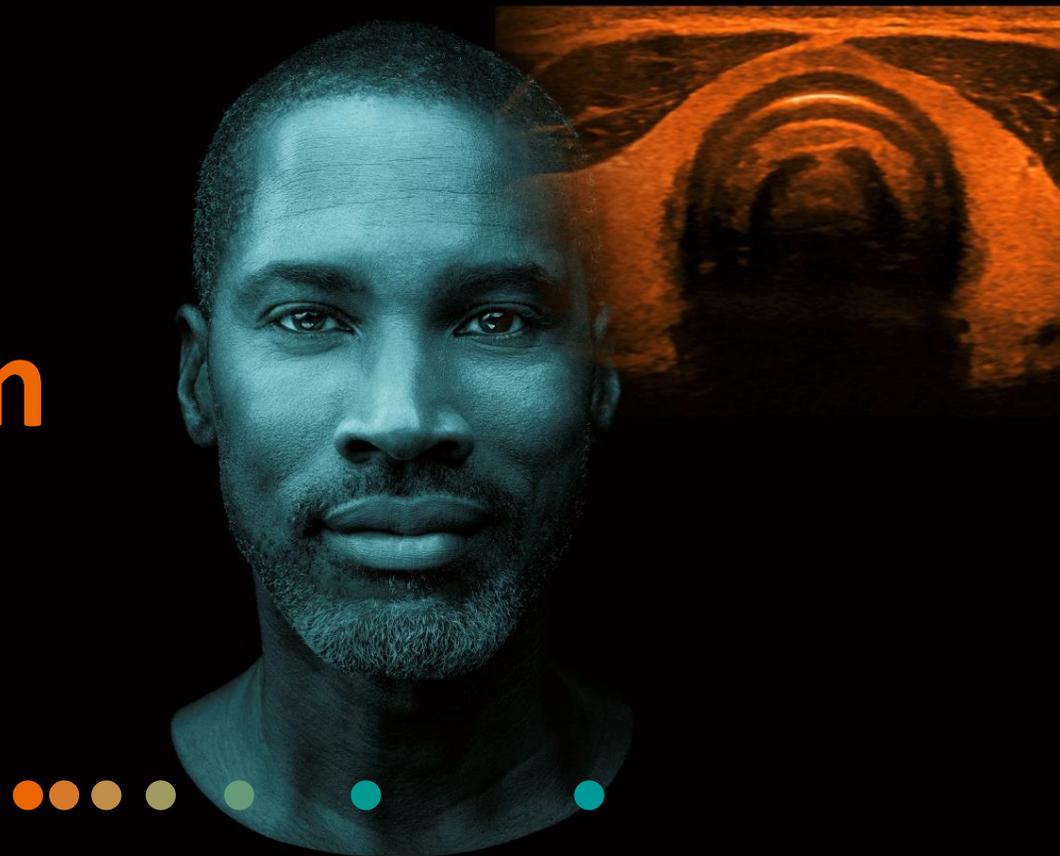


ACUSON Sequoia Ultrasound System

Major Modes
Release 3.5 (VB30)



Objectives

- **Review B-mode and M-mode controls**
- Describe B-mode and M-mode optimization features
- Explain display modes
- Review Doppler controls
- Describe Doppler optimization features



Mode imaging parameters

Selection
Screen

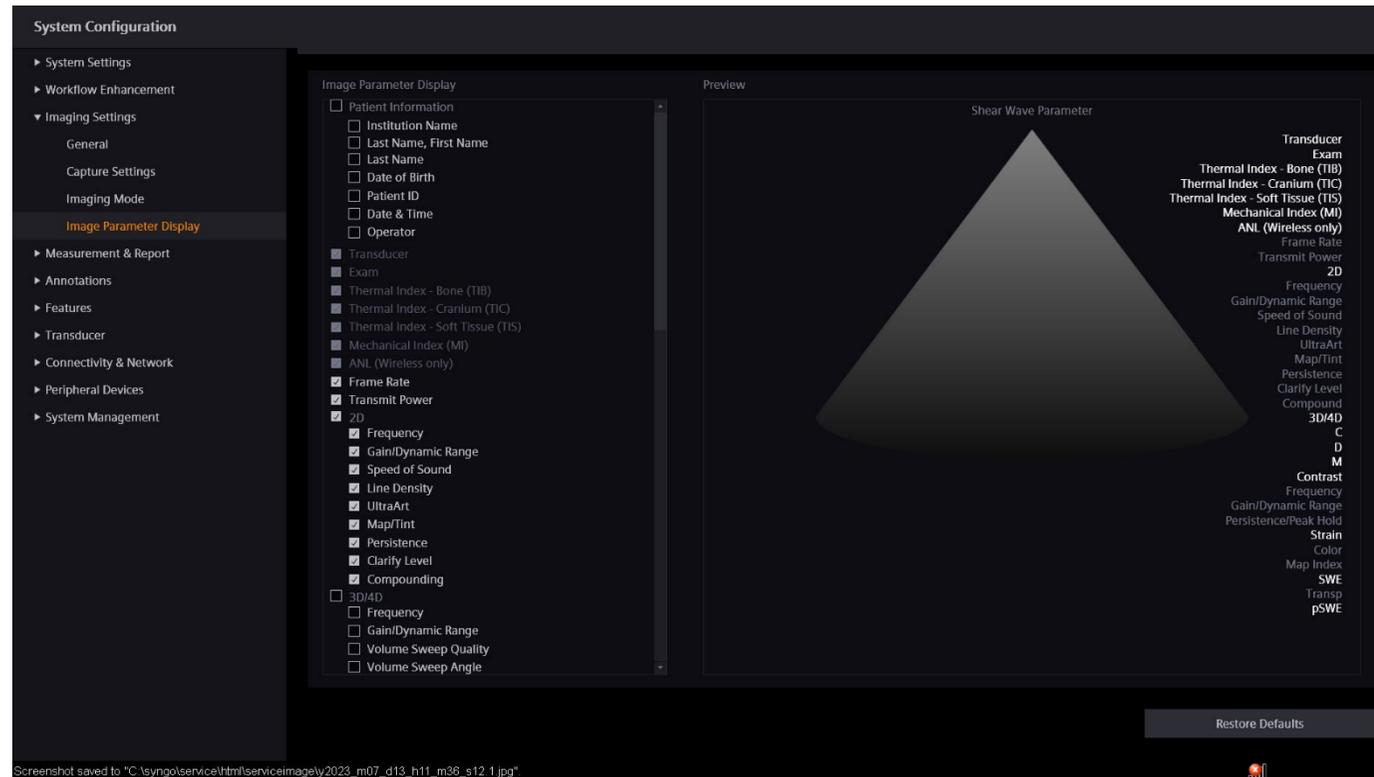
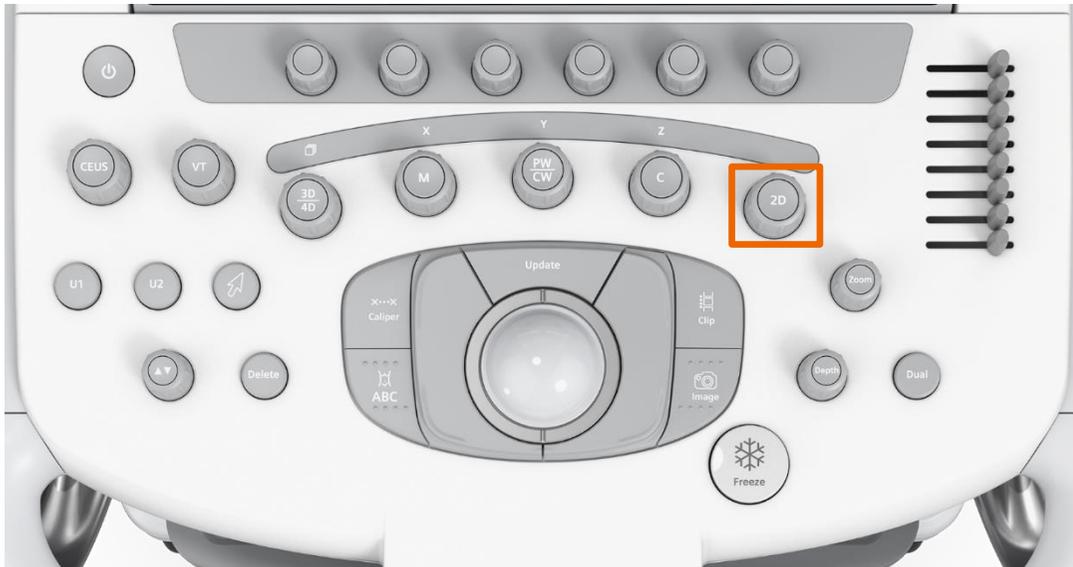
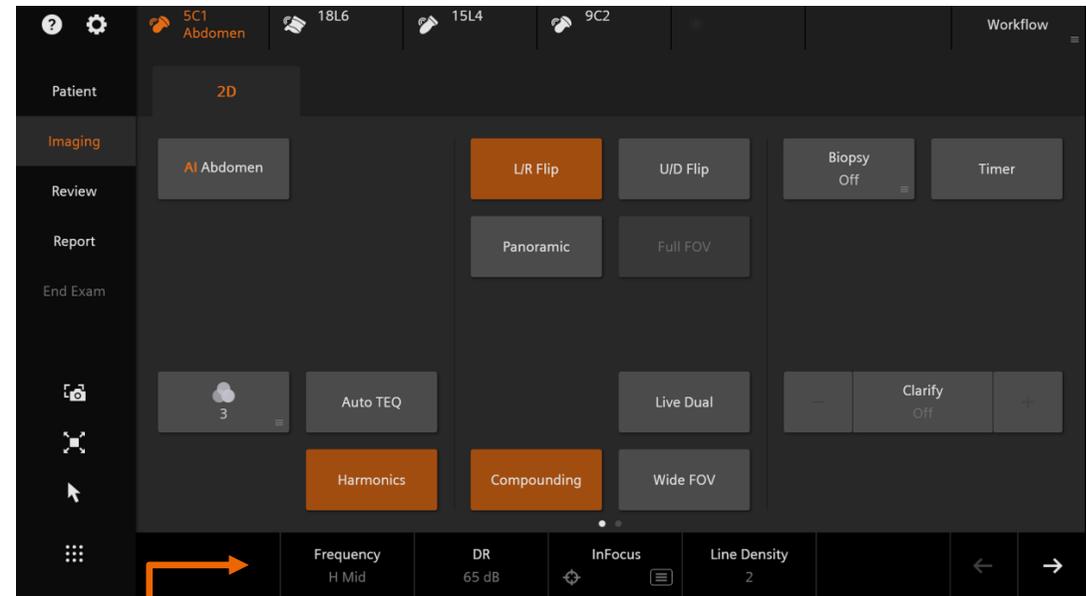


Image Screen
Display

Control Panel



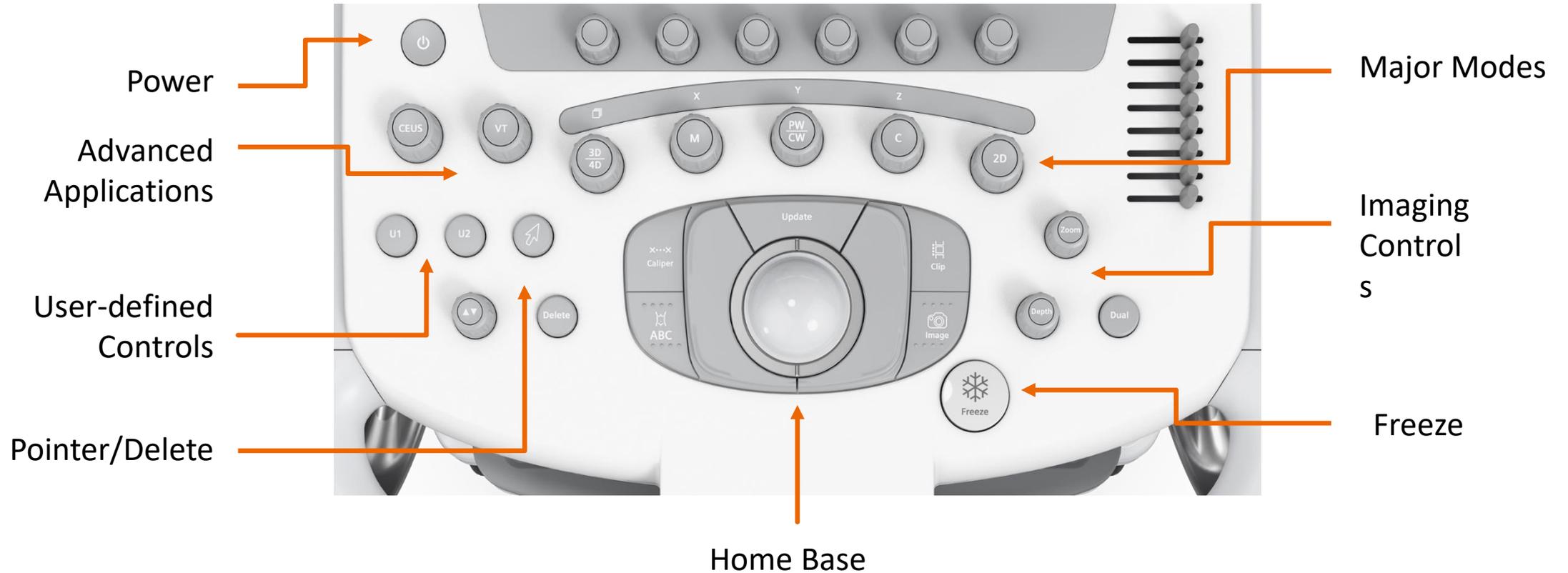
Touch Screen



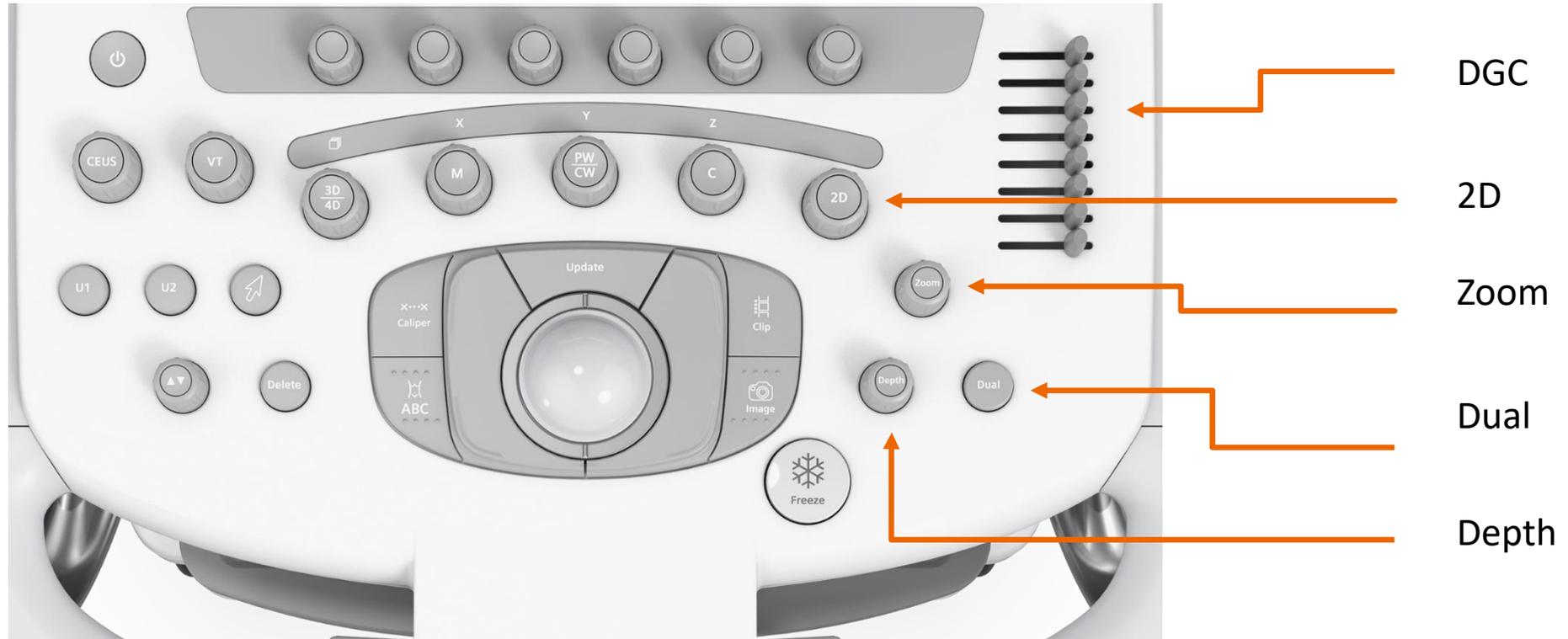
Soft Keys



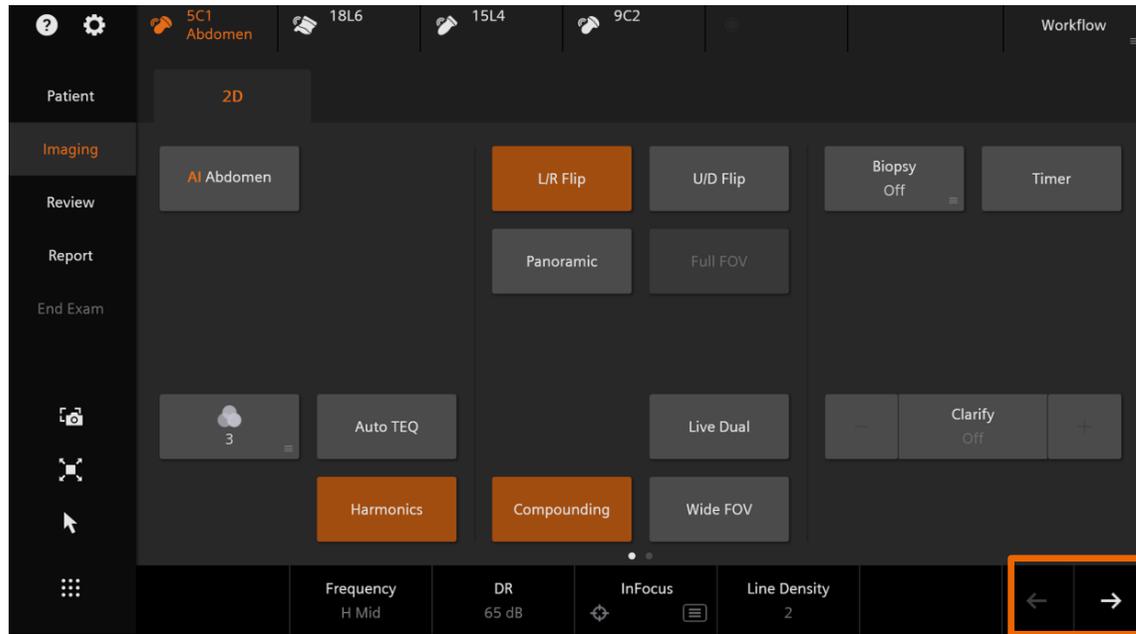
Soft key rotary controls



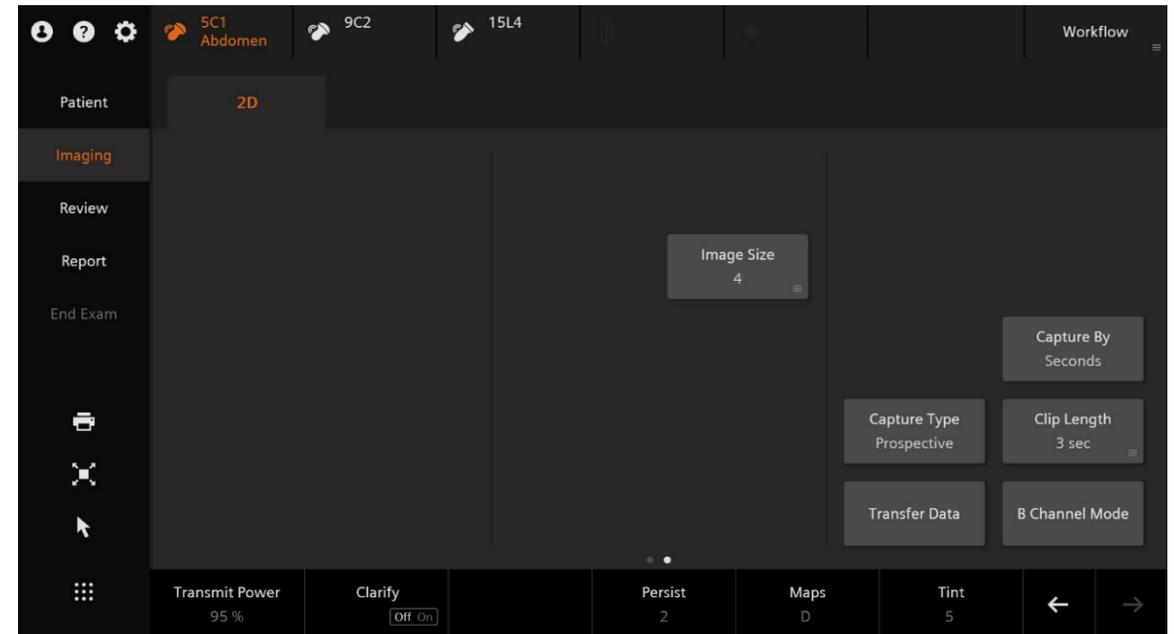
B-mode controls on the Control Panel



B-mode controls on the Touch Screen

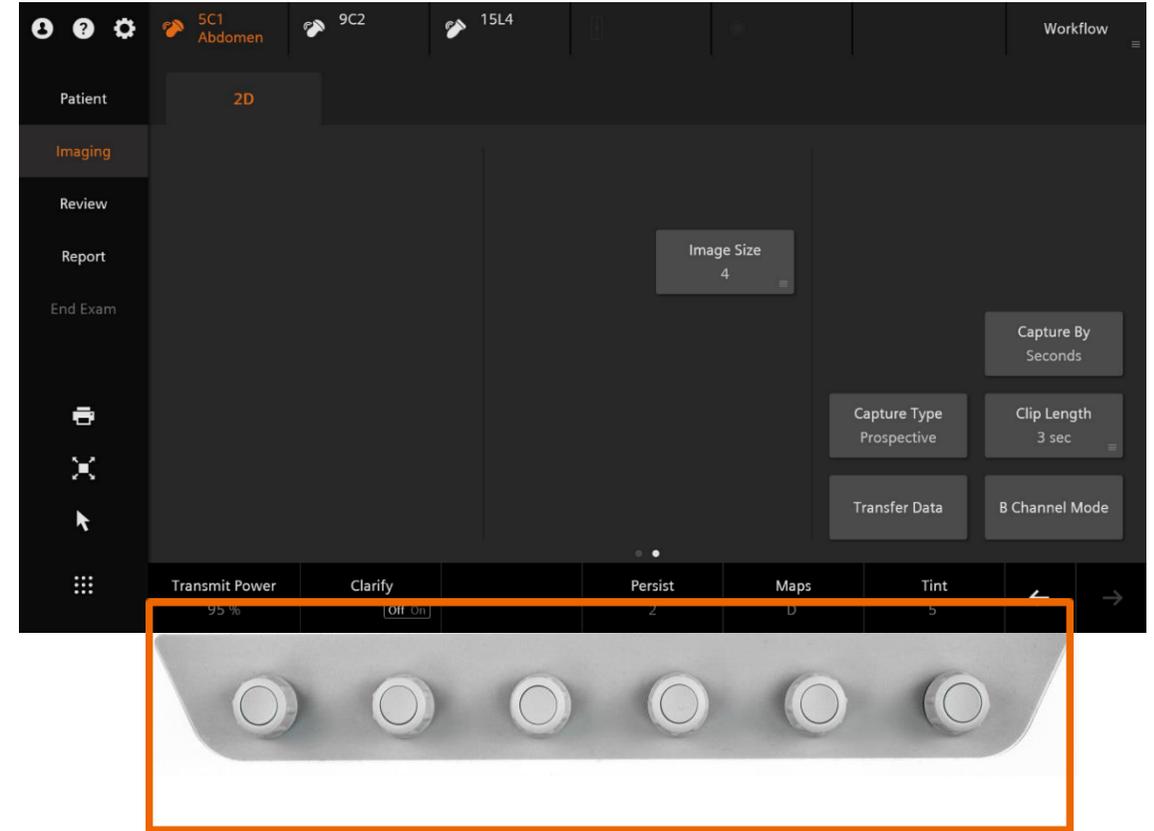
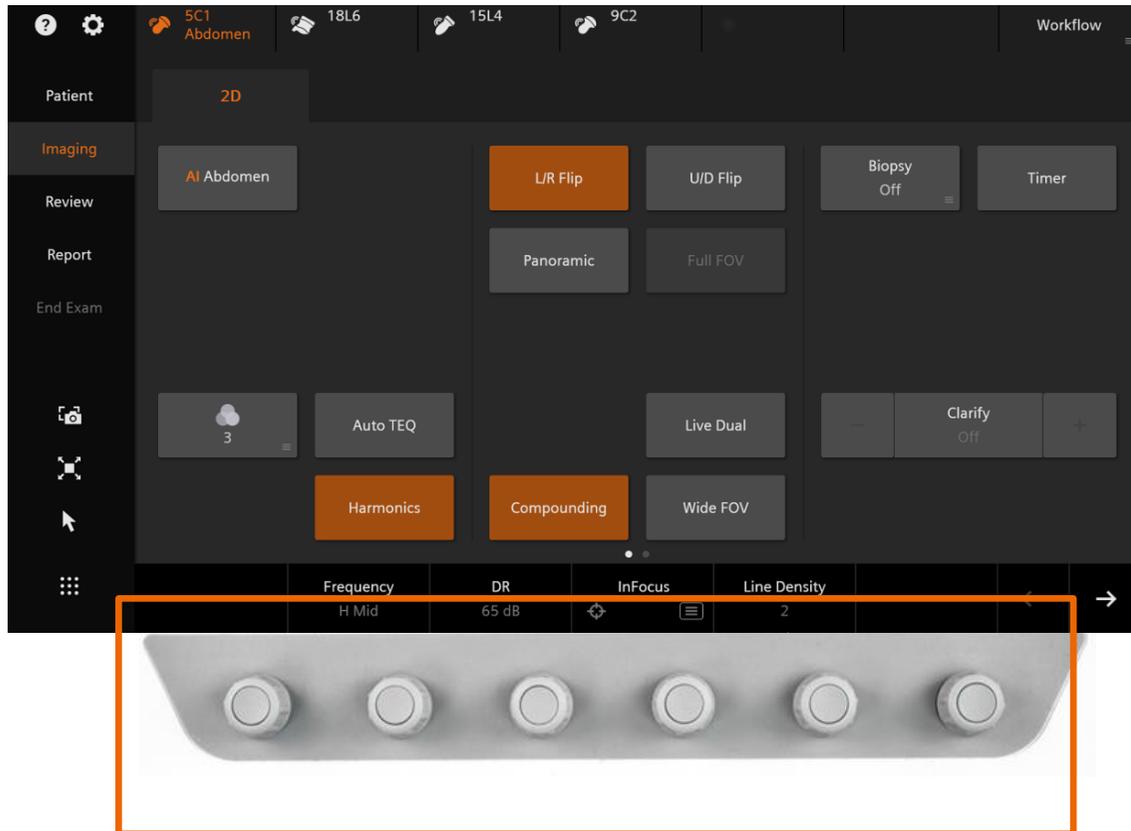


Page One

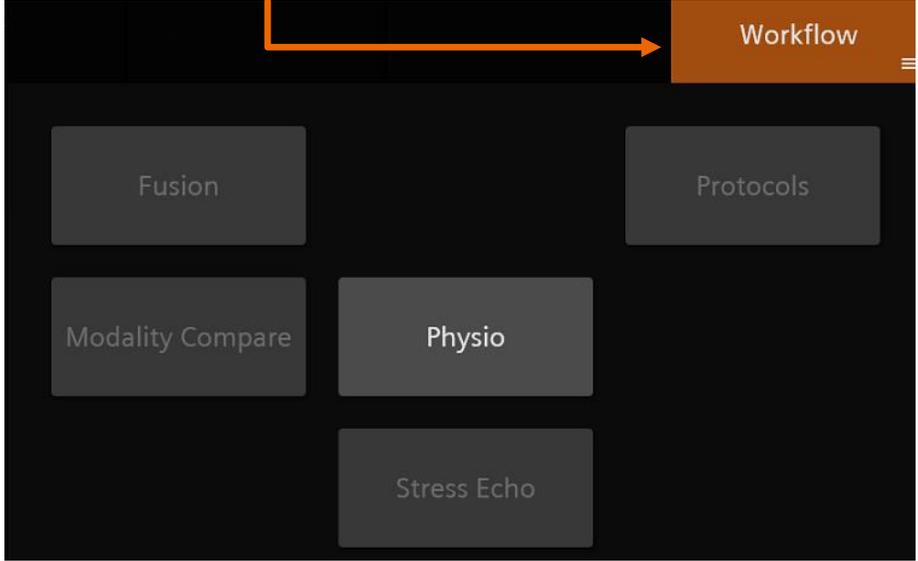
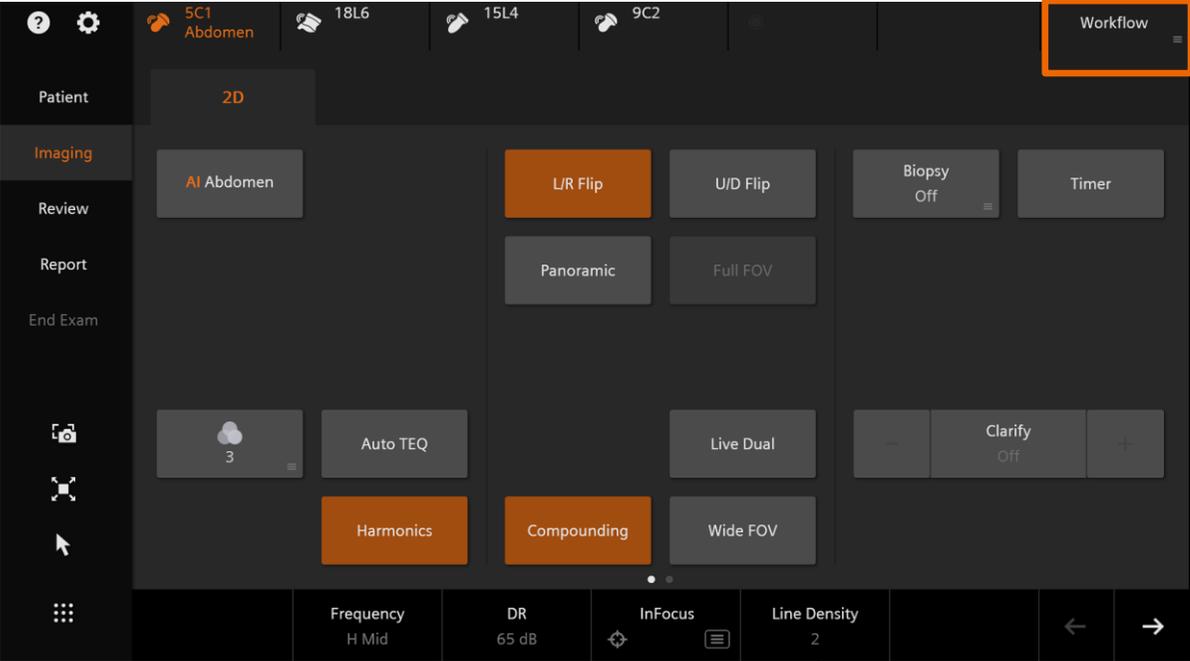


Page Two

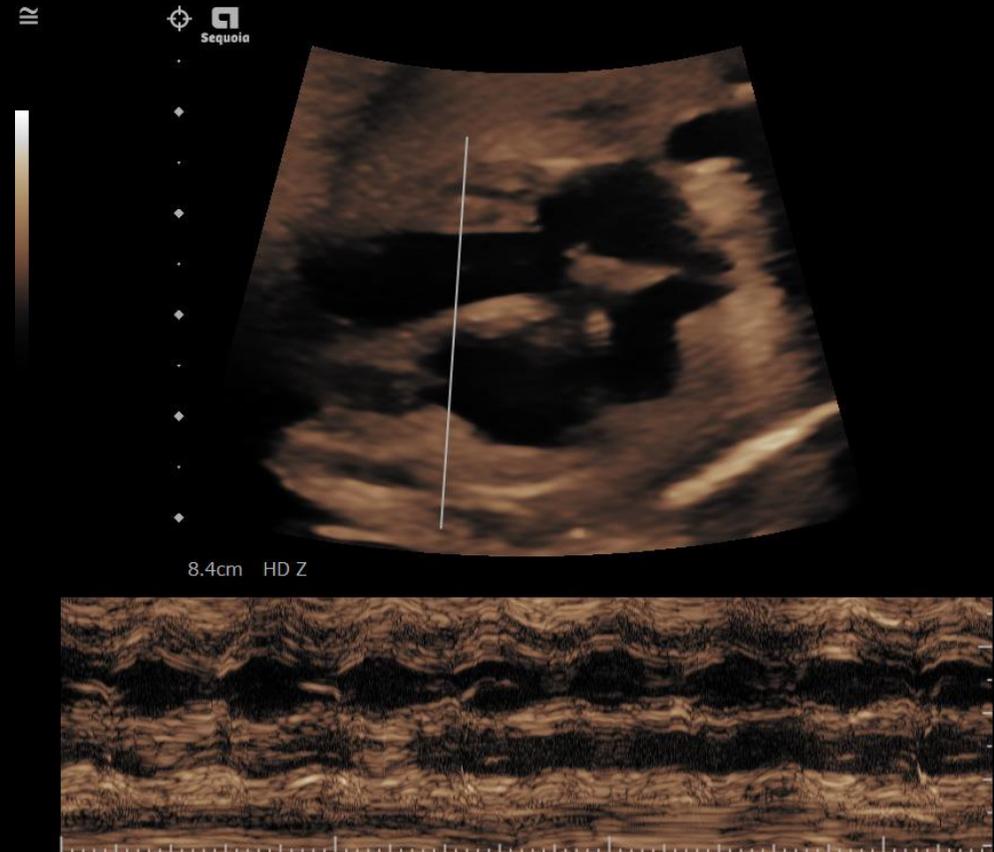
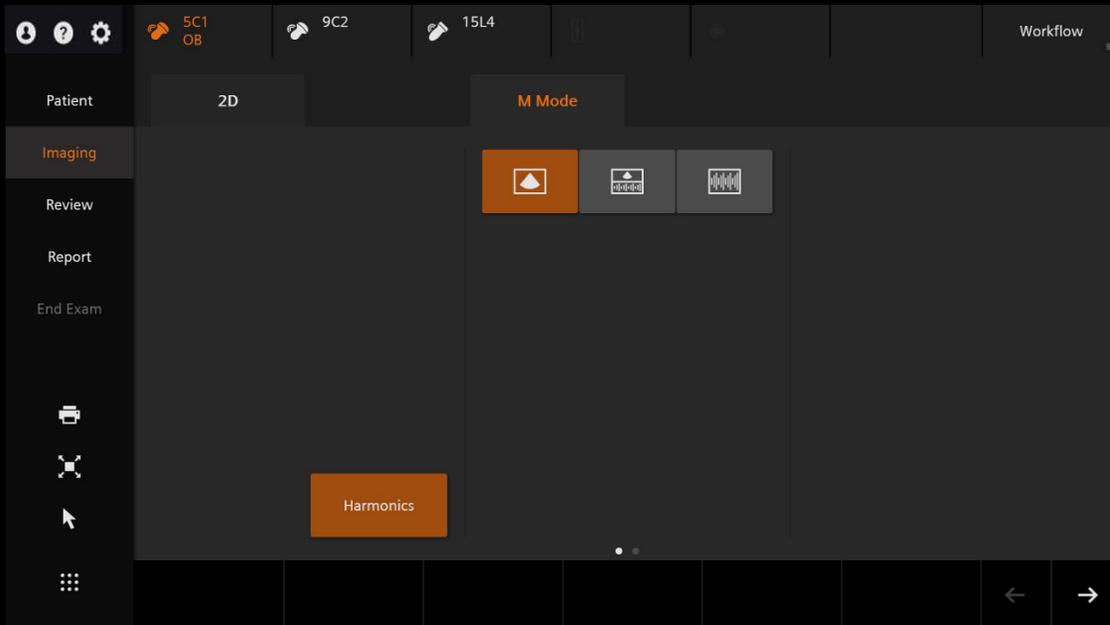
B-mode controls on the soft keys



Workflow control



M-mode controls



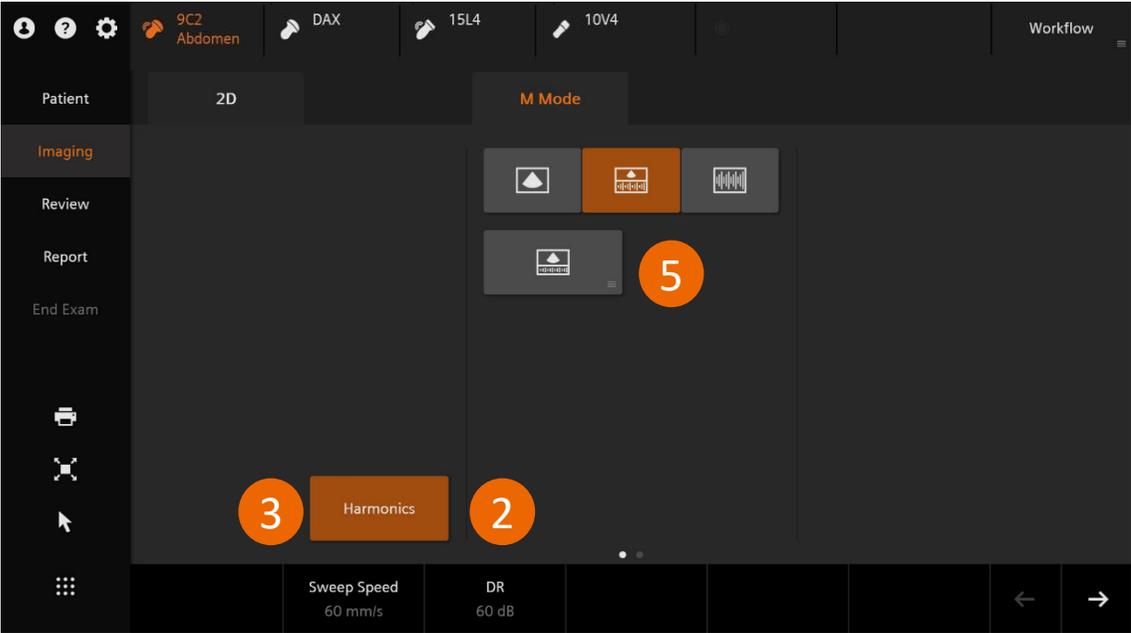
5C1
OB
TIB:2.47
TIC:3.02
TIS:1.27
MI:1.38
86fps
95%

2D
H High
9dB/DR55
LD 2
UA 3
MapE/T9
P 3

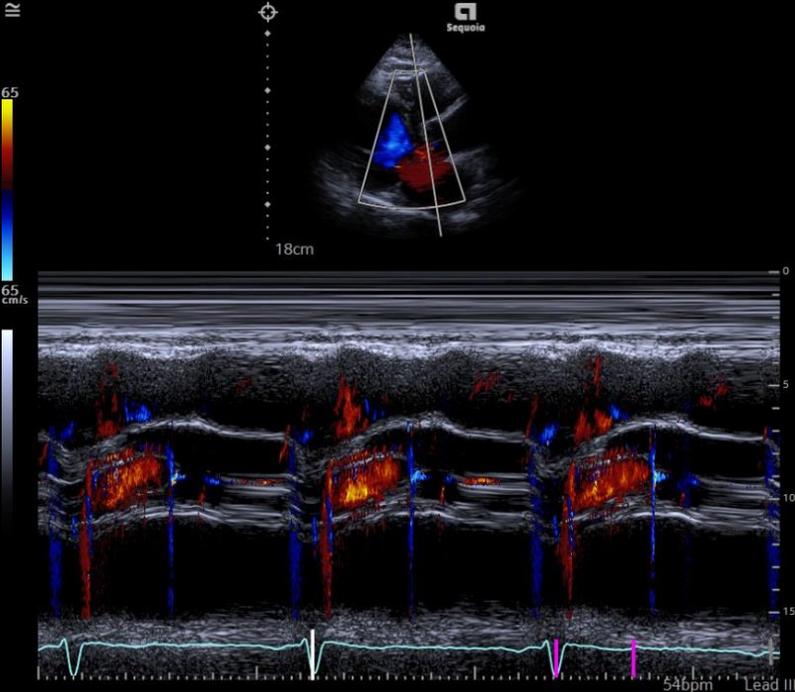
M
0dB/DR60
MapD/T9
E 2

Clinical Data

M-mode Touch Screen controls



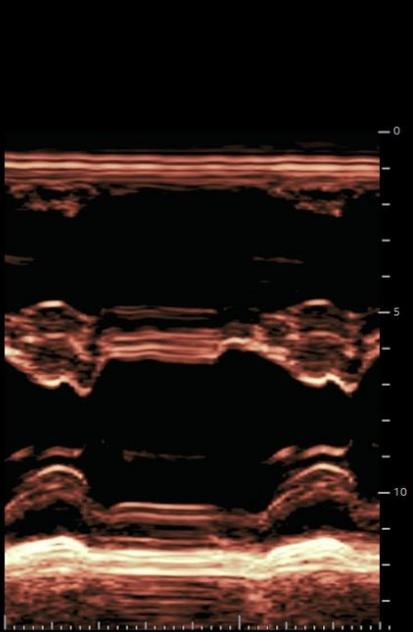
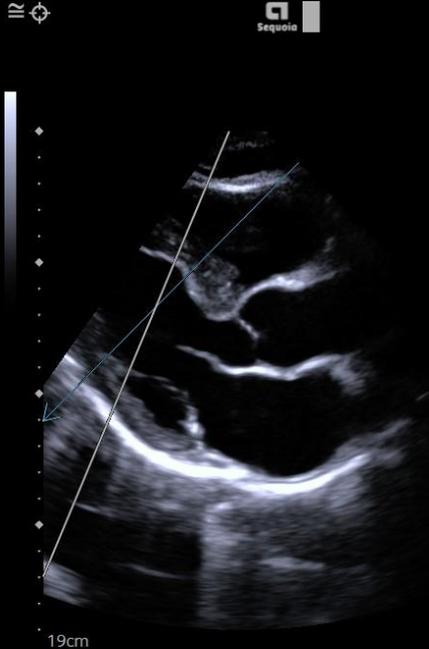
Anatomic and color M-mode



5V1
 *Cardiac-
 TIB:3.93
 TIC:3.06
 TIS:1.53
 MI:1.30
 19fps
 95%
2D
 H Mid
 -6dB/DR61
C
 Mid
 -2dB/ General
 PRF 3968
M
 2dB/DR60

Angle

Reset



5V1
 Cardiac
 TIB:0.72
 TIC:3.50
 TIS:0.72
 MI:0.94
 52fps
 95%
2D
 H High
 -10dB/DR60
M
 7dB/DR60

Objectives

- Review B-mode and M-mode controls
- **Describe B-mode and M-mode optimization features**
- Explain display modes
- Review Doppler controls
- Describe Doppler optimization features



Auto TEQ image optimization

Auto TEQ

5C1 Abdomen 18L6 15L4 9C2 Workflow

Patient 2D

Imaging AI Abdomen L/R Flip U/D Flip Biopsy Off Timer

Review

Report Panoramic Full FOV

End Exam

3 Auto TEQ Live Dual Clarify Off

Harmonics Compounding Wide FOV

Frequency H Mid DR 65 dB InFocus Line Density 2

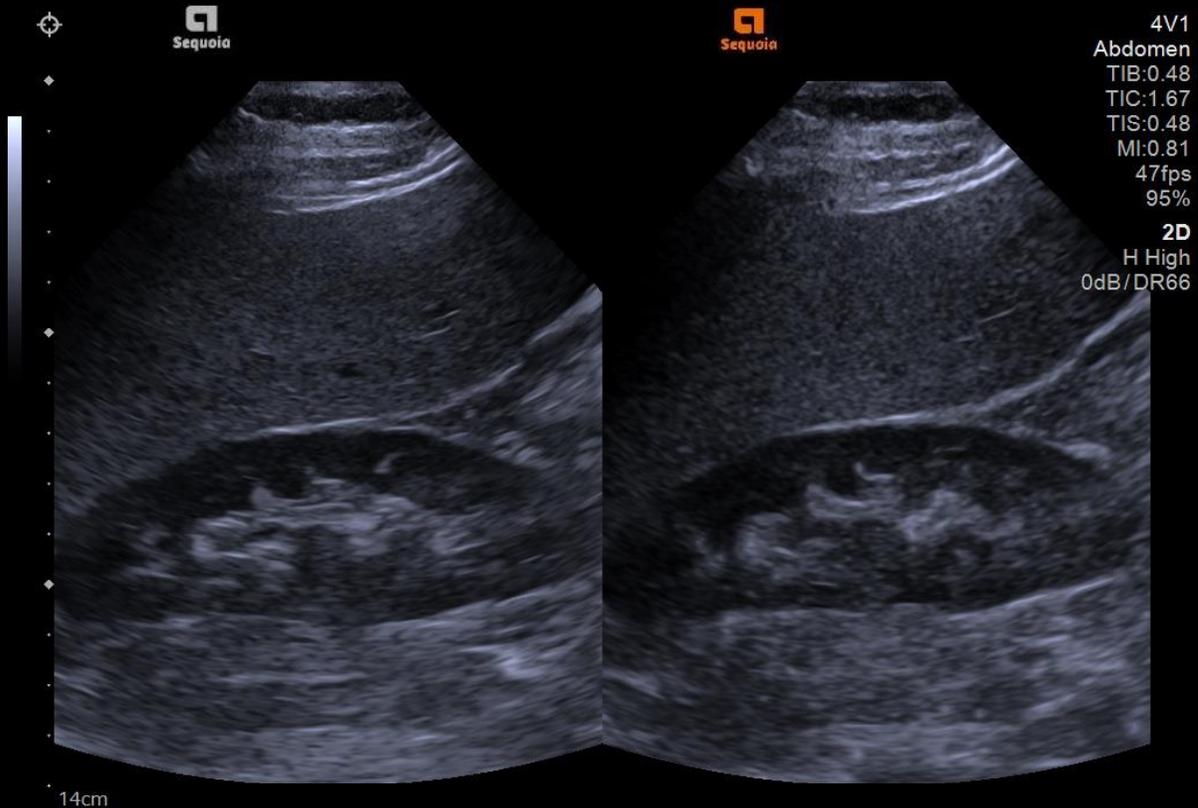


5C1
Abdomen
TIB:0.38
TIC:1.55
TIS:0.38
MI:1.38
31fps
95%

2D
H High
-1dB/DR65
c=1540
LD 2
UA 3
MapD/T5

Harmonic imaging

Harmonics



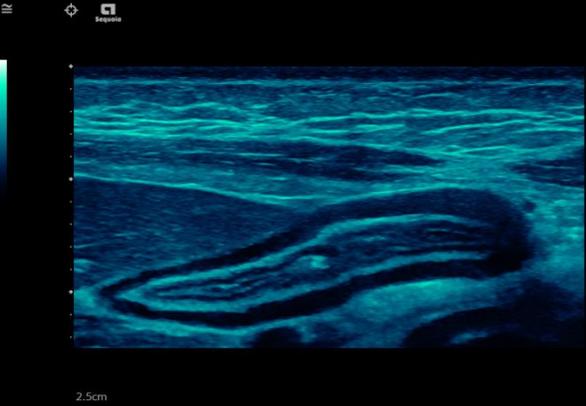
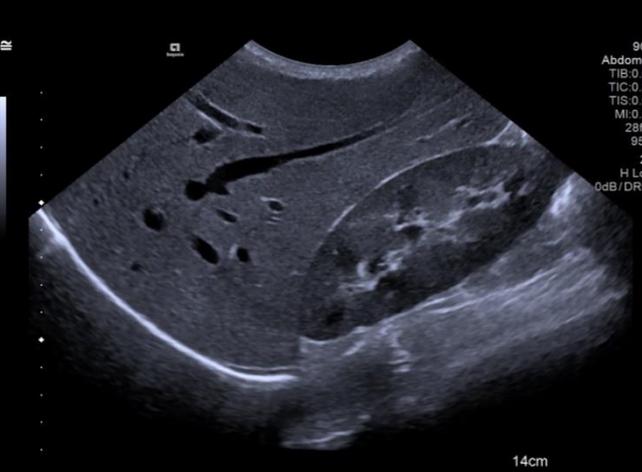
Fundamental

Harmonics

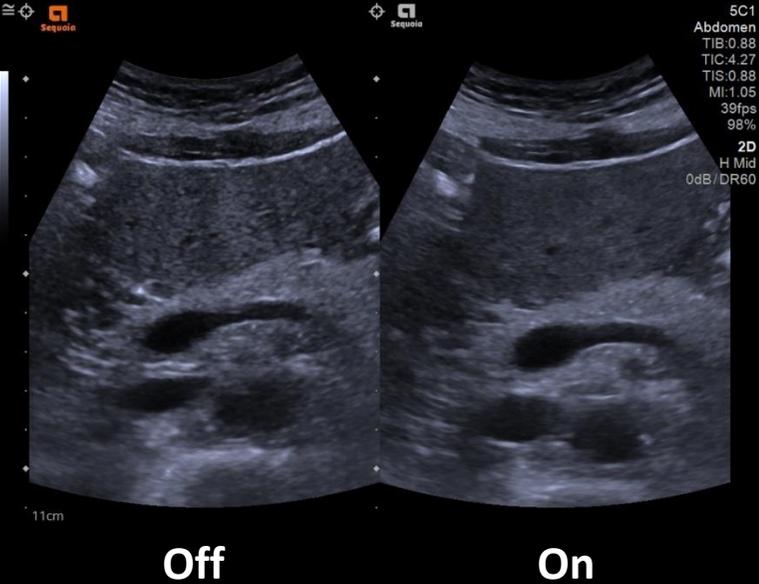
Frequency imaging

Control panel with the following elements:

- Grid icon
- Frequency** (highlighted in orange)
 - H Mid
- DR: 65 dB
- InFocus icon
- Line Density: 2
- Left arrow
- Right arrow



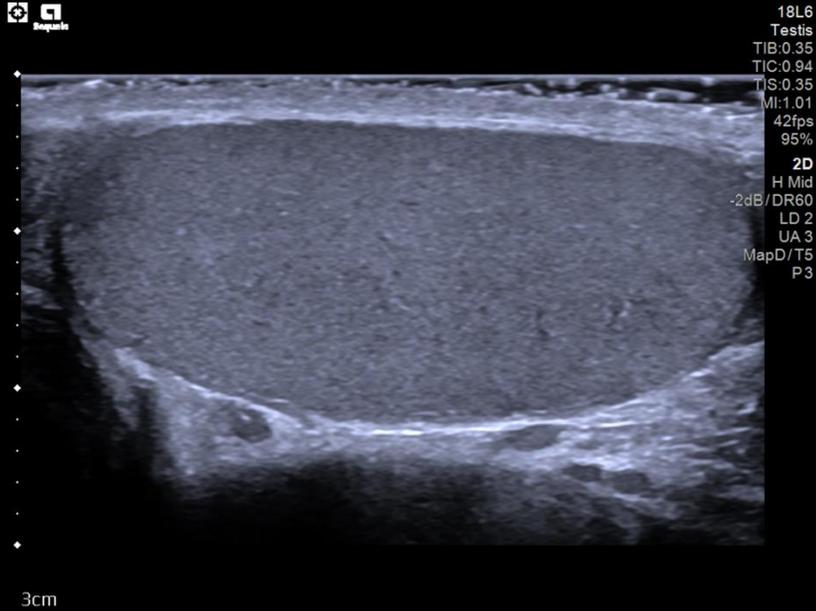
Compounding



Compounding



Line Density
1



Line Density

☰

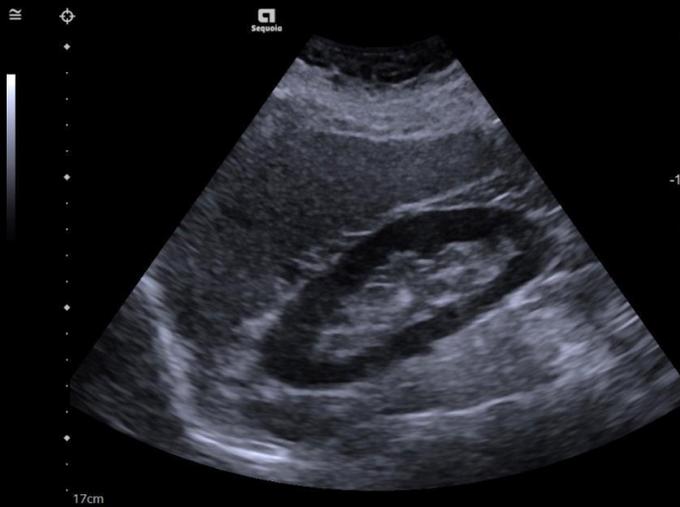
Frequency
H Mid

DR
65 dB

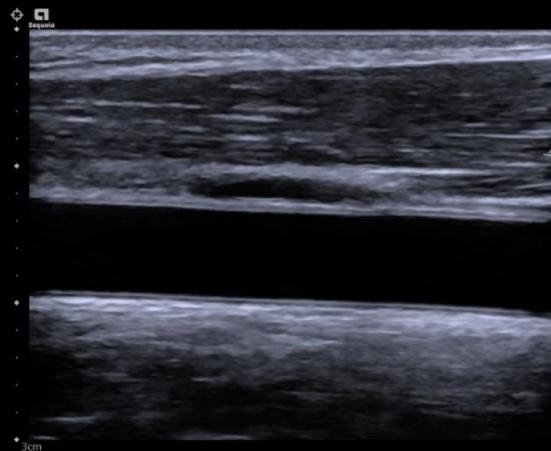
InFocus

Line Density
2

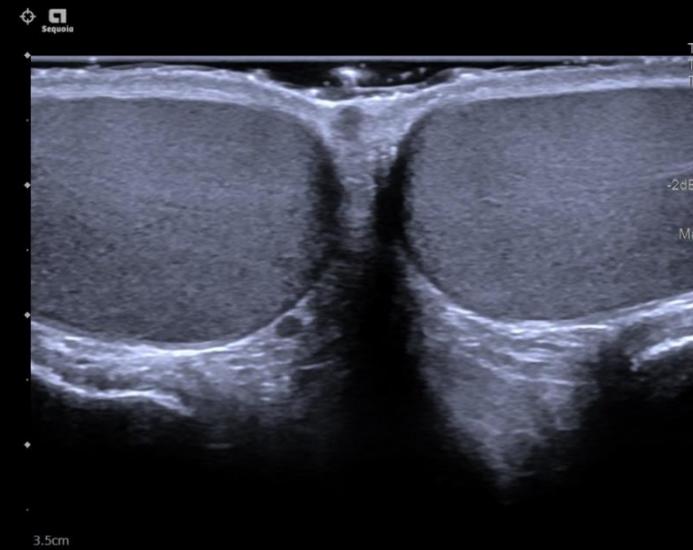
← →



DAX
Abdomen
TIB:0.37
TIC:2.12
TIS:0.37
MI:1.01
19fps
95%
2D
H Pen
-1dB/DR65
LD 3
UA 3
MapC/T4
P3

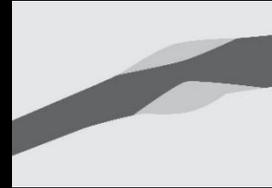
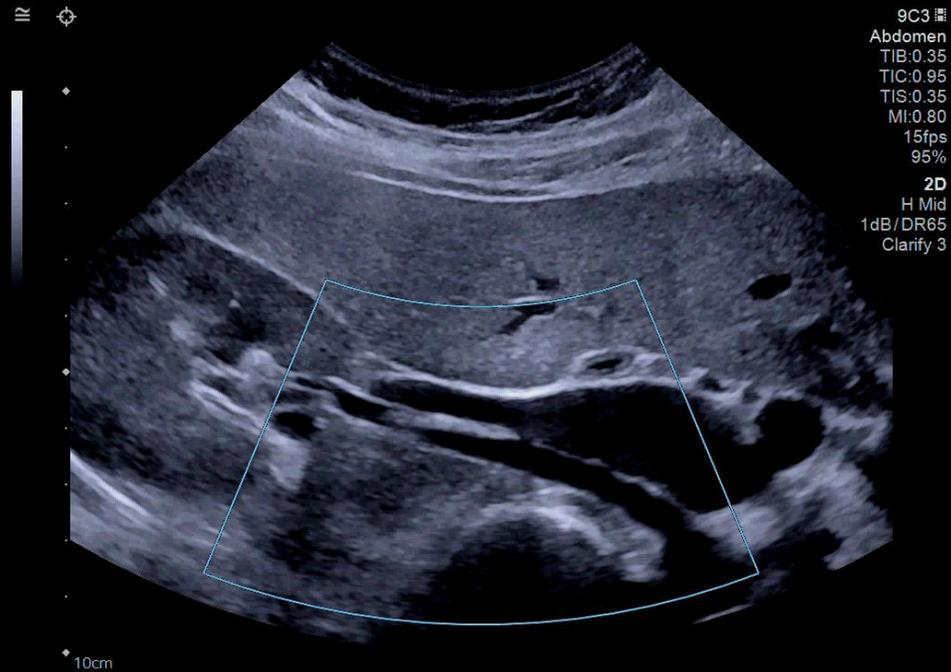


10L4
Carotid
TIB:0.25
TIC:0.68
TIS:0.25
MI:1.15
42fps
95%
2D
H High
-4dB/DR68
LD 2
UA 3
MapF/T4
P3

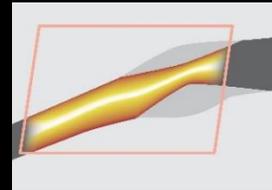


18L6
Testis
TIB:0.35
TIC:0.95
TIS:0.35
MI:1.05
36fps
95%
2D
H Mid
-2dB/DR60
LD 2
UA 3
MapD/T5
P3

Clarify vascular enhancement (VE) technology



2D



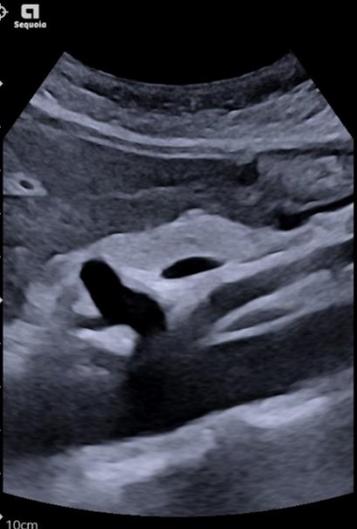
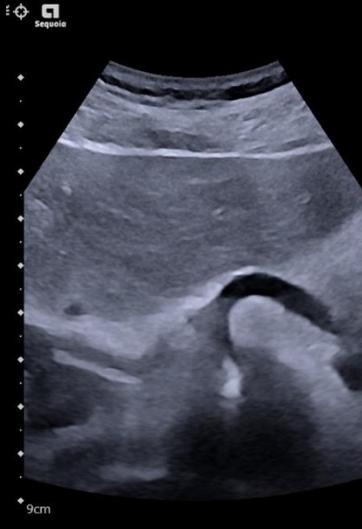
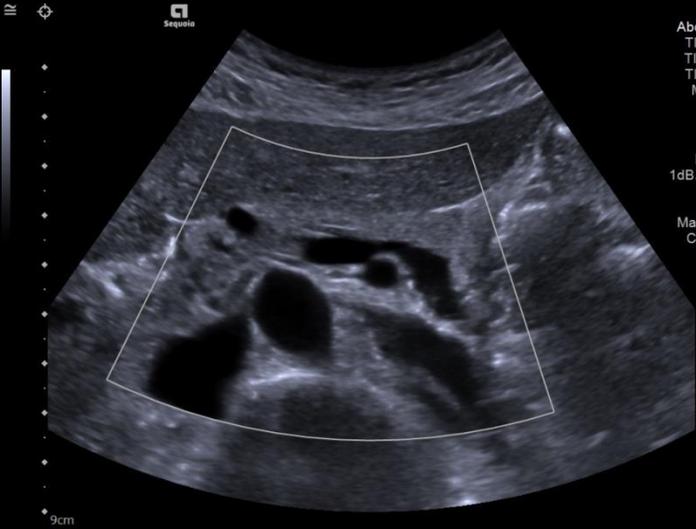
Power



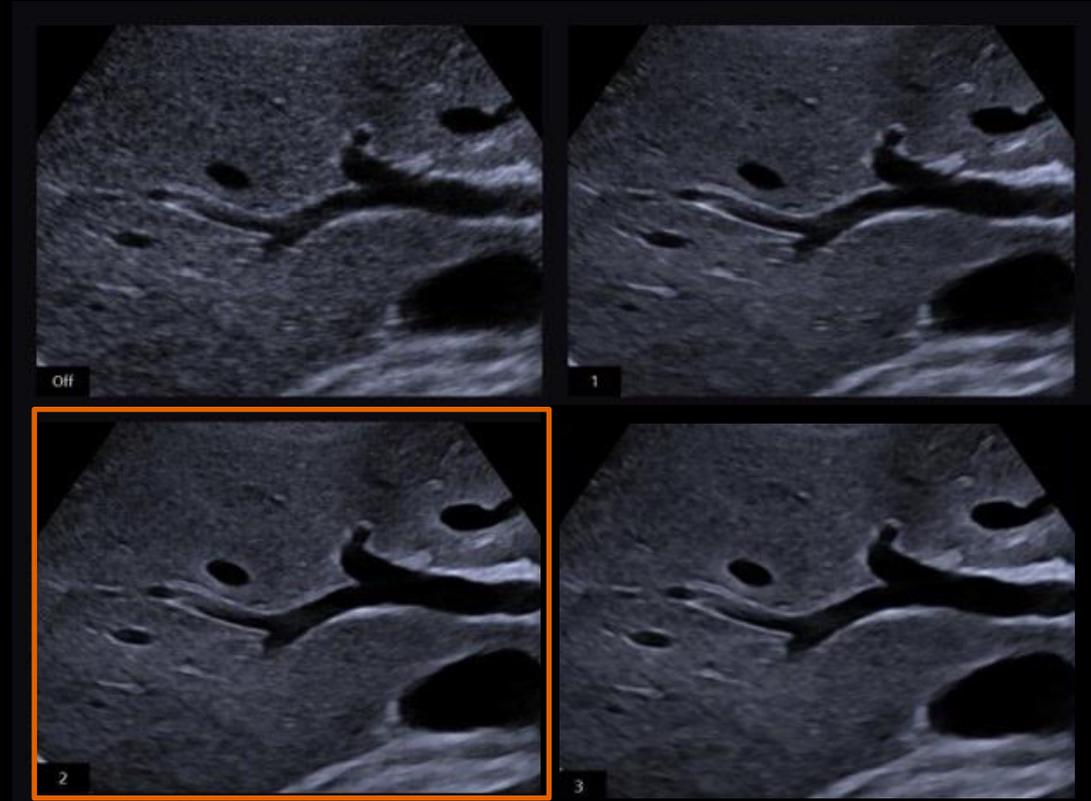
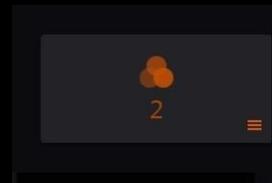
Clarify

- Uses Power Doppler amplitude information to enhance B-mode imaging
- Reduces artifacts in vessels and improves vessel wall definition

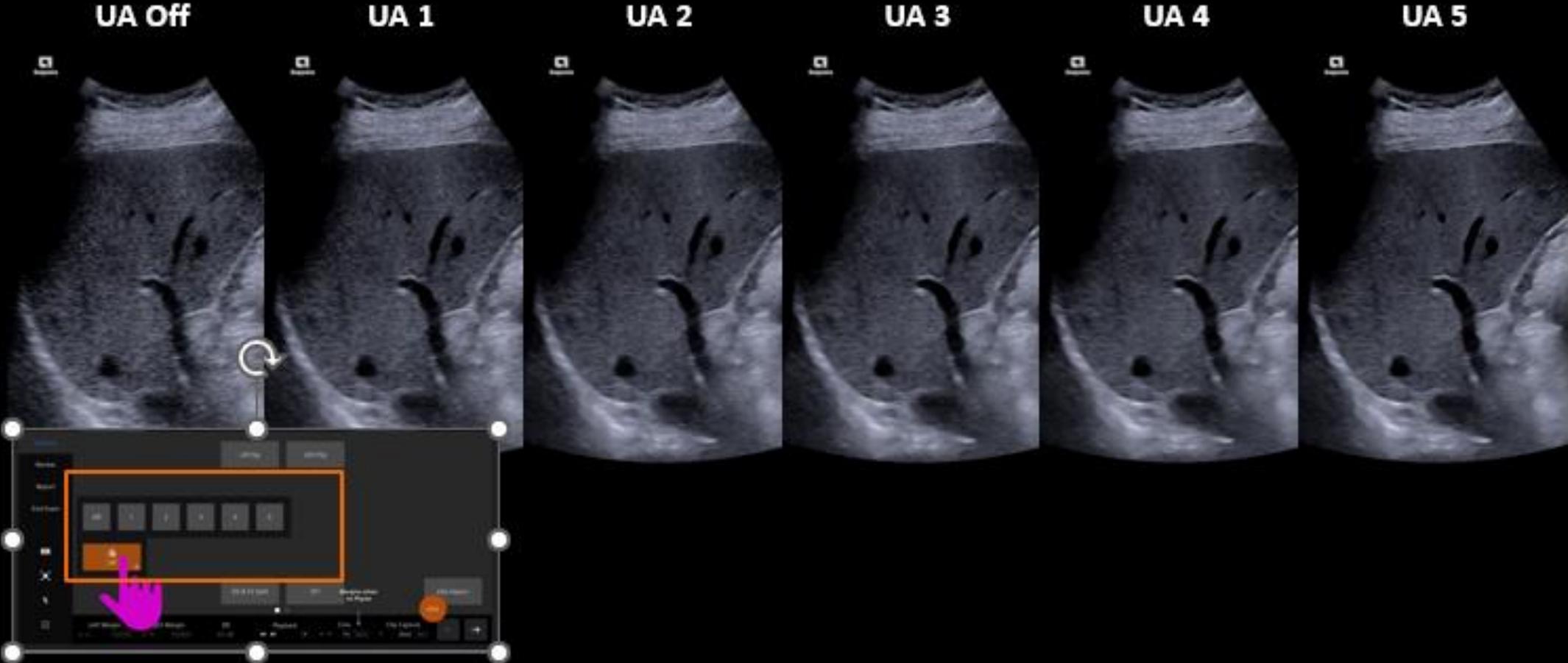
Clarify VE technology



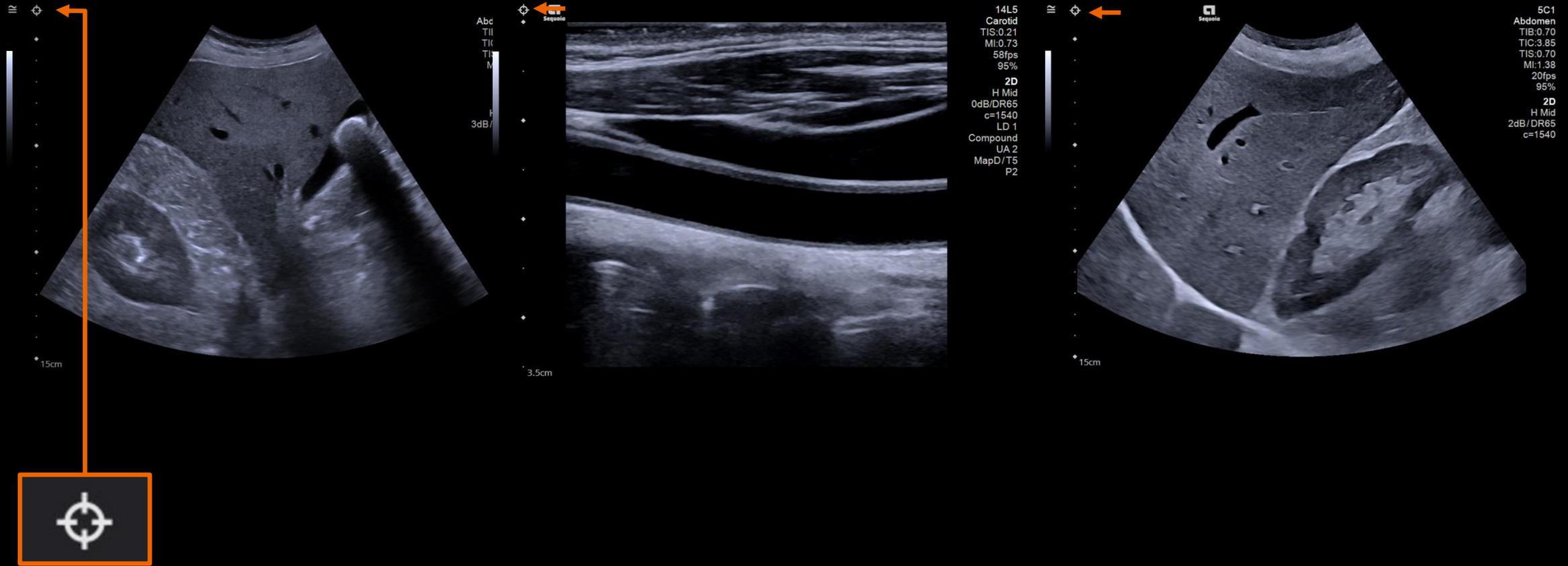
UltraArt universal image processing



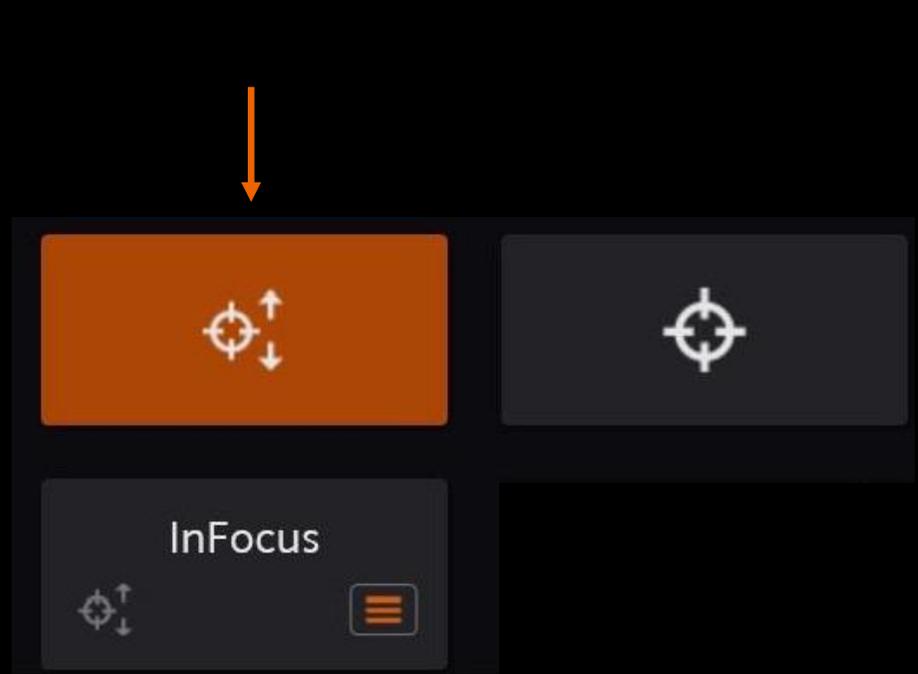
UltraArt universal image processing



InFocus coherent image formation



InFocus coherent image formation – Selectable focus



Transmit Power

9EC4
GYN
TIB:0.31
TIC:0.70
TIS:0.31
MI:0.69
31fps
95%

2D
H Mid
0dB/DR65
LD 2
UA 1
MapC/T3
P3

Clinical Data
7cm

5C1
Abdomen
TIB:0.62
TIC:2.62
TIS:0.62
MI:1.39
31fps
98%

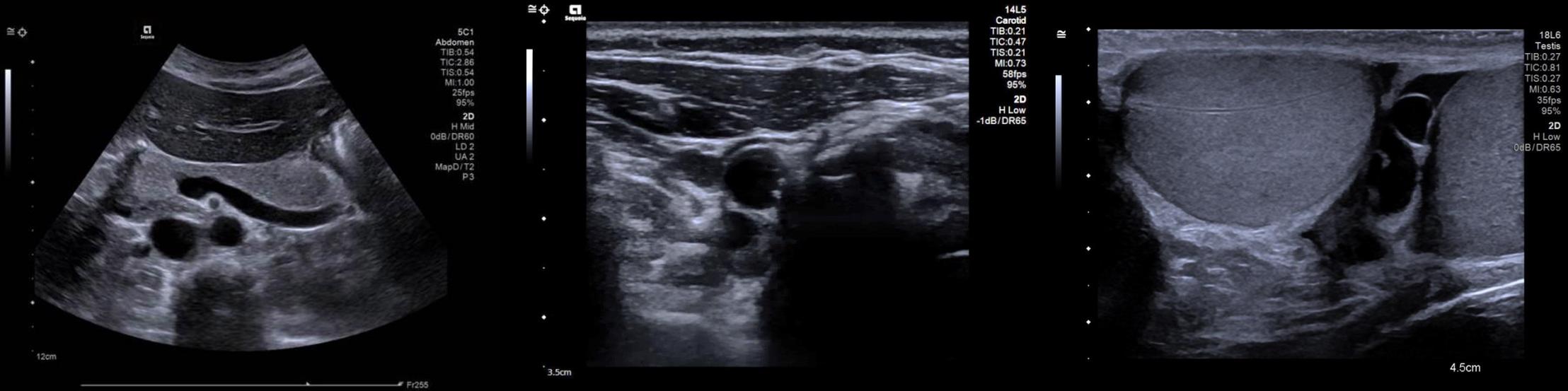
2D
H High
0dB/DR66
UA 3

8cm

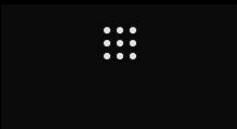
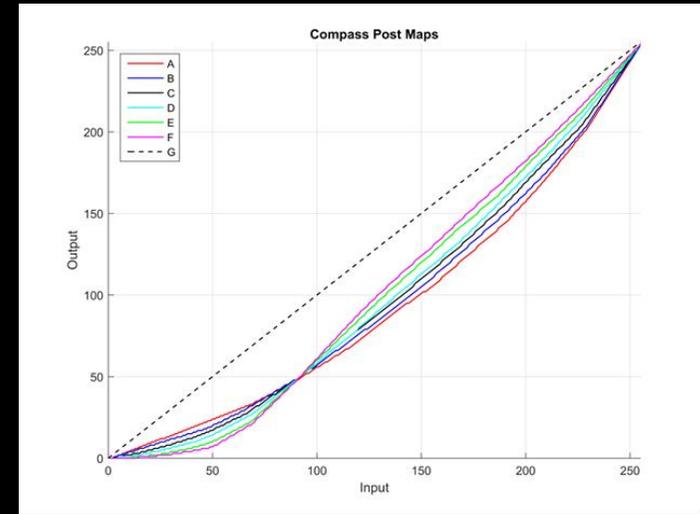
Transmit Power
95 %

Persist 3
Maps D
Tint 2

Dynamic Range



Grid icon | Frequency: H Mid | **DR: 65 dB** | InFocus | Line Density: 2 | Left arrow | Right arrow



Transmit Power
95 %

Clarify
Off On

Persist
2

Maps
C

Tint
5



Speed of Sound

LR Flip UR Flip Off

1540 1480 1460 1446

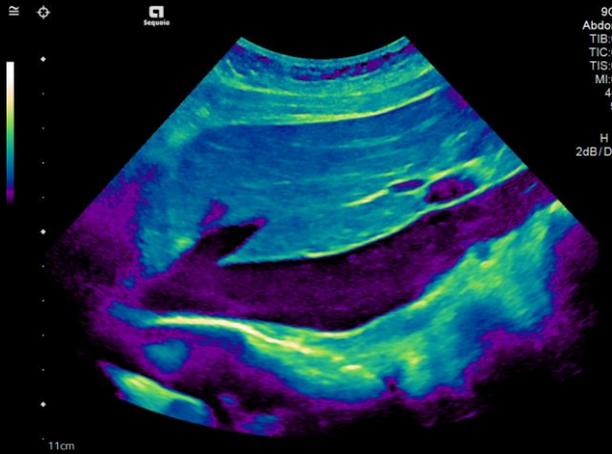
Speed of Sound
c=1446

Trapezoid 0° 90°

Live Dual



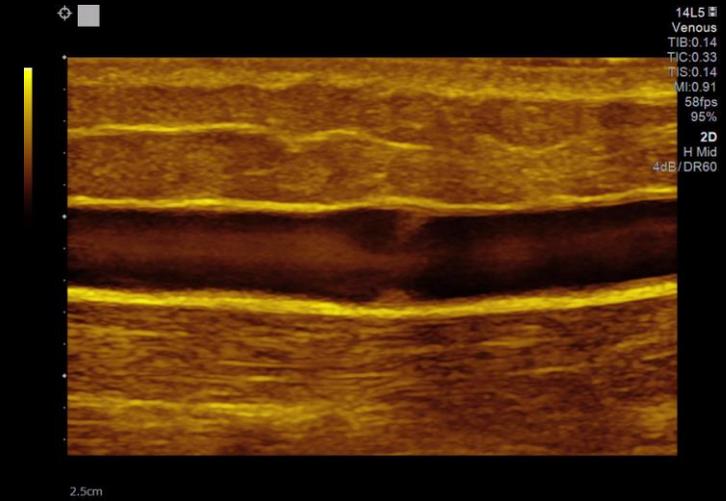
18L6
Breast
TIB:0.13
TIC:0.25
TIS:0.13
MI:0.72
65fps
95%
2D
Mid
2dB/DR65
→ c=1446



Inverted Rainbow



Sepia



Gold

Objectives

- Review B-mode and M-mode controls
- Describe B-mode and M-mode optimization features
- **Explain display modes**
- Review Doppler controls
- Describe Doppler optimization features



Trapezoid



Trapezoid

Wide Field of View

5C1 Abdomen 18L6 15L4 9C2 Workflow

Patient 2D

Imaging AI Abdomen L/R Flip UID Flip Biopsy Off Timer

Review Panoramic Full FOV

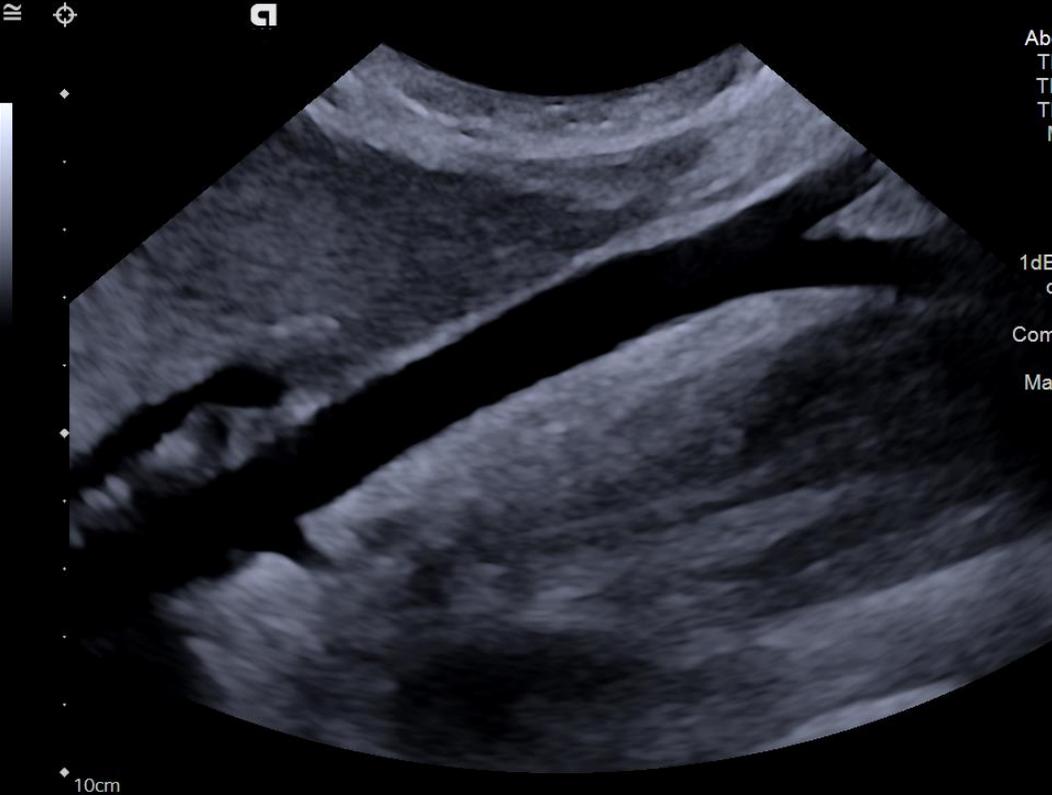
Report

End Exam

3 Auto TEQ Live Dual Clarify Off

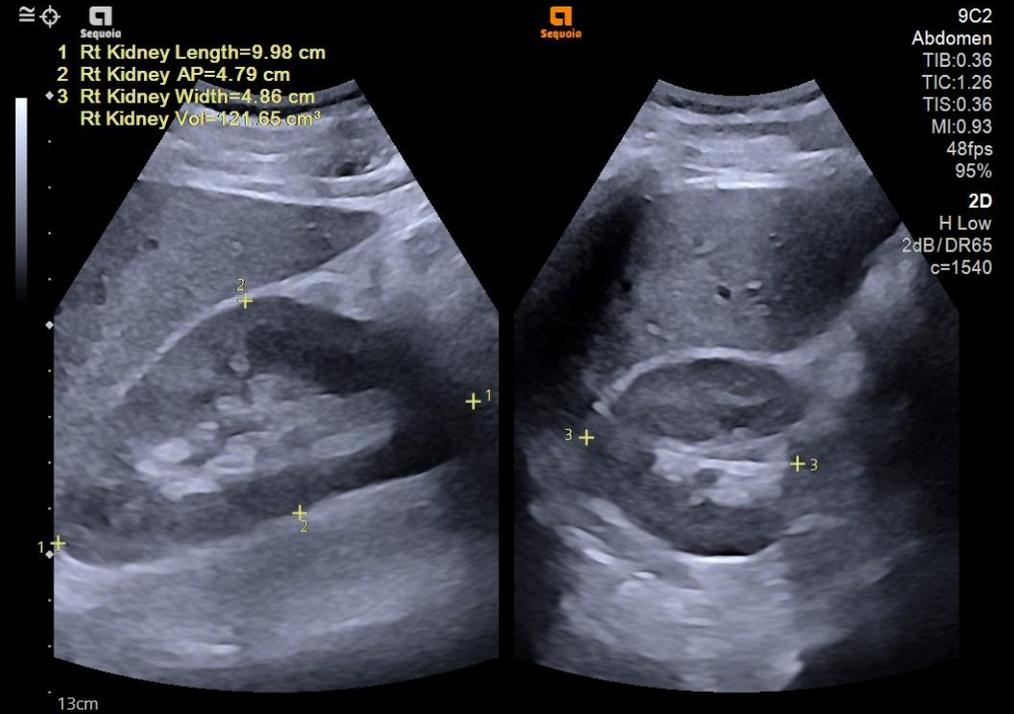
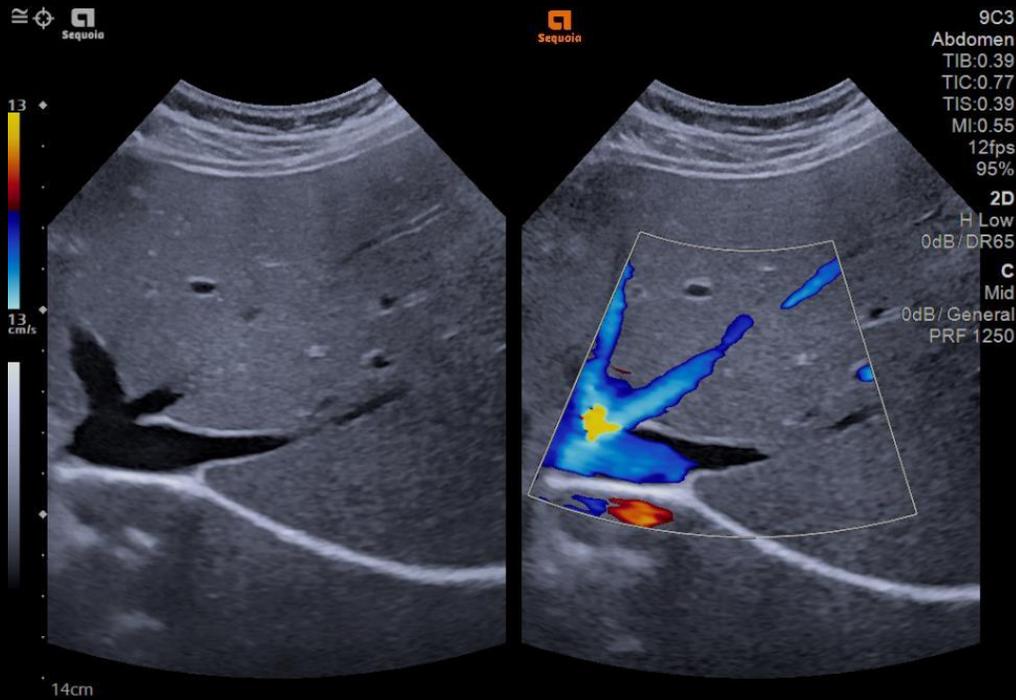
Harmonics Compounding **Wide FOV**

Frequency H Mid DR 65 dB InFocus Line Density 2

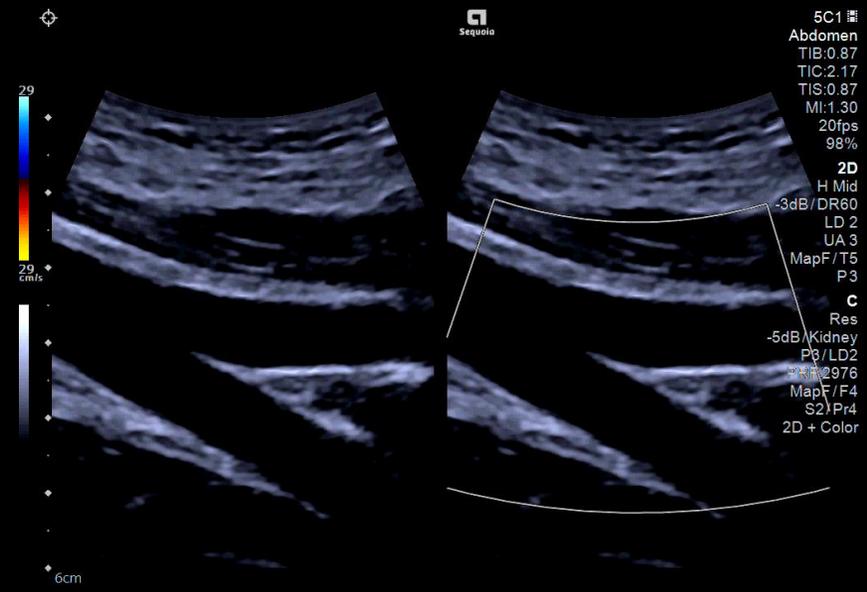
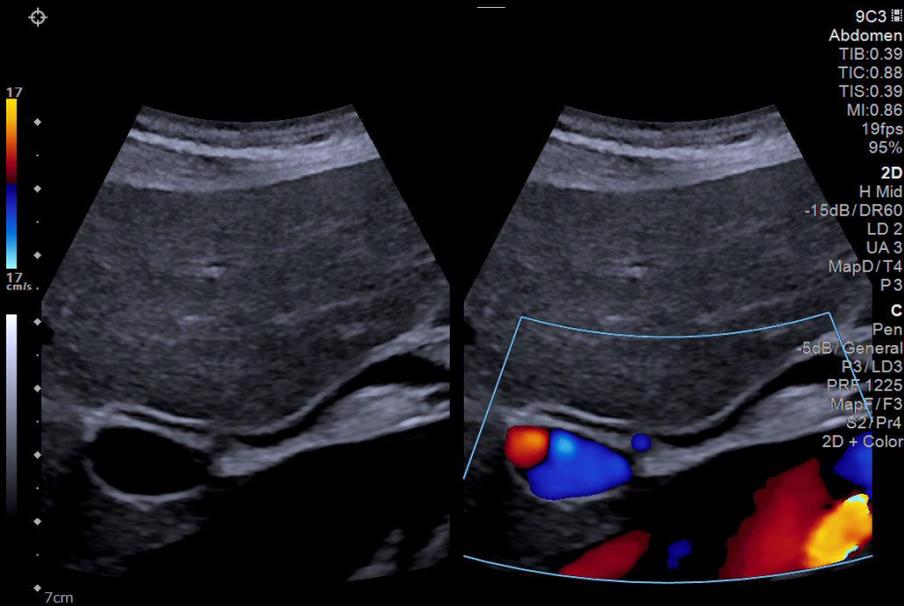


5C1
Abdomen
TIB:0.51
TIC:3.21
TIS:0.51
MI:1.38
22fps
95%

2D
H Low
1dB/DR65
c=1540
LD 2
Compound
UA 3
MapD/T5
P2



Live Dual

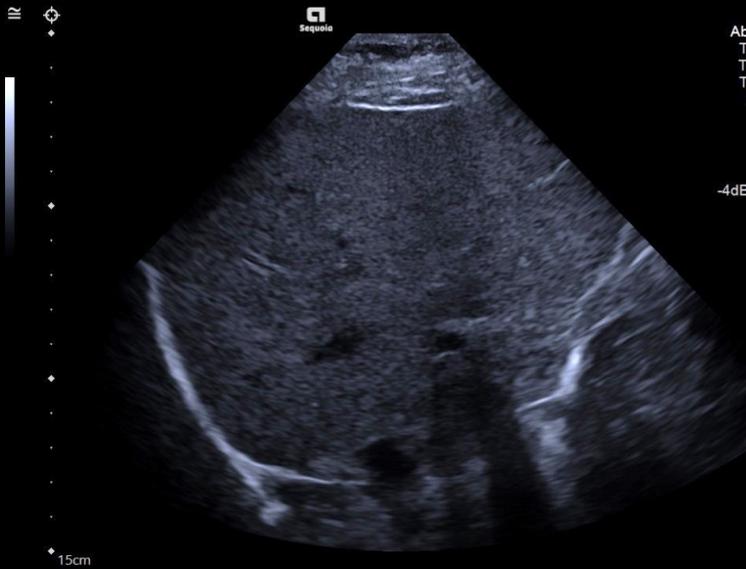


Live Dual

Left/Right and Up/Down Flip

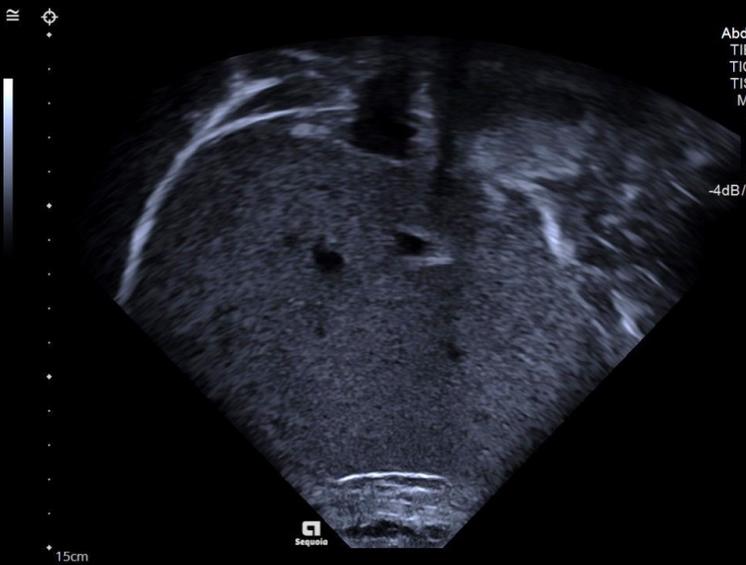
L/R Flip

U/D Flip



4V1
Abdomen
TIB:0.30
TIC:1.18
TIS:0.30
MI:0.76
43fps
95%

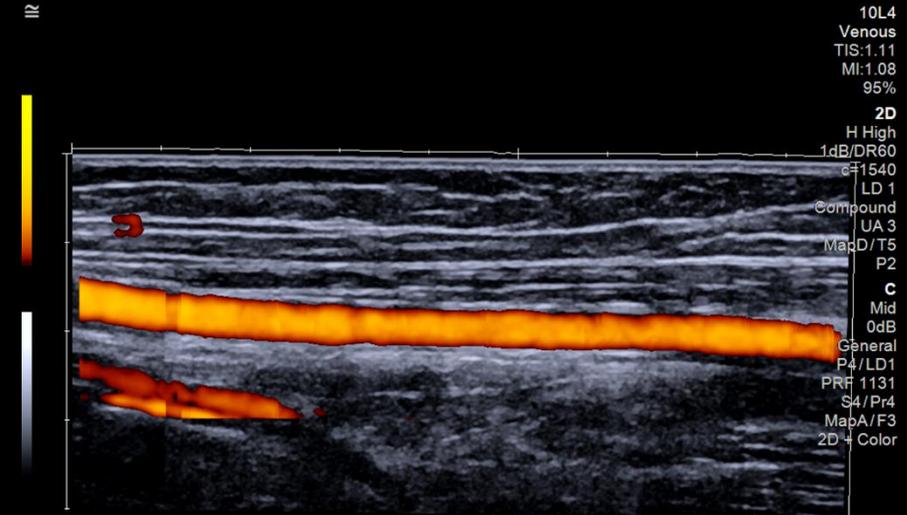
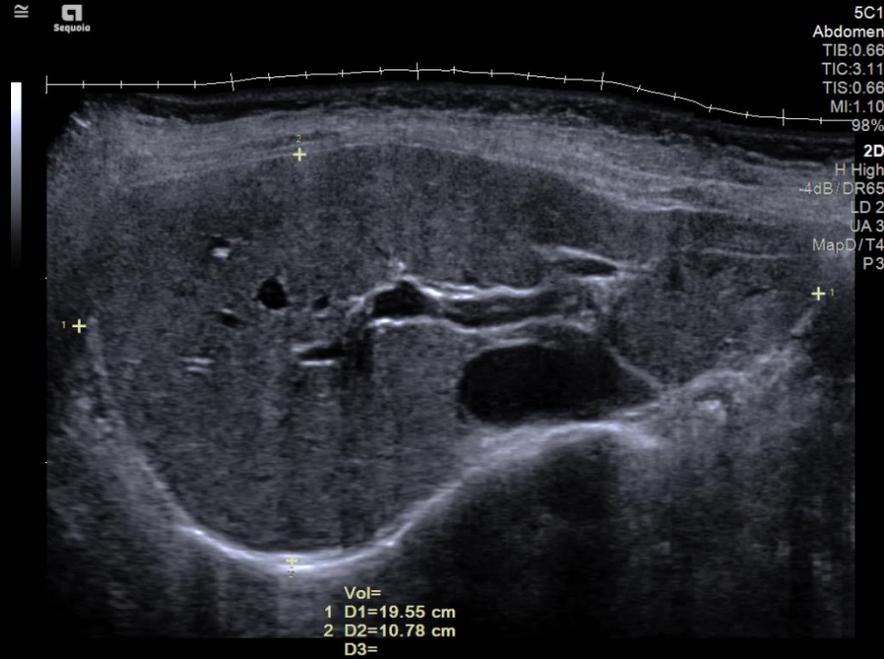
2D
H Mid
-4dB/DR66



4V1
Abdomen
TIB:0.30
TIC:1.18
TIS:0.30
MI:0.76
43fps
95%

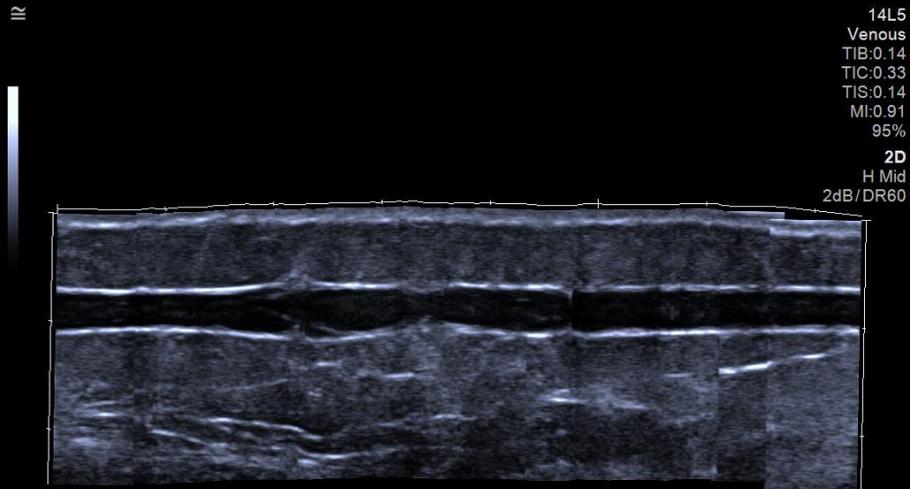
2D
H Mid
-4dB/DR66

Panoramic imaging



Power Doppler - Panoramic Mode

Panoramic imaging – B-mode



5C1 10L4 18L6 Breast 10V4

Workflow

Patient 2D Panoramic

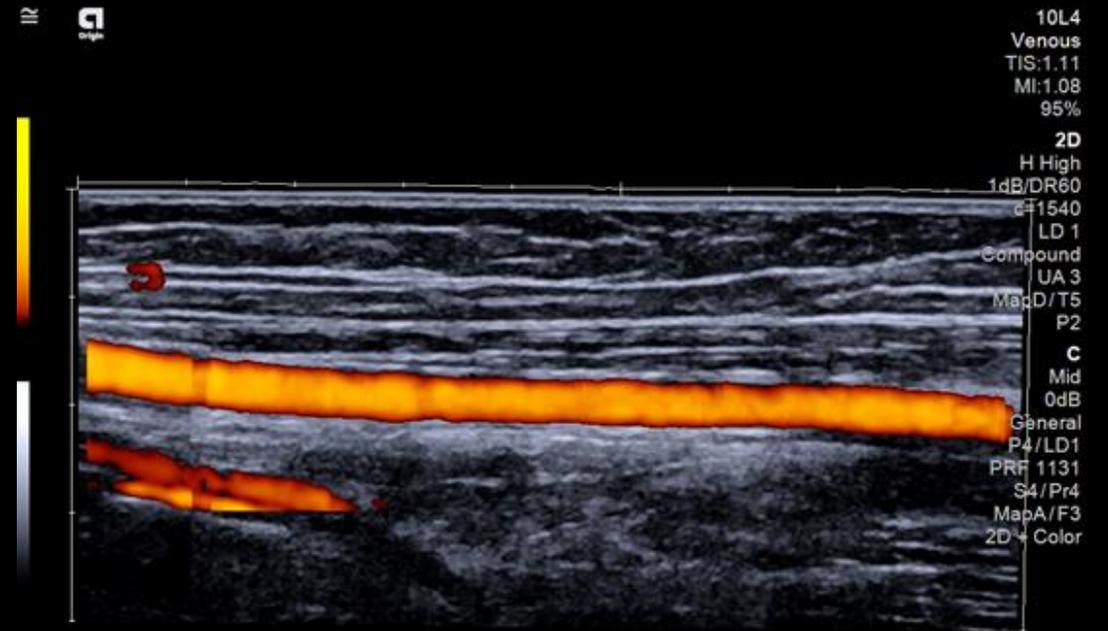
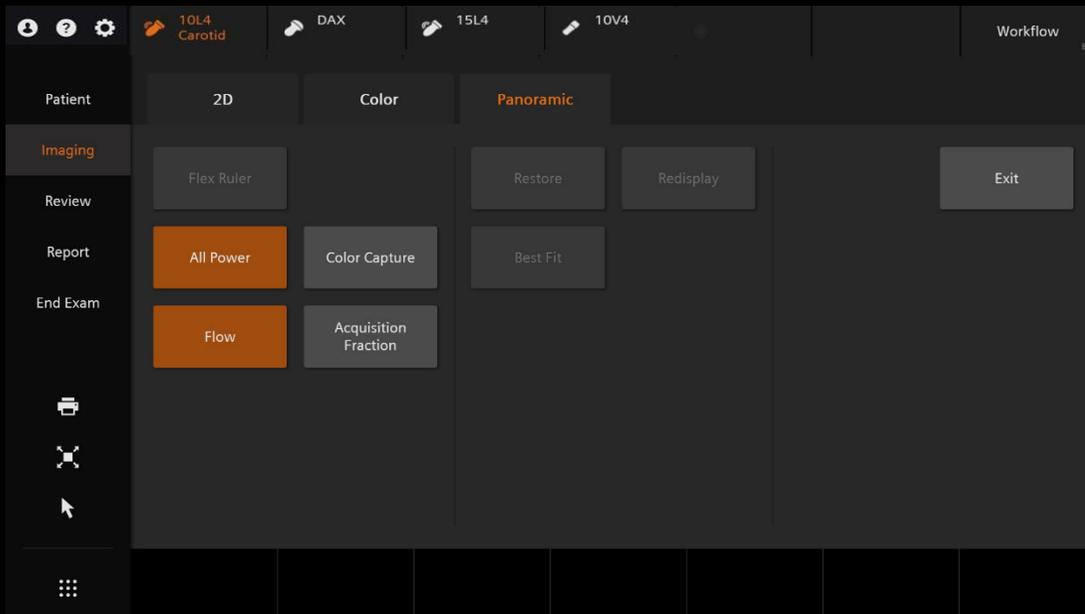
Imaging Flex Ruler Restore Redisplay Exit

Review

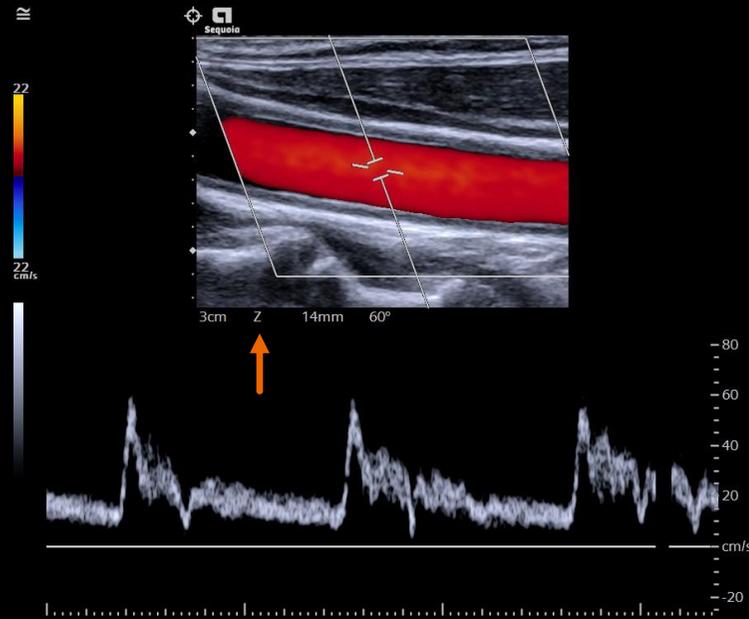
Report Best Fit

End Exam

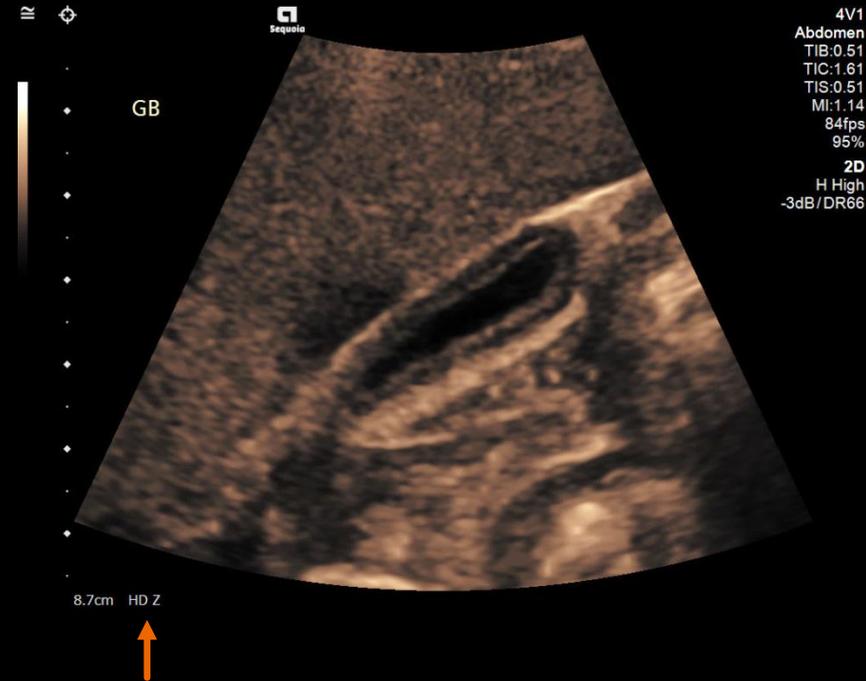
Panoramic imaging – Power Doppler



Zoom and HD Z



Zoom



HD Z

Image Size

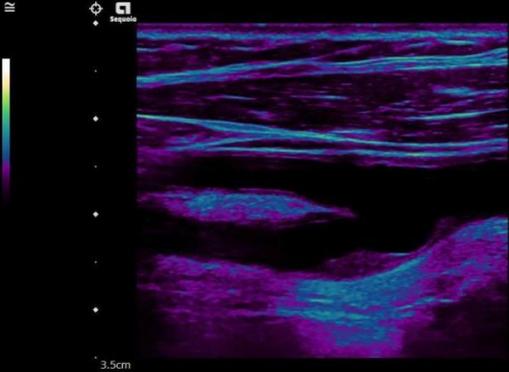


Image Size
1

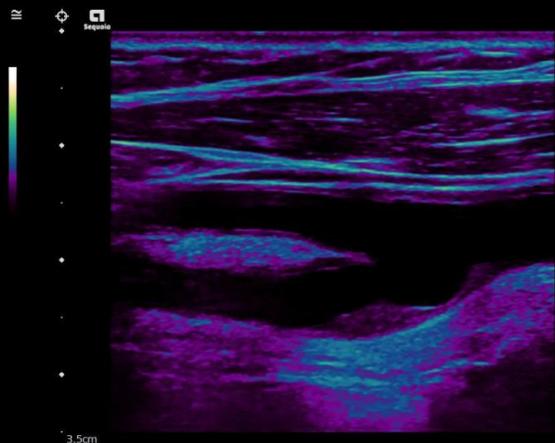


Image Size
3

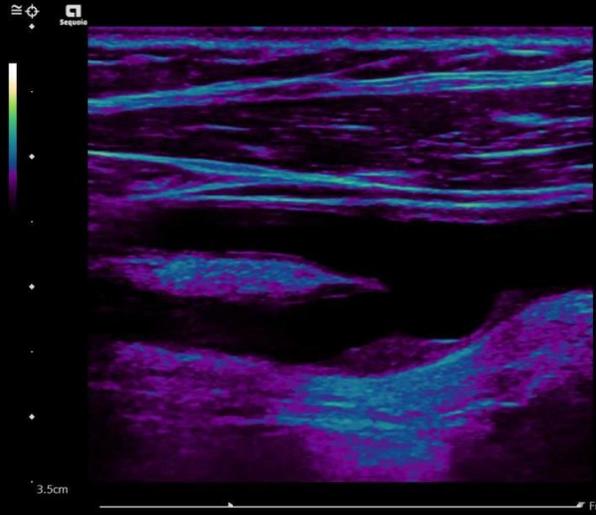
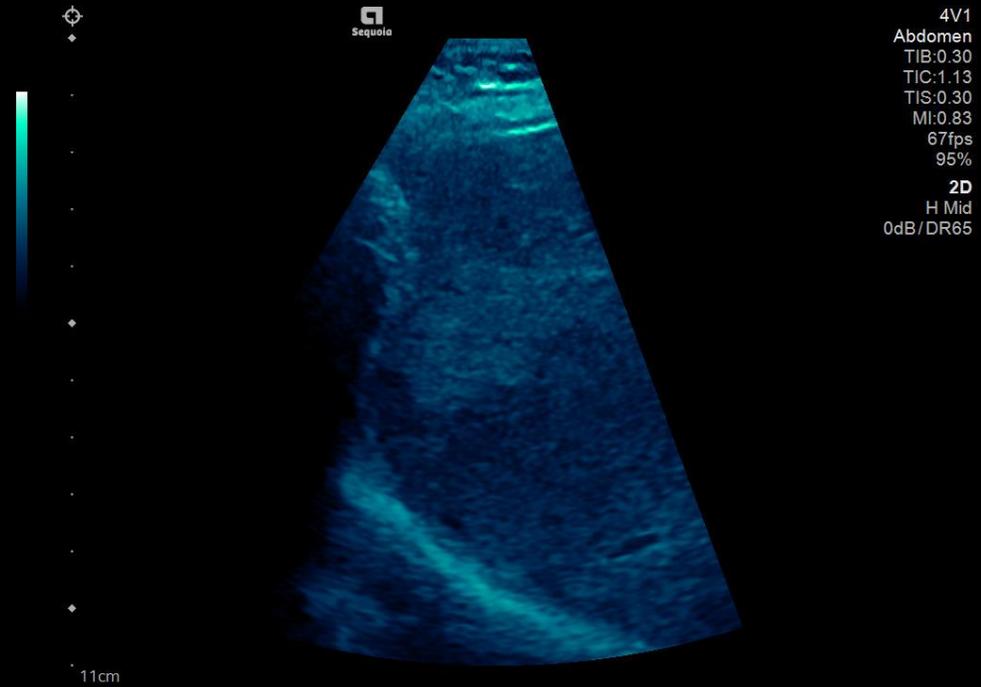
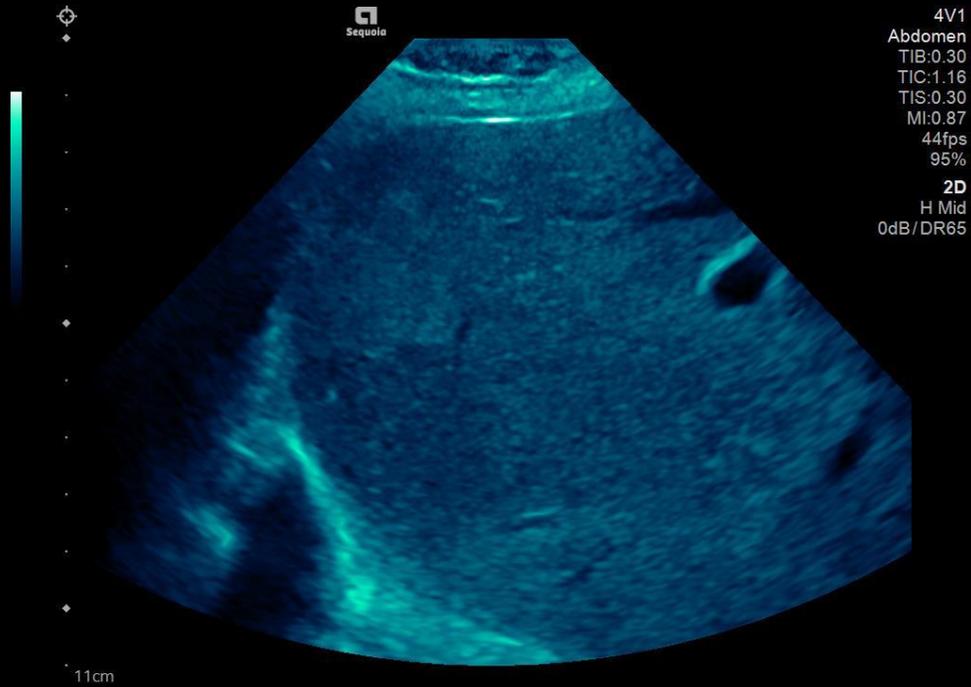
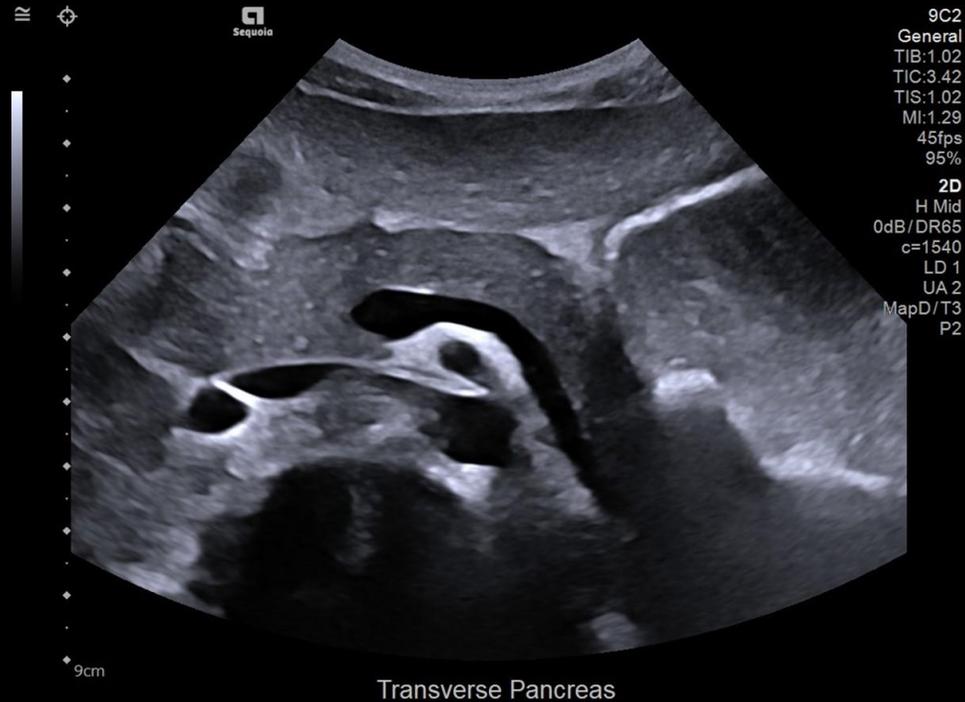


Image Size
5

Sector Size



B-mode post-processing features



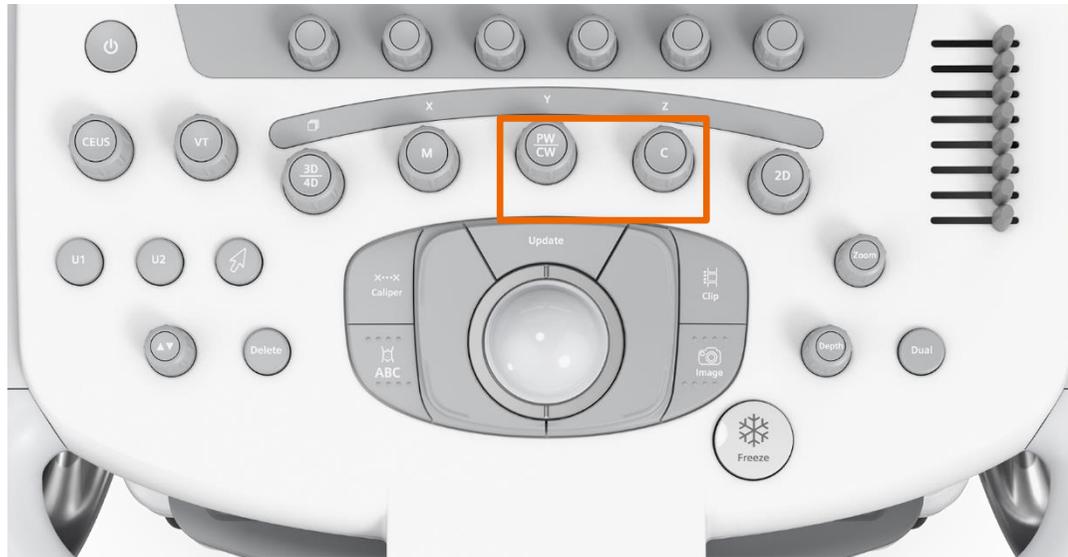
- DR
- Map
- Tint
- Image Size
- DGC
- Gain
- M-mode Gain
- UltraArt
- L/R Flip
- U/D Flip

Objectives

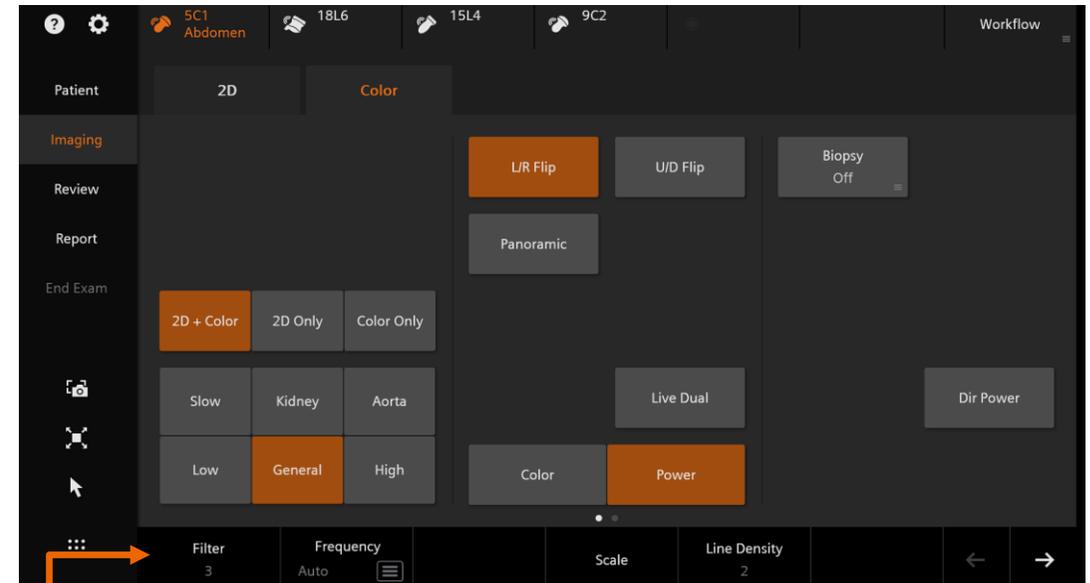
- Review B-mode and M-mode controls
- Describe B-mode and M-mode optimization features
- Explain display modes
- **Review Doppler controls**
- Describe Doppler optimization features



Control Panel



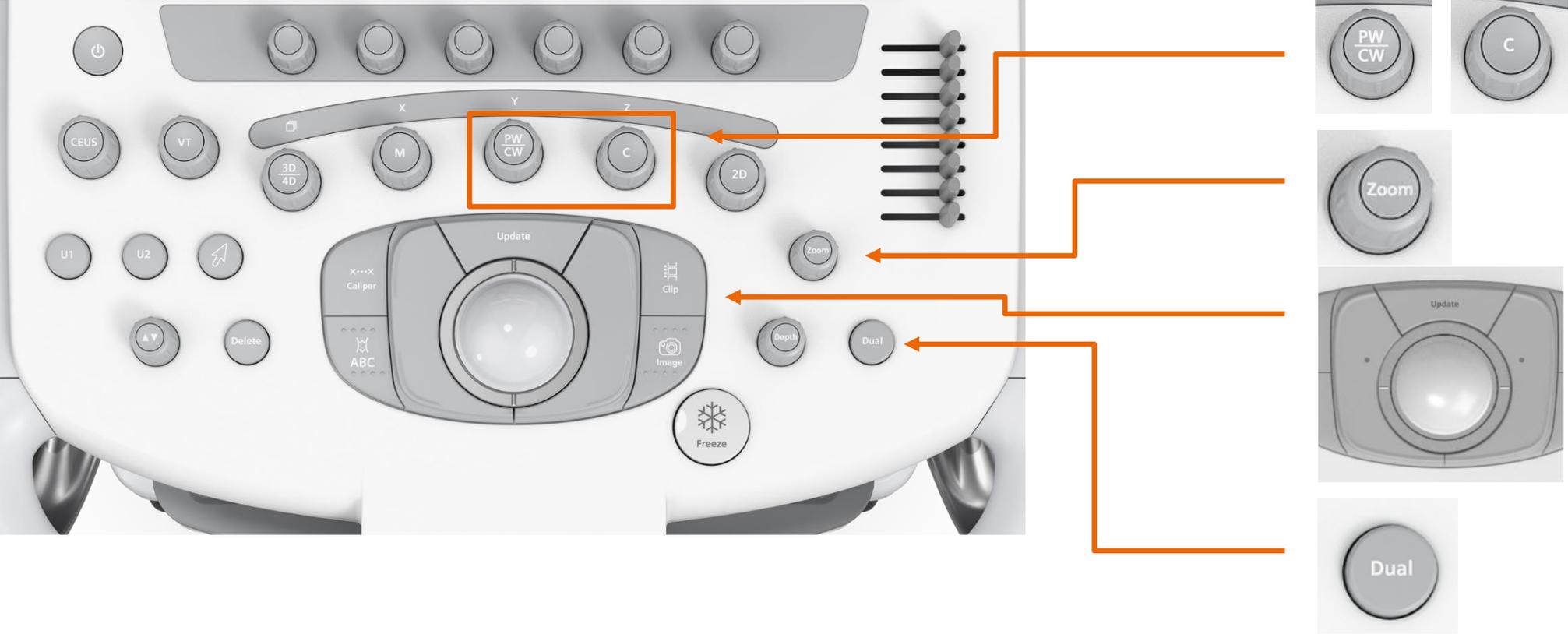
Touch Screen



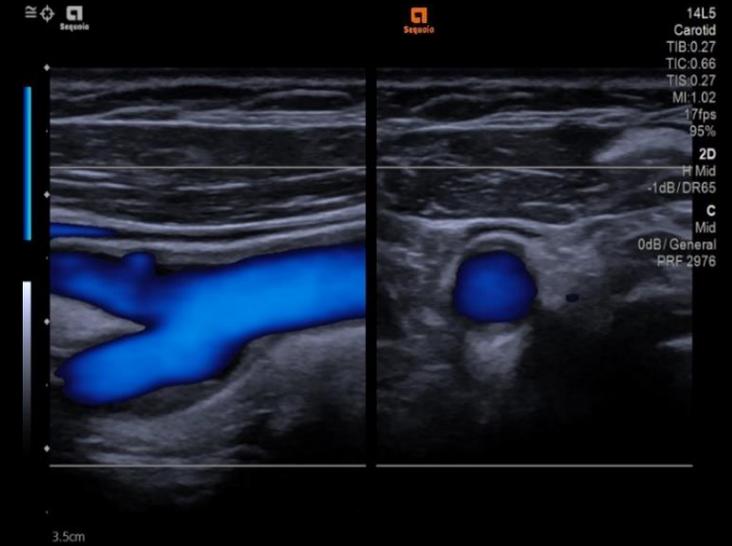
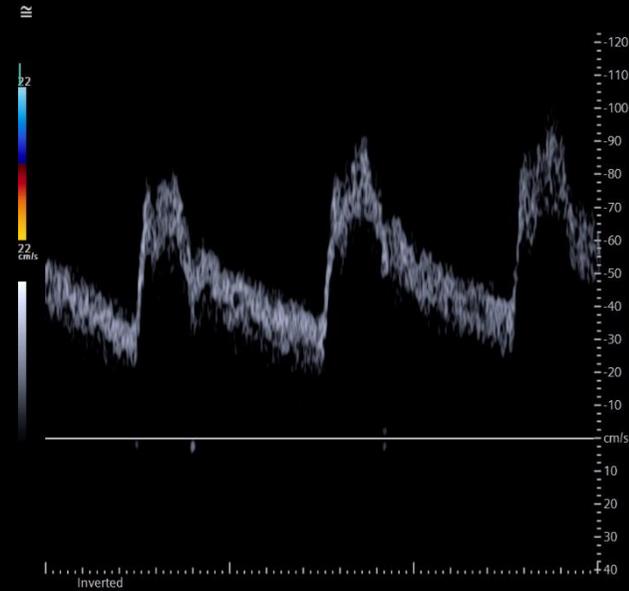
Soft keys



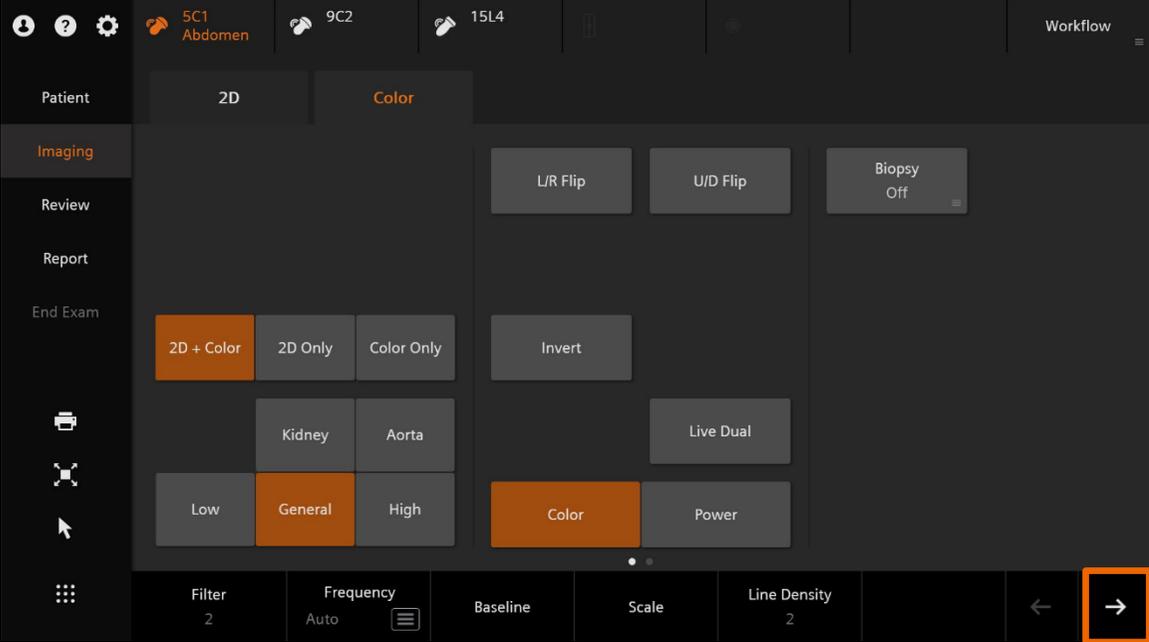
Doppler controls on the Control Panel



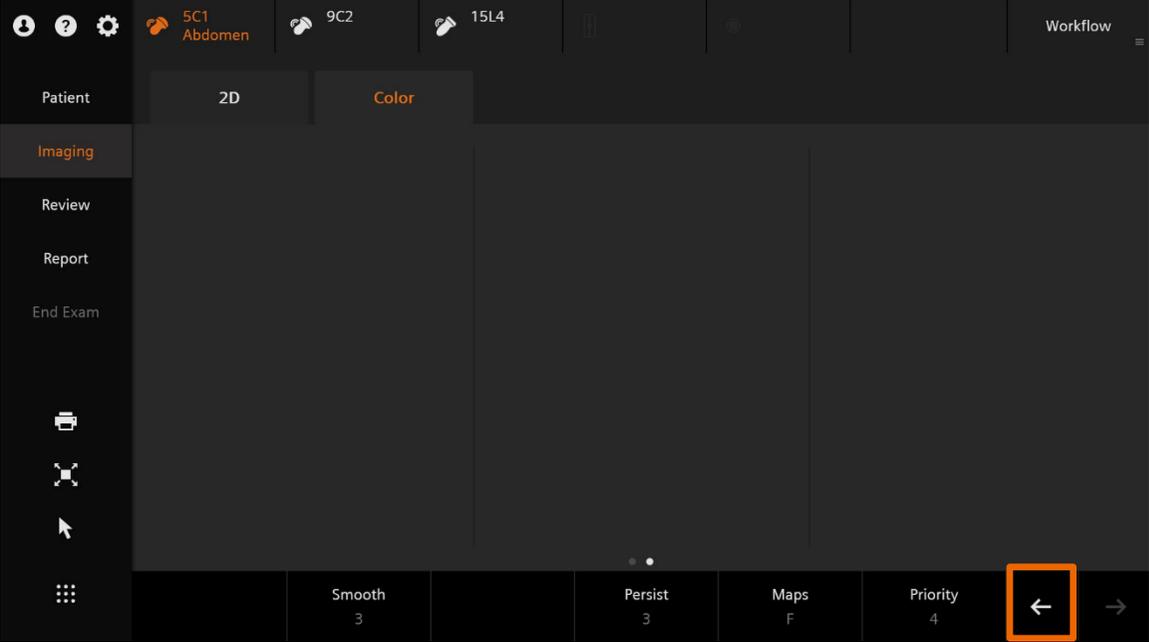
Doppler modes



Color controls on the Touch Screen

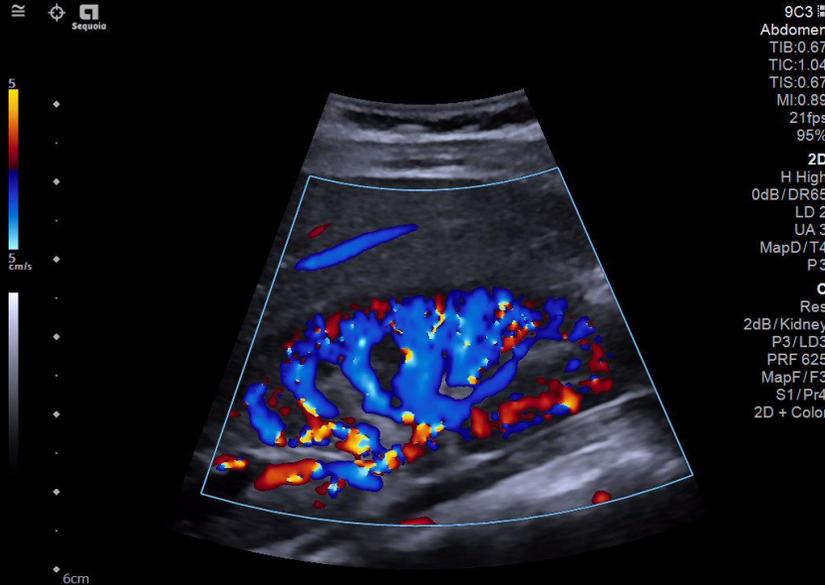
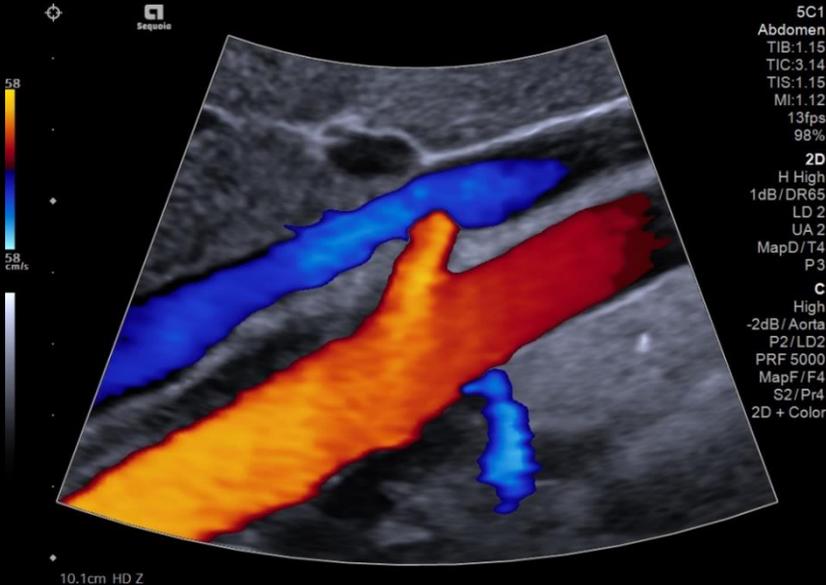


Page One



Page Two

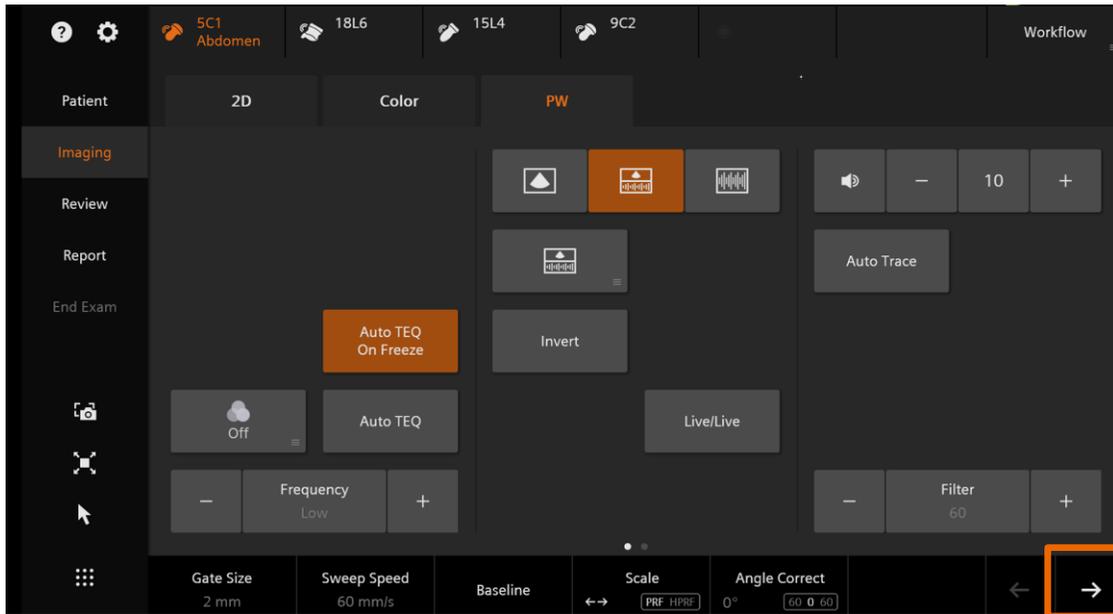
Color Doppler controls on the soft keys



⋮	Filter 2	Frequency Auto	Baseline	Scale	Line Density 2
---	-------------	-------------------	----------	-------	-------------------

⋮	Smooth 3	Persist 3	Maps F	Priority 4
---	-------------	--------------	-----------	---------------

PW controls on the Touch Screen

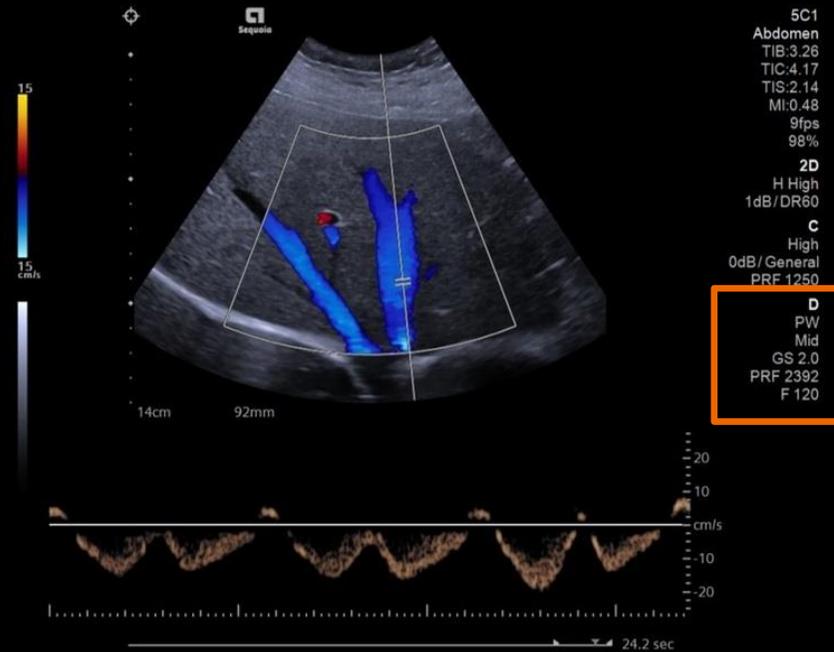


Page One



Page Two

PW Doppler controls on the soft keys



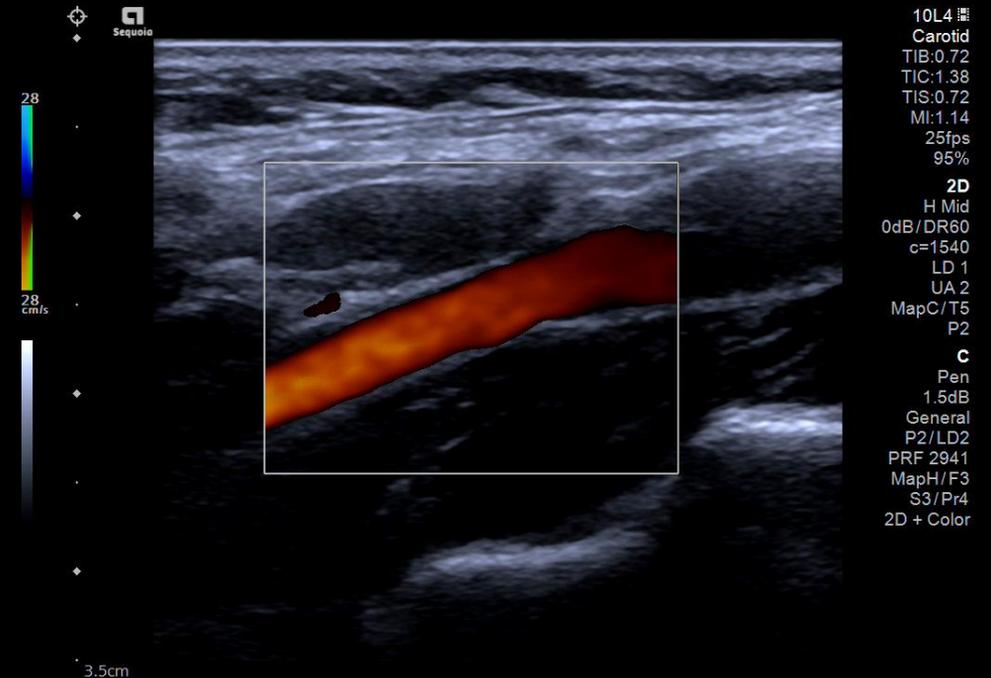
⋮	Gate Size 2 mm	Sweep Speed 60 mm/s	Baseline	Scale ←→ PRF HPRF	Angle Correct 0° (60 0 60)
---	-------------------	------------------------	----------	----------------------	-------------------------------

⋮	DR 60 dB	Edge 2	Maps D	Tint 5
---	-------------	-----------	-----------	-----------

Velocity variance map

Velocity variance map provides a variance in color flow display for differentiating complex flow patterns

- Available in Color Doppler velocity mode
 - Map H – General & Vascular
 - Map J – Cardiology
- Available on all transducers and presets



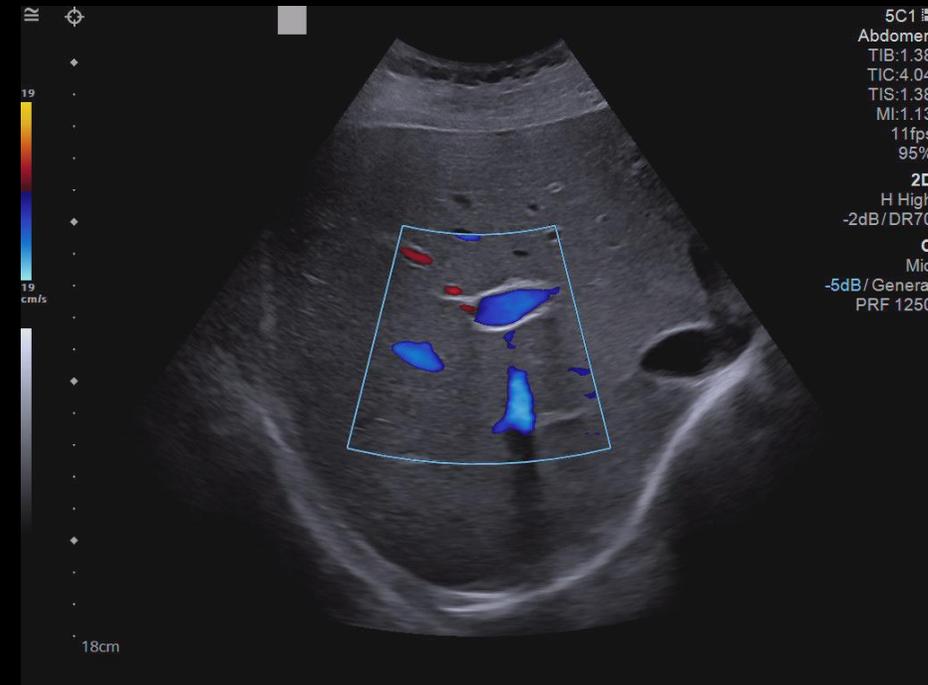
Objectives

- Review B-mode and M-mode controls
- Describe B-mode and M-mode optimization features
- Explain display modes
- Review Doppler controls
- **Describe Doppler optimization features**



Auto flash artifact suppression

Auto flash artifact suppression applies flash suppression relative to user motion



Color Doppler

5C1 Abdomen 18L6 15L4 9C2 Workflow

Patient 2D Color

Imaging L/R Flip U/D Flip Biopsy Off

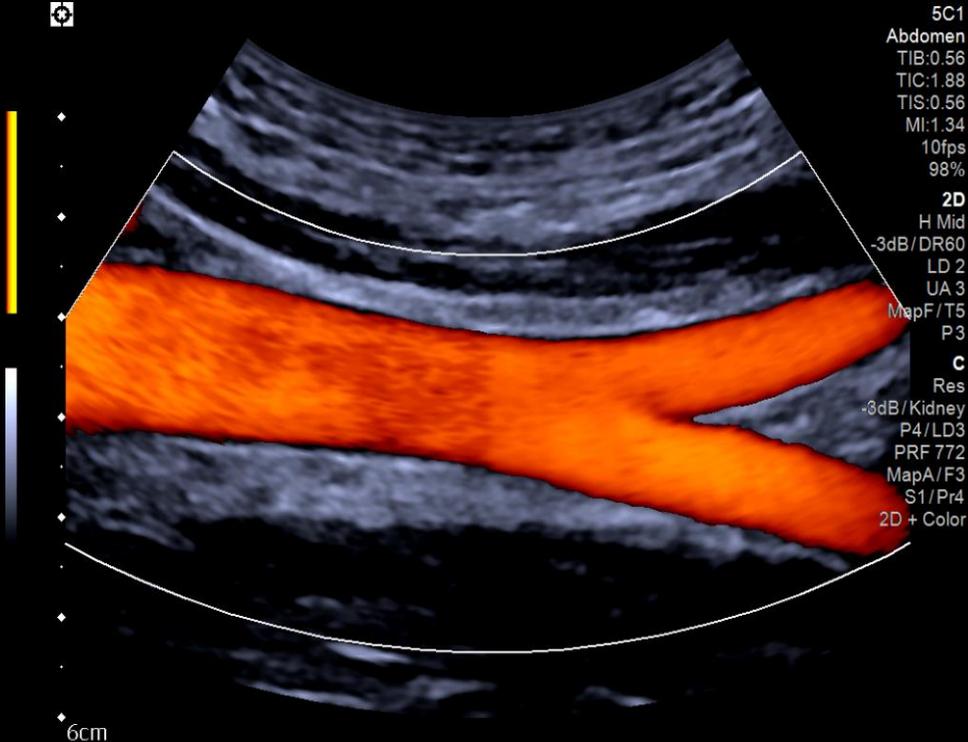
Review Panoramic

Report 2D + Color 2D Only Color Only Invert

End Exam Kidney Aorta Live Dual

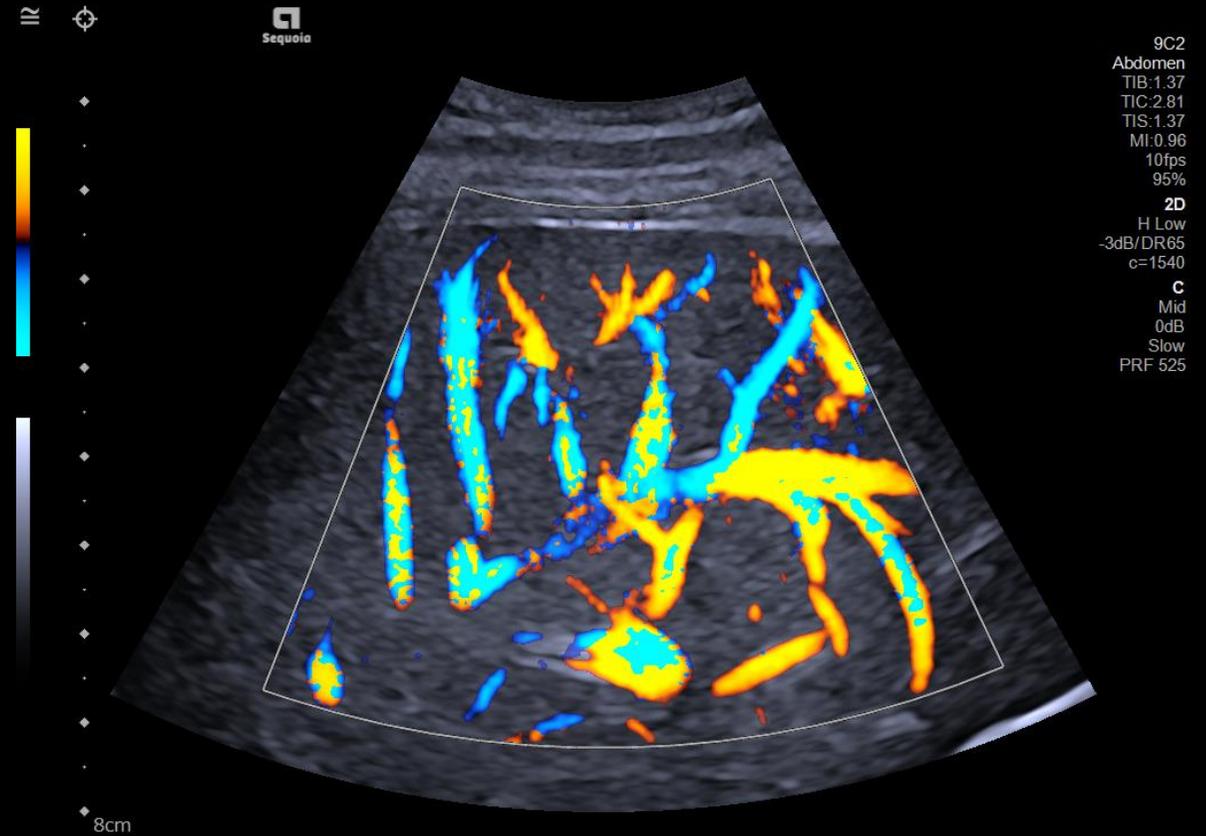
Low General High Color Power

Filter 2 Frequency Auto Baseline Scale Line Density 2



Display modes

2D + Color	2D Only	Color Only
Slow	Kidney	Aorta
Low	General	High

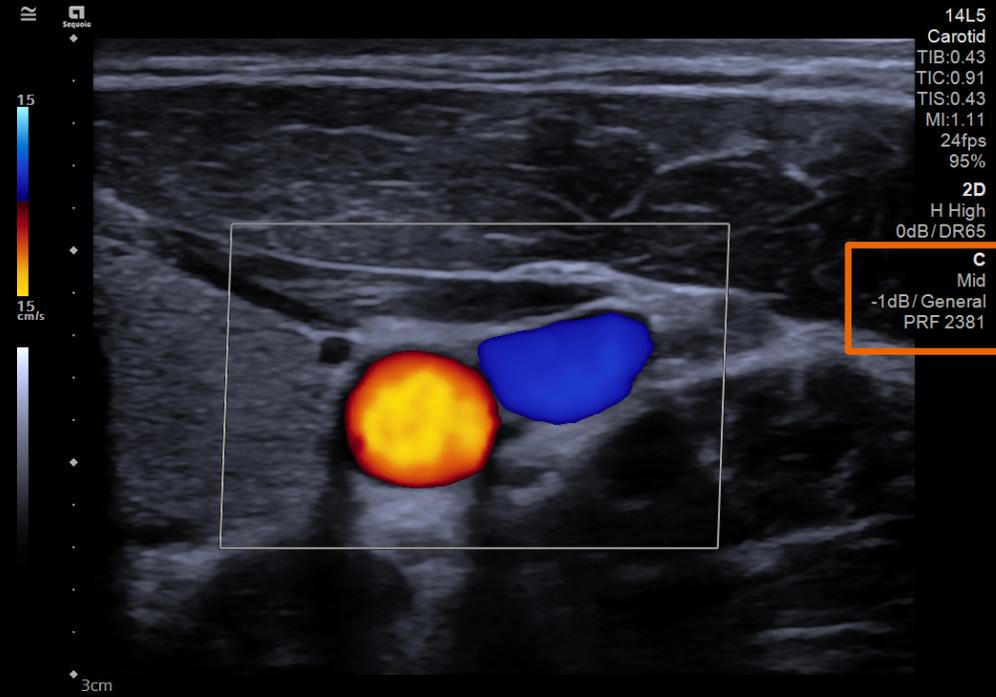
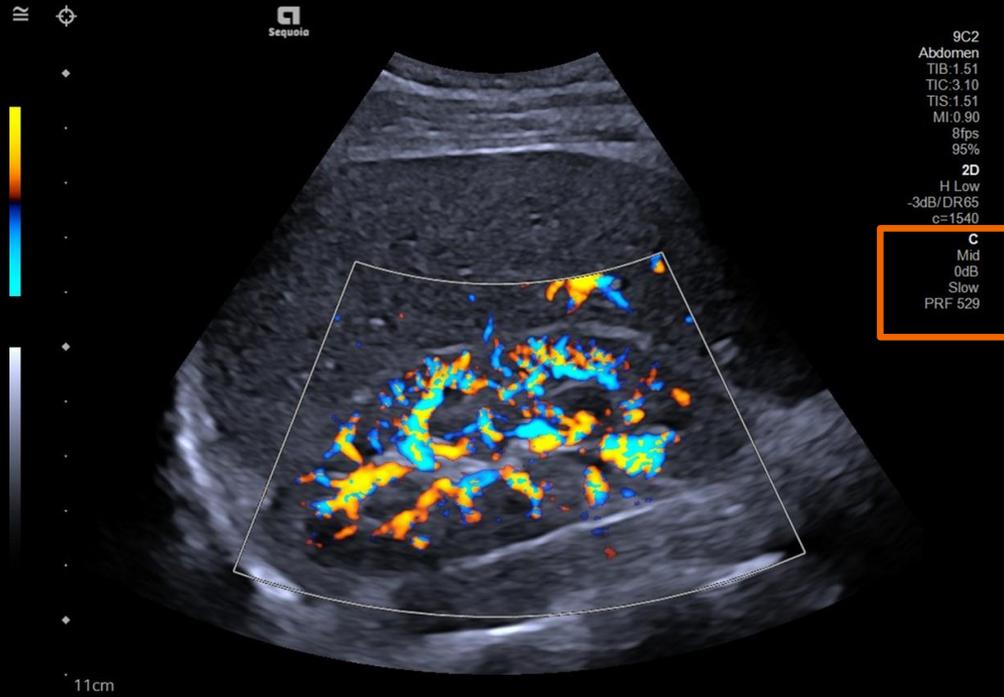


Flow states

2D + Color	2D Only	Color Only
Slow	Kidney	Aorta
Low	General	High



Flow state examples

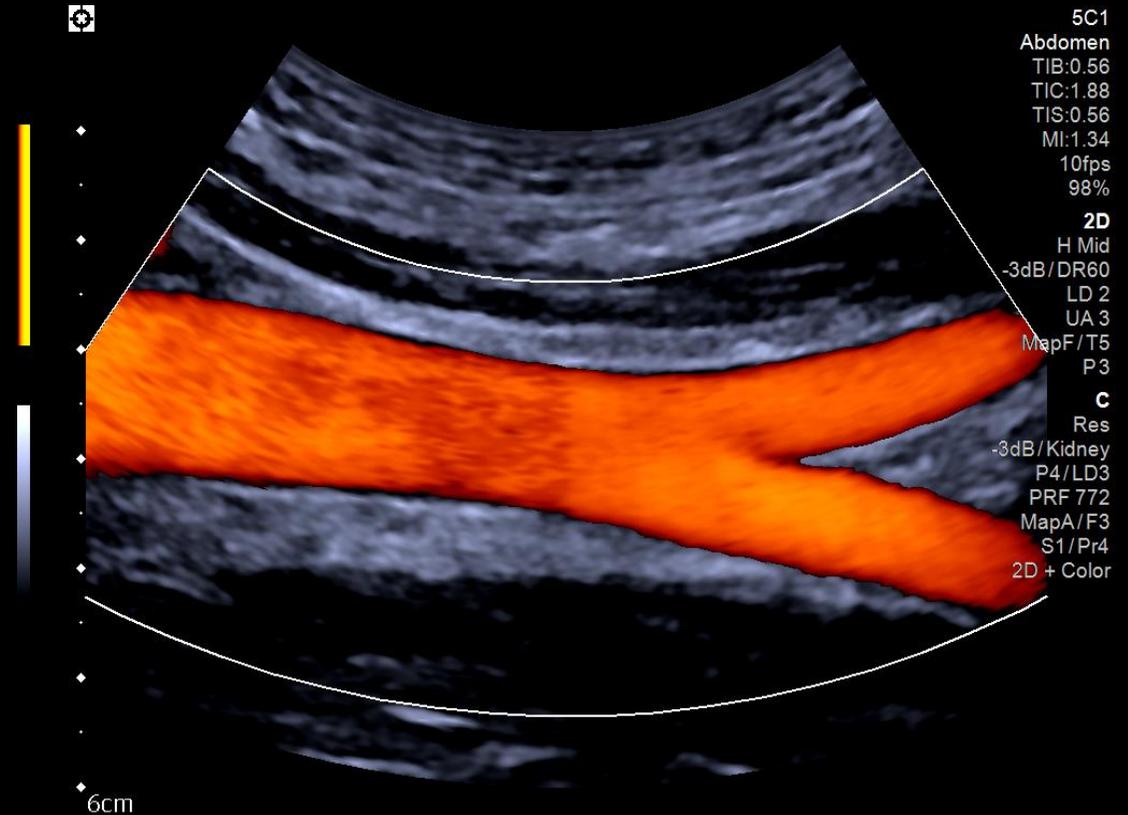


Dynamic MultiHertz Technology

Auto Manual

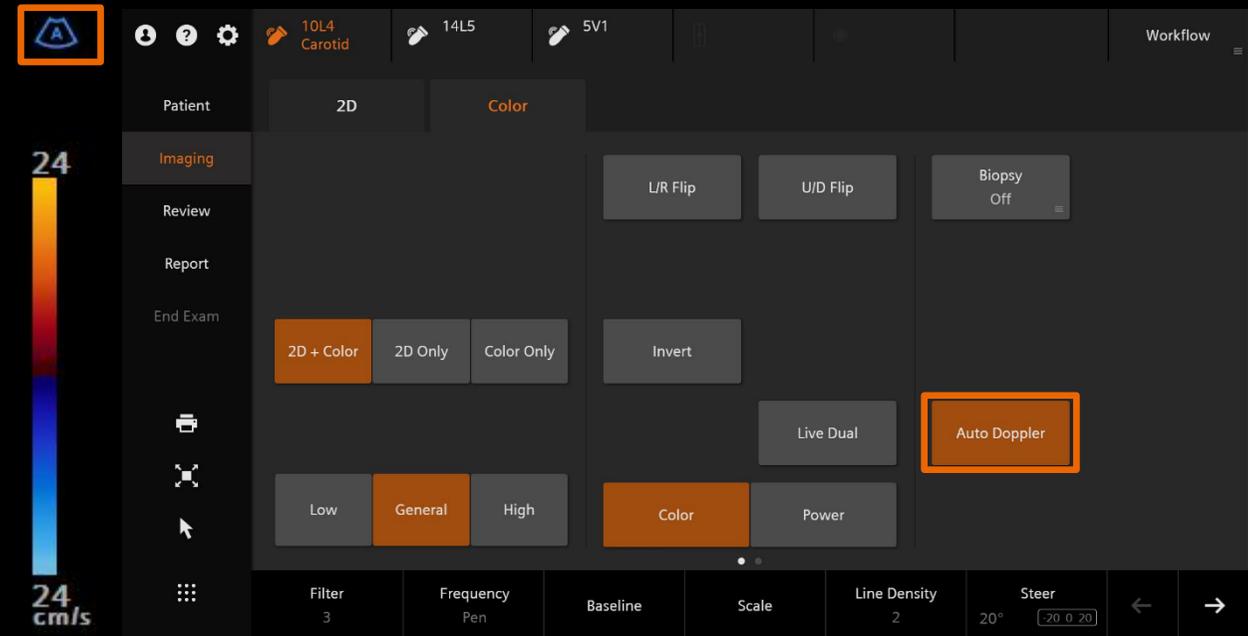
Frequency
Auto

Line Density
1



Auto Doppler

- Available on Touch Screen when Color or PW Doppler activated
- Automated placement of Color ROI
- Automated placement of the sample gate and 60 ° angle correct for Pulsed-wave Doppler
- Available on 10L4 Transducer in the carotid and arterial preset
- **Icon located above color bar**



Power Doppler

5C1 Abdomen 18L6 15L4 9C2 Workflow

Patient 2D Color

Imaging

Review

Report

End Exam

2D + Color 2D Only Color Only

Slow Kidney Aorta

Low General High

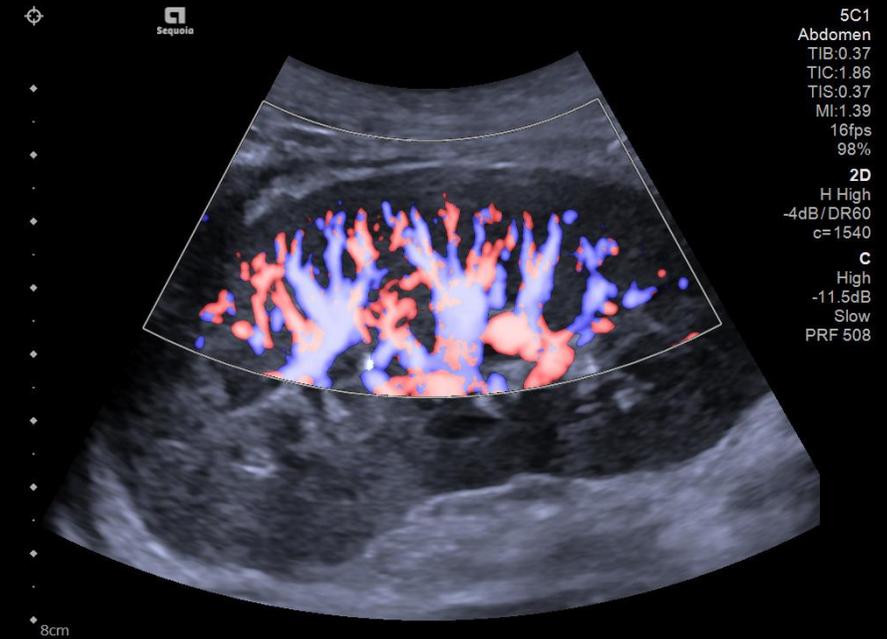
Color Power

LR Flip U/D Flip Biopsy Off

Panoramic

Live Dual Dir Power

Filter 3 Frequency Auto Scale Line Density 2



Slow Flow

5C1 Abdomen 18L6 15L4 9C2 Workflow

Patient 2D Color

Imaging

Review

Report

End Exam

L/R Flip U/D Flip Biopsy Off

Panoramic

Invert

2D + Color 2D Only Color Only

Slow Kidney Aorta Live Dual Dir Power

Low General High Color Power

Filter 3 Frequency Auto Scale Line Density 2

Sequoia

5C1 Abdomen
TIB:0.58
TIC:2.07
TIS:0.58
MI:1.39
16fps
98%

9cm

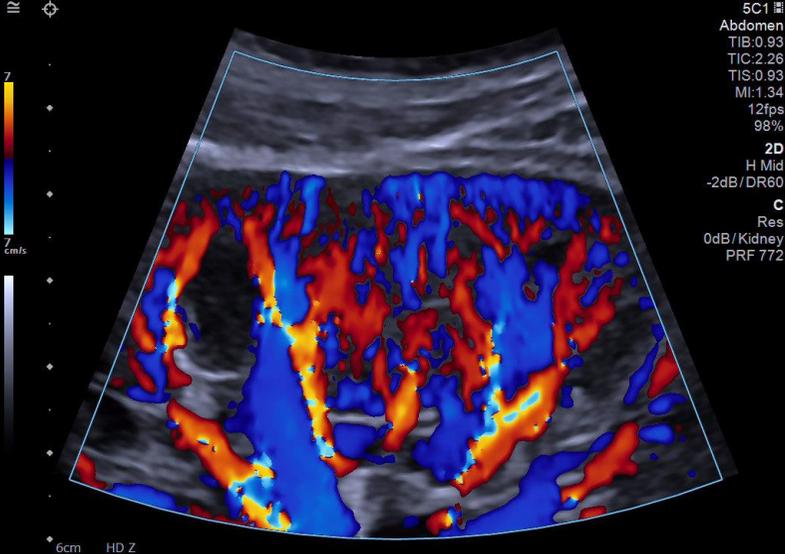
Color Doppler – Soft keys

Filter 2	Frequency Auto	Baseline	Scale	Line Density 2
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Page One

Smooth 3	Persist 3	Maps F	Priority 4
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Page Two



Power Doppler – Soft keys

Filter 3	Frequency Auto 	Scale	Line Density 2
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Page One

Gate Size 2 mm	Angle Correct 0° <input type="text" value="60"/> <input type="text" value="0"/> <input type="text" value="60"/>
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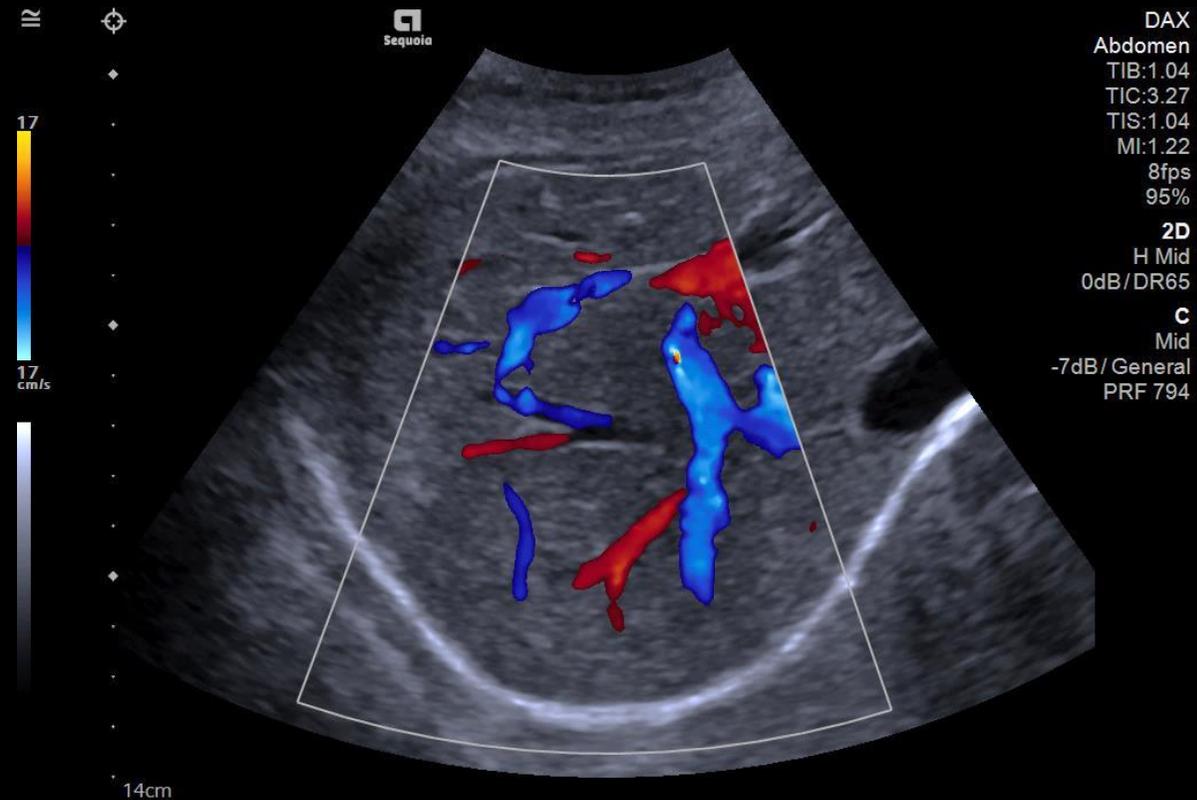
Page Two



9C3
Abdomen
TIB:0.40
TIC:0.79
TIS:0.40
MI:0.57
16fps
95%
2D
H Low
-5dB/DR60
LD 2
UA 3
MapE/T4
P3
C
Mid
-6dB/Aorta
P2/LD3
PRF 992
MapE/F3
S3/Pr4
2D + Color

Color post-processing

- 2D Gain
- Baseline
- Map
- Priority
- Invert



Pulsed wave (PW) Doppler



5C1 Abdomen 18L6 15L4 9C2 Workflow

Patient 2D Color PW

Imaging

Review

Report

End Exam

Auto TEQ On Freeze

Invert

Auto Trace

10

Off Auto TEQ

Frequency Low

Filter 60

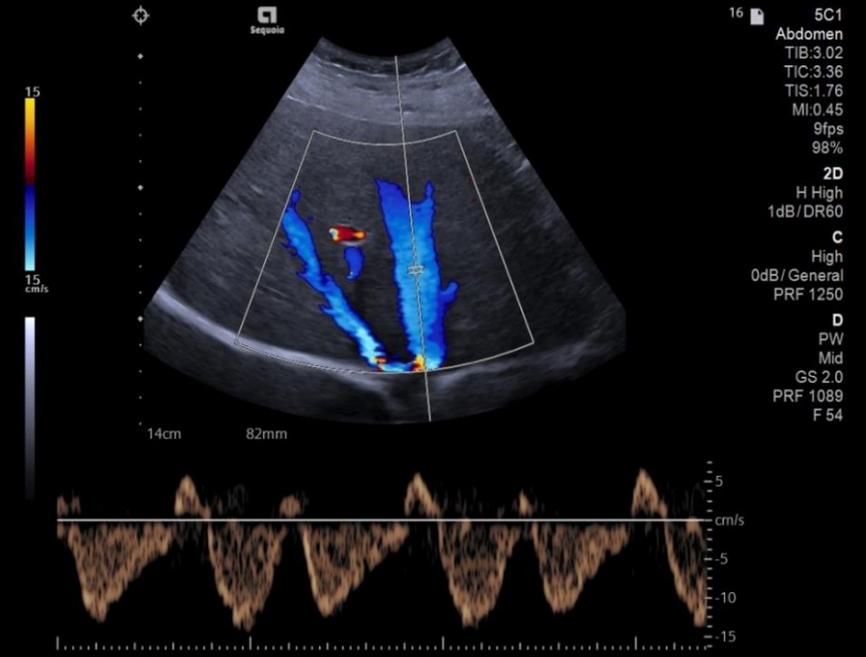
Gate Size 2 mm

Sweep Speed 60 mm/s

Baseline

Scale PRF HPRF

Angle Correct 0° 60 0 60

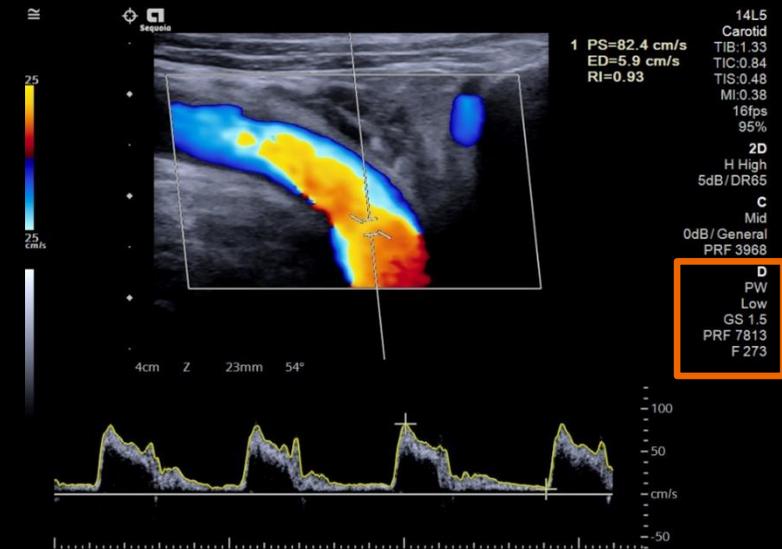


16 5C1
 Abdomen
 TIB:3.02
 TIC:3.36
 TIS:1.76
 MI:0.45
 9fps
 98%
 2D
 H High
 1dB/DR60
 C
 High
 0dB/General
 PRF 1250
 D
 PW
 Mid
 GS 2.0
 PRF 1089
 F 54

Pulsed wave (PW) Doppler – soft keys

Gate Size 2 mm	Sweep Speed 60 mm/s	Baseline ←→	Scale PRF HPRF	Angle Correct 0° 60 0 60
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Page One

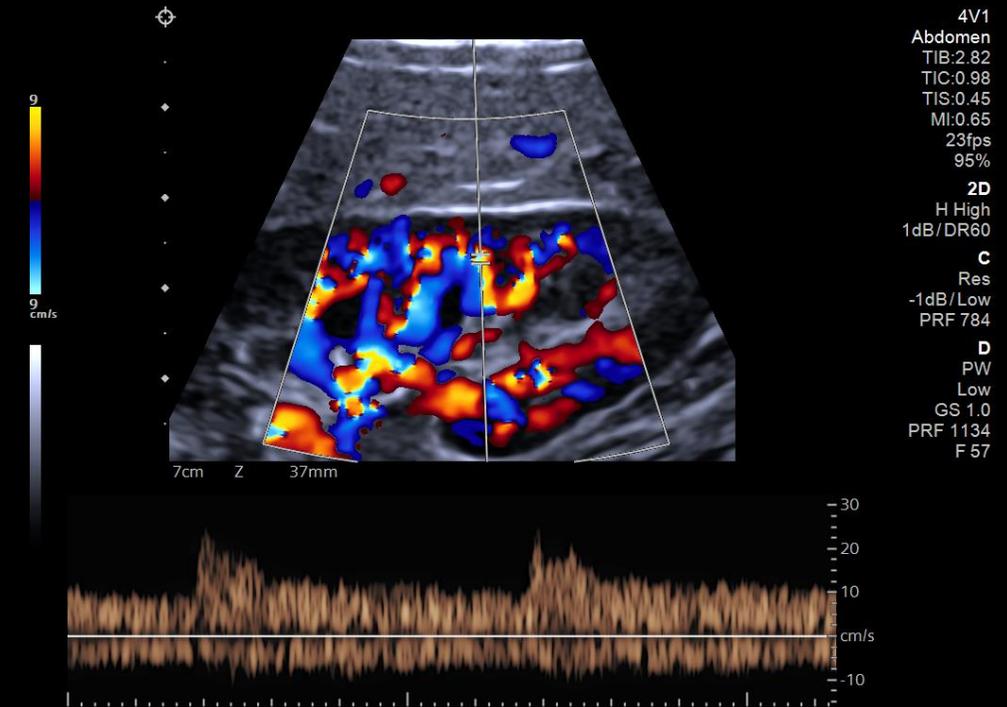


Pulsed wave (PW) Doppler – soft keys

	DR 60 dB	Edge 2	Maps D	Tint 5
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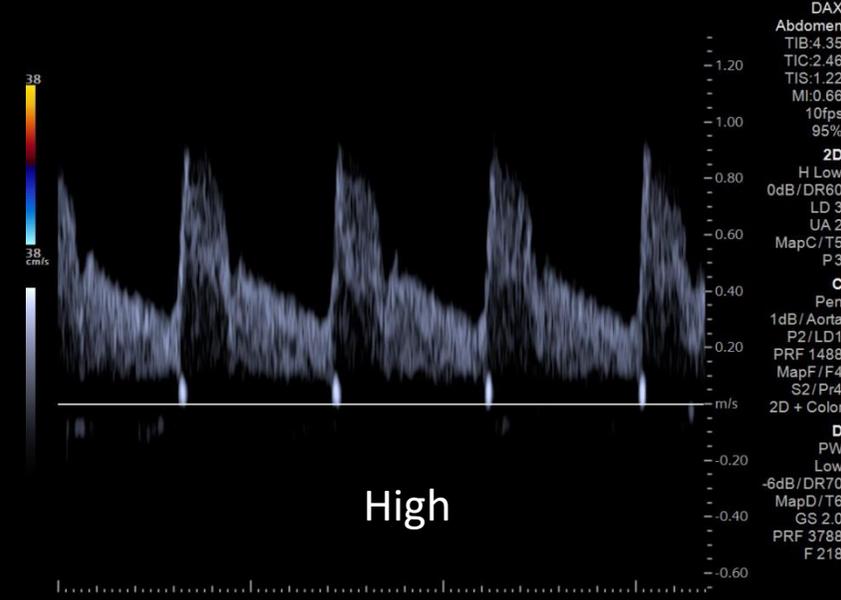
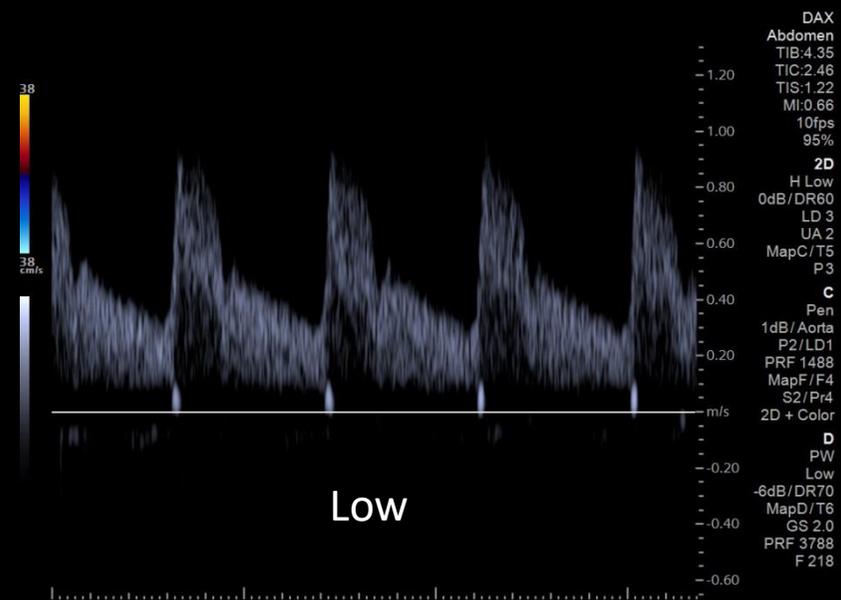
Page Two



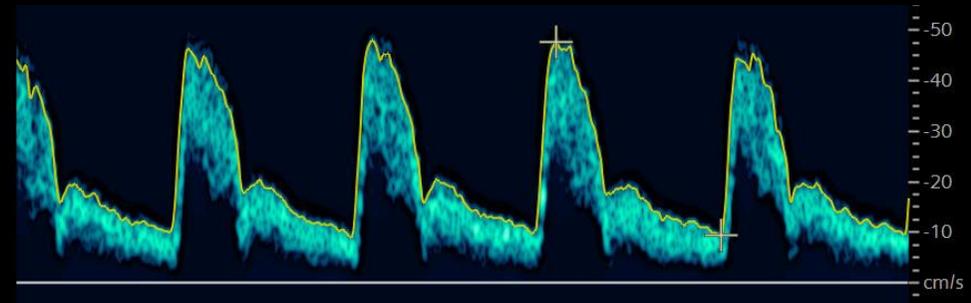
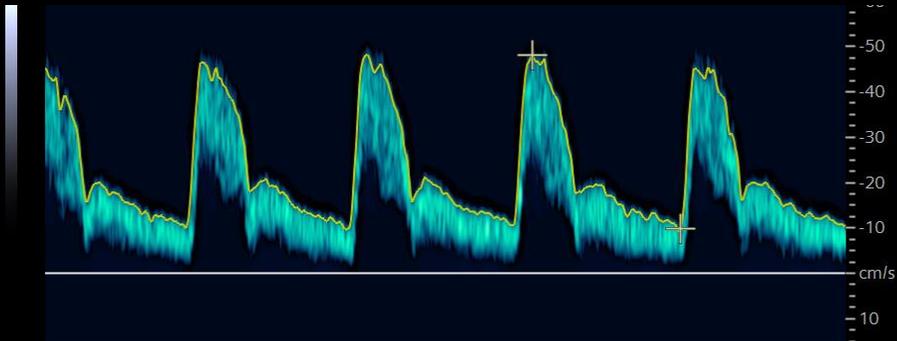
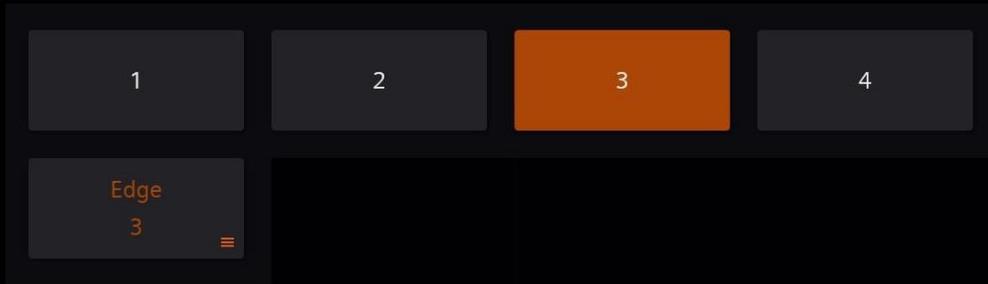


Off Low **Mid** High

Mid Live/Live



Edge in PW Doppler



Auto Trace Optimization & Sensitivity

7L2 5C1 Abdomen Workflow

Patient Imaging Review Report End Exam

2D Color PW

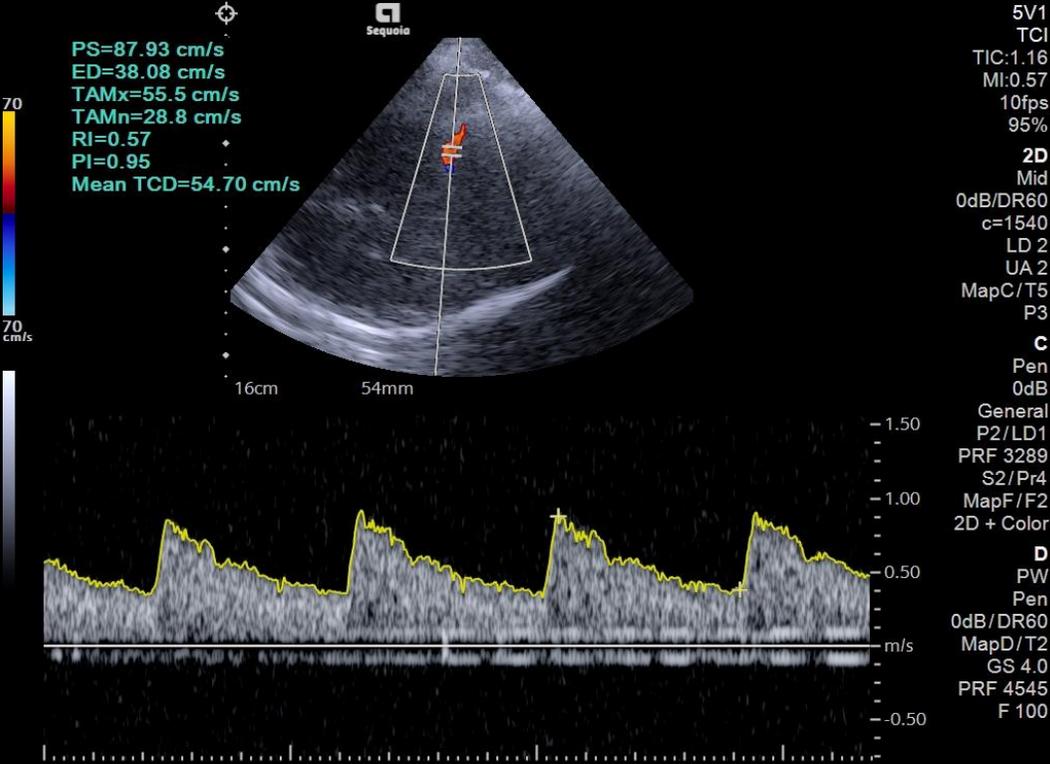
Auto TEQ On Freeze

Auto Trace Auto Trace Above Baseline

Sensitivity 10

Filter 60

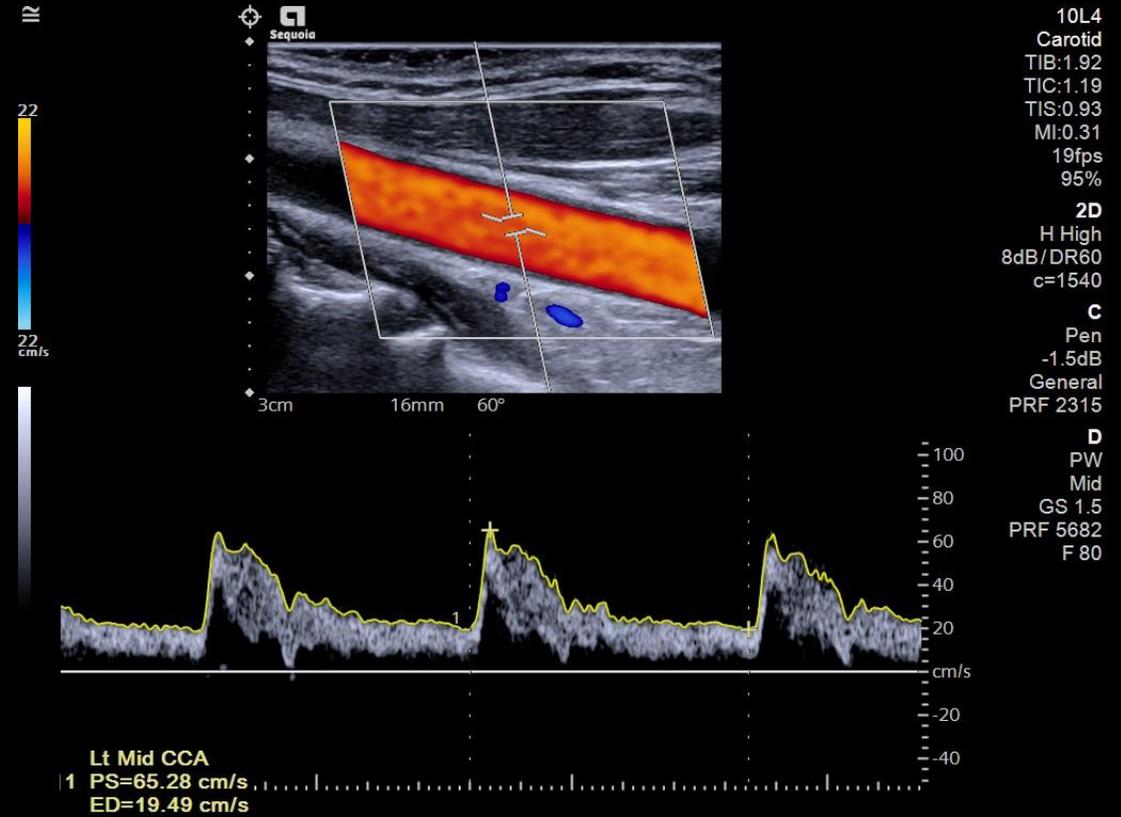
Gate Size 2 mm Sweep Speed 60 mm/s Baseline Scale PRF HPRF Angle Correct 0° 60 0 60



Auto Trace

Control panel for Auto Trace settings:

- Above Baseline
- Below Baseline
- Above and Below
- Auto Trace
- Auto Trace Above Baseline
- Auto Trace
- Auto Trace Above Baseline



Auto Trace configuration

System Configuration

- System Settings
- Workflow Enhancement
- Imaging Settings
- Measurement & Report
 - Measurement
 - Touch Screen Measurement Config
 - Custom Measurement Label
 - Custom Calculations
 - Report
 - OB Tables
 - Annotations
 - Features
 - Transducer
 - Connectivity & Network
 - Peripheral Devices
 - System Management

Exam Package: Cardiac

CINE Measurement Behavior

- Erase in CINE

2D Tools

- Volume Tool
- 3 Distances
- Area %Stenosis Tool
- Ellipse + Trace
- Generic Area Ratio Tool
- Trace

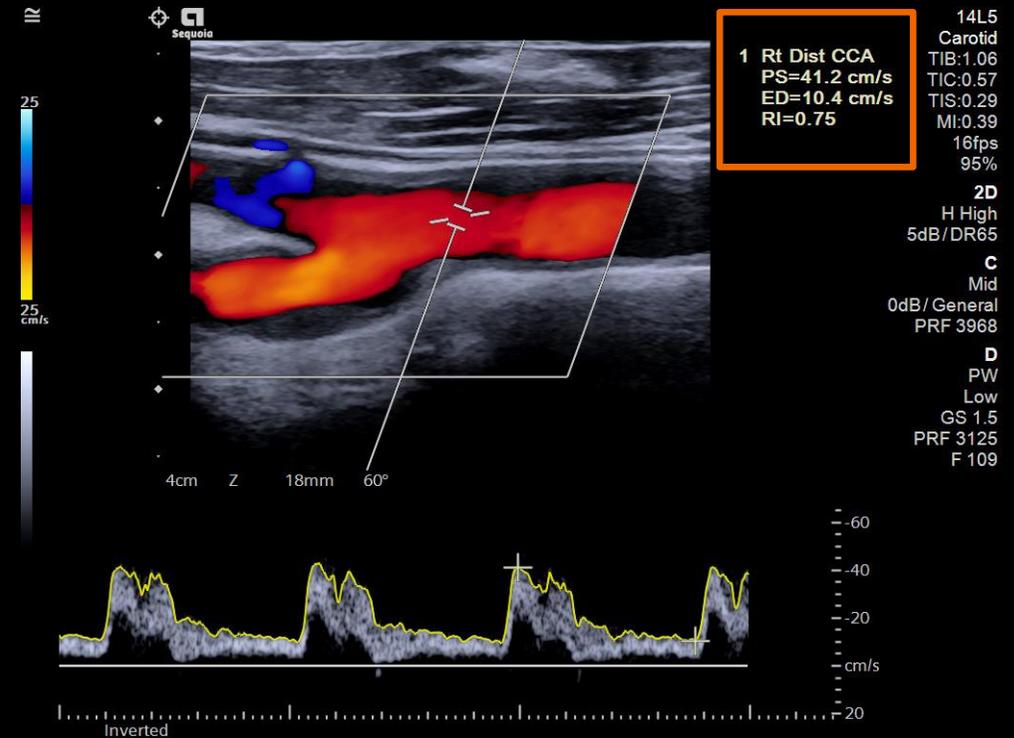
Doppler Tools

- Default Tool: Velocity
- Volume Flow Tool
- Volume
- Distance
- Flow
- Heart Cycle

Result Format	Show	Unit	Precision
IVS		cm	0.00
LVPW		cm	0.00
LVID		cm	0.00
%Stenosis		%	0
A	<input checked="" type="checkbox"/>	cm ²	0.00
A (B)		cm ²	0.00
A (E)		cm ²	0.00
Accel	<input checked="" type="checkbox"/>	m/s ²	0.00
Angle		°	0
Area Ratio			0.00
AT	<input type="checkbox"/>	ms	0
Average Distance		cm	0.00
C		cm	0.00
C10	<input type="checkbox"/>	mm	0.00
D		cm	0.00
D (B)		cm	0.00

Restore Defaults: Cardiac

TAMx	<input checked="" type="checkbox"/>	Show	cm/s	0.0
Time	<input type="checkbox"/>	Show	ms	0
Tr Semi Major Axis	<input type="checkbox"/>	Show	cm	0.00
Vel			cm/s	0.0
Velocity Ratio				0.00
Vmax	<input checked="" type="checkbox"/>	Show	cm/s	0.0
Vmean	<input type="checkbox"/>	Show	cm/s	0.00

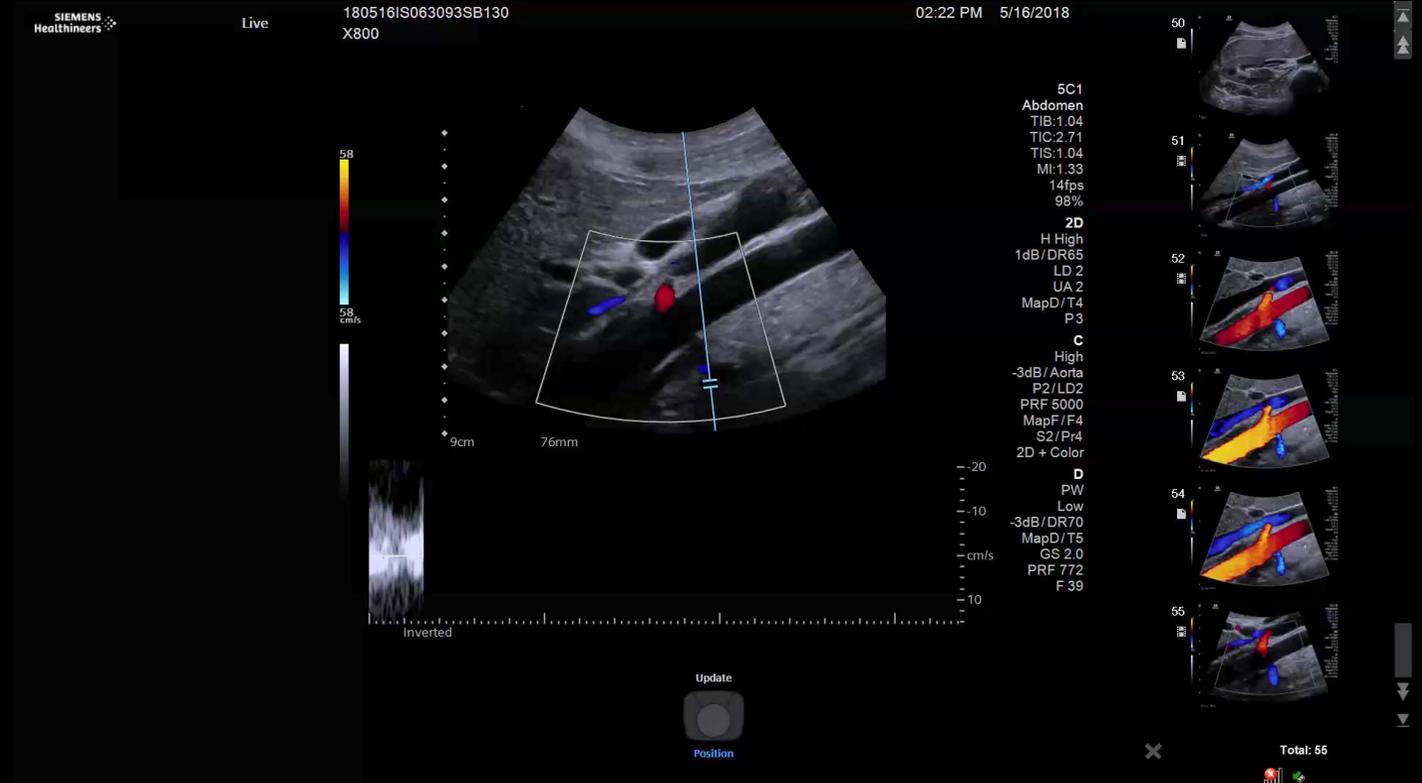
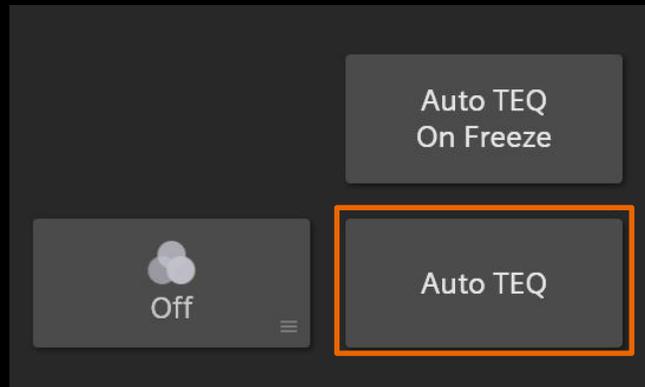


Auto TEQ tissue equalization technology

Doppler optimization

Automatic spectral Doppler optimization of:

- Gain
- Scale/Baseline
- Dynamic Range



Auto TEQ tissue equalization technology

Doppler optimization

System Configuration

- System Settings
- Workflow Enhancement
- Imaging Settings
 - General
 - Capture Settings
 - Imaging Mode**
 - Image Parameter Display
- Measurement & Report
- Annotations
- Features
- Transducers
- Connectivity & Network
- Peripheral Devices
- System Management

Exam Presets: **Abdomen**

Imaging Cursor Workflow

- Enable Cursor Mode

Doppler and M-Mode

- Enable Automatic Color Invert

Doppler Mode

Display Format: **1/2 2D, 1/2 Trace**

M Mode

Display Format: **2/3 2D, 1/3 Trace**

Freeze Behavior

Default Menu on Touch Screen: **Mode Menu**

In Review: **Play/Pause CINE**

Thermal Index Display

- TIS
- TIB
- TIC

Doppler Auto TEQ

Parameters

- Gain
- Dynamic Range
- Scale/Baseline

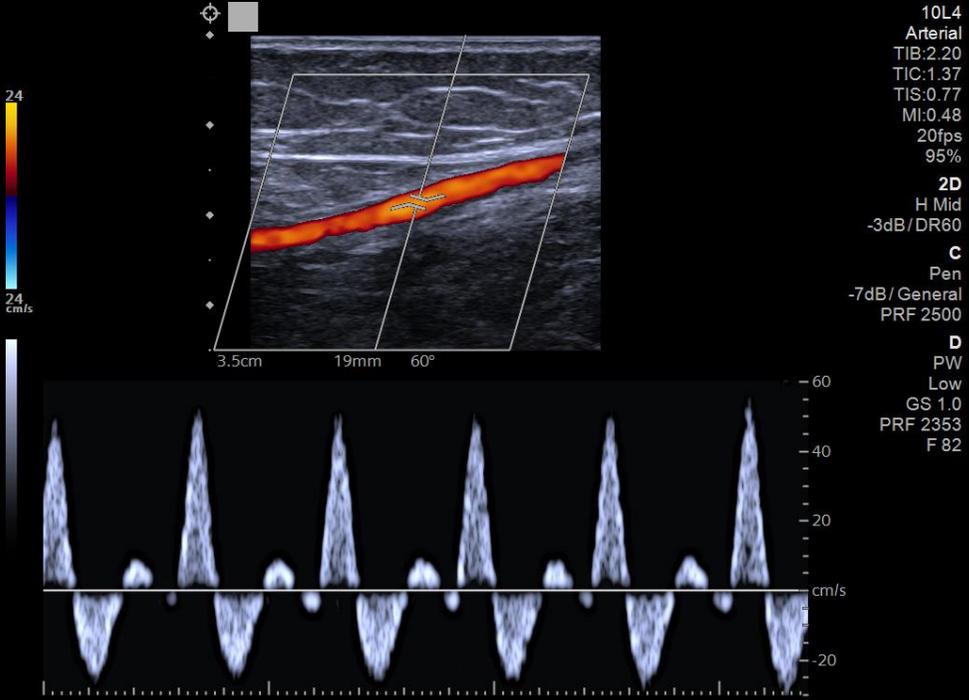
Doppler Auto TEQ on Freeze

- Off
- On

Doppler Auto TEQ Target Spectral Intensity

PW: **Low**

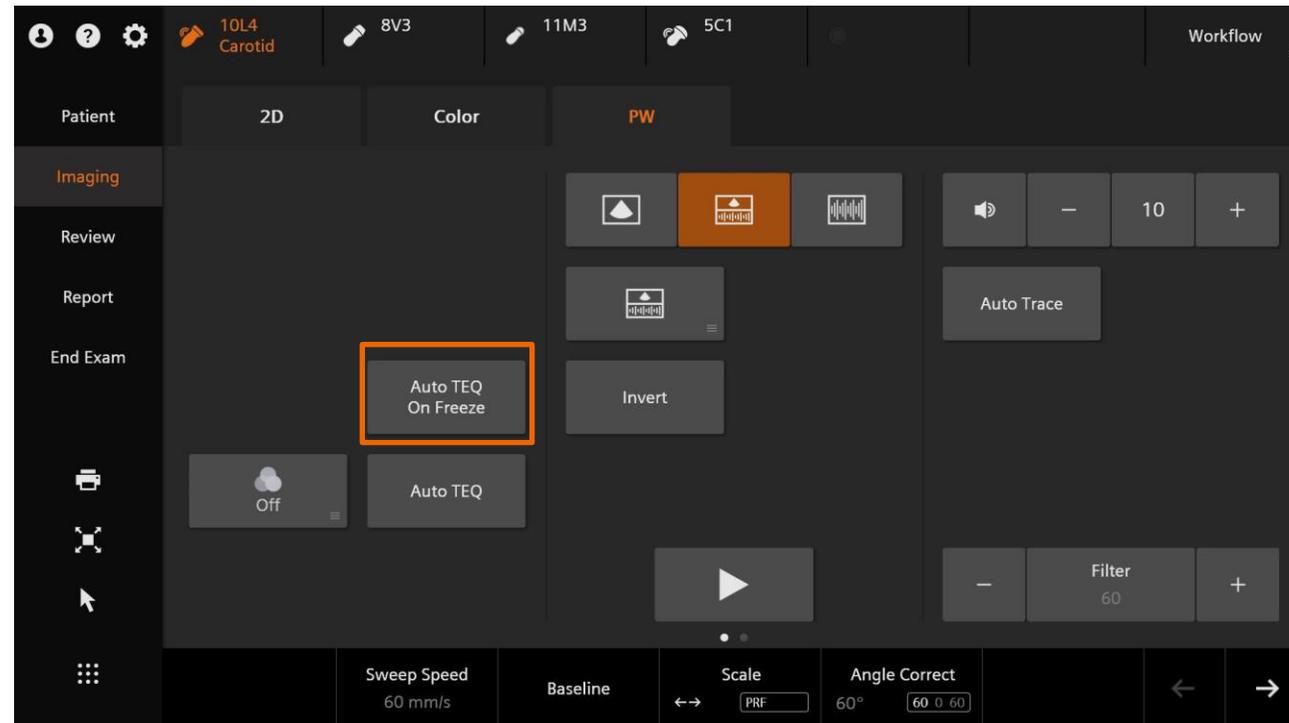
CW: **Medium**



Auto TEQ on Freeze Touch Screen

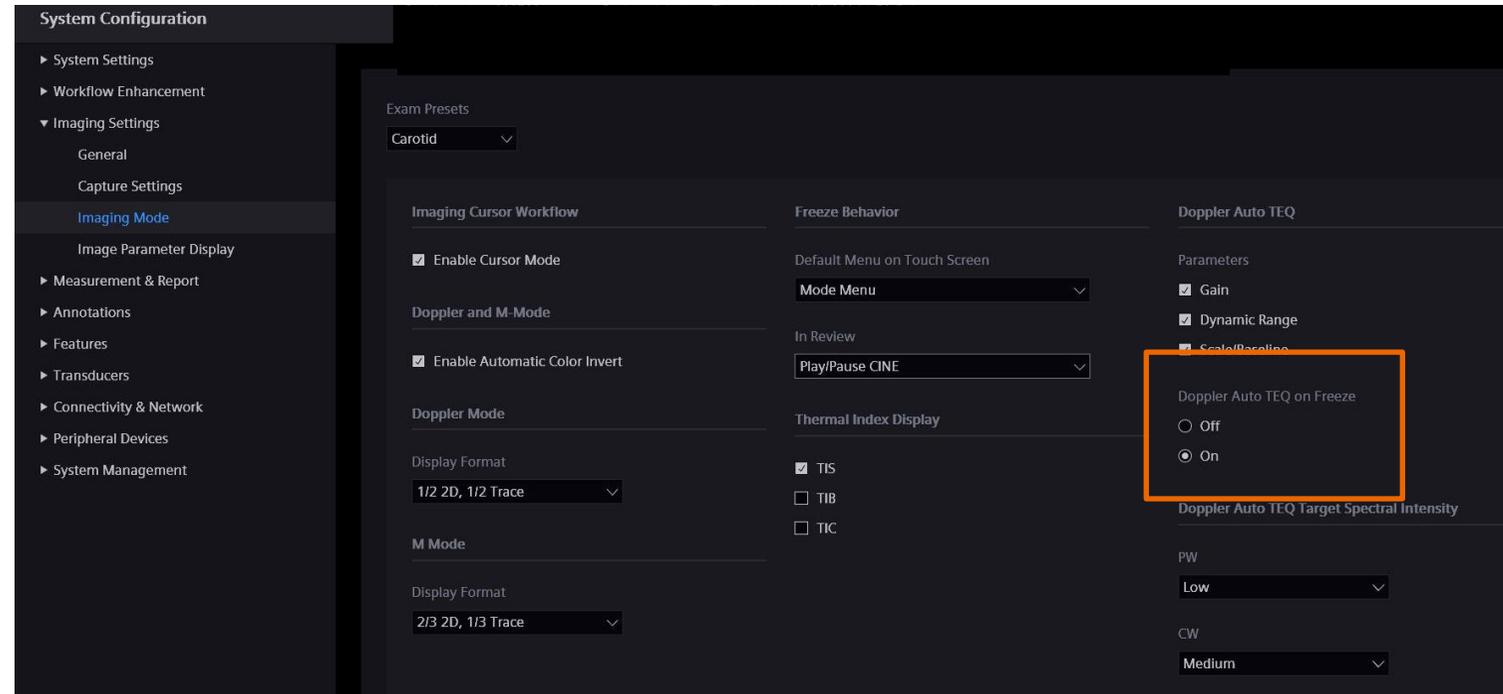
Touch Screen PW Mode
Button will only appear
when Doppler TEQ on
freeze is *turned on*

- When feature is activated: scale and baseline will automatically optimize on freeze
- When the feature is not activated: scale and baseline is set by user and remain unchanged after freeze



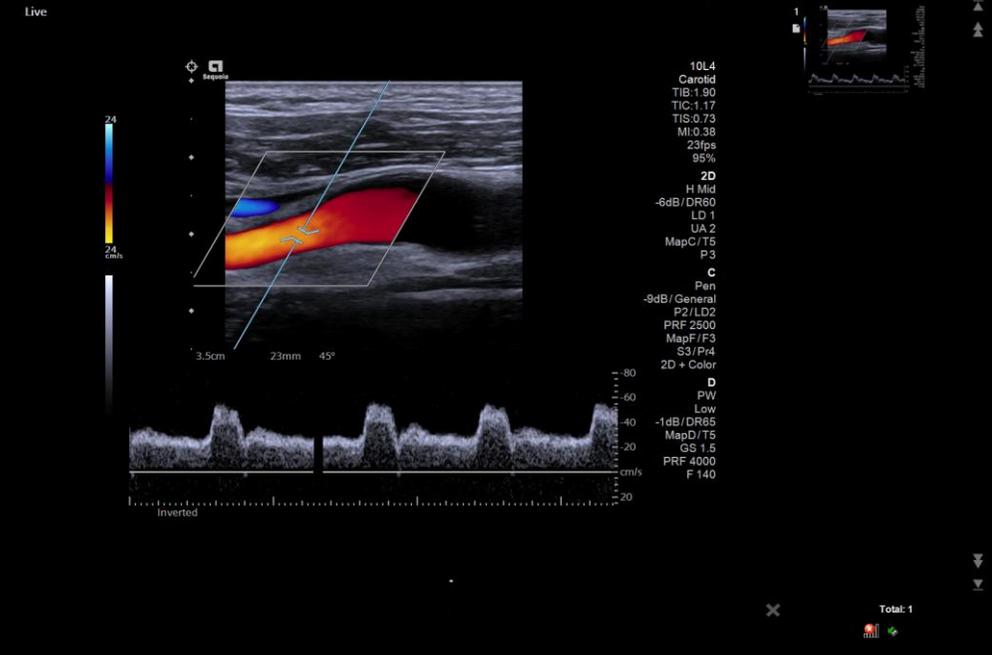
Doppler Auto TEQ on Freeze

- There is the option to pause Auto TEQ on Freeze
- System Configuration > Imaging Settings > Imaging Mode > Imaging Settings > Imaging Mode > doppler Auto TEQ on Freeze

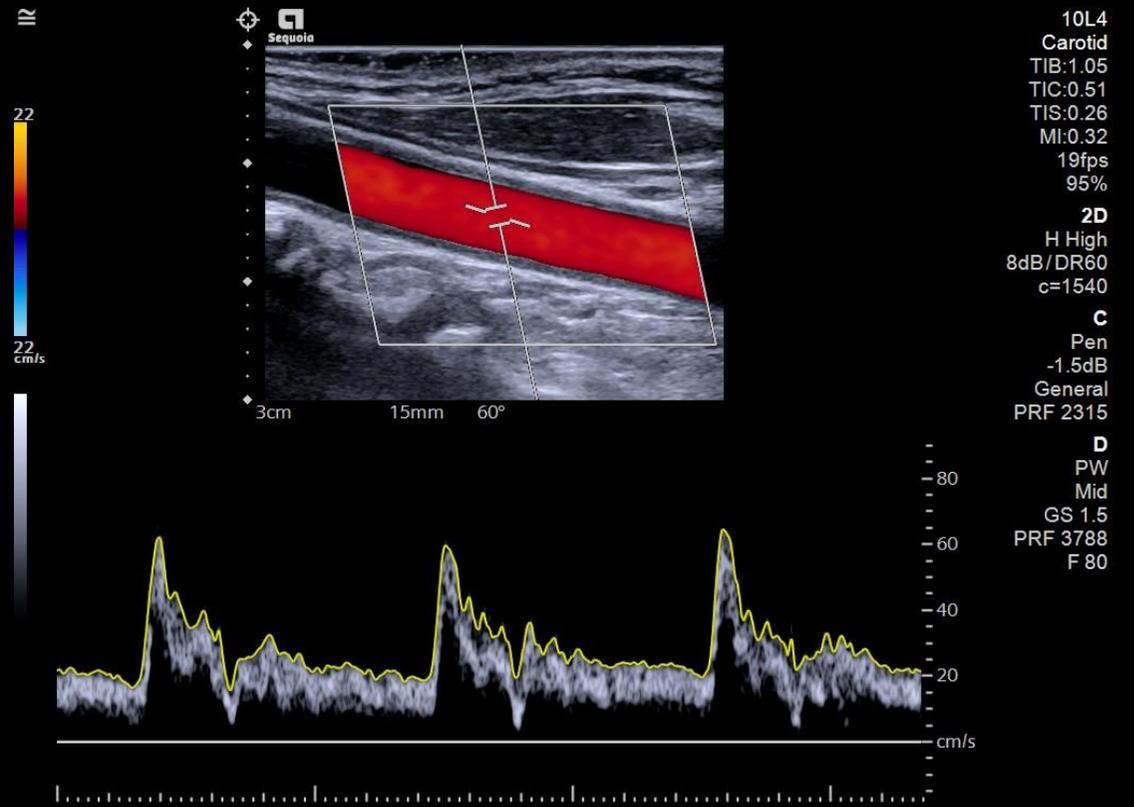
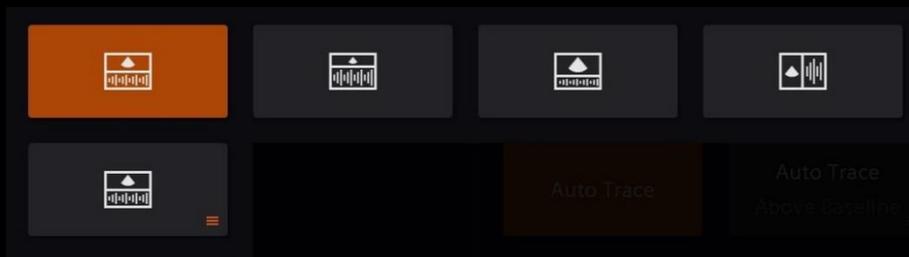
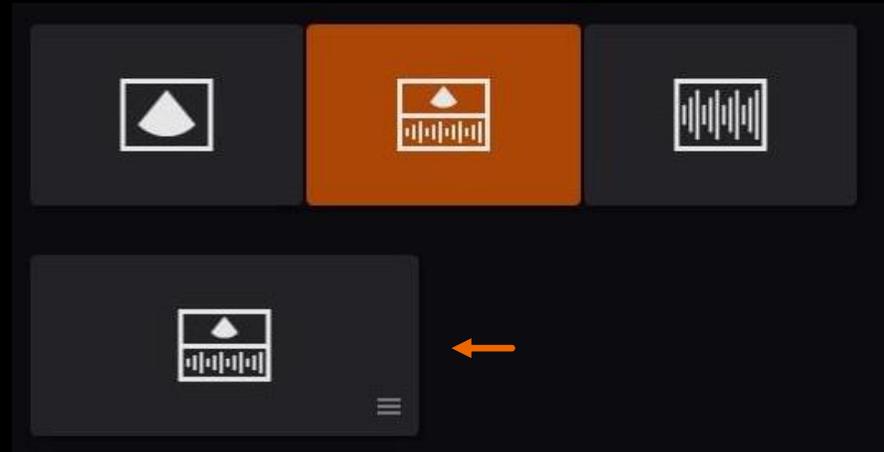


Live/Live (triplex)

The image shows a Siemens ultrasound control panel. At the top, there are patient and exam identifiers: '5C1 Abdomen', '18L6', '15L4', and '9C2'. Below these are tabs for 'Patient', '2D', 'Color', and 'PW'. The 'PW' (Pulsed Wave) mode is selected. In the center, there are several control buttons: a volume icon, a gain icon, a waveform icon, a speaker icon, and a gain slider set to '10'. Below these are buttons for 'Auto Trace', 'Invert', and 'Auto TEQ On Freeze'. The 'Live/Live' button is highlighted with an orange border. At the bottom, there are settings for 'Gate Size' (2 mm), 'Sweep Speed' (60 mm/s), 'Baseline', 'Scale' (PRF HPRF), and 'Angle Correct' (0°).

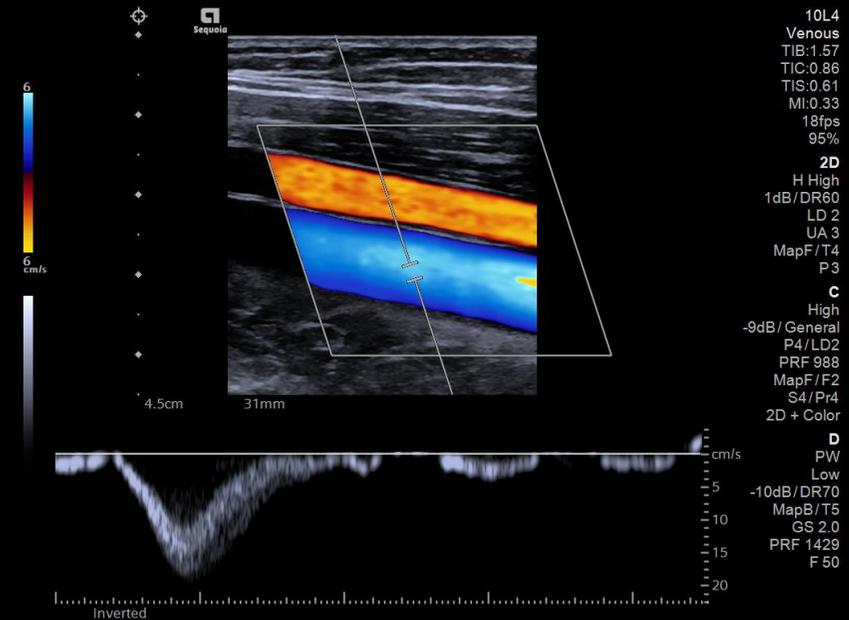


Display modes



Doppler post-processing

- 2D/PW Gain
- Scale
- Baseline
- Invert
- Angle Correct
- Edge
- Auto Trace
- Ultra Art
- Sweep Speed
- Dynamic Range
- Maps
- Tints
- Format (1/3-2/3, side-by-side, 2/3-1/3, 1/2-1/2)



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Thank you for your enthusiasm!

Questions?