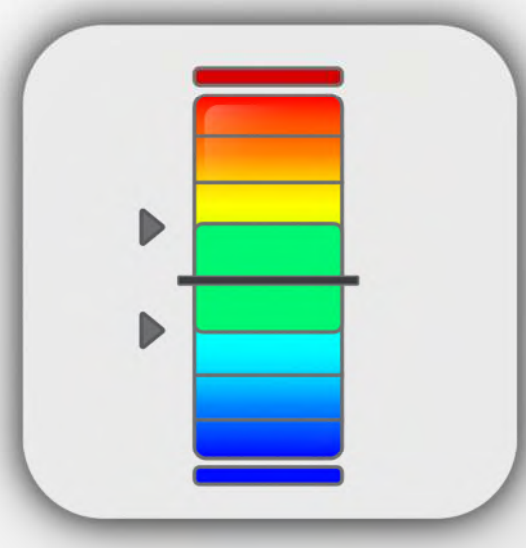
Compare



ver. 1.1
Revision 2 (03.2021)

Contents

Greetings

Thank you for using Medit Compare! You have made a great choice.

Medit offers high quality hardware and software solutions, including table top and intraoral scanners.

With Medit you can work efficiently with 3D data and use the software with minimal training.
We work relentlessly to create user-friendly products that supplement digital dentistry workflow for clinic and lab users.

Introduction and Overview

Medit Compare Overview

Intended Use and Disclaimer

System Requirements

Installation Guide

Introduction and Overview

1.1 Medit Compare Overview

Medit Compare is a software that helps to analyze any 3D data, including scan data, and to compare different data one by one or in sets. Its intuitive UI/UX and various tools can help anyone – from novices to advanced users - to easily perform various measurements (including distance, area, length, angles), transformations and analyses. Explicit explanations and guide messages are accompanying each mode.

Medit Compare can be run from both Clinic and Lab Accounts in Medit Link.

1.2 Intended Use and Disclaimer

⚠ The user is entirely responsible for the process of working with 3D data. Users should know that the results generated by the application may not be precise or reliable and should only be used for communication purposes. Medit does not take any responsibility or liability for any misunderstandings or miscommunications that might happen during and after interpretation of the results.

⚠ Medit Compare is not developed for using in medical or clinical purposes.

⚠ The software may not be used for the following purposes:

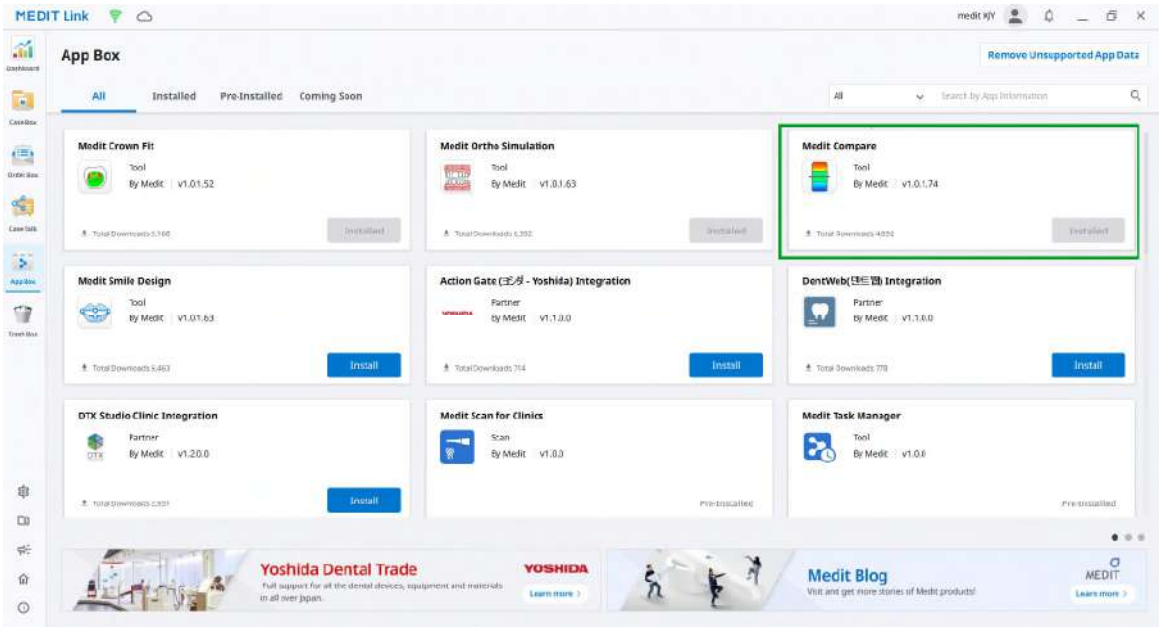
1. For the purposes of diagnosing, treating, mitigating or preventing diseases.
2. For the purposes of diagnosing, treating, mitigating or preventing injuries or disorders.
3. For the purposes of inspecting, replacing, or transforming a structure or function.

1.3 System Requirements

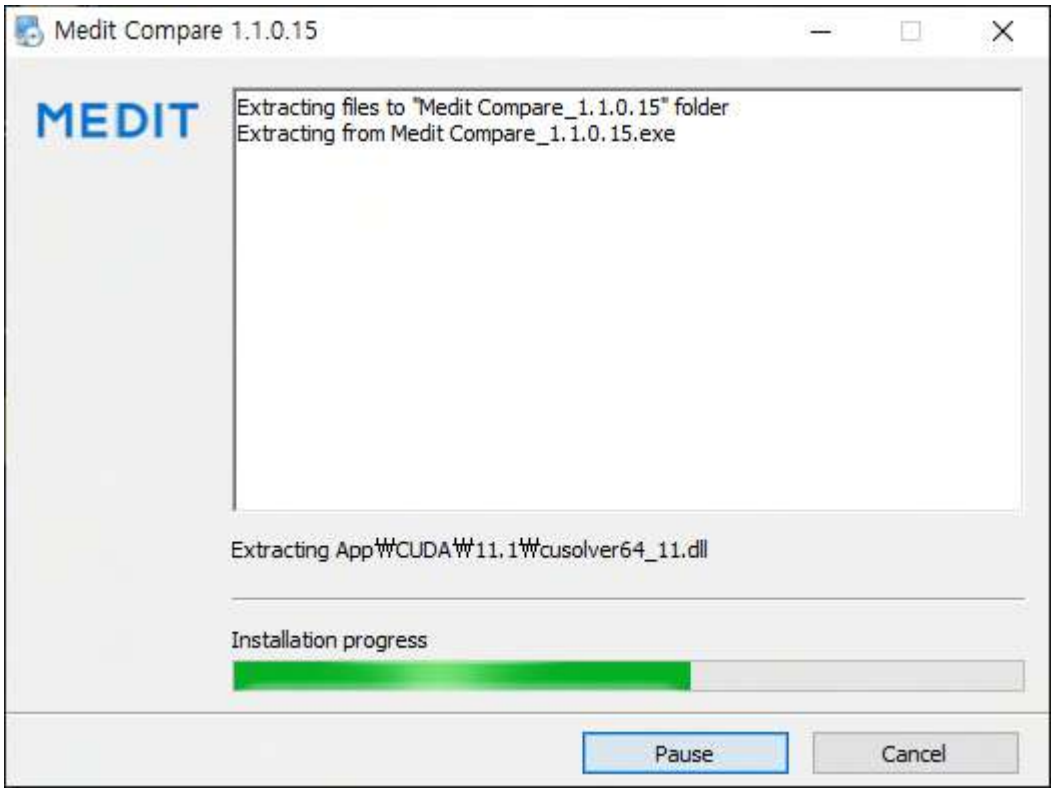
CPU	Intel Core i5 2.6GHz or higher
RAM	16 GB or higher
Graphic	NVIDIA GeForce GT 760 (2GB) or higher / or equivalent AMD video card
OS	Windows 8 64 Bit (unavailable in 32 Bit) or higher

1.4 Installation Guide

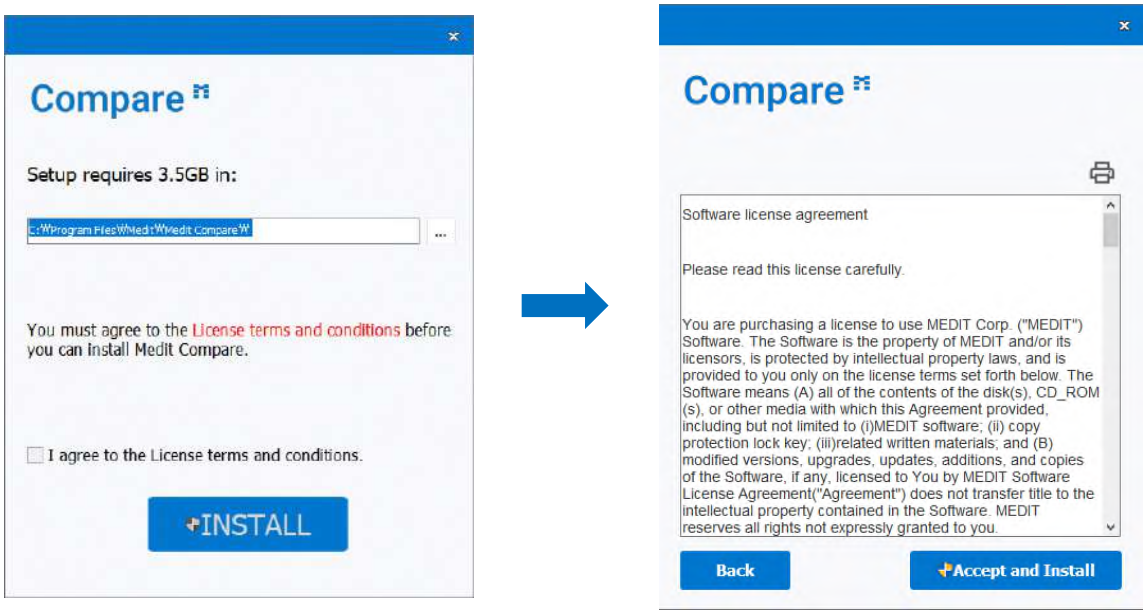
- Log in into your Medit Link Account and go to the App Box.
- Find **“Medit Compare”** and click on the **“Install”** button.



- After the download is complete, Medit Compare_1.0.X.X.exe will be run automatically from your PC.



- Read and agree to the License Terms and Conditions.



- It may take up to several minutes to finish the installation process. Please do not turn off the PC until the installation is complete.

- Press **"Finish"** to complete the installation.

- Restart Medit Link.

Data Management

Acquiring 3D Data

Running Medit Compare from Medit Link

3D Data Control

Data Management

2.1 Acquiring 3D Data

3D data to be used in Medit Compare can be acquired in two ways.

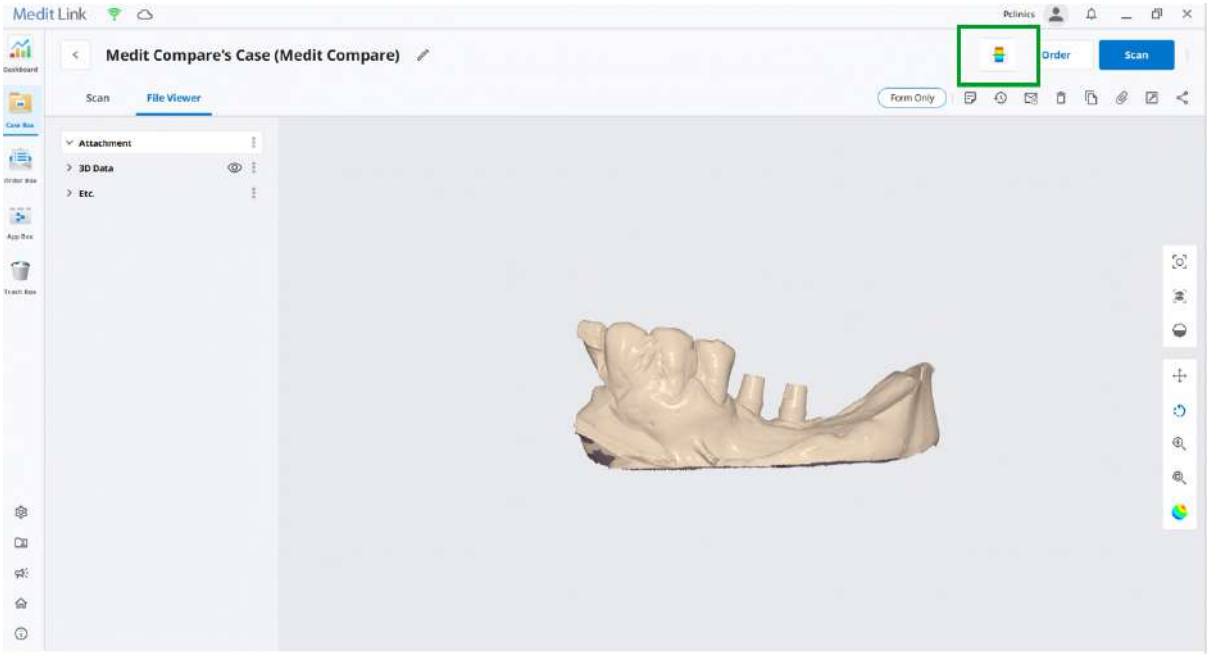
By performing scan in Medit Scan for Clinics or Labs
After performing the necessary scans in Medit Scan for Clinics or Labs, the scan data will be automatically saved in patient's case in Medit Link. Then it can be imported using the **"Import from Medit Link"** dialogue window.

By adding 3D data to a Medit Link case
To import 3D data acquired in other ways, it should be first attached to a case in Medit Link and then imported to Medit Compare using the **"Import from Medit Link"** dialogue window.

2.2 Running Medit Compare from Medit Link

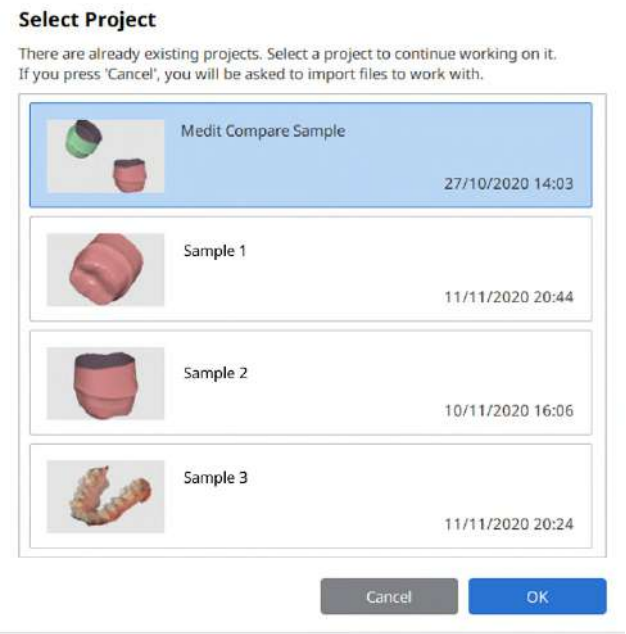
- Go to **Case Box** (Clinic Account) or **Work Box** (Lab Account) and choose the case would like to use for Medit Compare.

- Press the  icon in the right upper side of the Case Detail window in Medit Link, which will automatically appear once you install the App and relaunch Medit Link.



- Once you close Medit Compare, the project file will be saved to Medit Link. The project file allows you to get back to working on the same project later on.

- When you run the program from the same case, you will be asked to choose one among the projects that have been created.



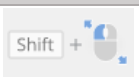
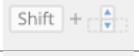
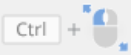
- All measurement results, sections, and scaling will be restored.

2.3 3D Data Control

3D data control using mouse:

Button	Action	Use	Image
Left	Click	Selects or deletes the entities in view screen when using the polyline selection or polyline trimming tool.	
	Drag	Selects or deletes entities in view screen when using Brush selection or Brush trimming tool.	
Wheel	Drag	Moves the data in view screen.	
	Scroll	Zooms in/out the data in view screen.	
Right	Click	Completes the selection or deletion of entities in view screen when using the polyline selection or polyline trimming tool.	
	Drag	Rotates data in view screen.	

3D data control using mouse and keyboard buttons:

Button	Action	Use	Image
Shift	Left Click and Drag	Zoom in / zoom out	
	Up and Down Keys	Zoom in / zoom out	
Alt	Left Click and Drag	Rotate	
	Up, Down, Left and Right Keys	Rotate	
Ctrl	Left Click and Drag	Move	
	Up, Down, Left and Right Keys	Move	

User Interface

Title Bar

Side Toolbar

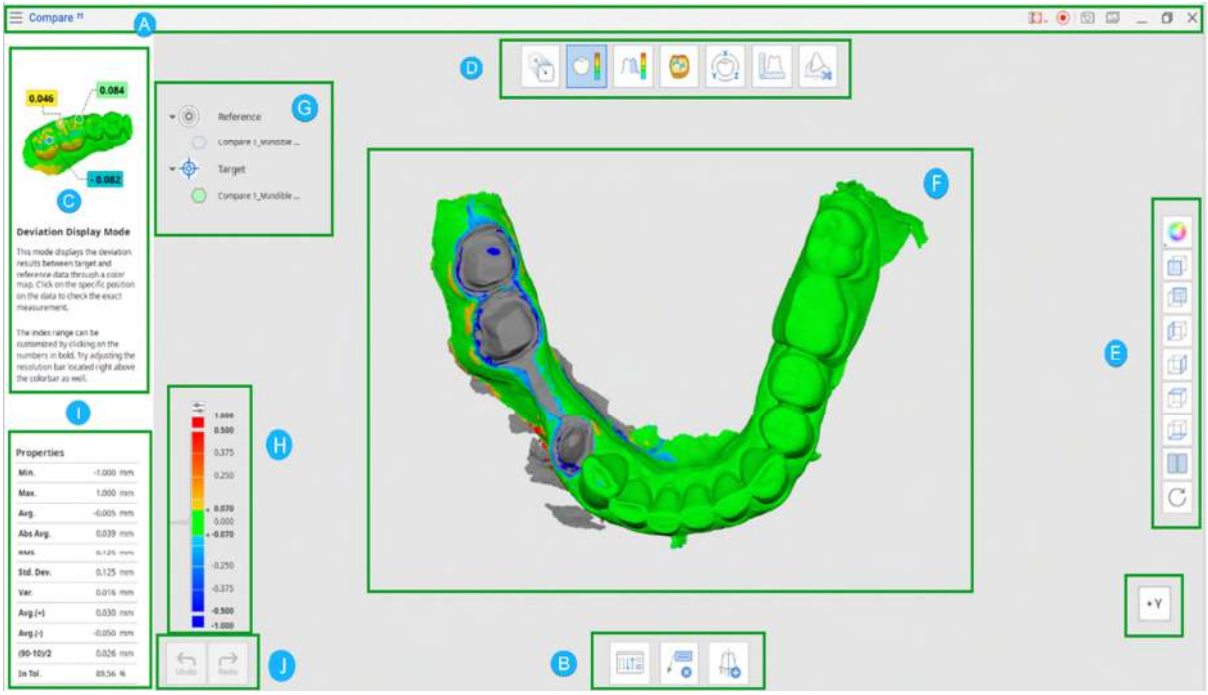
Tree View

Split View

Cube

Undo/Redo

User Interface



A. Title Bar
B. Toolbox
C. Guide Message
D. Modes
E. Side Toolbar
F. 3D Data View
G. Tree View
H. Colorbar
I. Data Properties
J. Undo/Redo

3.1 Title Bar

The Title Bar consists of the following options:

Menu	The menu includes tools to manage project options and shows the details of application.
Select Video Capture Area	Specifies the area to be recorded for the video capture.
Start Video Recording	Starts the video capture.
Screenshot	Captures the screen. You can select the area automatically or manually. The automatic selections are: 1) Program area; 2) Main 3D area.
Screen Capture Image Manager	Manages the captured screen images.

Minimize	Minimizes the application.
Maximize or Restore	Maximizes or restores the application.
Exit	Terminates the application.

3.2 Side Toolbar

The Side Toolbar provides the tools to change Data Display Modes and set view options.

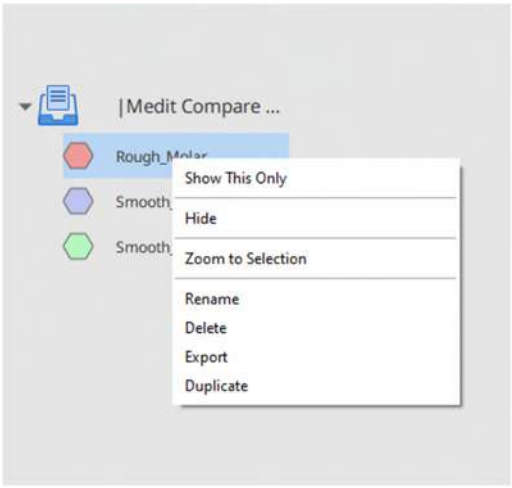
Data Display Modes		
	Textured	Displays data with color information.
	Textured with Edges	Displays the data with color information and edges.
	Monochrome	Displays the data in single color.
	Monochrome with Edges	Displays the data in single color with the edges.
	Wire-frame	Displays the data as edges only.
3D Data View Options		
	+Z Axis View	Shows the front view.
	-Z Axis View	Shows the back view.
	-X Axis View	Shows the left view.
	+X Axis View	Shows the right view.

	+Y Axis View	Shows the top view.
	-Y Axis View	Shows the bottom view.
	Split View	Allows to work on two different files simultaneously.
	Rotate	Allows to rotate data in any direction.  Use left mouse button to rotate data.

3.3 Data Tree

The data tree appears on the left side of the window.

- The tree view shows the list of data you are using in groups (either by target and reference data or by Medit Link case; the grouping is different according to the mode) and section lines once they are created in **Measurement Mode**.
    - You can easily control data by hiding, showing, or changing its transparency one by one or as a group.

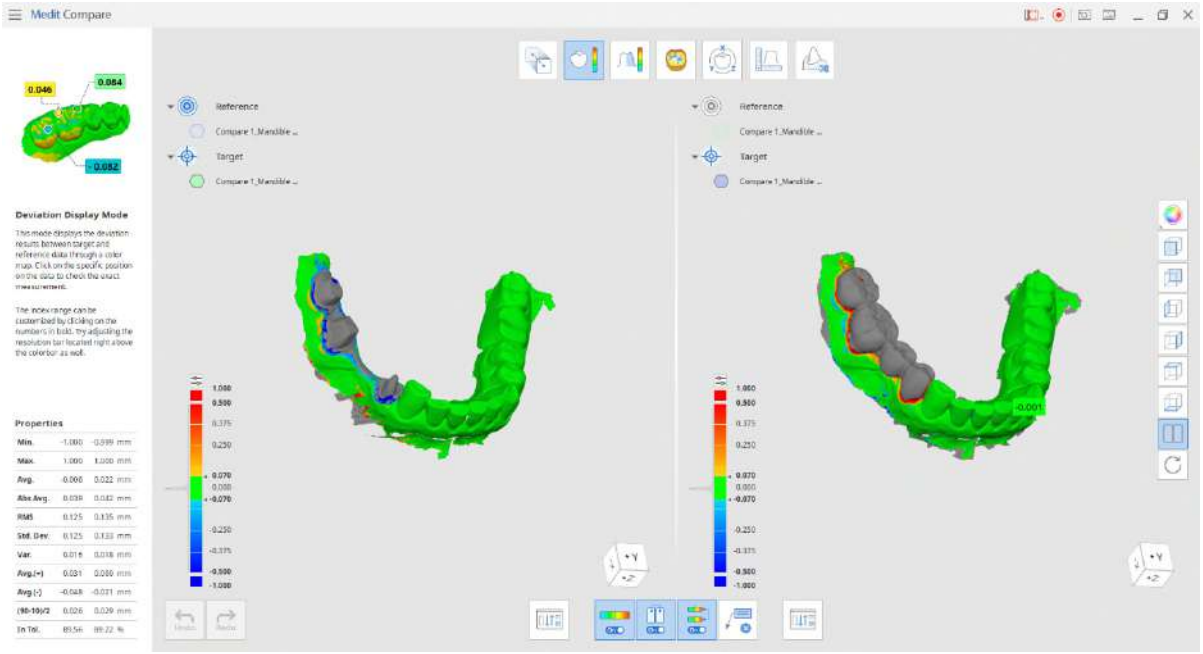


- Use right mouse button to see the options for each of group of data, or specific data.
    - **Show This Only**: shows only the chosen data.
    - **Show/Hide**: hides the chosen data.
    - **Zoom to Selection:** zooms the view to show the selected data fitted to the view.
    - **Rename:** allows to rename the data.
    - **Delete:** deletes the data from Medit Compare.
    - **Export:** exports the data to the Medit Link case the program was run from.

- **Duplicate:** duplicates the file.

3.4 Split View

Use the **"Split View"** option located on the Side Toolbar to work with two sets of data at the same time.



This option is available during Overview and Deviation Display Modes.

- Press the button to select the set of data you would like to compare the current one in the Split view.
- Choose whether you would like data manipulation to be synced on both parts of the screen ( ).
- If you sync the color bar (this option will appear while working in Deviation Display Mode), its values will change on both sides if you change it for one of the data sets.

Toolbox: Split View

	Re-assign Target and Reference Data	Re-selects target and reference data for assignment.
	Color Map On/Off	Turns off the color map.

	Sync View	When on, syncs the split view parts.
	Sync Color Bar	When on, syncs the color bar on the split view parts.
	Delete Measurement Results	Deletes deviation measurement results by clicking on each of them on 3D data.

3.5 View Cube

The view cube displays the 3D view orientation, which is updated in real time as the view is being rotated. You can align the view to specific directions by clicking on a specific face of the cube.

3.6 Undo/Redo

The undo/redo buttons are located at the bottom left corner of the window.

	Undo	Undoes previous action.
	Redo	Redoes previous action.

Modes

Overview Mode

Alignment Mode

Roughness Measurement Mode

Curvature Display Mode

Transformation Mode

Measurement Mode

Edit Mode

Modes

Modes in Medit Compare are not subjected to any particular sequence.

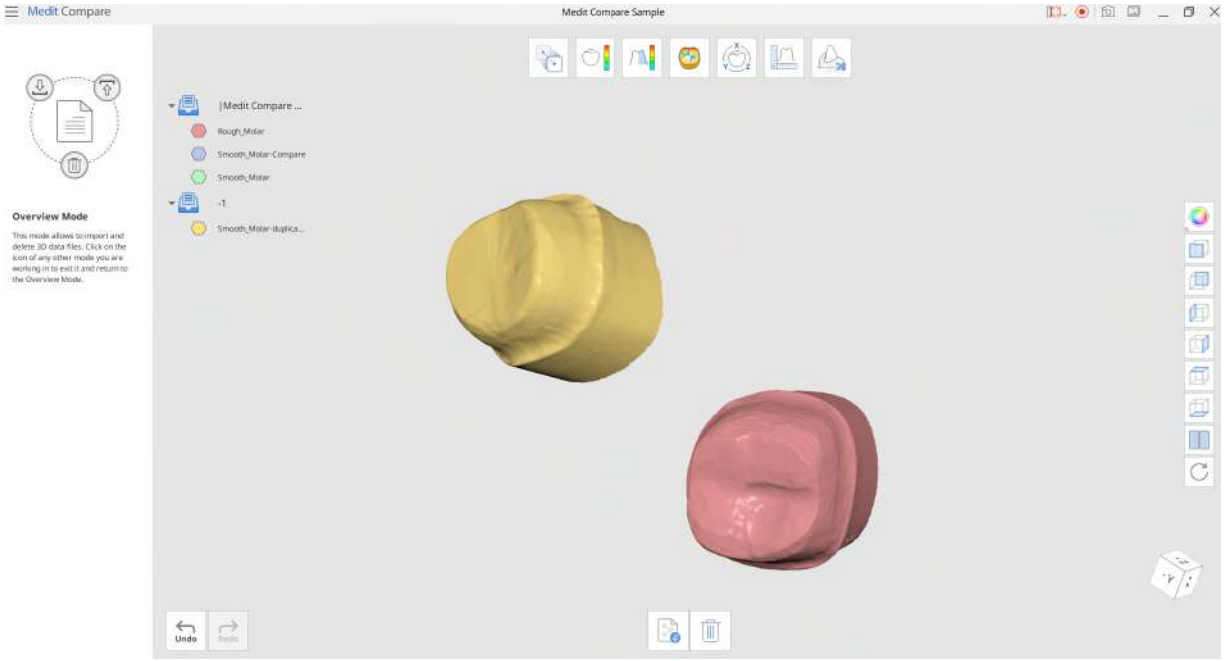
You can work on 3D data without prior alignment.

	Overview Mode	Allows to view and delete imported data. This mode allows to import and delete data. Click on the icon of any other mode you are working in to exit it and return to the **Overview Mode**.
	Alignment Mode	Aligns target and reference data.
	Deviation Display Mode	Displays the deviation result on the 3D data.
	Roughness Measurement Mode	Displays surface roughness of the data through a color map.
	Curvature Display Mode	Displays the curvature of data through a color map.
	Transformation Mode	Transforms 3D scan data by rotating, translating, scaling, or using a transformation matrix.
	Measurement Mode	Measures the distance, angle, length, and area on the 3D data or on its section lines.
	Edit Mode	Allows to remove unnecessary data by using various trimming tools.

Even after finishing working on the data in Medit Compare, you can go back to sections and measurement results created in Medit Compare once you open the program from the same case in Medit Link and choose the same project to work on. If you want to keep the measurement results ready for communication in Medit Link, capture the screen using the **“Screenshot”** tool which is located on the Main Toolbar.

4.1 Overview Mode

This mode allows to import and delete data.

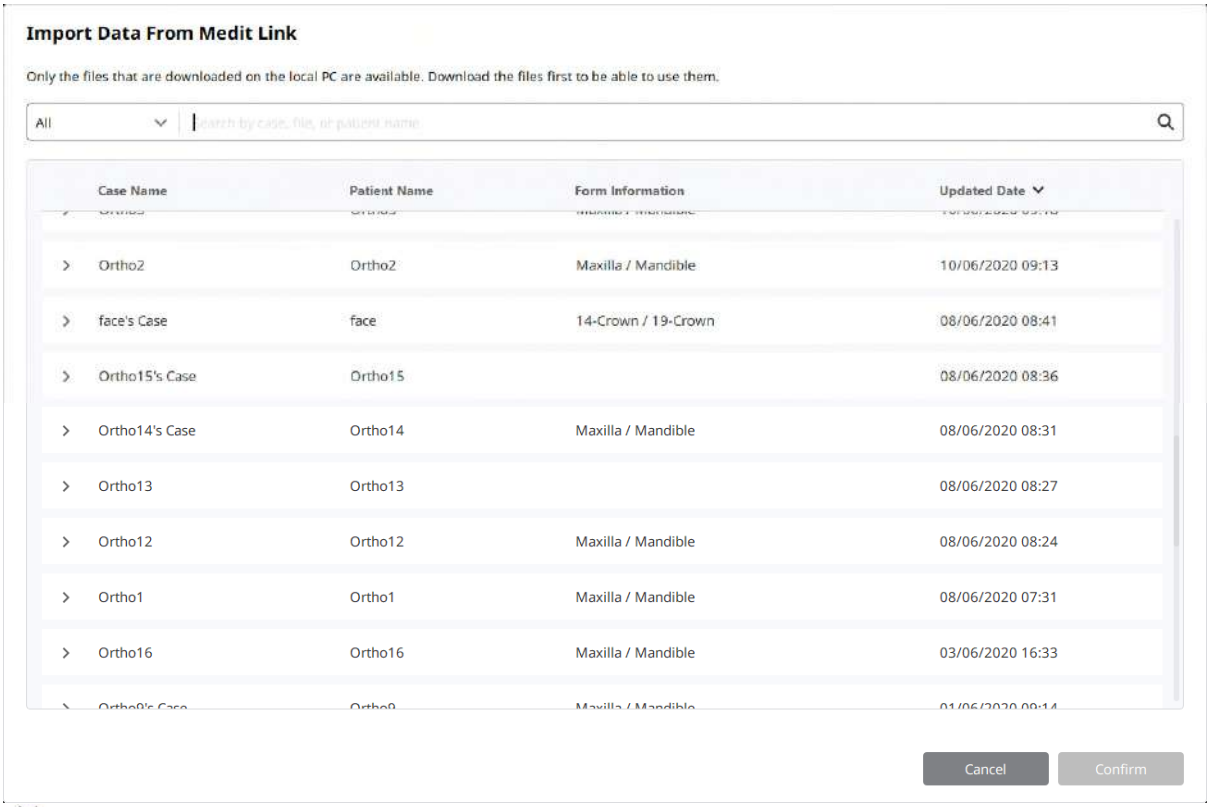


Toolbox

	Import Files	Imports files from Medit Link.
	Delete Data	Allows to select the data to delete.

▷ **How to import 3D data**

- Click the **“Import Files”** button.
- Choose the 3D data files from your existing Medit Link cases. You can choose the files that belong to different cases and compare them together, or as different sets.



After importing the files, control view options of different sets of data using the Tree View.

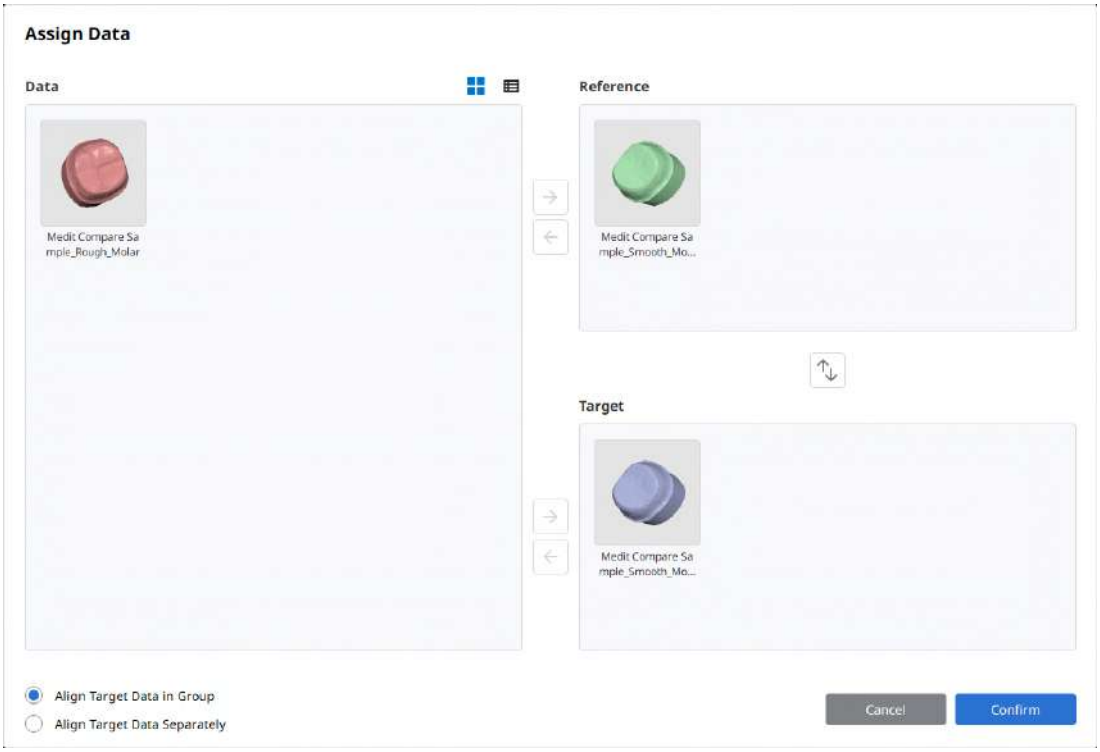
- You can choose multiple files to use in Medit Compare.
- You can import additional files at any time while working with the data by returning to the Overview Mode and pressing the **"Import Files"** button.

4.2 Alignment Mode

This mode provides various tools for alignment of target and reference data.

- First, you will be asked to define target and reference data among the files of the Medit Link Case you are working in.

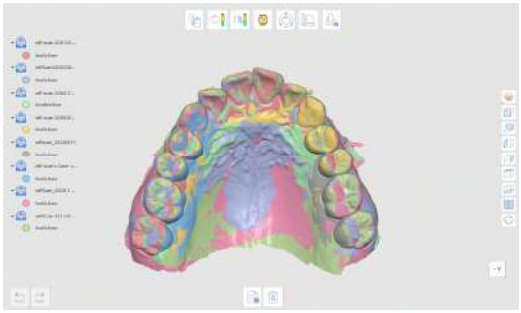
You can swap target and reference data by using the **"Re-assign Target and Reference Data"** button at the bottom of the window. You can come back to this option during working in any mode.



➢ In case you would like to align the target data separately to the reference, choose **"Align Target Data Separately"**. If you choose **"Align Target Data in Group"**, the target data will be aligned as a group.

Data alignment one by one

Aligned in a group

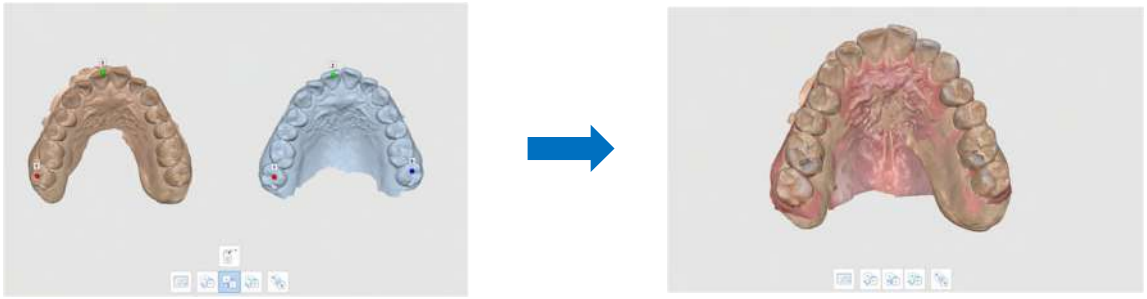


Toolbox

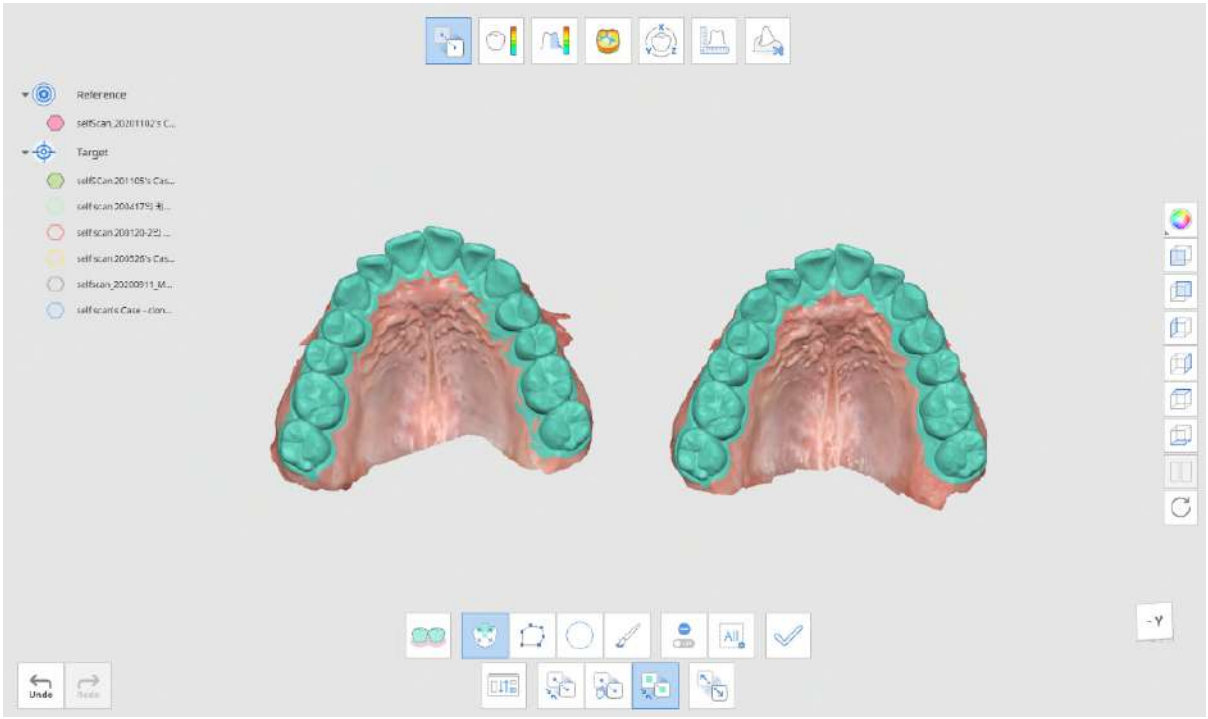
	Re-assign Data	Re-selects target and reference data for alignment.
	Automatic Alignment	Aligns the data automatically without any user-defined points.

	Manual Alignment	Aligns the data manually using user-defined points.
	Align with Selected Area	Performs alignment of reference and target data only within a selected area.
Alignment with selected area (The functions below appear when you work with the **"Align with Selected Area"** function.)		
	Align with Selected Area	Performs alignment of reference and target data only within a selected area.
	Smart Teeth Selection	Automatically selects all teeth of the arch leaving out gingiva parts.  This function is only available for the scan data that has been acquired by Medit Scan for Clinics with the **"Use GPU"** option on.
	Smart Single Tooth Selection	Automatically selects the area of a single tooth leaving out gingiva parts. Press and drag the mouse on the tooth.
	Polyline Selection	Selects all entities within a polyline shape drawn on the screen.
	Brush Selection	Selects all entities on a freehand-drawn path on the screen. Only the front face will be selected. The brush comes in three different sizes.
	Selection / Deselection	When on, deselects the area using various tools.
	Clear All Selection	Clears all selected areas.
Data detachment		
	Detach Data	Detaches the aligned data and takes it to the original position.

- Medit Compare provides three alignment options to choose from: 1) automatic alignment; 2) manual alignment; 3) alignment with a selected area.
    - To align data manually, press the **"Manual Alignment"** button and set up to three matching points on both target and reference data. The points can be deleted and set again after pressing the **"Delete Alignment Points"** button.



- The **“Align with Selected Area”** tool allows to select the specific part of the data you would like to align. Use the selection tools to mark the area on both target and reference data.
    - If you would like to select one or several teeth easily, try using **“Smart Single Tooth Selection”** tool:
    - If the data you are working on was acquired via scanning in Medit Scan for Clinics, **“Smart Teeth Selection”** is a great tool to select all teeth of the arch leaving out the soft tissue data.



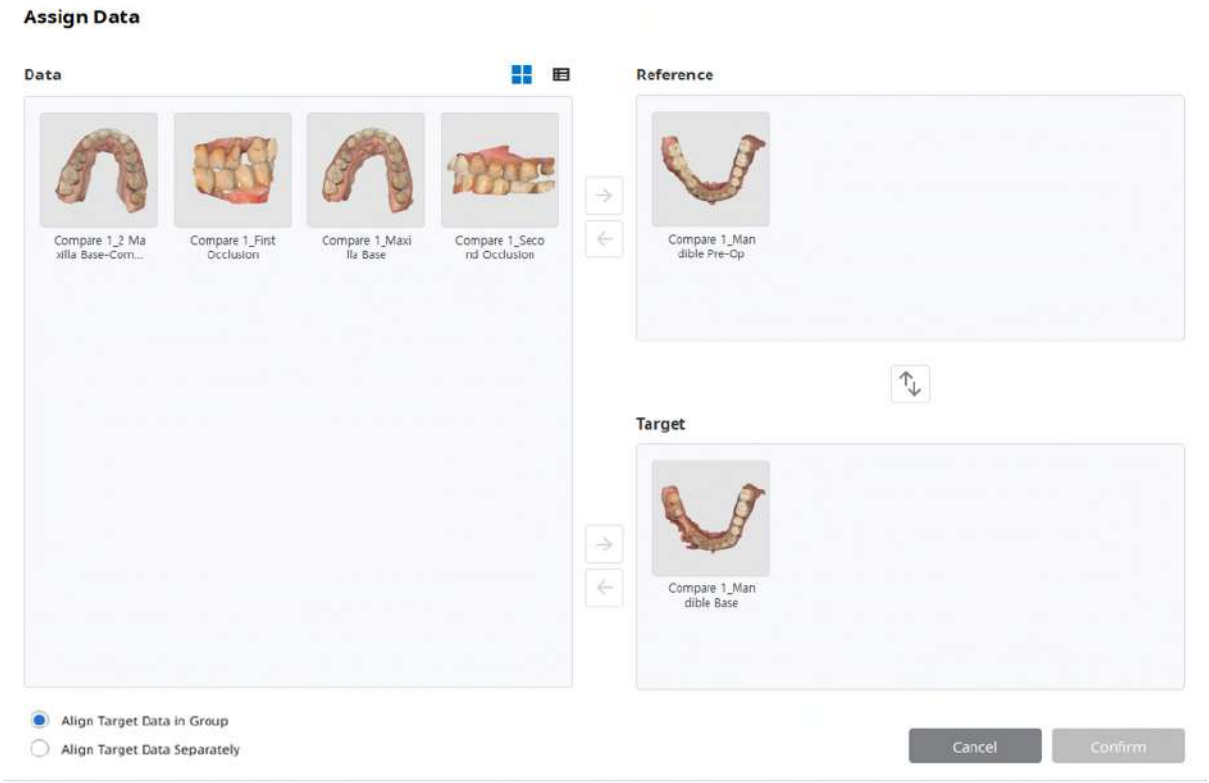
    - Click on the **“Check”** button to finish the selection and align the selected data with the selected area.

- Swap target and reference data by using the **“Re-assign Target and Reference Data”** button at the bottom of the window. You can come back to this option during working in any mode.

▷ **How to assign target and reference data**

- Go to the **Alignment Mode** to select target and reference data.

- Select 3D data that you want to set as the reference from the list and press the **“Assign as Reference”**  button or drag it with your mouse.
  - Alternatively, click right mouse button to choose a data assignment option.
- Next, select the 3D data you want to set as the target.

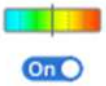


- Press **“Confirm”** button.

4.3 Deviation Display Mode

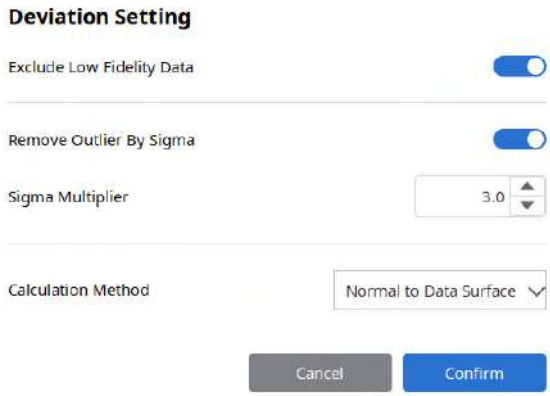
This mode displays the deviation results between the aligned target and reference data through a color map.

Toolbox

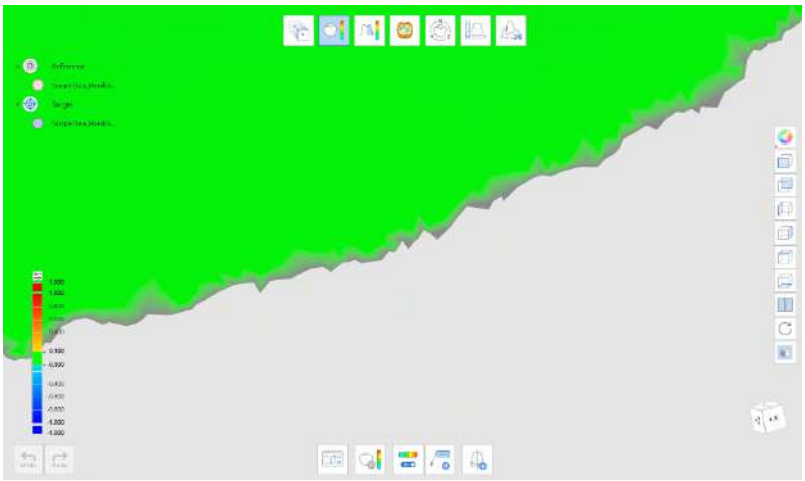
	Re-assign Target and Reference Data	Allows to change the assignment for target and reference data.
	Color Map On/Off	Turns on/off the color map.

	Delete Measurement Results	Deletes deviation results on the 3D data by clicking on each of them.
	Create Sections	Creates section lines.
	Deviation Settings	Sets options for calculating deviation.

➢ If you go to Deviation Settings, the below window will be displayed.

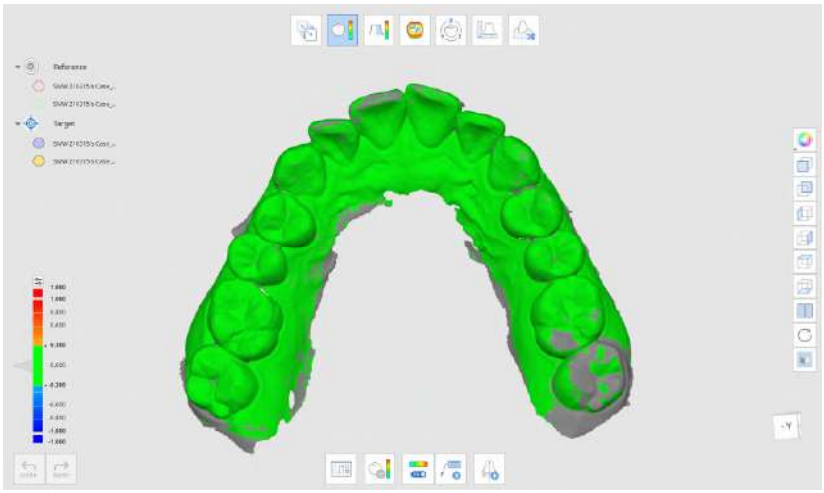


o Exclude Low Fidelity Data: Exclude the low-fidelity boundary data when calculating data deviation.

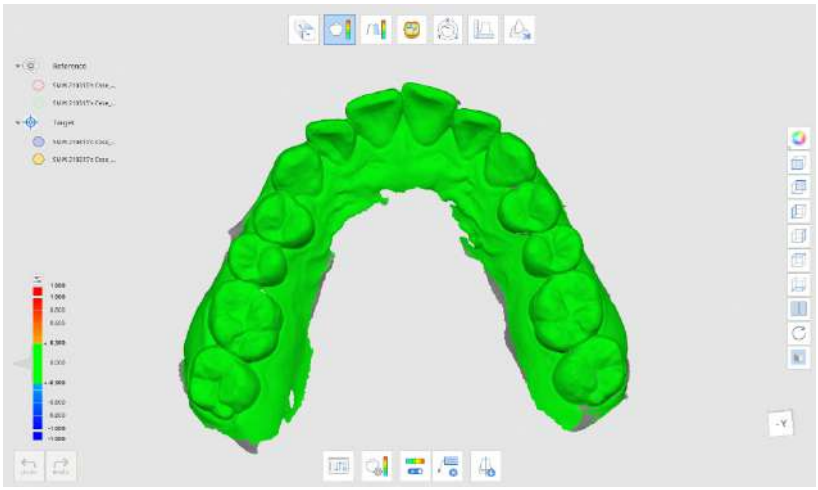


o Remove Outlier by Sigma: Input Sigma value and use it to exclude the outliers when calculating.

In the case of 1 sigma, based on the positive and negative deviations, only data comes within 1 sigma (standard deviation) are used for calculation.



In the case of n-time sigma, based on the positive and negative deviations, only data comes within n-time sigma (standard deviation) are used for calculation.

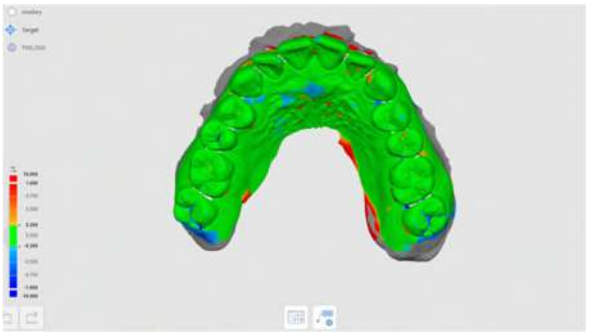


- Calculation Method: you can choose the calculation method between normal vector or the nearest position when calculating data deviation.

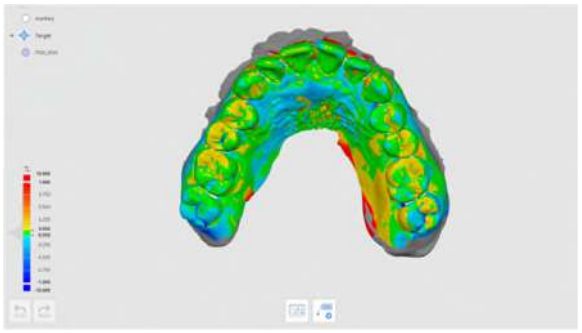
- You can customize the maximum value of deviation and the acceptable tolerance by clicking on the numbers in bold.

    - Adjust the resolution bar located above the colorbar. The higher the resolution becomes, the more class the color range is divided into.

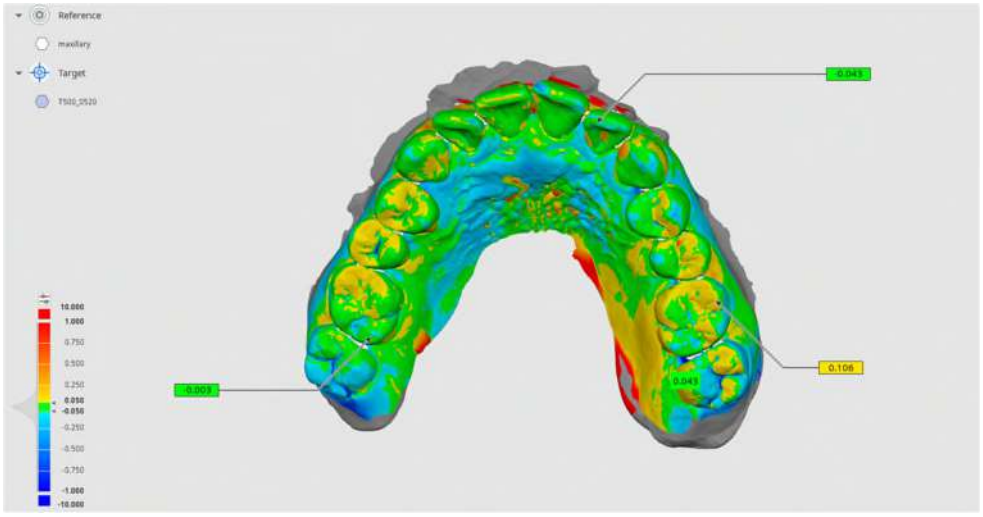
Acceptable Tolerance: 0.20 mm



Acceptable Tolerance: 0.05 mm



- To check the exact measurement, click on the specific position on the data.

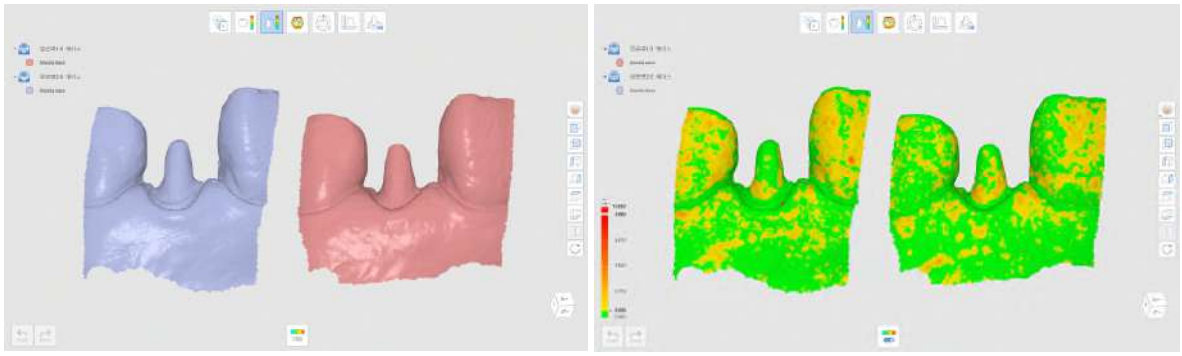


About Tree View

- The tree view in Deviation Display Mode shows data grouped into target and reference data.
- You can easily control data by hiding, showing, or changing its transparency one by one or as a group. Use right mouse click to see the options for each of group of data, or specific data.

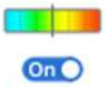
4.4 Roughness Measurement Mode

Roughness Measurement Mode displays surface roughness of 3D data through a color map.



- The map shows the roughness of target data and is colored according to the roughness value of a specific surface.
- You can customize the maximum roughness value and the acceptable tolerance by clicking on the numbers in bold on the index.
- To check the original texture and color of the 3D data, use the **"Color Map On/Off"** tool.

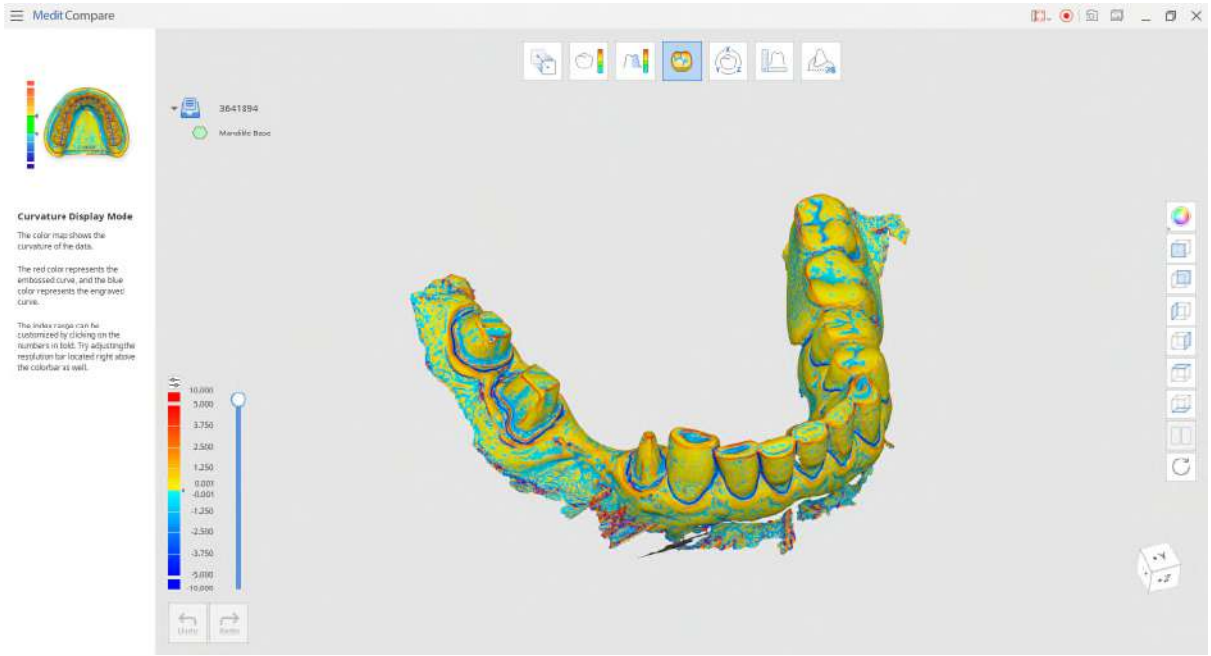
Toolbox

	Color Map On/Off	Turns on/off the color map.

4.5 Curvature Display Mode

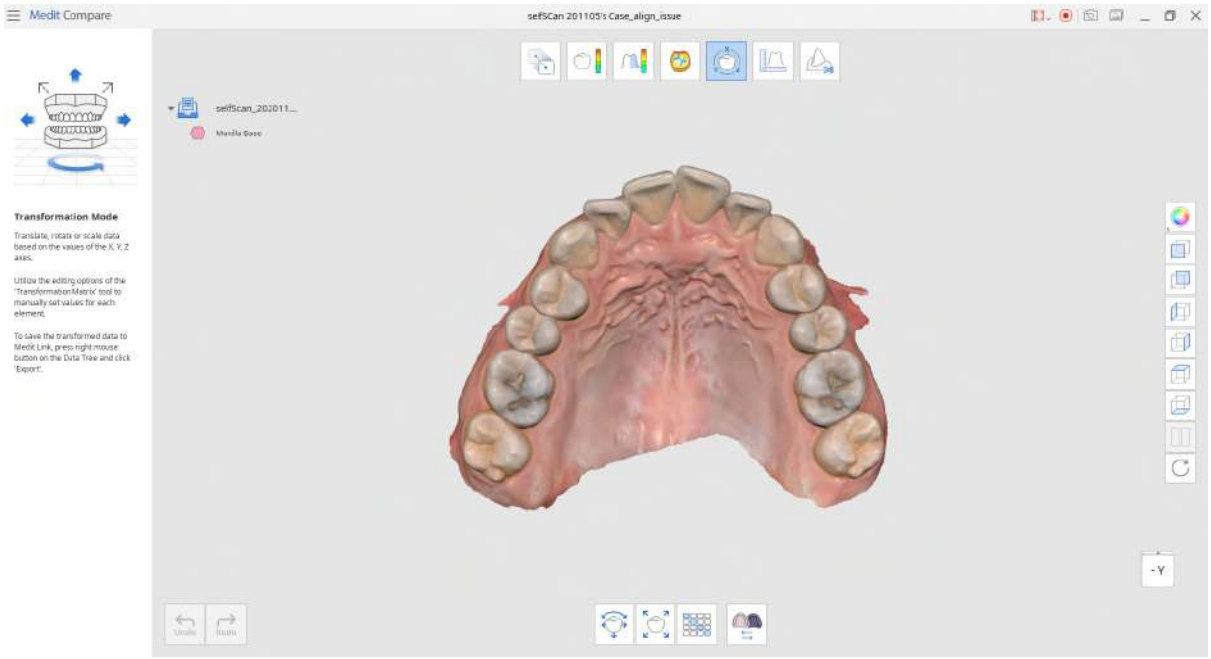
Curvature Display Mode helps to analyze roundness of the data which is shown using a color range.

- Control the slider located on the right side of the color bar to adjust the color ranger.



4.6 Transformation Mode

Transformation Mode provides tools to transforms 3D data by rotating, translating, scaling or using a transformation matrix.



- Utilize the Transformation Matrix tool to manually set values for each element.

To save the transformed data to Medit Link, press right mouse button on Data Tree and click **"Export."**

Once you exit the Transformation mode, you will have to select the data you would like to work on once again.

▷ How to utilize "Translate and Rotate" function

- Translate or rotate data by entering the distance or angle value for the axes.
  - Use the up and down keys on the keyboard or mouse wheel to change the values as well.
- Use the **"Apply"** button to apply the changes to the data across all modes in the program.

You can leverage this function to change the axes orientation of data – for example, if occlusal surface is located on the +Y axis, as in 3Shape CAD files, you change it to +Z axis to match the exocad orientation. Export the data by clicking the right mouse button on the data tree to export the data you are working on.

▷ How to utilize "Scale" function

- Scale data by entering values for the axes.
- Check the **"Uniform"** box to use the same value to scale data across all axes simultaneously.
- Use the **"Apply"** button to apply the changes to the data across all modes in the program.

Scale the enlarged crown/bridge data before sintering down to 1:1 proportion and compare it with the original data to see if the shrinkage is constant.

▷ **How to utilize Transformation Matrix**

Transformation matrix transforms the data by setting the value for each element.

- Use the **"Apply"** button to apply the changes to the data across all modes in the program.

Used when you want to check if CAD implant library and scan data were aligned correctly. Enter the value for the matrix to move to the alignment position and inspect the data.

Toolbox

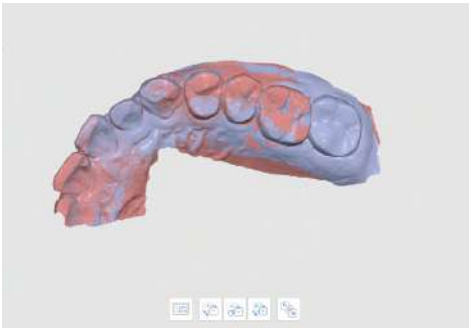
	Translate and Rotate	Allows to set values for X, Y, Z axes to translate and rotate data.
	Scale	Allows to set values for X, Y, Z axes to scale data.
	Transformation Matrix	Allows to manually set values for each element of the matrix.
	Reverse Data	Reverses the surface of the data inside out.

4.7 Measurement Mode

Measurement Mode allows to measure distance, angle, length, and area on the 3D data or on the section lines of the data. It is useful to check prep teeth, take measurements of teeth and occlusion.

- You can measure the data in the state of alignment or detachment.
  - Data can be detached in the **Alignment Mode** by pressing the **"Detach Data"** button.

Aligned



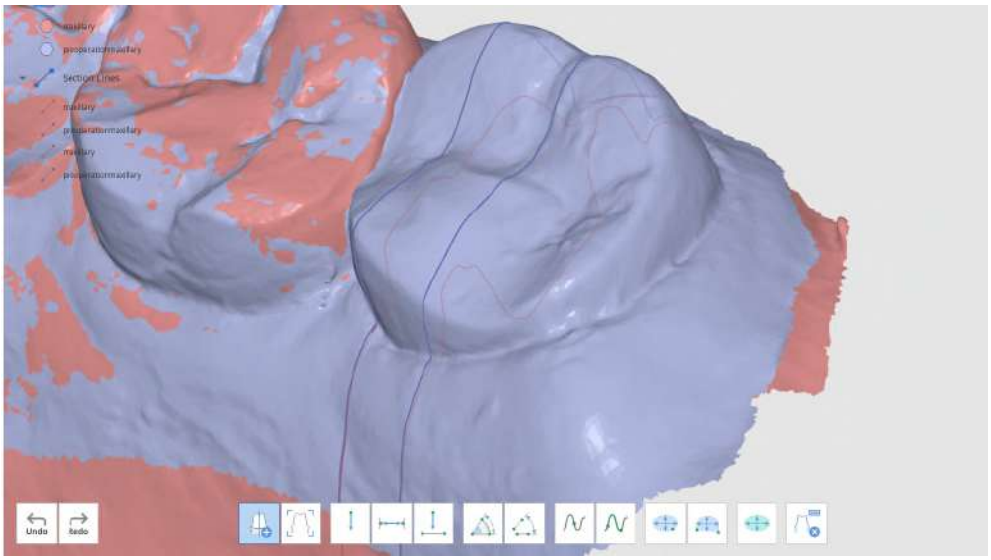
Detached

Toolbox: Measurement Tools

	Create Sections	Creates section lines.
	View Perpendicularly to Section Line	Orients the view perpendicularly to the section line.
	Measure Distance by One Point	Measures the shortest distance to the adjacent 3D data or line.
	Measure Distance by Two Points	Measures the distance between two points.
	Measure Distance by Three Points	Measures the distance between a point and a line defined by another two points.
	Measure Angle by Three Points	Measures the angle between the lines made with three points.
	Measure Angle by Four Points	Measures the angle between the lines made with four points.
	Measure Length by One Point	Measures the length of the section line by one point.
	Measure Length by Two Points	Measures the length of the section line by two points.
	Calculate Area by One Point	Calculates the area of the section line by one point.
	Calculate Area by Two Points	Calculates the area of the section line by two points.
	Calculate Area by Selection	Calculates the selected area.
	Delete Measurement Results	Deletes measurement results and sections by clicking on each of them.

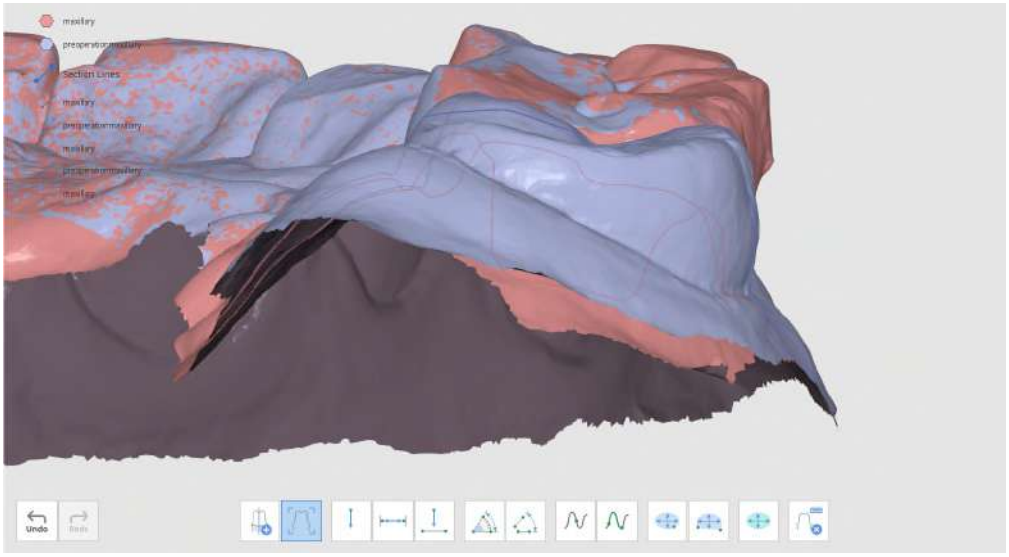
▷ **How to utilize Measurement Mode**

- Press **“Create Sections”** to draw a line at the desired area to create a section. (You can add multiple lines.)
    - The sections visibility view can be controlled in the Tree View.

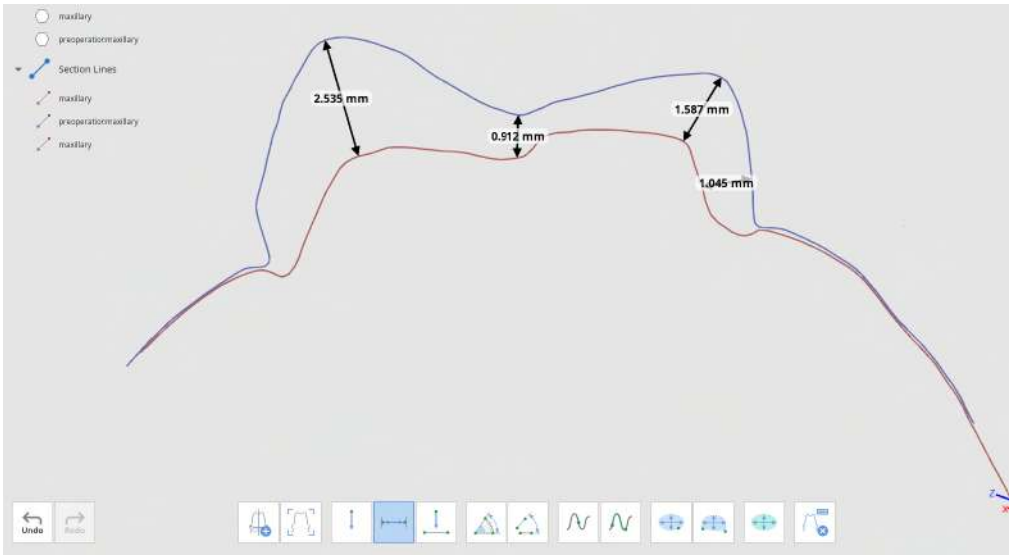


- Use the tools located at the bottom of the window to measure the distance, angle, length, and area of data or section lines.

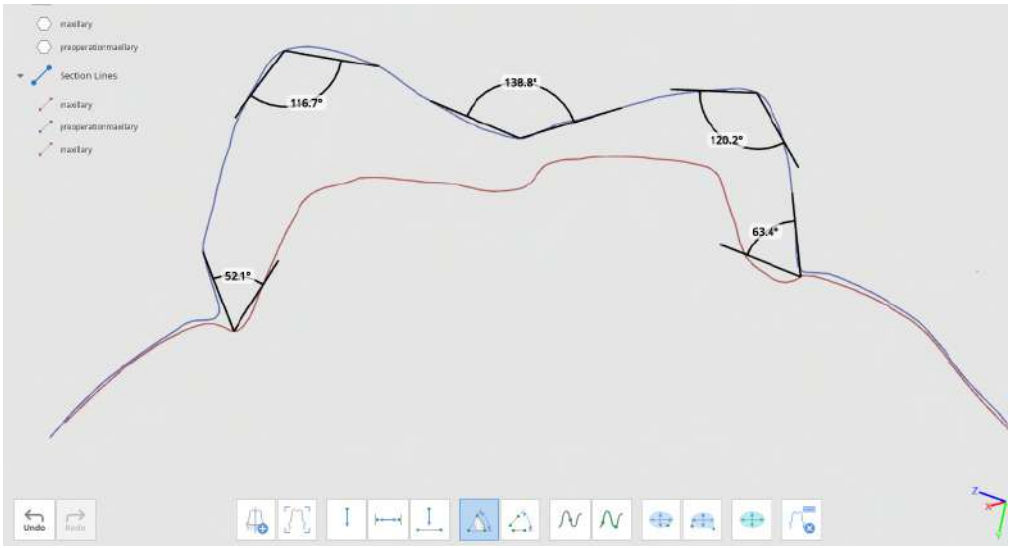
- To change view, click on the **“View Perpendicularly to Section Line”** button. Click on any of the section lines to change the data view perpendicularly to them.



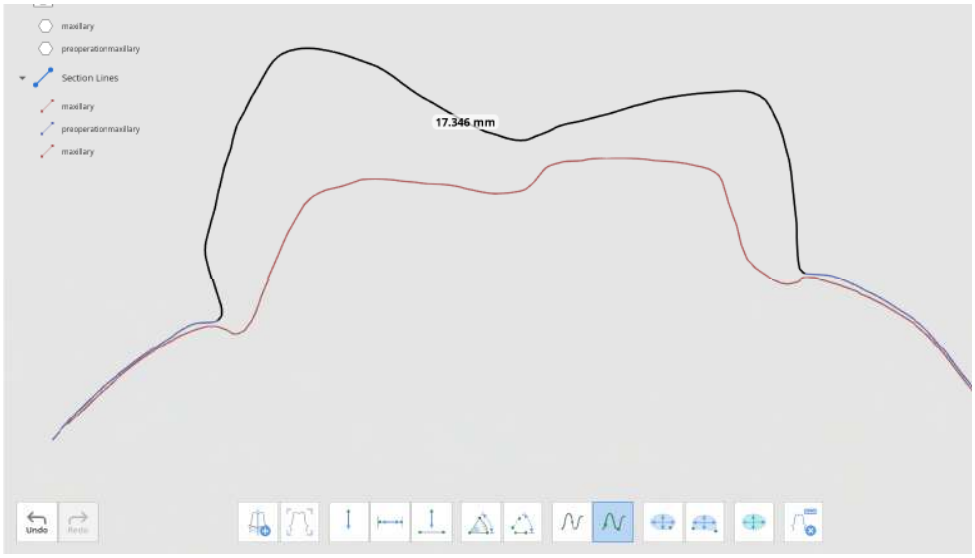
- **Measure Distance**: You can measure the distance by using one, two or three points.



- **Measure Angle**: You can measure the angle by using three or four points.



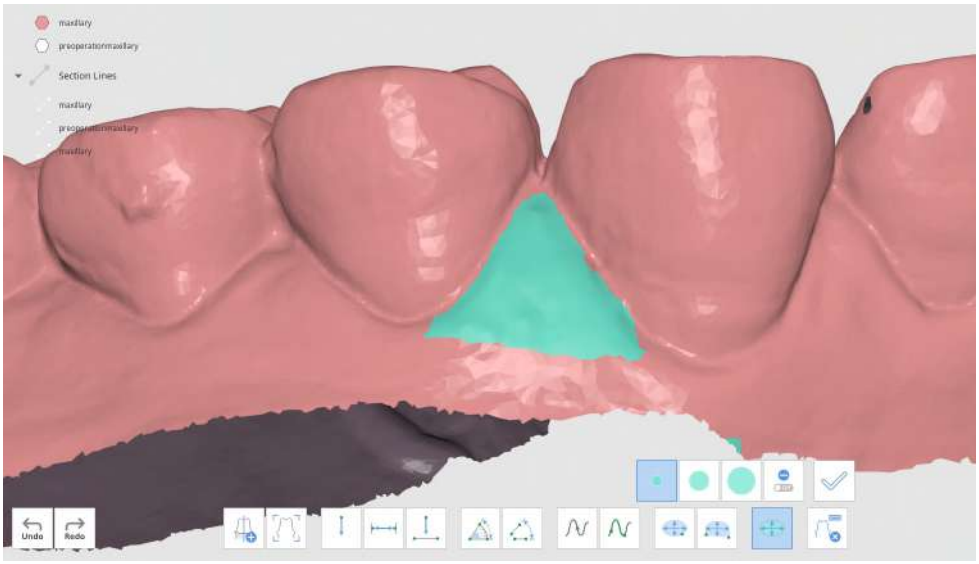
- **Measure Length:** You can measure the length by using one or two points.



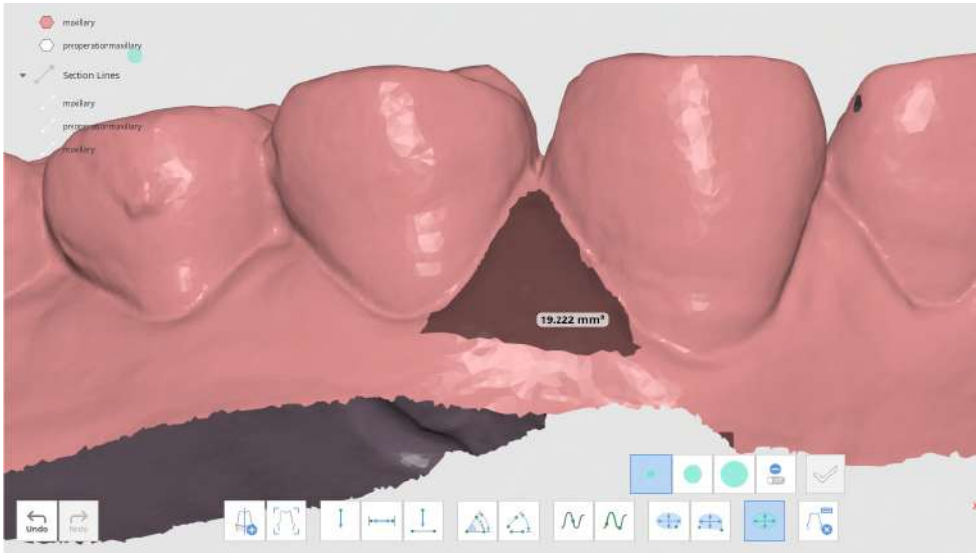
- **Measure Section Area**: You can measure the section area by using one or two points.

The Measure Distance and Measure Length tools can also be used without creating sections.

- The **"Measure Area"** tool allows you to measure the area by selecting the desired portion of the data.
    - Select the area of the 3D data to calculate.



- Click on the ✓ button to measure the selected area.



To remove measurements, click on the **"Delete Measurement Results"** button and then select any result on the data. You can also click and drag the mouse across all the measurement results to delete them.

4.8 Edit Mode

Edit Mode provides various tools to view and edit data.

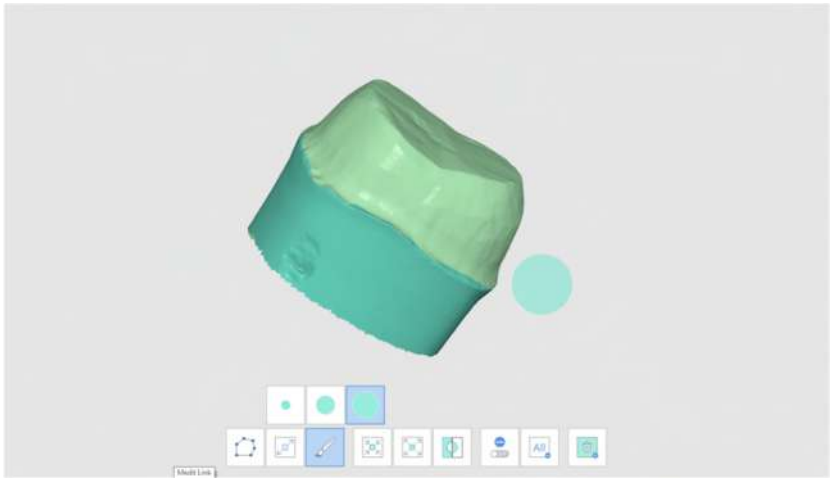
- The selected 3D data can be edited using different tools located on the bottom of the window.
- Control the data to be displayed and its transparency using the data tree on the left.

Toolbox

	Selection	
	Smart Teeth Selection	Automatically selects all teeth of the arch leaving out gingiva parts. This function is only available for the scan data that has been acquired by Medit Scan for Clinics with the **"Use GPU"** option on.
	Smart Single Tooth Selection	Automatically selects the area of a single tooth leaving out gingiva parts. Click, press and drag the mouse on the tooth.
	Polyline Selection	Selects all entities within a polyline shape drawn on the screen.
	Brush Selection	Selects all entities on a freehand-drawn path on the screen. Only the front face will be selected. The brush comes in three different sizes.
	After selecting an area	
	Shrink Selected Area	Reduces the selected area each time you press the button.
	Expand Selected Area	Expands the selected area each time you press the button.
	Invert Selected Area	Inverts the selection.
	Deselection	
	Selection / Deselection	When on, deselects the area using various tools.
	Clear All Selection	Clears all selected areas.
	Delete Selected Area	Deletes the data from selected area.

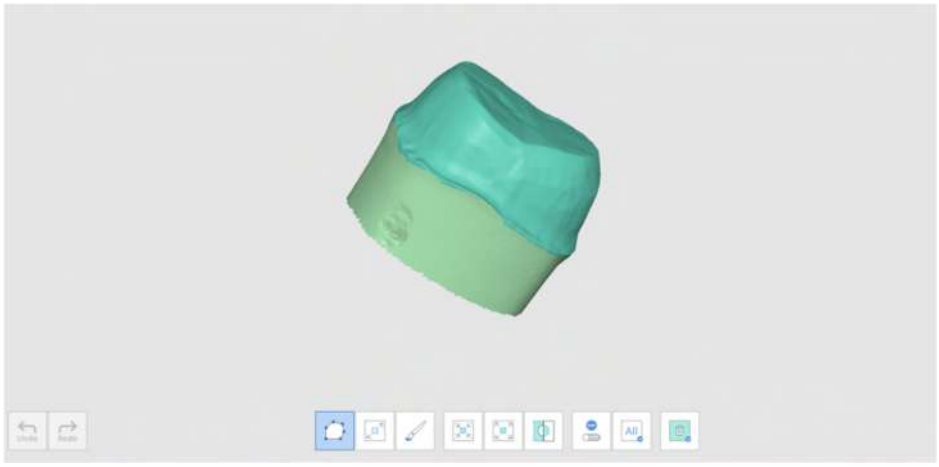
▷ **How to edit data**

- Using various tools to select the area you would like to edit.



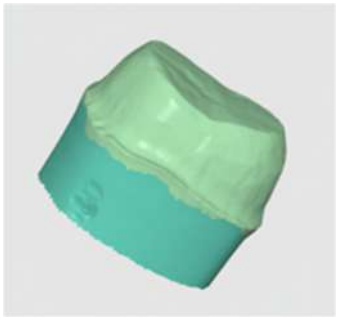
”Polyline” removes all entities within a polyline shape drawn on the screen, while **“Brush”** removes only the front face data.

- Revert the selection by pressing the **“Invert Selected Area”** button.

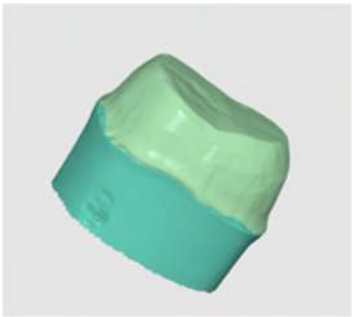


  - Reduce/expand the selected areas using the **“Shrink Selected Area”** / **“Expand Selected Area”** tools.

Shrink the selection



Expand the selection



- Click the **“Delete Selected Area”** button.