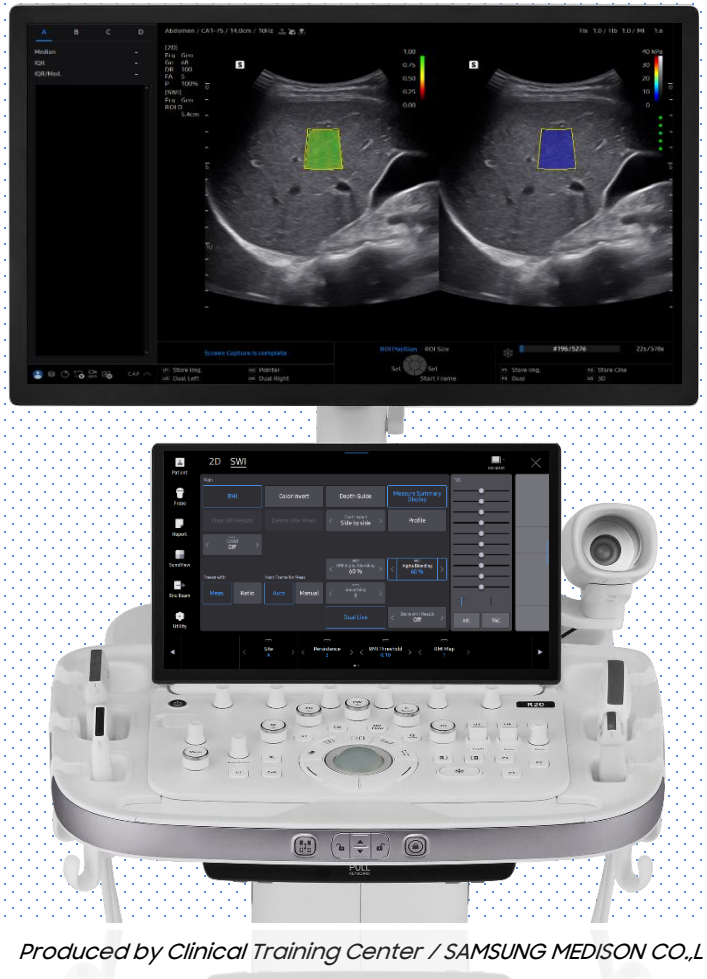
SAMSUNG

S-Shearwave Imaging™

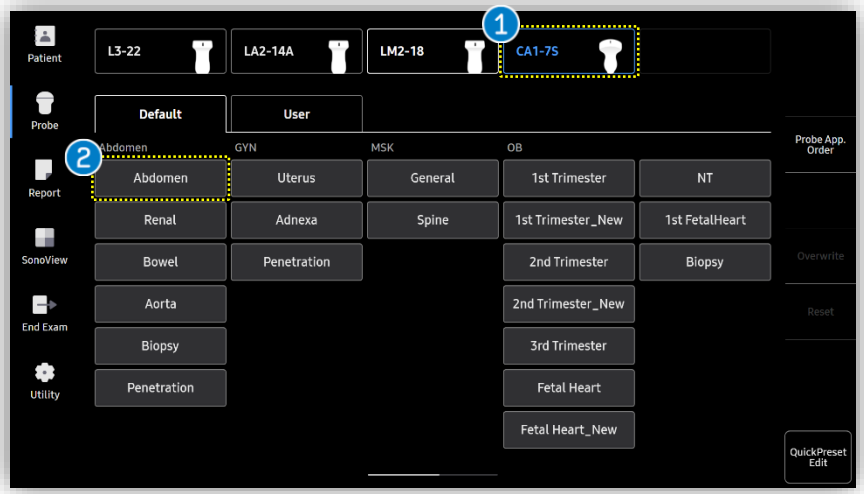
R20 Quick Guide

for Liver



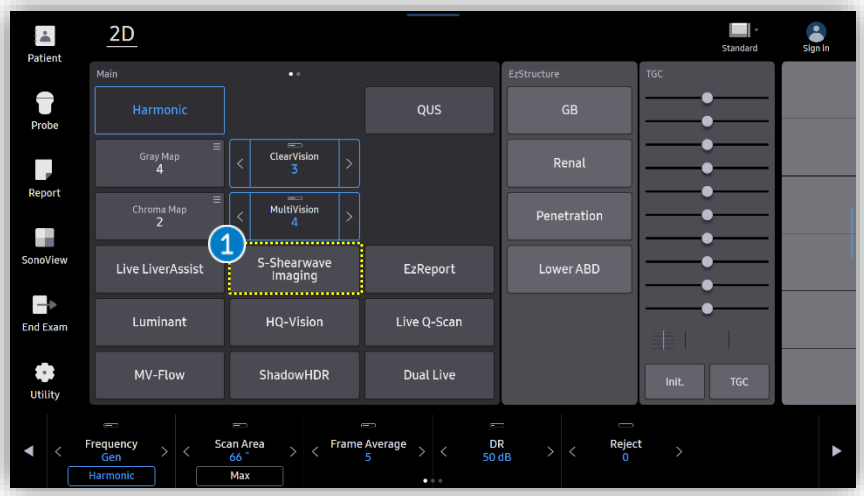
Produced by Clinical Training Center / SAMSUNG MEDISON CO.,LTD

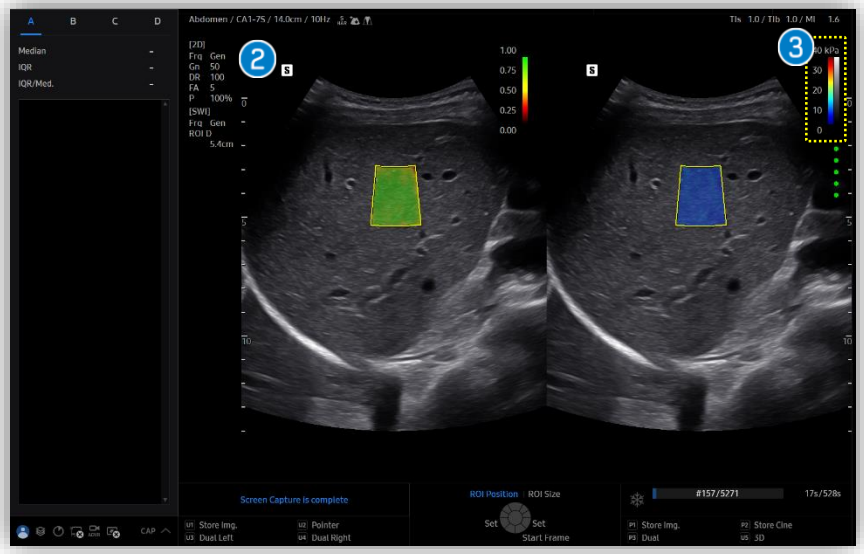
1. Preparation



❶ Probe	Select [CA1-7S] on the touch screen.
❷ Application & Preset	Choose [Abdomen] application/preset to perform it.
❸ Acquire a proper image	[Scan guideline] ▪ Patient should fast at least 4 hours before the examination. ▪ Scan the intercostal area in the supine or slight left lateral position with the arm raised above the head to increase the intercostal space. (The right hepatic lobe is recommended) ▪ Ask the patient to breathe normally before holding the breath (Avoid deep inhalation or exhalation) ▪ The transducer should be perpendicular to the liver capsule.

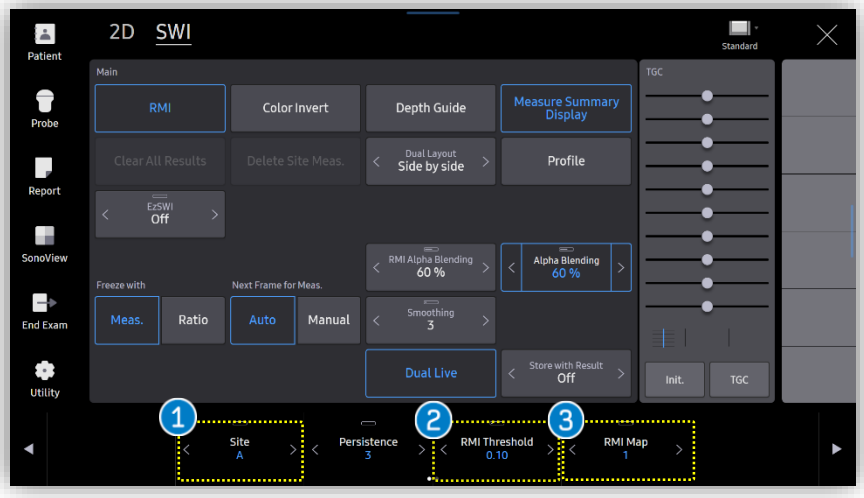
2. Start S-Shearwave Imaging™

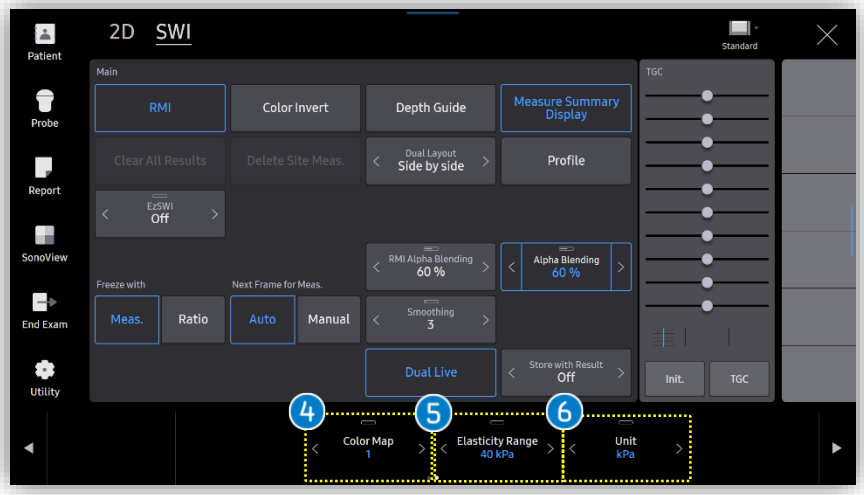




① S-Shearwave Imaging	Tap the [S-Shearwave Imaging] button on the touch screen to start.
② Image	When you select [S-Shearwave Imaging] button on the touch screen, the image layout is automatically turned to dual mode as a default setting. (Left : RMI map, Right : Elasticity map)
③ Elasticity color bar	Displays the color map range of the color stiffness within the ROI. If you change [Elasticity Range], color map within ROI and the color of the elasticity bar will also be changed accordingly.

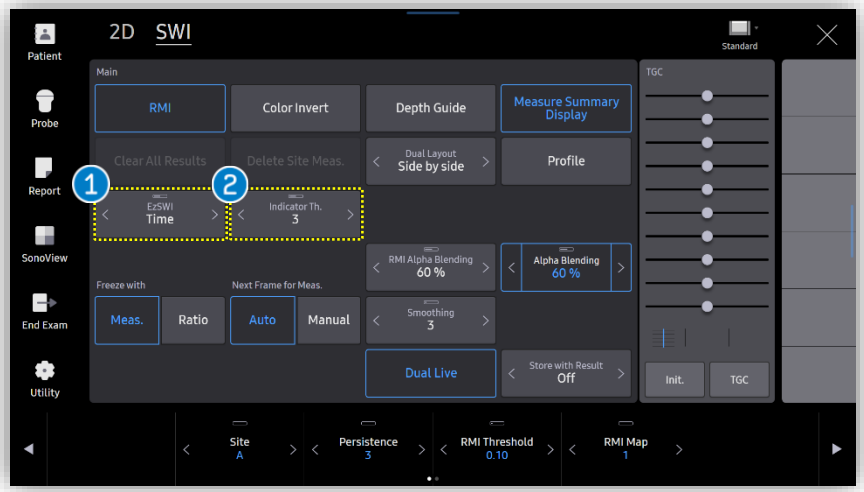
3. Parameters

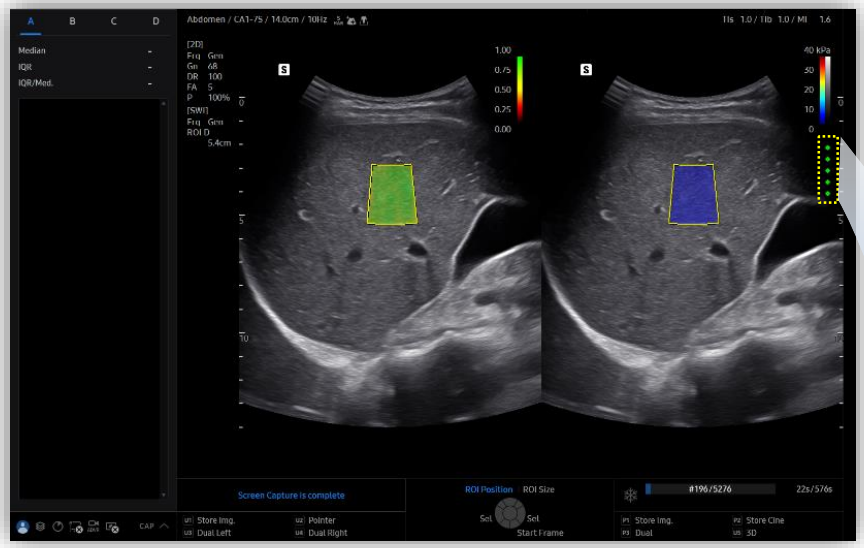




① Site	Changes the ROI site between 4 sites.
② RMI Threshold	Adjusts the threshold values, then the RMI color map below the threshold will be excluded.
③ RMI map	Changes the RMI map color according to user preference.
④ Color Map	Changes the elasticity map color depending on user preference.
⑤ Elasticity Range	Changes the color stiffness map range. If you change the [Elasticity Range], color map within ROI and the color of elasticity bar also will be changed accordingly.
⑥ Unit	Changes the unit of an elasticity value. ▪ The unit [kPa] is based on Young's modulus. ▪ The unit [m/s] is for Shearwave speed.

4. EzSWI™





① EzSWI	By providing the Reliability Indicator, EzSWI offers real-time guidance for optimal scanning and automatically displays the best frame to obtain stiffness values. There are 3 methods:

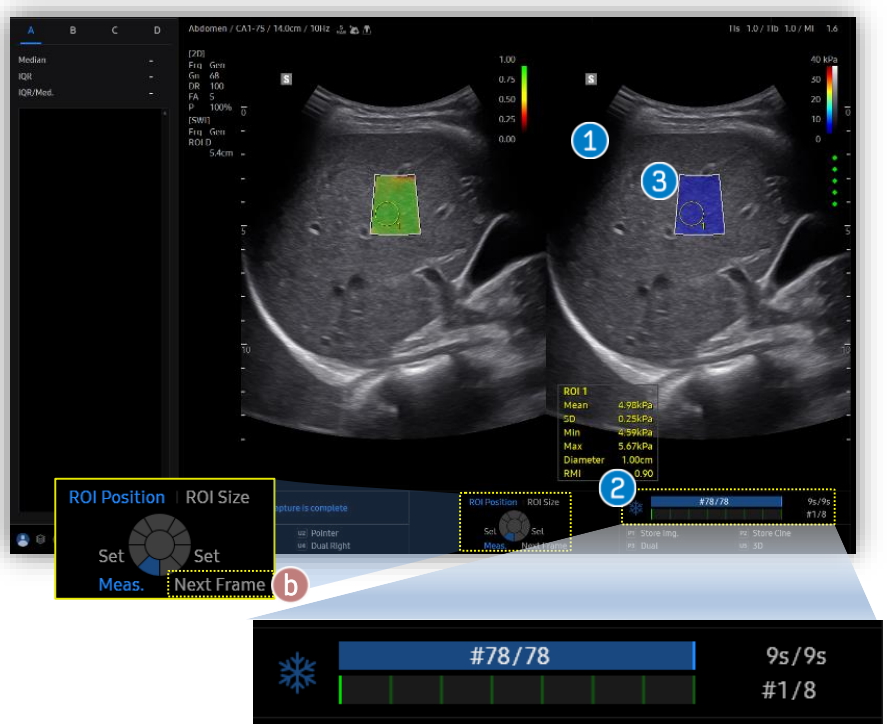
Time (Default)	Displays the frame in chronological order.
Indicator	Displays the frame from the highest indicator score.
Off (Deselected)	Does not provide Reliability Indicator. For detailed workflow, refer to the "Without EzSWI' slide.

② Indicator Threshold	Select the indicator threshold. Indicator threshold can be set from [1-5]. Ex) If set as 3, all frames of indicator 3 and above will be shown.

★ Tips

Indicator index 3 is recommended for optimal SWI measurement.

4-1. EzSWI™ with Time

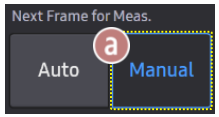


① Freeze the image	Press the freeze button to acquire the stiffness value
② Optimal frame displayed	According to chronological order, optimal frame above the threshold will be displayed automatically.
③ Auto ROI placement	The quantification ROI will be automatically placed in optimal area based on calculation of the uniformity of the Elasticity map and the RMI map.
④ Press the Set button	To acquire the value, press the Set button. Then it would automatically display the next optimal frame. Repeat this process until you have acquired enough information.

★ Tips

To measure using multiple ROIs in one frame, select [Next Frame for Meas. - Manual ⓐ] in the touch panel.

To move on to the next frame, press [Next Frame - ⓑ] in the contextual button.

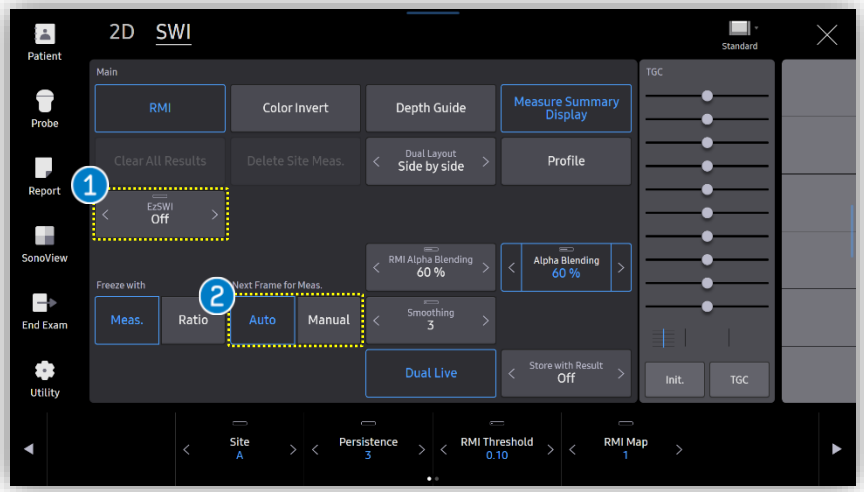


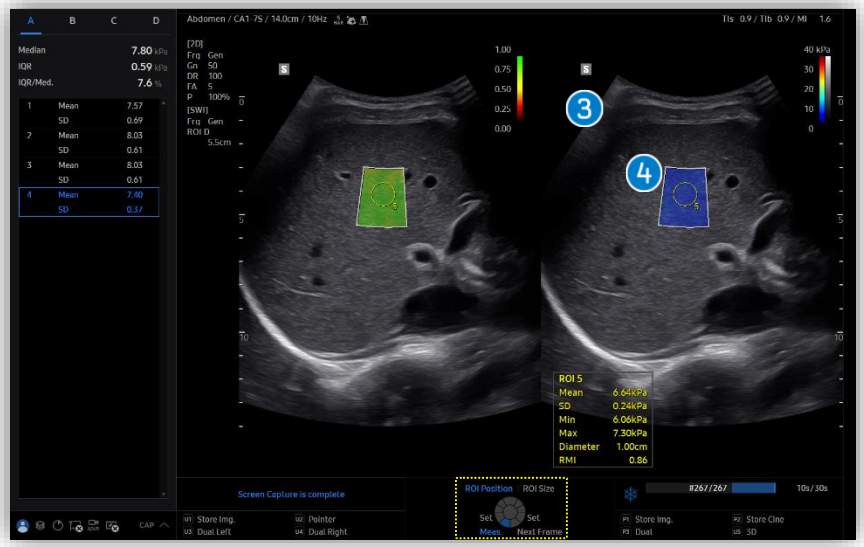
★ Tips

In Setup, the Frame Direction, [Forwards] or [Backwards] can be selected.

▶ Setup ▶ Imaging ▶ Features ▶ S-Shearwave Imaging ▶ Next Frame Direction

#. Without EzSWI



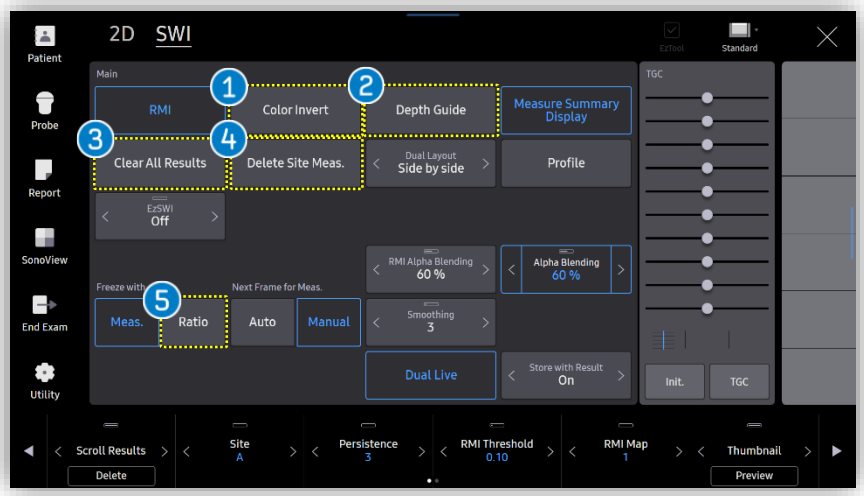


1 EzSWI Off	Deselect EzSWI in order to perform SWE without EzSWI.
2 Next Frame for Meas.	Select either Auto or Manual for Next Frame for Meas. ▪ Auto: When set is pressed, it would measure and also move on to the next frame. ▪ Manual: In order to move on to the next frame, [Next Frame] has to be pressed.
3 Acquire SWE Image	Scan the SWE image and freeze.
4 ROI placement	Freeze, and use the trackball to move the ROI to the desired position within the Elasticity Image ROI.
5 Set	Press Set to obtain the SWE measurement value of the ROI. *Operates according to the setting in 2 (Auto/Manual)

★ Tips

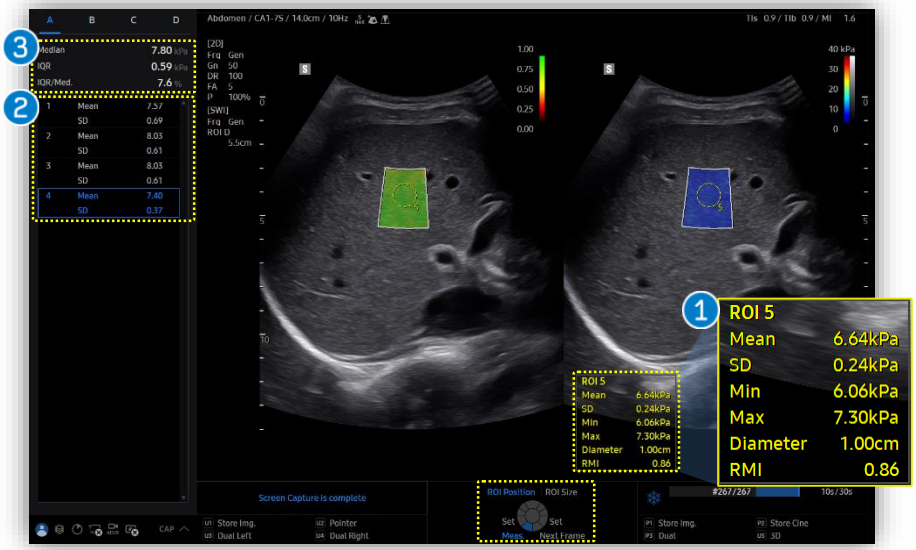
For automatic placement of the ROI on a recommended position, tick 'Recommended Position' (Liver Only) in the Setup.
Please refer to page 13 (Set up).

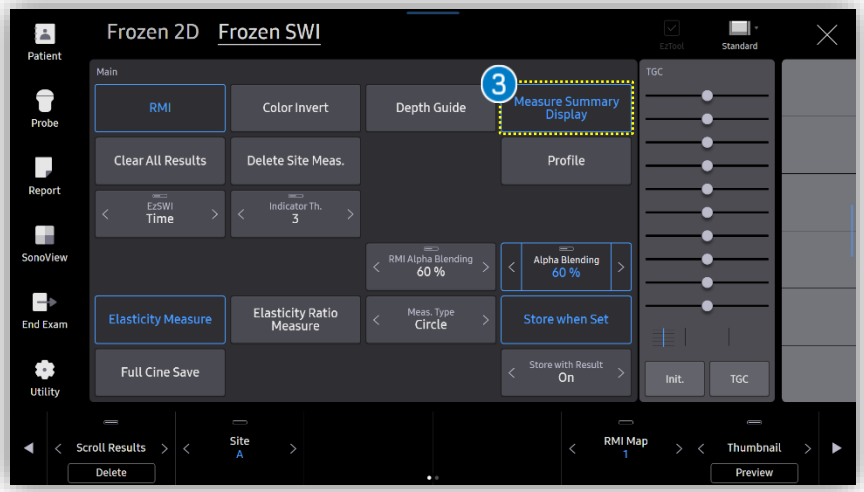
#. Other Parameters



① Color Invert	Inverts the SWE color mapping.
② Depth Guide	Displays the depth value of the SWE ROI.
③ Clear All Result	Clears the results of all sites.
④ Delete Site Meas.	Clears the results of the selected sites.
⑤ Ratio	In order to obtain the elasticity ratio, select Freeze with- Ratio. ▪ When two measure ROIs are measured, the elasticity ratio between the two ROIs will be displayed and will be saved.

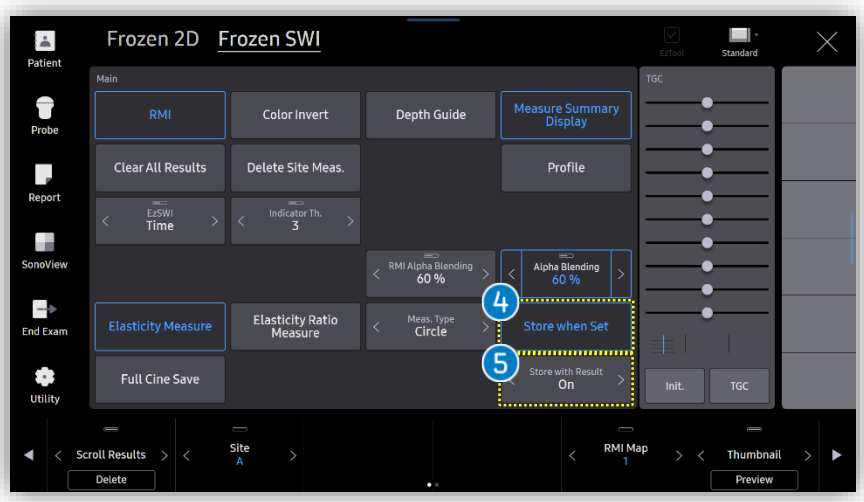
5. Results





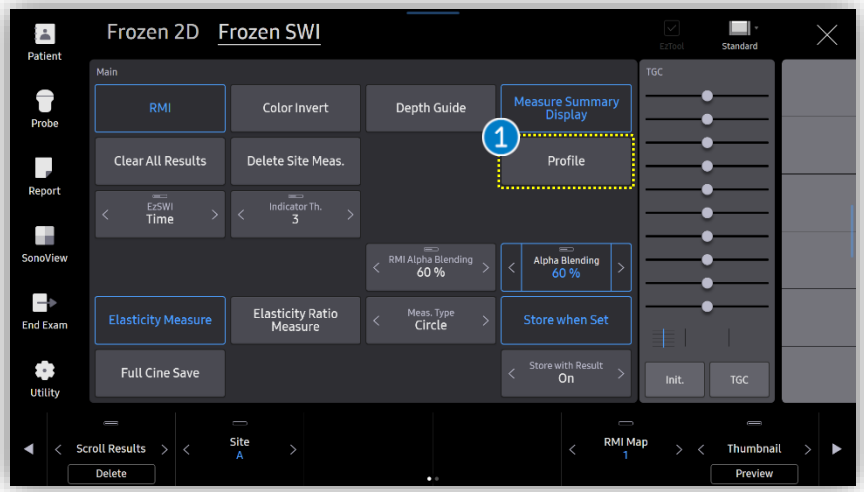
1 Result box	The stiffness results within quantification ROI are displayed. ▪ Mean : Mean Elasticity value in ROI. ▪ SD : Standard deviation in ROI. ▪ Min : Minimum Elasticity value in ROI. ▪ Max : Maximum Elasticity value in ROI. ▪ Diameter : Diameter of ROI box. ▪ RMI : The reliability of the measured Shearwave Elasticity value.
2 Stiffness Result	Displays the measured results. You can scroll the result using the [Scroll Results] knob. You can also delete the result individually by pressing the [Delete] button or selecting the icon.
3 Measure Summary Display	▪ With this button, you can select to display the measure summary (Median, Mean, IQR, IQR/Med value) in the results or not in the left column. ▪ You can configure the results that you wish to display and their order in Setup > Imaging > Features > S-Shearwave imaging > Meas. Summary Panel.

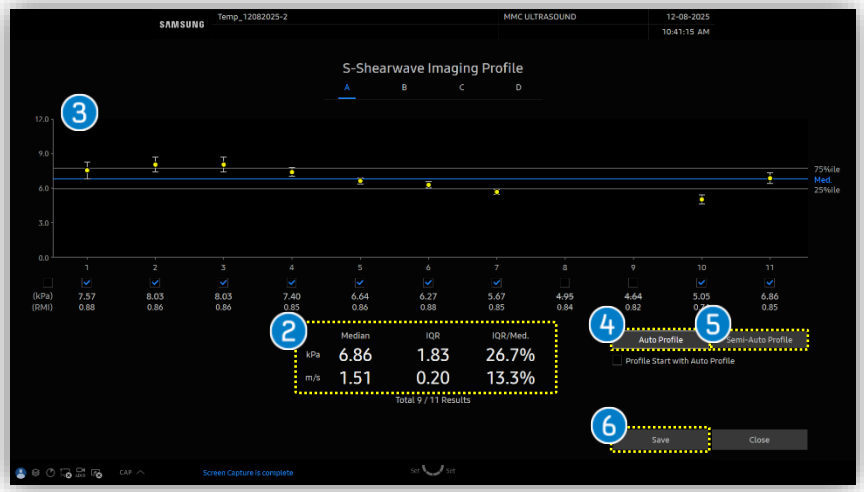
5-1. Results

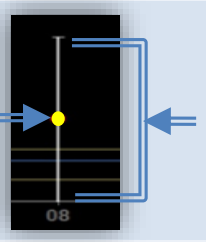


❹ Store when Set	When this button is selected, and Set key is pressed, the image is saved automatically.
❺ Store with Result	When this button is set as On, the images will be saved including the measurement result area.

6. Profile





① Profile	Displays statistical results obtained from repeated measurements. Select [Profile] button on the touch screen.
② Results	▪ Median : Central value ▪ IQR/Med. - IQR(Interquartile Range) : 75-25th percentile - IQR/Med (kPa) < 30% : Acceptable value IQR/Med (kPa) > 30% : Unreliable value - IQR/Med (m/s) < 15% : Acceptable value IQR/Med (kPa) > 15% : Unreliable value
③ Result Graph	Average of shear wave measurements  Standard deviation of measurements
④ Auto Profile	Exclude all unreliable data to set the IQR/Med value to 30% (kPa) / 15% (m/s) or lower.
⑤ Semi-Auto Profile	Exclude unreliable data one by one, starting from the most unreliable data to set the IQR/Med value close to 30% (kPa) / 15% (m/s) or lower.
⑥ Save	When you modify the measure value, [Save] button is activated. Press to update to the report page.

7. Report

Patient ID Temp_12082025-2 Name
Exam Date 12-08-2025

Abdomen

1 **Liver Analysis**

	Elasticity (kPa)	Speed (m/s)
	A	A
Mean	6.84	1.50
SD	0.98	0.11
Median	6.86	1.51
IQR	1.83	0.20
IQR/Med.(%)	26.65	13.28

2

Liver Stiffness	F0 - F1	F2	F3	F4
kPa	< 5.82	5.83 ~ 7.54	7.55 ~ 9.57	9.58 ≤

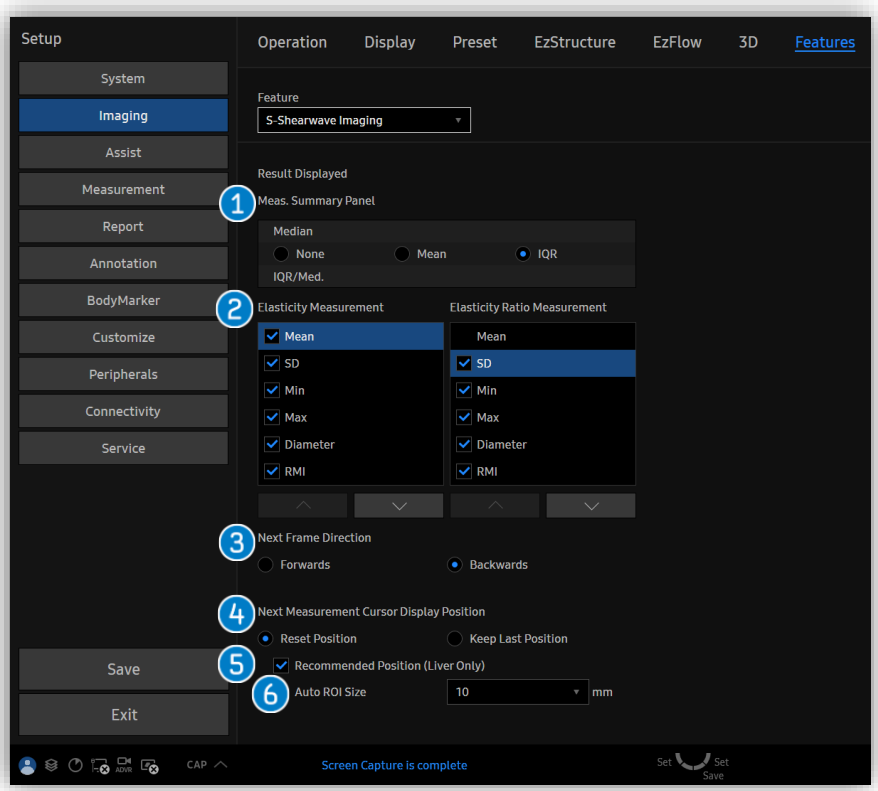
3 **S-Shearwave Imaging**
Elasticity [Site A]

Mean : 6.84kPa / 1.50m/s Median : 6.86kPa / 1.51m/s
IQR : 1.83kPa / 0.20m/s IQR/Med. : 26.65% / 13.28%

ROI	Mean		SD		Min-Max		Diameter	RMI
	kPa	m/s	kPa	m/s	kPa	m/s	cm	
1	7.57	1.59	0.69	0.07	6.38 - 8.88	1.46 - 1.72	1.00	0.88
2	8.03	1.63	0.61	0.06	6.52 - 8.99	1.47 - 1.73	1.00	0.86
3	8.03	1.63	0.61	0.06	6.52 - 8.99	1.47 - 1.73	1.00	0.86
4	7.40	1.57	0.37	0.04	6.65 - 8.19	1.49 - 1.65	1.00	0.85
5	6.64	1.49	0.24	0.03	6.06 - 7.30	1.42 - 1.56	1.00	0.86
6	6.27	1.45	0.24	0.03	5.83 - 6.75	1.39 - 1.50	1.00	0.88
7	5.67	1.37	0.20	0.02	5.21 - 6.16	1.32 - 1.43	1.00	0.85
8	5.05	1.30	0.35	0.05	4.45 - 5.89	1.22 - 1.40	1.00	0.74
9	6.86	1.51	0.45	0.05	5.77 - 7.62	1.39 - 1.59	1.00	0.85

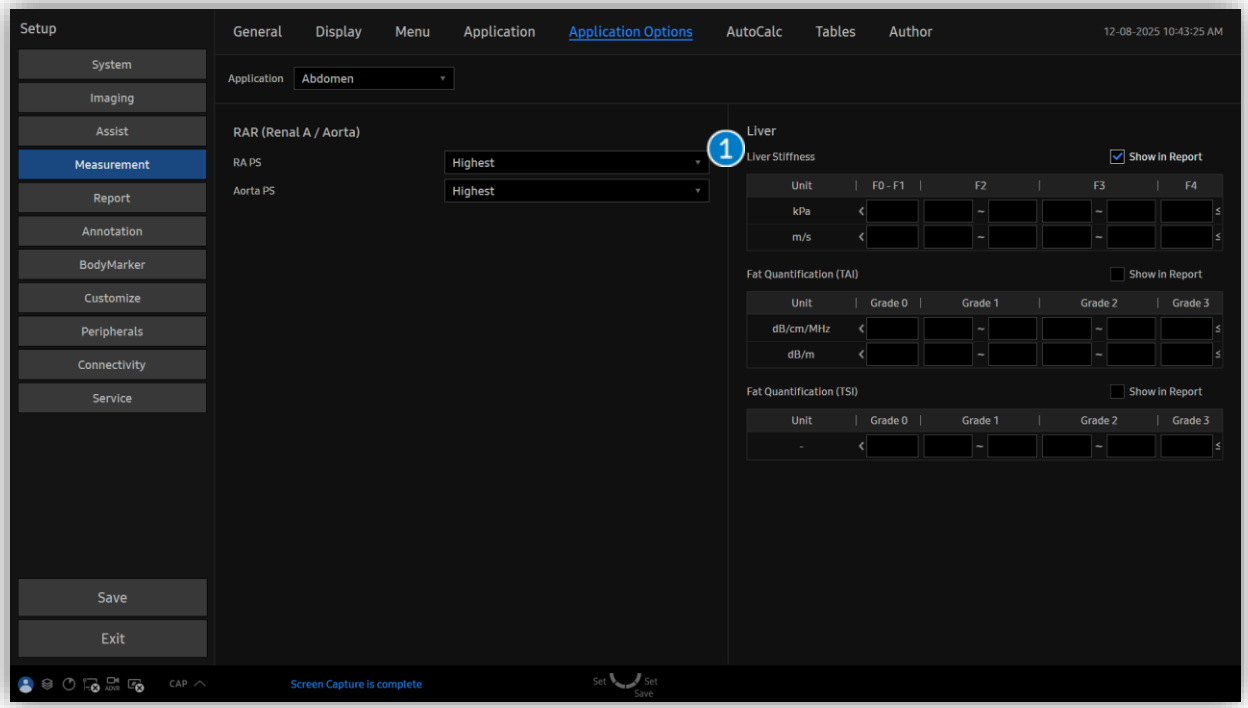
① Liver Analysis	Displays summary of the liver measurements.
② Liver Stiffness	Displays the cutoff for S-Shearwave Imaging inserted in the Setup page.
③ Display All Results	Displays each measure information as below; ▪ Measured site, Mean, IQR, Median and IQR/Med value. ▪ Each ROI's measure item (Mean, SD, kPa, m/s, Diameter, RMI). ▪ The most important reliability criterion is IQR/M of ≤ 30% for kilopascals and ≤ 15% for measurements in velocity.

8. Setup



1 Meas. Summary Panel	Select to display the Mean, IQR or none of these in the Meas. Summary Panel. ▶ Setup Imaging ▶ Features ▶ S-Shearwave Imaging ▶ Result Displayed
2 Result Displayed	Select the values and the order to be displayed in the results for [Elasticity Measurement] and [Elasticity Ratio Measurement].
3 Next Frame Direction	Select the Frame Direction, between [Forwards] or [Backwards].
4 Next Measurement Cursor Display Position	Choose to reset or keep last position of the Cursor when moving on to the next frame.
5 Recommended Position	Tick the box to use automatically recommended position of the ROI.
6 Auto ROI Size	Select the default ROI size.

S-Shearwave Imaging™ 8-1. Setup



① Liver Stiffness	Insert the cutoff for S-Shearwave Imaging, which will be displayed in the Report page. ▶ Setup ▶ Measurement ▶ Application Options ▶ Abdomen ▶ Liver

- The features, options may not be commercially available in some countries.
- Sales and shipments are effective only after the approval by the regulatory affairs. Please contact your local sales representative for further details.
- This Quick guide does not include all of the details of instruction, fore more detail, please refer to R20 User Manual.
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- This User Quick Guide is based on R20 V1.01.
- Disclaimer: Some Images in this content were obtained from other system.

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