SIEMENS Healthineers

# 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

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**Selection Screen**

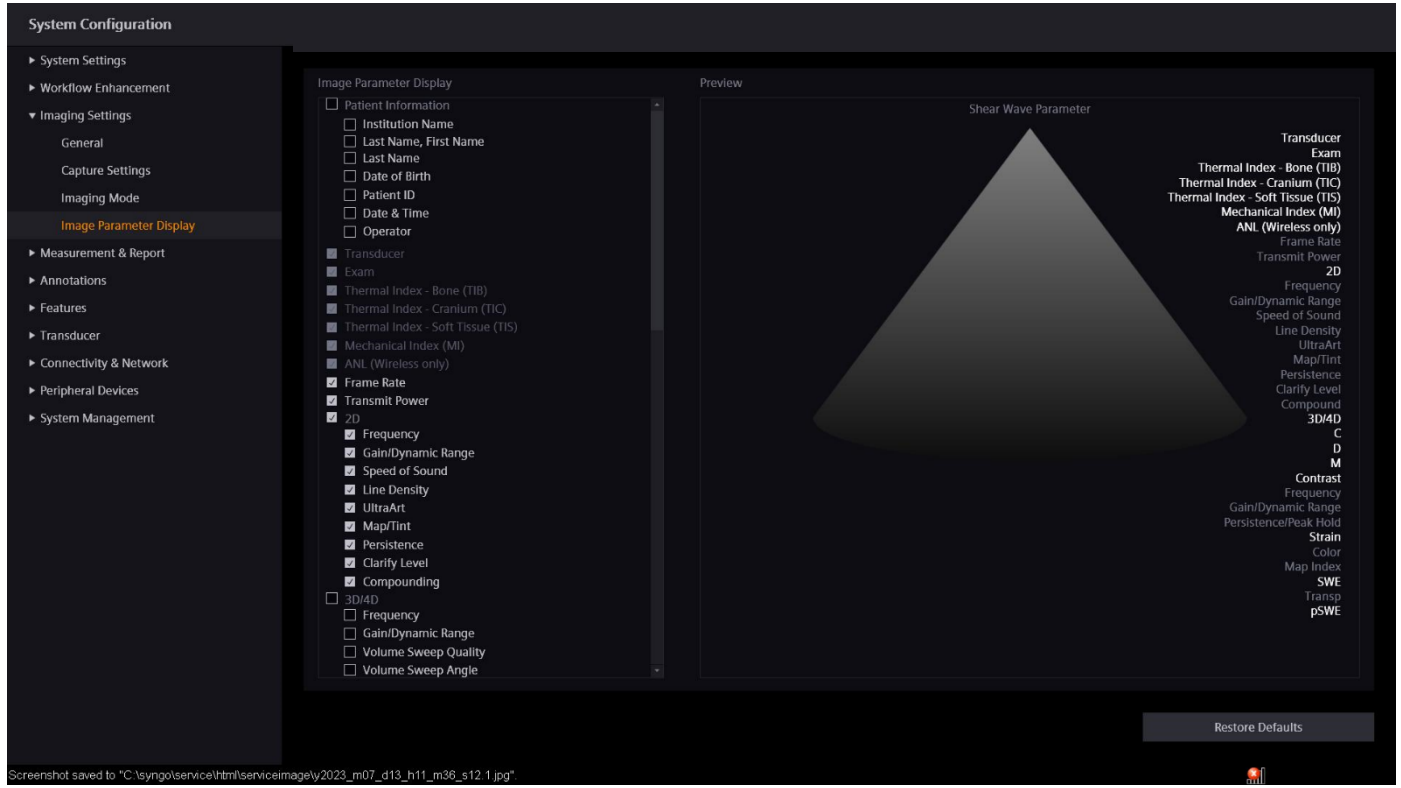
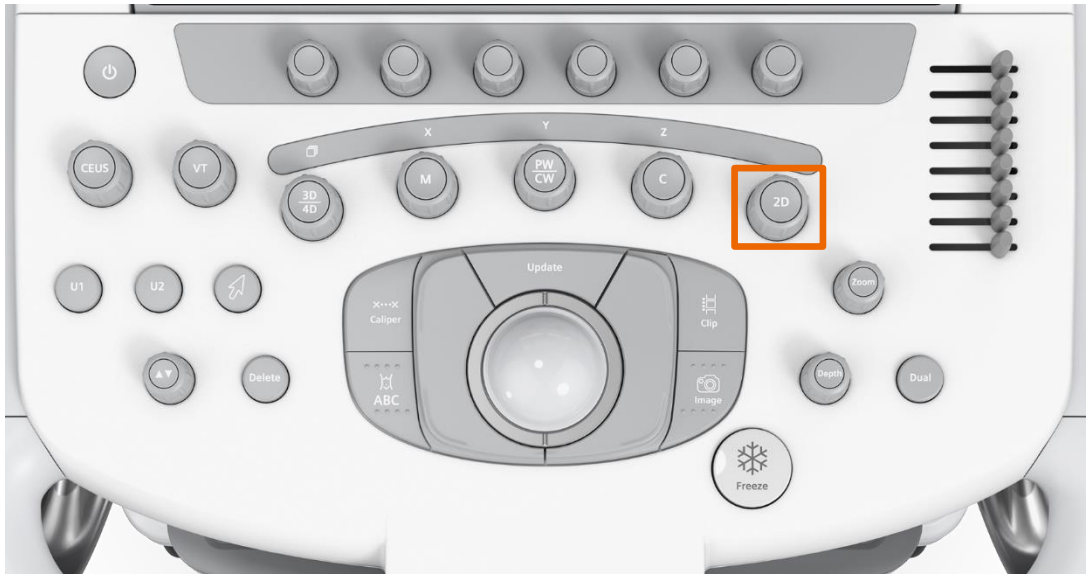


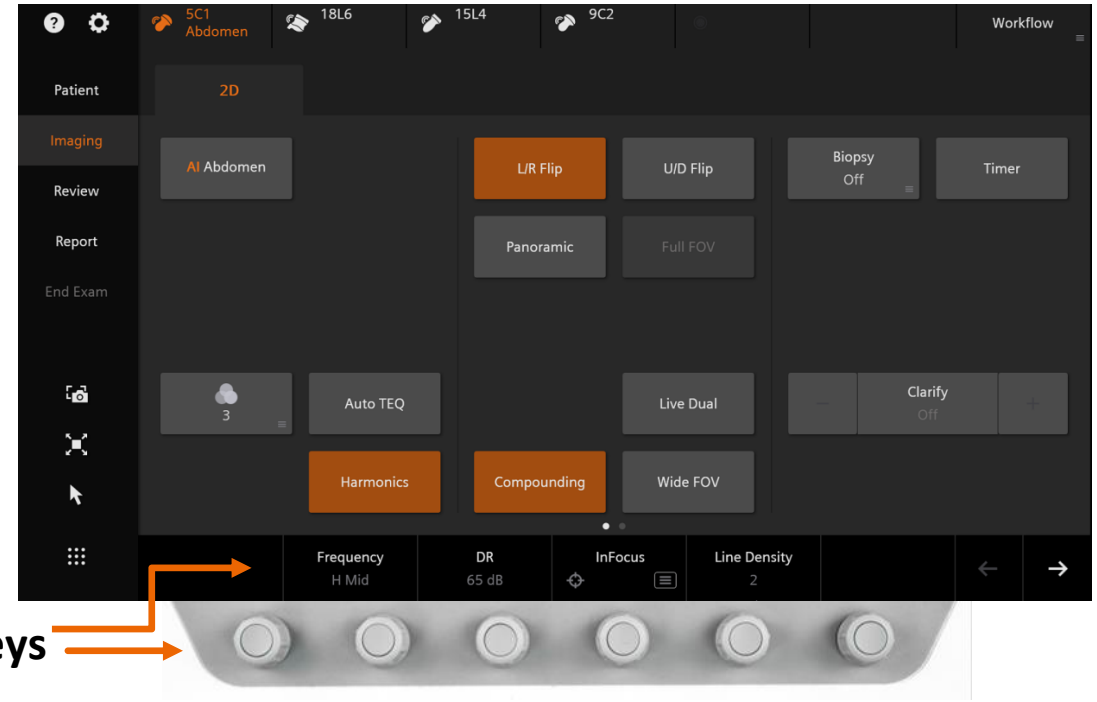

**Image Screen Display**

# B-mode controls

## Control Panel




## Touch Screen




**Soft Keys**

# Control panel

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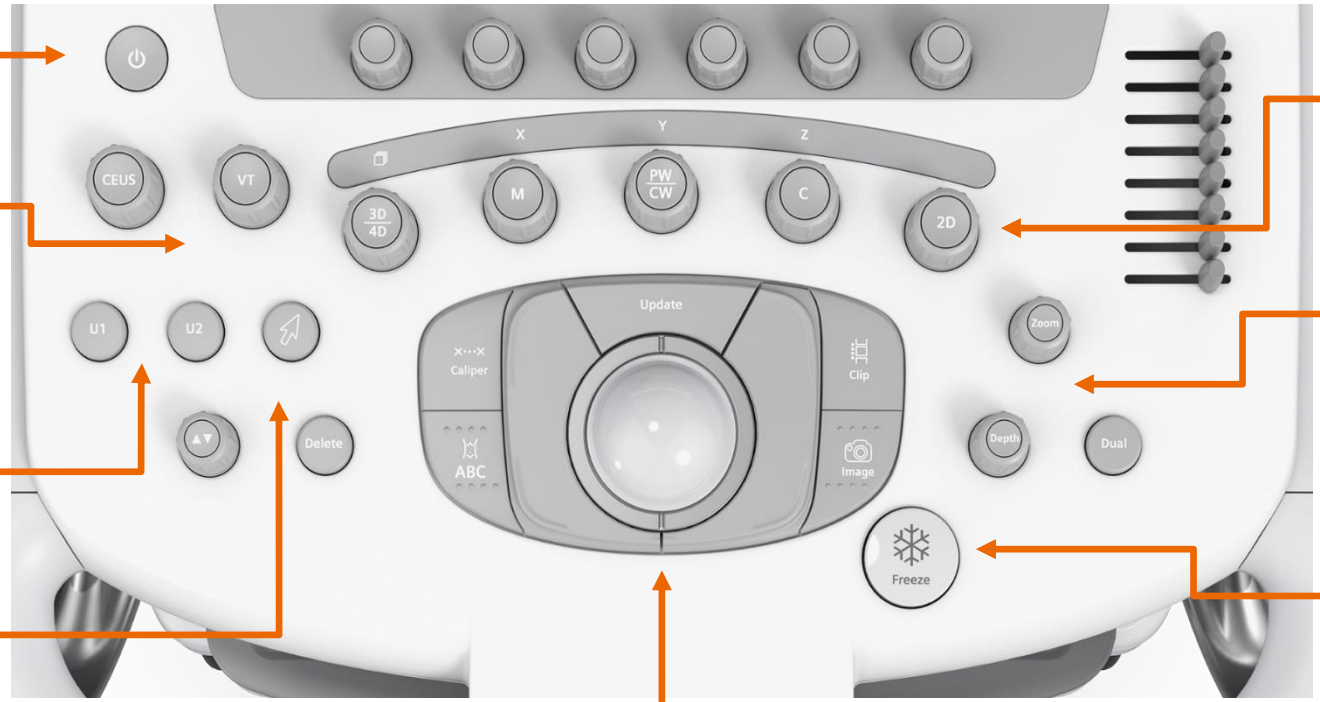
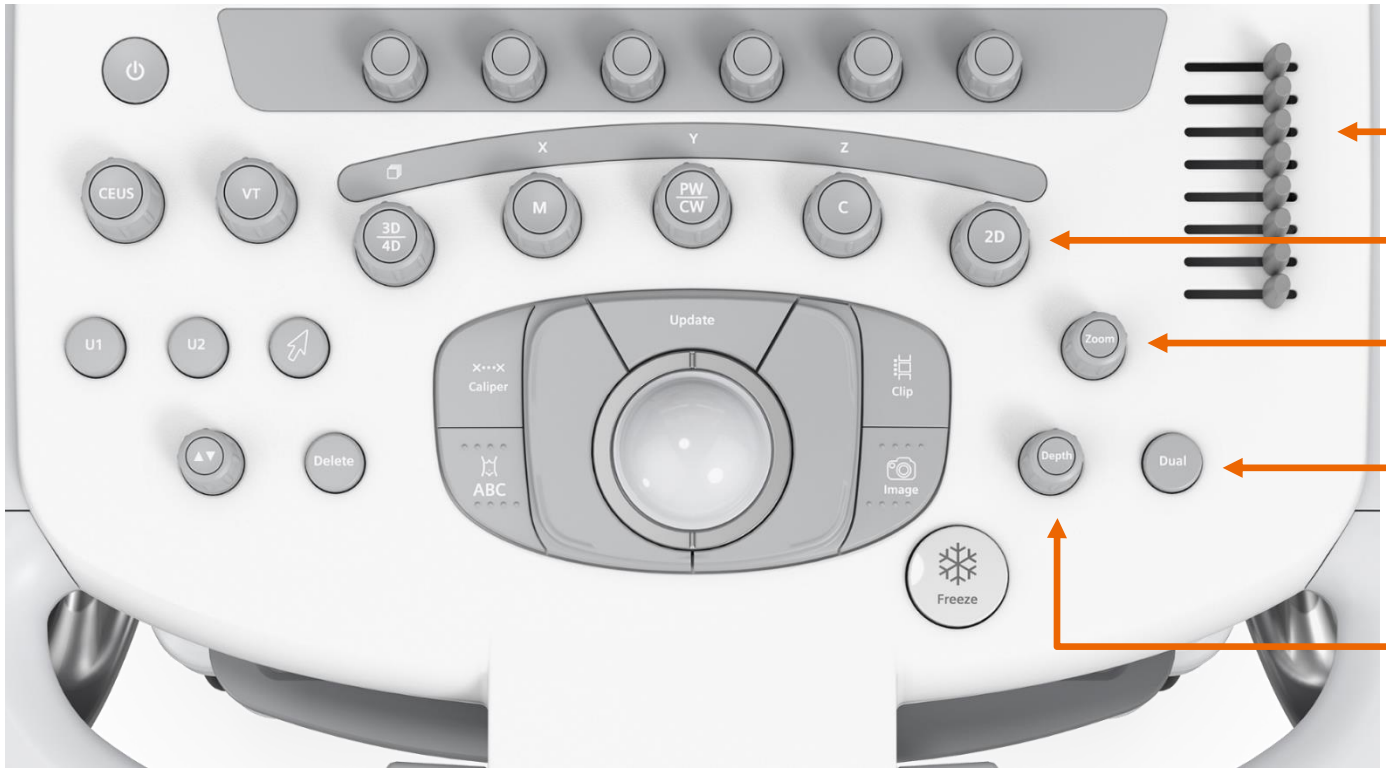
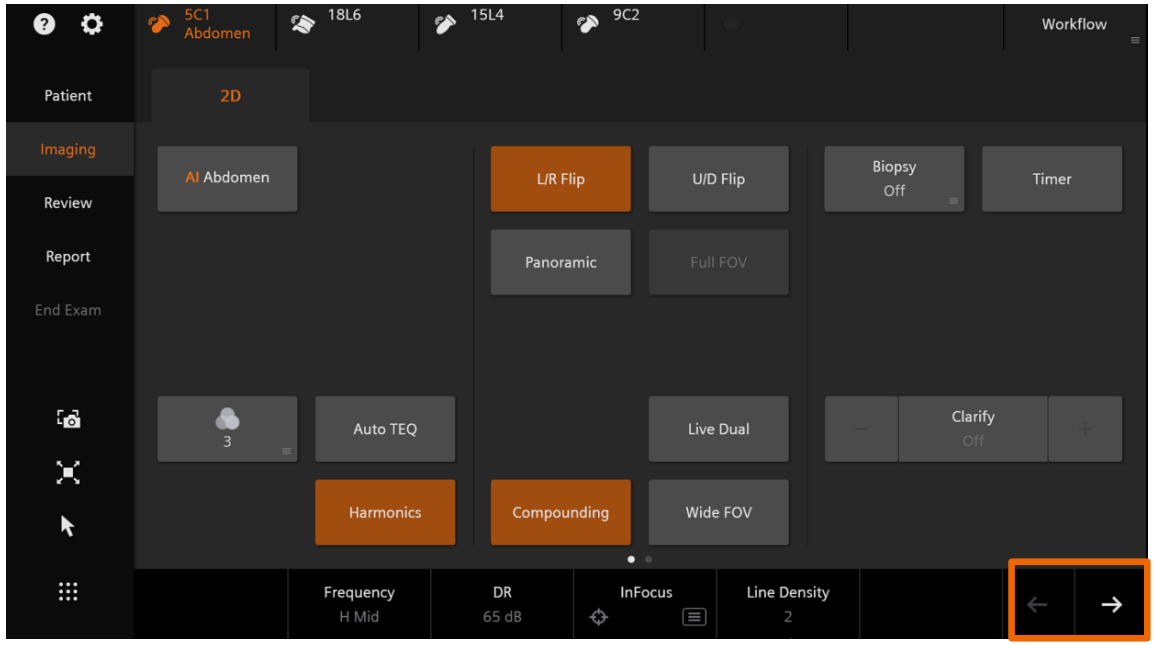
**Soft key rotary controls**



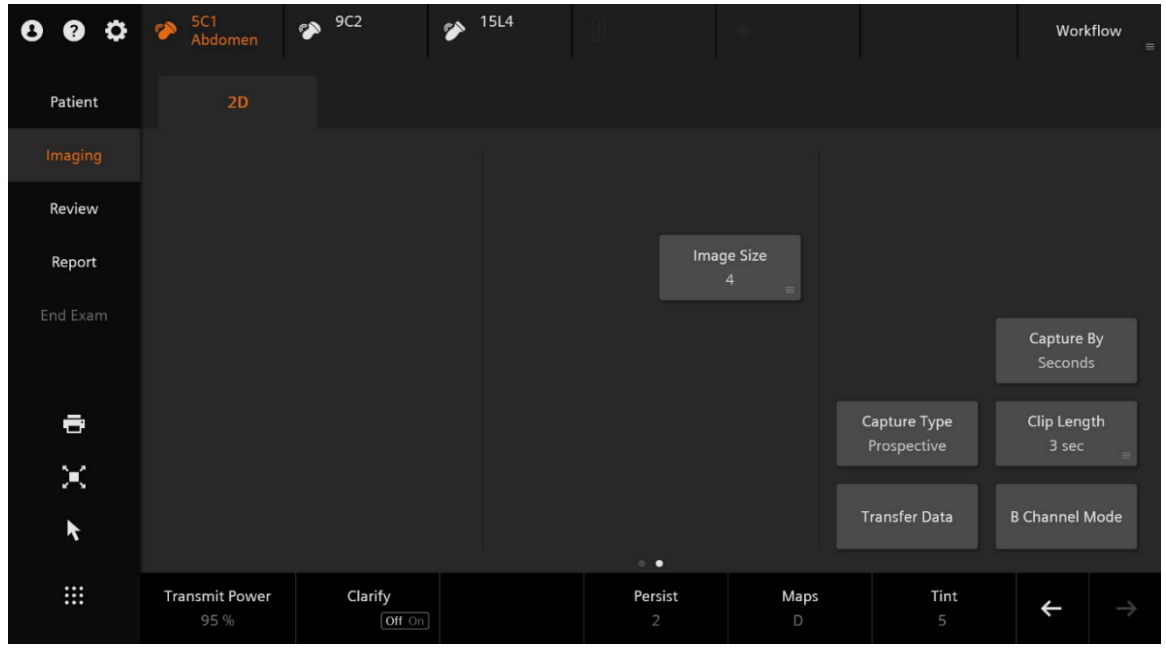
# B-mode controls on the Control Panel



# B-mode controls on the Touch Screen

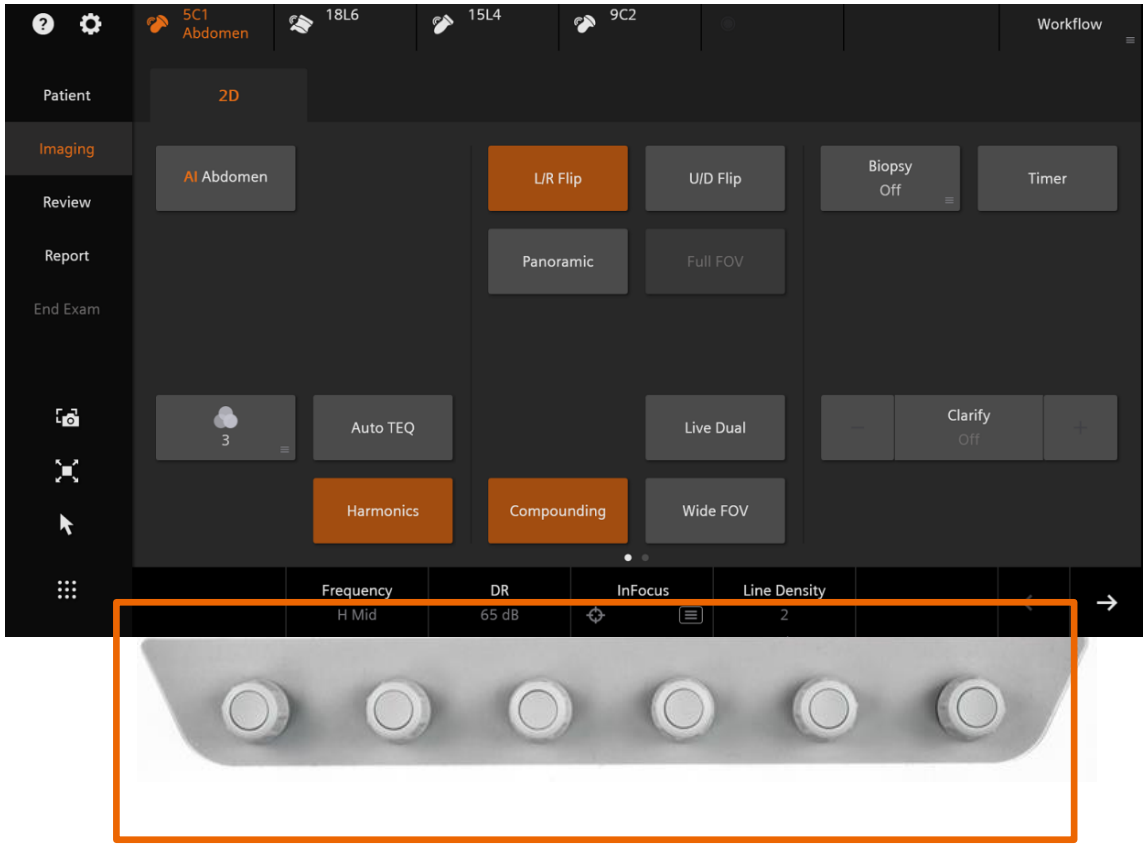



Page One

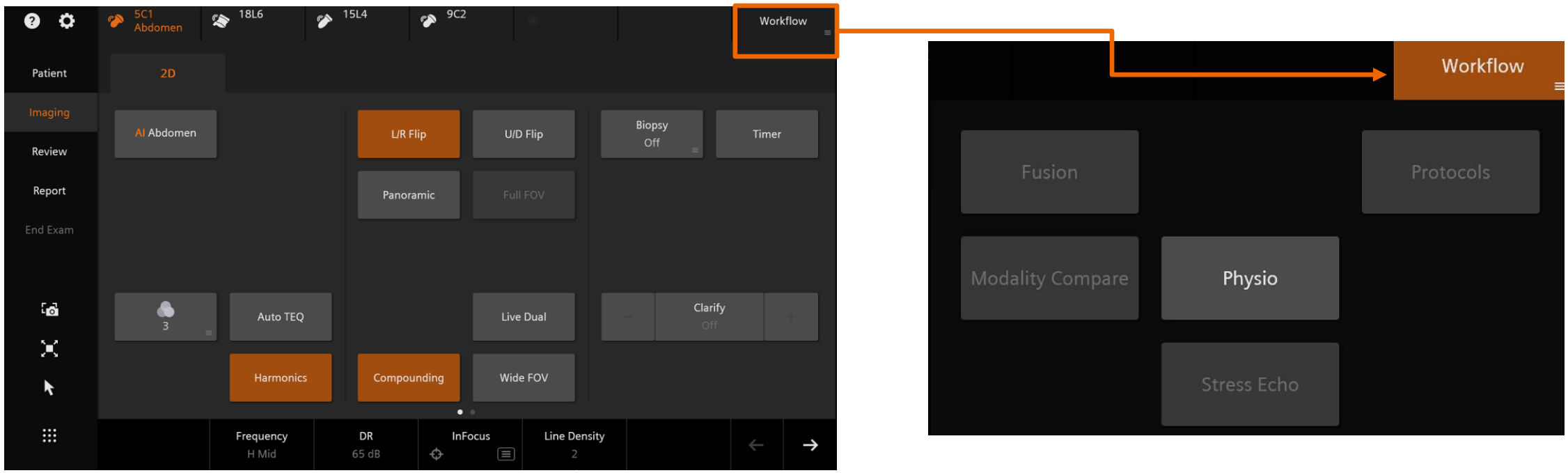



Page Two

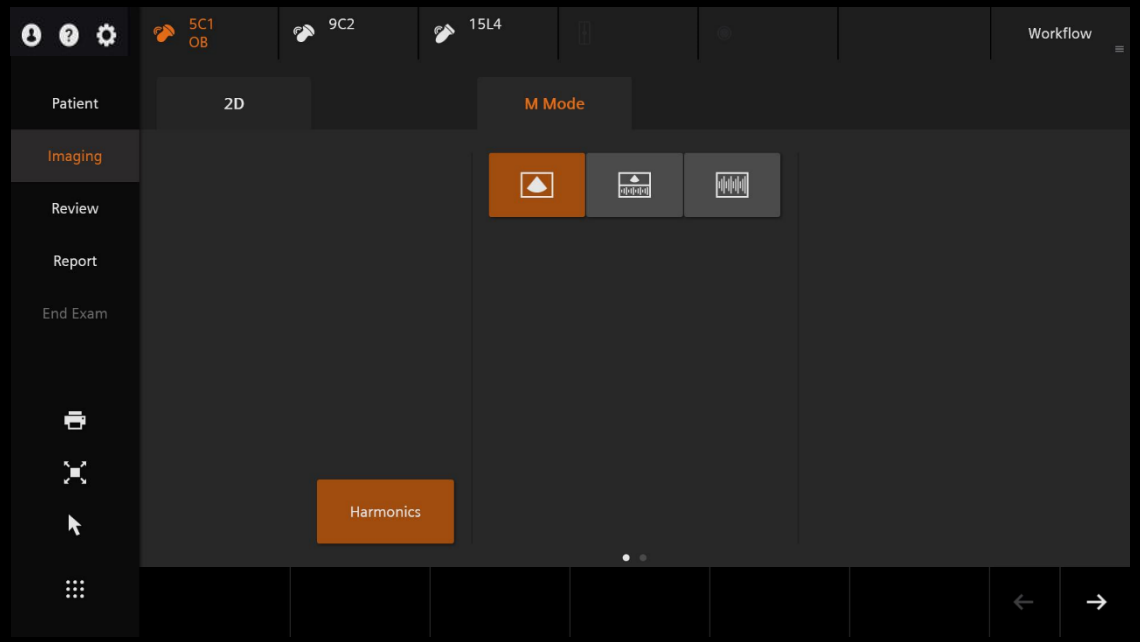
# B-mode controls on the soft keys

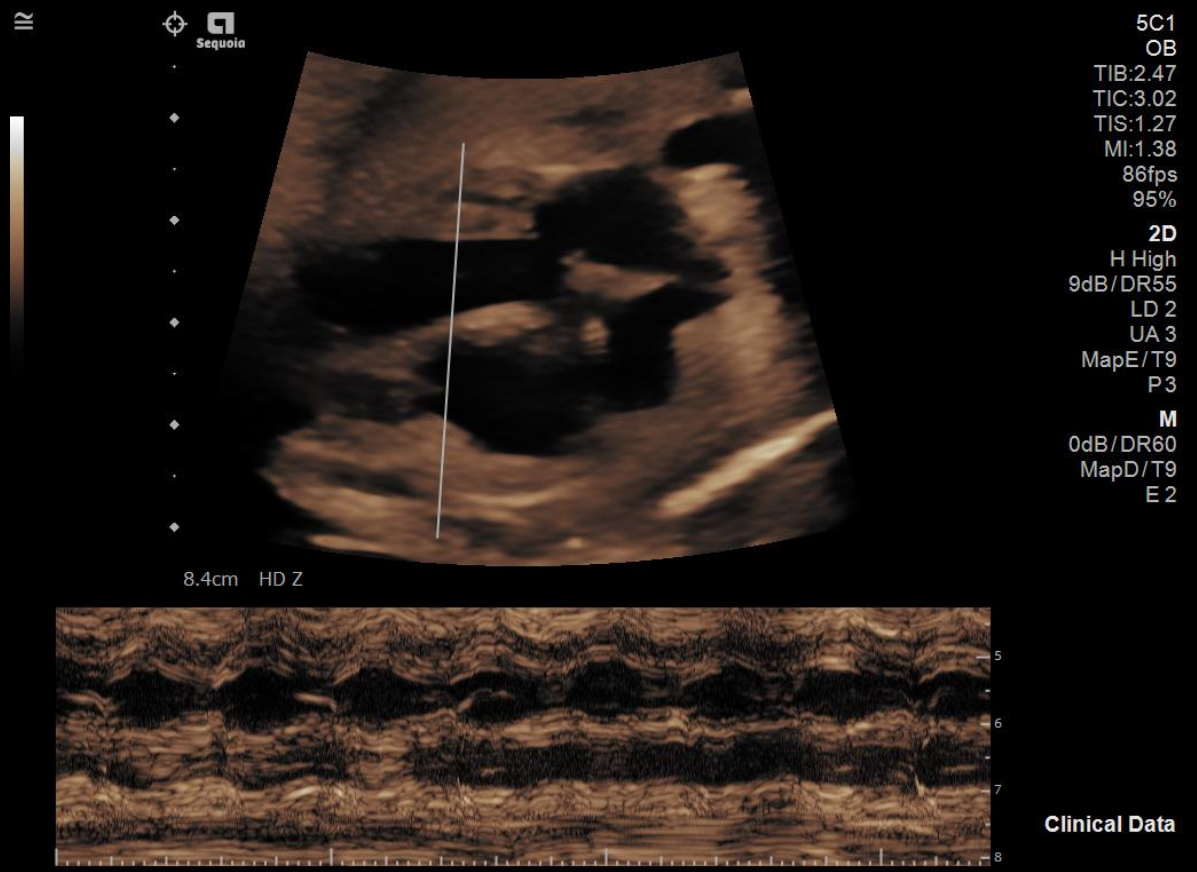



# Workflow control

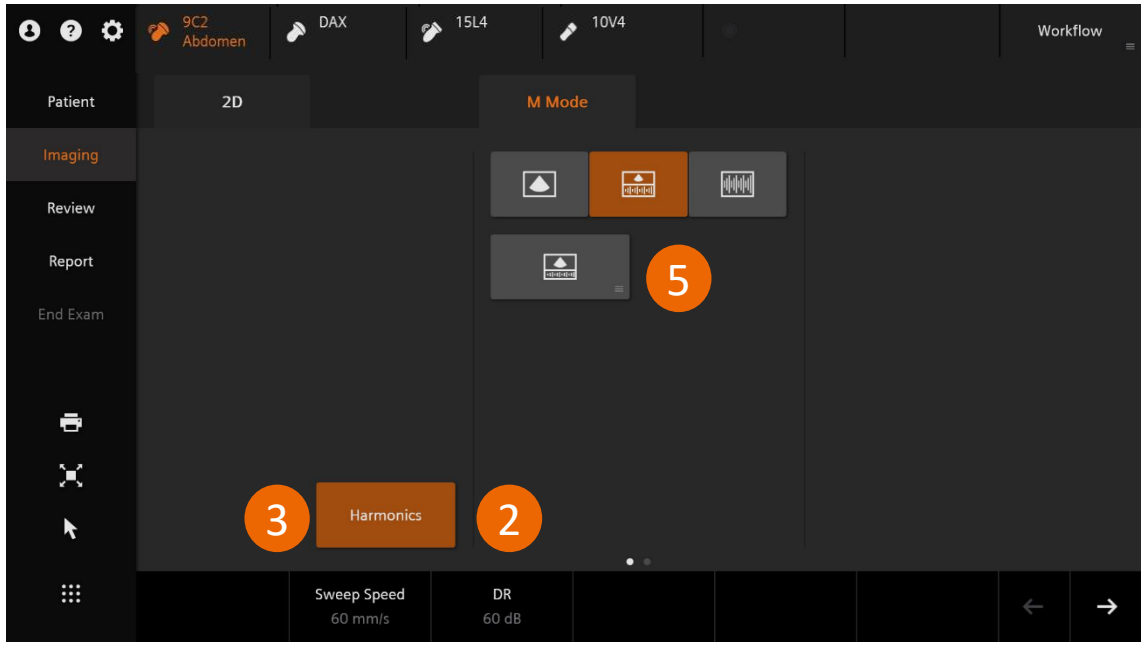


# M-mode controls

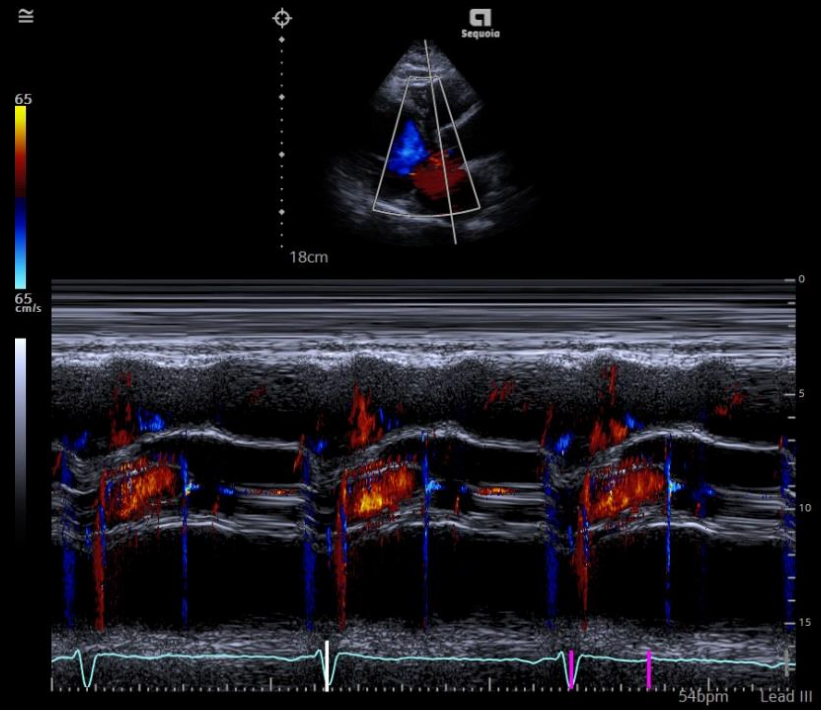



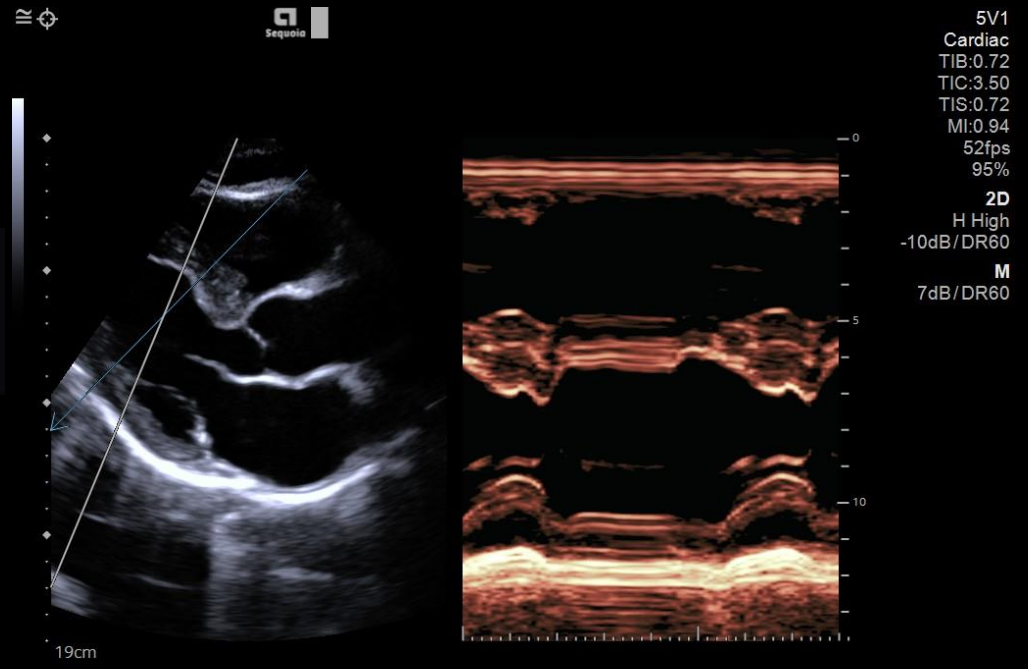
# M-mode Touch Screen controls




# Anatomic and color M-mode







# Objectives

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- **Describe B-mode and M-mode optimization features**
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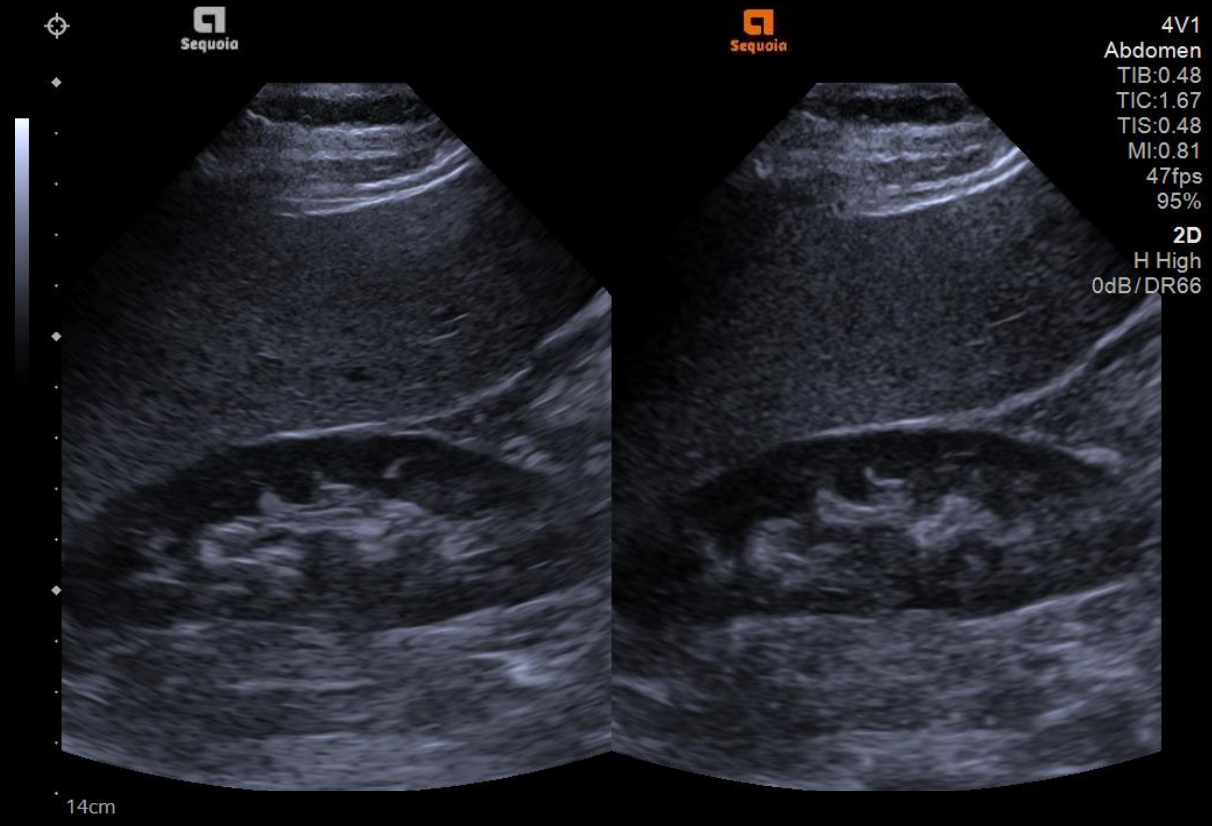
- Describe Doppler optimization features

# Auto TEQ image optimization

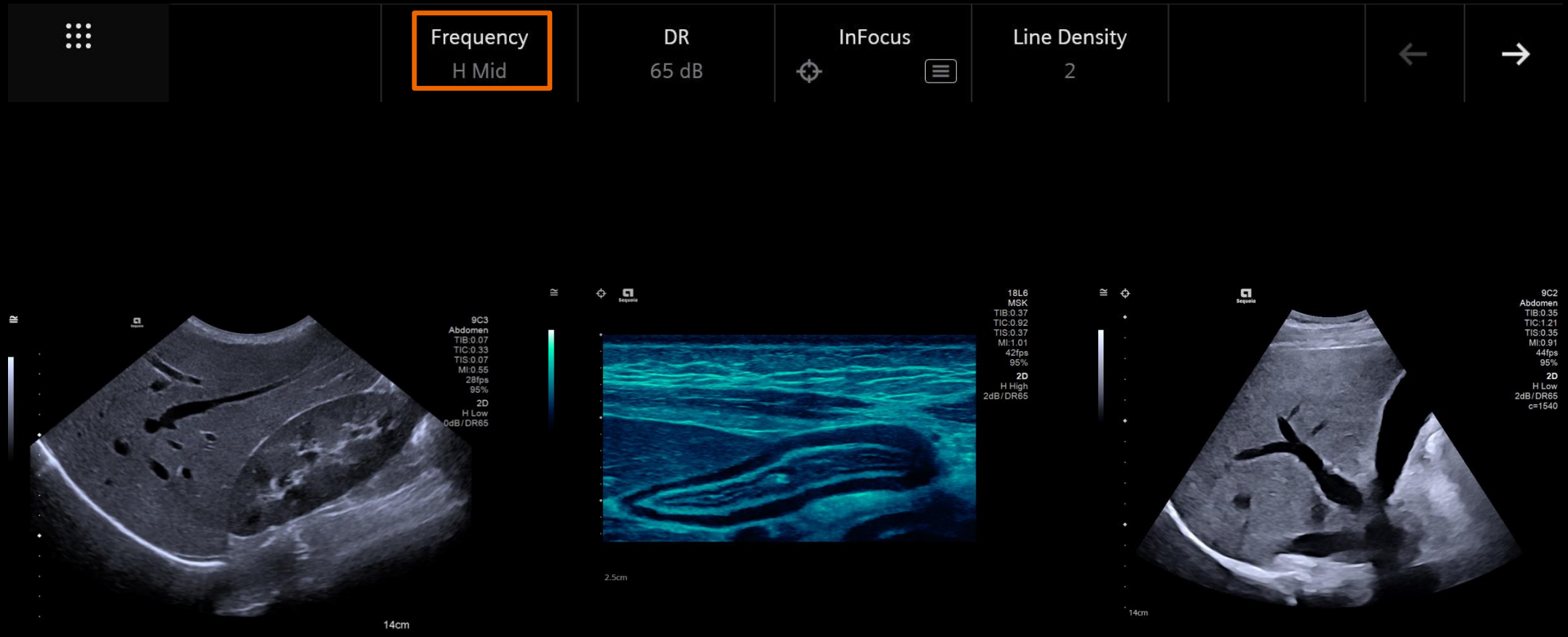
# Harmonic imaging

Harmonics

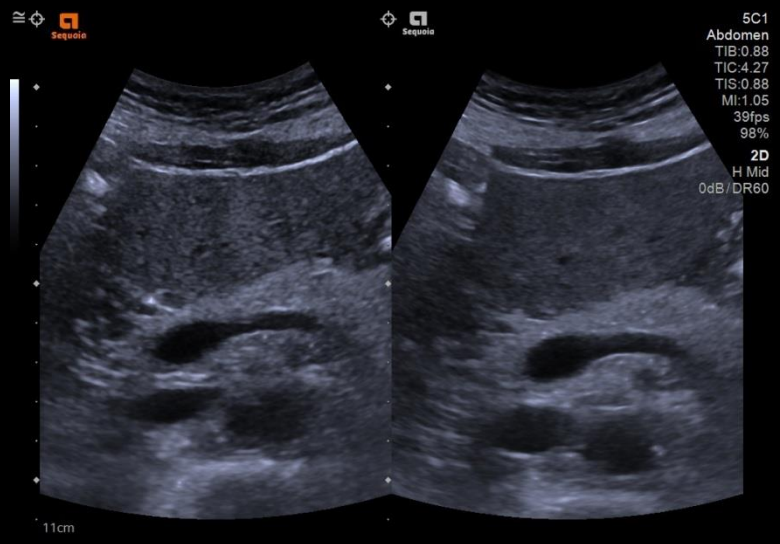



Fundamental Harmonics

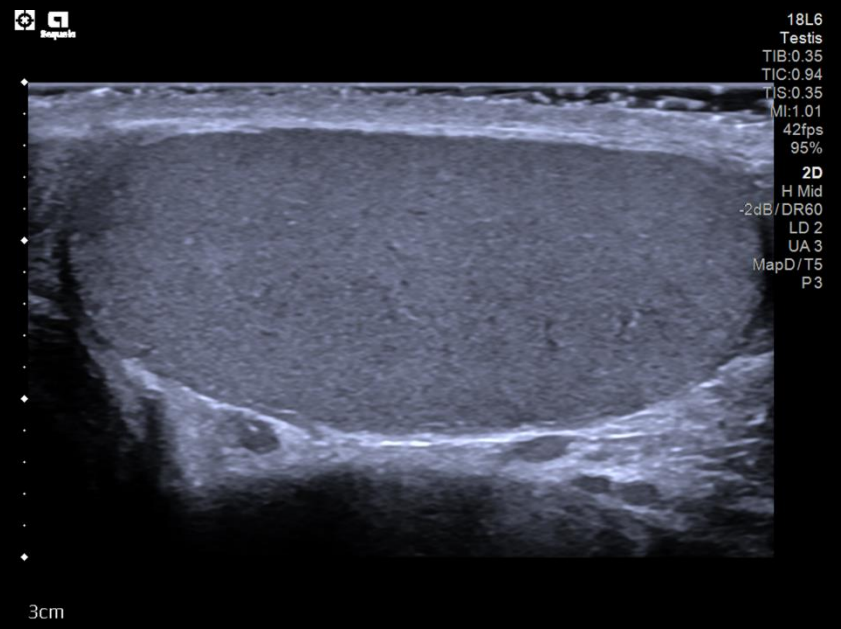
# Frequency imaging



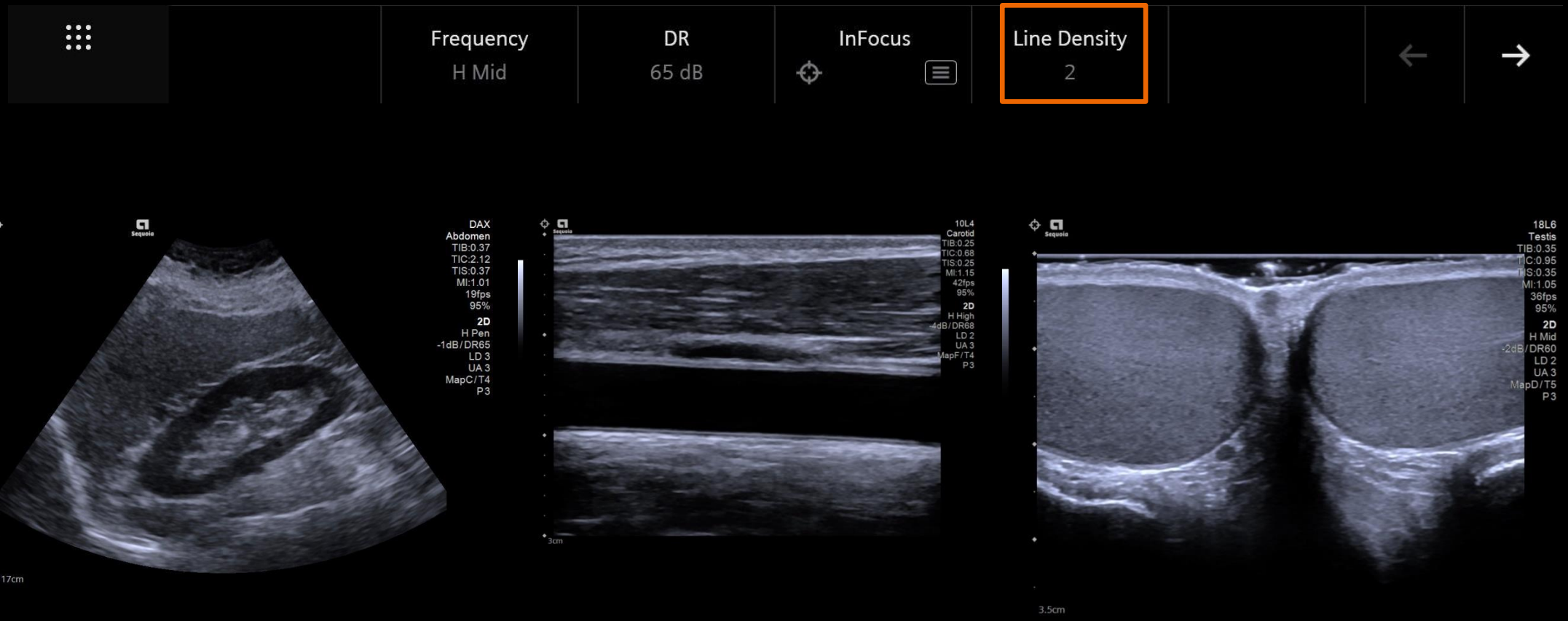
# Compounding



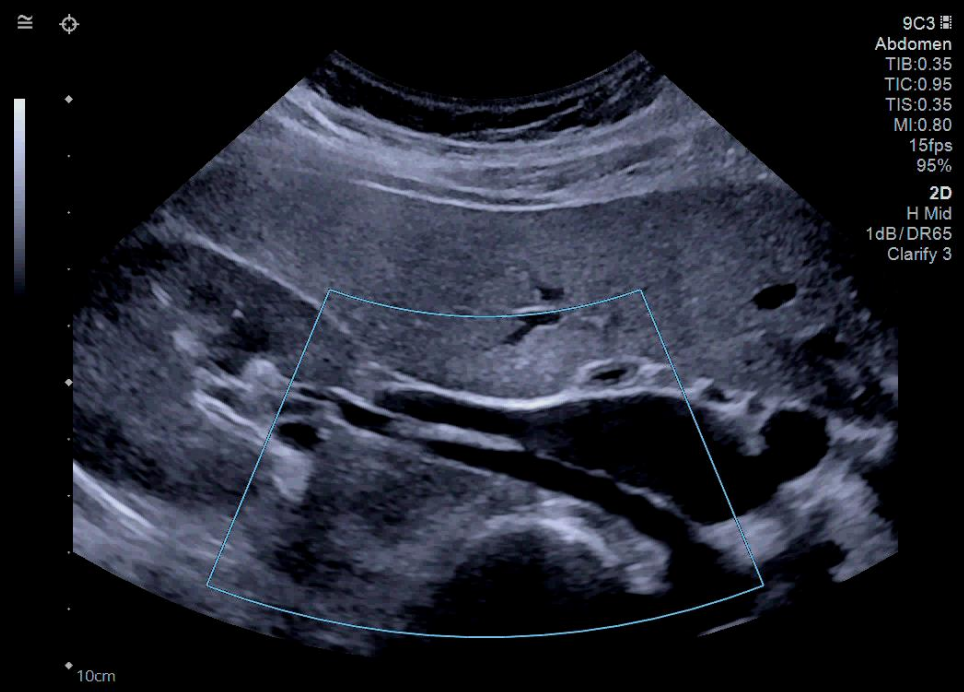

Off On

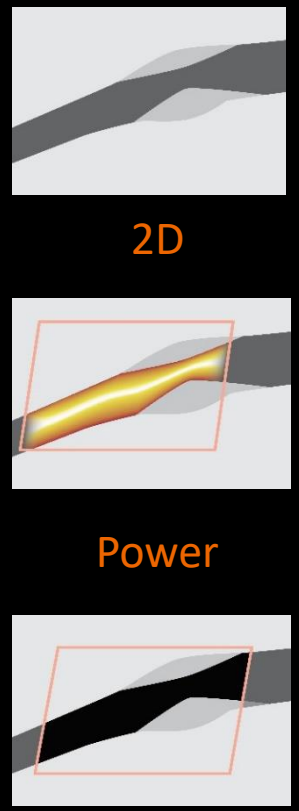



# Line Density



# Clarify vascular enhancement (VE) technology



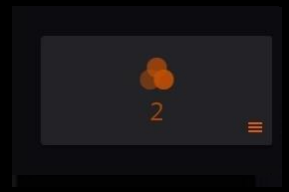



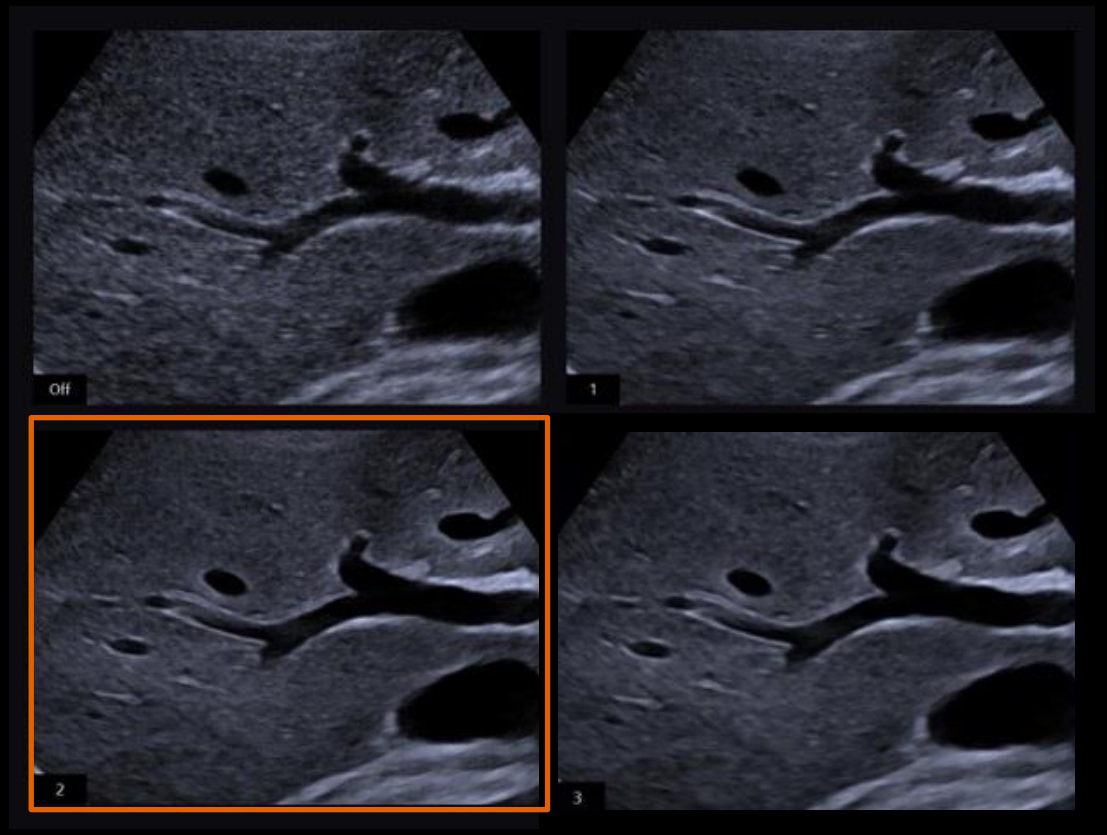

- Uses Power Doppler amplitude information to enhance B-mode imaging
- Reduces artifacts in vessels and improves vessel wall definition

# Clarify VE technology

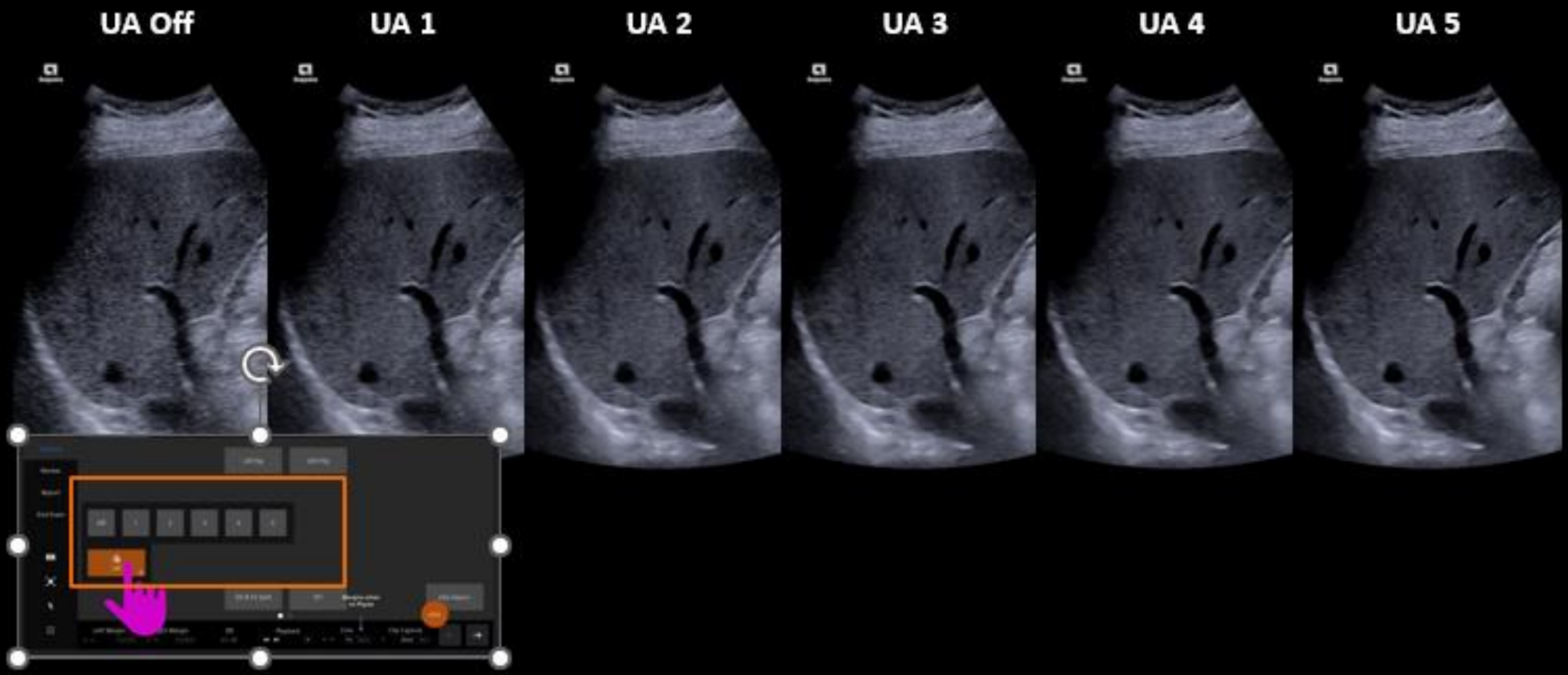
# UltraArt universal image processing

- Speckle Optimization
- Edge and Ridge Enhancement
- Contrast Enhancement
- Gain and Dynamic Range

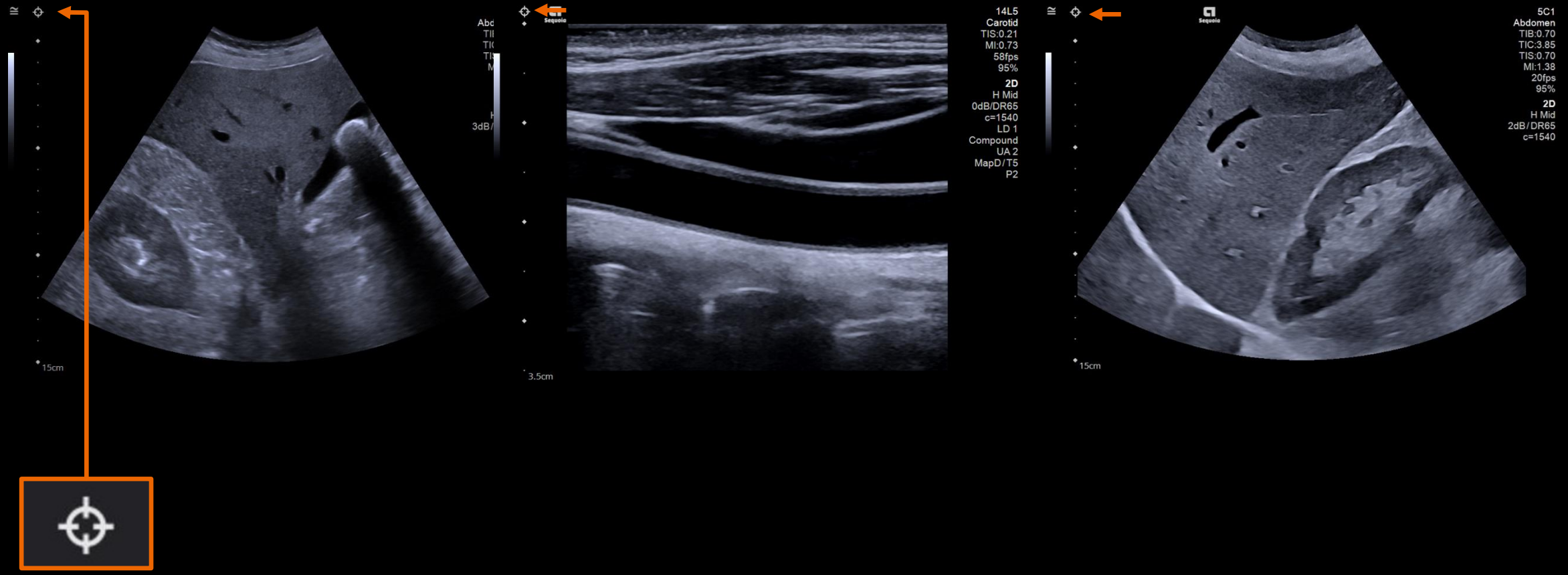


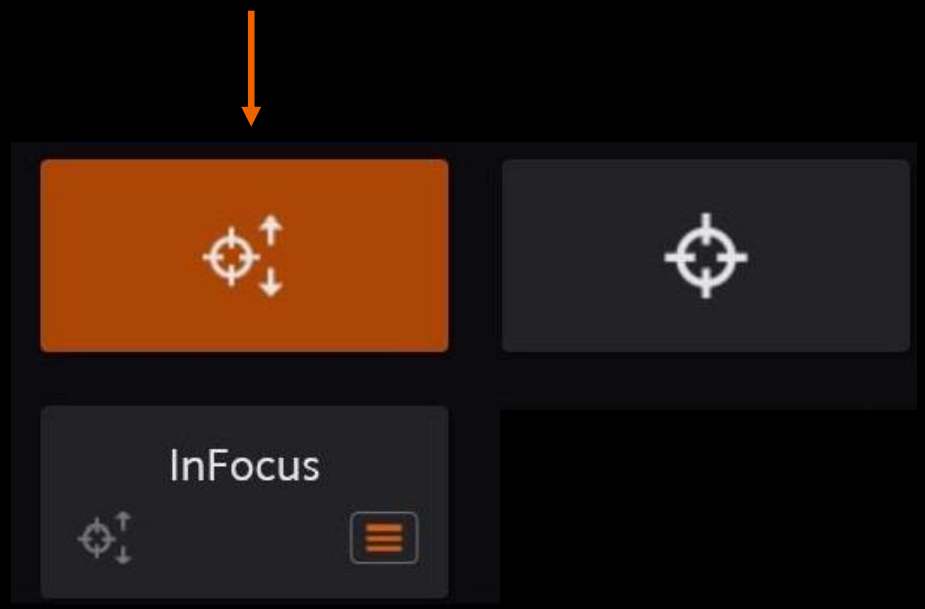
# UltraArt universal image processing

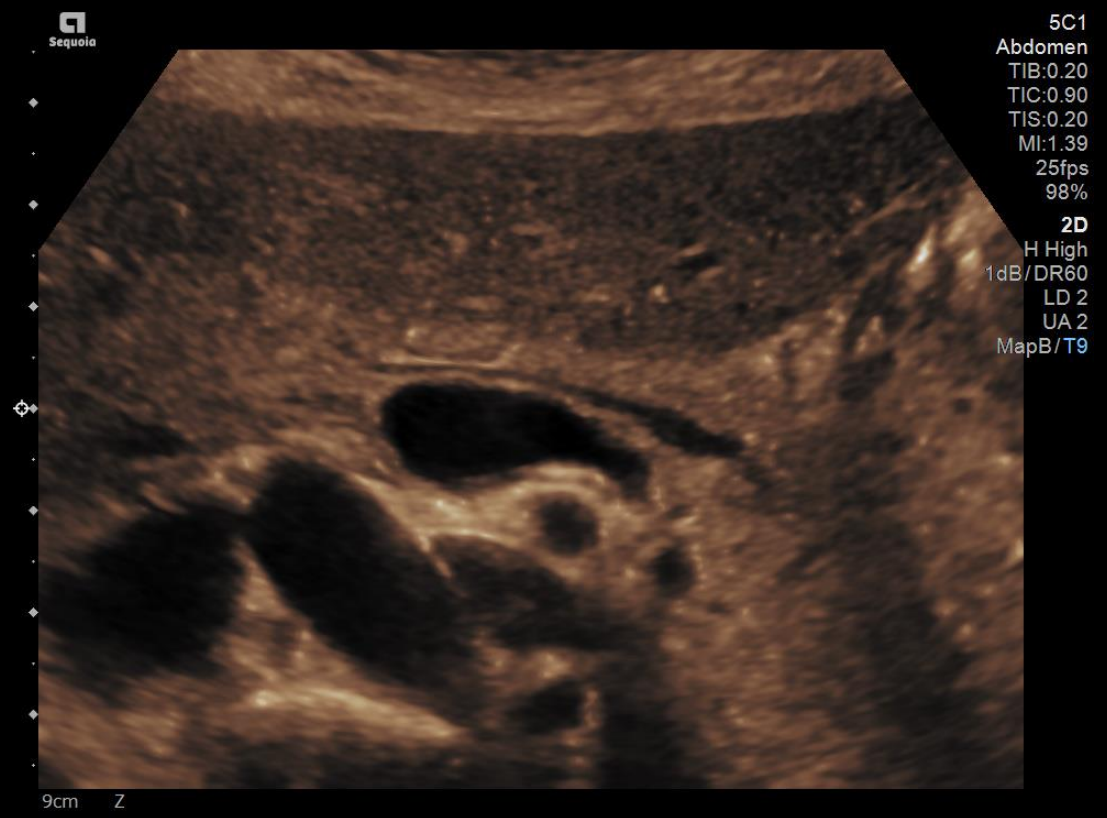


# InFocus coherent image formation

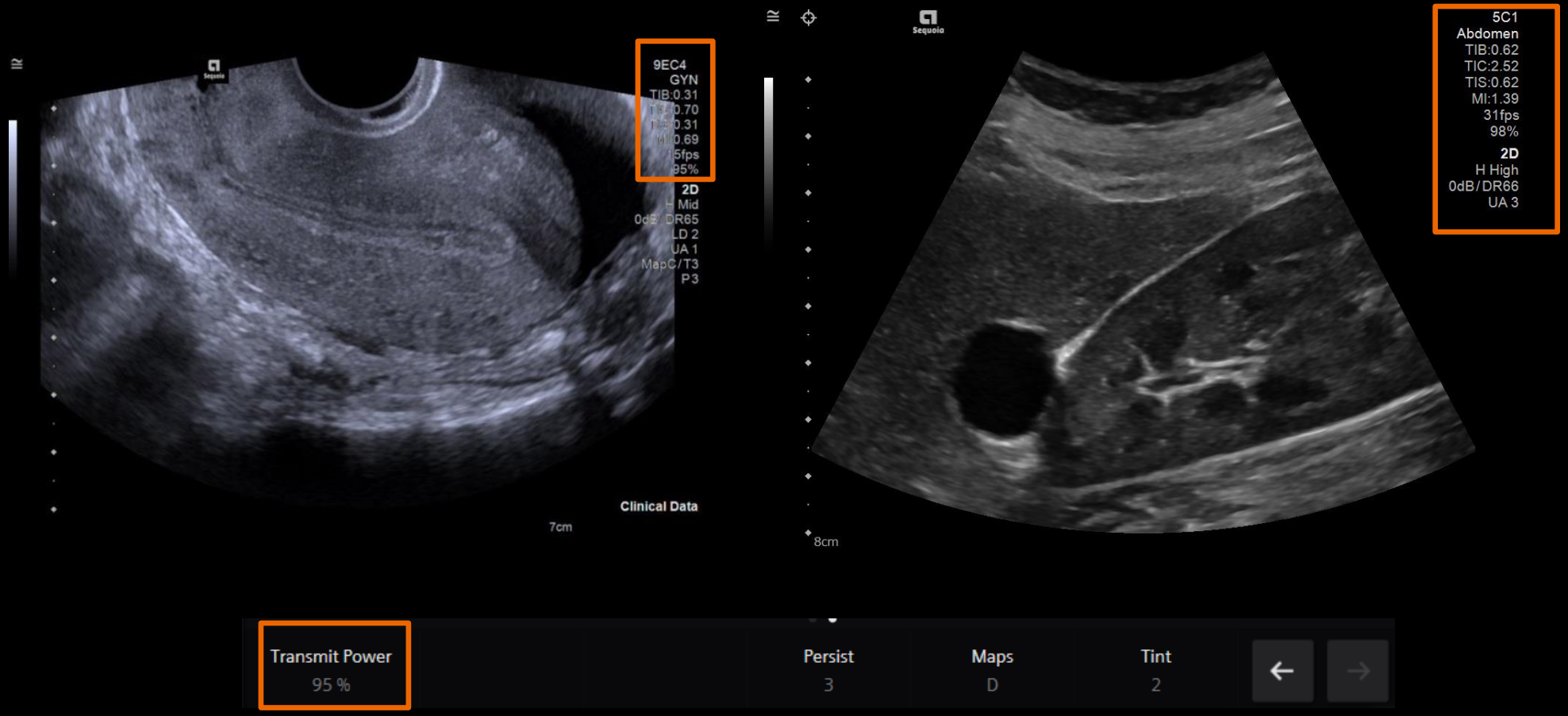


# InFocus coherent image formation – Selectable focus

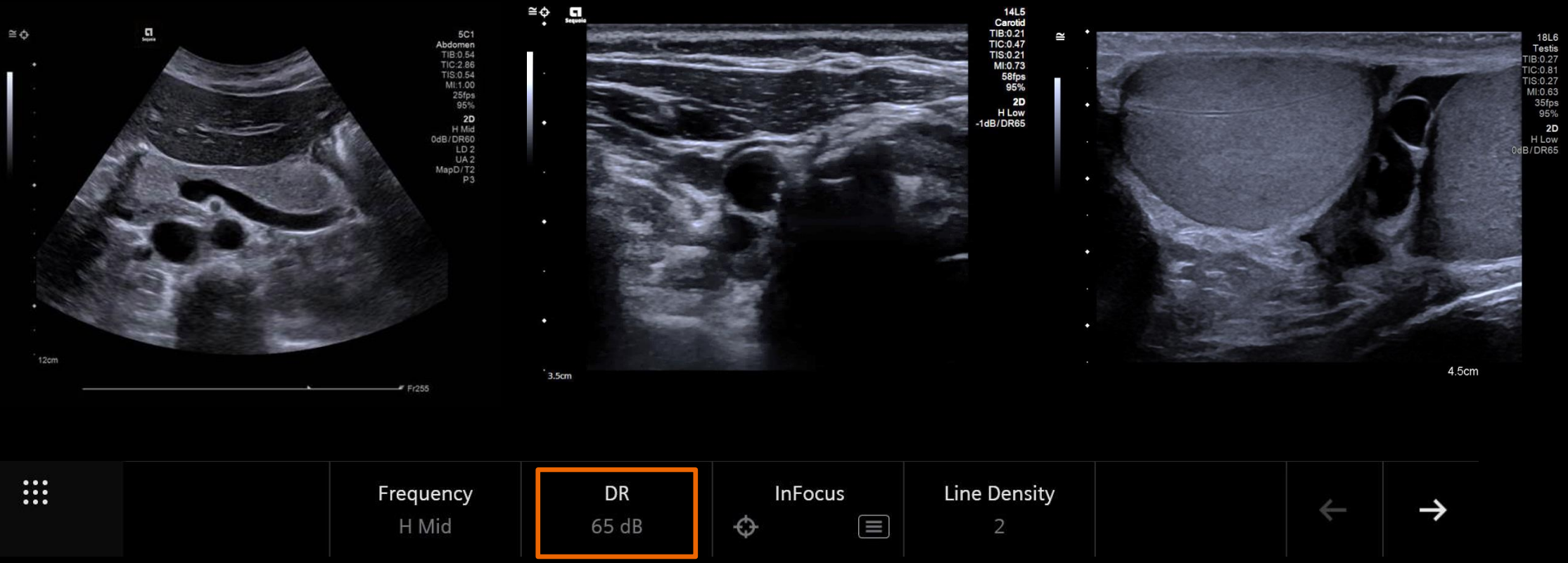


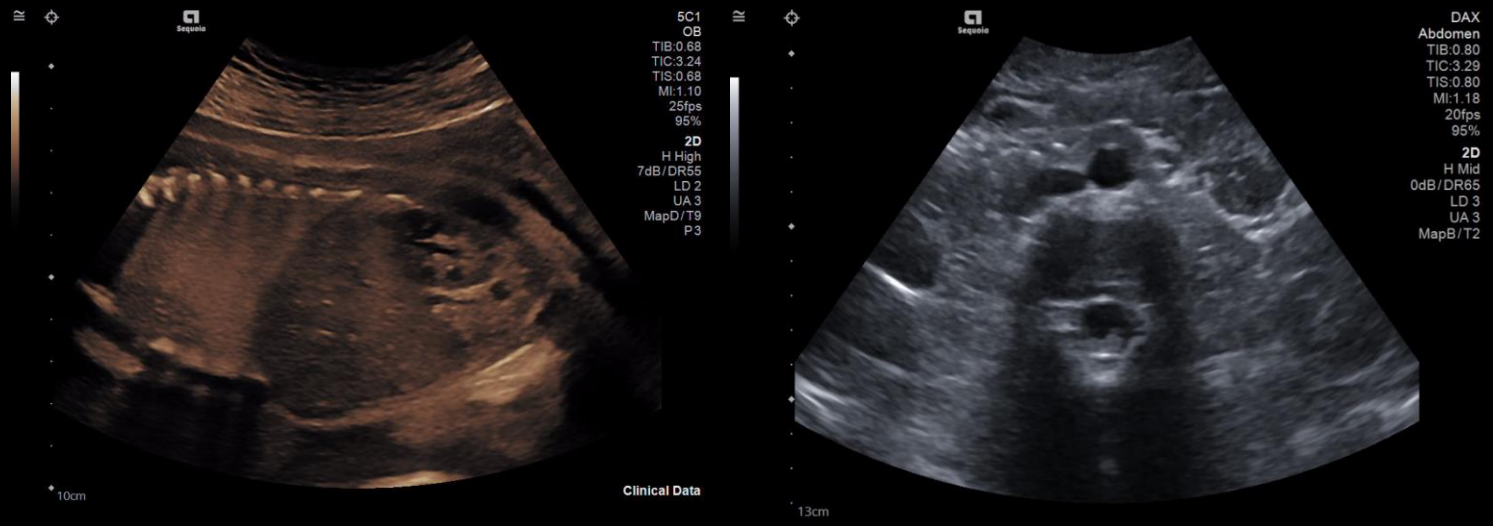
# Transmit Power

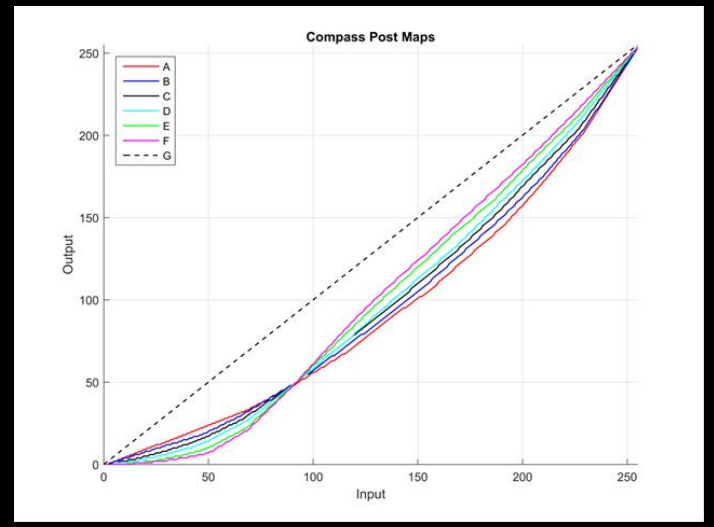


# Dynamic Range

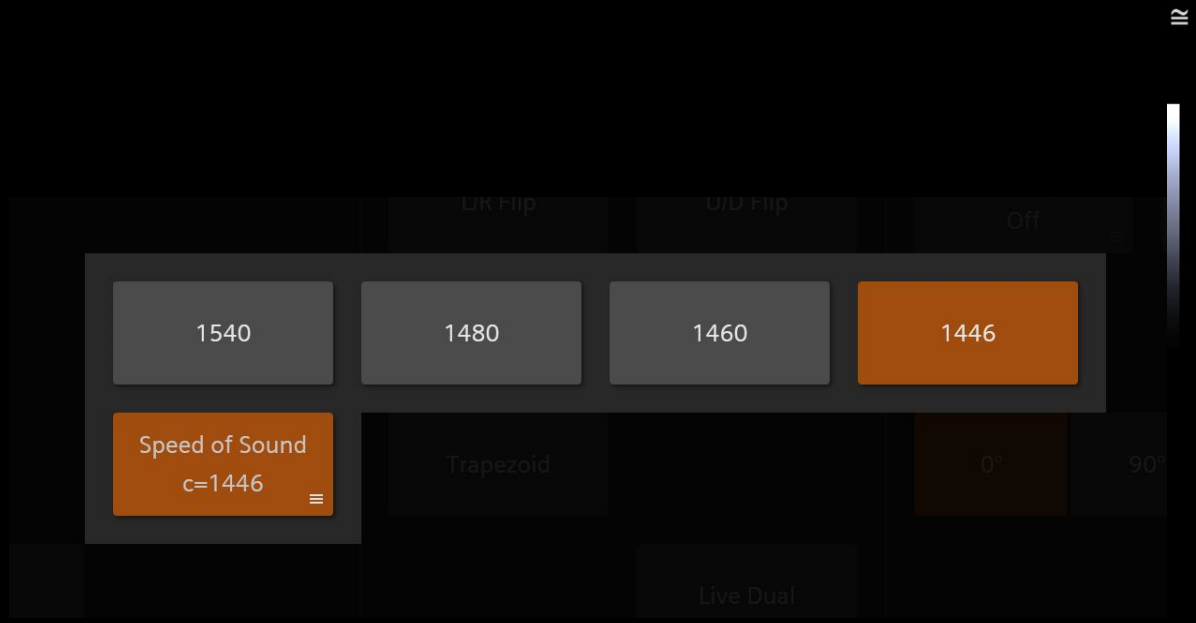


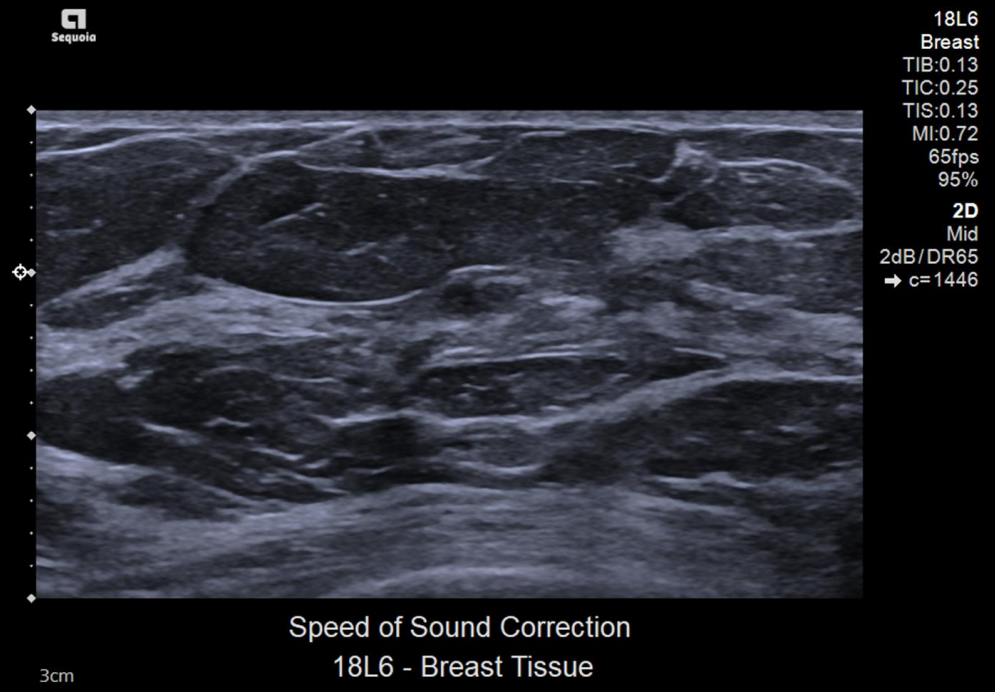
# Maps



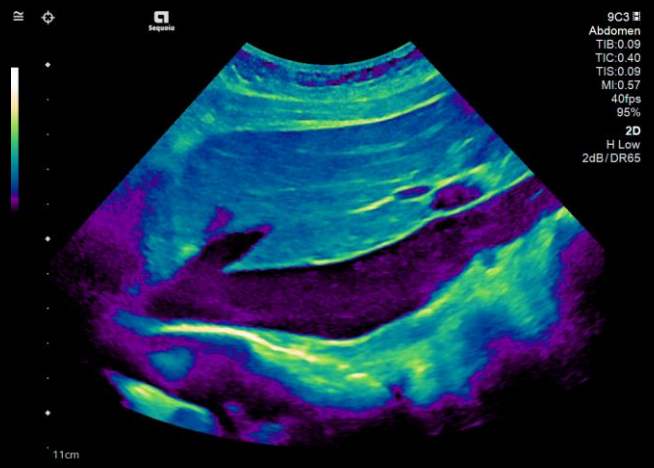

# Speed of Sound



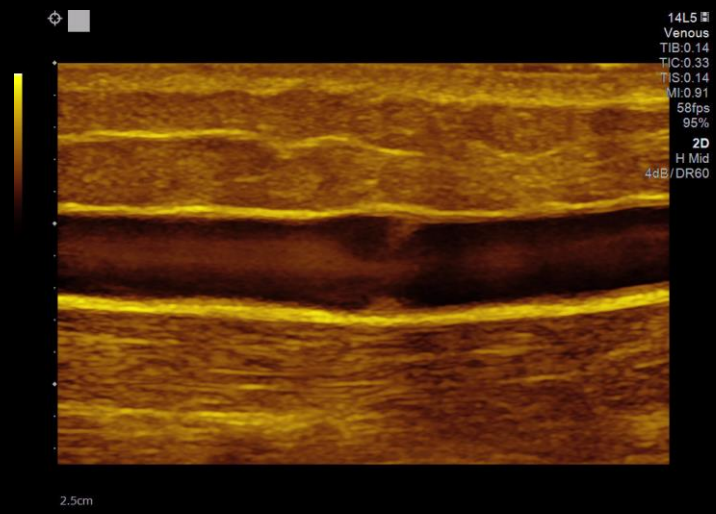

Speed of Sound Correction
18L6 - Breast Tissue

# Tints




Inverted Rainbow


Sepia

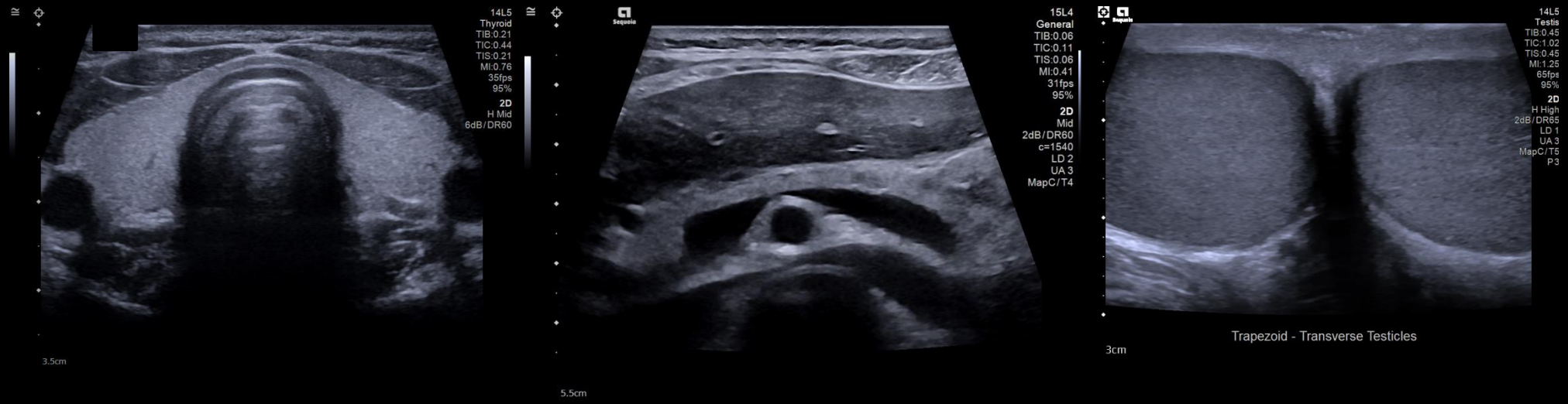



Gold

# Objectives

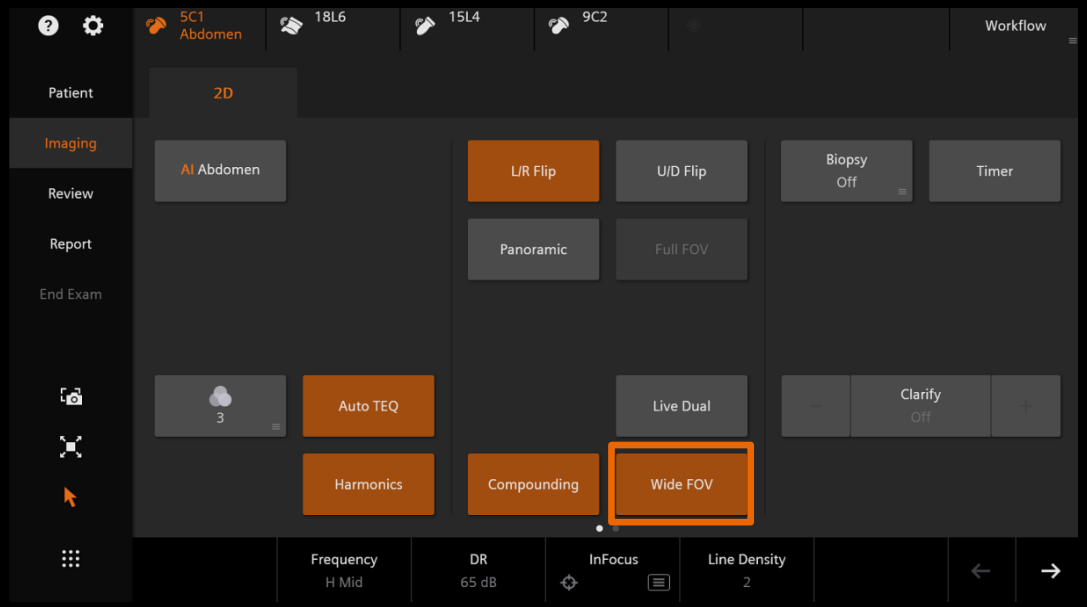
- Review B-mode and M-mode controls
- Describe B-mode and M-mode optimization features
- **Explain display modes**
- Review Doppler controls
- Describe Doppler optimization features

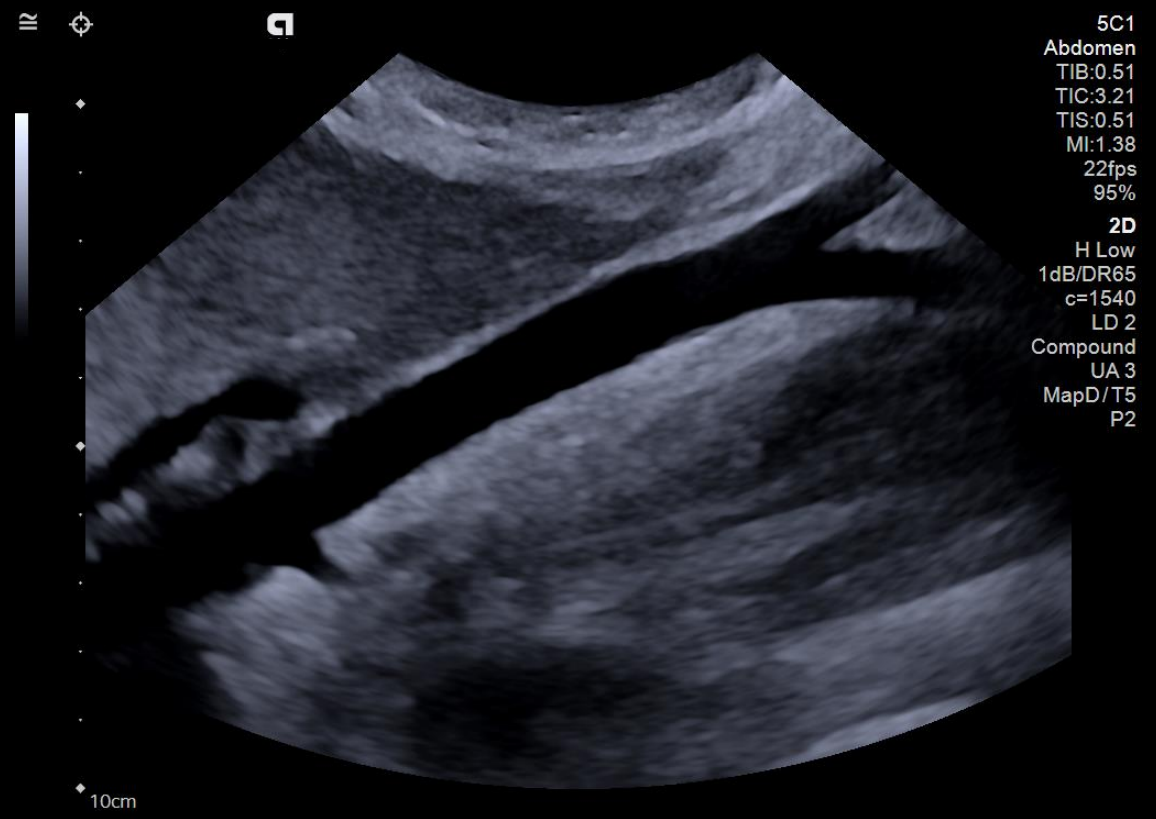
# Trapezoid



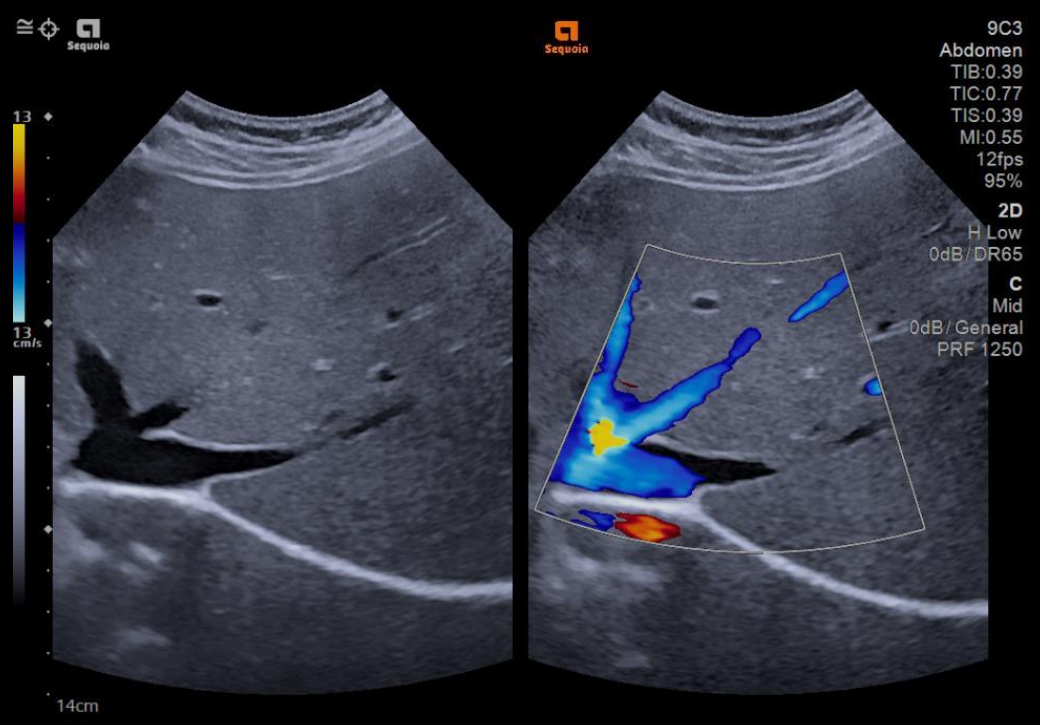

Trapezoid

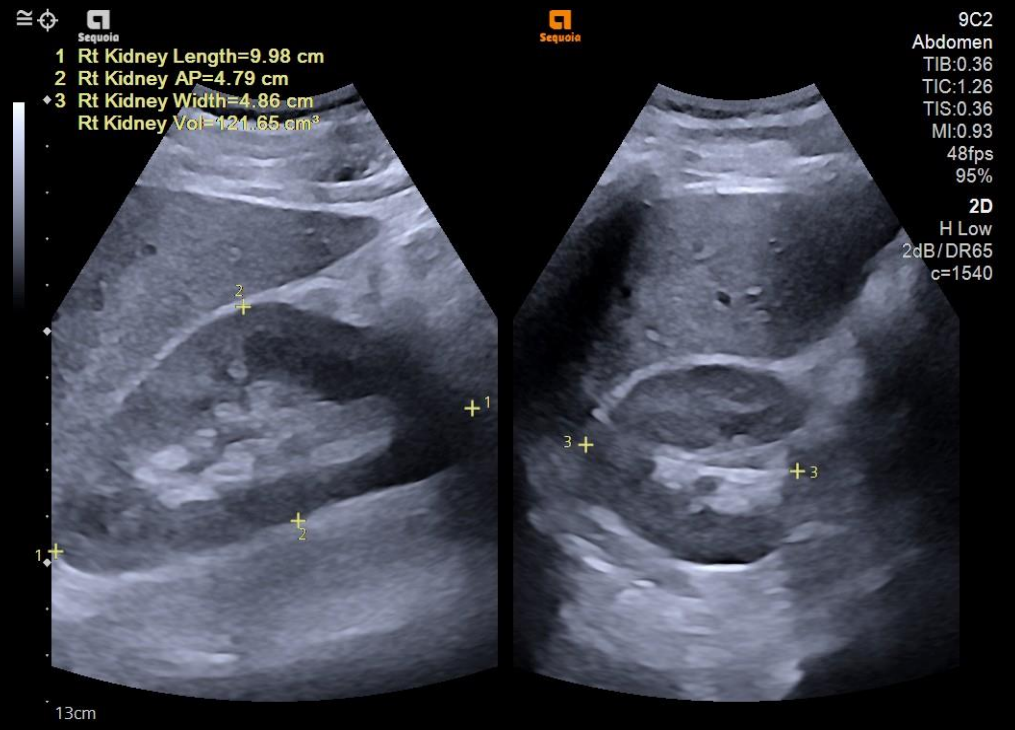
# Wide Field of View



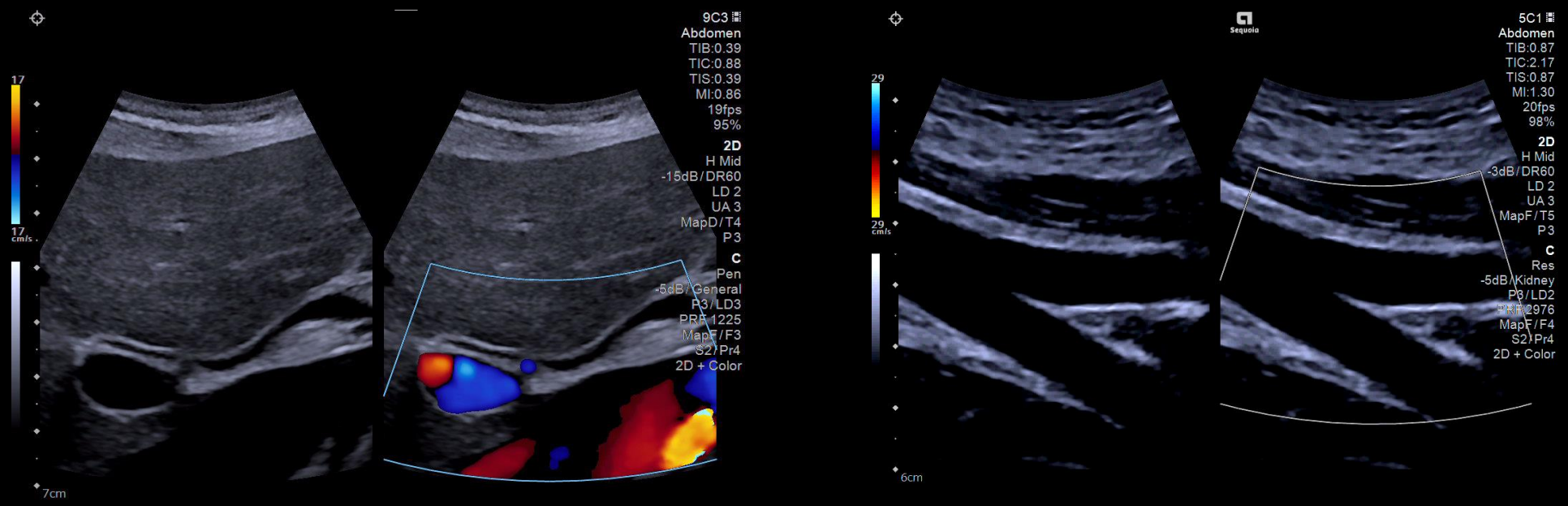



# Dual

# Live Dual

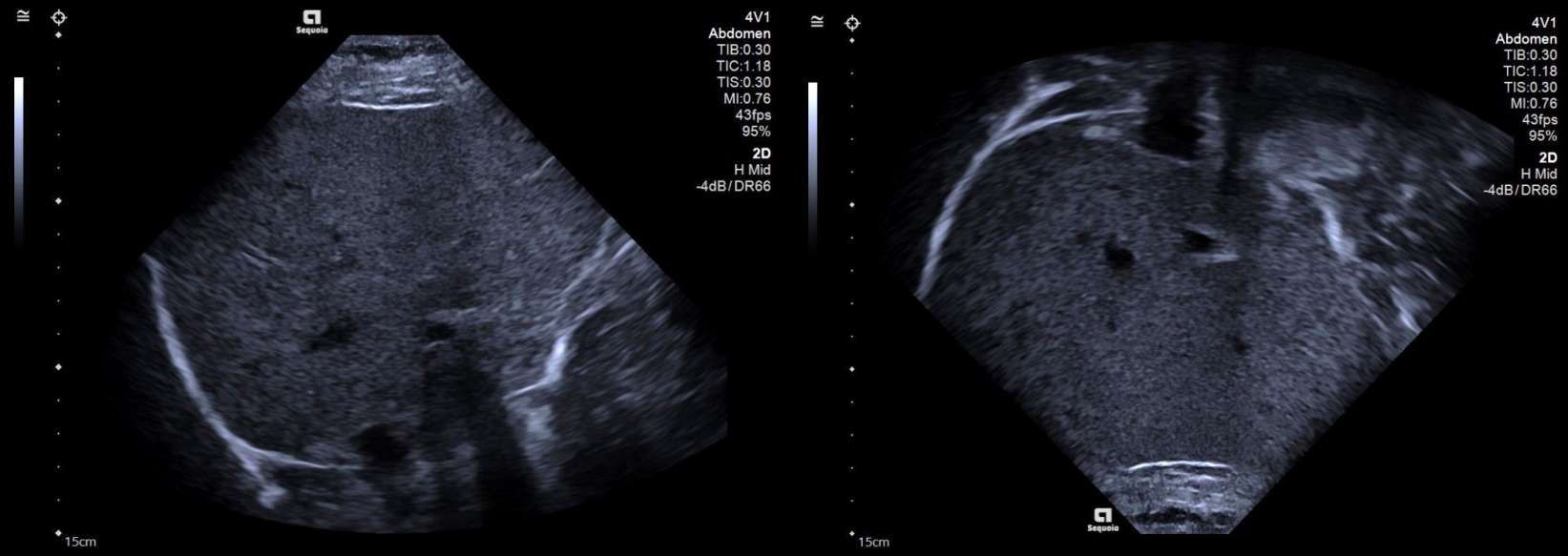



Live Dual

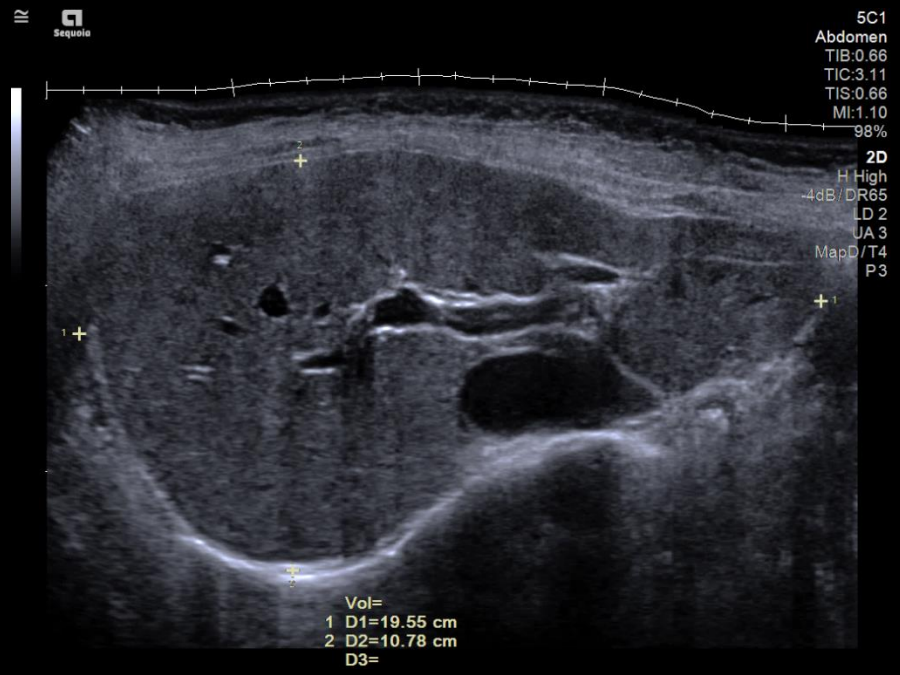
# Left/Right and Up/Down Flip

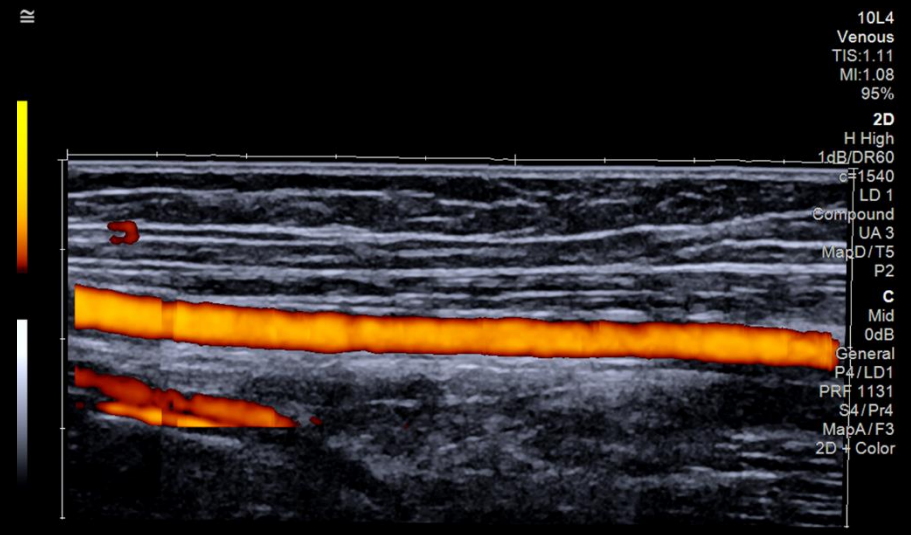
L/R Flip

U/D Flip



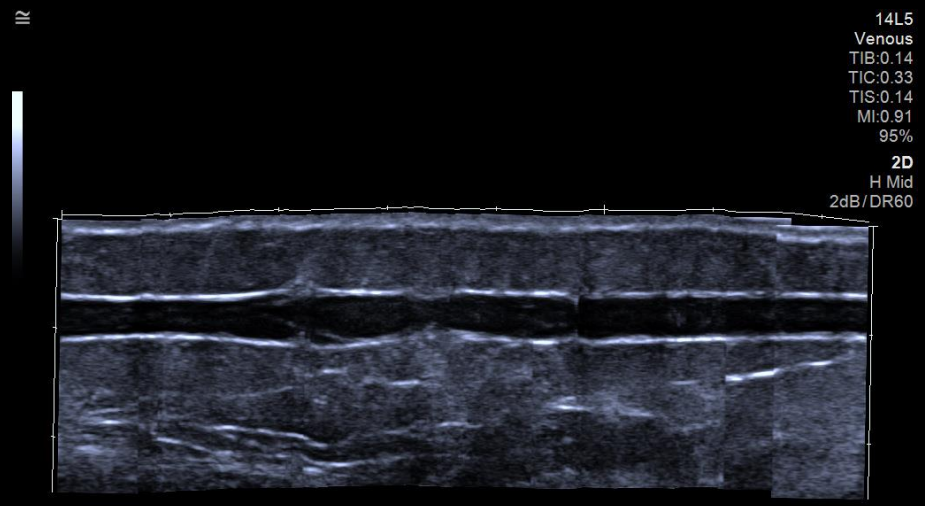
# Panoramic imaging

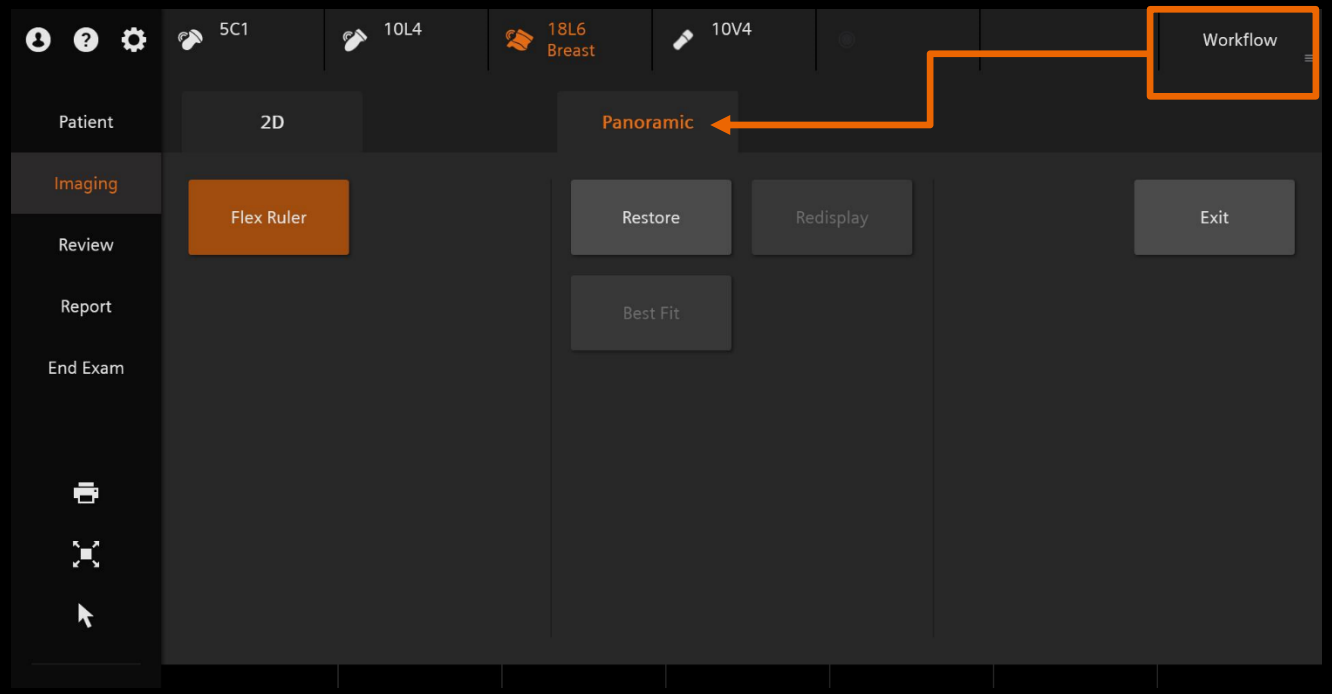


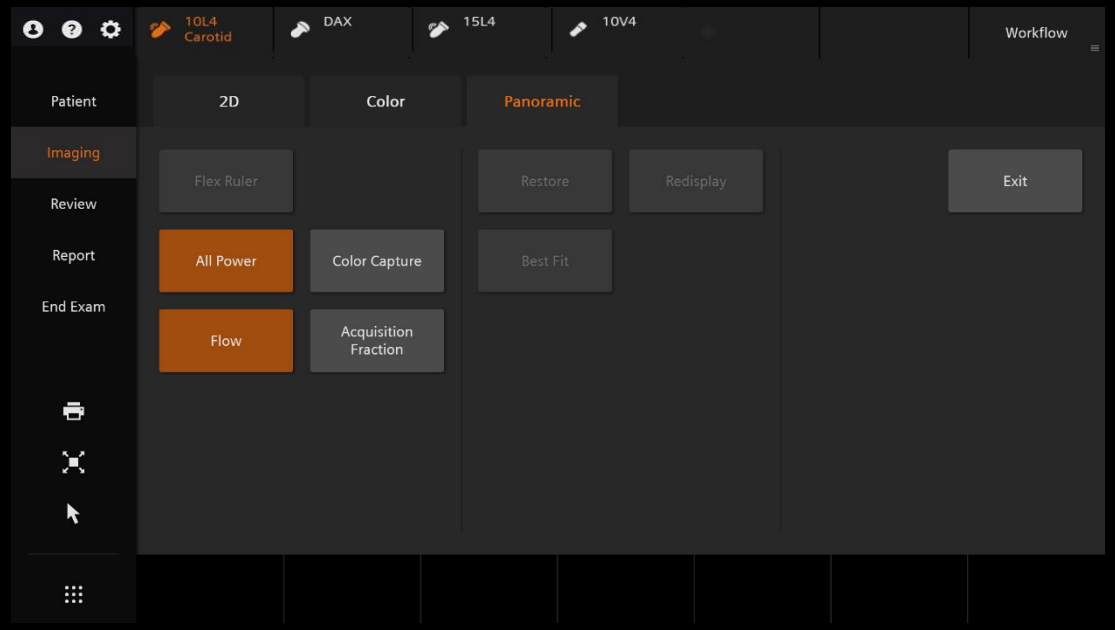

Power Doppler - Panoramic Mode

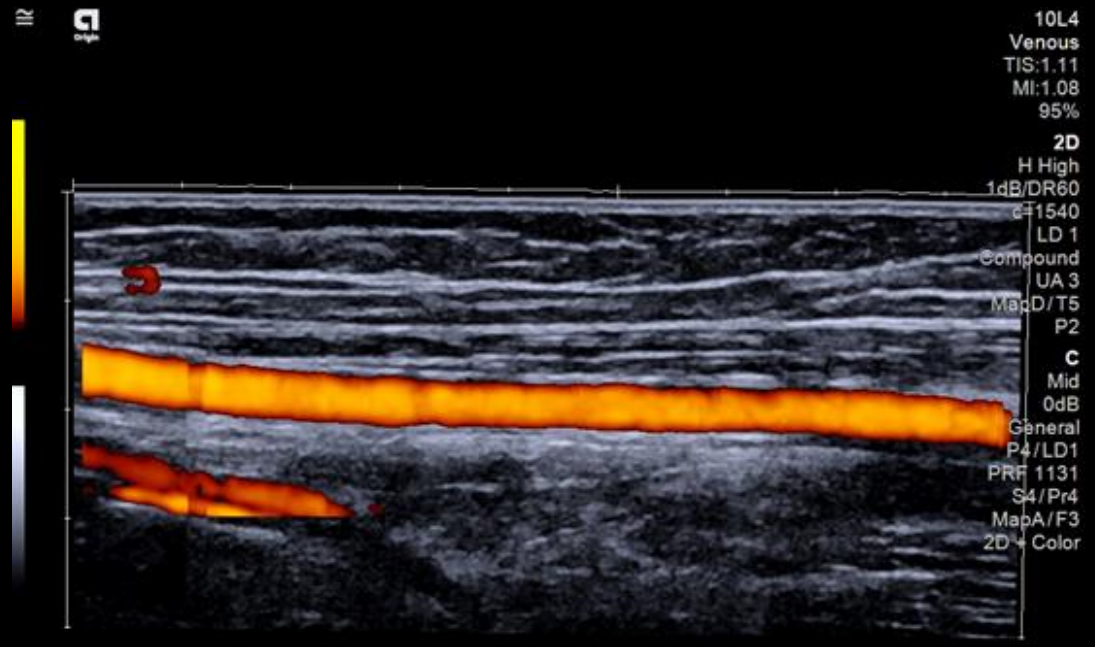
# Panoramic imaging – B-mode



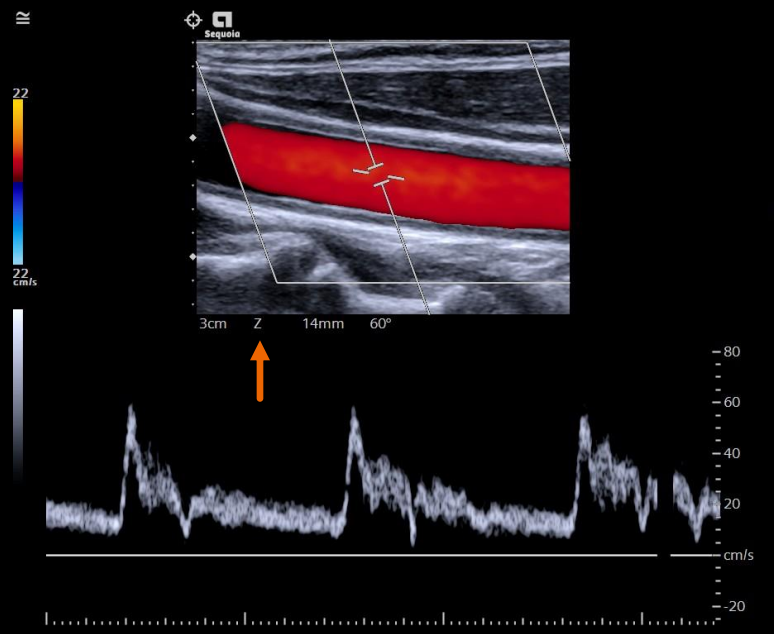



# Panoramic imaging – Power Doppler

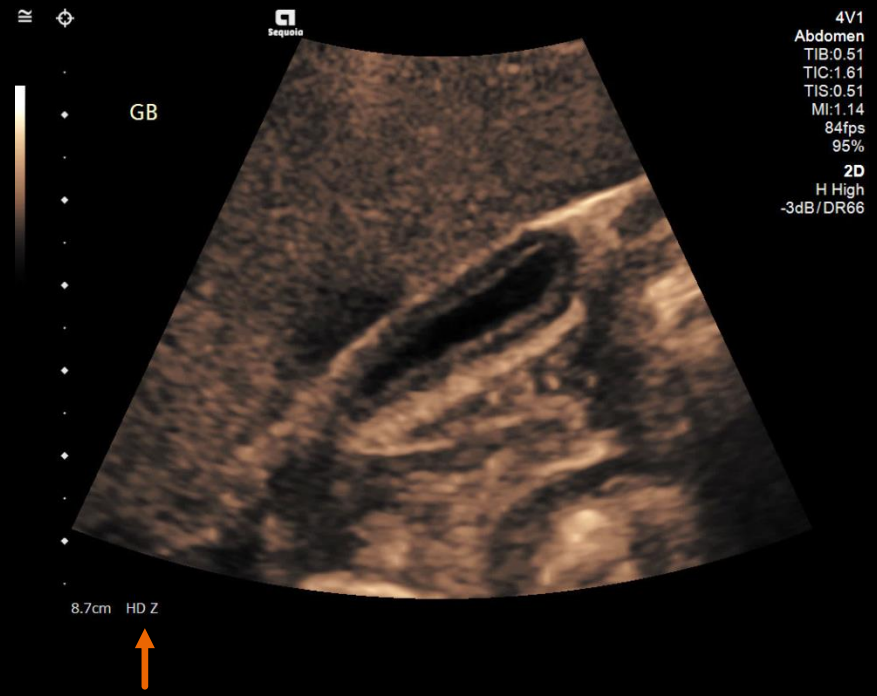


# Zoom and HD Z


Zoom




HD Z

# Image Size

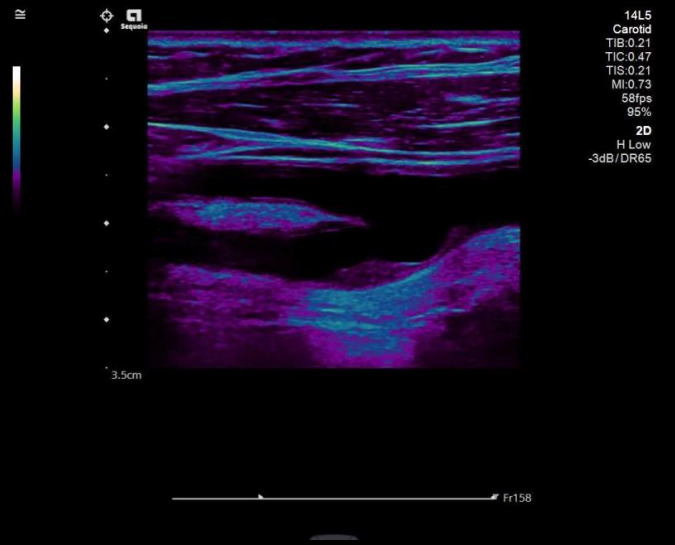



Image Size
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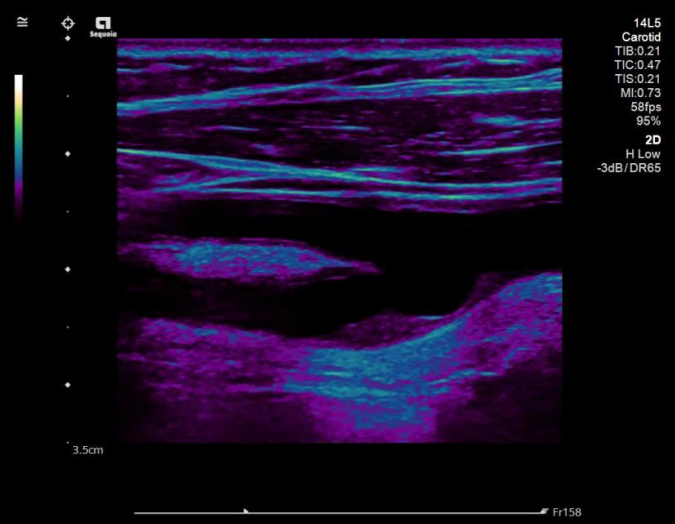



Image Size
3

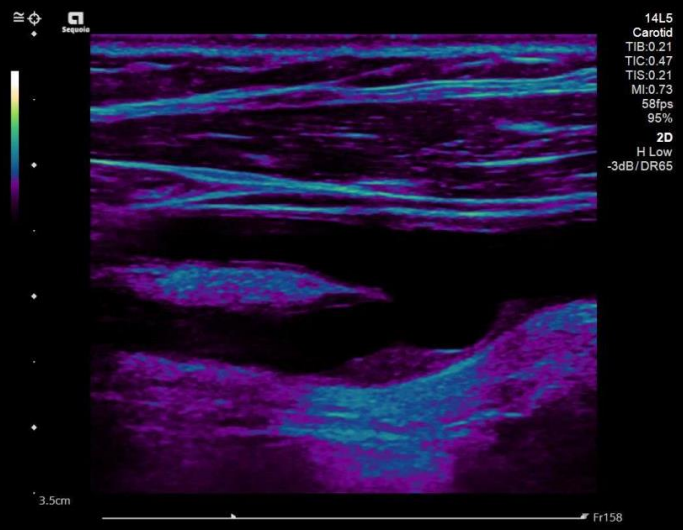
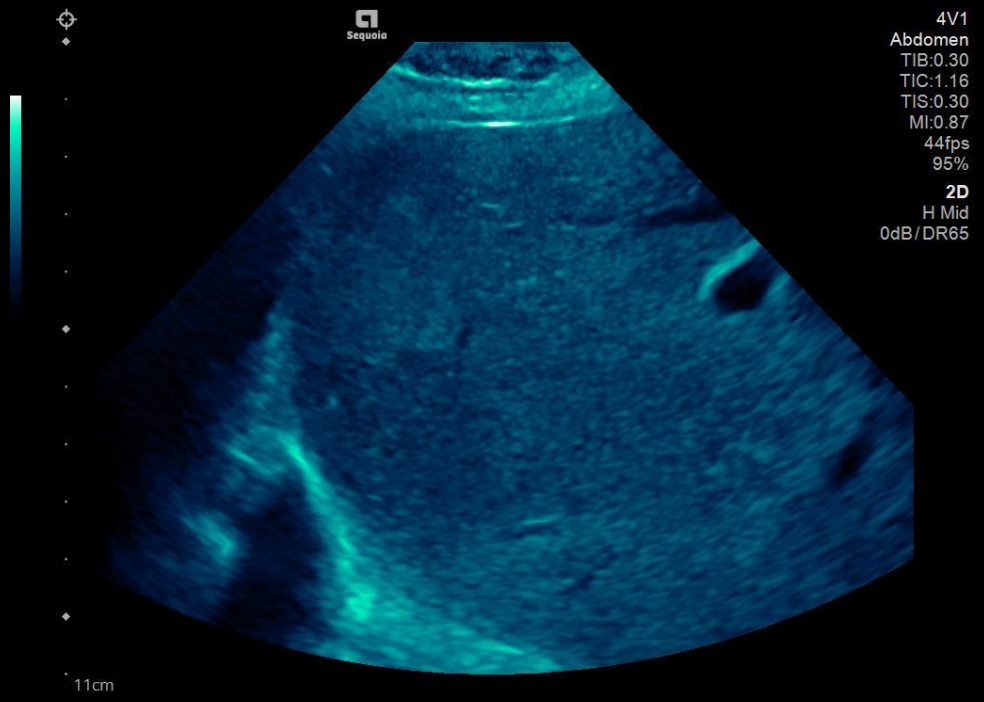
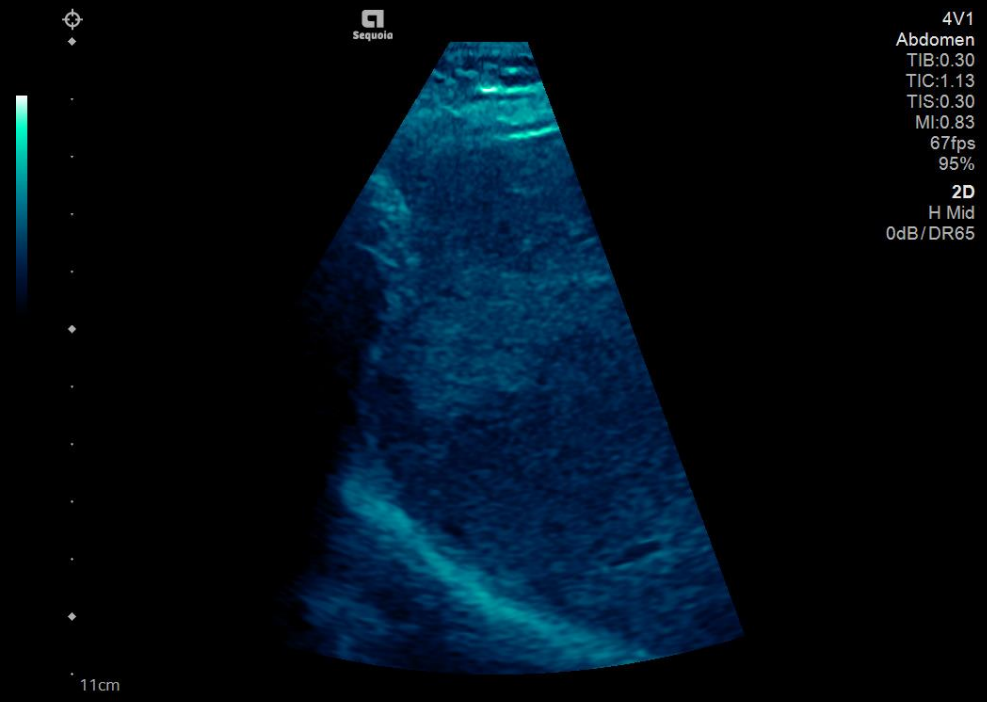



Image Size
5

# Sector Size



# B-mode post-processing features

Transverse Pancreas

- 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

# Doppler controls

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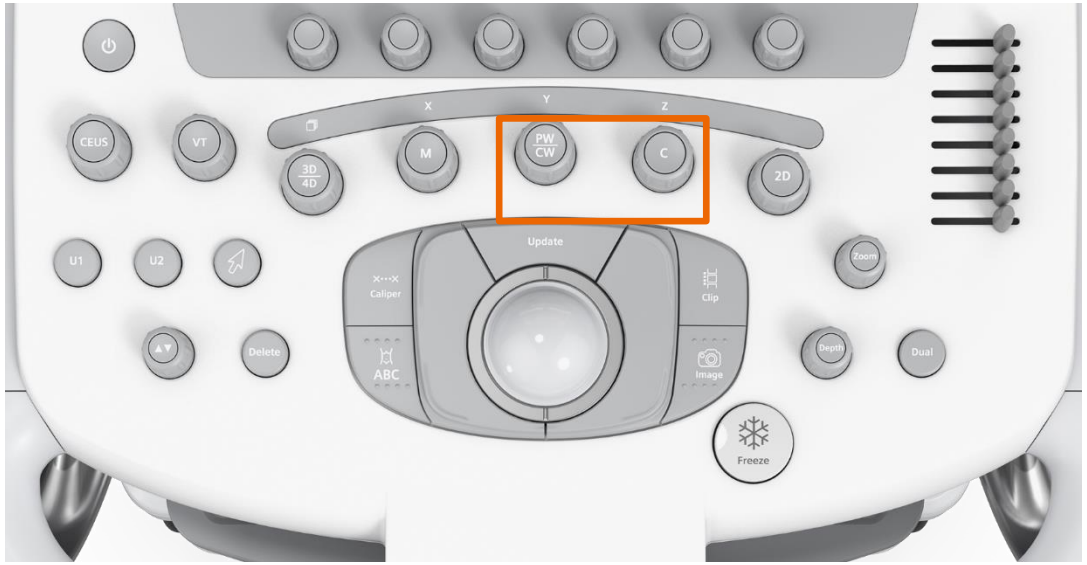
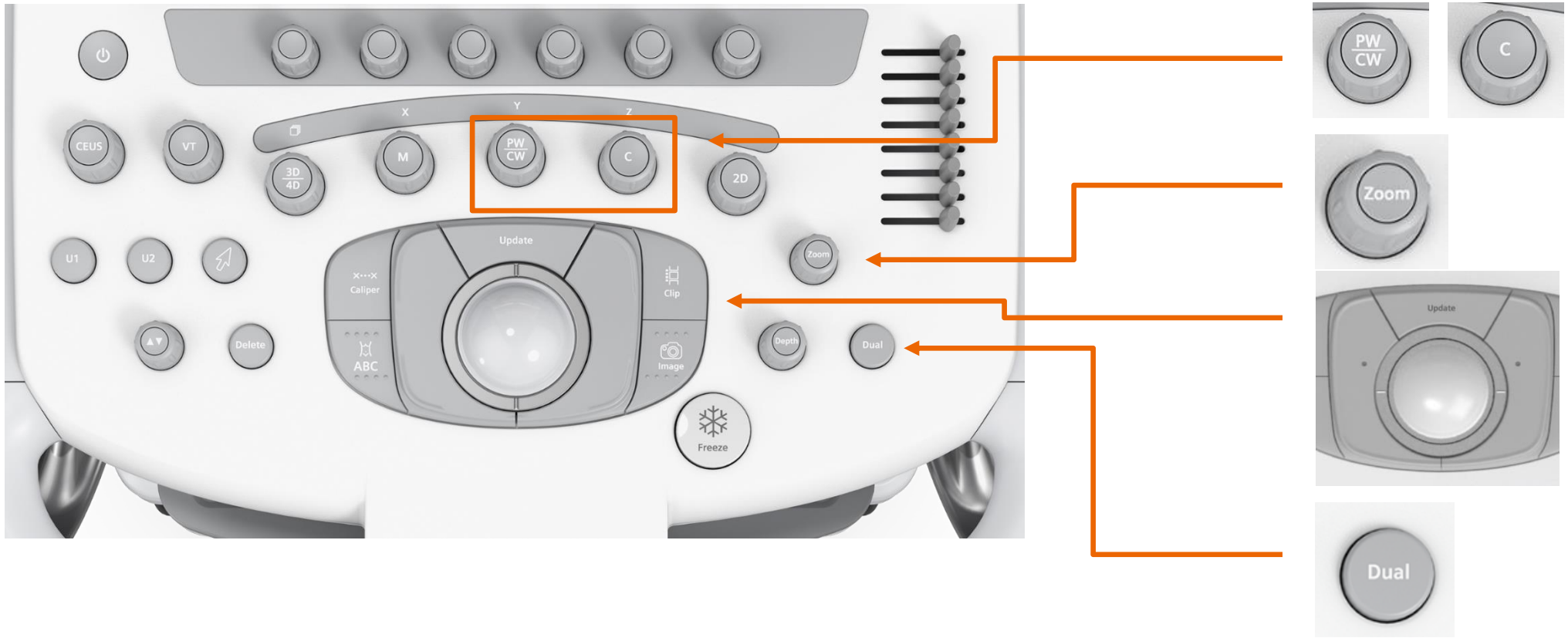
## Control Panel



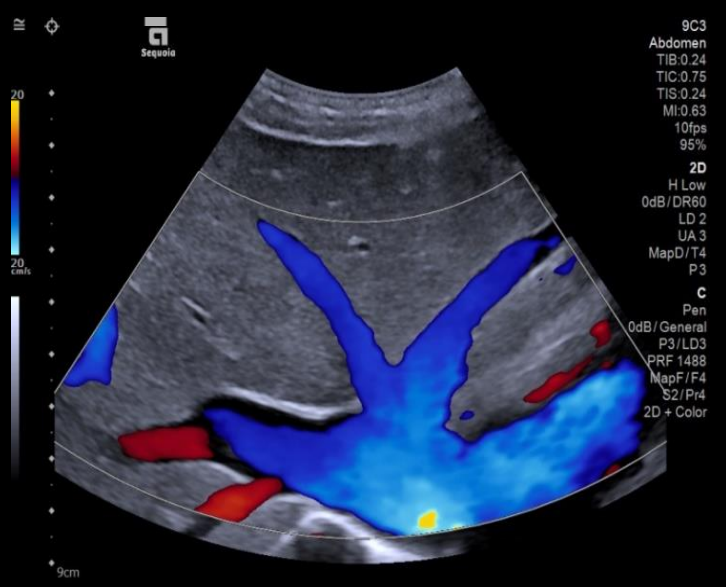

## Touch Screen

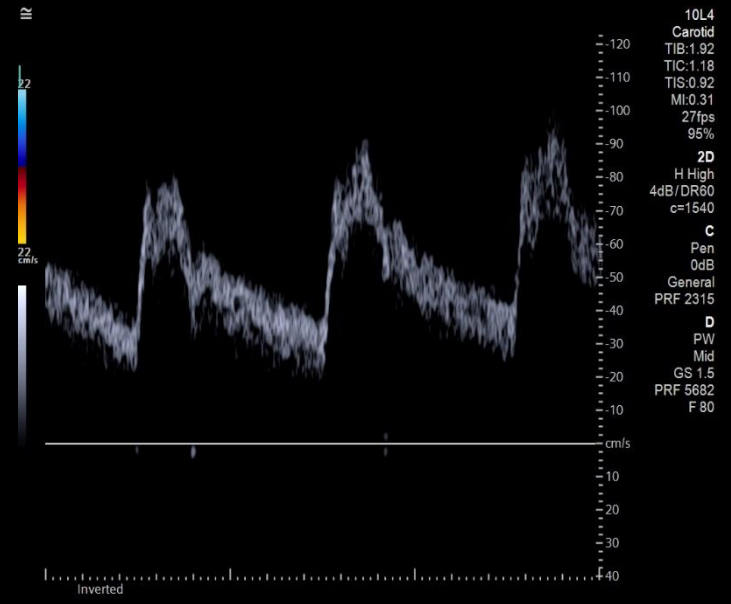

**Soft keys**

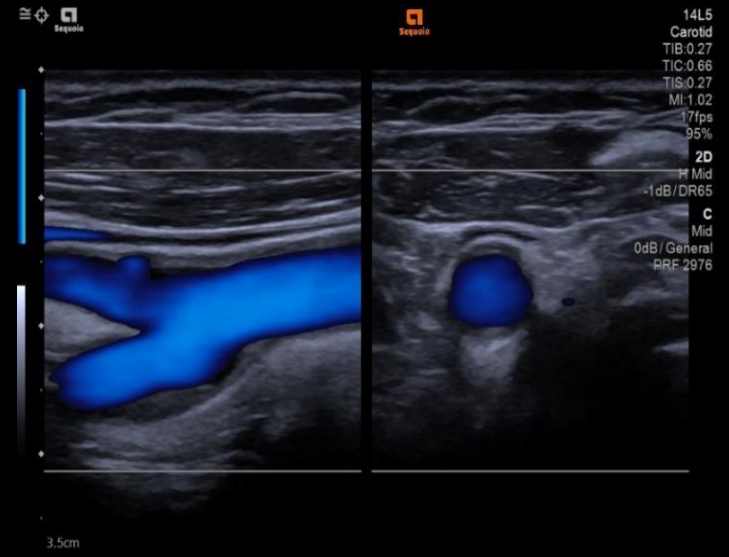
# Doppler controls on the Control Panel



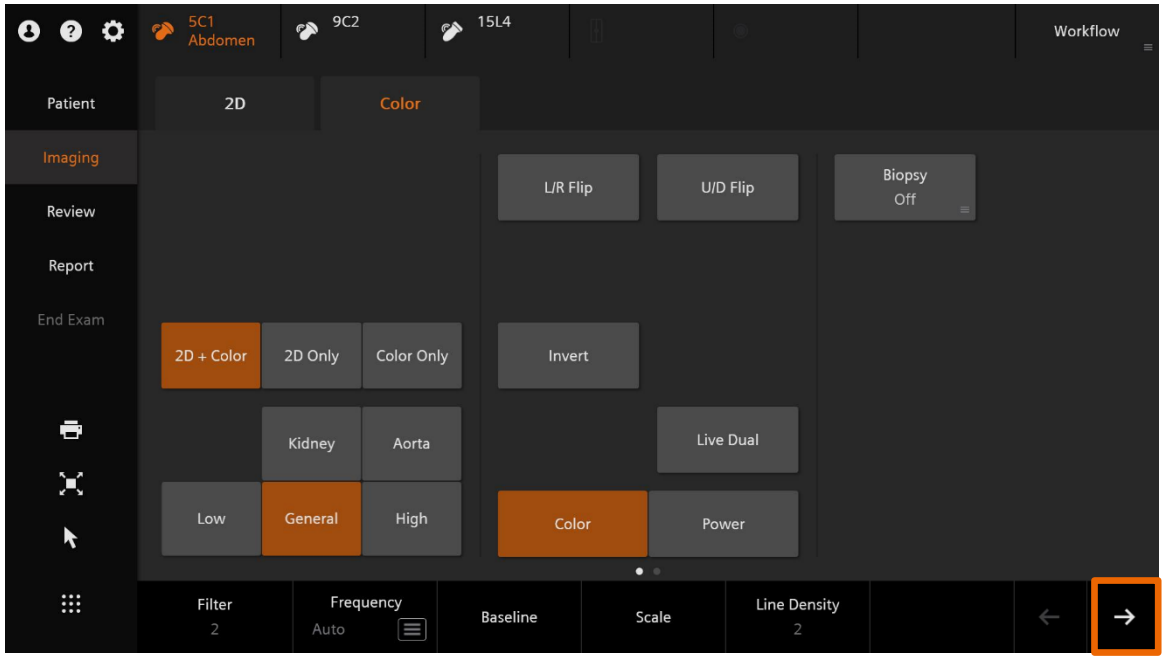
# Doppler modes



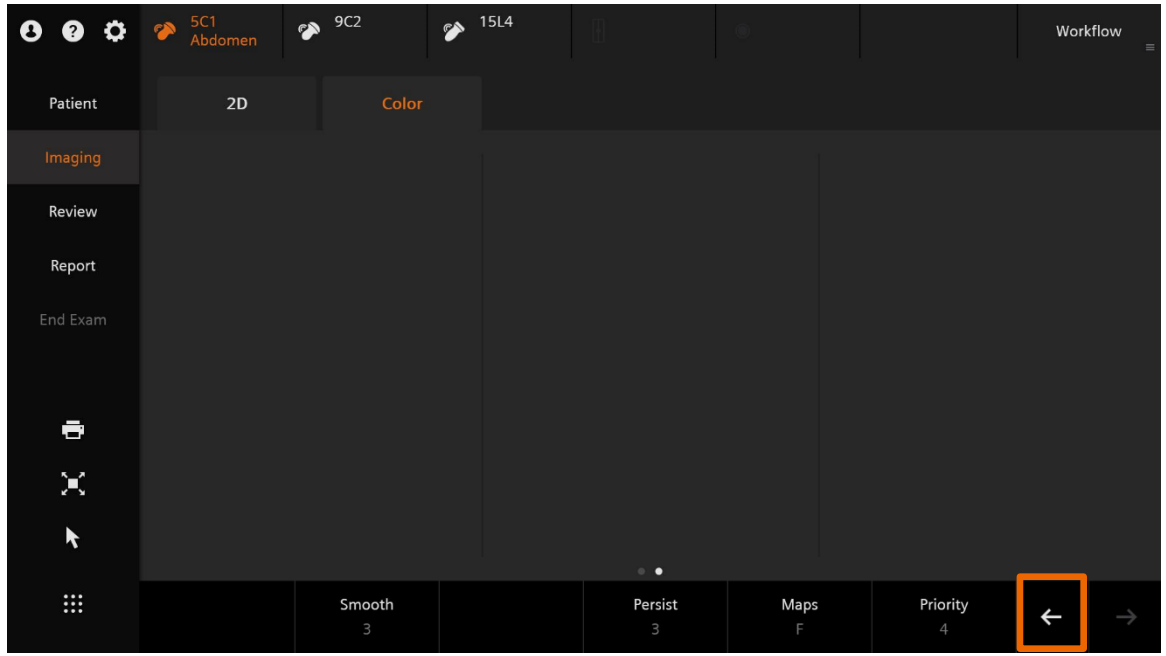



# Color controls on the Touch Screen

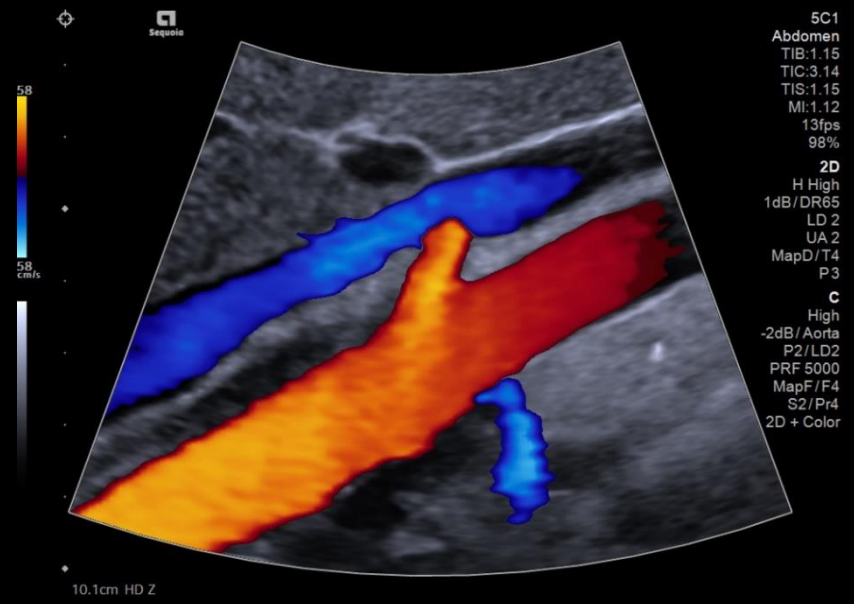


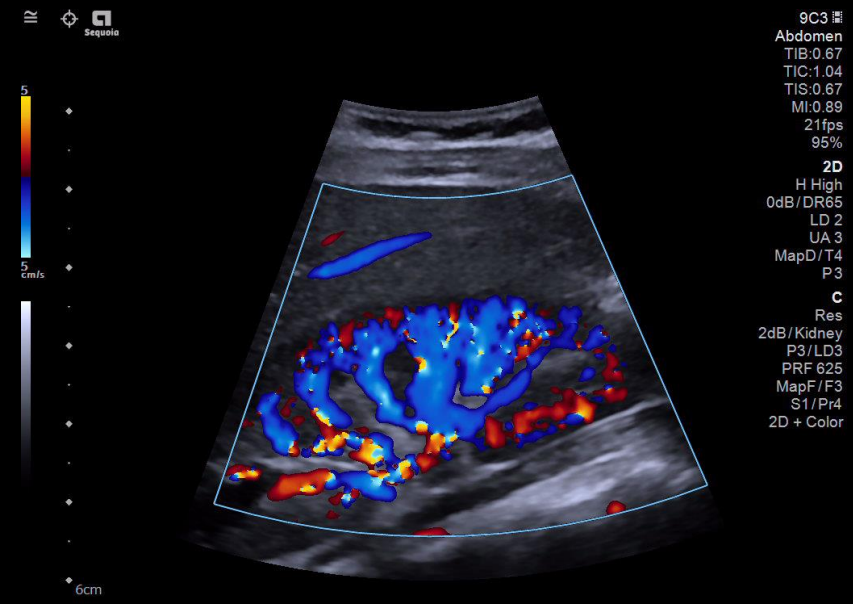

Page One




Page Two

# Color Doppler controls on the soft keys

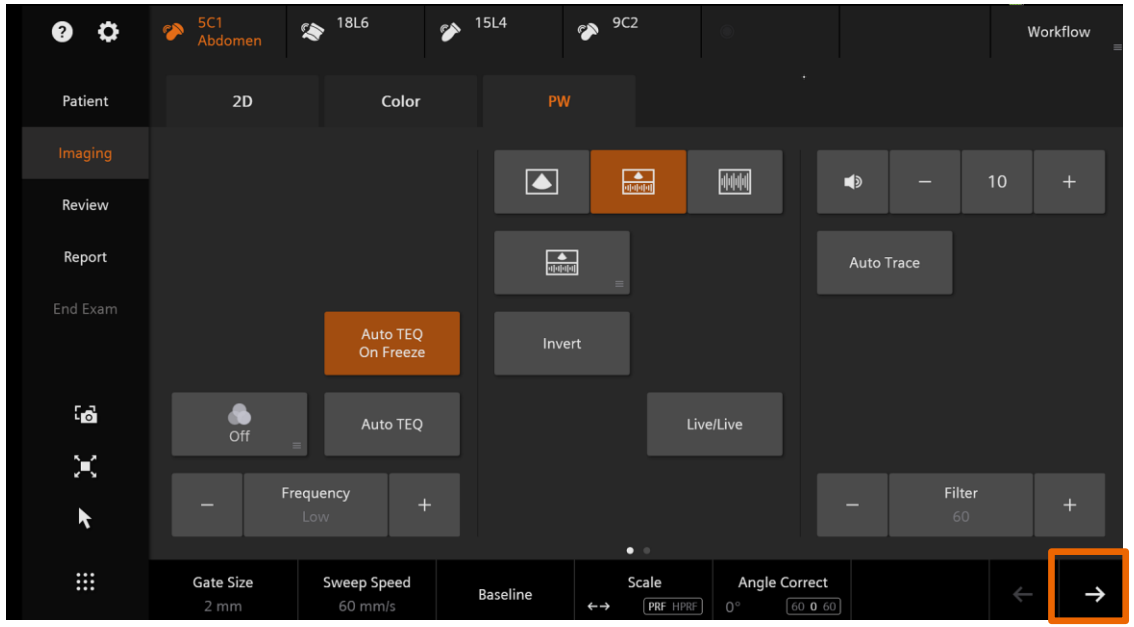



| | Filter | Frequency | Baseline | Scale | Line Density |
|---|---|---|---|---|---|
| | 2 | Auto | | | 2 |

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

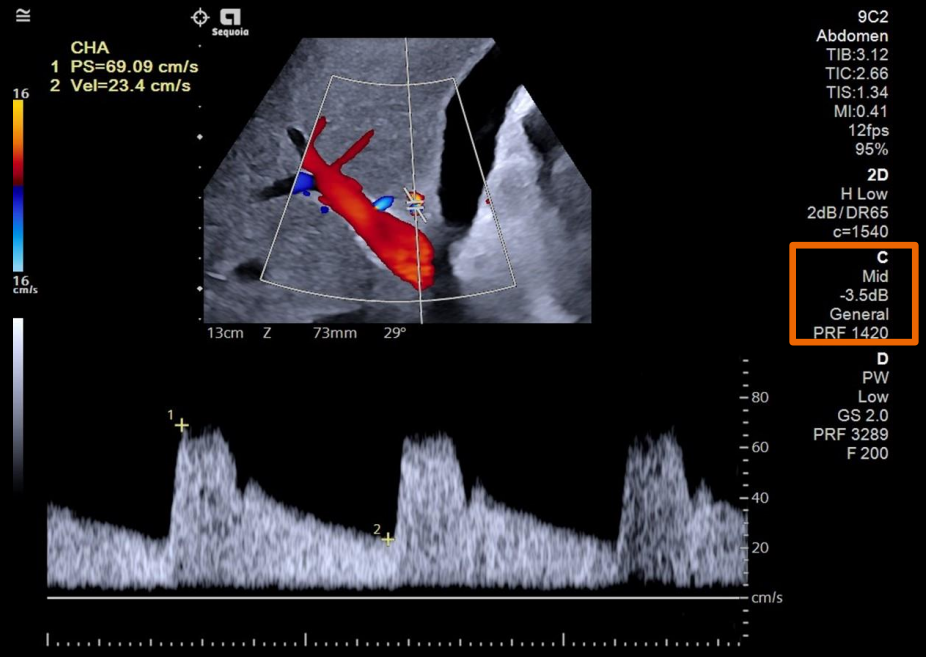
# PW controls on the Touch Screen

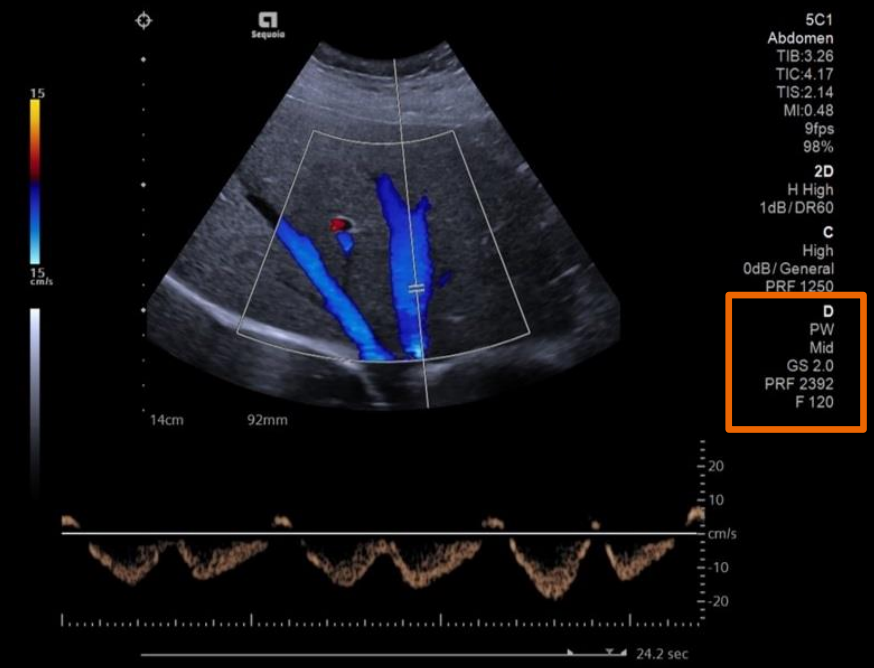



Page One


Page Two

# PW Doppler controls on the soft keys



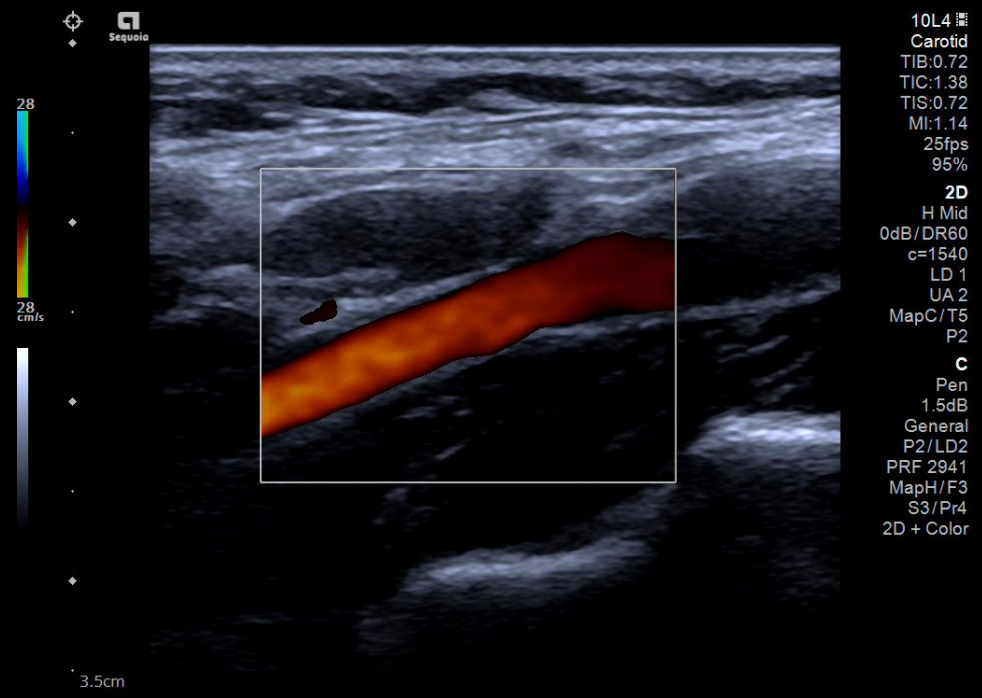





# Velocity variance map

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

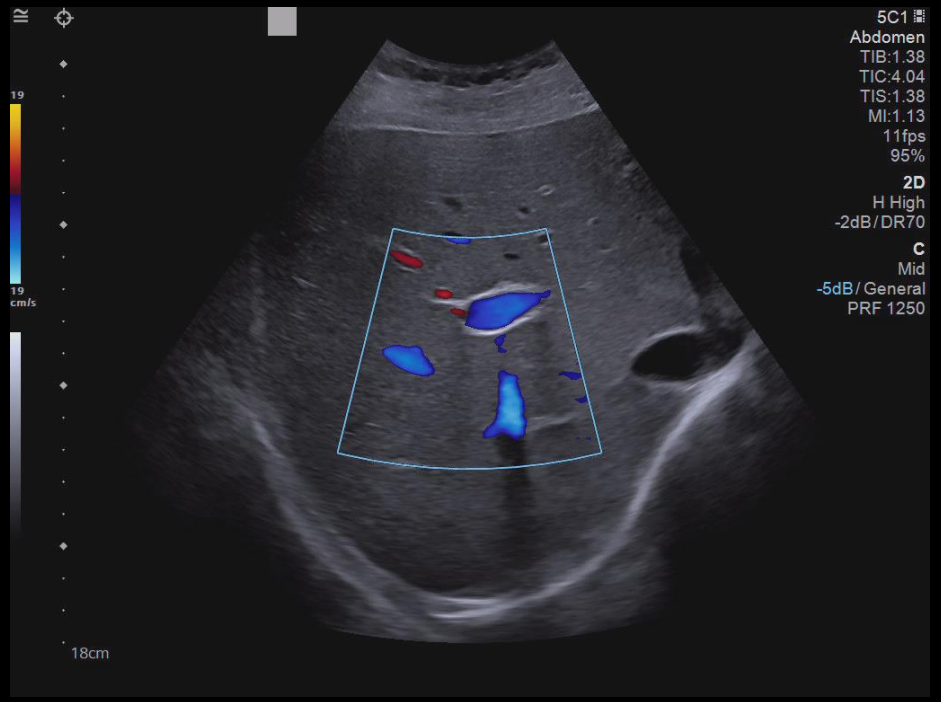


# Objectives

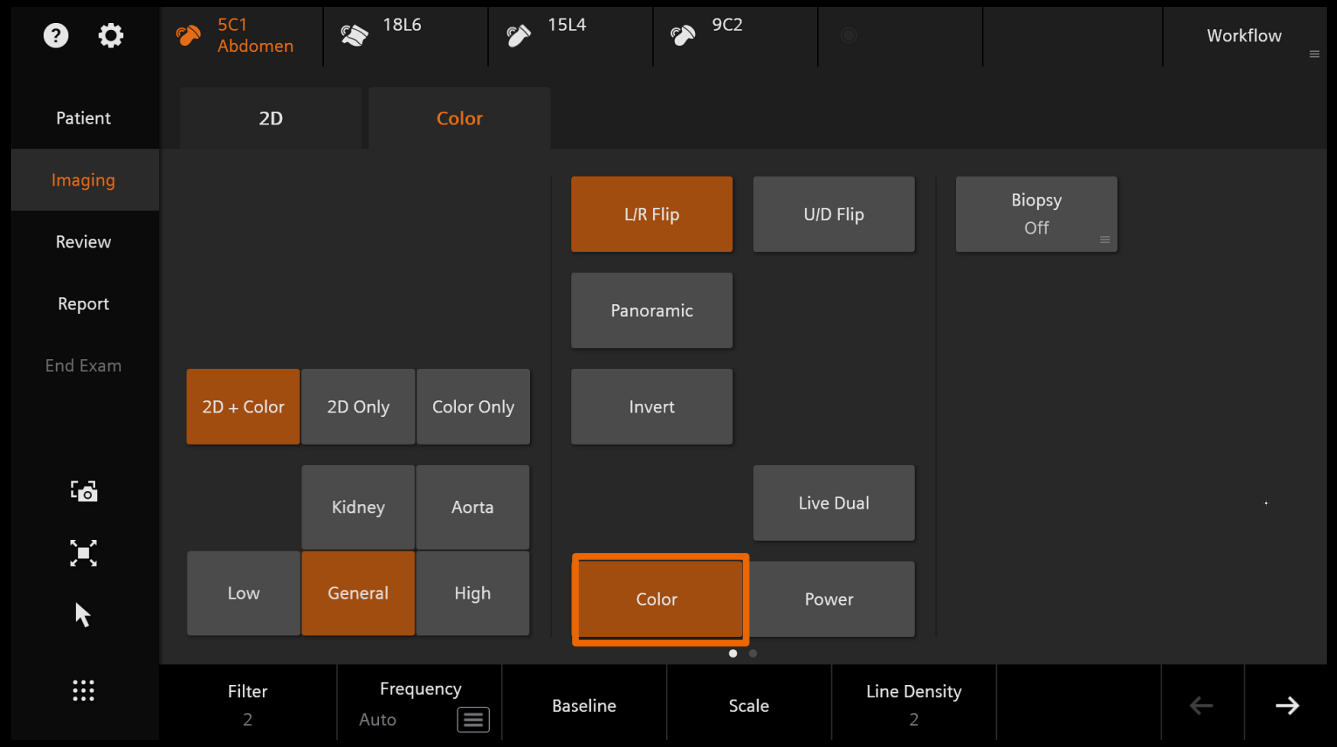
- Review B-mode and M-mode controls
- Describe B-mode and M-mode optimization features
- Explain display modes
- Review Doppler controls
- **Describe Doppler optimization features**

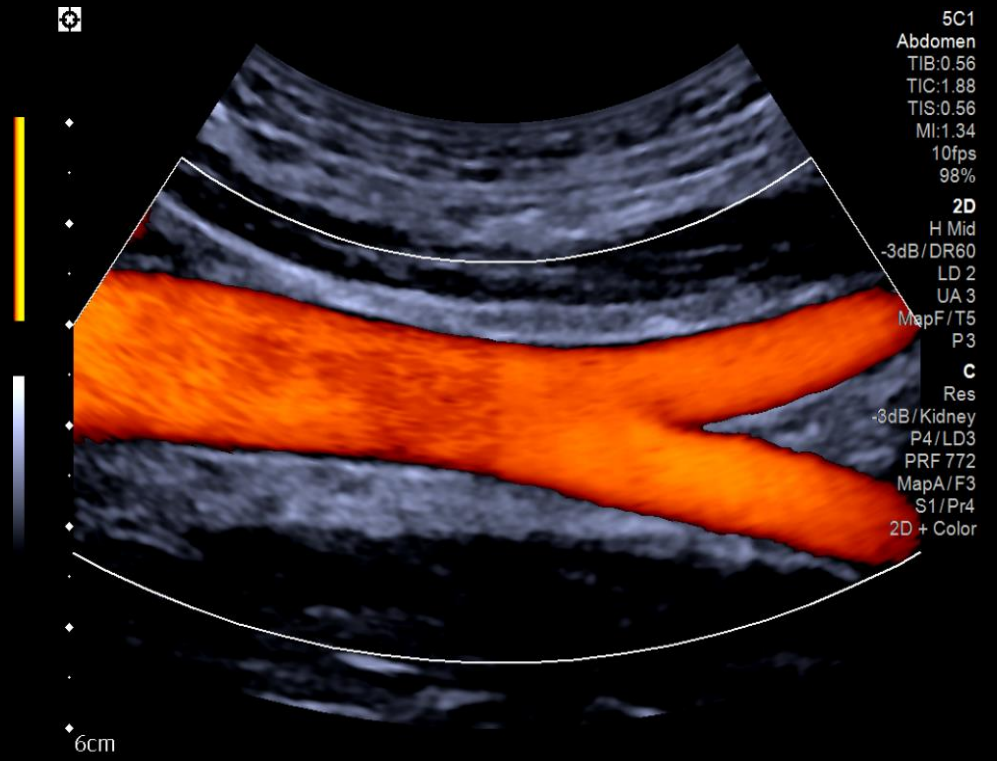
# Auto flash artifact suppression

Auto flash artifact suppression applies flash suppression relative to user motion



# Color Doppler



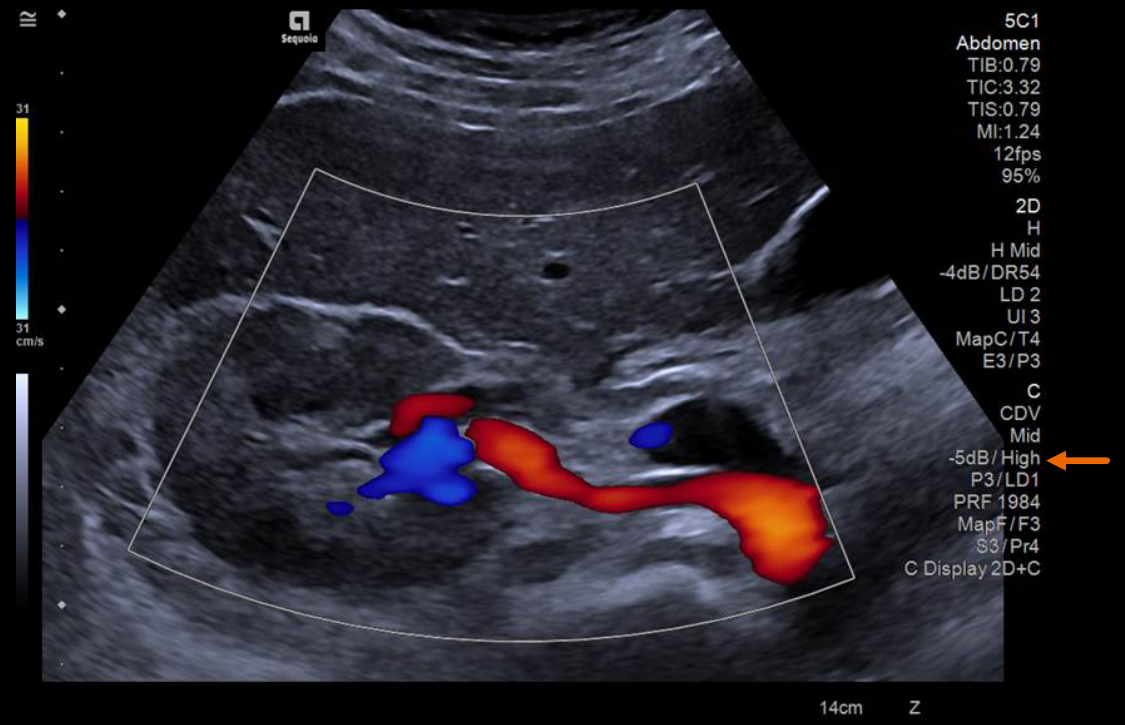



# Display modes

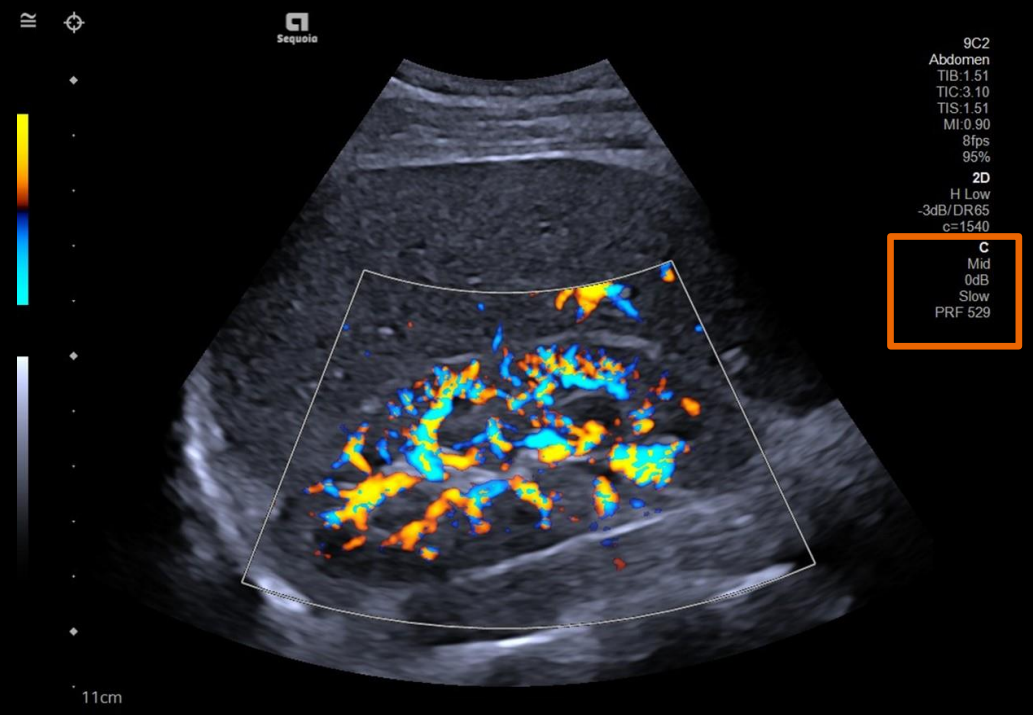
| | | |
|---|---|---|
| 2D + Color | 2D Only | Color Only |
| Slow | Kidney | Aorta |
| Low | General | High |

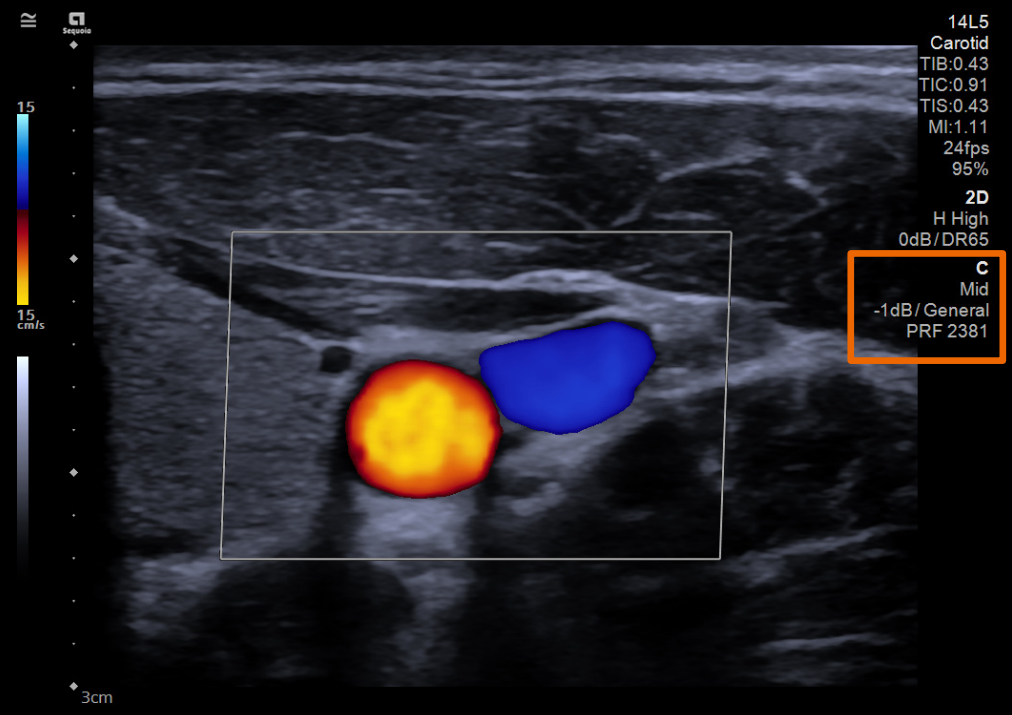
# Flow states

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

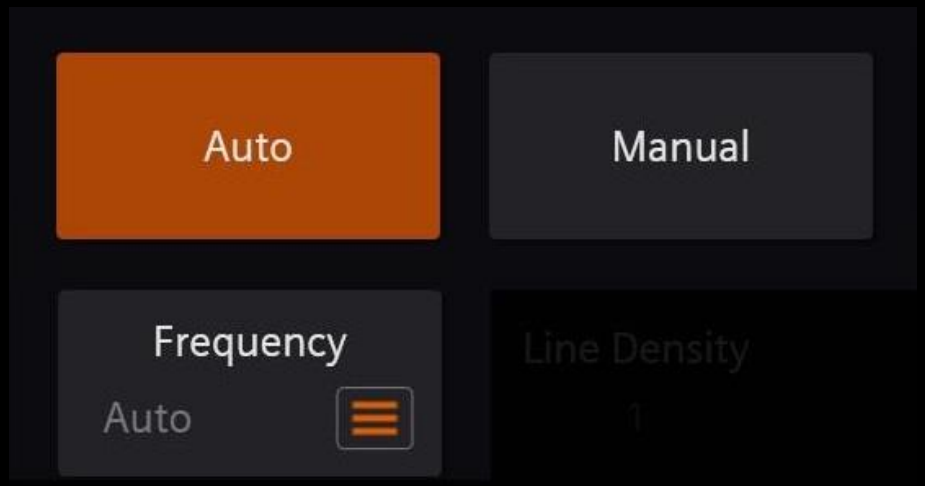


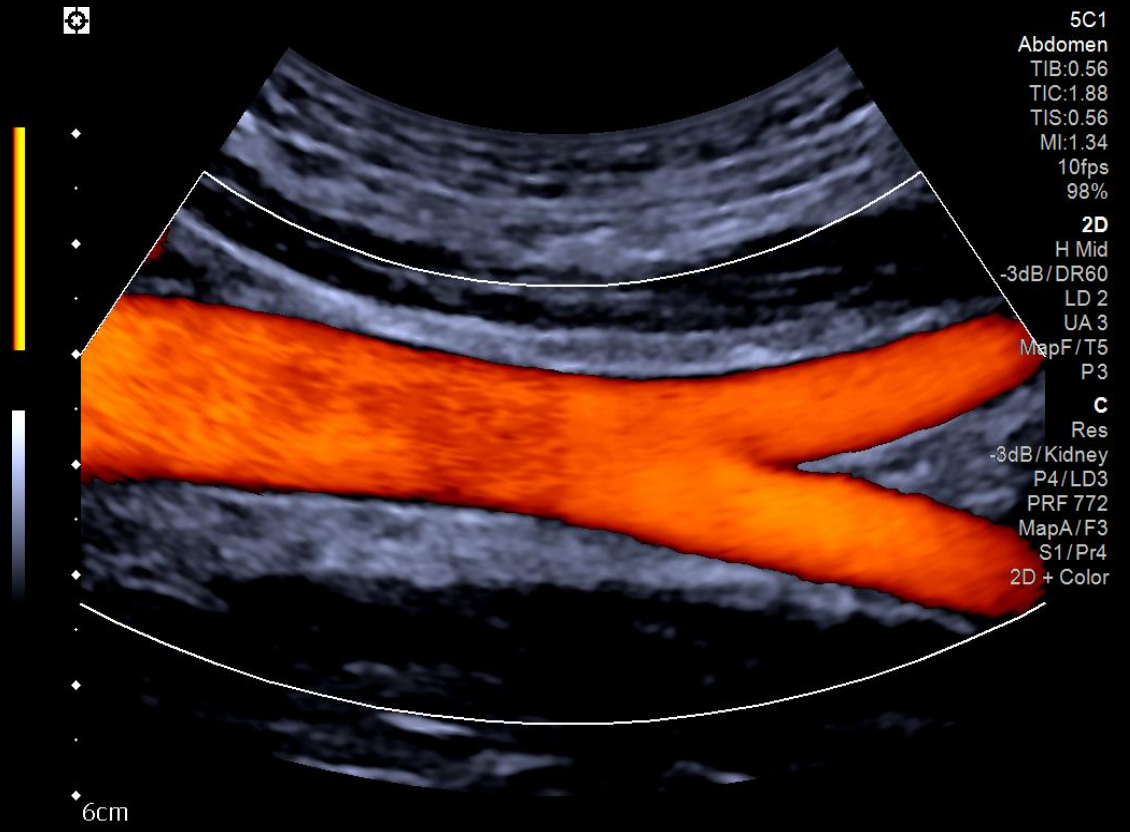
# Flow state examples



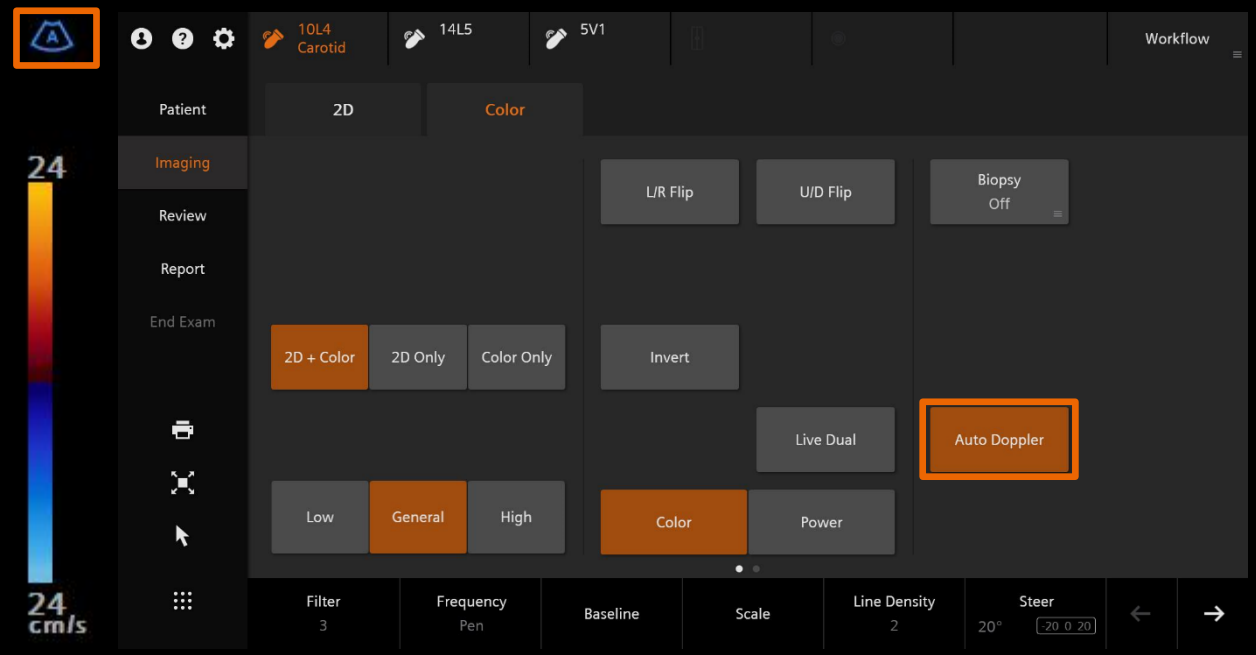
# Dynamic MultiHertz Technology



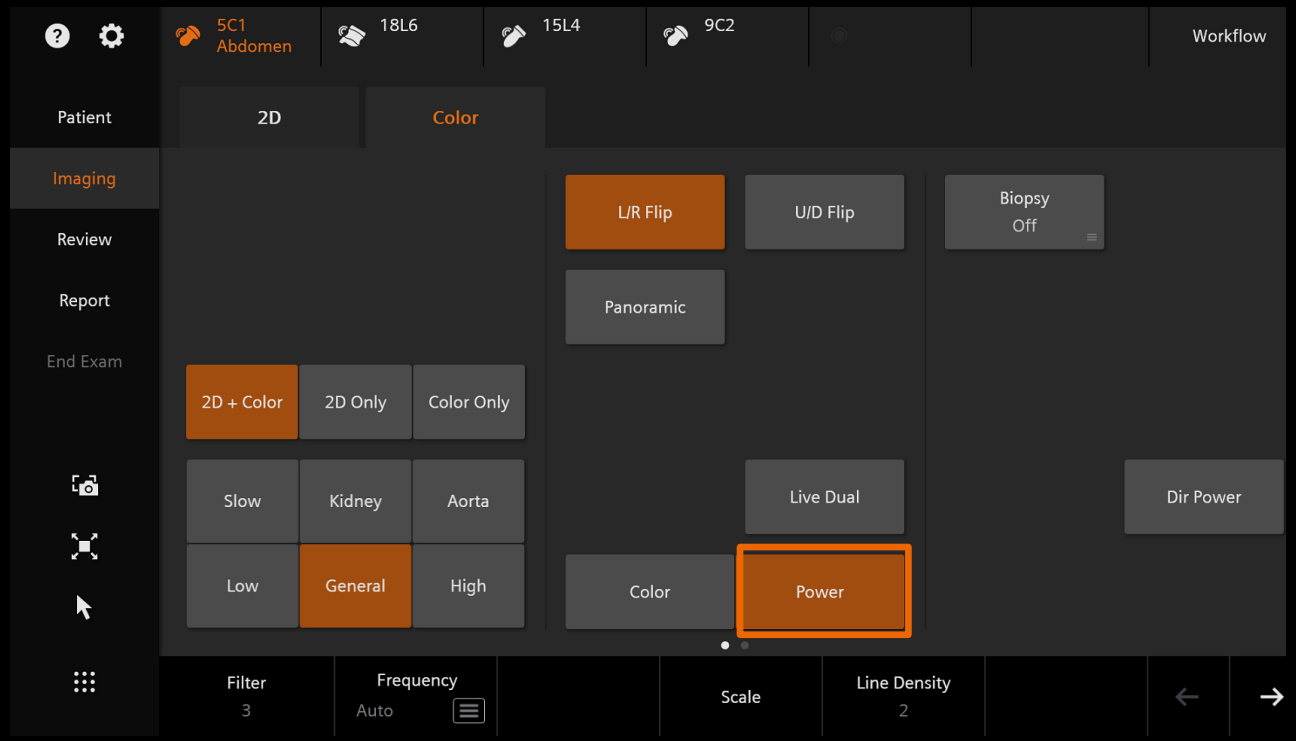



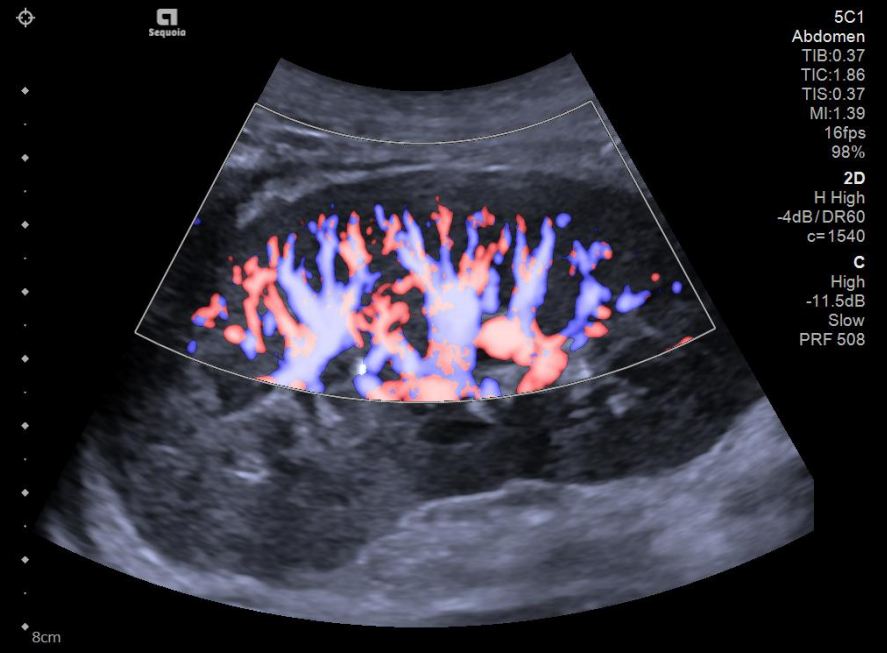
# Auto Doppler

- 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**

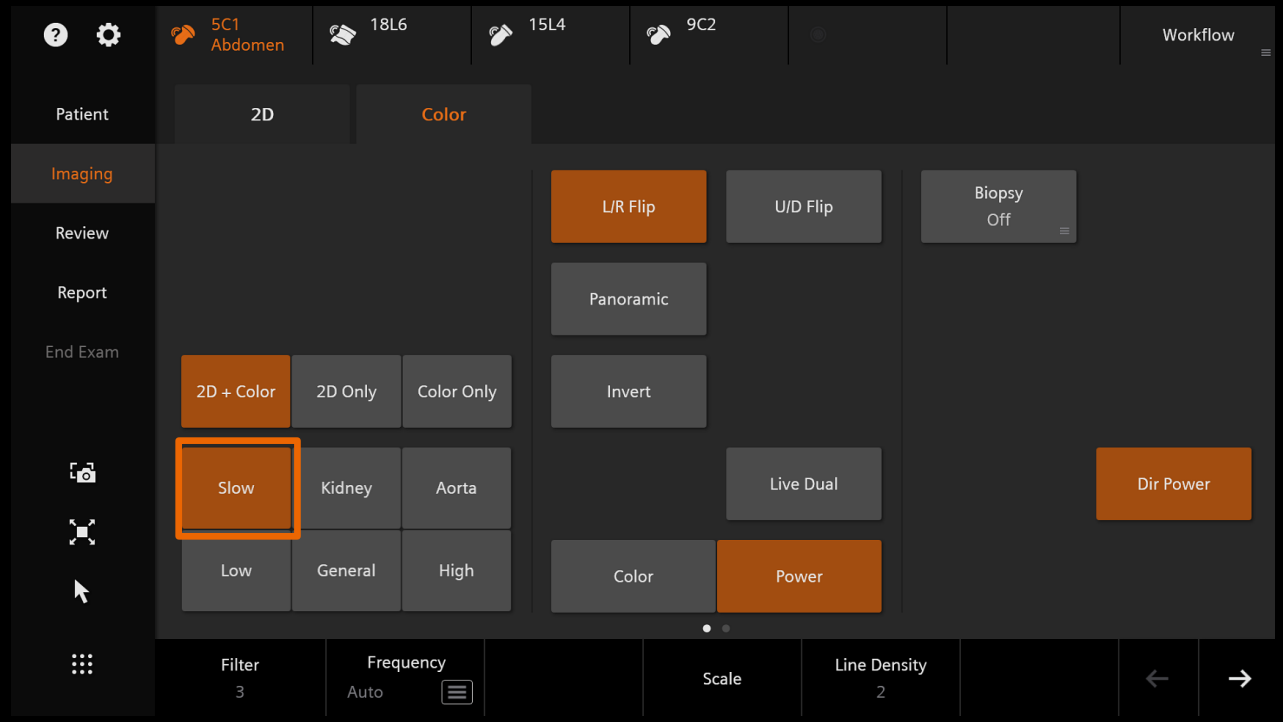


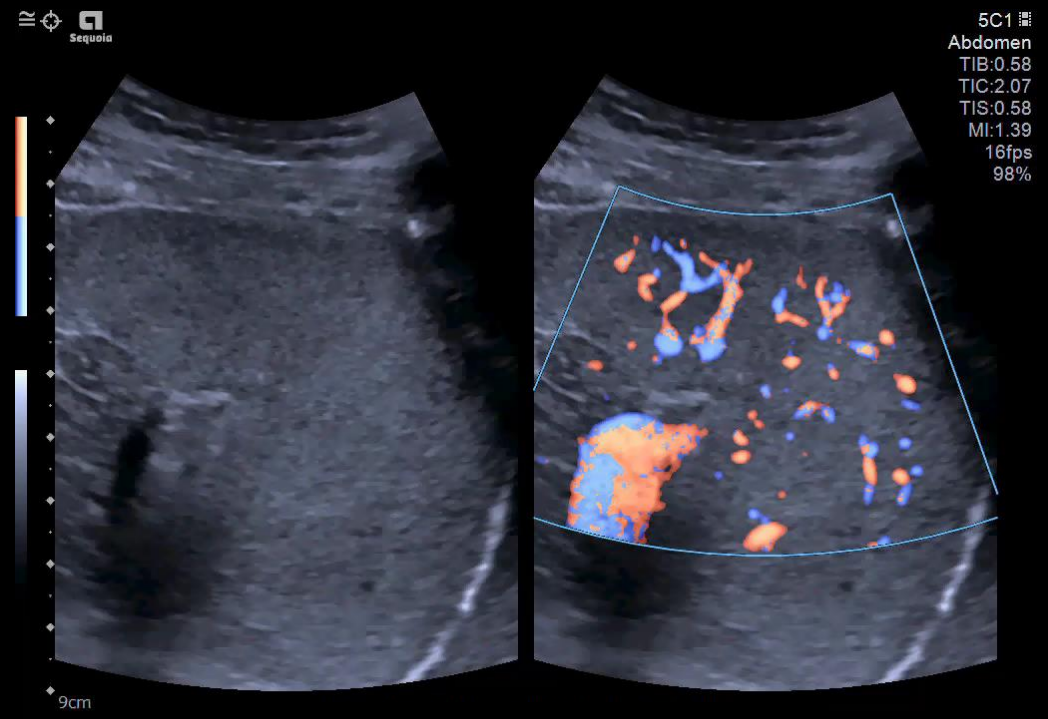
# Power Doppler



# Slow Flow



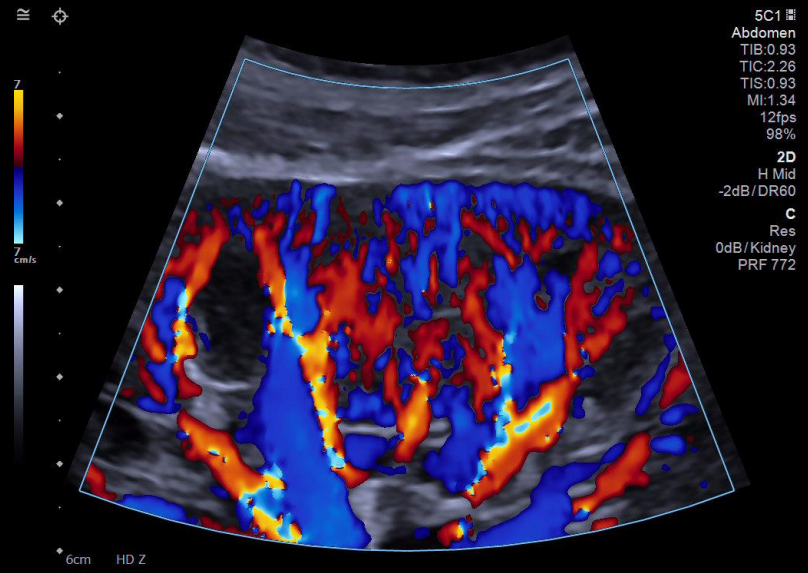
# Color Doppler – Soft keys

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

Page One

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

Page Two



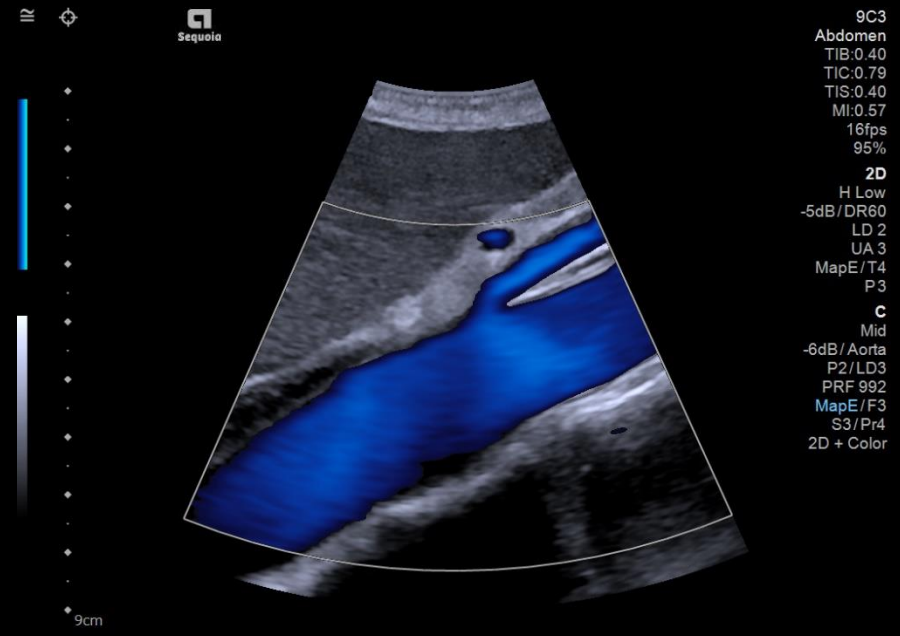
# Power Doppler – Soft keys

| Filter | Frequency | | Scale | Line Density |
|---|---|---|---|---|
| 3 | Auto | | | 2 |

Page One

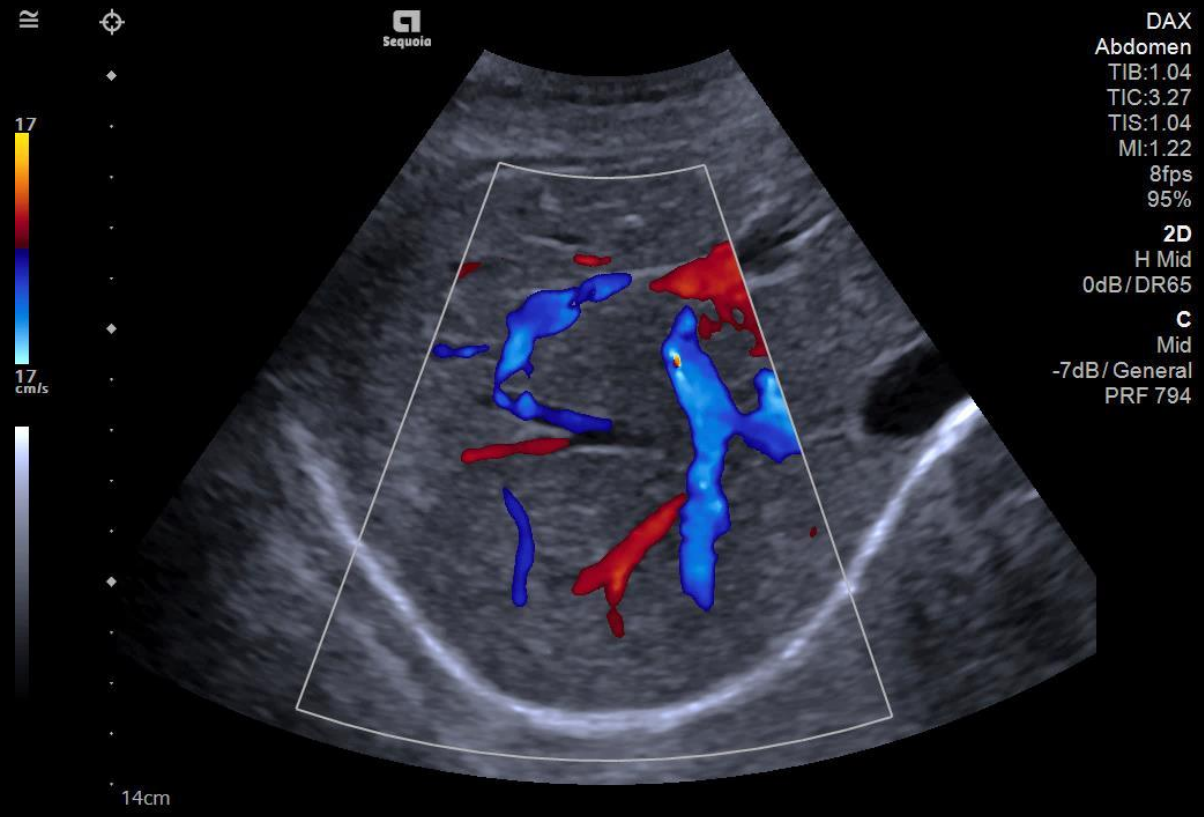
| Gate Size | | | | Angle Correct |
|---|---|---|---|---|
| 2 mm | | | | 0° 60 0 60 |

Page Two

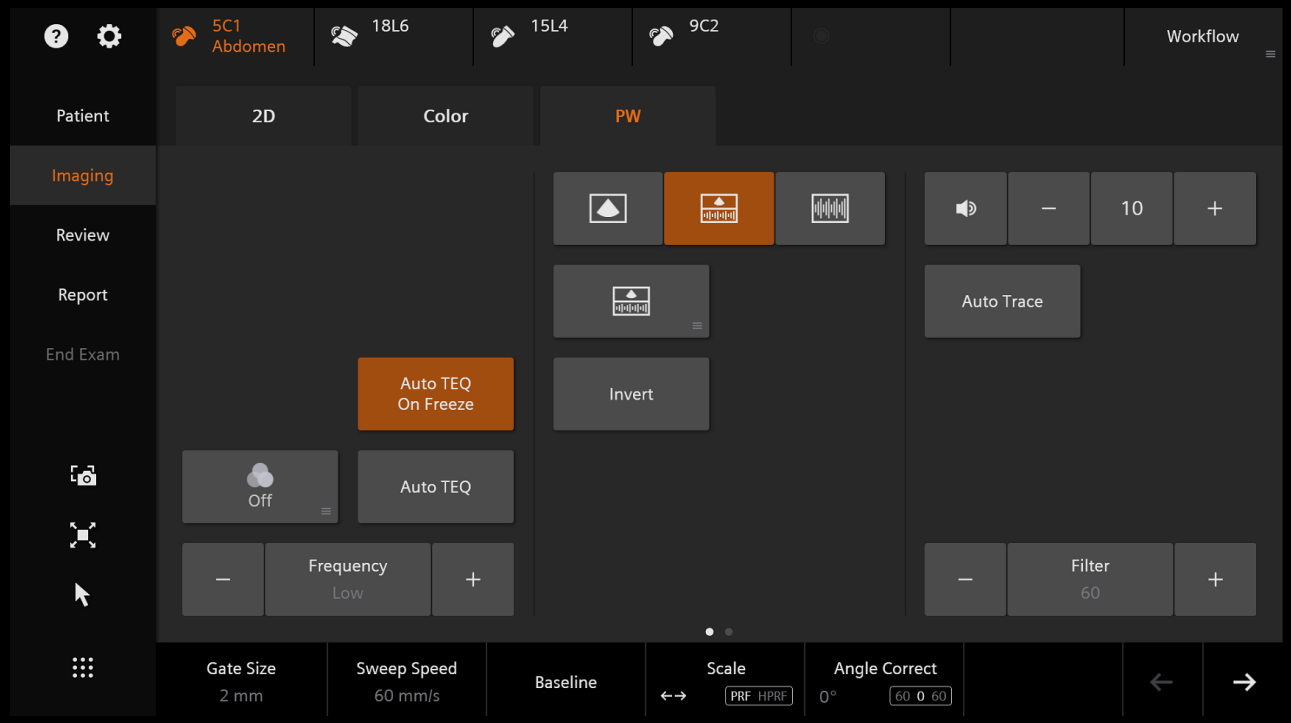


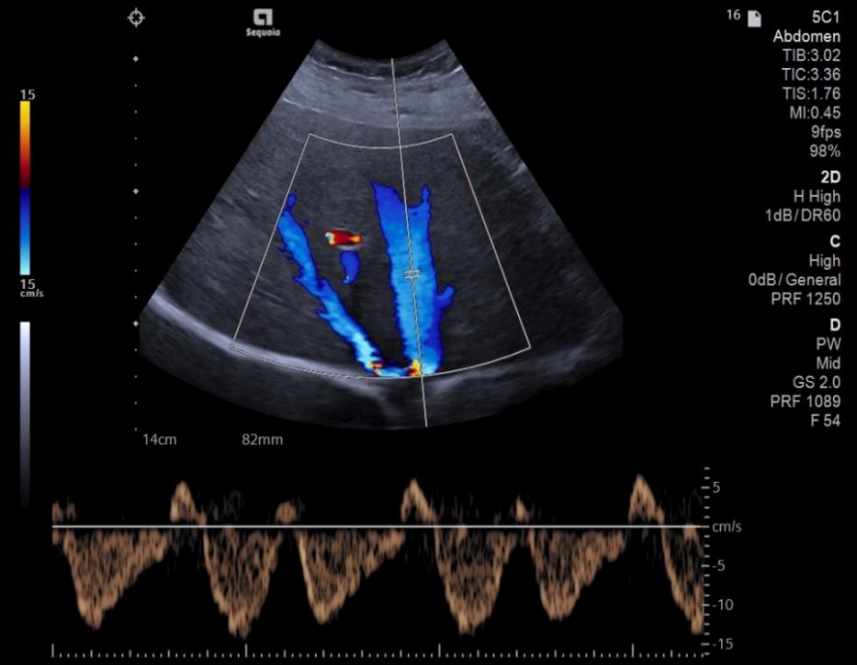
# Color post-processing

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



# Pulsed wave (PW) Doppler

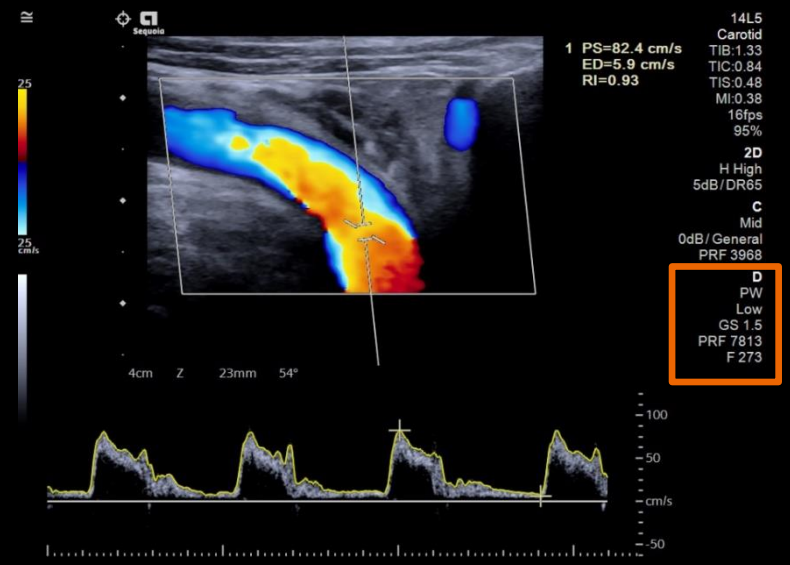



# Pulsed wave (PW) Doppler – soft keys

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

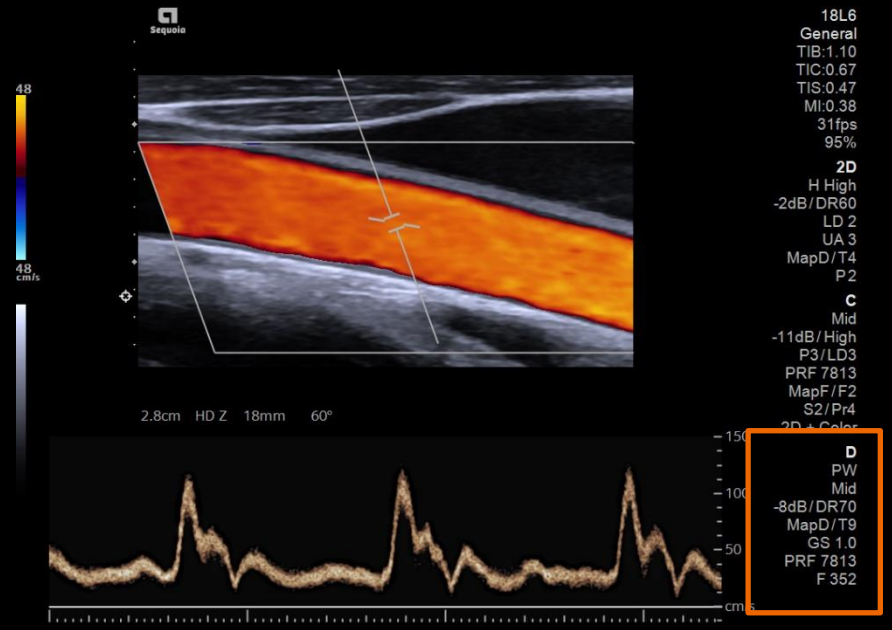
Page One



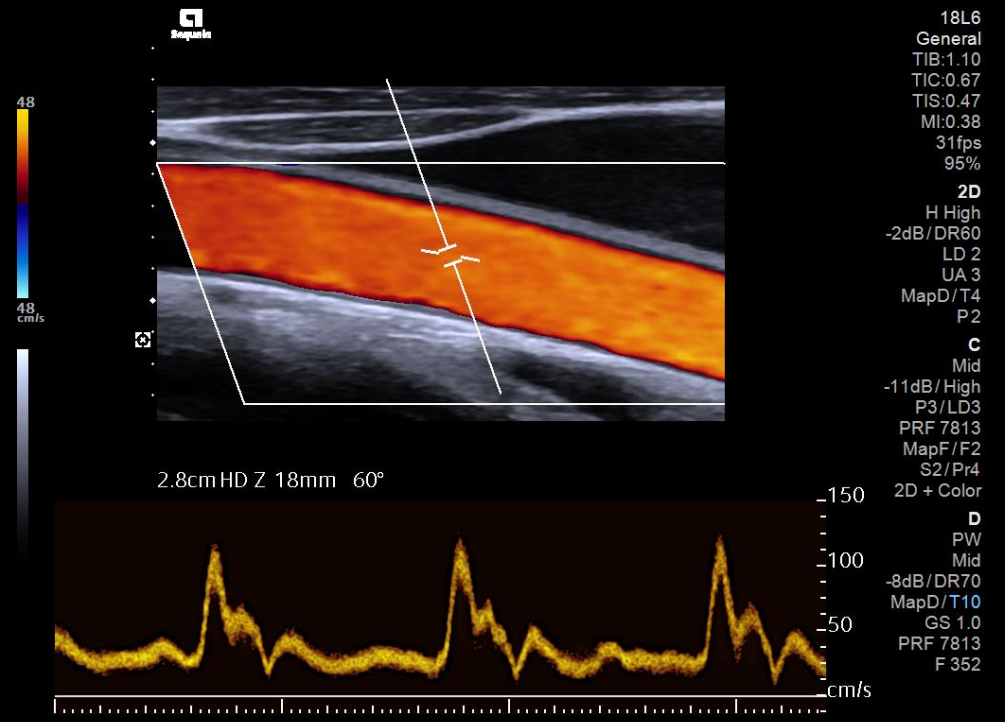
# Pulsed wave (PW) Doppler – soft keys

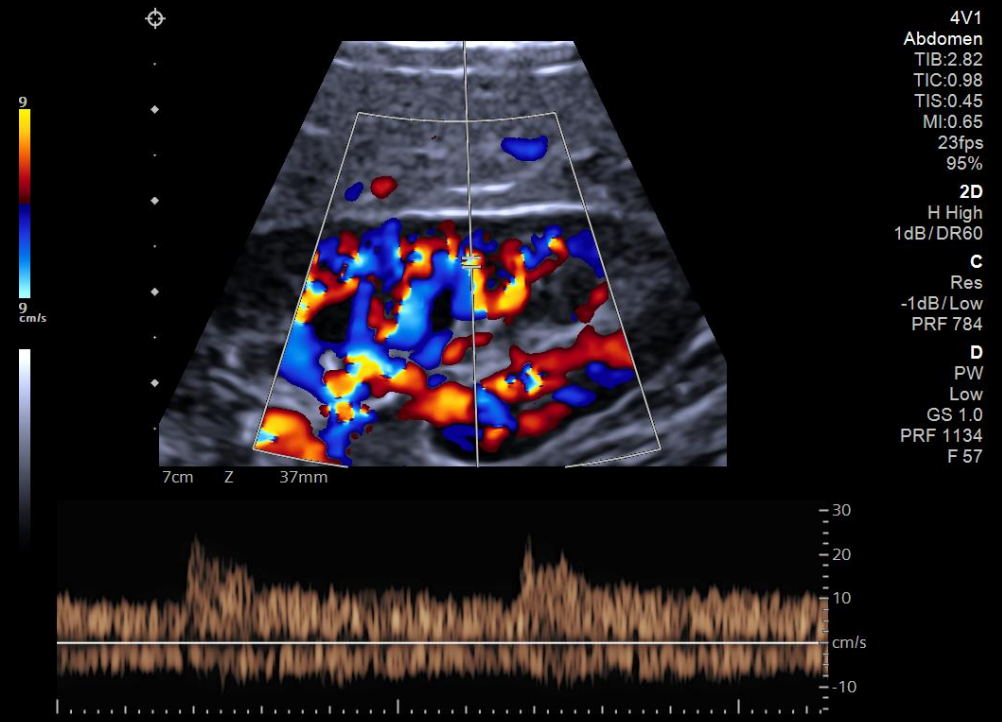
| | | DR | Edge | Maps | Tint |
|---|---|---|---|---|---|
| | | 60 dB | 2 | D | 5 |

Page Two



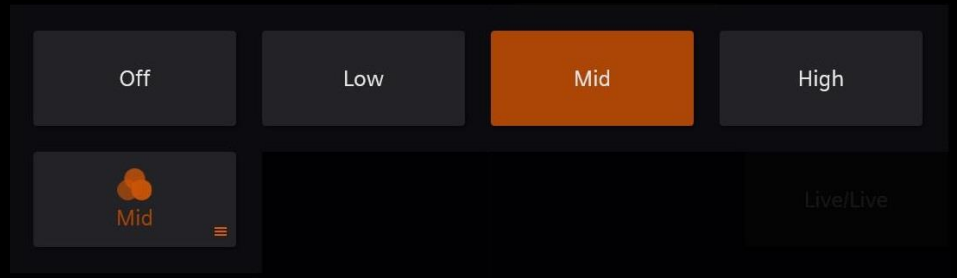
# Tint

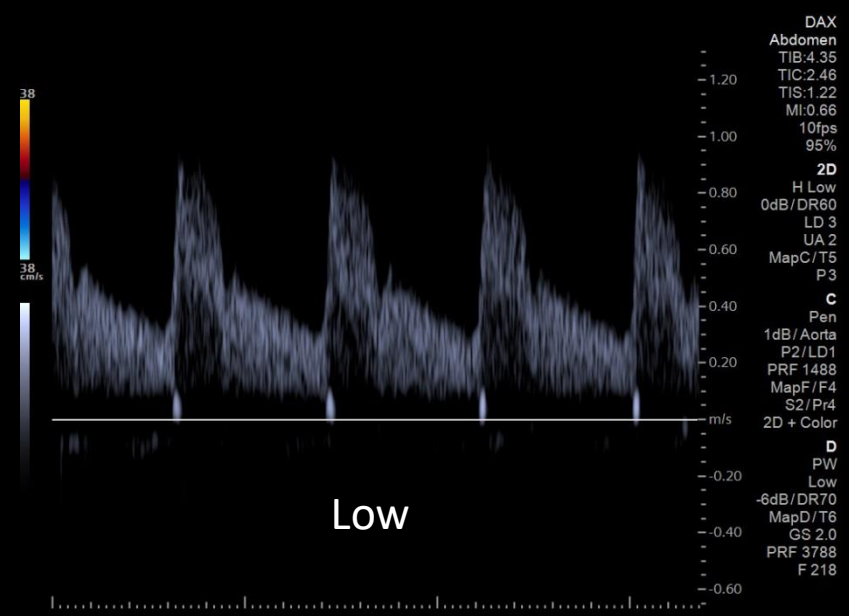


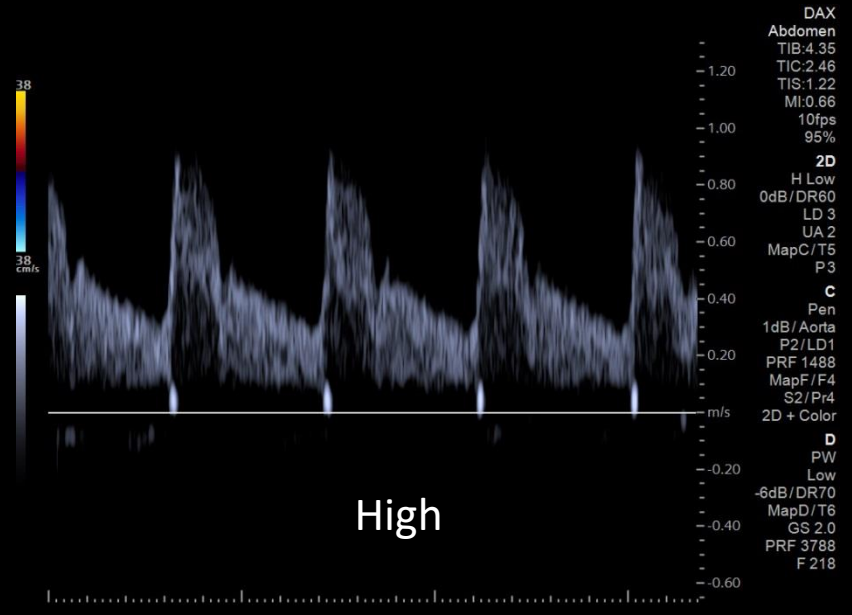
# UltraArt

SIEMENS Healthineers



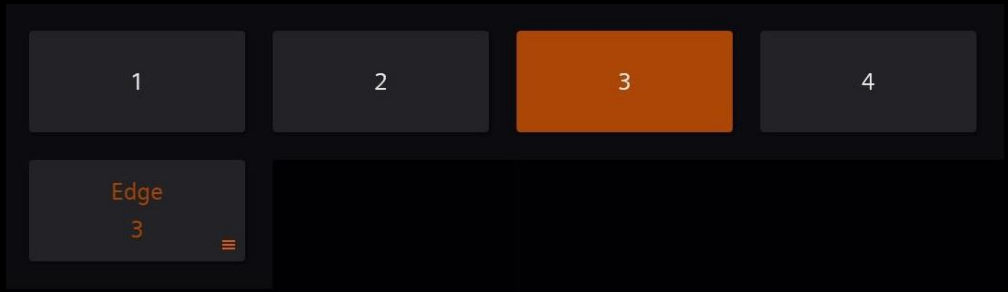



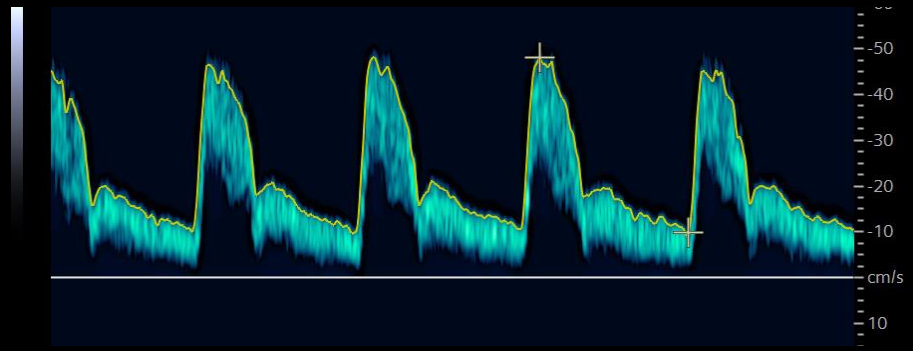

Low

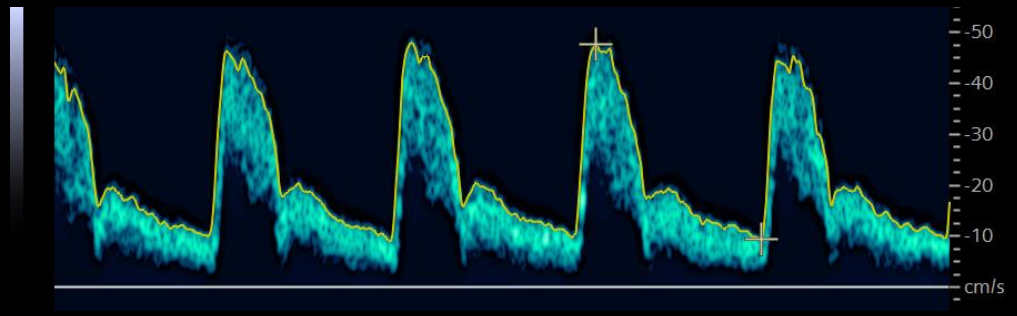



High

# Edge in PW Doppler

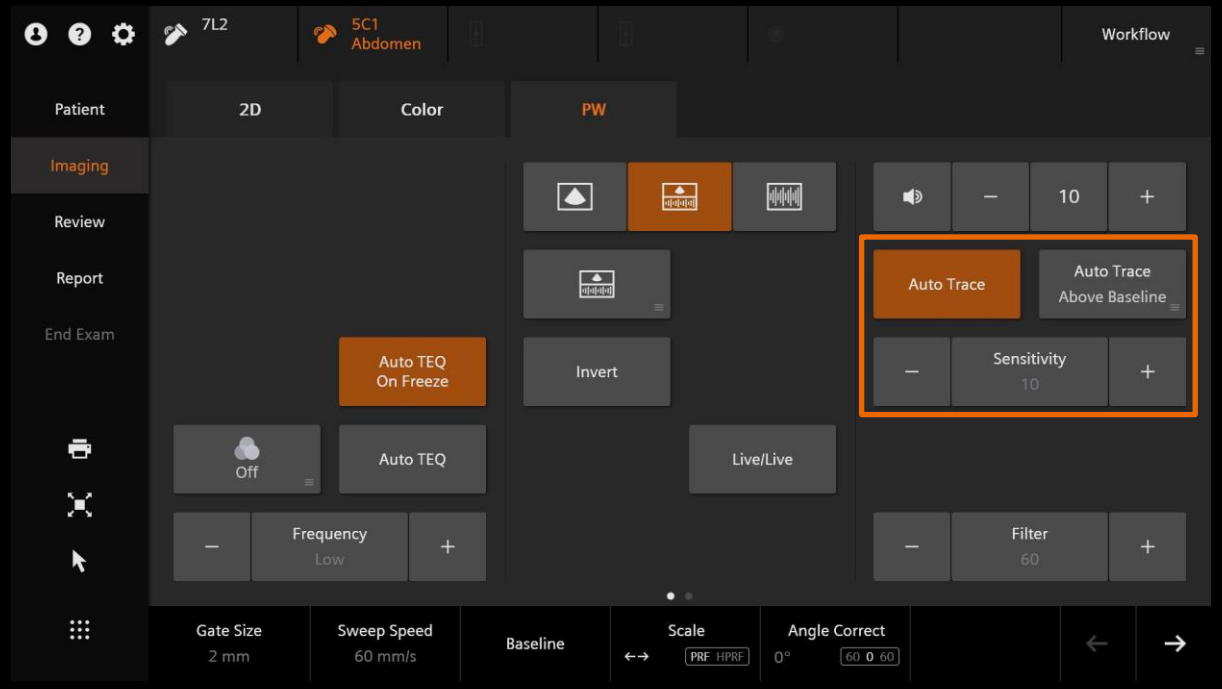


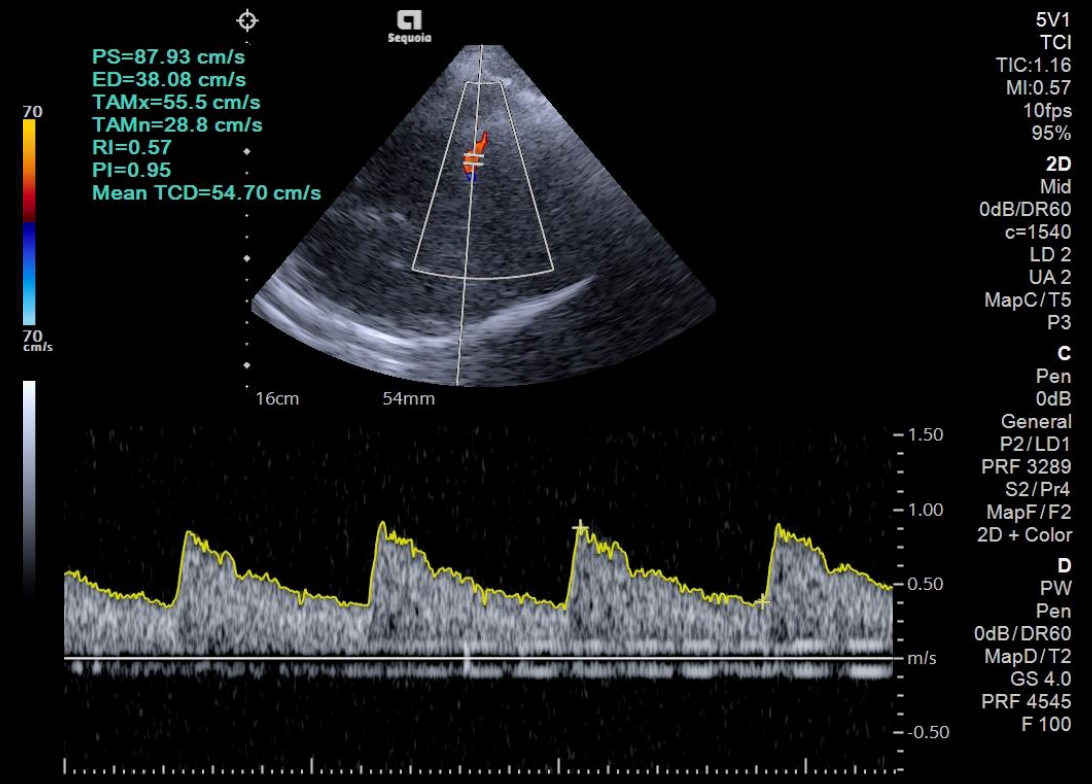



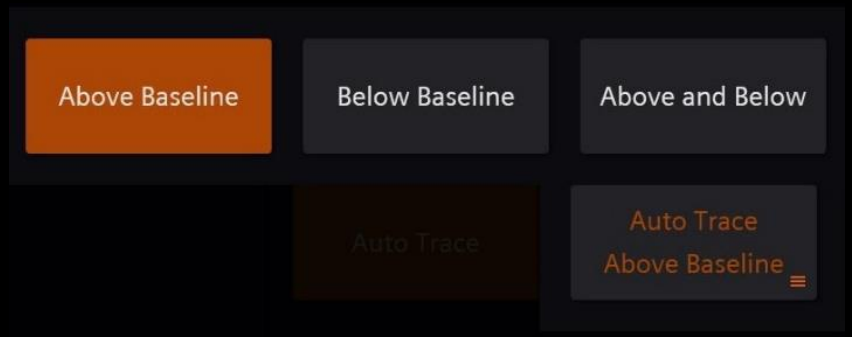
# Auto Trace Optimization & Sensitivity

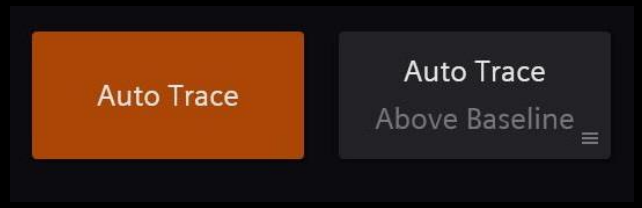
SIEMENS Healthineers

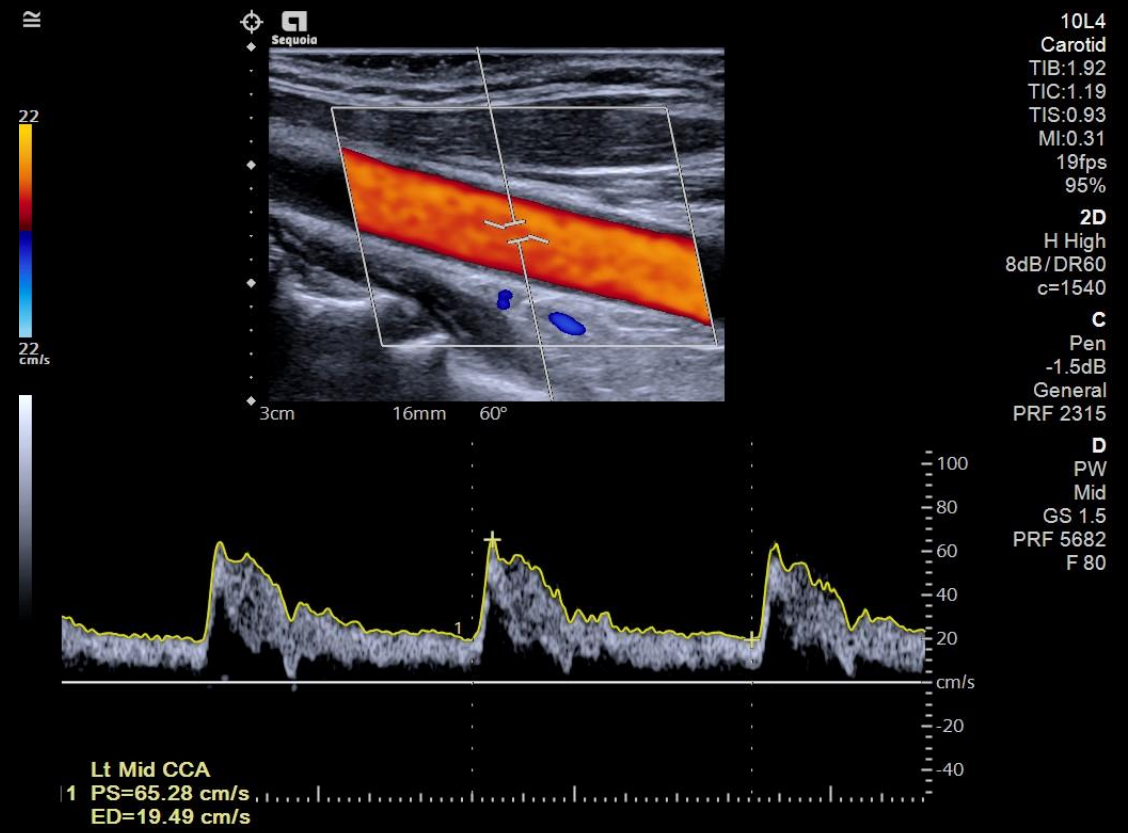


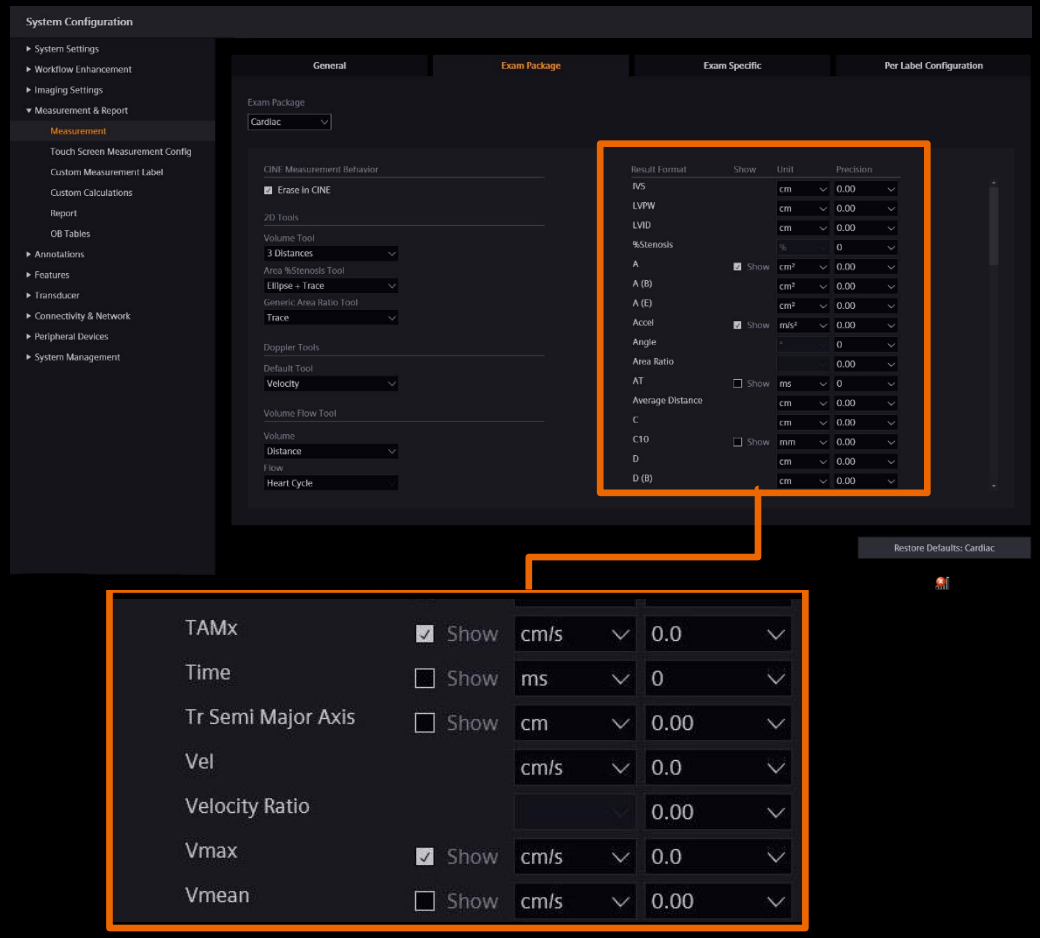
# Auto Trace

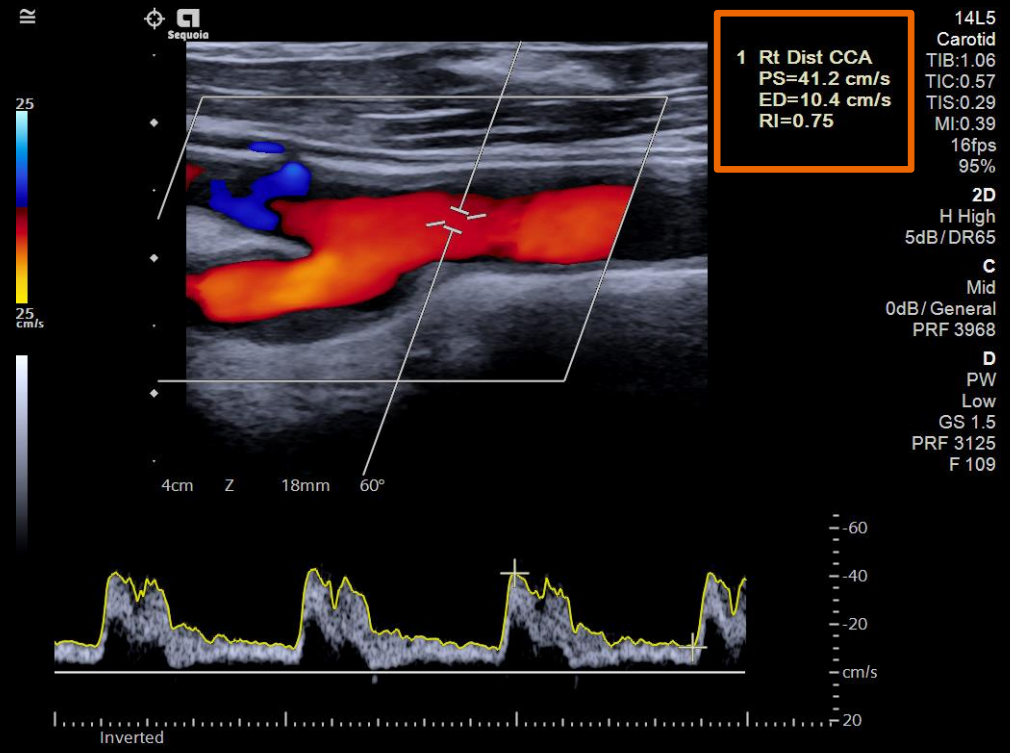


# Auto Trace configuration

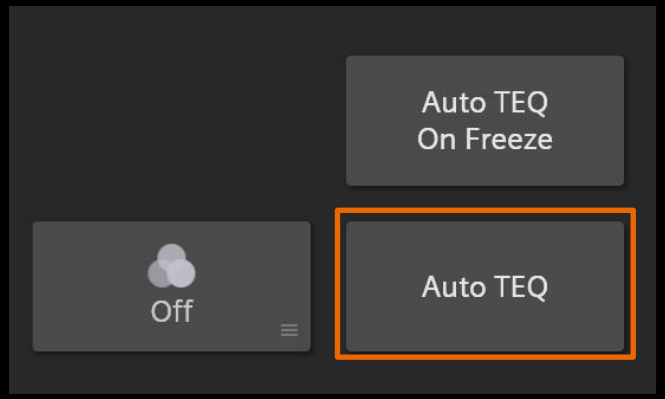


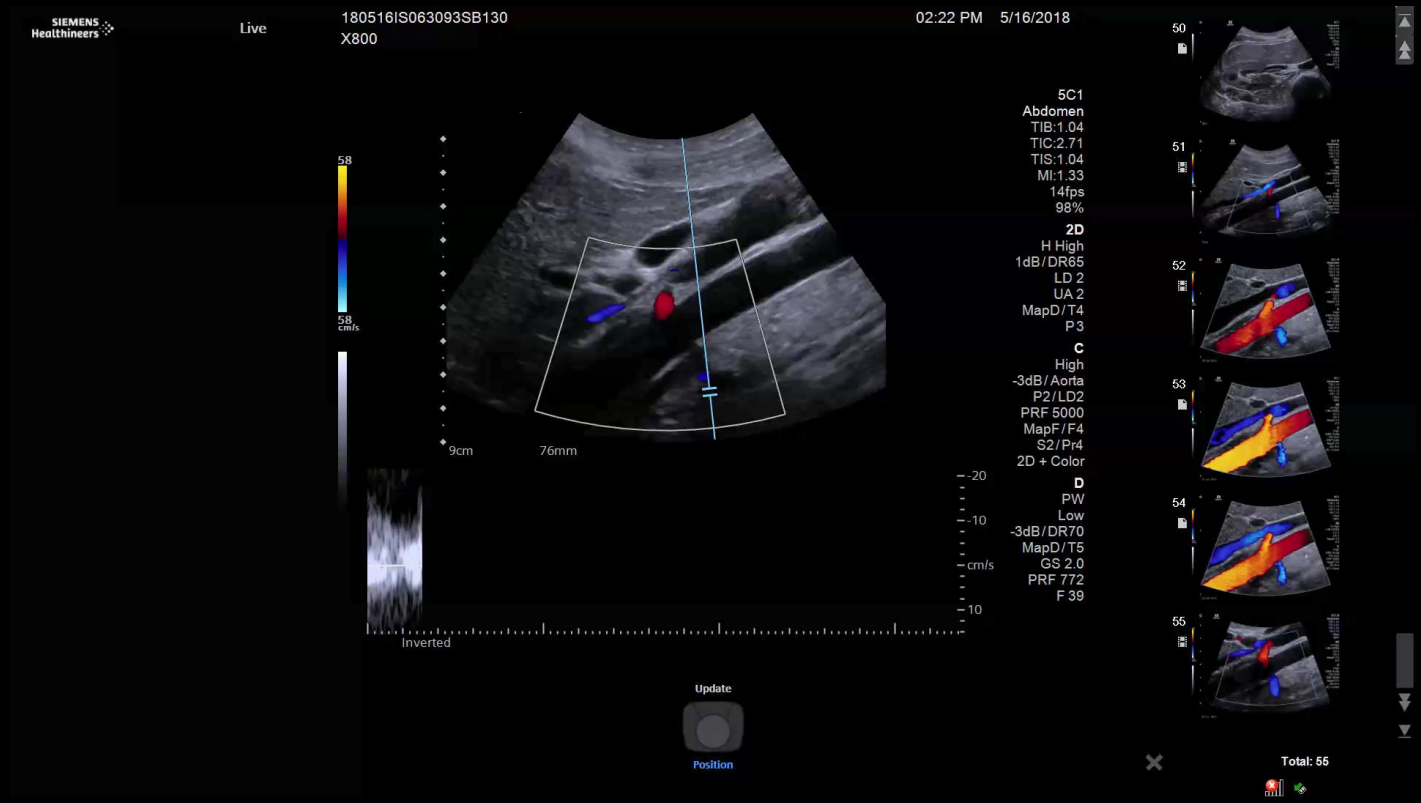



# Auto TEQ tissue equalization technology
# Doppler optimization

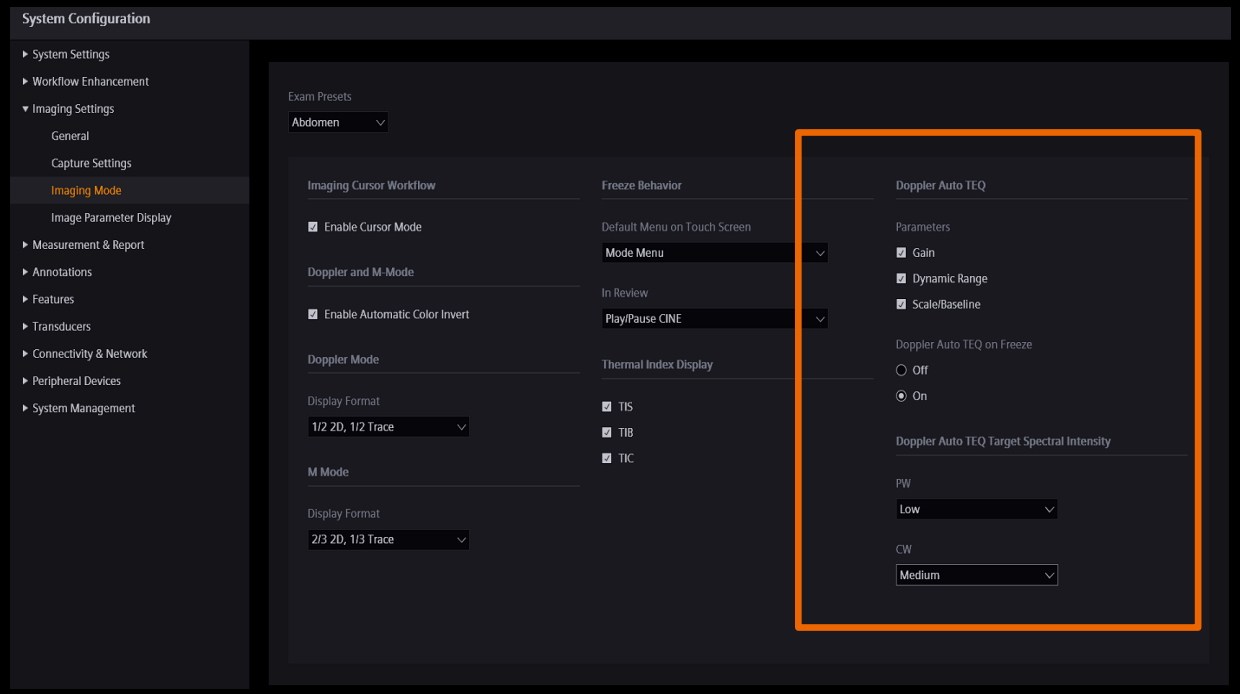
Automatic spectral Doppler optimization of:

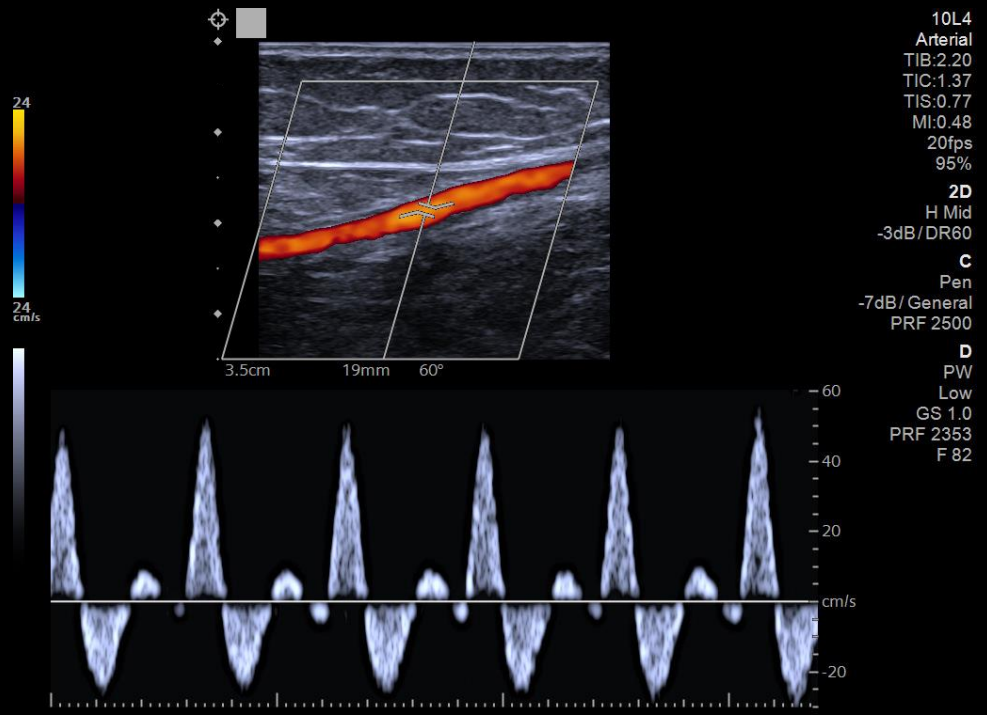
- Gain
- Scale/Baseline
- Dynamic Range



# Auto TEQ tissue equalization technology
# Doppler optimization

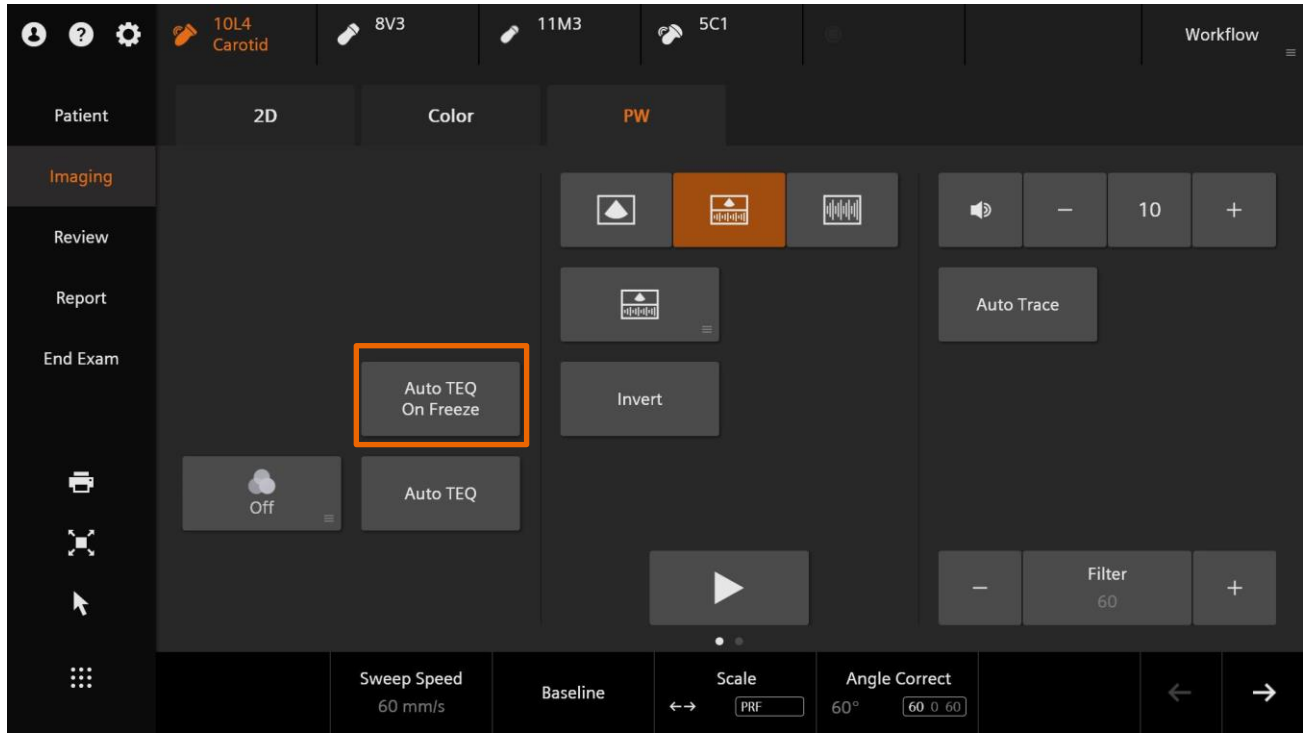


# Auto TEQ on Freeze Touch Screen

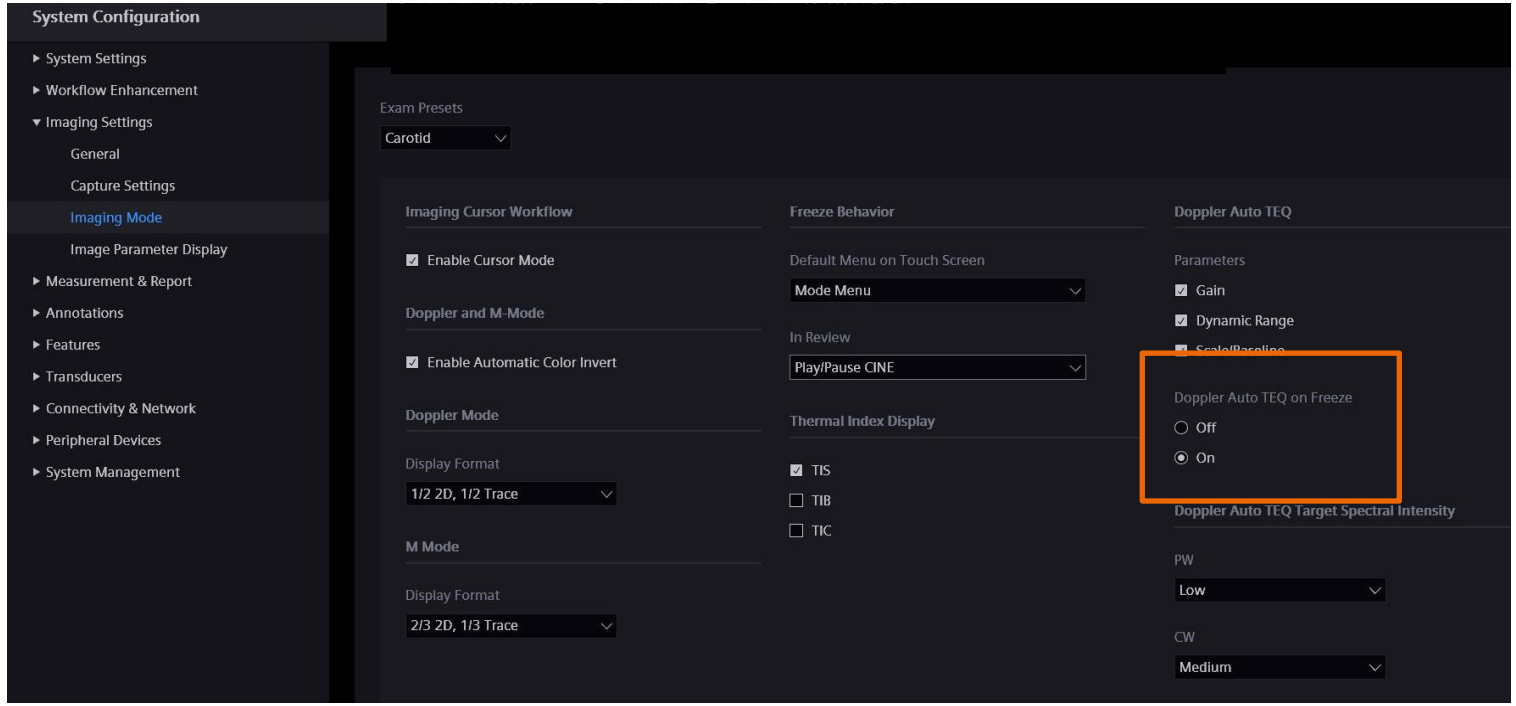
Touch Screen PW Mode Button will only appear when Doppler TEQ on freeze is *turned on*

- 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

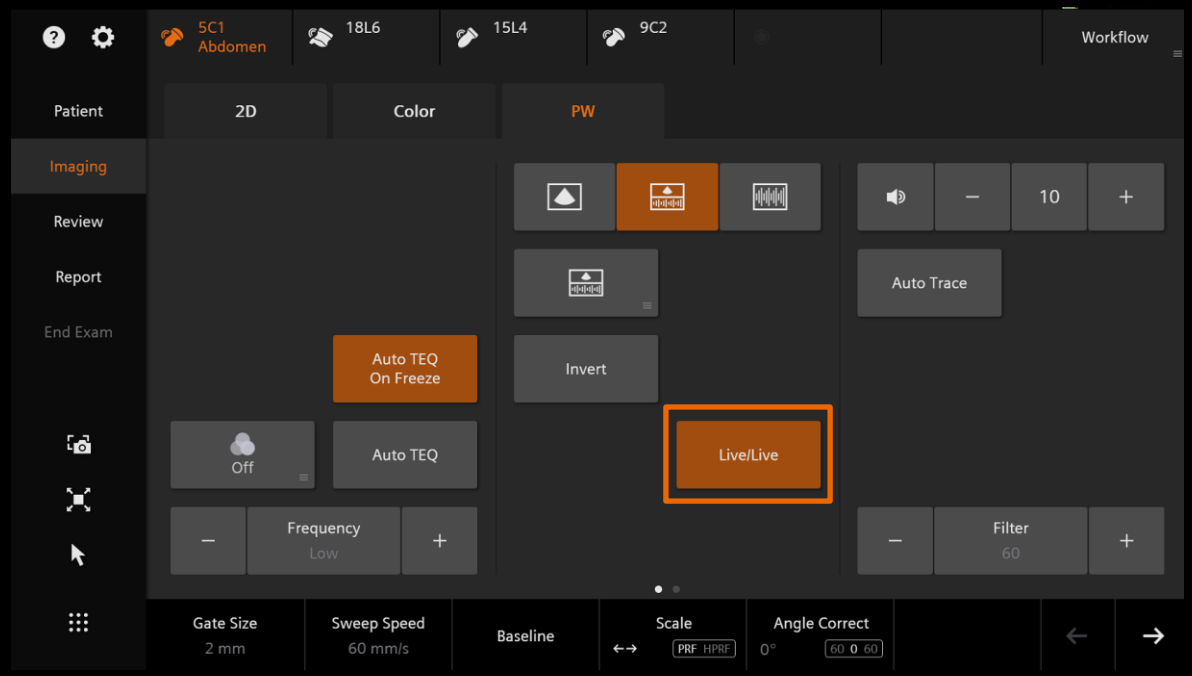


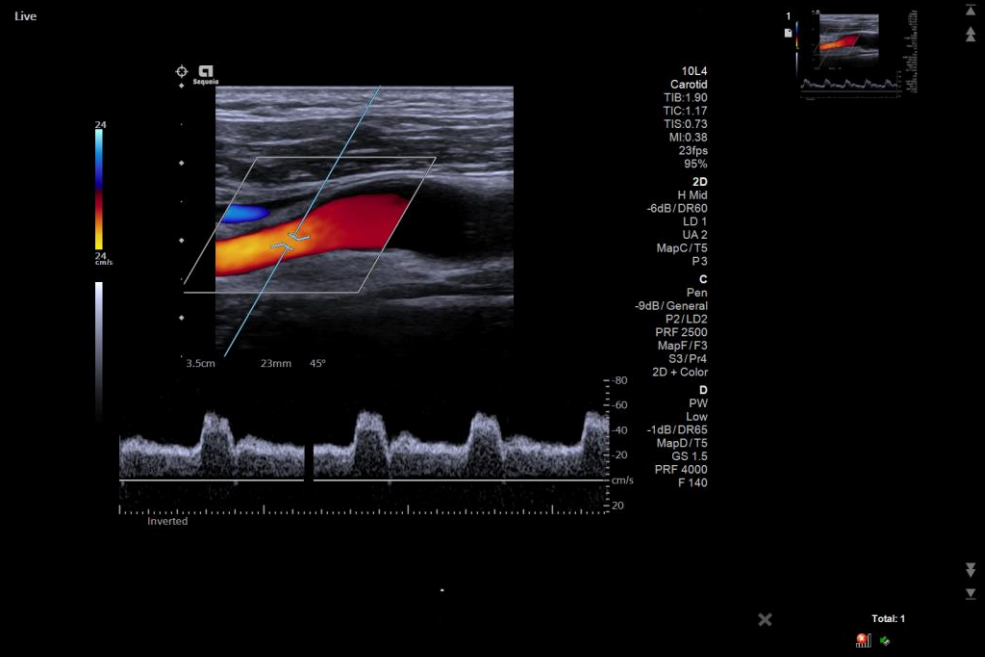
# Doppler Auto TEQ on Freeze

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

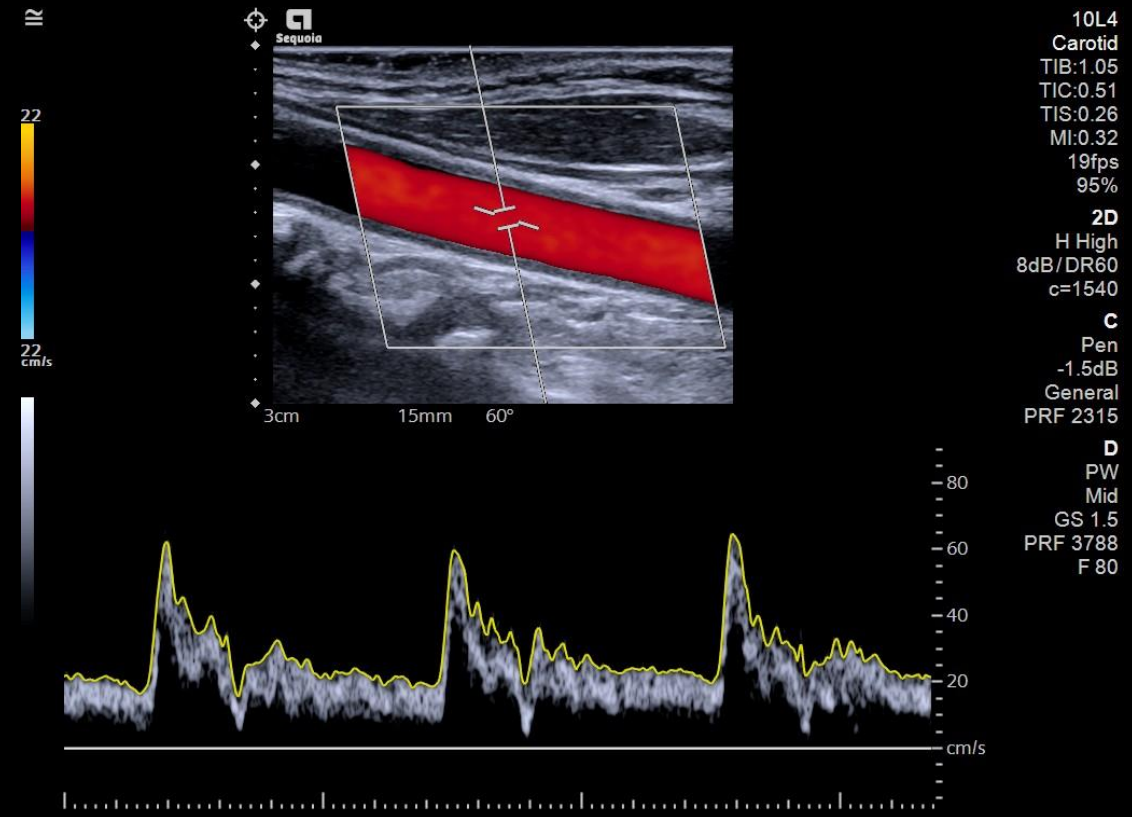


# Live/Live (triplex)

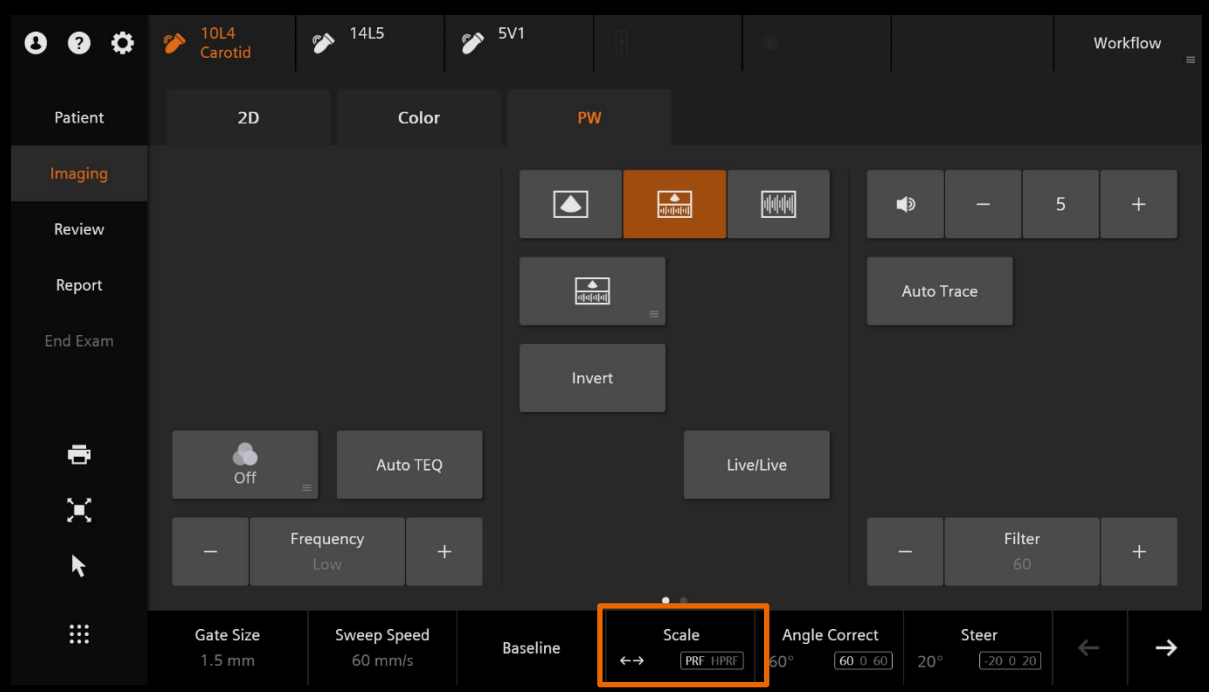


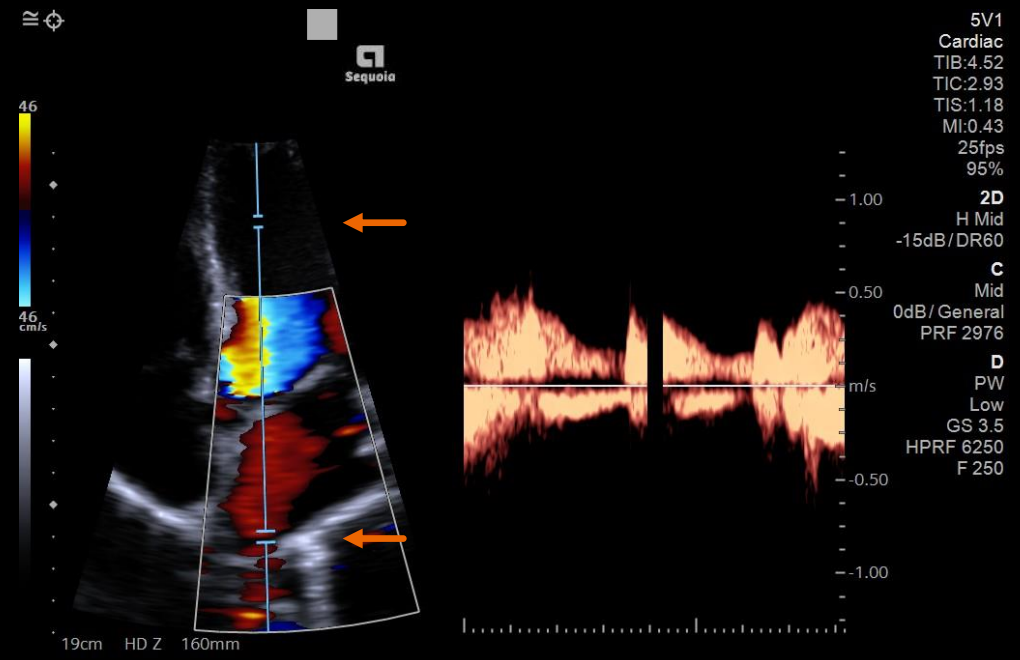



# Display modes

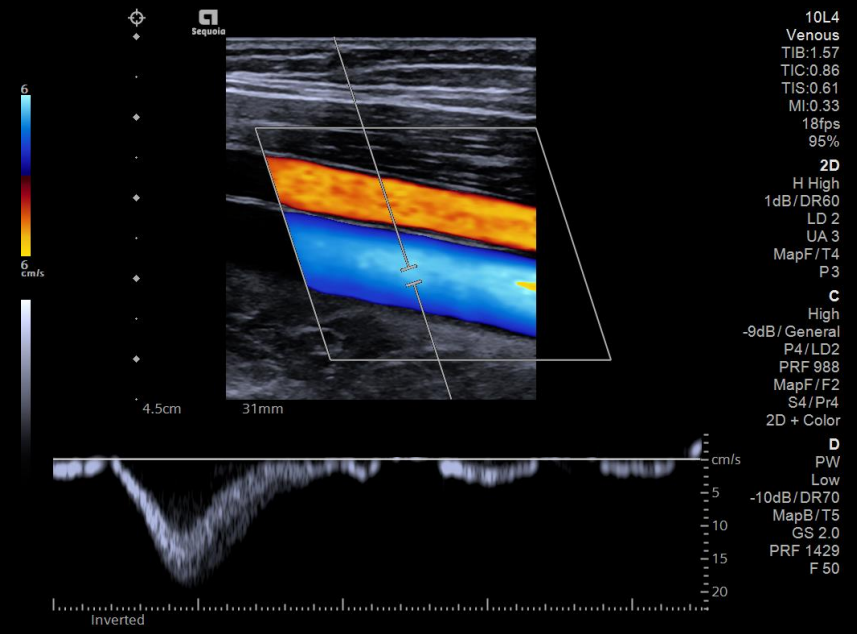
# HPRF – High pulse repetition frequency



# 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!

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# Questions?