doppler	CW Doppler	Color Doppler	Power Doppler	Combined Modes ¹²	Other [Notes]
Ophthalmic								
Fetal								
Abdominal								
Intraoperative ¹								
Intraoperative Neurological	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Pediatric	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Small Organ ²	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Neonatal Cephalic	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Adult Cephalic (excluding Transcranial)								
Cardiac								
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Peripheral Vascular	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Laparoscopic								
MSK Conventional	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
MSK Superficial	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Vascular Access (excluding Transcranial)	♦	♦	♦		♦	♦	♦	♦ [3-6,8,10]
Nerve Block	♦	♦	♦		♦	♦	♦	♦ [3-6,8,9]
Other								

♦ = Cleared for use

Notes:

1. Abdominal organs and vascular
2. Breast, Thyroid, Testicle
3. Elastography
4. Panoramic Imaging
5. Compound Imaging
6. Freehand 3D Imaging
7. Live 3D/4D Imaging
8. Imaging for guidance of biopsy
9. Imaging for guidance of nerve block injections
10. Imaging for guidance of central or peripheral lines
11. Volume Navigation/Image Fusion/GPS (available only with the GPS transducer)
12. B/M, B/PW Doppler or CW Doppler, B/C/PW Doppler (Triplex) or CW Doppler (Triplex CW), B/Power Doppler/PW Doppler or CW Doppler, Simultaneous Color Doppler or Power Doppler.



ULTRASONIX

DIAGNOSTIC ULTRASOUND INDICATIONS FOR USE FORM

Table C-58: 4DC7-3/40 Motorized Convex Radius Transducer

Intended use: Diagnostic ultrasound imaging or fluid flow analysis of the human body as follows:

Clinical Application	Mode of Operation							
	B	M	PW Doppler	CW Doppler	Color Doppler	Power Doppler	Combined Modes ¹²	Other [Notes]
Ophthalmic								
Fetal	♦	♦	♦		♦	♦	♦	♦ [3-8]
Abdominal	♦	♦	♦		♦	♦	♦	♦ [3-8]
Intraoperative ¹								
Intraoperative Neurological								
Pediatric	♦	♦	♦		♦	♦	♦	♦ [3-8]
Small Organ ²	♦	♦	♦		♦	♦	♦	♦ [3-8]
Neonatal Cephalic								
Adult Cephalic (excluding Transcranial)								
Cardiac								
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial								
Peripheral Vascular								
Laparoscopic								
MSK Conventional	♦	♦	♦		♦	♦	♦	♦ [3-8]
MSK Superficial	♦	♦	♦		♦	♦	♦	♦ [3-8]
Vascular Access (excluding Transcranial)								
Nerve Block								
Other								

♦ = Cleared for use

Notes:

1. Abdominal organs and vascular
2. Breast, Thyroid, Testicle
3. Elastography
4. Panoramic Imaging
5. Compound Imaging
6. Freehand 3D Imaging
7. Live 3D/4D Imaging
8. Imaging for guidance of biopsy
9. Imaging for guidance of nerve block injections
10. Imaging for guidance of central or peripheral lines
11. Volume Navigation/Image Fusion/GPS (available only with the GPS transducer)
12. B/M, B/PW Doppler or CW Doppler, B/C/PW Doppler (Triplex) or CW Doppler (Triplex CW), B/Power Doppler/PW Doppler or CW Doppler, Simultaneous Color Doppler or Power Doppler.

APPENDIX D: MAINTENANCE AND CLEANING

D.1 TRANSDUCERS

D.1.1 Guidelines

Ultrasonix recommends inspecting the transducers prior to each use:

- Ensure the transducers are always clean before they are used. There must be no ultrasound gel (from previous imaging), any debris, films or unusual odors present.
- Ensure there are no cracks or other damage to the transducers before they are used. Inspect the transducer surfaces for cracks and feel for cracks with finger tips as well.

Where any transducer (including, but not limited to, an intracavity transducer) is used in a clinical application of a semi-critical nature (including, but not limited to, intraoperative, transrectal, transvaginal, transesophageal, etc.), ensure the transducer is covered with the appropriate STERILE transducer cover/sheath which has received regulatory clearance for use.

D.1.2 Ultrasound Coupling Gels

The following ultrasound coupling gels are recommended for use with Ultrasonix transducers:

Table D-1: Recommended Ultrasound Coupling Gels

Gel Name	Manufacturer	Address
Aquasonic 100	Parker Laboratories, Inc.	286 Eldridge Road Fairfield, NJ, 07004 USA Ph (800) 631-8888 Fax (973) 276-9510
Clear Image	Sonotech, Inc.	774 Marine Drive Bellingham, WA 98225 USA Ph (360) 671-9121 Fax (360) 671-9024
Echo-Oil®	Echo Ultrasound	R.D.#2. Box 118 Reedsville, PA 17084 USA
Echotrack®	Echo Ultrasound	R.D.#2. Box 118 Reedsville, PA 17084 USA
Ecogel 100& 200	Echo-Med Pharmaceutical Inc.	7050 Bramalea Road Unit C58 Mississauga, ON L5S 1S9 Canada Ph (905) 405-1050 Fax (905) 405-0775



Do not use gels that contain any of the following solutions:

- Acetone
- Methanol
- Denatured ethyl alcohol
- Mineral oil
- Iodine
- Any lotions or gels that contain perfume.

If there are any questions, contact Ultrasonix Medical Corporation.

D.1.3 General Transducer Maintenance

Cautions:

DO NOT drop the transducers.

DO NOT hit the transducers against any surface that can dislodge or damage any of the transducer components.

DO NOT pinch or kink the transducer cable.

DO NOT use a brush to clean the transducer. (Use a soft cloth.)

DO NOT immerse the transducer scan head past the first seam in any liquid.

DO NOT soak the transducer for extended periods of time.

DO NOT rinse or immerse near the strain relief.

DO NOT use coupling gels and cleaning agents that have not been recommended by Ultrasonix.

DO NOT use sterilization or disinfection methods that have not been recommended by Ultrasonix. Severe damage will result. Contact Ultrasonix if you have any doubt about sterilization or disinfection methods. Use of non-recommended cleaning agents may cause damage to the housing and will void transducer warranties.

DO NOT use chemicals such as phenol, benzothonium chloride, pHisoHex, benzoyl peroxide, hydrogen peroxide—commonly found in hospitals or clinics. These chemicals will damage the transducer.

D.1.3.1 Inspection and Testing

Inspect the transducers prior to each use:

- always ensure the transducers are clean before they are used. There must be no ultrasound gel (from previous imaging), debris, films, or unusual odors present
- ensure there are no cracks or other damage to the transducers before they are used. Inspect the transducer surfaces for cracks and feel for cracks with finger tips as well.

Cautions:

DO NOT use transducers if they are found to be cracked, damaged, or broken.

DO NOT use the transducer if the transducer cable insulation is damaged, thereby exposing the wiring.

D.1.3.2 Storing and Packaging

To help avoid contamination, ensure the transducer is clean/disinfected and dry before storing/packing it. Store transducers:

- in one of the transducer holders
- separately, in a protected environment to avoid inadvertent transducer damage
- in the original case (recommended)
- away from direct sunlight, dust and extreme temperatures.

After placing a transducer in its carrying case, wrap the case in bubble wrap and place the wrapped case in a cardboard box.



D.1.4 General Transducer Cleaning/Disinfecting Recommendations and Warnings



Warnings:

Never sterilize the transducer with sterilization techniques such as autoclave, ultraviolet, gamma radiation, gas, steam, or heat sterilization techniques. Severe damage will result using the above sterilization techniques.

Use of precleaning solutions should be restricted to the external transducer face. DO NOT get solution on any other areas or surfaces of the transducer. This includes transducer connectors and contacts.

*Some chemicals such as phenol, benzothonium chloride, pHisoHex, benzoyl peroxide, hydrogen peroxide are commonly found in clinic and hospital settings, while others are found in antibacterial skin cleaners or lotions. **Use of these chemicals will cause damage to your transducer.***

Avoid transducer contact with strong solvents such as acetone, freon and other industrial cleansers.

Follow all infection control policies and procedures established by your organization, including safety procedures involving personal protective equipment (such as gloves, protective eyewear and protective clothing)

***DO NOT** use sterilization or disinfection methods that have not been recommended by Ultrasonix. Severe damage will result. Contact Ultrasonix if you have any doubt about sterilization or disinfection methods.*



***Warning:** Any transducer suspected of being contaminated with **Creutzfeld Jacob** disease material cannot be cleaned or sterilized.*

Contact Ultrasonix Medical Corporation to obtain instructions on the proper disposal of these transducers.

Remove ultrasound transmission gel with a dry or water-moistened soft cloth. It is recommended that transducers are reprocessed as soon as is reasonably practical following use.

Cautions:

Use only Ultrasonix recommended cleaners/disinfectants ([Table D-2](#) and [Table D-3](#)). They have been tested and determined safe to use on Ultrasonix transducers. Failure to follow these instructions may cause damage and will void transducer warranties.

Reprocessing should be completed only by personnel thoroughly trained in proper cleaning/disinfection procedures.

Follow all product/manufacture label cleaning and safety instructions.

Always verify product expiration dates.

Follow all regulatory and manufacturer instructions on product disposal.

For complete regulatory information and approval status on the products listed here, refer to the relevant EPA, FDA, Health Canada and CE documentation.

***Note:** Repeated processing has minimal effect on these transducers. End of life is normally determined by wear and damage due to use. Disassembly is not required.*

D.1.5 Cleaning/Disinfecting Non-Invasive Transducers

To prevent biological materials (bioburden) from drying on the equipment, always reprocess transducers as soon as is reasonably practical following use.

Table D-2: Non-Invasive Cleaning/Disinfecting Agents

NON-INVASIVE TRANSDUCERS		CLEANING/DISINFECTING AGENTS													
		75% IPA	Alkazyme	Cidex Activated Dialdehyde Solution 14 day	Cidex Plus 28 day	Cidex OPA	Cidezyme	Klenzyme	McKesson Brand	Metrizyme	Milton Disinfecting Liquid	Nuclean	Omnicide – FG2	Steranios 2%	T-spray
MISCELLANEOUS	SA4-2/24				◆	◆				◆					◆
	HST15-8/20			◆	◆	◆	◆	◆							
	4DC7-3/40			◆	◆	◆	◆	◆							
	4DL14-5/38		◆			◆		◆						◆	
GPS	C5-2/60 GPS	◆		◆	◆		◆	◆	◆		◆	◆			◆
	L14-5/38 GPS	◆		◆	◆		◆	◆	◆		◆	◆			◆
LINEAR AND CONVEX	C5-2/60	◆			◆	◆	◆	◆	◆	◆		◆			◆
	C7-3/50	◆			◆	◆	◆	◆	◆	◆		◆			◆
	L9-4/38	◆			◆	◆	◆	◆	◆	◆		◆			◆
	L14-5/38	◆			◆	◆	◆	◆	◆	◆		◆			◆
	L14-5W/60	◆			◆	◆	◆	◆	◆	◆		◆			◆

Caution: Use only Ultrasonix recommended cleaners/disinfectants (Table D-2). They have been tested and determined safe to use on Ultrasonix transducers. Failure to follow these instructions may cause damage and will void transducer warranties.



D.1.5.1 Cleaning Non-Invasive Transducers

Thorough cleaning is essential for successful disinfection. If a transducer is not properly cleaned, any remaining particles (e.g., blood, bodily fluids, dirt) may protect the microorganisms from the disinfection process, rendering it ineffective. Disinfectants overloaded with soil can become contaminated and may themselves become a source for microorganism transmission.

Before cleaning, always remove covers, accessories and attachments.

To Clean a Transducer:

1. After every patient exam, wipe the ultrasound transmission gel off the transducer.
2. Wipe the transducer and cable with a soft, dry or water-moistened cloth.
3. Following the manufacturer's instructions, clean the transducer with a recommended cleaning/disinfecting agent from [Table D-2](#).
4. Remove any residue with a soft cloth moistened in water then wipe with a clean, dry cloth.

Caution: *Do not allow cleaning solutions to air dry on the transducer.*

D.1.5.2 Disinfecting Non-Invasive Transducers

Using a disinfecting agent from the list in [Table D-2](#), follow the manufacturer's instructions to disinfect the transducer.

D.1.6 Cleaning/Disinfecting Endocavity Transducers

Endocavity transducers are semi-critical medical devices and must be decontaminated using, at a minimum, High Level Disinfection.

Clean and disinfect transducers prior to the first exam and following each exam thereafter.

Warning: For instructions on cleaning/disinfecting the mTEE8-3/5 transducer, refer to the most recent Sonix Ultrasound System mTEE8-3/5 User Manual.

Table D-3: Endocavity Cleaning/Disinfecting Agents

ENDOCAVITY TRANSDUCERS	CLEANING/DISINFECTING AGENTS			
	Cidex Activated Dialdehyde Solution 14 day	Cidex Plus 28 day	Cidex OPA	Cidezyme
EC9-5/10	◆	◆	◆	◆

Caution: Use only Ultrasonix recommended cleaners/disinfectants (Table D-3). They have been tested and determined safe to use on Ultrasonix transducers. Failure to follow these instructions may cause damage and will void transducer warranties.



To Clean/Disinfect a Transducer:

1. Unplug the transducer.
2. Wash the transducer head and cable with soap and water to remove any protein buildup; however do not rinse or immerse the transducer near the strain relief.
3. Following the manufacturer's instructions, disinfect the transducer with a recommended disinfecting agent from [Table D-3](#).

Note: *Where any transducer (including, but not limited to, an intracavity transducer) is used in a clinical application of a semi-critical nature (including, but not limited to intraoperative, transrectal, transvaginal, transesophageal, etc.), ensure the transducer is covered with the appropriate STERILE transducer cover/sheath which has received regulatory clearance for use.*

4. Wipe with a clean, dry cloth.

Caution: *Do not allow cleaning solutions to air dry on the transducer.*

D.1.7 Sterilization

Sterilization of transducers is not possible. Follow the instructions for cleaning and disinfection instead:

- Endocavity transducers: [D.1.6](#)
- Non-invasive transducers: [D.1.5.1](#) and [D.1.5.2](#).

Note: *Where transducers (non-critical and semi-critical medical devices/equipment) cannot withstand sterilization, the FDA recognizes the use of a sterile gel and a sterile transducer cover as an acceptable method of infection control for ultrasound transducers.*

D.2 SHIPPING TRANSDUCERS FOR SERVICE

It is the customer's responsibility to ensure:

- each transducer is disinfected prior to shipping ([D.1.5](#) and [D.1.6](#))
- the transducer is properly packaged for shipment ([D.1.3.2](#))
- all shipping waybills/paperwork is completed as per the relevant regulations and laws.

D.3 RECOMMENDED FREQUENCY OF HIGH-LEVEL MAINTENANCE PROCEDURES

The frequency of preventive maintenance performed on the system plays a key role in eliminating or extending the periods between downtime due to poor performance or unexpected breakdown. The following table offers recommendations that must be weighed by factors like frequency of use and environmental conditions. In every case, frequent checks of safety-related items are highly recommended.

Note: Additional maintenance procedures (covered in the relevant Service Manuals) must be completed by qualified service personnel.

Table D-4: Maintenance Procedure Frequency

Test/Clean	Frequency Interval	Task
Transducers	Six (6) months	Check for cracks or bent pins (D.1 Transducers).
System Filter	Four (4) months or as required	Check for good air flow without excessive noise.
		Remove and vacuum (D.4.9 System Filter).
		Note: Filter cleaning frequency is dependant upon usage location. If the system is used in a high traffic area (such as an Emergency Room) filters may require more frequent cleaning.
System Fans	Six (6) months	Check for good air flow without excessive noise.
Cart	Clean as necessary	The wheels have sealed bearings therefore no lubrication is necessary.

D.4 CLEANING SYSTEM COMPONENTS

Ultrasonix recommends the following cleaning instructions for all external surfaces, including the cart, cables and connectors.

Cautions:

Power off and unplug the system before cleaning.

Do not spill or spray water on the controls, transducer connection receptacle, or transducer ports.



D.4.1 LCD Display and Cabinet

Cautions:

Power off and unplug the system prior to cleaning the LCD display.

DO NOT apply cleaning solutions directly to any surface of the LCD display or cabinet.

D.4.1.1 LCD Display Cabinet

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth and wipe down the cabinet:

- water
- mild detergent (PH level at or near 7) and water solution.

D.4.1.2 LCD Display Screen

Caution: *Computer wipes may be used only if they specifically state they are designed for LCD displays.*

Apply a small amount of water to a soft, non-abrasive cloth. Stroke the cloth across the display in one direction, moving from the top of the display to the bottom.

- water
- mild detergent (PH level at or near 7) and water solution.

Cautions:

DO NOT scratch the LCD display.

DO NOT use paper towels to clean the LCD display as they may cause damage and scratches.

NEVER use cleaning products containing any of the following on either the cabinet or the screen:

- *Abrasives*
 - *Acetone*
 - *Alcohol (Ethanol, Methanol or Isopropyl)*
 - *Ammonia*
 - *Benzene*
 - *Solvents*
 - *Wax.*
-

D.4.2 Touch Screen

Cautions:

Power off and unplug the system prior to cleaning the touch screen on the operator console.

DO NOT apply the cleaning solution directly to the touch screen.

NEVER use cleaning products that contain Ammonia.

DO NOT scratch the touch screen.

DO NOT use paper towels to clean the console touch screen as they may cause damage and scratches.

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth:

- water
- 1% isopropyl alcohol.

D.4.3 Operator Console

Cautions:

Power off and unplug the system prior to cleaning the operator console.

DO NOT apply cleaning solutions directly to the operator console.

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth:

- water
- mild detergent (PH level at or near 7) and water solution.

D.4.4 Power Cord

Cautions:

Power off and unplug the system prior to cleaning.

DO NOT apply cleaning solutions directly to the power cord.

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth and wipe the power cord:

- water
- mild detergent (PH level at or near 7) and water solution.



D.4.5 SonixGPS Components



Warning: For details on SonixGPS cleaning and maintenance, refer to the most recent SonixGPS User Manual.

D.4.6 Transducer Holders and Cable Hooks

Cautions:

Power off and unplug the system prior to cleaning.

For best results, Ultrasonix recommends removing the transducer holders and cable hooks before cleaning (10.9). This will allow the operator to clean all the various curves and folds in a more effective manner.

DO NOT apply cleaning solutions directly to the transducer holders and cable hooks.

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth and wipe off the transducer holders and cable hooks:

- water
- mild detergent (PH level at or near 7) and water solution.

D.4.7 Footswitch (Dual and Triple)



Warning: Disconnect the footswitch prior to cleaning.

Caution: DO NOT apply cleaning solutions directly to the footswitch.

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth and wipe off the footswitch:

- water
- 70% isopropyl alcohol.

Note: Over time, silk-screened graphics may be damaged by the solvent effect of the isopropyl alcohol.

D.4.8 Peripheral Tray and Basket

Cautions:

Power off and unplug the system prior to cleaning.

For best results, Ultrasonix recommends removing the peripheral tray basket before cleaning (10.8). This will allow the operator to clean all the various curves and folds in a more effective manner.

DO NOT apply cleaning solutions directly to the peripheral tray basket.

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth and wipe off the peripheral tray and basket:

- water
- mild detergent (PH level at or near 7) and water solution.

D.4.9 System Filter

Cautions:

Power off and unplug the system prior to cleaning.

Vacuum only. DO NOT apply any liquids to the system filter.

Filter cleaning frequency is dependant upon usage location. If the system is used in a high traffic area (such as an Emergency Room), the filter may require more frequent cleaning.

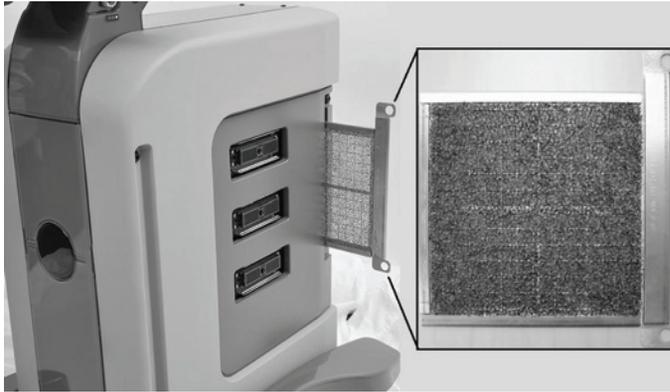
*Failure to regularly clean the system filter may cause reduced air flow and result in the system overheating. **System failures due to a lack of filter cleaning may not be covered by the Warranty or a Service Contract.***

This filter should be cleaned approximately every three (3) to six (6) months. Periodically, the system will present a cleaning reminder message. Always clean the filter when this reminder is presented.



To Clean the System Filter:

1. Power off and unplug the system.
2. Gently pull on the two (2) aluminum system filter frame handles until the filter is free of its slot on the right side of the system.



Caution: *When reinstalling, ensure the filter side faces toward the front of the system and the grid covering the back of the filter faces towards the back.*

3. Vacuum thoroughly and reinstall the filter.
4. Plug in and power on the system.

APPENDIX E: MODE ACTION AND IMAGING PARAMETER OPTIONS

The following tables ([Table E-1](#) and [Table E-2](#)) describe the available Mode Action and Imaging Parameter buttons for the various platforms and their primary imaging modes.

The specific mix of available Mode Action and Imaging Parameter buttons is dependant upon the combination of:

- mode
- transducer
- licensed options (and its attendant hardware, such as the **SonixGPS**)
- platform (SonixTouch, SonixMDP, SonixSP, SonixOP or SonixTablet)
- frozen/live image.

Note: Only primary imaging modes are included in the following tables. For details on modes that can be applied in combination (e.g., **Color** and **PW**), refer to all relevant primary modes.



Table E-1: Touch Screen Mode Action Buttons (by Imaging Mode)

Mode Action	Description	Imaging Mode								
		B-Mode	M-Mode	Color	PW/CW	Elastography	SonixGPS	Panoramic	SonixShine ¹	
3D	Selects 3D imaging. When 3D is selected the 4D transducer will only scan once (i.e., it will make only a single sweep to create a 3D Volume).	•								
4D	Selects 4D imaging. When 4D is selected the 4D transducer will scan continuously until the console button is pressed or 4D is exited. This will create a Cine loop consisting of the individual 3D Volumes .	•								
Anatomic	Tap to activate/deactivate Anatomic M-Mode . Note: This is licensed under Cardiac Advanced .		•							
Biopsy	Tap to display Biopsy guidelines. Note: This option is only available for the following transducers: C5-2/60, EC9-5/10, L9-4/38, L145-38 and L14-5W/38. To change the onscreen orientation of the Biopsy Guide , refer to 8.2.9 Biopsy Guide . For details on Biopsy use, refer to the instructions included with the Biopsy Starter Kits (Biopsy Starter Kit manufacturers and part numbers are listed under Accessories in Appendix B) .	•	•	•	•	•	•	•	•	•
Color On/Off	Tap to select/deselect Color Doppler imaging.			•						
Cut Line	Tap to toggle the Cut Line on/off. The Cut Line determines what portion of the ROI will be included in the 3D/4D Volume . Note: By default, the Cut Line is toggled on for the 4DC7-3/40 transducer and off for the 4DEC9-5/10 transducer .	•								
End Exam	Tap to end the current exam.	•	•	•	•	•	•	•	•	•
Grid On/Off	Toggles the Brachytherapy Grid on and off. Note: To access Brachytherapy , both the BPC8-4/10 transducer and B-Mode must be active.	•						•		
Grid Save	Saves the adjustments made to the Grid using the Brachytherapy Imaging Parameters. Note: To access Brachytherapy , both the BPC8-4/10 transducer and B-Mode must be active.	•							•	



Mode Action	Description	Imaging Mode							
		B-Mode	M-Mode	Color	PW/CW	Elastography	SonixGPS	Panoramic	SonixShine ¹
HD Zoom	<p>Tap to activate HD Zoom. Use the trackball to position the ROI.</p> <p>Note: enables ROI resizing with the trackball. Press again to accept the resized ROI and return to ROI repositioning or to move directly to imaging.</p> <p>Both HD Zoom and Zoom mode action buttons can be applied to an image.</p>	•	•			•	•		•
Invert	<p>Tap to Invert the image orientation by 180°.</p> <p>Tap Layout to cycle through to the next Split Imaging display type. The default is 1:1. The four (4) options are, in order:</p> <p>Split 1:1½ Imaging Mode – ½ Trace (top/bottom configuration)</p> <p>Large Trace½ Imaging Mode – ⅔ Trace</p> <p>Small Trace¾ Imaging Mode – ½ Trace</p> <p>Side by Side½ Imaging Mode – ½ Trace (side by side configuration).</p>	•	•						
Overlay	<p>Tap to toggle between the side-by-side Comparative image view and the combined overlaid image view.</p> <p>Note: The default view is Comparative.</p>					•			
Pano	<p>Tap to activate Panoramic imaging mode.</p>	•	•						•
Pano Cancel	<p>Tap to cancel the current Panoramic acquisition.</p> <p>Note: This is not a toggle button.</p>							•	
Pano Exit	<p>Tap to exit Panoramic imaging.</p> <p>Note: This is not a toggle button.</p>								•
Pano Start/Stop	<p>Tap to start or stop the Panoramic acquisition.</p>								
Reverse	<p>Tap to Reverse the image orientation right/left.</p>	•	•						•
Simultaneous 2D/Color-Color Mode	<p>Tap to activate/deactivate Simultaneous 2D/Color (side-by-side split screen):</p> <ul style="list-style-type: none"> • left side: live 2D/Color • right side: live 2D. 			•					



		Imaging Mode							
Mode Action	Description	B-Mode	M-Mode	Color	PW/CW	Elastography	SonixGPS	Panoramic	SonixShine ¹
SonixGPS	Tap to activate SonixGPS .						•		
Trace On/Off	Tap to activate/deactivate live spectral Doppler Trace display with measurement values.				•				
Triplex	Tap to activate/deactivate Triplex imaging mode. Note: Triplex is only available if both PW and Color have been activated. Once Triplex is active, press the console button to toggle through Active PW , Active B/C and Triplex imaging modes.								

¹ When licensed (and with the L14-5/38 transducer active in **B-Mode**), the **SonixShine** mode selection button is located on the touch screen with the mode action buttons.

Table E-2: Touch Screen Imaging Parameters (by Imaging Mode) (Tap to activate and/or dial/press to adjust)

Imaging Parameter	Description	Imaging Mode								
		B-Mode	M-Mode	Color	PW/CW	Elastography	SonixGPS	Panoramic	SonixShine ¹	
Baseline	Adjusts the Color Doppler Baseline : 0.2–6.7kHz.			•						
BaselineC	Adjusts the Color Doppler Baseline .			•						
BaselineD	Adjusts the Doppler Trace Baseline up or down.				•					
Box Height	Adjusts the size of the Color ROI box vertically.			•						
Box Width	Adjusts the size of the Color ROI box horizontally.			•						
Chroma	Adjusts the color Maps overlaying the 2D image: 0–7.	•	•	•	•	•	•	•	•	•
ChromaD	Adjusts the color Map of the Doppler Trace : 0–7.	•	•	•	•	•	•	•	•	•
ChromaM	Adjusts the color of the M-Mode Sweep : 0–7.		•							
Clarity	Adjusts the level of speckle reduction: Off, Low, Med, High, Max .	•	•	•	•	•	•	•	•	•
Cut Angle	Adjusts the angle of the 3D/4D Cut Line .	•								
	Note:									
	Adjusts the overall image contrast resolution in 1 dB increments.									
Dyn (Dynamic Range)	Displayed Dynamic Range varies from 15dB to 145dB. Complete system Dynamic Range is 302dB.	•	•	•	•	•	•	•	•	•
	Note: An increase in dB increases the level of grays displayed.									
Ensemble	Adjusts Color Doppler sensitivity: range 6–16.			•						
	Note: This adjusts both the FPS and TIS .									
	Adjusts the number of transmit focal zones on the screen. The maximum number of focal zones varies depending on which transducer is selected.									
Focus #	Note: Increasing the number of focal zones will reduce the Frame Rate .	•								•
	If desired, enable Auto-Focus by setting the Focus # to 0 (zero).									
	Note: There is no Focus Marker when Auto-Focus is active.									
Focus Span	Adjusts the distance between focal zones.	•								•
FreqC	Adjusts the Frequency of the Color Doppler : 4–6MHz.			•						



Imaging Parameter	Description	Imaging Mode						
		B-Mode	M-Mode	Color	PW/CW	Elastography	SonixGPS	Panoramic
FreqD	Adjusts PW/CW Doppler Frequency: 4.0–6.6MHz. Note: Not available in CW .				•			
FrRate	Adjusts the Frame Rate: Med, High and Max .	•	•	•			•	•
GainD	Adjusts the PW/CW Doppler Gain : 0–100% in 2% increments.				•			
Gate	Adjusts the PW/CW Sample Volume Gate size from 1.0mm–40.0mm in 0.5mm increments. Note: Not available in CW .							
Grid L/R	Adjusts the Brachytherapy Grid Left and Right . Note: To access Brachytherapy , both the BPC8-4/10 transducer and B-Mode must be active.	•					•	
Grid U/D	Adjusts the Brachytherapy Grid Up and Down . Note: To access Brachytherapy , both the BPC8-4/10 transducer and B-Mode must be active.	•					•	
Map	Adjusts the grayscale Map : 1–17.	•	•	•	•	•	•	•
MapC	Adjusts the Color Doppler Map : 1–9.			•				
MapD	Adjusts the grayscale Map of the Doppler Trace : 1–3.				•			
MapE	Adjusts the Elastography Color Map : 1–20, including grayscale.					•		
MapM	Adjusts the grayscale Map of the M-Mode display: 1–3.		•					
(Imaging) Method Color/Power/TDI	Toggles between the (Imaging) Method options: Color, Power and TDI (Tissue Doppler Imaging) .			•				
Opacity	Adjusts the Elastography image Opacity overlaid on the 2D image: 0–100% in 10% increments. Note: The lower the setting, the more transparent the Elastography display						•	
Persist	Adjusts the level of visual smoothing of the 2D image: 0–6.	•	•	•	•	•	•	•
PersistC	Adjusts the Color Doppler Persistence : 0–6.			•				
PersistE	Adjusts the Elastography Persistence : 0–6.					•		
Priority	Adjusts the Color Doppler 2D Priority .			•				
Reject	Eliminates or Rejects noise from the image: 25–60.	•	•	•	•	•	•	•

Imaging Parameter Description	Imaging Mode						
	B-Mode	M-Mode	Color	PW/CW	Elastography	SonixGPS	Panoramic
Res Adjusts the color Resolution in the ROI box: Low, Med(ium) or High . Note: High sharpens the edges of the ROI the most.					•		
Rgn Adjusts the visible Elastography Region that is overlaid on the 2D image based on the selected tissue stiffness: Soft, Med(ium), Hard or All . Note: Region coloration can be adjusted with the Map setting.					•		
Sector Adjusts the image Sector size: 50–100% in 5% increments. Note: Extended Field of View (FOV) and trapezoid imaging if available. Use the trackball to move the sector to different positions.	•	•	•	•	•	•	•
Sens Adjusts transducer Sensitivity depending on the level of compression applied during imaging: Low, Med1, Med2, High1 or High2 .					•		
SHINE Ang Use to adjust the SonixShine Angle : -40° to -15° or 15° to 40°. The imaging location of the SonixShine angle marker is dictated by the angle selected. When set to a negative angle (-40° to -15°), the angle marker is located in the upper left corner of the image. When set to a positive angle (15° to 40°), it's located in the upper right corner.							•
Smooth Adjusts spectrum smoothing: 1–5.					•		
Sweep Adjusts the Sweep speed of Doppler Trace (Low, Med, High1 and High2) . Note: Not available in CW.		•		•			
WF Adjusts the Wall Filter : 67–3333Hz.			•				
WFc Adjusts the Color WF : 20–1000Hz in 20Hz increments.			•				
WFd Adjusts the Doppler WF : 40–2000Hz in 40Hz increments.					•		
ZoomIM Adjusts the amount of M-Mode magnification. Use the trackball to reposition ZoomIM location.	•						

¹ When licensed, the **SonixShine** mode selection button is located on the touch screen with the mode action buttons.



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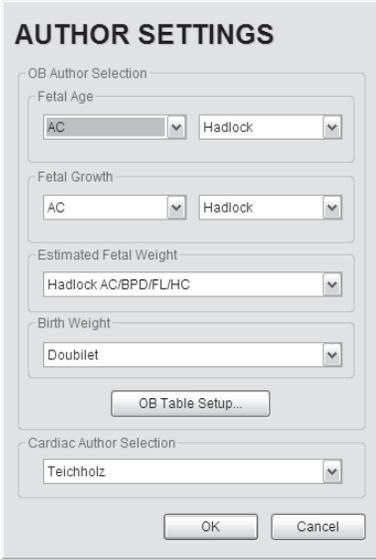
APPENDIX F: OB AND CARDIAC AUTHORS

OB and Cardiac Authors are controlled within **Measurements**.

Note: For details on **OB Table Setup...** refer to **8.2.6.6 Managing OB Tables**.

To Access Author Settings:

1. Press the console  button.
2. Select **Administrator > Measurements > Author Settings**.



The screenshot shows a dialog box titled "AUTHOR SETTINGS". It contains several sections for configuring OB and Cardiac authors:

- OB Author Selection:**
 - Fetal Age:** Two dropdown menus, the first set to "AC" and the second to "Hadlock".
 - Fetal Growth:** Two dropdown menus, the first set to "AC" and the second to "Hadlock".
 - Estimated Fetal Weight:** A dropdown menu set to "Hadlock AC/BPD/FL/HC".
 - Birth Weight:** A dropdown menu set to "Doublet".
- Buttons:** An "OB Table Setup..." button is located below the OB Author Selection section.
- Cardiac Author Selection:** A dropdown menu set to "Teichholz".
- Footer:** "OK" and "Cancel" buttons.



Table F-1: OB Author Selection – Fetal Age

Parameter	Authors	Parameter	Authors
AC	BC Women's Hadlock Hansmann Tokyo	FL	BC Women's Hadlock Hansmann Merz Osaka Tokyo
BDN	Jeanty Tongsong	FTA	Osaka
BPD	BC Women's Hadlock Hansmann Osaka Tokyo	GS	Hansmann Nyberg Rempen
		HC	BC Women's Hadlock Hansmann
CEREB	Hill	HL	Jeanty
CRL	BC Women's Hadlock Hansmann Osaka Rempen	OFD	Hansmann
		TL	Jeanty
		TTD	Hansmann
		UL	Jeanty

Table F-2: OB Author Selection – Fetal Growth

Parameter	Authors	Parameter	Authors
AC	BC Women's Hadlock Tokyo	FL	BC Women's Hadlock Jeanty Osaka Tokyo
AFI	Moore	FTA	Osaka
BPD	BC Women's Hadlock Osaka Tokyo	HC	BC Women's Hadlock
		HL	Jeanty
CRL	BC Women's Hadlock Osaka	TC	BC Women's

Table F-3: OB Author Selection – Fetal Growth Ratios

Parameter	Authors
CI (HC)	Hadlock
FL/AC	Hadlock
FL/BPD	Hohler
FL/HC	Hadlock
HC/AC	Campbell

Table F-4: OB Author Selection – Estimated Fetal Weight

Parameter	Authors
EFW	Hadlock (AC/BPD/FL) (AC/BPD/FL/HC) (AC/FL) (AC/FL/HC)
	Hansmann (BPD/TTD) Osaka (BPD/FTA/FL) Tokyo (BPD/APTD/TTD/FL)

Table F-5: OB Author Selection – Birth Weight

Parameter	Authors
BW	Brenner Doubilet Hadlock Osaka



Warning: *Ultrasonix does not endorse user-defined Measurements, Calculations and Tables for diagnostic purposes. All user-defined Measurements, Calculations and Tables are used at the Operator's discretion and risk only.*

Table F-6: Cardiac Author Selection

Parameter	Authors
Volume	Cubed Gibson Teichholz



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APPENDIX G: REFERENCES

G.1 OB

EFW (Hadlock AC/BPD/FL) (Estimated Fetal Weight (Hadlock AC/BPD/FL))

Hadlock, F., et al. "Estimated of Fetal Weight with the Use of Head, Body, and Femur Measurements, A Prospective Study." *American Journal of Obstetrics and Gynecology*, 151:13 (February 1, 1985), 333-337.

EFW (Hadlock AC/BPD/FL/HC) (Estimated Fetal Weight (Hadlock AC/BPD/FL/HC))

Hadlock, F., et al. "Estimated of Fetal Weight with the Use of Head, Body, and Femur Measurements, A Prospective Study." *American Journal of Obstetrics and Gynecology*, 151:13 (February 1, 1985), 333-337.

EFW (Hadlock AC/FL) (Estimated Fetal Weight (Hadlock AC/FL))

Hadlock, F., et al. "Estimated of Fetal Weight with the Use of Head, Body, and Femur Measurements, A Prospective Study." *American Journal of Obstetrics and Gynecology*, 151:13 (February 1, 1985), 333-337.

EFW (Hadlock AC/FL/HC) (Estimated Fetal Weight (Hadlock AC/FL/HC))

Hadlock, F., et al. "Estimated of Fetal Weight with the Use of Head, Body, and Femur Measurements, A Prospective Study." *American Journal of Obstetrics and Gynecology*, 151:13 (February 1, 1985), 333-337.

EFW (Hansmann BPD/TTD) (Estimated Fetal Weight (Hansmann BPD/TTD))

Hansmann, M., et al. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, (1986), 154.

EFW (Osaka BPD/FTA/FL) (Estimated Fetal Weight (Osaka BPD/FTA/FL))

Osaka University. *Ultrasound in Obstetrics and Gynecology*. (July 20, 1990), 103-105.

EFW (Tokyo BPD/APTD/TTD/FL) (Estimated Fetal Weight (Tokyo BPD/APTD/TTD/FL))

Tokyo, Shinozuka, N. FJSUM, et al. "Standard Values of Ultrasonographic Fetal Biometry." *Japanese Journal of Medical Ultrasonics*, 23:12 (1996), 880, Equation 1.

G.1.1 OB Gestational Age

AC (Abdominal Circumference)

Hadlock, F., et al. "Estimated Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." *Radiology*, 152: (1984), 497-501.

Hansmann, M., et al. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, (1986), 431.

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Tokyo, Shinozuka, N. FJSUM, et al. "Standard Values of Ultrasonographic Fetal Biometry." *Japanese Journal of Medical Ultrasonics*, 23:12 (1996), 885.

BND (Binocular Distance)

Jeanty P, Cantraine F, Cousaert E, Romero R, Hobbins JC. "The Binocular Distance: A New Way to Estimate Fetal Age." *Journal of Ultrasound in Medicine* 3:241, 1984.

Tongsong T, Wanapirak C, Jesadapornchai S, Tathayathikom E. "Fetal binocular distance as a predictor of menstrual age." *International Journal of Gynecology and Obstetrics* 38:87 1992.

BPD (Biparietal Diameter)

Hadlock, F., et al. "Estimated Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." *Radiology*, 152: 1984), 497-501.

Hansmann, M., et al. *Ultrasound Diagnosis in Obstetrics and Gynecology*. New York: Springer-Verlag, (1986), 440.

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Tokyo, Shinozuka, N. FJSUM, et al. "Standard Values of Ultrasonographic Fetal Biometry." *Japanese Journal of Medical Ultrasonics*, 23:12 (1996), 885.



Cereb (Cerebellum)

Hill, Lyndon, M., et al. "The Transverse Cerebellar Diameter in Estimating Gestational Age in the Large for Gestational Age Fetus." Obstetrics and Gynecology, (June 1990) Vol. 75, No. 6, 981-985 .

CRL (Crown Rump Length)

Hadlock, F., et al. "Fetal Crown-Rump Length: Re-evaluation of Relation to Menstrual Age (5-18 weeks) with High-Resolution, Real-Time Ultrasound." Radiology, 182: (February 1992), 501-505.

Hansmann, M., et al. Ultrasound Diagnosis in Obstetrics and Gynecology. New York: Springer-Verlag, (1986), 439.

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Rempen, German Society for Gynecology and Obstetrics, March 1991, Issue 15, Vol 1, pp. 23-28.

EFW (Estimated Fetal Weight)

Brenner, W.E., et al. "A standard of fetal growth for the United States of America." American Journal of Obstetrics and Gynecology, 126: (1976), 555.

Doubilet, Peter M., et al. "Improved Birth Weight Table for Neonates Developed from Gestations Dated by Early Ultrasonography." Journal of Ultrasound in Medicine, 16: (1997), 241-149 .

Hadlock, F., et al. "In Utero Analysis of Fetal Growth: A Sonographic Weight Standard." Radiology, 181: (1991), 129-133.

Osaka University. Ultrasound in Obstetrics and Gynecology. (July 20, 1990), 103-105.

FL (Femur Length)

Hadlock, F., et al. "Estimated Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology, 152: (1984), 497-501.

Hansmann, M., et al. Ultrasound Diagnosis in Obstetrics and Gynecology. New York: Springer-Verlag, (1986), 431.

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Tokyo, Shinozuka, N. FJSUM, et al. "Standard Values of Ultrasonographic Fetal Biometry." Japanese Journal of Medical Ultrasonics, 23:12 (1996), 886.

FL/AC Ratio (Femur Length/Abdominal Circumference)

Hadlock, F.P., R.L. Deter, R.B. Harrist, E. Roecker, and S.K. Park. "A Date Independent Predictor of Intrauterine Growth Retardation: Femur Length/Abdominal Circumference Ratio," American Journal of Roentgenology, 141: (November 1983), 979-984.

FL/BPD Ratio (Femur Length/Biparietal Diameter)

Hohler, C.W. & T.A. Quetel. "Comparison of Ultrasound Femur Length and Biparietal Diameter in Late Pregnancy," American Journal of Obstetrics and Gynecology, 141:7 (Dec. 1 1981), 759-762.

FTA (Fetal Trunk Area)

Osaka University. Ultrasound in Obstetrics and Gynecology. (July 20, 1990), 99-100.

GS (Gestational Sac)

Hansmann, M., et al. Ultrasound Diagnosis in Obstetrics and Gynecology. New York: Springer-Verlag, (1986).

Nyberg, D.A., et al. "Transvaginal Ultrasound." Mosby Yearbook, (1992), 76.

Rempen, German Society for Gynecology and Obstetrics, March 1991, Issue 15, Vol. 1, pp. 23-28.

HC (Head Circumference)

Hadlock, F., et al. "Estimated Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology, 152: (1984), 497-501.

Hansmann, M., et al. Ultrasound Diagnosis in Obstetrics and Gynecology. New York: Springer-Verlag, (1986), 431.

Lessoway, V A. et al. "Ultrasound Fetal Biometry Charts for a North American Caucasian Population." Journal of Clinical Ultrasound, Vol. 26, No 9 (1998), 433-453.



HL (Humeral Length)

Jeanty P, et al. "Estimation of Gestational Age from Measurements of Fetal Long Bones." Journal of Ultrasound Medicine (1984) 3:75-79.

OFD (Occipito-Frontal Diameter)

Hansmann, M., et al. Ultrasound Diagnosis in Obstetrics and Gynecology. New York: Springer-Verlag, (1986), 431.

TL (Tibial Length)

Jeanty, P, et al. "Estimation of Gestational Age from Measurements of Fetal Long Bones." Journal of Ultrasound Medicine (1984) 3:75-79.

TTD (Transverse Trunk Diameter)

Hansmann, M., et al. Ultrasound Diagnosis in Obstetrics and Gynecology. New York: Springer-Verlag, (1986), 431.

UL (Ulnar Length)

Jeanty P, et al. "Estimation of Gestational Age from Measurements of Fetal Long Bones." Journal of Ultrasound Medicine (1984) 3:75-79.

G.1.2 OB Growth Analysis

AC (Abdominal Circumference)

Hadlock, F., et al. "Estimated Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology, 152: (1984), 497-501.

Lessoway, V A. et al. "Ultrasound Fetal Biometry Charts for a North American Caucasian Population." Journal of Clinical Ultrasound, Vol. 26, No 9 (1998), 433-453.

Tokyo, Shinozuka, N. FJSUM, et al. "Standard Values of Ultrasonographic Fetal Biometry." Japanese Journal of Medical Ultrasonics, 23:12 (1996).

AFI (Amniotic Fluid Index)

Moore, T. R, et al. "The amniotic fluid index in normal human pregnancy." American Journal of Obstetrics and Gynecology. (1990) 162: 1168-1173.

BPD (Biparietal Diameter)

Hadlock, F., et al. "Estimated Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology, 152: (1984), 497-501.

Lessoway, V A. et al. "Ultrasound Fetal Biometry Charts for a North American Caucasian Population." Journal of Clinical Ultrasound, Vol. 26, No 9 (1998), 433-453.

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Tokyo, Shinozuka, N. FJSUM, et al. "Standard Values of Ultrasonographic Fetal Biometry." Japanese Journal of Medical Ultrasonics, 23:12 (1996).

CI (HC) (Cephalic Index (Head Circumference))

Hadlock FP, et al., "Estimating Fetal Age: Effects on Head Shape on BPD," American Journal Roentgen, 1981; 137:83-85.

CRL (Crown Rump Length)

Hadlock, F., et al. "Fetal Crown-Rump Length: Re-evaluation of Relation to Menstrual Age (5-18 weeks) with High-Resolution, Real-Time Ultrasound." Radiology, 182: (February 1992), 501-505.

Lessoway, V A. et al. "Ultrasound Fetal Biometry Charts for a North American Caucasian Population." Journal of Clinical Ultrasound, Vol 26, No 9 (1998), 433-453.

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FL (Femur Length)

Hadlock, F., et al. "Estimated Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology, 152: (1984), 497-501.

Jeanty P, E. et al. "Ultrasonic Evaluation of Fetal Limb Growth." Radiology (1982)143: 751-754.

Lessoway, V A. et al. "Ultrasound Fetal Biometry Charts for a North American Caucasian Population." Journal of Clinical Ultrasound, Vol 26, No 9 (1998), 433-453.

Osaka University. Ultrasound in Obstetrics and Gynecology. (July 20, 1990).

Tokyo, Shinozuka, N. FJSUM, et al. "Standard Values of Ultrasonographic Fetal Biometry." Japanese Journal of Medical Ultrasonics, 23:12 (1996).



FL/HC Ratio (Femur Length/Head Circumference)

Hadlock, F.P., R.B. Harrist, Y. Shah, & S/K. Park. "The Femur Length/Head Circumference Relation in Obstetric Sonography." Journal of Ultrasound in Medicine, 3: (October 1984), 439-442.

FTA (Fetal Trunk Area)

Osaka University. Ultrasound in Obstetrics and Gynecology. (July 20, 1990), 99-100.

HC (Head Circumference)

Hadlock, F., et al. "Estimated Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology, 152: (1984), 497-501.

Lessoway, V A. et al. "Ultrasound Fetal Biometry Charts for a North American Caucasian Population." Journal of Clinical Ultrasound. Vol 26, No 9 (1998), 433-453.

HC/AC (Head Circumference/Abdominal Circumference)

Campbell S., Thomas Alison. "Ultrasound Measurements of the Fetal Head to Abdomen Circumference Ratio in the Assessment of Growth Retardation," British Journal Obstetrics and Gynaecology, 84: (March 1977), 165-174.

HL (Humeral Length)

Jeanty P., E. et al. "Ultrasonic Evaluation of Fetal Limb Growth." Radiology (1982) 143: 751-754.

TC (Trunk Circumference)

Lessoway, V A. et al. "Ultrasound Fetal Biometry Charts for a North American Caucasian Population." Journal of Clinical Ultrasound. Vol 26, No 9 (1998), 433-453.

G.2 CARDIAC

AFI (Amniotic Fluid Index)

Rutherford S., et al., "Four Quadrant Assessment of Amniotic Fluid Volume," Journal of Reproductive Medicine, 1987;32:587-589.

AVA (Aortic Valve Area)

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 338.

CO (Cardiac Output)

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 337, 337-8, 371.

E/A Ratio

Maron, Barry J., et al., "Noninvasive Assessment of Left Ventricular Diastolic Function by Pulsed Doppler Echocardiography in Patients with Hypertrophic Cardiomyopathy", Journal of the American College of Cardiology, 1987, Vol.10, 733-742.

E/E' Ratio

Oh, Seward, and Jamil Tajik, The Echo Manual: Second Edition. Lippincott Williams & Wilkins, 1999, 55.

EDV (End Diastolic Velocity)

Schiller et al., "Recommendations for Quantitation of the Left Ventricle by Two-Dimensional Echocardiography", Journal of the American Society of Echocardiography, Vol 2, No. 5, Sept-Oct 1989, 362.

EF (Ejection Fraction)

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 371.

ESV

Schiller et al., "Recommendations for Quantitation of the Left Ventricle by Two-Dimensional Echocardiography", Journal of the American Society of Echocardiography, Vol 2, No. 5, Sept-Oct 1989, 362.

FS (Fractional Shortening)

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 371.

IVS FT (Interventricular Septum FT)

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 371.



LV Mass

Oh, Seward, and Jamil Tajik, The Echo Manual: Second Edition. Lippincott Williams & Wilkins, 1999, 41.

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 371.

LVEDV

Belenkie, Israel, et al., "Assessment of Left Ventricular Dimensions and Function by Echocardiography." American Journal of Cardiology, June 1973:31.

Gibson DG, "Estimation of left ventricular size by echocardiography." British Heart Journal, 1973, 35:128.

Teichholz et al, "Problems in Echocardiographic Volume Determinations: Echocardiographic-Angiographic Correlations in the Presence or Absence of Asynergy", American Journal of Cardiology, January 1976, Vol 37, 7 -11.

LVESV

Belenkie, Israel, et al., "Assessment of Left Ventricular Dimensions and Function by Echocardiography." American Journal of Cardiology, June 1973:31.

Gibson DG, "Estimation of left ventricular size by echocardiography." British Heart Journal, 1973, 35:128.

Teichholz et al, "Problems in Echocardiographic Volume Determinations: Echocardiographic-Angiographic Correlations in the Presence or Absence of Asynergy", American Journal of Cardiology, January 1976, Vol 37, 7 -11.

LVOT Area (Left Ventricular Outflow Tract Area)

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 338.

LVOT SV (Left Ventricular Outflow Tract SV)

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 355.

Myocardial Thick

Schiller et al., Recommendations for Quantitation of the Left Ventricle by Two-Dimensional Echocardiography, Journal of the American Society of Echocardiography, Vol 2, No. 5, Sept-Oct, 1989, 358-367.

PISA ERO

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 352.

Qp/Qs

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 355.

RVOT Area (Right Ventricular Outflow Tract Area)

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 355.

RVOT SV (Right Ventricular Outflow Tract SV)

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 355.

RVSP

Reynolds, Terry. The Echocardiographer's Pocket Reference. 3rd ed., School of Cardiac Ultrasound, Arizona Heart Institute, (2007), 333.

SV

Oh, Seward, and Jamil Tajik, The Echo Manual: Second Edition. Lippincott Williams & Wilkins, 1999, 40.

VOL (Volume)

Brunn J., Block U., Ruf G., Bos I., Kunze W.P., Scriba P.C. "Volumetric analysis of thyroid lobes by real-time ultrasound". Deutsche Medizinische Wochenschrift 1981;106:1338-40.

VolFlow (Volume Flow)

Evans, D.H., et. al., Doppler Ultrasound Physics, Instrumentation and Clinical Applications. New York, 1989, Chapter 11, 188-205.



ULTRASONIX

APPENDIX H: GLOSSARY

% A Red	Percent Area Reduction	AV	Aortic Valve
% Area Red	Percent Area Reduction	AVA	Aortic Valve Area
% D Red	Percent Diameter Reduction	AVI	Audio Video Interleave
% Diam Red	Percent Diameter Reduction	AVm	Mean Average Velocity
2D	Two Dimensional	AVp	Peak Average Velocity
3D	Three Dimensional	B/M-Mode	2D and M-Mode
4D	Four Dimensional (Live 3D)	Base	Baseline (i.e., Doppler Baseline)
4DC	4D Curved Array Transducer	BBT	Basal Body Temperature
Abd	Abdomen	BGR	Blue Green Red
AC	Abdominal Circumference	Blad Wall	Bladder Wall
AC	Alternating Current (power supply)	BLT	Bottom Left
ACC	Acceleration	BMP	Bitmap
AD	Angio Doppler	BNC	Bayonet Neill Concelman
Admin	Administrative/Administrator	BND	Binocular Distance
AE	Application Entity (DICOM)	BPD	Biparietal Diameter
AFI	Amniotic Fluid Index	BPM	Beats per Minute
AFV	Amniotic Fluid Volume	BRT	Bottom Right
AIUM	American Institute of Ultrasound in Medicine	BSA	Body Surface Area
ALARA	As Low As Reasonably Achievable	Calcs	Calculations
ANSI	American National Standards Institute	Card	Cardiology
Ao	Aorta	CBD	Command Bile Duct
AO/LA	Aorta/Left Atrium	CCA	Common Carotid Artery
AoV	Aortic Valve	CD	Compact Disc
AP	Anterior Posterior	Cereb	Cerebellum
APAD	Anterior Posterior Abdominal Diameter	CEREB	Cerebellum
APD	Anterior Posterior Diameter	CFM	Color Flow Mode
APTD	Anterior Posterior Thorax Diameter	CI	Cardiac Index
AR	Area	CI	Cephalic Index
Area Red	Area Reduction	CIR	Circumference
AT	Acceleration Time	cm	centimeters
AUA	Average Ultrasound Age	Cntrst Pos	Contrast Position
		CO	Cardiac Output



ULTRASONIX

COR	Coronal	F	Follicle
CRL	Crown Rump Length	FAST	Focused Assessment with Sonography in Trauma (Trauma (FAST))
CSA	Canadian Standards Association	FDA	U.S. Food and Drug Administration
CSA	Cross Sectional Area	FHR	Fetal Heart Rate
CW	Continuous Wave	FL	Femur Length
CWD	Continuous Wave Doppler	FOV	Field Of View
CxLength	Cervix Length	FPS	Frames per second
DCM	DICOM	FR	Frame Rate
DEL	Delete	FrD	Doppler Transmit Frequency
DIAM RED	Diameter Reduction	Freq	Frequency
DICOM	Digital Imaging and Communications in Medicine	Frm	Frame
DISP	Display	FrRate	Frame Rate
DIST	Distal	FS	Fractional Shortening
Dist	Distance	FTA	Fetal Trunk Area
DPD	Directional Power Doppler	Fwd	Forward
DT	Deceleration Time	g	grams
DVD	Digital Video Device	GA	Gestational Age
Dyn	Dynamic Range	Gb	Gigabyte
EC	Endocavity	GB	Gall Bladder
ECA	External Carotid Artery	GBWT	Gall Bladder Wall Thickness
ECG	Electrocardiogram	Gen	General
EDD	Estimated Date of Delivery	GIF	Graphics Interchange File or Format
EDV	End Diastolic Velocity	GS	Gestational Sac
EDVPG	EDV Pressure Gradient	Gyn	Gynecology
EF	Ejection Fraction	H	Height
EFW	Estimated Fetal Weight	HC	Head Circumference
EMR	Electronic Medical Record	HDMI	High Definition Multimedia Interface
Endom Thick	Endometrial Thickness	HIPAA	Health Insurance Portability & Accountability Act
EMC	Electromagnetic Compatibility	HL	Humeral Length
EPI	Extended Pulse Imaging	HR	Heart Rate
EPSS	E Point Septal Separation	Hz	Hertz
ET	Elapsed Time	ICA	Internal Carotid Artery
EV	Endovaginal		



ICT	Intracavity Transducer	MED	Medial
in	inches	MGr	Mean Gradient
IP	Internet Protocol	MI	Mechanical Index
ISP	Internet Service Provider	Min	Minimum
IT	Information Technology (e.g., IT Department)	M-M	Motion Mode
IVS	Interventricular Septum	mm	millimeters
IVSd	Interventricular Septum diastole	MPEG	Moving Picture Experts Group
IVSs	Interventricular Septum systole	MPG	Moving Picture (Experts) Group
JPEG	Joint Photographic Experts Group	MPR	Multiplanar Reconstruction
Kb	Kilobyte	Multi	Multiple
kPa	Kilopascal	Msk	Musculoskeletal
L	Length	MV	Mean Velocity
LA	Long Axis	MV	Mitral Valve
LA	Left Atrium	Myocardial Thick ..	Myocardial Thickness
LAN	Local Area Network	NEMA	National Electrical Manufacturers Association
LAT	Lateral	NET	Network
LCD	Liquid Crystal Display	NF	Nuchal Fold
LMP	Last Menstrual Period	NSF	National Sanitation Foundation
LONG	Longitudinal	NT	Nuchal Thickness
LOV	Left Ovary	NTSC	National Television Standards Committee
LT	Left	OB	Obstetrics
LVDd	Left Ventricular Diameter diastole	OD	Optical Density
LVDs	Left Ventricular Diameter systole	OEM	Original Equipment Manufacturer
LVET	Left Ventricular Ejection Time	OFD	Occipital-Frontal Diameter
LVOT	Left Ventricular Outflow Tract	OOD	Outer Orbital Diameter
LVOTd	Left Ventricular Outflow Tract distance	PA	Phased Array
LVPWd	Left Ventricular Posterior Wall diastole	PAL	Phased Alternating Line
LVPWs	Left Ventricular Posterior Wall systole	Pano	Panoramic Imaging Mode
Max	Maximum	Params	Parameters
Mb	Megabyte	PDF	Portable Document Format
MCA	Middle Cerebral Artery	Pel	Pelvis
MCA- PI	Middle Cerebral Artery-Pulsatility Index	Pen	Penetration
MEAS	Measure	Persist	Persistence



ULTRASONIX

PGr	Pressure Gradient	RVDd	Right Ventricular Dimension diastole
PHT	Pressure Half Time	RVDs	Right Ventricular Dimension systole
PI	Pulsatility Index	RVOT	Right Ventricular Outflow Tract
Picto	Pictogram	RVWd	Right Ventricular Wall diastole
PIN	Personal Identification Number	RVWs	Right Ventricular Wall systole
PISA	Proximal Isovelocity Surface Area	SA	Short Axis
PNG	Portable Network Graphics	SAG	Sagittal
Pos	Position	SAW	Surface Acoustic Wave
POS	Position	SCP	Service Class Provider
PostV Blad	Post Void Bladder	SCU	Service Class User
PreV Blad	Pre Void Bladder	SD	Standard Deviation
PRF	Pulse Repetition Frequency	SD	Systolic/Diastolic Ratio
PROX	Proximal	SDK	Software Development Kit
PSV	Peak Systolic Velocity	SEL	Select
PSVPG	PSV Pressure Gradient	Sens	Sensitivity
PV	Peak Velocity	Simult	Simultaneous
PV	Pulmonary Valve	SMTP	Simple Mail Transport Protocol
PW	Pulsed Wave Doppler	SonixGPS	Sonix Guidance Positioning System
PWD	Power Doppler	SV	Sample Volume
Q	Quadrant (e.g., AFI)	SV	Stroke Volume
Qp	Pulmonic Blood Flow	SV1	Selection Value 1
Qs	Systemic Blood Flow	TAD	Transverse Abdominal Diameter
Rad	Radius	TC	Trunk Circumference
Rect	Rectangle	TCP	Transfer Control Protocol
Res	Resolution	TCP/IP	Transmission Control Protocol/Internet Protocol
RF	Radio Frequency	TFT	Thin Film Technology
RGB	Red Green Blue	TGC	Time Gain Compensation
Rgn	Region	THI	Tissue Harmonic Imaging
RLE	Run Length Encoding	TI	Thermal Index
RI	Resistive Index	TIB	Thermal Index – Bone
ROI	Region of Interest	TIC	Thermal Index – Cranial
ROV	Right Ovary	TIS	Thermal Index – Soft Tissue
RT	Right	TL	Tibia Length
RTSA	Real Time Spectrum Analysis		



TDI	Tissue Doppler Imaging	US	Ultrasound
TRANS	Transverse	USB	Universal Serial Bus
Transp	Transparency	VAC	Volts Alternating Current
Trauma (FAST)	Trauma (Focused Assessment with Sonography in Trauma)	VCR	Video Cassette Recorder
TTD	Transverse Trunk Diameter	Vel	Velocity
TV	Tricuspid Valve	Vol	Volume
UI	User Interface	VolFlow	Volume Flow
UL	Ulnar Length	VPS	Volumes per Second
UL	Underwriter's Laboratory	VR	Volume Rendering
ULT	Upper Left	VTI	Velocity Time Integral
Umb A	Umbilical Artery	W	Width
Umb A-PI	Umbilical Artery- Pulsatility Index	WEEE	Waste Electrical and Electronic Equipment
UPS	Uninterruptible Power Supply	WF	Wall Filter
URL	Uniform Resource Locator	WWW	World Wide Web
URT	Upper Right	YS	Yolk Sack



ULTRASONIX