ultrasonix Analogic Ultrasound

Extended
User Manual

SonixMDP/SP/OP Q+ Ultrasound System

ultrasonix
Analogic Ultrasound

Ultrasonix Medical Corp

SonixMDP/SP/OP Q+ Ultrasound System Extended User Manual

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00.040.709, Revision B, May 30, 2014

US Patents 6,216,029 - 6,325,759 - 6,558,326 - 6,911,008 - 7,274,325 - 8,088,070 - 8,556,815 - D654,178

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CHAPTER 1: INTRODUCTION

1.1 AUDIENCE

This user manual is a reference for operators using a SonixMDP Q+, SonixSP Q+ or SonixOP Q+ 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. A* 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 in digital PDF (Portable Document Format) files
- some options are available only on one or two of the three system types. When this applies, section headings will be followed by, for example, **(MDP)** or **(SP/OP)**
- words that are in ***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 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.

1.7 PATIENT PRIVACY

To protect patient data, Ultrasonix strongly recommends regular patient/image file back-up and purging of older patient files stored on the system (**4.7 Exam Import/Export**).

IMPORTANT: *The contents of the system hard drive may include Personal Health Information that must be protected as dictated by the laws of the relevant jurisdiction (e.g., Health Insurance Portability & Accountability Act (HIPAA–USA) or Personal Information Protection and Electronic Documents Act (PIPEDA–Canada)). 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.

For additional details on privacy protection (HIPAA, PIPEDA, etc.), refer to ***Hide Patient ID*** (**Table 9-8**).

Note: *Any patient data included in this manual is fictional and is used for demonstration purposes only.*

1.8 LICENSE AGREEMENT

Portions of the Sonix computer programs have been patented by Ultrasonix Medical Corp (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.*

1.10 TRADEMARKS AND PATENTS

The following are trademarks of Analogic Corporation: Ultrasonix™, SonixTouch™, SonixOne™, SonixTablet™, SonixMDP™, SonixSP™, SonixOP™, SonixGPS™, SonixShine™, SonixCam™, SonixDVR™, SonixLive™ and SonixHub™.

Ultrasonix 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 - 8,556,815 - D654,178.

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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: System Components

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 transducer ports
9	Optional Uninterruptible Power Supply (UPS) with external breaker access (Not available on SonixOP Q+.)
10	Footrest
11	Wheelbase with four, dual lock casters ***Note:*** *Each caster can be set in three positions: unlocked, directional lock and total lock (***10.5***).*
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 2-2: 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	Q	**QSONIX** Button	Provides access to: • Quick exam start-up • Sonix Operator Console Tutorial • ***Remote Support***.
Print Controls	4	1	**1** Button (***Custom Key 1***)	One of four programmable buttons (**8.2.13**) used to: • 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	**2** Button (***Custom Key 2***)	One of four programmable buttons (**8.2.13**) used to: • 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 (***Custom Key 3***)	One of four programmable buttons (**8.2.13**) used to: • 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***.
	10		**MEASURE** Button	Initiates/closes the ***Measurement Package*** touch screen. Removes measurements from frozen image field. ***Note: Application****-specific measurement tabs are available on the touch screen.*
	11		**DELETE** (Measurement) Button	In ***Measure*** mode, deletes most recently saved measurement. Deletes selected thumbnail image.

	Item	Icon	System Control	Functionality
	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. • 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.
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 B 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: • ***Harmonics*** (if available) • ***Resolution*** (high frequency) • ***General*** • ***Penetration*** (low frequency) • ***EPI*** (***Extended Pulse Imaging***) (greater penetration).

	Item	Icon	System Control	Functionality
Color Doppler Controls	27	C	**COLOR** Doppler Button/Dial	Activates (press dial) ***Color Doppler*** imaging mode and controls ***Color Doppler Gain*** (turn dial). Controls ***Power Doppler Gain***.
	28	PD	**POWER DOPPLER** Button	Activates/deactivates the ***Color Power Doppler*** imaging mode. The C dial controls the ***Color Power Gain***.
	29		**INVERT** Button	Reverses direction of ***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: • ***Color Doppler*** Region of Interest (ROI) box • ***PW Doppler*** sample line • ***B-Mode/2D*** beam on linear transducers.
PW Doppler Controls	33	PW	**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 PW dial.*
	34	CW	**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.
	40		**WORKSHEET** Button	Presents the active ***Worksheet*** on the LCD display with associated options on the touch screen.
	41	E	**ELASTOGRAPHY** Button	Activates/deactivates ***Elastography*** imaging mode.
	42	SPATIAL	**SPATIAL COMPOUND** Button	Activates/deactivates ***Spatial Compounding*** imaging mode.

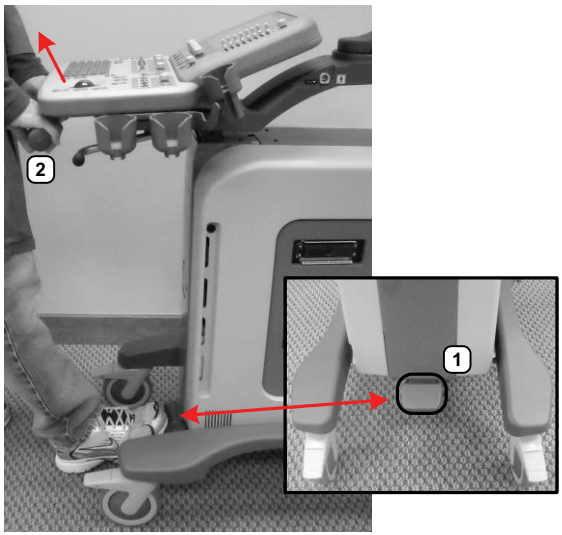
Item	Icon	System Control	Functionality
43	3D / 4D	**3D/4D** Button	Activates/deactivates optional ***Standard*** and ***Advanced 3D/4D*** imaging modes. (Not available on SonixOP Q+.)
44	AUTO	**OPTIMIZE** Button	Adjusts scale and ***Gain*** of ***Doppler*** spectrum to optimal.
45		**ACOUSTIC POWER** 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**.
46–50		Touch Screen Dials	Five 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. ***Note:*** *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.*
51		Touch Screen	Displays touch screen menus which change depending on the imaging mode/state. ***Note:*** *The active tab on a touch screen menu is indicated by a "dot" pattern around the tab name.*
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 adjustments: height, angle and swivel.

To Adjust the Console/Display Height:

1. Depress the system foot pedal (**1**).



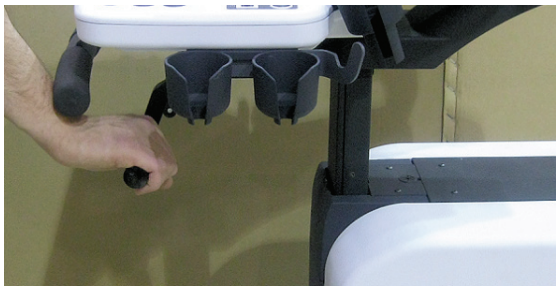
Note: *Keep the foot pedal depressed until the height adjustment is complete.*

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

Caution: *Use <u>only</u> 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 transducer ports are located on the right side.

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

Warnings:

Do not simultaneously touch the patient and the:

- *transducer ports*
- *Back Connectivity Panel connectors.*

Do not allow the patient to come in contact with any part of the system case or touch screen.

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**System Power Panel**

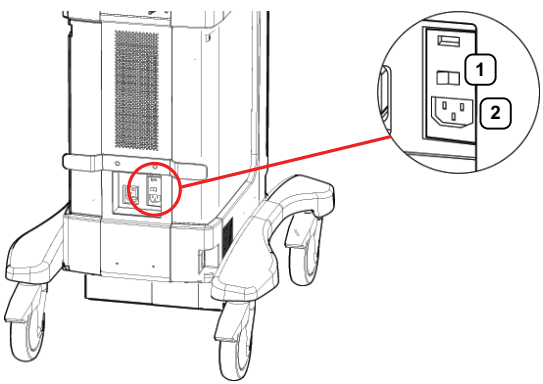


Table 2-3: System Power Panel

1	Main Power Switch
2	Power Cord (to Wall Outlet) Receptacle

***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 power panel 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 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.*

During shutdown, a UPS-configured system will enter Sleep Mode to protect the charged battery.

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 USB ports on the left edge of the console. Refer to **10.2 Console Connectivity** for details.

2.8 UPS (MDP/SP)

The system is delivered with an optional UPS running on a lithium ion battery. The UPS, located below the modulo, helps to ensure that no data is lost when the system is temporarily unplugged and moved around. Refer to section **10.6 UPS (MDP/SP)** for more details.

Refer to **10.6.1** for UPS circuit breaker shutdown procedures.

Warnings:

NEVER *let liquid from any source enter the UPS. Failure to do this may result in accidental* ***shorts, shocks or electrocutions****.*

DO NOT attempt to service this product yourself. *Attempting to open the battery case may cause exposure to lethal voltages within the unit even when it is apparently not operating and the input wiring is disconnected from the electrical source. Should the battery require maintenance or replacement, only qualified Ultrasonix Service Technicians may perform service as detailed in the Service Manual.Attempting to open the UPS may cause exposure to lethal voltages within the unit even when it is apparently not operating and the input wiring is disconnected from the electrical source. Should the UPS require maintenance or replacement, only qualified Ultrasonix Service Technicians may perform service as detailed in the Service Manual.*

Use only the UPS battery recommended and supplied by Ultrasonix Medical Corporation.

For UPS and battery service issues, contact Ultrasonix Technical Support.

If the battery is removed from the system, it is the responsibility of the customer to dispose of it in accordance with all local regulations and laws.

2.8.1 UPS Use Model

The UPS is intended to facilitate system portability, i.e., a properly charged UPS can help protect against the loss of data while the machine is temporarily unplugged and moved to a new location. Unless the system was powered down before being unplugged, make sure that it is reconnected to a power outlet within a few minutes.

When the system is running on battery power it cannot be left unplugged for long periods. For details on battery usage limitations and recharge alerts, refer to **Table 10-6** and **Table 10-7**, respectively.

Note: *When left powered on and unplugged, the rechargeable UPS battery will maintain a charge for a limited time only. Leaving the machine plugged in while unattended will prevent automated shutdown and prolong battery life.*

If the battery has been completely depleted, always fully recharge before attempting to run on battery power only.

While Ultrasonix recommends following this UPS Use Model, it is possible to power the system solely on UPS battery power for as long as 60–90 minutes. UPS battery run-time will vary depending on a variety of factors including battery age.

As an added precaution, always shut down the system properly (**2.5.2 Powering the System ON/OFF**). If, at this point, the system is left unplugged for a prolonged period, it will automatically protect battery integrity using sleep/standby mode. Refer to **10.6.3** to restart the system from this state.

2.9 ECG CONNECTORS (MDP)

On systems ordered with the optional ***ECG*** package, the ***ECG*** cable connector is positioned on the right side of the system (directly opposite the power switch). Refer to **10.7** for details on connecting the ***ECG*** cables to the system and **A.4** for safety details.

Note: *Refer to* **Accessories–Third Party** *in Appendix B for the recommended* ***ECG*** *electrode.*

2.10 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.

2.11 BARCODE READER (MDP/SP)

An optional pre-configured, barcode reader is available. This allows the operator to scan certain patient data for quick and reliable data entry. The results of the scan are entered directly into the fields on the ***QSonix Input Patient Information dialog*** and the ***Exam Management*** page—providing the cursor is present in the relevant field when the barcode is scanned.

Refer to **10.9 Barcode Reader (MDP/SP)** for details on connecting the barcode reader to the various hardware platforms.

Warnings:

USE OF CONTROLS *or adjustments or performance of procedures other than those specified in the manufacturer's User's Guide (delivered with system) may result in hazardous laser light exposure.*

NEVER *attempt to look at the laser beam, even if the barcode reader appears to be non-functional.*

NEVER *point the laser beam in anyone's eyes.*

USE OF OPTICAL *instruments with the laser equipment will increase eye hazard.*

UNDER NO CIRCUMSTANCES *should users or technicians attempt to open or service the laser scanner. Attempting to open the barcode reader may cause exposure to hazardous laser light. Should the barcode reader require maintenance or replacement, contact Ultrasonix Technical Support.*

2.12 WIRELESS ADAPTER (MDP/SP)

In addition to the standard, hard-wired network connection, the system supports an optional, factory-installed wireless adapter (**8.2.11.3 Wireless Configuration**).

Cautions:

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.

For details on FCC regulations as they apply to the wireless adapter, please refer to the manufacturer's User Guide included with the system.

2.13 FOOTSWITCH (DUAL OR TRIPLE)

The system supports an optional, (dual or triple) USB ***Footswitch*** (**8.2.14.3 Footswitch**).

Refer to **10.11 Connecting the USB Footswitch (Dual or Triple)** for details on connecting the ***Footswitch*** to the various hardware patforms.

Warning: *Footswitch is rated IPX1 only. Do not expose to liquids.*

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 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**).

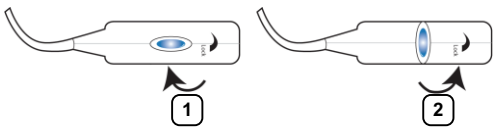
Note: *To ensure proper function, insert:*

- *the SA4-2/24 transducer into the second or third transducer connection port*
- *4D transducers into the upper-most transducer connection port.*

Only one 4D transducer can be connected at a time. (Not available on SonixOP Q+.)

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.*

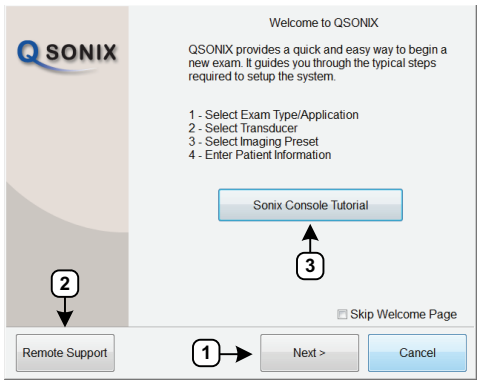
3.3 QSonix FEATURE

The Q button provides the following basic functions:

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

The Q button can also be configured to ***Reload Presets*** during an exam. Refer to **8.2.13 Custom Keys** for details.

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.*

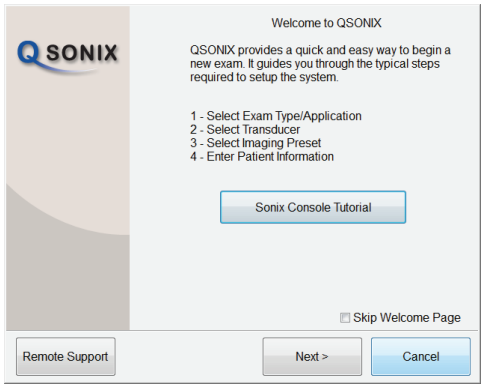
3.3.1 Quick Exam Start-Up

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:

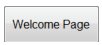
1. Select the ***Exam Type/Application***.
2. Select the transducer.
3. Select the ***Imaging Preset***.
4. Enter basic ***Patient Information***.
5. Begin the exam.

To Begin the Quick Exam Start-up:

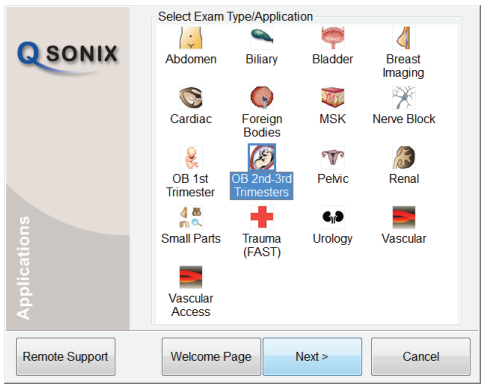
1. Press the console Q button.
2. If the ***Welcome to QSonix*** page appears, select ***Next***.



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.*

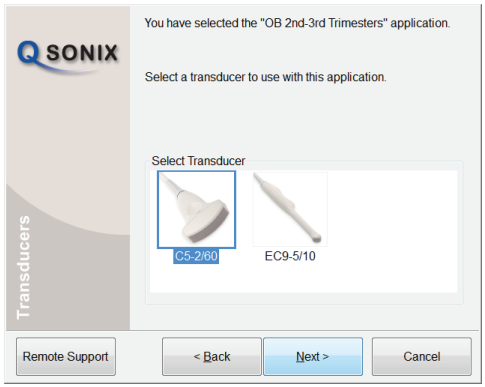


3. Select the desired ***Exam Type/Application*** and the system will automatically move to the next page.



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.

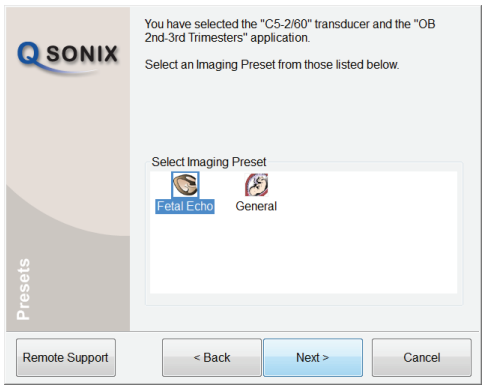


Note: *Only transducers currently connected to the system and applicable to the previously-selected* ***Exam Type/Application*** *will be available. If the selected* ***Application*** *is not compatible with the currently connected transducers, the system will prompt for a different transducer.*

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

If a 4D transducer is selected, the system will skip directly to **step 5***. (Not available on SonixOP Q+.)*

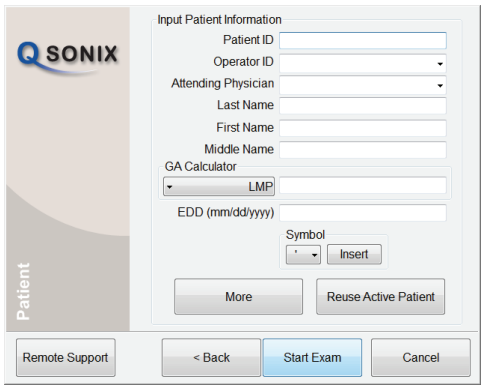
5. Select the desired ***Imaging Preset*** and the system will automatically move to the next page.



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).*

If an exam is begun without selecting a Patient, it can be assigned to a Patient before the exam ends. Refer to **4.5 Beginning an Exam with no Patient Selected** *for details.*

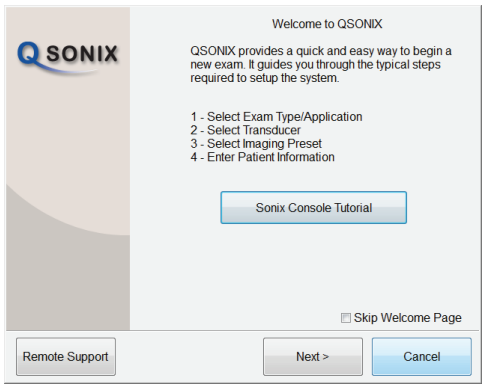
7. Select ***Start Exam*** to begin imaging.

3.3.2 Operator Console Tutorial

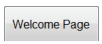
This feature provides a brief overview of the functionality of the operator console buttons, toggle buttons, dials, etc.

To Access the Operator Console Tutorial:

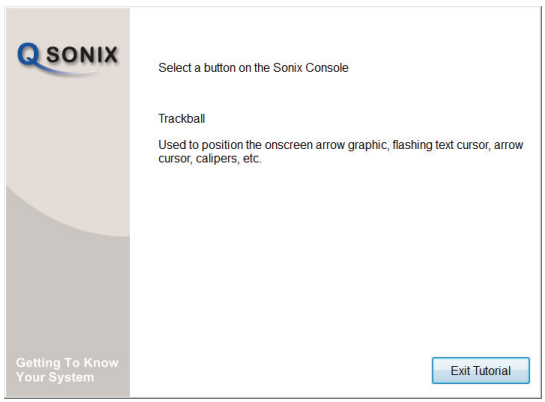
1. Press the console **Q** button.



***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

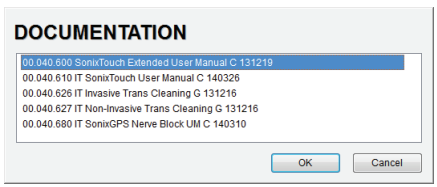
Operators can access PDF documentation via the button. This includes a cross-referenced version of the ***User Manual.***

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 or if the console* ABC button is active.

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.

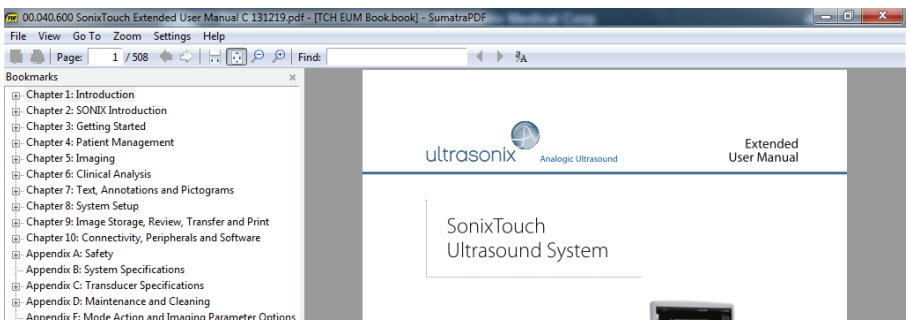


Note: *If only one PDF document has been added, it will be opened automatically.*

5. Select ***OK*** and the 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 is a licensed option that allows Ultrasonix Technical Support to remotely view and control a system for (technical) 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 the 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)

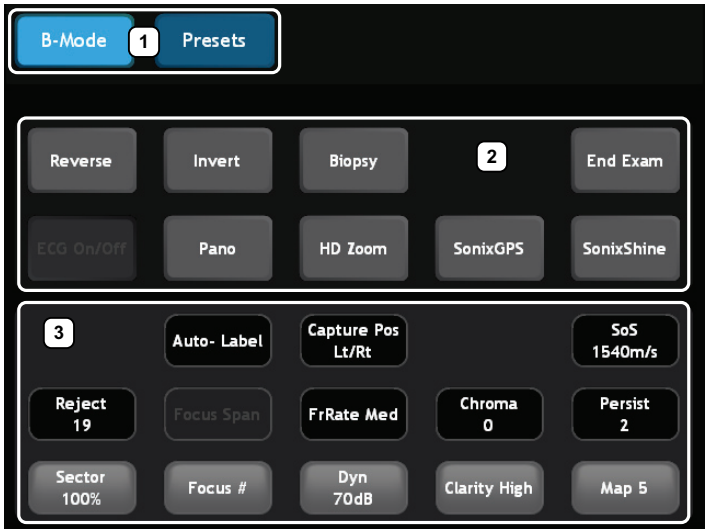


Table 3-1: Main Touch Screen Buttons

1	Touch Screen Tabs	Tap to access additional options. ***Note:*** *Tab availability depends on the current imaging mode.*
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 is ***Layout***—which always remains blue as it is tapped to toggle through the various ***Layout*** options. ***Note:*** *The actions available are mode and/or transducer-specific.*
3	Imaging Parameter Buttons	Enable adjustments to be made to the available imaging parameters for the selected mode. ***Note:*** *Most parameters are mode-specific, although some (such as* ***Steer****) are transducer-dependant.* 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 below the active button to make adjustments. ***Note:*** *To adjust an imaging parameter that is not currently active, tap the desired imaging parameter button then turn/press the dial directly to its right (e.g.,* ***Clarity****,* Figure 3-2*).*

3.5.2 Main Touch Screen – Frozen

Once an image has been a acquired and frozen, the touch screen will be updated. While many buttons stay the same, some are removed and others are added ensuring 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)

10a		***Play Cine*** and (***Cine***) ***Record*** Button (***Cine***)	Available only when an image has been frozen. To access all ***Cine*** options, tap the touch screen ***Cine*** tab. ***Note:*** *Refer to* 5.9 *for details on* ***Cine****.*
10b	***(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* 5.9 *for details on* ***Cine****.*

CHAPTER 4: PATIENT MANAGEMENT

Exam Management functionality allows users to enter patient/exam-related data into the system. Entering patient-specific data automatically creates a unique file in which the patient/exam data is stored.

4.1 ENTERING PATIENT DATA

The ***Exam Management*** page is sectioned into ***Patient Information***, ***Application Information*** and ***Exam Information*** data entry areas. If applicable, data can be accessed via the storage/database tabs at the bottom right side of the page (***Patient*** and ***Worklist***).

Figure 4-1: Exam Management Page

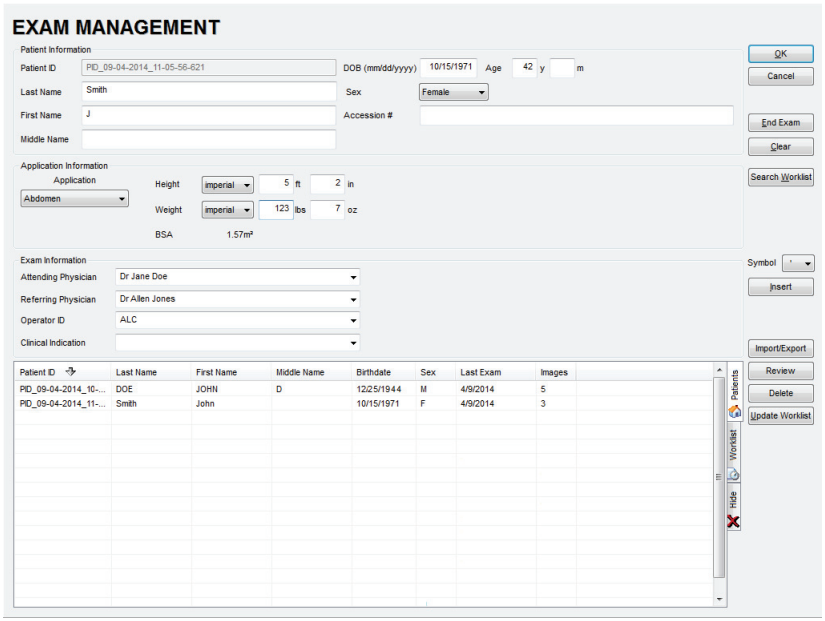


Table 4-1: Exam Management Page Options

OK	Saves the changes made to the ***Exam Management*** page and returns to imaging. ***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 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	• ***Patients***: list of Patients/Exams currently available on the system
	• ***DICOM***
	  • ***Worklist***: if enabled in ***DICOM***
	  • ***Store Queue***: if enabled in ***DICOM***
	  • ***Print Queue***: if enabled in ***DICOM***
	• ***Hide***: hides data to preserve privacy.
	Note: *Refer to* ***4.8 Storage/Database Tabs*** *for more details.*

Figure 4-2: Exam Management Page Touch Screen

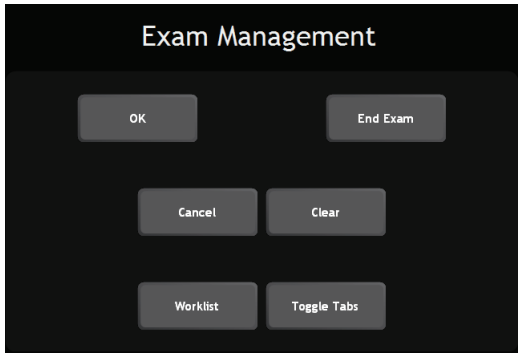


Table 4-2: Exam Management Touch Screen Controls (tap to activate)

OK	Saves the changes made to the ***Exam Management*** page and returns to imaging. ***Note:*** *If a unique* ***Patient ID*** *is not entered manually the system will create one automatically (e.g., {C9B3F82B-BE52-4C79-8C45-28375D69F8C9}).*
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 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.*
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

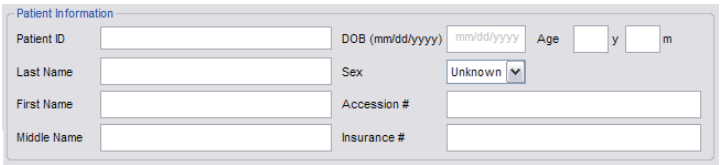


Table 4-3: Patient Information Fields

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***.

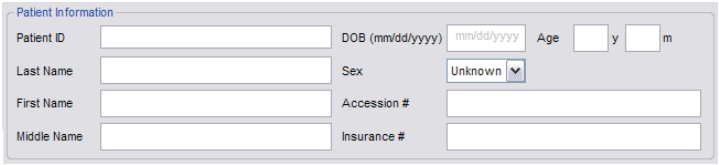
Notes:

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 8-38***) 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.



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.

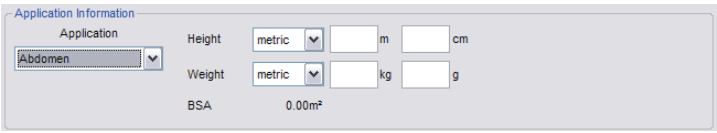
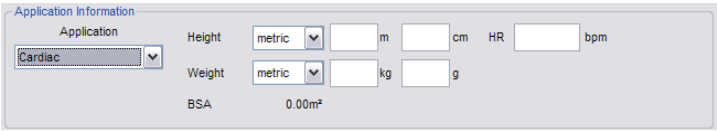
Note: *Fields that will accept data entry via the keyboard will also accept data scanned with the barcode reader. Simply ensure that the cursor is located in the required field then scan the relevant barcode.*

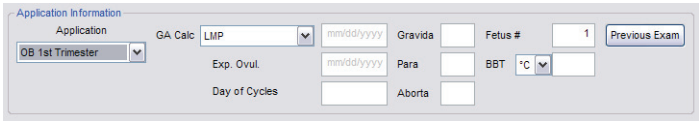
4.1.2 Application Information

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*** ***Breast Imaging*** ***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.
Cardiac	 • ***Height*** and ***Weight*** have both metric and imperial measurement options • ***BSA*** (***Body Surface Area***) is calculated and displayed when ***Height/Weight*** is entered • ***HR*** (***Heart Rate***) ***bpm*** (***beats per minute***) can be entered manually for use in ***Cardiac*** calculations during imaging. ***Note:*** *If no* ***HR*** *is entered, then it must be measured during imaging in order to be able to perform many of the different* ***Cardiac*** *calculations. Refer to* **6.10.4 Cardiac Reports** *for more details.*



- ***GA Calc(ulator)*** auto-calculates ***GA*** (***Gestational Age***) and ***EDD*** (***Estimated Date of Delivery***) based on the option selected:
  - ***LMP*** (***Last Menstrual Period***)
  - ***Oocyte Retrieval***
  - ***Day 3 Transfer***
  - ***Day 5 Transfer***.
- ***GA*** auto-calculates ***EDD***

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

OB 1st Trimester
OB 2nd–3rd Trimester

- ***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.*

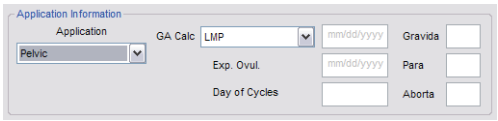
- ***Gravida***, ***Para*** and ***Aborta*** fields
- ***Fetus #*** defaults to 1. Enter up to 8 for multiple gestations

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.)).*

- ***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**.

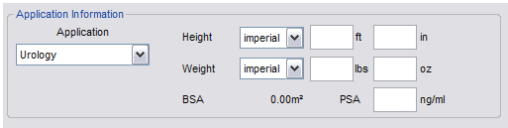
- ***Previous Exam*** enables the entry of previous ***OB*** exam data for ***Fetal Trending*** (refer to **4.1.2.1 OB Previous Exam (Fetal Trending)** for details).



Pelvic

- ***GA Calc(ulator):***
  - ***LMP***
  - ***Oocyte Retrieval***
  - ***Day 3 Transfer***
  - ***Day 5 Transfer***.
- ***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.*



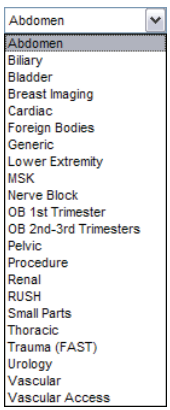
Urology

- ***Height*** and ***Weight*** have both metric and imperial measurement options
- ***BSA*** (***Body Surface Area***) is calculated and displayed when ***Height/Weight*** is entered.
- ***PSA*** (***Prostate-Specific Antigen***) is used in the ***PSA Density*** (***PSAD***) calculation.

Note: *Ensure the* ***PSA*** *test result is entered in the form* ***ng/ml****, or* ***nanograms per milliliters****.*

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 ***Fetuses***.

Figure 4-4: Previous Exam (Fetal Trending)

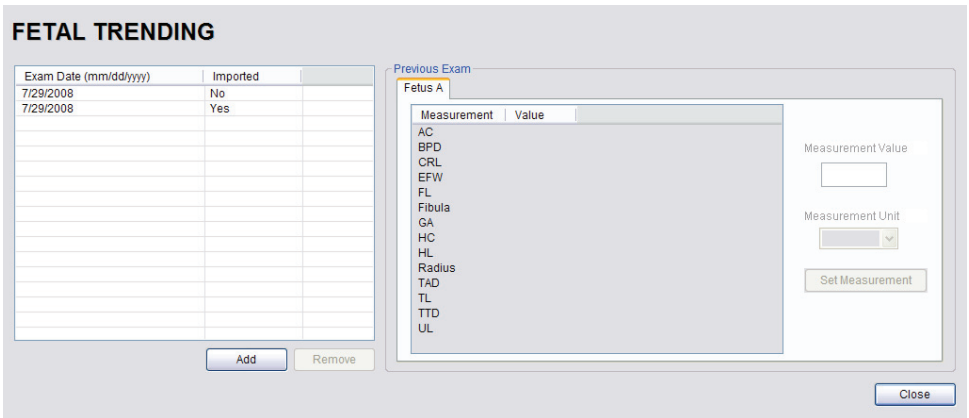
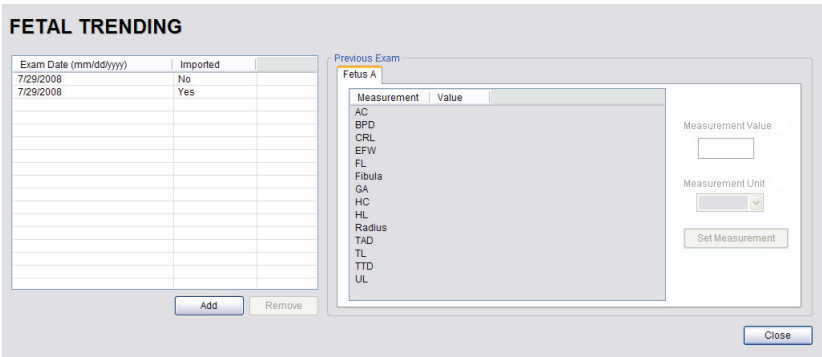


Table 4-5: Previous Exam (Fetal Trending)

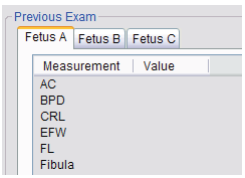
Exam Date (mm/dd/yyyy)		Indicates the date of the exam, if the exam is on the system or the date of the exam for which data was manually entered.
Imported		***Yes*** or ***No*** indicates whether or not exam data is being read from the system (***Imported*** = ***No***) or has been entered manually (***Imported*** = ***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.*
Previous Exam	***Measurement***	Lists the type of ***Measurement*** for which data will be entered.
Previous Exam	***Value***	Lists the ***Value*** of the entered ***Measurement***.
Previous Exam	***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.*
Previous Exam	***Measurement Unit***	Shows the relevant ***Measurement Unit***, e.g., ***days***, ***cm*** or ***g*** (***grams***).
Previous Exam	***Set Measurement***	Accepts the M***easurement*** 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.

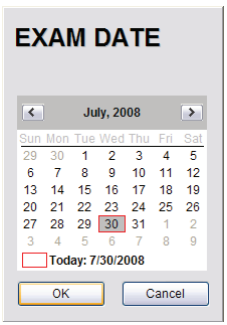


4. If required, select the relevant ***Fetus*** tab (***Fetus A***, ***Fetus B*** or ***Fetus C***).



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 exam per date.*

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

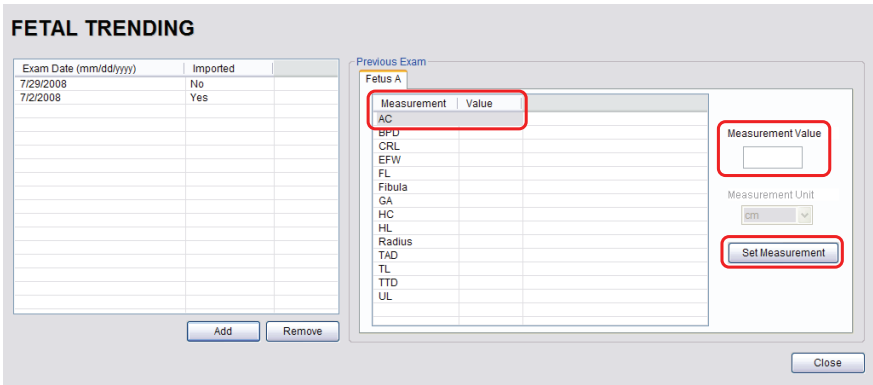
Note: *The current date is always enclosed in a red box.*

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

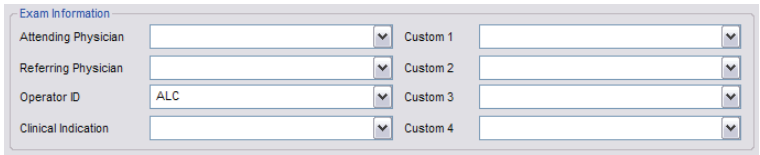


Table 4-6: Exam Information Fields

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.

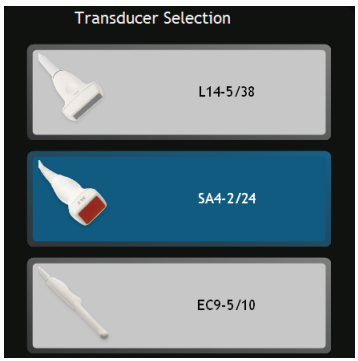
Note: *Fields that will accept data entry via the keyboard will also accept data scanned with the barcode reader. Simply ensure that the cursor is located in the required field then scan the relevant barcode.*

4.2 SELECTING A TRANSDUCER

Each transducer is restricted to a specific set of ***Exam Type/Applications***. Refer to section **C.4 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.



Notes:

*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.*

Refer to **8.2.14.3 Footswitch** *to configure one button transducer access.*

4.3 SELECTING AN APPLICATION AND IMAGING PRESET COMBINATION

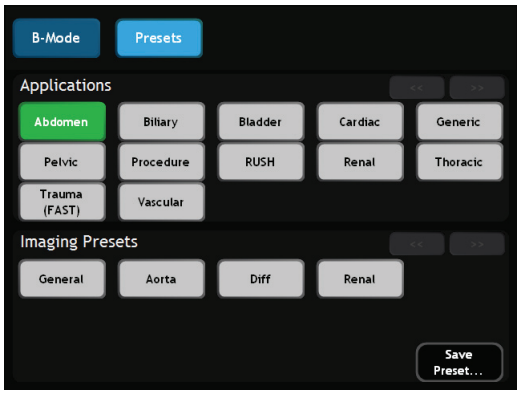
Imaging Presets specific to each ***Application*** are available with each of the system transducers. The ***Applications*** and ***Presets*** vary depending on the transducer type (refer to **4.2** for details on transducer selection). Additional user-defined ***Imaging Presets*** (**4.9**) may be created 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.4 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***.



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

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."****).*

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 nan 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 8-38***) 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 8-38**).

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 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.

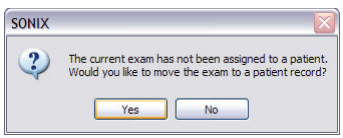
Note: *If the **Operator** continues with the exam, all subsequent data saved to the exam will include identifying Patient data (such as **Patient ID**).*

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 8-38**).
2. Ensure no Patient is currently selected.
3. Begin an exam and ensure that at least one measurement is taken or one 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.



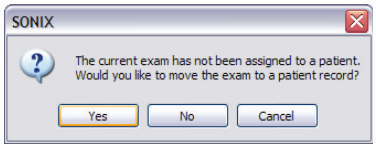
6. If ***Yes*** was selected in **step 5**, the ***Assign Exam*** page will be presented.
7. Enter the relevant data for a new patient or select an existing one.

   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:

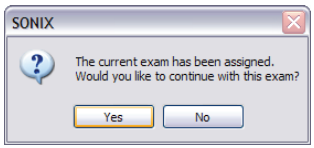
1. Ensure ***Enable Unassigned Exam*** was selected in the ***Patient Settings*** dialog (under **General Options** in **Table 8-38**).
2. Ensure no ***Patient*** is currently selected.
3. Begin an exam and ensure that at least one measurement is taken or one image is saved.
4. Ensure the system is at 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**).*

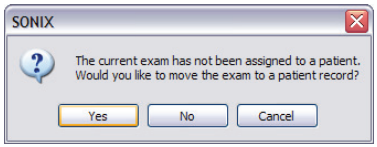
8. Select ***OK*** to exit.
9. When prompted, select ***Yes*** to continue imaging or ***No*** to end the exam.



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:

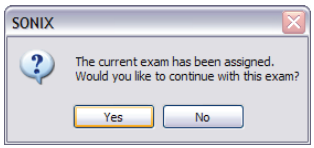
1. Ensure ***Enable Unassigned Exam*** was selected in the ***Patient Settings*** dialog (under **General Options** in **Table 8-38**).
2. Ensure no ***Patient*** is currently selected.
3. Begin an exam and ensure that at least one measurement is taken or one image is saved.
4. Ensure the system is at 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 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***.

Note: *To ensure compliance with local privacy laws and regulations (e.g., HIPAA–USA or PIPEDA–Canada), be sure to store any backups in a secure location.*

Figure 4-6: Exam Import/Export

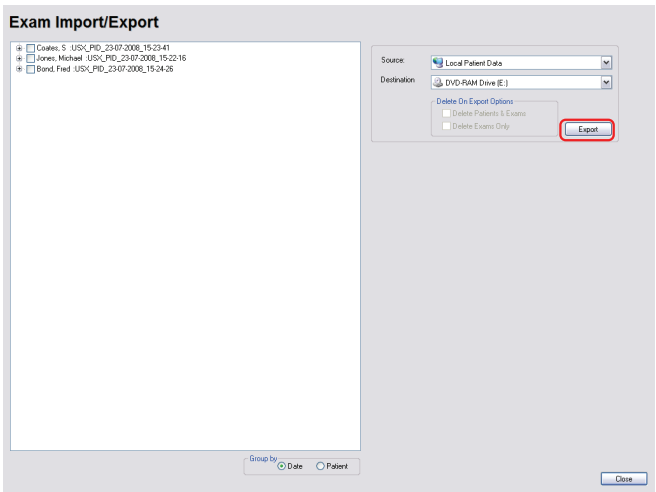


Table 4-7: Exam Import/Export

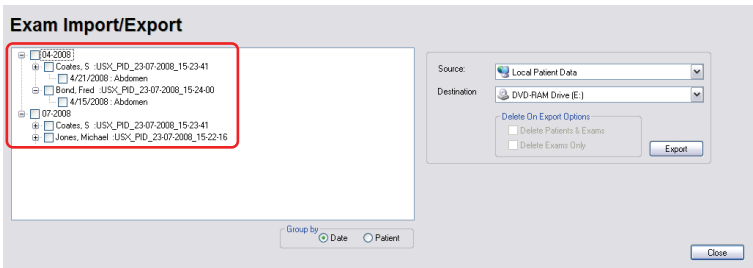
Source		When importing, select a ***Source*** location. ***Note:*** *Only currently available* ***Sources*** *will be presented. If the required data is not accessible, ensure the correct media has been connected to the system.* *For* ***Export****, the* ***Source*** *must be* ***Local Patient Data****.* *For* ***Import****, the* ***Destination*** *must be* ***Local Patient Data****.*
Destination		When exporting, select a ***Destination*** for the ***Patient/Exam*** data. ***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***.

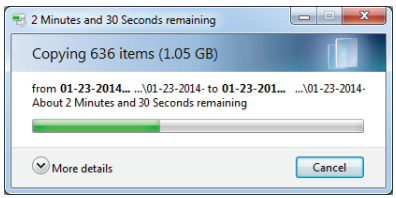
Note: Local Patient Data *is the only* ***Source*** *for exporting data.*

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.



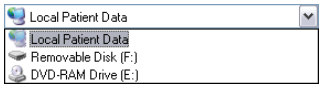
Note: *The system will present a transfer progress dialog, enabling the user to* ***Cancel*** *the process is desired.*

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:

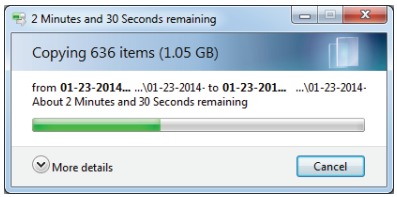
1. Press the console button.
2. Select the ***Import/Export*** button.
3. From the ***Source*** drop-down menu, select the ***Source*** of the data to be imported.



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

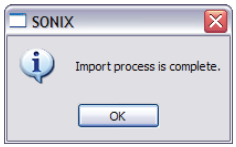
- ***Destination*** *drop-down menu will change to* ***Local Patient Data***
- ***Export*** *button will change to* ***Import****.*

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.



Note: *The system will present a transfer progress dialog, enabling the user to* ***Cancel*** *the process is desired.*

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 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. ***Note:*** *This tab is available only when the system is configured for* ***DICOM*** *(8.2.12) or* ***EMR*** *(8.2.16.1).*
	Store Queue	Select to display the current ***DICOM Storage Queue***. ***Note:*** *This tab is available only if* ***DICOM*** *is licensed and a* ***Storage Server*** *has been configured (8.2.12.1).*
	Print Queue	Select to display the current ***DICOM Print Queue***. ***Note:*** *This tab is available only if* ***DICOM*** *is licensed and a* ***Print Server*** *has been configured (8.2.12.2).*
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

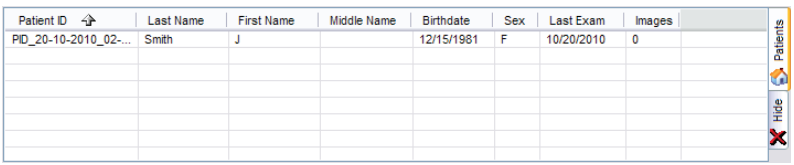


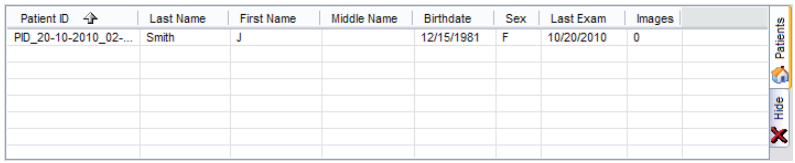
Table 4-9: Patients Database

(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.



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:

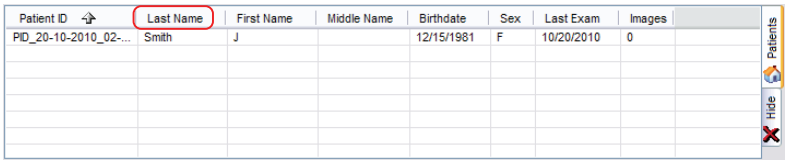
1. Press the console button.
2. Select the ***Patients*** tab near the bottom of the ***Exam Management*** page to display a list of locally stored (on the system hard drive) patients or use the ***Exam Management*** touch screen ***Toggle Tabs*** button to move to the appropriate database.
3. Select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



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

Note: *To 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.*

4.8.2 DICOM Worklist

The system must be configured for ***DICOM Worklist*** and connected to a ***DICOM*** server in order for the ***Worklist*** database feature to function. For setup instructions, refer to **8.2.12 DICOM Configuration**.

Note: *The data in the fields available on the actual search page are dependant upon the data entered into* ***DICOM****:* ***Patient ID****,* ***Last Name****,* ***First Name****,* ***Accession #****,* ***Start Date (mm/dd/yyyy)****,* ***End Date (mm/dd/yyyy)****,* ***Exam Type****,* ***Procedure ID****,* ***Station AE Title****,* ***Station Location*** *and* ***Modality Type****.*

After completing a ***DICOM Worklist*** search with a new, manually entered ***Modality***, the new ***Modality*** type will be saved to the ***Modality*** drop-down list. Additionally, the most recently used ***Modality*** will be automatically selected for use in the next ***DICOM Worklist*** search.

The six default ***DICOM Modality Types*** are: ***All***, ***CT***, ***MR***, ***RF***, ***US*** and ***XA***.

Device configuration for ***Modality Performed Procedure Steps*** (***MPPS***) is handled through the same ***AE Configuration*** as the ***DICOM Worklist***. All functionality is invisible to the user, except when testing a ***DICOM Worklist Device*** (**8.2.12.3**).

Figure 4-8: Exam Management Page (DICOM Worklist)

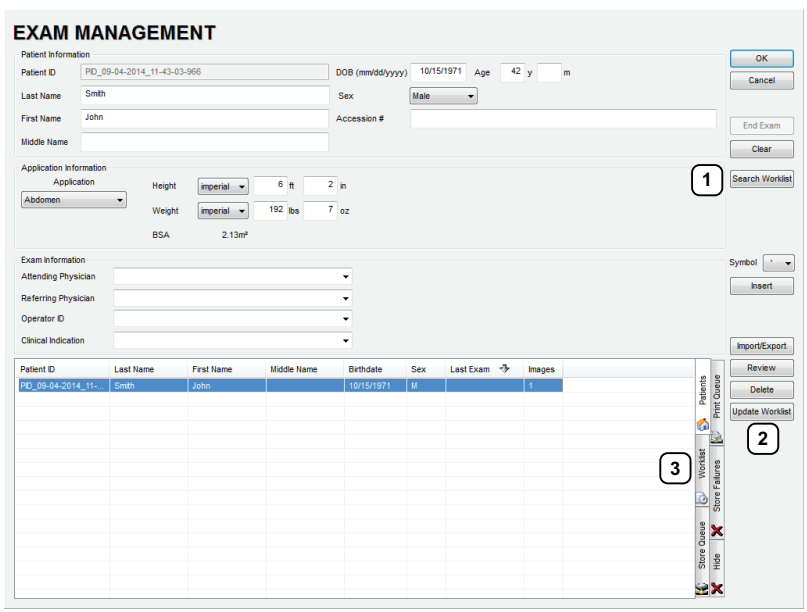
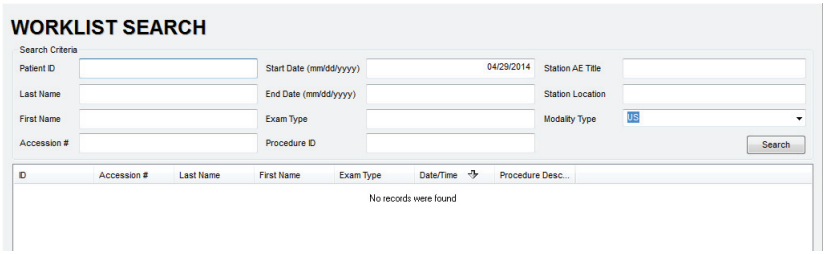


Table 4-10: Exam Management Page (DICOM Worklist)

1	***Search Worklist*** button	**2**	***Update Worklist*** button	**3**	***Worklist*** tab

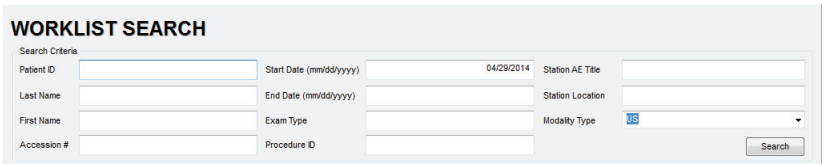
Figure 4-9: DICOM Worklist Search



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.).



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* SPATIAL *or* B*, the actual mode is also saved as part of the* ***Preset****.*

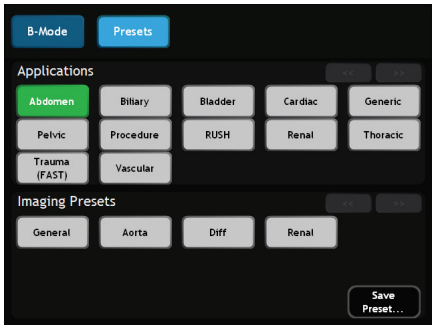
In addition to standard ***Presets***, the system also allows users to create and save user-defined ***3D/4D Presets***. Refer to **5.11.9 3D/4D Presets** for details.

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

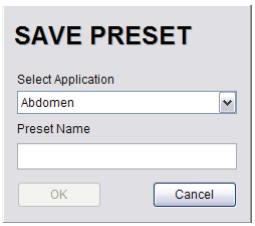
Note: *When configuring a user-defined* ***Preset*** *for* ***M***, ***PW*** *or* ***Triplex*** *mode, be sure to move to the desired* ***Layout*** *as this setting will be saved with the* ***Preset****. Refer to sections* **5.1.7**, **5.3** *and* **5.3.3** *for more details.*

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…***.
6. 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.



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****).*

7. Use the console keyboard to enter a ***Preset Name***.
8. Select ***OK*** to save the ***Preset*** or ***Cancel*** to exit without saving.
9. 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 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.

Note: ECG *functionality is only available if:*

- *the* ***ECG*** *option has been licensed*
- *the SA4 transducer is connected*
- ***Cardiac*** *has been selected as the active* ***Application****.*

Refer to **Accessories–Third Party** *in Appendix B for the recommended* ***ECG*** *electrode.*

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

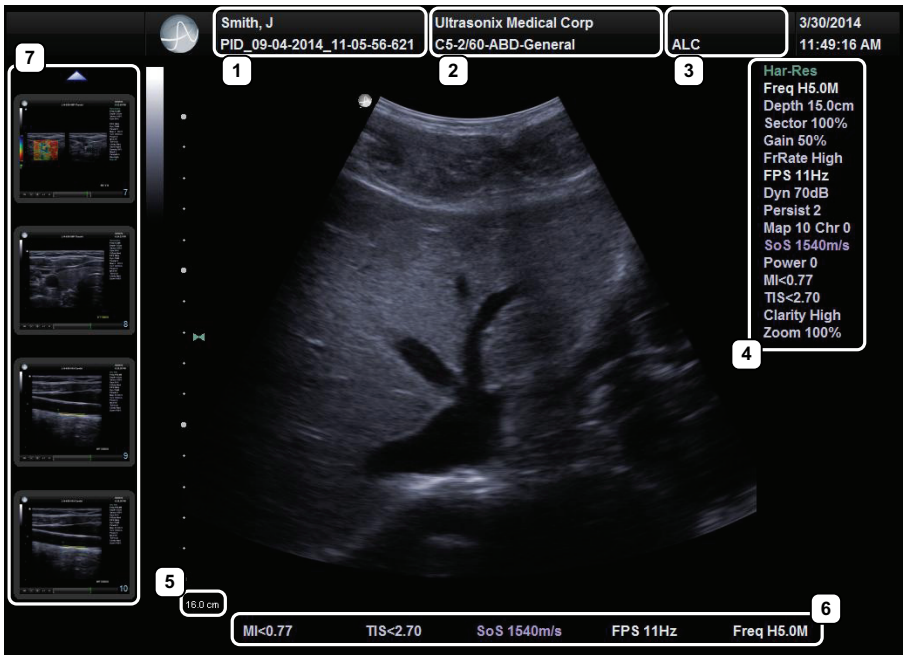


Table 5-1: 2D/B-Mode Field Locations During Imaging

1 **2** **3**	***Patient/Exam Information***	• 1: ***Patient Name*** and ***ID*** • 2: ***Institution Name*** and ***Transducer–Application–Preset*** • 3: ***GA*** (for ***OB***), ***LMP*** (for ***Pelvic***) and ***Operator ID***. ***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 8-37** *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 five imaging parameters will be displayed: ***MI***, ***TI***, ***FPS***, ***SoS*** and ***Freq***.
7	Thumbnails	Images saved during an exam are presented as thumbnails on the left side of the imaging screen.

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

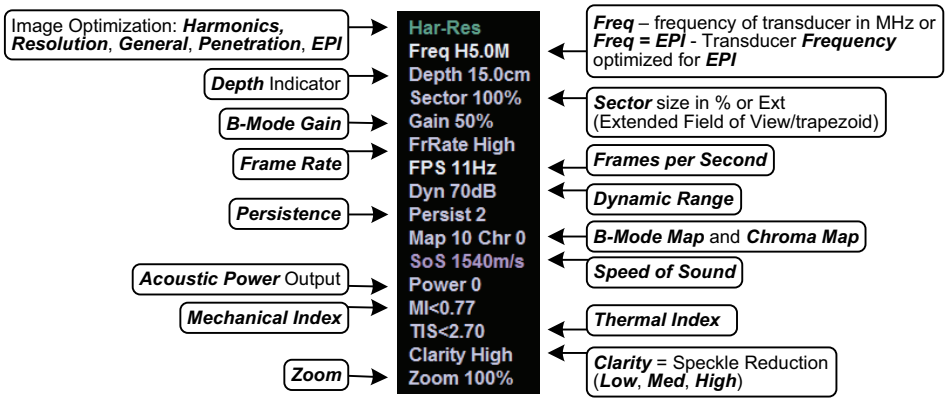


Table 5-1: 2D/B-Mode Imaging Console Controls

B	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

Compound imaging parameters ***Med*** and ***High*** are available with all linear and curved array transducers.

Note: *Refer to* **Table E-2** *for* ***Compound*** *imaging parameters.*

To Activate Spatial Compound Imaging:

1. Press the console SPATIAL button.

   Note: 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.*

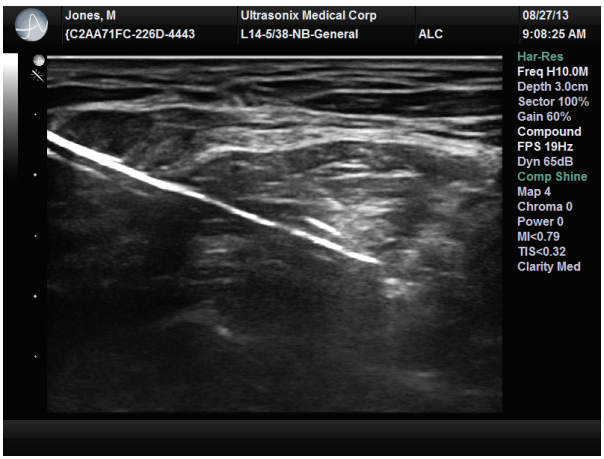
5.1.2.1 SonixShine

In combination with ***Spatial Compounding***, ***SonixShine*** offers enhanced, in-plane needle visibility.

Note: *Refer to* **Table E-1** *for Mode Action details on* ***SonixShine*** *and* **Table E-2** *for* ***Compound*** *imaging parameters (including* ***Shine Side****).*

SonixShine *is available only with the L9-4/38, L14-5/38 and L14-5/38 GPS transducers.*

Figure 5-3: SonixShine Imaging



To Activate SonixShine while in Spatial Compound Imaging:

1. With an active ***Compound*** image, tap the touch screen ***SonixShine*** button.

   Note: *The* ***Comp*** *imaging parameter button will be set to* ***Shine****. If* ***Comp*** *is reset to* ***Med*** *or* ***High****, the system will exit* ***SonixShine*** *but will remain in* ***Spatial Compound*** *imaging.*

   SonixShine *is available only with the following transducers: L9-4/38, L14-5/38 and L14-5/38 GPS.*

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 [B].

5.1.4 Dual Imaging Format

Dual imaging enables side by side imaging with either the Left or Right side enabled as the ***Active*** image.

Dual activates ***Top***/***Bottom*** imaging when using an EC9-5/10 or 4DEC9-5/10 transducer in ***B***, ***Color*** or ***Spatial Compounding Mode***.

Note: *Use the* ***Layout*** *button to access the side by side* ***Dual*** *option.*

Refer to **Split Imaging** (**Table 8-44**) for details on configuring the default active image (***Left Side*** or ***Right Side***) and the ***Auto-Switch on Start*** setting.

Figure 5-4: Dual Imaging

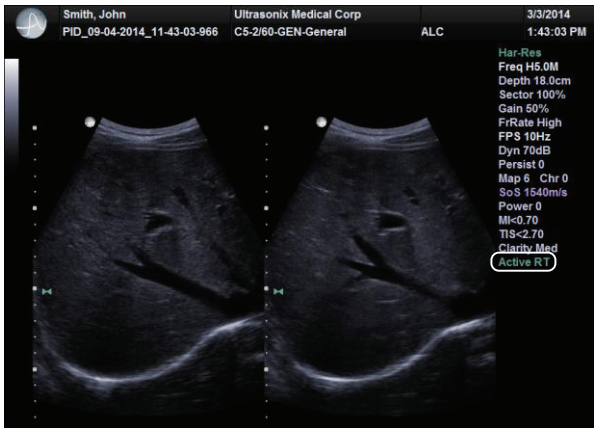


Table 5-2: Dual Imaging

Active Image	Indicates ***Active*** image: • ***Active LT***: left • ***Active RT***: right.

To Activate Side by Side 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 [B] to exit ***Dual*** imaging.

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

To Activate Top/Bottom Dual Imaging:

Note: *Available only with an EC9-5/10 or 4DEC9-5/10 transducer.*

Use the ***Layout*** *button to access the side by side* ***Dual*** *option.*

1. With an active ***B-Mode*** image, press the console ▫▫/⊞ button once.
2. When a live image appears on the top of the LCD display (***Active Top***), press ⟲ to freeze the ***Active Top*** image and unfreeze (i.e., make active) the ***Active Bottom*** image in one step.

   Note: *As an alternative, press ❄ to freeze the bottom 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 [B] to exit ***Dual*** imaging.

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

5.1.5 Quad Imaging Format

Figure 5-5: Quad Image

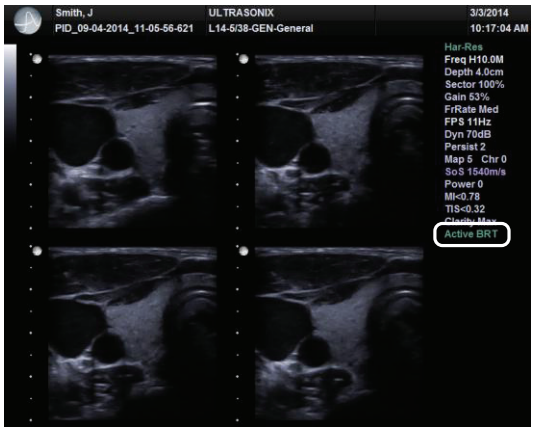


Table 5-3: Quad Imaging

Active Image	Indicates ***Active*** quadrant: • ***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****.*

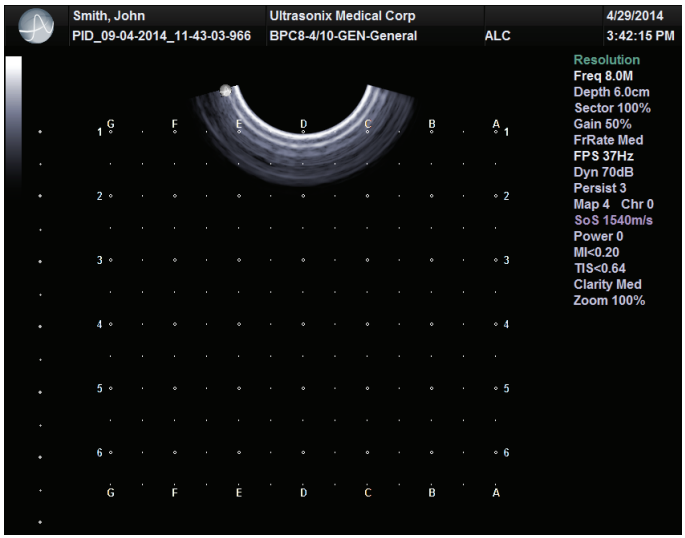
4. Continue pressing ◉ to move through the four images as required. Depending on the method selected above—◉ only or ❄ and ◉—the images will be active or frozen, respectively.
5. Press ▫▫/▦ or [B] to exit ***Quad*** imaging.

   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 5-6: 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

B	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.
M	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** *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** *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 5-7: Color Doppler Image

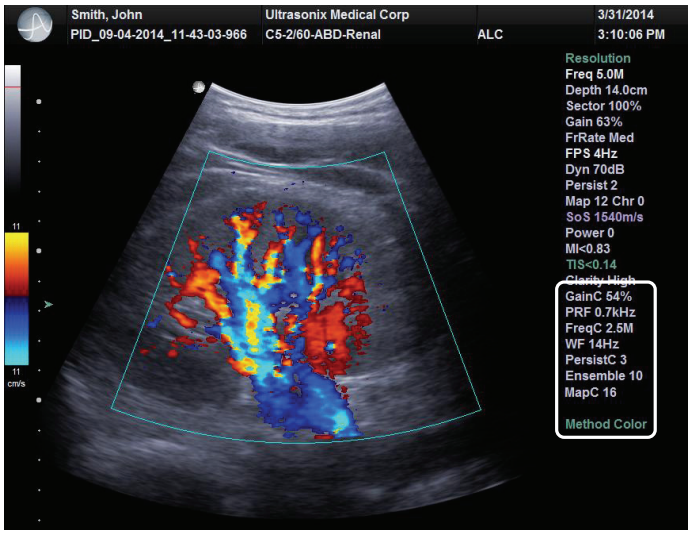
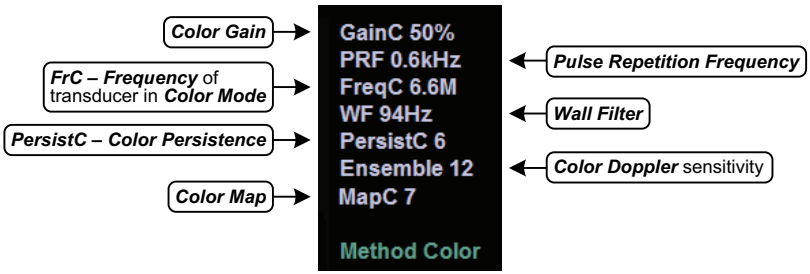


Figure 5-8: Color Doppler Imaging Parameters



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

C	Press to select ***Color Doppler*** imaging. Turn to adjust ***Color Gain***.
PD	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 C 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** 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 C 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 TDI:

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, TDI*** and ***Flow***.

   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 Flow Imaging

To Activate Flow 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***, ***TDI*** and ***Flow***.

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.*

5.2.5 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***
- *in* ***CW****.*

The ***Triplex*** *touch screen button is not available when using the* ***VAS-SOCD*** *and* ***VAS-TCD Presets*** *with the SA4-2/24 transducer.*

To ensure proper function, insert the SA4-2/24 transducer into the second or third transducer connection port.

ECG *is not available on SonixSP Q+ or SonixOP Q+.*

ECG *functionality is a licensed option that is intended for use with the* ***Cardiac Application****.*

ECG *functionality is* *only* *available if:*

- *the* ***ECG*** *option has been licensed*
- *the SA4 transducer is connected*
- ***Cardiac*** *has been selected as the active* ***Application.***

Figure 5-9: PW Doppler Imaging (Combined with Triplex)

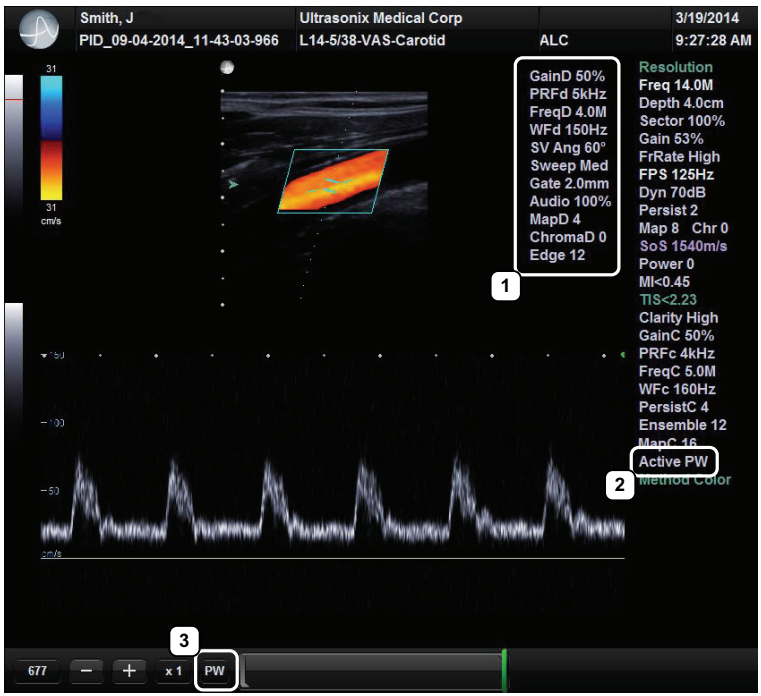
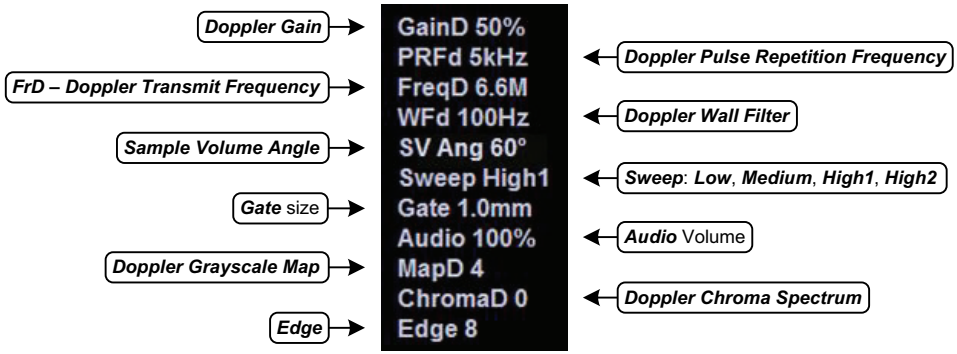


Table 5-6: PW Doppler Imaging (Combined with Triplex)

1	***PW Doppler*** Imaging Parameters	Refer to **Figure 5-10** and **Appendix E** for details.
2	***Cine Frame*** Mode	Indicates ***Cine*** frames actively available for each imaging mode: • ***PW*** (***Doppler Trace***) • ***PW*** (***Doppler Trace***) • ***B*** (***2D*** with and without ***Color***). Press ◉ to toggle control between modes.
3	***Active*** Imaging Mode	Indicates active imaging mode(s) when unfrozen: • ***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***. Press ◉ to toggle control between modes.

Figure 5-10: 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

PW	Press to activate ***PW Doppler*** mode/turn to adjust ***PW Doppler Gain***.
CW	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:*** *The volume control is located on the upper right side of the touch screen.*

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** *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** *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 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 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.

Note: *Elastography is supported on all transducers.*

Figure 5-11: Elastography Imaging

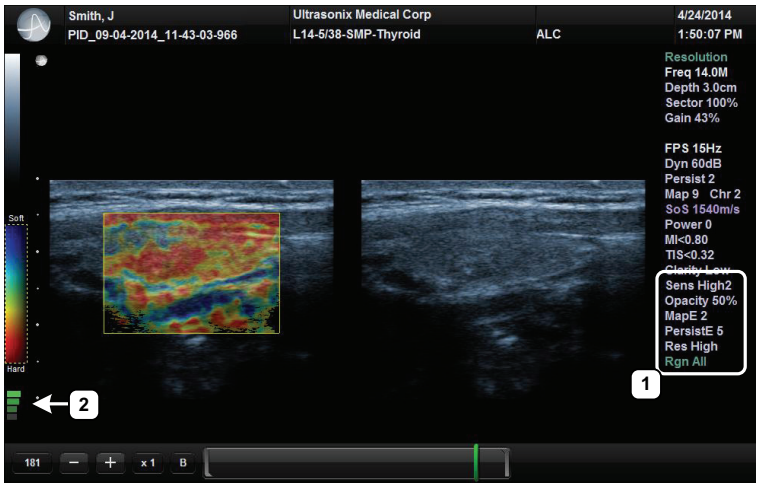


Figure 5-12: Elastography Imaging Parameters

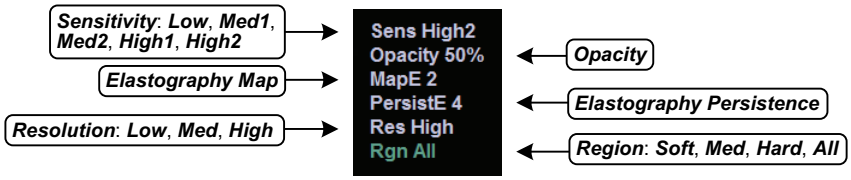


Table 5-8: Elastography Imaging

1	***Elastography*** Imaging Parameters	Refer to **Figure 5-12** and **Appendix E** for details.
2	Compression/Deformation Feedback Indicator	Tracks the amount of compression/deformation being applied to the tissue. Compression/deformation is defined as insufficient, acceptable or too much. Refer to **Figure 5-13** and **Table 5-9** for Feedback Indicator examples.

Figure 5-13: Compression/Deformation Feedback Indicator

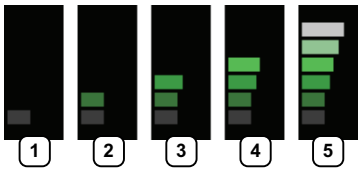


Table 5-9: Compression/Deformation Feedback Indicator

1 and 5	Not acceptable (too little or too much pressure).
2 to 4	Acceptable. ***Note:*** *Acceptable has a wide range.*

Table 5-10: Strain Ratio

Soft then ***Hard*** Measurement	***Strain Ratio*** value is less than one.
Hard then ***Soft*** Measurement	***Strain Ratio*** value is greater than one.

Table 5-11: Elastography Imaging Console Controls

E	Press to activate ***Elastography*** mode.
B	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 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: *To select the transducer, press the console button.*

2. Press the console button.

5.6 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.

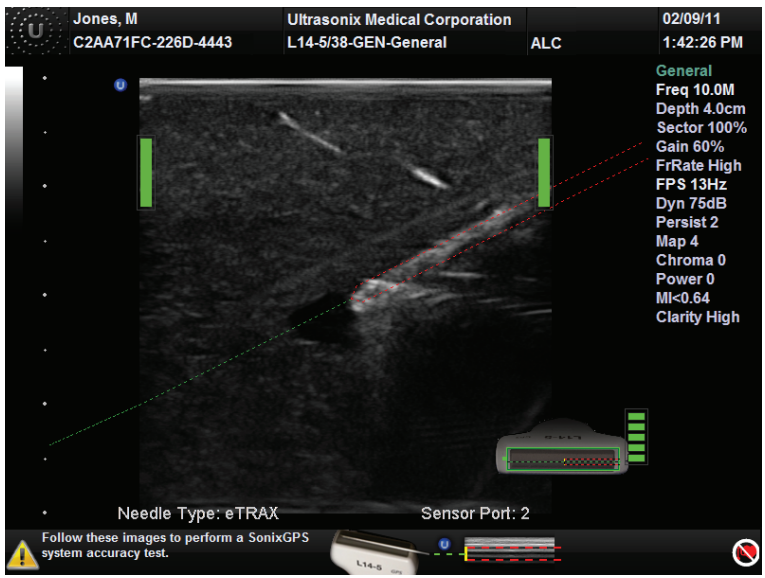
Warnings:

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 5-14: SonixGPS Imaging



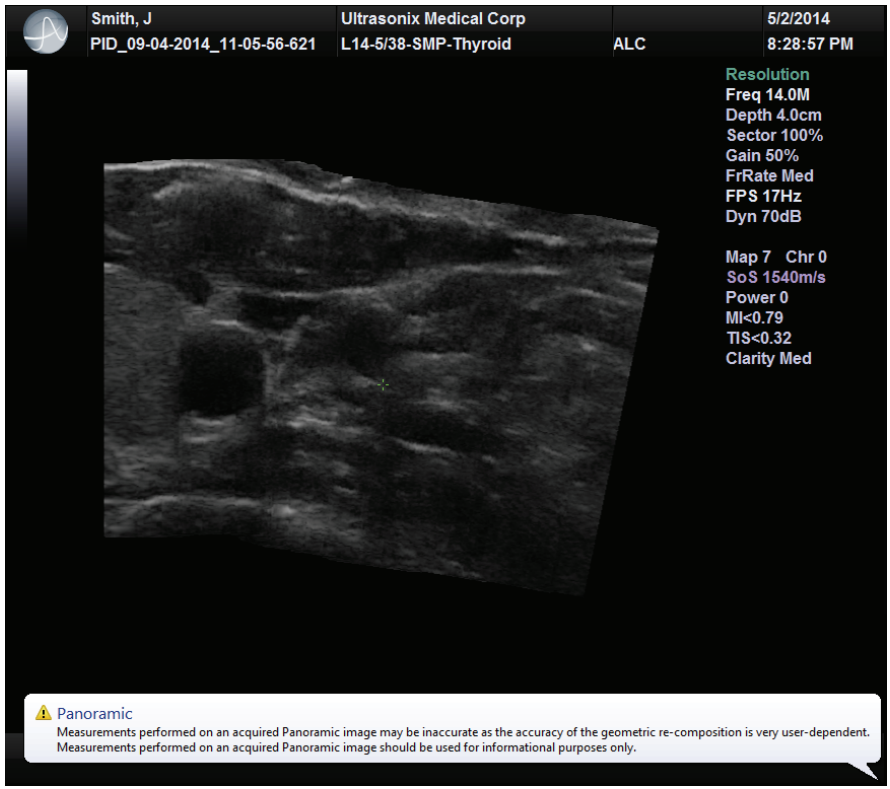
Warning: *Some* ***SonixGPS*** *components may interfere with nearby electrical systems or anyone relying on life-sustaining equipment, such as a pacemaker or defibrillator.*

5.7 PANORAMIC IMAGING

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 5-15: Panoramic Image



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

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

B	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 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 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. Press ↖ to set it.

   Note: *The edge of the* ***Pano*** *ROI box will change to dotted line.*
5. 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.*
6. To begin acquiring a ***Panoramic*** image, position the left side of the anatomical area of interest within the ***Pano*** ROI box.

7. Press the console button or tap ***Pano Start/Stop*** on the touch screen to begin the ***Panoramic*** acquisition.
8. 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.
9. When a suitable ***Pano*** image is acquired, press or or tap ***Pano Start/Stop*** on the touch screen.
10. The generated ***Panoramic*** image appears in the image field.
11. Tap ***Pano Exit*** to exit ***Panoramic*** imaging mode and return to ***2D*** imaging.

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

5.8 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.

5.9 2D CINE OPTIONS

The ***Cine*** option is programmed to record at the displayed, ***B-Mode Frame Rate*** unless the ***B-Mode Frame Rate*** is set to less than 30 Hz. When this occurs, the ***Cine*** recording speed will default to 30 Hz.

Note: *This does not apply to spectrum modes such* ***M-Mode*** *and* ***PW****. When in spectrum modes, the* ***Cine*** *recording speed will default to 30 Hz.*

5.9.1 2D Cine Frame Indicators

Figure 5-16: 2D Cine Frame Indicators

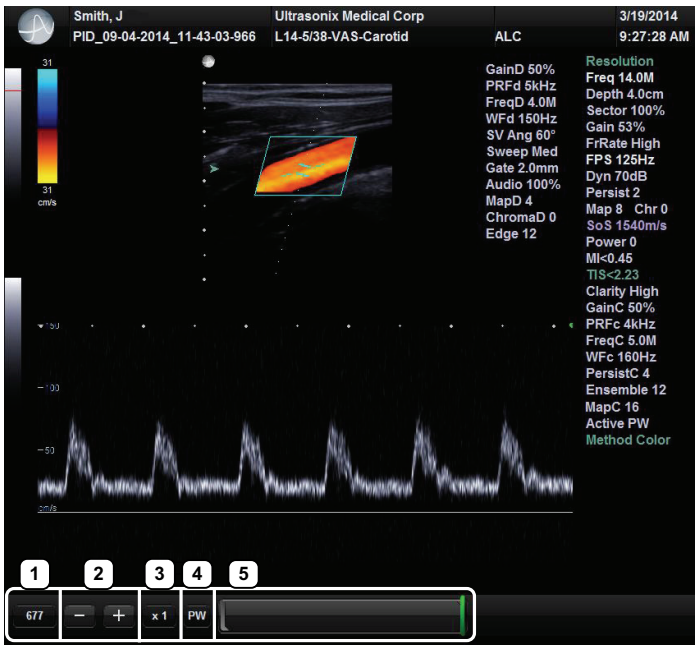


Table 5-13: 2D Cine Frame Indicators

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*** (⅛, ¼, ½, Full (1) or Double (2)).
4	***Active*** Imaging ***Cine***	Marks the ***Active*** imaging ***Cine***. Refer to **Table 5-6** for more details.
5	***Cine Loop*** Slider	Allows the ***Operator*** to select the: • 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). 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:*** *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).*

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

5.9.2 2D Cine Options

For details on ***4D Cine*** options, refer to **5.11.1.1 4D Cine Options**.

Figure 5-17: 2D Cine Touch Screen Options

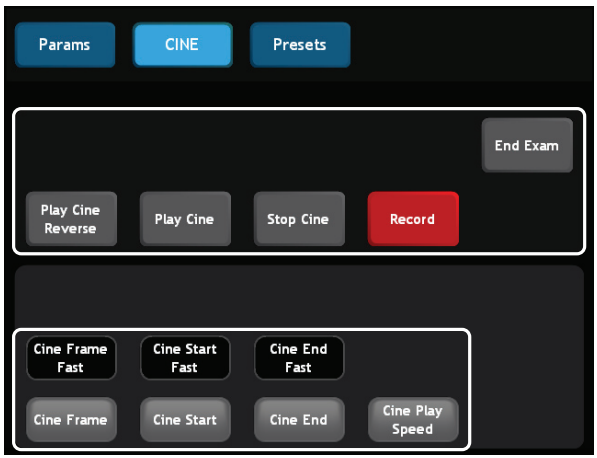


Table 5-14: Cine Mode Action Buttons (tap to activate)

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)

Cine Frame Fast ***Cine Frame***	Tap to activate, then turn the associated dial to trigger the action: • ***Cine Frame Fast*** selects the currently displayed frame and moves 10 frames at a time. • ***Cine Frame*** selects the currently displayed frame and moves one frame at a time.
Cine Start Fast ***Cine Start*** ***Cine End Fast*** ***Cine End***	When creating a ***Cine clip*** from a ***Cine loop***: • ***Cine Start/Cine End*** selects the start/end frame of the clip, moving one frame at a time. • ***Cine Start Fast/Cine End Fast*** selects the start/end frame of the clip, moving 10 frames at a time.
Cine Play Speed	Tap to activate, then turn the associated dial to select the ***Cine Play Speed*** (⅛, ¼, ½, 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.*

5.9.3 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* **5.11 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***).

5.9.4 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).*

5.9.5 Stored Thumbnail Review

The ***Stored Thumbnail Review*** is displayed on the left side 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.

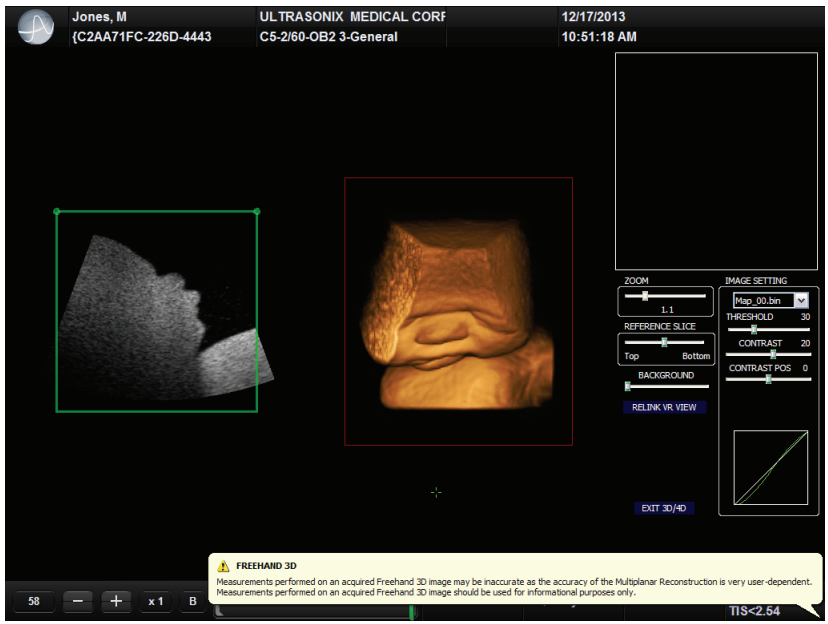
   Note: *Once the trackball arrow is over a thumbnail, a red* ***X*** *will be presented in the top right hand corner. Select the* ***X*** *and press ➤ to delete the thumbnail.*

2. Press ➤ again to return to imaging mode.

5.10 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.

Figure 5-18: Freehand 3D



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 5-19: Freehand 3D Configuration Options

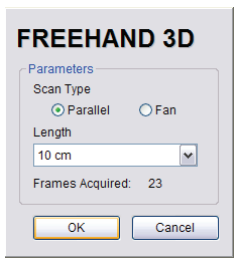


Table 5-16: Freehand 3D Imaging Console Controls

3D / 4D	Press to activate ***Freehand 3D***.

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.

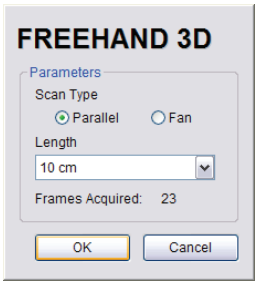
To Acquire a Freehand 3D Image:

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 3D/4D 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* **5.11.1** *for details).*

11. Press 3D/4D to exit ***Freehand 3D***.

5.11 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****.*

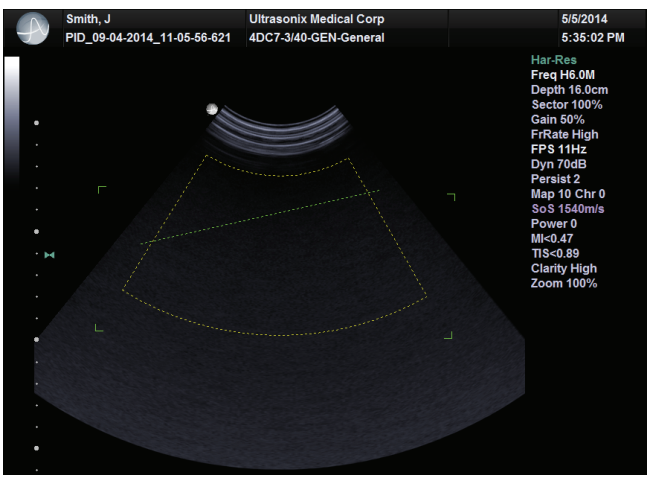
Figure 5-20: 3D/4D Touch Screen Buttons

Note: *A* ***3D/4D*** *transducer must be selected in order to access* ***Standard or Advanced 3D/4D*** *imaging (i.e., the* 3D / 4D *button will not be active if a* ***3D/4D*** *transducer has not been selected).*

Table 5-18: 3D/4D Touch Screen Buttons

1	Mode Action Buttons	Refer to **Appendix E** for details on the specific buttons, including ***FOV***, ***Quality*** and ***Cut Line***.
2	Imaging Parameter buttons	

Figure 5-21: 3D/4D Imaging Screen with Cut Line Toggled On



To Enter Standard or Advanced 3D/4D Imaging:

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 **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.
6. Press the console 3D / 4D button.
7. Set the ***FOV***, ***Quality*** and ***Cut Line*** as required.
8. Tap the relevant touch screen mode action button: ***3D*** or ***4D***.
9. Use the trackball and console button to position and adjust the size of the ROI.
10. Press the console button to begin imaging.

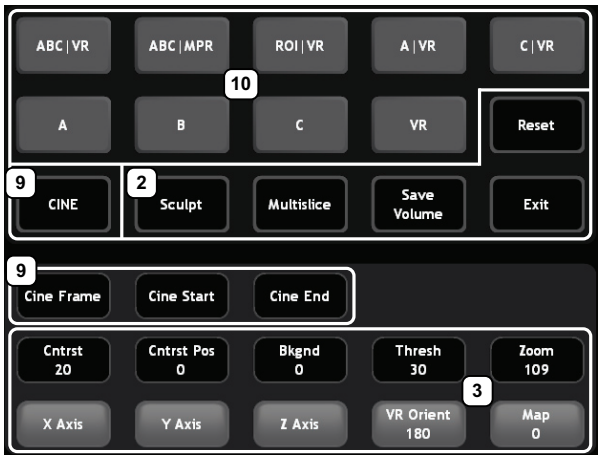
5.11.1 3D/4D Touch Screen Layout

3D imaging options are identical to ***4D*** options *once the **4D** image has been frozen*. For details on ***3D/4D*** image acquisition, refer to **5.11.4**.

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

*These options are only available on the SonixOP Q+ once a **Freehand 3D** image has been acquired. For details on **Freehand 3D** image acquisition, refer to **5.10**.*

Figure 5-22: 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 5-19: 3D (or Frozen 4D) Touch Screen Controls (tap to activate, dial/press to adjust)

2	***Mode Action Buttons***		Enable the application of certain actions to an image (e.g., ***Sculpt…***). ***Note:*** *Only* ***Reset*** *is available during the acquisition of a* ***4D*** *image.* *As an alternative to tapping the touch screen* ***Measure*** *button, press the console*  *button.* ***Multislice*** *and* ***Save Volume*** *are not available with* ***Freehand 3D*** *or* ***Standard 3D****.*
3	***Imaging Parameter Buttons***		Enable adjustments to be made to the available imaging parameters. Turn/press the relevant touch screen dial to adjust the active imaging parameter. 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. ***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****).* *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).*
9	***Cine***		Tap to access the ***Cine*** touch screen. ***Note: Cine*** *options are only available when a* ***4D*** *image has been frozen.* ***Cine*** *options are not available with* ***Freehand 3D*** *or* ***Standard 3D****.*
9	***Cine Frame*** ***Cine Start*** ***Cine End***		Enable ***Cine*** manipulation. These buttons are also available on the ***Cine*** touch screen (**Table 5-20**). ***Note:*** *Refer to* **5.11.1.1** *for more details on* ***4D Cine****.*
10	***Display Mode Options***	***ABC|VR*** ***ABC|MPR*** ***ROI|VR*** ***A|VR*** ***C|VR*** ***A*** ***B*** ***C*** ***VR***	Touch screen layout defaults to ***Display Mode*** options. Refer to **Table 5-22** for details on these options. To access ***Sculpt…*** touch screen layouts on the SonixOP Q+ and ***Sculpt…*** and ***Multislice*** touch screen layouts on the SonixMDP Q+ or SonixSP Q+, refer to item ***2***, above. ***Note: Display Mode*** *options are also available from the LCD display. For details, refer to* **5.11.2.1***.*

5.11.1.1 4D Cine Options

The ***Cine*** button (Table 5-22) is only available if a ***4D*** image has been frozen.

Figure 5-23: 4D Cine Options

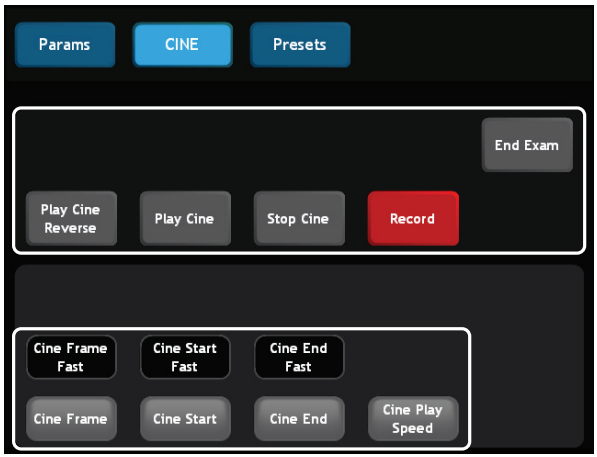


Table 5-20: 4D Cine Options (tap to activate)

Save Volume	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. Images that have been saved using the ***Save Volume*** option will be marked with a ***3D*** box icon.  ***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 side of the exam screen and configure the **3D** image as desired.* *This option is not available for **Freehand 3D**.*
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.
Cine Frame ***Cine Start*** ***Cine End***	These buttons can also be used in conjunction with their associated touch screen dial. Use ***Cine Start*** and ***Cine End*** to mark the beginning and end of a ***Cine clip***. ***Note:*** *To adjust a **Cine** action button that is not currently active, tap the button to activate it then turn the associated dial to make the required adjustment.*

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 5-20** are available on the touch screen.

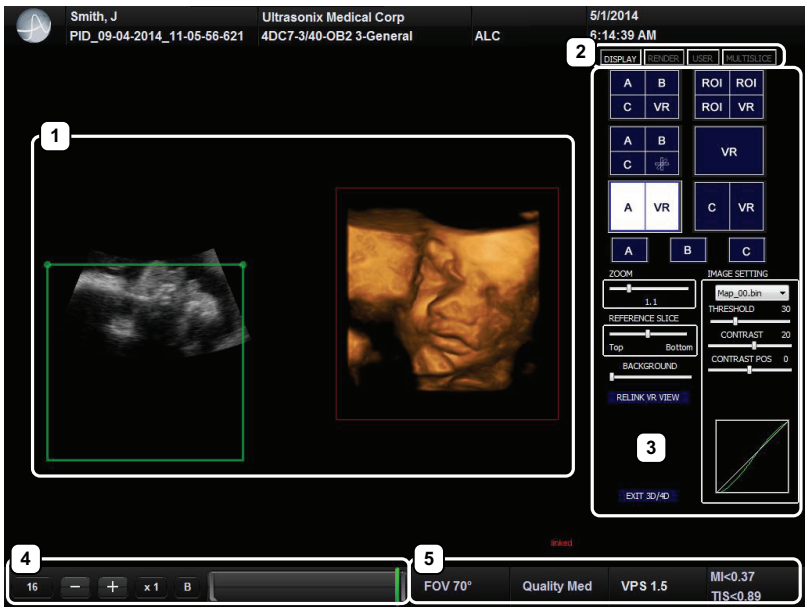
5.11.2 3D/4D LCD Display Layout

The LCD display is divided into two 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 5-24: 3D/4D Display Mode LCD Display



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

Table 5-21: 3D/4D LCD Display Options

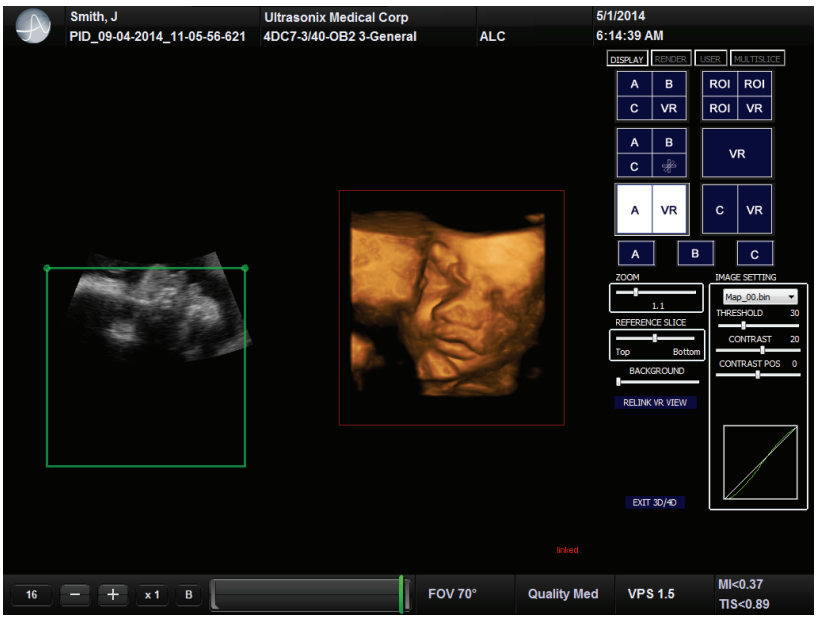
1	***Imaging***	Displays the selected image format.
2	***Mode Selection Buttons***	Allow the ***Operator*** to change between the various ***3D/4D*** modes: ***Display***, ***Render***, ***User*** and ***Multislice***. ***Note: Display*** *and* ***Multislice*** *options are also available from the touch screen.*
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***	Available only after a ***4D*** image has been frozen. Refer to **5.11.4.2** for details.
5	***Additional LCD Display Details***	Refer to **5.11.3** for details.

5.11.2.1 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 5-25: 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 5-26: 3D/4D Display Mode Touch Screen

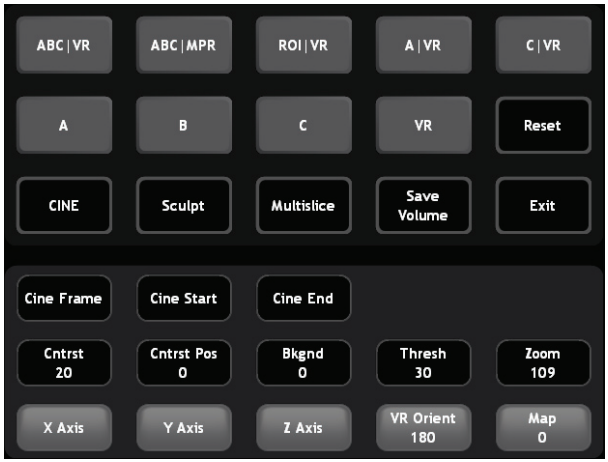


Table 5-22: 3D/4D Display Mode Options (Touch Screen and/or LCD Display)

ABC|VR	Displays ***A***, ***B*** (***Transverse***) and ***C*** (***Coronal***) ***Plane*** images with a ***3D/4D VR*** (***Volume Rendering***) image and allows the repositioning of both the ***A***, ***B*** and ***C Plane*** ROI boxes and the ***MPR Plane*** intersection point. ***Operators*** also have the ability to edit the position of the top line of the ROI box (spline editing). ***Note:*** *Refer to the following sections for more details:* **5.11.6 Spline Editing of 3D/4D Images** **5.11.7 Repositioning the ROI Box** **5.11.8 Repositioning the MPR Plane Intersection Point**.
ABC|MPR	Displays ***A***, ***B*** and ***C Plane*** images with a ***3D/4D MPR*** (***Multiplanar Reconstruction***) image and allows the ROI (on the ***A***, ***B*** and ***C Planes***) to be repositioned. ***Operators*** also have the ability to edit the position of the top line of the ROI box (spline editing). ***Note:*** *On the LCD display,* ***MPR*** *is replaced with the symbol* . *Refer to the following sections for more details:* **5.11.6 Spline Editing of 3D/4D Images** **5.11.7 Repositioning the ROI Box** **5.11.8 Repositioning the MPR Plane Intersection Point**.
A	Displays the ***A Plane*** image and allows the ROI to be repositioned. ***Operators*** also have the ability to edit the position of the top line of the ROI box (spline editing). ***Note:*** *Refer to the following sections for more details:* **5.11.6 Spline Editing of 3D/4D Images** **5.11.7 Repositioning the ROI Box**.

ROI|VR	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. ***Note:*** *Refer to the following sections for more details:* **5.11.6 Spline Editing of 3D/4D Images** **5.11.7 Repositioning the ROI Box**.
B	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). ***Note:*** *Refer to the following sections for more details:* **5.11.6 Spline Editing of 3D/4D Images** **5.11.7 Repositioning the ROI Box**.
A|VR	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). ***Note:*** *Refer to the following sections for more details:* **5.11.6 Spline Editing of 3D/4D Images** **5.11.7 Repositioning the ROI Box**.
C	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). ***Note:*** *Refer to the following sections for more details:* **5.11.6 Spline Editing of 3D/4D Images** **5.11.7 Repositioning the ROI Box**.
C|VR	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). ***Note:*** *Refer to the following sections for more details:* **5.11.6 Spline Editing of 3D/4D Images** **5.11.7 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 5-23: 3D/4D Touch Screen Mode Action Buttons (tap to activate)

Save Volume	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. Images that have been saved using the ***Save Volume*** option will be marked with a ***3D*** box icon.  ***Note:*** *To access the* ***3D*** *version of the image tap the touch screen* ***Exam Mgmt*** *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 and configure the* ***3D*** *image as desired.* *This option is not available for* ***Freehand 3D****.*
Reset	Returns many settings to their defaults, including settings on the various LCD display menus, imaging parameters, etc.
Cine	Tap to access ***4D Cine*** options.
Sculpt…	Tap to access ***Sculpt*** options. ***Note:*** *Refer to* **5.11.2.5** *for more details on* ***Sculpt…****.*
Multislice	Tap to access ***Multislice*** options from the touch screen. ***Note:*** *Refer to* **5.11.2.4** *for more details on* ***Multislice****.* ***Multislice*** *is not available with* ***Freehand 3D*** *or* ***Standard 3D/4D****.*
Exit	Tap to exit ***3D/4D*** imaging.

Table 5-24: 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. When in ***Multislice*** (5.11.2.4), the ***Reference Slice*** will be highlighted within a green box.
TS	***X-axis***	Rotates the selected image about the ***X-axis***.
TS	***Y-axis***	Rotates the selected image about the ***Y-axi***s.
TS	***Z-axis***	Rotates the selected image about the ***Z-axis***.
TS	***VR Orient***	Sets the ***Orientation*** of the ***VR***.

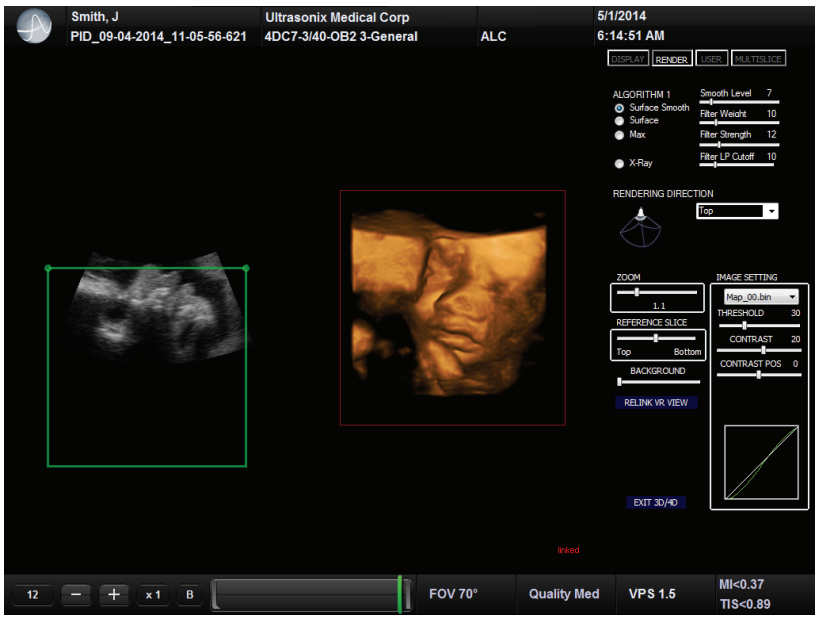
Note: *Refer to* 5.11.1.1 *for details on* ***Cine*** *controls.*

5.11.2.2 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 5-25** *for details.*

Figure 5-27: 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 5-25: 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 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. ***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 **5.11.9** 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.

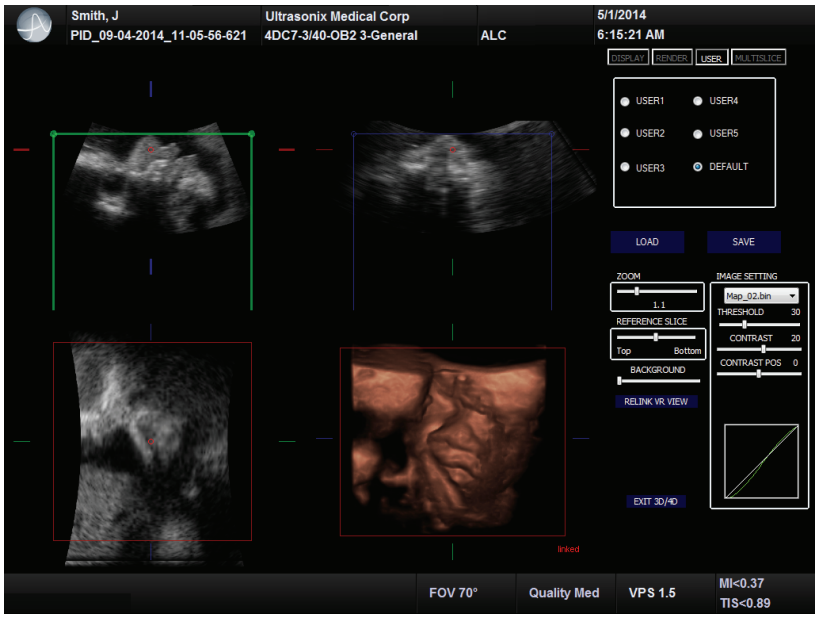
5.11.2.3 3D/4D User Mode (LCD Display Options Only)

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 5-28: 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 5-26: 3D/4D User Mode LCD Display Options

User1 ***User2*** ***User3*** ***User4*** ***User5***		The five available ***3D/4D Presets*** can be reconfigured but they cannot be renamed.
Default		***Default Preset*** for all images after initial acquisition. If desired, users can convert (save) the settings of one of the five ***User Presets*** into the ***Default Preset*** (5.11.9.1).
Load		Allows users to ***Load*** a different ***Preset*** as required.
Save		After making changes to one of the three 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. ***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 5.11.9 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.

5.11.2.4 Advanced 3D/4D Multislice Mode (LCD Display and Touch Screen Options)

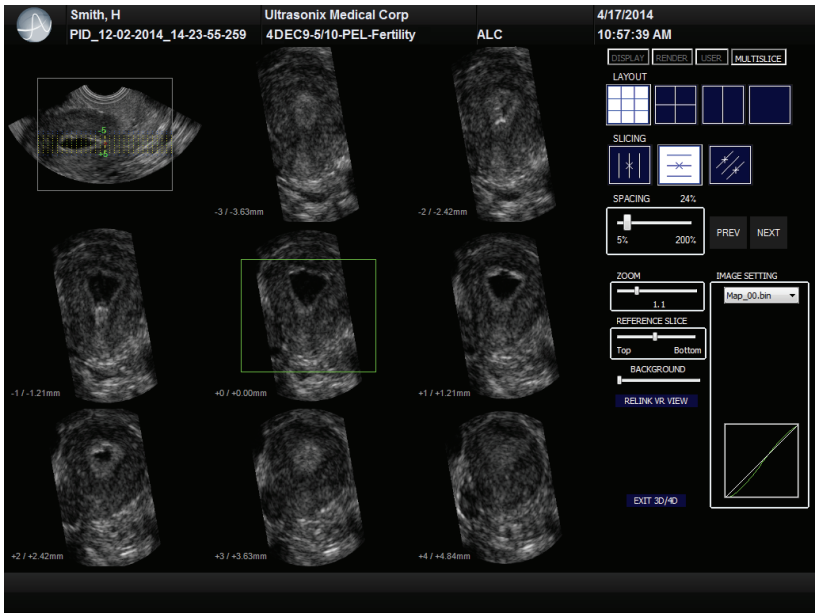
Multislice Mode enables users to select detailed views of individual slices of the ***A***, ***B*** or ***C Plane***. These slices can be positioned on the ***Horizontal***, ***Vertical*** or at a user-determined ***Angle***.

Note: *If the* ***Volume Rendering*** *is active when* ***Multislice*** *is entered, the image will default to the* ***C Plane****.*

Default entry settings show the ***Display Mode*** active plane as segment **0** (Table 5-31) with the ***Slice*** diagram focused on the centre of the image.

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

Figure 5-29: 3D/4D Multislice Mode LCD Display Options



Note: *On the LCD display, use the trackball, cursor and button to change* ***Multislice 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 5-30: Advanced 3D/4D Multislice Mode Touch Screen Options

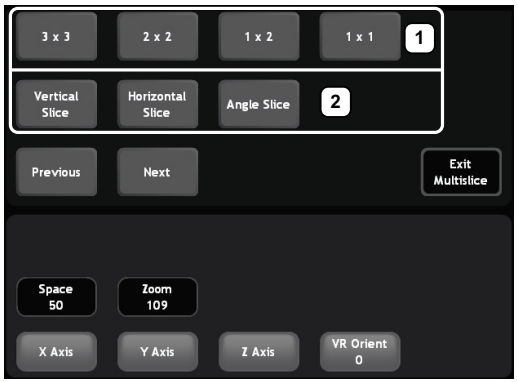


Table 5-27: Advanced 3D/4D Multislice Mode Touch Screen Options

1	***Layout***	**2**	***Slicing***

Figure 5-31: Advanced 3D/4D Multislice Layout Segments (3x3, 2x2 and 1x2)

Slice Diagram	**-3**/xx mm	**-2**/xx mm
-1/xx mm	**-0**/xx mm	**1**/xx mm
2/xx mm	**3**/xx mm	**4**/xx mm

Slice Diagram	**0**/xx mm
1/xx mm	**2**/xx mm

Slice Diagram	**0**/xx mm

Note: *Where **xx mm** refers to the number of millimeters the segment is from the center **Slice** of the image. The center **Slice** will always be labeled **0/0.00 mm**.*

The measurement will always be to two decimal places.

Table 5-28: Advanced 3D/4D Multislice Mode Options

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.*

TS/LCD	***Layout***	***Note:*** *Refer to* **Table 5-31** *to determine the meaning of the* ***Layout*** *segments and the order in which they are presented.*	
		3 by 3	Displays ***Multislice Mode*** images in a ***3 x 3 Layout***. The center ***Slice*** (segment **0**) is both the active image and the plane that was last selected in ***Display Mode***. The top left segment represents the entire image with the ***Slice*** data overlaid. The remaining segments show the actual slice data, including position from the center (-3 to 4) and the distance from the distance from the center in millimeters (mm). ***Note:*** *This is the default setting.*
		2 by 2	Displays ***Multislice Mode*** images in a ***2 x 2 Layout***, with the top, right ***Slice*** as the active image.
		1 x 2 (Side by Side)	Displays ***Multislice Mode*** images in a ***1 x 2 Layout***, with the right hand ***Slice*** as the active image.
		1 x 1 (single)	Displays the ***Multislice Mode*** image as a ***1 x 1 image***.
TS/LCD	***Slicing***	***Note:*** *Use the trackball to move the cursor into the* ***Slice*** *Diagram and press to move the center marker.*	
		Vertical Slice	Slices the image vertically.
		Horizontal Slice	Slices the image horizontally.
		Angle Slice	Allows the ***Operator*** to select the ***Slicing Angle*** to be applied to the image. ***Note:*** *To set the* ***Angle****, use the trackball to move the cursor into the* ***Slice*** *Diagram and press to set one end of the* ***Angle*** *caliper. Move the cursor to a second position and press again.*
TS/LCD	***Previous***		Moves the active image to the ***Previous Slice*** in the chosen ***Layout***.
TS/LCD	***Next***		Moves the active image to the ***Next Slice*** in the chosen ***Layout***.
TS	***Exit Multislice***		Exits ***Multislice***.
TS/LCD	***Space***		Sets the ***Spacing*** between slices. The range for this option is 5% to 200% in 10% increments. ***Note:*** *The actual measurement (in mm) will be displayed under each slice (***Table 5-29***).*
TS/LCD	***Zoom***		Adjusts the ***Zoom*** setting. The range is 0.5 (50%) to 3.0 (300%) in 0.1 (10%) increments.
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: Multislice *is not available in* ***Freehand 3D*** *or* ***Standard 3D/4D***.

5.11.2.5 3D/4D Sculpt (Touch Screen Options Only)

Sculpt is used to edit image contents after acquisition.

Figure 5-32: 3D/4D Sculpt Touch Screen Controls

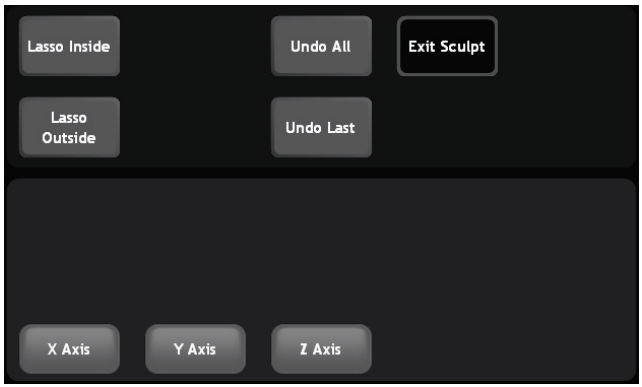


Table 5-29: 3D/4D Sculpt Touch Screen Controls (tap to activate, dial to adjust)

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.*

5.11.3 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 5-33: Additional 3D/4D LCD Display Details

Table 5-30: 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 10º to 70º (in 5º increments). Access this setting after pressing the console ***3D/4D*** button (**Figure 5-20**) and before entering ***3D*** or ***4D*** imaging. ***Note: FOV*** *is used in conjunction with* ***Quality****, to auto-calculate* ***Volumes per Second*** *(****VPS****).*
Quality	Adjusts image ***Quality***: ***Low***, ***Medium*** and ***High***. Access this setting after pressing the console ***3D/4D*** button (**Figure 5-20**) and before entering ***3D*** or ***4D*** imaging. ***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) ***TIS (Thermal Index)***	The ***MI*** and TIS are displayed for informational purposes only.

5.11.4 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 (**5.11.5**) using the settings discussed in sections **5.11.2.1** to **5.11.2.5**.

Figure 5-34: Acquisition Diagram

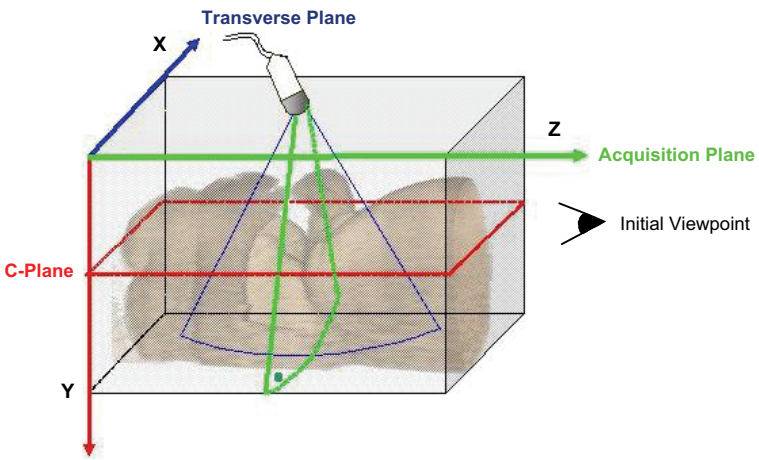


Figure 5-33 demonstrates the various planes and axis of an acquired ***3D*** image in its original state. Remember that once an image has been edited or optimized (**5.11.5 Optimization of Acquired Images**), the positions of the planes shown here will have been altered as well.

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 5-35: Image Quadrants

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

5.11.4.1 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 **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 3D / 4D 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.

5.11.4.2 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 **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 3D / 4D 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***.

5.11.5 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 **5.11.2.1** to **5.11.2.5**.

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):**).

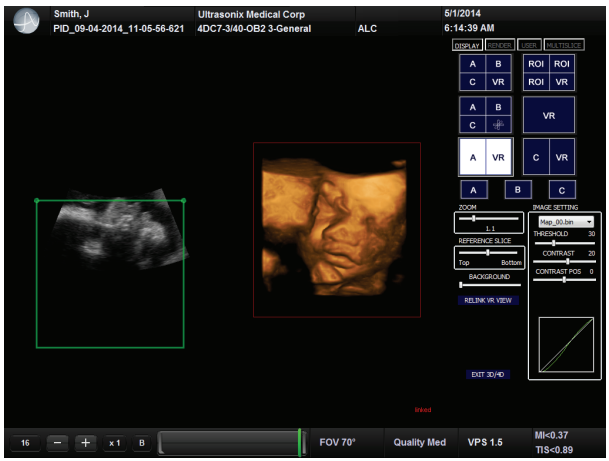
Note: *Once 24 hours have passed, the images can be viewed, but not edited.*

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 5-23** *for more details on* ***Save Volume****.*

---

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

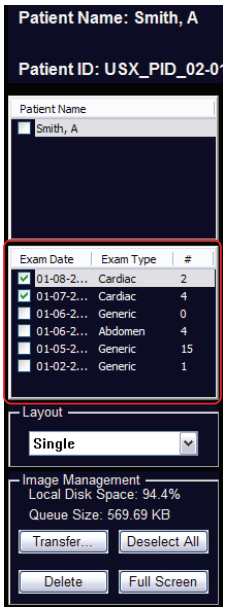
To Select a Saved 3D/4D Volume for Optimization/Editing (via Exam Review):

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 5-23 *for more details on* ***Save Volume****.*

---

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

5.11.6 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 5-36: Single Point Spline Editing

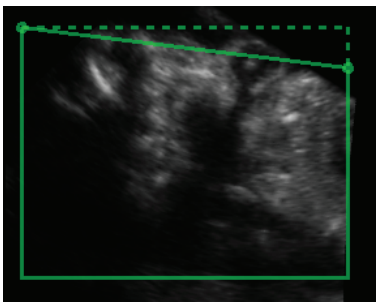
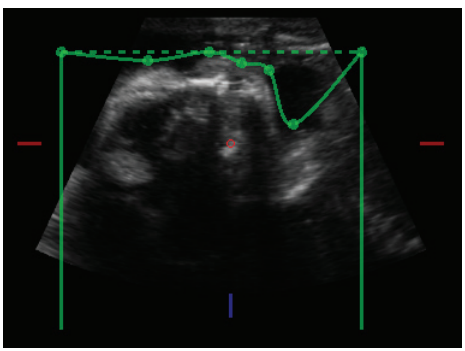
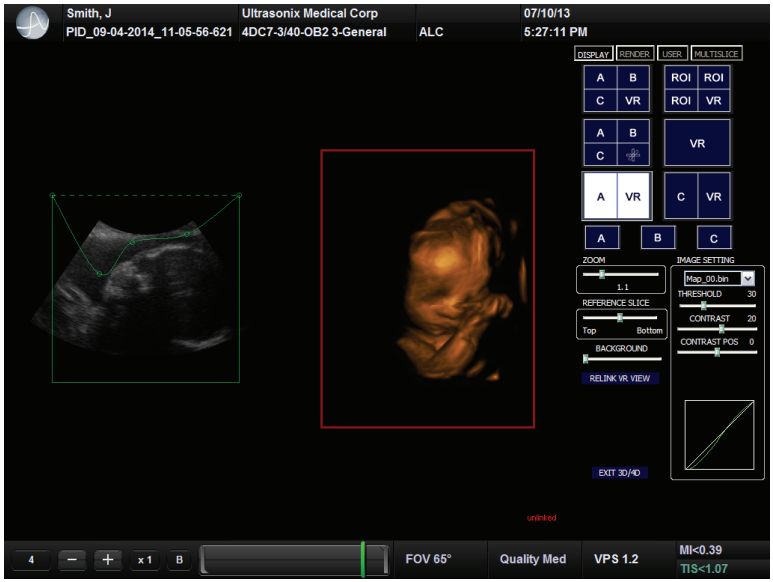


Figure 5-37: Multi-Point Spline Editing



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 5-38: 3D or Frozen 4D Image with A Plane Spline Editing



Note: *The **A Plane** ROI box has been moved. Refer to* **5.11.7** *for details on repositioning the ROI box from the various **Display Modes**.*

Table 5-31: 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 (**5.11.7**).

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.

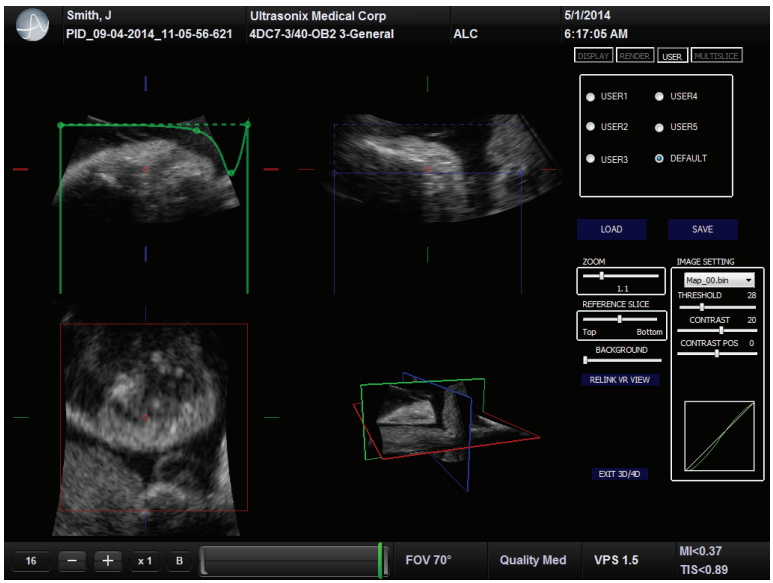
   Note: *As the touch screen **Reset** button applies to any changes made, on the:*

   - *SonixOP Q+–be sure to use the relevant **Custom Key** option (1, 2 and) to print/save relevant images.*
   - *SonixMDP Q+ or SonixSP Q+–be sure to use **Save Volume** or the relevant **Custom Key** option (1, 2 and) to print/save relevant images.*

5.11.7 Repositioning the ROI Box

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

Figure 5-39: 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.

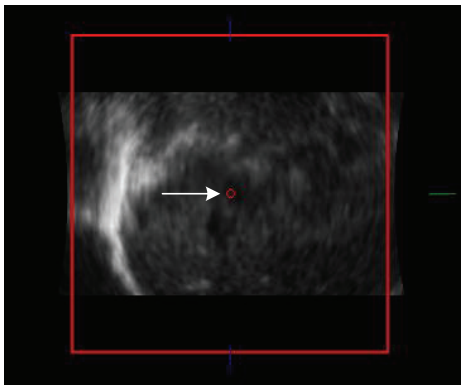
   Note: *The ROI repositioning cursor has four sides, each of which terminates in an arrow.*
3. Move the cursor to move the ROI box to the desired position.
4. Press again to anchor the ROI box in place.
5. Repeat **step 2** to **step 4** as many times as necessary.

   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.*

5.11.8 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 5-40: 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.*

5.11.9 3D/4D Presets

Standard and ***Advanced 3D/4D*** are delivered with five 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 ***Presets*** (***User1*** to ***User5***) are available through ***User Mode*** (5.11.2.3) 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* 5.11.2.2*.*

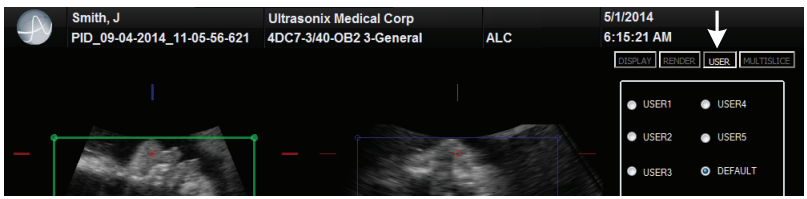
Refer to **5.11.2.3 3D/4D User Mode (LCD Display Options Only)***for more details on* ***3D4D Presets****.*

5.11.9.1 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 (5.11.9.2).

To Configure the Default User Preset on Entry:

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



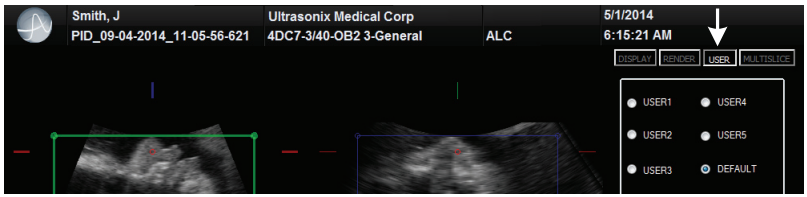
3. Select the radio button for the desired ***Default User Preset*** to be defaulted to upon entry.
4. Select ***Load***.
5. Select ***Default***.
6. Select ***Save***.

5.11.9.2 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 **5.11.2.1** and **5.11.2.5** 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: *Ultrasonix does not recommend editing the* ***Preset*** *parameters for* ***Users 1****,* ***2*** *and* ***3****.*

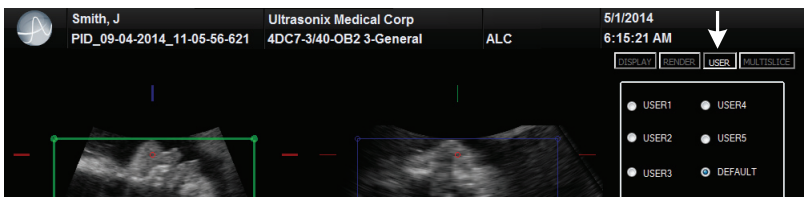
5. To save the parameters of the new ***Preset***, select ***Save***.

5.11.9.3 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.



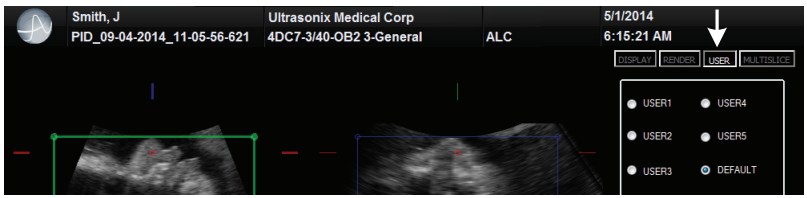
3. Select the radio button for the desired ***User Preset***.
4. Select ***Load*** to activate the selected ***Preset***.

5.11.9.4 Resetting Factory Defaults

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

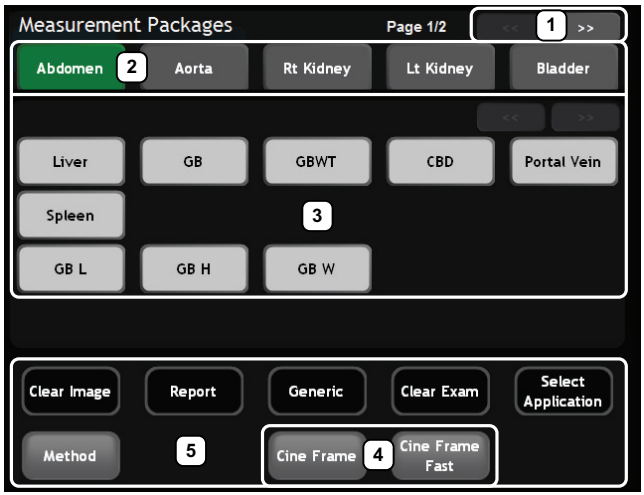
The system provides a wide range of ***Application***-specific measurement/calculation packages.

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 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:*** *If the page selector buttons are active, there are more* ***Measurement Packages*** *available than what is visible on the current touch screen.*
3	Measurement Options	The specific measurement options available for the active ***Measurement Package*** tab.
4	***Cine*** Controls	Standard ***Cine*** control buttons. Refer to **5.9** 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:*** *Pressing does not delete the measurements from the* ***Report****.*
	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:*** *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.*
	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 an information 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*** (6.10). 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.

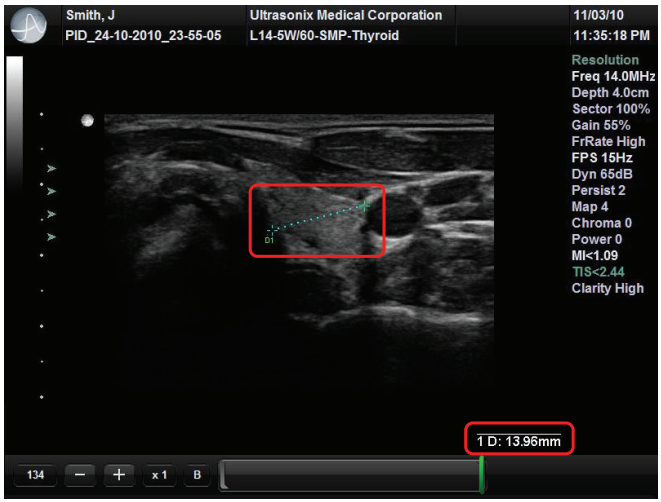
Note: Generic measurements are not written to the ***Worksheet/Report***.

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 ***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. Press to set the first caliper and activate the second caliper.
5. Use the trackball to position the second caliper.
6. Press to set the second caliper position and activate the ***Ellipse*** sides.
7. 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.*

8. Press to set the final caliper position.
9. 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 linear measurements have been completed. The three measurement values with auto-calculated ***Volume*** results are presented on the bottom right of the LCD display.

   Notes:

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

   *Only the three 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 methods of performing the outer and inner ***Area Reduction*** measurements—***Ellipse*** and ***Trace***—result in a total of three 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 SonixSP Q+ or SonixOP Q+.*

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 SonixSP Q+ or SonixOP Q+.*

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 to end and set the ***Trace***.
8. 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.

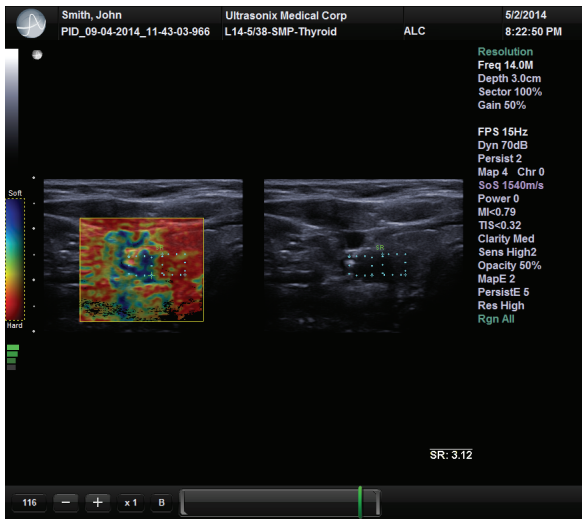
   Note: *Pressing will toggle control between the calipers enabling either or both to be repositioned.*

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 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****.*

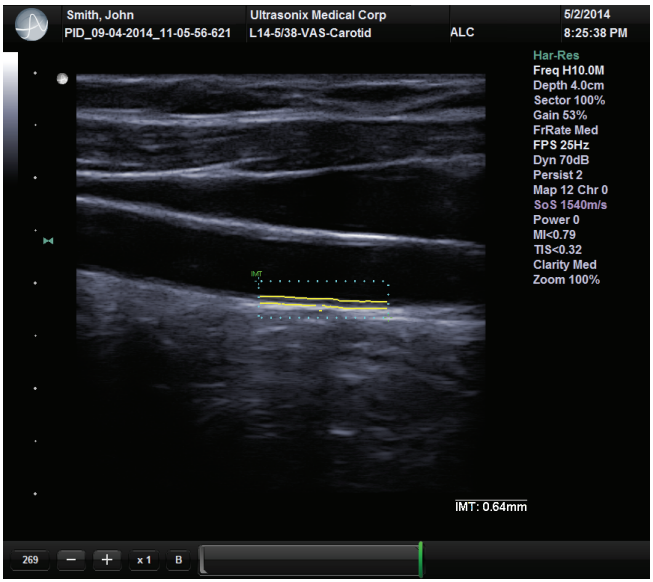
1. With a frozen ***Elastography*** image, press the console button.
2. Tap ***Generic*** then ***Strain Ratio*** (under the ***General*** tab).
3. Use the trackball to position the first caliper of the first ***Strain Ratio*** box.
4. Press to set the caliper position and activate the second caliper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

6.5 CAROTID INTIMA-MEDIA THICKNESS (IMT) MEASUREMENT

Using a high-frequency, linear array transducer, the automatic ***IMT*** measurement provides a quick and complete ***IMT*** evaluation. Both the near and far vessel walls of the carotid artery can be measured. As with other measurements, precision is related to minimal ***B-Mode*** imaging pixel size. Using ***HD Zoom***, measurement accuracy can be as close as 30 microns (0.03 mm). The resulting measurement is an average of the relevant area selected in the ROI box.

Note: IMT *is a licensed feature. Consult your local Ultrasonix Authorized Distributor or Sales Representative for details.*

Figure 6-4: IMT Measurement



To Perform a Carotid IMT Measurement:

1. Ensure an appropriate high-frequency, linear array transducer is connected to the system (e.g., L9-4/38).
2. Press the console button.
3. Using the touch screen, select a linear ***Transducer*** (e.g., L9-4/38).
4. Tap the ***Vascular Application*** and ***Carotid Imaging Preset***.
5. The system will move to live imaging.
6. With an acceptable image onscreen, tap ***HD Zoom*** and use the trackball to move the ***HD Zoom*** ROI box to an appropriate area of the image.
7. Press to lock the upper left corner of ***HD Zoom*** ROI box.
8. Use the trackball to adjust both the width and height of ***HD Zoom*** ROI box.
9. Press to lock the ***HD Zoom*** ROI box into its final position.

10. Press to zoom the image.
11. With an acceptable image onscreen, press to access the ***Measurement Packages*** touch screen and freeze the image.
12. Tap the ***Intima*** tab.
13. Tap ***IMT***.
14. Tap ***Method*** and turn the associated dial to select "***MT set to 'Near'*** or ***IMT set to 'Far'***, as required.

    Note: *The two* ***IMT Methods*** *are defined as:*

    - ***Far****: vessel wall furthest from the transducer*
    - ***Near****: vessel wall closest to the transducer.*

15. Use the trackball to position the first caliper at the start position of the ***IMT*** measurement ROI.
16. Press to set the first caliper.
17. Use the trackball to position the second caliper at the end position of the ***IMT*** measurement ROI.
18. Press to set the second caliper and calculate the ***IMT*** measurement.
19. The resulting ***IMT*** measurement is presented on the bottom right of the LCD display.

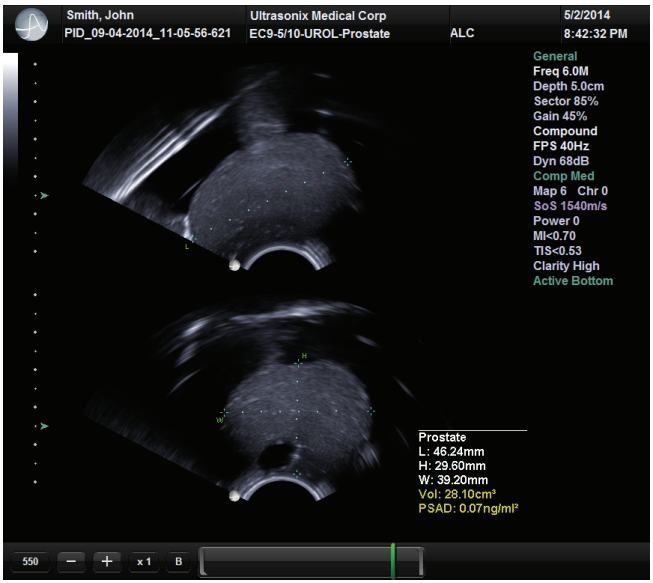
6.6 PSA/PSAD MEASUREMENT/CALCULATION

The ***Prostate-Specific Antigen*** (***PSA***) test result is used in combination with a ***Prostate Volume*** measurement to calculate ***PSA Density*** (***PSAD***).

Note: PSA *test result data must be entered in the* ***Exam Management*** *page (4.1.2). However, once the system rolls over to a new date, the data in the* ***PSA*** *field is removed.*

Each follow-up exam requires the entry of a current ***PSA*** *test result before additional* ***PSAD*** *calculations are made.*

Figure 6-5: PSAD Measurement/Calculation



6.6.1 PSAD Calculation Disclaimer

As ***PSAD*** calculations have not been conclusively linked to accurate clinical diagnoses/ outcomes, Ultrasonix does not recommend relying on ***PSAD*** calculations.

To Perform a PSAD Calculation:

1. Press the console button.
2. Create/select the patient (i.e., ensure the ***Patient Information*** data fields have been completed (4.1.1)).
3. Select the ***Urology Application*** from the drop-down menu.
4. Complete ***Height*** and ***Weight*** as required.
5. Enter the ***PSA*** test result data.

   Note: *The* ***PSA*** *data must be in the form* ***ng/ml****, or* ***nanograms*** *per* ***milliliters****.*

6. Complete the ***Exam Management*** page as required, then select ***OK***.
7. Press the console button.
8. Tap the desired ***EC9-5/10 Transducer*** and the system will present the ***Applications/ Imaging Presets*** touch screen.
9. Select the ***Urology Application*** and the ***Prostate Preset***.
10. With a frozen ***2D*** image, press the console button.
11. Tap ***Prostate*** to access the (***L*** (***Length***), ***H*** (***Height***) and ***W*** (***Width***)) options.
12. Tap ***L*** and use the track ball to position the first caliper.
13. Press to set the caliper position and activate the second caliper.
14. Use the trackball to position the second caliper.
15. Press to set the second caliper position and complete the measurement.
16. The system will automatically move to the next measurement in the ***Volume*** calculation.
17. Use the track ball to position the first caliper.
18. Repeat **step 13** through **step 15** to complete the ***Height*** measurement.
19. The system will automatically move to the last measurement in the ***Volume*** calculation.
20. Use the track ball to position the first caliper.
21. Repeat **step 13** through **step 15** to complete the ***Width*** measurement.
22. The three measurement values with auto-calculated ***Volume*** and ***PSAD*** results will be presented on the bottom right of the LCD display.

6.7 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.*

6.8 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 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 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 6-6: OB-Specific Measurement

6.9 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=(average of all diameters)3 *π/6**. For example:

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

6.10 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****.*

6.10.1 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* ***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:*** *This option is available only in* ***Cardiac****.*
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:*** *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 (*).*
Biometrics	Tap to move to the ***Biometrics*** page of the ***Report***. ***Note:*** *This option is available only for* ***OB Applications****.*
Anatomy	Tap to move to the ***Anatomy*** page of the ***Report***. ***Note:*** *This option is available only for* ***OB Applications****.*
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:*** *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****).*
HR	Turn the ***HR*** button dial to move to the desired ***HR*** for the ***Cardiac Report***. Refer to **6.10.4 Cardiac Reports** for details on the ***HR*** options. (Not available on SonixSP Q+ or SonixOP Q+.)

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.*

6.10.2 Enhanced Report Printing

Enhanced Report Printing offers a superior printed format.

6.10.2.1 Printed Report Format

It is not possible to edit the contents of the printed report format.

Figure 6-7: Report Viewer

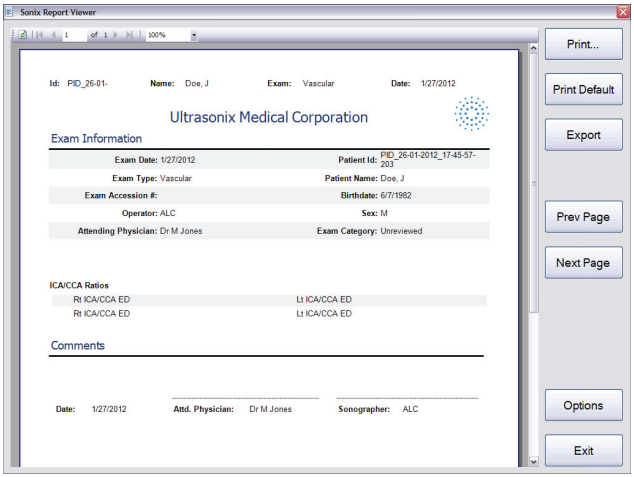


Table 6-7: Report Viewer

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).
Export	Tap to ***Export*** a PDF of the report to the root of an external media device such as a USB key. The file will be named with the ***Date***, followed by the ***Application*** and the ***Patient ID***, ending in the word "report". ***Note:*** *The* ***Report*** *naming convention does not use any spaces, (e.g.,* 2012-01-27_Vascular_{42F1EA98-690B-4c43-A855-AF5B18094885}_report.pdf*).*
Prev Page ***Next Page***	Tap to move back and forth through the various report pages.
Options	Tap to configure formatting options, including: ***Logo*** and ***Logo Placement*** (Figure 6-8 and Table 6-8).
Exit	Tap to close the ***Report Viewer***.

Figure 6-8: Report Options

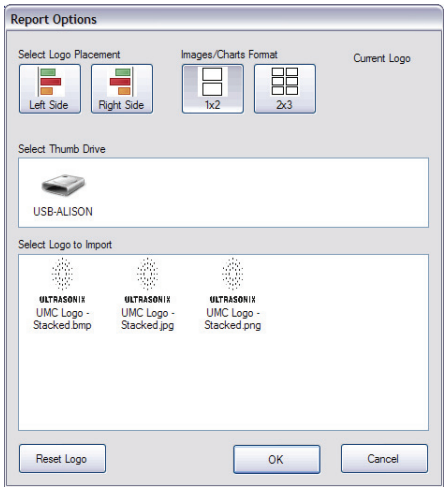


Table 6-8: Report Options

Select Logo Placement	***Left Side*** ***Right Side***	Select the desired option for logo placement. ***Note:*** *Select* ***Left Side*** *and* ***Right Side*** *to place a logo on both sides of the* ***Report*** *header.*
Images/Charts Format	***1x2*** ***2x3***	Select the desired option for image/chart placement.
Current Logo		Displays the current logo used in the report.
Select Thumb Drive		Select the thumb drive which contains the new logo to be imported. ***Note:*** *If only one thumb drive is connected to the system, it will be selected automatically.*
Select Logo to Import		Once the relevant thumb drive is selected, all ***PNG***, ***JPG*** and ***BMP*** images in the root of the drive will be displayed here for selection. ***Note:*** *For best results, Ultrasonix recommends using a 300 x 300 pixel logo.*
Reset Logo		Restores logo to the factory default, however, edits made to the logo placement will not remain intact.
OK		Saves the changes made to the ***Report Options*** dialog and returns to the ***Sonix Report Viewer***.
Cancel		Cancels any changes made to the ***Report Options*** dialog and returns to the ***Sonix Report Viewer***.

6.10.3 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 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 6-9: Sample Page from an Obstetrical Report Worksheet

6.10.4 Cardiac Reports

The ***HR*** data in the header of the ***Cardiac Report Worksheet*** can be obtained from several sources. The source can also be changed in the ***Report Worksheet*** at the ***Operator's*** discretion.

- ***No HR***: left blank
- ***Exam HR***: derived from the ***Cardiac Application Information*** entry on the ***Exam Management*** page (refer to **Cardiac** in **Table 4-4** for more details)
- ***Mmt HR***: derived from the actual ***PW*** measured ***HR***
- ***ECG HR***: derived from the actual ***ECG*** measured ***HR***.

Note: *Refer to* **Accessories–Third Party** *in Appendix B for the recommended ECG electrode.*

Figure 6-10: Cardiac Report Worksheet

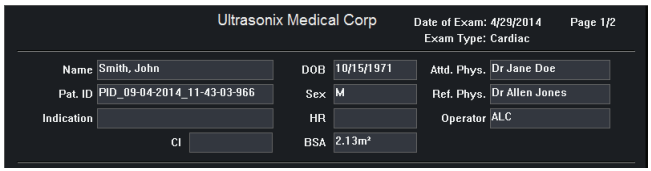


Figure 6-11: Cardiac Report Touch Screen

Note: *Turn the dial next to the* ***No HR*** *button in the* ***Cardiac Report*** *touch screen to cycle between the available* ***HR*** *options.*

Figure 6-12: Sample Page from a Final Version of a Cardiac Report Worksheet

6.10.5 Vascular Reports

Figure 6-13: Sample Page from a Vascular Report Worksheet

6.10.6 Graf Classification

MSK Hip Angle measurements include a ***Graf*** classification entry in the ***Report***.

6.10.7 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 6-14: Billing and QA Review

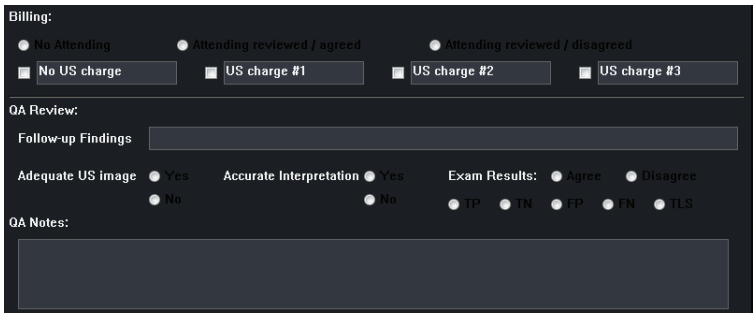


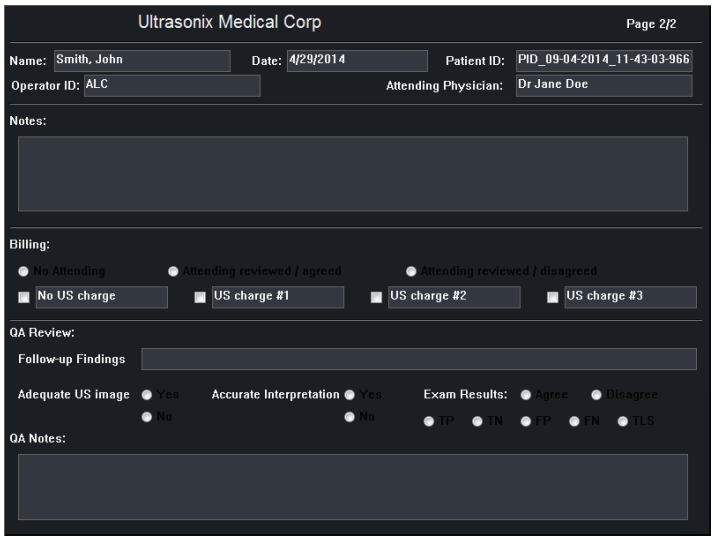
Table 6-9: Billing and QA Review Fields

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 Ultrasound (US) fields can be edited to reflect billing codes relevant to the ***Exam Type/Application*** and/or individual institutions. ***Note:*** *Ultrasonix recommends "blanking out" any unused billing code fields.*
Follow-up Findings	Enables ***Reviewers*** to comment on ***Follow-up Findings*** as necessary. ***Note:*** *This field will accept approximately 75 characters.*
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:*** *This field will accept approximately 400 characters.*

To Access Billing and QA Review Details:

1. Press the console button.
2. Turn the ***Pages*** dial to move to the relevant page.



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. • 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

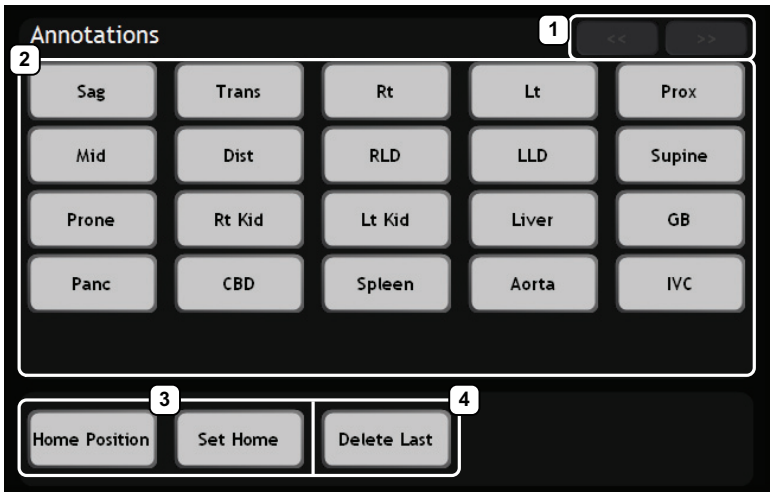


Table 7-2: Annotations Touch Screen

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*** activates the ability to configure a ***Text Home Position***. ***Set Home*** defines the selected position. ***Note:*** *Refer to* 7.1.1 *for details on setting the* ***Home Position****.*
4	***Delete Last***	***Delete Last*** (or keyboard **BACKSPACE** key) removes any 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)

Entering ***Annotations*** can be accomplished with or without the ***Auto-Complete*** function (**8.2.5 Annotations**).

If ***Auto-Complete*** is disabled, press the **ENTER** key to wrap the ***Annotation*** to the next line and continue typing.

If ***Auto-Complete*** is enabled, enter the first few letter(s) of the pre-defined ***Annotation*** and the rest of the word will be presented in blue. If more than one pre-defined ***Annotation*** with the same first letters exists, use the **TAB** key to cycle through all ***Annotations*** beginning with that letter. To set the desired ***Annotation***, press the keyboard **ENTER** key.

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.
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 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**.

Figure 7-2: Pictogram Touch Screen

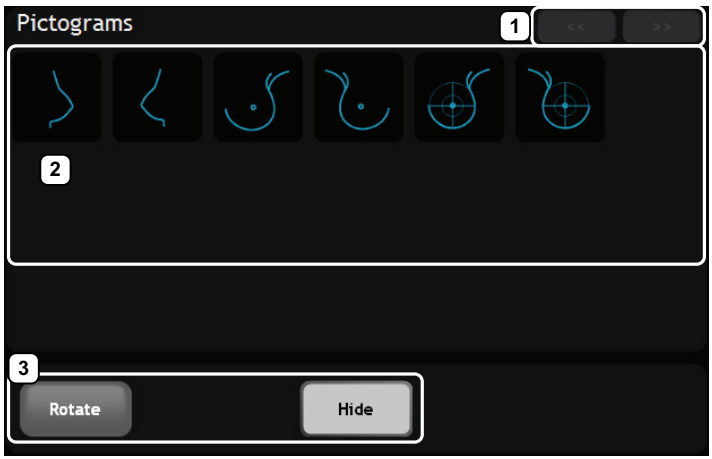


Table 7-3: Pictogram Touch Screen

1	***Page Selector*** Buttons	***Pictogram*** page selector buttons for use when there are multiple pages of ***Application***-specific ***Pictograms***.
2	***Pictogram*** Buttons	***Application***-specific ***Pictograms*** controlled via **8.2.3 Presets – Pictograms**.
3	***Edit*** Buttons	Common to all ***Pictogram*** touch screens: ***Rotate***, ***Hide*** and ***Close***.

To Activate a Pictogram:

1. Press the console button.
2. Tap the desired ***Pictogram*** to place it on the bottom left of the imaging screen (**Figure 7-2**).

   Note: *If not all* ***Pictograms*** *fit on a single touch screen, tap the* ***Page Selector*** *buttons as required to cycle through all available* ***Pictograms****.*
3. Use the trackball to position the ***Pictogram*** orientation marker in the desired location on the ***Pictogram***.
4. Tap the touch screen ***Rotate*** button and turn the associated dial to position the ***Pictogram*** orientation marker in the desired location on the ***Pictogram***.
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 ***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 Corp 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***	View live imaging on a remote computer using a ***LAN*** connection.
	Administrator	Access the ***Administrator Settings*** menu.
Support	***Remote Support***	Access the ***Remote Support*** option. ***Note: Remote Support*** *is configured via* **8.2.11 Network**.
	Chat Support	Access the ***Chat Support*** option ***Note: Chat Support*** *is configured via* **8.2.11 Network**.
	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 global ***Annotation*** settings. ***Note:*** *Customization of* ***Preset****-specific* ***Annotations*** *is handled through* ***Presets***.
	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***, such as: ***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:*** *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.* ***Note:*** *Dialup access requires an external USB modem. Talk to your local dealer or Ultrasonix Technical Support for details.* ***Wireless*** *networking options are not available on SonixOP Q+.*
	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, ***Cine loop*** storage, ***SonixDVR***/ ***SonixCam*** and ***Cine Advanced***.
	Imaging Modes	Configure a variety of ***Imaging Mode*** options including ***Split Imaging*** and ***Initial Active Display***.
	Documentation	***Add***/***Delete*** user documentation for viewing on the system ***Note:*** *All documents must be in PDF format.*
System Maintenance	***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

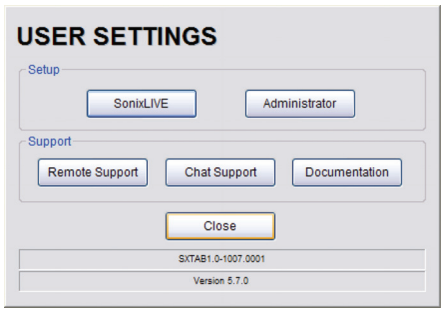
Service Settings	The system is delivered with this option under ***Password*** protection. ***Note:*** *Only qualified Ultrasonix Medical Corp service personnel can access this menu.*

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:

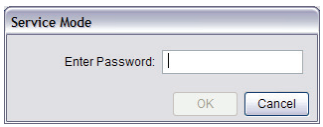
1. Press the console button and the ***User Settings*** menu will be presented.



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* **Q** *button.*

8.1 USER SETTINGS

8.1.1 SonixLive Setup

SonixLive allows users to view live imaging on a remote computer using a ***LAN*** connection. When remote viewing is underway, if the ***Status Bar*** icon has been activated, then the ***SonixLive*** icon will appear on the imaging screen (refer to **8.2.17 Status Bar** for details on the ***SonixLive*** icon).

SonixLive ultrasound system software is installed automatically. In order to view the ultrasound session from a remote location via a ***LAN***, ***SonixLive Viewer*** software must be downloaded, installed and configured on the relevant computer(s) (**8.1.1.2** and **8.1.1.3**).

Note: SonixLive is a licensed option.

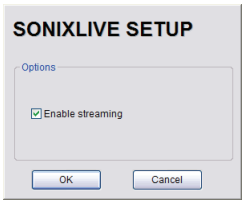
8.1.1.1 Configuring the Ultrasound System for SonixLive

There are two ***SonixLive*** configuration options on the ultrasound system:

- enabling streaming (mandatory)
- ***Status Bar*** configuration (optional).

To Enable SonixLive Streaming:

1. Press the console button.
2. Select ***SonixLive > Enable streaming***.

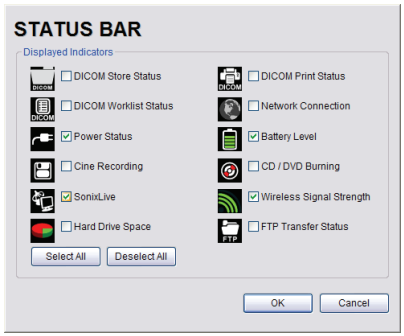


3. Select ***OK*** to accept the changes and exit or ***Cancel*** to exit without saving.

To Configure SonixLive Status Bar Setting (Optional):

Note: *The optional* ***SonixLive Status Bar*** *icon is only visible during streaming.*

1. Press the console button.
2. Select ***Administrator > Status Bar > SonixLive***.



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

8.1.1.2 Installing the SonixLive Viewer Software

In order to install the ***SonixLive Viewer***, the software must be downloaded from the Analogic Ultrasound website:

- web address: www.analogicultrasound.com/support/ultrasonix/sonixlive
- file name: *sonix_live_viewer_6.0.3_(00.036.270).zip*.

Note: *If Internet access is not available, contact Ultrasonix Technical Support to obtain a copy of the file.*

To Install the SonixLive Viewer:

1. Download a copy of the ***SonixLive Viewer*** (web address and software file name specified above).
2. Create a ***SonixLive Viewer*** folder and copy in *sonix_live_viewer_6.0.3_(00.036.270).zip*.
3. Unzip *sonix_live_viewer_6.0.3_(00.036.270).zip*.
4. If desired, create a ***SonixLive Viewer*** desktop shortcut for the program file *sonix_live_viewer.exe*.

Note: *A* ***SonixLive Viewer*** *desktop shortcut makes it easier to access the program.*

8.1.1.3 Configuring the Remote PC for SonixLive Viewing

The ***SonixLive Viewer*** must be installed on a remote PC(s) accessible on the same LAN as the ultrasound system.

Figure 8-3: SonixLive Viewer

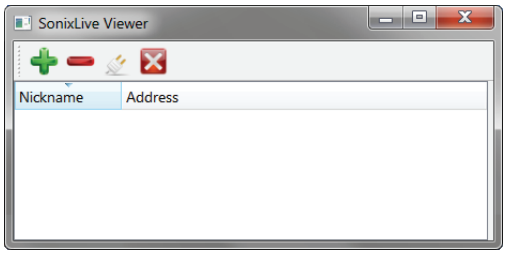


Table 8-4: SonixLive Viewer Icons

Icon	Definition	Icon	Definition
	Add an ultrasound system.		Delete an ultrasound system.
	Connect/disconnect an ultrasound system.		Exit ***SonixLive Viewer*** software.

To Configure the SonixLive Viewer:

1. Start the ***SonixLive Viewer***.
2. Select to add an ultrasound system.
3. Enter an identifying ***Nickname*** for the system.
4. Enter the system ***IP Address***.

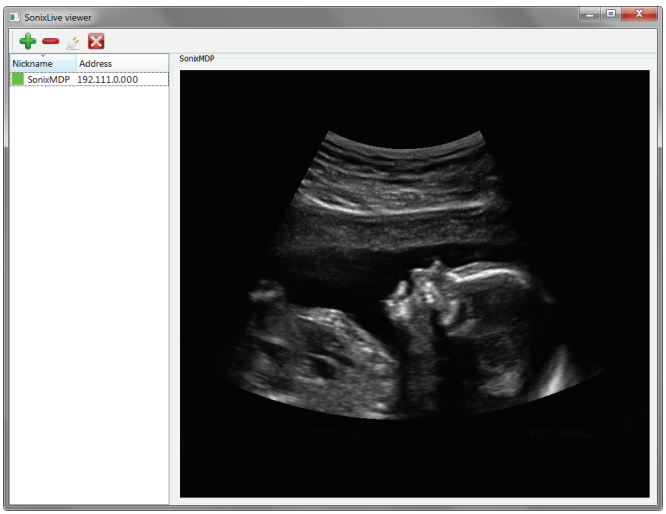
   Note: *Find the system* ***IP Address*** *at* ***> Administrator > Network***.

5. Repeat **step 2** to **step 4** as many times as necessary.

8.1.1.4 Viewing a Remote Ultrasound Exam SonixLive

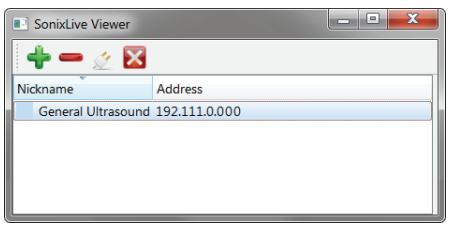
Once configured, ***SonixLive*** enables remote viewing of ultrasound exams.

Figure 8-4: SonixLive Viewer



To Remotely View an Ultrasound Exam with the SonixLive Viewer:

1. Open the ***SonixLive Viewer***.
2. Select the desired ultrasound system.



3. Select  to access the ultrasound system.
4. The current exam on the selected ultrasound system will be presented on the remote PC (excluding patient data) (**Figure 8-4**).

Note: *The* ***SonixLive*** *viewing screen will remain blank if:*

- *the image is frozen*
- *a Sonix dialog (e.g.,* ***Exam Management****) or Windows dialog (e.g.,* ***Date and Time Properties****) is open.*

8.1.2 Remote Support

Remote Support is a licensed option that allows Ultrasonix Technical Support to remotely view and control a system for (technical) 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* **Q** *button. Refer to* **3.4** *for details.*

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

Note: *If* ***Remote Support*** *does not appear to be available, contact the 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.

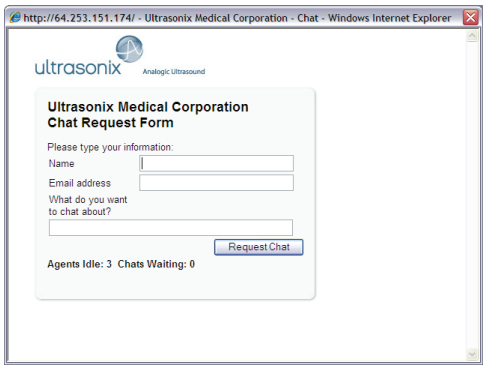
8.1.3 Chat Support

Chat Support enables a real-time discussion with a member of the Ultrasonix Technical Support team. In order to use ***Chat Support***, it must first be enabled (**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 enabled (**8.2.11.4**).*

To Access Chat Support:

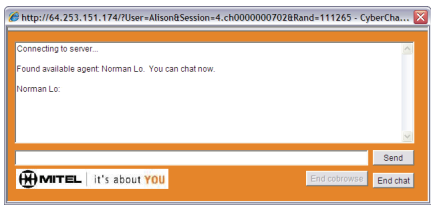
1. Press the console ⚙ button.
2. Select ***Chat Support...***.



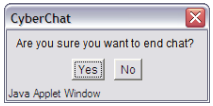
3. If an ***Agent*** is logged on (refer to the message at the bottom of the ***Chat Request Form***), use the keyboard to complete the ***Chat Request Form***.
4. Select ***Request Chat***.

Note*: There will be a short 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.

Warning: Application *parameters should be configured by a qualified medical practitioner.*

Figure 8-5: 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****. Refer to* **5.11.9** *for details.*

Figure 8-6: Presets Setup

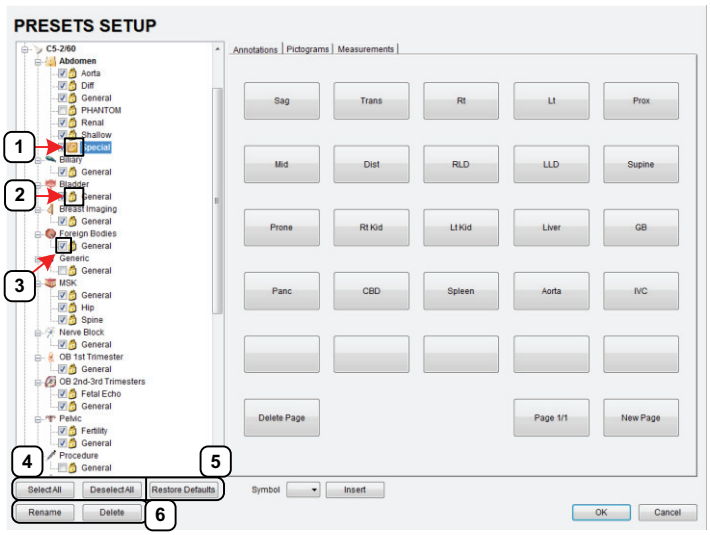


Table 8-5: Presets Setup

1	Key Icon	Denotes a user-defined ***Preset***, which cannot be locked.
2	Lock Icon	Denotes a default (factory) ***Preset***, which cannot be edited or deleted.
3	***Preset*** Checkbox	Enables ***Preset*** selection/deselection. Deselected ***Presets*** are not available during imaging.
4	***Select All*** ***Deselect All***	Enables selection/deselection of all ***Presets*** in one step. ***Note:*** *Not applicable to* ***Annotations****,* ***Pictograms*** *or* ***Measurements***
5	***Restore Defaults***	***Note: Restore Defaults*** *restores* *all* ***Presets Setup*** *changes to factory settings.*
6	***Rename*** and ***Delete***	***Note:*** ***Rename*** *and* ***Delete*** *are only available if a user-defined* ***Preset*** *has been selected.*

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 tabs on the ***Presets Setup*** page: ***Annotations***, ***Pictograms*** and ***Measurements***.

User-defined ***Presets*** are marked with a key icon. These cannot be locked.

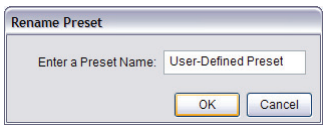
The left hand menu displays all currently available ***Presets***, both default and user-defined. Each ***Application*** is delivered with at least one default ***Preset***.

To Access the Presets Setup Page:

1. Press the console button.
2. Select ***Administrator > Presets***.

To Rename a Previously Created User-Defined Preset:

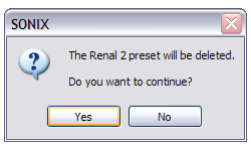
1. Press the console button.
2. Select ***Administrator > Presets***.
3. Select the user-defined ***Preset*** to be renamed.
4. Select the ***Rename*** button.
5. Type a new, unique name in the ***Rename Preset*** dialog box.



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

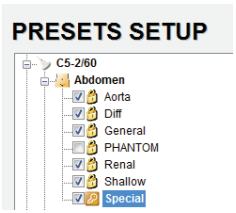
Preset availability can be controlled using its associated checkbox. When selected, as indicated by the presence of the green checkmark, the ***Preset*** will be available from both the touch screen and ***QSonix*** (providing the applicable transducer is connected).

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 8-7: Presets Setup – Annotations

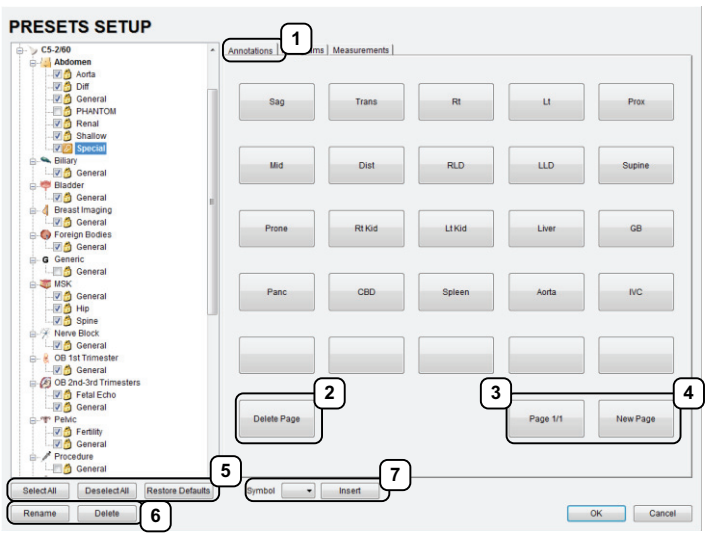


Table 8-6: Presets Setup – Annotations

1	***Annotations*** Tab	Accesses ***Annotation*** options.
2	***Delete Page***	Deletes the currently displayed page of ***Annotations***.
3	Page Selector	Enables Operator to page through available ***Annotations***.
4	***New Page***	Enables Operator to add a new, blank page of ***Annotations***.
5	***Rename*** and ***Delete***	***Note: Rename*** *and* ***Delete*** *are only available if a user-defined* ***Preset*** *has been selected.*
6	***Restore Defaults***	***Note: Restore Defaults*** *restores* <u>*all*</u> ***Presets Setup*** *changes to their factory settings.*
7	***Insert (Symbol)***	Enables the insertion of text symbol(s) not available on the keyboard (e.g., punctuation, symbols and letters from other languages).

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 8-8: Presets Setup – Pictograms

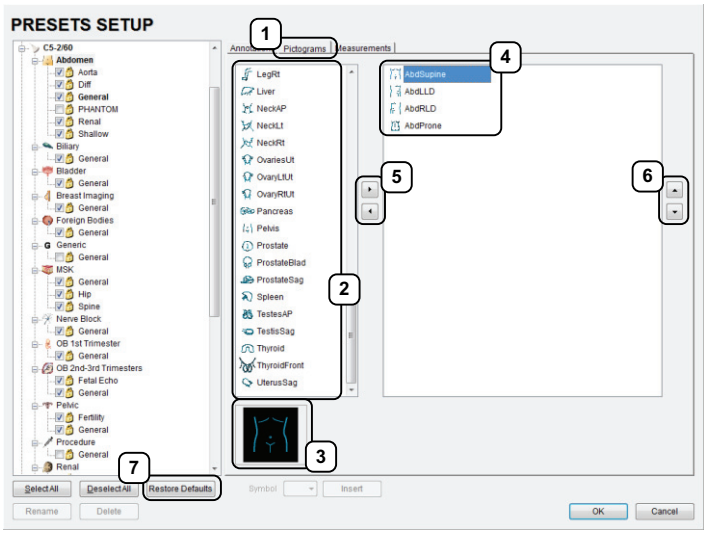


Table 8-7: Presets Setup – Pictograms

1	***Pictograms*** Tab	Accesses ***Pictogram*** options.
2	List of available ***Pictograms***	Lists available ***Pictograms***.
3	***Pictogram***	Previews selected ***Pictogram***.
4	User-defined List of ***Pictograms***	Previews user-defined ***Pictogram*** options.
5	***Pictogram*** Selectors	Moves selected items to/from the user-defined list of ***Pictograms***.
6	***Pictogram*** Order Selectors	Moves selected items up/down in the user-defined list of ***Pictograms***.
7	***Restore Defaults***	***Note: Restore Defaults*** *restores* *all* ***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 8-9: Presets – Measurements

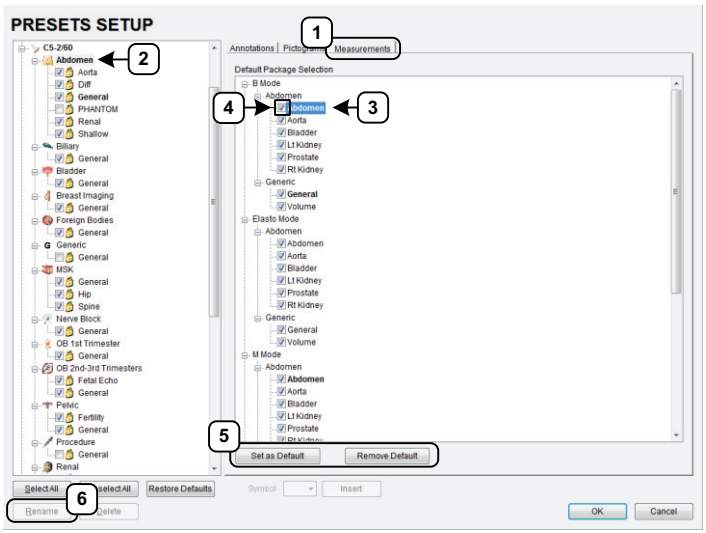


Table 8-8: Presets – Measurements

1	***Measurements*** Tab	Accesses ***Measurement*** options.
2	***Exam Type***	Transducer-specific ***Exam Type***.
3	***Measurement Package***	Default ***Measurement Package*** labels (bold face type).
4	***Measurement Package*** Checkbox	Enables ***Measurement Package*** selection/deselection. Deselected ***Measurement Packages*** are not available during imaging.
5	***Set as Default/Remove Default***	Set or remove default status of ***Measurement Packages***. ***Note: Remove Default*** *is especially useful when changing imaging modes during the measurement portion of an ultrasound exam as the* ***Measurement Package*** *will remain at the selected* ***Measurement Package*** *option rather than returning to a default setting.*
6	***Restore Defaults***	***Note: Restore Defaults*** *restores <u>all</u* ***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 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 global ***Annotation*** settings available.

Figure 8-10: (Global) Annotations Settings

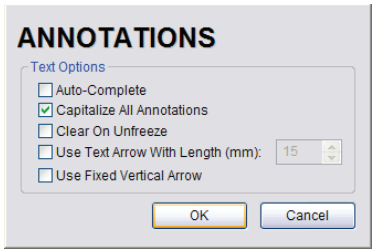


Table 8-9: (Global) Annotation Settings

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 un**FREEZE**. 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:

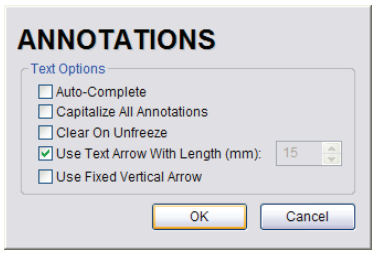
1. Press the console button.
2. Select ***Administrator > Annotations***.

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.

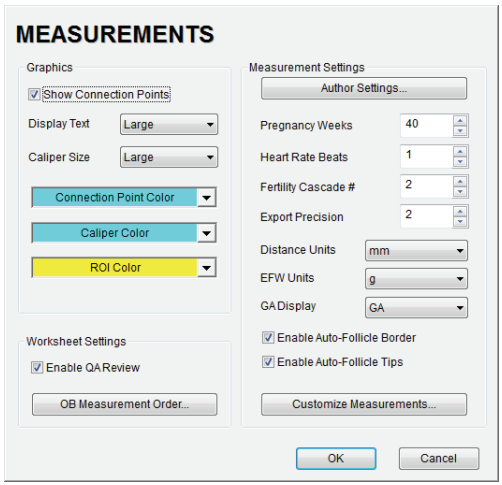
8.2.6 Measurements

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 8-11: 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 of three measurement label font size options: ***Small***, ***Medium*** and ***Large***.
	Caliper Size	Allows the selection of one of three 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.
	⚠ ***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****.*	
	Note: *To ensure the caliper modifications have been activated, switch imaging modes after exiting the* ***Setup*** *menus.*	
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***. ***Caution:*** *Changing* ***Distance Units*** *during an exam will result in anomalous measurement labeling.* ***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***, ***lbs-oz*** or ***oz***.
	GA Display	***Operators*** have the option of configuring the system to present either the ***EDD***, ***GA*** or ***GA & EDD*** onscreen along with OB measurement data. ***Note:*** *This applies only when taking measurements during an OB exam,*
	Enable Auto-Follicle Border	Draws a border around the edges of an ***Auto-Follicle*** measurement. By default, this setting is disabled. ***Note:***
	Enable Auto-Follicle Tips	Enables/disables onscreen ***Auto-Follicle*** tips.
	Customize Measurements…	Enables the user to make the following changes to measurements: • create custom ***Measurement Packages*** and ***Measurements*** • re-order ***Measurements*** • show/hide ***Applications***, ***Measurement Packages*** and ***Measurements*** for the ***Display/Touch Screen***, ***Worksheet*** or ***Report***. ***Note:*** *A* ***Measurement*** *must be performed in order to appear on the* ***Worksheet*** *or* ***Report****.*
		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 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.
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 ***Measurement Settings*** 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****.*

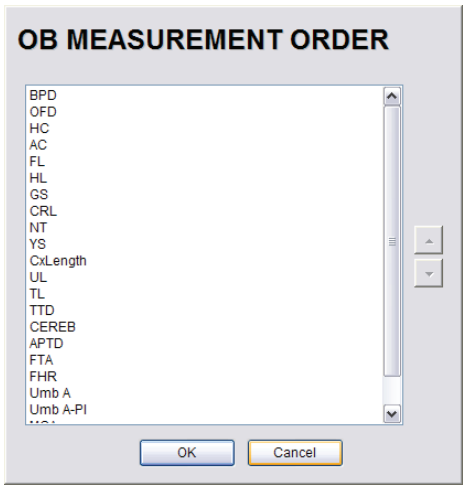
8.2.6.1 Managing Worksheet Settings

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 options apply only to* ***Measurements****, not* ***Measurement Packages****.*

Show/hide options apply to both factory-installed and customized measurements.

Figure 8-12: Customize Measurements

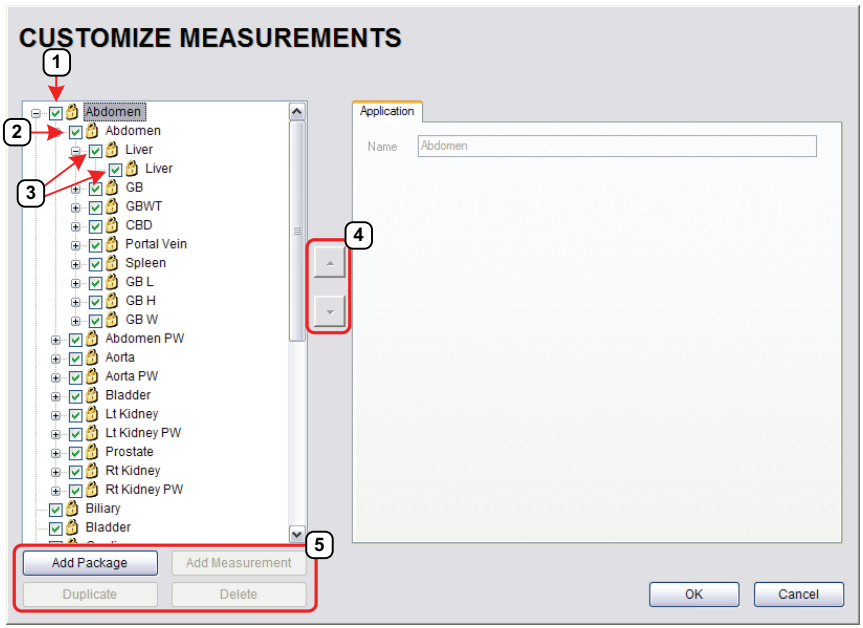
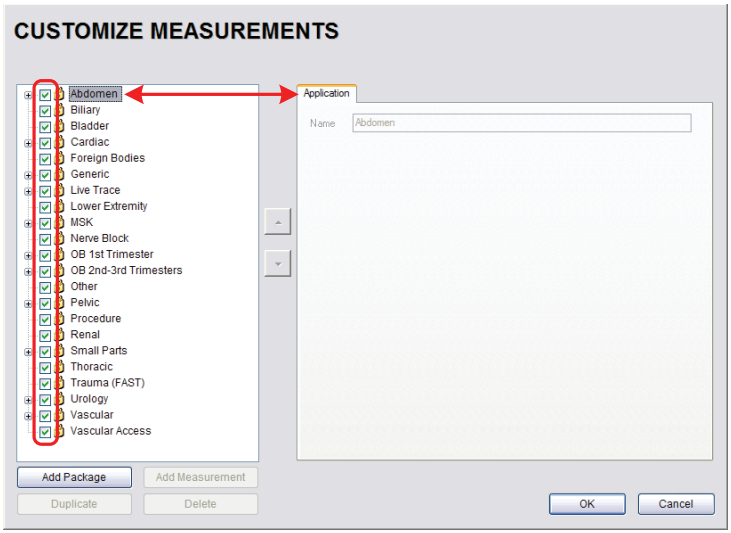


Table 8-11: Customize Measurements

1	***Application*** Checkbox
2	***Measurement Package*** Checkbox
3	***Measurement*** Checkboxes
4	***Measurement*** Selectors
5	Action Buttons

To Show/Hide Applications:

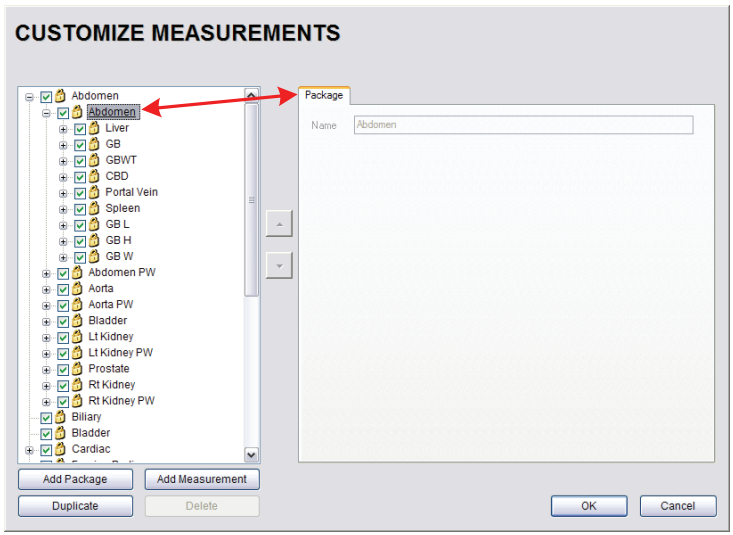
1. Press the console button.
2. Select ***Administrator > Measurements > Customize Measurements…***.
3. To show/hide an ***Application*** on the LCD display and touch screen (within the measurement function) select/deselect the ***Application*** checkbox.



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:

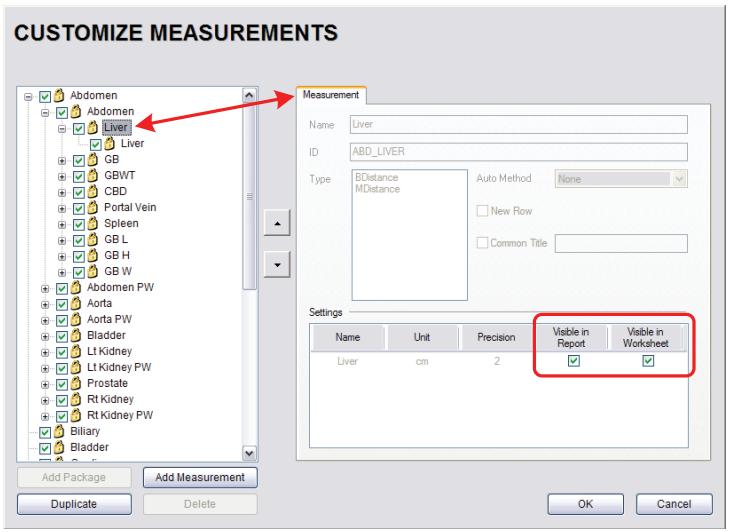
1. Press the console button.
2. Select ***Administrator > Measurements > Customize Measurements…***.
3. Expand the relevant ***Application*** tree by selecting the appropriate plus (+) sign (e.g., select the plus (+) sign next to ***Abdomen***).
4. To show/hide a ***Measurement Package*** on the LCD display and touch screen select/deselect the relevant ***Measurement Package*** checkbox.



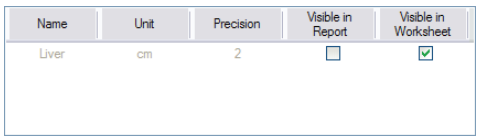
5. Repeat **step 3** and **step 4** as many times as required.
6. Select ***OK*** to accept the changes and exit or ***Cancel*** to exit without saving.

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***.



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 8-13: Customize Measurements

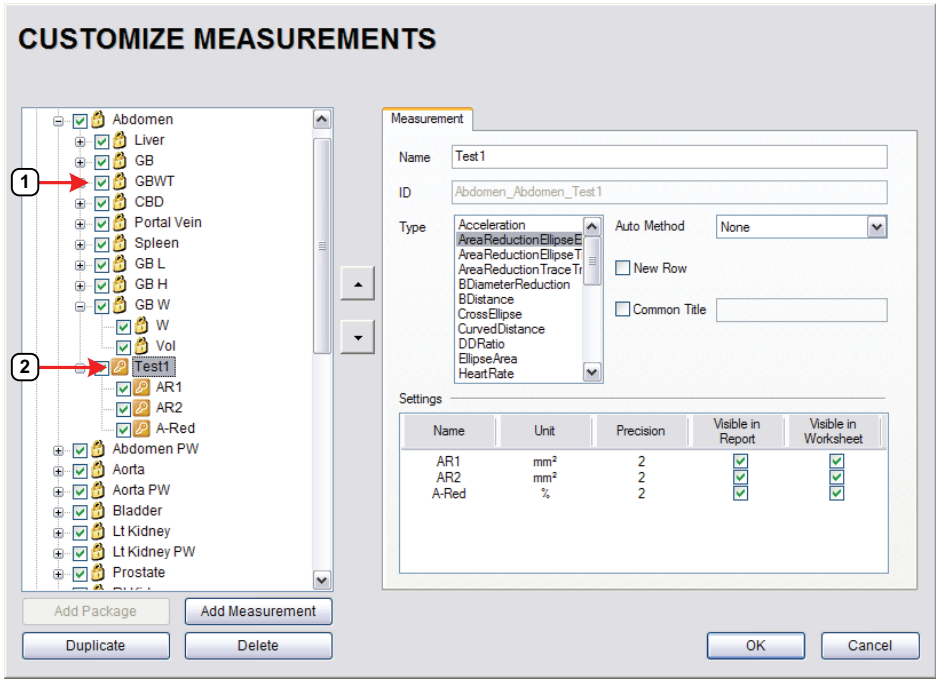


Table 8-12:

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.*

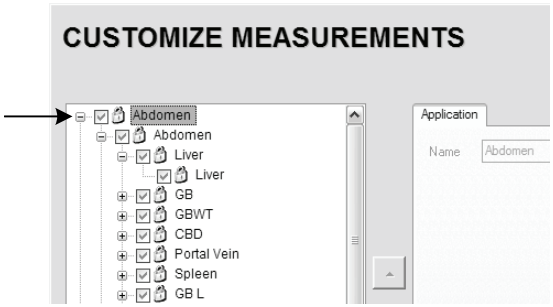
Table 8-13: Customize Measurement Options

Name		The ***Name*** of the custom measurement. ***Note:*** *Place the cursor in this field and use the touch screen keyboard to enter a new* ***Name****.*
ID		This is not an editable filed. Data in this field is auto-populated and is for information purposes only.
Type	***Acceleration*** ***AreaReductionEllipseEllipse*** ***AreaReductionEllipseTrace*** ***AreaReductionTraceTrace*** ***BDiameterReduction*** ***BDistance*** ***CrossEllipse*** ***CurvedDistance*** ***DDRatio*** ***EllipseArea*** ***HeartRate*** ***HipAngle*** ***MDiameterReduction*** ***MDistance*** ***Pisa*** ***PointsArea*** ***PointsSpectrum*** ***RectArea*** ***RTSA*** ***SimpsonsTrace*** ***SpectrumRange*** ***Time*** ***TimeSlope*** ***TraceArea*** ***TraceAreaSolid*** ***TraceSpectrum*** ***Velocity1*** ***Velocity2***	Selecting a pre-defined measurement ***Type*** will populate the ***Type*** attributes—which can be edited within pre-determined parameters. Once a ***Type*** has been selected, any attempt to change that ***Type*** for the specified measurement will result in an overwrite confirmation message.
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.*

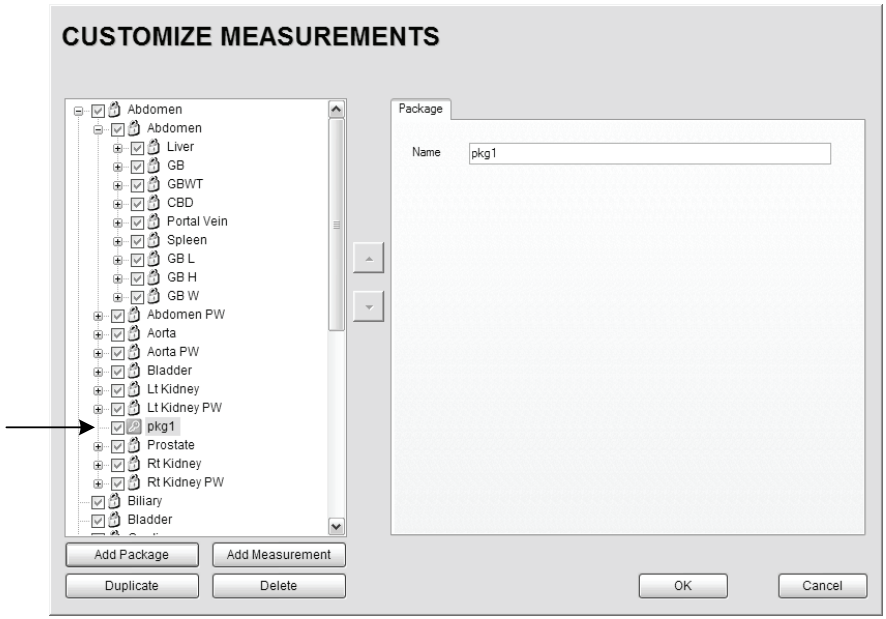
New Row		Forces the measurement to wrap to a ***New Row*** on the ***Measurement Packages*** touch screen.
Common Title		To group a series of measurement together, give each of the relevant measurements a ***Common Title***. For example, under ***Abdomen***, ***Abdomen***, the three measurements ***GB L***, ***GB H*** and ***GB W***, each have the ***Common Title***, ***GB Vol*** indicating that these three 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***).



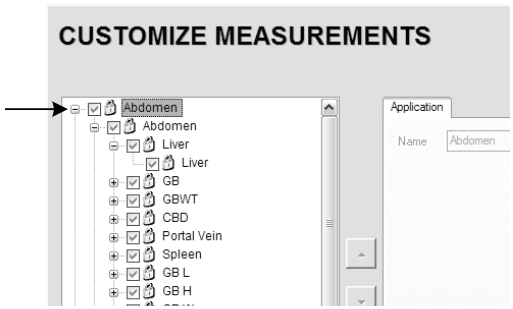
4. Select the ***Add Package*** button and ***pkg1*** will be added (alphabetically) to the list of ***Measurement Packages***.



To Add a Custom Measurement:

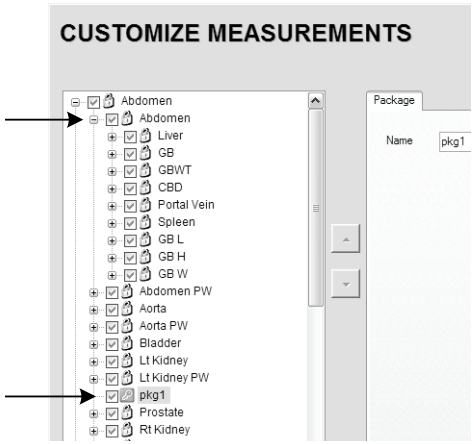
Note: Measurements *can be added to both custom and default* ***Measurement Packages****.*

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***).

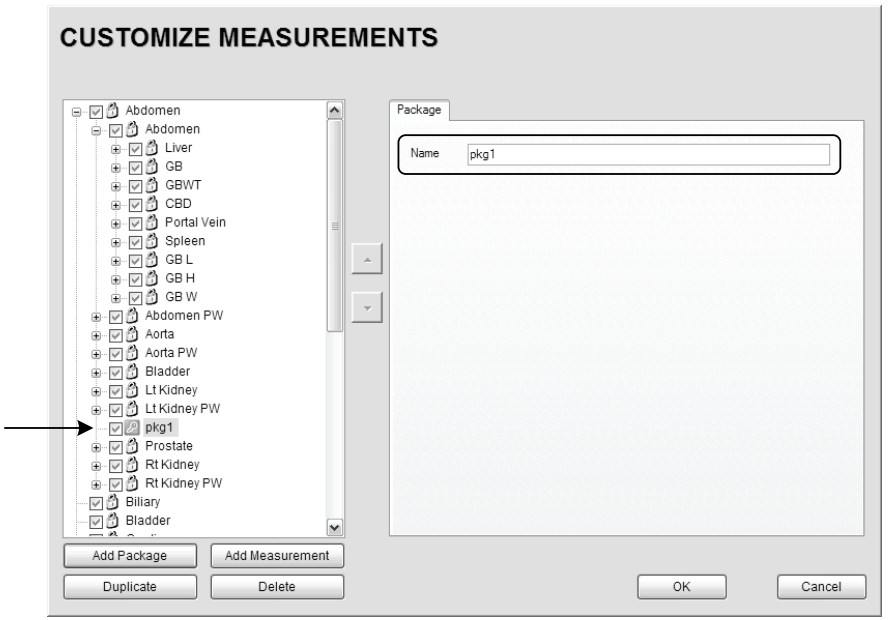


Note: *If* ***pkg1*** *is selected, the custom* ***Measurement*** *will be created one level below* ***pkg1****. If* ***Abdomen*** *is selected, the custom* ***Measurement*** *will be created at the same level as* ***Abdomen****.*

5. Select the ***Add Measurements*** button and mmt1 will be added.

To Rename a Custom Measurement Package or Measurement:

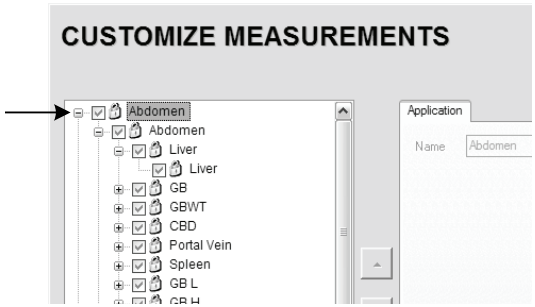
1. Press the console button.
2. Select ***Administrator > Measurements > Customize Measurements…***.
3. Select the custom ***Measurement Package*** or ***Measurement***.
4. Place the cursor in the ***Name*** field on the right hand side of the dialog.



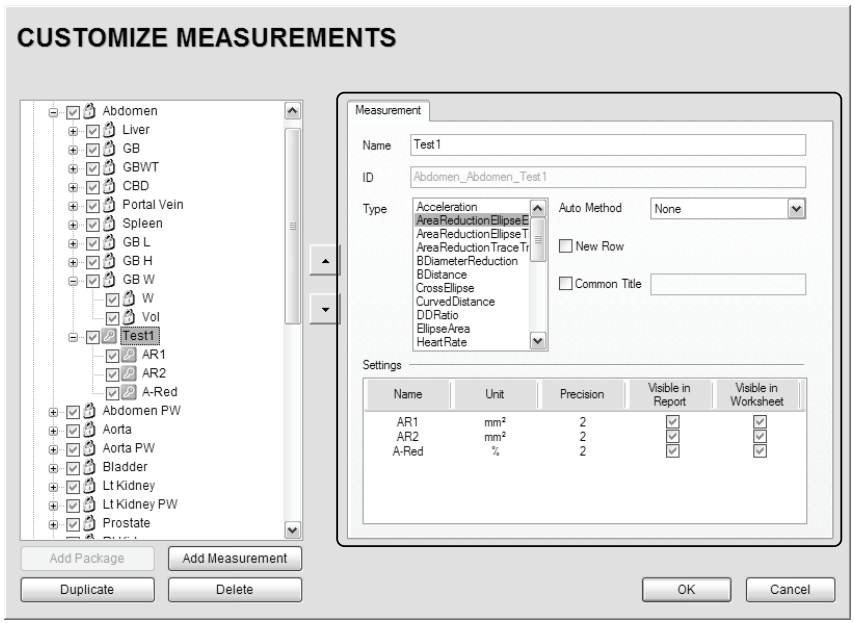
5. Use the touch screen keyboard to erase and type in a new ***Measurement Package*** or ***Measurement Name***.

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***).



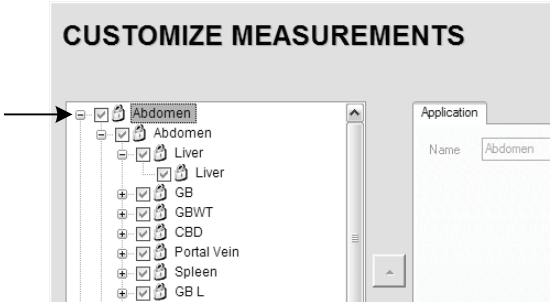
4. Select the custom ***Measurement*** to be edited.
5. Make the appropriate changes in the ***Measurement*** tab on the right hand side of the dialog.



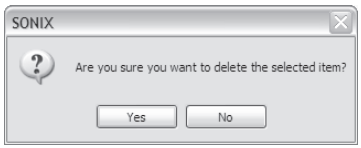
6. Select ***OK*** to accept the changes and exit or ***Cancel*** to exit without saving.

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***).

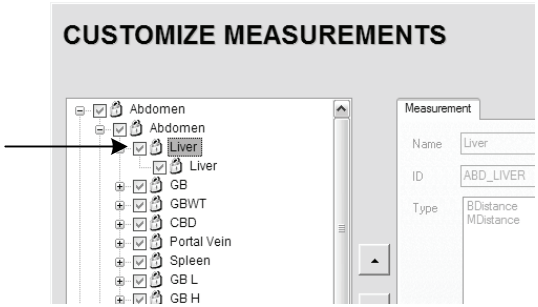


4. Select the custom ***Measurement Package*** or ***Measurement*** to be deleted.
5. Select the ***Delete*** button.
6. Select ***Yes*** to confirm the deletion or ***No*** to cancel the operation.



8.2.6.4 Reordering Measurements

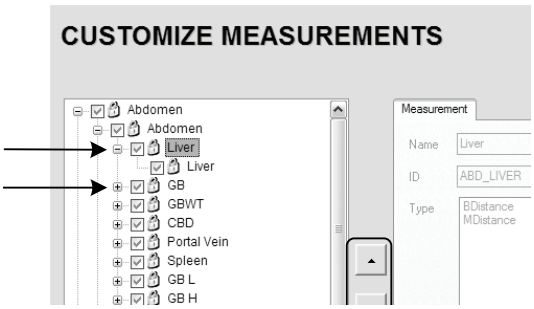
Figure 8-14: Measurement Packages



Note: *Only* ***Measurement Packages*** *at the level marked in* **Figure 8-14** *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***).

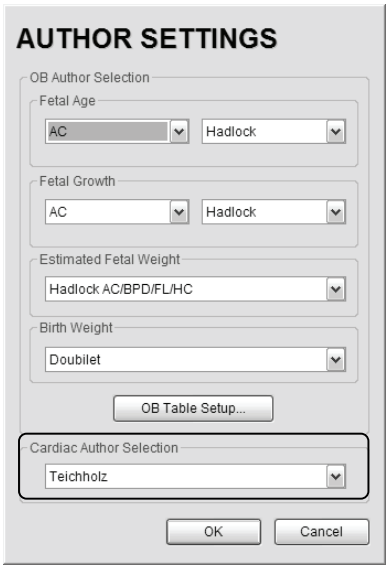


4. Highlight the relevant ***Measurement*** in the left hand column.
5. Use the (up/down) selector buttons to move the item to another place in the list.
6. Repeat **step 4** and **step 5** as many times as required.
7. Select ***OK*** to accept the changes and exit or ***Cancel*** to exit without saving.

8.2.6.5 Managing Author Settings

To Select the Cardiac Author:

1. Press the console button.
2. Select ***Administrator > Measurements > Author Settings…***.



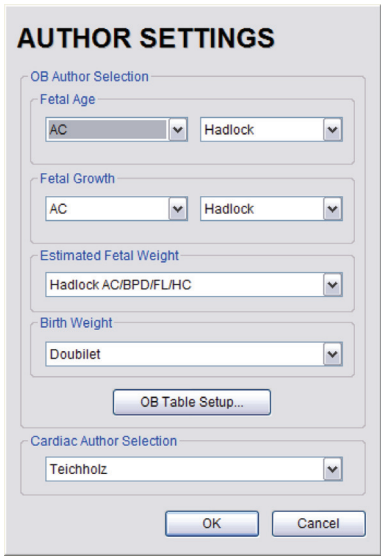
3. Select the ***Cardiac Author*** from the drop-down menu.

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…***.



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.*

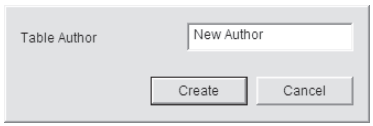
8.2.6.6 Managing OB Tables

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***.

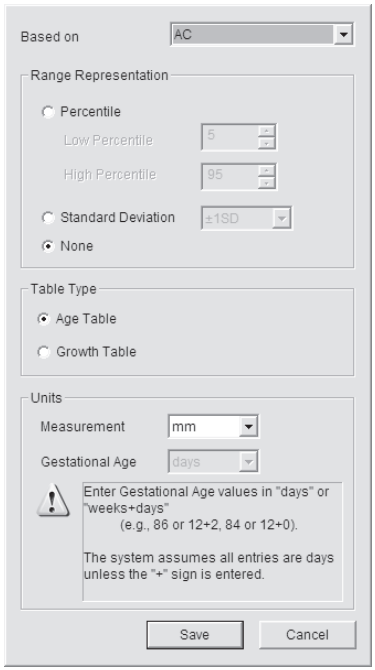
4. Enter a new ***Table Author*** and select ***Create*** to save the name to the author list.



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.*

6. From the ***Based on*** drop-down menu, select the desired parameter (***BPD***, ***HC***, etc.).



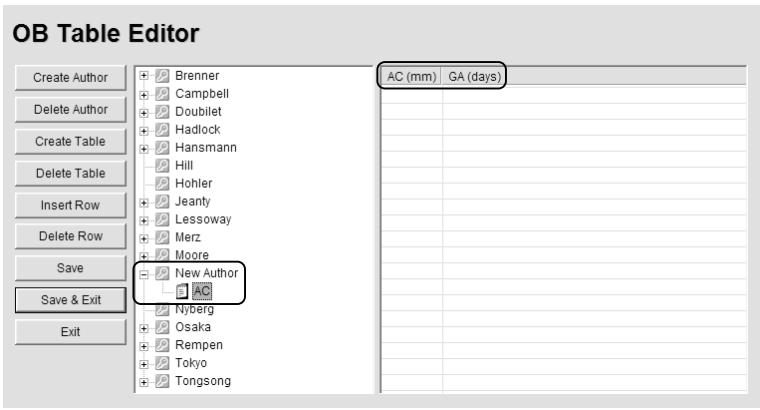
7. Select the desired table ***Range Representation***: ***Percentile***, ***Standard Deviation*** or ***None***.
8. Select the desired ***Table Type***: ***Age Table*** or ***Growth Table***.
9. From the ***Measurement*** drop-down menu, select the desired unit: ***cm***, ***cm^2***, ***g***, ***mm***, ***mm^2*** or ***ratio***.

Note: AC *and* ***HC*** *are assumed to be* ***Circumference*** *measurements.*

10. 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 Ultrasonix, but they can also be created by each organization, as long as they are created in one of the accepted digital formats.

Figure 8-15: Training Tutorials Dialog

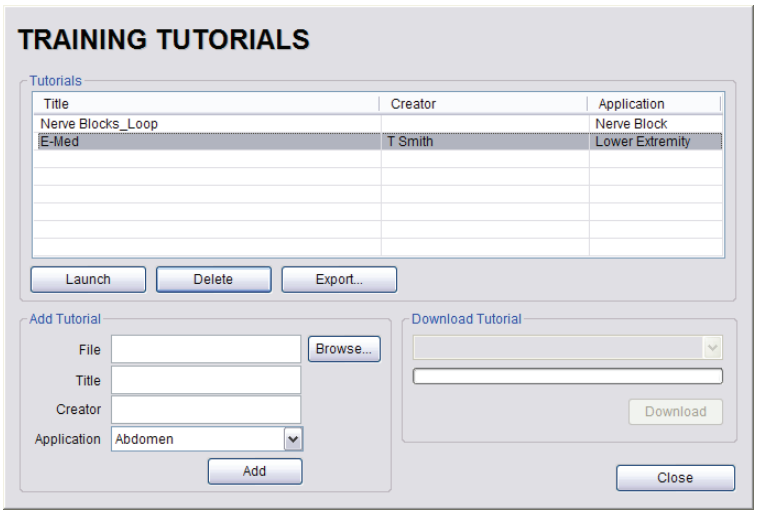


Table 8-14: Supported Training Tutorial File Formats

Video	***AVI***, ***MPG***, ***MPEG*** and ***WMV***.
Audio	***MP3*** and ***WMA***.
Microsoft® PowerPoint®	***PPT***.
	Note: *Video files embedded in* ***PowerPoint*** *presentations are not supported.*
Adobe® Flash®	***SWF***.
SonixCam	Compressed ***AVI***.

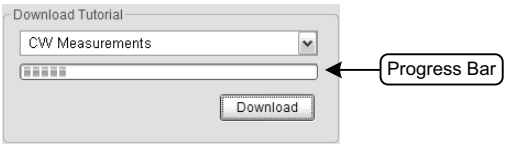
Table 8-15: Training Tutorial Options

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.

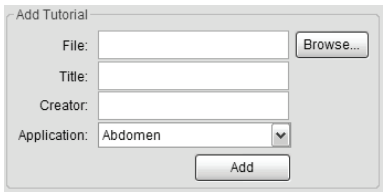


4. Select the ***Download*** button.
5. Follow the status of the progress bar to see how far along the download is.
6. When the download is complete, the ***Title*** will be added to the list of available T***utorials***.

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…***.



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.*

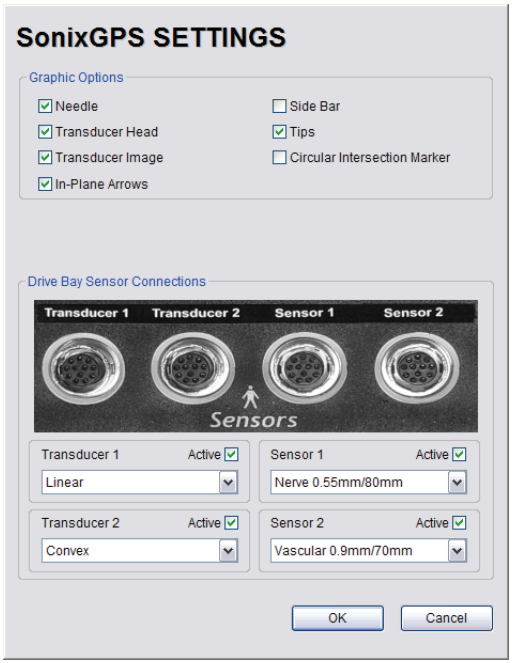
For files with an audio component, the volume can be adjusted with the audio slide on the right hand side of the tutorial screen. ***Master Volume*** *control is adjusted from the* ***System Settings*** *dialog (8.2.10).*

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 8-16: SonixGPS Settings



8.2.9 Biopsy Guide

Users can configure the system with the ***Single Guideline Biopsy*** option.

Figure 8-17: Biopsy

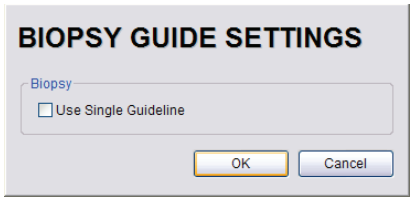


Table 8-16: Biopsy

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 system parameters, including: ***Institution Name***, ***Regional*** options, ***Shutdown Options***, ***Auto-Freeze***, ***Auto-Shutdown***, ***User Data*** settings and ***Admin Password***.

Figure 8-18: System Settings

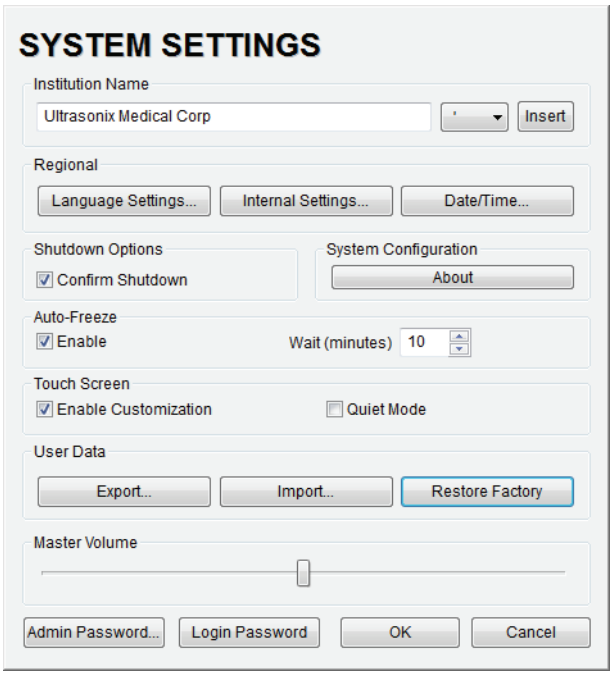


Table 8-17: System Settings Configuration Options

Institution Name			Enter the ***Institution Name*** using the keyboard. The text entered here appears at the top of the image field.
Insert (Symbol)			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	Select the desired keyboard language. During imaging, tap **Shift+Del** to toggle access between English and the non-English ***Keyboard Layout*** language. ***Note:*** *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****.* *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****.*
	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***		Contains (non-editable) system information, for example, ***Software Version*** and ***ECG Part Number*** (when applicable). ***Note:*** *For systems configured with an* ***ECG****, refer to* **A.4 ECG Safety (MDP)** *for details on the relevance of the* ***ECG Part Number****. (****ECG*** *is not available on SonixSP Q+ or SonixOP Q+.)*
Auto-Freeze	***Enable***		Enables ***Auto-Freeze***, which deactivates any transducer that is connected but not currently in use.
	Wait (minutes)		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. Select a setting of 5 to 120 minutes. The default is ***Auto-Freeze Enabled***, with a 10 minute ***Wait*** time. ***Note:*** *To reactivate (or unfreeze) the transducer/imaging session, simply press the console ❄ button.*
Touch Screen	***Enable Customization***		(Not available on SonixMDP/SP/OP Q+.)
	Quiet Mode		Enable/disable touch screen audio.
User Data	***Export… Import…***		Refer to **8.2.10.1** for details on exporting and importing ***User Data***.
	Restore Factory		Resets the system to the default settings installed at the factory.

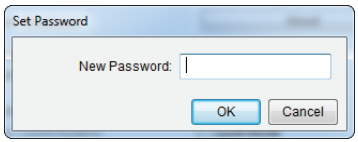
Master Volume	Controls the master setting for Sonix audio volume.
Admin Password	Creates/removes a global, administration level ***Password*** in order to protect ***Administrator Settings*** configuration.

To Access System Settings:

1. Press the console button.
2. Select ***Administrator > System***.

To Password Protect Administrator Settings Access:

1. Press the console button.
2. Select ***Administrator > System > Admin Password…***.
3. Enter a ***New Password*** when prompted by the dialog.



4. Select ***OK*** to accept the ***Password*** and exit or ***Cancel*** to exit without saving.

8.2.10.1 Exporting/Importing User Data Options

The ***System Export/Import*** options all ow the Operator to move user-configured data to/from an external storage device (e.g., USB medium).

Note: *The* ***Export*** *function can also be used to reset all but three* ***User Data*** *options (****Settings****,* ***System Logs*** *and* ***Licenses****) to their factory defaults.*

The system can only import data that has been previously exported from a compatible Sonix system.

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.*

Figure 8-19: Exporting/Importing User Data Options

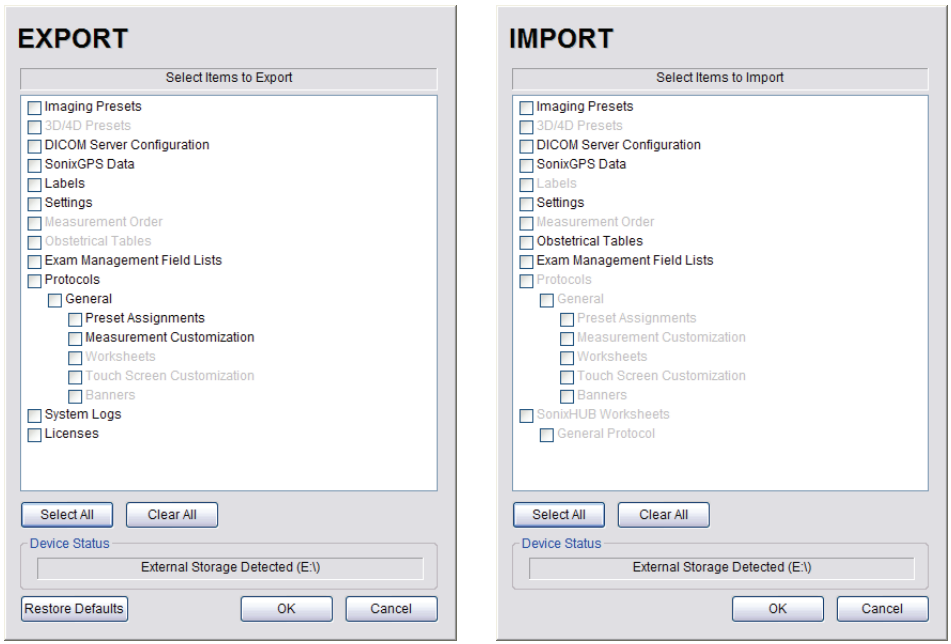


Table 8-18: Exporting/Importing User Data Options

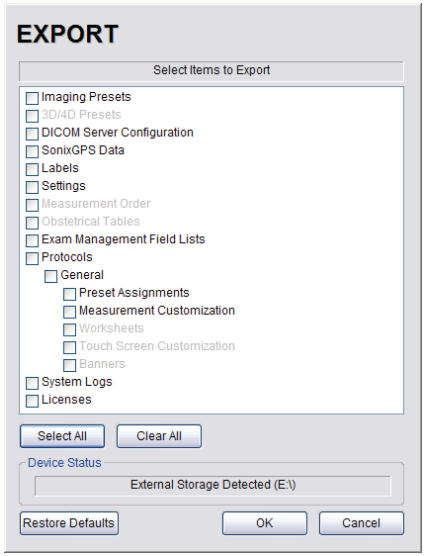
Imaging Presets	Exports/imports all user-defined Imaging ***Preset*** data.
3D/4D Presets	Exports/imports all user-defined 3D/4D ***Preset*** data.
DICOM Server Configuration	Exports/imports ***DICOM*** configuration data.
SonixGPS Data	Exports/imports ***SonixGPS*** configuration data.
Labels	Exports/imports all ***Labels*** as entered in the ***Capture Settings Auto-Label dialog*** (8.2.18). (Available only on the SonixTouch Q+).

<table>
<tr><td colspan="3">Settings</td><td>Exports/imports all user-defined Settings that are not explicitly specified in any other Export option (e.g., DICOM, Network, Peripherals, Patient, ECG HR Precedence, etc).</td></tr>
<tr><td colspan="3">Measurement Order</td><td>Exports/imports the Measurement Order data defined under Worksheet Settings on the Measurements dialog.</td></tr>
<tr><td colspan="3">Obstetrical Tables</td><td>Exports/imports all user-defined OB Tables.</td></tr>
<tr><td colspan="3">Exam Management Field Lists</td><td>Exports/imports all user-defined Exam Management page data (e.g, Attending Physician, Operator ID, etc).</td></tr>
<tr><td rowspan="7">Protocols</td><td colspan="3">Protocols refer to the various specialized applications that can be purchased for use on the SonixTouch Q+ (e.g., EMED, Anesthesia and General). All other products have only the default General Protocol.
Exporting/importing settings must be done for each separate Protocol.
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.
Only active Protocols with previously exported Preset, Measurement and Worksheet settings will be available for Import.</td></tr>
<tr><td rowspan="5">General</td><td>Preset Assignments</td><td>Exports/imports all Preset data as configured under Menu > Administrator > Presets (e.g., Annotations and Pictograms).
Note: Presets are Protocol-specific.</td></tr>
<tr><td>Measurement Customization</td><td>Exports/imports settings defined under Customize Measurements… on the Measurements dialog.
Note: Measurement Customization is Protocol-specific.</td></tr>
<tr><td>Worksheets</td><td>Exports/imports Worksheet settings.
Note: Worksheets are only available for the EMED, Anesthesia and Endocrinology Protocols.</td></tr>
<tr><td>Touch Screen Customization</td><td>Exports/imports customized touch screen settings (e.g., Favorites).
Note: Available only on SonixTouch Q+ and SonixOne.</td></tr>
<tr><td>Banners</td><td>Not available in this release.</td></tr>
<tr><td colspan="3">System Logs</td><td>Exports/imports copies of all current System Logs.
Note: These cannot be imported.</td></tr>
<tr><td colspan="3">Licenses</td><td>Copies existing license settings into licenses.key.
Note: To re-import licensing details, refer to 8.2.22.</td></tr>
<tr><td colspan="3">SonixHub Worksheets</td><td>Available only for new Worksheet formats created with SonixHub.
Note: SonixHub Worksheets are Protocol-specific.</td></tr>
<tr><td colspan="3">Restore Defaults</td><td>Resets the system to the default settings installed during manufacturing.</td></tr>
</table>

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.
1. Press the console button.
2. Select ***Administrator > System > Export…***.
3. 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.*

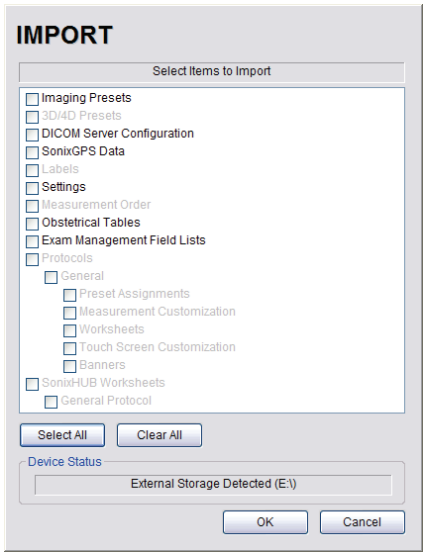
*Only active **Protocols** with changes to default **Presets**, **Measurement** and **Worksheet** settings will be available for **Export**.*

4. Select ***OK*** to begin the export process or ***Cancel*** to exit without exporting.
5. 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.*

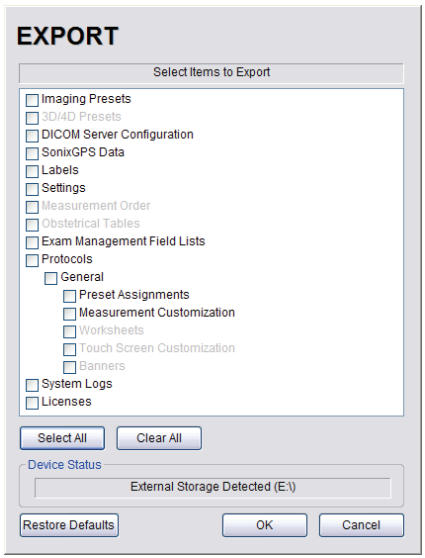
Only active ***Protocols*** *with changes to default* ***Presets****,* ***Measurement*** *and* ***Worksheet*** *settings will be available for* ***Import****.*

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.

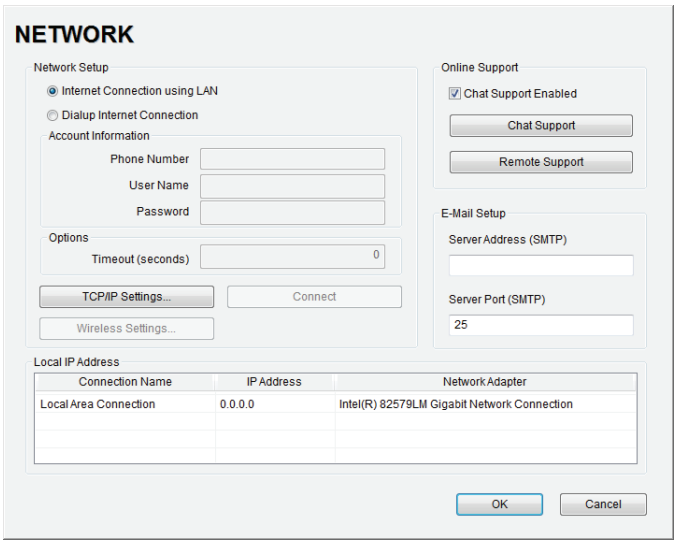
Note: *A dialup connection requires a third-party, USB modem. Contact your dealer or Ultrasonix Technical Support to learn more about this option.*

Remote Support (3.4 and 8.1.2) 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 (8.1.3 and 8.2.11.4) 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 8-20: Network Dialog



Note: *A network connection is required to use any of the following:* ***DICOM***, ***Chat Support***, ***Remote Support*** *and* ***SonixLive****.*

Table 8-19: Network Settings

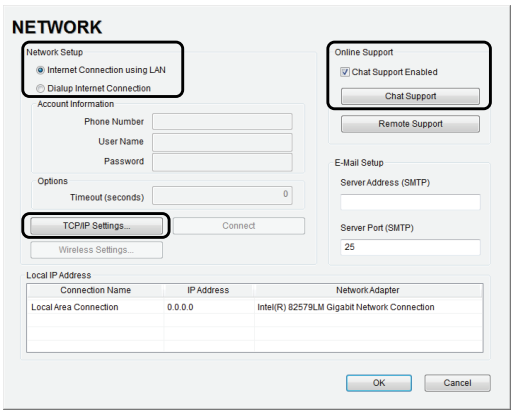
Network Setup		***Internet Connection Using LAN***	
		OR	Select ***Internet Connection*** type: ***LAN*** or ***Dialup***.
		Dialup Internet Connection	
	Account Information	***Phone Number***	If ***Dialup*** was selected in the previous step, enter the telephone number for the ***Internet Service Provider*** (***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.
	Options	***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.*
		TCP/IP Settings…	Select to configure ***TCP/IP Settings***. Refer to **8.2.11.1 Ethernet (LAN) Network Configuration** for details.
		Connect	Select to ***Connect*** using the ***Dialup*** settings.
		Wireless Settings…	Select to configure ***Wireless Settings***. Refer to **8.2.11.3 Wireless Configuration** for details. (Not available on SonixOP Q+.)
Online Support		***Chat Support Enabled***	Select this checkbox to enable ***Chat Support***.
		Chat Support	Select to access ***Chat Support*** (**8.1.3 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.
E-Mail Setup		***Server Address***	Enter the ***Outgoing (SMTP) Server Address*** here.
		Server Port	Enter the ***Outgoing Server Port*** number here.
Local IP Address		***Connection Name*** ***IP Address*** ***Network Adapter***	When a ***Network*** connection(s) is available, the data associated with ***Connection Name***, ***IP Address*** and ***Network Adapter*** will auto-complete. ***Note:*** *If the system is not connected to a network, the* ***IP Address*** *(in the* ***Network*** *dialog) will contain only zeroes (e.g. 000.000.0.000).* If more than one ***LAN*** connection is available, highlight the relevant connection before selecting the ***TCP/IP*** button. If a specific ***LAN*** connection is not selected, the ***TCP/IP*** button will always present the data from the first ***LAN*** connection in the list. ***Note:*** *The same is true for multiple* ***Wireless*** *connections and the* ***Wireless*** *button.* When using ***SonixLive***, the video recipient must be advised of the system's ***Local IP Address***. ***Note:*** *When using* ***SonixLive*** *(**8.1.1**), this* ***Local IP Address*** *can be accessed temporarily by selecting the* ***SonixLive*** *icon (**8.2.17**) on the LCD display.*

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):

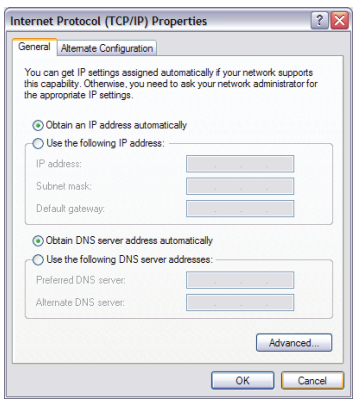
1. Connect an RJ45 cable to the LAN port located on the Back Connectivity Panel.
2. Press the console ⚙ button.
3. Select ***Administrator > Network > Internet Connection using LAN***.



4. Under ***Online Support***, ensure the ***Chat Support Enabled*** checkbox has been selected.

Note: *Do not select the* ***Chat Support Enabled*** *checkbox unless there is an Internet connection available.*

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.

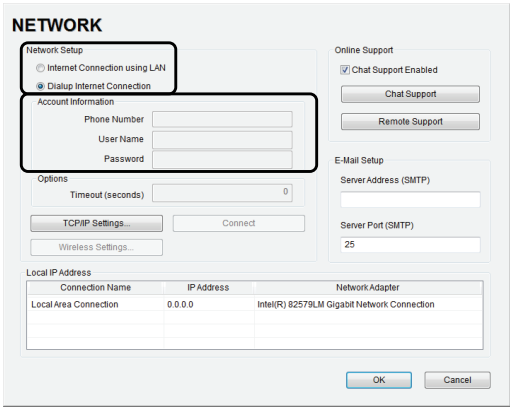
Note: *It may be necessary to restart in order for the changes to take affect.*

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 the Back Connectivity Panel.
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 ***Online 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 Wireless Configuration

Wireless is only available as a factory-installed option.

Note: *Not available on SonixOP Q+.*

Figure 8-21: Network Configuration Page (Wireless)

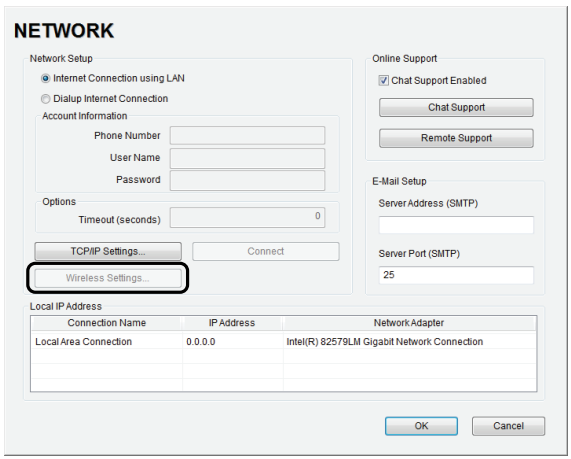


Figure 8-22: Wireless Network Connection Setup

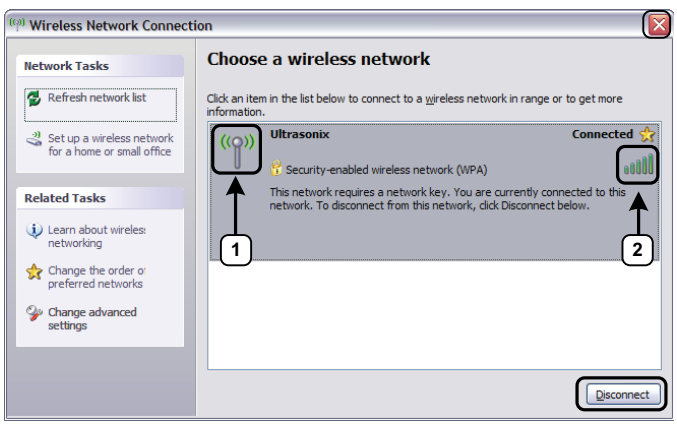


Table 8-20: Wireless Network Connection Setup

1	Security Indicator	**2**	Wireless Signal Strength Indicator

Notes:

Wireless Network Connection *options are controlled by MS Windows, not Ultrasonix.*

Once a secured, wireless network is in place, it will be necessary to obtain the institution's ***Network Key*** *(from the IT department) in order to log in.*

To Configure a Wireless Connection (If Available)

Notes:

When more than one wireless network is available, consult the IT department to determine which one is relevant for system operations.

Do not select the ***Chat Support Enabled*** *checkbox unless an Internet connection is available.*

1. Press the console button.
2. Select ***Administrator > Network > Wireless Settings…***.
3. Complete the wireless connection following the onscreen directions in the ***Wireless Network Connection*** dialog.
4. Under ***Online Support***, ensure the ***Chat Support Enabled*** check box has been selected.

   Note: *Do not select the* ***Chat Support Enabled*** *checkbox unless an Internet connection is available.*
5. Select ***OK*** and exit the menu system.

8.2.11.4 Chat Support

Chat Support enables a real-time discussion with a member of the Ultrasonix Technical Support team. To access ***Chat Support***, refer to **8.1.3**.

Note: *A network connection is required for* ***Chat Support****.*

To Enable Chat Support:

1. Press the console button.
2. Select ***Administrator > Network***.
3. Under ***Online Support***, ensure the ***Chat Support Enabled*** check box has been selected.

Note: *Do not select the* ***Chat Support Enabled*** *checkbox unless an Internet connection is available.*

8.2.11.5 Remote Support

Remote Support is a licensed option that allows a member of the Ultrasonix 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***.

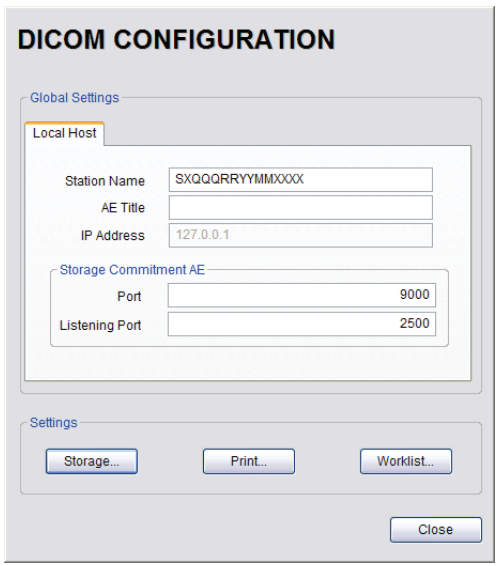
Note: DICOM Structured Reporting *is supported. Refer to* **Table 8-22** *for* ***Structured Reporting*** *data transfer options.*

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 8-23: DICOM Configuration



Note: Global Settings *for the* ***Local Host*** *apply to* ***DICOM Storage***, ***Print*** *and* ***Worklist***.

Table 8-21: 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***	***Port*** issues ***Storage Commitment*** requests (***N-Action***).
		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 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 tabbed settings options, select the* ***Settings…*** *button to access* ***Storage Settings****.*

The ***DICOM Storage AE Configuration*** dialog enables configuration of ***AE*** properties.

Figure 8-24: DICOM Storage Settings – AE Configuration

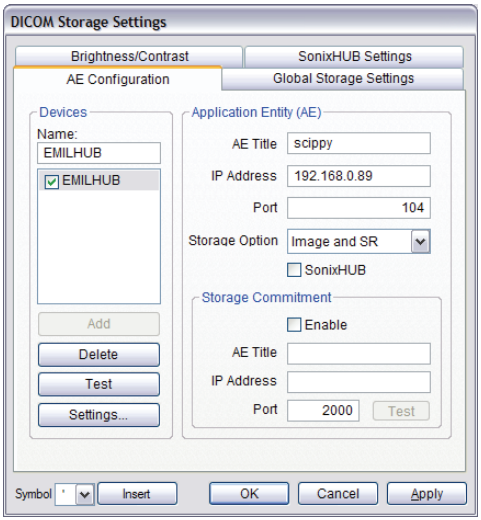


Table 8-22: DICOM Storage Settings – AE Configuration

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 ***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 8-25 and Table 8-23).
Application Entity (AE)	***Note:*** *The data entered/edited in the following fields is specific to the selected* ***Device Name***.	
	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). • ***Image and SR***: transfers both ***Images*** and ***Structured Report*** • ***Image***: transfers only ***Images*** • ***SR (Structured Report)***: transfers only the ***Structured Report***.

Application Entity (AE), cont'd	***SonixHub***		Select to enable/disable ***SonixHub***. ***Note:*** *This setting is only available if* ***SonixHub*** *is licensed.*
	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 8-25: DICOM Storage Settings – Storage Settings

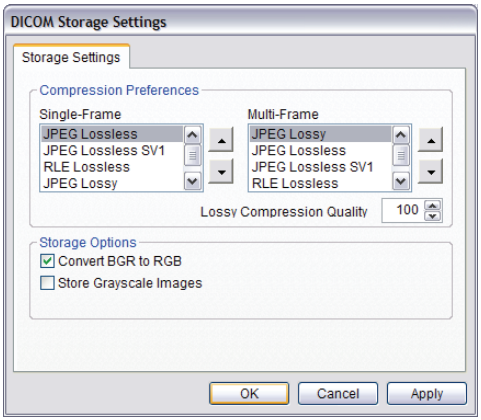


Table 8-23: DICOM Storage Settings – Storage Settings

Compression Preferences	***Single-Frame***	***JPEG Lossless*** ***JPEG Lossless SV1*** ***RLE Lossless*** ***JPEG Lossy*** ***No Compression***	Set ***DICOM*** image format storage order for single frame images. ***Note:*** *Refer to the* ***DICOM Standard*** *for details on image formats.*
	Multi-Frame	***JPEG Lossy*** ***JPEG Lossless*** ***JPEG Lossless SV1*** ***RLE Lossless*** ***No Compression***	Set ***DICOM*** image format storage order for ***Cine loops***. ***Note:*** *Refer to the* ***DICOM Standard*** *for details on image formats.*
	Lossy Compression Quality		Select the quality (1–100%) of image compression.
Storage Options	***Convert BGR to RGB***		Select to swap the color components of the image pixel data—the blue colors are swapped with the red colors.
	Store Grayscale Images		Select to store images in grayscale format.
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 Global Storage Settings*** dialog specifies global image storage parameters.

Figure 8-26: DICOM Storage Settings – Global Storage Settings

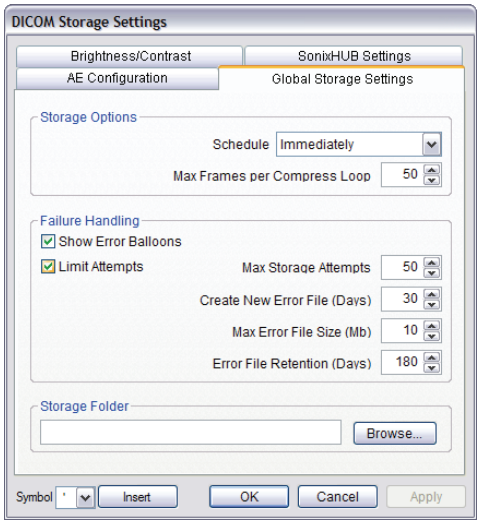


Table 8-24: DICOM Storage Settings – Global Storage Settings

Storage Options	***Schedule***		Select an auto-transfer setting: ***End of Exam***, ***Immediate***, ***On Idle***.
	Max Frames per Compress Loop		Maximum number of frames compressed at one time: 10–300. The default is 50. ***Note:*** *Once all frames in a given file are compressed, the completed file will be transferred.* *Compression type is based on the* ***Multi-Frame*** *format selected in the* ***Storage Settings*** *dialog.*
Failure Handling	***Show Error Balloons***		Select to enable the display of ***DICOM Storage*** error messages (e.g., ***Failed to connect to DICOM***).
	Limit Attempts		Select to configure error handling after a failed ***DICOM*** storage attempt. ***Note:*** *If* ***Limit Attempts*** *is not selected, the following four options will be grayed out.*
		Max Storage Attempts	Select the maximum number of times the system will retry after a failed storage attempt: 1–1000. The default is 50. ***Note:*** *Failure may occur during* ***DICOM*** *file creation or* ***DICOM*** *file transfer. The retry setting applies to both failure types.*
		Create New Error File (Days)	Select the length of time (in days) that initiates the creation of a new error file: 1–90. The default is 30 days. ***Note:*** *When a new file is created, the existing file is saved, renamed and stored for 180 days.* *This setting works in conjunction with* ***Max Error File Size (MB)****. A new file is created based on whichever limit is reached first.*

Failure Handling, cont'd	***Limit Attempts, cont'd***	***Max Error File Size (MB)***	Select the file size (in MB) that initiates the creation of a new error file: 1–50. The default is 10 MB. ***Note:*** *When a new file is created, the existing file is saved, renamed and stored for 180 days.* *This setting works in conjunction with* ***Create New Error File (Days)****. A new file is created based on whichever limit is reached first.*
		Error File Retention (Days)	Select the length of time (in days) that each error file will be retained: 30–180. The default is 180 days.
Storage Folder			Select the location (local or remote) where the images will be stored. ***Note:*** *If a value is specified, the* ***AE Configuration*** *and* ***Storage Commitment*** *dialogs are disabled—images can not be stored to an* ***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 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 8-27: DICOM Storage Settings – Brightness/Contrast

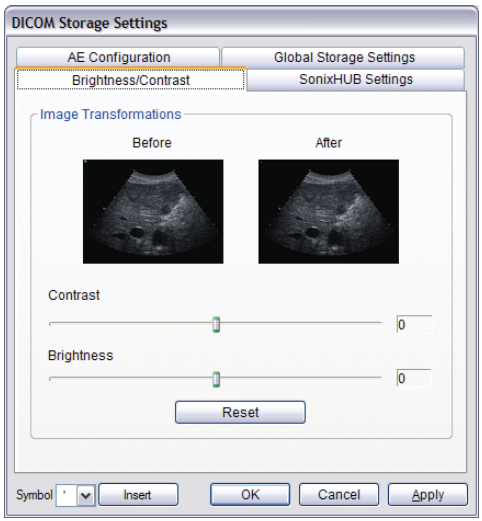


Table 8-25: DICOM Storage Settings – Brightness/Contrast

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. ***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.*

The ***DICOM SonixHub Settings*** dialog specifies ***SonixHub*** parameters.

Note: *These settings are only available if* ***SonixHub*** *is licensed.*

Figure 8-28: DICOM Storage Settings – *SonixHub* Settings

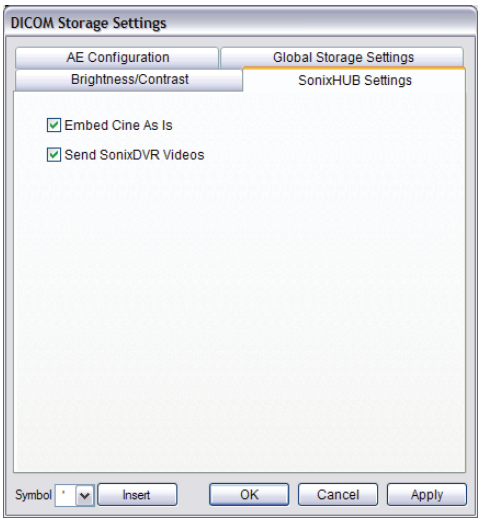


Table 8-26: DICOM Storage Settings – Global Storage Settings

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 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 ***Brightness/Contrast*** as required.

Note: *In addition to the two 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 8-29: DICOM Print Settings – AE Configuration

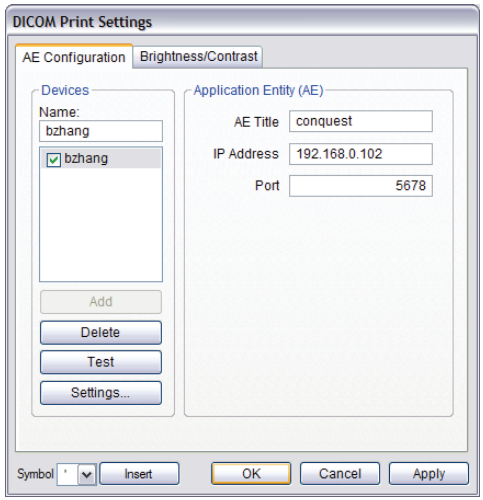


Table 8-27: DICOM Print Settings – AE Configuration

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 ***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 8-30 and Table 8-28) and ***Advanced Print Settings*** (Figure 8-31 and Table 8-29).
Application Entity (AE)	***Note:*** *The data entered/edited for the next three 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 8-30: DICOM Print Settings – Print Settings

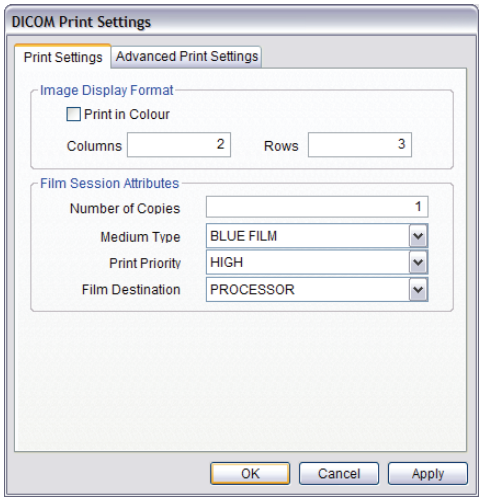


Table 8-28: DICOM Print Settings – Print Settings

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 8-31: DICOM Print Settings – Advanced Print Settings

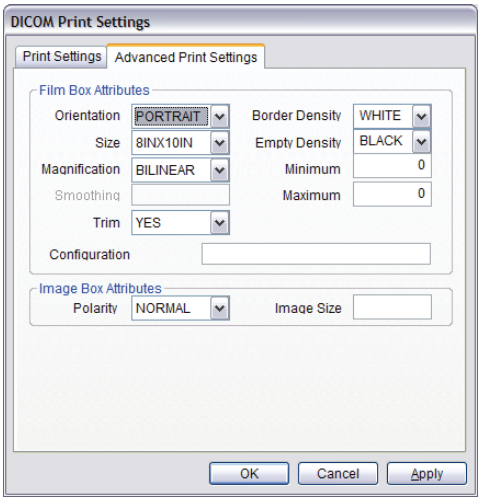


Table 8-29: DICOM Print Settings – Advanced Print Settings

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:*** *This option is printer-specific and only available if* ***Cubic Magnification*** *is selected in the previous field.*
	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 8-32: DICOM Print Settings – Brightness/Contrast

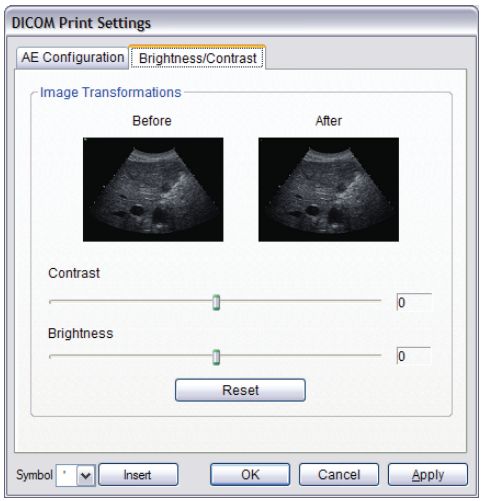


Table 8-30: DICOM Print Settings – Brightness/Contrast

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.
	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.*

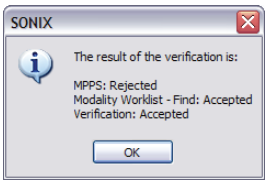
8.2.12.3 DICOM Worklist Settings

DICOM Worklist Settings offer advanced settings for configuring the ***DICOM Worklist SCU***.

Note: *All* ***Modality Performed Procedure Steps*** *(****MPPS****) functionality is invisible to the user, except when testing a* ***DICOM Worklist Device****.*

MPPS *will be accepted or rejected based on the* ***DICOM Server's*** *settings.*

Figure 8-33: DICOM Worklist Device Test Results



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 8-34: DICOM Worklist Settings – AE Configuration

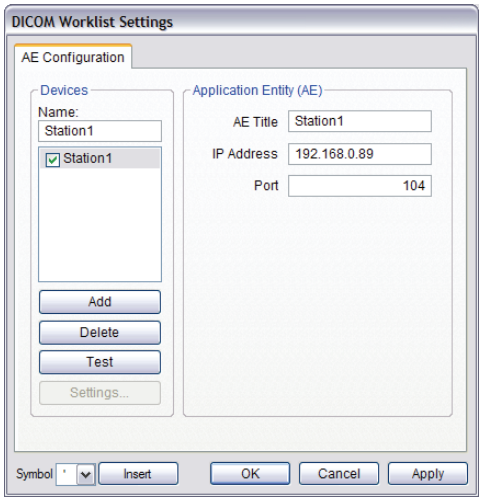


Table 8-31: DICOM Worklist Settings – AE Configuration

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 ***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 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 control the actions of several console and touch screen buttons: **1**, **2**, , , and **Q**.

The ***Custom Key*** setup dialog has a tab that corresponds to each of the ***Custom Key*** console or touch screen buttons. Once configured, pressing/tapping one of these buttons will produce the defined action.

Figure 8-35: Custom Keys (1, 2, and 3)

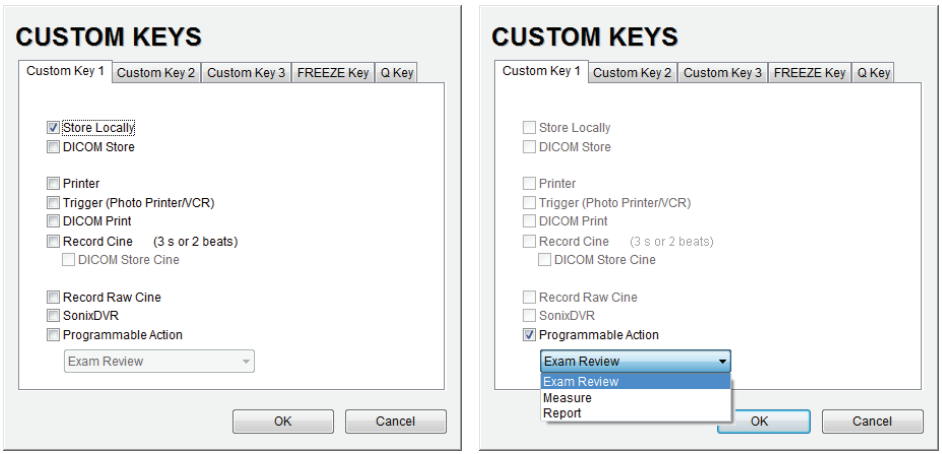


Table 8-32: Custom Key Settings (1, 2, and 3)

Store Locally	This setting is always selected by default and can only be deselected (or reselected) if all options except ***Trigger*** are deselected. When selected, regardless of other settings, images will always be saved to the system's local storage. ***Note:*** *Access locally stored images through the* ***Exam Management*** *page or the touch screen* ***Exam Review*** *button*
DICOM Store	Sends images to a ***DICOM*** archive. Refer to **8.2.12 DICOM Configuration** for more setup details.
Printer	Sends output to a ***Paper Printer***. Refer to **8.2.14 Peripherals** for details on printer setup.
Trigger (Photo Printer/VCR)	Sends a ***Trigger*** signal to attached video printers (e.g., ***Thermal Printer***). ***Note:*** *To select* ***Store Locally*** *(above), all other options must be deselected.*
DICOM Print	Sends images to a ***DICOM*** printer. Refer to **8.2.12 DICOM Configuration** for more setup details.
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 (**5.9.4 Raw Cine Manipulation**).
SonixDVR		Enables ***SonixDVR*** recording (i.e., a physical recording device is not 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 of five specific actions—unrelated to printing.	
	Exam Review	Toggles access between imaging and ***Exam Review*** page.
	Gated Capture	Pressing the relevant console ***Custom Key*** will trigger the timer for ***Gated Capture***. (Available only on SonixTouch Q+.) ***Note: Gated Capture*** *is available only if:* • ***Capture Protocols*** *is licensed (**8.2.18**)* • *the system is equipped with an* ***ECG*** *module.*
	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).

Figure 8-36: Custom Key Settings (FREEZE and Q Keys)

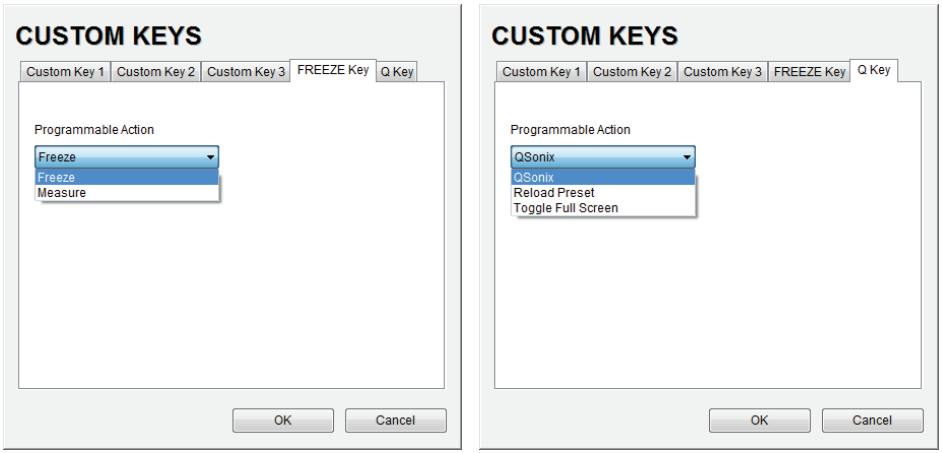


Table 8-33: Custom Key Settings (FREEZE and Q Keys)

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.
Q Key	***Programmable Action***	Enables the user to customize the action of the Q button.	
		QSonix	Initiates the ***QSonix*** option. This setting is the system default.
		Reload Preset	Selecting ***Reload Preset*** enables the ***Operator*** to reset the current ***Preset*** to its default settings, effectively "erasing" any changes made to imaging parameters during the current exam. ***Note:*** *The* ***QSonix*** *option will not be available if* ***Reload Preset*** *is selected as the* ***Q Key*** *action.*
		Toggle Full Screen	Toggles the imaging screen between ***Full*** and ***Normal*** (refer to **8.2.15 Display Settings** for more details).

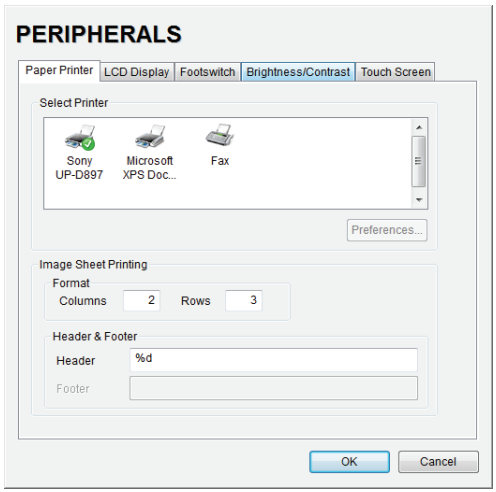
To Configure Custom Keys:

1. Press the console ⚙ button.
2. Select ***Administrator > Custom Keys***.
3. Select the desired ***Custom Key*** tab.
4. Configure the individual ***Custom Key*** options 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 8-37: 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.

Warning: *Before connecting a* ***Paper Printer****, refer to* **10.3 Ultrasonix-Approved Devices**.

Figure 8-38: Peripherals – Paper Printer

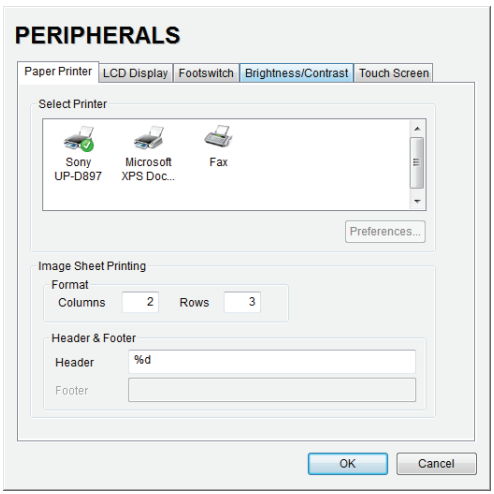


Table 8-34: Paper Printer Settings

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	***Note:*** *This field is always disabled.*

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***.*

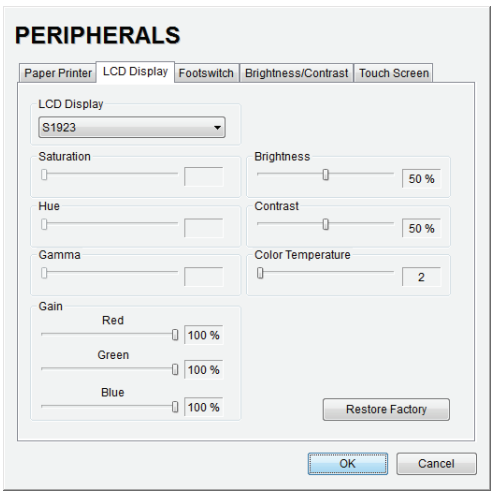
   To send partial print pages (e.g., 3 images remaining on a 4 image/sheet format) at the end of an exam, tap the touch screen ***End Exam*** *button.*

8.2.14.2 LCD Display

Adjust the following LCD display settings as required: ***Saturation***, ***Hue***, ***Gamma***, ***Gain*** (***Red***, ***Green*** and ***Blue***), ***Brightness***, ***Contrast*** and ***Color Mode***.

Note: *Select the* ***Restore Factory*** *button to reconfigure* ***LCD Display*** *to factory settings.*

Figure 8-39: 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 Footswitch

The ***Footswitch*** dialog allows the user to configure the desired operation for as many as three footswitches. There are ten options: ***None***, ***Print, Freeze***, ***Quick Cine Record***, ***Exam Management***, ***Measurement***, ***Exam Review, SonixDVR***, ***Next Transducer*** and ***Transducer 1***, ***2***, or ***3***.

Note: *The numbered transducer options corresponds to the equivalent transducer connector (e.g., the option for* ***Footswitch #2*** *is* ***Transducer 2****. When* ***Transducer 2*** *is selected and the pedal for* ***Footswitch #2*** *is pressed, the system will switch to whichever transducer is connected to the second transducer port.*

Figure 8-40: Peripherals – Footswitch

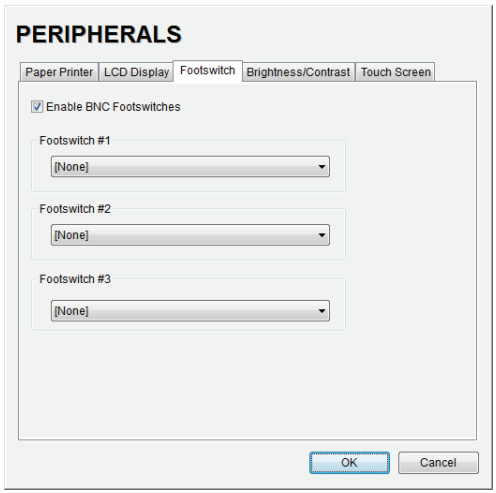


Table 8-35: Footswitch Options

Enable BNC Footswitches		Ensure an Ultrasonix-approved ***Footswitch*** has been connected (10.11), then select checkbox to enable ***Footswitch*** operation.
Footswitch #1, #2, #3	***None*** ***Print*** ***Freeze*** ***Quick Cine Record*** ***Exam Management*** ***Measurements*** ***Exam Review*** ***SonixDVR*** ***Next Transducer*** ***Transducer 1, 2, 3***	Select the action to be performed when a specific footswitch is pressed. ***Note:*** *The numbered transducer option corresponds to the equivalent transducer connector (e.g., the option for* ***Footswitch #2*** *is* ***Transducer 2****. When* ***Transducer 2*** *is selected and the pedal for* ***Footswitch #2*** *is pressed, the system will switch to whichever transducer is connected to the second transducer port.*

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.

8.2.14.4 Brightness/Contrast

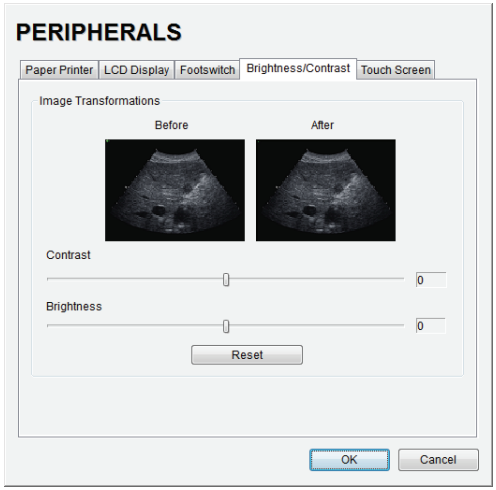
The ***Brightness/Contrast*** dialog allows users to change the ***Brightness/Contrast*** of images transferred to peripherals to ensure optimum quality.

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 8-41: 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.

8.2.14.5 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 8-42: Peripherals – Touch Screen

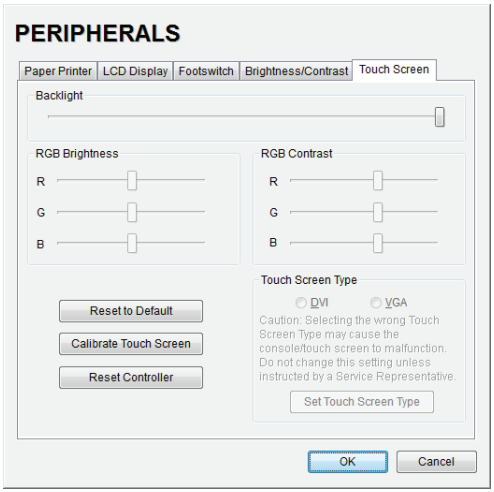


Table 8-36: Touch Screen Settings

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.

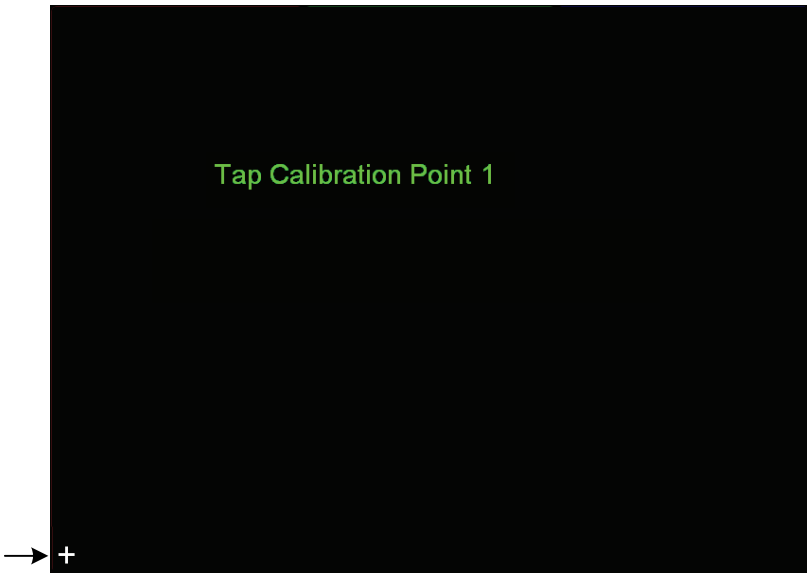
To Adjust the Touch Screen Settings:

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 8-43: Display Settings

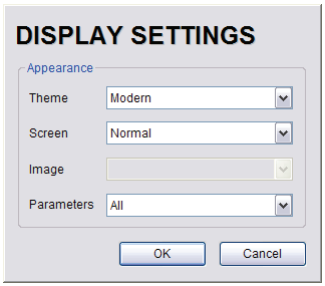


Table 8-37: Display Settings

Appearance	***Theme***	***Classic*** ***Modern***	Configure the basic settings for the LCD display using either ***Modern*** or ***Classic*** features.
	Screen	***Normal*** ***Full***	Configure imaging ***Layout***. ***Note:*** *Users can toggle between* ***Full*** *and* ***Normal*** *by setting the* ***Q Custom Key*** *to* ***Toggle Full Screen*** *(8.2.13).*
	Image	***Right*** ***Left***	Not available on SonixTouch Q+ or SonixMDP/SP/OP Q+.
	Parameters	***All*** ***Subset***	Configures the system to display ***All*** available or a specific ***Subset*** of imaging parameters. ***Subset*** combinations vary based on the selected imaging modes. The base ***Subset*** (all modes) consists of: ***MI***, ***TI***, ***SoS***, ***FPS*** and ***Freq*** Additional ***Subsets*** are as follows: • ***Color***, ***Power***: ***Color PRF*** and ***Color Freq*** • ***PW***, ***CW***: ***Doppler PRF*** and ***Doppler Freq*** • ***Dual***, ***Quad***, ***Triplex***: ***Active***. Refer to Table E-1 for imaging parameter details. ***Note:*** *When* ***Subset*** *is selected, a* ***Depth*** *value will be written beneath 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 available on SonixMDP/SP/OP Q+.)
- ***FTP*** transfers are automatically initiated once an exam is ended (**8.2.17 Status Bar**).

Figure 8-44: Patient Settings

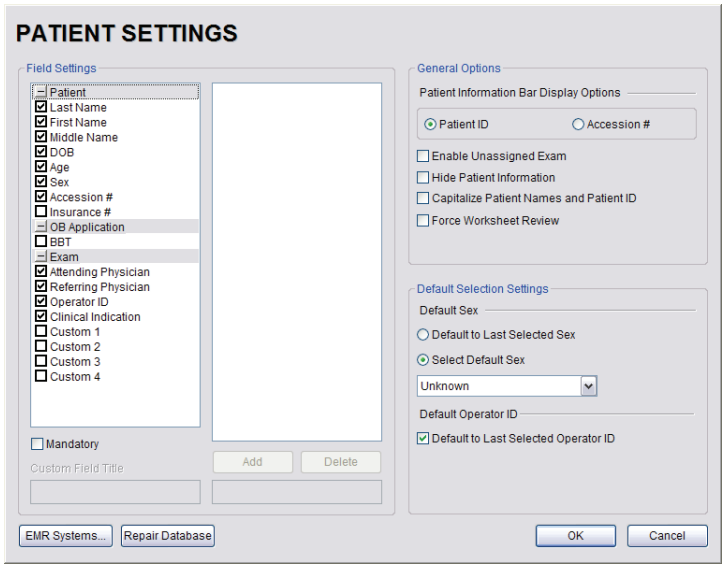


Table 8-38: Patient Settings

Field Settings	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**).	
	Last Name ***First Name*** ***Middle Name*** ***DOB*** ***Age*** ***Sex*** ***Accession #*** ***Insurance #***	When selected, these fields will be available under ***Patient Information*** (**4.1.1**).
	BBT	When selected, ***BBT*** will be available under ***Application Information*** (**4.1.2**). ***Note: BBT*** *is only applicable when the* ***Application*** *is set to* ***OB****.*

<table>
<tr><td rowspan="5">Field Settings, cont'd</td><td colspan="3">Note: Users are able to add/edit/delete data in the following fields. Deleting data does not affect existing patients.

Once deleted, the data can be added again at a later date either here or on the Exam Management page (4.1.3).</td></tr>
<tr><td colspan="2">Attending Physician
Referring Physician
Operator ID
Clinical Indication</td><td>When selected, these fields will be available under Exam Information (4.1.3).</td></tr>
<tr><td colspan="2">Custom 1, 2, 3, 4</td><td>Use these four 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).</td></tr>
<tr><td colspan="2">Mandatory</td><td>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.</td></tr>
<tr><td rowspan="4">General Options</td><td colspan="3">General Options control the ability to include/exclude or display/hide certain fields in the Patient Bar on the imaging screen.</td></tr>
<tr><td>Patient Information Bar Display Options</td><td>Patient ID
OR
Accession #</td><td>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.</td></tr>
<tr><td colspan="2">Enable Unassigned Exam</td><td>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 Ultrasonix are assuming all liabilities and risks associated with that decision.</td></tr>
<tr><td colspan="2">Hide Patient Information</td><td>Select/deselect to display/hide the Patient Information during an exam.</td></tr>
<tr><td colspan="2">Capitalize Patient Names and Patient ID</td><td>Select to capitalize all letters in a patient's name or identification number.</td></tr>
<tr><td colspan="2">Force Worksheet Review</td><td>Not available on SonixMDP/SP/OP Q+.</td></tr>
</table>

Default Selection Settings	***Default Sex***	***Default to last selected sex*** ***OR*** ***Select default sex***	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. 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 choices available: ***Female***, ***Male***, ***Other*** and ***Unknown***.
	Default Operator ID	***Default to last selected Operator ID***	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. ***Note:*** *This option is especially useful if the same* ***Operator*** *will be using the system for an extended period of time.*
EMR Systems...	Refer to **8.2.16.1 EMR Settings** for details on ***EMR System Settings***.		
Repair Database			Performs basic database file compression which can improve system performance. ***Caution:*** *This operation is best performed by or under the supervision of a Service Representative.*

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

Figure 8-45: EMR System Settings and Operators

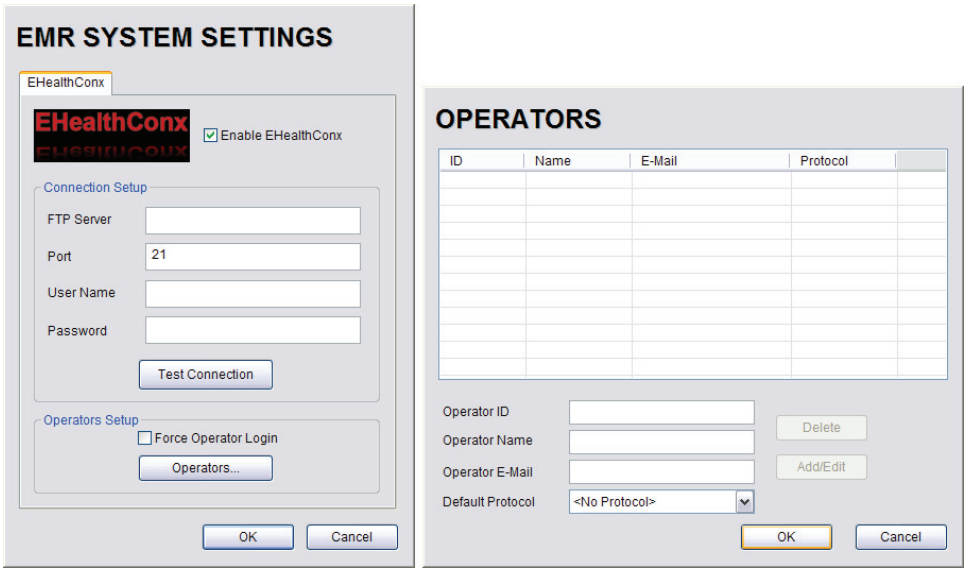


Table 8-39: EMR Settings

EMR Systems…	Selecting an ***EMR*** (***Electronic Medical Record***) ***System*** setting enables that ***EMR System***. It will also enable the configuration/control of ***Operator IDs***.				
	EHealthConx	***Connection Setup***	***Enable EHealthConx***		Select/deselect to enable/disable ***EHealthConx***.
			FTP Server ***Port*** ***User Name*** ***Password***		Enter the relevant data as provided by ***EHealthConx***. ***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*.*
			Test Connection		After entering the ***Connection Setup*** data, select this button to test the ***FTP*** connection.
		Operators Setup	***Note: Operator IDs*** *entered here are specific to* ***EHealthConx****, but they will also:* • *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).*		
			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).*
			Operators…	***Operator ID*** ***Operator Name*** ***Operator E-Mail*** ***Default Protocol***	Enter the relevant data in each field. ***Note:*** *The* ***Operator E-Mail*** *address must be valid as it is used by* ***EHealthConx*** *to identify the* ***Operator*** *involved in each specific exam.*

To Access EMR Settings:

1. Press the console button.
2. Select ***Administrator > Patient > EMR Systems…***.

To Configure EMR 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 8-46: Status Bar

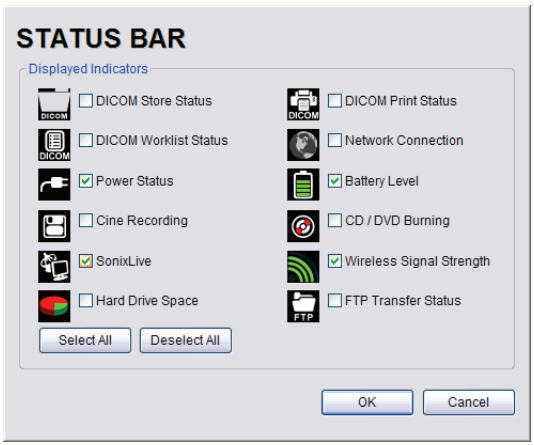


Table 8-40: Status Bar – Displayed Indicators

DICOM Store status Active Success Failure	Indicates the system is connected to a ***DICOM Storage*** server. This icon will be visible for only a short period of time. When an ***Operator*** accesses the ***DICOM Storage*** server, the icon will be presented while the operation is underway. ***Note:*** *A* ***Network*** *connection must exist in order to have access to a* ***DICOM*** *network.*
DICOM Print status Active Success Failure	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. ***Note:*** *A* ***Network*** *connection must exist in order to have access to a* ***DICOM*** *network.*
DICOM Worklist status Success Failure	Indicates the system is connected to a ***DICOM Worklist*** server. This icon will be visible only when the ***DICOM Worklist*** server is being accessed. ***Note:*** *A* ***Network*** *connection must exist in order to have access to a* ***DICOM*** *network.*

Network connection

Connected Not Connected

Indicates whether or not a hard-wired network connection is available.

Power status

Connected Not Connected

Specifies whether or not the system is connected to AC power.

Battery level

≥80% ≤79% ≤59% ≤39% ≤19%

Displays the approximate amount of ***Battery*** power remaining. (Not available on SonixOP Q+.)

Note: *Ultrasonix recommends selecting this option so* ***Operators*** *will always be aware of the battery power level.*

Over time, the level will rise when the system is connected to an AC power source or fall when it is running solely off the UPS battery.

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.*

SonixLive

Connected Not Connected

When ***SonixLive*** is activated, the ***Connected*** icon will be visible on the LCD Display.

Wireless signal strength

100% 75% 50% 25% 0%

Denotes the strength of the wireless signal (%). (Not available on SonixOP Q+.)

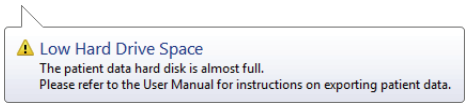
Note: *If a wireless network is not available and active, the relevant icon will not be presented—even if this option is enabled.*

Hard Drive Space

Displays the approximate amount of remaining ***Hard Drive Space*** to the nearest 1%.

Refer to **4.7 Exam Import/Export** for details on backing up/deleting Patient Data.

Note: *The* ***Low Hard Drive Space*** *warning is displayed when remaining* ***Hard Drive Space*** *falls below 30 GB, even if the option was not selected in the* ***Status Bar*** *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 8-38** for more detail). ***Note:*** *Once an* ***FTP*** *connection is configured under* **EMR Systems…** *(***Table 8-38***), 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.

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

Capture Settings allows the user to configure basic settings for ***Capture***, ***SonixDVR/SonixCam*** and ***Cine Advanced***.

Figure 8-47: Capture Settings – Capture

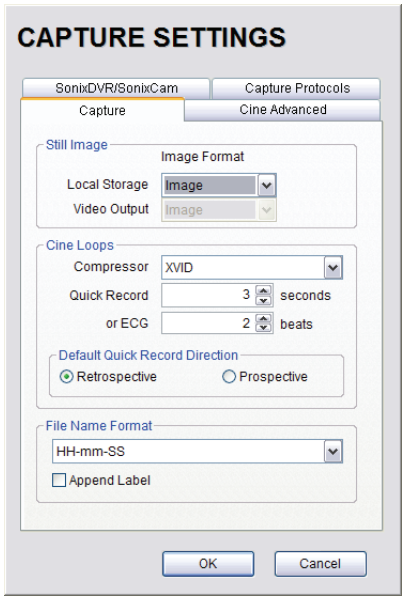


Table 8-41: Capture Settings – Capture

Still Image	***Local Storage***	Select between ***Full Screen*** and ***Image*** for still image storage. ***Note:*** *Image includes image field, imaging parameters and patient data bar. Thumbnail images are not included.* *Full screen 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.*

Cine Loops, cont'd	***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:*** *Refer to* **Accessories–Third Party** *in Appendix B for the recommended* ***ECG*** *electrode. (****ECG*** *is not available on SonixSP Q+ or SonixOP Q+.)*
	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**.
File Name Format	***File Name Format***		Select a ***File Name Format*** from the drop-down menu: • ***HH-mm-SS*** (hour-minute-second) • ***ID_HH-mm-SS*** (Patient ID_hour-minute-second) • ***ID_MM-DD-YYYY_HH-mm-SS*** (Patient ID_Month-Day-Year_ hour-minute-second) • ***Label*** (per the ***Labels*** entered in the ***Auto-Label*** dialog). ***Note: Labels*** *are configured in the* ***Capture Protocols*** *dialog,* ***Auto-Label*** *and are available only on the SonixTouch Q+.*
	Append Label		Select to append the ***Label*** name to the end of the ***File Name Format*** selected. If the ***Label*** name contains spaces, those spaces will be maintained in the file name. ***Note: Labels*** *are configured in the* ***Capture Protocols*** *dialog,* ***Auto-Label*** *and are available only on the SonixTouch Q+.* *If* ***Label*** *is selected as the* ***File Name Format****, selecting* ***Append Label*** *will be ignored.*

Figure 8-48: Capture Settings – Cine Advanced

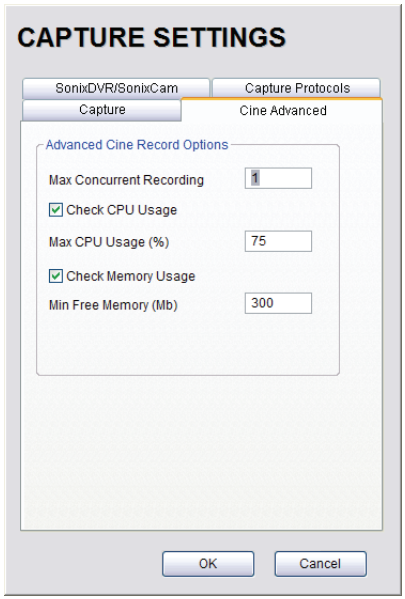
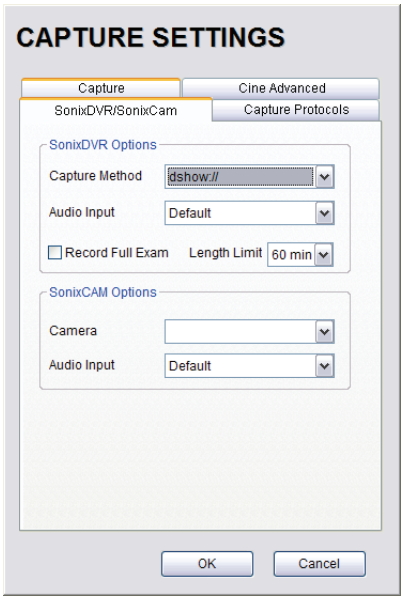


Table 8-42: Capture Settings – Cine Advanced

Advanced Cine Recording Options	***Note: Advanced Cine Recording Options*** *maximize system performance.* *If a setting range is exceeded, a message will be presented with details on the allowable range for the relevant field.*	
	Max Concurrent Recording	Enter the maximum number of ***Cine*** recordings to be handled concurrently: 1–10. The default is 1.
	Check CPU Usage	Select to activate this setting.
	Max CPU Usage (%)	Enter the maximum percentage of CPU usage allowable when processing ***Cine*** recordings: 20–100%. The default is 75%.
	Check Memory Usage	Select to activate this setting.
	Min Free Memory (MB)	Enter the minimum amount of memory (in MB) required to process ***Cine*** recordings: 100–1000. The default is 300 MB. If the required memory is not available, ***Cine*** processing will not proceed.
	Note: *During imaging, if any option exceeds its limit, an error message will be presented:* **Cine Acquisition** There are not enough available system resources to record the cine.	

Figure 8-49: Capture Settings – SonixDVR/SonixCam



Note: *To protect patient privacy during recording sessions, select the* ***Hide Patient Information*** *option in* ***Patient Settings****.*

Table 8-43: Capture Settings – SonixDVR/SonixCam

SonixDVR Options	***Note:*** *Refer to* **5.8 SonixDVR Recording** *for more details on this option.* *If* ***SonixCam*** *and/or* ***SonixLive*** *are already running, do not use* ***SonixDVR*** *until they have been shut down.*		
	Capture Method	***dshow://*** ***screen://***	Select ***Capture Method: dshow*** or ***screen***.
	Audio Input	***None*** ***Default*** ***Microsoft® LifeCam Cinema™*** ***Realtek HD Audio Input***	Select ***Audio Input*** method: ***None***, ***Default***, ***Microsoft LifeCam Cinema*** or ***Realtek HD Audio Input***. ***Note:*** *For optimal performance, Ultrasonix recommends setting* ***SonixDVR Audio Input*** *to* ***None***. ***Microsoft LifeCam Cinema*** *is only available if* ***SonixCam*** *is licensed (and connected).*
SonixDVR Options	***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: ***1***, ***5***, ***10***, ***20***, ***30***, ***40***, ***50*** or ***60 minutes***. Once the ***Length Limit*** is reached, the exam will automatically stop recording and save an MPG file 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 an* ***MPG*** *using the* ***Custom Key*** *configured for* ***SonixDVR***.
	Note: *If* ***SonixCam*** *is running,* ***SonixDVR*** *and/or* ***SonixLive*** *cannot be used.*		
	Camera		Select ***Camera*** type: ***USB Video Device*** (physical camera device) or ***UScreenCapture*** (video filter). ***Note:*** ***USB Video Device*** *is only available if* ***SonixCam*** *is licensed (and connected).*
	Audio Input	***None*** ***Default*** ***Microsoft® LifeCam Cinema™*** ***Realtek HD Audio Input***	Select ***Audio Input*** method: ***None***, ***Default***, ***Microsoft LifeCam Cinema*** or ***Realtek HD Audio Input***. ***Note:*** *For optimal performance, Ultrasonix recommends setting* ***Audio Input*** *to* ***Microsoft LifeCam Cinema****—which is the default for the hardware supplied as part of the* ***SonixCam*** *option.* ***Microsoft LifeCam Cinema*** *is only available if* ***SonixCam*** *is licensed (and connected).*

To Configure Capture Settings:

1. Press the console button.
2. Select ***Administrator > Capture***.
3. Configure the ***Capture***, ***Cine Advanced*** and ***SonixDVR/SonixCam*** dialogs 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 8-50: Imaging Modes and Color Settings

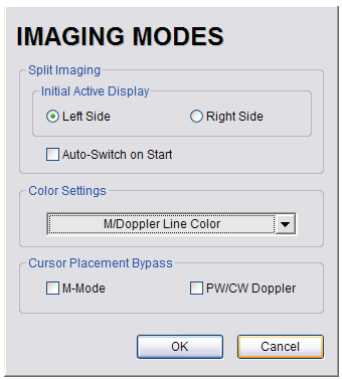


Table 8-44: Imaging Modes

Split Imaging	***Initial Active Display***	***Left Side***	When scanning in ***B-Mode***, 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 ***B-Mode***, 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***		***M-Mode*** automatically displays the split-screen ***2D/M-Mode Sweep*** immediately after ***M-Mode*** is activated. Deselecting ***M-Mode*** displays a full screen ***2D*** image with an ***M-Mode*** cursor line immediately after ***M-Mode*** is activated. (◉) activates the ***M-Mode Sweep***.
	PW/CW Doppler		***PW/CW Doppler*** automatically displays the split-screen ***2D/Doppler Trace*** immediately after ***Doppler*** is activated. Deselecting ***PW/CW Doppler*** displays a full screen ***2D*** image with the ***Doppler SV*** (***Sample Volume***) cursor immediately after ***Doppler*** is activated. (◉) activates the ***Doppler Trace***.

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.

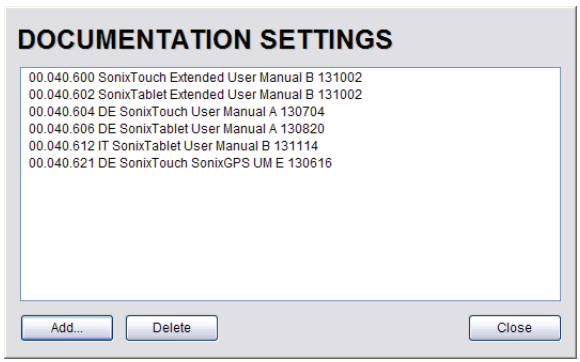
8.2.20 Documentation Settings

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.

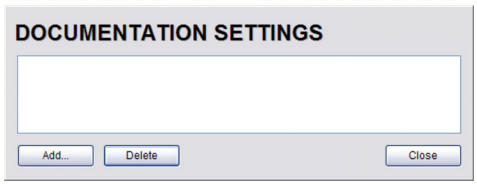
Figure 8-51: Documentation Settings



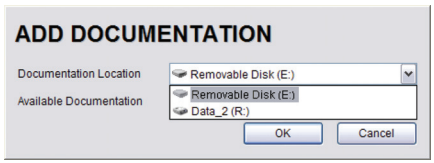
Note: *To view documentation (in PDF format only) on the system, refer to* **3.3.3 Documentation Access**.

To Add a (PDF) Document:

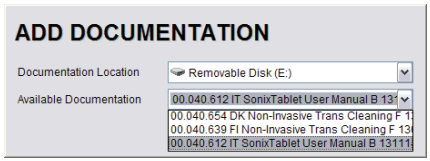
1. Ensure the appropriate media containing the relevant ***User Manual*** PDF(s) is connected to the system (e.g., a USB key).
1. Press the console button.
2. Select ***Administrator > Documentation***.



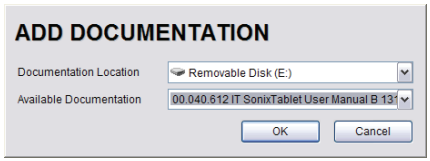
3. Select ***Add…***.
4. Select the ***Documentation Location*** from the drop-down menu.



5. Select the relevant PDF from the ***Available Documentation*** drop-down menu.



6. Select ***OK*** and the system will copy the PDF to the system.

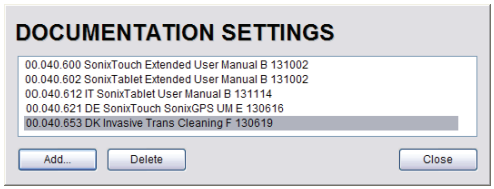


Note: *This may take a few moments, depending on the size of the PDF.*

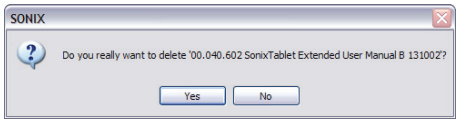
7. Repeat **step 3** to **step 6** as many times as required.

To Delete a (PDF) Document:

1. Press the console ⚙ button.
2. Select ***Administrator > Documentation***.
3. Highlight the PDF to be deleted.



4. Select ***Delete***.
5. When prompted, select ***Yes*** to delete the PDF or ***No*** to exit without deleting it.



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 8-52: Software Updates

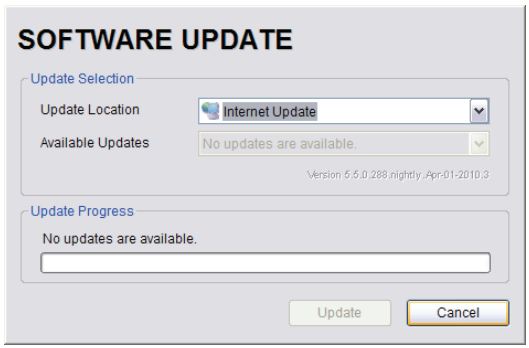


Table 8-45: Software Updates

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.
		Internet Driver Update	Enables ***Operators*** to install/update Ultrasonix-approved software drivers. ***Note:*** *The system must be connected to the Internet.*
		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.

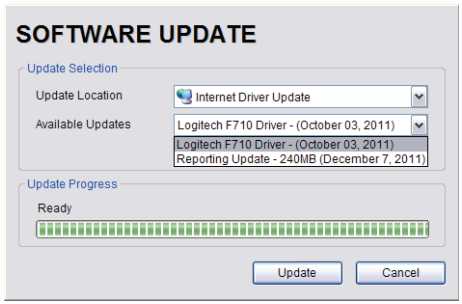
   Note: *The* ***Update Progress*** *bar displays the download progress. Upon completion, the* ***Software Update*** *will be auto-installed and the system will restart automatically.*

To Perform a Software Driver Update from a USB Key:

1. Create/obtain a USB key with the relevant driver file copied into the root directory.
2. Tap the touch screen button.
3. Press the console button.
4. Tap the touch screen ***Menu*** button.
5. Select ***Administrator > Software Updates***.
6. Select the relevant USB key from the ***Update Location*** drop-down menu.
7. Select the relevant driver file from the ***Available Updates*** drop-down menu.
8. 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 driver will auto-install.*

9. When prompted, select ***Close*** to complete the driver update.



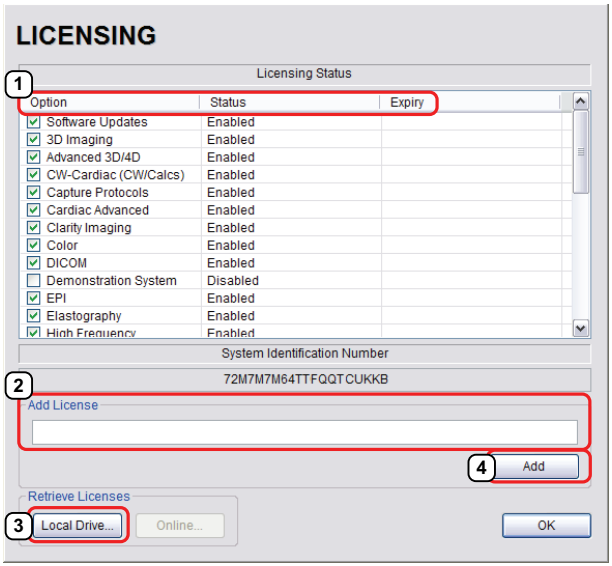
8.2.22 Licensing

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**.

When the system is powered up, if there are 30 days or less remaining until any license expires, a warning message will presented (**Figure 8-54**).

Figure 8-53: 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.*

Figure 8-54: License Expiration Reminder

Table 8-46: Licensing Status

1	***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****.* *When the system is powered up, if there are 30 days or less remaining until any license expires, a warning message will presented (***Figure 8-54***).*
	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 *license.key* 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 *license.key* into ***Add License***.
3	***Local Drive…*** Button	If *license.key* is available on the local hard drive, select ***Local Drive…*** and choose the appropriate file (*.key) to import/enable the new license.
4	***Add License*** Button	Select to add the license.

To Access the Licensing Dialog:

1. Press the console button.
2. 2. Select ***Administrator > Licensing***.

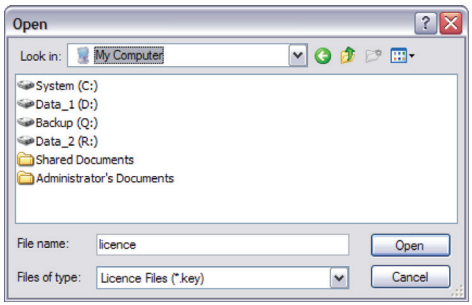
To Enter a New Licensing Key:

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.*

8.3 SERVICE MENU

Access to ***Service*** is password protected and restricted to certified, Ultrasonix Service representatives.

CHAPTER 9: IMAGE STORAGE, REVIEW, TRANSFER AND PRINT

The system 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

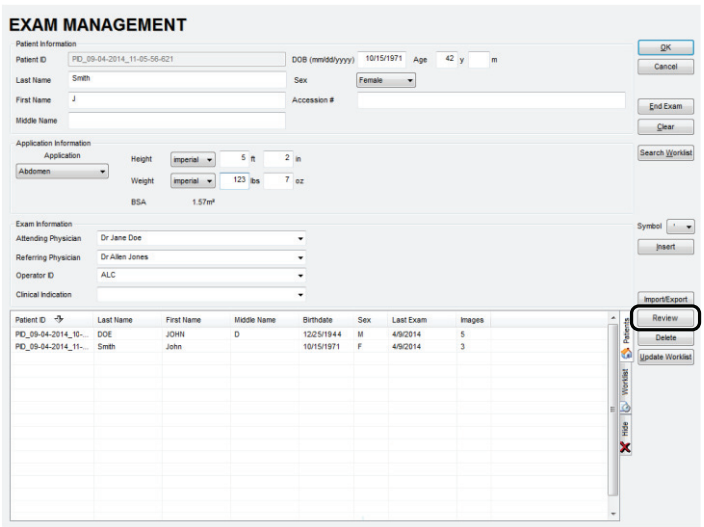
Each time a new patient is entered into the system, a local file is created for that patient. All saved images and ***Cine*** clips are stored in the patient file and organized by exam date and type. This image/***Cine*** data may be retrieved at any time and transferred to a printer, ***DICOM*** archive, etc.

Hard drive capacity for patient data storage is at least 160 GB. 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.*

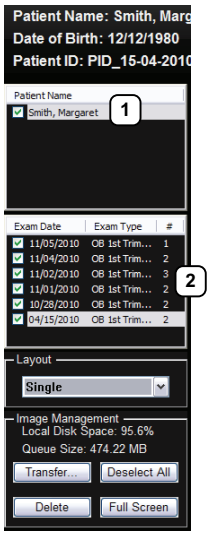
9.2 IMAGE REVIEW

Figure 9-1: Exam Management



Note: *Select **Review** to access **Exam Review** page (review current or selected Patient(s) image files).*

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)

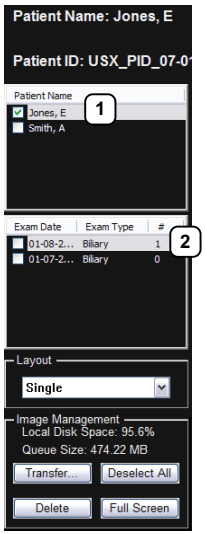


Table 9-2: Sample Exam Review Page (Method 3 – with Multiple Patients)

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

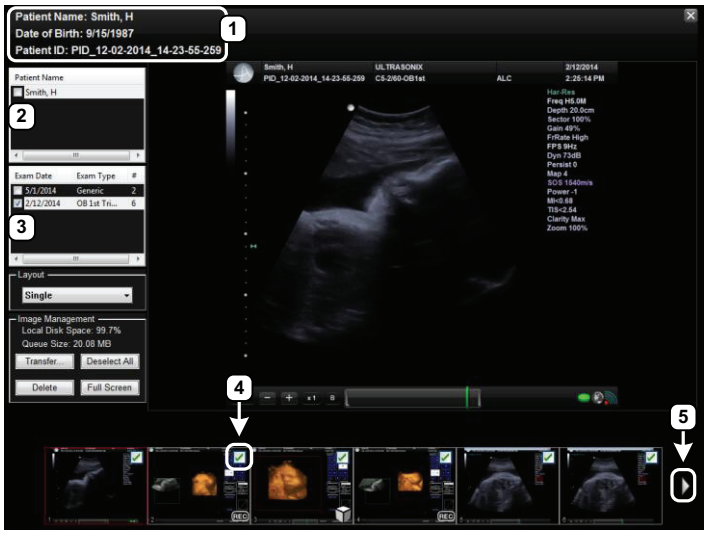


Table 9-3: Exam Review Page

1	Patient data for currently displayed image file.
2 — **3**	Check Patient and Exam file(s) for image transfer or deletion.
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:*** *Move the cursor off the arrow keys and 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 (****SonixDVR 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.*

REC

Raw ***Cine loops*** *(5.9.4) are labelled with the icon* ***RAW****.*

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 frame at a time.
Speed	Use to select ***Cine*** review play speed: ⅛, ¼, ½, 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) (**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

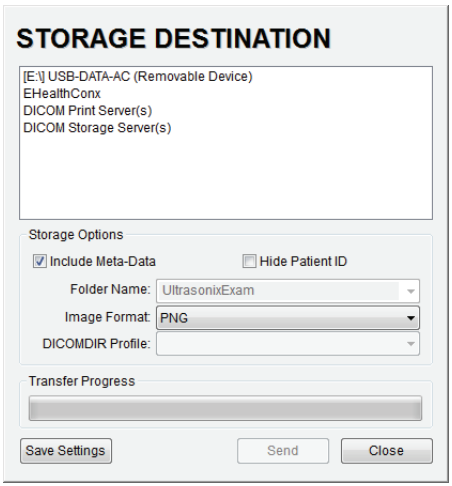
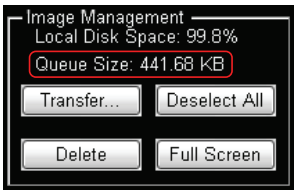


Table 9-8: Storage Destination Options

Storage Destination			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. ***Note:*** *A removable USB device must be connected to the system in order to have it appear in the list of* ***Storage Destinations****.*
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 file.
	Hide Patient ID		Removes Patient information (***Patient Name*** and ***ID***) from the image, rendering the data anonymous. ***Note:*** *This option helps to ensure compliance with local privacy laws and regulations (e.g., HIPAA – USA or PIPEDA – Canada).*
	Folder Name		Images written to a removable USB device will be written into the ***Folder Name*** entered here. The default is ***UltrasonixExam***. ***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.*
	Image Format		Enables the selection of five different image formats. ***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.*
		PNG	***Portable Network Graphics*** image format. This is the default selection. The average ***PNG*** image size is 100Kb.
		JPEG	***Joint Photographic Experts Group*** image format.
		Bitmap (BMP)	Converting the image to a ***Bitmap (BMP)*** increases the image size as follows: • 800 x 600 ***Bitmap*** image = approximately 2MB • 1024 x 768 ***Bitmap*** image = approximately 3 MB.
		GIF	***Graphics Interchange File*** or ***Format*** image.
		DICOM	***DICOM*** image format.
		DICOMDIR	***DICOMDIR*** image format. ***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			Displays the file transfer progress. ***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.*
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:

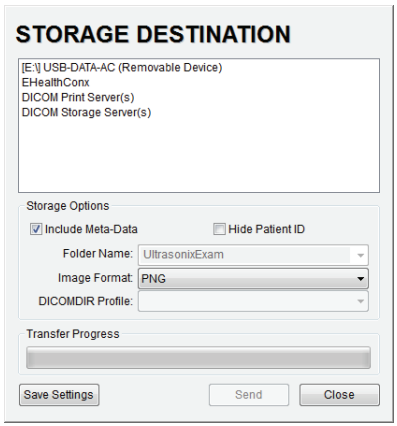
1. Select the desired ***Patient(s)***, ***Exam Date*** and/or images.



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****.*

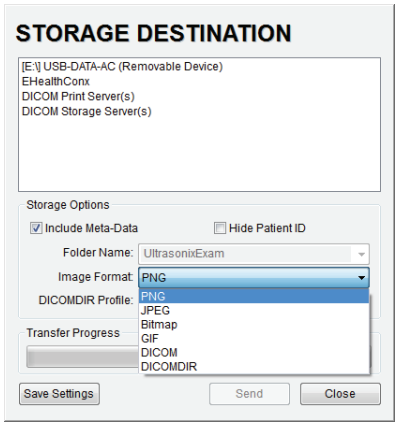
If a ***DICOM Storage*** *or* ***Print Server*** *is connected, it will also be available for selection.*

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 **Transfer 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 relevant Service Manual for further details on peripheral connectivity.

Warnings:

Do not simultaneously touch the patient and the:

- *transducer ports*
- *Back Connectivity Panel connectors.*

Do not allow the patient to come in contact with any part of the system case or touch screen.

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: Back Connectivity Panel

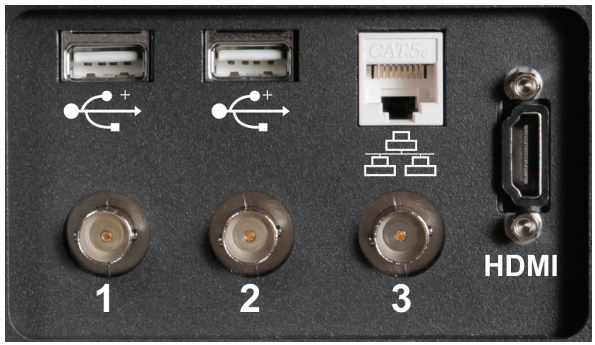


Table 10-1: Back Connectivity Panel

Icon	Label	Description
	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 10 MB/100 MB.
1	BNC (Input) Connector	Connected to the console **1** button, use to connect an Ultrasonix-approved peripheral (including a Footswitch). ***Note:*** *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).*
2	BNC (Output) Connector	Connected to the console **2** button, use to connect an Ultrasonix-approved peripheral. ***Note:*** *The device connected here is controlled by the settings configured for **Custom Key 2** (8.2.13).*
3	BNC Connector	Not in use.
HDMI	HDMI Connector	Use to connect a second (HDMI-compatible) LCD display or television. ***Caution:*** *DO NOT plug the extra (DVI-compatible) LCD display into the peripheral receptacle (Figure 10-3).* *For details on connecting an external TV, refer to 10.3.1.*

10.2 CONSOLE CONNECTIVITY

The system provides two 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 10-2: 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
- barcode reader (Not available on SonixOP Q+.)
- extra (DVI-compatible) LCD display.

Warning: *It is the Operator's responsibility to ensure that any peripheral device placed within the patient environment* – including printers and external displays – conforms to the following:*

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.

**The patient environment is defined as a 1.5 m (4.9') radius from the edge of the patient platform (i.e., from the outer edge of the chair/bed on which the patient is situated in order to perform the ultrasound).*

10.3.1 Connecting an External Television to the System

Caution: *DO NOT plug the extra (DVI-compatible) LCD display into the peripheral receptacle (**Figure 10-3**).*

The two 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.*

Note: *While a selection of televisions were tested against the following instructions, Ultrasonix cannot guarantee that all TVs will function as an external monitor.*

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.
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.
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.
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.
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***).

10.4 PERIPHERAL RECEPTACLE

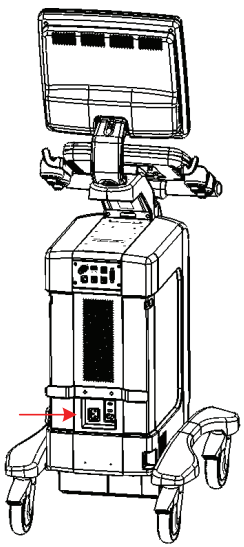
The system is delivered with one peripheral receptacle that is to be used only with Ultrasonix-approved peripheral devices. The connector is clearly labeled ***Only Ultrasonix-approved peripheral devices may be connected to this power receptacle*** and is to be used to connect only Ultrasonix-approved, third-party peripherals to the system.

Warning: *It is the Operator's responsibility to ensure that any peripheral device placed within the patient environment* – including printers and external displays – conforms to the following:*

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.

**The patient environment is defined as a 1.5 m (4.9') radius from the edge of the patient platform (i.e., from the outer edge of the chair/bed on which the patient is situated in order to perform the ultrasound).*

Figure 10-3: Peripheral Receptacle Location



10.5 DUAL LOCK CASTERS

The system is equipped with dual lock casters that can be set in three distinct positions.

Figure 10-4: Dual Lock Brakes

Table 10-4: Dual Lock Casters

1	Total lock: casters cannot move.
2	Directional lock: casters are directionally locked, restricting them to front/back movement only.
3	Completely unlocked: casters can move freely in any direction.

10.6 UPS (MDP/SP)

When the system arrives with the optional UPS installed, the UPS battery will be turned off and may be completely drained of power. During installation, the technician will ensure that the system—and therefore the UPS—is left plugged in, allowing it to completely charge the battery. This will take approximately 6.5 hours.

10.6.1 UPS Circuit Breakers

Access to the UPS circuit breakers is provided via the left side shroud.

Caution: *The UPS circuit breakers are designed to shut down power to the system only as a last resort. Improper use of the UPS circuit breakers may result in loss of patient data and/or hard drive failure and* ***may not be covered by the Ultrasonix warranty****.*

Figure 10-5: Breaker Types and Locations

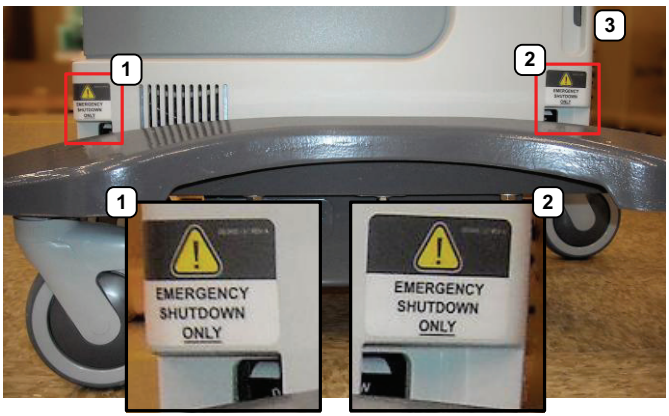


Table 10-5: Breaker Types and Locations

1	Battery Breaker	**2**	AC Input Breaker	**3**	System front

10.6.1.1 Determining Whether the UPS Breakers are ON or OFF

To determine whether the breakers are ON or OFF without removing the side shroud, check to see if there is a visible white marking at the top of each breaker. If there is, the breaker is OFF.

If only the Battery Breaker is off, the system will still run as long as it is plugged into a wall outlet. If both breakers are off, the system will not power on.

Figure 10-6: Breaker Position OFF

10.6.1.2 Turning OFF/Resetting the UPS Breakers

To Turn OFF the UPS Breakers:

1. Ensure the system is powered down and the power cord is disconnected from any power source.

Caution: *Unless a breaker has been tripped, it is important to turn OFF the breakers in the order specified.*

A tripped breaker will be in a central position, rather than ON or OFF. Determine which breaker has been tripped and turn if off first, then turn off the remaining breaker.

2. Turn ***2: AC Input Breaker*** to the OFF position.

Note: *Refer to* **Figure 10-5** *and* **Table 10-5** *to determine the location of each breaker.*

3. Turn ***1: Battery Breaker*** to the OFF position.

10.6.1.3 Turning ON the UPS Breakers

To Turn ON the UPS Breakers:

1. Plug in the system.
2. Turn ***1: Battery Breaker*** to the ON position.

Caution: *It is important to turn the breakers ON in the order specified.*

3. Turn ***2: AC Input Breaker*** to the ON position.

10.6.2 Battery Recharge Issues

As a data safety measure, Ultrasonix has configured the UPS alert system to ensure an optimal warning time for UPS battery recharging.

Warnings:

NEVER *let liquid from any source enter the UPS. Failure to do this may result in accidental* ***shorts, shocks or electrocutions****.*

DO NOT attempt to service this product yourself. *Attempting to open the UPS may cause exposure to lethal voltages within the unit even when it is apparently not operating and the input wiring is disconnected from the electrical source. Should the UPS require maintenance or replacement, only qualified Ultrasonix Service Technicians may perform service as detailed in the Service Manual.*

Use only the UPS battery recommended and supplied by Ultrasonix Medical Corporation.

For UPS and battery service issues, contact Ultrasonix Technical Support.

If the battery is removed from the system, it is the responsibility of the customer to dispose of it in accordance with all local regulations and laws.

Caution: *In order to effectively protect exam data for the current patient, pay particular attention to the details in* **Table 10-6** *and* **Table 10-7***, respectively.*

As an additional aid, refer to **8.2.17 Status Bar** for details on configuring the ***Status Bar*** so that ***Power status*** and ***Battery level*** icons are always visible on the LCD display.

Table 10-6: Battery Usage Limitations

Scanning Time Limit (Active and Frozen Imaging)	Ultrasonix does not recommend leaving the system unplugged even when imaging is frozen. ***Caution:*** *The system should only be unplugged (without shutting down) for the few moments it takes to move it to a new location.* ***Ignoring these instructions may result in data loss and battery failure.***
Recharge Time	To fully charge the battery, Ultrasonix recommends keeping the system plugged in continuously for 6.5 hours. ***Note:*** *If required, the system can continue to be used while the battery is charging. However, if the system is unplugged and moved during the recharge cycle, it may require more than 6.5 hours to fully charge.*

Table 10-7: Battery Recharge Alerts

Note: *The* ***Battery level*** *icon will only be visible if it has been enabled (8.2.17).*

Alert Level 2

While unplugged, if the battery charge falls below a predetermined level, the system will emit an audible alarm and present the following message on the ***Status Bar*** (bottom right of the LCD display). Both the message and the alarm will continue so long as the system remains unplugged.

Caution: *To protect patient data and prolong battery life, connect the system to an AC power source immediately.*

Alert Level 1

If ***Alert Level 2*** is ignored (i.e., if the system is not connected to an AC power source), after a predetermined time the tone of the audible alarm will alter and a 120 second (two minute) countdown ***Status Bar*** will be presented.

If the counter reaches zero (0) before the system is plugged into an AC power outlet, the system will automatically shutdown.

Before restarting the system, connect the power cord to an AC outlet. If the system is not plugged in before it is turned on, it will simply shut itself down again.

Caution: Ignoring these instructions may result in data loss and battery failure.

To fully charge the battery after an ***Alert Level 1*** *automated shutdown, leave the system plugged in continuously for 6.5 hours. If the charging cycle must be interrupted, Ultrasonix recommends leaving the system plugged in for a minimum of one hour before unplugging it. Once the system has been moved, it should be reconnected to a power source immediately and allowed to continue charging for the full 6.5 hours.*

Failure to follow these recommendations may result in premature battery failure which is not covered by the system warranty.

Note: *Battery Recharge Alerts are pre-programmed and cannot be edited or deleted by the user.*

10.6.3 UPS Sleep/Standby Mode

The UPS sleep/standby mode helps to preserve battery integrity.

There are two circumstances under which the UPS will automatically enter sleep/standby mode that will require the user to intervene. If:

- an ***Alert Level 1*** is ignored, the system is not plugged in to recharge but instead is allowed to countdown the 120 seconds and automatically shut itself down
- the system is powered off and left unplugged for more than 12 hours.

Proper use of the system, as discussed in **2.8.1 UPS Use Model** will ensure that neither of these circumstances ever applies.

To Wake the UPS from Sleep/Standby Mode:

1. Plug the system in to a power outlet that is known to be working.
2. Press the console **POWER** button for approximately 1 second (a clicking sound may be heard).

   Note: *If the system fails to boot, contact your internal service provider or Ultrasonix Technical Support.*

3. Once the system boots correctly, leave it plugged in and recharging for an uninterrupted period of approximately 6.5 hours.

   Note: *If desired, the system can be powered off and left plugged in to recharge or it can be used—without being unplugged—during the recharging period.*

10.7 ECG CONNECTION (MDP)

For Safety information and Leakage Current details, refer to **A.4**.

***Note: ECG** functionality is a licensed option.*
*Refer to **Accessories–Third Party** in Appendix B for the recommended **ECG** electrode.*

Figure 10-7: ECG Leads

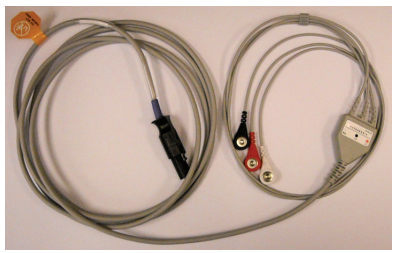


Figure 10-8: ECG Leads Connector

10.8 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.

10.9 BARCODE READER (MDP/SP)

A barcode reader is available as an option with the system.

Figure 10-9: Barcode Reader

Warnings:

USE OF CONTROLS *or adjustments or performance of procedures other than those specified in the manufacturer's User's Guide (delivered with system) may result in hazardous laser light exposure.*

NEVER *attempt to look at the laser beam, even if the barcode reader appears to be non-functional.*

NEVER *point the laser beam in anyone's eyes.*

USE OF OPTICAL *instruments with the laser equipment will increase eye hazard.*

UNDER NO CIRCUMSTANCES *should users or technicians attempt to open or service the laser scanner. Attempting to open the barcode reader may cause exposure to hazardous laser light. Should the barcode reader require maintenance or replacement, contact Ultrasonix Technical Support.*

Caution: Do not apply ultrasound gel to the barcode reader.

10.9.1 Connecting the Barcode Reader

Plug the barcode reader's USB connector into one of the USB ports on the console (**10.2**). To keep it handy, store the barcode reader in one of the transducer holders.

10.10 WIRELESS ADAPTER (MDP/SP)

Wireless is available only as a pre-installed option.

Cautions:

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.

For details on FCC regulations as they apply to the wireless adapter, please refer to the manufacturer's User Guide included with the system.

10.11 CONNECTING THE USB FOOTSWITCH (DUAL OR TRIPLE)

Connect the USB footswitch to the Back Connectivity Panel (**10.1**) and configure it via **8.2.14.3 Footswitch**.

Warning: *Footswitch is rated IPX1 only. Do not expose to liquids.*

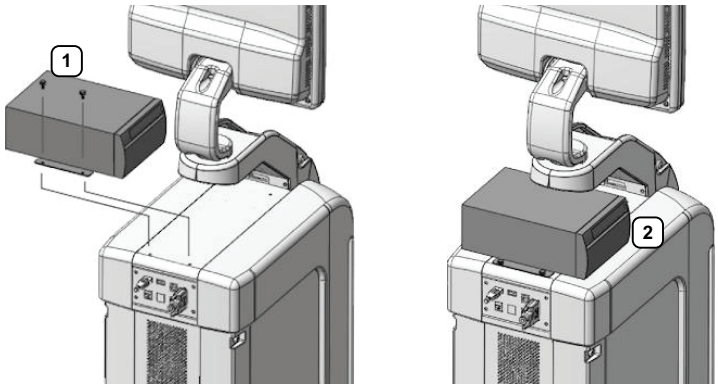
Figure 10-10: Dual and Triple USB Footswitches

10.12 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:

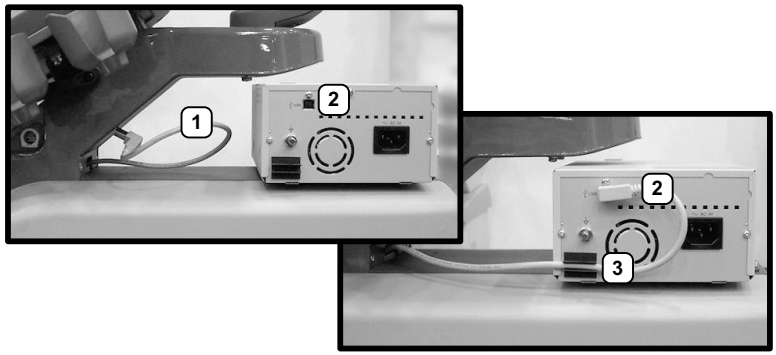
1. Using the two supplied thumbscrews (**1**), attach the printer mounting plate to the system.



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**).

10.13 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.

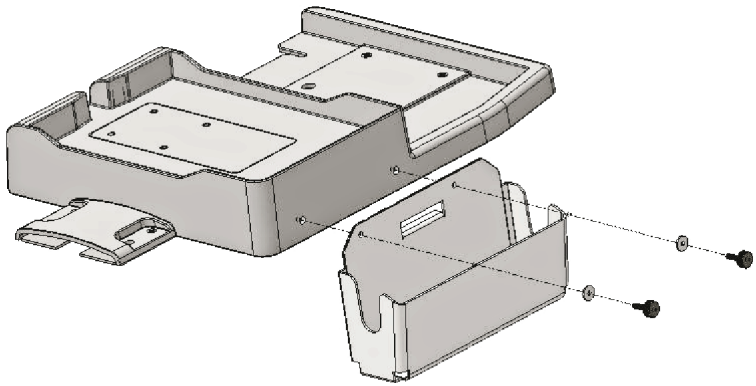
Note: *For best results, Ultrasonix recommends removing the peripheral tray basket before cleaning (D.4.10). This will allow the operator to clean all the various curves and folds in a more effective manner.*

If a USB printer has also been installed, it should be removed as well (10.13.1).

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 sets of supplied nylon washers and thumbscrews, attach the peripheral tray basket to the peripheral tray *while the tray is attached to the system*.



10.13.1 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.4.10) the peripheral tray. This will allow the operator to clean all the various curves and folds in a more effective manner.*

Figure 10-11: USB Printer Mounted on the Peripheral Tray

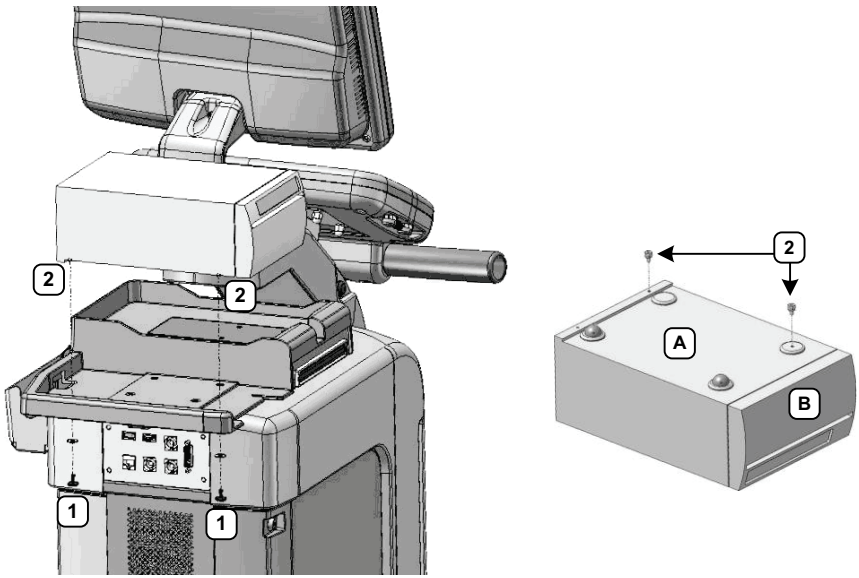


Table 10-8: USB Printer Mounted on the Peripheral Tray

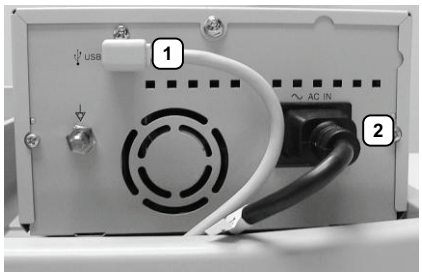
1	Thumbscrews	**A**	Printer bottom
2	Threaded Standoffs	**B**	Printer front

To Attach the Peripheral Tray Basket to the Peripheral Tray

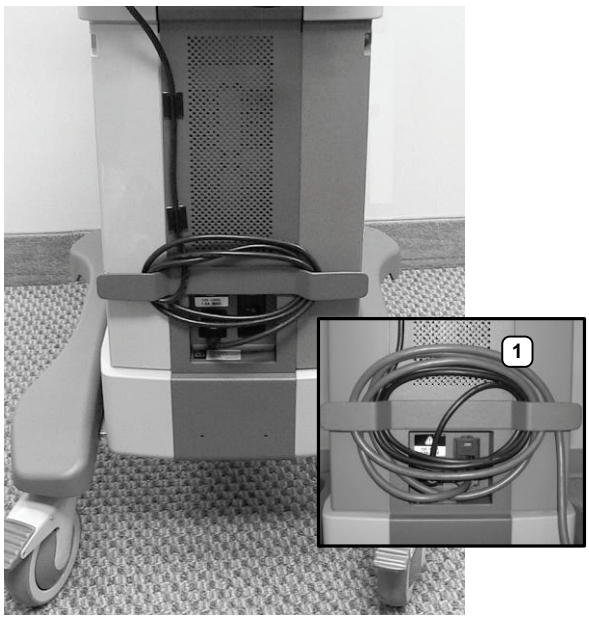
1. From underneath the back of the peripheral tray, fasten the two thumbscrews (**1**) through the holes provided into the two "threaded standoffs" (**2**) (already attached to the base of the USB printer.

   Note: *Refer to* **Figure 10-11** *and* **Table 10-8** *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**).*

10.14 TRANSDUCER HOLDERS AND CABLE HOOKS

The transducer holders and cable hooks are connected with one 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.4.8). This will allow the operator to clean all the various curves and folds in a more effective manner.*

Figure 10-12: Transducer Holders and Cable Hooks

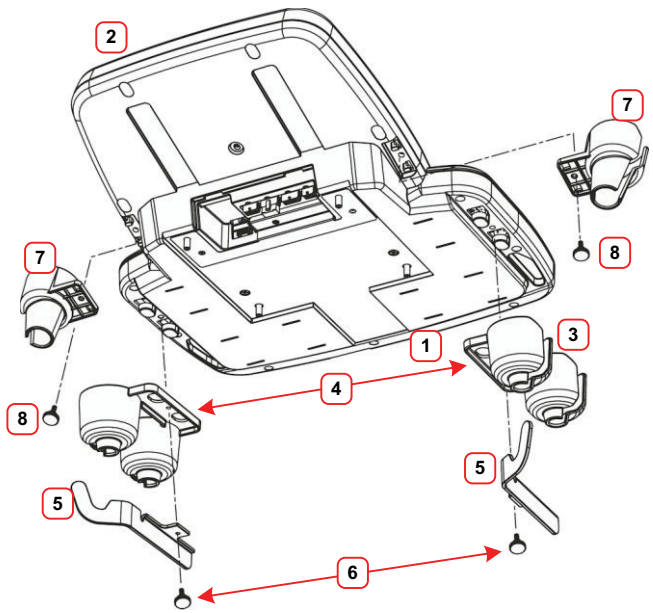
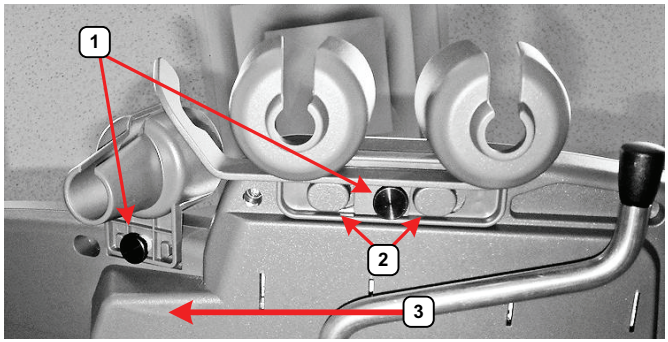


Table 10-9: Transducer Holders and Cable Hooks

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 in total).



3. Remove the cable hook.
4. The transducer holder is held in place by two 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.*

10.15 SOFTWARE

10.15.1 Anti-Virus Protection

Anti-virus software is installed during manufacture. By default, all files downloaded via the system Internet connection or uploaded from external media will be scanned.

Caution: *New systems are delivered with auto-update turned off. To activate auto-update, contact Ultrasonix Technical Support.*

Anti-virus updates will be available only on systems with an active Internet connection.

Users are advised to contact their IT department or Ultrasonix Technical Support if they wish to:

- uninstall the anti-virus software package (i.e., remove all anti-virus protection)

  Note: *Ultrasonix does not recommend removing anti-virus protection as this may compromise an institution's responsibility to comply with local privacy laws and regulations (e.g., HIPAA – USA or PIPEDA – Canada).*

- create a regularly scheduled anti-virus scan.

  Note: *Scheduling an anti-virus scan during business hours may have a negative impact on system performance.*

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.

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

A.2.1 Modifications

Do not modify this equipment without the authorization of the manufacturer.

A.2.2 Damage

Failure to repair/replace damaged parts may result in degraded image quality and therefore may impact diagnostic interpretations.

A.2.3 Cleaning/Disinfection/Sterilization

Keep the system clean. Carefully follow the procedures described later in this manual for cleaning the system, transducers and cooling fans.

A.2.4 Handling/Storage

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.

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.

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.

Follow local governing ordinances and recycling plans regarding disposal or recycling of device components.

DO NOT remove panels or covers from the system.

ALWAYS power the system from a grounded outlet.

A.2.5 General Usage

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.

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 during imaging 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.

Ultrasonix 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 UPS PRECAUTIONS (MDP/SP)

Refer to **10.6.1** for UPS circuit breaker shutdown procedures.

Warnings:

NEVER *let liquid from any source enter the UPS. Failure to do this may result in accidental* ***shorts, shocks or electrocutions****.*

DO NOT attempt to service this product yourself. *Attempting to open the battery case may cause exposure to lethal voltages within the unit even when it is apparently not operating and the input wiring is disconnected from the electrical source. Should the battery require maintenance or replacement, only qualified Ultrasonix Service Technicians may perform service as detailed in the Service Manual.Attempting to open the UPS may cause exposure to lethal voltages within the unit even when it is apparently not operating and the input wiring is disconnected from the electrical source. Should the UPS require maintenance or replacement, only qualified Ultrasonix Service Technicians may perform service as detailed in the Service Manual.*

Use only the UPS battery recommended and supplied by Ultrasonix Medical Corporation.

For UPS and battery service issues, contact Ultrasonix Technical Support.

If the battery is removed from the system, it is the responsibility of the customer to dispose of it in accordance with all local regulations and laws.

A.4 ECG SAFETY (MDP)

When speaking with Ultrasonix Technical Support, it may be necessary to determine the part number for the ***ECG*** module.

To Find the ECG Module Part Number:

1. Press the console button.
2. Select ***Administrator > System > About***.

Note: *The* ***About*** *box will list the* ***ECG Part Number****.*

A.4.1 ECG Module (All Part Numbers)

Table A-1: Leakage Current

Description	Details
Leakage Current	<500 micro amp at 230 V/ 60 Hz

A.4.2 ECG Cables

Table A-2: Applied Standards

Standard Name	Standard Number
Standard (Medical Electrical Equipment)	EN60601–1
Particular Requirements for the safety of ECG Equipment	EN60601–2–27

Table A-3: Replacement ECG Cables

ECG Module Part Number	ECG Cable Part Number
00.032.083	00.032.084
00.032.183	00.008.315

Note: *To determine which* ***ECG*** *Module is installed, use the instructions listed above:* **To Find the ECG Module Part Number:**.

Table A-4: Color Coding Standards

ECG Cable Color Coding Standards
IEC/EU
AAMI/AHA/US

A.4.2.1 Biocompatibility

All patient contact materials are Latex-free and have been tested according to ISO 10993–5 and ISO 10993–10.

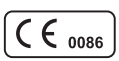
Note: *Refer to* **Accessories–Third Party** *in Appendix B for the recommended* ***ECG*** *electrode.*

A.5 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.6 SYMBOL DEFINITIONS

Table A-5: System Symbols

Symbol	Location	Meaning
	On serial plate that indicates the serial number and electrical rating.	Alternating current.
	On transducers and inputs of ECG leads.	Patient applied part meets the isolation requirements for type BF 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) and/ or warning/caution labels.	Follow instructions for use.
	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 *American National Standards Institute* (ANSI), *Underwriters Laboratories* (UL), *Canadian Standards Association* (CSA), *National Sanitation Foundation* (NSF) 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).	*Waste Electrical and Electronic Equipment* (*WEEE*) symbol indicates this device must not be disposed of as unsorted municipal waste. It must be disposed of in accordance will all local laws and regulations. Contact Ultrasonix Technical Support for more information on the decommissioning of this equipment.

A.7 ELECTRICAL SAFETY REQUIREMENTS

A.7.1 System

The SonixMDP/SP/OP Q+ Ultrasound System is classified in accordance with the IEC 60601–1, the standard for Medical Electrical Equipment as follows.

Table A-6: 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.7.2 Additional Hardware

Table A-7: 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

Table A-8: Barcode Reader Electrical Safety (MDP/SP)

UL (Underwriter's Laboratory)	UL listed for US and Canada UL 60950 C22.2 No. 60950
Laser Class	CDRH and IEC Laser Class 1 – In accordance with IEC 60825–1:1993 + A1:1997 + A22001 Class 1

A.8 EMC (ELECTROMAGNETIC COMPATIBILITY) REQUIREMENTS

A.8.1 System

The SonixMDP/SP/OP Q+ 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.8.2 Additional Hardware

Table A-9: 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-10: Barcode Reader (MDP/SP)

Electromagnetic Compatibility	Class B: FCC Part 15 ICES–003 European Union Directive 89/336/EEC

Table A-11: 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

A.9 ENVIRONMENTAL CONDITIONS

A.9.1 System

Table A-12: System Operating Environment

Operational Temperature	50° to 104° F (10º to 40º C)
Operational Humidity	30 to 75% relative humidity
Operational Pressure (kilopascal)	70 kPa to 106 kPa
Shipping/Storage Conditions	+5° to +122° F (-15° to +50° C)
Shipping/Storage Humidity	10% to 90% (non-condensing)
Shipping/Storage Pressure	50 kPa to 106 kPa

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.9.2 Additional Hardware

Table A-13: Barcode Reader (MDP/SP)

Operating Temperature	32° to 104° F (0° to 40° C)
Storage Temperature	-40° to 140° F (-40° to 60° C)
Humidity	5% to 95% relative humidity, non-condensing
Light Levels	Up to 4842 Lux (449.8 foot-candles)
Shock	Designed to withstand 1.5 m (5') drops
Contaminants	Sealed to resist airborne particulate contaminants
Ventilation	None required

Table A-14: Wireless (MDP/SP)

Operating Temperature	32° to 104° F (0° to 40° C)
Storage Temperature	-4° to 158° F (-20° to 70° C)
Humidity	80% maximum, non-condensing

Note: *For more details on the wireless adapter and other peripherals, refer to the manufacturer's User's Guides included with the system.*

A.10 LIMITING TRANSDUCER SURFACE HEATING

Ultrasound transducer assemblies are tested in normal conditions, such that when applied to a patient, the patient contact surface temperature does not exceed 43°C (refer to **Table A-15**). This maximum represents a safety factor of two, relative to the threshold for thermally induced chronic damage to the kidney, one of the most sensitive mammalian tissues. This limit is only applicable for long term (more than 10 minutes) contact with healthy skin of an adult. Special consideration should be taken for an application on children. The influence of drugs and the condition of the patient are also factors that should be considered in the risk-benefit analysis.

With respect to further unforeseeable developments, the safety of long-term transducer use (more than 41°C) inside the body is currently not well investigated. It is assumed that the safe use of temperatures higher than 41°C on children, inside the body and on patients with possibly risky conditions should also be based on clinical experience.

In order to aid the risk-benefit analysis, the transducers in the table below have maximum temperatures that have been found to be greater than 41°C. The ALARA principle should be applied to keep patient ultrasound exposure to a minimum without compromising diagnostic image quality.

Table A-15: Temperature Calculations

Transducer Type	Calculation
External	Temperature = 33°C + Test Temperature Rise
Internal	Temperature = 37°C + Test Temperature Rise

Table A-16: Transducers with Max Temperature Calculations Greater than 41°C

Transducer	Temp	Transducer	Temp
SA4-2/24	42.8°C	C7-3/50	42.0°C
C5-2/60	41.9°C	C9-5/10	41.6°C
4DC7-3/40	42.0°C		

A.11 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.

APPENDIX B: SYSTEM SPECIFICATIONS

Notes:

Talk to your Ultrasonix dealer for details on standard and optional features.

Ultrasonix Medical Corp reserves the right to alter system specifications at any time.

Table B-1: Product Key

TCH	SonixTouch Q+	MSO	SonixMDP/SP/OP Q+	ONE	SonixOne

Table B-2: Symbol Key

√ Standard	♦ Optional	Ø Not Available

Table B-3: System Specifications

	TCH	MSO	ONE
CLINICAL APPLICATIONS			
Abdominal \	√	√	√
Biliary	√	√	√
Bladder	√	√	√
Cardiac ***Note:*** *Access to* ***Cardiac*** *is controlled through licensing. If* ***CW*** *is not licensed and active, then the* ***Cardiac Application*** *is not available.*	♦	√/√/♦	♦
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	√	√	√

	TCH	MSO	ONE
MEASUREMENTS AND ANALYSIS			
Obstetrical calculation and report package	√	√	√
Abdominal calculation and report package	√	√	√
Gyn/Fertility calculation and report package	√	√	√
Cardiac calculation and report package ***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.*	♦	√/√/♦	♦
Vascular calculation and report package	√	√	√
Auto-Follicle calculation and report package	♦	Ø	♦
BROADBAND TRANSDUCERS[2]			
SA4-2/24 broadband (2–3 MHz), 24 mm, 84/90.55" (2.13 m/2.30 m) cable, phased array	♦	♦	♦
PA7-4/12 broadband (7–4 MHz), 12 mm, 90.55 (2.30 m) cable, phased array	♦	♦	♦
MC9-4/12 broadband (4–9 MHz), 12 mm radius, 75" (1.90 m) cable, microconvex	♦	♦	♦
EC9-5/10 and EC9-5/10 GPS 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	♦	♦	♦
C7-3/50 (3–7 MHz), 50 mm, 90.5" (2.30 m) cable, curved array	♦	♦	♦
C9-5/10 broadband (9–5 MHz), 10 mm radius, 75" (1.90 m) cable, microconvex	♦	♦	♦
BPC8-4/10 (4–8 MHz), 10 mm, 86.6" (2.20 m) cable, endocavity microconvex array	♦	♦	♦
BPL9-5/55 (5–9 MHz), 55 mm, 86.6" (2.20 m) cable, endocavity linear 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	♦	♦	♦
L40-8/12 broadband (8-40 MHz), 12 mm, 86.6" (2.2 m) cable, high frequency 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	♦	♦	Ø
4DEC9-5/10 broadband (5–9 MHz), 10 mm radius, 75" (1.90 m) cable, 4D motor-driven electronic endocavity microconvex array	♦	♦	Ø
4DL14-5/38 broadband (5-14 MHz), 38 mm, 78.74" (2m) cable, 4D motor-driven electronic linear array	♦	♦	Ø
PRESETS			
Default presets	√	√	√
User-defined presets	√	√	√
PHYSICAL CHARACTERISTICS			
Footprint: 53.5 cm x 91.5 cm (21" x 36")	√	√	Ø
Size: 45 cm wide x 17.5 cm deep x 42.5 cm high (17.7" x 6.9" x 16.7")	Ø	Ø	√
Weight, with UPS: 105 kg (231.5 lbs)	√	√	Ø
Weight, without UPS: 80 kg (214.3 lbs)	√	√	Ø
Weight, standalone: 15 kg (33 lbs)	Ø	Ø	√
Power Pack Size: 10.4 cm wide x 40 cm long x 5.8 cm high (4.1" x 15.75" x 2.3")	Ø	Ø	♦
Power Pack Weight: 2.7 kg (5.95 lbs)	Ø	Ø	♦
Battery Module Size: 21.6 cm wide x 35.5 cm long x 11.4 cm high (8.5" x 14" x 4.5")	Ø	Ø	♦
Battery Module Weight: 8 kg (17.6 lbs)	Ø	Ø	♦
Height (Measured from top of LCD display to floor): Highest Position: 155 cm (61") Lowest Position: 139.7 cm (55")	 √ √	 √ √	 Ø Ø
Height, Transport Mode (LCD display folded flat over console): 106.7 cm (42")	√	√	Ø
Tilt/Lift, Console (Combination of tilt and lift, measured from trackball position to floor): Highest Position: 99 cm (39") Lowest Position: 83.8 cm (33")	 √ √	 Ø Ø	 Ø Ø
Tilt/Lift, Console (Combination of tilt and lift, measured from trackball position to floor): Highest Position: 96.5 cm (38") Lowest Position: 81.25 cm (32")	 Ø Ø	 √ √	 Ø Ø
Tilt Angle, Console–three positions (measured by degrees (°) off horizontal position): 0° 5° down 10° down	 √ √ √	 √ √ √	 Ø Ø Ø
Swivel Range, Console (Measured by degrees (°) off center position): ± 45°	√	√	Ø

	TCH	MSO	ONE
Tilt Angle, LCD Display (Measured by degrees (°) from the "Transport Mode position): 0 to 115°	√	√	Ø
Swivel Range, LCD Display (Measured by degrees (°) off center position): ± 90°	√	√	Ø
Cart: Maximum height: 52.6 cm wide x 48.5 cm long x 150.4 cm high (20.7" x 19.1" x 59.2") Minimum height: 52.6 cm wide x 48.5 cm long x 129.5 cm high (20.7" x 19.1" x 51")	 Ø Ø	 Ø Ø	 ♦ ♦
Cart Height Range from Floor: 140.9 cm - 165.4 cm (55.5" x 65.1")	Ø	Ø	♦
Cart Mounted Tilt Angle (Measured by degrees (°) off horizontal position): -0º to +90º	Ø	Ø	√
TFT (Active Matrix) LCD display: 19" 19" with PCT (Projected Capacitive Touch) touch screen	 √ Ø	 √ Ø	 Ø √
Touch Screen: 10.4" LCD display with resistive touch screen 8.4" LCD display with resistive touch screen	 √ Ø	 Ø √	 Ø Ø
Rear Pull Handles	√	√	Ø
Transducer connectors	3	3	2
USER INTERFACE[3]			
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 one minute of data (Transducer/sector size dependent)	√	√	√
Total available memory: >500 fr	√	√	√
REMOTE SUPPORT[4]			
Real-time live chat support	√	√	√
Ultrasonix 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 6 on Side Connectivity Panel	 √ Ø	 √ Ø	 Ø √
Built-in Firewall	√	√	√
HDMI (High Definition Multimedia Interface) output	√	√	Ø
USB printer output	√	√	√
Hard-wired Network (LAN) connection	√	√	√
Wireless Network connection	♦	♦/♦/Ø	♦
SonixLive (Streaming video)[4]	♦	♦	♦

	TCH	MSO	ONE
PERIPHERALS			
USB printer with direct-to-system mounting kit	♦ √	♦ √	♦ Ø
Peripheral Tray, with optional: CD/DVD R/W drive USB Printer	♦ ♦ ♦	♦ ♦ ♦	Ø Ø Ø
UPS (Uninterruptible Power Supply)	♦	♦/♦/Ø	Ø
Battery Module	Ø	Ø	♦
ECG Hardware	♦	√/♦/Ø	♦
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)	♦	♦/♦/Ø	♦
Wireless Adapter (802.11a/b/g/n compatible)	♦	♦/♦/Ø	♦
SonixGPS 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)	 ♦ ♦	 ♦ ♦	 ♦ ♦
ACCESSORIES–ULTRASONIX MEDICAL CORPORATION			
SonixGPS Needle Kits and Accessories: SonixGPS Vascular Access Starter Kit (contains 1x 00.024.451 and 2x 00.037.041) (UXID 00.037.050) SonixGPS 0.9 mm Needle Sensor (non-sterile, reusable) (UXID 00.024.451) SonixGPS Vascular Access Needle Kit (Single use, Sterile Pack of 10, Ga 17 x 70 mm L) (UXID 00.037.041) SonixGPS Nerve Block Starter Kit (contains 1x 00.024.452, 2x 00.037.055) (UXID 00.037.051) SonixGPS 0.55 mm Needle Sensor (non-sterile, reusable) (UXID 00.024.452) SonixGPS Nerve Block Needle Kit (Single use, Sterile Pack of 10, Ga 19 x 80 mm L) (UXID 00.037.055) SonixGPS Sensor Cord Clips (Single use, non-sterile Pack of 10) (UXID 00.024.500)	♦	♦	♦
ACCESSORIES–THIRD PARTY			
SonixGPS™ Needle Kits and Accessories: eTRAX™ Needle Starter Kit, Manufactured by CIVCO, Part Number 610-1055 (UXID: 00.037.034[5]) 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[5]) Blue Phantom, Branched 4-Vessel Ultrasound Training Block Model, Part Number BPBV110 (UXID: 00.032.185)	♦	♦	♦
Endocavity Transducer Cover/Sheath, Manufactured by CIVCO (Pack of 24), Part Number 610-637 (E8385JC, UA0071) (Sterile 8.9 x 91.5cm (3.5" x 36") telescopically-folded CIV-Flex cover).	♦	♦	♦
Recommended ECG Electrode: Kendall Medi-Trace 200 and 230 Foam Electrode	♦	♦	Ø
Biopsy Starter Kits EC9-5/10, Manufactured by Protek, Part Number: 7544 (Reusable) (UXID: 00.037.011) EC9-5/10, Manufactured by CIVCO, Part Number: 610-986 (Disposable) (UXID: 00.037.012[5]) C5-2/60 and C7-3/50, Manufactured by Protek, Part Number: 7462 (UXID: 00.037.056) L9-4/38, Manufactured by Protek, Part Number: 7157 (UXID: 00.037.059) L14-5/38, Manufactured by Protek, Part Number: 7157 (UXID: 00.037.059)	 ♦ ♦ ♦ ♦	 ♦ ♦ ♦ ♦	 ♦ ♦ ♦ ♦

1 Ultrasonix Medical Corp 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 Licensed for sale in Canada.

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 MEASUREMENT ACCURACY

Table C-1: Measurement Accuracy Test Results

	Probe	Relative Error	Range Min	Range Max	Test Method
2D/B-MODE MEASUREMENT TESTS					
Area	SA4-2/24	± 0.97%	0.01 cm^2	1,208.00 cm^2	Multipurpose Phantom§
	PA7-4/12	± 2.57%	0.01 cm^2	207.19 cm^2	Multipurpose Phantom§
	MC9-4/12	± 0.97%	0.01 cm^2	143.13 cm^2	Multipurpose Phantom¤
	EC9-5/10 and EC9-5/10 GPS	± 0.26%	0.01 cm^2	175.00 cm^2	Multipurpose Phantom§
	C5-2/60 and C5-2/60 GPS	± 4.51%	0.01 cm^2	491.26 cm^2	Multipurpose Phantom§
	C7-3/50	± 2.38%	0.01 cm^2	558.00 cm^2	Multipurpose Phantom§
	C9-5/10	± 0.26%	0.01 cm^2	142.00 cm^2	Multipurpose Phantom§
	BPC8-4/10	± 3.09%	0.01 cm^2	43.86 cm^2	Multipurpose Phantom¤
	BPL9-5/55	± 1.68%	0.01 cm^2	43.86 cm^2	Multipurpose Phantom¤
	L9-4/38	± 1.68%	0.01 cm^2	42.25 cm^2	Multipurpose Phantom¤
	L14-5/38 and L14-5/38 GPS	± 4.51%	0.01 cm^2	43.86 cm^2	Multipurpose Phantom§
	L14-5W/60	± 3.80%	0.01 cm^2	43.86 cm^2	Multipurpose Phantom¤
	L40-8/12	± 0.29%	0.01 cm^2	14.98 cm^2	Multipurpose Phantom¤
	HST15-8/20	± 0.44%	0.01 cm^2	43.86 cm^2	Multipurpose Phantom¤
	4DC7-3/40	± 2.38%	0.01 cm^2	140.00 cm^2	Multipurpose Phantom§
	m4DC7-3/40	± 4.51%	0.01 cm^2	616.45 cm^2	Multipurpose Phantom§
	4DEC9-5/10	± 0.26%	0.01 cm^2	175.00 cm^2	Multipurpose Phantom§
	4DL14-5/38	± 3.09%	0.01 cm^2	43.86 cm^2	Multipurpose Phantom¤
	Max. Value Among Probes	± 4.51%	0.01 cm^2	1208.00 cm^2	

	Probe	Relative Error	Range Min	Range Max	Test Method
	2D/B-MODE MEASUREMENT TESTS				
Distance–Axial	SA4-2/24	± 0.67%	0.09 mm	360.00 mm	Multipurpose Phantom§
	PA7-4/12	± 0.05%	0.09 mm	150.12 mm	Multipurpose Phantom§
	MC9-4/12	± 0.30%	0.07 mm	119.89 mm	Multipurpose Phantom¤
	EC9-5/10 and EC9-5/10 GPS	± 0.41%	0.08 mm	120.00 mm	Multipurpose Phantom§
	C5-2/60 and C5-2/60 GPS	± 0.33%	0.10 mm	300.00 mm	Multipurpose Phantom§
	C7-3/50	± 0.58%	0.11 mm	300.24 mm	Multipurpose Phantom§
	C9-5/10	± 0.06%	0.07 mm	120.00 mm	Multipurpose Phantom§
	BPC8-4/10	± 0.58%	0.07 mm	89.91 mm	Multipurpose Phantom¤
	BPL9-5/55	± 0.26%	0.07 mm	89.91 mm	Multipurpose Phantom¤
	L9-4/38	± 0.17%	0.07 mm	89.75 mm	Multipurpose Phantom¤
	L14-5/38 and L14-5/38 GPS	± 0.06%	0.07 mm	99.63 mm	Multipurpose Phantom§
	L14-5W/60	± 0.36%	0.07 mm	89.91 mm	Multipurpose Phantom¤
	L40-8/12	± 0.16%	0.03 mm	29.95 mm	Multipurpose Phantom¤
	HST15-8/20	± 0.90%	0.07 mm	89.91 mm	Multipurpose Phantom¤
	4DC7-3/40	± 0.32%	0.10 mm	119.86 mm	Multipurpose Phantom§
	m4DC7-3/40	± 0.36%	0.12 mm	239.88 mm	Multipurpose Phantom§
	4DEC9-5/10	± 0.41%	0.08 mm	120.00 mm	Multipurpose Phantom§
	4DL14-5/38	± 0.44%	0.07 mm	89.91 mm	Multipurpose Phantom¤
	Max. Value Among Probes	± 0.90%	0.12 mm	300.24 mm	
Distance–Lateral	SA4-2/24	± 0.43%	0.09 mm	427.69 mm	Multipurpose Phantom§
	PA7-4/12	± 0.41%	0.09 mm	178.00 mm	Multipurpose Phantom§
	MC9-4/12	± 0.09%	0.08 mm	170.00 mm	Multipurpose Phantom¤
	EC9-5/10 and EC9-5/10 GPS	± 0.05%	0.07 mm	152.00 mm	Multipurpose Phantom§
	C5-2/60 and C5-2/60 GPS	± 0.46%	0.10 mm	362.00 mm	Multipurpose Phantom§
	C7-3/50	± 0.40%	0.10 mm	362.00 mm	Multipurpose Phantom§
	C9-5/10	± 0.65%	0.07 mm	151.34 mm	Multipurpose Phantom§
	BPC8-4/10	± 0.63%	0.07 mm	91.69 mm	Multipurpose Phantom¤
	BPL9-5/55	± 0.38%	0.07 mm	91.69 mm	Multipurpose Phantom¤
	L9-4/38	± 0.63%	0.07 mm	91.69 mm	Multipurpose Phantom¤
	L14-5/38 and L14-5/38 GPS	± 0.09%	0.07 mm	106.76 mm	Multipurpose Phantom§
	L14-5W/60	± 0.35%	0.07 mm	91.69 mm	Multipurpose Phantom¤
	L40-8/12	± 0.15%	0.03 mm	27.74 mm	Multipurpose Phantom*
	HST15-8/20	± 0.41%	0.07 mm	91.69 mm	Multipurpose Phantom¤
	4DC7-3/40	± 0.09%	0.10 mm	149.60 mm	Multipurpose Phantom§
	m4DC7-3/40	± 0.68%	0.12 mm	332.29 mm	Multipurpose Phantom§
	4DEC9-5/10	± 0.09%	0.08 mm	170.00 mm	Multipurpose Phantom§
	4DL14-5/38	± 0.51%	0.07 mm	91.69 mm	Multipurpose Phantom¤
	Max. Value Among Probes	± 0.68%	0.12 mm	362.00 mm	

	Probe	Relative Error	Range Min	Range Max	Test Method
	2D/B-MODE MEASUREMENT TESTS				
Volume	SA4-2/24	± 1.17%	0.01 cm^3	38,227.74 cm^3	Multipurpose Phantom^
	PA7-4/12	± 0.84%	0.01 cm^3	2,752.55 cm^3	Multipurpose Phantom^
	MC9-4/12	± 0.12%	0.01 cm^3	1,723.77 cm^3	Multipurpose Phantom^
	EC9-5/10 and EC9-5/10 GPS	± 1.69%	0.01 cm^3	2,429.65 cm^3	Multipurpose Phantom^
	C5-2/60 and C5-2/60 GPS	± 2.80%	0.01 cm^3	23,777.92 cm^3	Multipurpose Phantom^
	C7-3/50	± 1.52%	0.01 cm^3	24,166.43 cm^3	Multipurpose Phantom*
	C9-5/10	± 0.88%	0.01 cm^3	1,701.48 cm^3	Multipurpose Phantom*
	BPC8-4/10	± 0.63%	0.01 cm^3	1,691.19 cm^3	Multipurpose Phantom§
	BPL9-5/55	± 0.41%	0.01 cm^3	594.55 cm^3	Multipurpose Phantom*
	L9-4/38	± 0.33%	0.01 cm^3	594.55 cm^3	Multipurpose Phantom^
	L14-5/38 and L14-5/38 GPS	± 3.79%	0.01 cm^3	594.55 cm^3	Multipurpose Phantom^
	L14-5W/60	± 0.32%	0.01 cm^3	594.55 cm^3	Multipurpose Phantom^
	L40-8/12	± 0.69%	0.01 cm^3	45.94 cm^3	Multipurpose Phantom^
	HST15-8/20	± 0.64%	0.01 cm^3	18,010.21 cm^3	Multipurpose Phantom^
	4DC7-3/40	± 1.36%	0.01 cm^3	18,010.21 cm^3	Multipurpose Phantom^
	m4DC7-3/40	± 0.77%	0.01 cm^3	1,635.77 cm^3	Multipurpose Phantom^
	4DEC9-5/10	± 1.56%	0.01 cm^3	594.55 cm^3	Multipurpose Phantom^
	4DL14-5/38	± 0.09%	0.01 cm^3	144.08 cm^3	Multipurpose Phantom*
	Max. Value Among Probes	± 3.79%	0.01 cm^3	38,227.74 cm^3	
	M-MODE MEASUREMENT TESTS				
Distance	SA4-2/24	± 0.30%	0.03 mm	298.96 mm	Multipurpose Phantom§
	PA7-4/12	± 0.15%	0.03 mm	148.61 mm	Multipurpose Phantom§
	MC9-4/12	± 0.06%	0.03 mm	119.71 mm	Multipurpose Phantom§
	EC9-5/10 and EC9-5/10 GPS	± 0.50%	0.03 mm	119.56 mm	Multipurpose Phantom§
	C5-2/60 and C5-2/60 GPS	± 0.75%	0.03 mm	298.96 mm	Multipurpose Phantom§
	C7-3/50	± 0.36%	0.03 mm	298.96 mm	Multipurpose Phantom§
	C9-5/10	± 0.17%	0.03 mm	118.06 mm	Multipurpose Phantom§
	BPC8-4/10	± 0.52%	0.03 mm	119.71 mm	Multipurpose Phantom*
	BPL9-5/55	± 0.80%	0.03 mm	89.93 mm	Multipurpose Phantom§
	L9-4/38	± 0.51%	0.03 mm	89.93 mm	Multipurpose Phantom¤
	L14-5/38 and L14-5/38 GPS	± 0.80%	0.03 mm	89.93 mm	Multipurpose Phantom§
	L14-5W/60	± 1.70%	0.03 mm	89.70 mm	Multipurpose Phantom§
	L40-8/12	± 1.40%	0.01 mm	29.93 mm	Multipurpose Phantom¤
	HST15-8/20	± 1.30%	0.03 mm	49.80 mm	Multipurpose Phantom§
	4DC7-3/40	± 0.11%	0.03 mm	119.71 mm	Multipurpose Phantom§
	m4DC7-3/40	± 1.04%	0.03 mm	239.42 mm	Multipurpose Phantom§
	4DEC9-5/10	± 0.80%	0.03 mm	119.56 mm	Multipurpose Phantom§
	4DL14-5/38	± 0.84%	0.03 mm	148.61 mm	Multipurpose Phantom§
	Max. Value Among Probes	± 1.70%	0.03 mm	298.96 mm	

	Probe	Relative Error	Range Min	Range Max	Test Method
	M-MODE MEASUREMENT TESTS				
Heart Rate	SA4-2/24	± 0.11%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	PA7-4/12	± 0.16%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	MC9-4/12	± 0.75%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	EC9-5/10 and EC9-5/10 GPS	± 0.51%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	C5-2/60 and C5-2/60 GPS	± 0.23%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	C7-3/50	± 0.13%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	C9-5/10	± 0.59%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	BPC8-4/10	± 0.65%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	BPL9-5/55	± 0.12%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	L9-4/38	± 0.14%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	L14-5/38 and L14-5/38 GPS	± 0.87%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	L14-5W/60	± 0.74%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	L40-8/12	± 0.16%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	HST15-8/20	± 0.75%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	4DC7-3/40	± 0.81%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	m4DC7-3/40	± 0.22%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	4DEC9-5/10	± 0.66%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	4DL14-5/38	± 0.00%	8 BPM	30,000 BPM	Ultrasonix Test Equipment
	Max. Value Among Probes	± 0.87%	8 BPM	30,000 BPM	
	PW MODE MEASUREMENT TESTS				
Heart Rate	SA4-2/24	± 5.00%	9 BPM	15,000 BPM	Doppler String Phantom°
	PA7-4/12	± 4.00%	9 BPM	15,000 BPM	Doppler String Phantom°
	MC9-4/12	± 5.33%	9 BPM	15,000 BPM	Doppler String Phantom°
	EC9-5/10 and EC9-5/10 GPS	± 3.67%	9 BPM	15,000 BPM	Doppler String Phantom°
	C5-2/60 and C5-2/60 GPS	± 5.00%	9 BPM	15,000 BPM	Doppler String Phantom°
	C7-3/50	± 4.33%	9 BPM	15,000 BPM	Doppler String Phantom°
	C9-5/10	± 3.67%	9 BPM	15,000 BPM	Doppler String Phantom°
	BPC8-4/10	± 3.67%	9 BPM	15,000 BPM	Doppler String Phantom°
	BPL9-5/55	± 4.00%	9 BPM	15,000 BPM	Doppler String Phantom°
	L9-4/38	± 4.33%	9 BPM	15,000 BPM	Doppler String Phantom°
	L14-5/38 and L14-5/38 GPS	± 4.33%	9 BPM	15,000 BPM	Doppler String Phantom°
	L14-5W/60	± 4.33%	9 BPM	15,000 BPM	Doppler String Phantom°
	L40-8/12	± 5.00%	9 BPM	15,000 BPM	Doppler String Phantom°
	HST15-8/20	± 5.00%	9 BPM	15,000 BPM	Doppler String Phantom°
	4DC7-3/40	± 4.00%	9 BPM	15,000 BPM	Doppler String Phantom°
	m4DC7-3/40	± 4.00%	9 BPM	15,000 BPM	Doppler String Phantom°
	4DEC9-5/10	± 4.33%	9 BPM	15,000 BPM	Doppler String Phantom°
	4DL14-5/38	± 5.33%	9 BPM	15,000 BPM	Doppler String Phantom°
	Max. Value Among Probes	± 5.33%	9 BPM	15,000 BPM	

	Probe	Relative Error	Range Min	Range Max	Test Method
	PW MODE MEASUREMENT TESTS				
Velocity	SA4-2/24	± 2.95%	0.08 cm/s	3,695.21 cm/s	Doppler String Phantom°
	PA7-4/12	± 6.44%	0.04 cm/s	1,385.70 cm/s	Doppler String Phantom°
	MC9-4/12	± 1.89%	0.02 cm/s	591.23 cm/s	Doppler String Phantom°
	EC9-5/10 and EC9-5/10 GPS	± 0.31%	0.05 cm/s	591.23 cm/s	Doppler String Phantom°
	C5-2/60 and C5-2/60 GPS	± 2.21%	0.10 cm/s	1,478.08 cm/s	Doppler String Phantom°
	C7-3/50	± 4.83%	0.05 cm/s	1,847.61 cm/s	Doppler String Phantom°
	C9-5/10	± 1.80%	0.03 cm/s	591.23 cm/s	Doppler String Phantom°
	BPC8-4/10	± 5.66%	0.04 cm/s	591.23 cm/s	Doppler String Phantom°
	BPL9-5/55	± 1.10%	0.04 cm/s	1,108.56 cm/s	Doppler String Phantom°
	L9-4/38	± 5.66%	0.04 cm/s	1,385.70 cm/s	Doppler String Phantom°
	L14-5/38 and L14-5/38 GPS	± 1.50%	0.05 cm/s	1,385.70 cm/s	Doppler String Phantom°
	L14-5W/60	± 0.87%	0.04 cm/s	1,108.56 cm/s	Doppler String Phantom°
	L40-8/12	± 5.45%	0.02 cm/s	692.85 cm/s	Doppler String Phantom°
	HST15-8/20	± 0.78%	0.02 cm/s	832.25 cm/s	Doppler String Phantom°
	4DC7-3/40	± 4.15%	0.07 cm/s	1,583.66 cm/s	Doppler String Phantom°
	m4DC7-3/40	± 3.60%	0.07 cm/s	1,583.66 cm/s	Doppler String Phantom°
	4DEC9-5/10	± 2.85%	0.02 cm/s	1,108.56 cm/s	Doppler String Phantom°
	4DL14-5/38	± 0.86%	0.04 cm/s	1,385.70 cm/s	Doppler String Phantom°
	Max. Value Among Probes	± 5.66%	0.10 cm/s	3,695.21 cm/s	
	CW MODE MEASUREMENT TESTS				
Heart Rate	SA4-2/24	± 4.67%	9 BPM	15,000 BPM	Doppler String Phantom°
	PA7-4/12	± 3.67%	9 BPM	15,000 BPM	Doppler String Phantom°
Velocity	SA4-2/24	± 0.69%	0.37 cm/s	6,651.00 cm/s	Doppler String Phantom°
	PA7-4/12	± 1.96%	0.12 cm/s	2,271.13 cm/s	Doppler String Phantom°

* ATS Multipurpose Endoscopic Phantom, Model 570 (S/N: 21006360)
^ CIRS 3D Ultrasound Calibration Phantom, Model 055 (S/N: 6047)
¤ Gammex Precision Multipurpose Phantom, 403GS (S/N 802260-3036-3)
§ Gammex Precision Multipurpose Phantom, 403LE (S/N: 802263-3649-1)
° JJ&A Instruments Doppler String Phantom, Mark 4 (S/N: MK4-395)

Table C-2: Field Definitions

Field	Definition
Max. Value Among Probes	Maximum error or range among all probes (except in the lower range where the minimum values were used) was chosen for presentation.

C.3 ACOUSTIC OUTPUT RECORDING TABLES

Below are copies of the **Acoustic Output Reporting Tables for Track 3** for all transducers and all modes.

The following notes apply to **ALL** Acoustic Output Reporting Tables for **ALL** transducers/modes:

1) Data need not be entered for more than 1 of the columns related to TIS.
2) Information need not be provided regarding TIC for any transducer assembly not intended for transcranial or neonatal cephalic uses.
3) Data need not be entered in the columns related to TIS, TIB, or TIC if Section 4.1.2.1 of AIUM/NEMA (2004b) is met.

Table C-3: Transducer Model SA4-2/24 (Operating Mode: B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					A_{aprt}≤1	A_{aprt}>1		
Global Maximum Index Value			0.88	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.39					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	5.40					
	$d_{eq}(z_{sp})$	(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)	0.62					
	PRF	(Hz)	30					
	$p_r@PII_{max}$	(MPa)	2.22					
	$d_{eq}@PII_{max}$	(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)	126.37					
Operating Control	Control 1 Depth		70	[mm]				
	Control 2 Focus		60	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-4: Transducer Model SA4-2/24 (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			0.64		(a)	(a)	(a)	1.18
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.01					
	W_o	(mW)		81.28	(a)		(a)	87.40
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	5.40					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	2.50	2.50	(a)	(a)	(a)	2.50
	Dim of A_{aprt}	X (cm)		1.92	(a)	(a)	(a)	1.92
		Y (cm)		1.40	(a)	(a)	(a)	1.40
Other Information	PD	(µsec)	1.04					
	PRF	(Hz)	20					
	$p_r@PII_{max}$	(MPa)	1.61					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		6.00	(a)	(a)		6.00
		FL_Y (cm)		6.00	(a)	(a)		6.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	63.91					
Operating Control	Control 1 Depth		70	[mm]				
	Control 2 Focus		60	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-5: Transducer Model SA4-2/24 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			*0.88*	*0.53*	*(a)*	*(a)*	*0.51*	*1.45E+00*
Associated Acoustic Parameter	$p_{r.3}$	*(MPa)*	*1.39*					
	W_o	*(mW)*		*44.40*	*(a)*		*(a)*	*(a)*
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	*(mW)*				*(c)*		
	z_1	*(cm)*				*(c)*		
	z_{bp}	*(cm)*				*(a)*		
	z_{sp}	*(cm)*					*(a)*	
	$z@PII_{.3max}$	*(cm)*	*5.40*					
	$d_{eq}(z_{sp})$	*(cm)*					*(a)*	
	f_c	*(MHz)*	*2.50*	*2.50*	*(a)*	*(a)*	*(a)*	*2.50*
	Dim of A_{aprt}	*X (cm)*		*1.92*	*(a)*	*(a)*	*(a)*	*1.92*
		Y (cm)		*1.40*	*(a)*	*(a)*	*(a)*	*1.40*
Other Information	*PD*	*(µsec)*	*0.62*					
	PRF	*(Hz)*	*20*					
	$p_r@PII_{max}$	*(MPa)*	*2.22*					
	$d_{eq}@PII_{max}$	*(cm)*					*(a)*	
	Focal Length	FL_X *(cm)*		*6.00*	*(a)*	*(a)*		*6.00*
		FL_Y *(cm)*		*6.00*	*(a)*	*(a)*		*6.00*
	$I_{PA.3}@MI_{max}$	*(W/cm^2)*	*126.37*					
Operating Control	*Control 1 Depth*		*70*	*[mm]*				
	Control 2 Focus		*60*	*[mm]*				
	Control 3 Gate		*0*	*[mm]*				
	Control 4 Preset		GEN-General					

Table C-6: Transducer Model SA4-2/24 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.42	(a)	1.21	0.5037	1.11	2.07
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.66					
	W_o	(mW)		(a)	101.30		101.30	101.30
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				42.31		
	z_1	(cm)				2.09		
	z_{bp}	(cm)				1.84		
	z_{sp}	(cm)					2.09	
	$z@PII_{.3max}$	(cm)	2.09					
	$d_{eq}(z_{sp})$	(cm)					0,17	
	f_c	(MHz)	2.50	(a)	2.50	2.50	2.50	2.50
	Dim of A_{aprt}	X (cm)		(a)	0.84	0.84	0.84	0.84
		Y (cm)		(a)	1.40	1.40	1.40	1.40
Other Information	PD	(µsec)	2.90					
	PRF	(Hz)	10000					
	$p_r@PII_{max}$	(MPa)	0.79					
	$d_{eq}@PII_{max}$	(cm)					0.15	
	Focal Length	FL_X (cm)		(a)	3.00	3.00		3.00
		FL_Y (cm)		(a)	3.00	3.00		3.00
	½	(W/cm^2)	16.24					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-7: Transducer Model SA4-2/24 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.42	1.62	1.77	0.5037	0.76	3.04
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.66					
	W_o	(mW)		136.00	149.01		149.01	149.01
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				103.91		
	z_1	(cm)				2.09		
	z_{bp}	(cm)				1.84		
	z_{sp}	(cm)					2.09	
	$z@PII_{.3max}$	(cm)	2.09					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	2.50	2.50	2.50	2.50	2.50	2.50
	Dim of A_{aprt}	X (cm)		0.84	0.84	0.84	0.84	0.84
		Y (cm)		1.40	1.40	1.40	1.40	1.40
Other Information	PD	(µsec)	2.90					
	PRF	(Hz)	10000					
	$p_r@PII_{max}$	(MPa)	0.79					
	$d_{eq}@PII_{max}$	(cm)					0.05	
	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)	16.24					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-8: Transducer Model SA4-2/24 (Operating Mode: CW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.06	0.00	0.00	0.0003	0.01	0.00
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.08					
	W_o	(mW)		0.03	0.04		0.04	0.04
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				0.02		
	z_1	(cm)				4.00		
	z_{bp}	(cm)				1.75		
	z_{sp}	(cm)					4.00	
	$z@PII_{.3max}$	(cm)	4.00					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	1.69	1.69	1.69	1.69	1.69	1.69
	Dim of A_{aprt}	X (cm)		0.76	0.76	0.76	0.76	0.76
		Y (cm)		1.40	1.40	1.40	1.40	1.40
Other Information	PD	(µsec)	10.00					
	PRF	(Hz)	10					
	$p_r@PII_{max}$	(MPa)	0.10					
	$d_{eq}@PII_{max}$	(cm)					0.02	
	Focal Length	FL_X (cm)		8.00	8.00	8.00		8.00
		FL_Y (cm)		8.00	8.00	8.00		8.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	0.00					
Operating Control	Control 1 Depth		100	[mm]				
	Control 2 Focus		80	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-9: Transducer Model SA4-2/24 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.42	1.67	1.83	0.50	0.76	2.08
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.66					
	W_o	(mW)		140.69	154.10		154.10	154.10
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				5.58		
	z_1	(cm)				2.09		
	z_{bp}	(cm)				2.77		
	z_{sp}	(cm)					2.09	
	$z@PII_{.3max}$	(cm)	2.09					
	$d_{eq}(z_{sp})$	(cm)					10.43	
	f_c	(MHz)	2.50	2.50	2.50	2.50	2.50	2.50
	Dim of A_{aprt}	X (cm)		1.92	1.92	1.92	1.92	1.92
		Y (cm)		1.40	1.40	1.40	1.40	1.40
Other Information	PD	(µsec)	2.90					
	FPS	(Hz)	69.00					
	$p_r@PII_{max}$	(MPa)	0.79					
	$d_{eq}@PII_{max}$	(cm)					5.42	
	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)	63.91					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-10: Transducer Model PA7-4/12 (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			0.86	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.91					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	2.90					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.92	(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)	0.27					
	PRF	(Hz)	30					
	$p_r@PII_{max}$	(MPa)	3.12					
	$d_{eq}@PII_{max}$	(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)	174.43					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-11: Transducer Model PA7-4/12 (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			0.58	0.19	(a)	(a)	(a)	0.21
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.26					
	W_o	(mW)		8.36	(a)		(a)	8.44
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	1.89					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.80	4.80	(a)	(a)	(a)	4.80
	Dim of A_{aprt}	X (cm)		1.28	(a)	(a)	(a)	1.28
		Y (cm)		0.60	(a)	(a)	(a)	0.60
Other Information	PD	(µsec)	0.51					
	PRF	(Hz)	23					
	$p_r@PII_{max}$	(MPa)	1.73					
	$d_{eq}@PII_{max}$	(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)	69.24					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		40	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-12: Transducer Model PA7-4/12 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.86	0.21	(a)	(a)	0.18	2.31E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.91					
	W_o	(mW)		9.05	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.90					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.92	4.92	(a)	(a)	(a)	4.92
	Dim of A_{aprt}	X (cm)		1.28	(a)	(a)	(a)	1.28
		Y (cm)		0.60	(a)	(a)	(a)	0.60
Other Information	PD	(µsec)	0.27					
	PRF	(Hz)	30					
	$p_r@PII_{max}$	(MPa)	3.12					
	$d_{eq}@PII_{max}$	(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)	174.43					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-13: Transducer Model PA7-4/12 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.35	(a)	0.73	0.5079	0.48	1.17
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.79					
	W_o	(mW)		(a)	30.58		30.58	30.58
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				21.38		
	z_1	(cm)				2.49		
	z_{bp}	(cm)				0.98		
	z_{sp}	(cm)					2.49	
	$z@PII_{.3max}$	(cm)	2.49					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	5.00	(a)	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		(a)	0.56	0.56	0.56	0.56
		Y (cm)		(a)	0.60	0.60	0.60	0.60
Other Information	PD	(µsec)	2.83					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	1.22					
	$d_{eq}@PII_{max}$	(cm)					0.04	
	Focal Length	FL_X (cm)		(a)	5.00	5.00		5.00
		FL_Y (cm)		(a)	5.00	5.00		5.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	29.11					
Operating Control	Control 1 Depth		90	[mm]				
	Control 2 Focus		50	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-14: Transducer Model PA7-4/12 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.35	0.91	0.92	0.5079	0.24	1.47
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.79					
	W_o	(mW)		38.14	38.50		38.50	38.50
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				16.30		
	z_1	(cm)				2.49		
	z_{bp}	(cm)				0.98		
	z_{sp}	(cm)					2.49	
	$z@PII_{.3max}$	(cm)	2.49					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	5.00	5.00	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		0.56	0.56	0.56	0.56	0.56
		Y (cm)		0.60	0.60	0.60	0.60	0.60
Other Information	PD	(µsec)	2.83					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	1.22					
	$d_{eq}@PII_{max}$	(cm)					0.03	
	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)	29.11					
Operating Control	Control 1 Depth		90	[mm]				
	Control 2 Focus		50	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-15: Transducer Model PA7-4/12 (Operating Mode: CW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.06	0.00	0.00	0.0006	0.00	0.00
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.13					
	W_o	(mW)		0.03	0.04		0.04	0.04
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				0.02		
	z_1	(cm)				1.97		
	z_{bp}	(cm)				0.98		
	z_{sp}	(cm)					1.97	
	$z@PII_{.3max}$	(cm)	1.97					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	5.00	5.00	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		0.56	0.56	0.56	0.56	0.56
		Y (cm)		0.60	0.60	0.60	0.60	0.60
Other Information	PD	(µsec)	5.00					
	PRF	(Hz)	25000					
	$p_r@PII_{max}$	(MPa)	0.19					
	$d_{eq}@PII_{max}$	(cm)					0.02	
	Focal Length	FL_X (cm)		8.00	8.00	8.00		8.00
		FL_Y (cm)		8.00	8.00	8.00		8.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	0.00					
Operating Control	Control 1 Depth		100	[mm]				
	Control 2 Focus		80	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-16: Transducer Model PA7-4/12 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.35	0.94	0.95	0.51	0.24	1.01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.79					
	W_o	(mW)		39.56	39.94		39.94	39.94
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				6.48		
	z_1	(cm)				2.49		
	z_{bp}	(cm)				1.48		
	z_{sp}	(cm)					2.49	
	$z@PII_{.3max}$	(cm)	2.49					
	$d_{eq}(z_{sp})$	(cm)					4.69	
	f_c	(MHz)	5.00	5.00	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		1.28	1.28	1.28	1.28	1.28
		Y (cm)		0.60	0.60	0.60	0.60	0.60
Other Information	PD	(µsec)	2.83					
	FPS	(Hz)	61.00					
	$p_r@PII_{max}$	(MPa)	1.22					
	$d_{eq}@PII_{max}$	(cm)					2.26	
	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)	69.24					
Operating Control	Control 1 Depth		90	[mm]				
	Control 2 Focus		50	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-17: Transducer Model MC9-4/12 (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			0.65	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.42					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	2.21					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.75	(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)	0.26					
	PRF	(Hz)	59					
	$p_r@PII_{max}$	(MPa)	2.05					
	$d_{eq}@PII_{max}$	(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)	64.61					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-18: Transducer Model MC9-4/12 (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			0.35	0.51	(a)	(a)	(a)	0.47
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.70					
	W_o	(mW)		25.92	(a)		(a)	25.96
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.09					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.11	4.11	(a)	(a)	(a)	4.11
	Dim of A_{aprt}	X (cm)		2.94	(a)	(a)	(a)	2.94
		Y (cm)		0.50	(a)	(a)	(a)	0.50
Other Information	PD	(µsec)	0.73					
	PRF	(Hz)	119					
	$p_r@PII_{max}$	(MPa)	0.94					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		2.00	(a)	(a)		2.00
		FL_Y (cm)		2.00	(a)	(a)		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	18.87					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-19: Transducer Model MC9-4/12 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.65	0.25	(a)	(a)	0.25	2.01E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.42					
	W_o	(mW)		10.98	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.21					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.75	4.75	(a)	(a)	(a)	4.75
	Dim of A_{aprt}	X (cm)		2.94	(a)	(a)	(a)	2.94
		Y (cm)		0.50	(a)	(a)	(a)	0.50
Other Information	PD	(µsec)	0.26					
	PRF	(Hz)	59					
	$p_r@PII_{max}$	(MPa)	2.05					
	$d_{eq}@PII_{max}$	(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)	64.61					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-20: Transducer Model MC9-4/12 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.23	(a)	0.33	0.2025	0.21	0.53
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.52					
	W_o	(mW)		(a)	13.69		13.69	13.69
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				8.53		
	z_1	(cm)				1.85		
	z_{bp}	(cm)				0.96		
	z_{sp}	(cm)					1.85	
	$z@PII_{.3max}$	(cm)	1.85					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	5.00	(a)	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		(a)	0.64	0.64	0.64	0.64
		Y (cm)		(a)	0.50	0.50	0.50	0.50
Other Information	PD	(µsec)	2.89					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	0.72					
	$d_{eq}@PII_{max}$	(cm)					0.06	
	Focal Length	FL_X (cm)		(a)	5.00	5.00		5.00
		FL_Y (cm)		(a)	5.00	5.00		5.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	10.63					
Operating Control	Control 1 Depth		100	[mm]				
	Control 2 Focus		50	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-21: Transducer Model MC9-4/12 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.23	0.67	0.67	0.2025	0.22	1.10
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.52					
	W_o	(mW)		28.18	28.21		28.21	28.21
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				14.91		
	z_1	(cm)				1.85		
	z_{bp}	(cm)				0.96		
	z_{sp}	(cm)					1.85	
	$z@PII_{.3max}$	(cm)	1.85					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	5.00	5.00	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		0.64	0.64	0.64	0.64	0.64
		Y (cm)		0.50	0.50	0.50	0.50	0.50
Other Information	PD	(µsec)	2.89					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	0.72					
	$d_{eq}@PII_{max}$	(cm)					0.05	
	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)	10.63					
Operating Control	Control 1	Depth	100	[mm]				
	Control 2	Focus	50	[mm]				
	Control 3	Gate	40	[mm]				
	Control 4	Preset	GEN-General					

Table C-22: Transducer Model MC9-4/12 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.23	0.76	0.76	0.20	0.22	0.58
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.52					
	W_o	(mW)		31.95	32.02		32.02	32.02
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				1.26		
	z_1	(cm)				1.85		
	z_{bp}	(cm)				2.05		
	z_{sp}	(cm)					1.85	
	$z@PII_{.3max}$	(cm)	1.85					
	$d_{eq}(z_{sp})$	(cm)					4.44	
	f_c	(MHz)	5.00	5.00	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		2.94	2.94	2.94	2.94	2.94
		Y (cm)		0.50	0.50	0.50	0.50	0.50
Other Information	PD	(µsec)	2.89					
	FPS	(Hz)	108.00					
	$p_r@PII_{max}$	(MPa)	0.72					
	$d_{eq}@PII_{max}$	(cm)					4.84	
	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)	18.87					
Operating Control	Control 1	Depth	100	[mm]				
	Control 2	Focus	50	[mm]				
	Control 3	Gate	40	[mm]				
	Control 4	Preset	GEN-General					

Table C-23: Transducer Model EC9-5/10 and EC9-5/10 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			0.88	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.91					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	2.13					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.78	(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)	0.26					
	PRF	(Hz)	40					
	$p_r@PII_{max}$	(MPa)	2.72					
	$d_{eq}@PII_{max}$	(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)	144.95					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-24: Transducer Model EC9-5/10 and EC9-5/10 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			0.48	0.12	(a)	(a)	(a)	0.09
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.07					
	W_o	(mW)		4.99	(a)		(a)	5.00
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.13					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.98	4.98	(a)	(a)	(a)	4.98
	Dim of A_{aprt}	X (cm)		2.62	(a)	(a)	(a)	2.62
		Y (cm)		0.60	(a)	(a)	(a)	0.60
Other Information	PD	(μsec)	0.73					
	PRF	(Hz)	20					
	$p_r@PII_{max}$	(MPa)	1.54					
	$d_{eq}@PII_{max}$	(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)	49.65					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-25: Transducer Model EC9-5/10 and EC9-5/10 GPS (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.88	0.12	(a)	(a)	0.27	1.51E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.91					
	W_o	(mW)		5.34	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.13					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.78	4.78	(a)	(a)	(a)	4.78
	Dim of A_{aprt}	X (cm)		2.62	(a)	(a)	(a)	2.62
		Y (cm)		0.60	(a)	(a)	(a)	0.60
Other Information	PD	(µsec)	0.26					
	PRF	(Hz)	25					
	$p_r@PII_{max}$	(MPa)	2.72					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		2.00	(a)	(a)		2.00
		FL_Y (cm)		2.00	(a)	(a)		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	144.95					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-26: Transducer Model EC9-5/10 and EC9-5/10 GPS (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			*0.24*	*(a)*	*0.18*	*0.1258*	*0.16*	*0.28*
Associated Acoustic Parameter	$p_{r.3}$	*(MPa)*	*0.53*					
	W_o	*(mW)*		*(a)*	*7.46*		*7.46*	*7.46*
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	*(mW)*				*5.28*		
	z_1	*(cm)*				*1.23*		
	z_{bp}	*(cm)*				*0.99*		
	z_{sp}	*(cm)*					*1.23*	
	$z@PII_{.3max}$	*(cm)*	*1.23*					
	$d_{eq}(z_{sp})$	*(cm)*					*0.10*	
	f_c	*(MHz)*	*5.00*	*(a)*	*5.00*	*5.00*	*5.00*	*5.00*
	Dim of A_{aprt}	*X (cm)*		*(a)*	*0.57*	*0.57*	*0.57*	*0.57*
		Y (cm)		*(a)*	*0.60*	*0.60*	*0.60*	*0.60*
Other Information	*PD*	*(µsec)*	*1.50*					
	PRF	*(Hz)*	*6700*					
	$p_r@PII_{max}$	*(MPa)*	*0.66*					
	$d_{eq}@PII_{max}$	*(cm)*					*0.05*	
	Focal Length	FL_X *(cm)*		*(a)*	*2.00*	*2.00*		*2.00*
		FL_Y *(cm)*		*(a)*	*2.00*	*2.00*		*2.00*
	$I_{PA.3}@MI_{max}$	*(W/cm^2)*	*9.07*					
Operating Control	*Control 1 Depth*		*40*	*[mm]*				
	Control 2 Focus		*20*	*[mm]*				
	Control 3 Gate		*40*	*[mm]*				
	Control 4 Preset		GEN-General					

Table C-27: Transducer Model EC9-5/10 and EC9-5/10 GPS (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.24	0.30	0.30	0.1258	0.13	0.48
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.53					
	W_o	(mW)		12.79	12.80		12.80	12.80
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				8.38		
	z_1	(cm)				1.23		
	z_{bp}	(cm)				0.99		
	z_{sp}	(cm)					1.23	
	$z@PII_{.3max}$	(cm)	1.23					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	5.00	5.00	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		0.57	0.57	0.57	0.57	0.57
		Y (cm)		0.60	0.60	0.60	0.60	0.60
Other Information	PD	(µsec)	1.50					
	PRF	(Hz)	6700					
	$p_r@PII_{max}$	(MPa)	0.66					
	$d_{eq}@PII_{max}$	(cm)					0.02	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	9.07					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-28: Transducer Model EC9-5/10 and EC9-5/10 GPS (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.24	0.32	0.32	0.13	0.13	0.24
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.53					
	W_o	(mW)		13.52	13.52		13.52	13.52
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				3.62		
	z_1	(cm)				1.23		
	z_{bp}	(cm)				2.12		
	z_{sp}	(cm)					1.23	
	$z@PII_{.3max}$	(cm)	1.23					
	$d_{eq}(z_{sp})$	(cm)					3.04	
	f_c	(MHz)	5.00	5.00	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		2.62	2.62	2.62	2.62	2.62
		Y (cm)		0.60	0.60	0.60	0.60	0.60
Other Information	PD	(µsec)	1.50					
	FPS	(Hz)	79.00					
	$p_r@PII_{max}$	(MPa)	0.66					
	$d_{eq}@PII_{max}$	(cm)					1.96	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	49.65					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-29: 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			0.94	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.44					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	5.30					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	2.34	(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)	0.53					
	PRF	(Hz)	40					
	$p_r@PII_{max}$	(MPa)	2.22					
	$d_{eq}@PII_{max}$	(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)	111.72					
Operating Control	Control 1 Depth		70	[mm]				
	Control 2 Focus		60	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-30: 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			0.74	0.40	(a)	(a)	(a)	0.27
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.18					
	W_o	(mW)		34.06	(a)		(a)	35.65
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	5.50					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	2.49	2.49	(a)	(a)	(a)	2.49
	Dim of A_{aprt}	X (cm)		5.90	(a)	(a)	(a)	5.90
		Y (cm)		1.40	(a)	(a)	(a)	1.40
Other Information	PD	(µsec)	1.49					
	PRF	(Hz)	20					
	$p_r@PII_{max}$	(MPa)	1.89					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		6.00	(a)	(a)		6.00
		FL_Y (cm)		6.00	(a)	(a)		6.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	102.70					
Operating Control	Control 1 Depth		70	[mm]				
	Control 2 Focus		60	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-31: Transducer Model C5-2/60 and C5-2/60 GPS (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.94	0.66	(a)	(a)	0.56	4.80E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.44					
	W_o	(mW)		59.52	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	5.30					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	2.34	2.34	(a)	(a)	(a)	2.34
	Dim of A_{aprt}	X (cm)		5.90	(a)	(a)	(a)	5.90
		Y (cm)		1.40	(a)	(a)	(a)	1.40
Other Information	PD	(µsec)	0.53					
	PRF	(Hz)	40					
	$p_r@PII_{max}$	(MPa)	2.22					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		6.00	(a)	(a)		6.00
		FL_Y (cm)		6.00	(a)	(a)		6.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	111.72					
Operating Control	Control 1 Depth		70	[mm]				
	Control 2 Focus		60	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-32: 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	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			*0.32*	*(a)*	*1.08*	*0.3524*	*0.79*	*1.75*
Associated Acoustic Parameter	$p_{r.3}$	*(MPa)*	*0.51*					
	W_o	*(mW)*		*(a)*	*90.38*		*90.38*	*90.38*
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	*(mW)*				*29.61*		
	z_1	*(cm)*				*4.30*		
	z_{bp}	*(cm)*				*1.94*		
	z_{sp}	*(cm)*					*4.30*	
	$z@PII_{.3max}$	*(cm)*	*4.30*					
	$d_{eq}(z_{sp})$	*(cm)*					*0.14*	
	f_c	*(MHz)*		*(a)*	*2.50*	*2.50*	*2.50*	*2.50*
	Dim of A_{aprt}	*X (cm)*		*(a)*	*0.94*	*0.94*	*0.94*	*0.94*
		Y (cm)		*(a)*	*1.40*	*1.40*	*1.40*	*1.40*
Other Information	*PD*	*(µsec)*	*5.88*					
	PRF	*(Hz)*	*5000*					
	$p_r@PII_{max}$	*(MPa)*	*0.74*					
	$d_{eq}@PII_{max}$	*(cm)*					*0.12*	
	Focal Length	FL_X *(cm)*		*(a)*	*4.00*	*4.00*		*4.00*
		FL_Y *(cm)*		*(a)*	*4.00*	*4.00*		*4.00*
	$I_{PA.3}@MI_{max}$	*(W/cm^2)*	*10.08*					
Operating Control	*Control 1 Depth*		*80*	*[mm]*				
	Control 2 Focus		*40*	*[mm]*				
	Control 3 Gate		*10*	*[mm]*				
	Control 4 Preset		GEN-General					

Table C-33: 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	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.32	1.38	1.45	0.3524	0.46	2.35
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.51					
	W_o	(mW)		115.66	121.54		121.54	121.54
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				57.85		
	z_1	(cm)				4.30		
	z_{bp}	(cm)				1.94		
	z_{sp}	(cm)					4.30	
	z@$PII_{.3max}$	(cm)	4.30					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	2.50	2.50	2.50	2.50	2.50	2.50
	Dim of A_{aprt}	X (cm)		0.94	0.94	0.94	0.94	0.94
		Y (cm)		1.40	1.40	1.40	1.40	1.40
Other Information	PD	(µsec)	5.88					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	0.74					
	$d_{eq}@PII_{max}$	(cm)					0.06	
	Focal Length	FL_X (cm)		4.00	4.00	4.00		4.00
		FL_Y (cm)		4.00	4.00	4.00		4.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	10.08					
Operating Control	Control 1 Depth		80	[mm]				
	Control 2 Focus		40	[mm]				
	Control 3 Gate		10	[mm]				
	Control 4 Preset		GEN-General					

Table C-34: 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	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.32	1.39	1.46	0.35	0.46	0.94
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.51					
	W_o	(mW)		116.35	122.38		122.38	122.38
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				2.27		
	z_1	(cm)				4.30		
	z_{bp}	(cm)				4.86		
	z_{sp}	(cm)					4.30	
	z@$PII_{.3max}$	(cm)	4.30					
	$d_{eq}(z_{sp})$	(cm)					8.45	
	f_c	(MHz)	2.50	2.50	2.50	2.50	2.50	2.50
	Dim of A_{aprt}	X (cm)		5.90	5.90	5.90	5.90	5.90
		Y (cm)		1.40	1.40	1.40	1.40	1.40
Other Information	PD	(µsec)	5.88					
	FPS	(Hz)	50.00					
	$p_r@PII_{max}$	(MPa)	0.74					
	$d_{eq}@PII_{max}$	(cm)					6.88	
	Focal Length	FL_X (cm)		4.00	4.00	4.00		4.00
		FL_Y (cm)		4.00	4.00	4.00		4.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	17.58					
Operating Control	Control 1 Depth		80	[mm]				
	Control 2 Focus		40	[mm]				
	Control 3 Gate		10	[mm]				
	Control 4 Preset		GEN-General					

Table C-35: Transducer Model C7-3/50 (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			0.88	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.59					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	4.39					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	3.29	(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)	0.42					
	PRF	(Hz)	43					
	$p_r@PII_{max}$	(MPa)	2.62					
	$d_{eq}@PII_{max}$	(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)	126.74					
Operating Control	Control 1 Depth		60	[mm]				
	Control 2 Focus		50	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-36: Transducer Model C7-3/50 (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			0.62	1.39	(a)	(a)	(a)	0.83
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.09					
	W_o	(mW)		93.87	(a)		(a)	96.99
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	5.07					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	3.12	3.12	(a)	(a)	(a)	3.12
	Dim of A_{aprt}	X (cm)		6.12	(a)	(a)	(a)	6.12
		Y (cm)		1.10	(a)	(a)	(a)	1.10
Other Information	PD	(μsec)	0.83					
	PRF	(Hz)	25					
	$p_r@PII_{max}$	(MPa)	1.88					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		6.00	(a)	(a)		6.00
		FL_Y (cm)		6.00	(a)	(a)		6.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	85.80					
Operating Control	Control 1 Depth		70	[mm]				
	Control 2 Focus		60	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-37: Transducer Model C7-3/50 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.88	0.51	(a)	(a)	0.33	1.40E+00
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.59					
	W_o	(mW)		32.64	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	4.39					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	3.29	3.29	(a)	(a)	(a)	3.29
	Dim of A_{aprt}	X (cm)		6.12	(a)	(a)	(a)	6.12
		Y (cm)		1.10	(a)	(a)	(a)	1.10
Other Information	PD	(µsec)	0.42					
	PRF	(Hz)	25					
	$p_r@PII_{max}$	(MPa)	2.62					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		5.00	(a)	(a)		5.00
		FL_Y (cm)		5.00	(a)	(a)		5.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	126.74					
Operating Control	Control 1 Depth		60	[mm]				
	Control 2 Focus		50	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-38: Transducer Model C7-3/50 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			*0.22*	*(a)*	*0.98*	*0.3399*	*0.37*	*1.11*
Associated Acoustic Parameter	$p_{r.3}$	*(MPa)*	*0.43*					
	W_o	*(mW)*		*(a)*	*51.26*		*51.26*	*51.26*
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	*(mW)*				*17.85*		
	z_1	*(cm)*				*4.56*		
	z_{bp}	*(cm)*				*1.74*		
	z_{sp}	*(cm)*					*4.56*	
	$z@PII_{.3max}$	*(cm)*	*4.56*					
	$d_{eq}(z_{sp})$	*(cm)*					*0.14*	
	f_c	*(MHz)*	*4.00*	*(a)*	*4.00*	*4.00*	*4.00*	*4.00*
	Dim of A_{aprt}	*X (cm)*		*(a)*	*0.96*	*0.96*	*0.96*	*0.96*
		Y (cm)		*(a)*	*1.10*	*1.10*	*1.10*	*1.10*
Other Information	*PD*	*(µsec)*	*1.85*					
	PRF	*(Hz)*	*9500*					
	$p_r@PII_{max}$	*(MPa)*	*0.81*					
	$d_{eq}@PII_{max}$	*(cm)*					*0.10*	
	Focal Length	FL_X *(cm)*		*(a)*	*5.00*	*5.00*		*5.00*
		FL_Y *(cm)*		*(a)*	*5.00*	*5.00*		*5.00*
	$I_{PA.3}@MI_{max}$	*(W/cm^2)*	*8.69*					
Operating Control	*Control 1 Depth*		*90*	*[mm]*				
	Control 2 Focus		*50*	*[mm]*				
	Control 3 Gate		*40*	*[mm]*				
	Control 4 Preset		GEN-General					

Table C-39: Transducer Model C7-3/50 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.22	1.57	1.62	0.3399	0.30	1.83
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.43					
	W_o	(mW)		82.25	84.97		84.97	84.97
	min of [$W_{.3}(z_1)$, $I_{TA.3}(z_1)$]	(mW)				24.13		
	z_1	(cm)				4.56		
	z_{bp}	(cm)				1.74		
	z_{sp}	(cm)					4.56	
	$z@PII_{.3max}$	(cm)	4.56					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	4.00	4.00	4.00	4.00	4.00	4.00
	Dim of A_{aprt}	X (cm)		0.96	0.96	0.96	0.96	0.96
		Y (cm)		1.10	1.10	1.10	1.10	1.10
Other Information	PD	(µsec)	1.85					
	PRF	(Hz)	9500					
	$p_r@PII_{max}$	(MPa)	0.81					
	$d_{eq}@PII_{max}$	(cm)					0.05	
	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)	8.69					
Operating Control	Control 1	Depth	90	[mm]				
	Control 2	Focus	50	[mm]				
	Control 3	Gate	40	[mm]				
	Control 4	Preset	GEN-General					

Table C-40: Transducer Model C7-3/50 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.22	1.59	1.65	0.34	0.30	0.74
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.43					
	W_o	(mW)		83.73	86.52		86.52	86.52
	min of [$W_{.3}(z_1)$, $I_{TA.3}(z_1)$]	(mW)				2.12		
	z_1	(cm)				4.56		
	z_{bp}	(cm)				4.39		
	z_{sp}	(cm)					4.56	
	$z@PII_{.3max}$	(cm)	4.56					
	$d_{eq}(z_{sp})$	(cm)					6.25	
	f_c	(MHz)	4.00	4.00	4.00	4.00	4.00	4.00
	Dim of A_{aprt}	X (cm)		6.12	6.12	6.12	6.12	6.12
		Y (cm)		1.10	1.10	1.10	1.10	1.10
Other Information	PD	(µsec)	1.85					
	FPS	(Hz)	94.00					
	$p_r@PII_{max}$	(MPa)	0.81					
	$d_{eq}@PII_{max}$	(cm)					5.26	
	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)	85.80					
Operating Control	Control 1	Depth	90	[mm]				
	Control 2	Focus	50	[mm]				
	Control 3	Gate	40	[mm]				
	Control 4	Preset	GEN-General					

Table C-41: Transducer Model C9-5/10 (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			0.96	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	2.08					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	2.17					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.69	(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)	0.27					
	PRF	(Hz)	59					
	$p_r@PII_{max}$	(MPa)	2.96					
	$d_{eq}@PII_{max}$	(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)	203.01					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-42: Transducer Model C9-5/10 (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			0.58	0.62	(a)	(a)	(a)	0.47
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.28					
	W_o	(mW)		26.33	(a)		(a)	26.38
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.13					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.94	4.94	(a)	(a)	(a)	4.94
	Dim of A_{aprt}	X (cm)		2.62	(a)	(a)	(a)	2.62
		Y (cm)		0.60	(a)	(a)	(a)	0.60
Other Information	PD	(µsec)	0.73					
	PRF	(Hz)	110					
	$p_r@PII_{max}$	(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)	79.15					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-43: Transducer Model C9-5/10 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.96	0.30	(a)	(a)	0.33	2.38E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	2.08					
	W_o	(mW)		13.44	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.17					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.69	4.69	(a)	(a)	(a)	4.69
	Dim of A_{aprt}	X (cm)		2.62	(a)	(a)	(a)	2.62
		Y (cm)		0.60	(a)	(a)	(a)	0.60
Other Information	PD	(µsec)	0.27					
	PRF	(Hz)	59					
	$p_r@PII_{max}$	(MPa)	2.96					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		2.00	(a)	(a)		2.00
		FL_Y (cm)		2.00	(a)	(a)		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	203.01					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-44: Transducer Model C9-5/10 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			*0.31*	*(a)*	*0.33*	*0.2353*	*0.28*	*0.53*
Associated Acoustic Parameter	$p_{r.3}$	*(MPa)*	*0.70*					
	W_o	*(mW)*		*(a)*	*13.95*		*13.95*	*13.95*
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	*(mW)*				*9.88*		
	z_1	*(cm)*				*2.01*		
	z_{bp}	*(cm)*				*0.99*		
	z_{sp}	*(cm)*					*2.01*	
	$z@PII_{.3max}$	*(cm)*	*2.01*					
	$d_{eq}(z_{sp})$	*(cm)*						
	f_c	*(MHz)*	*5.00*	*(a)*	*5.00*	*5.00*	*5.00*	*5.00*
	Dim of A_{aprt}	*X (cm)*		*(a)*	*0.57*	*0.57*	*0.57*	*0.57*
		Y (cm)		*(a)*	*0.60*	*0.60*	*0.60*	*0.60*
Other Information	*PD*	*(µsec)*	*2.91*					
	PRF	*(Hz)*	*5000*					
	$p_r@PII_{max}$	*(MPa)*	*0.99*					
	$d_{eq}@PII_{max}$	*(cm)*					*0.03*	
	Focal Length	FL_X *(cm)*		*(a)*	*3.00*	*3.00*		*3.00*
		FL_Y *(cm)*		*(a)*	*3.00*	*3.00*		*3.00*
	$I_{PA.3}@MI_{max}$	(W/cm^2)	*18.42*					
Operating Control	*Control 1 Depth*		*60*	*[mm]*				
	Control 2 Focus		*30*	*[mm]*				
	Control 3 Gate		*40*	*[mm]*				
	Control 4 Preset		GEN-General					

Table C-45: Transducer Model C9-5/10 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.31	0.55	0.55	0.2353	0.23	0.88
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.70					
	W_o	(mW)		23.19	23.31		23.31	23.31
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				11.66		
	z_1	(cm)				2.01		
	z_{bp}	(cm)				0.99		
	z_{sp}	(cm)					2.01	
	$z@PII_{.3max}$	(cm)	2.01					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	5.00	5.00	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		0.57	0.57	0.57	0.57	0.57
		Y (cm)		0.60	0.60	0.60	0.60	0.60
Other Information	PD	(µsec)	2.91					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	0.99					
	$d_{eq}@PII_{max}$	(cm)					0.03	
	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)	18.42					
Operating Control	Control 1 Depth		60	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-46: Transducer Model C9-5/10 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.31	0.58	0.59	0.24	0.23	0.43
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.70					
	W_o	(mW)		24.46	24.59		24.59	24.59
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				2.03		
	z_1	(cm)				2.01		
	z_{bp}	(cm)				2.12		
	z_{sp}	(cm)					2.01	
	$z@PII_{.3max}$	(cm)	2.01					
	$d_{eq}(z_{sp})$	(cm)					3.84	
	f_c	(MHz)	5.00	5.00	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		2.62	2.62	2.62	2.62	2.62
		Y (cm)		0.60	0.60	0.60	0.60	0.60
Other Information	PD	(µsec)	2.91					
	FPS	(Hz)	101.00					
	$p_r@PII_{max}$	(MPa)	0.99					
	$d_{eq}@PII_{max}$	(cm)					3.30	
	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)	79.15					
Operating Control	Control 1 Depth		60	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-47: Transducer Model BPC8-4/10 (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			0.69	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.51					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	2.33					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.76	(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)	0.26					
	PRF	(Hz)	50					
	$p_r@PII_{max}$	(MPa)	2.21					
	$d_{eq}@PII_{max}$	(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)	81.91					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-48: Transducer Model BPC8-4/10 (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			0.53	0.28	(a)	(a)	(a)	0.19
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.18					
	W_o	(mW)		11.81	(a)		(a)	11.88
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.33					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.94	4.94	(a)	(a)	(a)	4.94
	Dim of A_{aprt}	X (cm)		2.62	(a)	(a)	(a)	2.62
		Y (cm)		0.70	(a)	(a)	(a)	0.70
Other Information	PD	(µsec)	0.51					
	PRF	(Hz)	61					
	$p_r@PII_{max}$	(MPa)	1.76					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		2.00	(a)	(a)		2.00
		FL_Y (cm)		2.00	(a)	(a)		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	66.80					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-49: Transducer Model BPC8-4/10 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.69	0.19	(a)	(a)	0.22	1.36E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.51					
	W_o	(mW)		8.44	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.33					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.76	4.76	(a)	(a)	(a)	4.76
	Dim of A_{aprt}	X (cm)		2.62	(a)	(a)	(a)	2.62
		Y (cm)		0.70	(a)	(a)	(a)	0.70
Other Information	PD	(µsec)	0.26					
	PRF	(Hz)	50					
	$p_r@PII_{max}$	(MPa)	2.21					
	$d_{eq}@PII_{max}$	(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)	81.91					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-50: Transducer Model BPC8-4/10 (Operating Mode: PW Doppler)

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)*	*0.19*	*0.1064*	*0.09*	
Associated Acoustic Parameter	*$p_{r.3}$*	*(MPa)*	*0.51*					
	W_o	*(mW)*		*(a)*	*6.06*		*6.06*	*6.06*
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	*(mW)*				*3.38*		
	z_1	*(cm)*				*2.65*		
	z_{bp}	*(cm)*				*0.00*		
	z_{sp}	*(cm)*					*2.65*	
	$z@PII_{.3max}$	*(cm)*	*2.65*					
	$d_{eq}(z_{sp})$	*(cm)*					*0.10*	
	f_c	*(MHz)*	*6.64*	*(a)*	*6.64*	*6.64*	*6.64*	*6.64*
	Dim of A_{aprt}	*X (cm)*		*(a)*	*0.00*	*0.00*	*0.00*	*0.00*
		Y (cm)		*(a)*	*0.00*	*0.00*	*0.00*	*0.00*
Other Information	*PD*	*(µsec)*	*1.39*					
	PRF	*(Hz)*	*5000*					
	$p_r@PII_{max}$	*(MPa)*	*0.94*					
	$d_{eq}@PII_{max}$	*(cm)*					*0.03*	
	Focal Length	*FL_X (cm)*		*(a)*	*2.50*	*2.50*		*2.50*
		FL_Y (cm)		*(a)*	*2.50*	*2.50*		*2.50*
	$I_{PA.3}@MI_{max}$	*(W/cm^2)*	*11.44*					
Operating Control	*Control 1 Depth*		*50*	*[mm]*				
	Control 2 Focus		*25*	*[mm]*				
	Control 3 Gate		*40*	*[mm]*				
	Control 4 Preset		GEN-General					

Table C-51: Transducer Model BPC8-4/10 (Operating Mode: PW+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	0.40	0.40	0.1064	0.10	
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.51					
	W_o	(mW)		12.64	12.69		12.69	12.69
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				3.76		
	z_1	(cm)				2.65		
	z_{bp}	(cm)				0.00		
	z_{sp}	(cm)					2.65	
	$z@PII_{.3max}$	(cm)	2.65					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	6.64	6.64	6.64	6.64	6.64	6.64
	Dim of A_{aprt}	X (cm)		0.00	0.00	0.00	0.00	0.00
		Y (cm)		0.00	0.00	0.00	0.00	0.00
Other Information	PD	(µsec)	1.39					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	0.94					
	$d_{eq}@PII_{max}$	(cm)					0.04	
	Focal Length	FL_X (cm)		2.50	2.50	2.50		2.50
		FL_Y (cm)		2.50	2.50	2.50		2.50
	$I_{PA.3}@MI_{max}$	(W/cm^2)	11.44					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		25	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-52: Transducer Model BPC8-4/10 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.20	0.44	0.45	0.11	0.10	0.23
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.51					
	W_o	(mW)		14.15	14.21		14.21	14.21
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				2.77		
	z_1	(cm)				2.65		
	z_{bp}	(cm)				2.29		
	z_{sp}	(cm)					2.65	
	$z@PII_{.3max}$	(cm)	2.65					
	$d_{eq}(z_{sp})$	(cm)					2.56	
	f_c	(MHz)	6.60	6.60	6.60	6.60	6.60	6.60
	Dim of A_{aprt}	X (cm)		2.62	2.62	2.62	2.62	2.62
		Y (cm)		0.70	0.70	0.70	0.70	0.70
Other Information	PD	(µsec)	1.39					
	FPS	(Hz)	119.00					
	$p_r@PII_{max}$	(MPa)	0.94					
	$d_{eq}@PII_{max}$	(cm)					1.89	
	Focal Length	FL_X (cm)		2.50	2.50	2.50		2.50
		FL_Y (cm)		2.50	2.50	2.50		2.50
	$I_{PA.3}@MI_{max}$	(W/cm^2)	66.80					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		25	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-53: Transducer Model BPL9-5/55 (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			0.54	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.26					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	2.77					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	5.39	(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)	0.23					
	PRF	(Hz)	104					
	$p_r@PII_{max}$	(MPa)	2.11					
	$d_{eq}@PII_{max}$	(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)	64.02					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-54: Transducer Model BPL9-5/55 (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			0.41	0.16	(a)	(a)	(a)	0.10
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.85					
	W_o	(mW)		7.56	(a)		(a)	7.66
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.77					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.33	4.33	(a)	(a)	(a)	4.33
	Dim of A_{aprt}	X (cm)		5.38	(a)	(a)	(a)	5.38
		Y (cm)		0.50	(a)	(a)	(a)	0.50
Other Information	PD	(µsec)	0.50					
	PRF	(Hz)	50					
	$p_r@PII_{max}$	(MPa)	1.28					
	$d_{eq}@PII_{max}$	(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)	36.21					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		40	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-55: Transducer Model BPL9-5/55 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.54	0.47	(a)	(a)	0.38	1.87E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.26					
	W_o	(mW)		18.30	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.77					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	5.39	5.39	(a)	(a)	(a)	5.39
	Dim of A_{aprt}	X (cm)		5.38	(a)	(a)	(a)	5.38
		Y (cm)		0.50	(a)	(a)	(a)	0.50
Other Information	PD	(µsec)	0.23					
	PRF	(Hz)	139					
	$p_r@PII_{max}$	(MPa)	2.11					
	$d_{eq}@PII_{max}$	(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)	64.02					
Operating Control	Control 1	Depth	40	[mm]				
	Control 2	Focus	30	[mm]				
	Control 3	Gate	0	[mm]				
	Control 4	Preset	GEN-General					

Table C-56: Transducer Model BPL9-5/55 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			*0.39*	*(a)*	*0.76*	*0.4815*	*0.50*	*0.69*
Associated Acoustic Parameter	$p_{r.3}$	*(MPa)*	*1.01*					
	W_o	*(mW)*		*(a)*	*24.05*		*24.05*	*24.05*
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	*(mW)*				*15.20*		
	z_1	*(cm)*				*1.40*		
	z_{bp}	*(cm)*				*1.30*		
	z_{sp}	*(cm)*					*1.40*	
	$z@PII_{.3max}$	*(cm)*	*1.40*					
	$d_{eq}(z_{sp})$	*(cm)*					*0.10*	
	f_c	*(MHz)*	*6.66*	*(a)*	*6.66*	*6.66*	*6.66*	*6.66*
	Dim of A_{aprt}	*X (cm)*		*(a)*	*1.18*	*1.18*	*1.18*	*1.18*
		Y (cm)		*(a)*	*0.50*	*0.50*	*0.50*	*0.50*
Other Information	*PD*	*(µsec)*	*2.18*					
	PRF	*(Hz)*	*5000*					
	$p_r@PII_{max}$	*(MPa)*	*1.39*					
	$d_{eq}@PII_{max}$	*(cm)*					*0.03*	
	Focal Length	FL_X *(cm)*		*(a)*	*2.00*	*2.00*		*2.00*
		FL_Y *(cm)*		*(a)*	*2.00*	*2.00*		*2.00*
	$I_{PA.3}@MI_{max}$	*(W/cm^2)*	*46.51*					
Operating Control	*Control 1*	*Depth*	*40*	*[mm]*				
	Control 2	*Focus*	*20*	*[mm]*				
	Control 3	*Gate*	*30*	*[mm]*				
	Control 4	*Preset*	GEN-General					

Table C-57: Transducer Model BPL9-5/55 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.39	0.97	0.98	0.4815	0.27	0.90
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.01					
	W_o	(mW)		30.47	30.98		30.98	30.98
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				16.25		
	z_1	(cm)				1.40		
	z_{bp}	(cm)				1.30		
	z_{sp}	(cm)					1.40	
	z@$PII_{.3max}$	(cm)	1.40					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	6.66	6.66	6.66	6.66	6.66	6.66
	Dim of A_{aprt}	X (cm)		1.18	1.18	1.18	1.18	1.18
		Y (cm)		0.50	0.50	0.50	0.50	0.50
Other Information	PD	(µsec)	2.18					
	PRF	(Hz)	5000					
	p_r@PII_{max}	(MPa)	1.39					
	d_{eq}@PII_{max}	(cm)					0.05	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}$@MI_{max}	(W/cm^2)	46.51					
Operating Control	Control 1	Depth	40	[mm]				
	Control 2	Focus	20	[mm]				
	Control 3	Gate	30	[mm]				
	Control 4	Preset	GEN-General					

Table C-58: Transducer Model BPL9-5/55 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.39	0.99	1.01	0.48	0.27	0.43
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.01					
	W_o	(mW)		31.61	32.14		32.14	32.14
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				1.72		
	z_1	(cm)				1.40		
	z_{bp}	(cm)				2.77		
	z_{sp}	(cm)					1.40	
	z@$PII_{.3max}$	(cm)	1.40					
	$d_{eq}(z_{sp})$	(cm)					4.44	
	f_c	(MHz)	6.60	6.60	6.60	6.60	6.60	6.60
	Dim of A_{aprt}	X (cm)		5.38	5.38	5.38	5.38	5.38
		Y (cm)		0.50	0.50	0.50	0.50	0.50
Other Information	PD	(µsec)	2.18					
	FPS	(Hz)	119.00					
	p_r@PII_{max}	(MPa)	1.39					
	d_{eq}@PII_{max}	(cm)					4.15	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}$@MI_{max}	(W/cm^2)	36.21					
Operating Control	Control 1	Depth	40	[mm]				
	Control 2	Focus	20	[mm]				
	Control 3	Gate	30	[mm]				
	Control 4	Preset	GEN-General					

Table C-59: Transducer Model L9-4/38 (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			0.94	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.95					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	2.61					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.32	(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)	0.28					
	PRF	(Hz)	69					
	$p_r@PII_{max}$	(MPa)	2.88					
	$d_{eq}@PII_{max}$	(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)	182.94					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		40	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-60: Transducer Model L9-4/38 (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			0.55	0.31	(a)	(a)	(a)	0.19
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.22					
	W_o	(mW)		12.95	(a)		(a)	13.01
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.61					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.98	4.98	(a)	(a)	(a)	4.98
	Dim of A_{aprt}	X (cm)		3.90	(a)	(a)	(a)	3.90
		Y (cm)		0.60	(a)	(a)	(a)	0.60
Other Information	PD	(μsec)	0.75					
	PRF	(Hz)	22					
	$p_r@PII_{max}$	(MPa)	1.92					
	$d_{eq}@PII_{max}$	(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)	104.31					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-61: Transducer Model L9-4/38 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					A_{aprt}≤1	A_{aprt}>1		
Global Maximum Index Value			0.94	0.77	(a)	(a)	0.99	5.41E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.95					
	W_o	(mW)		37.17	(a)		(a)	(a)
	min of [$W_{.3}(z_1)$, $I_{TA.3}(z_1)$]	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	z@$PII_{.3max}$	(cm)	2.61					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.32	4.32	(a)	(a)	(a)	4.32
	Dim of A_{aprt}	X (cm)		3.90	(a)	(a)	(a)	3.90
		Y (cm)		0.60	(a)	(a)	(a)	0.60
Other Information	PD	(µsec)	0.28					
	PRF	(Hz)	138					
	p_r@PII_{max}	(MPa)	2.88					
	d_{eq}@PII_{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)	182.94					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		40	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-62: Transducer Model L9-4/38 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					A_{aprt}≤1	A_{aprt}>1		
Global Maximum Index Value			*0.41*	*(a)*	*0.42*	*0.3008*	*0.40*	*0.56*
Associated Acoustic Parameter	$p_{r.3}$	*(MPa)*	*0.91*					
	W_o	*(mW)*		*(a)*	*17.84*		*17.84*	*17.84*
	min of [$W_{.3}(z_1)$, $I_{TA.3}(z_1)$]	*(mW)*				*12.64*		
	z_1	*(cm)*				*1.81*		
	z_{bp}	*(cm)*				*1.20*		
	z_{sp}	*(cm)*					*1.81*	
	z@$PII_{.3max}$	*(cm)*	*1.81*					
	$d_{eq}(z_{sp})$	*(cm)*					*0.10*	
	f_c	*(MHz)*	*5.00*	*(a)*	*5.00*	*5.00*	*5.00*	*5.00*
	Dim of A_{aprt}	*X (cm)*		*(a)*	*0.84*	*0.84*	*0.84*	*0.84*
		Y (cm)		*(a)*	*0.60*	*0.60*	*0.60*	*0.60*
Other Information	*PD*	*(µsec)*	*2.90*					
	PRF	*(Hz)*	*5000*					
	p_r@PII_{max}	*(MPa)*	*1.25*					
	d_{eq}@PII_{max}	*(cm)*					*0.03*	
	Focal Length	FL_X *(cm)*		*(a)*	*2.00*	*2.00*		*2.00*
		FL_Y *(cm)*		*(a)*	*2.00*	*2.00*		*2.00*
	$I_{PA.3}$@MI_{max}	*(W/cm^2)*	*28.54*					
Operating Control	*Control 1 Depth*		*40*	*[mm]*				
	Control 2 Focus		*20*	*[mm]*				
	Control 3 Gate		*40*	*[mm]*				
	Control 4 Preset		GEN-General					

Table C-63: Transducer Model L9-4/38 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.41	0.55	0.55	0.3008	0.22	0.73
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.91					
	W_o	(mW)		23.23	23.25		23.25	23.25
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				12.47		
	z_1	(cm)				1.81		
	z_{bp}	(cm)				1.20		
	z_{sp}	(cm)					1.81	
	$z@PII_{.3max}$	(cm)	1.81					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	5.00	5.00	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		0.84	0.84	0.84	0.84	0.84
		Y (cm)		0.60	0.60	0.60	0.60	0.60
Other Information	PD	(µsec)	2.90					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	1.25					
	$d_{eq}@PII_{max}$	(cm)					0.03	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	28.54					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-64: Transducer Model L9-4/38 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.41	0.44	0.46	0.30	0.09	0.28
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.91					
	W_o	(mW)		18.68	19.26		19.26	19.26
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				1.47		
	z_1	(cm)				1.81		
	z_{bp}	(cm)				2.59		
	z_{sp}	(cm)					1.81	
	$z@PII_{.3max}$	(cm)	1.81					
	$d_{eq}(z_{sp})$	(cm)					3.45	
	f_c	(MHz)	5.00	5.00	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		3.90	3.90	3.90	3.90	3.90
		Y (cm)		0.60	0.60	0.60	0.60	0.60
Other Information	PD	(µsec)	2.90					
	FPS	(Hz)	137.00					
	$p_r@PII_{max}$	(MPa)	1.25					
	$d_{eq}@PII_{max}$	(cm)					3.50	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	23.47					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-65: Transducer Model L14-5/38 and L14-5/38 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			0.73	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.69					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	2.13					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	5.37	(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)	0.22					
	PRF	(Hz)	83					
	$p_r@PII_{max}$	(MPa)	2.51					
	$d_{eq}@PII_{max}$	(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)	111.15					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-66: 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	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.61	0.13	(a)	(a)	(a)	0.09
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.38					
	W_o	(mW)		5.22	(a)		(a)	5.25
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.13					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	5.05	5.05	(a)	(a)	(a)	5.05
	Dim of A_{aprt}	X (cm)		3.90	(a)	(a)	(a)	3.90
		Y (cm)		0.40	(a)	(a)	(a)	0.40
Other Information	PD	(µsec)	0.74					
	PRF	(Hz)	30					
	$p_r@PII_{max}$	(MPa)	2.00					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		2.00	(a)	(a)		2.00
		FL_Y (cm)		2.00	(a)	(a)		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	109.15					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-67: Transducer Model L14-5/38 and L14-5/38 GPS (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.73	0.60	(a)	(a)	0.86	2.07E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.69					
	W_o	(mW)		23.43	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.13					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	5.37	5.37	(a)	(a)	(a)	5.37
	Dim of A_{aprt}	X (cm)		3.90	(a)	(a)	(a)	3.90
		Y (cm)		0.40	(a)	(a)	(a)	0.40
Other Information	PD	(µsec)	0.22					
	PRF	(Hz)	167					
	$p_r@PII_{max}$	(MPa)	2.51					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		2.00	(a)	(a)		2.00
		FL_Y (cm)		2.00	(a)	(a)		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	111.15					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-68: 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	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			*0.23*	*(a)*	*0.53*	*0.2087*	*0.20*	*0.64*
Associated Acoustic Parameter	$p_{r.3}$	*(MPa)*	*0.59*					
	W_o	*(mW)*		*(a)*	*16.83*		*16.83*	*16.83*
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	*(mW)*				*6.58*		
	z_1	*(cm)*				*2.69*		
	z_{bp}	*(cm)*				*0.99*		
	z_{sp}	*(cm)*					*2.69*	
	$z@PII_{.3max}$	*(cm)*	*2.69*					
	$d_{eq}(z_{sp})$	*(cm)*					*0,10*	
	f_c	*(MHz)*	*6.65*	*(a)*	*6.65*	*6.65*	*6.65*	*6.65*
	Dim of A_{aprt}	*X (cm)*		*(a)*	*0.85*	*0.85*	*0.85*	*0.85*
		Y (cm)		*(a)*	*0.40*	*0.40*	*0.40*	*0.40*
Other Information	*PD*	*(µsec)*	*2.20*					
	PRF	*(Hz)*	*5000*					
	$p_r@PII_{max}$	*(MPa)*	*1.10*					
	$d_{eq}@PII_{max}$	*(cm)*					*0.06*	
	Focal Length	FL_X *(cm)*		*(a)*	*3.00*	*3.00*		*3.00*
		FL_Y *(cm)*		*(a)*	*3.00*	*3.00*		*3.00*
	$I_{PA.3}@MI_{max}$	*(W/cm^2)*	*17.07*					
Operating Control	*Control 1 Depth*		*60*	*[mm]*				
	Control 2 Focus		*30*	*[mm]*				
	Control 3 Gate		*40*	*[mm]*				
	Control 4 Preset		GEN-General					

Table C-69: Transducer Model L14-5/38 and L14-5/38 GPS (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.23	0.60	0.62	0.2087	0.08	0.75
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.59					
	W_o	(mW)		19.09	19.64		19.64	19.64
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				5.70		
	z_1	(cm)				2.69		
	z_{bp}	(cm)				0.99		
	z_{sp}	(cm)					2.69	
	$z@PII_{.3max}$	(cm)	2.69					
	$d_{eq}(z_{sp})$	(cm)					0,10	
	f_c	(MHz)	6.65	6.65	6.65	6.65	6.65	6.65
	Dim of A_{aprt}	X (cm)		0.85	0.85	0.85	0.85	0.85
		Y (cm)		0.40	0.40	0.40	0.40	0.40
Other Information	PD	(µsec)	2.20					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	1.1					
	$d_{eq}@PII_{max}$	(cm)					0.04	
	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)	17.07					
Operating Control	Control 1 Depth		60	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-70: 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		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.23	0.61	0.63	0.21	0.08	0.36
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.60					
	W_o	(mW)		19.38	20.12		20.12	20.12
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				1.50		
	z_1	(cm)				2.69		
	z_{bp}	(cm)				2.11		
	z_{sp}	(cm)					2.69	
	$z@PII_{.3max}$	(cm)	2.69					
	$d_{eq}(z_{sp})$	(cm)					3.04	
	f_c	(MHz)	6.60	6.60	6.60	6.60	6.60	6.60
	Dim of A_{aprt}	X (cm)		3.90	3.90	3.90	3.90	3.90
		Y (cm)		0.40	0.40	0.40	0.40	0.40
Other Information	PD	(µsec)	2.20					
	FPS	(Hz)	129.00					
	$p_r@PII_{max}$	(MPa)	1.10					
	$d_{eq}@PII_{max}$	(cm)					3.04	
	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)	24.33					
Operating Control	Control 1 Depth		60	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-71: Transducer Model L14-5W/60 (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)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	2.27					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	1.36					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	5.93	(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)	0.21					
	PRF	(Hz)	125					
	$p_r@PII_{max}$	(MPa)	3.00					
	$d_{eq}@PII_{max}$	(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)	218.81					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-72: Transducer Model L14-5W/60 (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			0.78	0.41	(a)	(a)	(a)	0.20
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.98					
	W_o	(mW)		13.21	(a)		(a)	13.32
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	1.48					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	6.47	6.47	(a)	(a)	(a)	6.47
	Dim of A_{aprt}	X (cm)		5.47	(a)	(a)	(a)	5.47
		Y (cm)		0.40	(a)	(a)	(a)	0.40
Other Information	PD	(µsec)	0.39					
	PRF	(Hz)	105					
	$p_r@PII_{max}$	(MPa)	2.75					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		2.00	(a)	(a)		2.00
		FL_Y (cm)		2.00	(a)	(a)		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	208.60					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-73: Transducer Model L14-5W/60 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.93	0.54	(a)	(a)	0.86	2.16E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	2.27					
	W_o	(mW)		19.17	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	1.36					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	5.93	5.93	(a)	(a)	(a)	5.93
	Dim of A_{aprt}	X (cm)		5.47	(a)	(a)	(a)	5.47
		Y (cm)		0.40	(a)	(a)	(a)	0.40
Other Information	PD	(µsec)	0.21					
	PRF	(Hz)	167					
	$p_r@PII_{max}$	(MPa)	3.00					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		2.00	(a)	(a)		2.00
		FL_Y (cm)		2.00	(a)	(a)		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	218.81					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-74: Transducer Model L14-5W/60 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.37	0.73	0.75	0.2955	0.28	0.76
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.95					
	W_o	(mW)		23.12	23.76		23.76	23.76
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				9.28		
	z_1	(cm)				2.05		
	z_{bp}	(cm)				1.17		
	z_{sp}	(cm)					2.05	
	$z@PII_{.3max}$	(cm)	2.05					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	6.65	6.65	6.65	6.65	6.65	6.65
	Dim of A_{aprt}	X (cm)		1.20	1.20	1.20	1.20	1.20
		Y (cm)		0.40	0.40	0.40	0.40	0.40
Other Information	PD	(µsec)	2.18					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	1.52					
	$d_{eq}@PII_{max}$	(cm)					0.03	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	49.70					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-75: Transducer Model L14-5W/60 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.37	0.73	0.75	0.2955	0.28	0.76
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.95					
	W_o	(mW)		23.12	23.76		23.76	23.76
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				9.28		
	z_1	(cm)				2.05		
	z_{bp}	(cm)				1.17		
	z_{sp}	(cm)					2.05	
	$z@PII_{.3max}$	(cm)	2.05					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	6.65	6.65	6.65	6.65	6.65	6.65
	Dim of A_{aprt}	X (cm)		1.20	1.20	1.20	1.20	1.20
		Y (cm)		0.40	0.40	0.40	0.40	0.40
Other Information	PD	(µsec)	2.18					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	1.52					
	$d_{eq}@PII_{max}$	(cm)					0.03	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	49.70					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-76: Transducer Model L14-5W/60 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.37	0.76	0.78	0.30	0.28	0.37
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.95					
	W_o	(mW)		24.28	24.96		24.96	24.96
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				4.60		
	z_1	(cm)				2.05		
	z_{bp}	(cm)				2.50		
	z_{sp}	(cm)					2.05	
	$z@PII_{.3max}$	(cm)	2.05					
	$d_{eq}(z_{sp})$	(cm)					3.64	
	f_c	(MHz)	6.60	6.60	6.60	6.60	6.60	6.60
	Dim of A_{aprt}	X (cm)		5.47	5.47	5.47	5.47	5.47
		Y (cm)		0.40	0.40	0.40	0.40	0.40
Other Information	PD	(µsec)	2.18					
	FPS	(Hz)	64.00					
	$p_r@PII_{max}$	(MPa)	1.52					
	$d_{eq}@PII_{max}$	(cm)					2.08	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	208.60					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		40	[mm]				
	Control 4 Preset		GEN-General					

Table C-77: Transducer Model L40-8/12 (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			0.34	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.22					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	1.00					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	12.60	(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)	0.10					
	PRF	(Hz)	83					
	$p_r@PII_{max}$	(MPa)	1.89					
	$d_{eq}@PII_{max}$	(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)	45.44					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-78: Transducer Model L40-8/12 (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			0.20	0.12	(a)	(a)	(a)	0.13
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.63					
	W_o	(mW)		2.48	(a)		(a)	2.49
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	1.00					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	10.23	10.23	(a)	(a)	(a)	10.23
	Dim of A_{aprt}	X (cm)		1.28	(a)	(a)	(a)	1.28
		Y (cm)		0.15	(a)	(a)	(a)	0.15
Other Information	PD	(µsec)	0.37					
	PRF	(Hz)	96					
	$p_r@PII_{max}$	(MPa)	0.90					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		2.00	(a)	(a)		2.00
		FL_Y (cm)		2.00	(a)	(a)		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	19.75					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-79: Transducer Model L40-8/12 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.34	0.11	(a)	(a)	0.12	9.25E-02
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.22					
	W_o	(mW)		1.82	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	1.00					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	12.60	12.60	(a)	(a)	(a)	12.60
	Dim of A_{aprt}	X (cm)		1.28	(a)	(a)	(a)	1.28
		Y (cm)		0.15	(a)	(a)	(a)	0.15
Other Information	PD	(µsec)	0.10					
	PRF	(Hz)	83					
	$p_r@PII_{max}$	(MPa)	1.89					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		2.00	(a)	(a)		2.00
		FL_Y (cm)		2.00	(a)	(a)		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	45.44					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-80: Transducer Model L40-8/12 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.17	(a)	0.11	0.056	0.07	0.25
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.54					
	W_o	(mW)		(a)	2.35		2.35	2.35
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				1.18		
	z_1	(cm)				1.04		
	z_{bp}	(cm)				0.35		
	z_{sp}	(cm)					1.04	
	$z@PII_{.3max}$	(cm)	1.04					
	$d_{eq}(z_{sp})$	(cm)					1.10	
	f_c	(MHz)	10.02	(a)	10.02	10.02	10.02	10.02
	Dim of A_{aprt}	X (cm)		(a)	0.28	0.28	0.28	0.28
		Y (cm)		(a)	0.15	0.15	0.15	0.15
Other Information	PD	(µsec)	1.49					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	0.78					
	$d_{eq}@PII_{max}$	(cm)					0.02	
	Focal Length	FL_X (cm)		(a)	1.50	1.50		1.50
		FL_Y (cm)		(a)	1.50	1.50		1.50
	$I_{PA.3}@MI_{max}$	(W/cm^2)	13.81					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		15	[mm]				
	Control 3 Gate		30	[mm]				
	Control 4 Preset		GEN-General					

Table C-81: Transducer Model L40-8/12 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.17	0.04	0.15	0.056	0.04	0.35
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.54					
	W_o	(mW)		0.88	3.20		3.20	3.20
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				1.56		
	z_1	(cm)				1.04		
	z_{bp}	(cm)				0.35		
	z_{sp}	(cm)					1.04	
	$z@PII_{.3max}$	(cm)	1.04					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	10.02	10.02	10.02	10.02	10.02	10.02
	Dim of A_{aprt}	X (cm)		0.28	0.28	0.28	0.28	0.28
		Y (cm)		0.15	0.15	0.15	0.15	0.15
Other Information	PD	(µsec)	1.49					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	0.78					
	$d_{eq}@PII_{max}$	(cm)					0.03	
	Focal Length	FL_X (cm)		1.50	1.50	1.50		1.50
		FL_Y (cm)		1.50	1.50	1.50		1.50
	$I_{PA.3}@MI_{max}$	(W/cm^2)	13.81					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		15	[mm]				
	Control 3 Gate		30	[mm]				
	Control 4 Preset		GEN-General					

Table C-82: Transducer Model L40-8/12 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.17	0.07	0.18	0.06	0.04	0.19
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.54					
	W_o	(mW)		1.39	3.72		3.72	3.72
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				0.74		
	z_1	(cm)				1.04		
	z_{bp}	(cm)				0.74		
	z_{sp}	(cm)					1.04	
	$z@PII_{.3max}$	(cm)	1.04					
	$d_{eq}(z_{sp})$	(cm)					1.48	
	f_c	(MHz)	10.00	10.00	10.00	10.00	10.00	10.00
	Dim of A_{aprt}	X (cm)		1.28	1.28	1.28	1.28	1.28
		Y (cm)		0.15	0.15	0.15	0.15	0.15
Other Information	PD	(µsec)	1.49					
	FPS	(Hz)	170.00					
	$p_r@PII_{max}$	(MPa)	0.78					
	$d_{eq}@PII_{max}$	(cm)					2.11	
	Focal Length	FL_X (cm)		1.50	1.50	1.50		1.50
		FL_Y (cm)		1.50	1.50	1.50		1.50
	$I_{PA.3}@MI_{max}$	(W/cm^2)	19.75					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		15	[mm]				
	Control 3 Gate		30	[mm]				
	Control 4 Preset		GEN-General					

Table C-83: 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			0.81	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	2.08					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	1.60					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	6.61	(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)	0.19					
	PRF	(Hz)	55					
	$p_r@PII_{max}$	(MPa)	3.00					
	$d_{eq}@PII_{max}$	(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)	207.81					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-84: 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			0.45	0.13	(a)	(a)	(a)	0.10
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.17					
	W_o	(mW)		4.12	(a)		(a)	4.13
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	1.60					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	6.80	6.80	(a)	(a)	(a)	6.80
	Dim of A_{aprt}	X (cm)		2.56	(a)	(a)	(a)	2.56
		Y (cm)		0.35	(a)	(a)	(a)	0.35
Other Information	PD	(μsec)	0.38					
	PRF	(Hz)	42					
	$p_r@PII_{max}$	(MPa)	1.70					
	$d_{eq}@PII_{max}$	(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)	79.58					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-85: Transducer Model HST15-8/20 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.81	0.42	(a)	(a)	0.39	1.15E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	2.08					
	W_o	(mW)		13.24	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	1.60					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	6.61	6.61	(a)	(a)	(a)	6.61
	Dim of A_{aprt}	X (cm)		2.56	(a)	(a)	(a)	2.56
		Y (cm)		0.35	(a)	(a)	(a)	0.35
Other Information	PD	(µsec)	0.19					
	PRF	(Hz)	148					
	$p_r@PII_{max}$	(MPa)	3.00					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		2.00	(a)	(a)		2.00
		FL_Y (cm)		2.00	(a)	(a)		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	207.81					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-86: Transducer Model HST15-8/20 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			*0.28*	*(a)*	*0.22*	*0.1363*	*0.19*	*0.34*
Associated Acoustic Parameter	$p_{r.3}$	*(MPa)*	*0.73*					
	W_o	*(mW)*		*(a)*	*6.81*		*6.81*	*6.81*
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	*(mW)*				*4.30*		
	z_1	*(cm)*				*1.00*		
	z_{bp}	*(cm)*				*0.75*		
	z_{sp}	*(cm)*					*1.00*	
	$z@PII_{.3max}$	*(cm)*	*1.00*					
	$d_{eq}(z_{sp})$	*(cm)*					*0.10*	
	f_c	*(MHz)*	*6.66*	*(a)*	*6.66*	*6.66*	*6.66*	*6.66*
	Dim of A_{aprt}	*X (cm)*		*(a)*	*0.56*	*0.56*	*0.56*	*0.56*
		Y (cm)		*(a)*	*0.35*	*0.35*	*0.35*	*0.35*
Other Information	*PD*	*(µsec)*	*2.17*					
	PRF	*(Hz)*	*5000*					
	$p_r@PII_{max}$	*(MPa)*	*0.92*					
	$d_{eq}@PII_{max}$	*(cm)*					*0.03*	
	Focal Length	FL_X *(cm)*		*(a)*	*2.00*	*2.00*		*2.00*
		FL_Y *(cm)*		*(a)*	*2.00*	*2.00*		*2.00*
	$I_{PA.3}@MI_{max}$	*(W/cm^2)*	*19.80*					
Operating Control	*Control 1 Depth*		*30*	*[mm]*				
	Control 2 Focus		*20*	*[mm]*				
	Control 3 Gate		*30*	*[mm]*				
	Control 4 Preset		GEN-General					

Table C-87: Transducer Model HST15-8/20 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.28	0.28	0.28	0.1363	0.11	0.45
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.73					
	W_o	(mW)		8.81	8.96		8.96	8.96
	min of [$W_{.3}(z_1)$, $I_{TA.3}(z_1)$]	(mW)				5.65		
	z_1	(cm)				1.00		
	z_{bp}	(cm)				0.75		
	z_{sp}	(cm)					1.00	
	$z@PII_{.3max}$	(cm)	1.00					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	6.66	6.66	6.66	6.66	6.66	6.66
	Dim of A_{aprt}	X (cm)		0.56	0.56	0.56	0.56	0.56
		Y (cm)		0.35	0.35	0.35	0.35	0.35
Other Information	PD	(µsec)	2.17					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	0.92					
	$d_{eq}@PII_{max}$	(cm)					0.01	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	19.80					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		30	[mm]				
	Control 4 Preset		GEN-General					

Table C-88: Transducer Model HST15-8/20 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.29	0.29	0.29	0.14	0.11	0.22
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.74					
	W_o	(mW)		9.18	9.32		9.32	9.32
	min of [$W_{.3}(z_1)$, $I_{TA.3}(z_1)$]	(mW)				1.93		
	z_1	(cm)				1.00		
	z_{bp}	(cm)				1.60		
	z_{sp}	(cm)					1.00	
	$z@PII_{.3max}$	(cm)	1.00					
	$d_{eq}(z_{sp})$	(cm)					2.51	
	f_c	(MHz)	6.60	6.60	6.60	6.60	6.60	6.60
	Dim of A_{aprt}	X (cm)		2.56	2.56	2.56	2.56	2.56
		Y (cm)		0.35	0.35	0.35	0.35	0.35
Other Information	PD	(µsec)	2.17					
	FPS	(Hz)	164.00					
	$p_r@PII_{max}$	(MPa)	0.92					
	$d_{eq}@PII_{max}$	(cm)					2.21	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	79.58					
Operating Control	Control 1 Depth		30	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		30	[mm]				
	Control 4 Preset		GEN-General					

Table C-89: Transducer Model 4DC7-3/40 (Operating Mode: B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					A_{aprt}≤1	A_{aprt}>1		
Global Maximum Index Value			0.55	(a)	(a)	(a)	(a)	(a)
Assoc. Acoustic Param.	Pr.3	[MPa]	1.06					
	W_o	[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]					(a)	
	z @ $PII_{.3max}$	[cm]	4.55					
	$d_{eq}(z_{sp})$	[cm]					(a)	
	f_c	[MHz]	3.76	(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]	130					
	p_r@PII_{max}	[MPa]	1.92					
	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]	38.29					
Operating Control Conditions	Control 1 Depth		50	[mm]				
	Control 2 Focus		40	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-90: Transducer Model 4DC7-3/40 (Operating Mode: Color and Power Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					A_{aprt}≤1	A_{aprt}>1		
Global Maximum Index Value			0.58	0.47	(a)	(a)	(a)	0.32
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.11					
	W_o	(mW)		27.14	(a)		(a)	35.09(a)
	min of [$W_{.3}(z_1)$, $I_{TA.3}(z_1)$]	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	z@$PII_{.3max}$	(cm)	4.23					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	3.62	3.62	(a)	(a)	(a)	3.62
	Dim of A_{aprt}	X (cm)		5.44	(a)	(a)	(a)	5.44
		Y (cm)		1.10	(a)	(a)	(a)	1.10
Other Information	PD	(µsec)	1.04					
	PRF	(Hz)	49					
	p_r@PII_{max}	(MPa)	1.88					
	d_{eq}@PII_{max}	(cm)					(a)	
	Focal Length	FL_X (cm)		7.00	(a)	(a)		7.00
		FL_Y (cm)		7.00	(a)	(a)		7.00
	IPA.3@MI_{max}	(W/cm^2)	78.30					
Operating Control	Control 1 Depth		80	[mm]				
	Control 2 Focus		70	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-91: Transducer Model 4DC7-3/40 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.55	0.86	(a)	(a)	0.55	6.13E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.06					
	W_o	(mW)		48.28	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	4.55					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	3.76	3.76	(a)	(a)	(a)	3.76
	Dim of A_{aprt}	X (cm)		5.44	(a)	(a)	(a)	5.44
		Y (cm)		1.10	(a)	(a)	(a)	1.10
Other Information	PD	(µsec)	0.34					
	PRF (Bmode FPS)	(Hz)	130					
	$p_r@PII_{max}$	(MPa)	1.92					
	$d_{eq}@PII_{max}$	(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)	38.29					
Operating Control	Control 1	Depth	50	[mm]				
	Control 2	Focus	40	[mm]				
	Control 3	Gate	0	[mm]				
	Control 4	Preset	GEN-General					

Table C-92: Transducer Model 4DC7-3/40 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.38	(a)	1.68	0.7069	0.86	1.88
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.72					
	W_o	(mW)		(a)	97.22		97.22	97.22
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				40.98		
	z_1	(cm)				4.10		
	z_{bp}	(cm)				1.94		
	z_{sp}	(cm)					4.10	
	$z@PII_{.3max}$	(cm)	4.10					
	$d_{eq}(z_{sp})$	(cm)					0.11	
	f_c	(MHz)	3.63	(a)	3.63	3.63	3.63	3.63
	Dim of A_{aprt}	X (cm)		(a)	1.19	1.19	1.19	1.19
		Y (cm)		(a)	1.10	1.10	1.10	1.10
Other Information	PD	(µsec)	4.08					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	1.21					
	$d_{eq}@PII_{max}$	(cm)					0.08	
	Focal Length	FL_X (cm)		(a)	8.00	8.00		8.00
		FL_Y (cm)		(a)	8.00	8.00		8.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	26.84					
Operating Control	Control 1	Depth	110	[mm]				
	Control 2	Focus	80	[mm]				
	Control 3	Gate	10	[mm]				
	Control 4	Preset	GEN-General					

Table C-93: Transducer Model 4DC7-3/40 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.38	1.75	1.86	0.7069	0.28	2.08
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.72					
	W_o	(mW)		101.23	107.63		107.63	107.63
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				38.54		
	z_1	(cm)				4.10		
	z_{bp}	(cm)				1.94		
	z_{sp}	(cm)					4.10	
	$z@PII_{.3max}$	(cm)	4.10					
	$d_{eq}(z_{sp})$	(cm)					0.11	
	f_c	(MHz)	3.63	3.63	3.63	3.63	3.63	3.63
	Dim of A_{aprt}	X (cm)		1.19	1.19	1.19	1.19	1.19
		Y (cm)		1.10	1.10	1.10	1.10	1.10
Other Information	PD	(µsec)	4.08					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	1.21					
	$d_{eq}@PII_{max}$	(cm)					0.09	
	Focal Length	FL_X (cm)		8.00	8.00	8.00		8.00
		FL_Y (cm)		8.00	8.00	8.00		8.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	26.84					
Operating Control	Control 1 Depth		110	[mm]				
	Control 2 Focus		80	[mm]				
	Control 3 Gate		10	[mm]				
	Control 4 Preset		GEN-General					

Table C-94: Transducer Model 4DC7-3/40 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.39	0.73	1.84	0.71	0.28	1.00
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.74					
	W_o	(mW)		103.65	110.37		110.37	110.37
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				0.12		
	z_1	(cm)				4.10		
	z_{bp}	(cm)				4.14		
	z_{sp}	(cm)					4.10	
	$z@PII_{.3max}$	(cm)	4.10					
	$d_{eq}(z_{sp})$	(cm)					7.54	
	f_c	(MHz)	3.50	3.50	3.50	3.50	3.50	3.50
	Dim of A_{aprt}	X (cm)		5.44	5.44	5.44	5.44	5.44
		Y (cm)		1.10	1.10	1.10	1.10	1.10
Other Information	PD	(µsec)	4.08					
	FPS	(Hz)	96.00					
	$p_r@PII_{max}$	(MPa)	1.21					
	$d_{eq}@PII_{max}$	(cm)					26.90	
	Focal Length	FL_X (cm)		8.00	8.00	8.00		8.00
		FL_Y (cm)		8.00	8.00	8.00		8.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	9.22					
Operating Control	Control 1 Depth		110	[mm]				
	Control 2 Focus		80	[mm]				
	Control 3 Gate		10	[mm]				
	Control 4 Preset		GEN-General					

Table C-95: Transducer Model m4DC7-3/40 (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			0.98	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.55					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	4.92					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	2.51	(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)	0.55					
	PRF	(Hz)	130					
	$p_r@PII_{max}$	(MPa)	2.37					
	$d_{eq}@PII_{max}$	(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)	73.17					
Operating Control	Control 1 Depth		70	[mm]				
	Control 2 Focus		60	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-96: Transducer Model m4DC7-3/40 (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			0.01	1.04	(a)	(a)	(a)	0.74
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.01					
	W_o	(mW)		62.87	(a)		(a)	81.91
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	43.47					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	3.49	3.49	(a)	(a)	(a)	3.49
	Dim of A_{aprt}	X (cm)		5.44	(a)	(a)	(a)	5.44
		Y (cm)		1.10	(a)	(a)	(a)	1.10
Other Information	PD	(µsec)	0.72					
	PRF	(Hz)	40					
	$p_r@PII_{max}$	(MPa)	2.13					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		7.00	(a)	(a)		7.00
		FL_Y (cm)		7.00	(a)	(a)		7.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	0.01					
Operating Control	Control 1 Depth		80	[mm]				
	Control 2 Focus		70	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-97: Transducer Model m4DC7-3/40 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					A_{aprt}≤1	A_{aprt}>1		
Global Maximum Index Value			0.98	2.01	(a)	(a)	1.86	2.00E+00
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.55					
	W_o	(mW)		168.26	(a)		(a)	(a)
	min of [$W_{.3}(z_1)$, $I_{TA.3}(z_1)$]	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	z@$PII_{.3max}$	(cm)	4.92					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	2.51	2.51	(a)	(a)	(a)	2.51
	Dim of A_{aprt}	X (cm)		5.44	(a)	(a)	(a)	5.44
		Y (cm)		1.10	(a)	(a)	(a)	1.10
Other Information	PD	(µsec)	0.55					
	PRF	(Hz)	130					
	p_r@PII_{max}	(MPa)	2.37					
	d_{eq}@PII_{max}	(cm)					(a)	
	Focal Length	FL_X (cm)		6.00	(a)	(a)		6.00
		FL_Y (cm)		6.00	(a)	(a)		6.00
	$I_{PA.3}$@MI_{max}	(W/cm²)	73.17					
Operating Control	Control 1 Depth		70	[mm]				
	Control 2 Focus		60	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-98: Transducer Model m4DC7-3/40 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					A_{aprt}≤1	A_{aprt}>1		
Global Maximum Index Value			0.34	(a)	1.05	0.4684	0.58	1.17
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.65					
	W_o	(mW)		(a)	6.63		6.63	6.63
	min of [$W_{.3}(z_1)$, $I_{TA.3}(z_1)$]	(mW)				27.13		
	z_1	(cm)				4.06		
	z_{bp}	(cm)				1.94		
	z_{sp}	(cm)					4.06	
	z@$PII_{.3max}$	(cm)	4.06					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	3.63	(a)	3.63	3.63	3.63	3.63
	Dim of A_{aprt}	X (cm)		(a)	1.19	1.19	1.19	1.19
		Y (cm)		(a)	1.10	1.10	1.10	1.10
Other Information	PD	(µsec)	4.10					
	PRF	(Hz)	5000					
	p_r@PII_{max}	(MPa)	1.08					
	d_{eq}@PII_{max}	(cm)					0.08	
	Focal Length	FL_X (cm)		(a)	7.00	7.00		7.00
		FL_Y (cm)		(a)	7.00	7.00		7.00
	$I_{PA.3}$@MI_{max}	(W/cm²)	19.35					
Operating Control	Control 1 Depth		100	[mm]				
	Control 2 Focus		70	[mm]				
	Control 3 Gate		10	[mm]				
	Control 4 Preset		GEN-General					

Table C-99: Transducer Model m4DC7-3/40 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.34	3.34	4.10	0.4684	0.99	4.59
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.65					
	W_o	(mW)		193.33	236.95		236.95	236.95
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				85.59		
	z_1	(cm)				4.06		
	z_{bp}	(cm)				1.94		
	z_{sp}	(cm)					4.06	
	$z@PII_{.3max}$	(cm)	4.06					
	$d_{eq}(z_{sp})$	(cm)					0.18	
	f_c	(MHz)	3.63	3.63	3.63	3.63	3.63	3.63
	Dim of A_{aprt}	X (cm)		1.19	1.19	1.19	1.19	1.19
		Y (cm)		1.10	1.10	1.10	1.10	1.10
Other Information	PD	(µsec)	4.10					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	1.08					
	$d_{eq}@PII_{max}$	(cm)					0.14	
	Focal Length	FL_X (cm)		7.00	7.00	7.00		7.00
		FL_Y (cm)		7.00	7.00	7.00		7.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	19.35					
Operating Control	Control 1 Depth		100	[mm]				
	Control 2 Focus		70	[mm]				
	Control 3 Gate		10	[mm]				
	Control 4 Preset		GEN-General					

Table C-100: Transducer Model m4DC7-3/40 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.35	3.28	4.01	0.47	0.99	2.18
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.66					
	W_o	(mW)		196.66	240.86		240.86	240.86
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				0.00		
	z_1	(cm)				4.06		
	z_{bp}	(cm)				4.14		
	z_{sp}	(cm)					4.06	
	$z@PII_{.3max}$	(cm)	4.06					
	$d_{eq}(z_{sp})$	(cm)					11.17	
	f_c	(MHz)	3.50	3.50	3.50	3.50	3.50	3.50
	Dim of A_{aprt}	X (cm)		5.44	5.44	5.44	5.44	5.44
		Y (cm)		1.10	1.10	1.10	1.10	1.10
Other Information	PD	(µsec)	4.10					
	FPS	(Hz)	113.00					
	$p_r@PII_{max}$	(MPa)	1.08					
	$d_{eq}@PII_{max}$	(cm)					987.85	
	Focal Length	FL_X (cm)		7.00	7.00	7.00		7.00
		FL_Y (cm)		7.00	7.00	7.00		7.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	0.01					
Operating Control	Control 1 Depth		100	[mm]				
	Control 2 Focus		70	[mm]				
	Control 3 Gate		10	[mm]				
	Control 4 Preset		GEN-General					

Table C-101: Transducer Model 4DEC9-5/10 (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			0.73	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.53					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	2.09					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.44	(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)	0.29					
	PRF	(Hz)	40					
	$p_r@PII_{max}$	(MPa)	2.11					
	$d_{eq}@PII_{max}$	(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)	82.13					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-102: Transducer Model 4DEC9-5/10 (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			0.39	0.34	(a)	(a)	(a)	0.27
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.86					
	W_o	(mW)		14.49	(a)		(a)	14.55
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.49					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.86	4.86	(a)	(a)	(a)	4.86
	Dim of A_{aprt}	X (cm)		2.20	(a)	(a)	(a)	2.20
		Y (cm)		0.65	(a)	(a)	(a)	0.65
Other Information	PD	(µsec)	0.74					
	PRF	(Hz)	88					
	$p_r@PII_{max}$	(MPa)	1.31					
	$d_{eq}@PII_{max}$	(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)	37.32					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		40	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-103: Transducer Model 4DEC9-5/10 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.73	0.11	(a)	(a)	0.15	9.84E-02
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.53					
	W_o	(mW)		5.29	(a)		(a)	(a)
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.09					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.44	4.44	(a)	(a)	(a)	4.44
	Dim of A_{aprt}	X (cm)		2.20	(a)	(a)	(a)	2.20
		Y (cm)		0.65	(a)	(a)	(a)	0.65
Other Information	PD	(µsec)	0.29					
	PRF	(Hz)	40					
	$p_r@PII_{max}$	(MPa)	2.11					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		2.00	(a)	(a)		2.00
		FL_Y (cm)		2.00	(a)	(a)		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	82.13					
Operating Control	Control 1 Depth		50	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-104: Transducer Model 4DEC9-5/10 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	*$A_{aprt} > 1$*		
Global Maximum Index Value			*0.21*	*(a)*	*0.18*	*0.1247*	*0.15*	*0.30*
Associated Acoustic Parameter	*$p_{r.3}$*	*(MPa)*	*0.48*					
	W_o	*(mW)*		*(a)*	*7.67*		*7.67*	*7.67*
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	*(mW)*				*5.25*		
	z_1	*(cm)*				*2.25*		
	z_{bp}	*(cm)*				*0.95*		
	z_{sp}	*(cm)*					*2.25*	
	$z@PII_{.3max}$	*(cm)*	*2.25*					
	$d_{eq}(z_{sp})$	*(cm)*					*0.10*	
	f_c	*(MHz)*	*4.99*	*(a)*	*4.99*	*4.99*	*4.99*	*4.99*
	Dim of A_{aprt}	*X (cm)*		*(a)*	*0.48*	*0.48*	*0.48*	*0.48*
		Y (cm)		*(a)*	*0.65*	*0.65*	*0.65*	*0.65*
Other Information	*PD*	*(µsec)*	*2.92*					
	PRF	*(Hz)*	*5000*					
	$p_r@PII_{max}$	*(MPa)*	*0.70*					
	$d_{eq}@PII_{max}$	*(cm)*					*0.04*	
	Focal Length	*FL_X (cm)*		*(a)*	*3.00*	*3.00*		*3.00*
		FL_Y (cm)		*(a)*	*3.00*	*3.00*		*3.00*
	$I_{PA.3}@MI_{max}$	*(W/cm^2)*	*9.03*					
Operating Control	*Control 1 Depth*		*60*	*[mm]*				
	Control 2 Focus		*30*	*[mm]*				
	Control 3 Gate		*10*	*[mm]*				
	Control 4 Preset		*GEN-General*					

Table C-105: Transducer Model 4DEC9-5/10 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.21	0.26	0.26	0.1247	0.10	0.44
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.48					
	W_o	(mW)		10.96	10.99		10.99	10.99
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				5.06		
	z_1	(cm)				2.25		
	z_{bp}	(cm)				0.95		
	z_{sp}	(cm)					2.25	
	$z@PII_{.3max}$	(cm)	2.25					
	$d_{eq}(z_{sp})$	(cm)						
	f_c	(MHz)	4.99	4.99	4.99	4.99	4.99	4.99
	Dim of A_{aprt}	X (cm)		0.48	0.48	0.48	0.48	0.48
		Y (cm)		0.65	0.65	0.65	0.65	0.65
Other Information	PD	(µsec)	2.92					
	PRF	(Hz)	5000					
	$p_r@PII_{max}$	(MPa)	0.70					
	$d_{eq}@PII_{max}$	(cm)					0.03	
	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)	9.03					
Operating Control	Control 1 Depth		60	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		10	[mm]				
	Control 4 Preset		GEN-General					

Table C-106: Transducer Model 4DEC9-5/10 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt}\leq 1$	$A_{aprt}>1$		
Global Maximum Index Value			0.21	0.33	0.33	0.12	0.10	0.26
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	0.48					
	W_o	(mW)		13.78	13.84		13.84	13.84
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				2.49		
	z_1	(cm)				2.25		
	z_{bp}	(cm)				2.02		
	z_{sp}	(cm)					2.25	
	$z@PII_{.3max}$	(cm)	2.25					
	$d_{eq}(z_{sp})$	(cm)					2.82	
	f_c	(MHz)	5.00	5.00	5.00	5.00	5.00	5.00
	Dim of A_{aprt}	X (cm)		2.20	2.20	2.20	2.20	2.20
		Y (cm)		0.65	0.65	0.65	0.65	0.65
Other Information	PD	(µsec)	2.92					
	FPS	(Hz)	53.00					
	$p_r@PII_{max}$	(MPa)	0.70					
	$d_{eq}@PII_{max}$	(cm)					2.19	
	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)	37.32					
Operating Control	Control 1 Depth		60	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		10	[mm]				
	Control 4 Preset		GEN-General					

Table C-107: Transducer Model 4DL14-5/38 (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			1.03	(a)	(a)	(a)	(a)	(a)
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	2.36					
	W_o	(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)					(a)	
	$z@PII_{.3max}$	(cm)	2.37					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	5.28	(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)	0.23					
	PRF	(Hz)	137					
	$p_r@PII_{max}$	(MPa)	3.65					
	$d_{eq}@PII_{max}$	(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)	210.19					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-108: Transducer Model 4DL14-5/38 (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			0.61	0.34	(a)	(a)	(a)	0.24
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.35					
	W_o	(mW)		14.97	(a)		(a)	15.03
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	$z@PII_{.3max}$	(cm)	2.37					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	4.83	4.83	(a)	(a)	(a)	4.83
	Dim of A_{aprt}	X (cm)		3.84	(a)	(a)	(a)	3.84
		Y (cm)		0.50	(a)	(a)	(a)	0.50
Other Information	PD	(μsec)	0.50					
	PRF	(Hz)	36					
	$p_r@PII_{max}$	(MPa)	2.00					
	$d_{eq}@PII_{max}$	(cm)					(a)	
	Focal Length	FL_X (cm)		8.00	(a)	(a)		8.00
		FL_Y (cm)		8.00	(a)	(a)		8.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	85.69					
Operating Control	Control 1 Depth		90	[mm]				
	Control 2 Focus		80	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-109: Transducer Model 4DL14-5/38 (Operating Mode: M)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					A_{aprt}≤1	A_{aprt}>1		
Global Maximum Index Value			1.03	1.13	(a)	(a)	1.61	8.59E-01
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	2.36					
	W_o	(mW)		45.03	(a)		(a)	(a)
	min of [$W_{.3}(z_1)$, $I_{TA.3}(z_1)$]	(mW)				(c)		
	z_1	(cm)				(c)		
	z_{bp}	(cm)				(a)		
	z_{sp}	(cm)					(a)	
	z@$PII_{.3max}$	(cm)	2.37					
	$d_{eq}(z_{sp})$	(cm)					(a)	
	f_c	(MHz)	5.28	5.28	(a)	(a)	(a)	5.28
	Dim of A_{aprt}	X (cm)		3.84	(a)	(a)	(a)	3.84
		Y (cm)		0.50	(a)	(a)	(a)	0.50
Other Information	PD	(µsec)	0.23					
	PRF	(Hz)	173					
	p_r@PII_{max}	(MPa)	3.65					
	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)	210.19					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		30	[mm]				
	Control 3 Gate		0	[mm]				
	Control 4 Preset		GEN-General					

Table C-110: Transducer Model 4DL14-5/38 (Operating Mode: PW Doppler)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					A_{aprt}≤1	A_{aprt}>1		
Global Maximum Index Value			*0.41*	*(a)*	*0.31*	*0.1996*	*0.27*	*0.35*
Associated Acoustic Parameter	$p_{r.3}$	*(MPa)*	*1.05*					
	W_o	*(mW)*		*(a)*	*10.10*		*10.10*	*10.10*
	min of [$W_{.3}(z_1)$, $I_{TA.3}(z_1)$]	*(mW)*				*6.45*		
	z_1	*(cm)*				*1.36*		
	z_{bp}	*(cm)*				*1.10*		
	z_{sp}	*(cm)*					*1.36*	
	z@$PII_{.3max}$	*(cm)*	*1.36*					
	$d_{eq}(z_{sp})$	*(cm)*					*0.10*	
	f_c	*(MHz)*	*6.51*	*(a)*	*6.51*	*6.51*	*6.51*	*6.51*
	Dim of A_{aprt}	*X (cm)*		*(a)*	*0.84*	*0.84*	*0.84*	*0.84*
		Y (cm)		*(a)*	*0.50*	*0.50*	*0.50*	*0.50*
Other Information	*PD*	*(µsec)*	*0.68*					
	PRF	*(Hz)*	*12500*					
	p_r@PII_{max}	*(MPa)*	*1.43*					
	d_{eq}@PII_{max}	*(cm)*					*0.04*	
	Focal Length	*FL_X (cm)*		*(a)*	*2.00*	*2.00*		*2.00*
		FL_Y (cm)		*(a)*	*2.00*	*2.00*		*2.00*
	$I_{PA.3}$@MI_{max}	*(W/cm^2)*	*37.63*					
Operating Control	*Control 1 Depth*		*40*	*[mm]*				
	Control 2 Focus		*20*	*[mm]*				
	Control 3 Gate		*30*	*[mm]*				
	Control 4 Preset		GEN-General					

Table C-111: Transducer Model 4DL14-5/38 (Operating Mode: PW+B)

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.41	0.73	0.73	0.1996	0.31	0.81
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.05					
	W_o	(mW)		26.63	23.69		23.69	23.69
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				12.84		
	z_1	(cm)				1.36		
	z_{bp}	(cm)				1.10		
	z_{sp}	(cm)					1.36	
	$z@PII_{.3max}$	(cm)	1.36					
	$d_{eq}(z_{sp})$	(cm)					0.10	
	f_c	(MHz)	6.51	6.51	6.51	6.51	6.51	6.51
	Dim of A_{aprt}	X (cm)		0.84	0.84	0.84	0.84	0.84
		Y (cm)		0.50	0.50	0.50	0.50	0.50
Other Information	PD	(µsec)	0.68					
	PRF	(Hz)	12500					
	$p_r@PII_{max}$	(MPa)	1.43					
	$d_{eq}@PII_{max}$	(cm)					0.02	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	37.63					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		30	[mm]				
	Control 4 Preset		GEN-General					

Table C-112: Transducer Model 4DL14-5/38 (Operating Mode: Triplex (B/Color/PW))

Index Label			MI	TIS			TIB	TIC
				scan	non-scan		non-scan	
					$A_{aprt} \leq 1$	$A_{aprt} > 1$		
Global Maximum Index Value			0.41	0.75	0.75	0.20	0.31	0.38
Associated Acoustic Parameter	$p_{r.3}$	(MPa)	1.05					
	W_o	(mW)		23.79	23.86		23.86	23.86
	min of $[W_{.3}(z_1), I_{TA.3}(z_1)]$	(mW)				1.02		
	z_1	(cm)				1.36		
	z_{bp}	(cm)				2.35		
	z_{sp}	(cm)					1.36	
	$z@PII_{.3max}$	(cm)	1.36					
	$d_{eq}(z_{sp})$	(cm)					3.85	
	f_c	(MHz)	6.60	6.60	6.60	6.60	6.60	6.60
	Dim of A_{aprt}	X (cm)		3.84	3.84	3.84	3.84	3.84
		Y (cm)		0.50	0.50	0.50	0.50	0.50
Other Information	PD	(µsec)	0.68					
	FPS	(Hz)	78.00					
	$p_r@PII_{max}$	(MPa)	1.43					
	$d_{eq}@PII_{max}$	(cm)					4.68	
	Focal Length	FL_X (cm)		2.00	2.00	2.00		2.00
		FL_Y (cm)		2.00	2.00	2.00		2.00
	$I_{PA.3}@MI_{max}$	(W/cm^2)	8.54					
Operating Control	Control 1 Depth		40	[mm]				
	Control 2 Focus		20	[mm]				
	Control 3 Gate		30	[mm]				
	Control 4 Preset		GEN-General					

C.4 ULTRASOUND INDICATIONS FOR USE TABLES

TABLE C-113: SonixMDP/SP/OP Q+ 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 Modes12	Other [Notes]
Ophthalmic								
Fetal	♦	♦	♦	♦	♦	♦	♦	♦ [3-8,11]
Abdominal	♦	♦	♦	♦	♦	♦	♦	♦ [3-8,11]
Intraoperative[1]								
Intraoperative Neurological								
Pediatric	♦	♦	♦	♦	♦	♦	♦	♦ [3-8,11]
Small Organ[2]	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8,11]
Neonatal Cephalic	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8,11]
Adult Cephalic	♦	♦	♦	♦	♦	♦	♦	♦ [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	♦	♦	♦	♦	♦	♦	♦	♦ [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-114: 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	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8]
Cardiac	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8]
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8]
Peripheral Vascular								
Laparoscopic								
MSK Conventional								
MSK Superficial								
Vascular Access								
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-115: PA7-4/12 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	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8]
Cardiac	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8]
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8]
Peripheral Vascular								
Laparoscopic								
MSK Conventional								
MSK Superficial								
Vascular Access								
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-116: MC9-4/12 Microconvex 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	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
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	♦	♦	♦		♦	♦	♦	♦ [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-117: EC9-5/10 and EC9-5/10 GPS 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								
Cardiac								
Transesophageal								
Transrectal	♦	♦	♦		♦	♦	♦	♦ [3-6,,8,11]
Transvaginal	♦	♦	♦		♦	♦	♦	♦ [3-6,,8,11]
Transurethral								
Transcranial								
Peripheral Vascular								
Laparoscopic								
MSK Conventional								
MSK Superficial								
Vascular Access								
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-118: 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								
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								
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.

DIAGNOSTIC ULTRASOUND INDICATIONS FOR USE FORM

Table C-119: C7-3/50 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]
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	♦	♦	♦		♦	♦	♦	♦ [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								
Nerve Block								
Other								

♦ = Cleared for use

Notes:

25. Abdominal organs and vascular
26. Breast, Thyroid, Testicle
27. Elastography
28. Panoramic Imaging
29. Compound Imaging
30. Freehand 3D Imaging
31. Live 3D/4D Imaging
32. Imaging for guidance of biopsy
33. Imaging for guidance of nerve block injections
34. Imaging for guidance of central or peripheral lines
35. Volume Navigation/Image Fusion/GPS (available only with the GPS transducer)
36. 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.

DIAGNOSTIC ULTRASOUND INDICATIONS FOR USE FORM

Table C-120: C9-5/10 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]
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	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
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	♦	♦	♦		♦	♦	♦	♦ [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-121: BPC8-4/10 Microconvex Endocavity Biplane 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								
Cardiac								
Transesophageal								
Transrectal	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8]
Transvaginal								
Transurethral								
Transcranial								
Peripheral Vascular								
Laparoscopic								
MSK Conventional								
MSK Superficial								
Vascular Access								
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-122: BPL9-5/55 Linear Endocavity Biplane 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								
Cardiac								
Transesophageal								
Transrectal	♦	♦	♦	♦	♦	♦	♦	♦ [3-6,8]
Transvaginal								
Transurethral								
Transcranial								
Peripheral Vascular								
Laparoscopic								
MSK Conventional								
MSK Superficial								
Vascular Access								
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-123: 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	♦	♦	♦		♦	♦	♦	♦ [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	♦	♦	♦		♦	♦	♦	♦ [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-124: 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	♦	♦	♦		♦	♦	♦	♦ [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	♦	♦	♦		♦	♦	♦	♦ [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.

DIAGNOSTIC ULTRASOUND INDICATIONS FOR USE FORM

Table C-125: 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	♦	♦	♦		♦	♦	♦	♦ [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	♦	♦	♦		♦	♦	♦	♦ [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-126: L40-8/12 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								
Pediatric	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Small Organ[2]	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Neonatal Cephalic								
Adult Cephalic								
Cardiac								
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial								
Peripheral Vascular	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Laparoscopic								
MSK Conventional	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
MSK Superficial	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Vascular Access	♦	♦	♦		♦	♦	♦	♦ [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-127: 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								
Pediatric	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Small Organ[2]	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Neonatal Cephalic	♦	♦	♦		♦	♦	♦	♦ [3-6,8]
Adult Cephalic								
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	♦	♦	♦		♦	♦	♦	♦ [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-128: 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								
Cardiac								
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial								
Peripheral Vascular								
Laparoscopic								
MSK Conventional	♦	♦	♦		♦	♦	♦	♦ [3-8]
MSK Superficial	♦	♦	♦		♦	♦	♦	♦ [3-8]
Vascular Access								
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-129: m4DC7-3/40 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								
Cardiac								
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial								
Peripheral Vascular								
Laparoscopic								
MSK Conventional	♦	♦	♦		♦	♦	♦	♦ [3-8]
MSK Superficial	♦	♦	♦		♦	♦	♦	♦ [3-8]
Vascular Access								
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-130: 4DEC9-5/10 Motorized 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								
Cardiac								
Transesophageal								
Transrectal	♦	♦	♦		♦	♦	♦	♦ [3-8]
Transvaginal	♦	♦	♦		♦	♦	♦	♦ [3-8]
Transurethral								
Transcranial								
Peripheral Vascular								
Laparoscopic								
MSK Conventional								
MSK Superficial								
Vascular Access								
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-131: 4DL14-5/38 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	♦	♦	♦		♦	♦	♦	♦ [3-8]
Abdominal	♦	♦	♦		♦	♦	♦	♦ [3-8]
Intraoperative[1]								
Intraoperative Neurological								
Pediatric	♦	♦	♦		♦	♦	♦	♦ [3-8]
Small Organ[2]	♦	♦	♦		♦	♦	♦	♦ [3-8]
Neonatal Cephalic	♦	♦	♦		♦	♦	♦	♦ [3-8]
Adult Cephalic								
Cardiac								
Transesophageal								
Transrectal								
Transvaginal								
Transurethral								
Transcranial								
Peripheral Vascular	♦	♦	♦		♦	♦	♦	♦ [3-8]
Laparoscopic								
MSK Conventional	♦	♦	♦		♦	♦	♦	♦ [3-8]
MSK Superficial	♦	♦	♦		♦	♦	♦	♦ [3-8]
Vascular Access	♦	♦	♦		♦	♦	♦	♦ [3-8,10]
Nerve Block	♦	♦	♦		♦	♦	♦	♦ [3-9]
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.

APPENDIX D: MAINTENANCE AND CLEANING

D.1 TRANSDUCERS

Be sure to read and follow all procedures, Warnings and Cautions before using any Ultrasonix ultrasound 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. Refer to **Accessories–Third Party** in Appendix B for the recommended transducer cover/sheath.

D.1.2 Ultrasound Coupling Gels

The following ultrasound coupling gel is recommended for use with Ultrasonix transducers:

Table D-1: Recommended Ultrasound Coupling Gel

Gel Name	Manufacturer	Address	Telephone/Fax	Internet/E-Mail
Sterile Aquasonic 100	Parker Laboratories, Inc.	286 Eldridge Road Fairfield, NJ, 07004 USA	Tel: (800) 631-8888 Fax: (973) 276-9510	www.parkerlabs.com parker@parkerlabs.com

Caution: *Failure to use the recommended gel may cause damage and void transducer warranties.*

Do not use lotions.

If there are any questions, contact Ultrasonix Medical Corp.

Note: *Sterile Aquasonic 100 ultrasound gel is not made with natural rubber latex.*

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, disinfected or sterilized.*

Contact Ultrasonix Medical Corp 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/sterilants (***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/manufacturer 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				♦	♦					♦				♦
	PA7-4/12				♦	♦					♦				♦
	MC9-4/12				♦	♦					♦				♦
	HST15-8/20			♦	♦	♦	♦	♦							
	4DC7-3/40			♦	♦	♦	♦	♦							
	PA4-2/20			♦	♦	♦	♦	♦							
	L40-8/12		♦			♦		♦						♦	
	m4DC7-3/40		♦	♦	♦	♦		♦					♦	♦	
	4DL14-5/38		♦			♦		♦						♦	
GPS	C5-2/60 GPS	♦		♦	♦		♦	♦	♦			♦	♦		♦
	L14-5/38 GPS	♦		♦	♦		♦	♦	♦			♦	♦		♦
Linear and Convex	C5-2/60	♦			♦	♦	♦	♦	♦	♦	♦		♦		♦
	C7-3/50	♦			♦	♦	♦	♦	♦	♦	♦		♦		♦
	C9-5/10	♦			♦	♦	♦	♦	♦	♦	♦		♦		♦
	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.

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	♦	♦	♦	♦
EC9-5/10 GPS	♦	♦	♦	♦
4DEC9-5/10				
BPC8-4/10				
BPL9-5/55	♦	♦	♦	♦

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.* Refer to **Accessories–Third Party** in Appendix B for the recommended transducer cover/sheath.

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 months	Check for cracks or bent pins (**D.1 Transducers**).
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 Filter	Four months or as required	Check for good air flow without excessive noise. Remove and vacuum (**D.4.11 System Filter**). ***Note:*** *Every four months, the system will present an automated filter cleaning reminder.*
System Fans	Six 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 Barcode Reader (MDP/SP)

Warning: *Disconnect the barcode reader prior to cleaning.*

Caution: *DO NOT apply cleaning solutions directly to the barcode reader.*

Note: *Barcode reader usage should not entail patient contact.*

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth and wipe the barcode reader:

- water
- mild detergent (PH level at or near 7) and water solution.

D.4.6 Wireless Adapter (When Connected Externally) (MDP/SP)

Warning: *Disconnect the wireless adapter prior to cleaning.*

Caution: *DO NOT apply cleaning solutions directly to the wireless adapter.*

Note: *Wireless adapter usage should not entail patient contact.*

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth and wipe the wireless adapter:

- water
- mild detergent (PH level at or near 7) and water solution.

D.4.7 SonixGPS Components

Warning: For details on SonixGPS cleaning and maintenance, refer to the most recent SonixGPS User Manual.

D.4.8 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 (10.14). 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.4.9 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.4.10 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 (10.13). 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.4.11 System Filter

Cautions:

Power off and unplug the system prior to cleaning.

Vacuum only. DO NOT apply any liquids to the system filter.

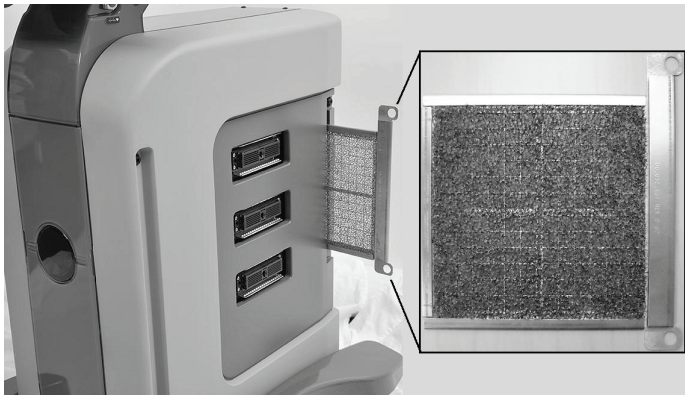
Filter cleaning frequency is dependant upon usage location. If the system is used in a high traffic area (such as an Emergency Room), the filter may require more frequent cleaning.

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 to six 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 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 ***SonixGPS***)
- platform (e.g., SonixMDP/SP/OP Q+))
- 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)

		Imaging Mode							
Mode Action	***Description***	***B-Mode***	***M-Mode***	***Color***	***PW/CW***	***Spatial Compound***	***Elastography***	***SonixGPS***	***Panoramic***
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–Third Party** *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.* *Not available during* ***Freehand 3D****.*	•							
Directional Power	Tap to activate ***Directional Power Doppler***.			•					
Dual/Quad	Activates ***Dual*** (press once) and ***Quad*** (press twice) split screen imaging. ◉ toggles between image fields. Press B to return to single screen imaging. ***Note:*** ***Dual*** *activates* ***Top/Bottom*** *imaging when using an EC9-5/10 or 4DEC9-5/10 transducer in* ***B***, ***Color*** *or* ***Spatial Compounding Mode****. Tap* ***Layout*** *to activate* ***Right/Left*** *imaging.* ***Quad*** *imaging is not available in* ***Color*** *mode.*	•		•		•			
End Exam	Tap to end the current exam.	•	•	•	•	•	•		•
ECG On/Off	Tap to turn on/off the ***ECG*** machine. ***Note:*** *This option is only available when* ***Cardiac*** *is selected as the* ***Preset****.* *Refer to* **Accessories–Third Party** *in Appendix B for the recommended ECG electrode.*	•	•	•	•		•	•	•
End Exam	Tap to end the current exam.	•	•	•	•	•	•		•

Mode Action	Description	Imaging Mode							
		B-Mode	M-Mode	Color	PW/CW	Spatial Compound	Elastography	SonixGPS	Panoramic
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.*	•						•	
Harmonics PIH	Tap to activate/deactivate ***PIH (Pulse Inversion Harmonics)***. ***Note: Harmonics PIH*** *is both transducer- and mode-dependant.* *Supported transducers: SA4-2/24, PA7-4/12, C5-2/60, C7-3/50, 4DC7-3/40 and m4DC7-3/40.* *Supported modes also include:* ***Dual B***, ***Quad B*** *and* ***Dual Compound***.	•				•			
HD Zoom	Tap to activate ***HD Zoom***. Use the trackball to position the ROI. ***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.* *Both* ***HD Zoom*** *and* ***Zoom*** *mode action buttons can be applied to an image.*	•	•			•	•	•	
Invert	Tap to ***Invert*** the image orientation by 180°.	•	•			•		•	•
Layout	Tap ***Layout*** to cycle through to the next ***Split Imaging*** display type. The default is 1:1. The four options are, in order: ***Split 1:1***..... ½ Imaging Mode – ½ Trace (top/bottom configuration) ***Large Trace*** ..... ⅓ Imaging Mode – ⅔ Trace ***Small Trace*** ..... ⅔ Imaging Mode – ⅓ Trace ***Side by Side*** ..... ½ Imaging Mode – ½ Trace (side by side configuration). ***Note:*** *Tap* ***Dual*** *to activate* ***Top/Bottom*** *imaging when using an EC9-5/10 or 4DEC9-5/10 transducer in* ***B***, ***Color*** *or* ***Spatial Compounding Mode***.		•	•	•				
Overlay	Tap to toggle between the side-by-side ***Comparative*** image view and the combined or overlaid image view. ***Note:*** *The default view is* ***Comparative***.						•		
Pano	Tap to activate ***Panoramic*** imaging mode.	•	•	•				•	•
Pano Cancel	Tap to cancel the current ***Panoramic*** acquisition. ***Note:*** *This is not a toggle button.*								•
Pano Exit	Tap to exit ***Panoramic*** imaging. ***Note:*** *This is not a toggle button.*								•

Mode Action	Description	Imaging Mode							
		B-Mode	M-Mode	Color	PW/CW	Spatial Compound	Elastography	SonixGPS	Panoramic
Pano Start/Stop	Tap to start or stop the ***Panoramic*** acquisition.								•
Reverse	Tap to ***Reverse*** the image orientation right/left.	•	•			•		•	•
Simult 2D/Col-Color Mode	Tap to activate/deactivate ***Simultaneous 2D/Color*** (side-by-side split screen): • left side: live ***2D/Color*** • right side: live ***2D***.			•					
SonixGPS	Tap to activate ***SonixGPS***.	•						•	
SonixShine	Tap to activate ***SonixShine*** during ***Spatial Compound*** imaging. ***Note:*** *This will also activate* ***Spatial Compound*** *imaging as* ***SonixShine*** *functions as a* ***Spatial Compound*** *imaging parameter (***5.1.2 Spatial Compound Imaging***).* ***SonixShine*** *is available only with the L9-4/38, L14-5/38 and L14-5/38 GPS linear transducers.*					•			
(PW) TDI	Tap to activate/deactivate ***TDI*** in the ***PW*** spectrum.				•				
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.*				•				
Velocity Variance	Enables ***Operators*** to see where flows deviate from the sample's mean velocity. ***Note:*** *There are 15 standard* ***Color Maps*** *but only six when* ***Velocity Variance*** *is selected.*			•					

Table E-2: Touch Screen Imaging Parameters (by Imaging Mode) (Tap to activate and/or dial/press to adjust)

		Imaging Mode							
Imaging Parameter	***Description***	***B-Mode***	***M-Mode***	***Color***	***PW/CW***	***Spatial Compound***	***Elastography***	***SonixGPS***	***Panoramic***
Acoustic Power	Adjusts ***Acoustic Power*** (turn dial) 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**.	•	•	•	•	•	•	•	•
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***.	•	•	•	•	•	•	•	•
Comp (Compound)	Improves contrast, resolution and needle enhancement. The available options are transducer-dependant: • ***Shine***: L9-4/38, L14-5/38 and L14-5/38 GPS linear transducers • ***Med*** and ***High***: all linear and curved array transducers. ***Note:*** *If the Mode Action button* ***SonixShine*** *is selected, the system will auto-activate* ***Comp Shine****. If the Mode Action button* ***SonixShine*** *is not selected and* ***Comp*** *is set to* ***Shine****, then the system will auto-activate* ***SonixShine****.*					•			
Cut Angle	Adjusts the angle of the ***3D/4D Cut Line***. ***Note:*** *Not available during* ***Freehand 3D****.*	•							
Depth	Adjusts the imaging ***Depth*** up or down.	•	•	•	•	•	•	•	•
Dyn (Dynamic Range)	Adjusts the overall image contrast resolution in 1 dB increments. 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.*	•	•	•	•	•	•	•	•
ECG Gain	Adjusts the size of the ***ECG Trace***. (Not available on SonixSP Q+ and SonixOP Q+.) ***Note:*** *If* ***ECG*** *is* ***Off****, this option will not be available on the touch screen.*				•				
ECG Invert	Inverts the ***ECG Trace***. (Not available on SonixSP Q+ and SonixOP Q+.) ***Note:*** *If* ***ECG*** *is* ***Off****, this option will not be available on the touch screen.*				•				

Imaging Parameter	Description	Imaging Mode							
		B-Mode	M-Mode	Color	PW/CW	Spatial Compound	Elastography	SonixGPS	Panoramic
ECG Lead	Adjusts the required **ECG Lead** display. (Not available on SonixSP Q+ and SonixOP Q+.)				•				
	Note: *If* ***ECG*** *is* ***Off****, this option will not be available on the touch screen.*								
ECG Position	Adjusts the position of the **ECG Trace**. (Not available on SonixSP Q+ and SonixOP Q+.)				•				
	Note: *If* ***ECG*** *is* ***Off****, this option will not be available on the touch screen.*								
ECG R Wave	Turns on/off the **ECG R Wave** tag. (Not available on SonixSP Q+ and SonixOP Q+.)				•				
	Note: *If* ***ECG*** *is* ***Off****, this option will not be available on the touch screen.*								
ECG R Thresh(old)	Adjusts the **ECG R Threshold** in relation to **ECG R Wave** tagging. (Not available on SonixSP Q+ and SonixOP Q+.) Turn the associated dial counter-clockwise to move the **R Wave** tag to the left or clockwise to move it to the right.				•				
	Note: *If* ***ECG*** *is* ***Off****, this option will not be available on the touch screen.*								
Edge	Adjusts spectrum smoothing: 1–12.				•				
Ensemble	Adjusts **Color Doppler** sensitivity: range 6–16.			•					
	Note: *This adjusts both the* ***FPS*** *and* ***TIS****.*								
Focus #	Adjusts the number of transmit focal zones on the screen. The maximum number of focal zones varies depending on which transducer is selected.	•				•			
	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.	•				•			
Frequency	Adjusts the transducer **Frequency**: **Penetration**, **General**, **Resolution**, **Harmonics** and **EPI**.	•	•	•	•	•	•	•	•
FreqC	Adjusts the **Frequency** of the **Color Doppler**: 4–6.6MHz.			•					
FreqD	Adjusts **PW/CW Doppler** Frequency: 4.0–6.6MHz.				•				
	Note: *Not available in* ***CW****.*								
FrRate	Adjusts the **Frame Rate**: **Med**, **High** and **Max**.	•	•	•		•		•	•
Gain	Turn dial to control **2D Gain**.	•	•	•	•	•	•	•	•
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****.*								

		Imaging Mode							
Imaging Parameter	**Description**	***B-Mode***	***M-Mode***	***Color***	***PW/CW***	***Spatial Compound***	***Elastography***	***SonixGPS***	***Panoramic***
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*** and ***Power Maps***: • ***Color***: 1–15 • ***Power***: 1–8.			•					
	Note: *If* ***Velocity Variance*** *is active, the* ***MapC*** *range is 1–6. f* ***Directional Power*** *is active, the* ***MapC*** *range is 1–7.*								
MapD	Adjusts the grayscale ***Map*** of the ***Doppler Trace***: 1–3.				•				
MapE	Adjusts the ***Elastography Color Map.*** ***MapE 1*** is a 1D ***Map***. ***MapE 2*** is a soft threshold 2D ***Map***, while ***MapE 3*** is a hard threshold 2D ***Map***. Additional ***Maps*** (***4–12***) include grayscale.						•		
MapM	Adjusts the grayscale ***Map*** of the ***M-Mode*** display: 1–3.		•						
(Imaging) Method Color/Power/TDI/ Flow	Toggles between the (***Imaging***) ***Method*** options: ***Color***, ***Power***, ***TDI*** and ***Flow***.			•					
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– 9.			•					
PersistE	Adjusts the ***Elastography Persistence***: 0–6.						•		
Priority	Adjusts the ***Color Doppler 2D Priority***.			•					
Reject	Eliminates or ***Rejects*** noise from the image: 0–100.	•	•	•	•	•	•	•	•
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.*								

Imaging Parameter	Description	Imaging Mode							
		B-Mode	M-Mode	Color	PW/CW	Spatial Compound	Elastography	SonixGPS	Panoramic
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 Side	Moves the **Shine** marker between the top right and top left side of the imaging screen, depending on the desired needle entry position.					•			
Smooth	Adjusts spectrum smoothing: 1–5.				•				
SoftC	Enables **Color** smoothing during **Color** and **Power** imaging. The higher the setting the greater the degree of **Color** smoothing: 1, 3 and 5.			•					
SoS	Adjusts the **Speed of Sound** (**SoS**) through tissue: 1400m/s–1540m/s, in increments of 10 (1540m/s is the average **SoS** in soft tissue). Operators may find this useful when working with technically difficult patients.	•	•			•			
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.				•				
Zoom	Adjusts the image in or out: 80–500% in 10% increments. ***Note:*** *If the image is zoomed to the point where it is larger than the imaging field, use the trackball to pan around the image.*	•	•	•	•	•	•	•	•
ZoomM	Adjusts the amount of **M-Mode** magnification. Use the trackball to reposition **ZoomM** location.		•						

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***.

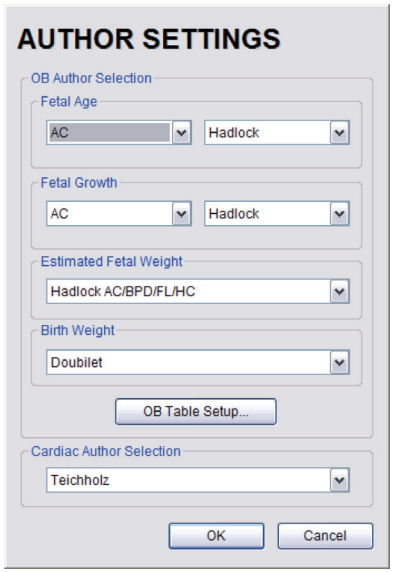


Table F-1: OB Author Selection – Fetal Age

Parameter	Authors	
AC	BC Women's Crequat Hadlock	Hansmann Tokyo
APAD	Persson	
BDN	Jeanty	Tongsong
BPD	BC Women's Crequat DSOG Eik-Nes eSnurra Hadlock Hobbins	Kurtz Hansmann Osaka Persson Robinson Selbing-Kjessler Tokyo
CEREB	Hill	
CRL	BC Women's DSOG Hadlock Hansmann Hobbins	Loughna Osaka Persson Rempen Robinson
FL	Altman and Chitty BC Women's Crequat DSOG eSnurra Hadlock	Hansmann Merz Osaka Persson Tokyo
GS	Hansmann Hellman	Nyberg Rempen
Fibula	Hobbins	
FTA	Osaka	
HC	Altman and Chitty BC Women's Crequat	Hadlock Hansmann
HL	Jeanty	
OFD	Hansmann	
TAD	Crequat	eSnurra
TL	Jeanty	Hobbins
TTD	Hansmann	
UL	Jeanty	

Table F-2: OB Author Selection – Fetal Growth

Parameter	Authors	
AC	BC Women's Chitty Crequat	Hadlock Tokyo
AFI	Moore	
BPD	BC Women's Crequat Eik-Nes eSnurra Hadlock Hobbins	Kurtz Osaka Robinson Selbing-Kjessler Tokyo
CRL	BC Women's Hadlock Hobbins	Osaka Robinson
Fibula	Hobbins	
FL	BC Women's Chitty Crequat eSnurra	Hadlock Jeanty Osaka Tokyo
FTA	Osaka	
HC	BC Women's Chitty	Crequat Hadlock
HL	Jeanty	
TC	BC Women's	
TAD	Crequat	eSnurra
TL	Hobbins	

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
AC/BPD/FL	Hadlock
AC/BPD/FL/HC	Hadlock
AC/FL	Hadlock
AC/FL/HC	Hadlock
BPD/AC	Hadlock
BPD/APAD/TAD	DSOG Persson
BPD/APAD/TAD/FL	DSOG Persson
BPD/APTD/TTD/FL	Tokyo
BPD/FTA/FL	Osaka
BPD/TAD	Eik-Nes
BPD/TTD	Hansmann

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

APPENDIX G: REFERENCES

G.1 OB

EFW (Eik_Nes BPD/TAD)

Eik-Nes SH, Grottum P. Estimation of fetal weight by ultrasound measurement. Development of a new formula. Acta Obstet et Gynecol Scand., 1982;61:307 - 312.

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 (Hadlock BPD/AC)

Irina Burd, et al. "Is Sonographic Assessment of Fetal Weight Influenced by Formula Selection?" American Institute of Ultrasound in Medicine J Ultrasound Med., 2009; 28, 1019-1024.

EFW (Persson BPD/APAD/TAD)

Persson PH, Weldner BM. Intra-uterine weight curves obtained by ultrasound. Acta Obstet et Gynecol Scand., 1986c;65:169-73.

EFW (DSOG BPD/APAD/TAD)

DSOG (Danish Society of Obstetrics and Gynaecology (http://www.dsog.dk/files/biometriguidelines.htm).

EFW (DSOG BPD/APAD/TAD/FL)

DSOG (Danish Society of Obstetrics and Gynaecology (http://www.dsog.dk/files/biometriguidelines.htm).

EFW (Persson BPD/APAD/TAD/FL)

Persson PH, Weldner BM. Intra-uterine weight curves obtained by ultrasound. Acta Obstet Gynecol Scand., 1986c;65:169-73.

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)

Crequat J, Duyme M, Brodaty G. "Biometry 2000. Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155" Gynecol Obstet Fertil., 2000 Jun; Vol 28, No 6, 435-45.

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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.

Tokyo, Shinozuka, N. FJSUM, et al. "Standard Values of Ultrasonographic Fetal Biometry." Japanese Journal of Medical Ultrasonics, 23:12 (1996), 885.

APAD (Anterior-Posterior Abdominal Diameter)

Persson PH, Obstetrisk Ultralyd, 1997;36:92-93 (Swedish Working Group in Gynecology ULTRAARG).

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)

Crequat J, Duyme M, Brodaty G. "Biometry 2000. Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155" Gynecol Obstet Fertil., 2000 Jun; Vol 28, No 6, 435-45.

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Eik-Nes SH, Grottum P. Estimation of fetal weight by ultrasound measurement. Development of a new formula. Acta Obstet et Gynecol Scand., 1982;61:307 - 312.

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Kurtz AB, et al: Analysis of biparietal diameter as an accurate indicator of gestational age. J Clin Ultrasound 1980;8:319 - 319.

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Persson PH, Obstetrisk Ultralyd, 1997;36:92-93 (Swedish Working Group in Gynecology ULTRAARG).

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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)

DSOG (Danish Society of Obstetrics and Gynaecology) (http://www.dsog.dk/files/biometriguidelines.htm) 2007.

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.

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Pam Loughna, Lyn Chitty, Tony Evans & Trish Chudleigh. "Fetal size and dating: charts recommended for clinical obstetric practice" Ultrasound (August 2009), Vol 17, No 3, p161 - 167.

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Rempen, German Society for Gynecology and Obstetrics, March 1991, Issue 15, Vol 1, pp. 23-28.

Robinson H, Flemming J. British Journal of Obstetrics and Gynaecology. 1975;82:702.

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.

Fibula (Fibula Length)

Hobbins et al. Prenatal Diagnosis of Congenital Anomalies 1988.

FL (Femur Length)

Altman DG, Chitty LS. "New charts for ultrasound dating of pregnancy". Ultrasound Obstet Gynecol., 1997;10:174 - 191.

Crequat J, Duyme M, Brodaty G. "Biometry 2000. Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155" Gynecol Obstet Fertil., 2000 Jun; Vol 28, No 6, 435-45.

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Persson PH, Weldner BM. Normal range growth curves for fetal biparietal diameter, occipito frontal diameter, mean abdominal diameters and femur length. Acta Obstet Gynecol Scand., 1986b;65:759-61.

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).

Hellman LM, Kobayashi M, Fillisti L, et al. Growth and development of the human fetus prior to the 20th week of gestation. Am J Obstet Gynecol., 1969;103:784-800.

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)

Altman DG, Chitty LS. "New charts for ultrasound dating of pregnancy". Ultrasound Obstet Gynecol., 1997;10:174 - 191.

Crequat J, Duyme M, Brodaty G. "Biometry 2000. Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155" Gynecol Obstet Fertil., 2000 Jun; Vol 28, No 6, 435-45.

Hadlock, F., et al. "Estimated Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology, 152: (1984), 497-501.

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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.

TAD (Tranverse Abdominal Diameter)

Crequat J, Duyme M, Brodaty G. "Biometry 2000. Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155" Gynecol Obstet Fertil., 2000 Jun; Vol 28, No 6, 435-45.

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TL (Tibial Length)

Hobbins et al. Prenatal Diagnosis of Congenital Anomalies 1988.

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)

Chitty LS, Altman DG, Henderson A, Campbell S. Charts of fetal size: 3. Abdominal measurements. Br J Obstet Gynaecol., 1994;101:125 - 131.

Crequat J, Duyme M, Brodaty G. "Biometry 2000. Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155" Gynecol Obstet Fertil., 2000 Jun; Vol 28, No 6, 435-45.

Hadlock, F., et al. "Estimated Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology, 152: (1984), 497-501.

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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)

Crequat J, Duyme M, Brodaty G. "Biometry 2000. Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155" Gynecol Obstet Fertil., 2000 Jun; Vol 28, No 6, 435-45.

Eik-Nes SH, Grottum P. Estimation of fetal weight by ultrasound measurement. Development of a new formula. Acta Obstet et Gynecol Scand., 1982;61:307 - 312.

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Robinson H, Flemming J. British Journal of Obstetrics and Gynaecology. 1975;82:702.

Selbing A, Kjessler B. Conceptual dating by ultrasonic measurement of the fetal biparietal diameter in early pregnancy. Acta Obstet Gynecol Scand., 1985; 64: 593 - 597.

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.

Hobbins et al. Prenatal Diagnosis of Congenital Anomalies 1988.

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Osaka University. Ultrasound in Obstetrics and Gynecology. (July 20, 1990) 96, Table 3-3.

Robinson H, Flemming J. British Journal of Obstetrics and Gynaecology. 1975;82:702.

Fibula (Fibula Length)

Hobbins et al. Prenatal Diagnosis of Congenital Anomalies 1988.

FL (Femur Length)

Chitty LS, Altman DG, Henderson A, Campbell S. Charts of fetal size: 4. Femur length. Br J Obstet Gynaecol., 1994;101:132 - 135.

Crequat J, Duyme M, Brodaty G. "Biometry 2000. Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155" Gynecol Obstet Fertil., 2000 Jun; Vol 28, No 6, 435-45.

eSnurra (http://www.esnurra.com).

Hadlock, F., et al. "Estimated Fetal Age: Computer-Assisted Analysis of Multiple Fetal Growth Parameters." Radiology, 152: (1984), 497-501.

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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)

Chitty LS, Altman DG, Henderson A, Campbell S. Charts of fetal size: 2. Head measurements. Br J Obstet Gynaecol., 1994;101:35 - 43.

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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.

TAD (Tranverse Abdominal Diameter)

Crequat J, Duyme M, Brodaty G. "Biometry 2000. Fetal growth charts by the French College of fetal ultrasonography and the Inserm U 155" Gynecol Obstet Fertil., 2000 Jun; Vol 28, No 6, 435-45.

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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.

TL (Tibia Length)

Hobbins et al. Prenatal Diagnosis of Congenital Anomalies 1988.

G.2 CARDIAC

AFI (Amniotic Fluid Index)

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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)

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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)

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LV Mass

Oh, Seward, and Jamil Tajik, The Echo Manual: Second Edition. Lippincott Williams & Wilkins, 1999, 41.

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LVEDV

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LVESV

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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.

G.3 FLOW MEDIATED DILATION (FMD)

FMD (Flow Mediated Dilation)

Cunha Filho, Edson Vieira, Carolina Mohr, Breno José Acauan Filho, Giovani Gadonski, Leticia Germany Paula, Ivan Carlos Ferreira Antonello, Carlos Eduardo Poli-de-Figueiredo, Bartira Ercilia Pinheiro-da-Costa, "Flow-Mediated Dilatation in the Differential Diagnosis of Preeclampsia Syndrome." Arquivos Brasileiros de Cardiologia, 94:2 (2010).

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APPENDIX H: GLOSSARY

% A Red .....Percent Area Reduction

% Area Red .....Percent Area Reduction

% D Red .....Percent Diameter Reduction

% Diam Red .....Percent Diameter Reduction

2D .....Two Dimensional

3D .....Three Dimensional

4D .....Four Dimensional (Live 3D)

4DC.....4D Curved Array Transducer

Abd.....Abdomen

AC.....Abdominal Circumference

AC.....Alternating Current (power supply)

ACC .....Acceleration

AD.....Angio Doppler

Admin.....Administrative/Administrator

AE.....Application Entity (DICOM)

AFI .....Amniotic Fluid Index

AFV.....Amniotic Fluid Volume

AIUM.....American Institute of Ultrasound in Medicine

ALARA .....As Low As Reasonably Achievable

ANSI .....American National Standards Institute

Ao .....Aorta

AO/LA.....Aorta/Left Atrium

AoV.....Aortic Valve

AP .....Anterior Posterior

APAD .....Anterior Posterior Abdominal Diameter

APD .....Anterior Posterior Diameter

APTD .....Anterior Posterior Thorax Diameter

AR.....Area

Area Red .....Area Reduction

AT.....Acceleration Time

AUA .....Average Ultrasound Age

AV .....Aortic Valve

AVA.....Aortic Valve Area

AVI .....Audio Video Interleave

AVm .....Mean Average Velocity

AVp .....Peak Average Velocity

B/M-Mode.....2D and M-Mode

Base.....Baseline (i.e., Doppler Baseline)

BBT.....Basal Body Temperature

BGR.....Blue Green Red

Blad Wall.....Bladder Wall

BLT .....Bottom Left

BMP.....Bitmap

BNC .....Bayonet Neill Concelman

BND .....Binocular Distance

BPD.....Biparietal Diameter

BPM.....Beats per Minute

BRT.....Bottom Right

BSA.....Body Surface Area

Calcs.....Calculations

Card.....Cardiology

CBD .....Command Bile Duct

CCA .....Common Carotid Artery

CD.....Compact Disc

Cereb.....Cerebellum

CEREB.....Cerebellum

CI.....Cardiac Index

CI.....Cephalic Index

CIR.....Circumference

cm.....centimeters

Cntrst Pos.....Contrast Position

CO.....Cardiac Output

COR.....Coronal

CRL.....Crown Rump Length

CSA.....Canadian Standards Association

CSA.....Cross Sectional Area

CW .....Continuous Wave

CWD.....Continuous Wave Doppler

CxLength.....Cervix Length

DCM ..... DICOM

DEL ..... Delete

DIAM RED ..... Diameter Reduction

DICOM ..... Digital Imaging and Communications in Medicine

DISP. ..... Display

DIST ..... Distal

Dist ..... Distance

DPD ..... Directional Power Doppler

DT ..... Deceleration Time

DVD ..... Digital Video Device

Dyn ..... Dynamic Range

EC ..... Endocavity

ECA ..... External Carotid Artery

ECG ..... Electrocardiogram

EDD ..... Estimated Date of Delivery

EDV ..... End Diastolic Velocity

EDVPG ..... EDV Pressure Gradient

EF ..... Ejection Fraction

EFW ..... Estimated Fetal Weight

EMR ..... Electronic Medical Record

Endom Thick ..... Endometrial Thickness

EMC ..... Electromagnetic Compatibility

EPI ..... Extended Pulse Imaging

EPSS ..... E Point Septal Separation

ET ..... Elapsed Time

EV ..... Endovaginal

F ..... Follicle

FAST ..... Focused Assessment with Sonography in Trauma (Trauma (FAST)

FDA ..... U.S. Food and Drug Administration

FHR ..... Fetal Heart Rate

FL ..... Femur Length

FMD ..... Flow Mediated Dilation

FOV ..... Field Of View

FPS ..... Frames per second

FR ..... Frame Rate

FrD ..... Doppler Transmit Frequency

Freq ..... Frequency

Frm ..... Frame

FrRate ..... Frame Rate

FS ..... Fractional Shortening

FT ..... Fractional Thickening

FTA ..... Fetal Trunk Area

Fwd ..... Forward

g ..... grams

GA ..... Gestational Age

GB ..... Gigabyte

GB ..... Gallbladder

GBWT ..... Gallbladder Wall Thickness

Gen ..... General

GIF ..... Graphics Interchange File or Format

GS ..... Gestational Sac

Gyn ..... Gynecology

H ..... Height

HC ..... Head Circumference

HDMI ..... High Definition Multimedia Interface

HIPAA ..... Health Insurance Portability & Accountability Act

HL ..... Humeral Length

HR ..... Heart Rate

Hz ..... Hertz

ICA ..... Internal Carotid Artery

ICT ..... Intracavity Transducer

IMT ..... Intima-Media Thickness

in ..... inches

IP ..... Internet Protocol

ISP ..... Internet Service Provider

IT ..... Information Technology (e.g., IT Department)

IVS ..... Interventricular Septum

IVSd ..... Interventricular Septum diastole

IVSs ..... Interventricular Septum systole

JPEG ..... Joint Photographic Experts Group

Kb ..... Kilobyte

kPa ..... Kilopascal

L.....Length

LA.....Long Axis

LA.....Left Atrium

LAN.....Local Area Network

LAT.....Lateral

LCD.....Liquid Crystal Display

LMP.....Last Menstrual Period

LONG.....Longitudinal

LOV.....Left Ovary

LT.....Left

LVDd.....Left Ventricular Diameter diastole

LVDs.....Left Ventricular Diameter systole

LVET.....Left Ventricular Ejection Time

LVOT.....Left Ventricular Outflow Tract

LVOTd.....Left Ventricular Outflow Tract distance

LVPWd.....Left Ventricular Posterior Wall diastole

LVPWs.....Left Ventricular Posterior Wall systole

Max.....Maximum

MB.....Megabyte

MCA.....Middle Cerebral Artery

MCA- PI.....Middle Cerebral Artery-Pulsatility Index

MEAS.....Measure

MED.....Medial

MGr.....Mean Gradient

MI.....Mechanical Index

Min.....Minimum

M-M.....Motion Mode

ml.....milliliters

mm.....millimeters

MPEG.....Moving Picture Experts Group

MPG.....Moving Picture (Experts) Group

MPR.....Multiplanar Reconstruction

Multi.....Multiple

Msk/MSK.....Musculoskeletal

MV.....Mean Velocity

MV.....Mitral Valve

Myocardial Thick...Myocardial Thickness

NEMA.....National Electrical Manufacturers Association

NET.....Network

NF.....Nuchal Fold

ng.....nanograms

NSF.....National Sanitation Foundation

NT.....Nuchal Thickness

NTSC.....National Television Standards Committee

OB.....Obstetrics

OD.....Optical Density

OEM.....Original Equipment Manufacturer

OFD.....Occipital-Frontal Diameter

OOD.....Outer Orbital Diameter

PA.....Phased Array

PAL.....Phased Alternating Line

Pano.....Panoramic Imaging Mode

Params.....Parameters

PCT.....Projected Capacitive Touch

PDF.....Portable Document Format

Pel.....Pelvis

Pen.....Penetration

Persist.....Persistence

PGr.....Pressure Gradient

PHT.....Pressure Half Time

PI.....Pulsatility Index

Picto.....Pictogram

PIN.....Personal Identification Number

PIPEDA.....Personal Information Protection and Electronic Documents Act

PISA.....Proximal Isovelocity Surface Area

PNG.....Portable Network Graphics

Pos.....Position

POS.....Position

PostV Blad.....Post Void Bladder

PreV Blad.....Pre Void Bladder

PRF.....Pulse Repetition Frequency

PROX.....Proximal

PSA.....Prostate-Specific Antigen

PSAD ..... Prostate-Specific Antigen Density

PSV ..... Peak Systolic Velocity

PSVPG ..... PSV Pressure Gradient

PV ..... Peak Velocity

PV ..... Pulmonary Valve

PW ..... Pulsed Wave Doppler

PWD ..... Power Doppler

Q ..... Quadrant (e.g., AFI)

Qp ..... Pulmonic Blood Flow

Qs ..... Systemic Blood Flow

Rad ..... Radius

Rect ..... Rectangle

Res ..... Resolution

RF ..... Radio Frequency

RGB ..... Red Green Blue

Rgn ..... Region

RLE ..... Run Length Encoding

RI ..... Resistive Index

ROI ..... Region of Interest

ROV ..... Right Ovary

RT ..... Right

RTSA ..... Real Time Spectrum Analysis

RVDd ..... Right Ventricular Dimension diastole

RVDs ..... Right Ventricular Dimension systole

RVOT ..... Right Ventricular Outflow Tract

RVWd ..... Right Ventricular Wall diastole

RVWs ..... Right Ventricular Wall systole

SA ..... Short Axis

SAG ..... Sagital

SAW ..... Surface Acoustic Wave

SCP ..... Service Class Provider

SCU ..... Service Class User

SD ..... Standard Deviation

SD ..... Systolic/Diastolic Ratio

SDK ..... Software Development Kit

SEL ..... Select

Sens ..... Sensitivity

Simult ..... Simultaneous

SMTP ..... Simple Mail Transport Protocol

SonixGPS ..... Sonix Guidance Positioning System

SoS ..... Speed of Sound

SV ..... Sample Volume

SV ..... Stroke Volume

SV1 ..... Selection Value 1

TAD ..... Transverse Abdominal Diameter

TC ..... Trunk Circumference

TCP ..... Transfer Control Protocol

TCP/IP ..... Transmission Control Protocol/Internet Protocol

TFT ..... Thin Film Technology

TGC ..... Time Gain Compensation

THI ..... Tissue Harmonic Imaging

TI ..... Thermal Index

TIB ..... Thermal Index – Bone

TIC ..... Thermal Index – Cranial

TIS ..... Thermal Index – Soft Tissue

TL ..... Tibia Length

TDI ..... Tissue Doppler Imaging

TE ..... Transesophageal

TRANS ..... Transverse

Transp ..... Transparency

Trauma (FAST) ..... Trauma (Focused Assessment with Sonography in Trauma)

TTD ..... Transverse Trunk Diameter

TV ..... Tricuspid Valve

UI ..... User Interface

UL ..... Ulnar Length

UL ..... Underwriter's Laboratory

ULT ..... Upper Left

Umb A ..... Umbilical Artery

Umb A-PI ..... Umbilical Artery- Pulsatility Index

UPS ..... Uninterruptible Power Supply

URL ..... Uniform Resource Locator

URT ..... Upper Right

US ..... Ultrasound

USB .....Universal Serial Bus

VAC.....Volts Alternating Current

VCR .....Video Cassette Recorder

Vel.....Velocity

Vol.....Volume

VolFlow.....Volume Flow

VPS.....Volumes per Second

VR .....Volume Rendering

VTI.....Velocity Time Integral

W.....Width

WEEE.....Waste Electrical and Electronic Equipment

WF.....Wall Filter

WWW.....World Wide Web

YS .....Yolk Sack