

QUICK SETUP GUIDE

Soft Homing Gates

The image displays the Eddyfi software interface for setting up Soft Homing Gates. It includes several key components:

- Ultrasound Settings:** A window showing the configuration for the selected channel (Linear 0). The 'Gates' tab is active, displaying a table of gate settings.
- Create Soft C-Scan:** A dialog box for creating a new soft C-scan. It includes fields for Name, Reference for homing, Reference for homing end, Gate Type, Threshold Type, Gate Location (Start, End Offset), and Threshold.
- Analysis Views:** A sidebar showing the 'Contents' of the project, including 'Ultrasound' and 'Analysis' views. The 'Analysis' view is currently selected, showing 'Regular Mode' and 'Volumetric views'.
- Data Cleaner:** A small dialog box for cleaning data, with options to remove or close.

Ultrasound Settings - Gates Tab Table:

Detection Type	Homing	HomingEnd	Compute	Reset
Crossing	None	None	Compute	Reset
Crossing	None	None	Compute	Reset
Crossing	None	None	Compute	Reset
Crossing	Gate 1	None	Compute	Reset
Crossing	None	Gate 2	Compute	Reset

Create Soft C-Scan Dialog:

Name: Full Homing Soft C-Scan 1

Reference for homing: Linear 0

Reference for homing end: Linear 0

Gate Type: Crossing

Threshold Type: Both

Gate Location: Start: 0.44 mm, End Offset: 30.08 mm, Threshold: 0.0 %

Buttons: OK, Cancel

GENERAL OVERVIEW

Soft Homing/Homing End Gate is a feature available in the 3.12R22 version (and higher) of UltraVision Classic® software in the Analysis mode with Basic, Advanced, and 3D licence keys. It is also available in UltraVision Analysis interface using its associated licence key.

The objective of creation of Homing/HomingEnd gates is to monitor a certain thickness zone defined by the position of signals detected in reference gates. This feature enables the users to define a software gate starting at a certain distance from a reference signal used as a trigger (e.g., interface) and/or ending at a certain distance from another reference signal (e.g., backwall). Using this feature, the Start and/or the Length of the Homing and/or the Homing End gate is dynamically adjusted by the position of the triggering signals in the reference gates.

Contents

1	REFERENCES	4
2	ABBREVIATION & DEFINITION	4
3	INTRODUCTION	5
3.1	New items and menus	6
4	CREATION OF SOFTWARE HOMING/HOMING END GATES IN ULTRASOUND SETTINGS	8
4.1	Creation of Homing gate in Ultrasound Settings	9
4.2	Creation of Homing End gate in Ultrasound Settings	13
4.3	Creation of Full Homing gate in Ultrasound Settings	18
5	CREATION OF SOFT C-SCANS IN HOMING/HOMING END MODE	22
5.1	Creation of Soft C-Scans in Homing mode in Create Soft C-Scans menu	23
5.2	Creation of Soft C-Scans in Homing End mode in Create Soft C-Scans menu	25
5.3	Creation of Soft C-Scans in Full Homing mode in Create Soft C-Scans menu	27
5.4	Soft C-Scan Display	29
5.5	Removing/Deleting Soft C-Scans	29
6	USER TIPS AND RECOMMENDATIONS	31
7	LIMITATIONS AND REMAINING ANOMALIES	33
8	LICENCING	33



1 REFERENCES

Document Name	Reference N°
1. User Manuals	10027456-R03 UltraVision@3 Getting Started User Manual
	10031080-R03 UltraVision@3 Setup & Inspection User Manual
	10031082-R03 UltraVision@3 Analysis & Reporting User Manual

2 ABBREVIATION & DEFINITION

Homing Gate: The gate which is configured in the Homing mode; the start position of this gate will be automatically set at the Start offset distance from the position of the triggering signal in the Reference Gate.

Homing End Gate: The gate which is configured in the Homing End mode; the length of this gate will be automatically adjusted so that its end position is set at the End Offset distance from the position of the triggering signal in the Reference Gate.

Full Homing Gate: The gate which is configured in both Homing and Homing End modes; the start position as well as the length of this gate will be automatically adjusted based on the position of the triggering signals in the Homing Reference Gate and in the HomingEnd Reference Gate.

Reference Gate: The detected signal in this gate is used as the reference triggering signal for Homing/Homing End gates. The Start/End offset in Homing/Homing End gates is measured from the position of the triggering signal detected within the Reference Gate.

Soft C-Scan: Soft C-Scans are created by the Soft C-Scan... tool. This type of C-Scan appears in the Contents window under the associated channel.

3 INTRODUCTION

The Software Homing Gates purpose is to create gates in the Analysis mode of UltraVision enabling the user to monitor a certain thickness zone defined by the position of the triggering signals in the reference gates. Based on the Homing mode enabled for a certain software gate, the Start and/or the Length of the gate is automatically adjusted as a function of the position of the triggering signals detected in the associated reference gates. By doing so, the Start and/or the End of the Homing/HomingEnd gate will be dynamically set at the predefined Start Offset and/or End Offset relative the associated reference triggering signal.

This new feature provides the following gate types in the Analysis mode:

- **Homing Gate:** The "Start" position of the Homing gate is referenced to the triggering signal. The user needs to define the reference gate, the start offset, the length, and the Threshold value. In each A-Scan, the Homing Gate start is adjusted so that it starts at the entered offset from the triggering signal in the reference gate.
- **Homing End Gate:** The "End" position of the Homing End gate is referenced to the triggering signal. The user needs to define the reference gate, the end offset, the Start and the Threshold value. In each A-Scan, the Homing End Gate length gets automatically adjusted so that it ends at the entered offset from the triggering signal in the reference gate.
- **Full Homing Gate:** The "Start" and the "End" position of the Full Homing gate is referenced to their associated triggering signals. The user needs to define the reference gate, the start offset, the length, and the Threshold value. In each A-Scan, the Homing Gate start is adjusted so that it starts at the entered offset from the triggering signal in the reference gate.

Figure 1 depicts an example in which the light blue gate is set to both Homing and Homing End modes:

- Homing based on the red gate (Homing reference) with a start offset of X mm
- Homing End based on the green gate (Homing End reference) with an end offset of Y mm

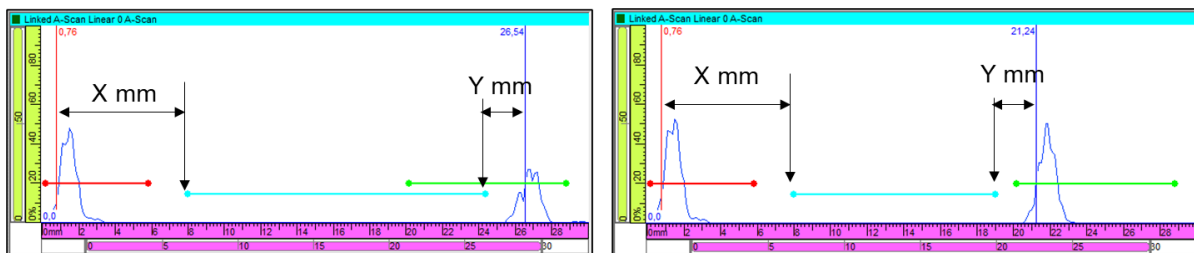


Figure 1: General overview of a Full Homing Gate with X mm Start Offset and Y mm End Offset at two different scan positions

Similar to a regular gate, it is possible for the user to display the Amplitude/Position C-Scan data group for Soft Homing/Homing End Gates.

In addition, the Homing/Homing End options are available also when the user wants to create soft C-scans from the **Create Soft C-Scan...** menu.

Figure 2 provides an example a gate in the Full Homing mode with its associated C-Scan in UltraVision in the analysis mode.

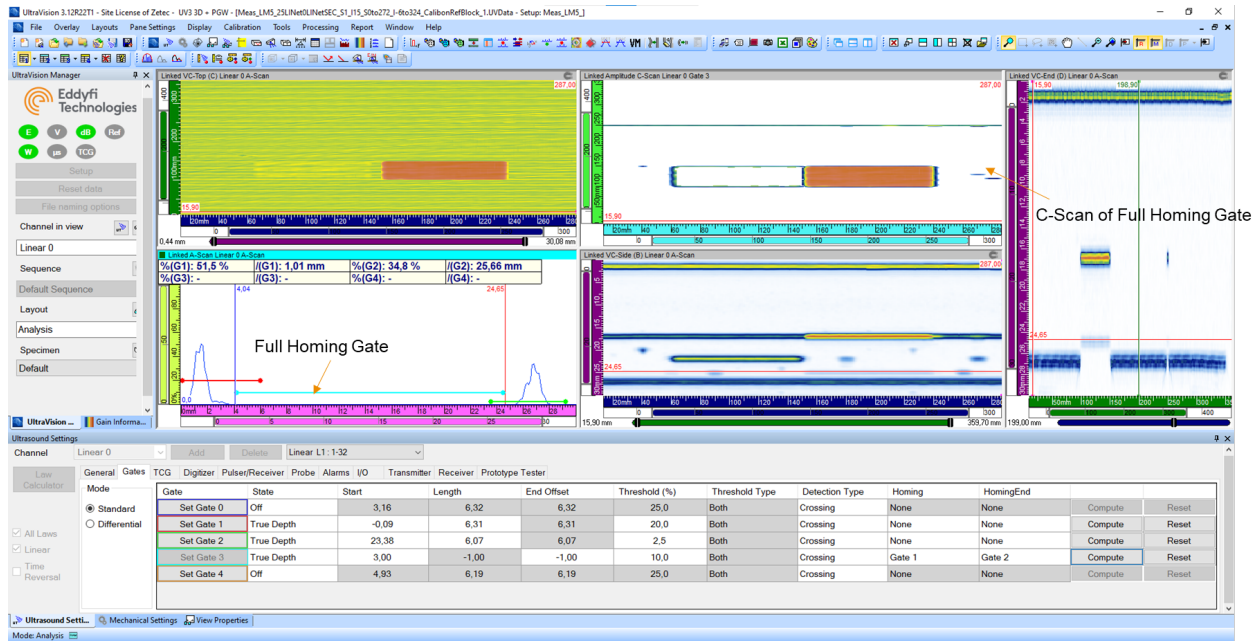


Figure 2: Example depicting a data file with Gate 3 set to the Full Homing Gate and its C-Scan

3.1 NEW ITEMS AND MENUS

In UltraVision 3.12R22, two new columns and a new button were added to the Gates page in the Ultrasound Settings menu.

- **End Offset** Column: To define the offset value between the current gate's end and the position of the triggering signal in Homing End reference gate; this column is added to the Pages grid as soon as the first gate is set to the HomingEnd mode
- **HomingEnd** Column: To set the current gate to the Homing End mode and to define the gate used as the reference gate for Homing End
- **Reset** Button: To reset the gates to their initial state/parameters as in the original UVDData

The orange boxes in Figure 3 highlight the new items added to the Gates page.

General Gates TCG Digitizer Pulser/Receiver Probe Alarms I/O Transmitter Receiver Prototype Tester												
Mode	Gate	State	Start	Length	End Offset	Threshold (%)	Threshold Type	Detection Type	Homing	HomingEnd		
<input checked="" type="radio"/> Standard	Set Gate 0	Off	3.16	6.32	6.32	25.0	Both	Crossing	None	None	Compute	Reset
<input type="radio"/> Differential	Set Gate 1	True Depth	-0.09	6.31	6.31	20.0	Both	Crossing	None	None	Compute	Reset
	Set Gate 2	True Depth	23.38	6.07	6.07	2.5	Both	Crossing	None	None	Compute	Reset
	Set Gate 3	True Depth	3.00	-2.00	-2.00	12.0	Both	Crossing	Gate 1	Gate 2	Compute	Reset
	Set Gate 4	Off	4.93	6.19	6.19	25.0	Both	Crossing	None	None	Compute	Reset

Figure 3: Gates page in Ultrasound Settings menu including new items added since UltraVision 3.12R22

In addition, a checkbox as well as a field and an extra data tree were added to the Create Soft C-Scan menu in order to enable the users to create Soft C-Scans in Homing, Homing End, or Full Homing mode.

- **Is Homing End Gate** checkbox: To set the Soft C-Scan (to be created) to the Homing End mode
- **End Offset** field: To define the offset value between the Soft C-Scan gate's end and the position of the trigger signal in the reference gate; this field replaces the Stop field once the user checks the Is Homing End Gate checkbox
- **Reference for homing end** data tree: To define the gate used as the reference gate for Homing End; this section appears in the window once the user checks the Is Homing End Gate checkbox

The orange boxes in Figure 4 highlight the new items added to the Create Soft C-Scan menu.

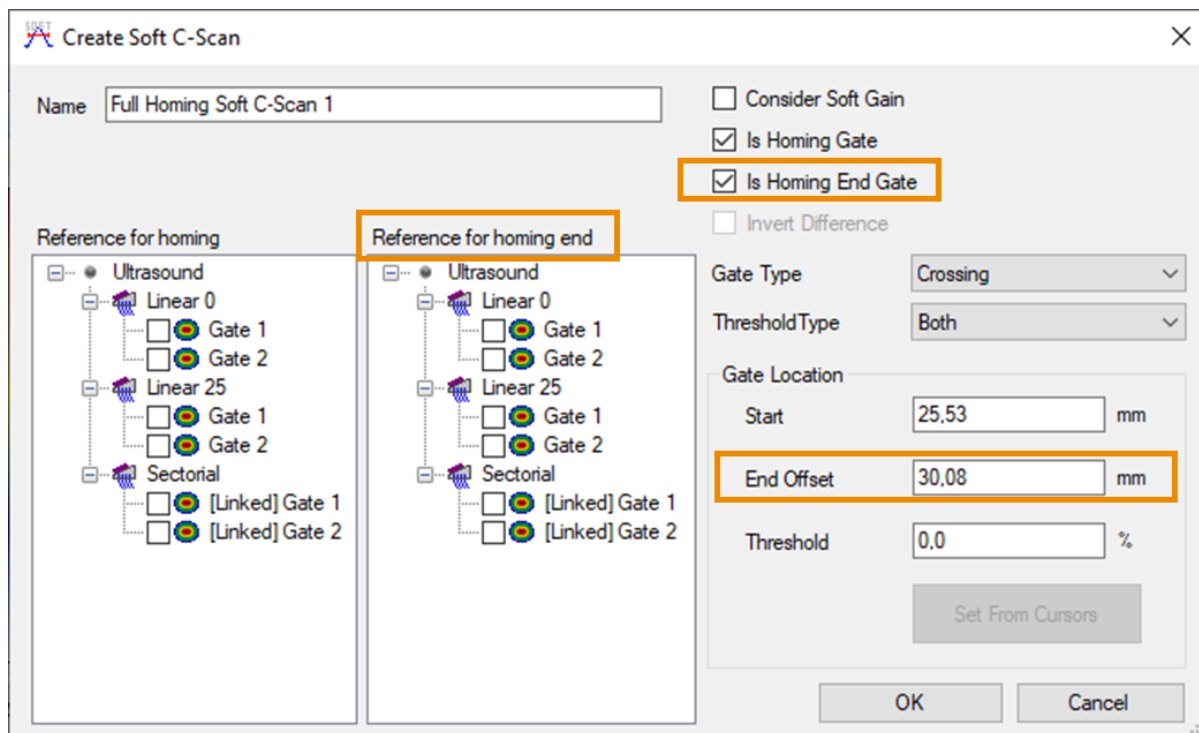


Figure 4: Create Soft C-Scan menu including new items added since UltraVision 3.12R22

4 CREATION OF SOFTWARE HOMING/HOMING END GATES IN ULTRASOUND SETTINGS

Software Homing Gates feature is only available in **UltraVision Classic 3.12R22 (or higher)** in the analysis mode with *UVData* files. UltraVision users can create Homing, HomngEnd and Full Homing gates via the Gates page in the Ultrasound Settings menu. This section aims at providing the instructions on how to create and configure these gates types.



Some important points before starting the configuration section:

- It is **not possible** to set Gate 0 and Gate 1 to any of the Homing modes.
- For a Homing/Homing End gate to be defined, at least one active gate should be present since the Homing/Homing End gate needs a reference gate.
- Homing/Homing End gates can only be referenced to gates which are located upper than them in the list. For instance, Gate 2 can be homed on Gate 1 but the inverse is not possible. The reference gate will always be set to a smaller number than the Homing/Homing End gate itself.

4.1 CREATION OF HOMING GATE IN ULTRASOUND SETTINGS

This section provides step by step instructions on how to set up Homing gates from the Gates page in the Ultrasound Settings menu.

1. Open the UVDData file of interest in UltraVision Classic 3.12R22 (or higher version)
2. From Ultrasound Settings > Gates page, activate your Gate of interest by setting its State to a value other than "Off".
 - In Figure 5, the user activates **Gate 3** which was already off in the data file. The user switches the State from "Off" to "True Depth"

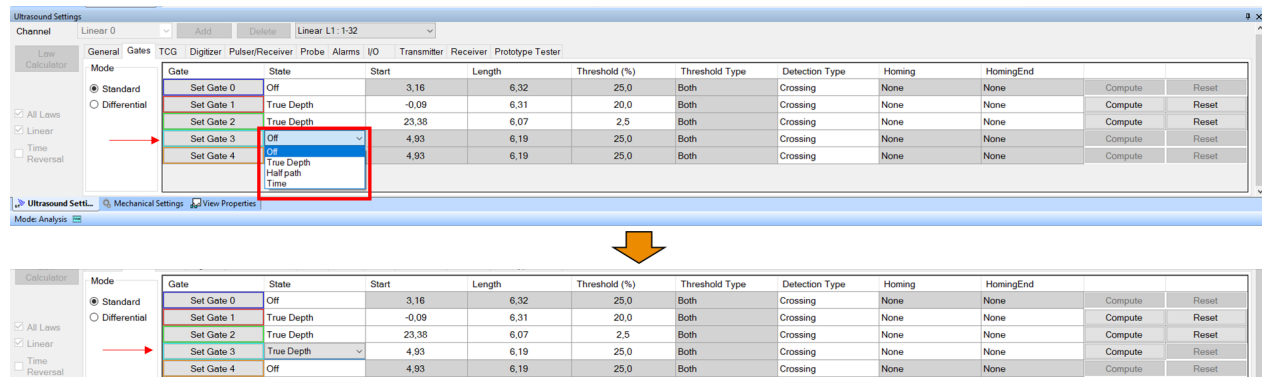


Figure 5: Activating a gate from Gates page in the analysis mode

3. Then, as depicted in Figure 6, for the gate of interest (the one the user wants to set on mode Homing), from the Ultrasound Settings > Gates > Homing column, select the name of the reference gate. In the following example, by setting the Homing column of **Gate 3** to the **Gate 1** option, **Gate 3** will be set to the Homing mode and at the same time, **Gate 1** is set as the reference of Homing function for **Gate 3**.

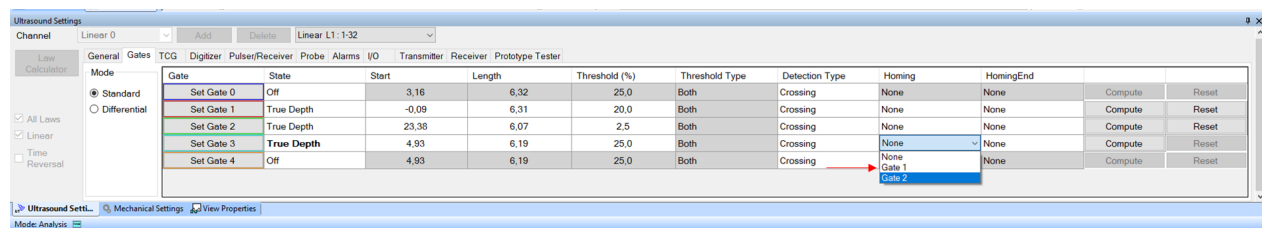
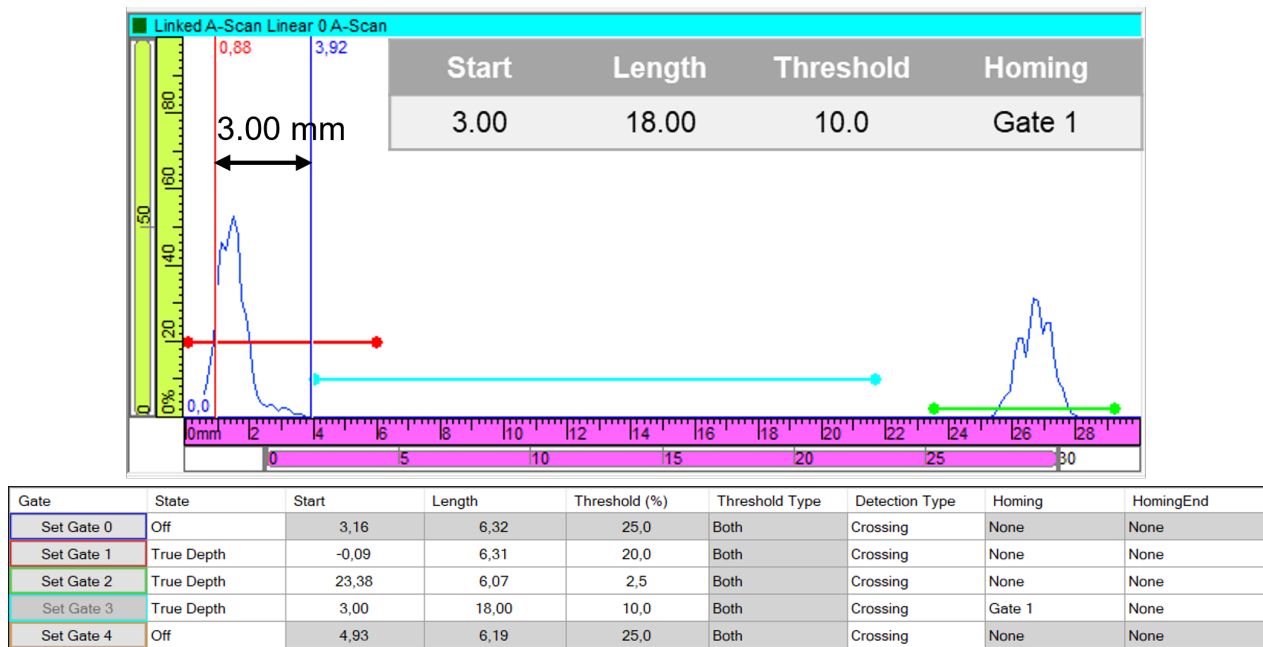
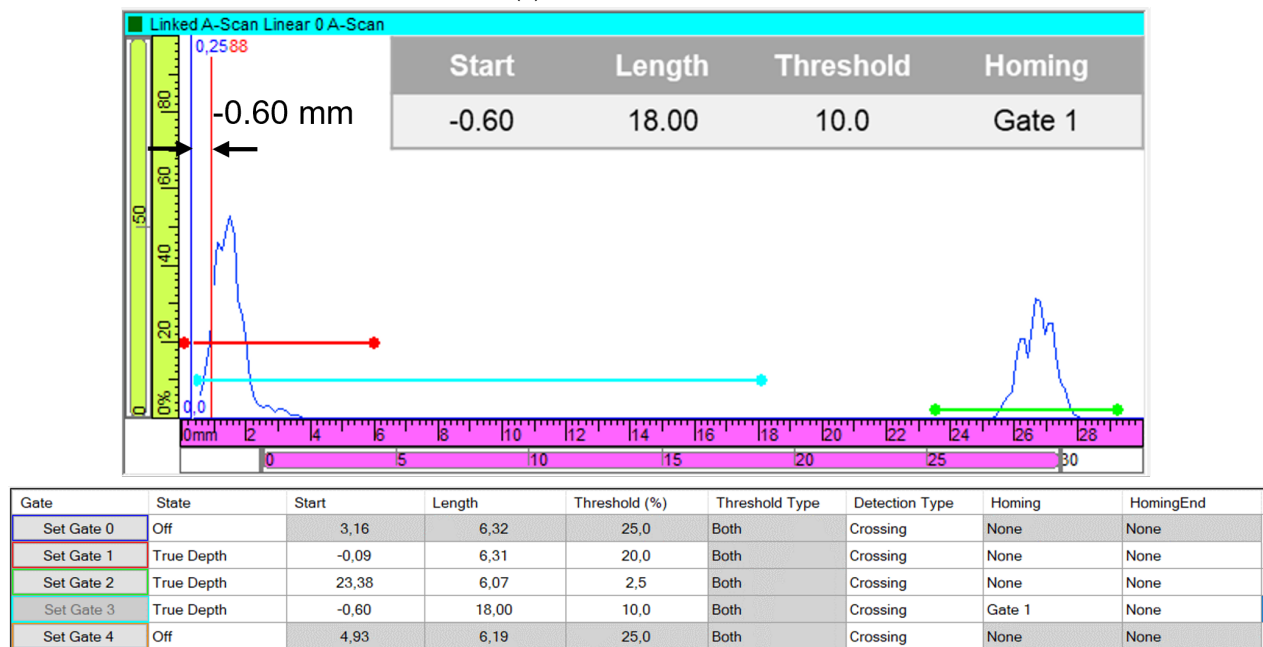


Figure 6: Activating Software Homing mode for a gate in Gates page

4. Once the Homing reference is selected, enter the desired start offset value for the Homing Gate under the Start column.
 - As shown in Figure 7, a positive start offset value (+x mm) means that the homing gate starts later than (x mm after) the reference triggering signal, while a negative start offset value (-x mm) means that the homing gate starts earlier than (x mm before) the reference triggering signal.



(a) Positive Start Offset



(b) Negative Start Offset

Figure 7: Gate 3 set to the Homing mode based on reference signal in Gate 1 with (a) a positive and (b) a negative Start Offset

5. Under the Length and Threshold columns, enter the desired values for the Homing Gate

6. Under the Detection Type column, enter the desired detection type for the Homing Gate

- In Figure 8, the user requests the Homing Gate (Gate 3) to start 3,00 mm (in True Depth) after the position of the triggering signal in the reference gate (Gate 1)

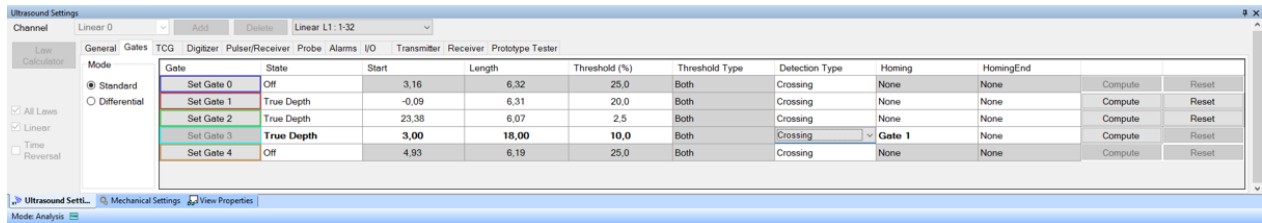


Figure 8: Configuring Homing gate parameters in the Gates page

7. Press the Compute button for the Homing Gate so that the entered values are applied to the Homing Gate
8. Wait for the progress bar to get completed
 - Once the user modifies a parameter of the Homing Gate, its font switches to the **bold** format which means that the entered values are not yet applied. As soon as the Compute button is pressed for the Homing Gate, the entered values are applied and their font switches back to the normal format. Figure 9 shows the Gates grid once the entered gate parameters are computed and applied.

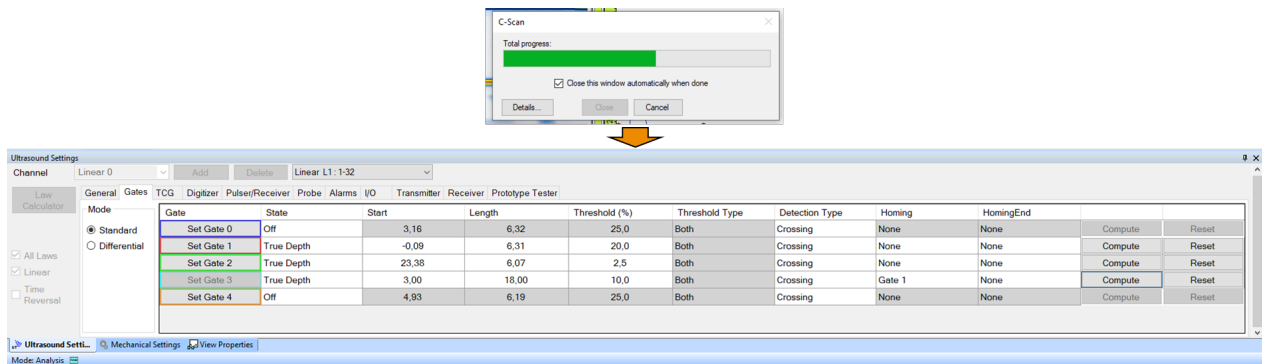
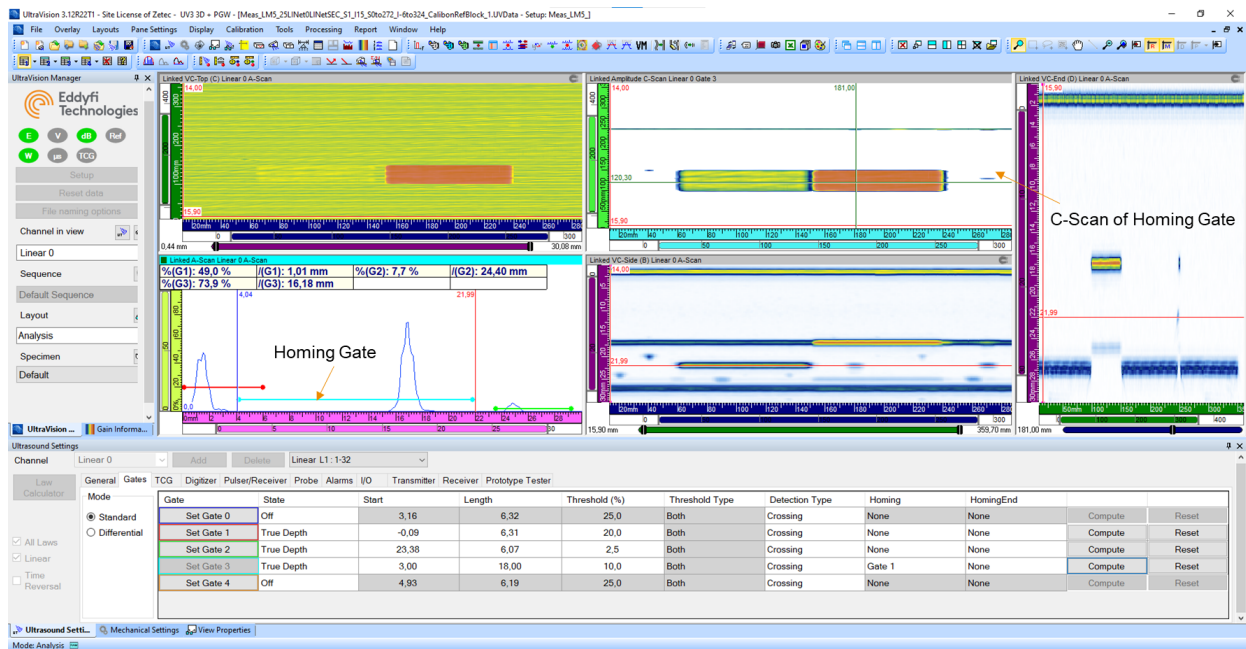


Figure 9: Gate parameters are applied once the progress bar gets completed

Once the Software Homing Gate is configured, the user can display the C-Scan generated by this gate as shown in the following example (Figure 10)



4.2 CREATION OF HOMING END GATE IN ULTRASOUND SETTINGS

This section provides step by step instructions on how to set up Homing End gates from the Gates page in the Ultrasound Settings menu.

1. Open the UVDData file of interest in UltraVision Classic 3.12R22 (or higher version)
2. From Ultrasound Settings > Gates page, activate your Gate of interest by setting its State to a value other than "Off".
 - In Figure 11, the user activates **Gate 4** which was already off in the data file. The user switches the State from "Off" to "True Depth"

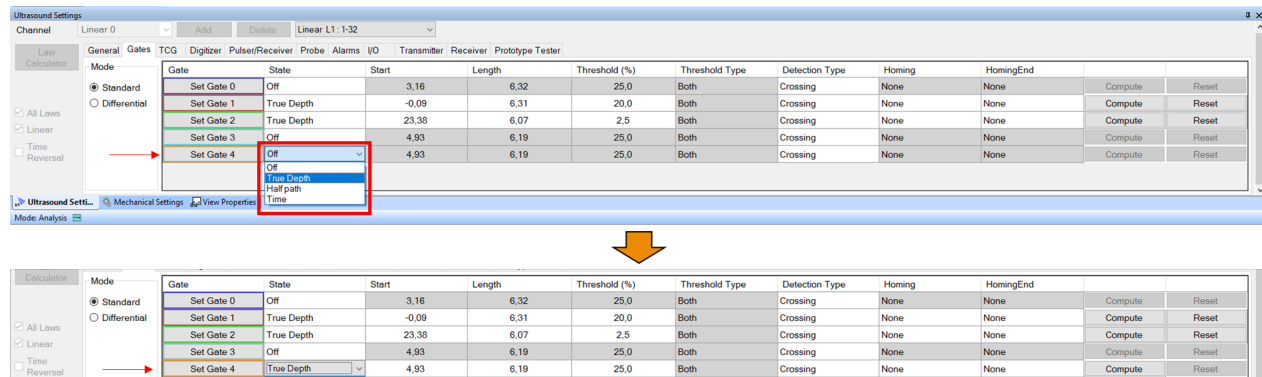


Figure 11: Activating Gate 4 from Gates page in the analysis mode

3. Then, as depicted in Figure 12, for the gate of interest (the one the user wants to set on mode Homing End), from the **Ultrasound Settings > Gates > HomingEnd** column, select the name of the reference gate. In the following example, by setting the HomingEnd column of **Gate 4** to the **Gate 2** option, **Gate 4** will be set to the Homing End mode and at the same time, **Gate 2** is set as the reference of Homing End function for **Gate 4**.

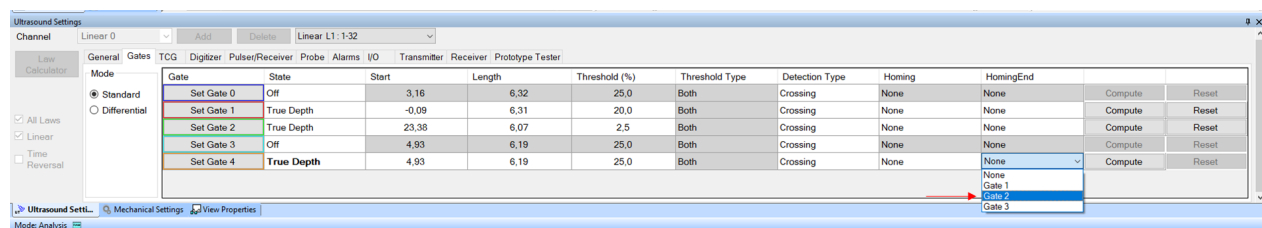
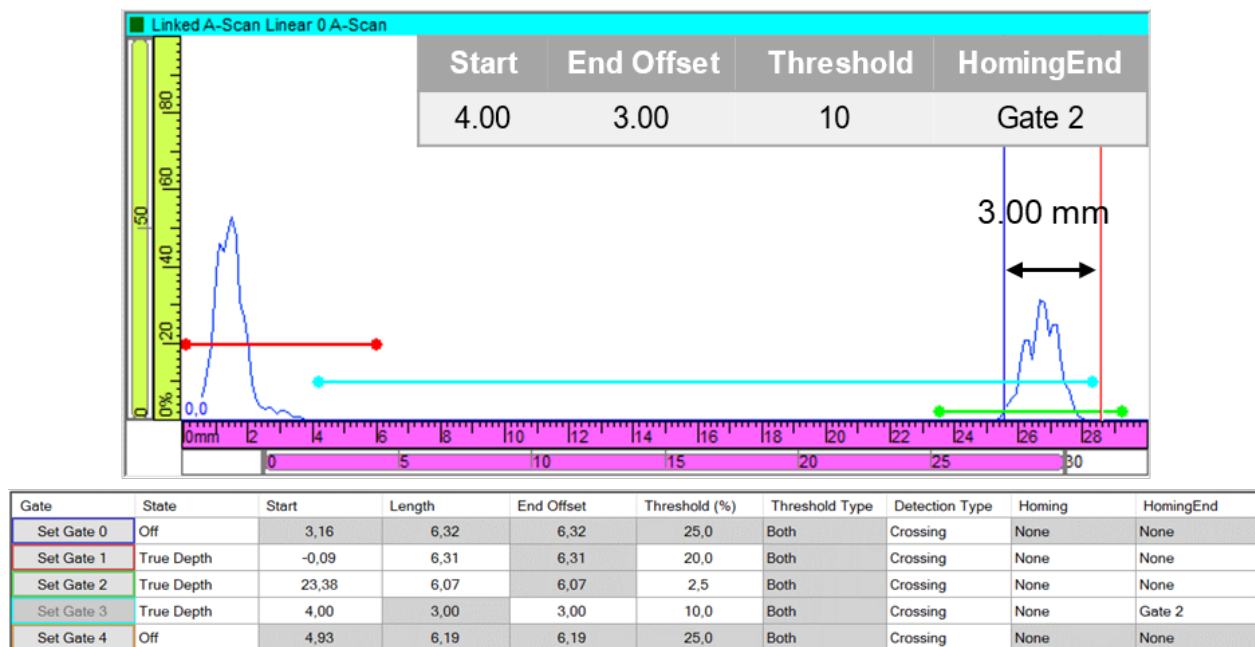
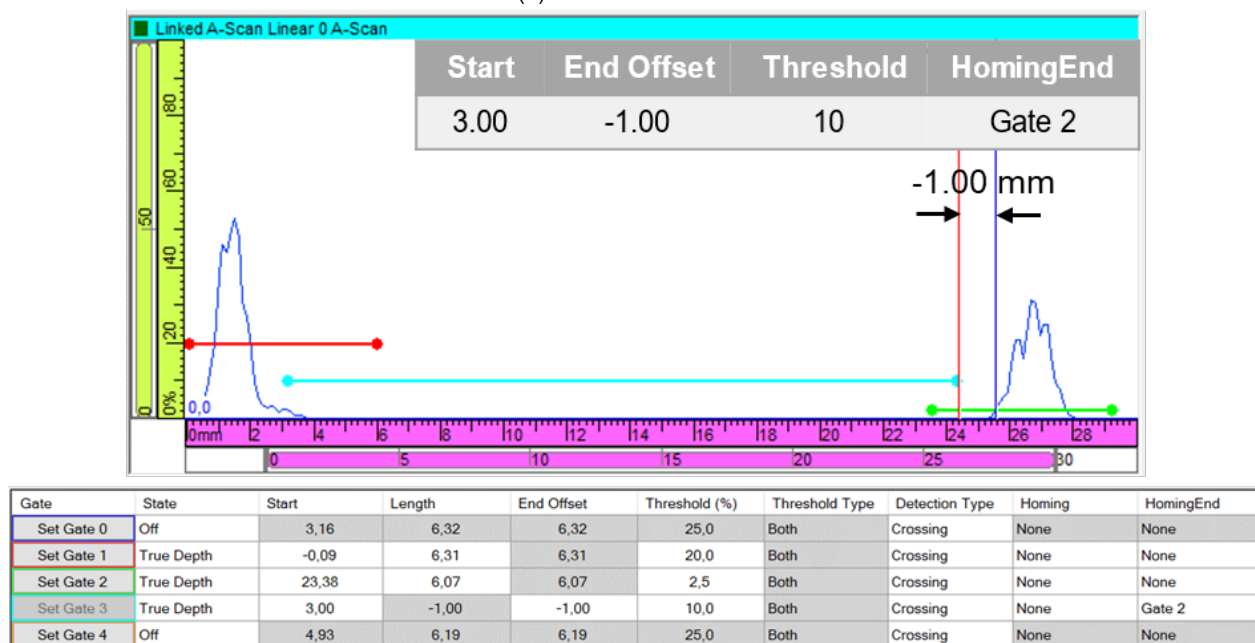


Figure 12: Activating Software Homing End mode for a gate in Gates page

4. Once the Homing End reference is selected, the End Offset column is added to the grid. Enter the desired End offset value for the Homing End Gate under the new column
5. Under the Start and Threshold columns, enter the desired values for the Homing End Gate
6. Under the Detection Type column, enter the desired detection type for the Homing Gate
 - As shown in Figure 13, A positive End Offset value (+x mm) means that the homing end gate ends later than (x mm after) the reference triggering signal while a negative End Offset value (-x mm) means that the homing end gate ends earlier than (x mm before) the reference triggering signal.



(a) Positive End Offset



(b) Negative End Offset

Figure 13: Gate 3 set to the Homing End mode based on reference signal in Gate 2 with (a) a positive and (b) a negative End Offset

7. Under the Start and Threshold columns, enter the desired values for the Homing End Gate
8. Under the Detection Type column, enter the desired detection type for the Homing End Gate
 - In Figure 14, the user requests the Homing End Gate (Gate 4) to end 1,00 mm (in True Depth) before the position of the triggering signal in the reference gate (Gate 2)

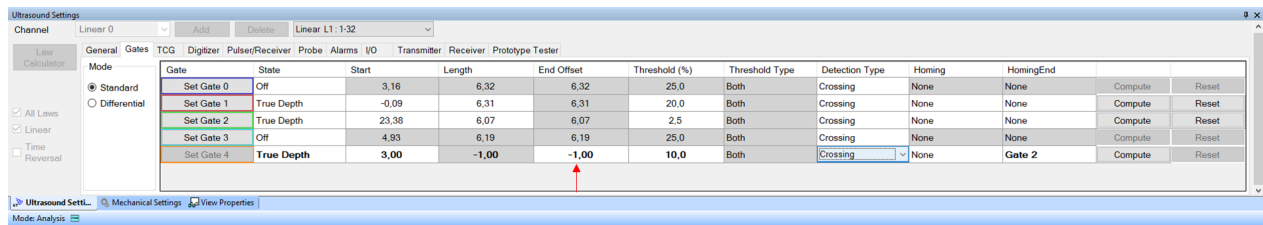


Figure 14: Configuring Homing End gate parameters in the Gates page

9. Press the Compute button for the Homing End Gate so that the entered values are applied to the Homing End Gate
10. Wait for the progress bar to get completed
 - Once the user modifies a parameter of the Homing End Gate, its font switches to the **bold format** which means that the entered values are not yet applied. As soon as the Compute button is pressed for the Homing End Gate, the entered values are applied and their font switches back to the normal format. Figure 15 shows the Gates grid once the entered gate parameters are computed and applied.

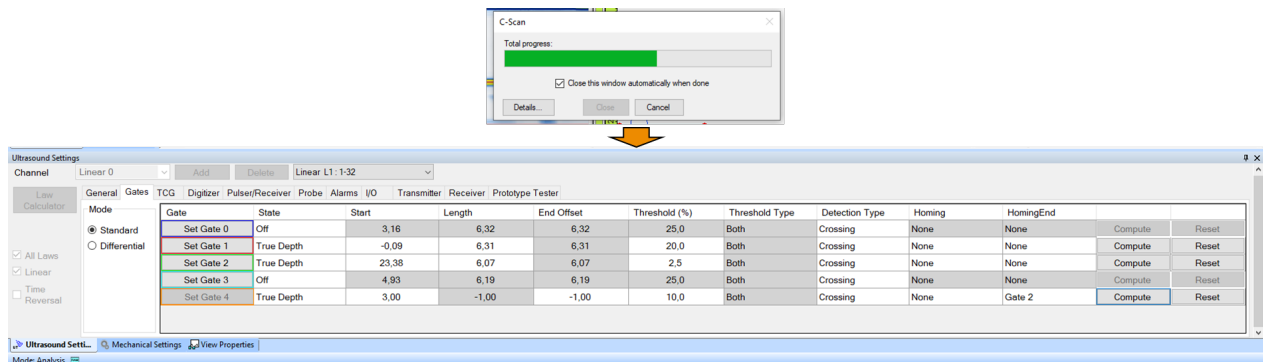


Figure 15: Homing End gate parameters are applied once the progress bar gets completed

Once the Software Homing End Gate is configured, the user can display the C-Scan generated by this gate as shown in the following example (Figure 16)

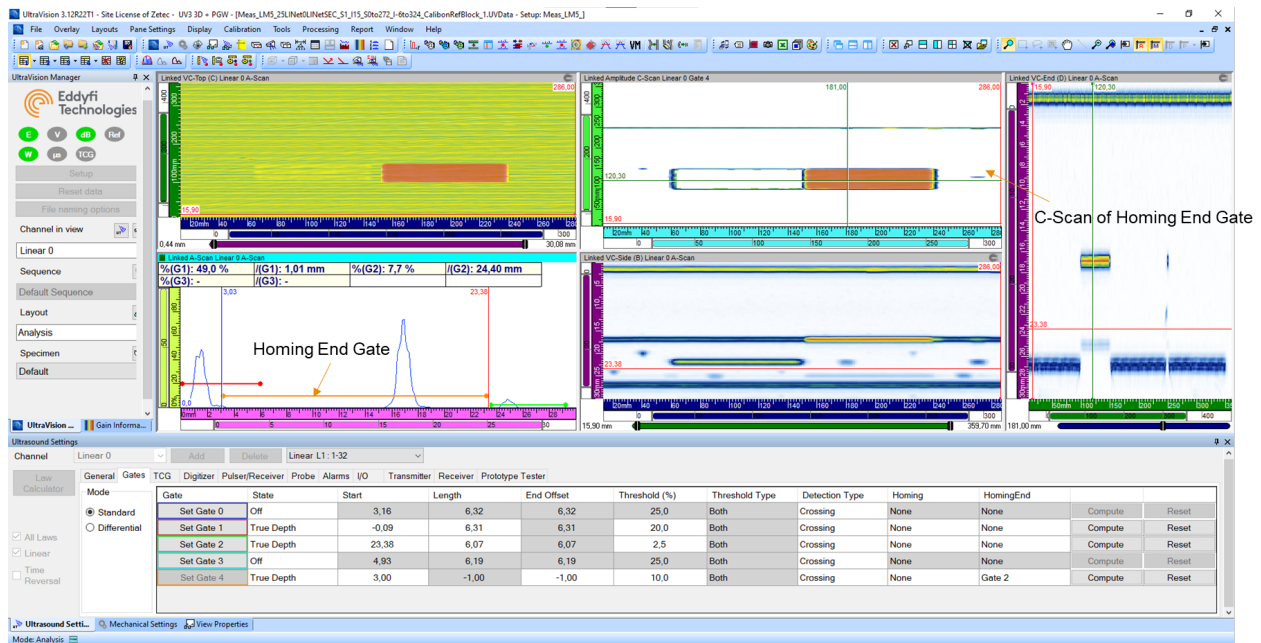


Figure 16: Example showing a Software Homing End Gate and a view displaying its C-Scan

In the example provided in Figure 16, **Gate 4** (Homing End) starts at 3.00 mm True Depth as requested in the grid. Its length is adjusted at every scan position based on the triggering signal in the reference gate (**Gate 2**). In Figure 17, **Gate 4** stops at **23.40 mm** which is located **1.00 mm** before the position of the triggering signal in **Gate 2** (**24.40 mm**)

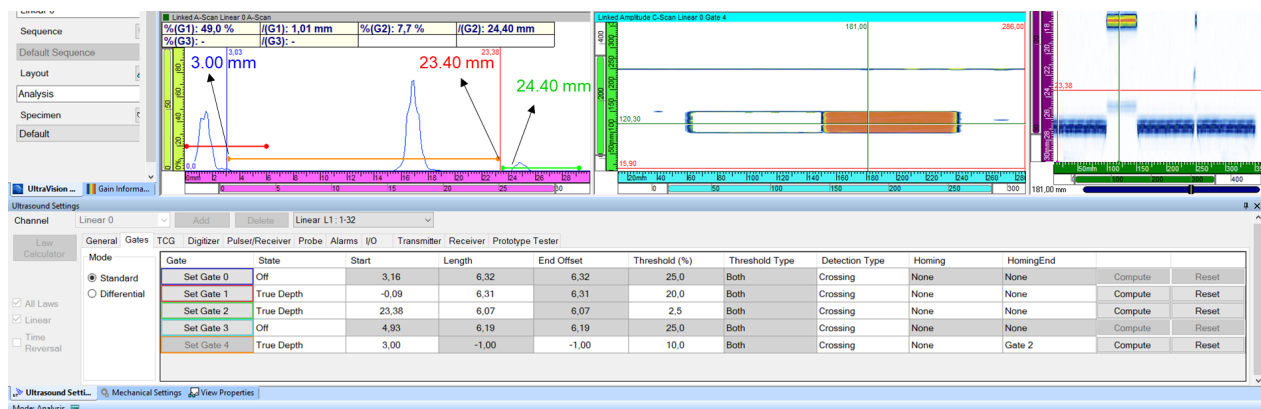


Figure 17: Example showing the end position of the HomingEnd gate relative to the reference signal

The length of **Gate 4** is adjusted at every scan position based on the triggering signal in the reference gate (**Gate 2**). In Figure 18 for scan position 1 and 2, **Gate 4** stops at:

- **23.40 mm** which is **1.00 mm before** the position of the ref. signal in **Gate 2** (**24.40 mm**)
- **24.66 mm** which is **1.00 mm before** the position of the ref. signal in **Gate 2** (**25.66 mm**)

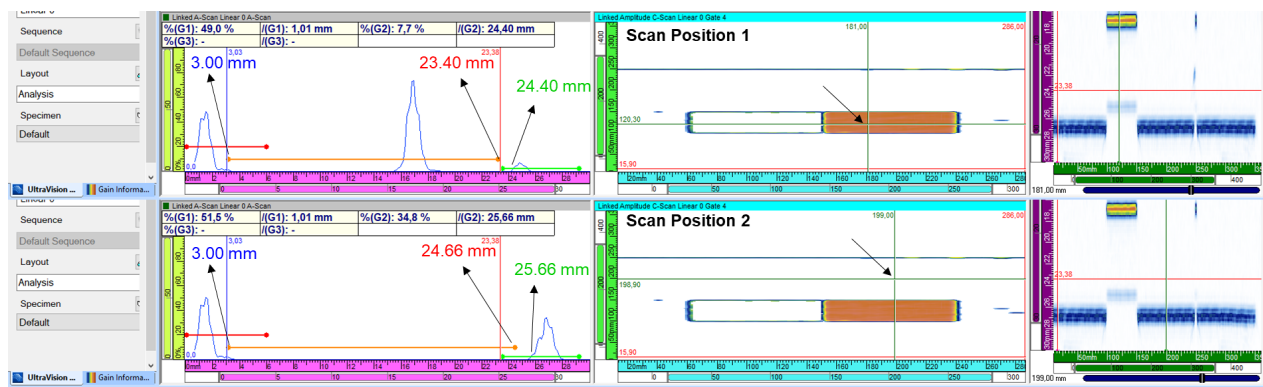


Figure 18: Example showing the length of the Homing End gate being adjusted at different scan positions as a function of the position of the reference signal

4.3 CREATION OF FULL HOMING GATE IN ULTRASOUND SETTINGS

This section provides step by step instructions on how to set up Full Homing gates from the Gates page in the Ultrasound Settings menu.

1. Open the UVDData file of interest in UltraVision Classic 3.12R22 (or higher version)
2. From **Ultrasound Settings > Gates** page, activate your Gate of interest by setting its State to a value other than "Off".
 - In Figure 19, the user activates **Gate 3** which was already off in the data file. The user switches the State from "Off" to "True Depth"

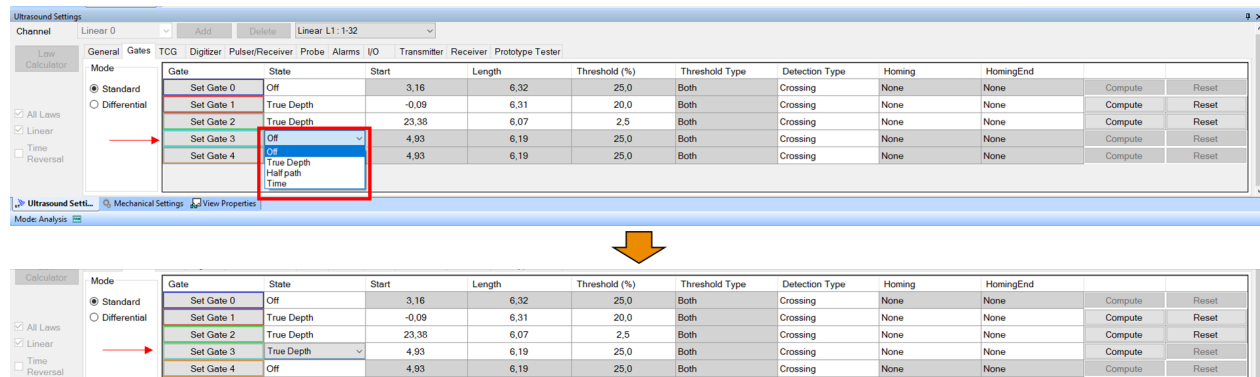


Figure 19: Activating **Gate 3** from Gates page in the analysis mode

3. Then, as depicted in Figure 20, for the gate of interest (the one the user wants to set on mode Homing End):
 - (a) from the **Ultrasound Settings > Gates > Homing** column, select the name of the reference gate for Homing; and
 - (b) from the **Ultrasound Settings > Gates > HomingEnd** column, select the name of the reference gate.

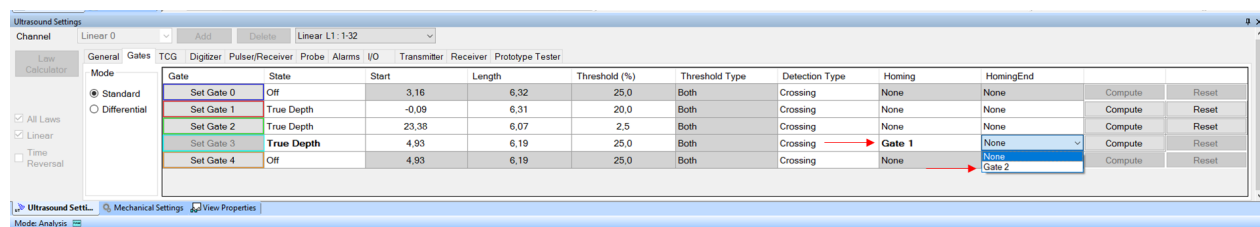


Figure 20: Activating Software Full Homing mode for a gate in Gates page



It is not possible to select the same ref. gate for Homing and Homing End. Therefore, for the gate of interest, once a ref. gate is selected for Homing, it will be absent in the dropdown list for HomingEnd ref. gates.



If, for Homing, the user selects a ref. gate which has already been selected for HomingEnd, the priority is given to the Homing function, and hence the ref. gate for HomingEnd will switch to None.

4. Once the Homing End reference is selected, the End Offset column is added to the grid. For the Full Homing Gate
 - (a) Enter the desired start offset value under the Start column
 - (b) Enter the desired End offset value under the HomingEnd column
5. Under the Threshold and Detection Type columns, enter the desired threshold and detection type for the Full Homing Gate
 - In Figure 21, the user requests the Full Homing Gate (Gate 3) to start 3,00 mm after the position of the triggering signal in Homing ref. gate (Gate 1) and to end 1,00 mm before the position of the triggering signal in Homing End ref. gate (Gate 2)

Gate	State	Start	Length	End Offset	Threshold (%)	Threshold Type	Detection Type	Homing	HomingEnd	Compute	Reset
Set Gate 0	Off	3,16	6,32	6,32	25,0	Both	Crossing	None	None	Compute	Reset
Set Gate 1	True Depth	-0,09	6,31	6,31	20,0	Both	Crossing	None	None	Compute	Reset
Set Gate 2	True Depth	23,38	6,07	6,07	2,5	Both	Crossing	None	None	Compute	Reset
Set Gate 3	True Depth	→ 3,00	-1,00	→ -1,00	10,0	Both	Crossing	Gate 1	Gate 2	Compute	Reset
Set Gate 4	Off	4,93	6,19	6,19	25,0	Both	Crossing	None	None	Compute	Reset

Figure 21: Configuring Full Homing gate parameters in the Gates page



A positive start offset value (+x mm) means that the homing gate starts later than (x mm after) the reference triggering signal while a negative start offset value (-x mm) means that the homing gate starts earlier than (x mm before) the reference triggering signal.

A positive End Offset value (+y mm) means that the homing end gate ends later than (y mm after) the reference triggering signal while a negative End Offset value (-y mm) means that the homing end gate ends earlier than (y mm before) the reference triggering signal.

6. Press the Compute button for the Full Homing Gate so that the entered values are applied to the Full Homing Gate
7. Wait for the progress bar to get completed
 - Once the user modifies a parameter of the Full Homing Gate, its font switches to the **bold format** which means that the entered values are not yet applied. As soon as the Compute button is pressed for the Full Homing Gate, the entered values are applied and their font switches back to the normal format. Figure 22 shows the Gates grid once the entered gate parameters are computed and applied.

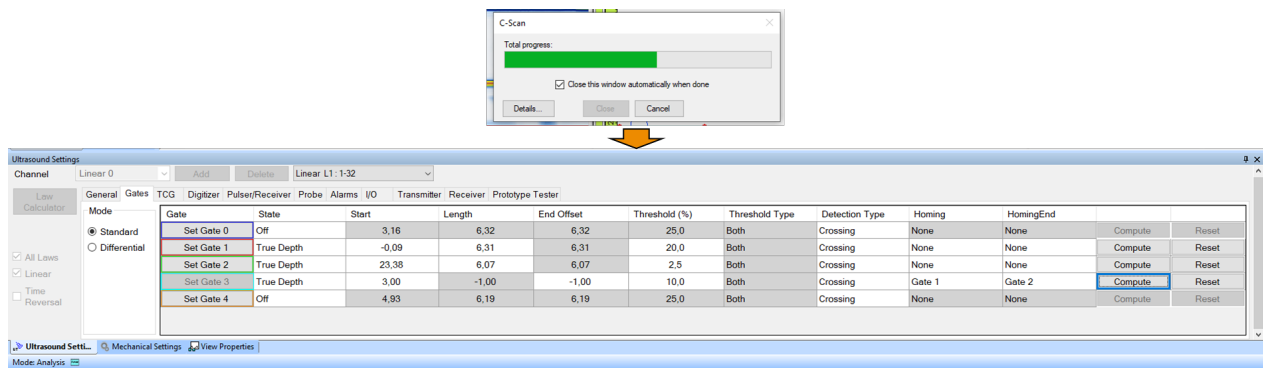


Figure 22: Full Homing gate parameters are applied once the progress bar gets completed

Once the Software Full Homing Gate is configured, the user can display the C-Scan generated by this gate as shown in the following example (Figure 23)

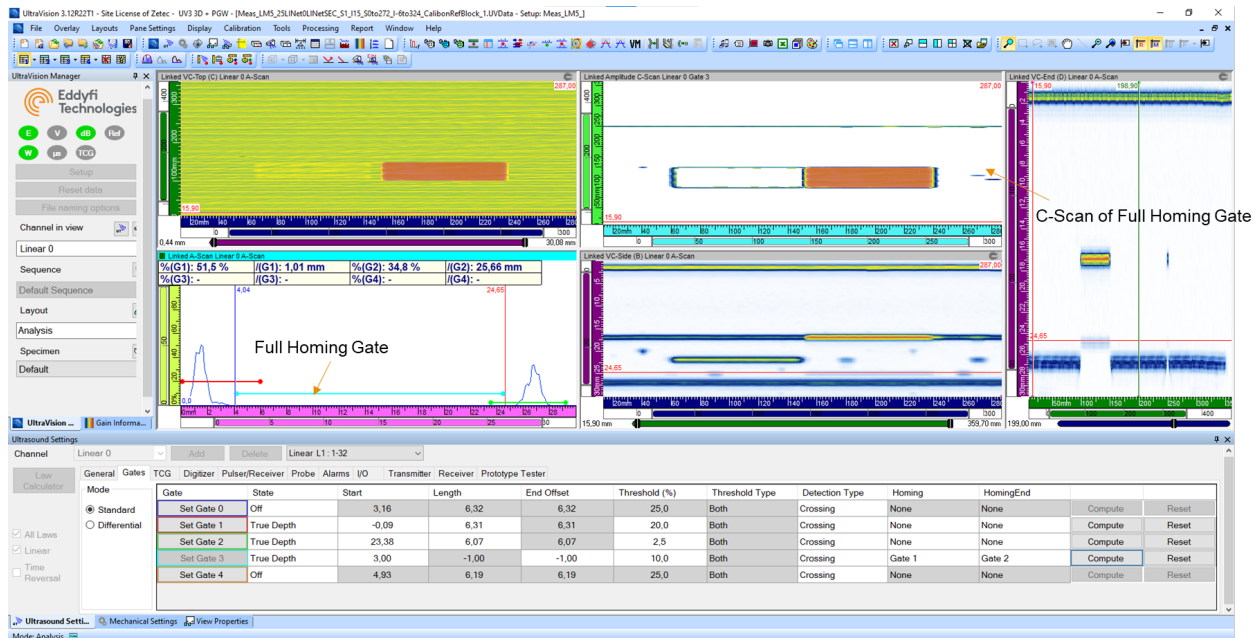


Figure 23: Example showing a Software Full Homing Gate and a view displaying its C-Scan

In the example provided in Figure 23, the start and the length of **Gate 3** (Full Homing) are adjusted at every scan position based on the triggering signals in the Homing reference gate (**Gate 1**) and Homing End reference gate (**Gate 2**). In Figure 24:

- **Gate 3** starts at **4.00 mm** which is **3.00 mm** after the position of the signal in **Gate 1** (**1.01 mm**) and
- **Gate 3** stops at **23.40 mm** which is **1.00 mm** before the position of the signal in **Gate 2** (**24.40 mm**)

The start and the length of **Gate 3** (Full Homing) are adjusted at every scan position based on the triggering signals in the Homing and HomingEnd reference gates, **Gate 1** and **Gate 2**, respectively. In Figure 25 for scan position 1 and 2, **Gate 3** starts at **3.00 mm** after the reference signal in **Gate 1** and stops **1.00 mm** before the reference signal in **Gate 2**

- Scan Position 1: Start at 4.04 mm and end at 23.27 mm
- Scan Position 2: Start at 4.04 mm and end at 25.04 mm

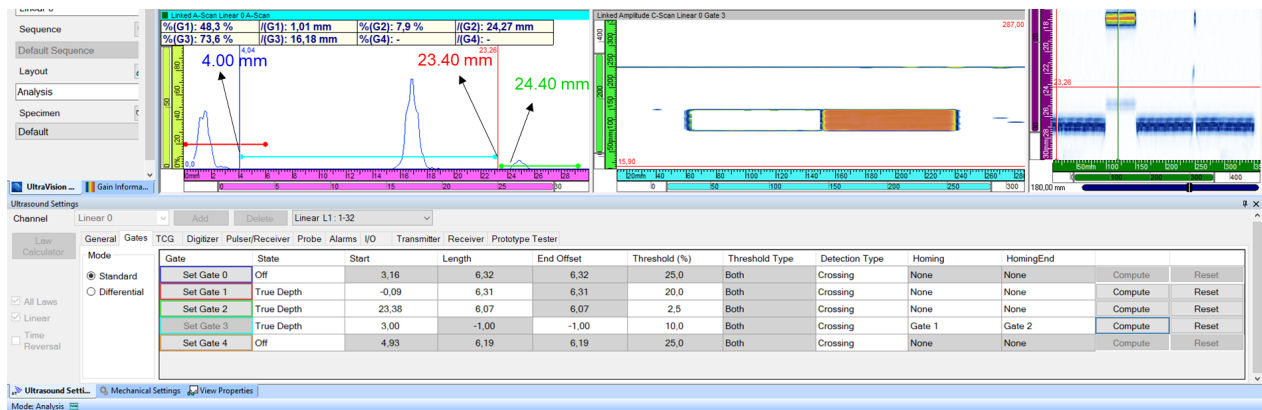


Figure 24: Example showing the end position of the HomingEnd gate relative to the reference signal

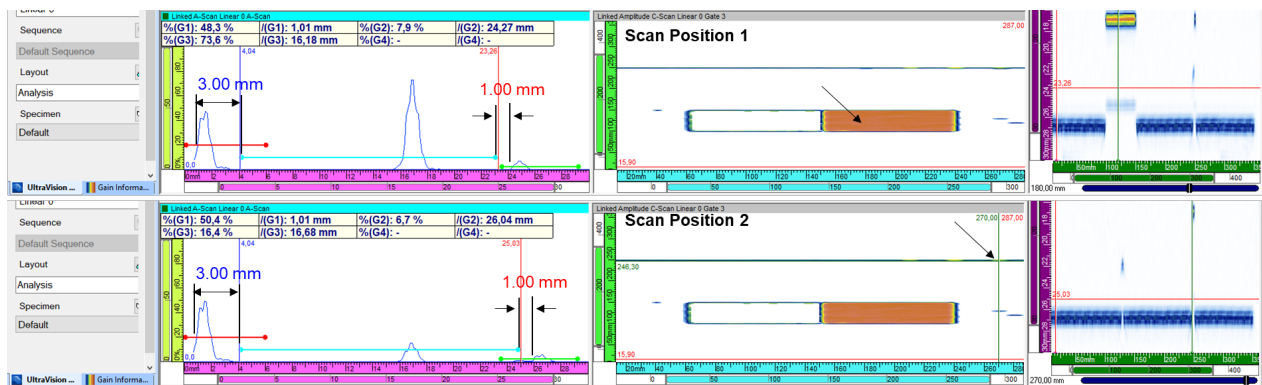


Figure 25: Example showing the length of the Full Homing gate being adjusted at different scan positions as a function of the position of the reference signal

5 CREATION OF SOFT C-SCANS IN HOMING/HOMING END MODE

Creating Soft C-Scans in Homing mode is only available in **UltraVision Classic 3.12R22 (or higher)** in the analysis mode with UVDData files. UltraVision users can create Soft C-Scans in Homing, HomingEnd and Full Homing modes via Soft C-Scan... menu located in Tools. This section aims at providing the instructions on how to create and configure these types of Soft C-Scans.



Some important points before starting the configuration section:

- For a Homing/Homing End Soft C-Scan to be defined, at least one active gate should be present since the Homing/Homing End Soft C-Scan needs a reference gate.

5.1 CREATION OF SOFT C-SCANS IN HOMING MODE IN CREATE SOFT C-SCANS MENU

This section provides step by step instructions on how to set up Soft C-Scans in the Homing mode from the Create Soft C-Scan menu in Tools.

1. Open the UVData file of interest in UltraVision Classic 3.12R22 (or higher version)
2. From **Tools > Soft C-Scan...**, open the Create Soft C-Scan dialog box
3. Check the **Is Homing Gate** checkbox so that the soft C-Scan will be created in the Homing mode. As displayed in Figure 26, once checked:
 - The data selection box switches to gates so that the user can select the reference gate
 - Homing prefix is automatically added to the name of the soft C-Scan

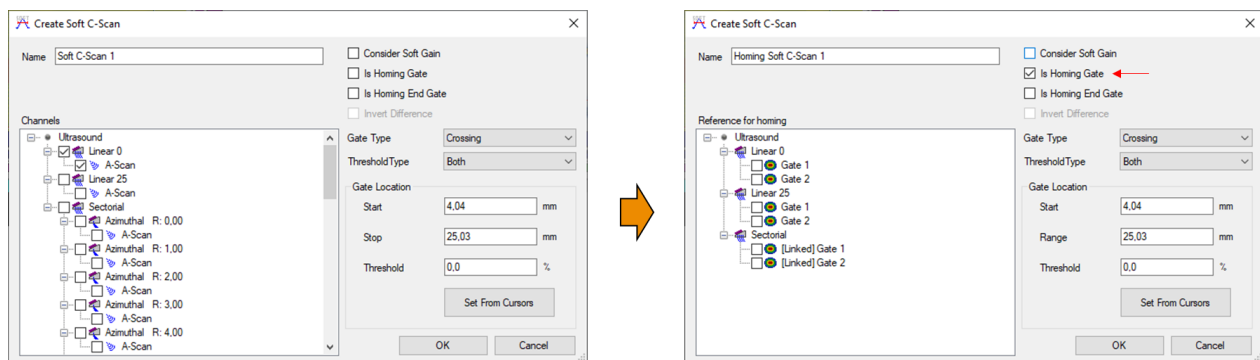


Figure 26: Activating Homing mode for Soft C-Scans

4. Select the reference gate for Homing from the “Reference for homing” box
5. Once the reference gate is selected:
 - (a) From the Gate Type and Threshold Type lists, select the desired values for the Homing Soft C-Scan
 - (b) Enter the desired start offset value for the Homing Soft C-Scan in the Start field
 - (c) In the Range and Threshold fields, enter the desired values for the Homing Soft C-Scan
 - In Figure 27, the user requests the Soft C-Scan Gate to start 3,00 mm after the position of the triggering signal in the reference gate (**Gate 1**)
6. Press the OK button for the Soft C-Scan in Homing mode to be created.
7. Wait for the progress bar to be completed.
8. Once, the Soft C-Scan is processed, it will appear in the Contents menu (See Figure 28).

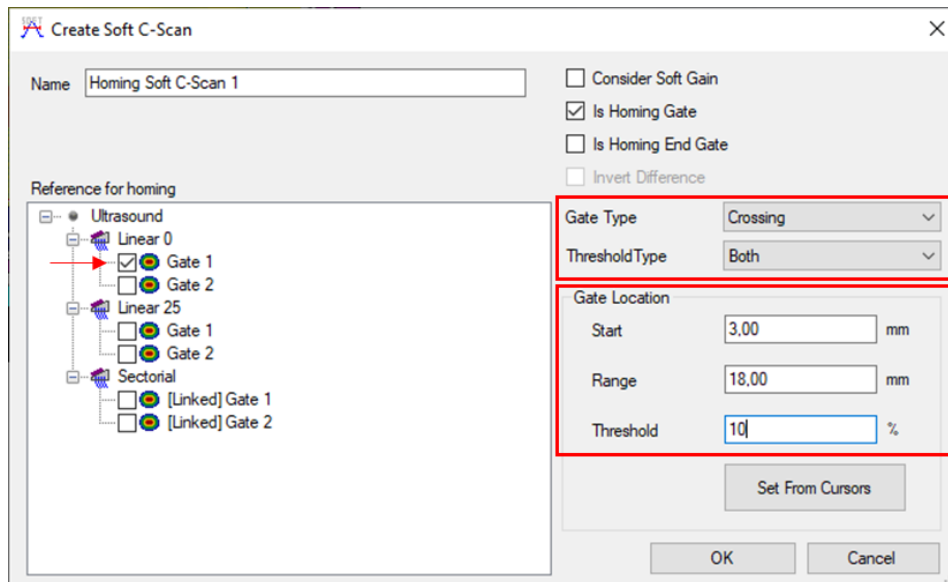


Figure 27: Configuring Homing Soft C-scan parameters

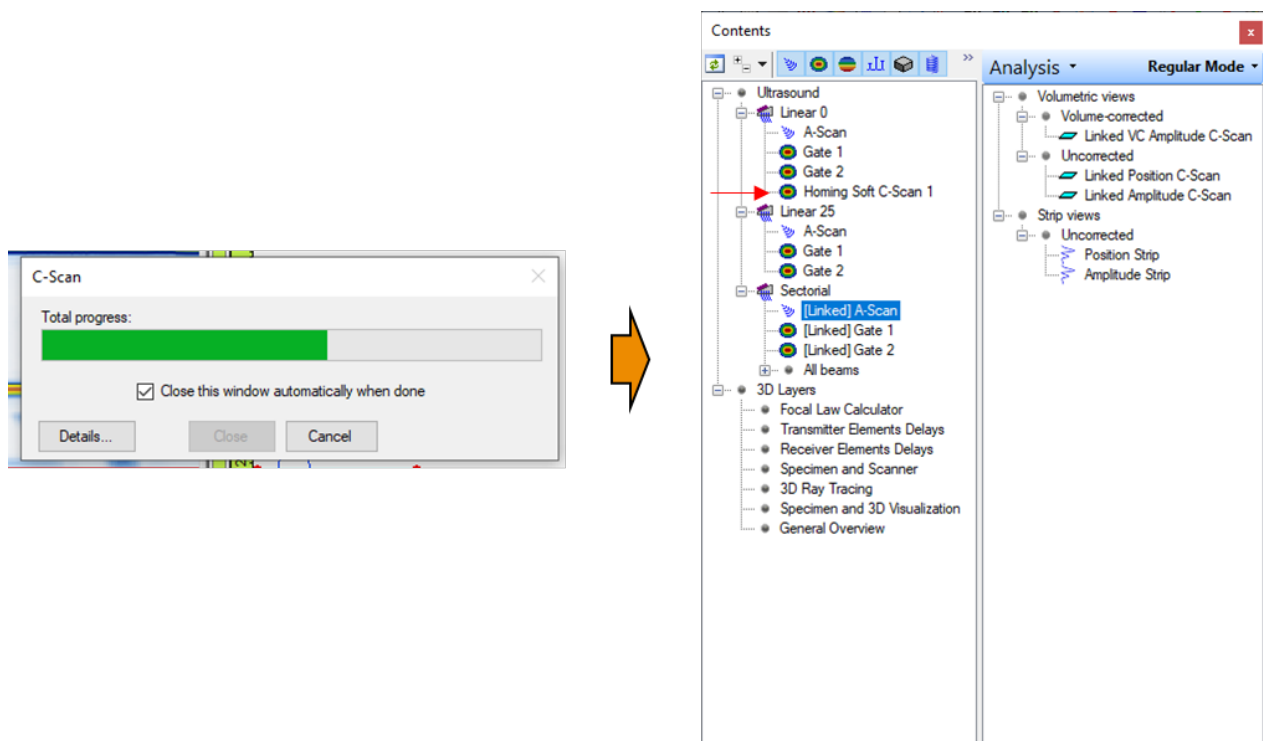


Figure 28: Processing and creation of Homing Soft C-scan

5.2 CREATION OF SOFT C-SCANS IN HOMING END MODE IN CREATE SOFT C-SCANS MENU

This section provides step by step instructions on how to set up Soft C-Scans in the Homing End mode from the Create Soft C-Scan menu in Tools.

1. Open the UVData file of interest in UltraVision Classic 3.12R22 (or higher version)
2. From **Tools > Soft C-Scan...**, open the Create Soft C-Scan dialog box
3. Check the **Is Homing End Gate** checkbox so that the soft C-Scan will be created in the Homing End mode. As displayed in Figure 29, once checked:
 - the data selection box switches to gates so that the user can select the reference gate
 - Homing End prefix is automatically added to the name of the soft C-Scan

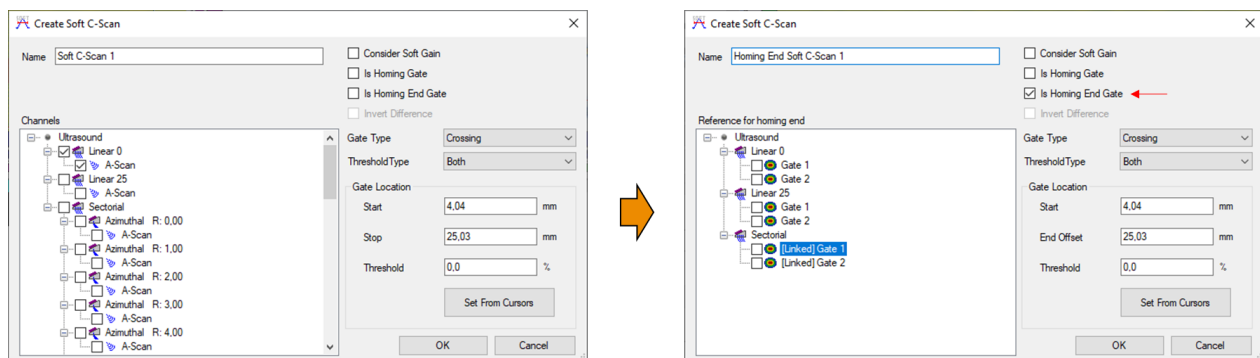


Figure 29: Activating Homing End mode for Soft C-Scans

4. Select the reference gate for Homing End from the “Reference for homing end” box
5. Once the reference gate is selected:
 - (a) From the Gate Type and Threshold Type lists, select the desired values for the Homing End Soft C-Scan
 - (b) In the Start and Threshold fields, enter the desired values for the Homing End C-Scan
 - (c) Enter the desired end offset value for the Homing End C-Scan in the End Offset field
 - In Figure 30, the user requests the Soft C-Scan Gate’s length to be adjusted so that it ends 1,00 mm before the position of the triggering signal in the reference gate (**Gate 2**)
6. Press the OK button for the Soft C-Scan in Homing End mode to be created.
7. Wait for the progress bar to get completed.
8. Once, the Soft C-Scan is processed, it will appear in the Contents menu (See Figure 31).

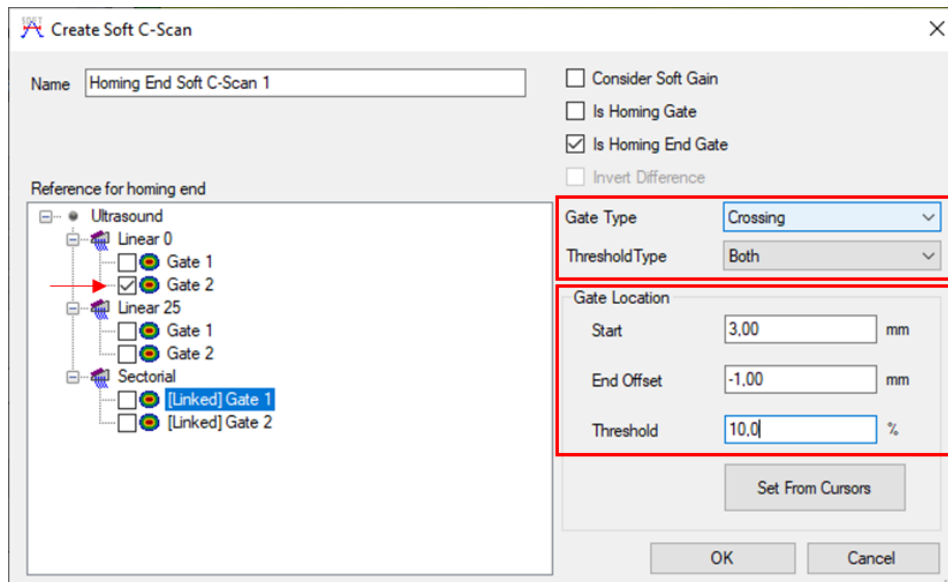


Figure 30: Configuring Homing End Soft C-Scan parameters

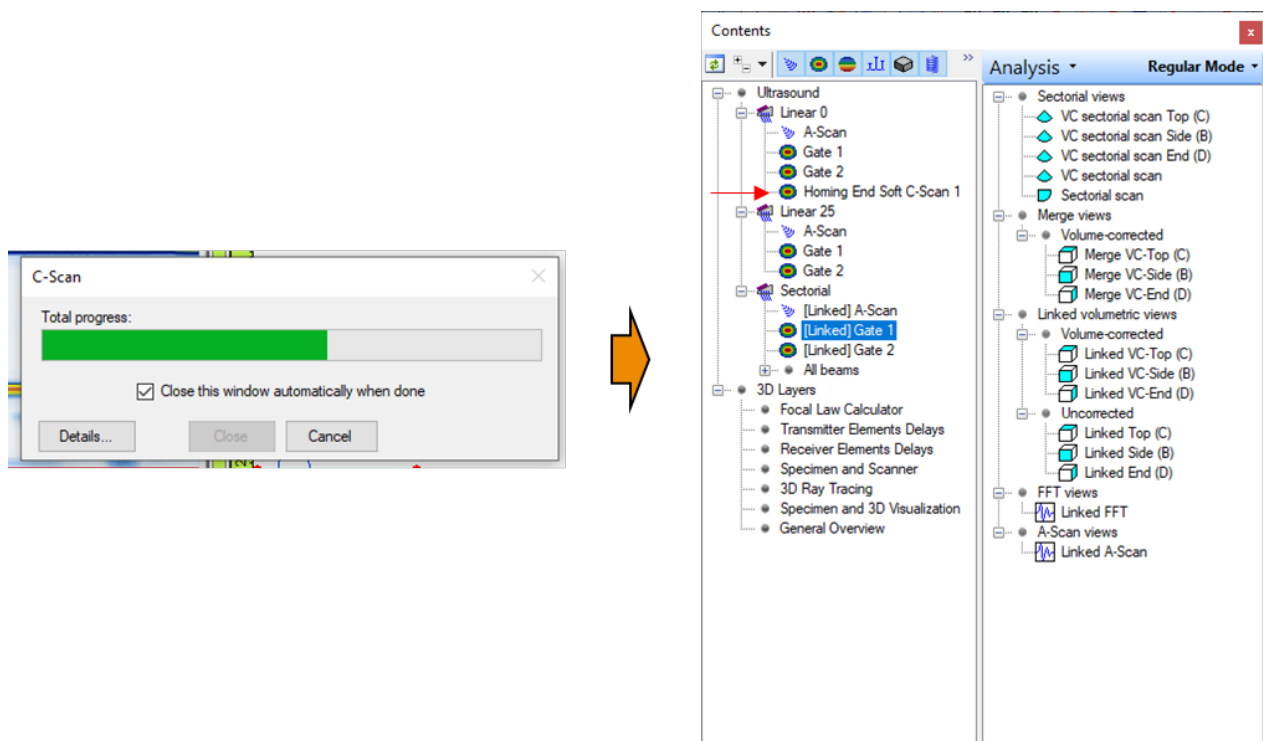


Figure 31: Processing and creation of Homing End Soft C-Scan

5.3 CREATION OF SOFT C-SCANS IN FULL HOMING MODE IN CREATE SOFT C-SCANS MENU

This section provides step by step instructions on how to set up Soft C-Scans in the Full Homing mode from the Create Soft C-Scan menu in Tools.

1. Open the UVData file of interest in UltraVision Classic 3.12R22 (or higher version)
2. From **Tools > Soft C-Scan...**, open the Create Soft C-Scan dialog box
3. Check the **Is Homing Gate** and **Is Homing End Gate** checkboxes so that the soft C-Scan will be created in the Full Homing mode. As displayed in Figure 32, once checked:
 - the data selection box switches to gates so that the user can select the reference gates
 - Full Homing prefix is automatically added to the name of the soft C-Scan

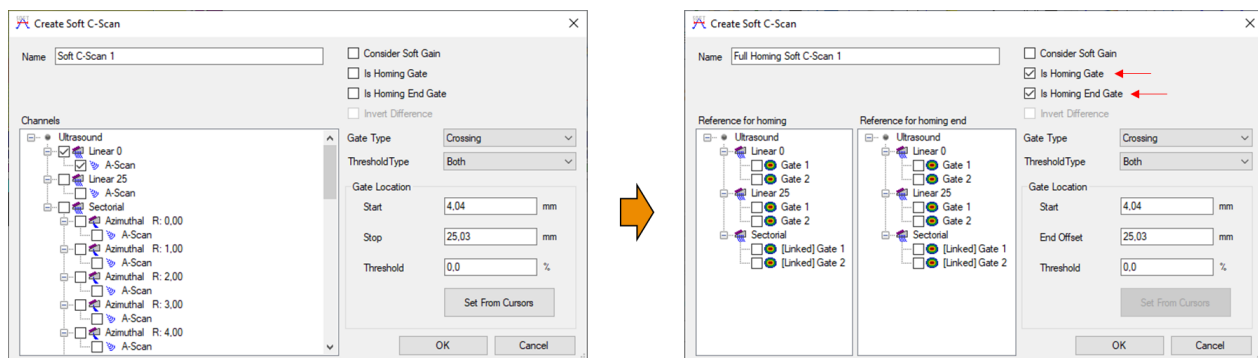


Figure 32: Activating Full Homing mode for Soft C-Scans

4. Select the reference gate for Homing from the “Reference for homing” box
5. Select the reference gate for Homing End from the “Reference for homing end” box
6. Once the reference gates are selected:
 - (a) From the Gate Type and Threshold Type lists, select the desired values for the Full Homing Soft C-Scan
 - (b) Enter the desired start offset value required for the Homing mode in the Start field
 - (c) Enter the desired end offset value for the Homing End mode in the End Offset field
 - (d) In the Threshold field, enter the desired value for the Full Homing C-Scan
 - In Figure 33, the user requests the Soft C-Scan to start 3,00 mm after the position of the triggering signal in the Homing reference gate (**Gate 1**) and its length to be adjusted so that it ends 1,00 mm before the position of the triggering signal in the Homing End reference gate (**Gate 2**)
7. Press the OK button for the Soft C-Scan in Full Homing mode to be created.
8. Wait for the progress bar to get completed.
9. Once, the Soft C-Scan is processed, it will appear in the Contents menu (See Figure 34).

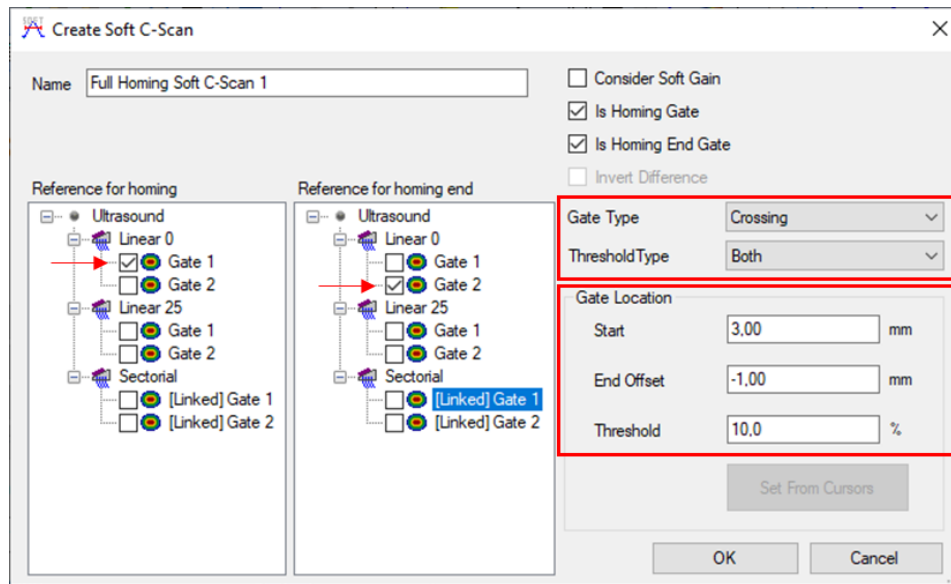


Figure 33: Configuring Full Homing Soft C-Scan parameters

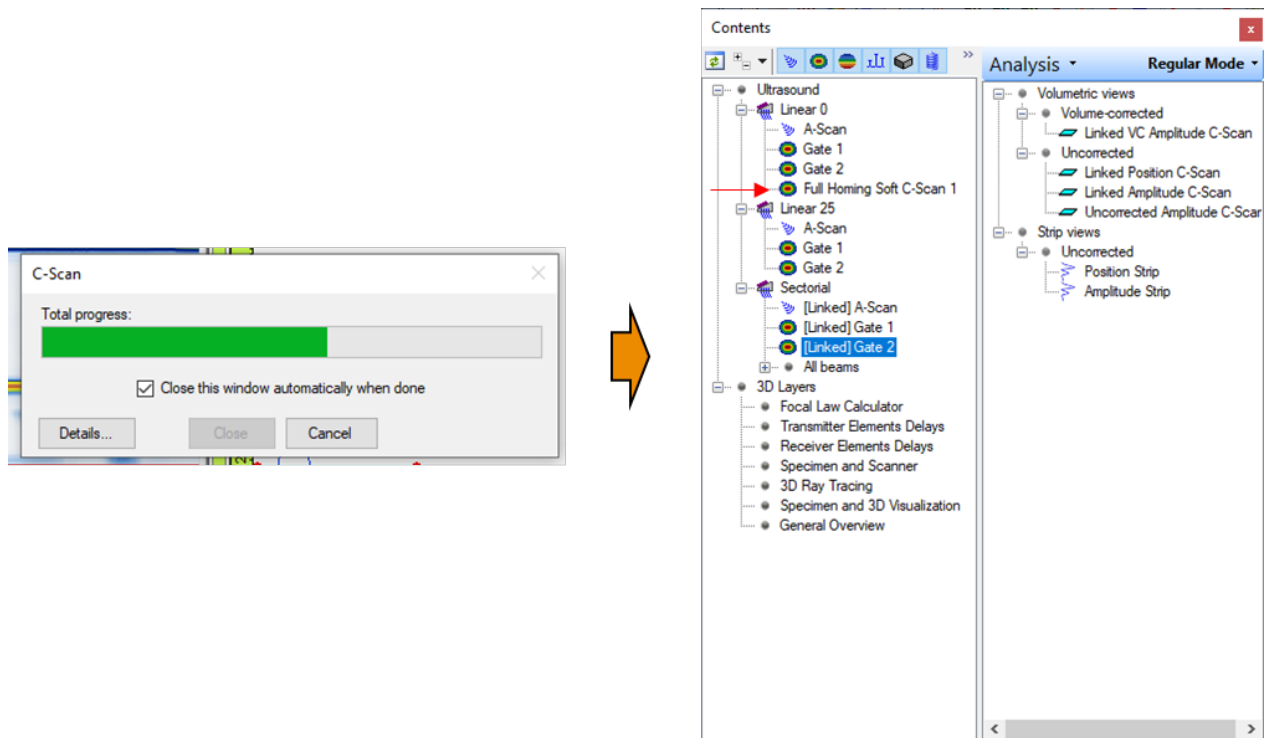


Figure 34: Processing and creation of Full Homing Soft C-Scan

5.4 SOFT C-SCAN DISPLAY

Once a Soft C-Scan is created, it is possible to display its content in the pane of interest in the layout. To do so, the user should:

- select the pane of interest in which the user would like to display the C-Scan,
- go to Show/hide contents pane. . . menu,
- select the Soft C-Scan of interest
- then double click on the C-Scan type to be displayed in the pane

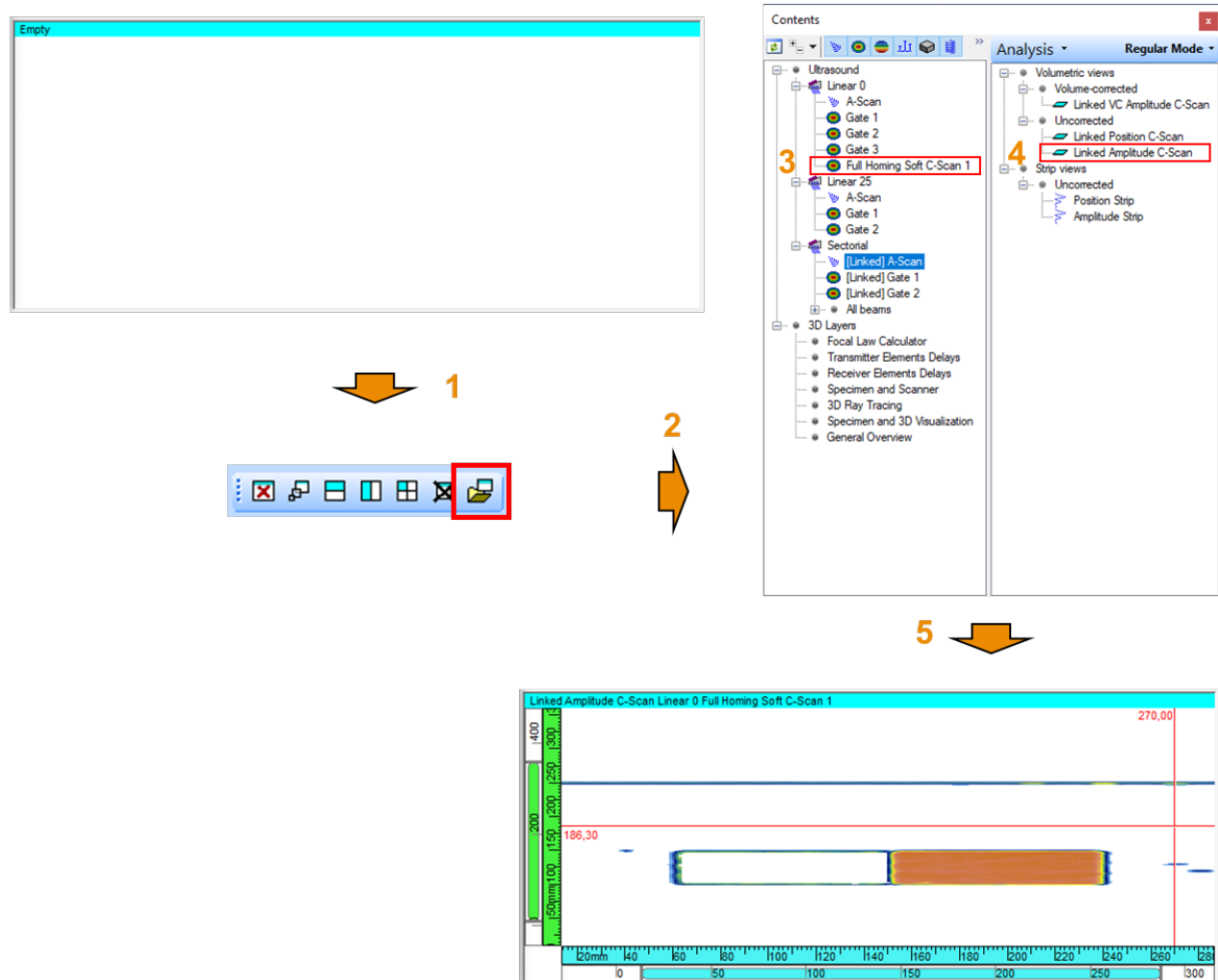


Figure 35: Displaying soft C-Scans created in the Homing/HomingEnd mode

5.5 REMOVING/DELETING SOFT C-SCANS

Figure 36 provides step by step instructions on how to remove/delete a Soft C-Scan from the processed data. to do so, it is required to

- (a) Go to the Data Cleaner menu from **Processing > Cleanup Processed Data...**
- (b) Remove the check mark for all the items by clicking in the Ultrasound checkbox located at the top of the data tree

- (c) Check the box in front of the Soft C-Scan(s) of interest (make sure the other gates and Soft C-Scans in the list are unchecked.)
- (d) Press Remove

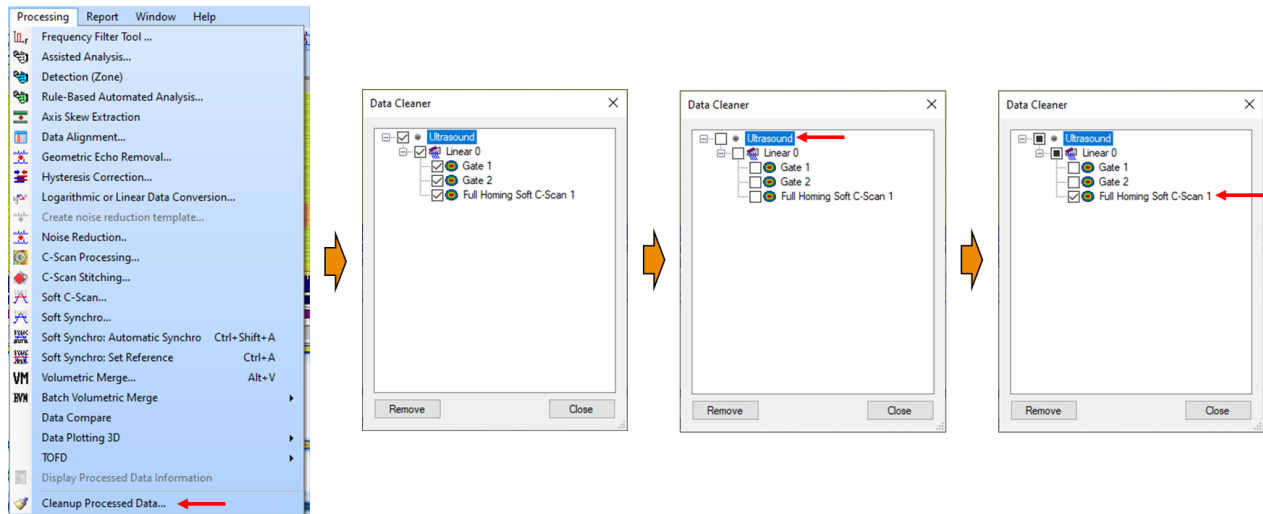


Figure 36: Removing/Deleting Soft C-Scans from the data content



This method of removing/deleting C-Scans is **recommended only** for the Soft C-Scans. In order to remove/delete the gates created/modified in the analysis mode, it is **strongly recommended** to use the **Reset** button in the Ultrasound Settings > Gates page for that particular gate.

6 USER TIPS AND RECOMMENDATIONS

- For a gate which is set to the Homing/Homing End mode, if there is no detection in the reference gate, the Homing/Homing End gate will not be present since it is not triggered, and it switches to No Data mode. Figure 37 shows the A-Scan signals at three different scan positions. In the A-Scan located at the bottom right, the trigger signal is missing in the reference gate for the Homing End function (**Gate 2**) which causes the Full Homing Gate (**Gate 3**) to enter into the No Data mode and becomes absent. However, in the other two A-Scans where the reference signal is present in the reference gates (**Gate 1** for Homing and **Gate 2** for Homing End), the Full Homing gate (**Gate 3**) is formed and present in the A-Scan.

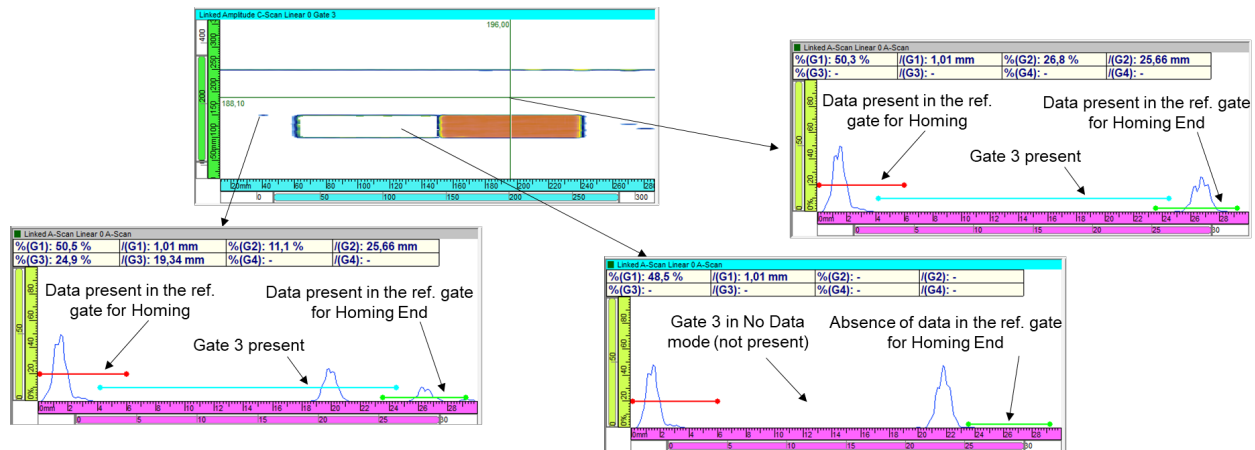


Figure 37: Homing/Homing End Gate state at scan positions where the triggering signal is present in the reference gates versus a scan position where there is no triggering signal in the reference gate

- In **Ultrasound Settings > Gates** page (see Figure 38):
 - Set Gate X button gets unavailable/grayed out when the gate is set to Homing/Homing End mode
 - The Compute and Reset buttons apply to each gate individually.
 - It is not possible to modify and configure more than one gate at once. Therefore, if it is required to modify multiple gates, it is mandatory to modify the parameters of one gate and apply the modifications by pressing the Compute button before modifying another gate.
 - The Reset button resets the gates to their initial state/parameters as in the original UVData. Any modifications performed during analysis to that particular gate will be reset once the Reset button is pressed.

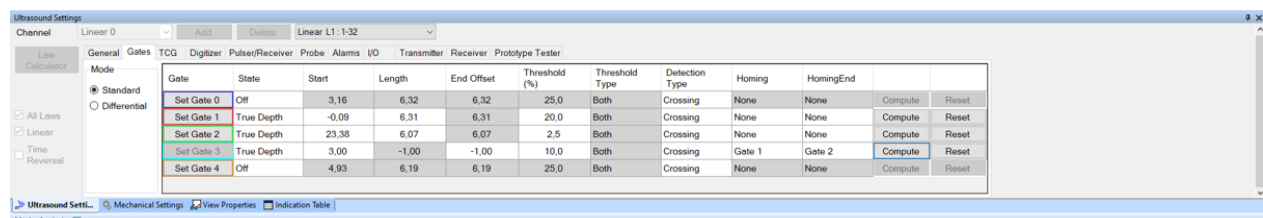


Figure 38: Overview of the Gates page including gates in Homing/Homing End mode

- If a gate is set to the Homing/Homing End mode, it will not be anymore possible to modify the gate parameters (Start, End, Threshold) for this particular gate from the A-Scan views.

- Opposite to the gates which are defined in **Ultrasound Settings > Gates** page, Soft C-Scans which are created via **Processing > Soft C-Scan...** do not create a physical gate which can be displayed in the A-Scan (or other) views. This type of C-Scan is a 2D image which is generated based on a virtual gate defined in the Create Soft C-Scan... dialog box.
- If the user modifies a reference gate in **Ultrasound Settings > Gates** page, its modification automatically propagates to its dependent gates in the **Ultrasound Settings > Gates** page (not to the Soft C-Scans).
- Soft C-Scans in Homing and Homing End mode are created based on the state of the reference gate(s) at the time of Soft C-Scan creation. Therefore, if any modification is made to the reference gate(s) after the creation of the Soft C-Scans, it is mandatory to create the Soft C-Scans again so that the Soft C-Scan is based on the latest state of the reference gate.
- **IMPORTANT NOTE:** In **Ultrasound Settings > Gates** page, after pressing the Compute button for a reference gate if the user interrupts the modifications to that reference gate by cancelling the progress bar, **it is mandatory** to press the Compute button for all the gates dependent on that particular gate to make sure that the modification has appropriately propagated to the dependent gates. For Homing function, entering a positive start offset value means that the Homing Gate (C-Scan) starts after the reference triggering signal while entering a negative start offset value means that the Homing Gate (C-Scan) starts before the reference triggering signal. For Homing End function, entering a positive End Offset value means that the Homing End Gate (C-Scan) ends after the reference triggering signal while entering a negative End Offset value means that the Homing End Gate (C-Scan) ends before the reference triggering signal.
- For a gate set to the HomingEnd mode, when the entered End Offset causes the gate end to fall before the gate start, the gate length is set to the minimum possible in the corresponding A-Scan view and it will return no data in the C-Scans. Therefore, as a safety measure for Homing End gates, UltraVision does not allow the Homing end gate's end to fall before its start, even if the entered values for the gate's Start and End Offset push the gate to fall in such a state.
- For a gate or a Soft C-Scan which is set to the Full Homing mode, it is not possible to select the same reference gate for Homing and Homing End.
 - In **Ultrasound Settings > Gates** page:
 - * Once a reference gate is selected for Homing, it will be absent in the dropdown list for HomingEnd reference gates.
 - * If, for Homing, the user selects a reference gate which has already been selected for HomingEnd, the priority is given to the Homing function, and hence the reference gate for HomingEnd will switch to None.
 - In **Create Soft C-Scan** menu, if similar gate is selected as the reference for Homing and Homing End, the user will be notified through a warning message once the OK button is pressed and then they will be returned to the Create Soft C-Scan menu to modify the reference gates.
- As depicted in Figure 35, to display the C-Scans (generated by gates or Soft C-Scans), the user should:
 - select the pane of interest in which the user would like to display the C-scan,
 - go to **Show/hide contents pane...** menu,
 - select the Gate/Soft C-Scan of interest
 - then double click on the C-Scan type to be displayed in the pane

7 LIMITATIONS AND REMAINING ANOMALIES

- For UVDData files including channels with multiple independent focal laws (azimuthal sweep, linear channels when the Linear checkbox is unchecked, etc.), Soft C-Scans must be created individually (per channel) in separate instances.
 - Figure 39 provides an example where the user intends to create Soft C-Scans for Linear 0 channel (which is phased array linear sweep) and for Sectorial channel (multiple independent focal laws). In this case, it is required to create the Soft C-Scan for Linear 0 channel by entering its parameters and then pressing OK. Once created, the user should return to the Soft C-Scan... menu to create the Soft C-Scan for the Sectorial channel

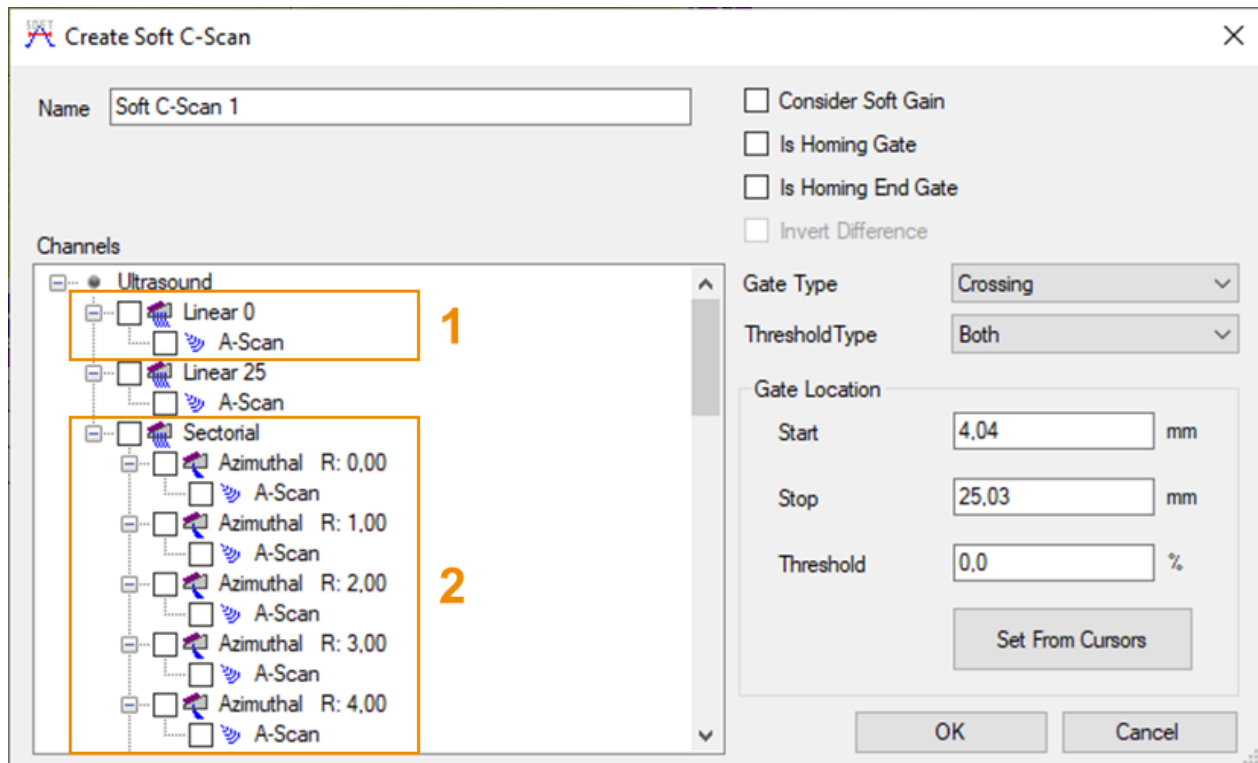


Figure 39: Creating soft C-Scans in separate instances for channels with different configurations

- If the user employs Tools > Export Datagroup... function to export the Soft C-Scans created in UltraVision versions lower than 3.12R22, the exported Length parameter of the Soft C-Scan Gate cannot be exported. However, for the Soft C-Scans created in 3.12R22 (and higher), the exported Length parameter of the Soft C-Scan will be correct and as defined in the Create Soft C-Scan menu. The Length parameter does not apply to Soft C-Scans in Homing End mode since their length is adjusted automatically.

8 LICENCING

The Homing/Homing End feature is available in

- UltraVision Classic interface only in the analysis mode with Basic, Advanced, and 3D license keys.
- UltraVision Analysis interface with the UltraVision Analysis licence key.