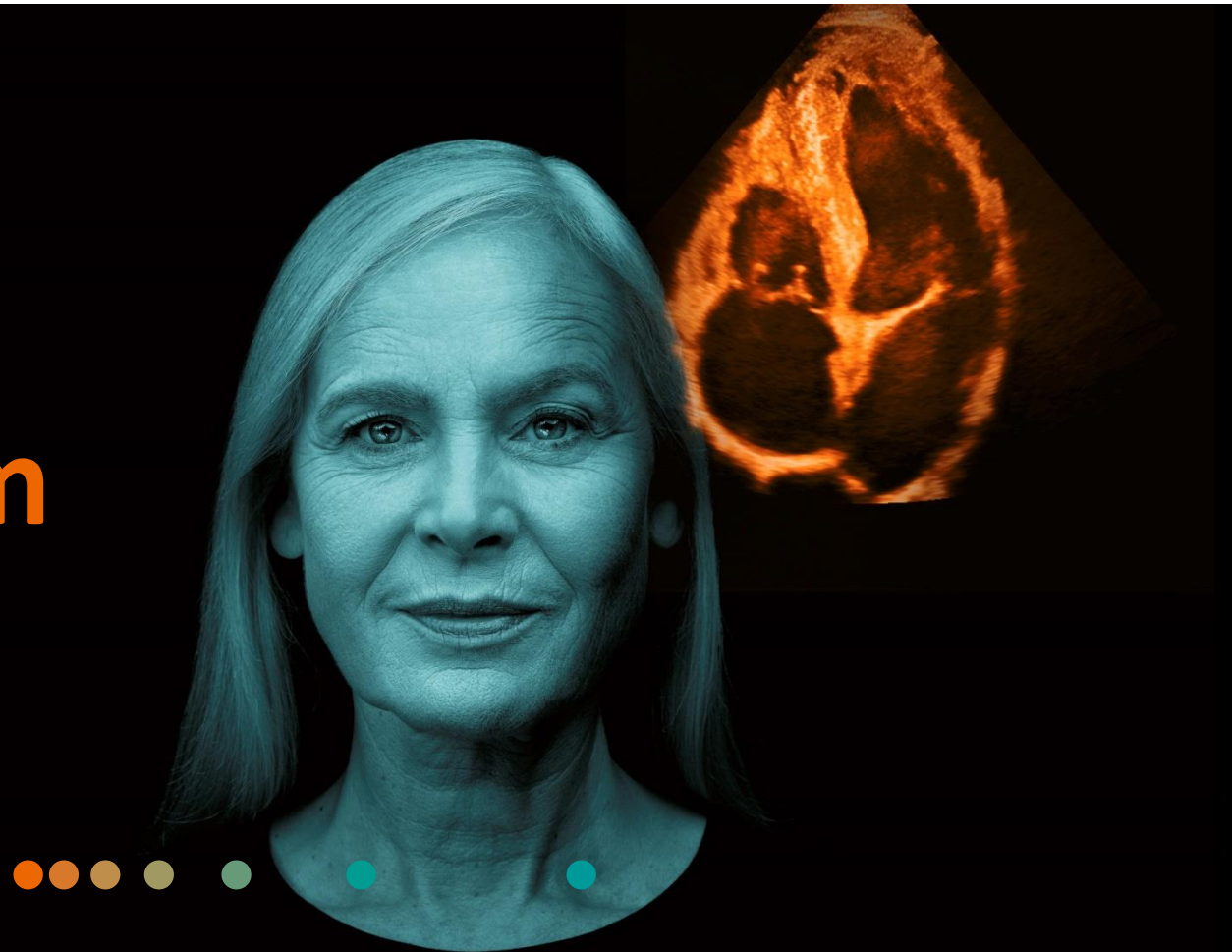# ACUSON Juniper Ultrasound System

Cardiac Major Modes
VB10 SW Release

Objectives

- **Review cardiac transducers**

- 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

5P1 adult cardiac transducer

- Phased array with single crystal design
- 96 elements
- Bandwidth: 1.1 – 5.0 MHz
- Plunkability
  - Inter-costal access with ergonomic nosepiece design
  - Flat array design helps prevent rib shadowing
  - Ergonomic handle design for comfortable scanning experience

5P1 adult cardiac transducer VB10 improvements

- Image quality
  - Near-field noise is reduced
  - Contrast between myocardium and chamber is improved
- Spectral Doppler
  - CW – signal-to-noise ratio is improved
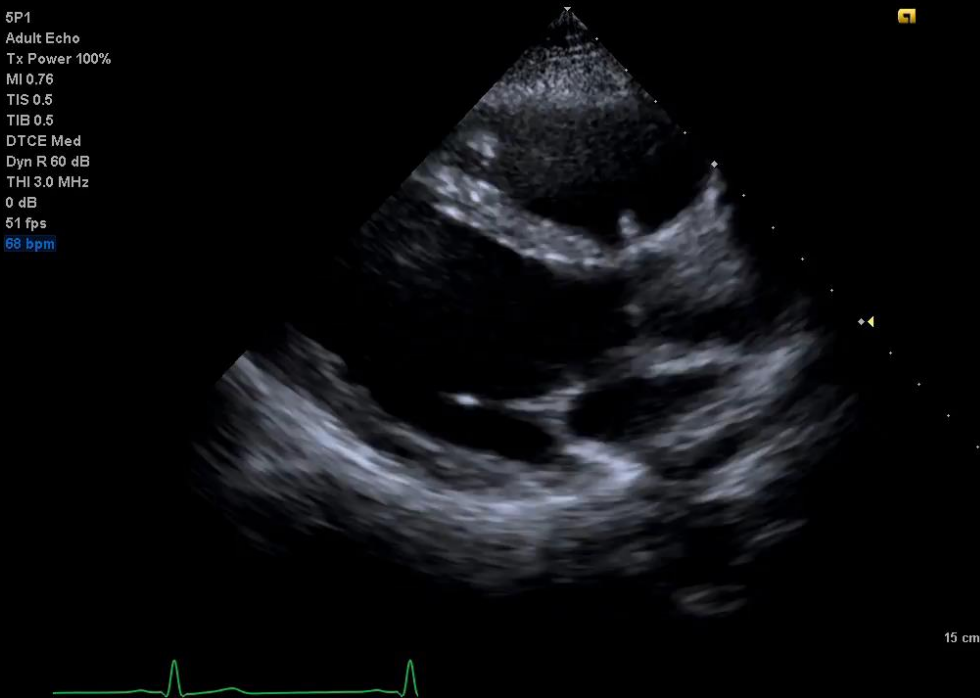- 5P1 transducer supports left ventricular opacification (LVO) in the Adult Echo exam*

*LVO workflow will be covered further in a separate ACUSON Juniper VB10 presentation
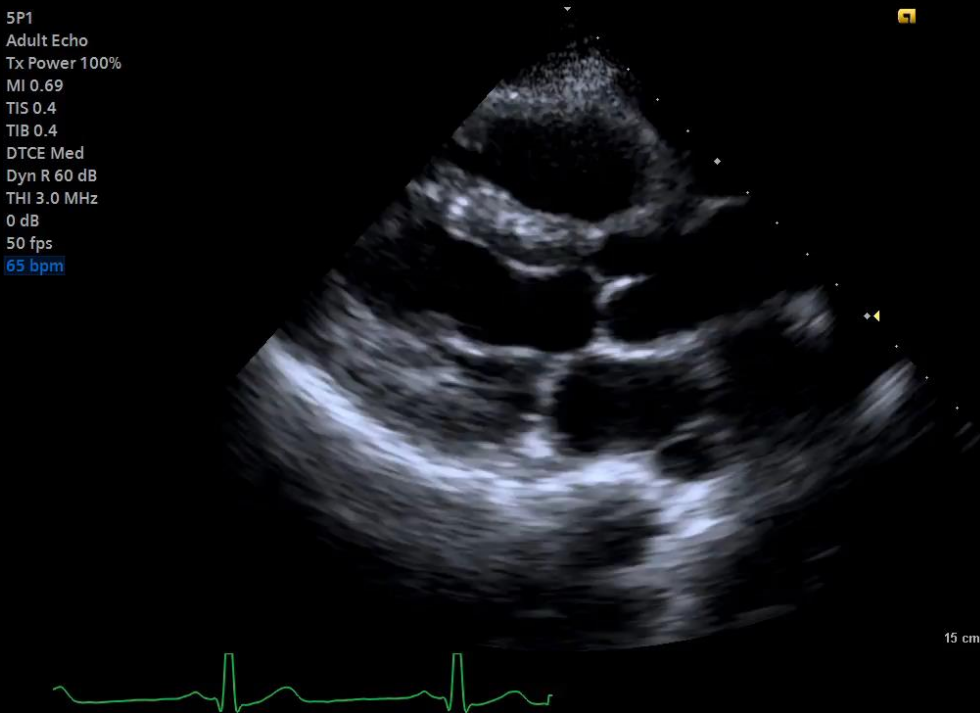
5P1 Adult Echo
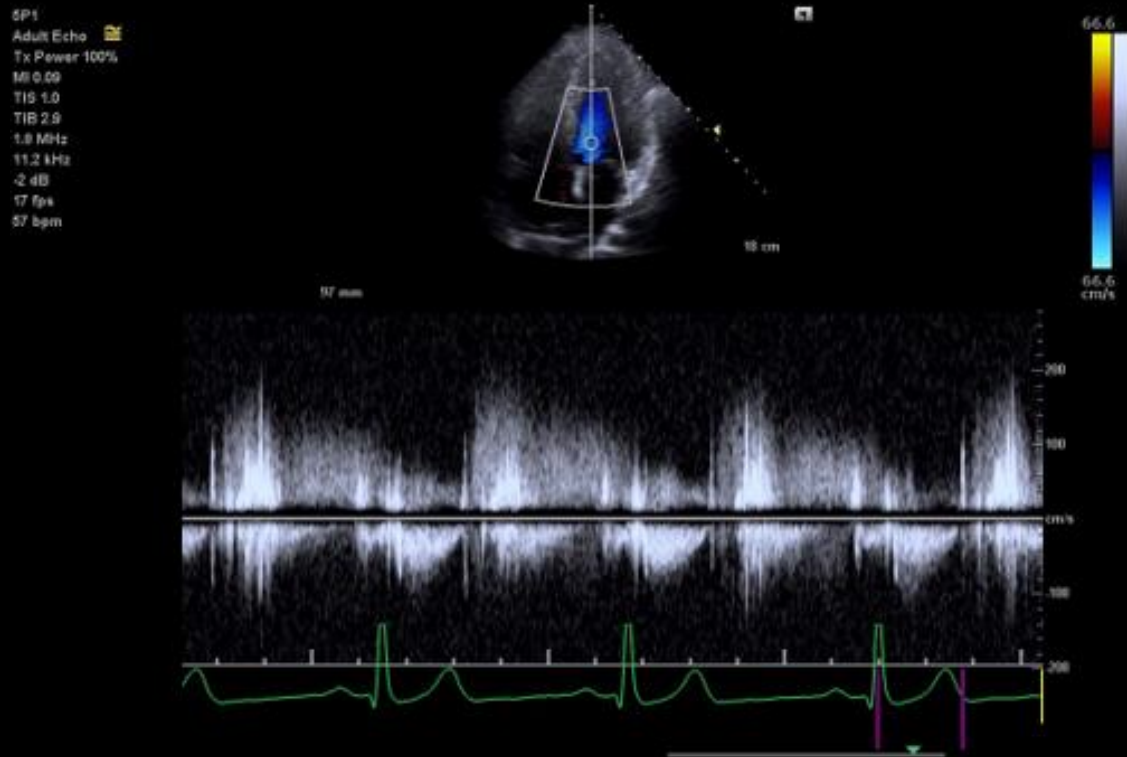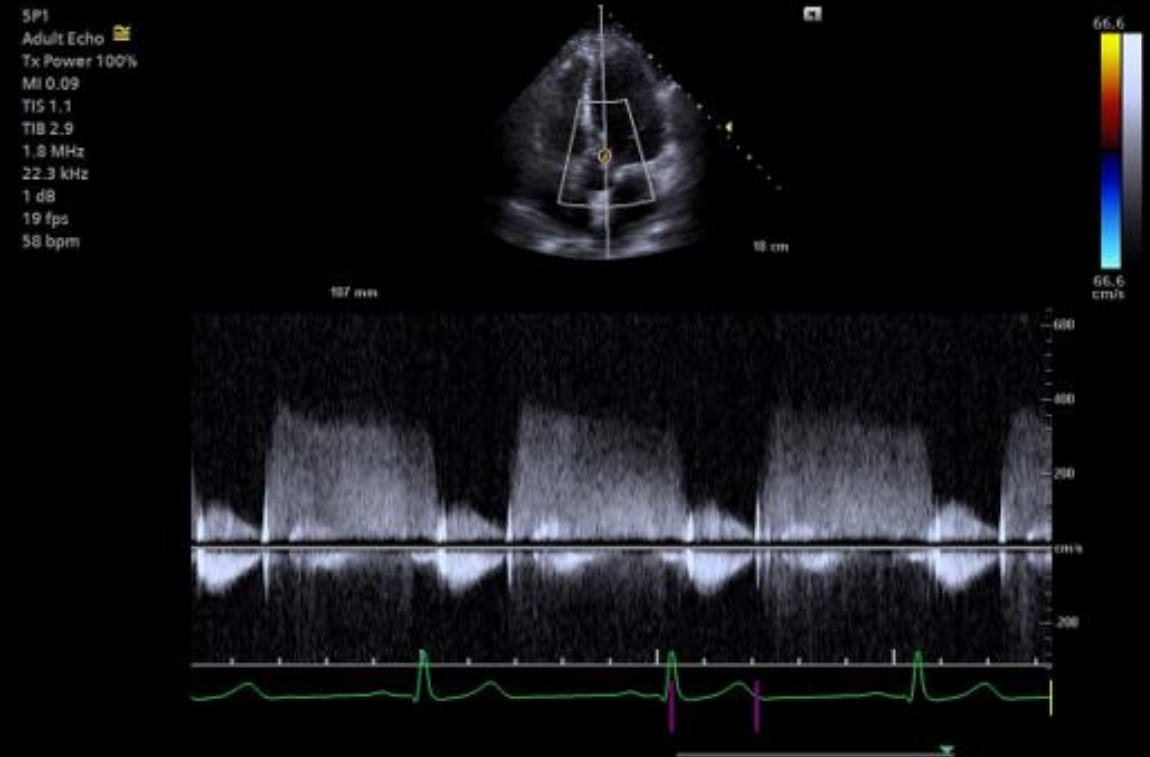# B-mode improvement

ACUSON Juniper VA10

ACUSON Juniper VB10

5P1
Adult Echo
Tx Power 100%
MI 0.76
TIS 0.5
TIB 0.5
DTCE Med
Dyn R 60 dB
THI 3.0 MHz
0 dB
51 fps
68 bpm

15 cm

5P1
Adult Echo
Tx Power 100%
MI 0.69
TIS 0.4
TIB 0.4
DTCE Med
Dyn R 60 dB
THI 3.0 MHz
0 dB
50 fps
65 bpm

15 cm

5P1 Adult Echo
CW spectral Doppler improvement

ACUSON Juniper VA10

ACUSON Juniper VB10

8V4 pediatric cardiac transducer

- Vector array
- 64 elements
- Bandwidth: 2.7 – 8.0 MHz

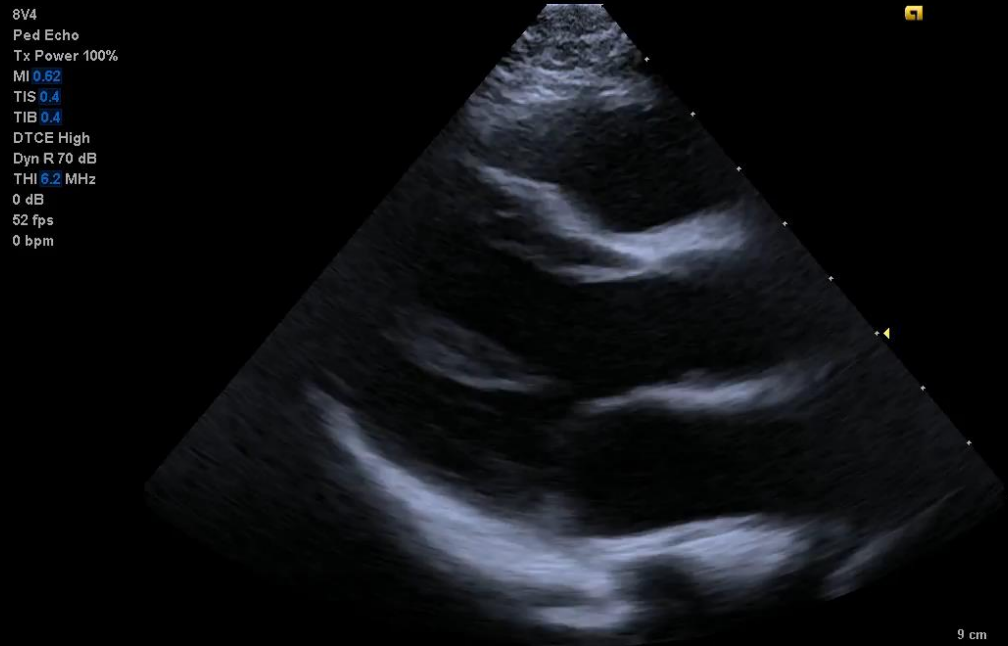# 8V4 pediatric cardiac transducer VB10 improvements

- Pediatric Echo
  - B-mode spatial filter is optimized improving sharpness and contrast resolution
  - Spatial filter of color detail is optimized for improved resolution
  - CW Doppler has improved sensitivity and signal-to-noise ratio without background noise
- Pediatric Abdomen
  - In all available frequencies, penetration and uniformity are improved
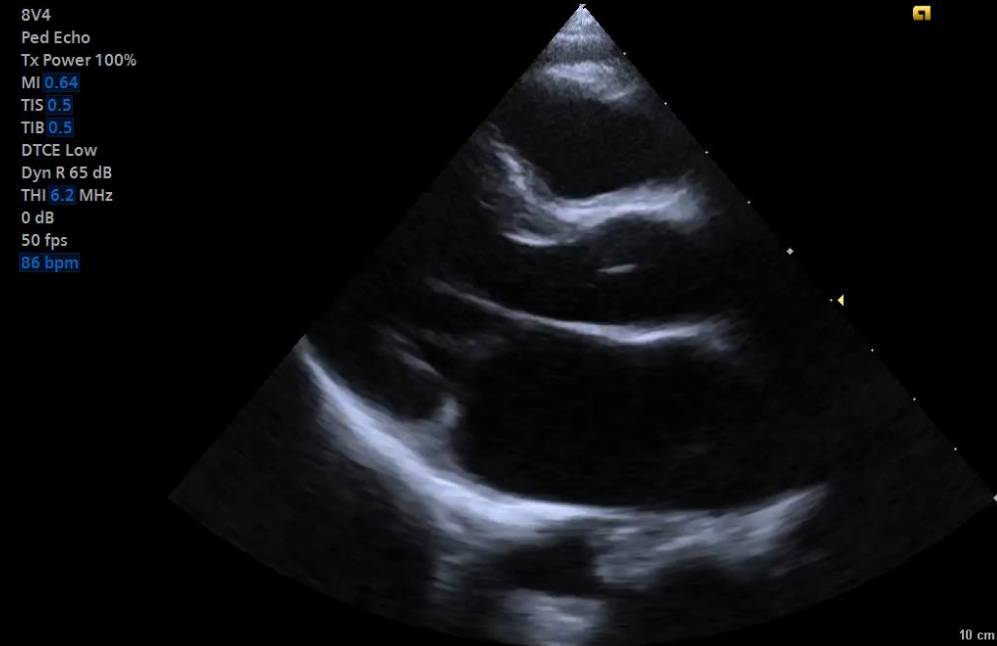 - Resolution in fundamental frequencies is improved

8V4 Pediatric Echo
B-mode improvement
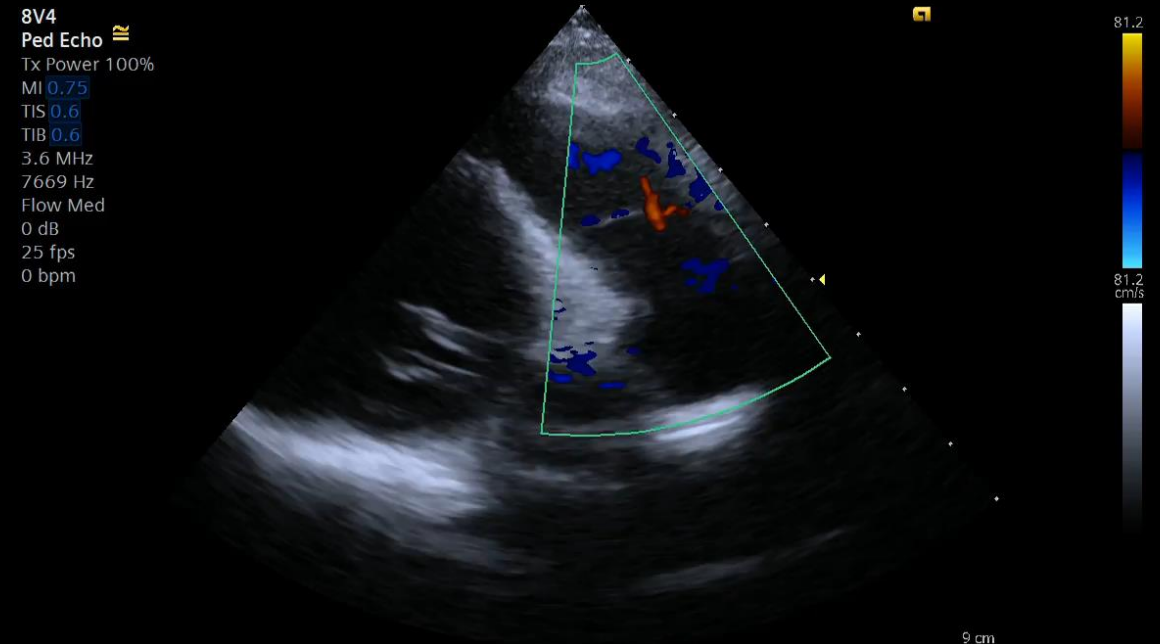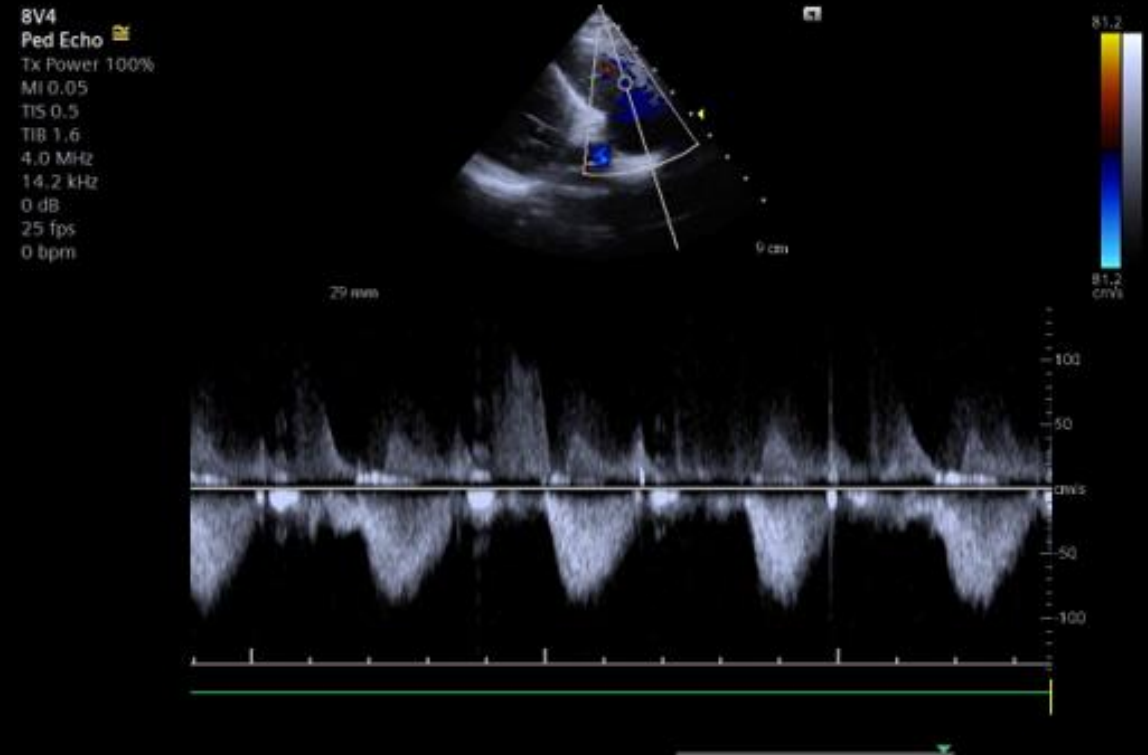
ACUSON Juniper VA10

ACUSON Juniper VB10

8V4
Ped Echo
Tx Power 100%
MI 0.62
TIS 0.4
TIB 0.4
DTCE High
Dyn R 70 dB
THI 6.2 MHz
0 dB
52 fps
0 bpm

9 cm

8V4
Ped Echo
Tx Power 100%
MI 0.64
TIS 0.5
TIB 0.5
DTCE Low
Dyn R 65 dB
THI 6.2 MHz
0 dB
50 fps
86 bpm

10 cm

8V4 Pediatric Echo
Color Doppler improvement

ACUSON Juniper VA10

ACUSON Juniper VB10

8V4 Pediatric Echo
CW spectral Doppler improvement

ACUSON Juniper VA10
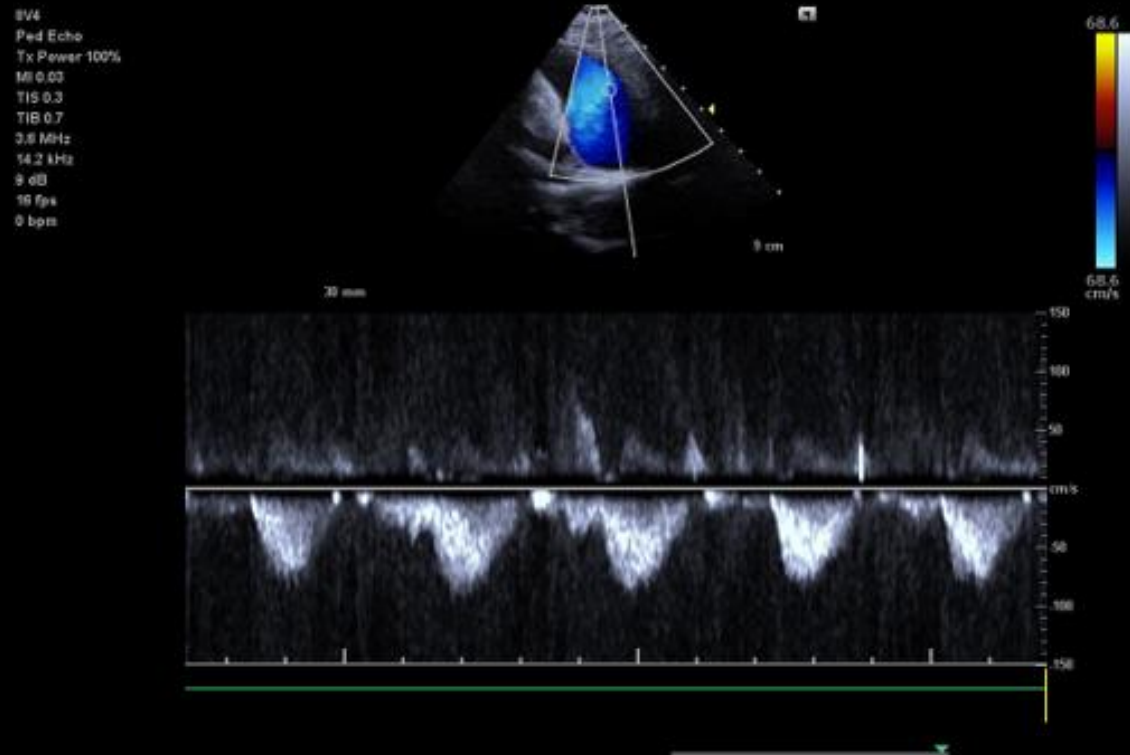
ACUSON Juniper VB10

10V4 pediatric / neonatal cardiac transducer

- Vector array
- 128 elements
- Bandwidth: 3.4 – 10.4 MHz
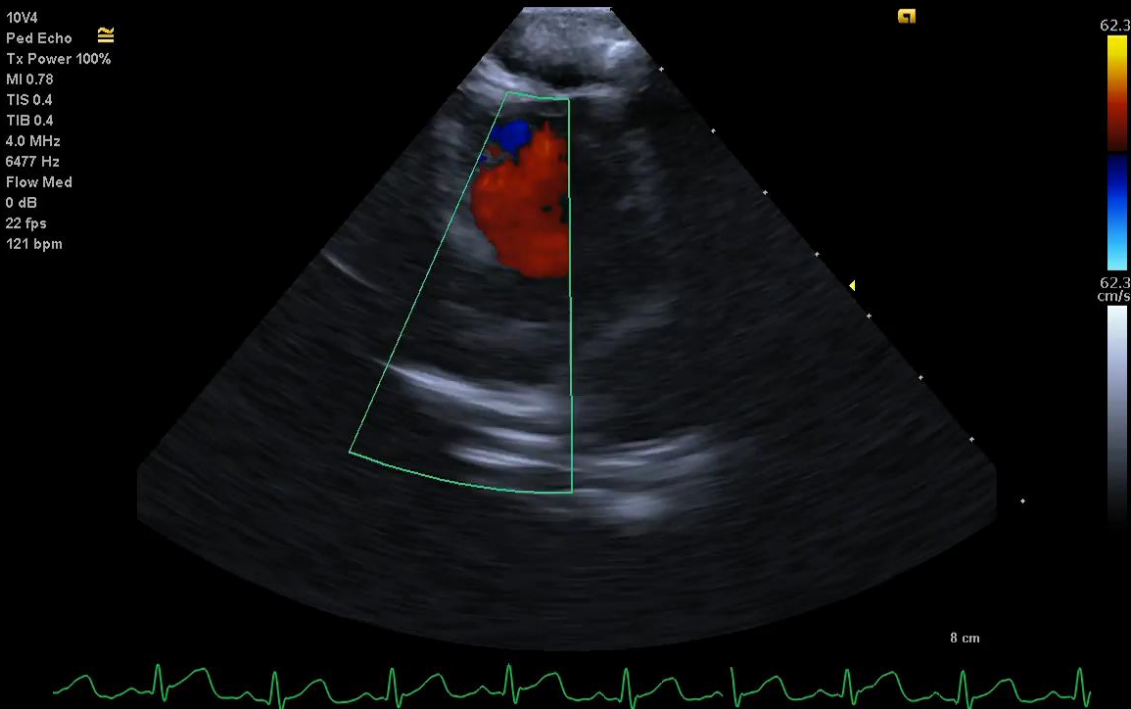
10V4 pediatric / neonatal cardiac transducer VB10 improvements

- Pediatric Echo
  - Image uniformity and resolution are improved
  - Color detail resolution is improved
  - CW Doppler has good signal-to-noise ratio without background noise
- Pediatric Abdomen
  - Has better penetration in all frequencies
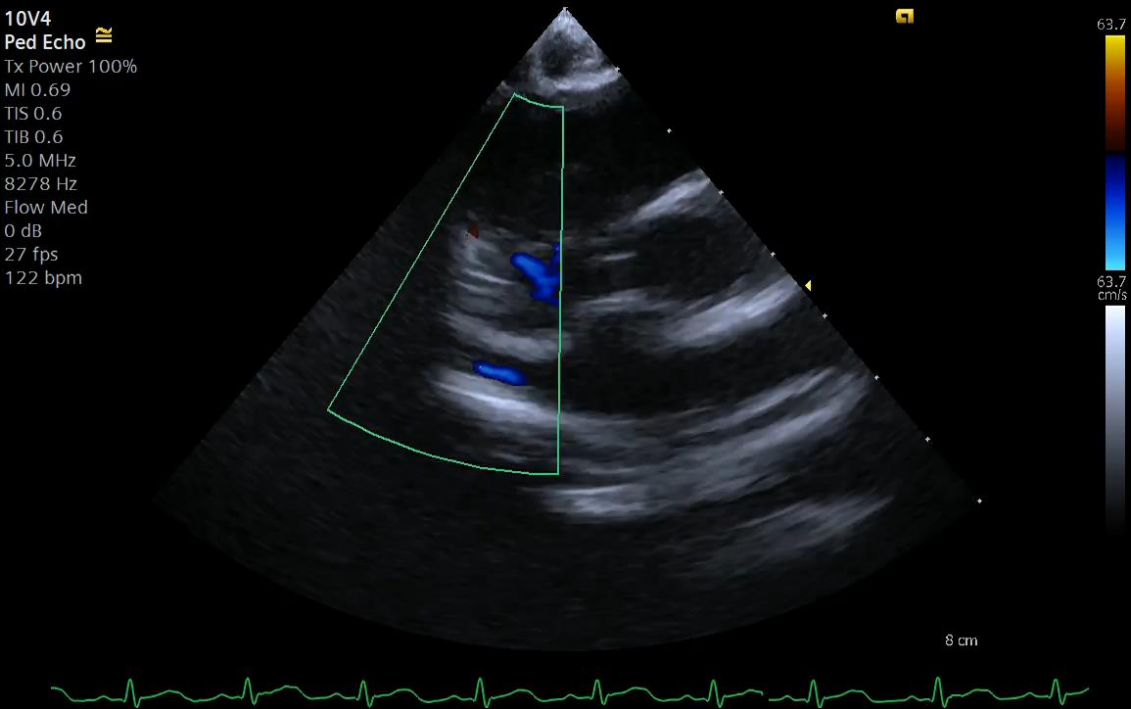 - Lateral resolution is improved and less blurry

10V4 Pediatric / Neonatal Echo Color Doppler improvement
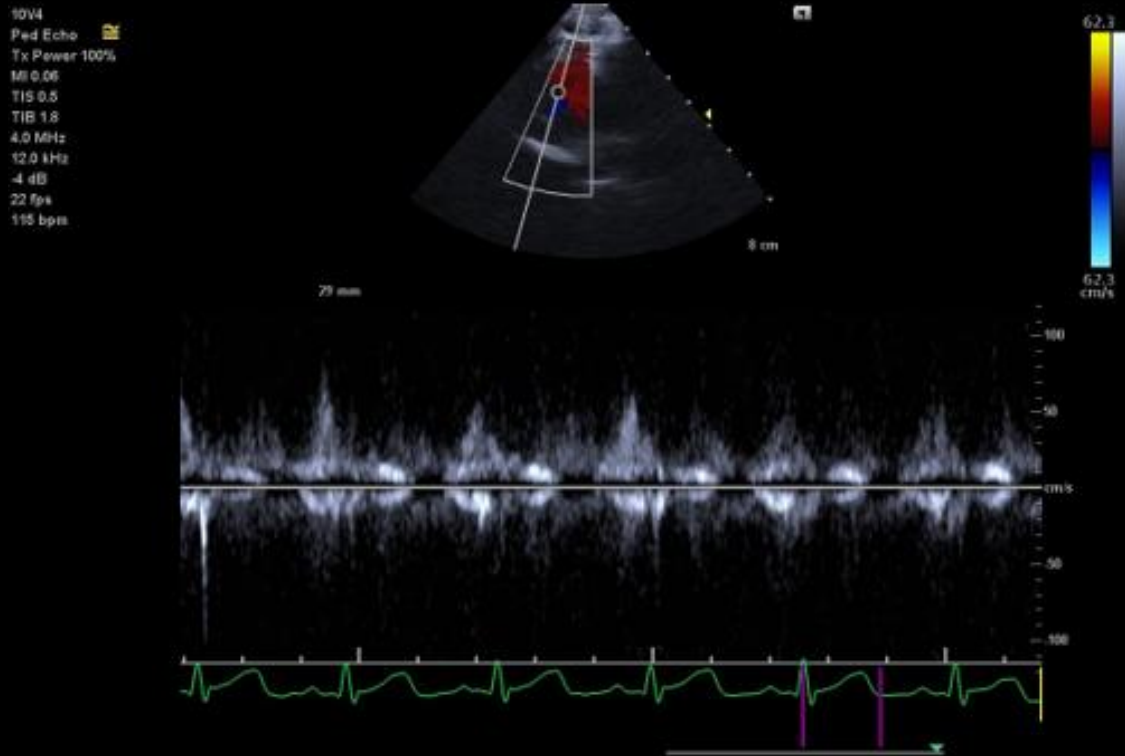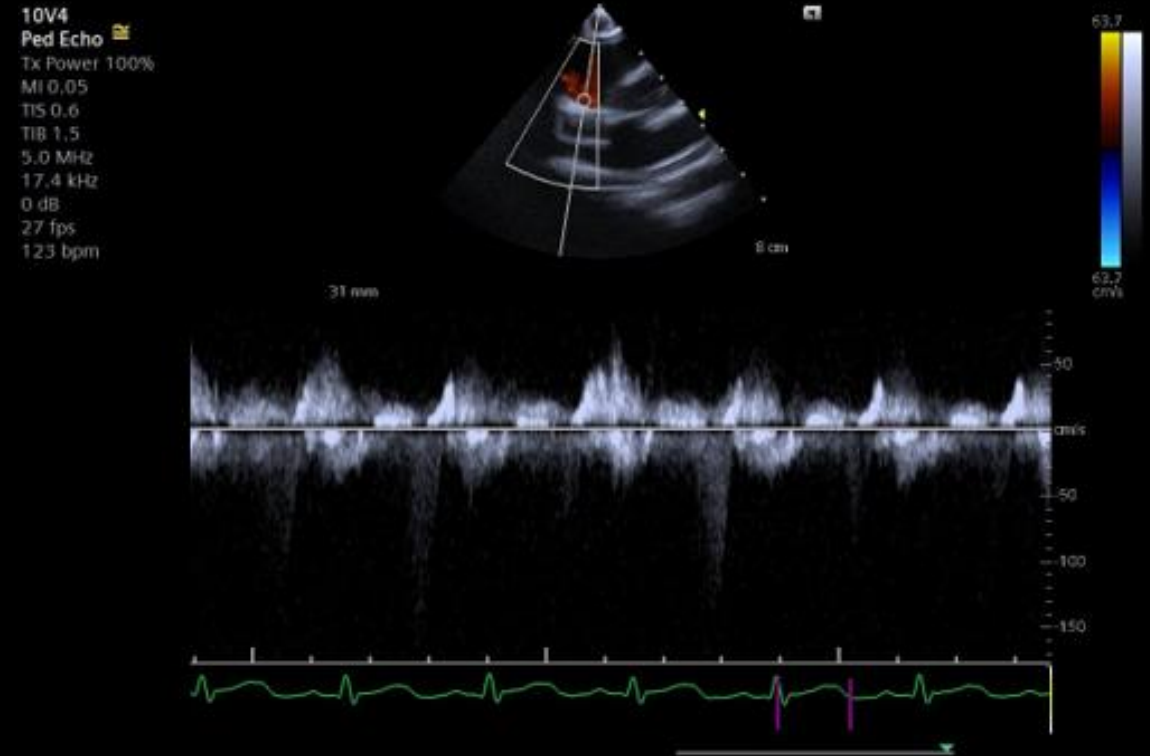
ACUSON Juniper VA10

10V4
Ped Echo
Tx Power 100%
MI 0.78
TIS 0.4
TIB 0.4
4.0 MHz
6477 Hz
Flow Med
0 dB
22 fps
121 bpm

62.3

62.3 cm/s

8 cm

ACUSON Juniper VB10

10V4
Ped Echo
Tx Power 100%
MI 0.69
TIS 0.6
TIB 0.6
5.0 MHz
8278 Hz
Flow Med
0 dB
27 fps
122 bpm

63.7

63.7 cm/s

8 cm

10V4 Pediatric / Neonatal Echo
CW spectral Doppler improvement

SIEMENS
Healthineers

ACUSON Juniper VA10

Juniper VB10

Non-imaging continuous wave (CW) transducers

- CW2
- Frequency – 2 MHz
- Application – cardiac

- CW5 and CW8
- Frequency – 5 MHz and 8 MHz
- Application – vascular

5VT transesophageal transducer

- Similar to V5Ms in lens and rotary handle construction and function

- Has improved articulation sleeve material for durability

- Uses Twin Cam – Zero Insertion Force connector (does not require adapter)

Note: For additional information, refer to ACUSON Juniper ultrasound system VB10 SW Release 5VT Transesophageal Transducer presentation.
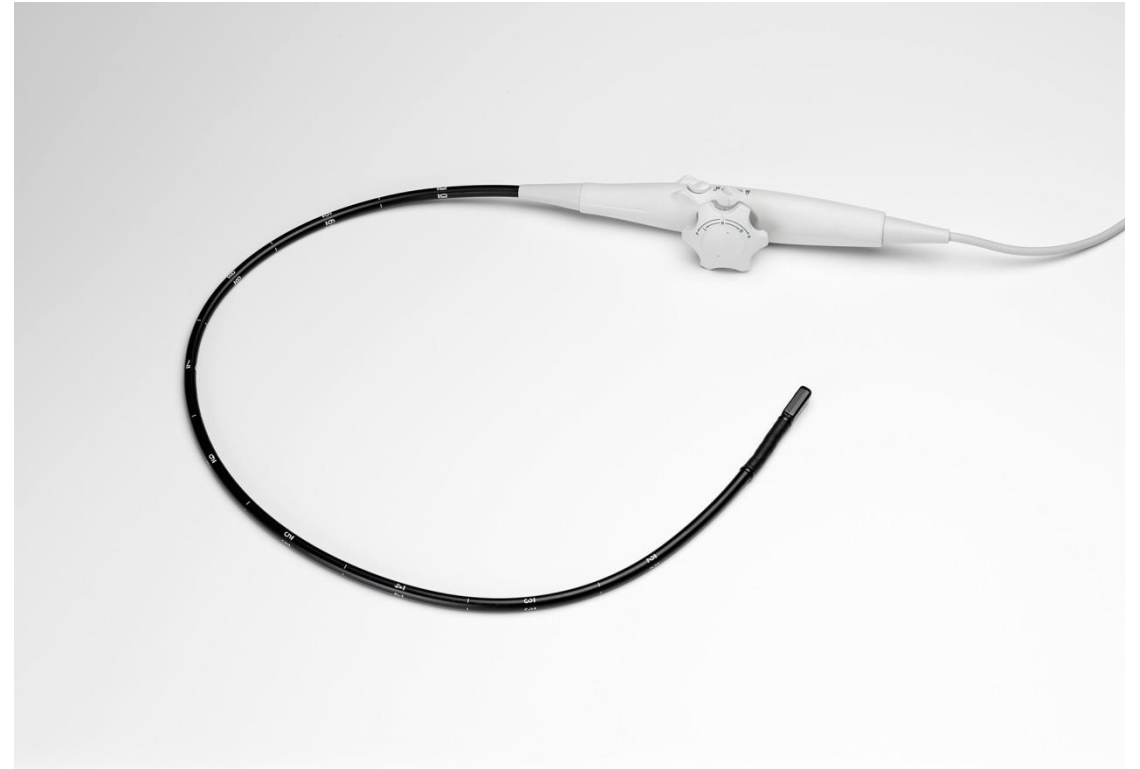
Objectives

- Review cardiac transducers

- **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

B-mode controls

Control panel

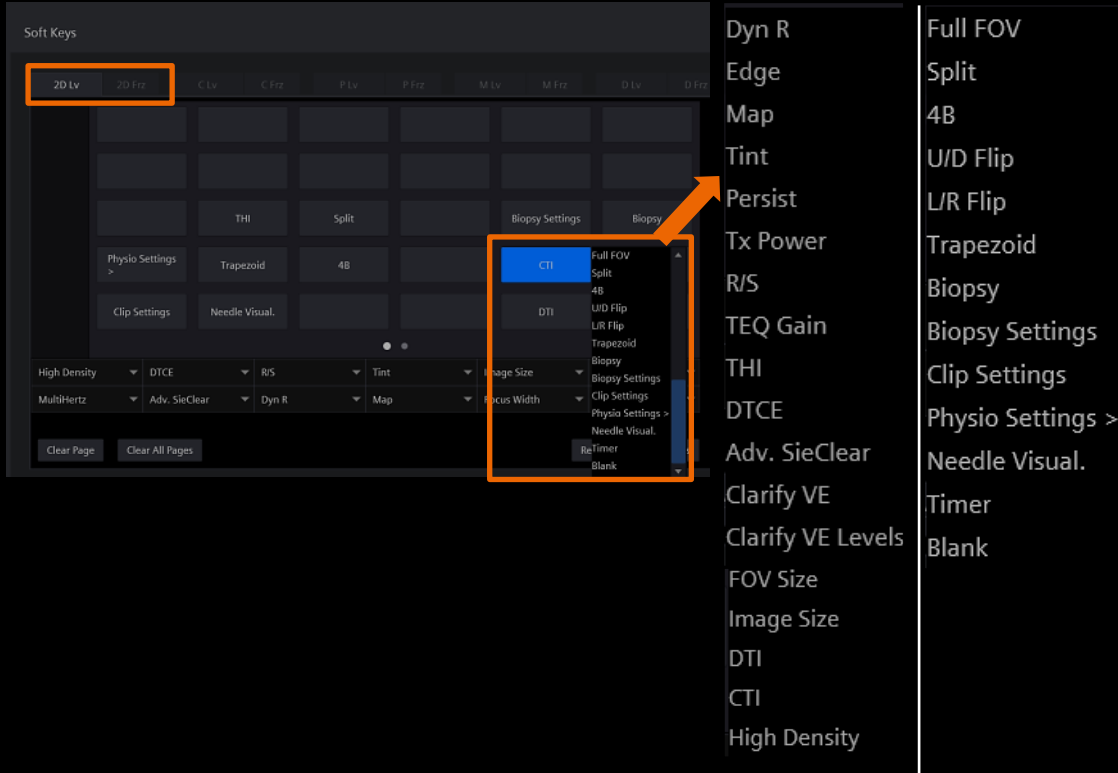**Touch screen**

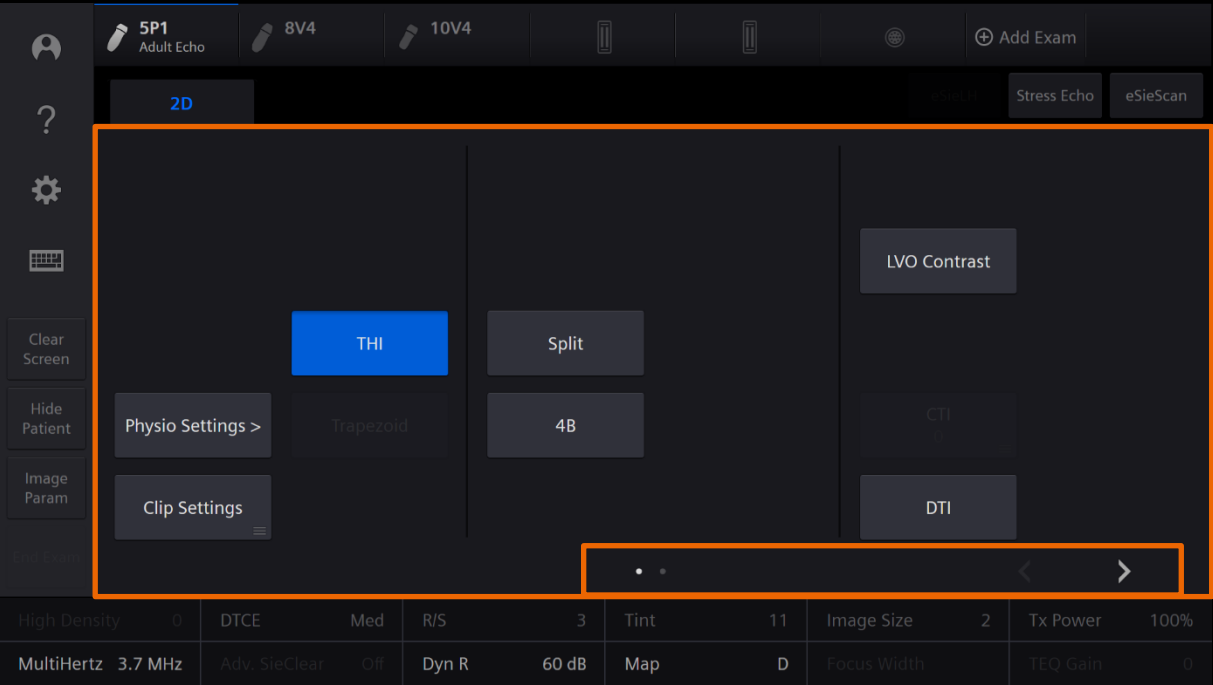**Soft keys**
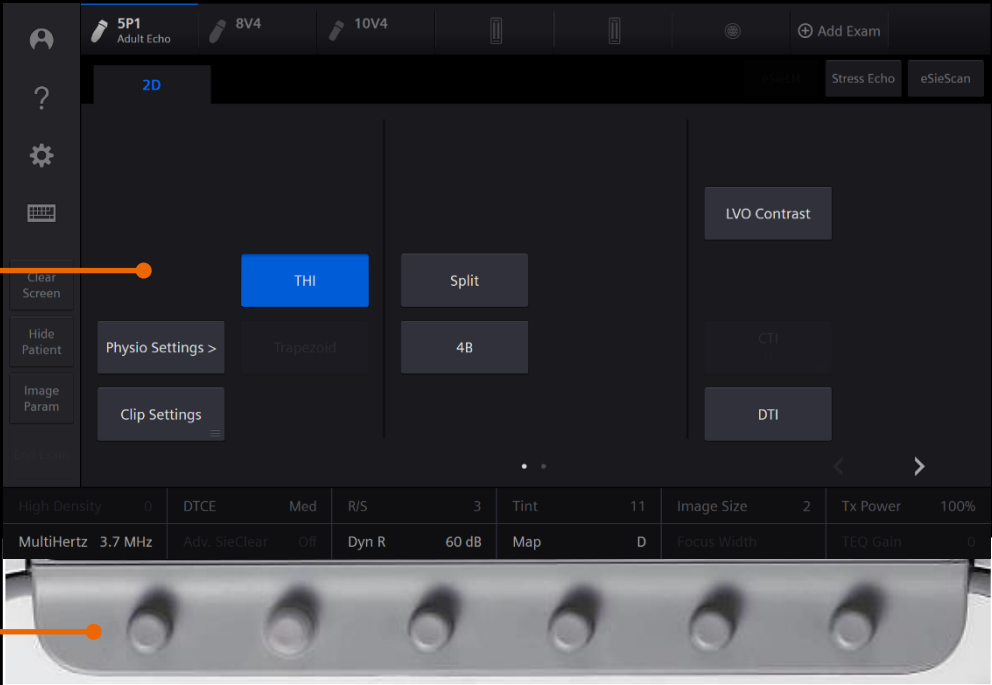
B-mode controls on the control panel
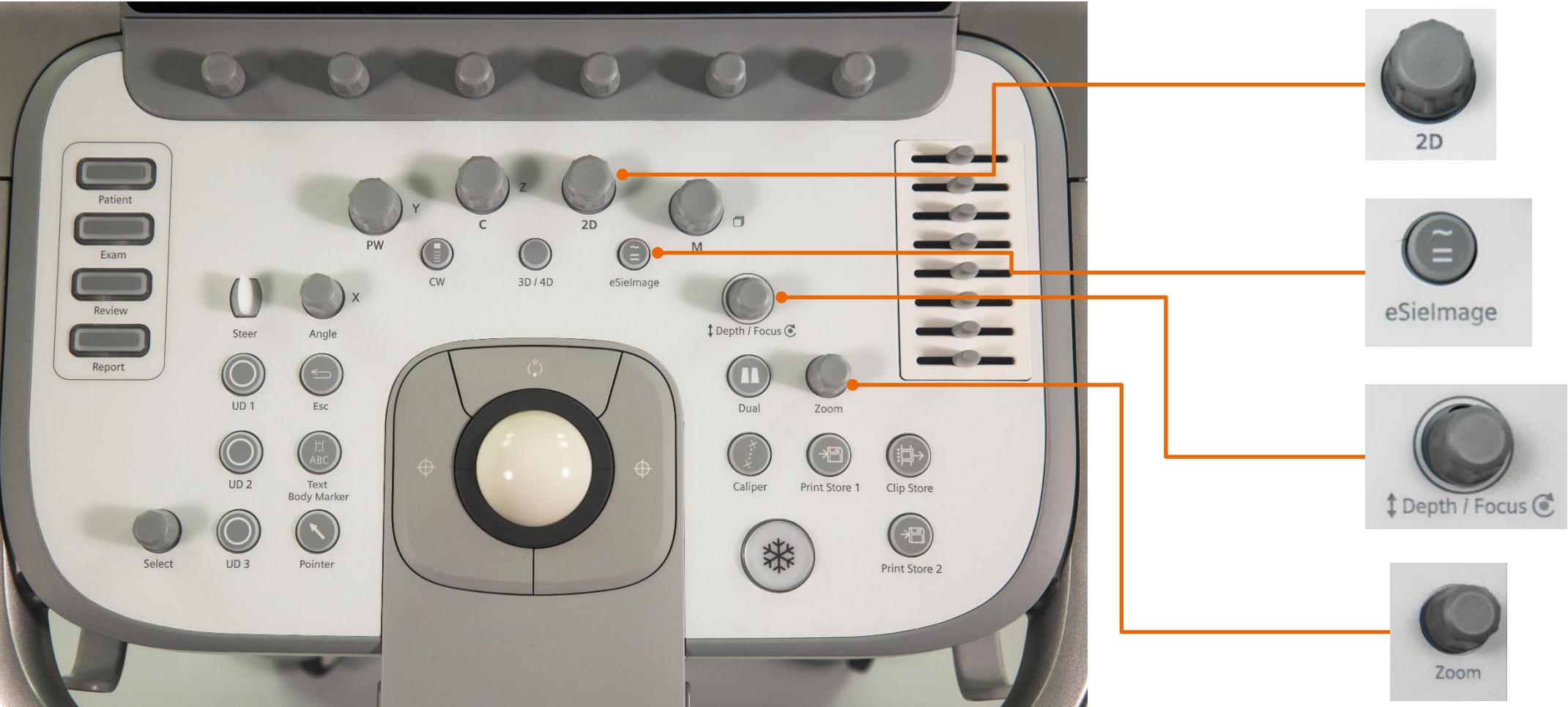
B-mode controls on the soft keys
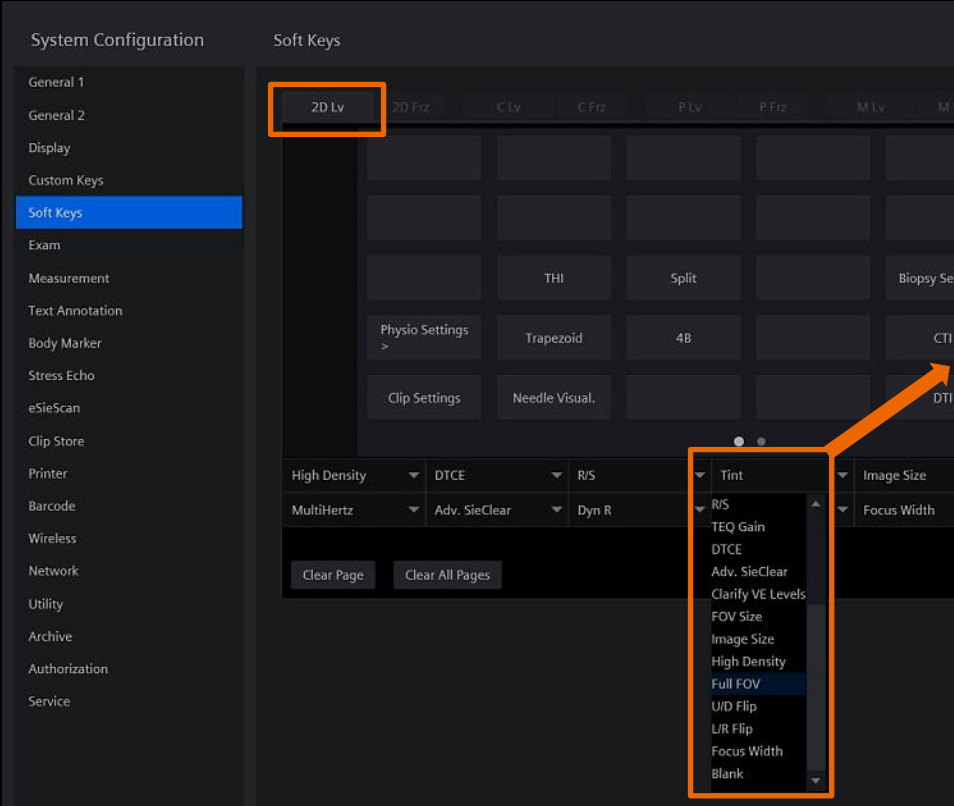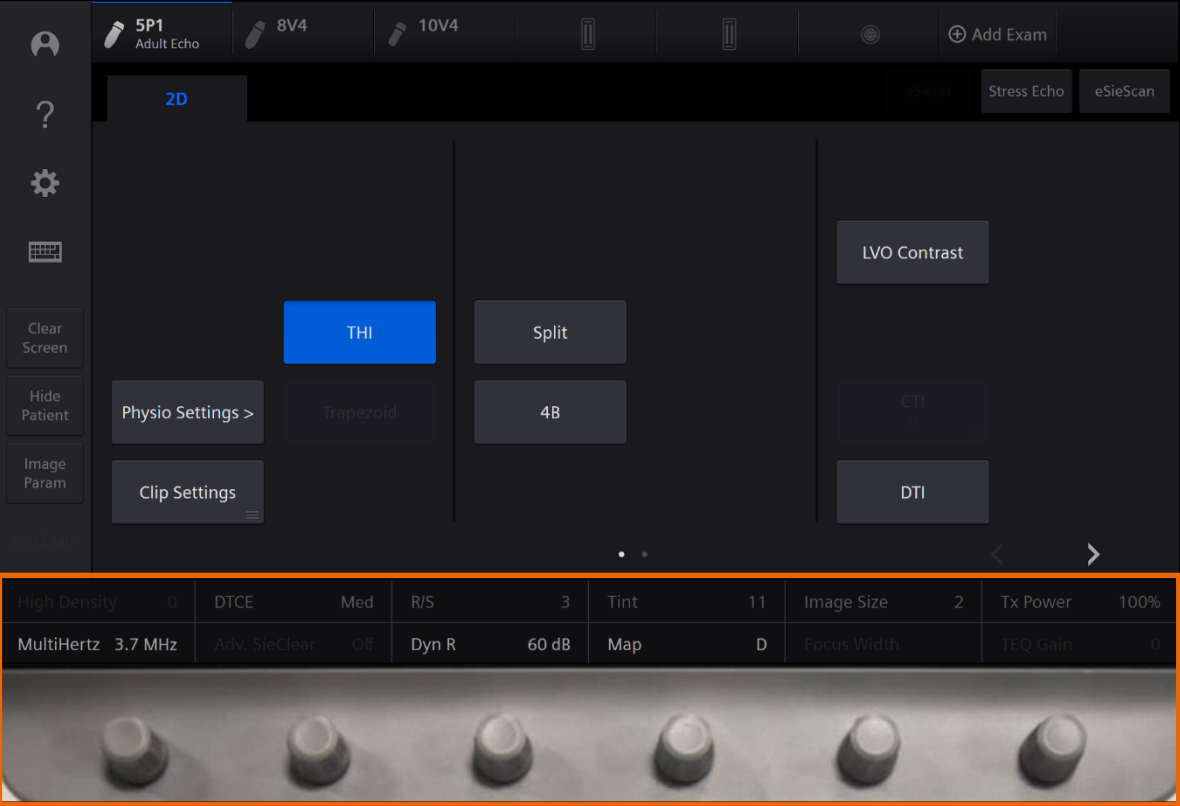
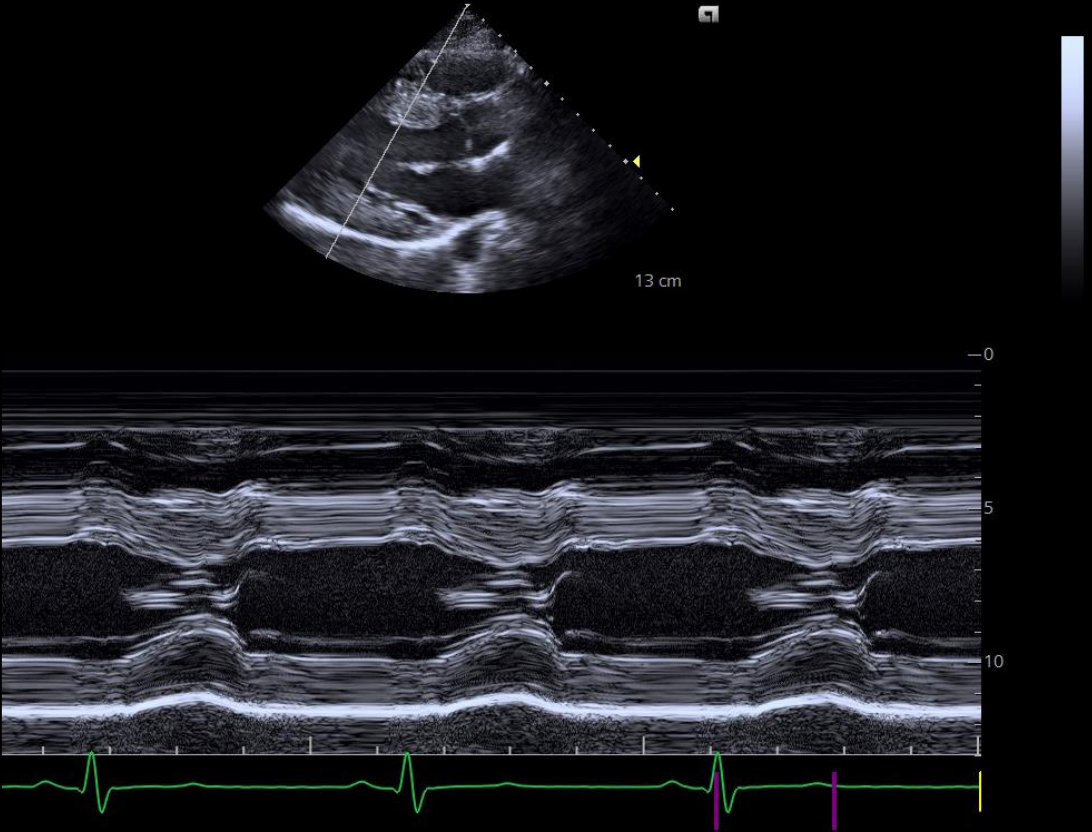# B-mode controls on the touch screen
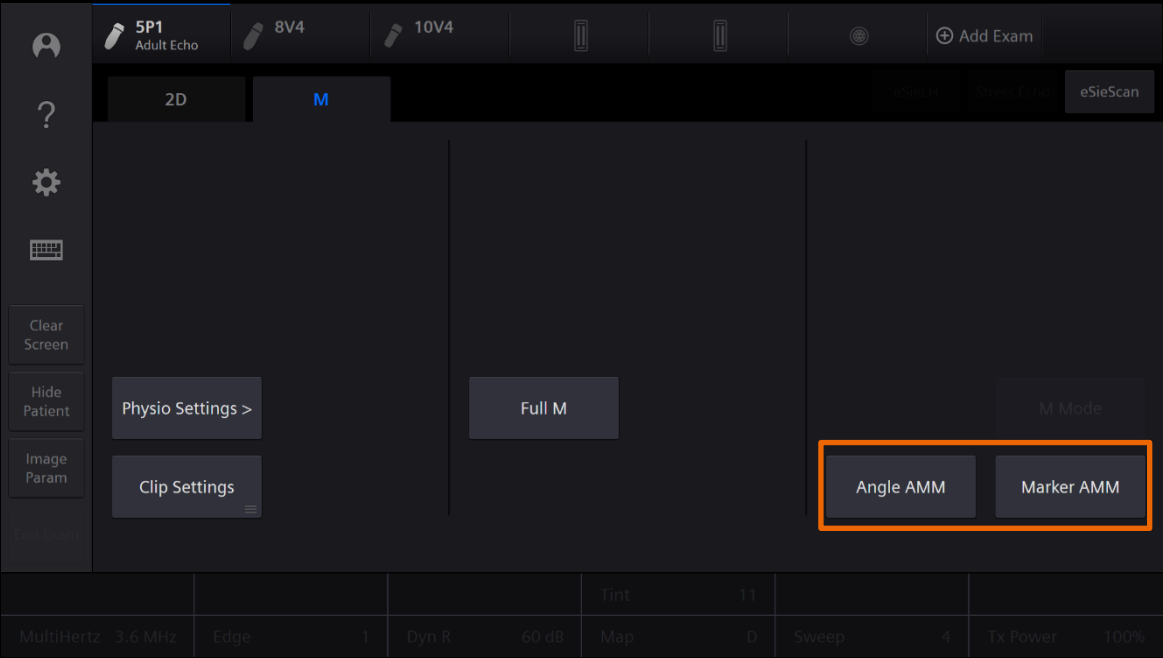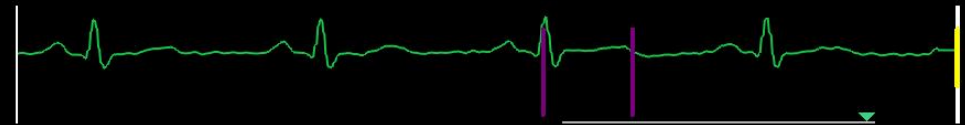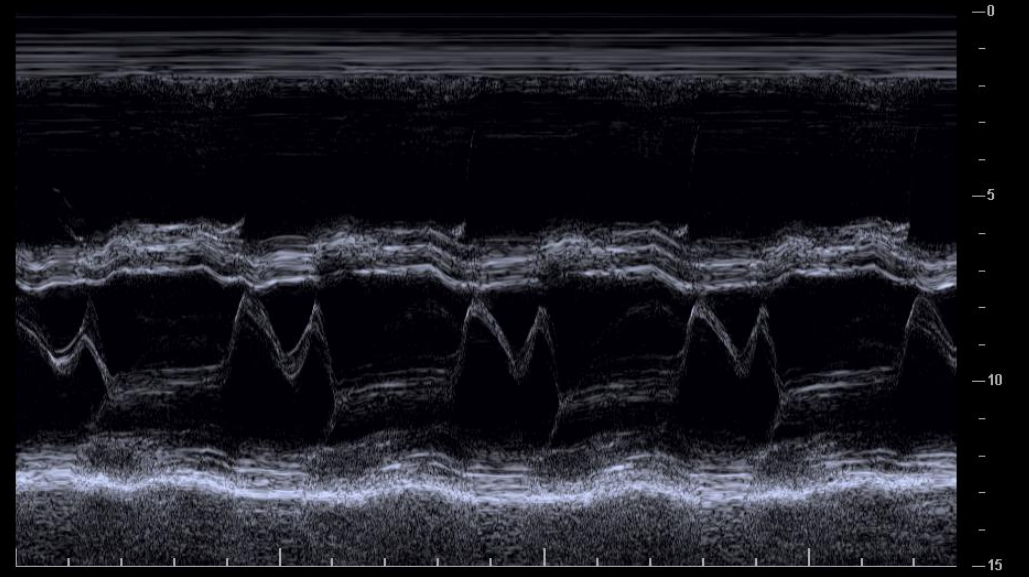
M-mode controls

Anatomic M-mode

Full M
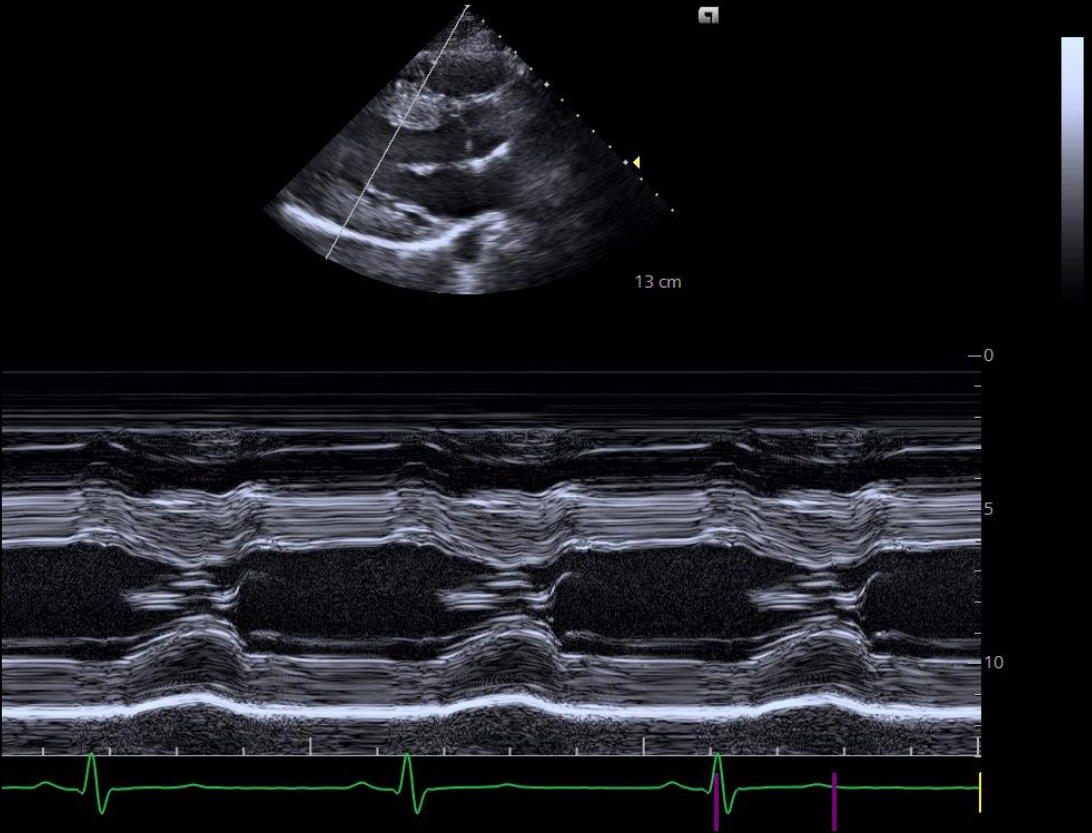
Objectives

- Review cardiac transducers

- 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

eSieImage multiparametric optimization

eSieImage

5P1
Adult Echo
Tx Power 100%
MI 0.83
TIS 0.6
TIB 0.6
DTCE Med
Dyn R 60 dB
THI 3.7 MHz
9 dB
45 fps
59 bpm

17 cm

System Configuration   Exam

General 1

General 2   Exam   Adult Echo ⌄

Display

Custom Keys   Freeze Behavior   Cine ⌄

Soft Keys   Seamless Dual   ○ On   ● Off

Exam   Dual Behavior on Freeze   ○ Left Dual Image Live

Measurement   ● ED-ES Split

Text Annotation
                           eSieImage   ● On   ○ Off

Tissue harmonic imaging (THI)

THI

10V4
Ped Echo
Tx Power 100%
MI 0.56
TIS 0.8
TIB 0.8
DTCE Med
Dyn R 65 dB
8.9 MHz
0 dB
73 fps
82 bpm

9 cm

10V4
Ped Echo
Tx Power 100%
MI 0.73
TIS 0.4
TIB 0.4
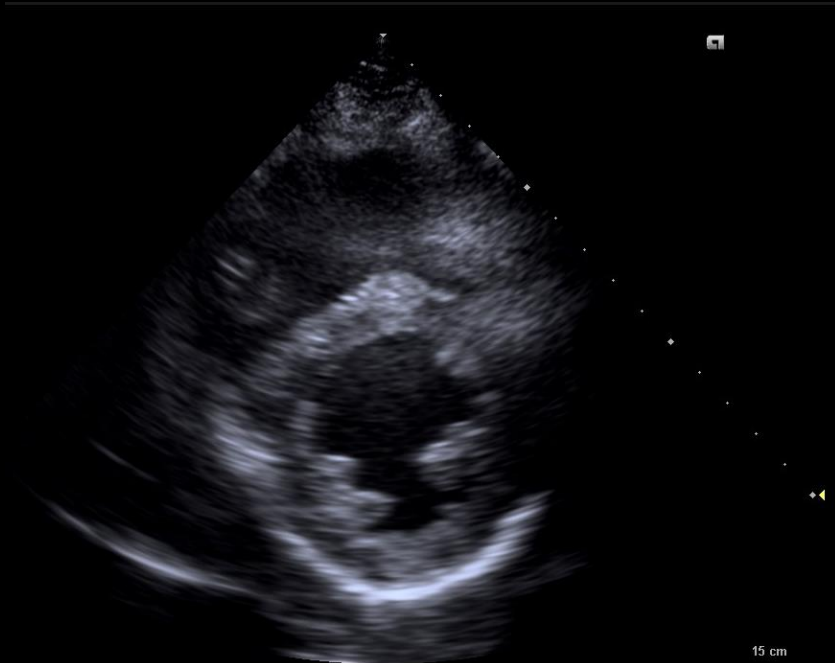DTCE Med
Dyn R 65 dB
THI 8.8 MHz
0 dB
43 fps
88 bpm

9 cm

Without THI

With THI

MultiHertz multiple frequency imaging

High Density	0	DTCE	Med	R/S	3	Tint	11	Image Size	2	Tx Power	100%
MultiHertz 3.7 MHz		Adv. SieClear	Off	Dyn R	60 dB	Map	D	Focus Width		TEQ Gain	0

5P1
Adult Echo
Tx Power 100%
MI 0.89
TIS 0.4
TIB 0.4
DTCE High
Dyn R 60 dB
TH 3.7 MHz
0 dB
52 fps
66 bpm

14 cm
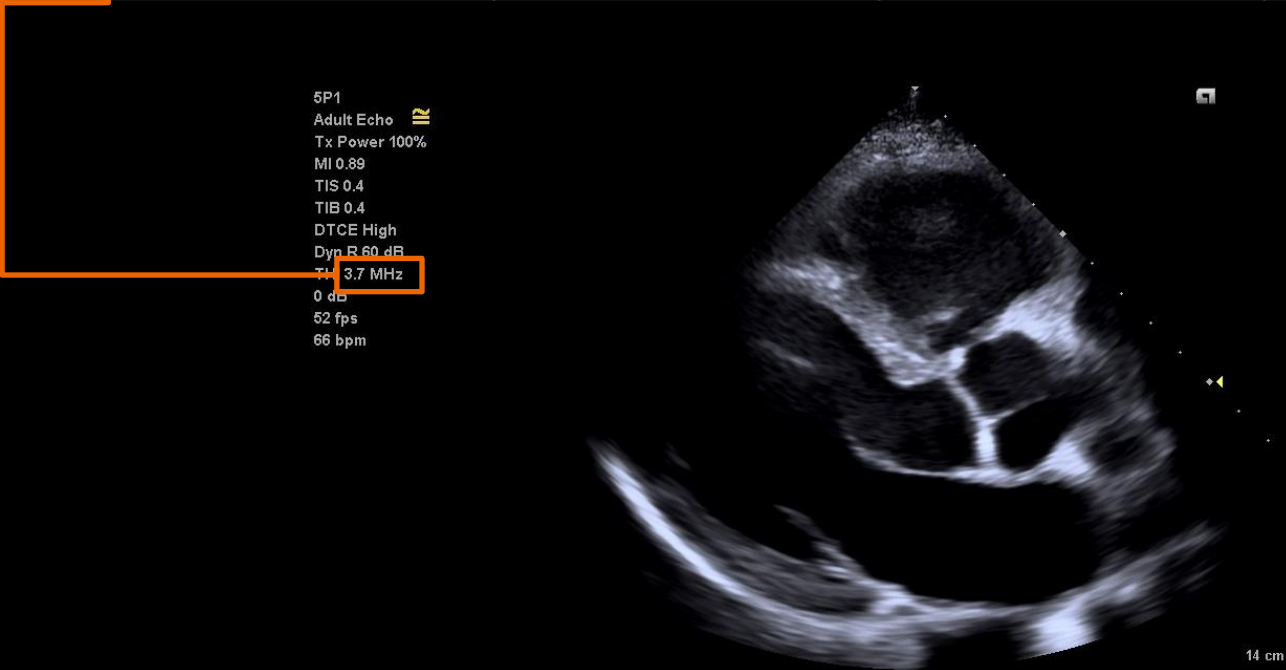
Dynamic TCE tissue contrast enhancement technology

High Density	0	DTCE	Med	R/S	3	Tint	2	Image Size	2	Tx Power	100%
MultiHertz	3.6 MHz	Adv. SieClear	1	Dyn R	63 dB	Map	C	Focus Width		TEQ Gain	0

15 cm

15 cm

Without DTCE
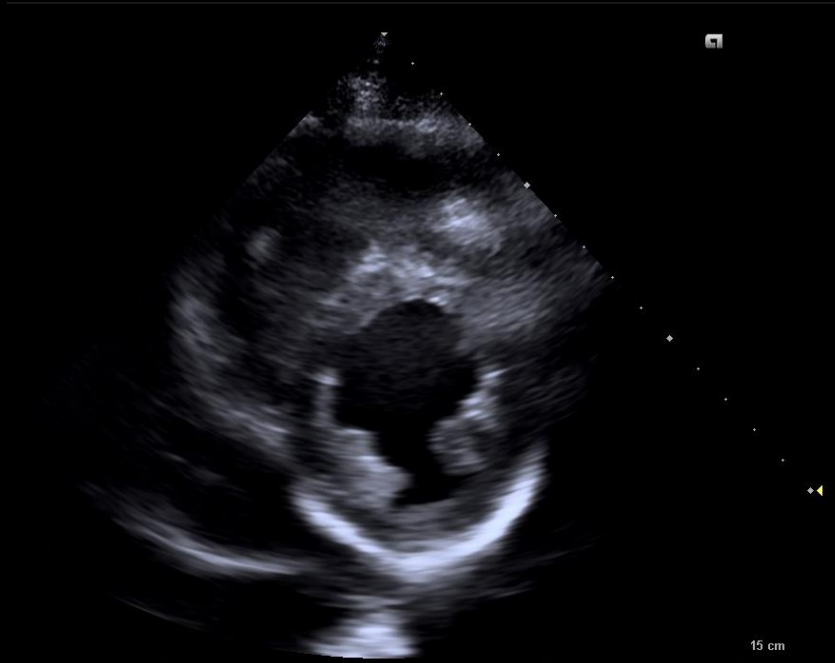
With DTCE (Med)

High Density

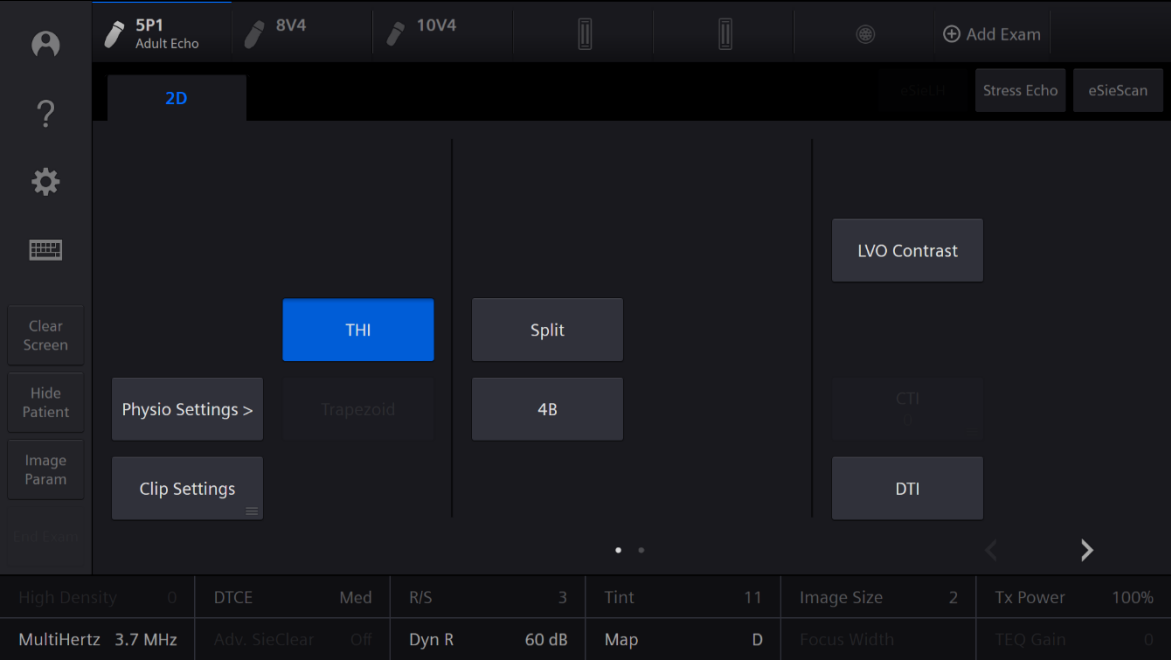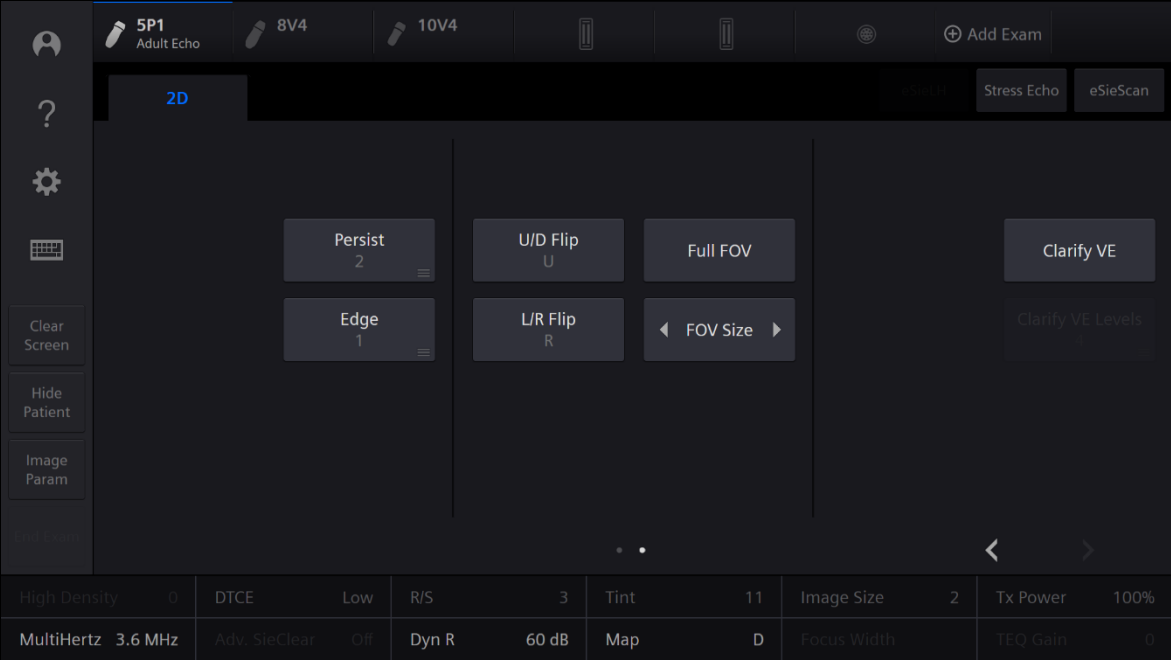| High Density	1	DTCE	High	R/S	3	Tint	11	Image Size	2	Tx Power	100%
MultiHertz	4.0 MHz	Adv. SieClear	Off	Dyn R	60 dB	Map	D	Focus Width		TEQ Gain	0
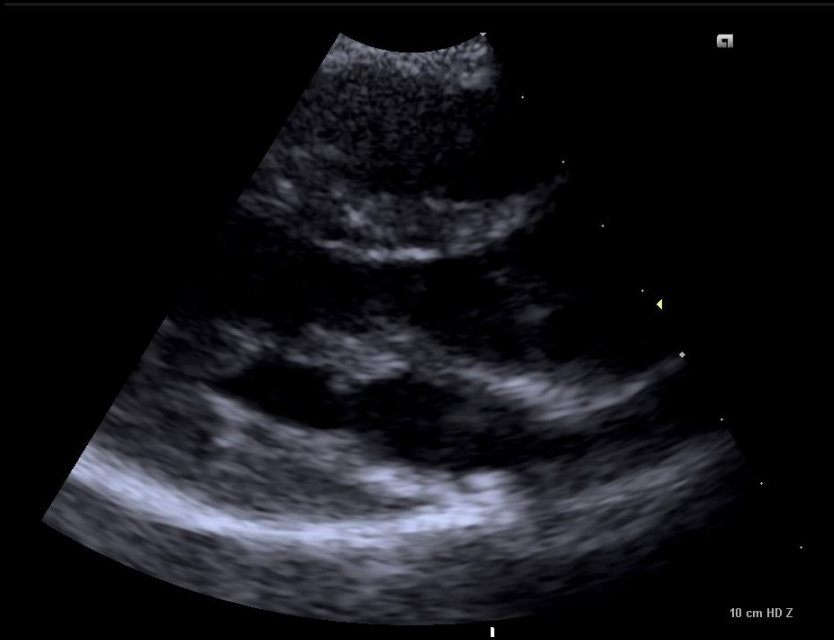
High Density 0
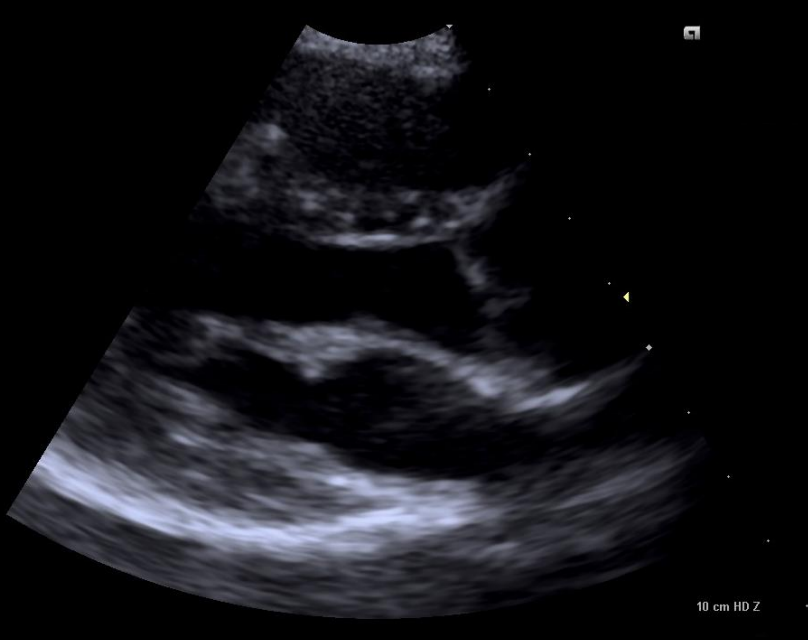
High Density 1

Additional optimization features

Page 1

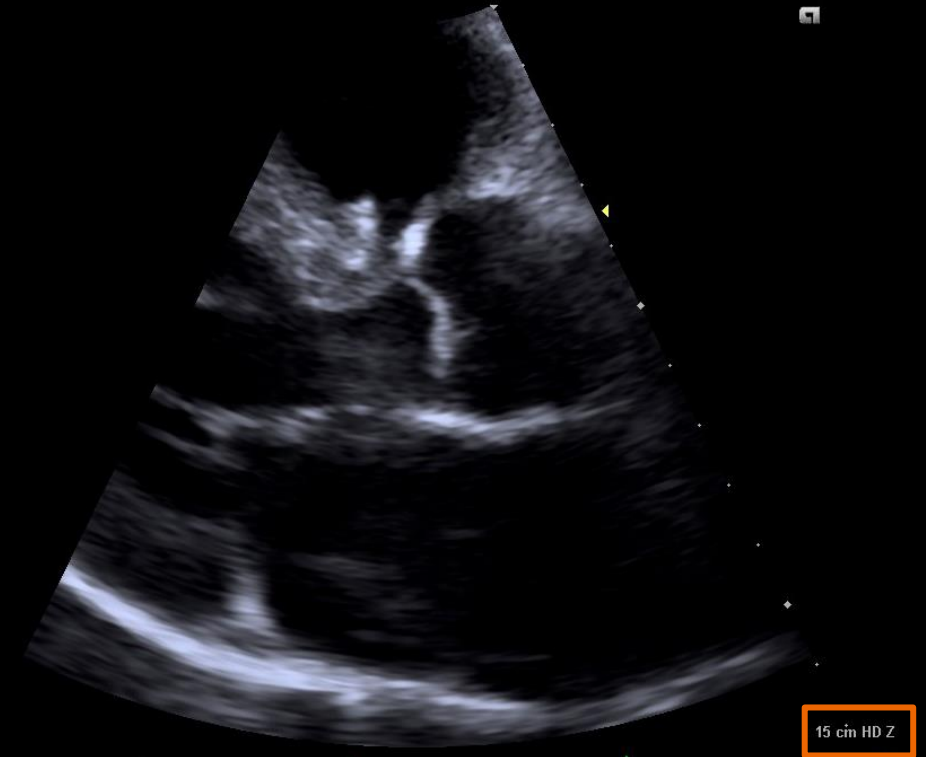**Page 2**

Objectives

- Review cardiac transducers

- 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

Zoom and HD Zoom

Zoom
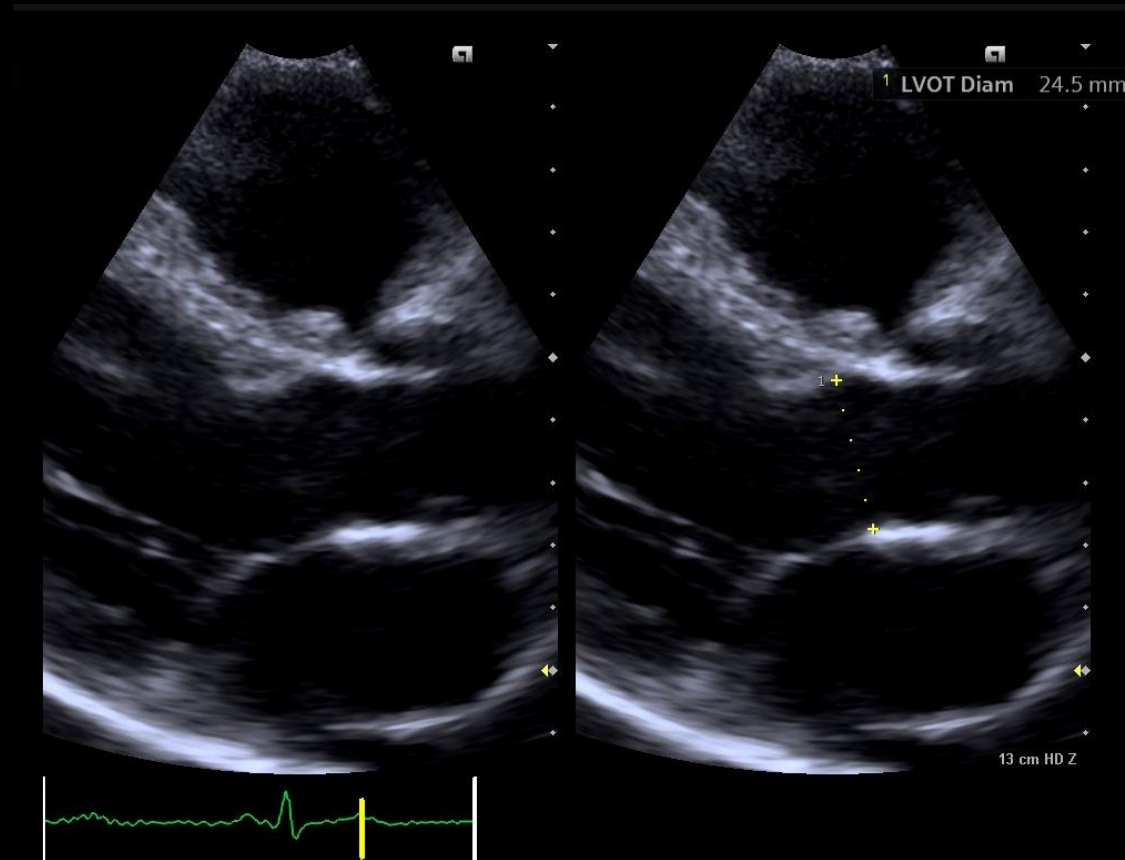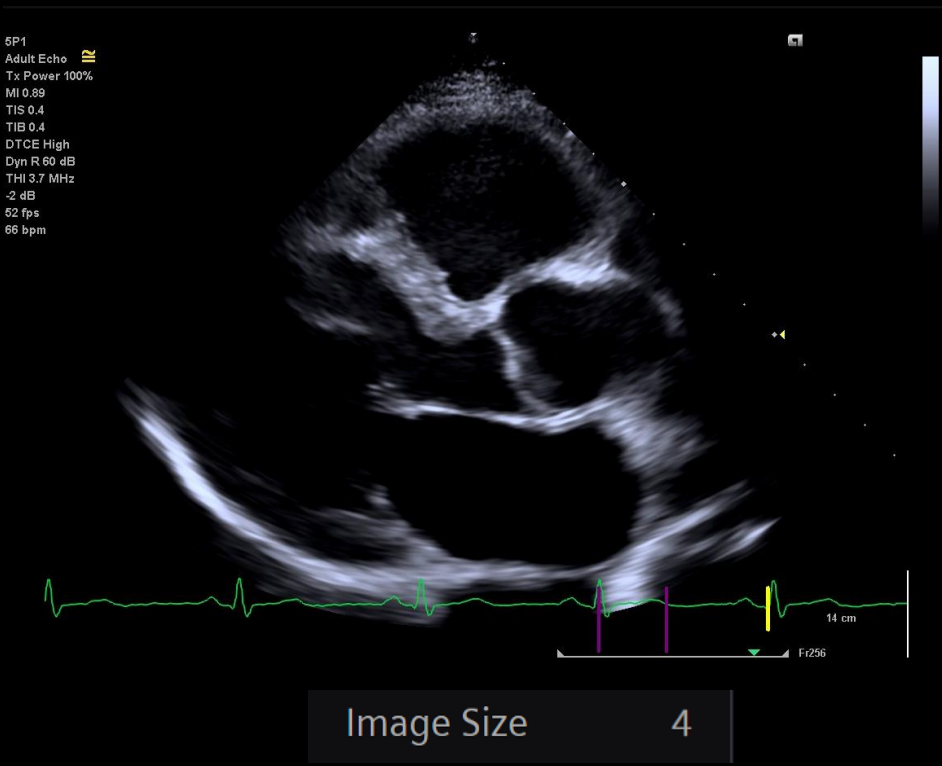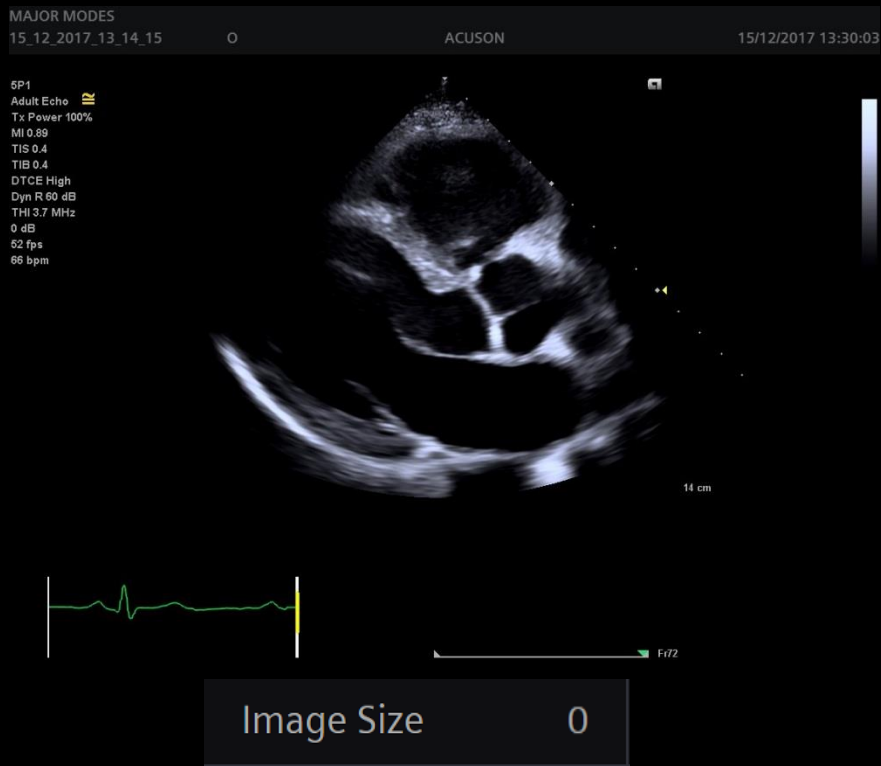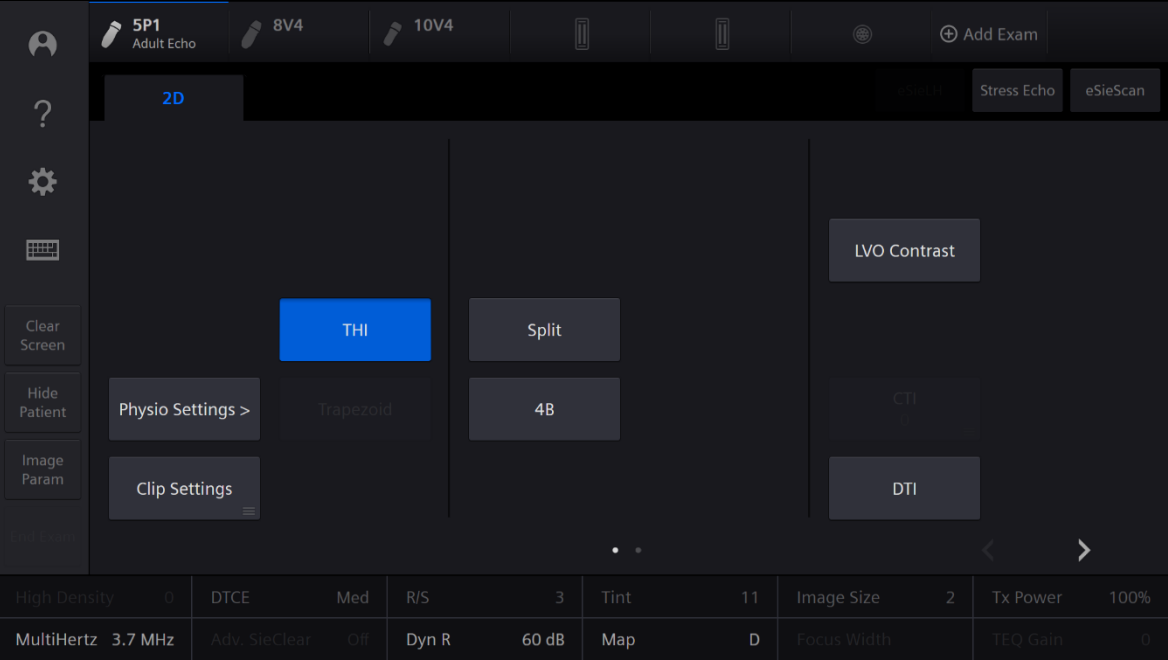
HD Zoom

Split

Image Size

Additional display modes

Page 1
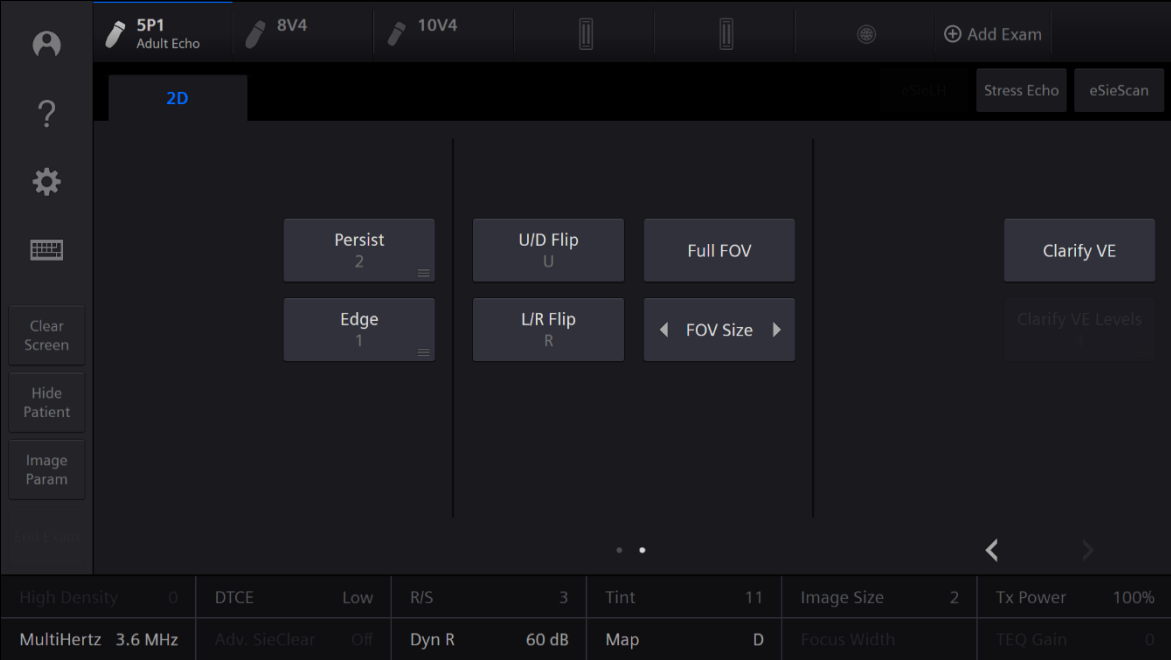
Page 2

Post-processing features
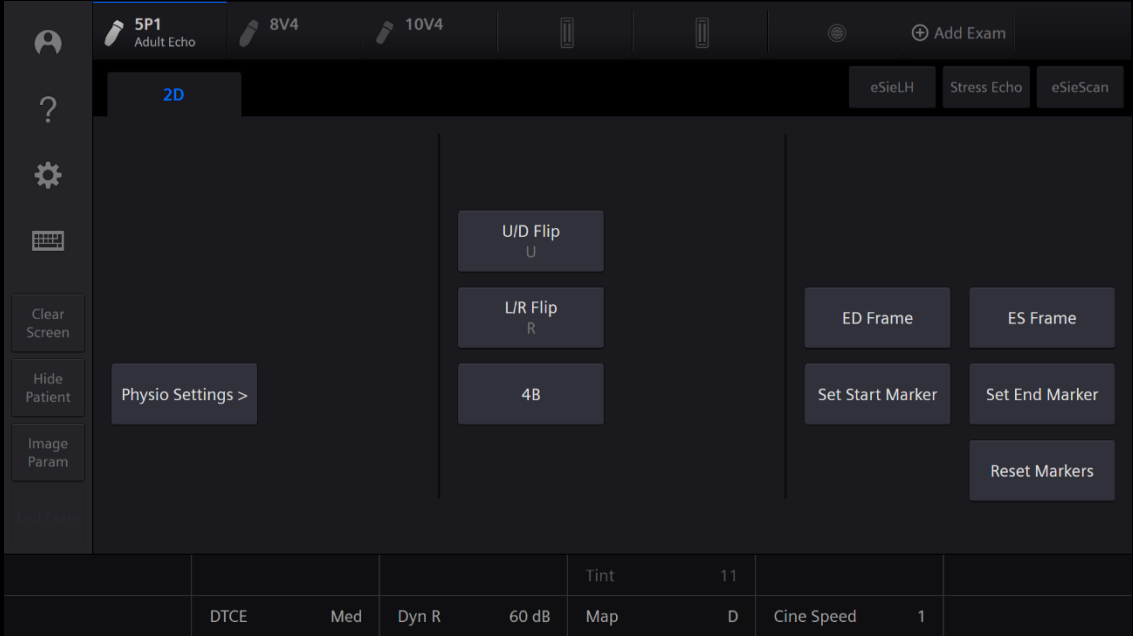
Zoom

B-mode

5P1 Adult Echo	8V4	10V4			⊕ Add Exam

2D		eSieLH	Stress Echo	eSieScan

U/D Flip
U

L/R Flip
R

4B

ED Frame

ES Frame

Set Start Marker

Set End Marker

Reset Markers

Physio Settings >

		Tint	11	
DTCE	Med	Dyn R	60 dB	Map	D	Cine Speed	1

M-mode

5P1 Adult Echo	8V4	10V4			⊕ Add Exam

2D	M			eSieScan

Full M

Angle AMM

Marker AMM

Physio Settings >

M Mode

		Tint	11	
Dyn R	60 dB	Map	D	Sweep	4

Clear Screen / Hide Patient / Image Param
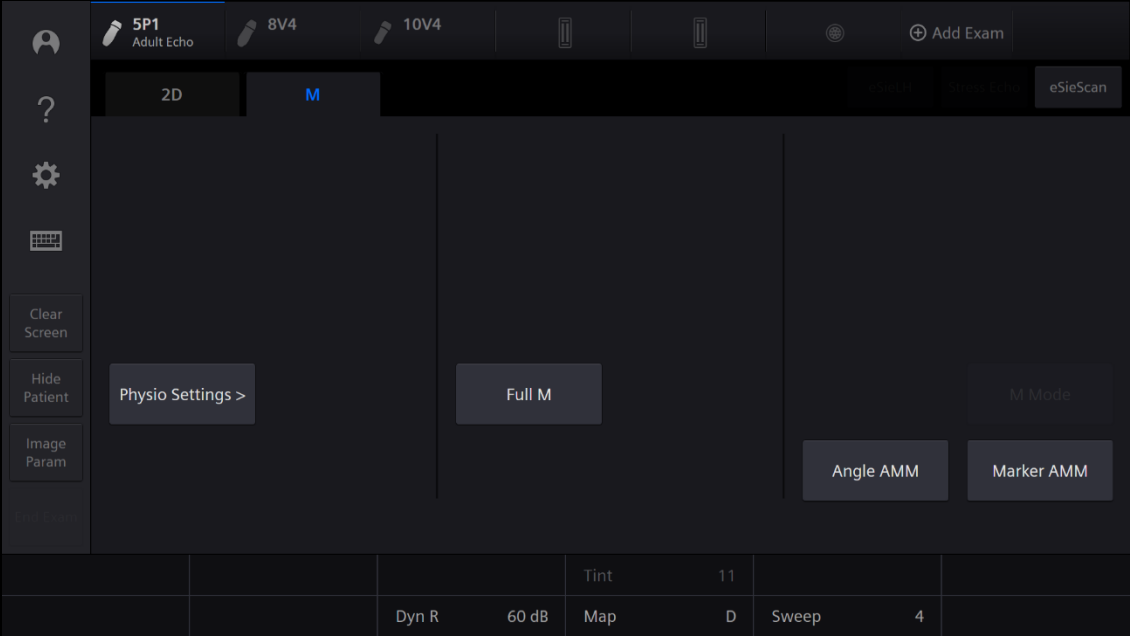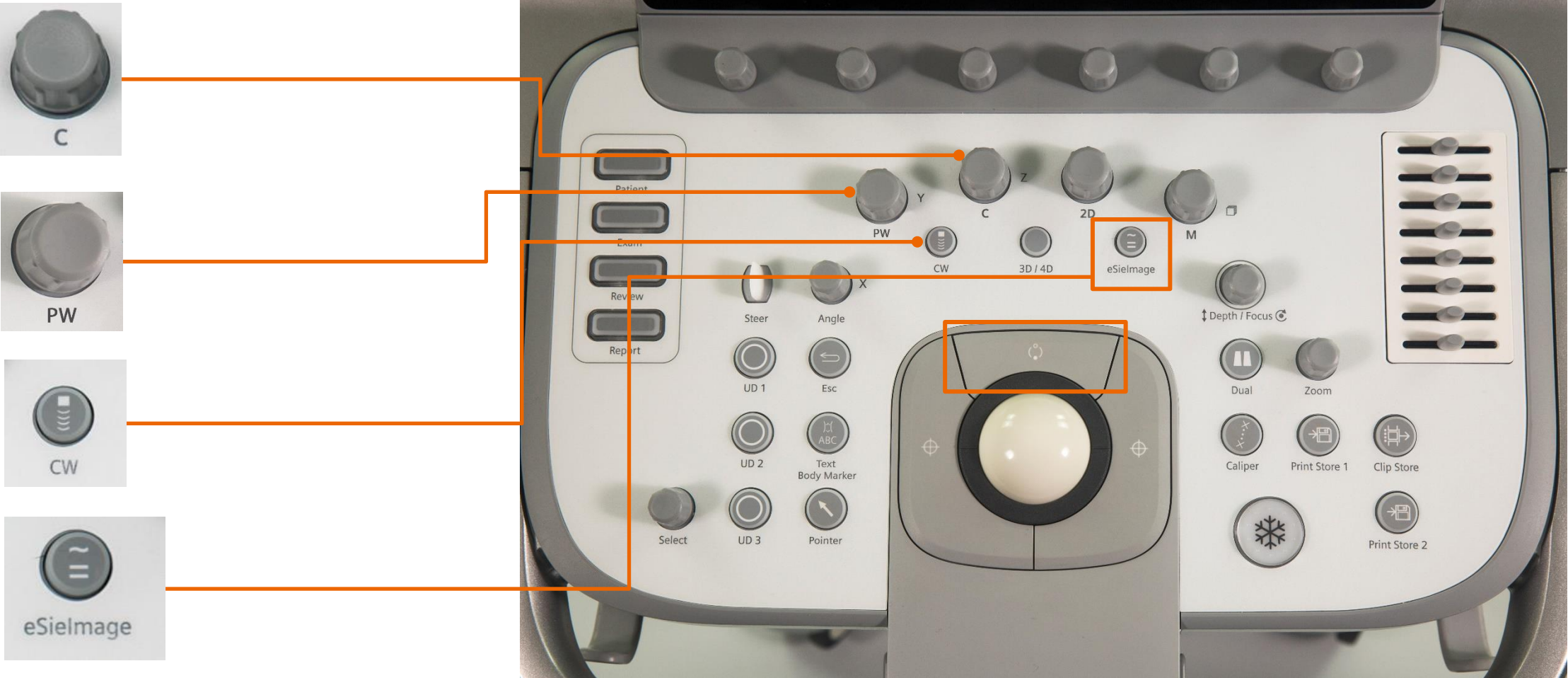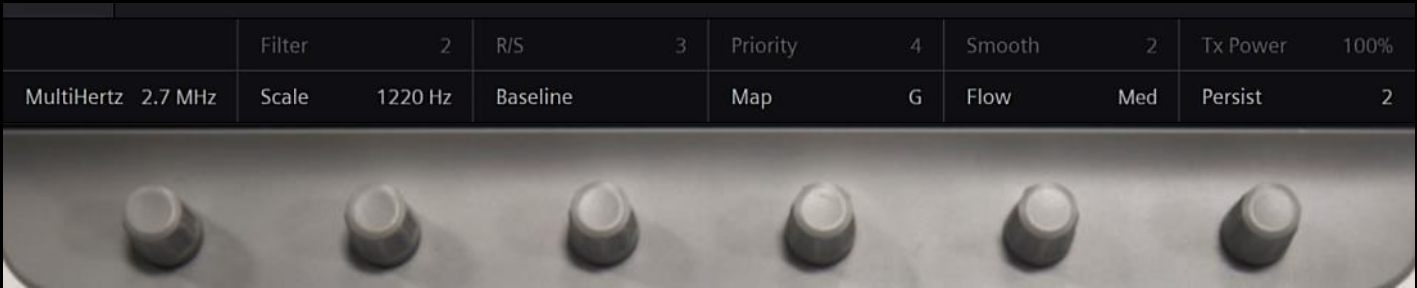
Objectives

- Review cardiac transducers

- 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 on the control panel
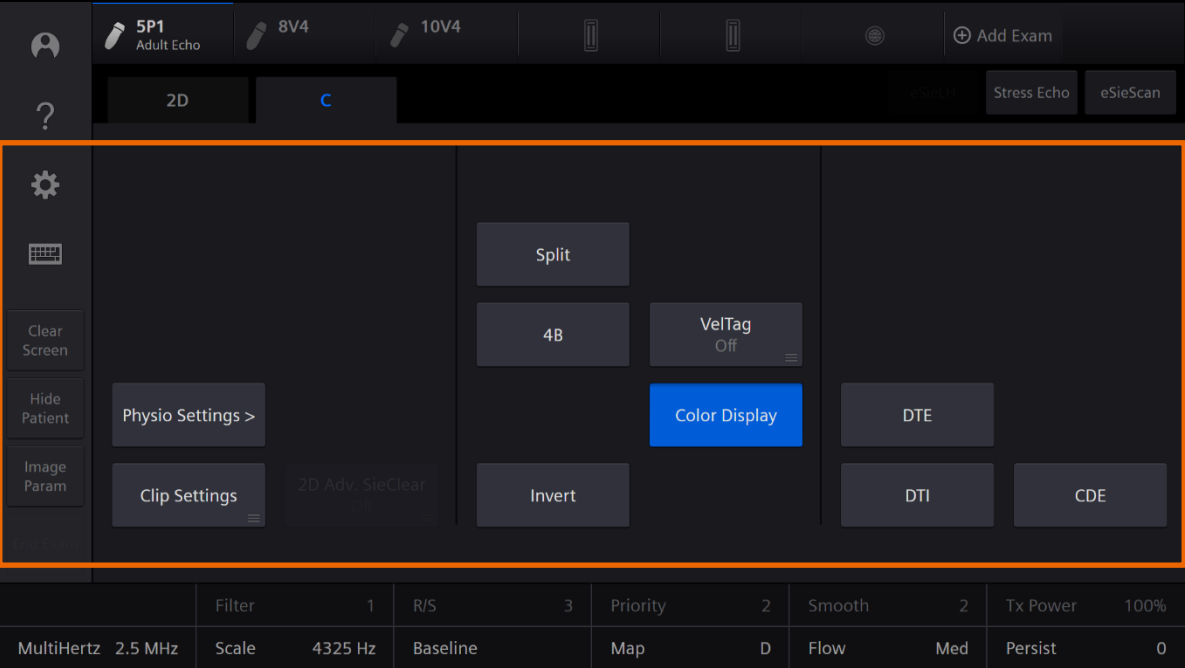
Doppler controls on the soft keys

	Filter	2	R/S	3	Priority	4	Smooth	2	Tx Power	100%
MultiHertz 2.7 MHz	Scale	1220 Hz	Baseline		Map	G	Flow	Med	Persist	2

Color Doppler

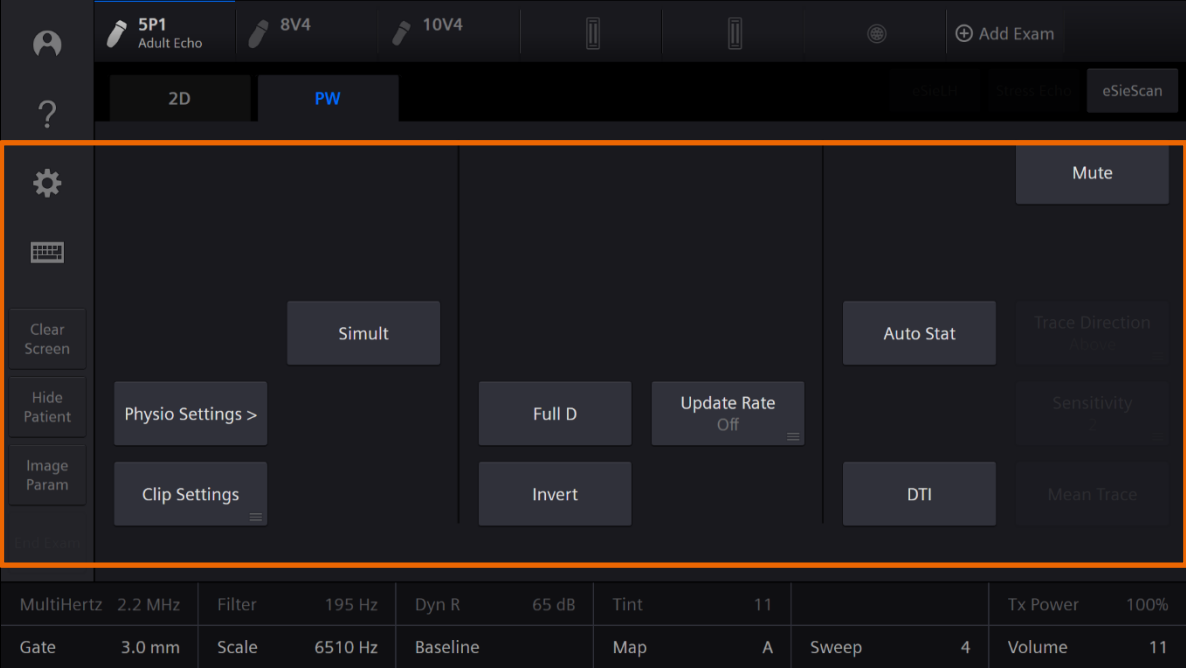| MultiHertz 2.7 MHz	Filter	98 Hz	Dyn R	80 dB	Tint	2			Tx Power	100%
Gate	4.0 mm	Scale	2170 Hz	Baseline		Map	C	Sweep	3	Volume	10

Spectral Doppler

Doppler controls on the touch screen

Color Doppler
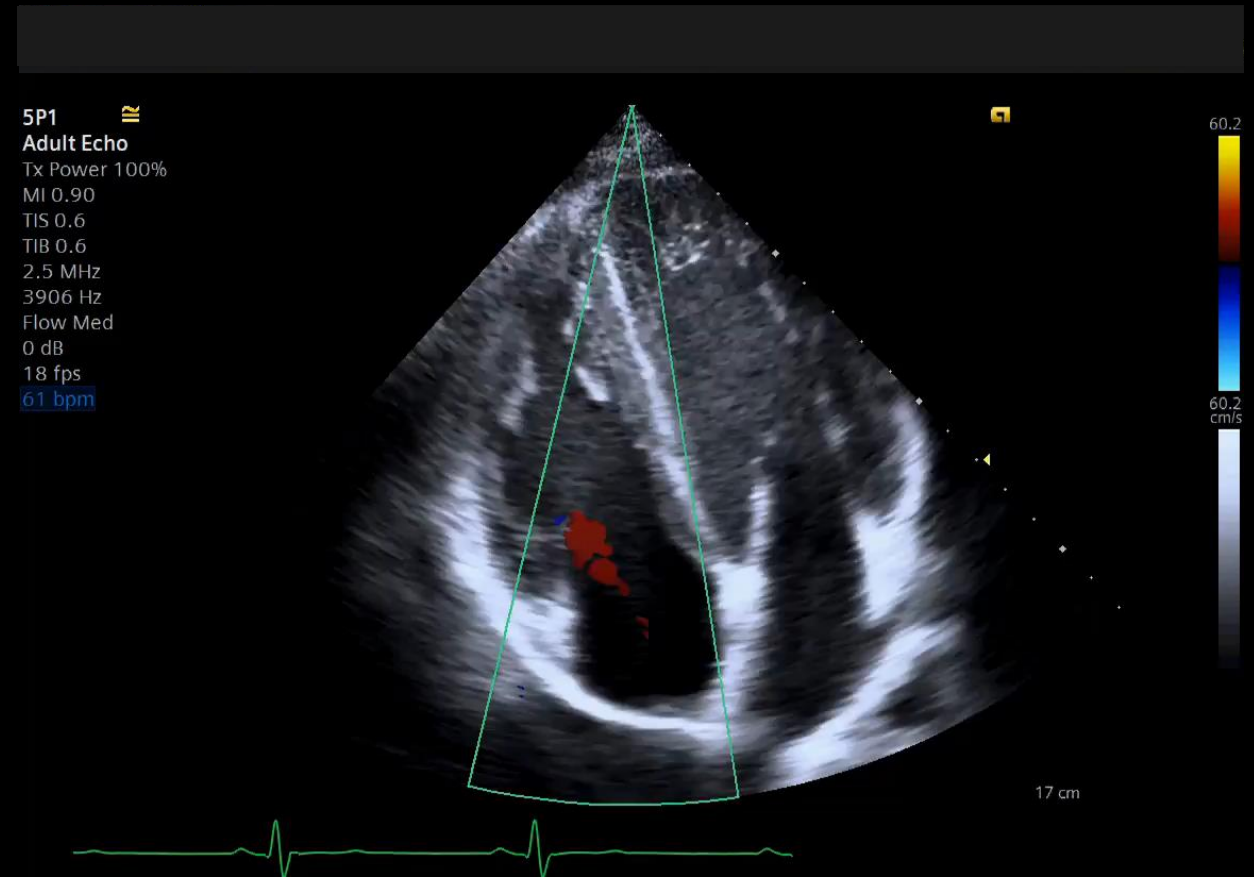
Spectral Doppler

Objectives

- Review cardiac transducers

- Review B-mode and M-mode controls

- Describe B-mode and M-mode optimization features

- Explain display modes

- Review Doppler controls
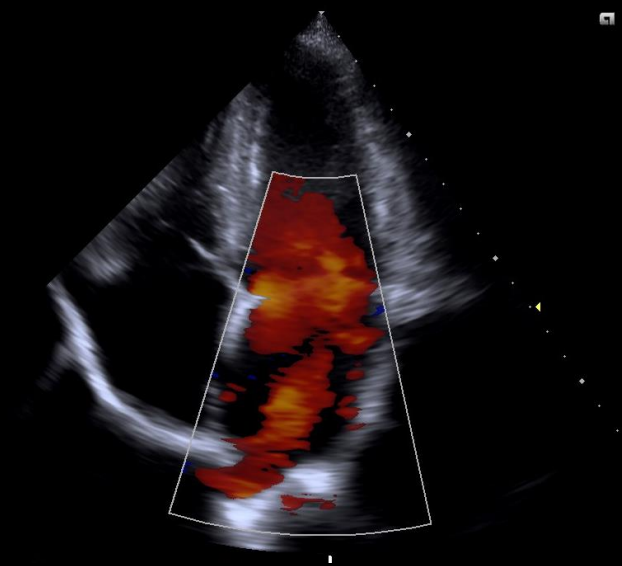
- Describe Doppler optimization features

Dynamic persistence
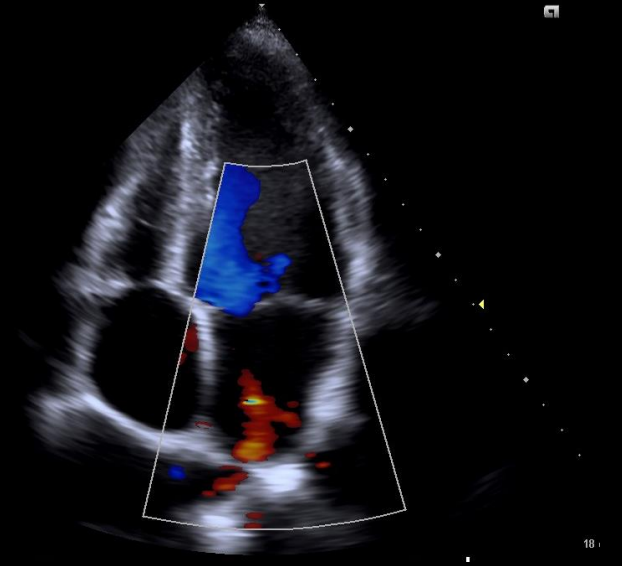# Auto flash artifact suppression

- Dynamic persistence adjusts persistence relative to user motion

- Auto flash artifact suppression applies flash suppression relative to user motion

5P1
Adult Echo
Tx Power 100%
MI 0.90
TIS 0.6
TIB 0.6
2.5 MHz
3906 Hz
Flow Med
0 dB
18 fps
61 bpm

60.2

60.2
cm/s

17 cm

Flow

	Filter	1	R/S	4	Priority	4	Smooth	2	Tx Power	100%
MultiHertz 6.7 MHz	Scale	781 Hz	Baseline		Map	C	Flow	Low	Persist	3

Flow   Low

Flow   High

Split

Split

5P1
Adult Echo
Tx Power 100%
MI 0.88
TIS 0.6
TIB 0.6
2.5 MHz
3906 Hz
Flow Med
0 dB
19 fps
60 bpm

60.2

60.2
cm/s

16 cm
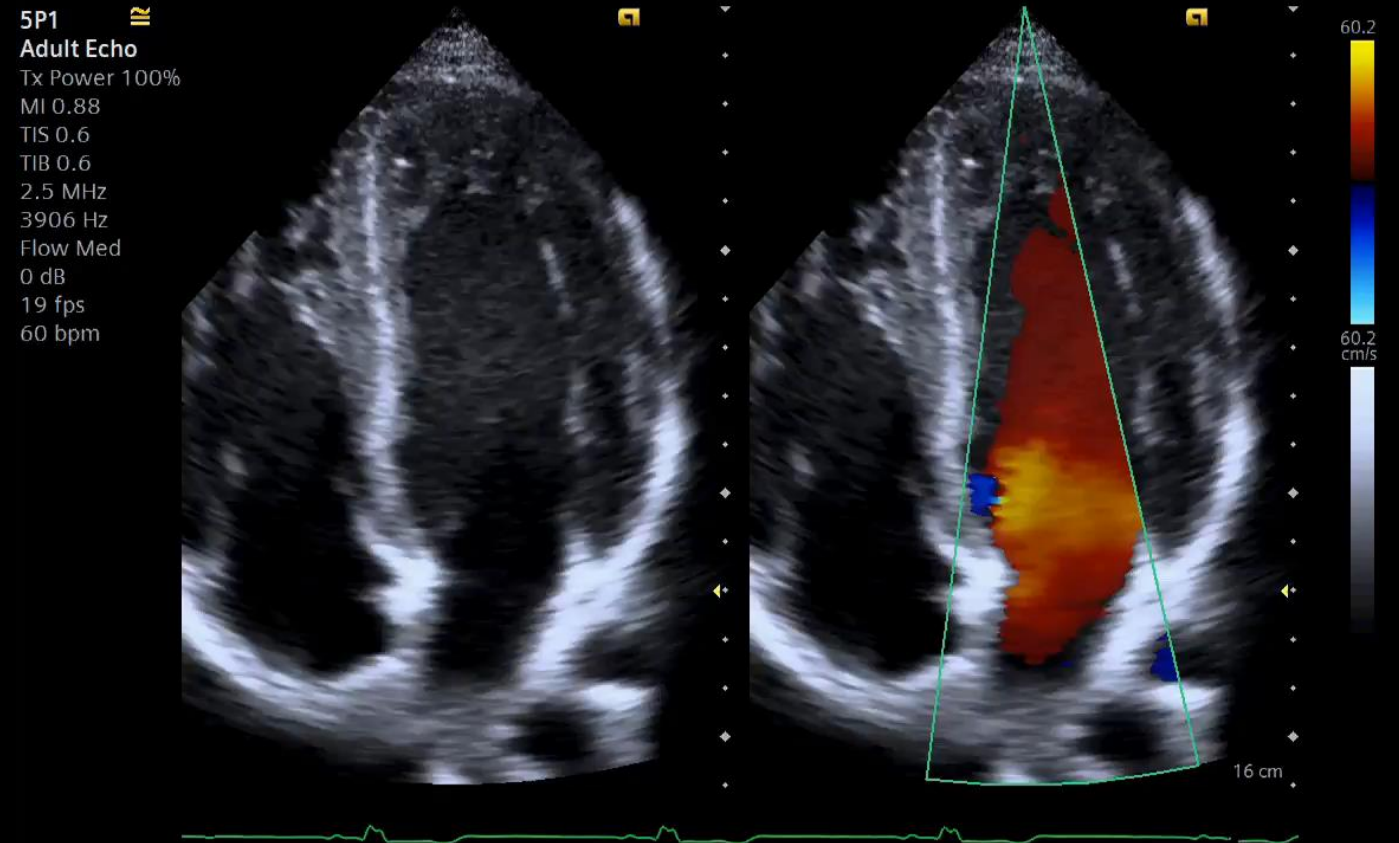
Pulsed wave (PW) Doppler

PW

	5P1 Adult Echo	8V4	10V4			⊕ Add Exam

| 2D | PW | | | eSieLH | Stress Echo | eSieScan |

Mute

Simult

Auto Stat

Trace Direction

Physio Settings >

Full D | Update Rate Off

Sensitivity

Clip Settings

Invert

DTI

Mean Trace

Clear Screen

Hide Patient

Image Param

MultiHertz	2.2 MHz	Filter	195 Hz	Dyn R	65 dB	Tint	11		Tx Power	100%
Gate	3.0 mm	Scale	6510 Hz	Baseline		Map	A	Sweep	4	Volume	11

17 cm

110 mm

—50

cm/s

—50

—100

—150

Doppler auto optimization

Automatic spectral Doppler
optimization of:

- Gain
- Scale / Baseline
- Dynamic Range
- Auto Invert

eSieImage

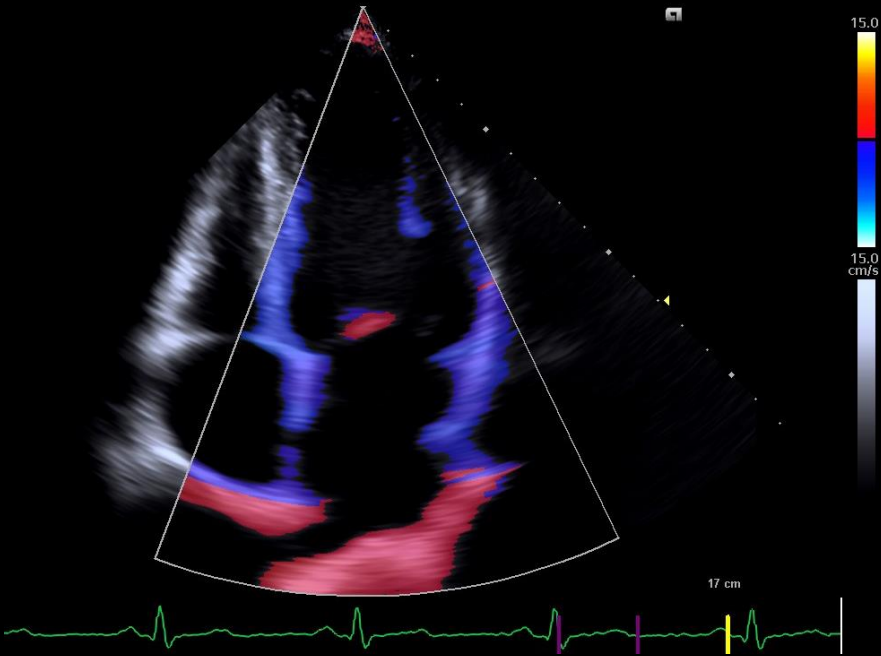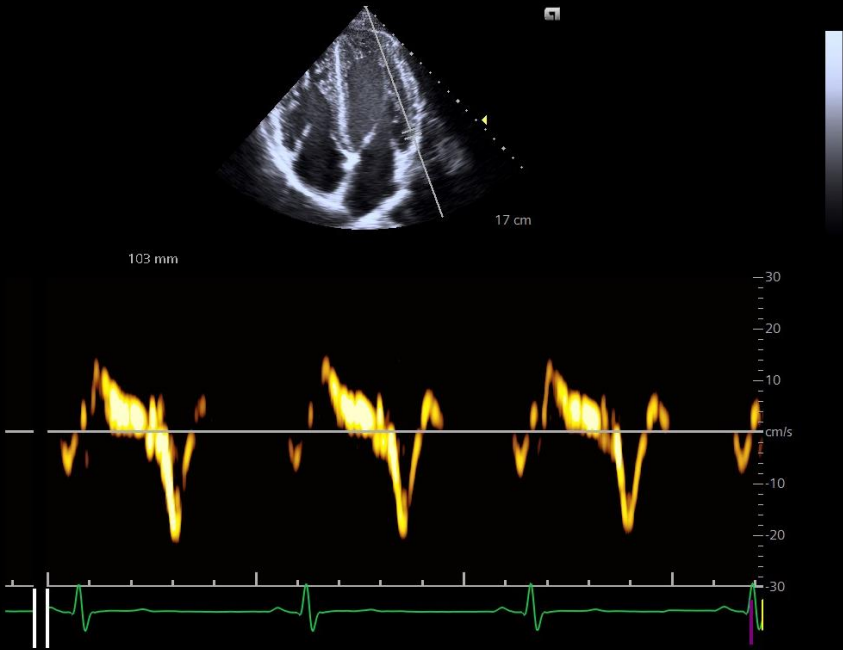| Doppler Auto Optimization	☑ Gain	☑ Dynamic Range
	☑ Scale/Baseline	☑ Auto Invert
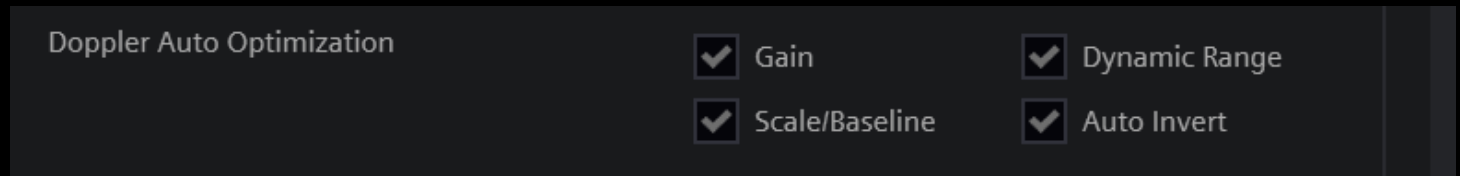
Full D

Full D

5P1
Adult Echo
Tx Power 100%
MI 0.57
TIS 0.5
TIB 1.6
2.2 MHz
5787 Hz
Gate 5.0 mm
-5 dB
62 bpm
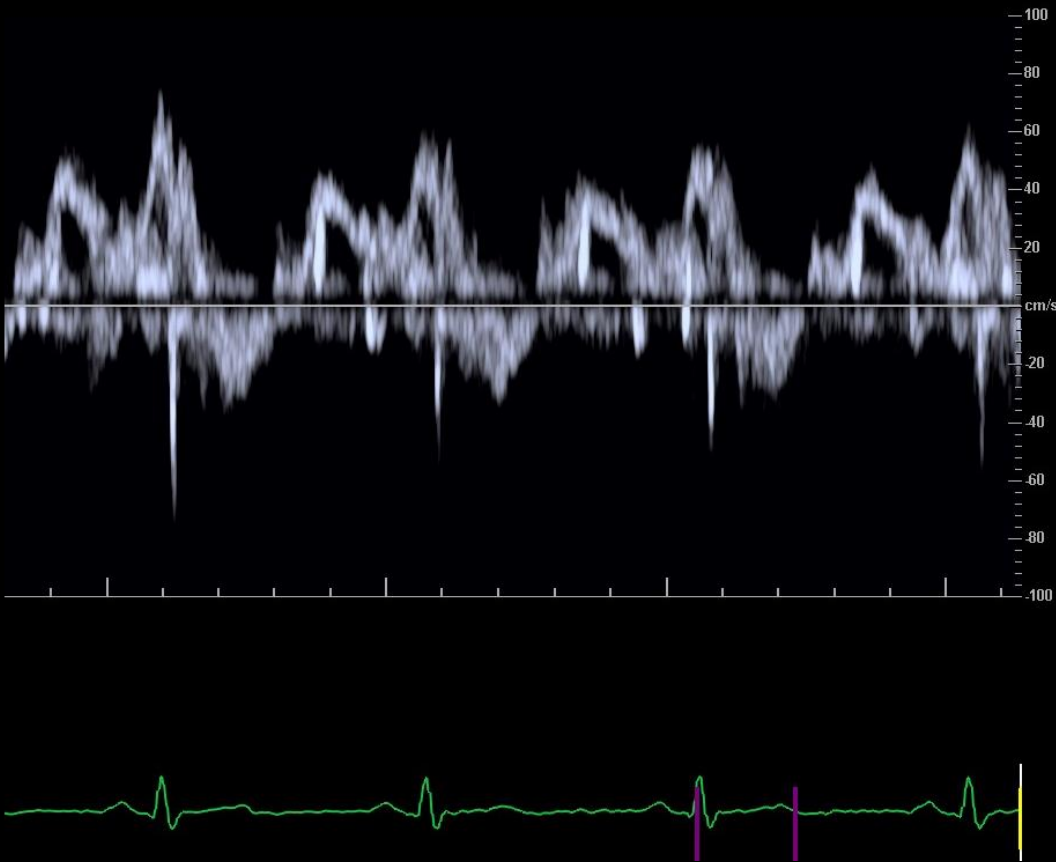
Doppler tissue imaging
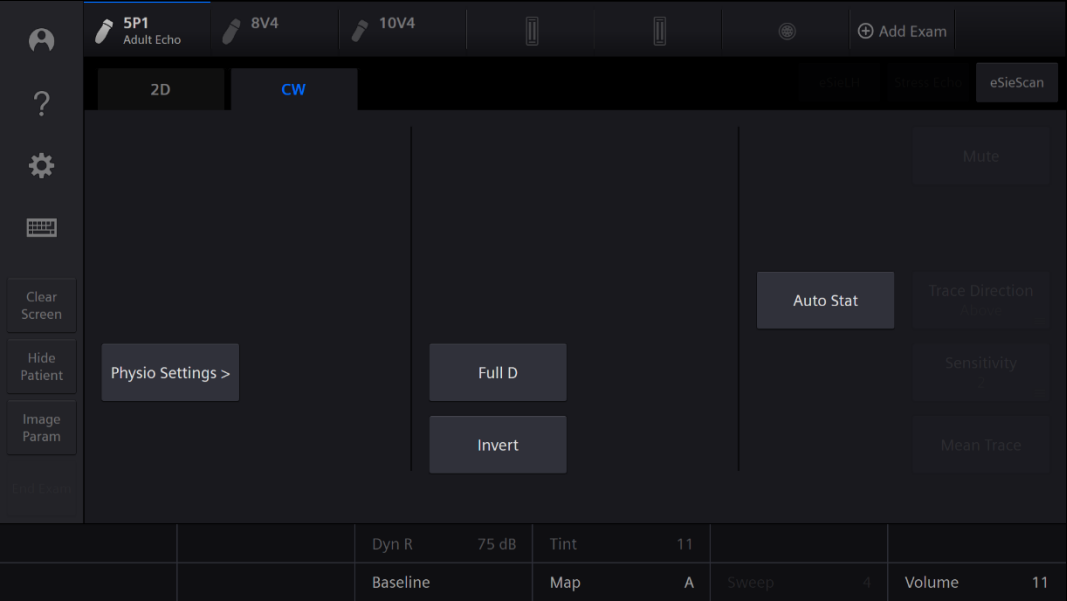
DTI

Bypass cursor mode

Continuous wave (CW) Doppler
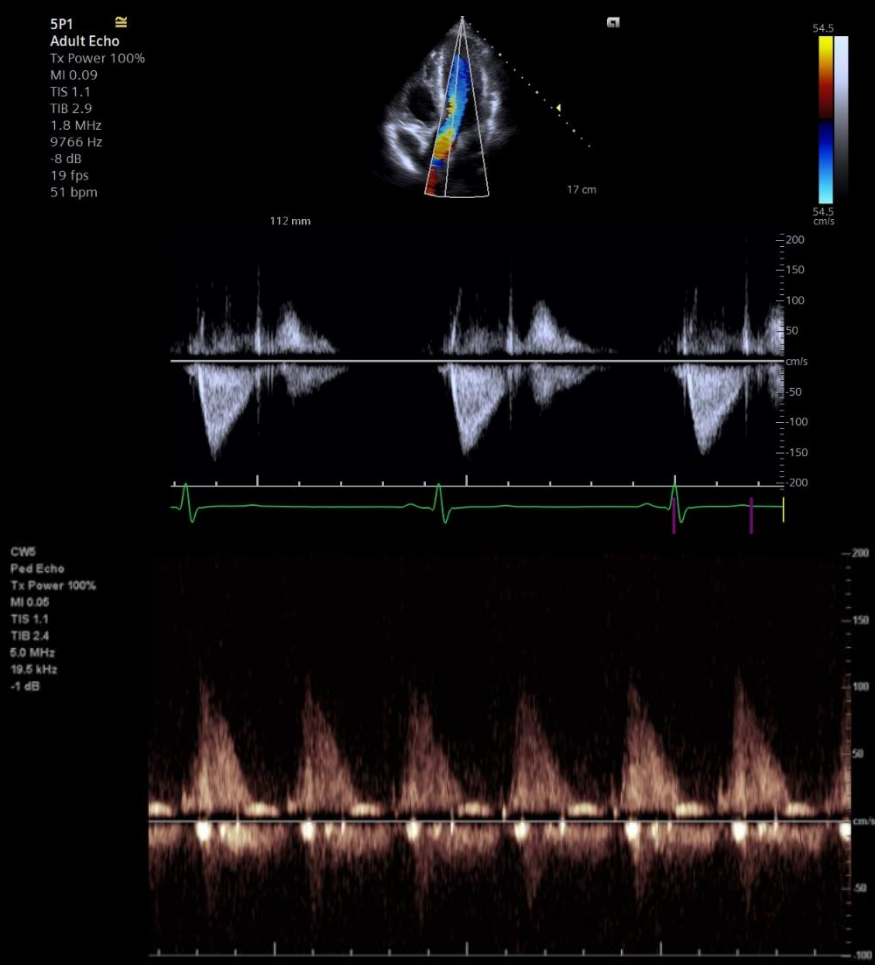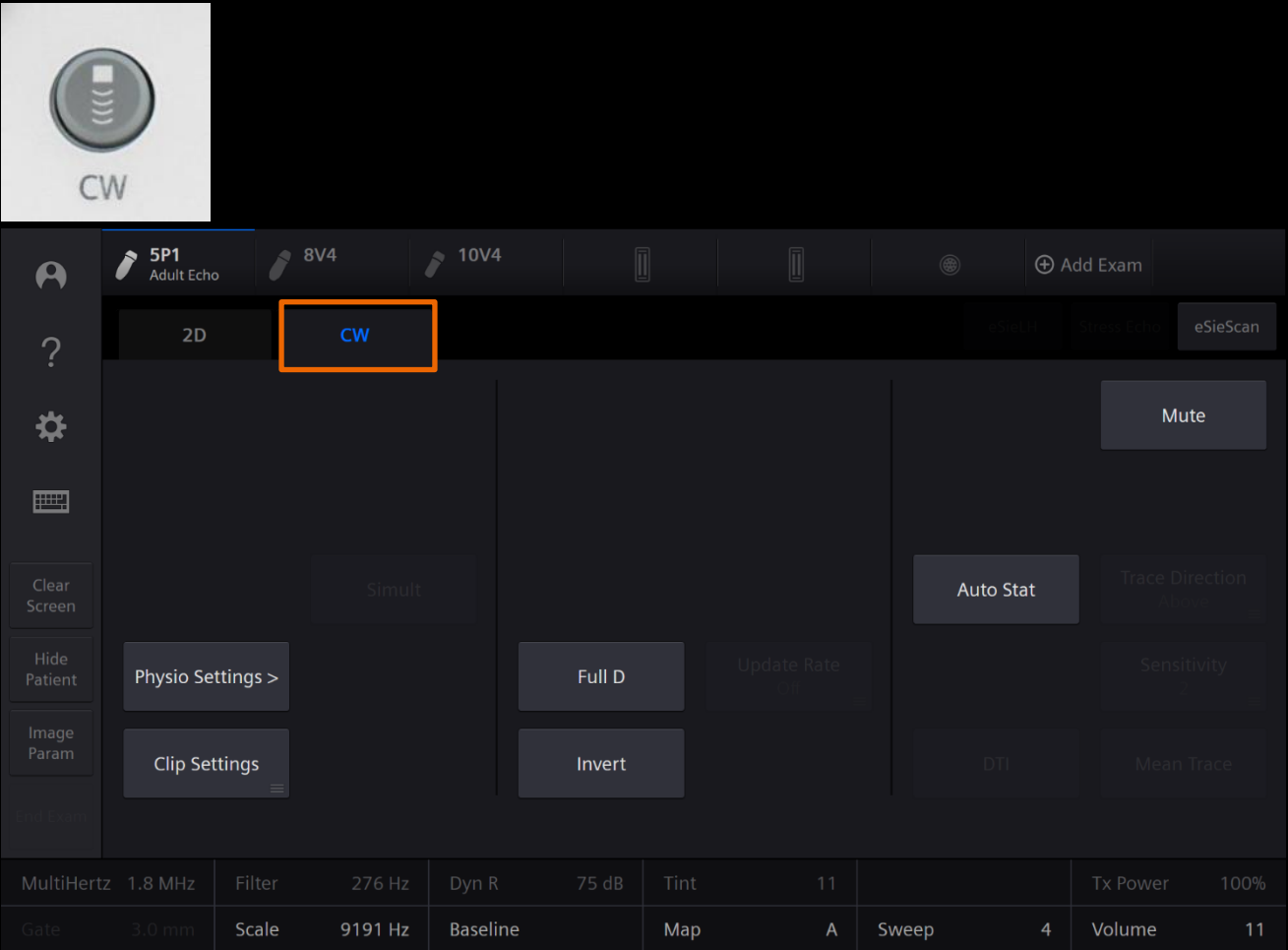
Post-processing features

Color Doppler

Spectral Doppler

Summary

- Review cardiac transducers

- 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

Questions?