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sense and simplicity

Philips iU22 Ultrasound System Advanced System Training

台灣醫療事業保健部門
臨床應用專員 楊欣蓓

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Agenda

- System overview
- Imaging modes
- Caliper / Calculation
- Review and Image management
- Q & A

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System overview

- System
- Transducers
- Peripherals

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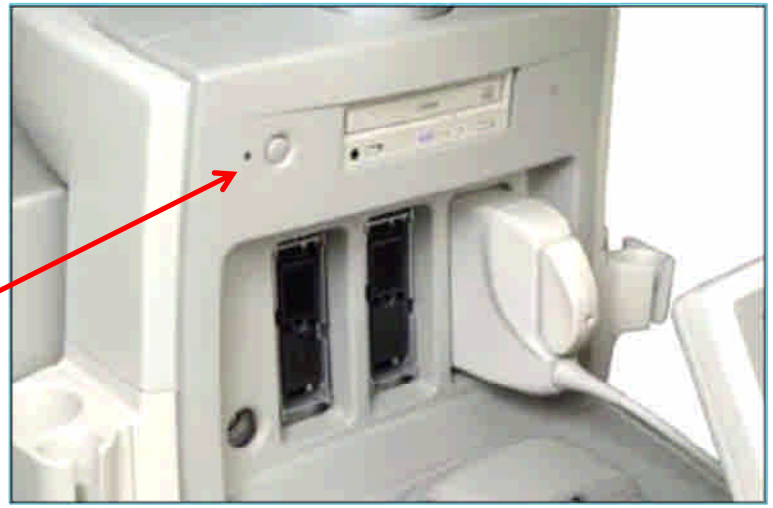
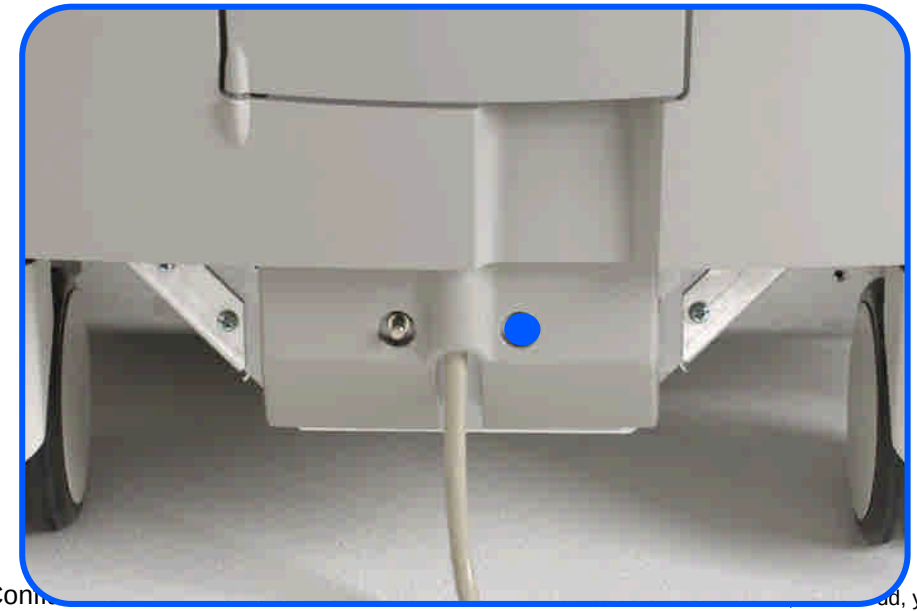
System overview

Power ON / OFF





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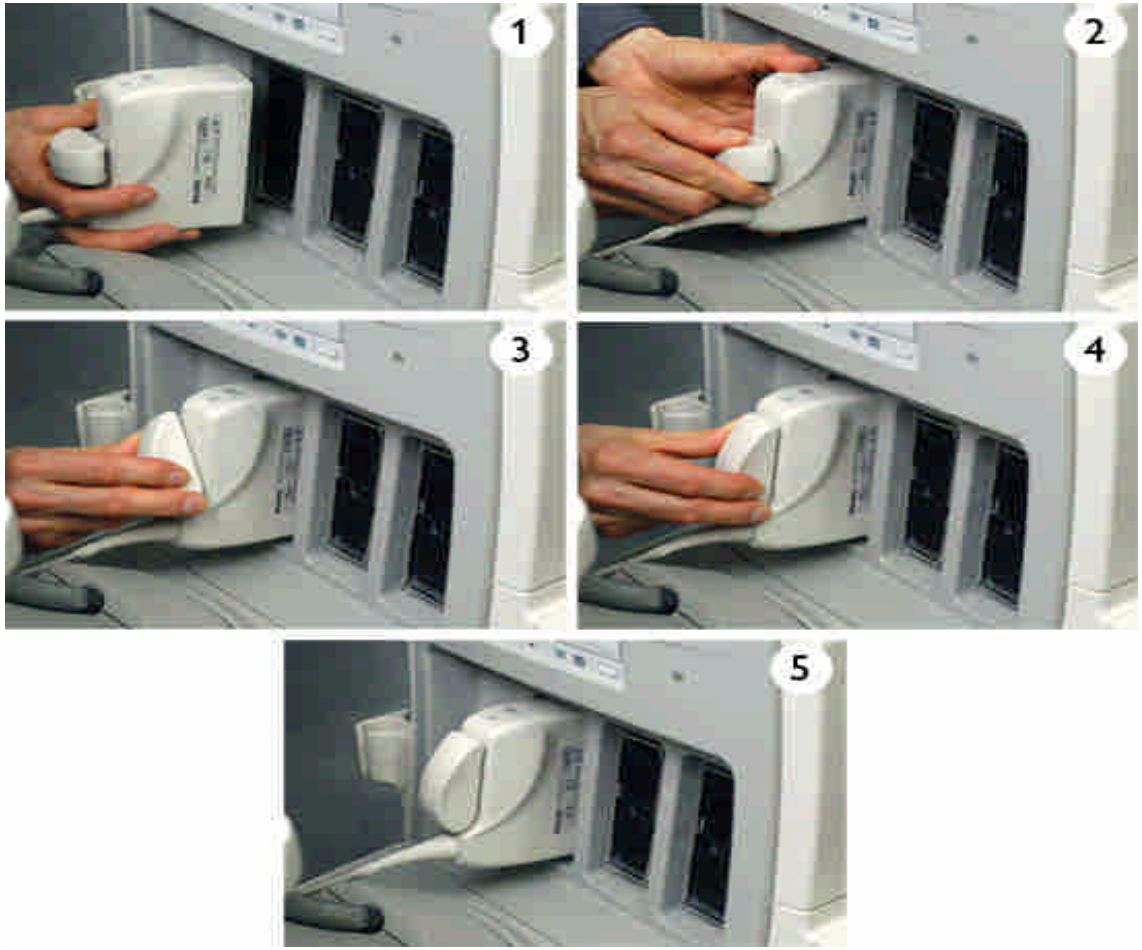
System overview

Transducer Port



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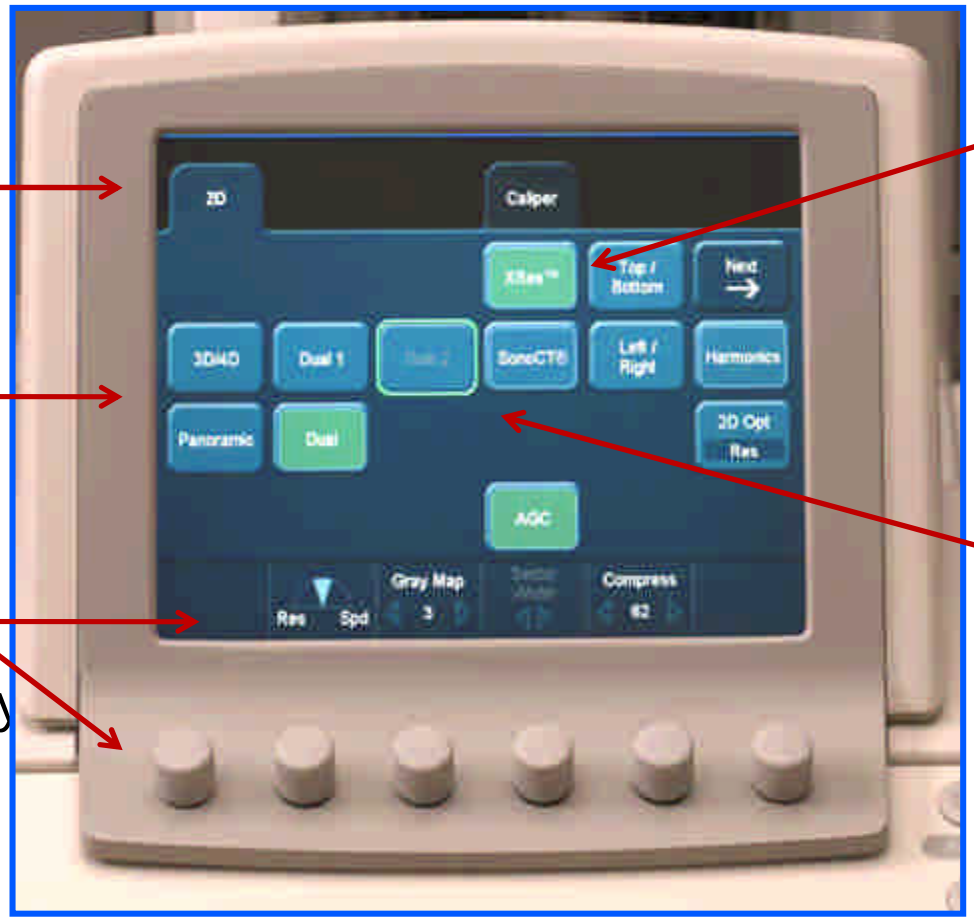
System overview

Touch screen



Tabs

Touch Screen Buttons

Touch Screen Rotary Knob Display

Green

Green Outline

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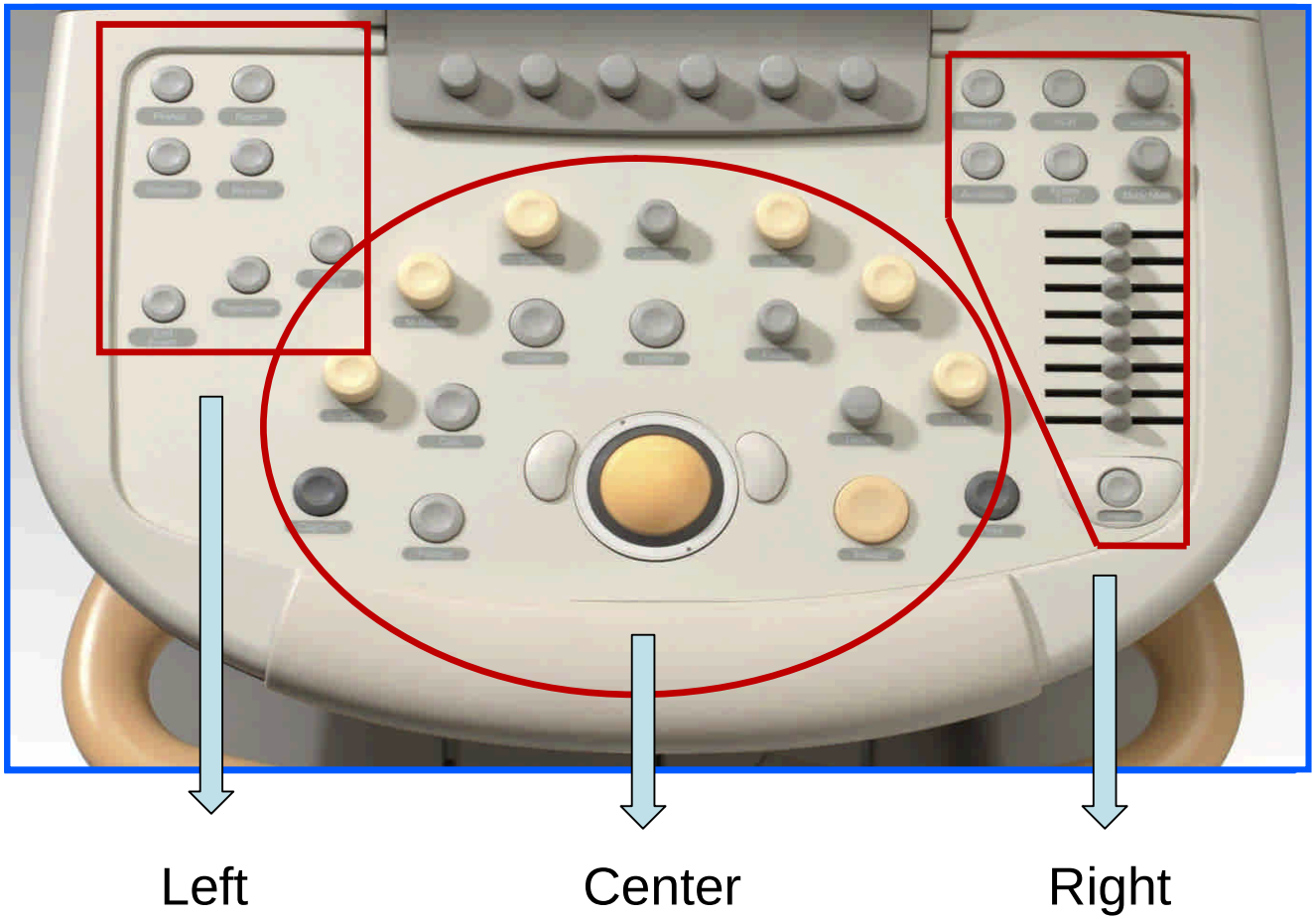
System overview

Keyboard / Control Panel



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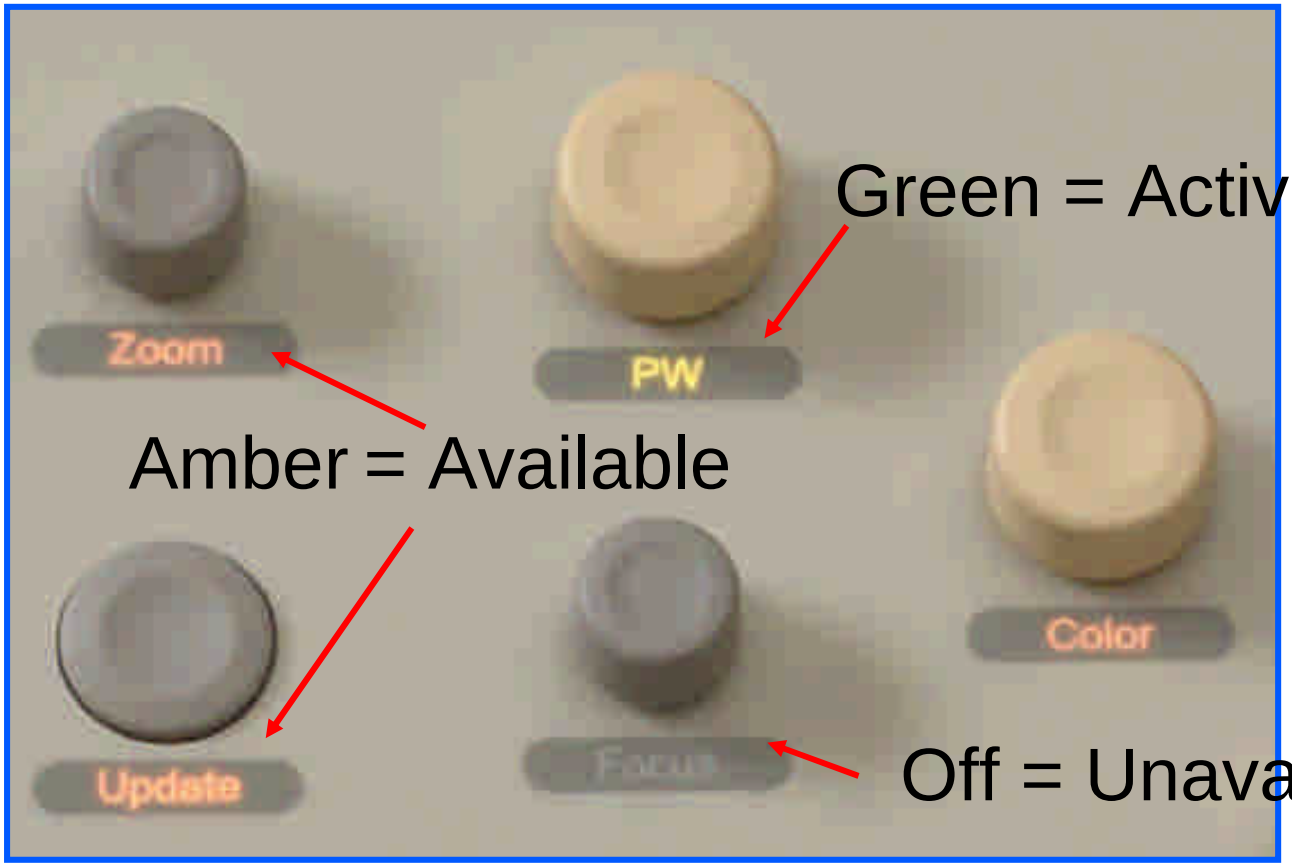
System Overview

Control Panel – Tri State Lighting



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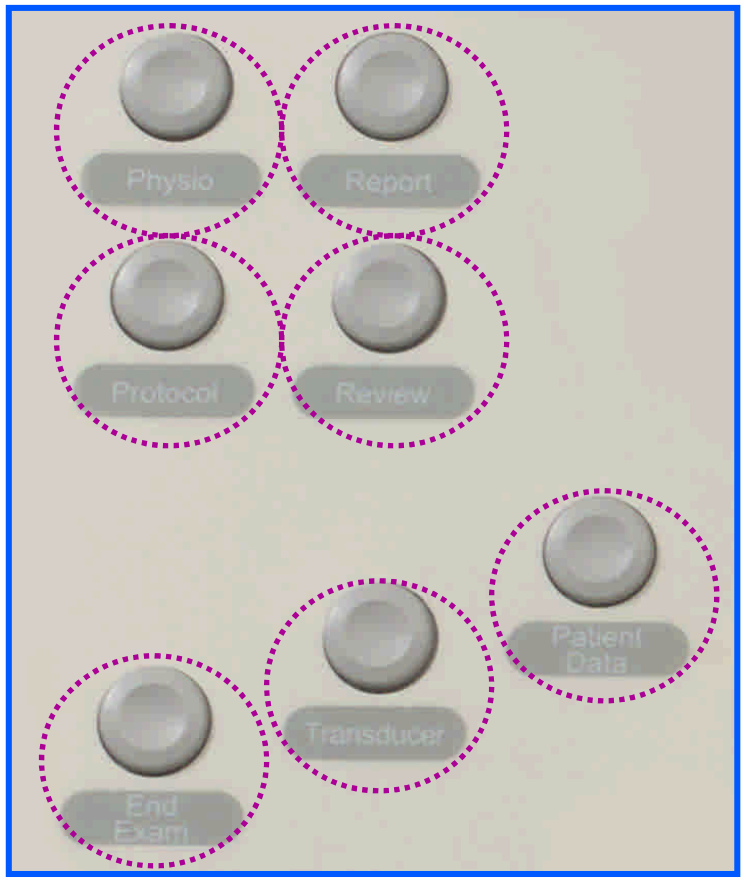
System overview

Control Panel - Left

- Physio
- Report
- Protocol
- Review
- Patient Data
- Transducer
- End Exam



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System overview

Control Panel - Center

- 2D
- Color
- PW
- Zoom
- CPA
- M-mode
- CW
- Capture (max10min)

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System overview

Control Panel - Center

- Freeze
- Depth
- Focus
- Update
- Caliper
- Calc
- Pointer
- Trackball
- Click

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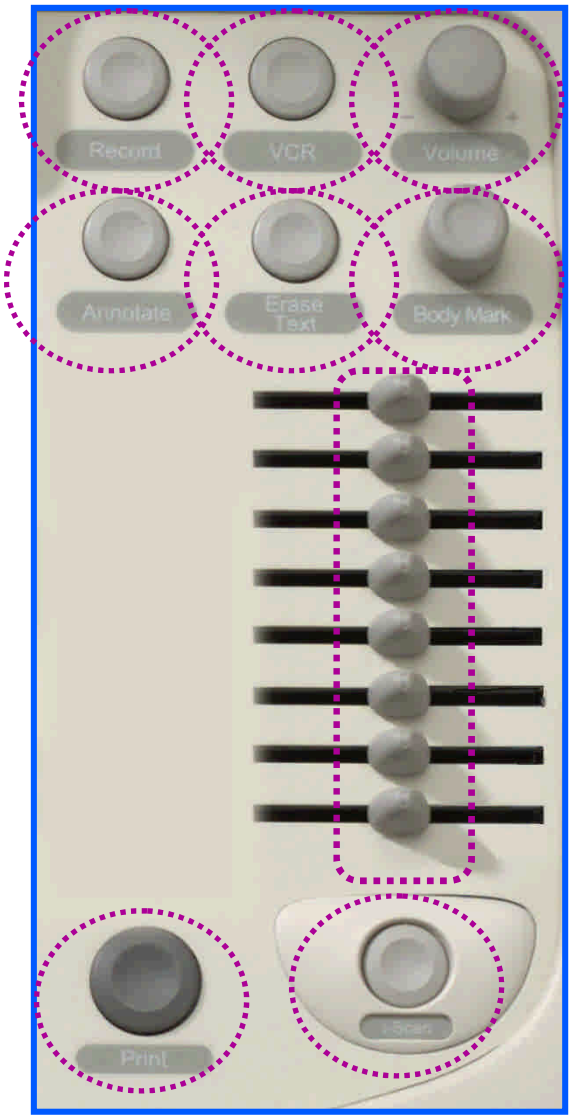
System overview

Control Panel - Right

- Record
- VCR
- Volume
- Annotate, Erase Text
- Body Marker
- TGC
- iSCAN
- Print



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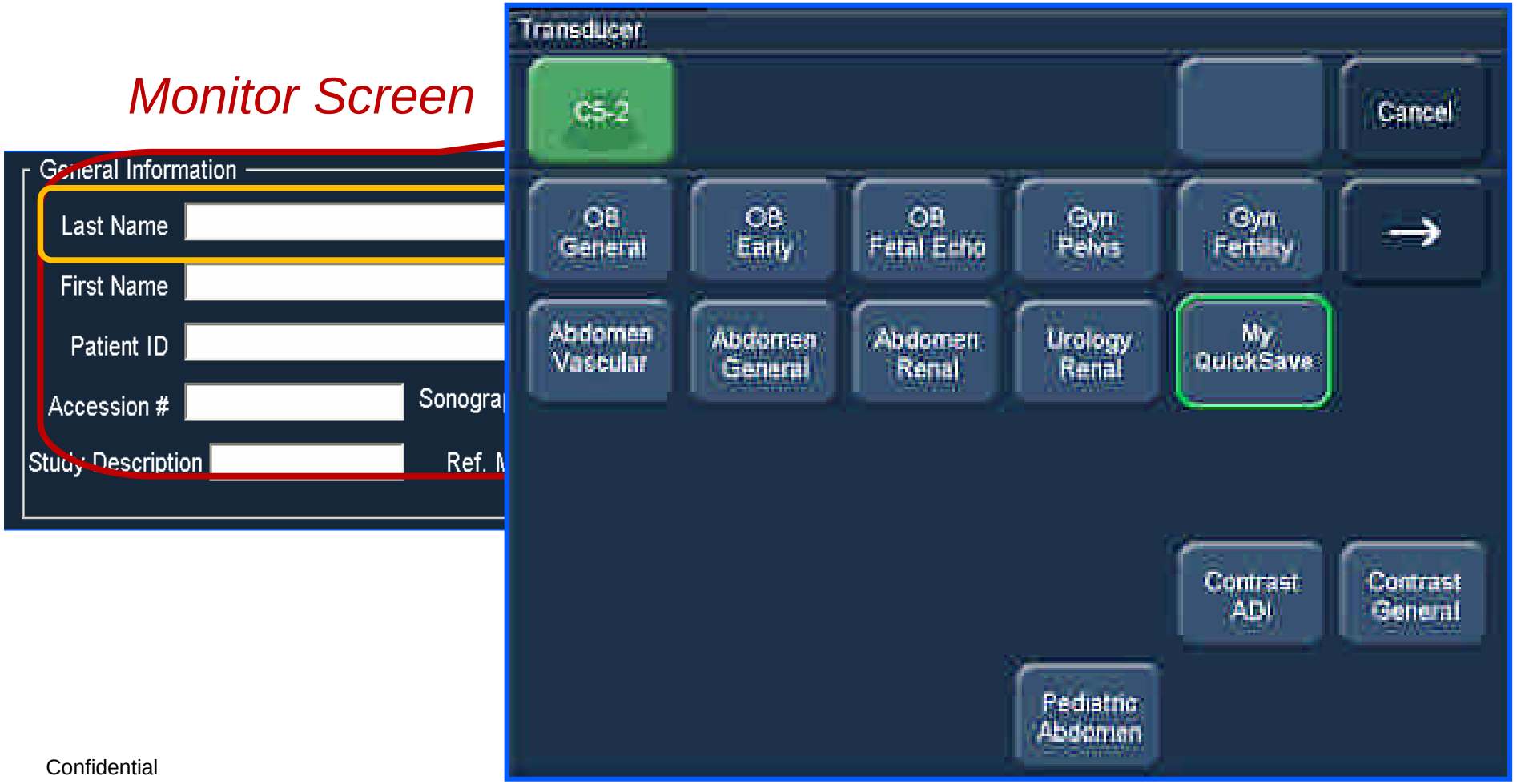
Start Exam

- Power on
- Patient data
- Transducer / Application

Monitor Screen



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Imaging Modes

2D

- Depth
- Gain
- Compress
- TGC
- Focus / Focus range
- Compress
- 2D opt :
  Pen / Gen / Res /
  HPen / HGen / Hres
- SonoCT
- XRes
- DRS
- AGC
- iSCAN

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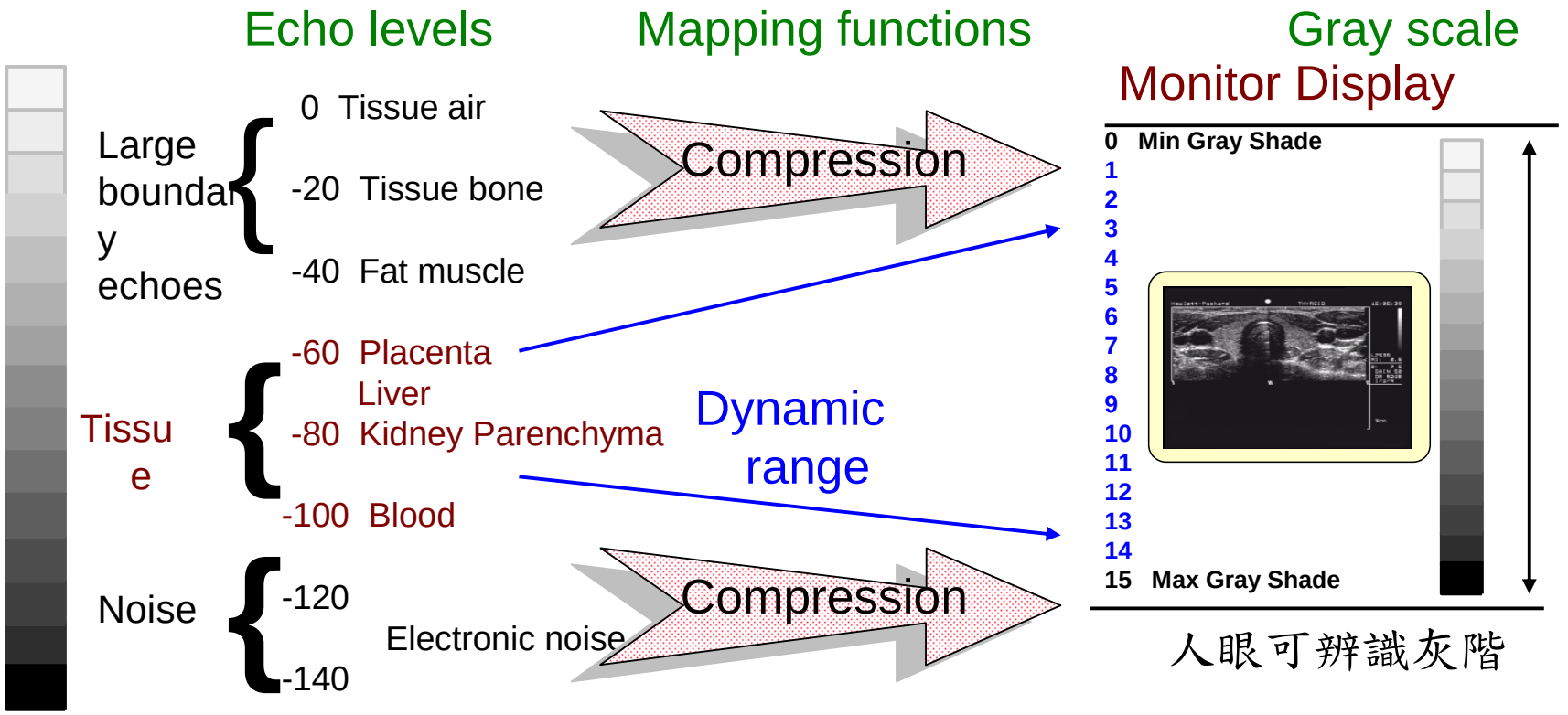
Gain

- 接受音訊的放大器

Compress

- Dynamic range (動態範圍)



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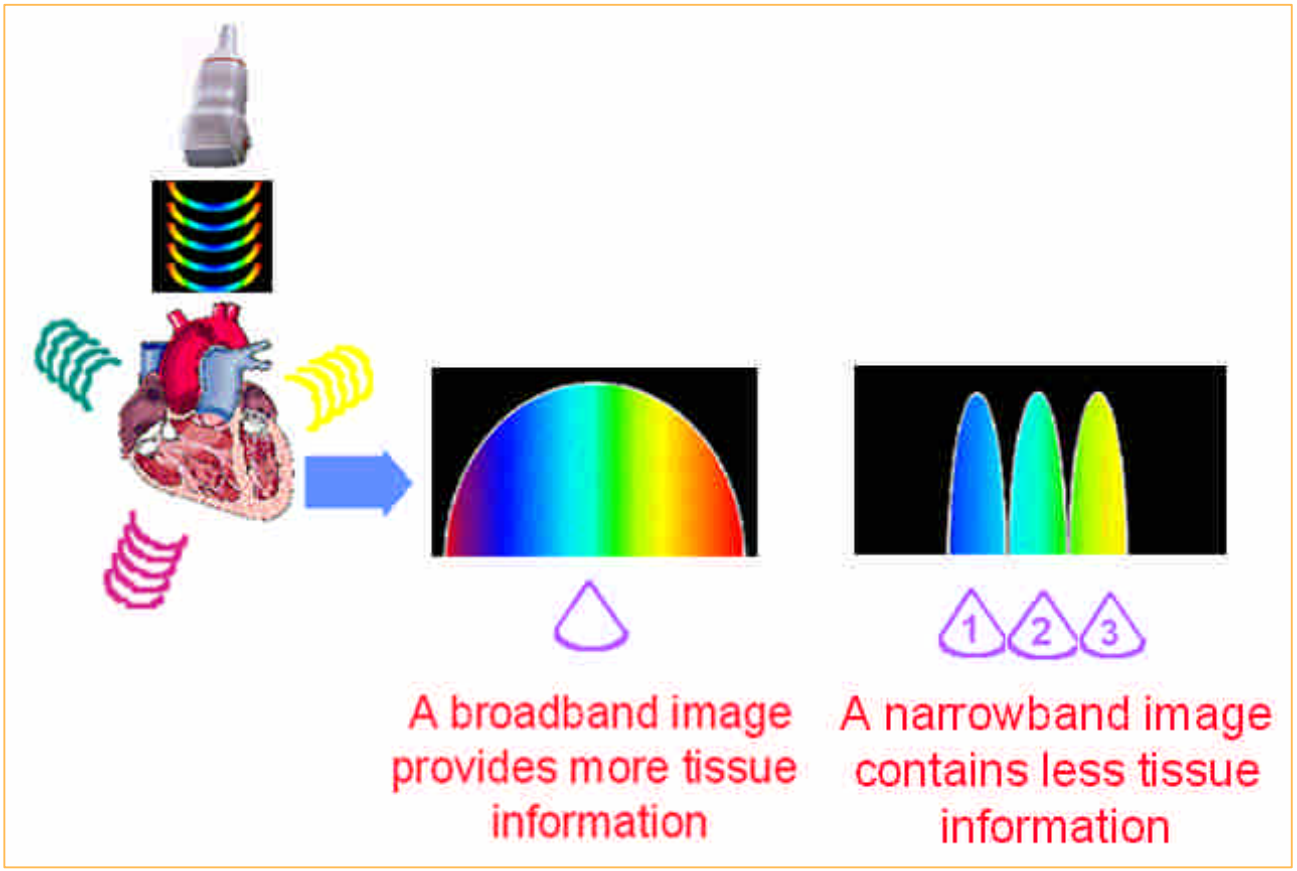
Broadband



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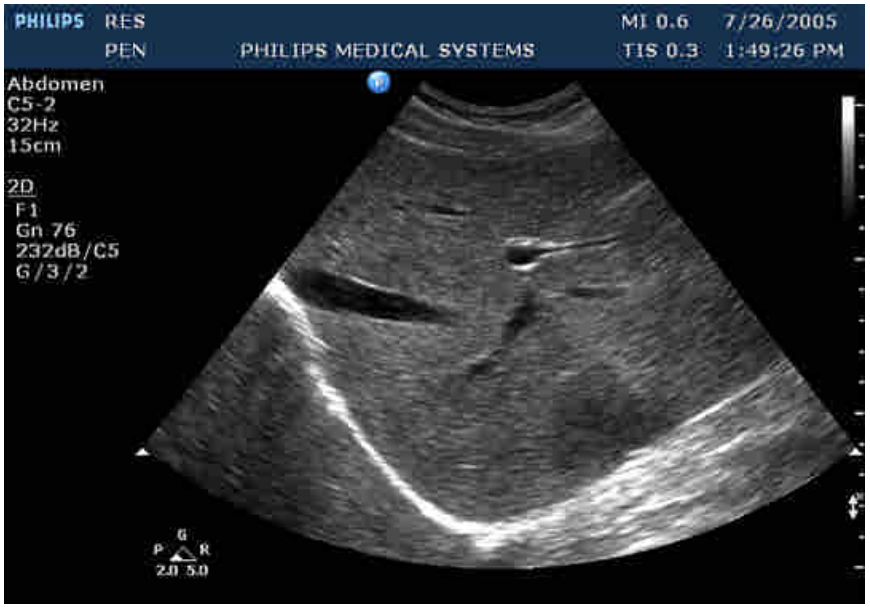
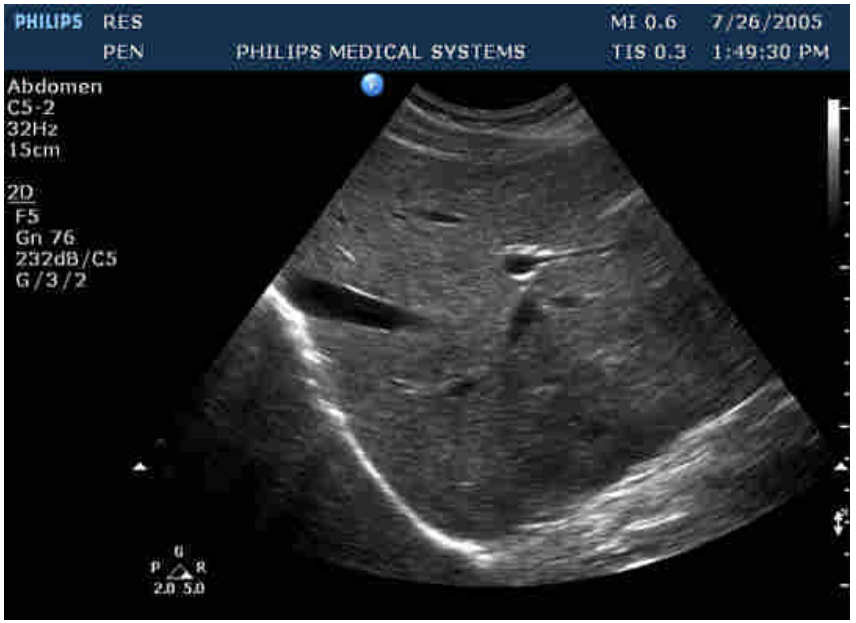
Broadband



Pen



Res

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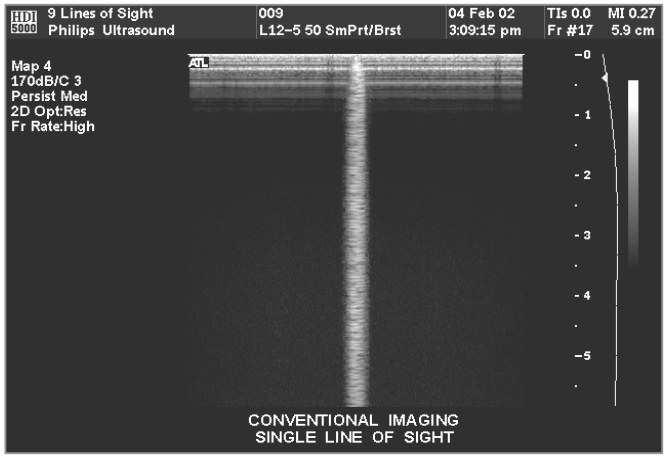
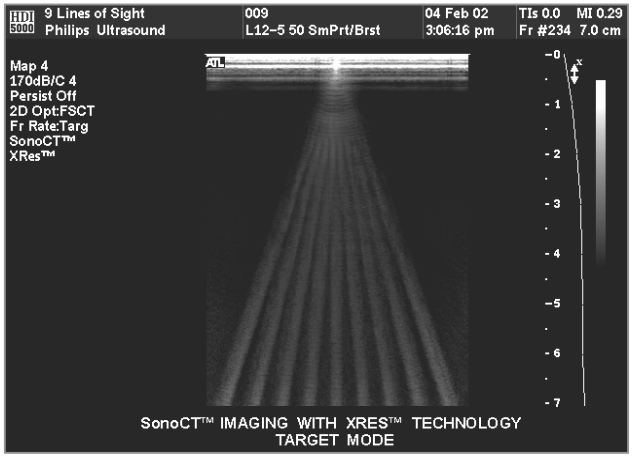
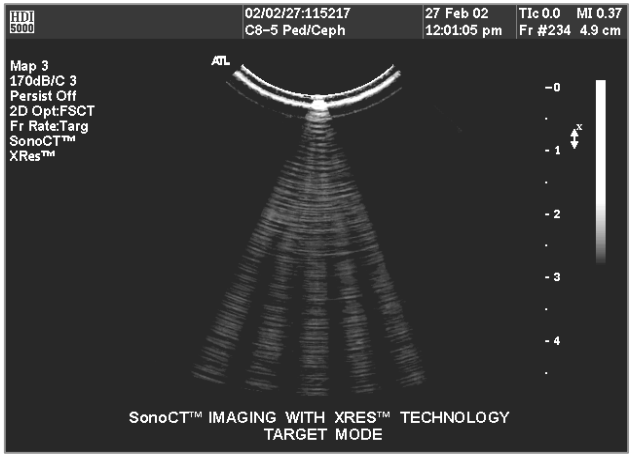
SonoCT

Conventional image



SonoCT image





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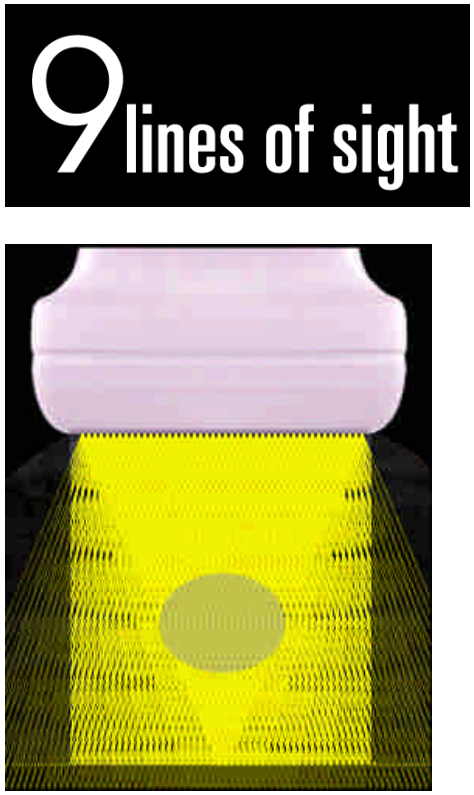
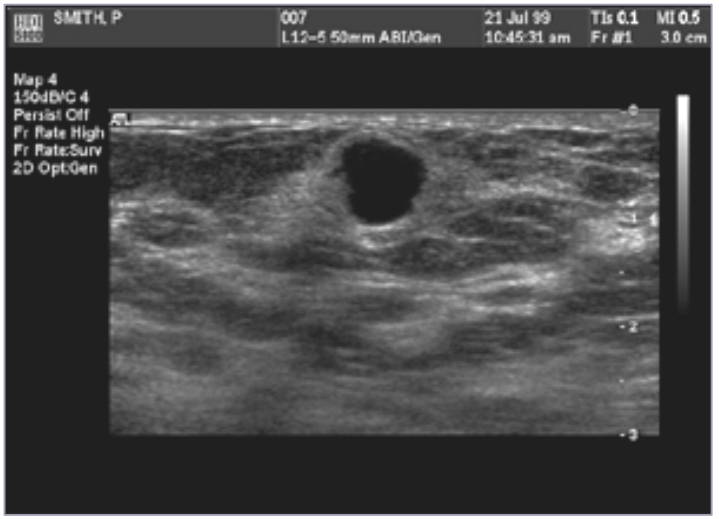
SonoCT





- 連續擷取不同角度的多張圖像，獲致更多彎曲與不規則組織之訊號，影像大為清晰，
- 可消除斑點雜訊、多重反射雜訊、不規則的反射雜訊，臨床上證實非常有效

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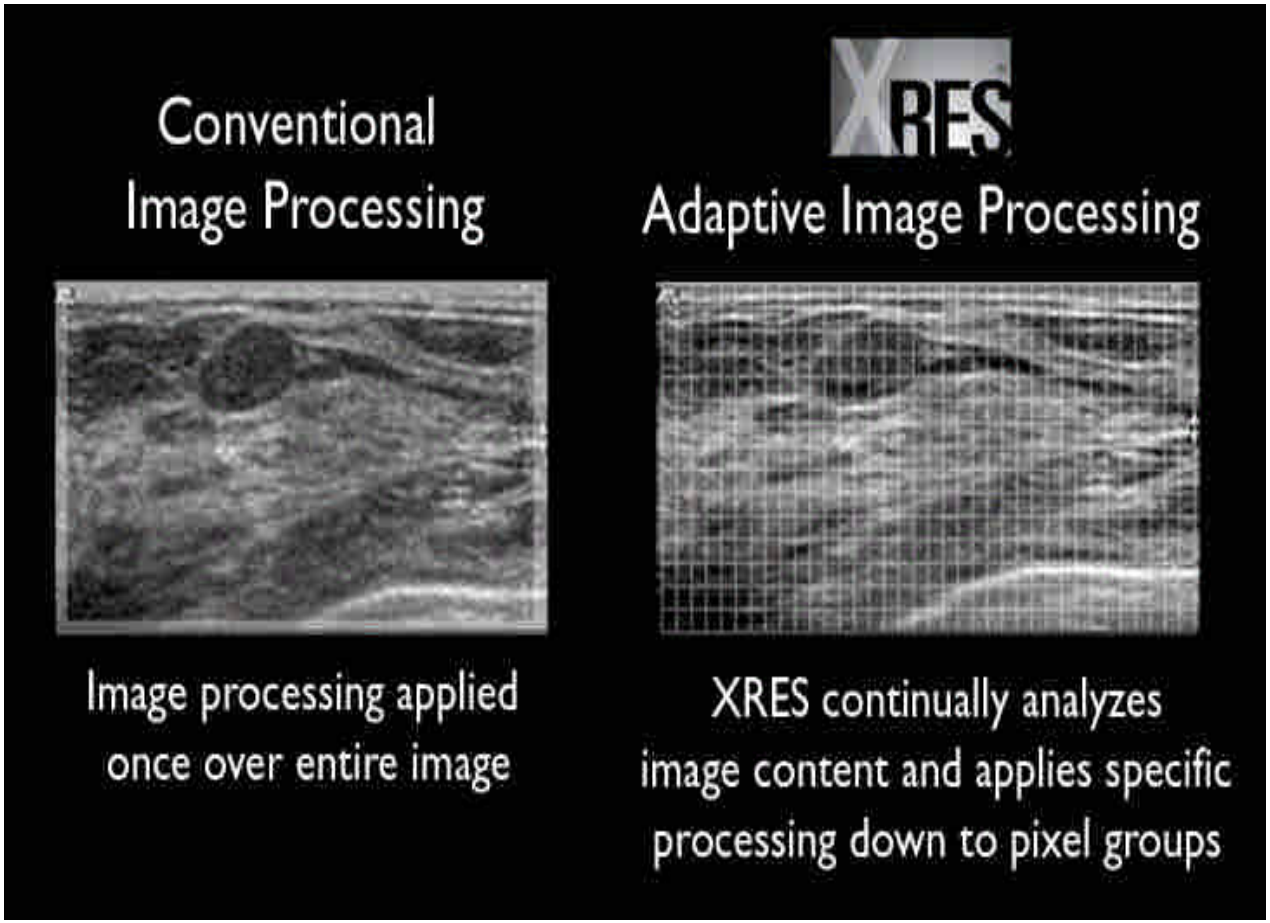
XRes

- 利用影像處理技術快速的計算每張圖像上的數億個影像資料
- 消除很多雜訊並增強了組織邊際與分界



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DRS (Dynamic Resolution System) Res-Spd/ Res- Pen

DRS is a macro control that provides instantaneous one button adjustment of temporal vs. spatial resolution in 2D, 3D, color and CPA modes. The feature is designed to give the user the best combinations of multiple controls when they need to choose between fast frame rates or optimal image quality.

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DRS (Dynamic Resolution System) Res-Spd / Res- Pen

Dynamic Resolution System - one control that adjusts nearly 40 parameters simultaneously to optimize functions such as:

- Line density , Persistence, Number of lines of sight (SonoCT)…

R1 is optimized for maximum image quality

RS provides the best overall choice of system settings

S1 is optimized to improve speed

2D

R1 is optimized for color resolution

P1 is optimized for color sensitivity

Color

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AGC (Adaptive Gain Compensation)

AGC works continuously to correct for localized attenuation and enhancement variations not accounted for by Time Gain Compensation (TGC). AGC does not control overall gain or compression. AGC is hardware controlled and there is no effect to frame rate when activated.

While AGC is activated all other controls (TGC, gain, etc.) will respond normally.

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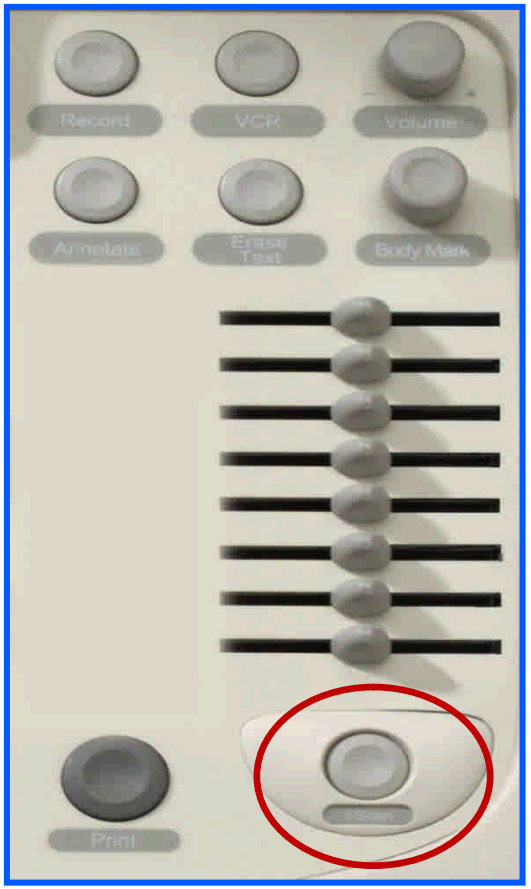
iSCAN

- Uses system intelligence to automatically adjust:
  - TGC based on tissue attenuation
  - Receiver gain based on overall tissue brightness
  - Re-map compression curve based on range of detectable tissue signals
  - Doppler gain based on Doppler signal strength
  - Doppler PRF based on maximum detectable velocity
  - Doppler Baseline based on forward/reverse flow components



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How does AGC differ from iSCAN?

iSCAN is an automated image optimization process using user-available controls (gain, TGC, compression). iSCAN optimizes the image each time the Iscan button is pressed. The purpose of iSCAN is global image optimization.

AGC is a signal processing technique that dynamically adjusts the gain of every sample in real time. AGC runs continuously when activated. The purpose of AGC is dynamic correction of localized gain artifacts.

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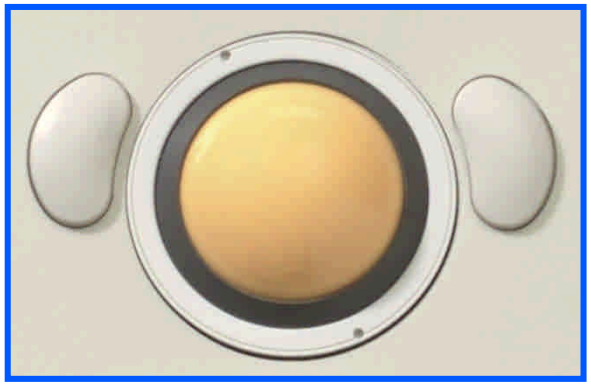
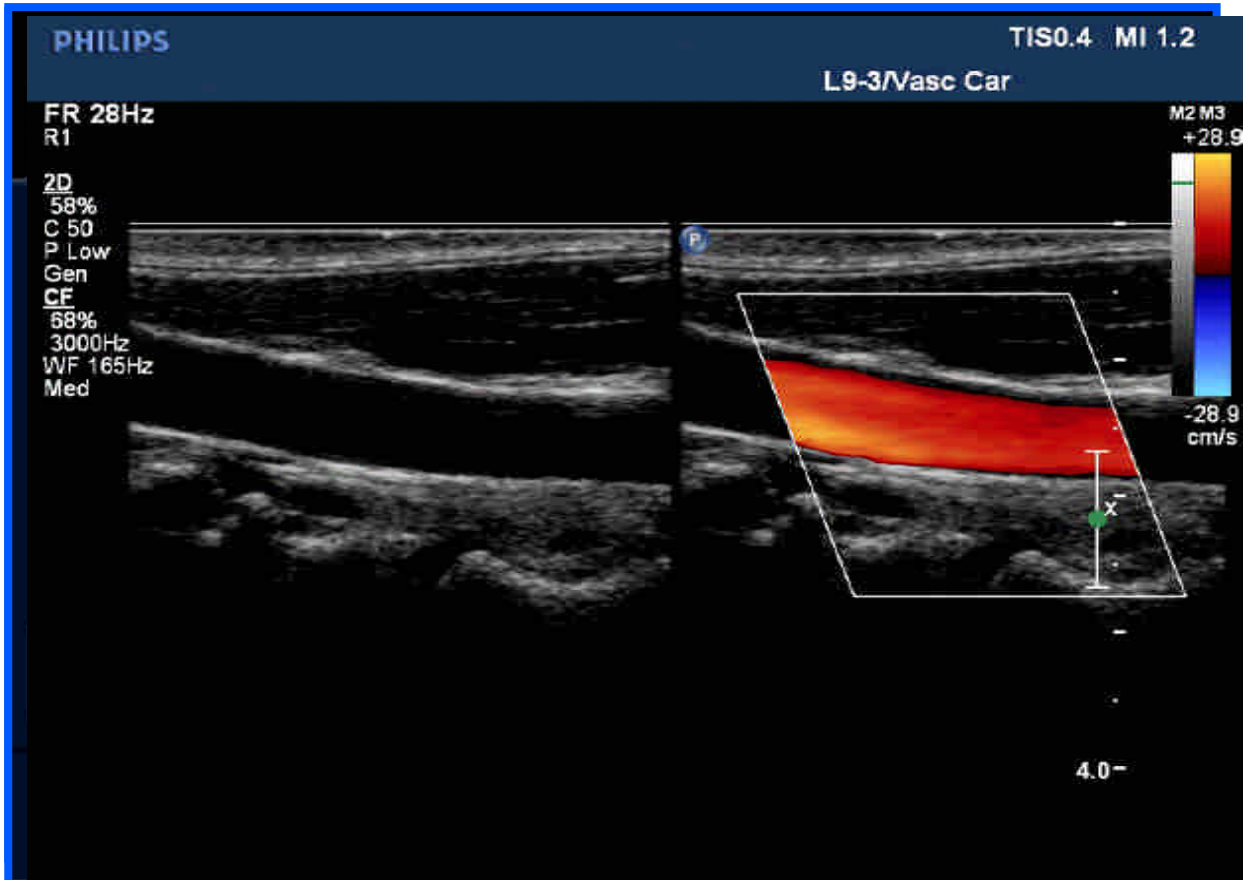
Imaging Modes

Color
- Color box position / size
- Gain
- Scale
- Invert
- Flow Opt:
  Low / Med / High
- Color compare
  * What are the benefits?





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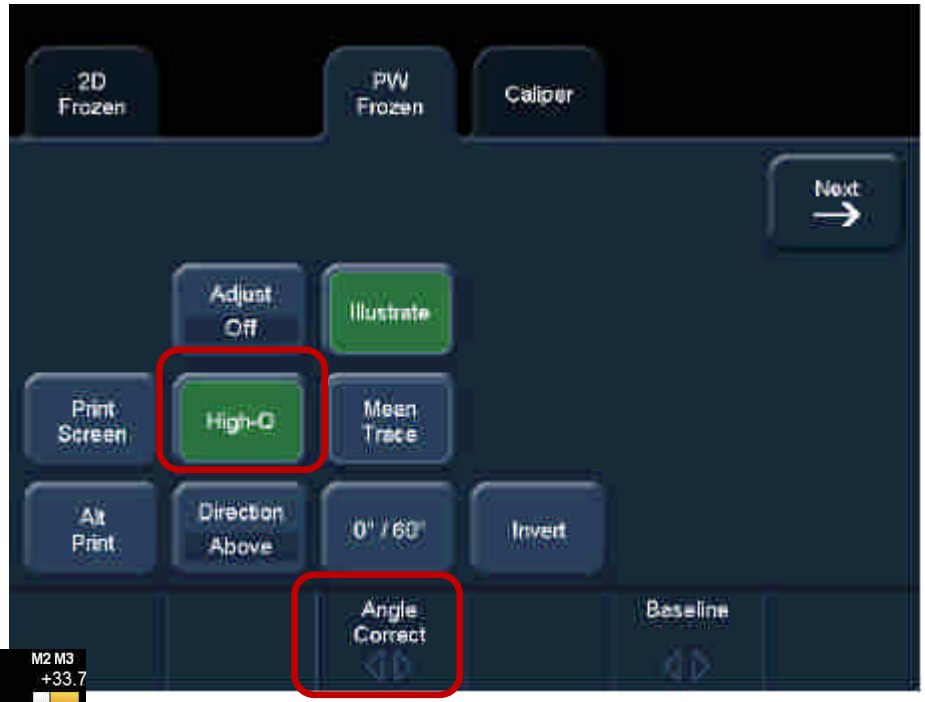
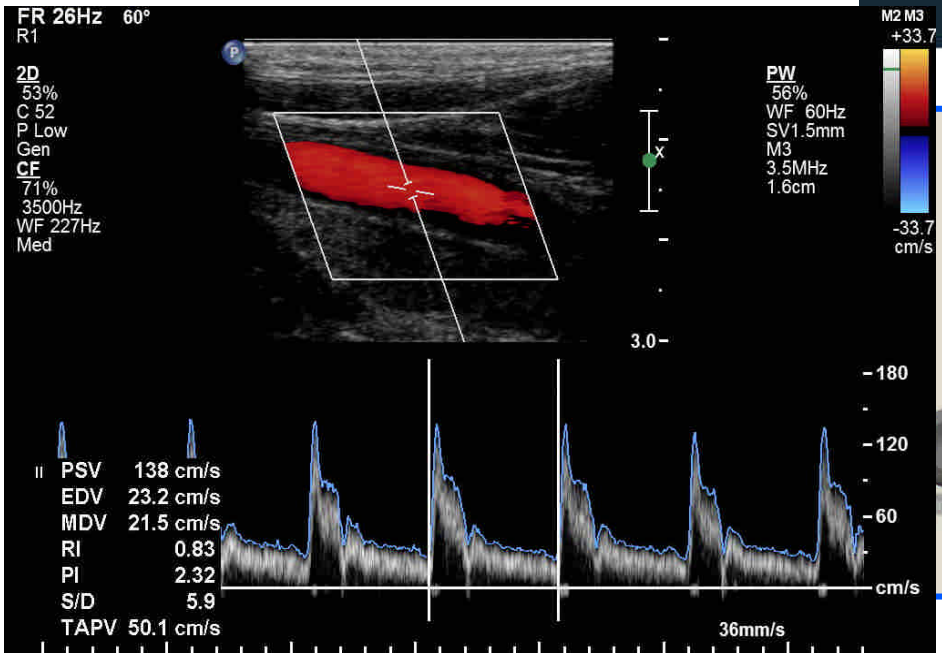
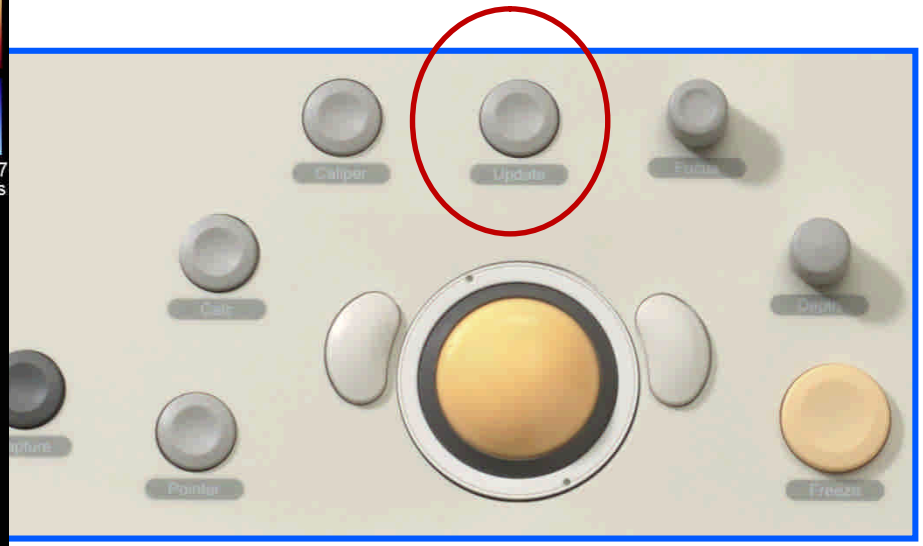
Imaging Modes

PW

選定好位置後, 調整SV 角度,
按 “Update” , “High-Q”







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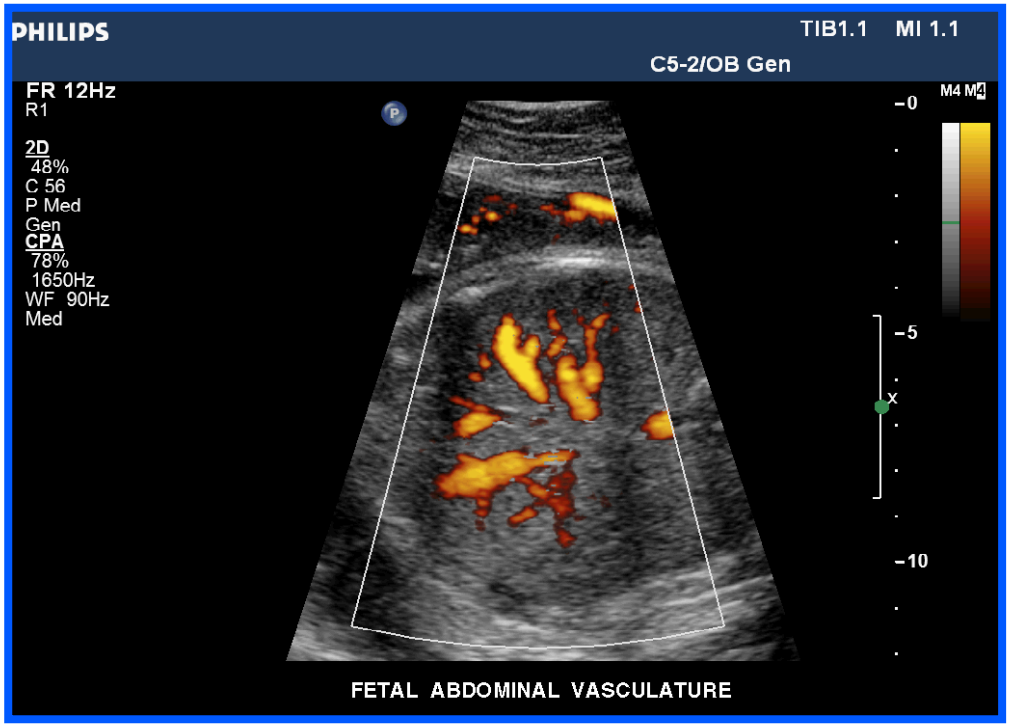
Imaging Modes

CPA (Color Power Angio)

- an amplitude mode color display showing the intensity of Doppler shifts. CPA is useful for showing slow or diminished flow due to the fact that it is less angle dependent than color flow imaging.



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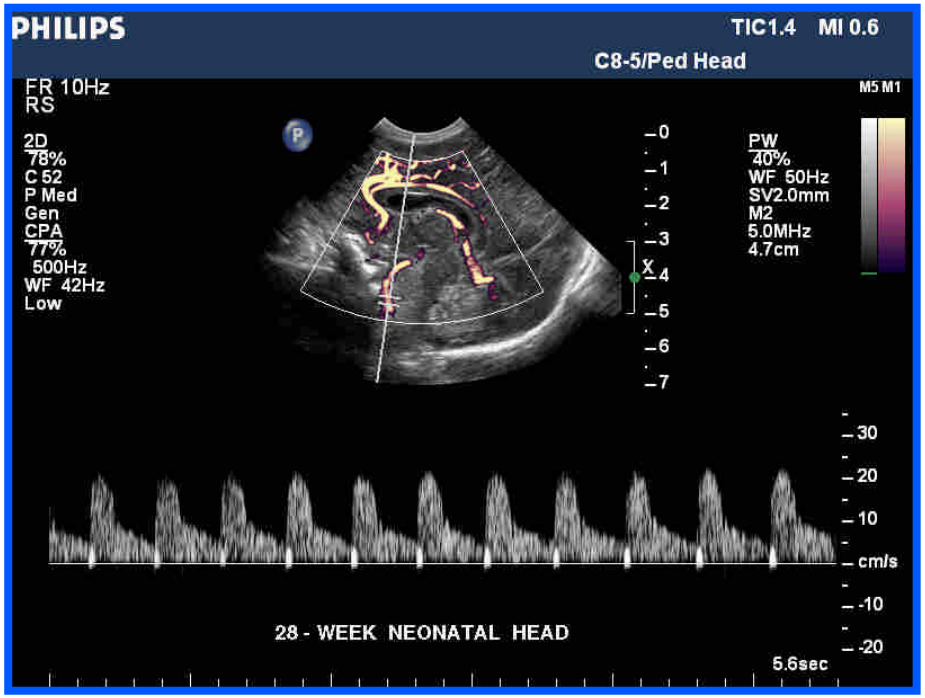
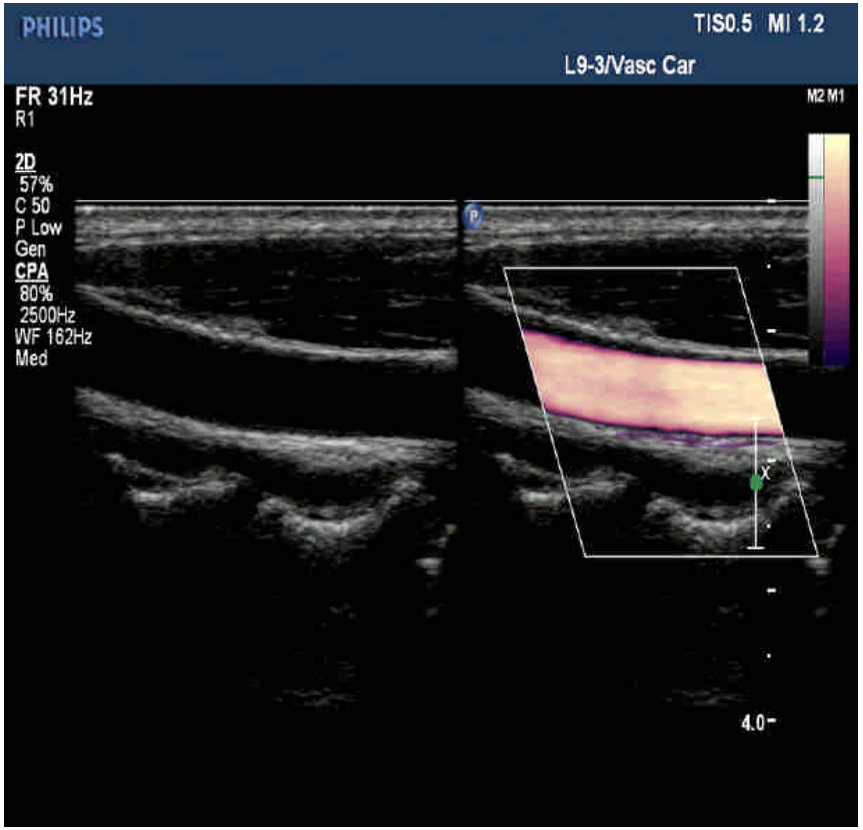
Imaging Modes

CPA and Doppler



CPA compare



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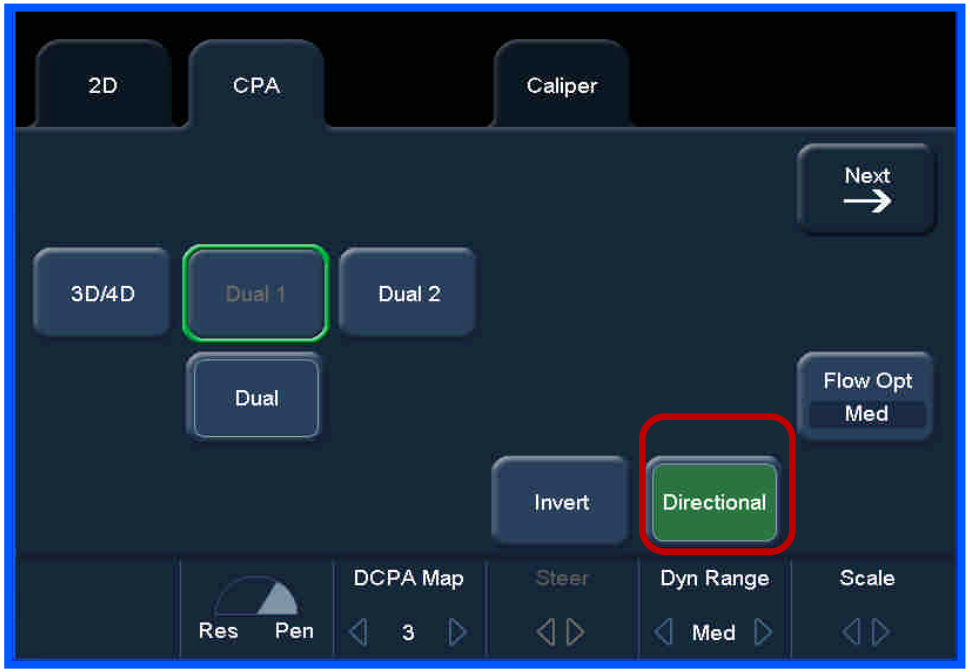
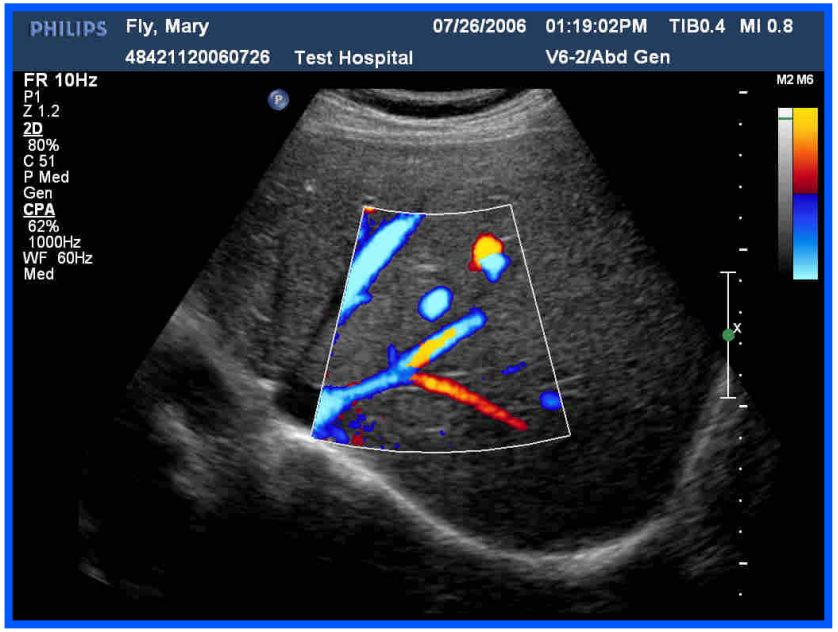
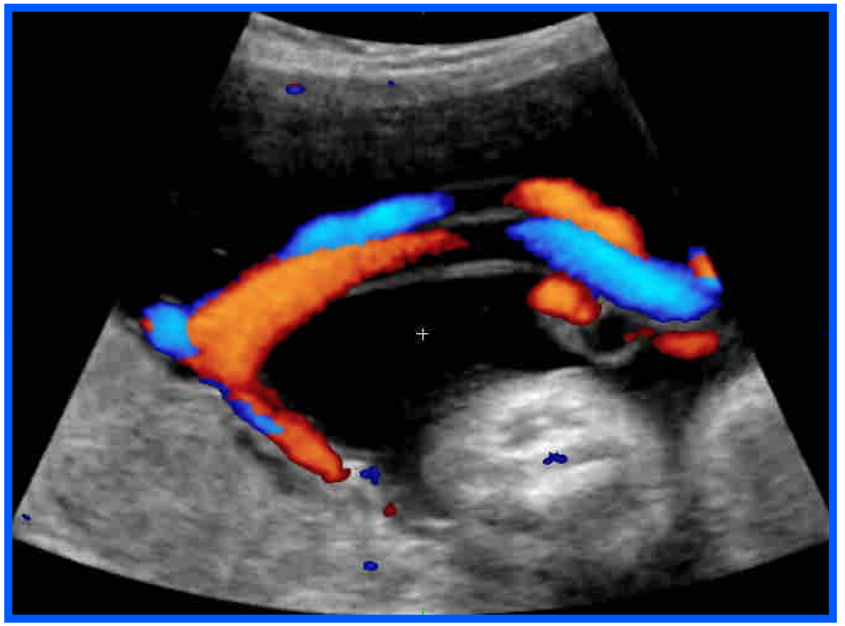
Imaging Modes

Directional CPA







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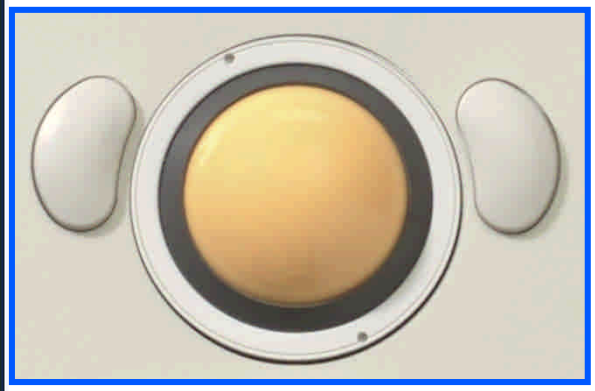
Caliper and Calculation

The following measurements and calculations are performed from the Caliper tab of the touch screen. Some selections are only available after Freeze.



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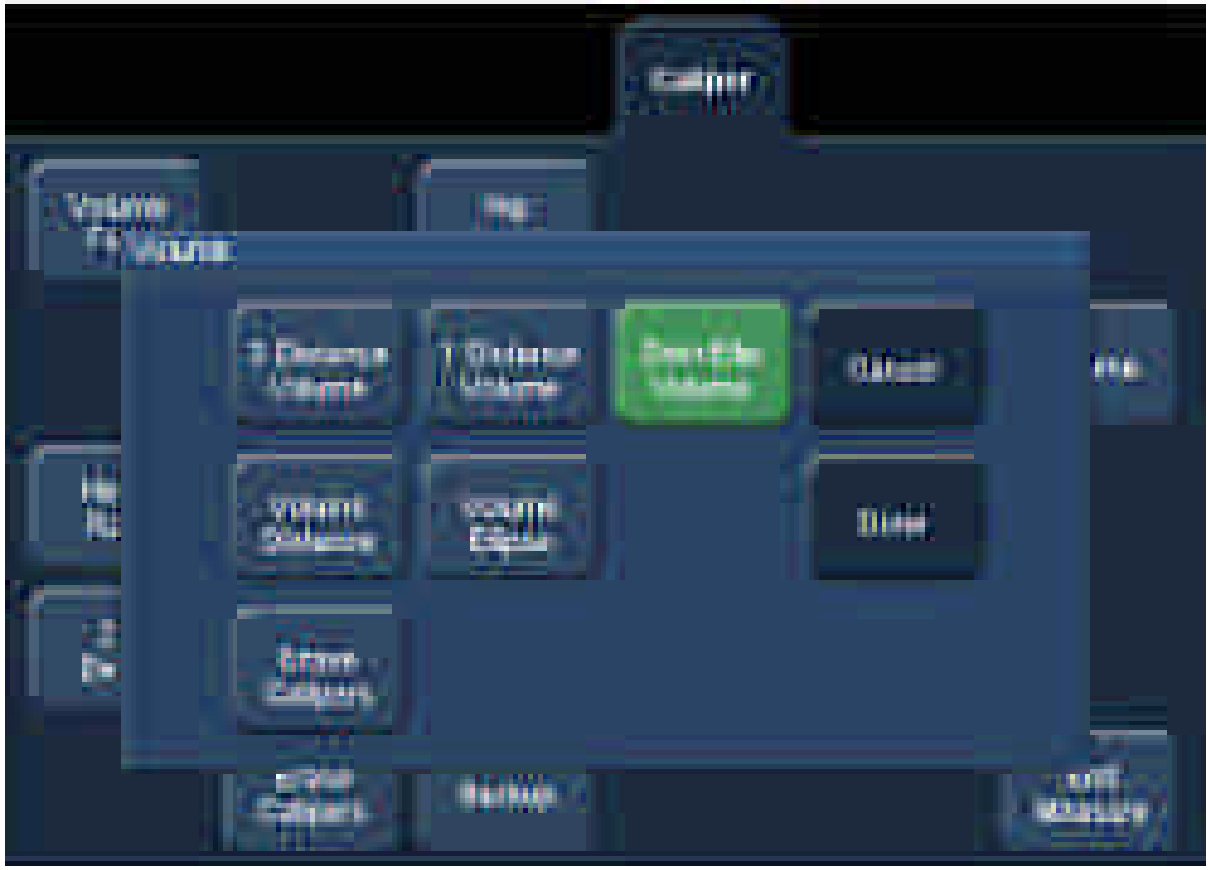
Volume



- 3 Distance Vol
- 1 Distance Vol
- Dist+ Ellip Vol
- Vol Distance
- Volume Ellipse

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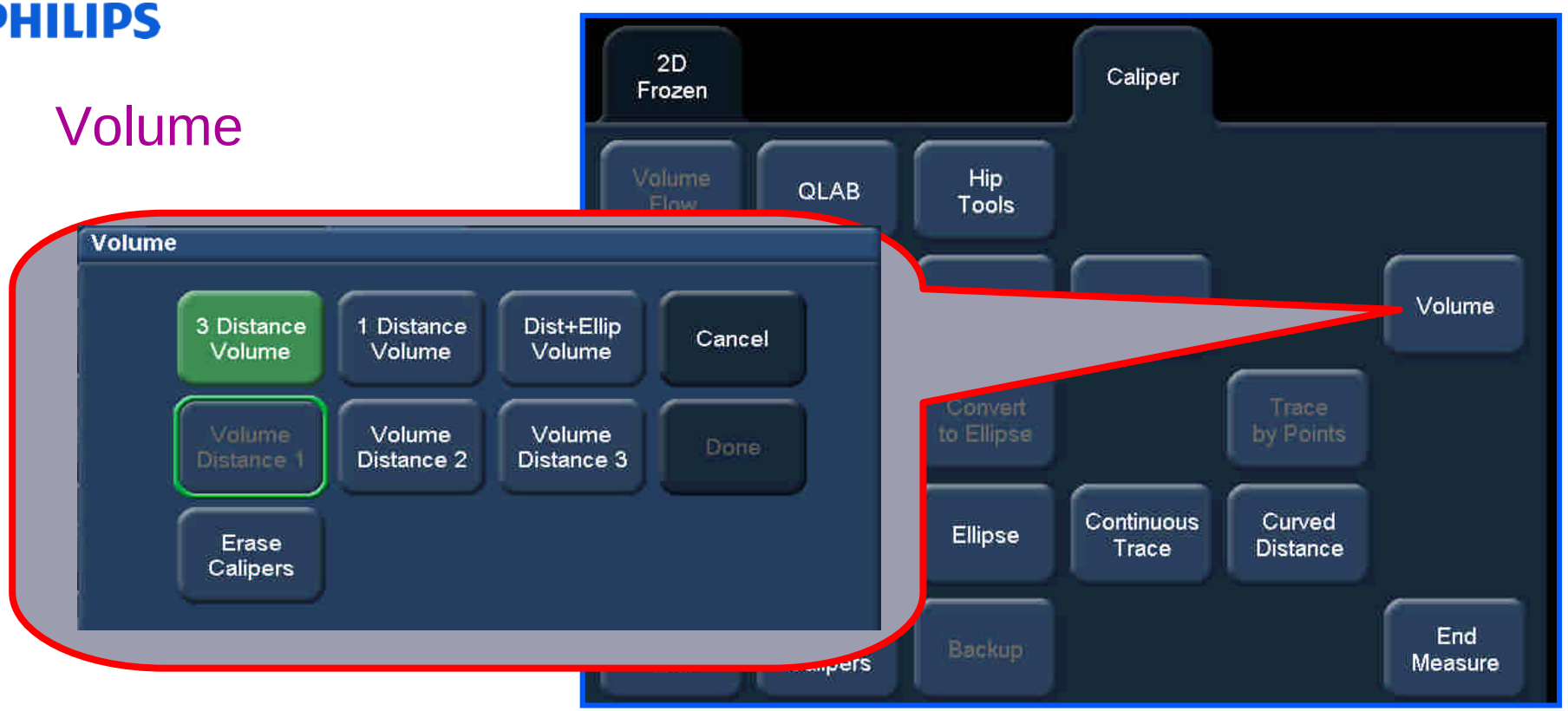
Volume



A. 3 Distance Volume

1) 於2D 測量 Volume Distance 1, Volume Distance 2

2) 另取一正交90度之平面測量Volume Distance 3 , Done ,即可得Volume。

***長 X 寬 X 高 X 0.523 = Volume**

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B. l Distance Volume

1) 於2D 測量 1 Distance Volume ,即可得 volume。

* 此係利用三個相等的距離算出

C. 1 Distance and 1 Ellipse Volume

1) 於2D 測量 一 Volume Distance

2) 另取一正交90度之平面測量 Volume Ellipse , 畫出 ellipse 測量(即一橢圓形),即可得 volume。

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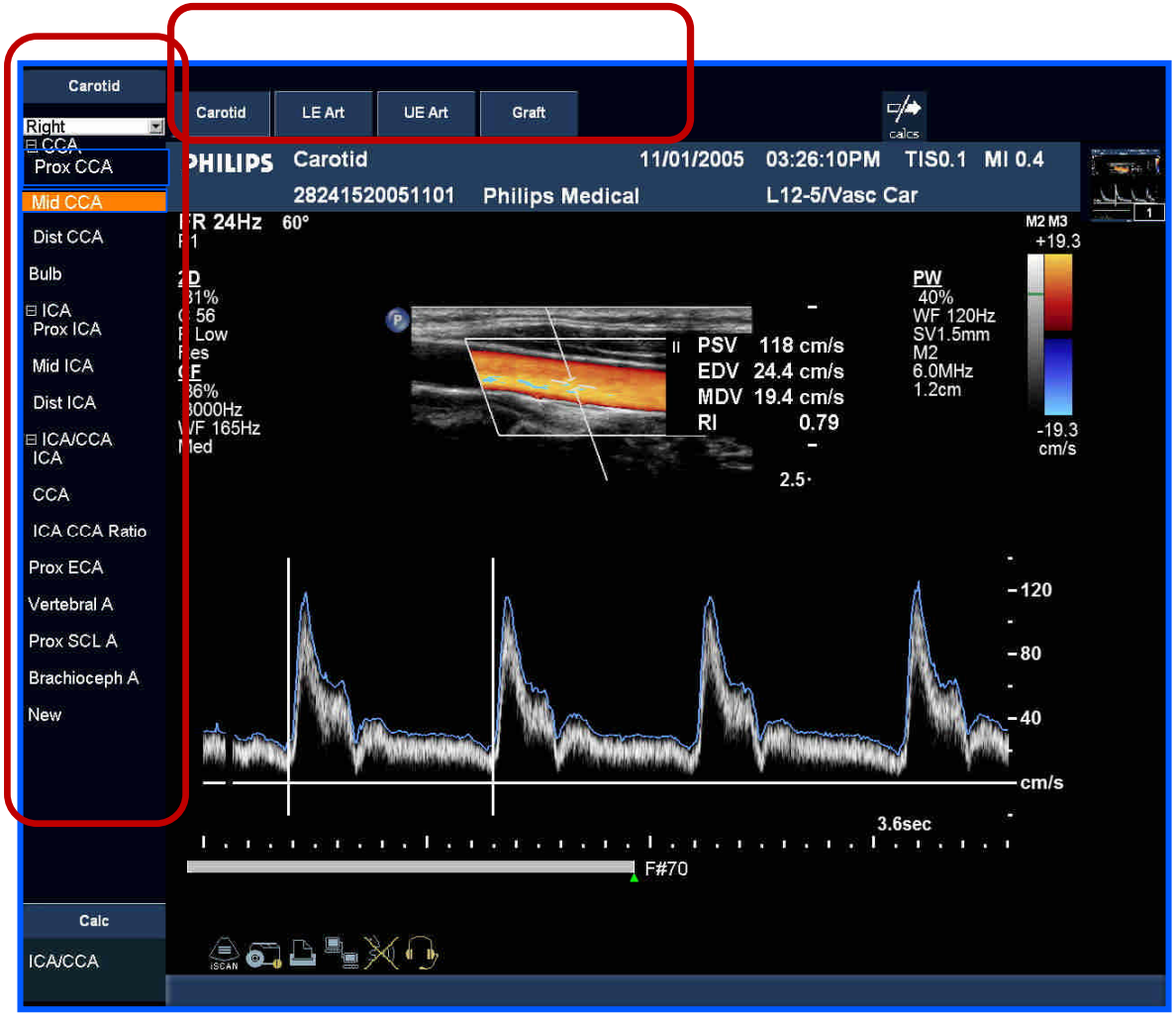
Caliper and Calculation

Press the Calc button and select the desired label



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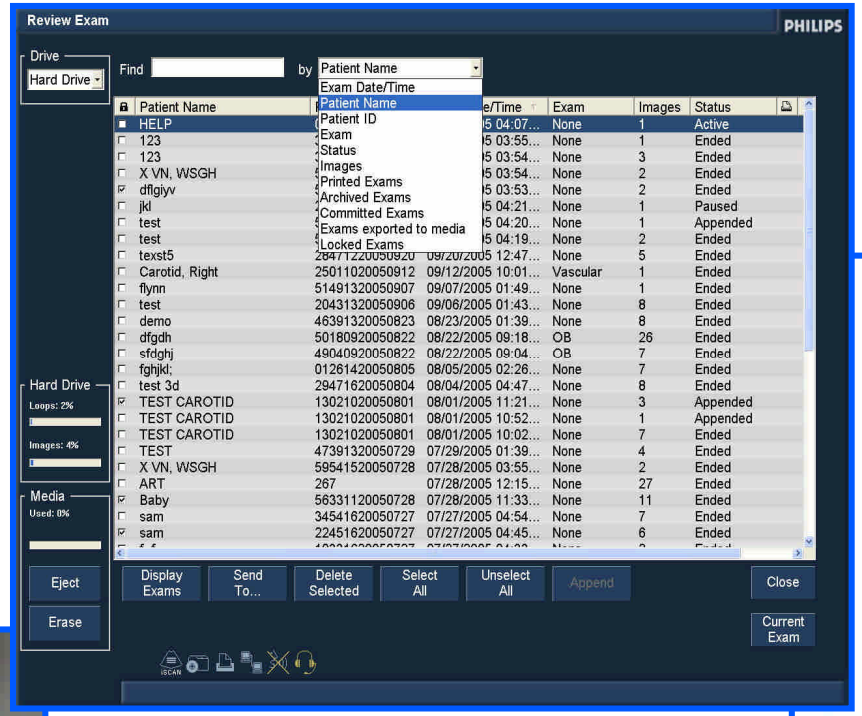
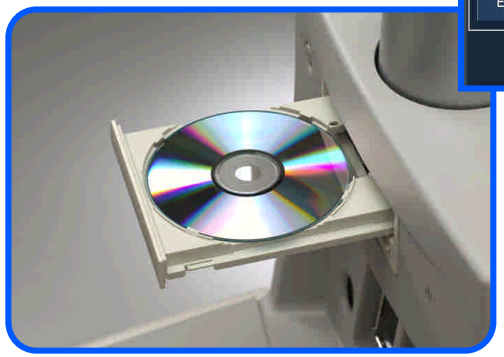
Review and Image management





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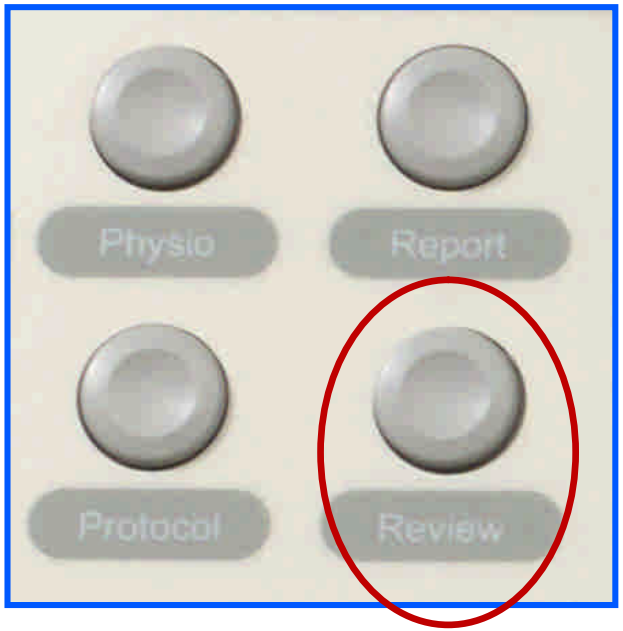
Review and Image management

Review

- Press Review
- Is exam in progress?
- System enters image review or patient directory



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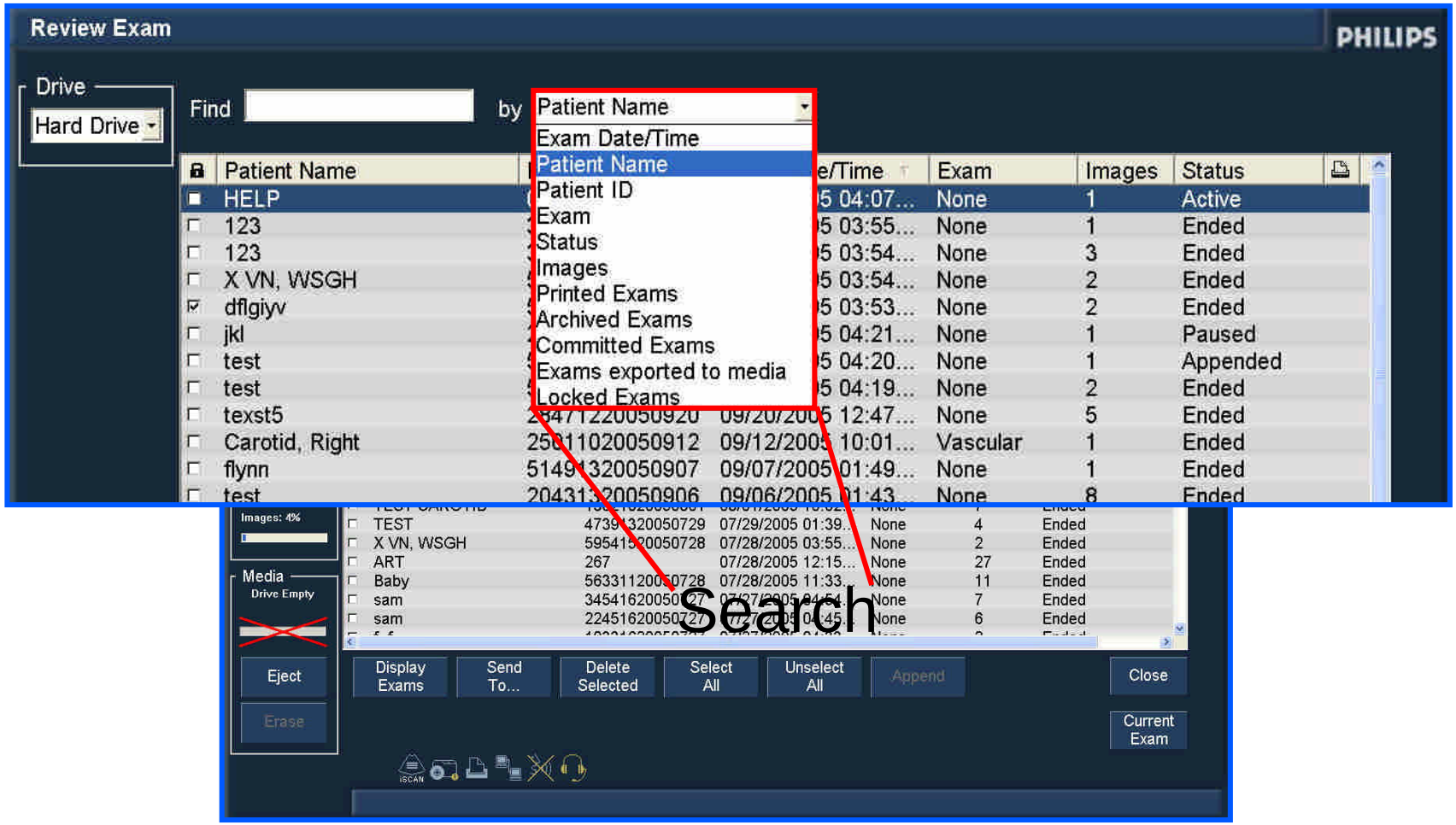
Review and Image management

Patient Directory - Search



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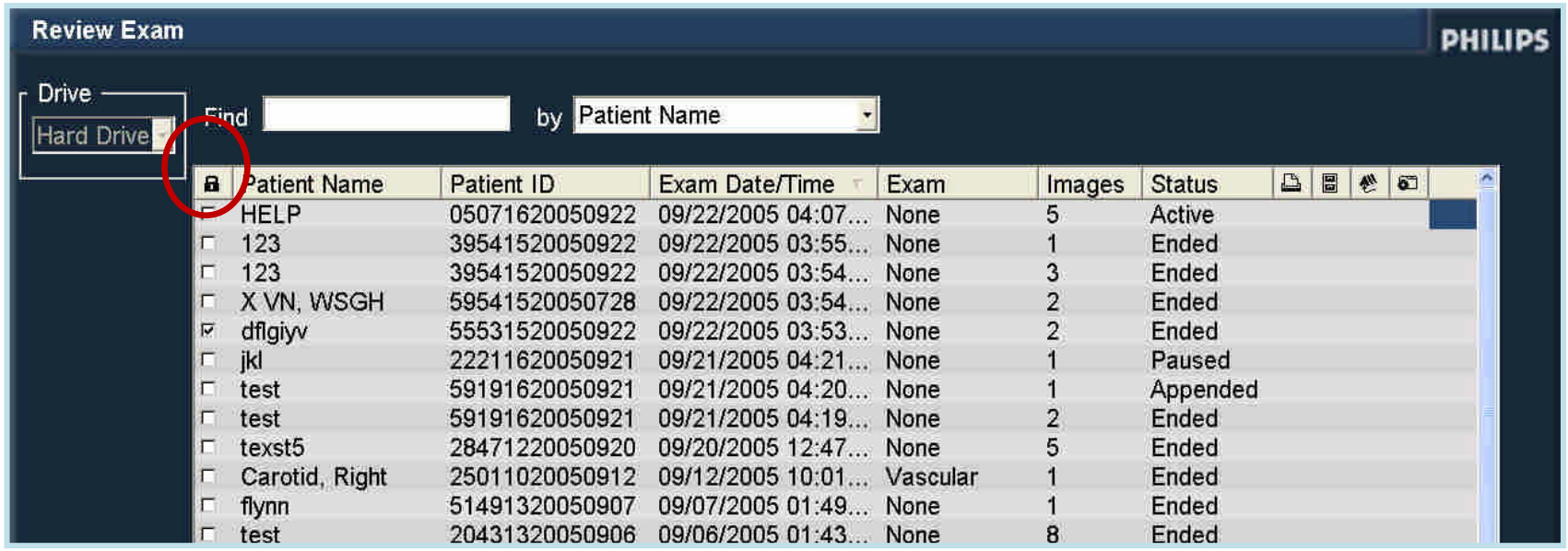
Review and Image management

Patient Directory – Lock Study



Patient Name	Patient ID	Exam Date/Time	Exam	Images	Status
HELP	05071620050922	09/22/2005 04:07...	None	5	Active
123	39541520050922	09/22/2005 03:55...	None	1	Ended
123	39541520050922	09/22/2005 03:54...	None	3	Ended
X VN, WSGH	59541520050728	09/22/2005 03:54...	None	2	Ended
dflgiyv	55531520050922	09/22/2005 03:53...	None	2	Ended
jkl	22211620050921	09/21/2005 04:21...	None	1	Paused
test	59191620050921	09/21/2005 04:20...	None	1	Appended
test	59191620050921	09/21/2005 04:19...	None	2	Ended
texst5	28471220050920	09/20/2005 12:47...	None	5	Ended
Carotid, Right	25011020050912	09/12/2005 10:01...	Vascular	1	Ended
flynn	51491320050907	09/07/2005 01:49...	None	1	Ended
test	20431320050906	09/06/2005 01:43...	None	8	Ended

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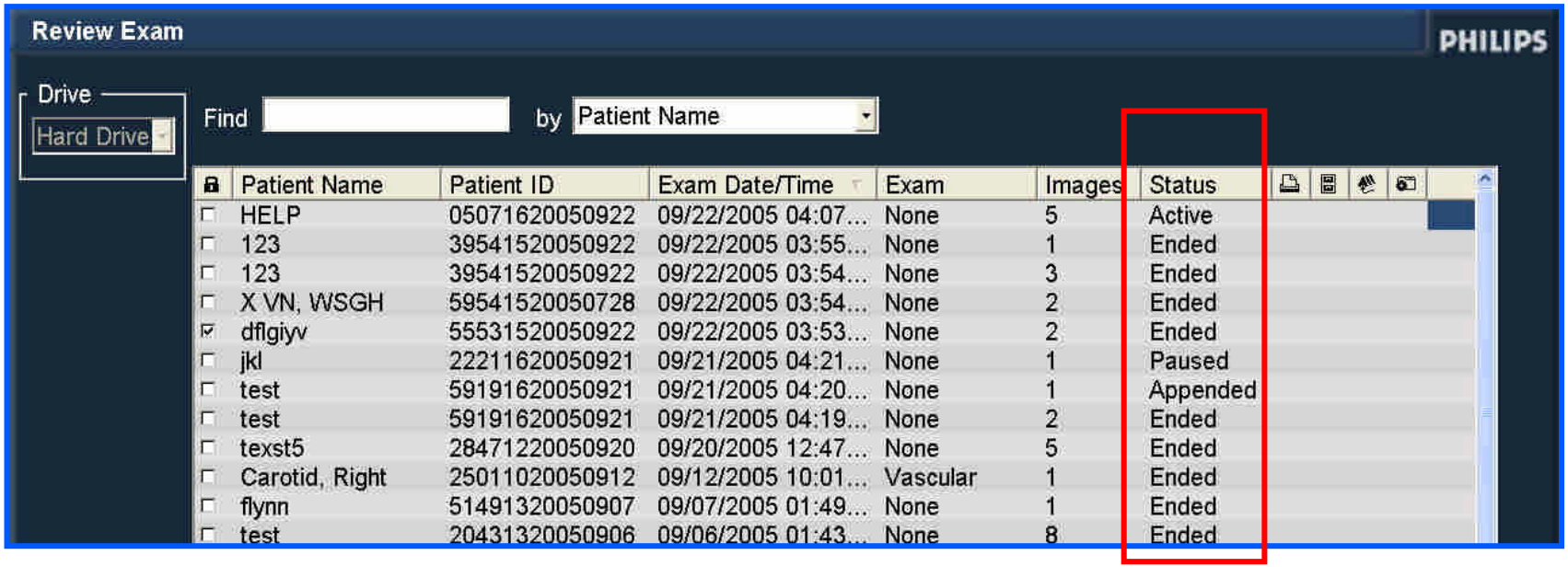
Review and Image Management

Patient Directory – Exam Status



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Review and Image Management

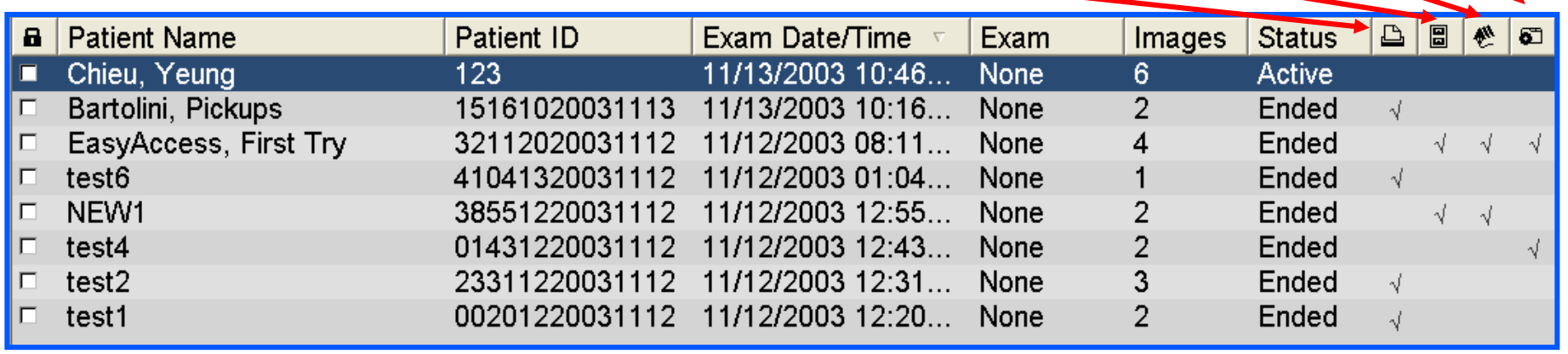
Patient Directory – Network Status

Print Status

Archive Status

Commit Status

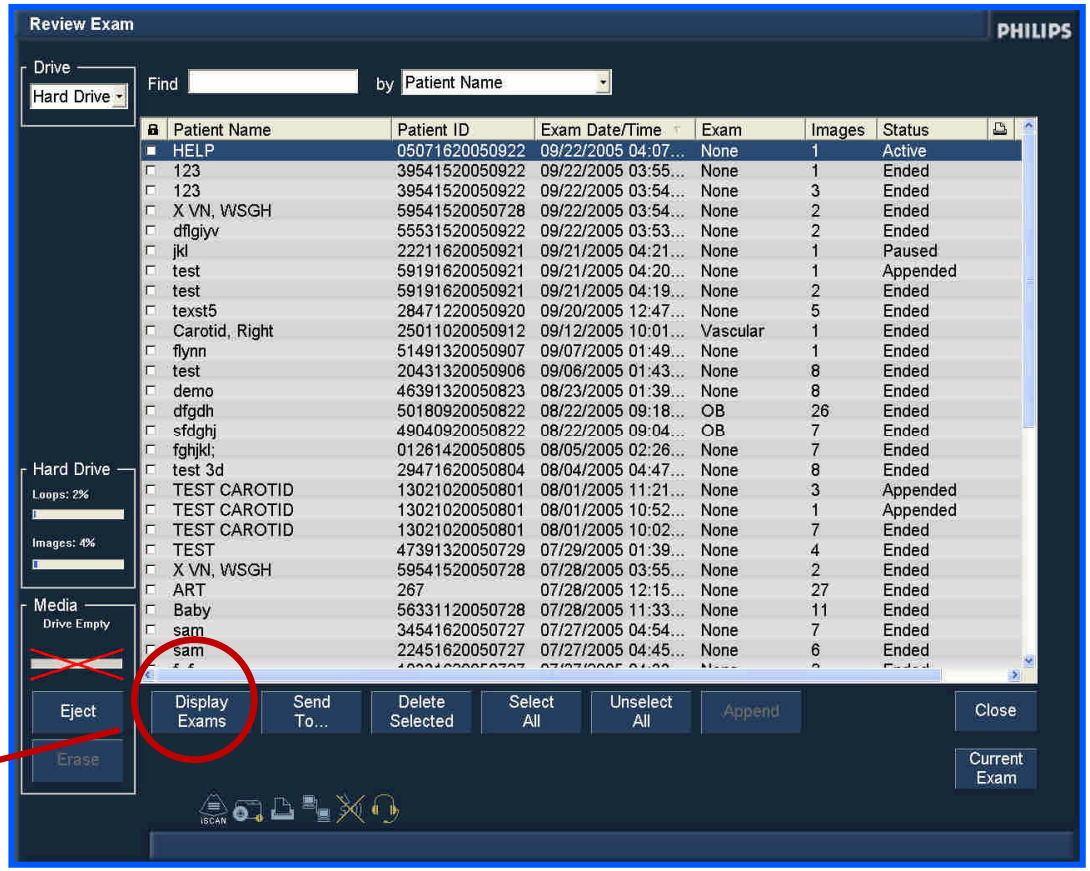
Export to DVD status



	Patient Name	Patient ID	Exam Date/Time	Exam	Images	Status				
☐	Chieu, Yeung	123	11/13/2003 10:46...	None	6	Active				
☐	Bartolini, Pickups	15161020031113	11/13/2003 10:16...	None	2	Ended	√			
☐	EasyAccess, First Try	32112020031112	11/12/2003 08:11...	None	4	Ended		√	√	√
☐	test6	41041320031112	11/12/2003 01:04...	None	1	Ended	√			
☐	NEW1	38551220031112	11/12/2003 12:55...	None	2	Ended		√	√	
☐	test4	01431220031112	11/12/2003 12:43...	None	2	Ended				√
☐	test2	23311220031112	11/12/2003 12:31...	None	3	Ended	√			
☐	test1	00201220031112	11/12/2003 12:20...	None	2	Ended	√			

Review and Image Management

Image Review



Display Exam

PHILIPS

Review and Image Management

Image Review Screen

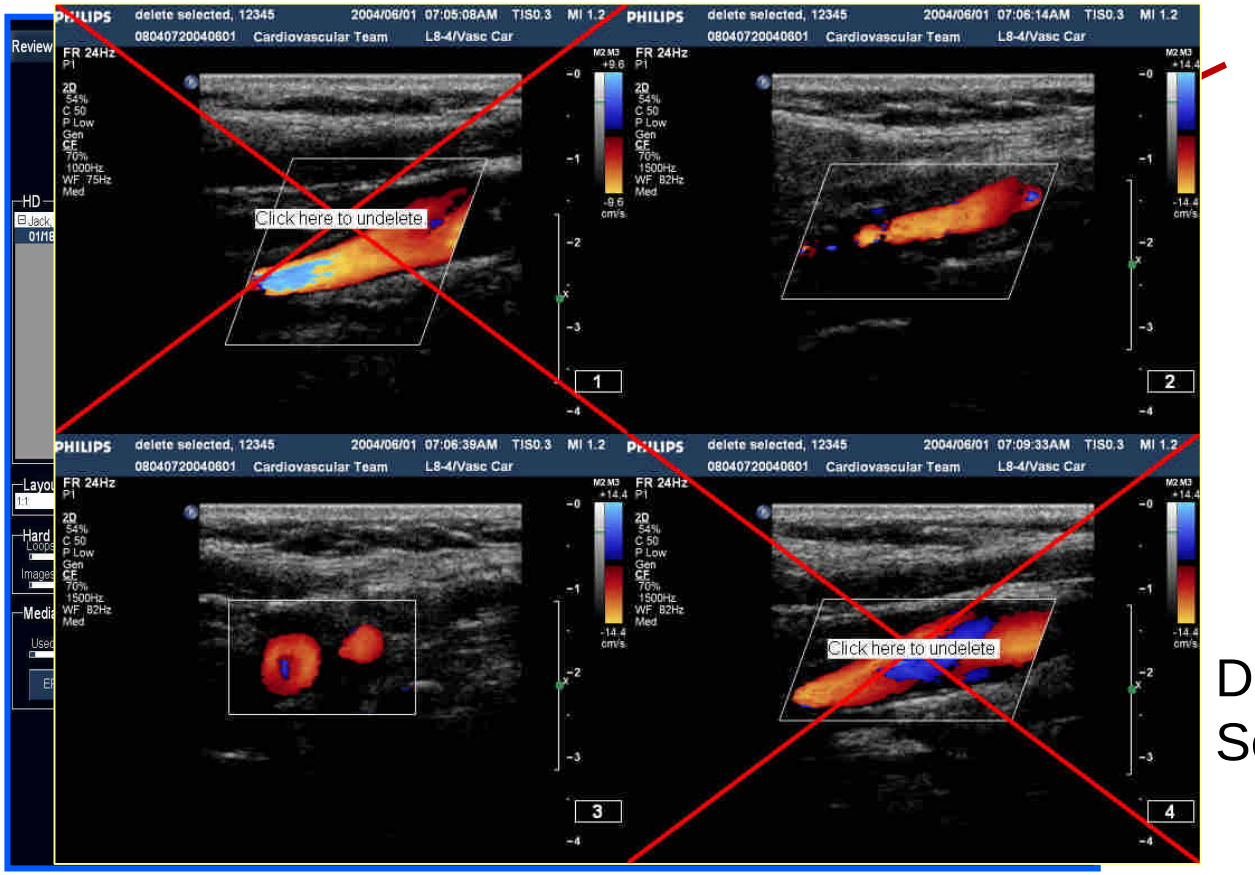
Selected patient exams

Thumbnail region

PHILIPS

Review and Image Management

Delete Image

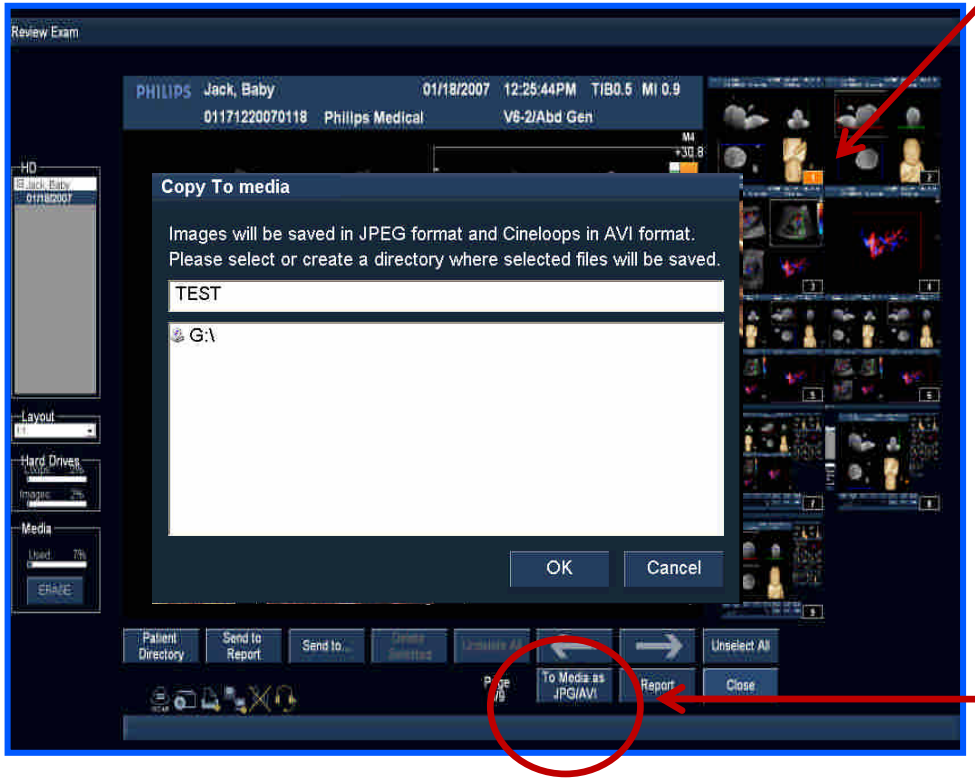


Delete Selected

PHILIPS

Review and Image Management

Export Media – JPG/AVI



To Media as JPG/AVI

PHILIPS

Thank you for your attention