



# Clever One

# User Manual

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English

ewoosoft



# Introduction

This manual provides detailed information on how to use Clever One. This document may not be reproduced in any manner without the prior written consent from the publisher.

The user manual of Ewoosoft consists of 1) Product Installation and Server Manual, and 2) Product User Manual. It is recommended that users read this user manual thoroughly before using the program in order to learn the installation process of Clever One S/W and the functions of the program.



We provide a User Manual, and Installation and Server Manual for this product.

- User Manual: Guides you through the full product features and settings.
- Installation and Server Manual: Guides you through product installation and server-related functions.

If you need any of the above manuals, you can request them from ewoosoft or the customer support center. Both PDF and print manuals are available.

For supplementations, this manual is subject to change without prior notice. A printed manual distributed along with the product may not include contents specific to the latest version of the product. For additional information pertaining to this manual and the product, please contact us at:

## **Ewoosoft Co., Ltd.**

- Website: <http://www.ewoosoft.com>
- Tel.: +82-1588-9510

## **About this document**

- Manual Name: Clever One User Manual
- Publication Date: March 2025
- Manual Version: v1.0.1
- Relevant Clever One Version: v1.0
- Manufacturer: Ewoosoft Co., Ltd
- Document ID: IFU101-014-EN

## **User Notice**

- This manual is subject to change without prior notice for supplementation.
- Several functions of Clever One might be limited to use depending on countries and languages.
- This document may not be reproduced in any manner without the prior written consent from the publisher.
- To maintain seamless operation, user must read and follow the instructions prior to using Clever One.




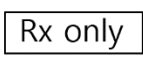
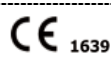




- For the optimal use of Clever One, the user must comply with the system requirements.
- When transferring patient data such as images or information, laws and regulations on personal information in the country of use must be obeyed.
- In the event of a serious accident while using the product, please contact Ewoosoft and all related administrative and regulatory authorities.
- This product may only be sold or used by healthcare providers or users authorized to use it by law.

### Product Information

<b>Product</b>	<b>Dental Imaging Processing Software For X-ray System</b>		
<b>Model</b>	<b>Clever One</b>	<b>Software Version: 1.0</b>	
	801-ho, Vatechnetworks Bldg.,13, Samsung 1-ro 2-gil Hwaseong-si, Gyeonggi-do, Republic of Korea		
Manufacturer	<b>Ewoosoft Co., Ltd.</b>	<b>Website: <a href="http://www.ewoosoft.com">www.ewoosoft.com</a></b>	
	49 Quai de Dion Bouton, AVISO A 4ème étage, 92800 Puteaux, France		
	<b>VATECH GLOBAL FRANCE SARL</b>		
	<b>Unique Device Identifier: (01)08800019700593</b>		
	<b>Serial No.: Marked on the Product</b>		
	<b>Medical Device</b>		
			
			

### Standard

Clever One complies with the following international standards and regulations.

	<b>Manufacturer</b>
	<b>Authorized representative in the European County.</b>
	<b>Serial Number</b>
	<b>Prescription only</b>
	<b>CE Marking</b>
	<b>Caution</b>
	<b>eIFU Indicator</b>
	<b>Unique Device Identifier</b>
	<b>Medical Device</b>
<p>The prescription use statement as required by 21 CFR 801.109(b)(1)</p> <p>“Caution: Federal Law restricts this device to sale by or the order of a physician or any other practitioners licensed by the law of the state in which that person practices to use or order the use of the device.”</p>	



**Unique Device Identification (UDI)**

(01)08800019700593  
(8012)V1.0.0

## The Main Functions of Clever One

Clever One stores, analyzes and helps in the process of diagnosing 2D/3D patient images that have been acquired through VATECH dental equipment

- Manage Patient Information
- Capture and store 2D and 3D images.
  - Diagnosis based on high resolution 3D VR
  - Simple and easy manipulation of 2D/3D image
  - 3D implant simulation
  - Powerful consultation using video contents
- Provide tools for image processing and View function for Patient image view
- Process images to enhance their diagnostic value with dental-specific tools and consultation animations.
- Create a record with patient images with the Report Module.

Clever One can be used in remote and local network environments with the exact same settings. If it has been installed on several PCs, the user can share the database for patient images and information in several workspaces.

# Cyber Security

## Cyber Security

Before installing the Clever One, you must follow the instructions below for Cyber security.

The instructions help to protect the program against cyber security threats such as viruses and malware.

- Prior to installing and using Clever One, scan your computer system with anti-virus and anti-spyware programs from a trusted source.
- Install, set up and enable adequate anti-virus software.
- Maintain up-to-date anti-virus software.
- Make sure that your OS has the latest security updates applied.
- Activate your PC's firewall.

Please contact our cyber security contact on the phone or via e-mail at the contacts listed below for the following situations.

- To request a software bill of materials(SBOM).
- Upon detection of a cybersecurity incident
- To inquire any cybersecurity related questions

## Cyber Security Contact

- Tel.: +82 1588-9510
- E-mail: [gcs@vatech.co.kr](mailto:gcs@vatech.co.kr)
- Website: <http://www.ewoosoft.com>

## Port Information

Below is the list of network ports used to receive and send data

designated port information for the following functions. Please refrain from changing the port information from the designated port information as it may open the user to security risks.

- Clever One to EzServer: 43112(TCP, UDP), 43132(TCP)
- EzServer to EzCloud/OneID ([https://\\*.ezcld.com](https://*.ezcld.com)): 443 (TCP)
- EzServer to LMP (<https://license.ewoosoft.com>): 443 (TCP), 8080 (TCP)

## Installing Security Apps

We strongly advise installing Microsoft or a security app, supporting features such as, malware protection, web protection, and real-time security notifications

The instructions help to protect the program against cyber security threats such as viruses and malware.

1. Open <https://aka.ms/WindowsDefender> to go to Microsoft Defender in the Microsoft Store and select Install.

2. After installing, sign in with the personal Microsoft account (such as @outlook.com, @hotmail.com, or @live.com).

### **Backup Data**

All data is backed up at 1:00 pm according to the OS scheduler time. To restore any of the backed up data please contact the cyber security contact listed above to restore or recover data. Please keep in mind any data created between after 1:00 pm and the restoration process will be lost.

### **Software Life Cycle and End of Life**

Intended Life Cycle: N/A

Therefore, the lifespan of this product is not limited, and software updated to the latest version can be used continuously unless otherwise noticed by the manufacturer.

## Interoperability

Clever One can interoperate with FDA-approved 3rd party software and is limited to the functions, intended population, input data, and specifications of the aforementioned FDA-approved software. Clever One receives a information of detected pathology and is visualized in Clever One.

- Requirements

Second Opinion requires the following to interoperate properly: Must support API communication.

- Limitations

Can only communicate with set APIs.

- Pathology Detection Services Currently Available for Integration

Pearl Inc., Second Opinion (K210365)

## License Plan Options

Clever One is available in a variety of plans in response to the users' needs. Restrictions on provided tabs and functions may apply by the plans. Please contact our customer support to upgrade your license plan.

Modules available for each license plan are described below.

Modules	Trial	Basic	Standard	Advanced
Common (Patient/2D/Acquisition/Consult/Report)	O	O	O	O
3D(MPR/Section/3D PAN)	O	X	O	O
3D(Endo)	X	X	X	O

Features available for each license plan are described below.

Feature		License Plan			
		Trial	Basic	Standard	Advanced
2D Module	CT Window	O	O	O	O
	2 <sup>nd</sup> CT Window	O	X	O	O
3D Module	Endo Sub-module	X	X	X	O
	DAVIS Toolkit for Segmentation	X	X	X	O
	Tooth Extraction	X	X	X	O
	Measure Airway	X	X	X	O
	Export (Image, Define Volume Range, Recon Ceph)	O	X	O	O
	CT - IO Scan Image Auto Registration	O	X	O	O
	CT - 3D Photo Auto Registration	O	X	O	O

Not all features provided by Clever One are listed above. Features other than listed above are available in all license plans.

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# 1. Indications for Use/Intended Patient Population

Clever One is dental imaging software that is intended to provide tools for supporting diagnosis and treatment.

These tools enable end users to view and interpret a series of DICOM compliant medical images and are intended for use by trained medical professionals.

Clever One allows users to load, view, and save DICOM images from CT, panoramic, cephalometric, intraoral, and other imaging equipment. It also provides functionalities such as 2D viewing, 2D analysis, 3D visualization, 3D analysis.

## **Intended Patient Population**

Our product has no clinical diagnostic or treatment functions and its main purpose is visualizing data. All contents shown in the software are visualized information of numerical values acquired from acquisition equipment and visualization results only assist end-users in patient counseling, diagnosis, and treatment planning. Users can adjust the visualization settings according to content viewed by the user. All diagnosis and treatment decisions made are solely up to the user. The 3D tooth segmentation function is limited to adult subjects with permanent teeth.

## 2. PC System Requirement for Clever One

The device Clever One is a medical software intended to be used in the dental practice. Please ensure that dental radiographs will be visualized on computer monitors compatible with recognized standards of image quality. The minimum system requirements to run Clever One are different according to the active license. Please refer to following items.

### 2.1 Client PC

#### 2.1.1 Basic License (2D only)

Category	Minimum Requirement	Recommended Requirements
CPU	Intel Core i5 10 <sup>th</sup> Gen	Intel Core i7 12 <sup>th</sup> Gen or higher
GPU	Internal or external GPU supporting OpenGL 2.1	NVIDIA RTX 20 series or AMD Radeon RX 5000 series or higher (GPU Memory: 4GB)
RAM	4 GB	8 GB or higher
OS	Windows 11	Windows 11 or higher
Display	1024x768	1920×1080 or higher ㄱ
Network	100M Ethernet LAN(CAT 5 cable) or Wireless Network 802.11n	100M Ethernet LAN(CAT 5 cable) or Wireless Network 802.11n or higher

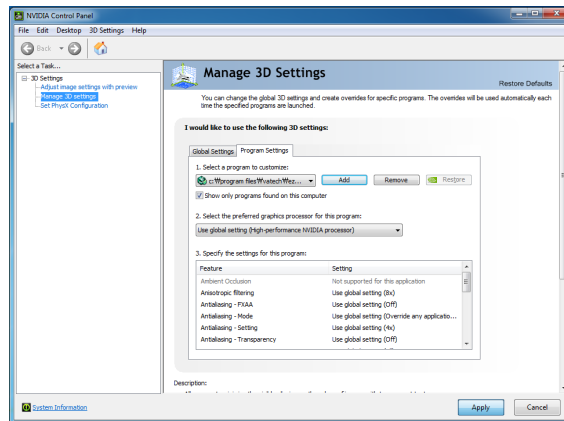
#### 2.1.2 Trial, Standard, Advanced License (2D + 3D)

Category	Minimum Requirements	Recommended Requirements
CPU	Intel Core i5 10 <sup>th</sup> Gen	Intel Core i7 12 <sup>th</sup> Gen or higher
GPU	NVIDIA GTX 10 series or AMD Radeon RX 400 series (GPU Memory: 2GB)	NVIDIA RTX 20 series or AMD Radeon RX 5000 series or higher (GPU Memory: 4GB)
RAM	4 GB	8 GB or higher
OS	Windows 11	Windows 11 or higher
Display	1280×1024	1920×1080 or higher
Network	100M Ethernet LAN(CAT 5 cable) or Wireless Network 802.11n	100M Ethernet LAN(CAT 5 cable) or Wireless Network 802.11n or higher



The updated version of graphic card driver should be installed on user's PC.

For the users who use NVIDIA graphic card, go to [Control Panel > NVIDIA Control Panel > 3D Settings > Manage 3D settings] to add Clever One.



For laptop users, please set the 'Select the preferred graphics processor for the program' option as 'High-performance NVIDIA processor'.



It is recommended to set DPI Scaling level as 100%.

1. Right click on desktop and select "Display Settings".
2. Use the slider under "Change the size of text, app and other items" to change the DPI scaling level.
3. Click the "Apply" button.

## 2.2 DAVIS Toolkit for Segmentation Operating PC

Category	Minimum Requirements	Recommended Requirements
CPU	Intel Core i5 11th Gen	Intel Core i7 11th Gen or Higher
GPU Memory	8GB	12GB or Higher)
RAM	16GB DDR3	32GB DDR4 or Higher
OS	Windows 10/11 (x64) (Recent Build)	Windows 10/11 (x64) (Recent Build)
Storage	SSD	NVMe M.2 SSD or Higher

### Supported GPU Series and Driver Versions by DAVIS Toolkit for Segmentation Version

Category	Driver Version	Supported Series
v1.0.0	452.39 or Higher	NVIDIA RTX series 20 - 40
v1.1.0	576.02 or Higher	NVIDIA RTX series 20 - 40 and 5070 (Desktop only)
v1.1.1	570.65 or Higher	NVIDIA RTX series 20 - 50

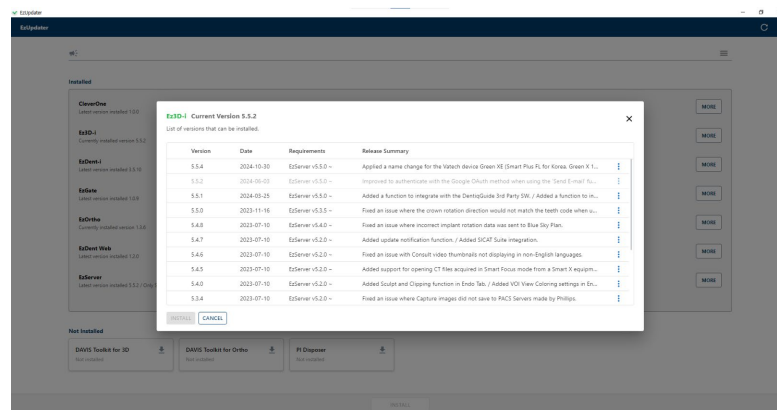


Please contact our customer service center for model compatibility with NVIDIA Quadro or Pro series.

### 3. Before Use

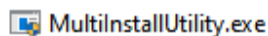
View and install new versions of Clever One via EzUpdater.

For more information on the operation of EzUpdater, see the 'Installation and Server Manual' provided with this User Manual.

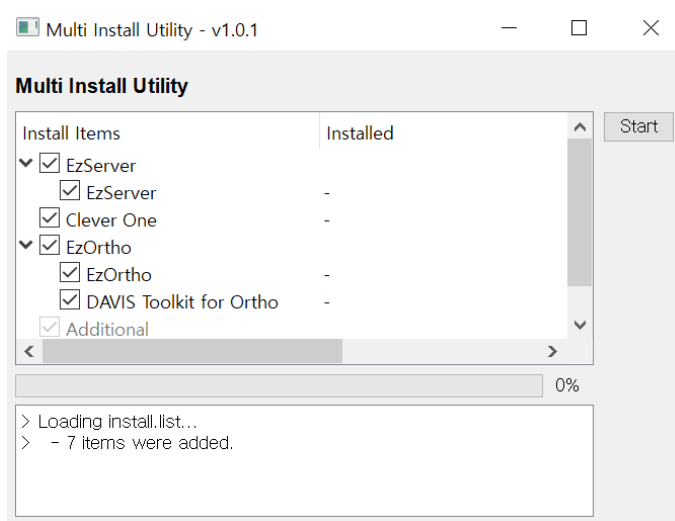


#### 3.1 Installing Clever One and EzServer

1. Execute MultiInstallUtility.exe.



2. Multi Install Utility window for selecting installation mode will be shown.




3. Select all items to install and click [Start] to install selected items in order.



All items below must be installed to use all functions of Clever One v1.0 by the PC types.

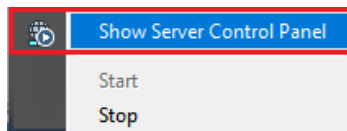
- Server PC
  - EzServer v6.2 or Higher
  - Consult Data

	<ul style="list-style-type: none"><li>• Implant DB</li><li>▪ Client PC</li><li>• DAVIS Toolkit for Segmentation</li></ul>
	<p>Integrated login function requires EzCommonTools that contains EzWebAgent, a custom browser provided by Ewoosoft, to be installed on the PC where Clever One is installed on. When initially installing a product that uses the integrated login function, the installation of EzCommonTools is automatically executed after installation of the product.</p>

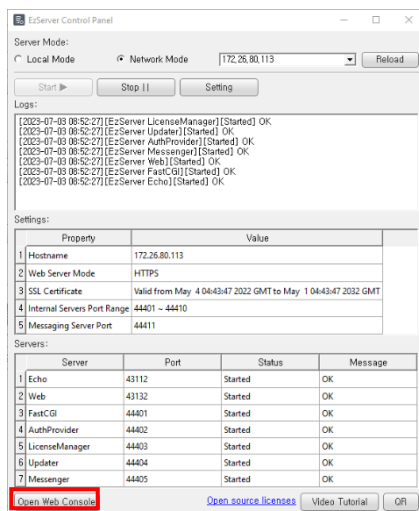
## 3.2 EzServer Settings

Log into EzServer Web Console using Master Admin account to set the server, manage user accounts.

1. Right click on the Server Control Panel tray icon then, click [Show Server Control Panel] from the context menu.



2. Click [Open Web Console] then, EzServer Web Console window appears.

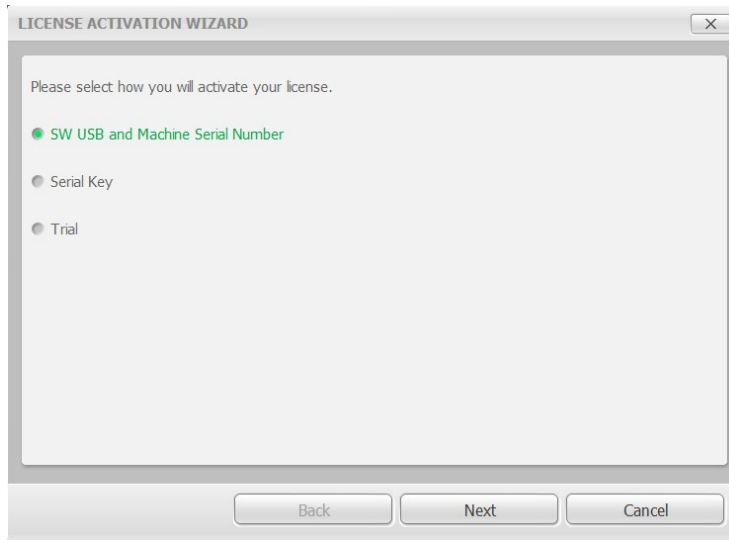


- EzServer Web Console is also accessible by executing EzLauncher and selecting EzServer Web Console.



### 3.3 Clever One License Activation

Activate the license using provided license key and enter user information to use all functions of Clever One. The following License Activation Wizard appears when you run Clever One without a license activated.



See 'Installation and Server Manual' for more details.

## 4. Opening Clever One

Double click the Clever One icon on the desktop to open Clever One.

### 4.1 Starting Clever One

1. Double click the icon of Clever One on the desktop. Clever One is executed.



>> Clever One Icon



>> Run Clever One

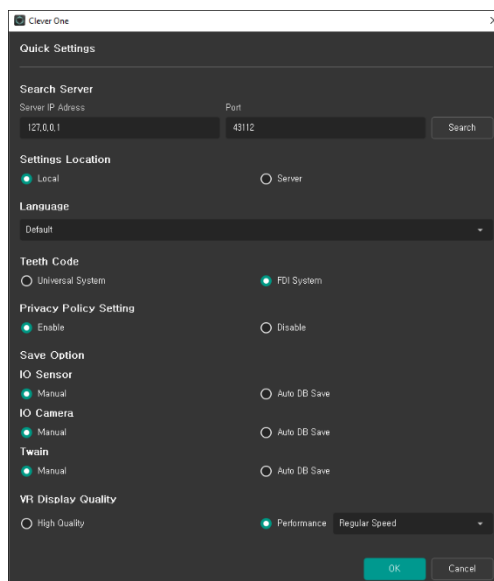


NOTE

When the Login function is enabled in EzServer, a login dialog appears. Enter ID and password then click [Login] to use Clever One.

User accounts can be added and managed through EzServer Web Console. See EzServer Web Console in '*Chapter 2. Setting up Clever One > 2. Environment > 2.1 General*' for details.

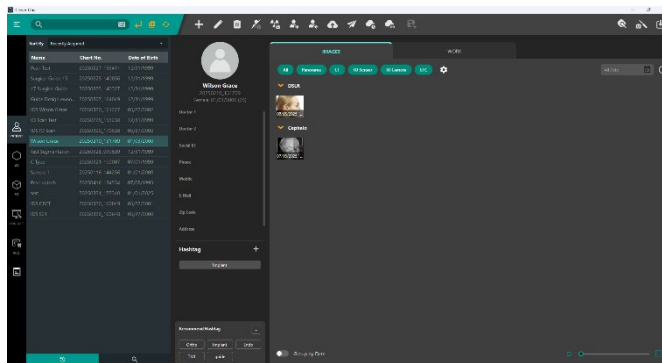
2. The [Quick Settings] widow appears when the user run Clever One for the first time after installation. With the [Quick Settings] window, the user can set Server IP Address, Setting Location (Local/ Server), Language, Teeth Code, VR Quality Mode and Skin Theme.



If the program was set during a previous time, the Quick Setting dialog does not appear and program is started right away.

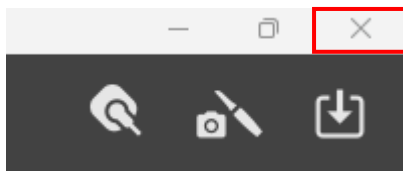


3. Once the quick settings are complete, the Clever One screen appears as follows.



## 4.2 Exiting Clever One

Click the [Exit] button in the upper right corner of the Clever One. Clever One is closed.



## 5. Module Common Features

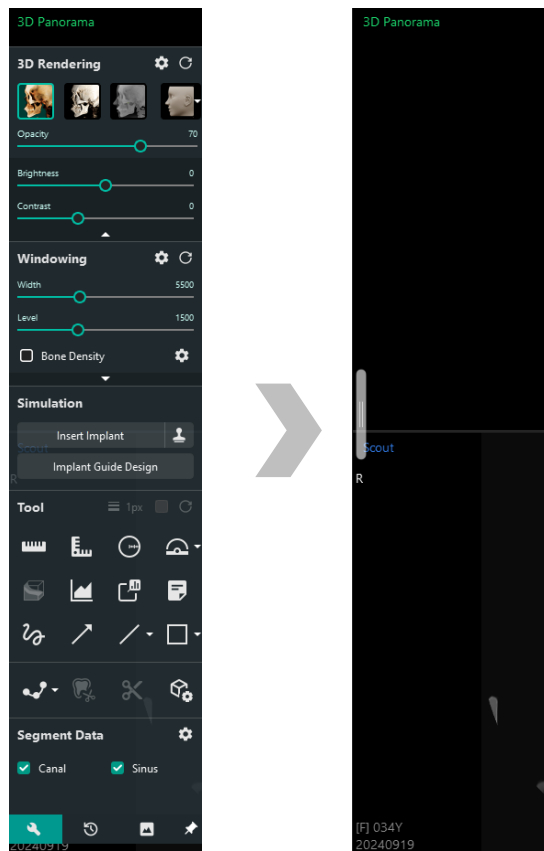
### 5.1 Unpinning the Control Panel

The control panel is pinned by default and can be unpinned to expand the view area.

1. Click the [Unpin] icon on the control panel.



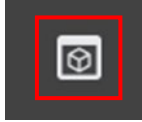
2. The control panel becomes translucent and collapses when not in use.



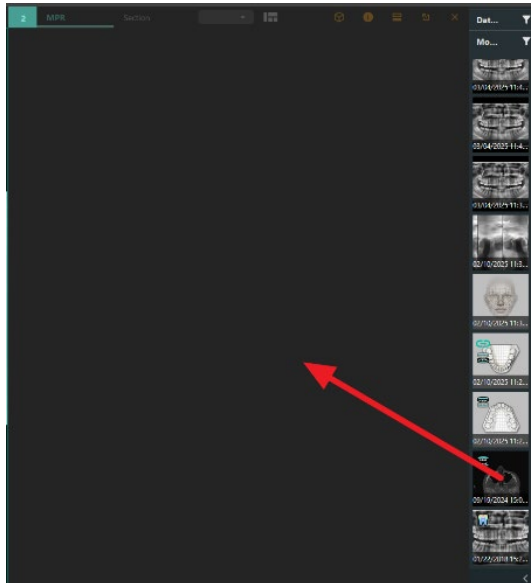
## 5.2 CT Window

Open an additional window to view a CT file to view and compare with other images or content.

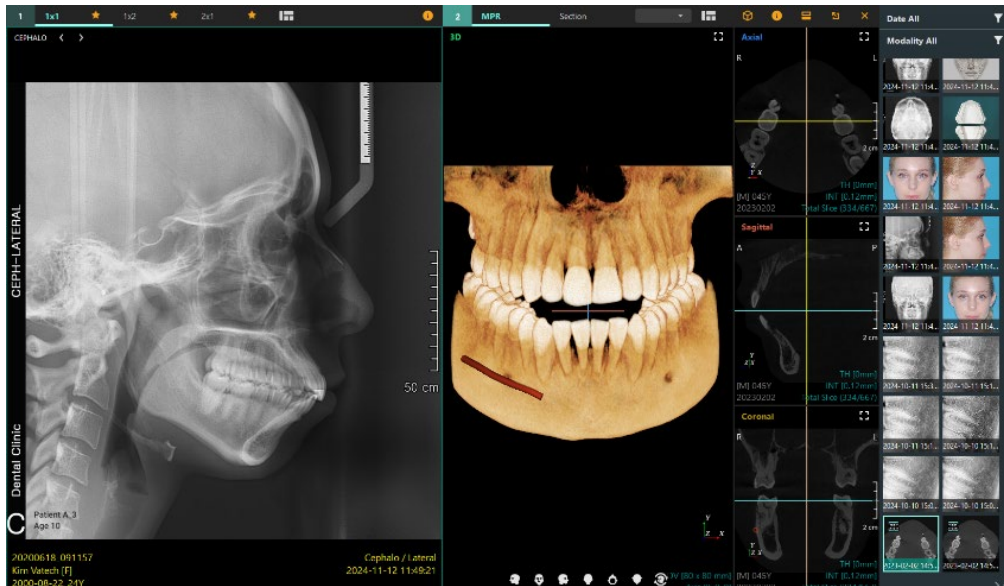
1. Click the 2nd CT Window from the upper-right to open the 2nd CT Window.



2. Drag and drop a CT file from image panel or external local sources.



3. The CT is displayed in the CT window.



## 5.3 Switching to Presentation Mode

View images in full screen in the 2D, 3D, Consult modules.

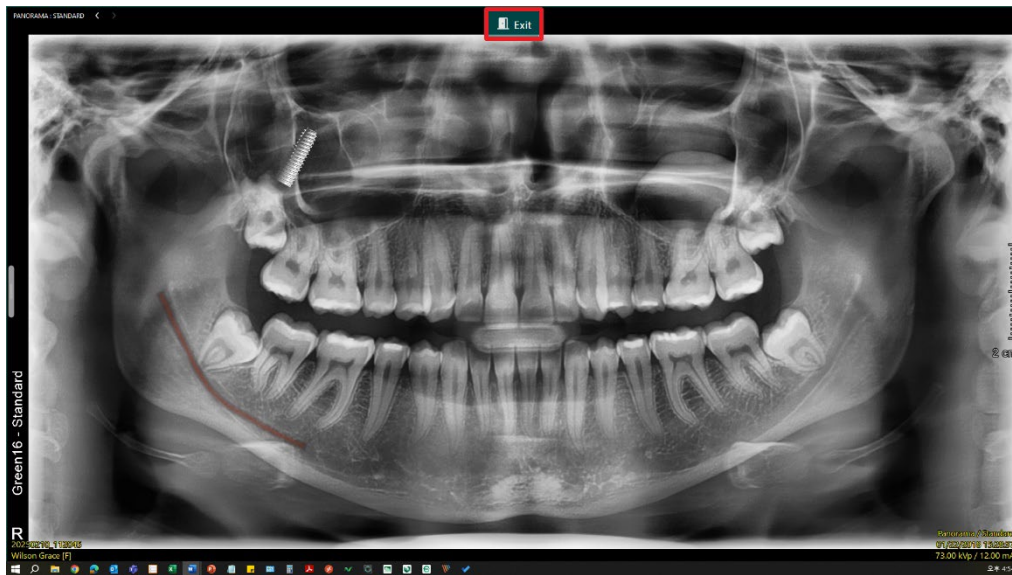
1. Click the [Presentation Mode] button on the upper-right corner. The window is displayed in full screen.



2. The hidden Toolbar reappears when the mouse is placed over the arrow on the left.

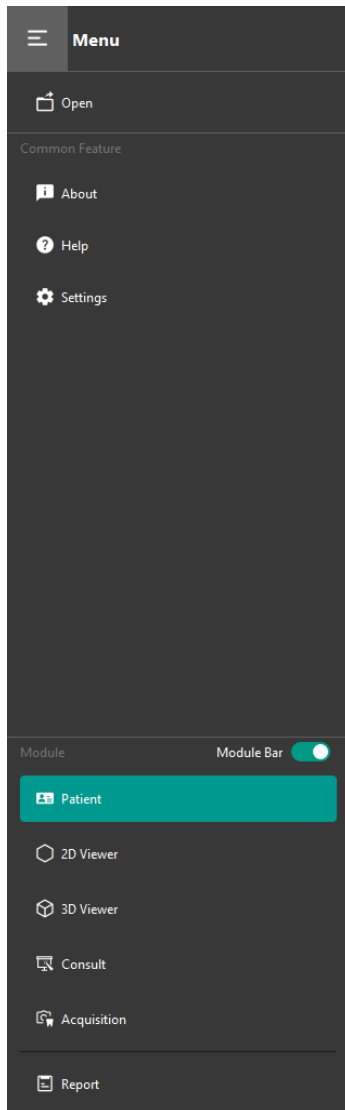


3. Click the ESC key to close the Presentation mode.
  - Alternatively, Click the [X] button on the top center of the image to close the presentation mode.



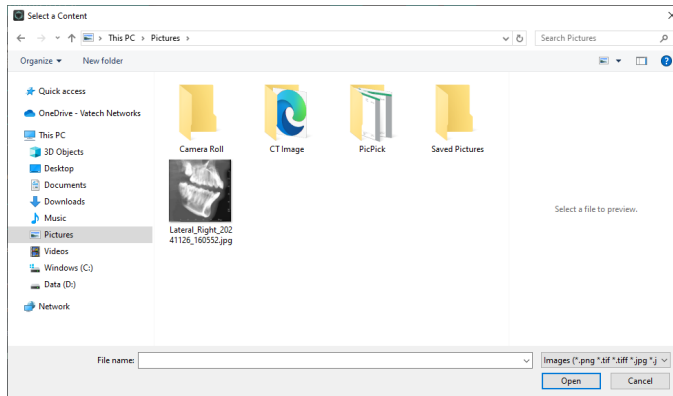
## 6. Utilizing Main Menu

The menus included in the main menu ( **MAIN MENU** ) of Clever One are Open, About, Help, and Settings.

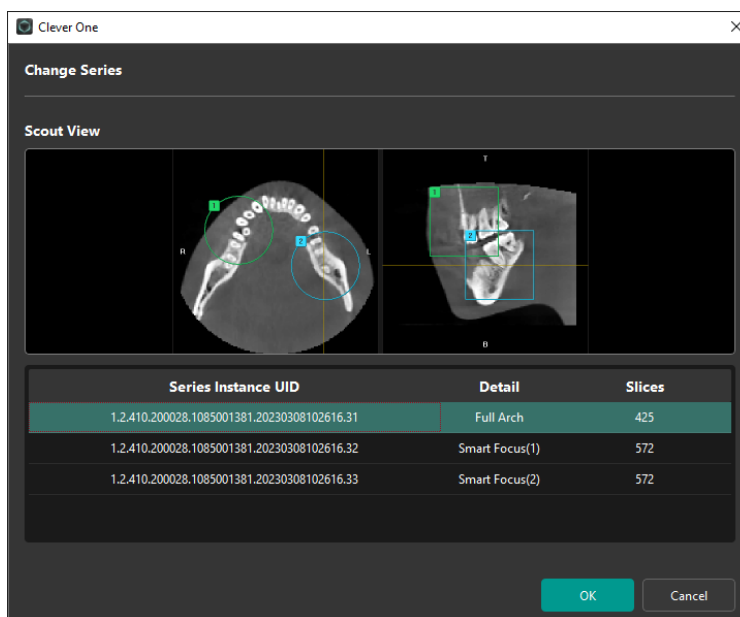


## 6.1 Open

1. Click the [Open] menu to open a file.
2. The [Open] window appears, and then select a file to open. Click the [Open] button. The selected file appears in the workspace.

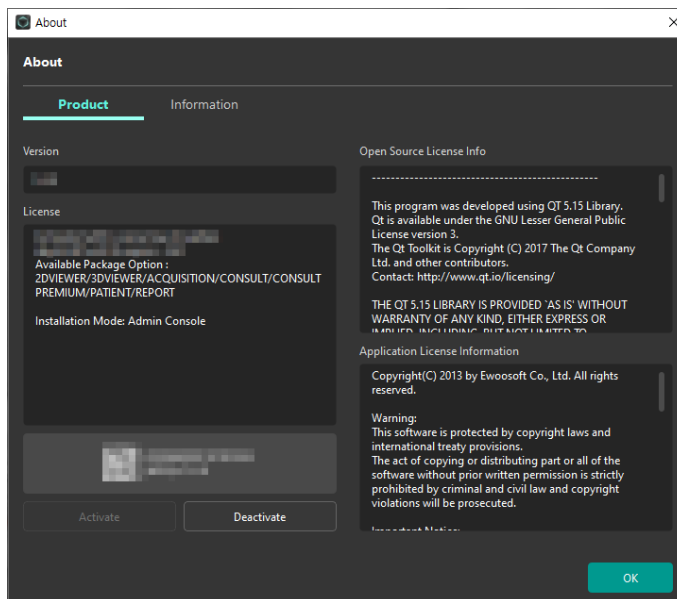


3. When multiple series exists in DICOM file, the following Load Multi Series Volume dialog appears. Select a series and click [OK] to open the series.



## 6.2 About

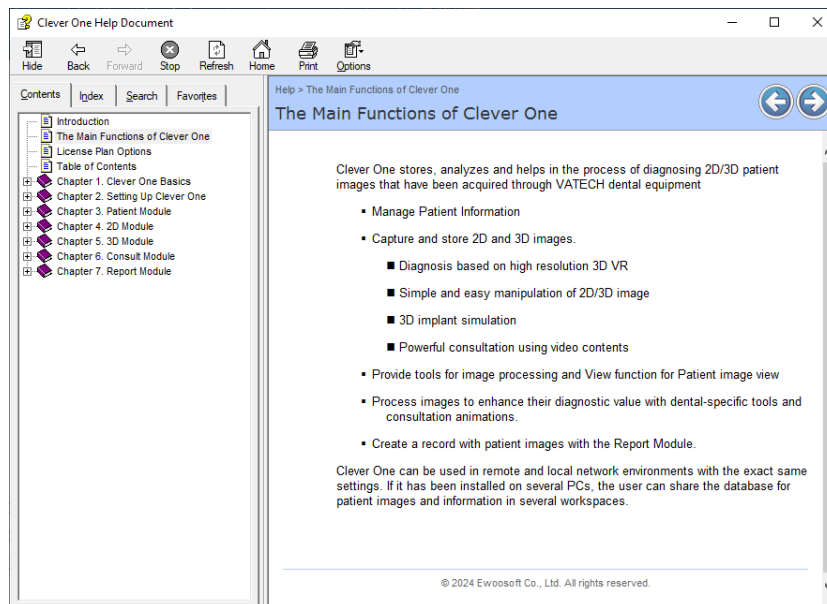
The program version, company name, license information, UDI information, and product labels by countries for Clever One are listed.





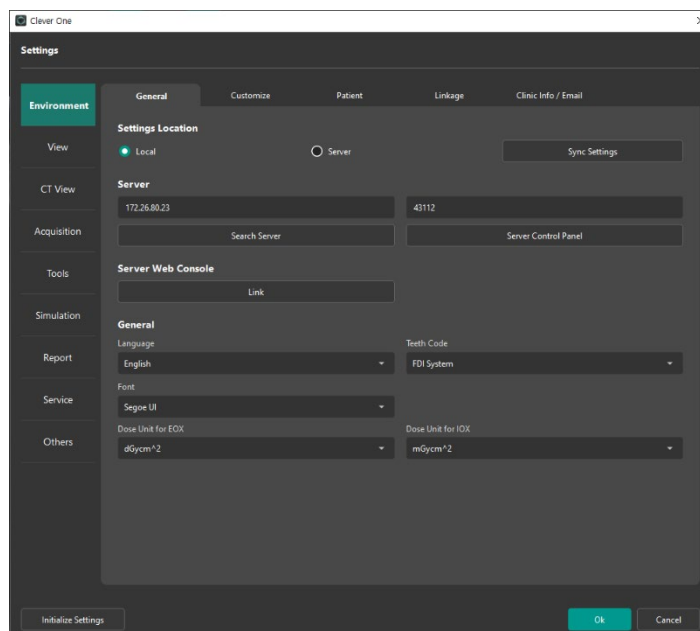
## 6.3 Help

View the digital Clever One User Manual in CHM file format.



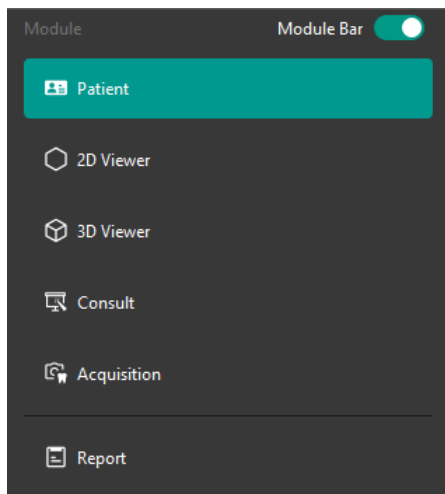
## 6.4 Settings

[Settings] provides the user with general setting preferences necessary for using Clever One. For details, see 'Chapter 2. Setting up Clever One'.



## 6.5 Modules

Select a module from the main menu to open.



## 6.6 Logout



NOTE

- When logged out from Clever One, the account will be logged out from all other products using integrated login.

The current account is logged out from Clever One. When the Login function is disabled in Server, the item is being hidden.

## 7. Performance information

### 7.1 Units and Conventions

This document uses the FDI tooth numbering system

Measurements in the Clever One software and in this document are in mm or in degree.

### 7.2 Measurement function

#### Performance Summary:

The accuracy of this function was validated using phantom images. Test results demonstrated a mean accuracy of  $\pm 10\%$  for length measurements and  $\pm 10\%$  for angle measurements under tested conditions, meeting pre-specified performance criteria.

#### Factors Affecting Performance & Limitations:

- Original image quality (noise, blur, artifacts)
- Incorrect image scale calibration
- Low image resolution

#### Potential Impact & User Recommendations:

Measurement errors can lead to inaccurate diagnosis or treatment planning (e.g., incorrect implant sizing). Users should always visually verify measurement points and ensure correct image scale calibration. Use high-quality images for best results.

### 7.3 Tooth Segmentation Function

#### Performance Summary:

The performance of this function was evaluated using an independent test dataset comprising 100 Oral and Maxillofacial CT scans (containing 2,810 teeth) acquired between November 2016 and June 2017. Validation was performed by measuring specific dimensions (e.g., length) of the automatically segmented tooth models within the software and calculating the error by comparing against a known reference value (e.g., Skull Phantom tooth measurements). An acceptance criterion of error within 10% of the average tooth size based on the Skull Phantom (approx. 11.2 mm), corresponding to roughly an absolute error of 1 mm, was established, and test results met this criterion.



- The 3D tooth segmentation function is limited to adult subjects with permanent teeth. Training and validation were performed using adult datasets and skull phantoms with permanent dentition.

#### Factors Affecting Performance & Limitations:

- **Data-Based Limitations:** Performance was validated on images with characteristics similar to the 2016-2017 Oral and Maxillofacial CT data used for testing (e.g., 8-bit grayscale). Performance may vary on images with significantly different characteristics (e.g., different acquisition equipment or protocols), data acquired after this period, or significantly different image types.

- **Image Quality:** Degraded original image quality (e.g., significant noise, metal artifacts, low contrast) can negatively impact segmentation accuracy.
- **Anatomical Variations:** Performance may be reduced in cases with atypical anatomy, severe pathology, or rare conditions not well-represented in the training data.
- **Algorithmic Limitations:** Inherent limitations of the deep learning models used (FCN, RNN) may lead to inaccurate segmentation in certain situations (e.g., ambiguous tooth boundaries, severely overlapping teeth).

### Potential Impact & User Recommendations:

Inaccurate segmentation could potentially lead to missed pathology or errors in treatment planning (e.g., for implant placement). Given the limitations of the measurement-based evaluation, it is critically important that users more thoroughly visually inspect the overall shape and boundaries of the segmentation results, confirming or correcting them based on clinical judgment. This function is intended as an aid for trained professionals and does not replace clinical judgment or final diagnostic/treatment decisions. Exercise particular caution and verify results when using images with significant artifacts, atypical anatomy, or characteristics substantially different from the test dataset.

## 7.4 General recommendations

Measurement accuracy depends on the accuracy of the input data, in particular the spatial resolution and alignment of the CT data. The input data can contain artifacts which do not represent the patient's actual physical anatomy.

When measuring distances/angles, results can also be influenced by contrast and brightness settings, and density threshold settings

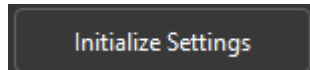
## Chapter 2. Setting Up Clever One

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5. Acquisition .....	57
6. Tools.....	62
7. Simulation.....	66
8. Report .....	74
9. Service.....	75
10. Others .....	77

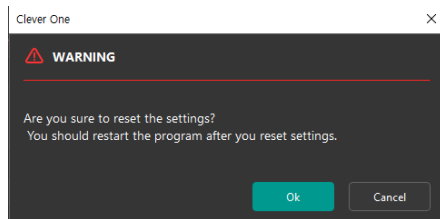
## 1. Reset the Settings

Setting values of Clever One can be reset by clicking [Reset the Setting] button.

1. Click [Reset the Setting] button at the left bottom of Setting dialog.



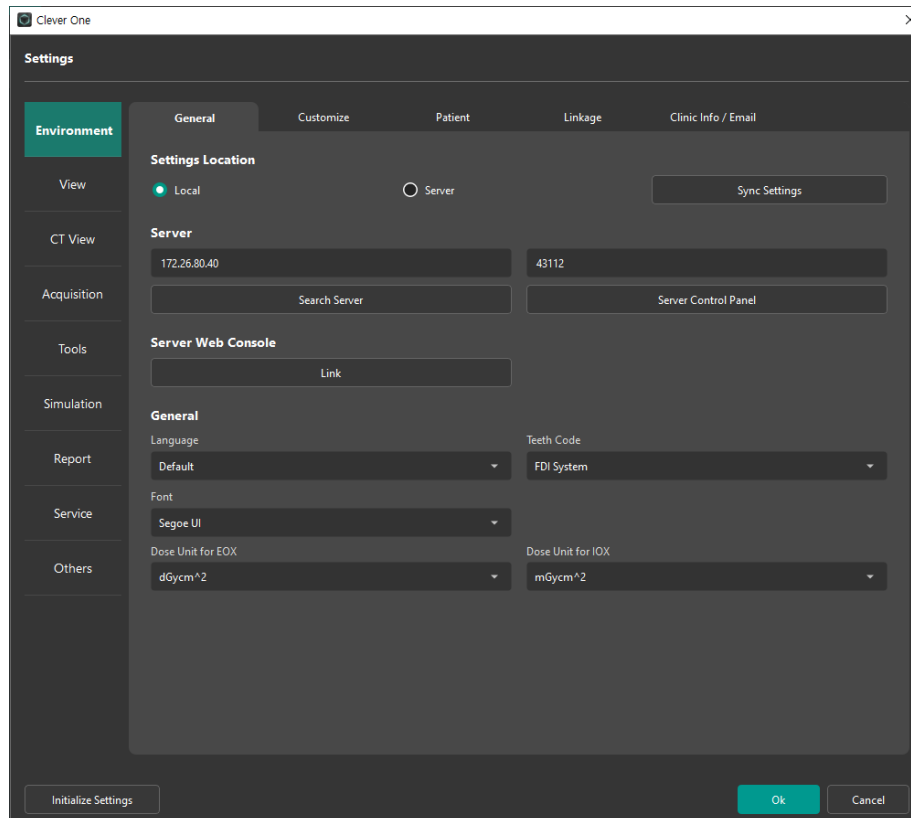
2. Click OK button when the following warning dialog appears.



3. Restart Clever One to apply changes.

## 2. Environment

### 2.1 General



#### ▪ Setting Location

Select an option for setting location of the viewer setting.

- [Local]: To apply the settings separately from the Server PC, select the [Local] option. By clicking the [Sync] button, the settings from the Server PC will be applied, but some options can be set separately if necessary.
- [Server]: To apply the settings of Server PC, select the [Server] option.
- [Sync]: The [Sync] button is activated only when the Setting Location is [Local]. The settings of the Server PC will be applied by clicking the [Sync] button, but the following options can be set separately from the Server PC settings.
  - ♦ Environment
    - General: Location & Theme settings
    - Database: All options
    - Linkage/E-mail: 3rd Party Software
  - ♦ View
    - General: VR Display Quality
  - ♦ DICOM

### ▪ Server Setting

If Clever One is used as Server, input "127.0.0.1" or click the [Search Server] button and select the corresponding IP address. Click on the [Server Control Panel] button to open the Server Control Panel to select server modes and change server settings. The [Server Control Panel] is displayed if EzServer is installed on the same PC.

If Clever One is used as Viewer, check the IP address of Server PC and input the corresponding address. At this time, the IP address must be the IP address of Server PC, not the IP address entered for Server setting (127.0.0.1). Click the [Search Server] to display the list of the IP address that are connected to LAN (Local Area Network). Select the proper IP address from the list and the address will be automatically entered into the input field.



It is recommended to set with a fixed IP address when setting IP address.

### ▪ Server Web Console



The default settings set in Server Web Console are designed to protect cyber security. Changing any of the settings can lead to decrease in cyber security or a cyber security threat.

Please refrain from changing the default settings in Server Web Console.

Click [Link] to open EzServer Web Console to set server settings including managing user accounts, enabling/disabling Login function and setting the security code. See 'Installation and Server Manual' for details.

### • Restrictions on Authority by Account Types

When the Login function is enabled in EzServer, restrictions may apply on using functions of Clever One by accounts logged in.

Account	Features Not Allowed
Master Admin	None
Admin	User Account Manager
Doctor	User Account Manager, Delete Data, Edit Shared Data
Staff	User Account Manager, Delete Data, Add and Edit Data, Transfer Data, Export Data, Edit Shared Data

### • Security Code

If the Security Code function is enabled in EzServer and functions to apply are selected, a dialog asking the security code appears when using corresponding functions. If the current user logged in is authorized and the Security Code function is disabled, the corresponding function is executed without asking the security code. However, the Security Code function cannot be disabled while the Login function is disabled.

The initial security code is set to numbers '0000' and the code can be changed in EzServer Web Console.

If the incorrect password is entered wrong for 10 attempts, the account will be locked. To unlock the account please contact customer service. To view information regarding login attempts or any other security related actions, view the complete log in EzServer Web Console > Security > Log.



- Logging of Events

The following actions or security events are logged. Search or view logs of the following actions in the EzServer Web Console > Security > Log. the log files are saved as a php file format and saved in the *c:\Program Files (x86)\VATECH\EzWebServer\www\ezwebserver\src\application\logs* file path in a *log-yyyy-MM-dd.php* format.

- Login, logout of accounts
- Adding or deleting users.
- Adding clinics
- Adding, deleting, or modifying patients.
- Transferring, exporting, or deleting of data
- Adding, activating and deactivating licenses

- Disposing Personal Information

To dispose of personal or confidential information use the Patient Information Disposal Tool located in EzServer Web Console > Security > Privacy.

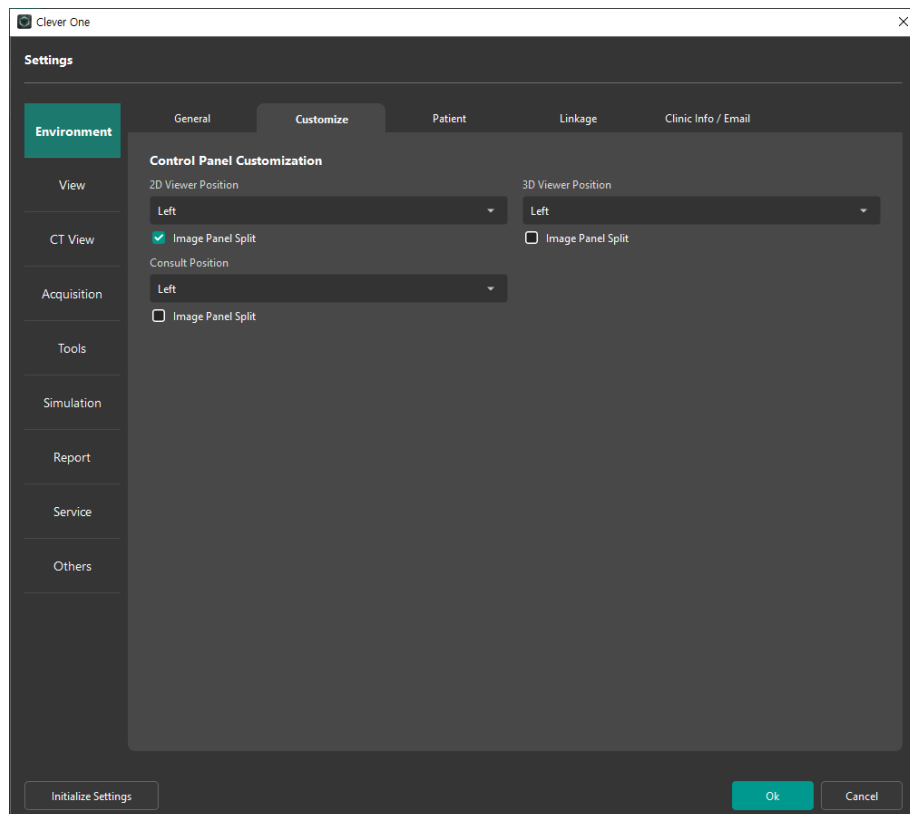
- General

The user can set the program's language environment, font, tooth code, and dose unit.



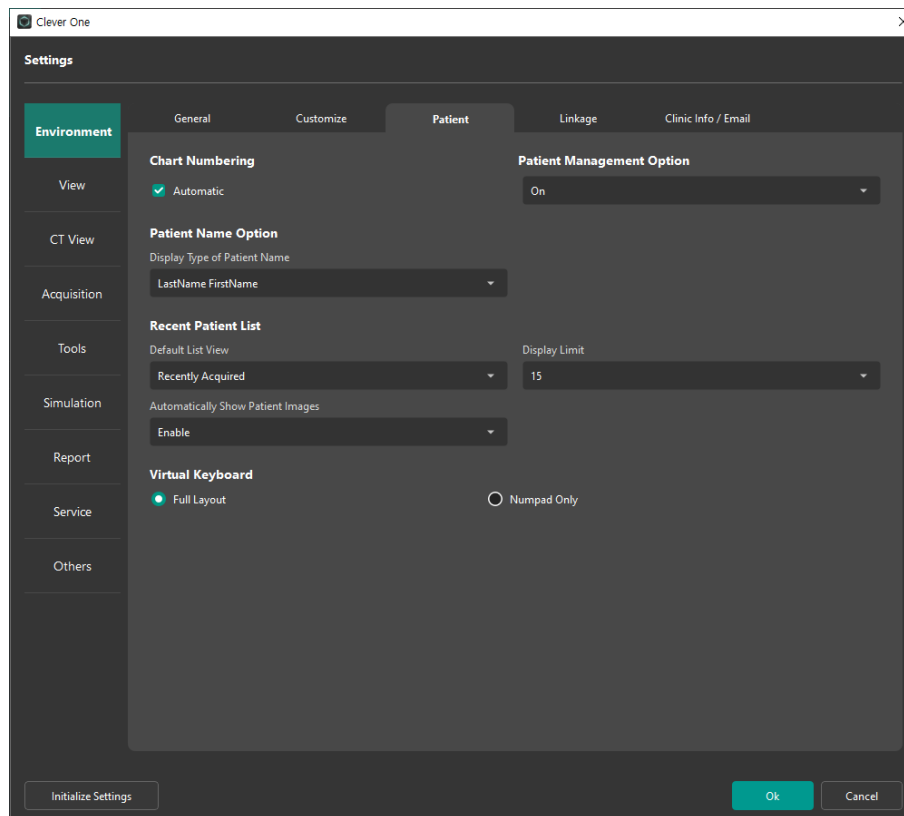
Some fonts may not be available for certain languages.

## 2.2 Customize



Customize the control panel by moving the 2D, 3D, and consult control panel position. You can also split the image panel to efficiently filter and select images.

## 2.3 Patient



- **Chart Numbering**

Determine whether a chart number is to be generated automatically or entered manually during patient registration. Check the box for a number to be generated and entered automatically.

- **Patient Management Option**

When using the PMS integration, disable Clever One's patient management features (add, edit, delete patients) for ease of patient management.

- **Patient Name Option**

Specify the patient name format.

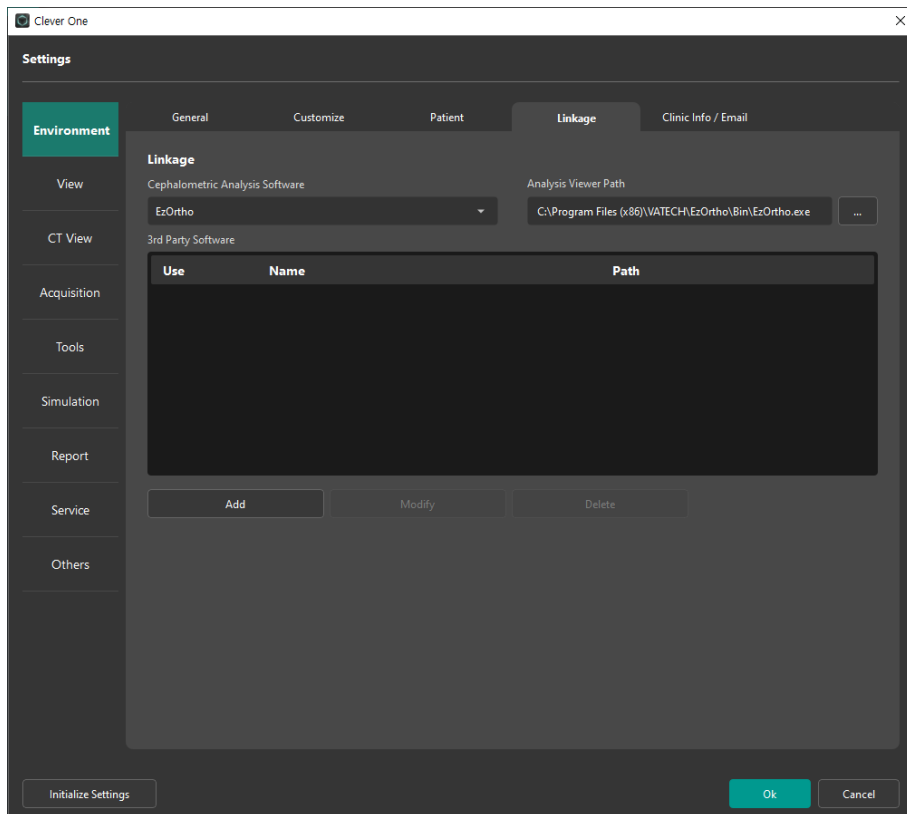
- **Recent Patient List**

- **[Default List View]:** Set how to list the patient in the Patient List when launching the program. You can set to list patient by the acquisition date or viewed date.
- **[Automatically Show Patient Images]:** When enabling the [Automatically Show Patient Images] option, the images of a selected patient are displayed on the right pane automatically after launching the program. When disabling the [Automatically Show Patient Image] option, the images of a selected patient are not displayed automatically, and users should double click the patient to display the images.

- **Virtual Keyboard**

- Set the layout of virtual keyboard. Choose either the full layout or numpad only as needed.

## 2.4 Linkage



- **Linkage**
  - **Cephalometric Analysis Software**  
Clever One can be linked with a Cephalometric Analysis Program. The programs which can be linked with Clever One are EzOrtho and OrthoVision.
  - **Analysis Viewer Path**  
Set the location of program of Cephalometric Analysis Program in this field.
  - **3rd Party Software**  
User can select the linked program that can send the data in use. Browse and set the path of the selected program for [3rd Party Software] option. If the path is not property set, the relevant program on the [Go to 3rd party SW] menu will not be activated.

## 2.5 Clinic Info/E-mail

The screenshot shows the 'Clever One' application window with the 'Settings' menu open. The 'Clinic Info / Email' tab is selected. The 'Environment' sidebar is visible on the left. The main content area is divided into three sections: 'Clinic Information', 'Clinic Logo', and 'Email Sender Information'. The 'Clinic Information' section has fields for Clinic Name, Web Site, Phone Number, Fax Number, and Address. The 'Clinic Logo' section has radio buttons for 'Text' (selected) and 'Image', a dropdown for 'Segoe UI', and a text area containing 'VATECH Dental Clinic'. The 'Email Sender Information' section has fields for Email Address, Password, Name, and SMTP Server Address, along with a 'Test' button. At the bottom, there are 'Initialize Settings', 'Ok', and 'Cancel' buttons.

- **Clinic Information**

The user can input their clinic information such as the name of the clinic, website address, phone number, fax number, address, clinic logo, and image. The report reflects the information entered.

- **Clinic Logo**

Select a clinic logo type between a text logo and image log. Once the clinic logo (image file) is registered, it appears at the bottom left of the Clever One screen by default. The saved logo will be used in the reports as an advertisement.

- **E-Mail Sender Information**

Users can send a test email from the saved user account. To do this, the email address, name, password and other related information are required.



To use the Email feature properly, you must configure the IMAP/POP3 setting from the sender's email account. In the email setting, change the POP3 and IMAP setting to [Enable].

- **SMTP Server Address**

If the domain of the user's email address is predefined by Clever One, the SMTP Server address will be automatically filled with the default value.

To use the different email server, input the server address directly into the field.

- Port

The default setting for the Port is 25. To use different port number, input the port number as desired.

When the domain information, such as Naver, Gmail, or AOL, is saved in Clever One, the Port number is entered automatically and cannot be modified.

- Security

Select the encrypted connecting method that is used when sending emails.

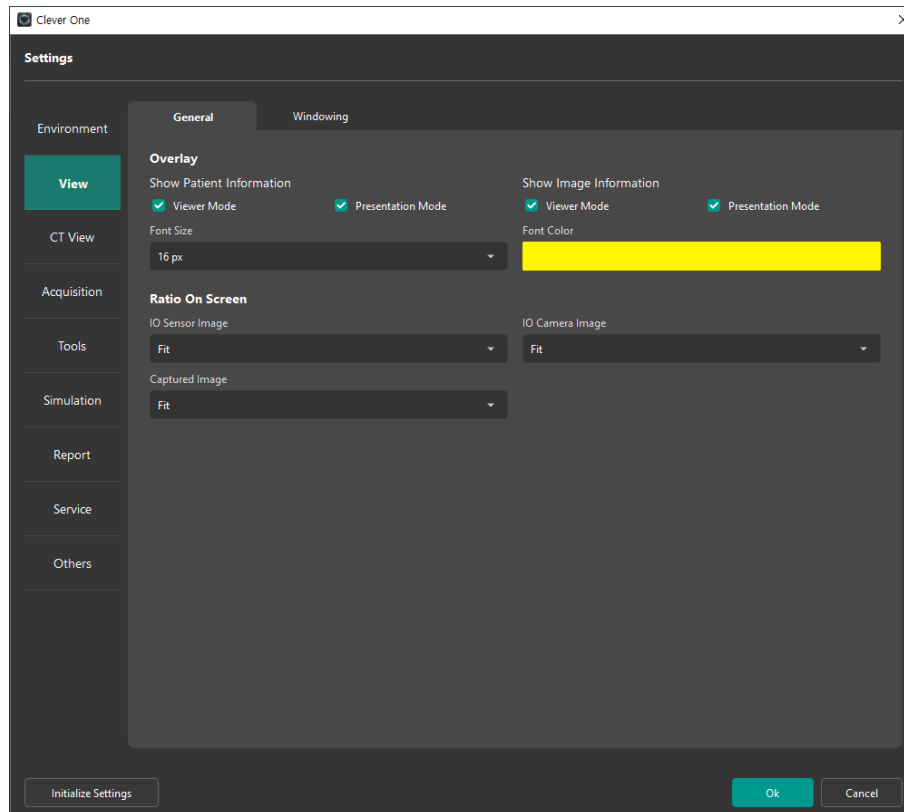


The provided Security options are as follows: None, Auto, SSL, and TLS. The default setting value is Auto, but the user can change the option as desired.

But, when the domain information, such as Naver or AOL, is saved in Clever One, the Security value is entered automatically and cannot be modified.

## 3. View

### 3.1 General



- Overlay

Set the default setting of the [Patient Information Show/Hide] function on the Presentation mode. Set the [Image Information On/Off] function to always show image information. Set the font size and color for the patient and image information

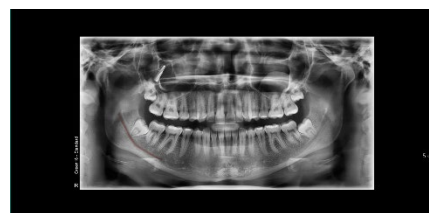
- Ratio On Screen

Select the size of the IO sensor image, IO Camera Image, and Captured Image which appears in the image view.

For example, when [Fit] is selected from the list, the image is fitted to the window size in the image view. When the Ratio on Screen\_Capture image is set to [40%], screen appears as shown below.

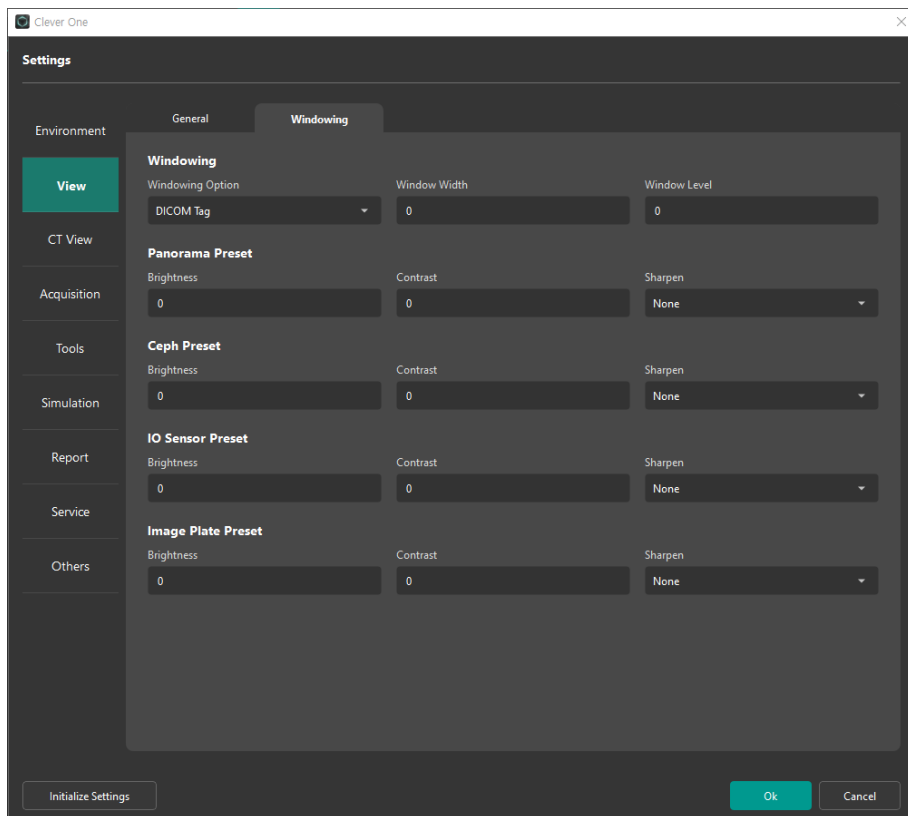


Set as Fit



Set as 40%

## 3.2 Windowing



- **Windowing**

When applying the windowing effect of the DICOM file to an image, select the [DICOM Tag] option to generate the values automatically, or select the [User Define] option to manually enter the windowing values. Clever One recommends applying the windowing effect with the value read from the DICOM Tag file.

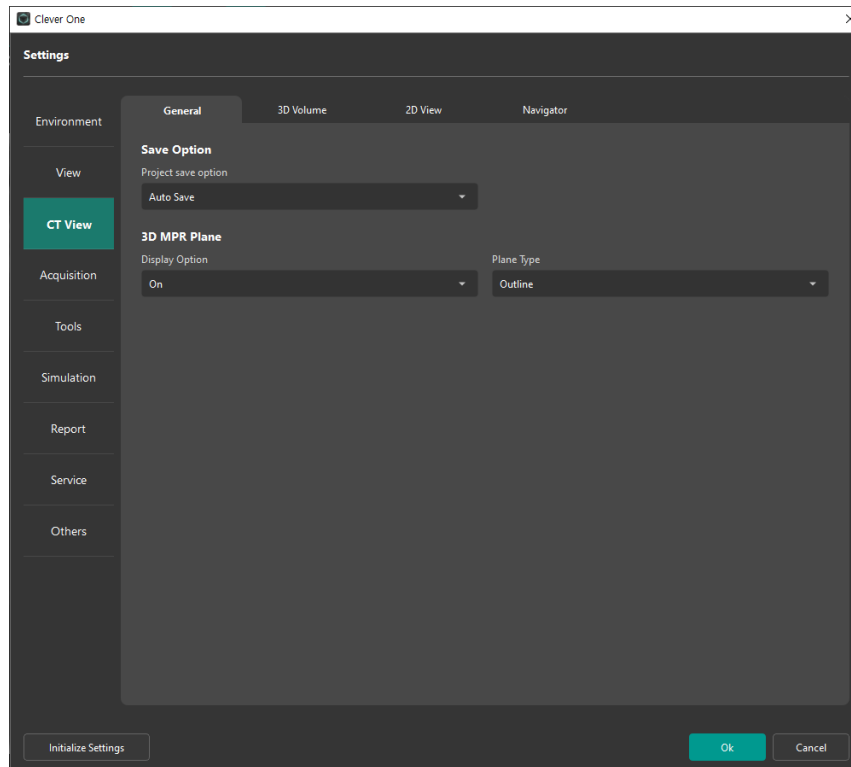
- **Preset**

Set image processing effect to apply when displaying images in 2D or 3D modules. The values apply only once on Pano, Ceph, IO Seonsor, and Image Plate images when initially opened. For an image that has been opened using Clever One, the values saved in its DICOM tag applies.



## 4. CT View

### 4.1 General



#### ▪ Save Option

- Project save option

When exiting the Clever One program, you can save the project manually or automatically.

- ♦ [Auto Save]: The project is saved automatically.
- ♦ [Manual Save]: When exiting the program, a window will appear asking whether to save: Click the [Save] button to save the changes and click the [Don't Save] to cancel the changes. The program will not close with the [Cancel] button.

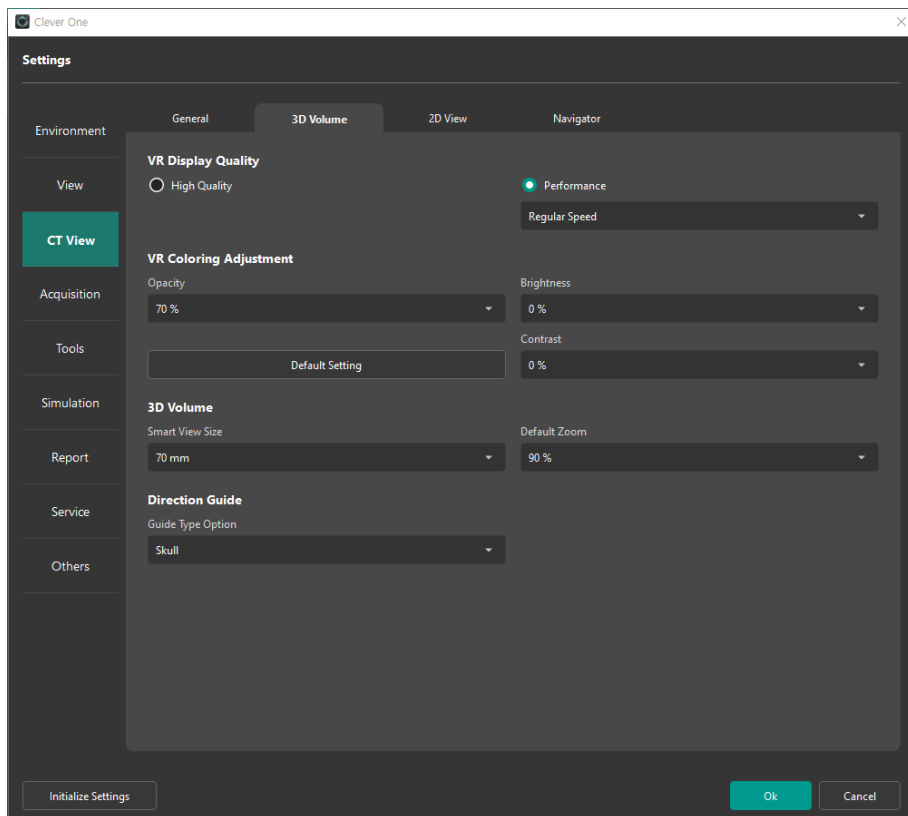


The project will be saved automatically regardless of the project save option in case of exporting with the [Project File] option.

#### ▪ 3D MPR Plane

- Display Option  
User can set to turn on or off the MPR Plane, which is displayed in 3D View.
- Plane Type  
User can set the display type of MPR Plane.

## 4.2 3D Volume



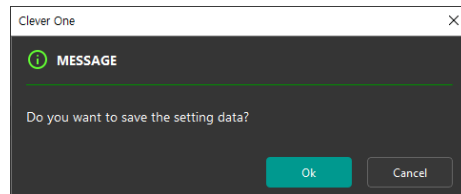
- **VR Display Quality**
  - **High Quality**  
When PC recommended specification is met, user can set up the VR quality as high performance.
  - **Performance**  
The rotation speed of an image compared to the VR Quality can be set with the [Performance] option if the PC specifications are lower than the recommended specifications.  
The [Fastest Speed] option displays the images in the minimum definition, and the [Fast Speed] option maintains VR quality as middle level. When it is set to [Fastest Speed] option, the image is displayed with its best quality. But when VR is not moving, the quality is displayed with the best quality. It is recommended to test the PC level before utilizing the software.

- VR Coloring Adjustment

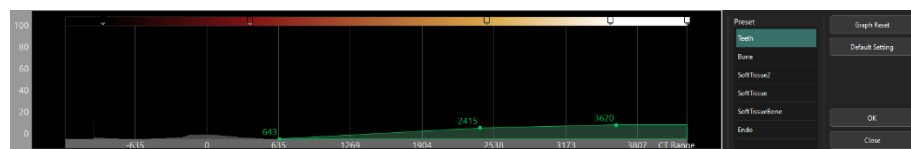
With the adjusting VR coloring function, users can set up the default value in various modes.

- Default Setting

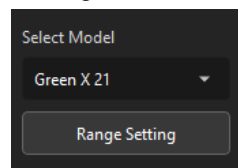
Click the [Default Setting] button and the following window appears.



Click the [OK] button to change Preset VR Coloring values for the 3D images.



- ♦ Setting default coloring value for each model



Select a model from the dropdown list and set the default coloring value for each model.

- If the acquisition device saved in the DICOM file is not in the model list, the coloring values of images will be displayed with the default value.
- VR Coloring values cannot be set in MIP mode.
- Click the [Range Setting] button to set the minimum and maximum values of the range of graph to be displayed.
- Click the [Save as Preset] button to set the current settings as a preset.

- ♦ Importing VR Coloring Graph

Click the [Import Graph] button to open the saved graph file. The acquisition equipment and the values saved for the equipment will be shown.

- ♦ Exporting VR Coloring Graph

Click the [Export Graph] button to save and export the current graph values to the local PC.

- Opacity

Move the slider to adjust the opacity of 3D images. With lower opacity, the image is more transparent, and the inserted structure is displayed clearer.

- **Brightness**  
Move the slider to adjust the brightness of 3D images. Higher number displays the brighter image.

- **Contrast**  
Move the slider to adjust the contrast of 3D images.

- **3D Volume**

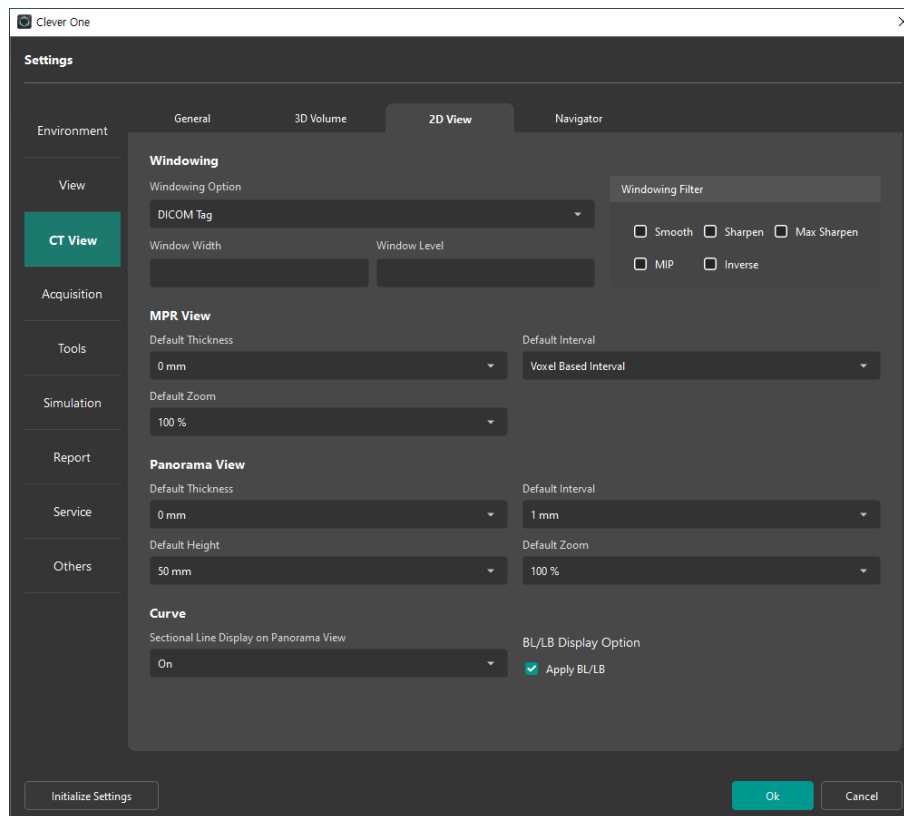
The user can set the 3D image preferences. The Smart View size is the actual size of the magnified 3D images, and the Default Zoom is the default magnification of the 3D image when it is first opened.

- **Direction Guide**

- **Guide Type**

The guide type that displays the direction of 3D images, Field of View (FOV) size, and the acquisition point in the MPR sub-module can be set to be either Skull or Cube.

## 4.3 2D View



- **Windowing**

User can select the Windowing option to use for viewing 2D images of CT data.

- **Windowing Option**
  - [DICOM Tag] : applies the Window Width and Window Level values that are stored in the DICOM file.
  - [User Define] : The user can specify and set up the User Define directly.
- **Windowing Filter**

Set the filter as default. Refer to '*Chapter 5. 3D Module > 3. Adjusting 2D Images*' for how to set filters.

- **MPR View**

The user can set the values of default thickness, basic scale of zoom, interval in Axial/Coronal/Sagittal View and color theme of secondary CT data.

- **Panorama View**

The user can set the default thickness, spacing, height, and the basic scale of zoom for 2D images in Panorama View.

- **Curve**

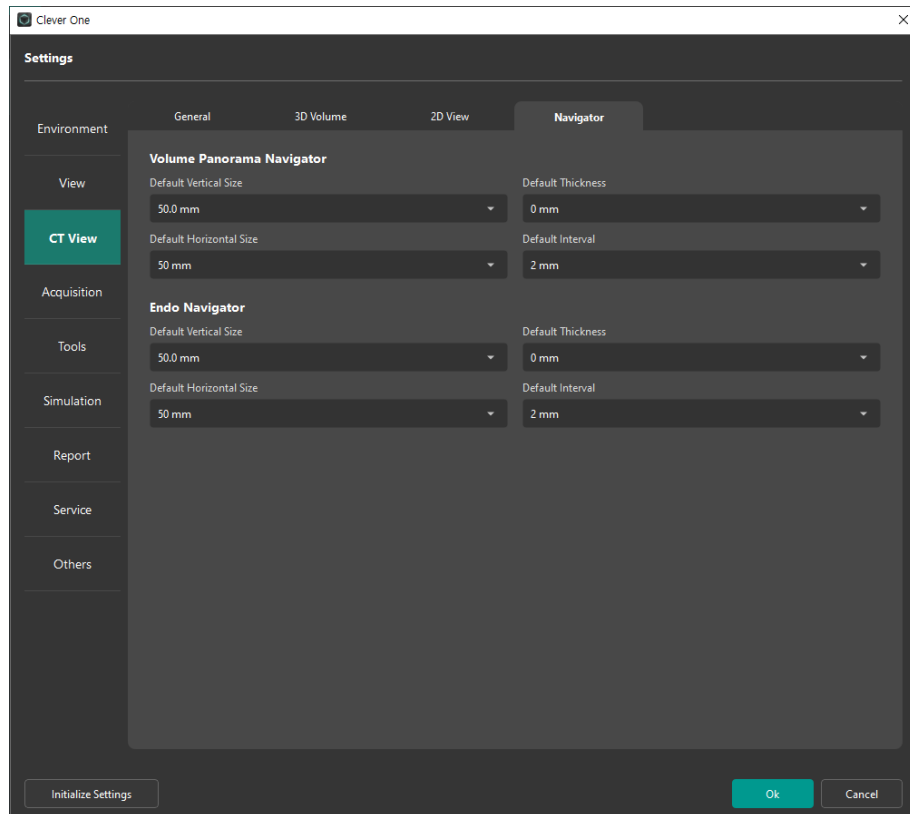
- **Sectional Line Display on Panorama View**

Show/hide the sectional line on Panorama View in Section sub-module.

- BL/LB Display Option

Click the checkbox of [Apply BL/LB] to select the option, and then the L (Lingual)/ B (Buccal) indication marks will be created on the curves in the Section sub-module. The user can change the display location of L/B mark, and the L/B position of slice image will be changed depending on the L/B mark.

## 4.4 Navigator



- Volume Panorama Navigator

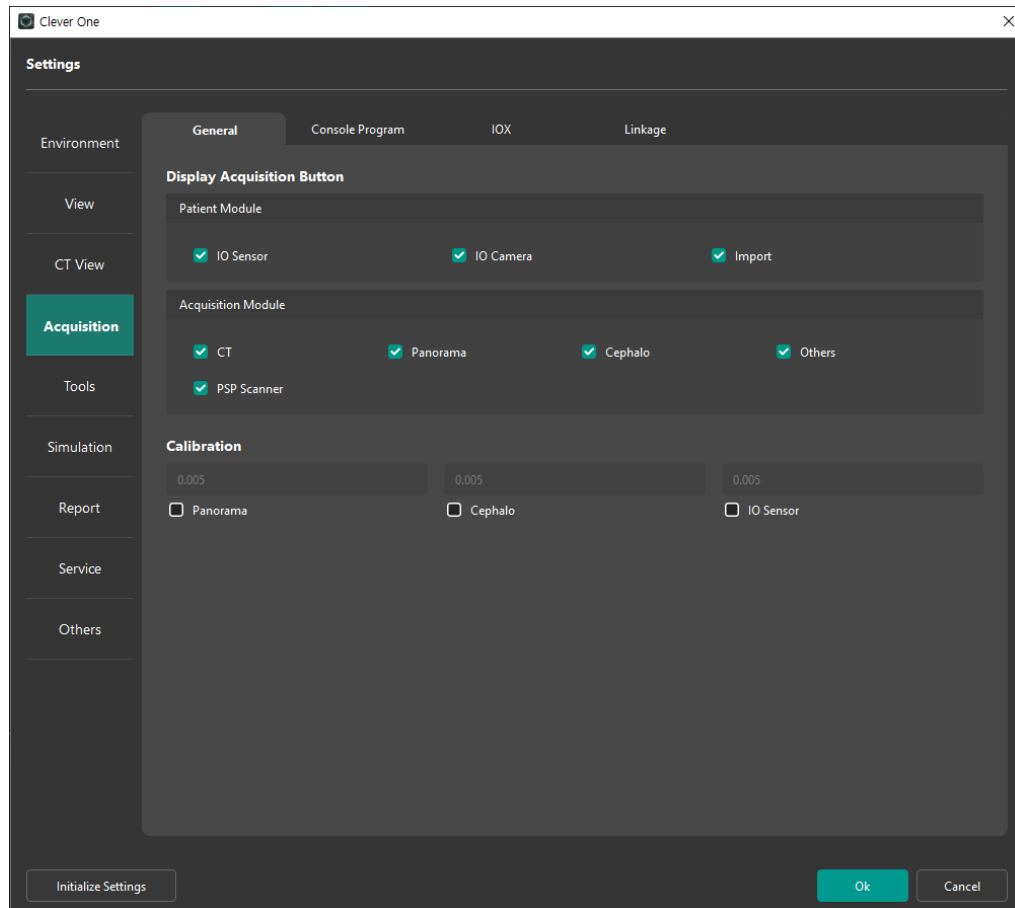
Set the default size, thickness, and the interval of the Navigator displayed in the Volume Panorama view of the 3D PAN sub-module.

- Endo Navigator

Set the default size, thickness and interval of the Navigator displayed in Endo sub-module.

## 5. Acquisition

### 5.1 General



- **Display Acquisition Button**

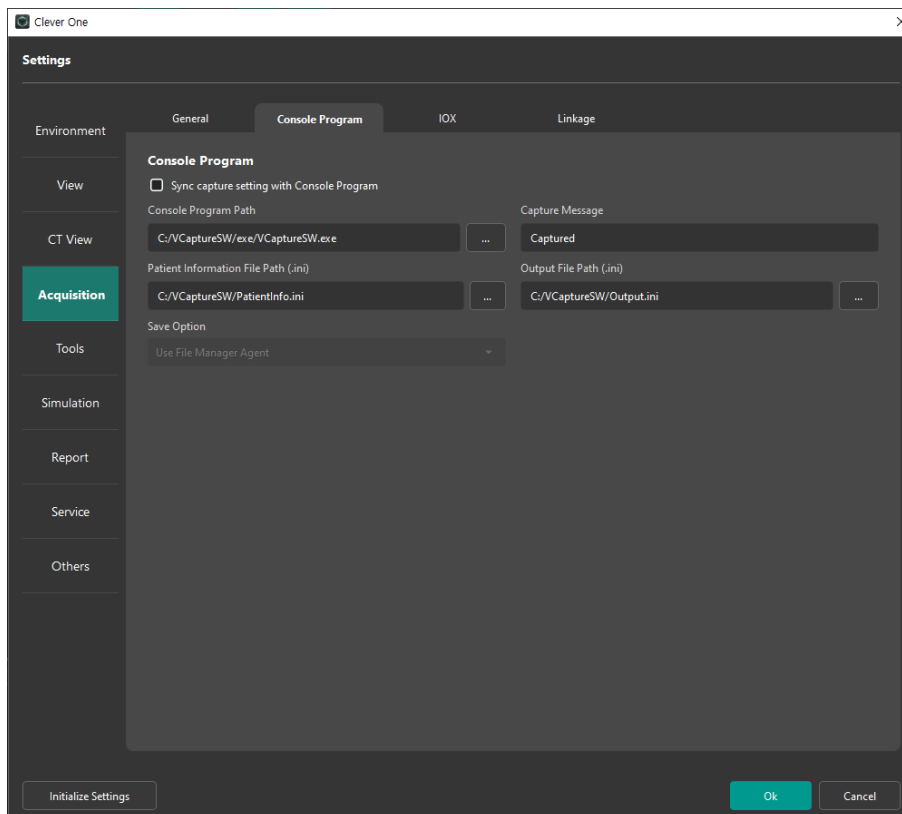
Disable or enable the acquisition buttons for the following tabs.

- Patient Module: IO Scanner, IO Sensor, IO Camera, Import
- Acquisition Module: CT, Panorama, Cephalo, PSP Scanner, Others, and PSP Scanner

- **Calibration**

The set calibrated values can be automatically applied to the Panorama, Cephalo or IO Sensor images that are not calibrated. To apply the calibrated value, click the check boxes to enable.

## 5.2 Console Program



### ▪ Console Program

- Sync Capture Settings with Console Program

If this option is checked, it reflects console program's settings including the Console Program Path, Capture Message, Patient Information File Path and Output File Path automatically.

The auto sync function is not supported when no or non-compatible version of console program is installed. In that case, the user needs to enter the following items manually.

- Console Program Path

Enter the location of executable file. Refer to each equipment manual for the default equipment software install path.

- Capture Message

When an image is acquired it sends a message. In case of the image acquisition program, input 'Captured' in the [Capture Message] field.

- Patient Information File Path

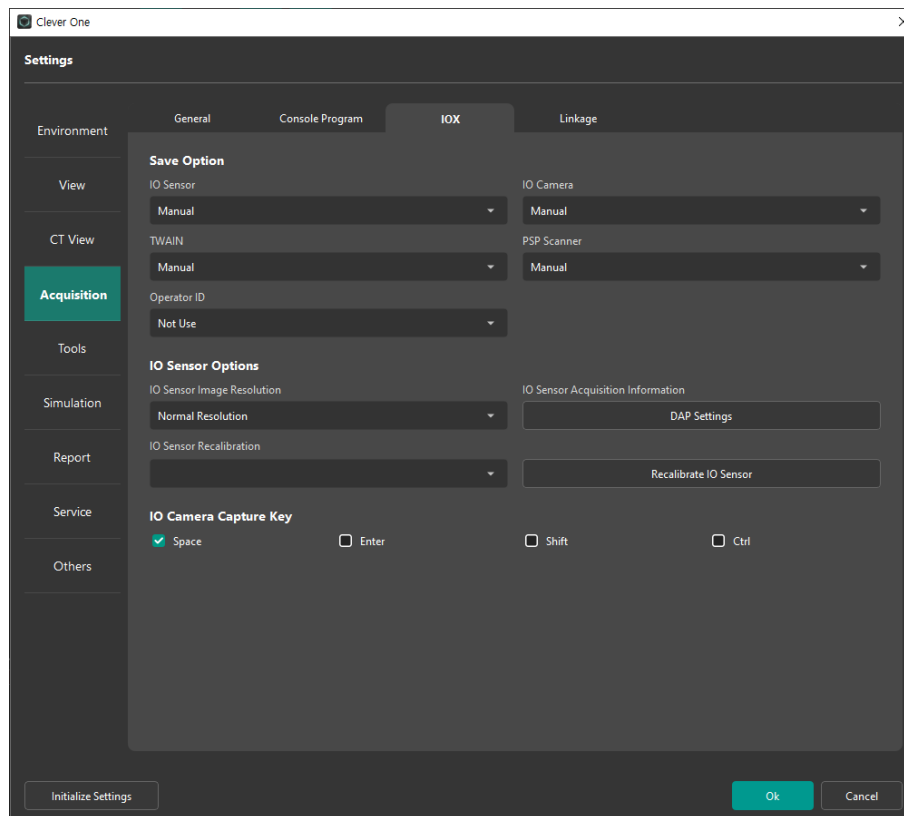
In case of the image acquisition program, 'C:/VCaptureSW/exe/PatientInfo.ini' path should be entered

- Output File Path

In case of the image acquisition program, 'C:/VCaptureSW/Output.ini' should be entered.



## 5.3 IOX



- **Save Option**

Determine whether images captured with IO sensor, IO camera, TWAIN or PSP Scanner will be saved in the database automatically or manually.

For the manual setting, click the [Capture] button to acquire images. Select the images desired among the acquired images and click the [Save] button and store the images in the database.

For the Auto DB Save setting, click the [Capture] button to save all acquired images in the database. For this reason, the Acquisition module appears differently during image acquisition.

When the [Operator ID] option is set to [Use], a button to select the operator is added to the control panel on the Acquisition module.

- **IO Sensor Options**

When the image resolution is set to [High Resolution], the image acquired with equipment that supports high resolution will be saved in high resolution mode, but this [High Resolution] option will not affect the resolution of the images that are acquired with other general equipment.

- DAP Settings

Enter the Dose Area Product(DAP) value by gender, age, and tooth code to record DAP values. The DAP value can be viewed on the file information of IO sensor images.

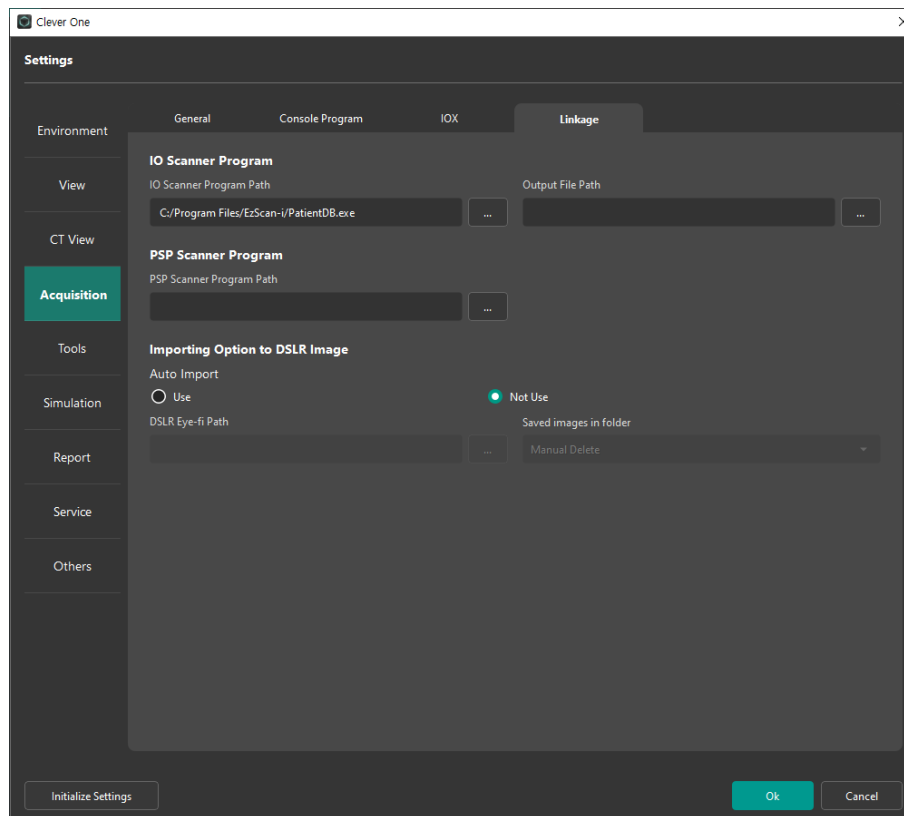
The screenshot shows the 'DAP Preset' window with three sections: Male, Female, and Child. Each section contains a grid of input fields for different age groups and tooth codes. The 'Male' and 'Female' sections have age groups 18, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, and 100. The 'Child' section has age groups 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. Each grid has a column for tooth codes: 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100. The 'Dose Unit: DAP(mGy/cm²)' label is located at the bottom right of the grid. The 'Modify' button is at the bottom left, and the 'Close' button is at the bottom right.

1. Click the [Modify] button to open the DAP Preset select screen.
2. Enter the DAP value for each tooth code by genders and ages or enter the first value and click [Apply All] to apply the same value to all teeth within the gender or age group.
3. Click the [Save] button to save preset values. When the IO sensor acquires images, the corresponding DAP value for the selected tooth code in response to the patient's gender and age will be applied to the image.

- IO Camera Capture Key

Set the Keyboard key which can be used as the capture key for your IO Camera.

## 5.4 Linkage



- **IO Scanner Program**

Enter the location of executable file.

- **File Path of IO Scanner Program**

When the IO scanner program is set as default, the location should be 'C:/I-Scan A/Ez-iScan x64/Ez-iScan.exe'.

- **Output File Path**

In case of the IO scanner program, 'C:/I-Scan A/Exchanging/Output.xml' should be entered.

- **PSP Scanner Program**

Enter the location of executable file.

- **File Path of PSP Scanner Program**

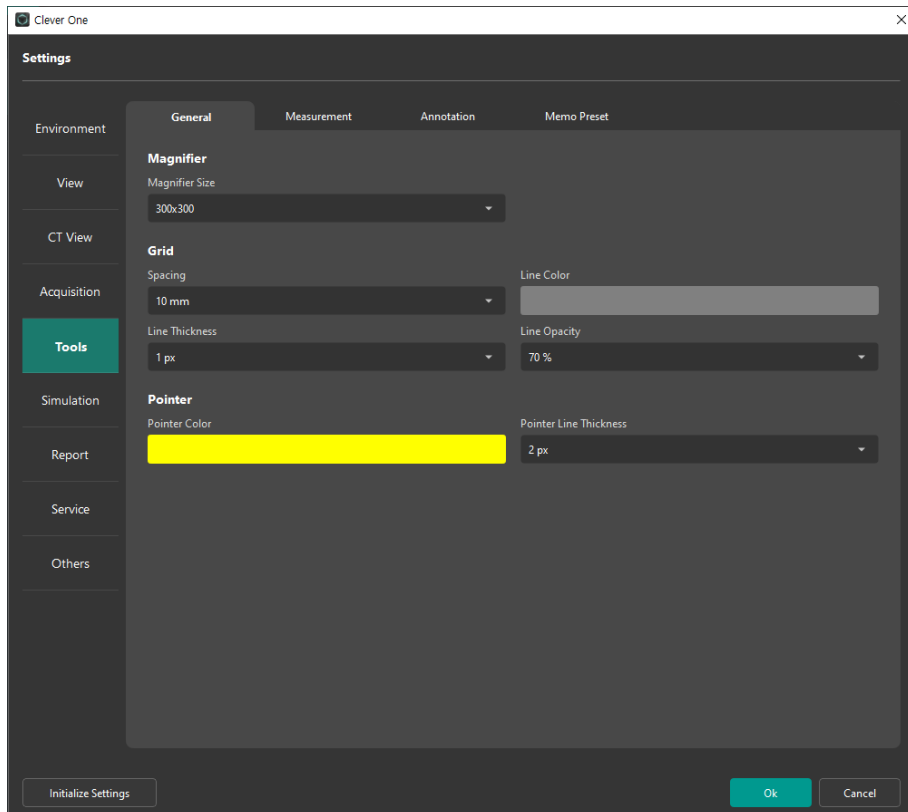
Enter the location of executable file.

- **Importing Option to DSLR Images**


When using DSLR, you can change the setting to import the images from the specifically set folder. Change the [Auto Import] option to [Use], and specify [DSLR Eye-fi Path].

## 6. Tools

### 6.1 General



- **Magnifier**

Adjust the size of the [Magnify] tool (  ) in the 2D module. Adjust the size of the magnifying glass to enlarge a part of the image.

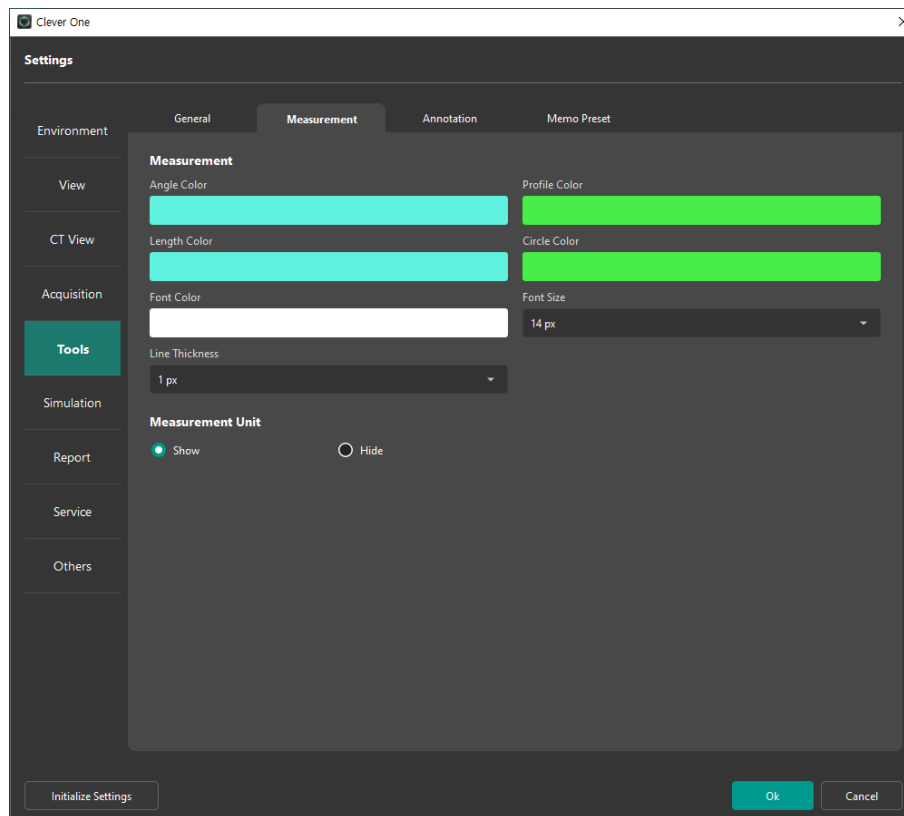
- **Grid**

Set the spacing, color, thickness, opacity of the default values for grids, available in the 2D, 3D, Consult modules.

- **Pointer**

Set the color and thickness of the default values for pointers, available in the 2D, 3D, Consult modules.

## 6.2 Measurement



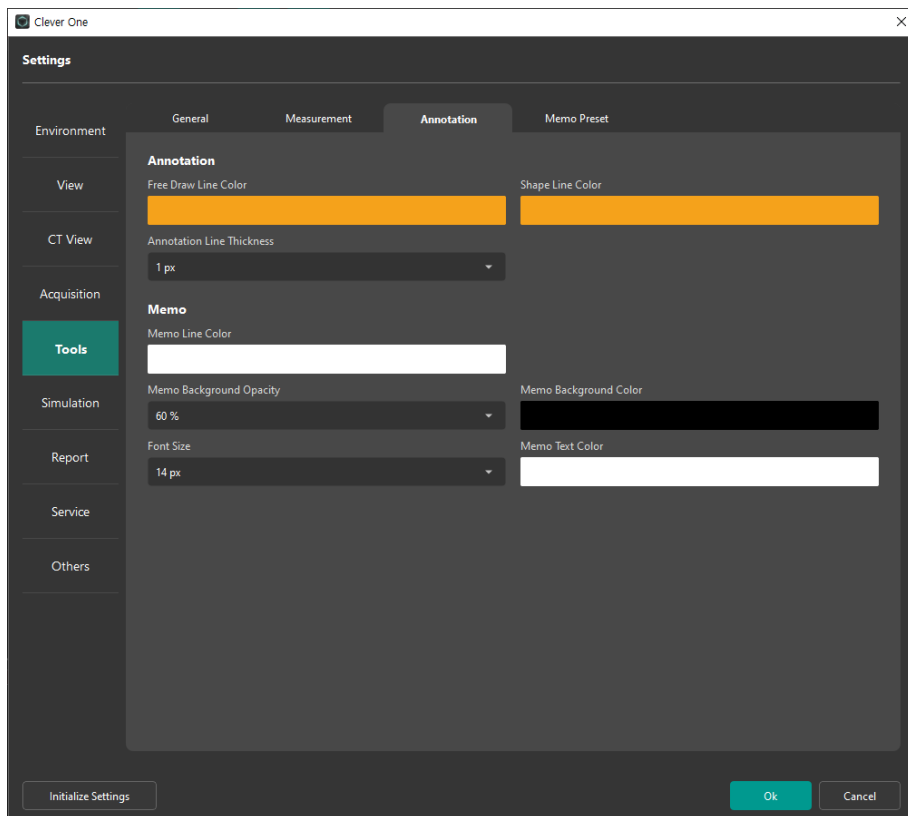
- **Measurement**

Set the default color for angle, length, profile and circle, and the font size for measurements available in the Object group in the control panel.

- **Measurement Unit**

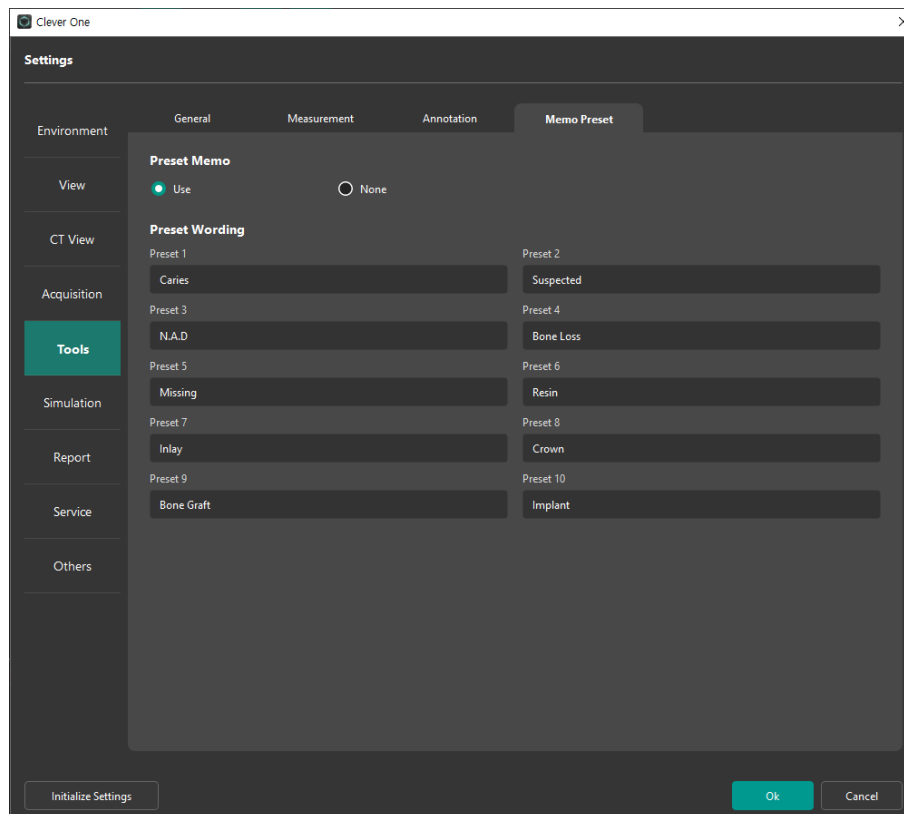
Show/hide measurements units entered into the image.

## 6.3 Annotation



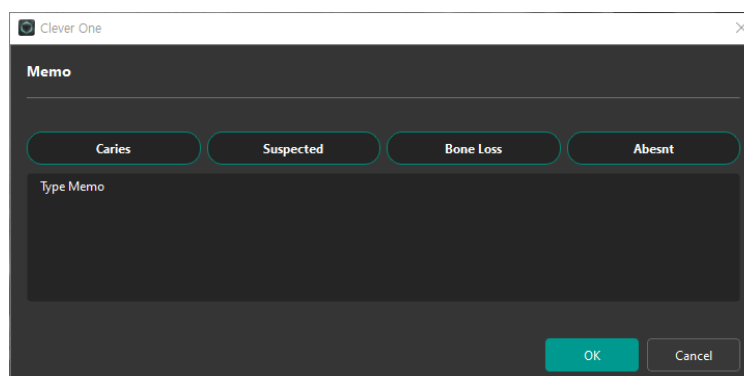
- **Annotation**  
Set the line color and thickness of Free Draw and Shape tools
- **Memo**  
Set the line color, background opacity, background color, font size, and text color of memos made with the Memo tool.

## 6.4 Memo Preset



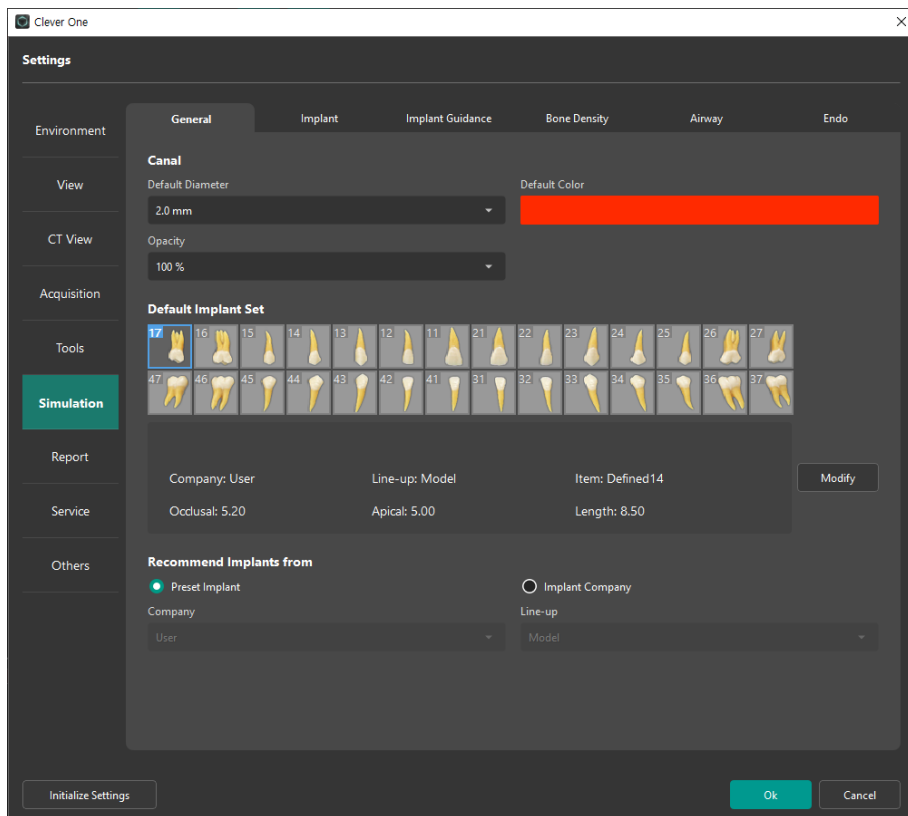
Save frequently used phrases when using the Memo tool from the 2D,3D, Consult modules.

1. Input a desired phrase (e.g. Tooth Extraction Case) to [Memo Preset > Preset Wording] and click the [OK] button at the bottom of the [Settings] window.
2. Move to the 2D,3D, or Consult module and click the Memo icon in the Object group.
3. Click on the image where the user wishes to leave memo. The saved phrases in [Preset Memo] appear in a list and click the desired phrase to insert on the image.



## 7. Simulation

### 7.1 General

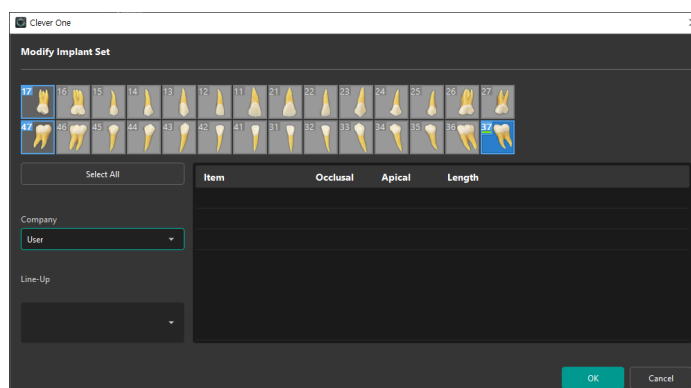


- **Canal**

Set the default diameter, base color, and opacity of the canal.

- **Default Implant Set**

When using the implant simulation, set the default implant value according to the tooth number. To change the default implant for the selected number of tooth, click the [Modify] button and the [Modify Implant Set] dialog appears as follows. Set multiple teeth to apply the same implant on them concurrently.



In the [Modify Implant Set] dialog, the user can check the default implant for the selected number of tooth, and set the Implant Company, product family, and model name regarding the default implant value according to each tooth number.

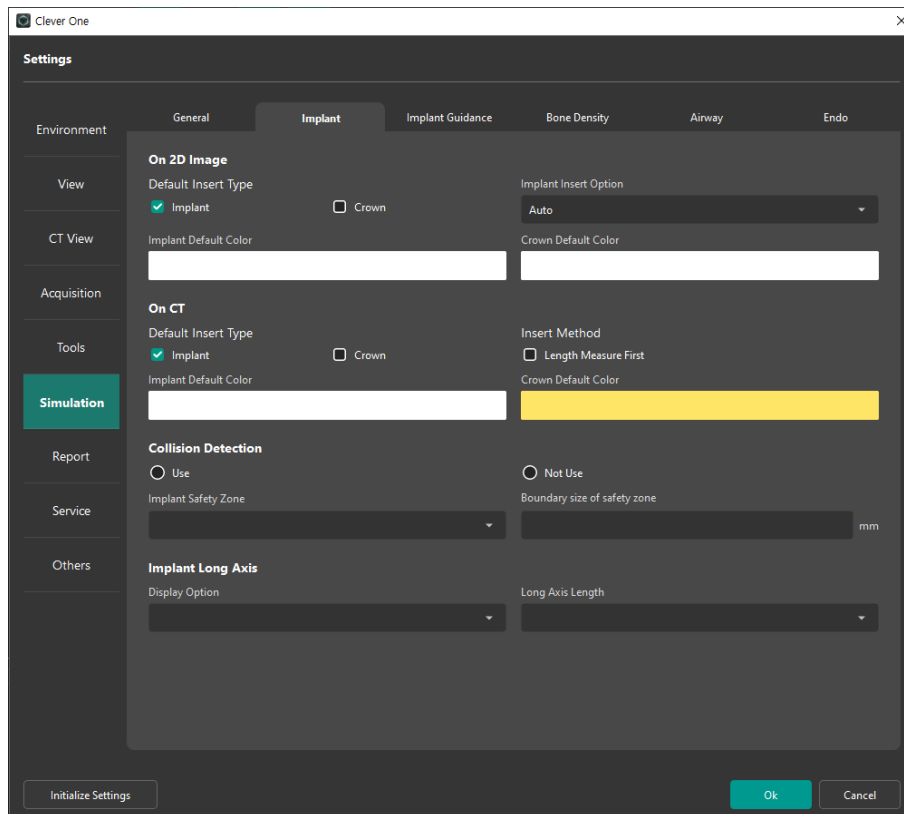


- Recommend Implants from

Clever One recommends implants to insert based on the [Recommended Implants from] option when using the implant simulation by right-clicking the mouse after length measurement.

By selecting [Preset Implants] option, Clever One recommends implants among preset implants while by selecting [Implant Company] option, Clever One recommends implants among implants of the selected company.

## 7.2 Implant



- On 2D Image

Set the properties and insert methods of the [Implant] and [Crown] function in the Object group in the 2D module. In case of [Auto], user can insert the implant automatically at the specific location according to the user specified number. In case of [Manual] user can locate and insert the implant manually. Set the default implant type and color of the item when inserting implants by setting the [Default Insert Type].

- On CT

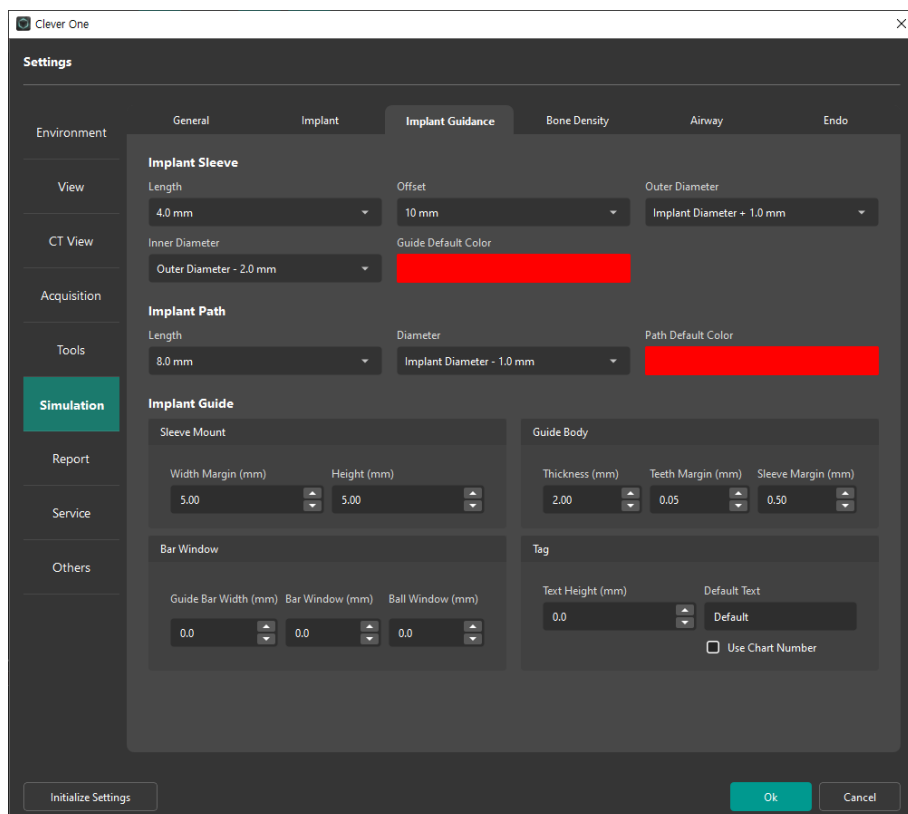
Set the properties and insert methods of the [Implant] and [Crown] function in the Object group in the 3D module. In case of [Auto], user can insert the implant automatically at the specific location according to the user specified number. In case of [Manual] user can locate and insert the implant manually. Set the default implant type and color of the item when inserting implants by setting the [Default Insert Type].

- Collision Detection

Click on the radio button to enable the collision detection. When the collision detection is set to [Use], the Implant Safety Zone and the boundary size can be set.

- **Implant Safety Zone**  
User can set to display or hide the minimum space required for implant insertion.
- **Boundary Size of Safety Zone**  
User can set the size of Implant Safety Zone
- **Implant Long Axis**
  - **Display Option**  
The user can select whether to display implant long Axis or not.
  - **Long Axis Size**  
The user can set the size of Long Axis between 5, 10, 15, 20, 25, 30, 35, 40, 45, and 50. The default value is 20 mm.

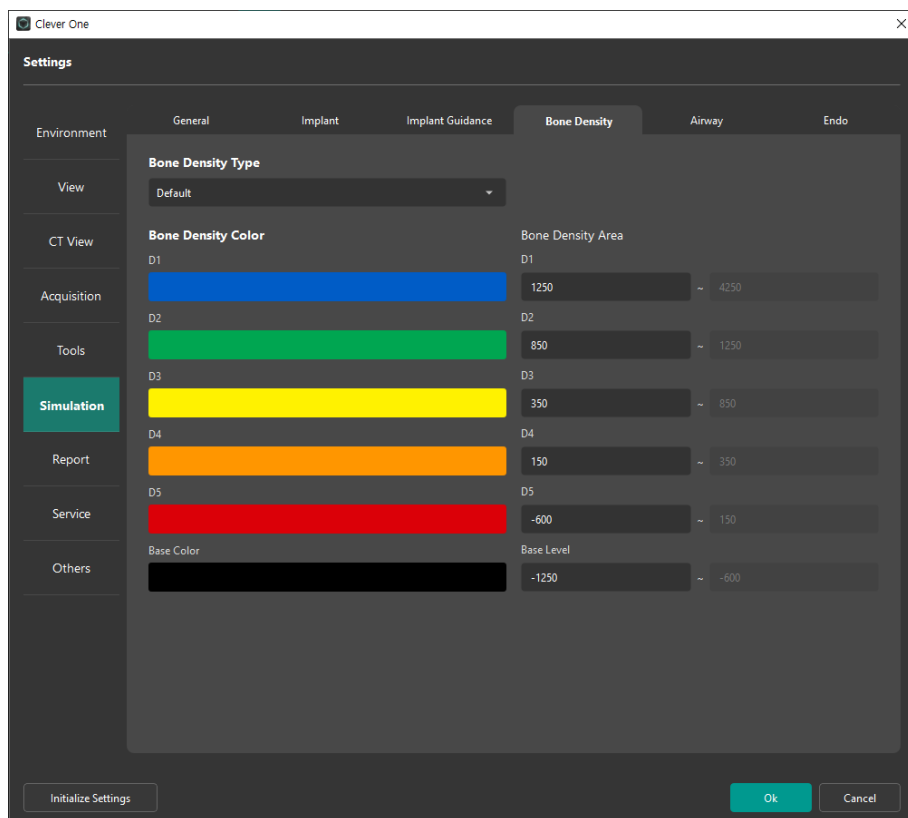
## 7.3 Implant Guidance



- **Implant Sleeve**
  - **Guide Length**  
User can set the default length for implant sleeves
  - **Offset**  
User can set the default offset between Implant and implant sleeves
  - **Outer Diameter**  
User can set the default outer diameter for implant sleeves

- Inner Diameter  
User can set the default inner diameter for implant sleeves
- Outer Diameter  
User can set the default inner diameter for implant sleeves
- Implant Guide
  - Guide Length  
User can set the default length for implant guides
  - Offset  
User can set the default offset between Implant and implant guides
  - Outer Diameter  
User can set the default outer diameter for implant guides
  - Inner Diameter  
User can set the default inner diameter for implant guides
- Implant Path
  - Path Length  
User can set the default length for Implant Path
  - Path Diameter  
User can set the default diameter for Implant Path

## 7.4 Bone Density



- **Bone Density Type**

The bone density values can be set by acquisition equipment.

- **Bone Density Color and Area**

User can set the color for each Density range that is displayed for Bone Density effect in Windowing group of the 3D PAN sub-module.

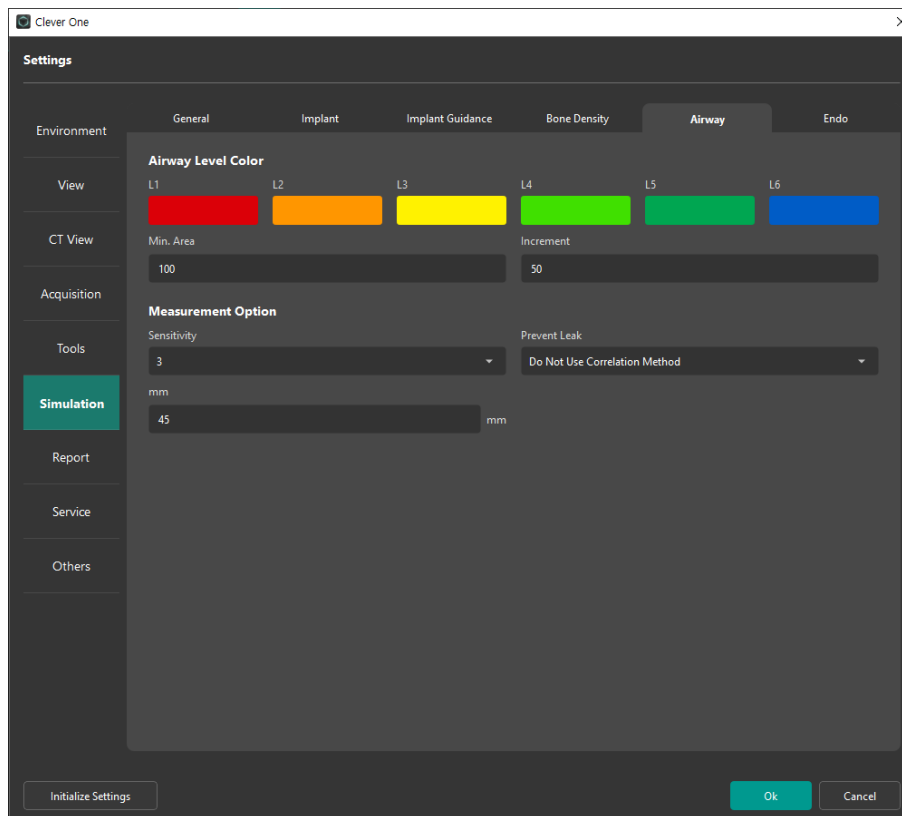


CAUTION

Adjusting bone density range depending on the equipment that you have is required to use the bone density function more accurately. (There are many cases where CBCT has different CT Number values, which are the standard of bone density standard, depending on the equipment.)

Users should be aware of this limitation before diagnosing and performing simulation according to the bone density value. The treatment based on the incorrect measurement may cause failure in operation or complications.

## 7.5 Airway



### ■ Airway Level Color

Set the range to apply to the Airway Volume, which is displayed with the [Airway Measurement] function in the MPR sub-module, and the color for each level.

The Airway Level Color is used to visualize the area ( $\text{mm}^2$ ) for each Axial slice in the measured Airway area. The color for total of six level (L1 ~ L6) can be set, and the range for each level is set based on the minimum area value and the increment.

The minimum area value refers to the minimum area (unit:  $\text{mm}^2$ ) of Airway area, and the increment refers to the value of the increased area (unit:  $\text{mm}^2$ ) by each level.

[Ex] If the minimum area value is 100 (unit:  $\text{mm}^2$ ) and the increment is 50, the Airway Level Color (L1~L6) means as follows. And if the area of the Airway in the Axial Slice is 125  $\text{mm}^2$ , the mixed color of L1 and L2 is set.

- L1 color is used when the Airway area in the Axial slice is below 100  $\text{mm}^2$ .
- L2 color is used when the Airway area in the Axial slice is 150  $\text{mm}^2$ .
- L3 color is used when the Airway area in the Axial slice is 200  $\text{mm}^2$ .
- L4 color is used when the Airway area in the Axial slice is 250  $\text{mm}^2$ .
- L5 color is used when the Airway area in the Axial slice is 300  $\text{mm}^2$ .
- L6 color is used when the Airway area in the Axial slice exceeds 350  $\text{mm}^2$ .

### ■ Measurement Option

- Sensitivity

To adjust the degree of the Prevent Leak function, click the dropdown menu of the [Prevent Leak] to select the [Use Correlation Method] option. When the [Sensitivity] option is set to 1, the Prevent Leak function is applied with the weakest degree. Set the [Sensitivity] option higher to apply the Prevent Leak function with stronger degree.

- Prevent Leak

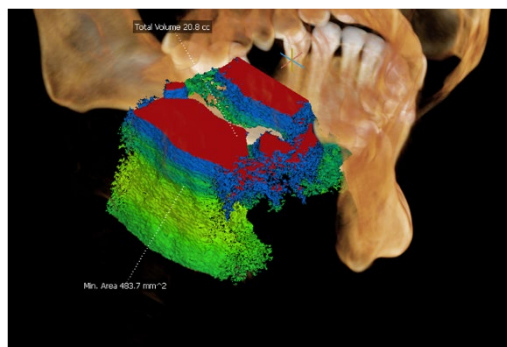
Set the default value for the function that removes the areas, which are not part of the Airway.

The parts, which is not the Airway, may be measured in the CBCT image due to the artifacts made from metal, etc. To prevent this, use the Prevent Leak function to remove the areas, which are not part of the Airway.

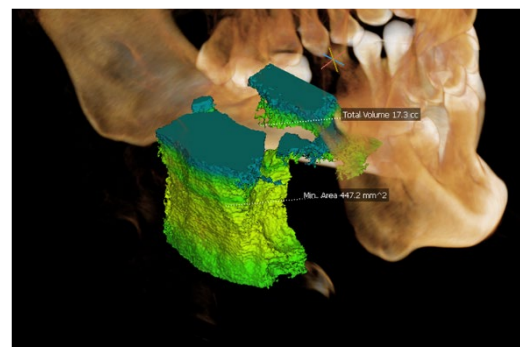


Using the Prevent Leak function increases the time needed for Airway measurement. Also, if the Metal artifact is severe, the function may not work.

- 3D Rendering



Prevent leak function not in use



Prevent leak function in use

- Axial Image

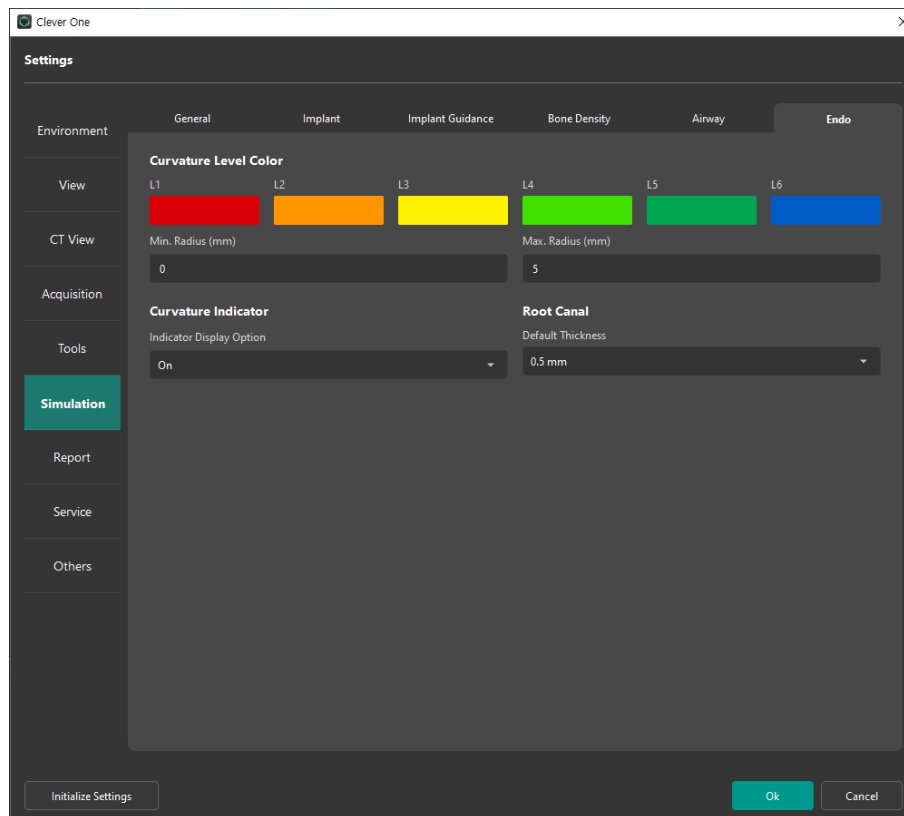


Prevent leak function not in use



Prevent leak function in use

## 7.6 Endo



- Curvature Level Color

Set the size and color of curvature circle radius displayed in VOI view in Endo sub-module.



L1 corresponds to the minimum radius and L6 corresponds to the maximum radius. Color gradient value applies between levels.

Radius size smaller/larger than the Min./Max. Radius is displayed as a circle with the minimum/maximum radius.

- Curvature

- Indicator Display Option

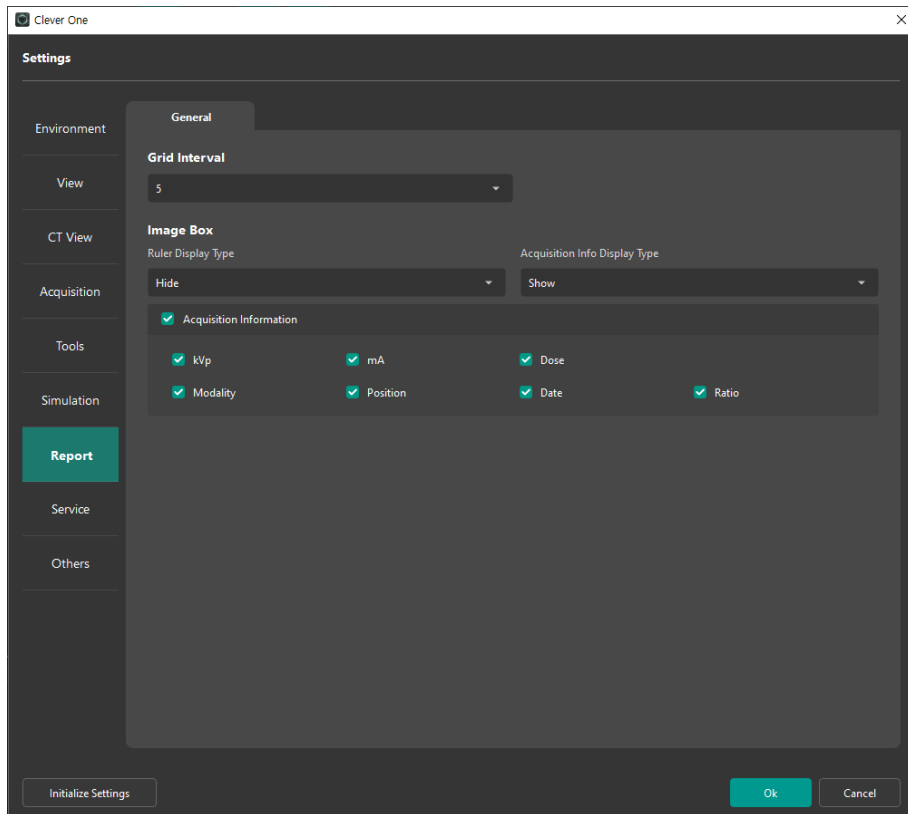
Show/hide the circle indicator overlay.

- Root Canal

The user can set the default diameter of Root Canal.

## 8. Report

### 8.1 General



- **Grid Interval**  
Set the interval of grid.
- **Image Box**  
Set the default values whether to display ruler, acquisition information and select which acquisition information to display.

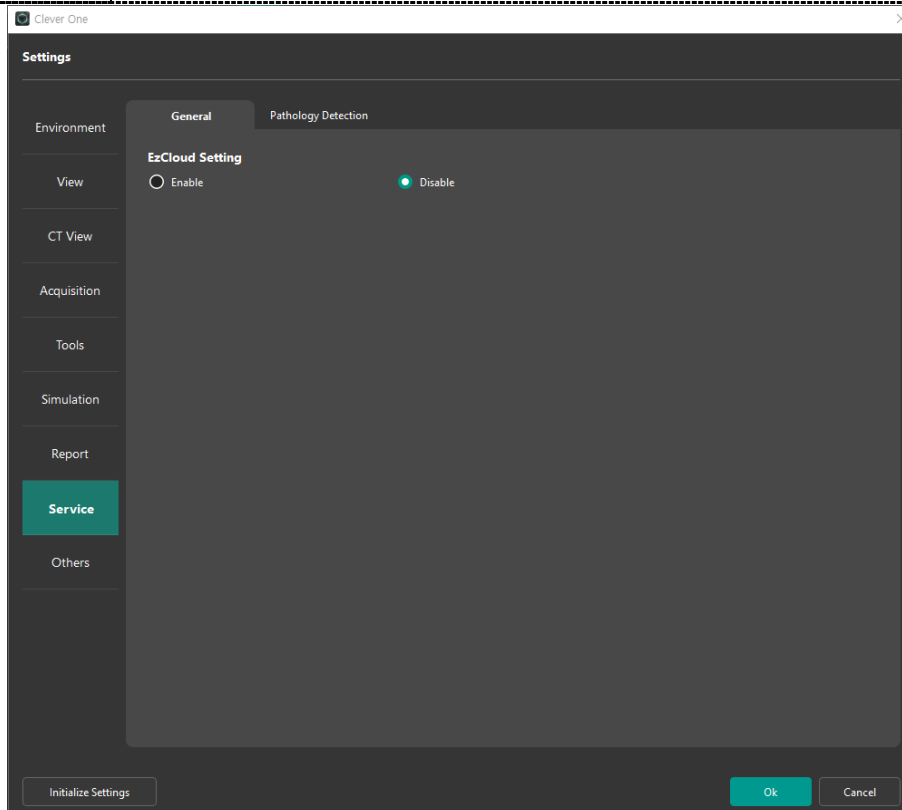


## 9. Service

### 9.1 General



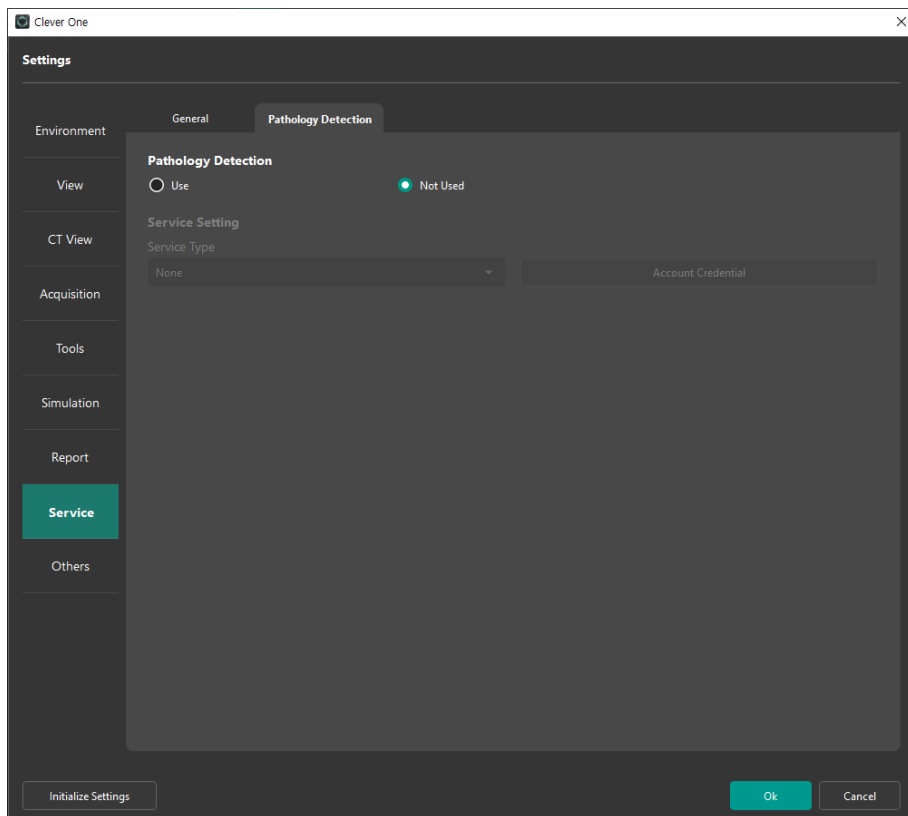
This function may be restricted depending on the support situation for each country.



- **EzCloud Settings**

Enable or disable Ewoosoft Cloud Service EzCloud feature. If set to [Enable], the [Export/Import] and [EzCloud] tool groups are added to the Patient module toolbar.

## 9.2 Pathology Detection

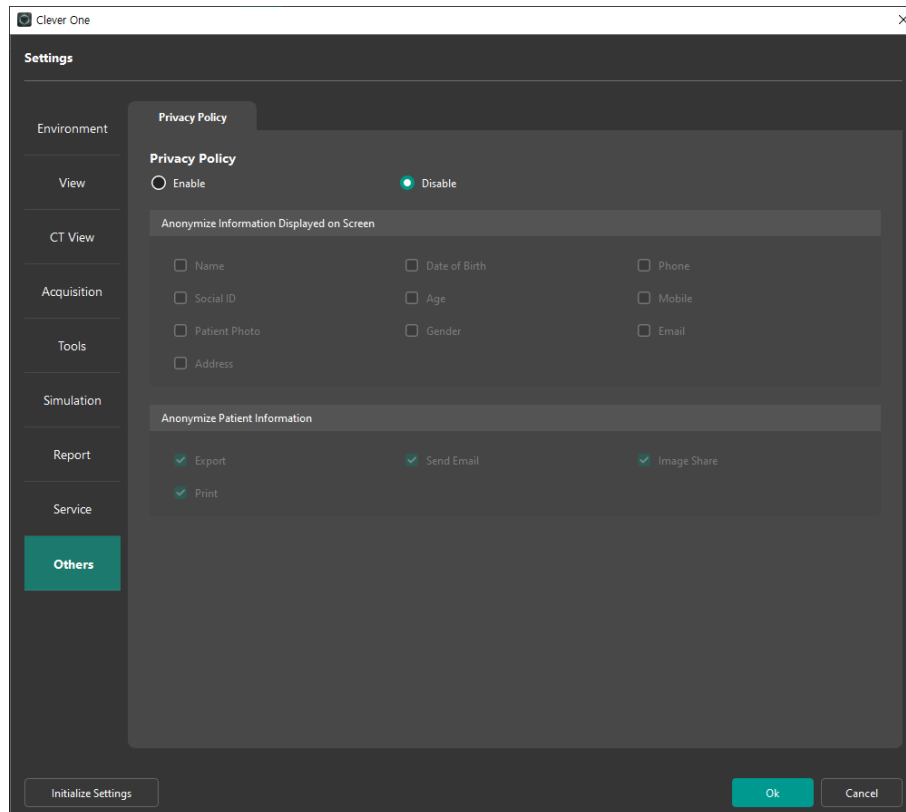


- Pathology Detection

Link and integrate pathology detection services to use in conjunction with Clever One.

## 10. Others

### 10.1 Privacy Policy



- **Privacy Policy**  
The user can select whether to use the privacy option or not.
- **Anonymize Information Displayed on Screen**  
The user can select options to display on screen without anonymization. This option is enabled when Privacy Policy Setting is 'Enable'.
- **Anonymize Patient Information**  
The user can select whether to apply anonymization function or not for each option. For options checked, related UI appears when running each function.



## Chapter 3. Patient Module

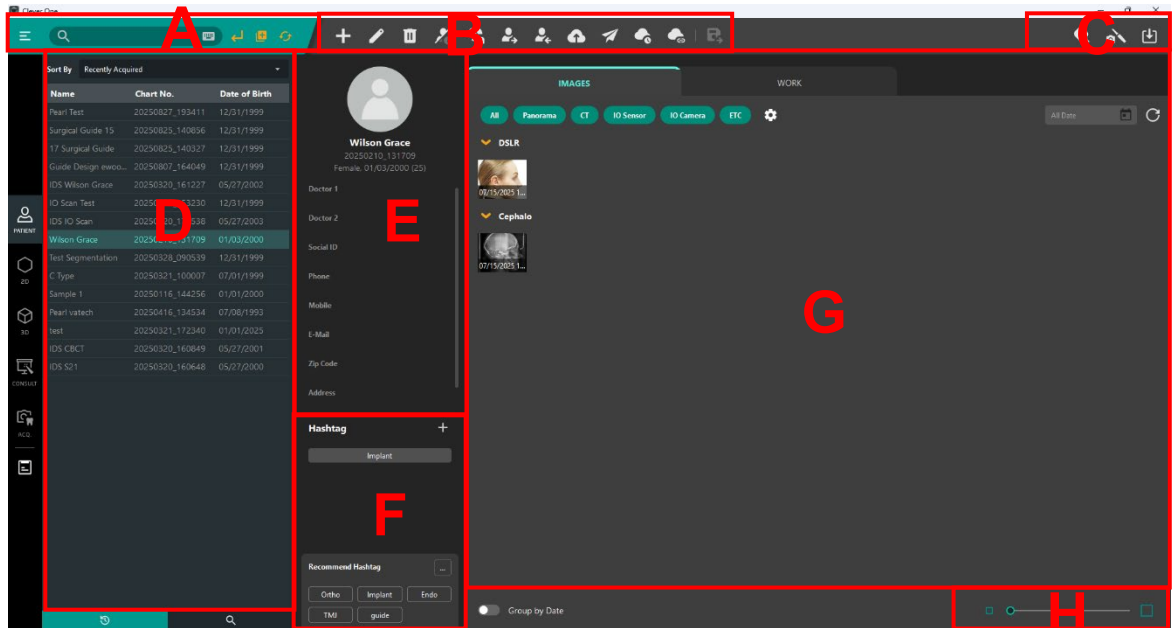
1.Managing Patients and Images .....	81
2.Searching Patients .....	82
3.Editing Patient Info .....	85
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5.EzCloud Service .....	93
6.Signing Up to OneID Service .....	97
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8.Managing Registered Patients Data.....	101
9.Controlling Direction of 3D, VR Images .....	104
10.Toolbar .....	105



# 1. Managing Patients and Images

This is a module for patient management. From here, Users are able to manage a patient's information and images.

## 1.1 Workspace



- A: Search for a patient or sort patients by desired options.
- B: Add, modify, delete, adding, import, export, share patient data.
- C: Acquisition shortcuts for IO Scanner, IO Sensor, IO Camera, and Import
- D: Sort patients according to selected criteria.
- E: Detailed information of the selected patient is displayed.
- F: Apply hashtags to images and filter to view images with the corresponding hashtag.
- G: Images and Work done on the selected patient are displayed.



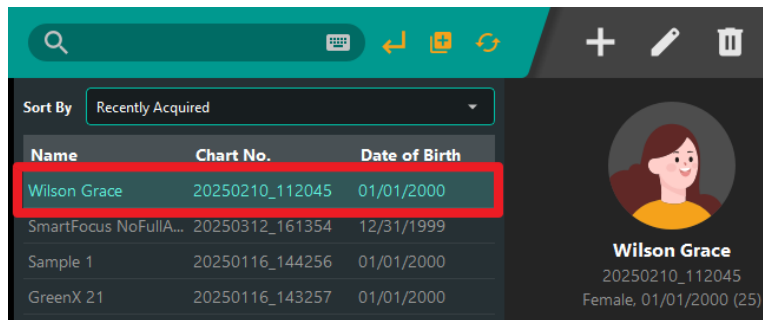
Multi-select CT and another 3D photo or IO Scanner to view them together.

- H: User can adjust the size of the searched image through the thumbnail slider at the bottom right of the viewer window .

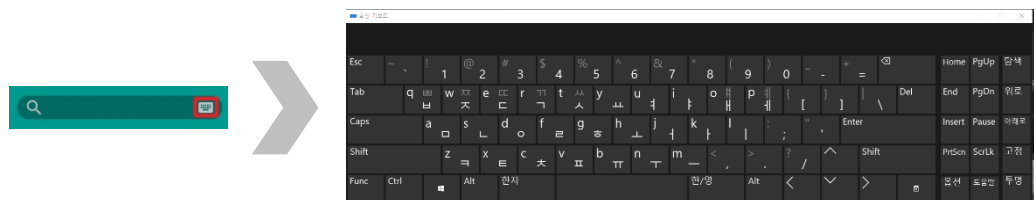
## 2. Searching Patients

### 2.1 Searching for Registered Patient

1. Enter the name or chart number of the patient in the Patient Search window and click the [Search] button or press the Enter key. The search results appear.



- Click the keyboard icon in the search box and the on-screen keyboard appears. Use the on-screen keyboard for searching a patient quickly and easily.



- Type the initials of saved name to search for patients. (Ex: Type "A, H" in the Search window for Audrey Hepburn)
2. Click the patient in the search result list to view the detail information about the patient.



#### ■ Anonymize Information Displayed on Screen

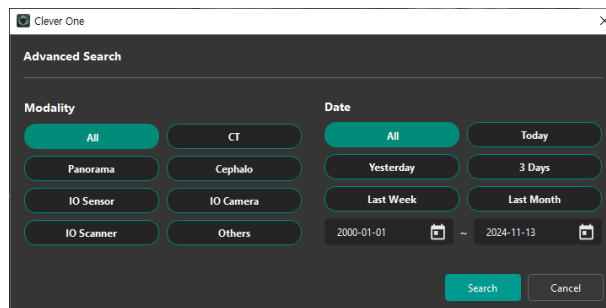
If you have chosen to use the Privacy Policy Settings (found in [Settings > Others]), the patient information displayed on the Patient module will be marked with asterisks (\*).



## 2.2 Advanced Patient Searching

The advanced search can result more comprehensive search outcomes through the combination of searching by imaging mode and by date.

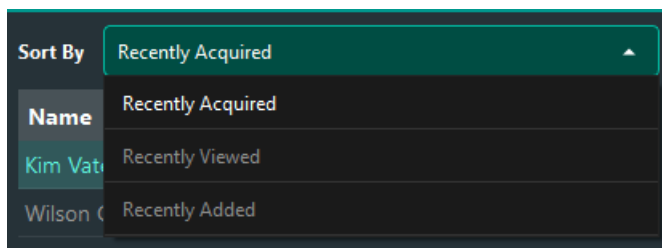
1. Click the advanced search button on the right side of search bar button. The [Advanced Search] window appears.



2. Select the desired condition for searching and click the [Search] button. The results meeting the search conditions appear.
3. When selecting the patient, the patient information will change to the selected patient in the current module.

## 2.3 Viewing Recent Patient List

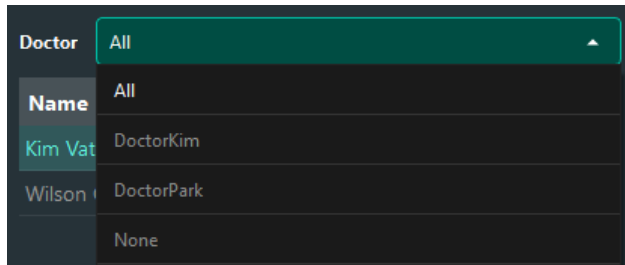
The patient list can be sorted by the acquisition date, last viewed date, or added date.



- Recently Acquired: Lists the patients by the date of acquisition.
- Recently Viewed: Lists the patients by the viewed date in the 2D or 3D module.
- Recently Added: Lists the patients by the added date.

## 2.4 List of Patients by Doctor

When selecting a doctor name, the patients assigned to the selected doctor are sorted and listed.



- All: Lists all of the registered patients.
- A specific doctor: Lists the patients assigned to the selected doctor.
- None: Lists the patients not assigned to any doctor.



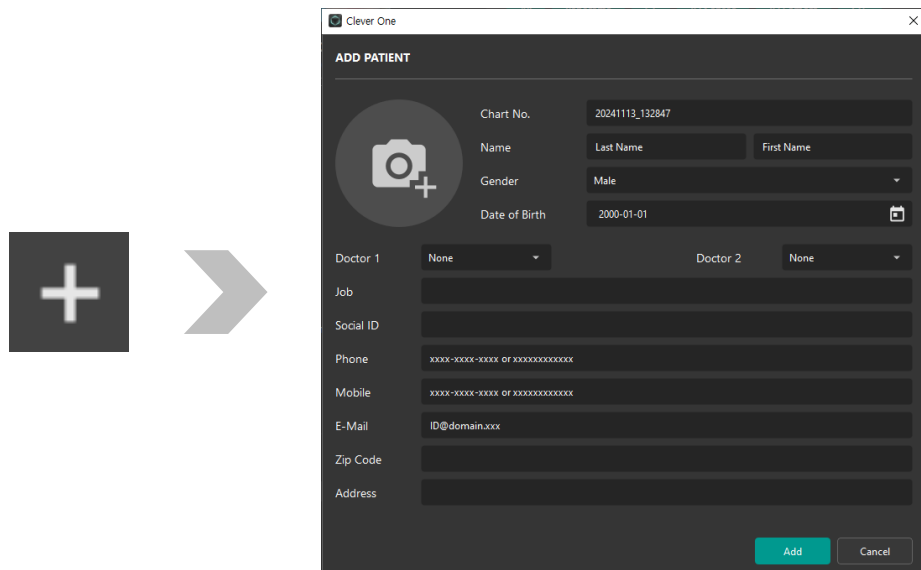
NOTE

- The user can add, modify, or delete the doctor list in EzServer Web Console.
- Only the doctor names created with the doctor account are shown on the doctor list.

## 3. Editing Patient Info

### 3.1 Registering a New Patient

1. Click the [Add Patient] icon from the toolbar. The [ADD PATIENT] window appears.



The 'ADD PATIENT' window includes the following fields:

- Chart No.: 20241113\_132847
- Name: Last Name, First Name
- Gender: Male
- Date of Birth: 2000-01-01
- Doctor 1: None, Doctor 2: None
- Job:
- Social ID:
- Phone: xxx-xxx-xxxx or xxxxxxxxxxxx
- Mobile: xxx-xxx-xxxx or xxxxxxxxxxxx
- E-Mail: ID@domain.xxx
- Zip Code:
- Address:

Buttons: Add, Cancel

2. Enter the patient information to the Add Patient window and click the [Add] button. The required information includes the chart number, name, and e-mail address. For other information such as the manual input of the chart number, changing the order of the name (first and last name, or vice versa) and e-mail settings can be found on '2. Setting up Clever One'.
  - The chart number is entered automatically, but the user can edit the chart number using alphabets, number, and '\_'. If you type alphabets in lower case, they automatically change to upper case letters, and the chart name will be saved in upper case letters in DB.
  - The doctor information is required when searching for patients by doctor. In case of not assigning a doctor, it is displayed as 'None'.
  - The fields for the first and last name are required.
  - E-mail address of the recipient is required when the Report module sends an email. For optional information, you can add the Social ID, phone number, email, Zip code, and address.




NOTE

- The user can add, modify, or delete the doctor list in EzServer Web Console.
- Only the doctor names created with the doctor account are shown on the doctor list.

3. After the completion of this process, the patient appears in the patient search list.

## 3.2 Modifying Patient Records

1. Search and select the patient data to modify from the list of search results.
2. Click the [Modify] icon in the toolbar. The [Modify Patient] window appears.



**Clever One**

**EDIT PATIENT**

Chart No. 20200618\_091157

Name Kim \* Vatech \*

Gender Female

Date of Birth 2000-08-22

Doctor 1 None Doctor 2 None

Job

Social ID 0000000 \*

Phone xxx-xxxx-xxxx of xxxxxxxxxxxx

Mobile 123-456-7890 \*

E-Mail abc@sample.com \*

Zip Code 12345 \*

Address

Modify Cancel

3. Modify the patient information appropriately and then click the [Modify] button. The modified patient information has been saved.

## 3.3 Deleting Patient Records


1. Search and select the patient data to delete from the list of search results.
2. Click the [Delete] icon on the toolbar to delete the selected patient.

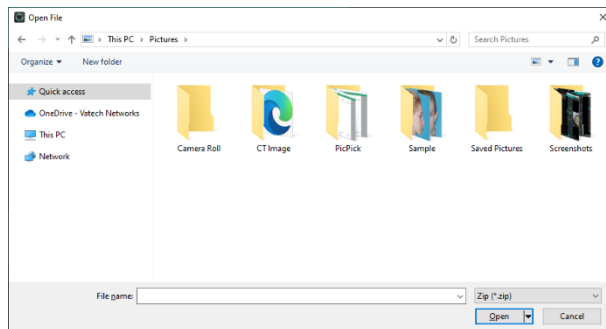


## 4. Export/Import

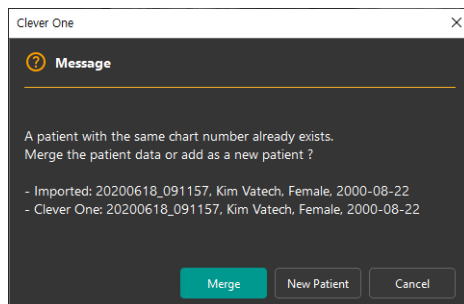
### 4.1 Importing Patients

Exported patient files can be imported with the Import Patient function.

1. Select the [Import Patient] icon () on the tool bar.
2. Select file to import and click the [Open] button to import the file.



3. If the importing file requires a password, enter the password and click [Confirm].
4. If the chart number in the imported file is the same as an existing patient's chart number in the database, the following pop-up message appears.




5. Click the [Merge] button to merge the data with the existing data.

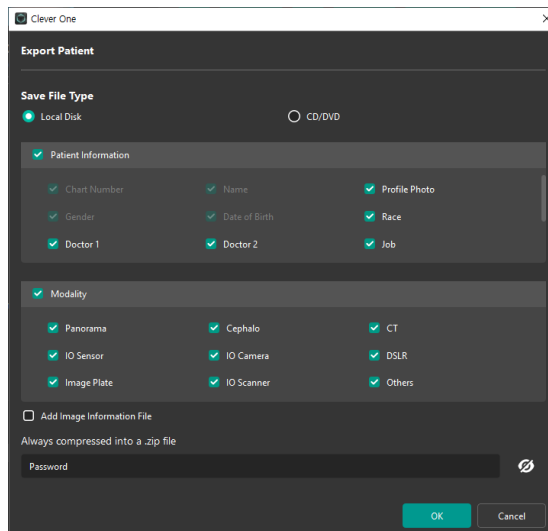


Clicking the [New Patient] button will open a Add Patient window. See 'Chapter 3. Patient > 3. Editing Patient Info > 3.1 Registering a New Patient' for details.

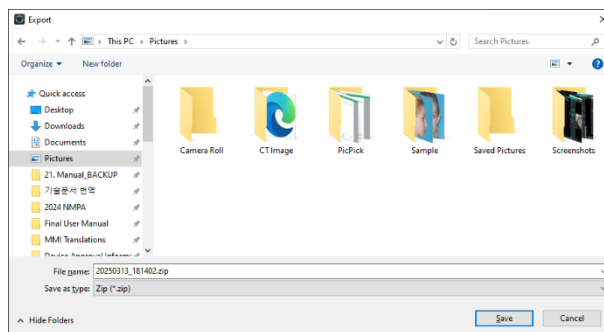
6. The imported patient is displayed on the patient list.

## 4.2 Exporting Patients

1. Select a patient to export from the patient list.
2. Click the [Export Patient] button(  ) and the password entry window appears.
3. Enter the password and the Export Patient window appears.



4. Select the Save File Type and select Export items.
5. If needed, set a password to enter when decompressing the file.
6. Click the [Export] button.
7. Specify the name and the saving location for patient file and click the [Save] button.



8. Click the [Save] button.

## 4.3 Exporting Acquisition Information

The information such as exposure time, kVp, mA, DAP by patient, modality, and period can be exported. The [Export Acquisition Information] function allows to check the number of acquisition by modality.

1. Select the [Export Acquisition Information] icon on the tool bar.



2. The [Export Acquisition Information] window appears. Select the Patient, Modality, and Period. Then, click the [Export] button.

- Patient
  - All Patient: Export acquisition information for all registered patient.
  - Selected Patient: Export acquisition information for selected patients.
- Gender: Select gender.
- Age: Select the range of patients' age.
- Modality: Select modality.
- Period: Select period.



### ▪ Patient Information Anonymization

If you have chosen to use the Privacy Policy Settings (found in [Settings > Others]), and [Export] is one of the options chosen under [Anonymize Patient Information], the option below appears when you use the [Export Acquisition Information] function. If you choose [Apply], the patient information will be anonymized in the resulting file.

3. Specify the name and the saving location for the acquisition list file, and click the [Save] button. The acquisition information is saved in an Excel file (\*.csv).

ID	IP	Port	Device	Model	Age	OS	OS Version	Service	Service ID	Domain	Generate	Image Tag	NetworkPolicy	PA	CA	Category	Response Time	Test
1	20000000	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000000000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
2	20000001	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000010000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
3	20000002	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000020000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
4	20000003	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000030000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
5	20000004	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000040000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
6	20000005	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000050000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
7	20000006	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000060000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
8	20000007	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000070000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
9	20000008	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000080000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
10	20000009	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000090000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
11	20000010	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000100000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
12	20000011	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000110000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
13	20000012	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000120000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
14	20000013	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000130000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
15	20000014	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000140000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
16	20000015	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000150000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
17	20000016	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000160000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
18	20000017	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000170000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
19	20000018	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000180000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
20	20000019	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000190000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
21	20000020	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000200000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
22	20000021	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000210000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
23	20000022	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000220000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
24	20000023	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000230000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
25	20000024	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000240000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
26	20000025	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000250000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
27	20000026	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000260000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
28	20000027	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000270000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
29	20000028	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000280000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
30	20000029	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000290000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
31	20000030	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000300000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
32	20000031	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000310000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
33	20000032	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000320000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
34	20000033	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000330000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
35	20000034	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000340000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
36	20000035	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000350000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
37	20000036	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000360000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
38	20000037	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000370000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
39	20000038	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000380000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
40	20000039	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000390000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
41	20000040	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000400000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
42	20000041	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000410000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
43	20000042	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000420000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
44	20000043	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000430000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
45	20000044	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000440000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
46	20000045	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000450000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
47	20000046	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000460000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
48	20000047	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000470000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
49	20000048	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000480000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
50	20000049	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000490000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
51	20000050	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000500000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
52	20000051	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000510000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
53	20000052	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000520000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
54	20000053	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000530000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
55	20000054	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000540000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
56	20000055	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000550000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
57	20000056	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000560000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
58	20000057	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000570000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
59	20000058	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000580000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
60	20000059	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000590000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
61	20000060	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000600000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
62	20000061	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000610000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
63	20000062	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000620000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
64	20000063	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000630000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
65	20000064	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000640000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
66	20000065	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000650000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
67	20000066	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000660000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
68	20000067	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000670000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
69	20000068	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000680000	PA	PA	PA	PA	PA	PA	PA	0.00000000	0.00000000
70	20000069	80	Windows Server	2016	2016-01-01	Windows	6.0.6002	HTTP	200000690000	PA	PA	PA	PA					

- Information that can be checked through the [Export to acquisition information] function  
: Chart Number, Patient name, DOB, Social ID, Doctor, Image Type, kVp, mA, DAP, Exposure time, and Date.
- The items without kVp, mA, and DAP information are displayed with the default value “0”.
- DAP Sum is displayed to four decimal points and as the same value with the Excel Sum value.

## 4.4 Exporting Images

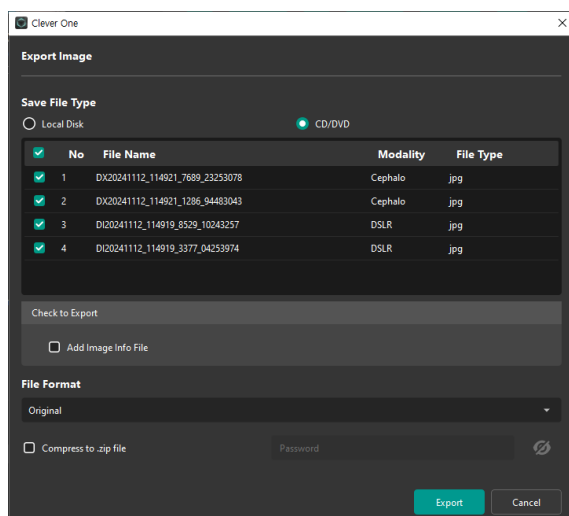
Users can export images saved in Clever One to their local PC or CD/DVD using [Export] icon from the toolbar.



Burn the working file on CD/DVD or save on the local disk.

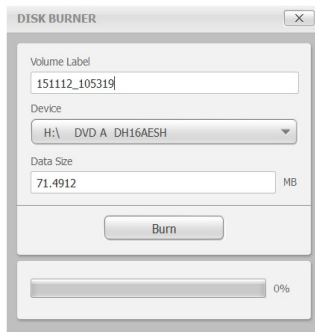
#### 4.4.1 Save on CD/DVD

1. Click [CD/DVD] on the Save Type. Click the [Export] button.





- The [Export] window appears.
- When the process is complete, the [DISK BURNER] window appears as follows:



- After inserting empty CD/ DVD RW, click [Burn] to proceed with CD/ DVD burning.



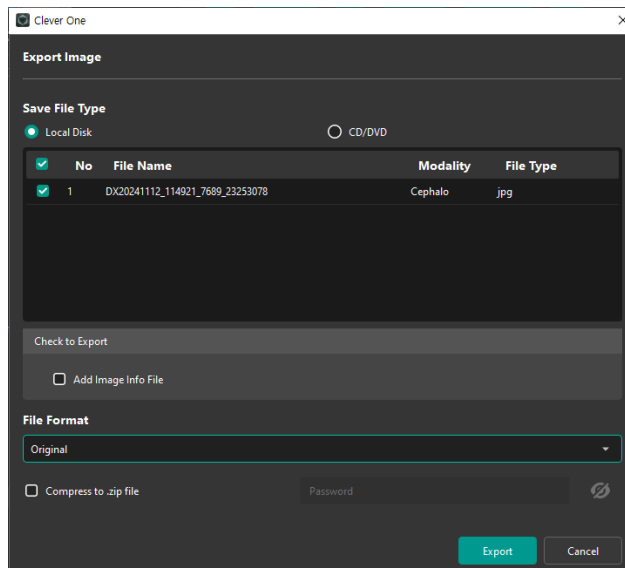
NOTE

If no disk inserted, the following window appears.

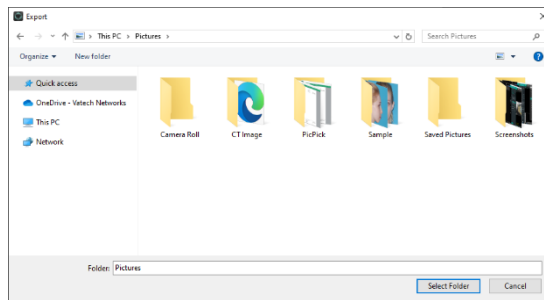


#### 4.4.2 Save on Local Disk

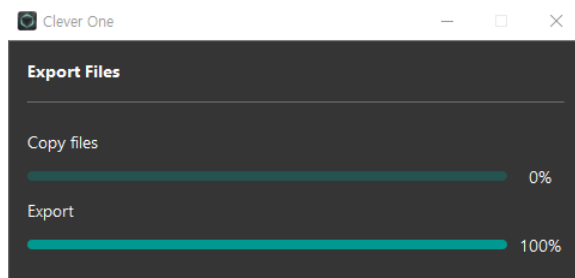
- Click [Local Disk] to select from Save Type, and then click the [Save] button.



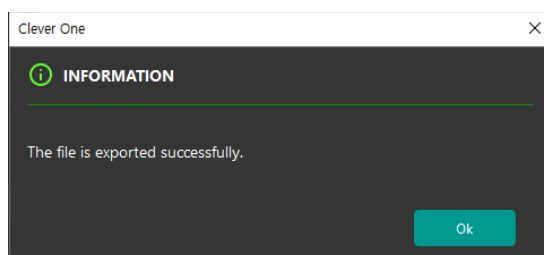
2. The [Export] window appears. Select a location to save, then click the [Save] button.



3. The [Export] window appears as follows:



4. When the process is complete, the following Information window appears. Click the [Ok] button to save.



## 5. EzCloud Service

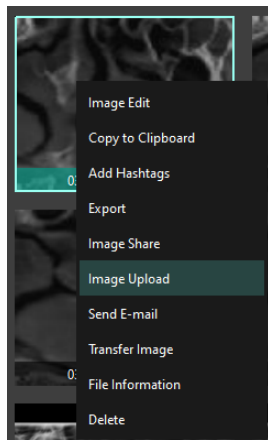
Search for patients to upload and share images via the cloud server.

### 5.1 Uploading Images to Cloud

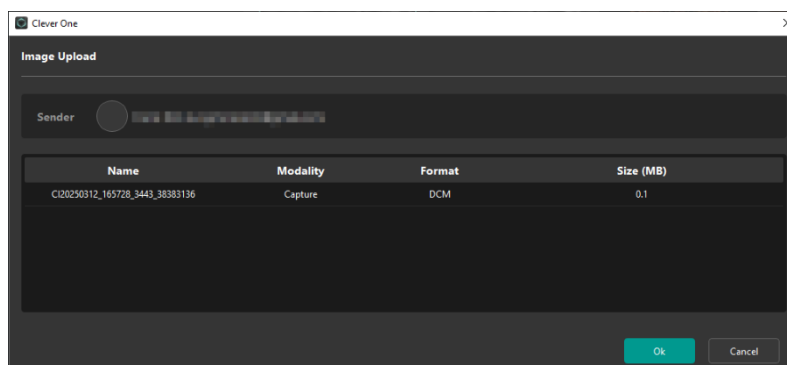
1. Select file to share and [Image Upload] icon from the toolbar to upload images to EzCloud.



- You can also upload images from Patient module by right-clicking on the image and selecting the [Send to EzCloud] option.



2. When the [Image Share] window appears, search for a recipient or E-mail address to share the image. Enter information or a message to share with the recipient.

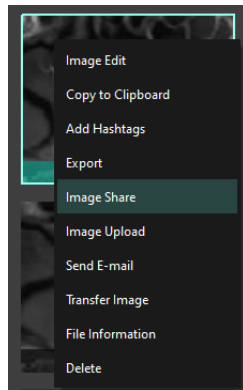


## 5.2 Sharing Data

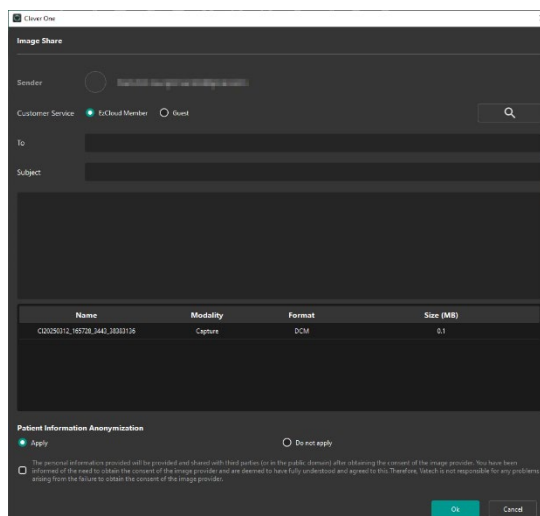
1. Click [Share] icon from the toolbar to share images out of Clever One.



- You can also share images from Patient module by right-clicking on the image and selecting the [Image Share] option. You can also select multiple images by holding the Ctrl key on the keyboard and clicking the desired images and sharing them. The maximum share volume and file number are limited.



2. When the [Image Share] window appears, search for a recipient or E-mail address to share the image. Enter information or a message to share with the recipient.



NOTE

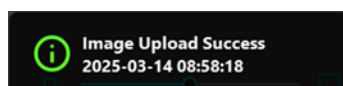
### ▪ Patient Information Anonymization

If you have chosen to use the Privacy Policy Settings (found in [Settings > Others]), and [Share] is one of the options chosen under [Anonymize Patient Information], the option below appears when you use the [Share] function.

If you choose [Apply], the patient information will be anonymized in the resulting file.

- Links share to non-members are valid for 7 days from upload.

3. Click [Share] and a image upload success message is displayed.



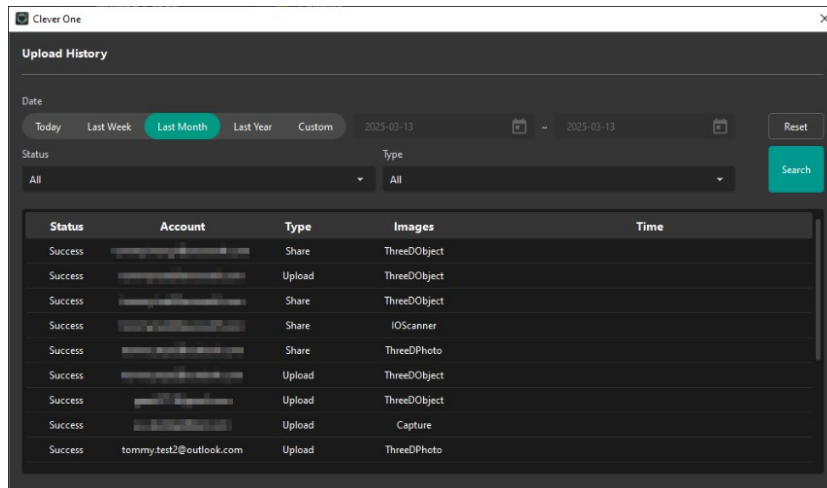
## 5.3 Viewing Upload and Share History

Manage and view the history, status, and information of shared data through the cloud.

1. Click [Share History] icon from the toolbar to view and manage the share history.



2. The [Share History] window appears. View and check the status and history of shared data.



- **Date**  
Select a date to filter results.
- **Status:**  
Select a status type, such as upload success/fail to filter results.
- **Type**  
Select a type, such as upload or share to filter results.
- **List Information**
  - **Status**
    - Waiting: waiting to upload
    - Sending: upload in progress
    - Fail: failed to upload
    - Success: upload or share request successful
  - **Account**  
Uploading or sharing account
  - **Type**  
Displays item type(upload or share)
  - **Images**  
Shows the number of shared images.
  - **Time**  
Display time for each status
    - Success: transfer success time

- Fail: transfer final fail time
- Waiting: transfer request time
- Sending: transfer start time

## 6. Signing Up to OneID Service

OneID is a unified login service offered by Vatech and Ewoosoft products that allows you to log in and use all products with one ID.

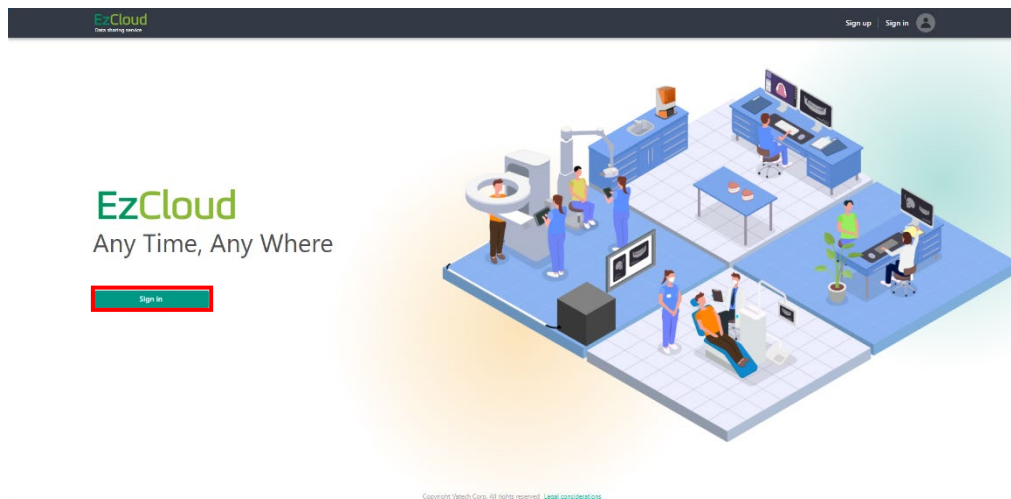
### 6.1 Signing Up OneID Service and Activating EzCloud

1. In the Patient module, click the [Go to EzCloud] button in the EzCloud advanced tools, and the EzCloud page is opened with the default browser.



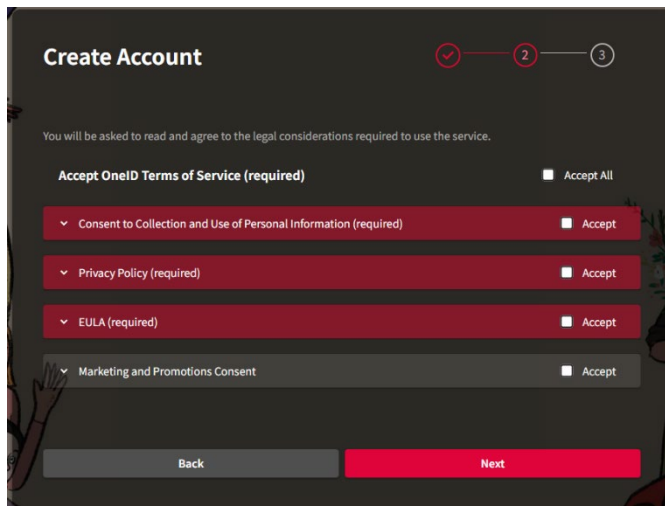
EzCloud functions must be enabled in the Settings to display the EzCloud advanced tools. See Chapter 2. Setting Up Clever One > 9. Service > 9.1 General' for details.

2. Click the [Signup] button on the EzCloud website.



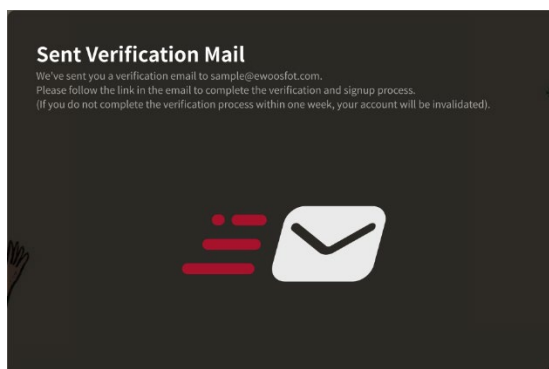
3. Select country to use the service.

4. After agreeing to the required terms and conditions to use the service, click the [Continue] button.

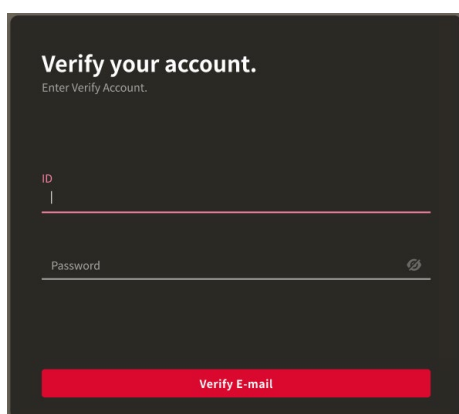


The screenshot shows the 'Create Account' screen. At the top, there is a progress indicator with three steps: 1 (checked), 2 (current), and 3. Below the title, a message states: 'You will be asked to read and agree to the legal considerations required to use the service.' Underneath, there is a section titled 'Accept OneID Terms of Service (required)' with an 'Accept All' checkbox. Below this, there are four expandable sections, each with a dropdown arrow and an 'Accept' checkbox: 'Consent to Collection and Use of Personal Information (required)', 'Privacy Policy (required)', 'EULA (required)', and 'Marketing and Promotions Consent'. At the bottom, there are two buttons: 'Back' and 'Next'.

5. After entering all the required information to sign up, click the [Confirm] button to send a verification email to the email address you entered.



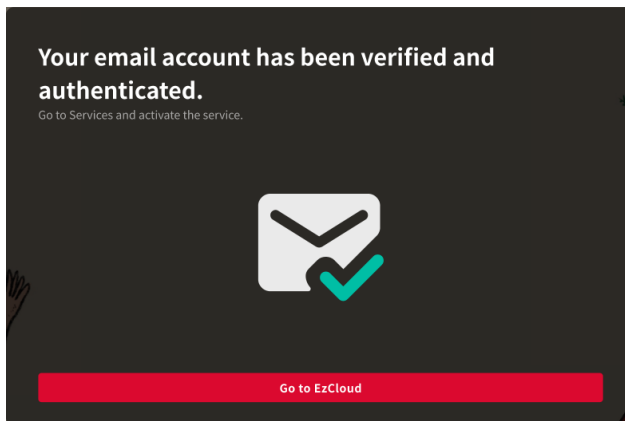
6. Click the [Verify Email] button in the email sent to you.
7. Enter the email and password you set when signing up, and click the [Verify Email] button.



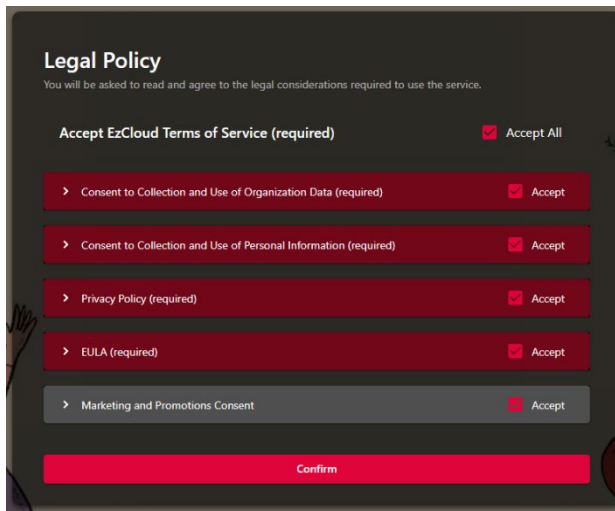
The screenshot shows the 'Verify your account.' screen. It has the title 'Verify your account.' and the subtitle 'Enter Verify Account.' Below this, there are two input fields: 'ID' and 'Password'. The 'ID' field has a red underline. The 'Password' field has a red underline and a small eye icon to its right. At the bottom, there is a red button labeled 'Verify E-mail'.



8. Once an OneID account is created, click [Go to EzCloud] to go to the EzCloud service activation window.



9. After agreeing to the EzCloud required terms and conditions, click the [Continue] button.



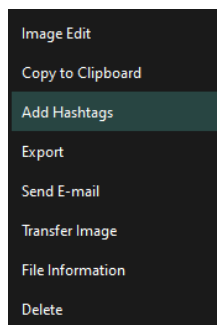
10. EzCloud service is successfully activated.

## 7. Adding Hashtags to Images

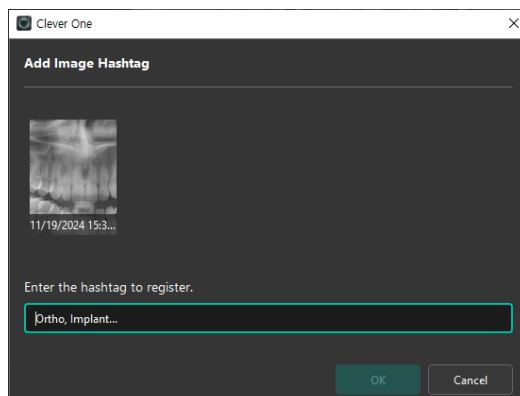
Add hashtags to images to view and open images with the corresponding hashtag. Hashtags are managed on a patient basis. Open images with the hashtag by clicking hashtags with link icons next to the text.



1. Right click on the implant and select the [Add Hashtags] option.



2. Once the [Add Image Hashtag] window appears, enter a hashtag to register to the image.



Recommended items will appear below the text bar.

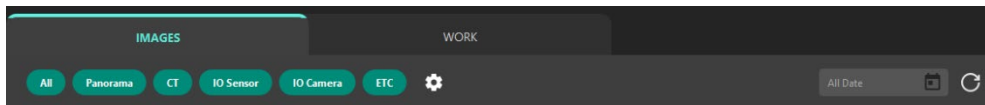
3. Hashtag is successfully added to the image.

## 8. Managing Registered Patients Data

### 8.1 Filter Images of Registered Patients

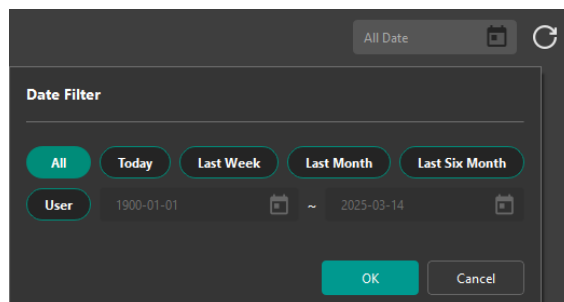
The patient images can be filtered by modality or sorted by date.

1. Search and select a patient.
2. Select the date or enter a period in patient images. And then, the images which meet these conditions are displayed.



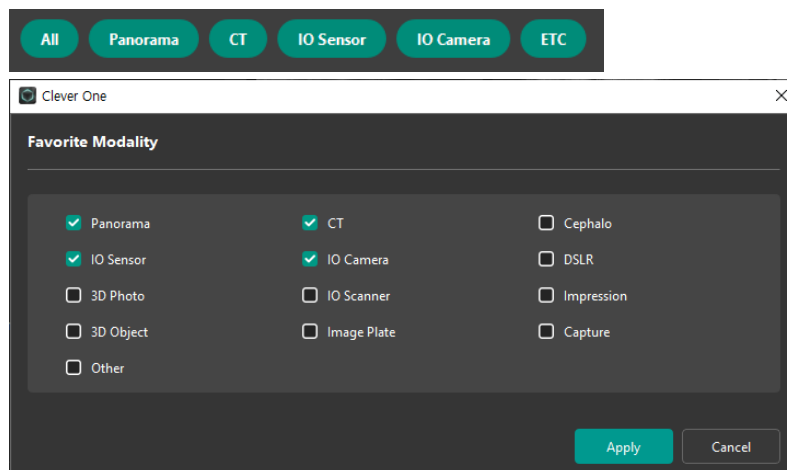
- **Search by Date**

The images are listed from the recent data, and are displayed in the order of acquisition time within the list.



- **Filter by Modality**

The images are listed by modality and are displayed in the order of acquisition time within the list.



3. Double click an image to display the image on the viewer window.

## 8.2 Managing Patient images

Right click on the patient image from the patient image list. A dropdown menu with your image management options will appear.



Images scanned together with Vatech scanner equipment are transferred and deleted together.

Image Edit  
Copy to Clipboard  
Add Hashtags  
Export  
Image Share  
Image Upload  
Send E-mail  
Transfer Image  
File Information  
Delete

- Image Edit

From here, users can calibrate, rotate or Initialize the image.

- Copy to Clipboard

Users can copy the selected image to the Clipboard.

- Add Hashtags

Apply hashtags to images to view images with the hashtag at once.

- Export

Users can export images saved in Clever One to their local PC. For more details, see '*Chapter 3. Patient Module > 4. Export/Import*'.

- Image Share

Share images from Clever One to another user via EzCloud. For more details, see '*Chapter 3. Patient Module > 5. EzCloud Service*'.

- Image Upload

Upload images from Clever One to the linked EzCloud. For more details, see '*Chapter 3. Patient Module > 5. EzCloud Service*'.

- Send E-mail

The selected image is automatically attached and sent by email. Press the <Ctrl> key on the keyboard to select multiple images to be attached.



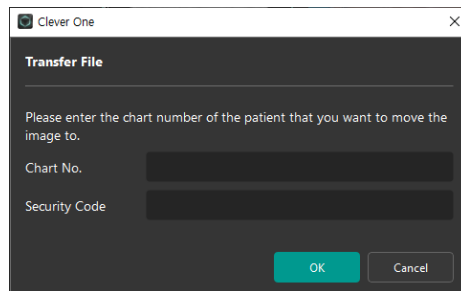
Checking [Compress to .zip file] allows you to [Export] all files (images, patient information) as a compressed file (.zip).

- Input a password during the [Export] process to password-protect the exported file.
- Password can be entered up to 12 digits.

- **Transfer Image**

An image which is saved under one patient can be transferred to another patient. At this time, the acquisition date and image information(modality and position) are maintained, and the acquisition date and the image information cannot be modified. To modify the acquisition information, user should change the information directly using the Image Editor.

1. Right click on the desired image then, select the [Transfer Image] option. Press the <Ctrl> key on the keyboard to select multiple images to be attached. Enter the chart number of the patient that the transferred image of will be saved.



2. When the [Message] window appears, click the [OK] button. The Image transfer is completed.

- **File Information**

Users can verify the file information of the selected image.

- **Delete**

Users can delete the selected image from the DB.

1. If the user wants to delete more than 2 images, hold the <Ctrl> key on the keyboard and click the desired images from patient image list, then Right Click and select Delete.
2. Right click on the desired image for deletion. Select [Delete] from the list menu.

## 8.3 Managing Patient Report Files

Right click on the report from the patient report list. A dropdown menu with your report management options will appear.

- **Delete**

Users can delete the selected report from the DB.

1. Click the desired report from patient report list.
2. Select [Delete] from the list menu.

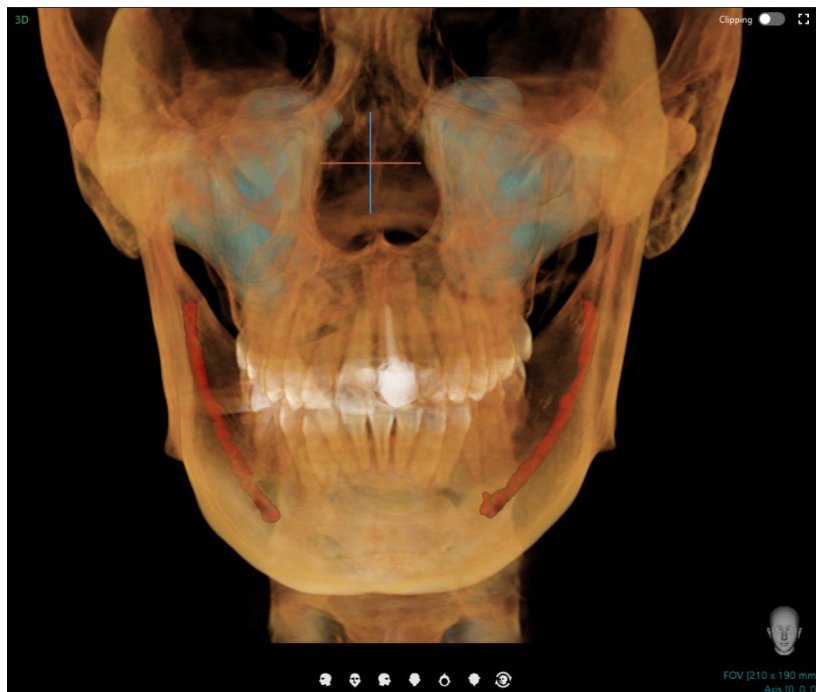
## 9. Controlling Direction of 3D, VR Images

Click the Predefined direction button or drag the 3D image to change the direction of the 3D image.













When clicking the head image button at the bottom of the 3D realm, the 3D image is rotated to the indicated position.



- If the DICOM header file exists, the pink box on the Skull appears to indicate the 3D capture area in relation to the entire view of the skull.



## 10. Toolbar

Icons	Designation	Description of Features
	Add	Add new patient.
	Modify	Edit the information or images of the registered patient.
	Delete	Delete the registered patient.
	Hide the displayed patient information	Reset the searched results and hide the image.
	Export to acquisition information	Export the values of kVp, mA, DAP, DAP SUM, and exposure time for all patient or a selected patient to an Excel file.
	Export Patient	Export selected patient.
	Import Patient	Import a patient exported from EzSeries products.
	Send to PMS Server	Upload selected patient information to PMS
	Image Upload	Upload selected image(s) to EzCloud.
	Image Share	Share selected patient images through the cloud.
	Upload History	View and manage history of shared data.
	Go to EzCloud	Redirect to EzCloud homepage.
	Export Image	Export selected patient images.





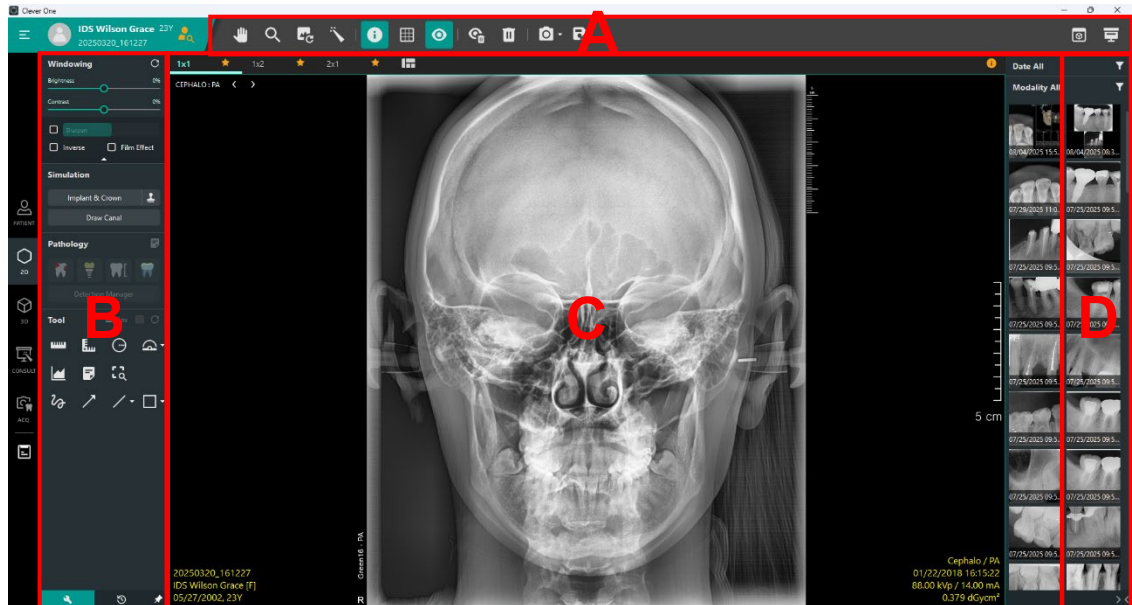
## Chapter 4. 2D Module

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# 1. Configuring the 2D Module

## 1.1 Workspace



- A: These buttons are for measuring, zooming, moving the images.
- B: This pane is used for windowing images and performs simulation.
- C: The user can view selected images with windowing and simulation results.
- D: This pane shows the images for the selected patients in thumbnail.

## 2. Windowing

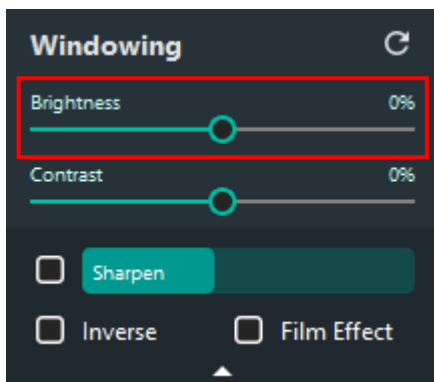
Through the Windowing function of Clever One, user can adjust the brightness and the contrast of images, and also can give sharpen, inverse, and film effect to the images.



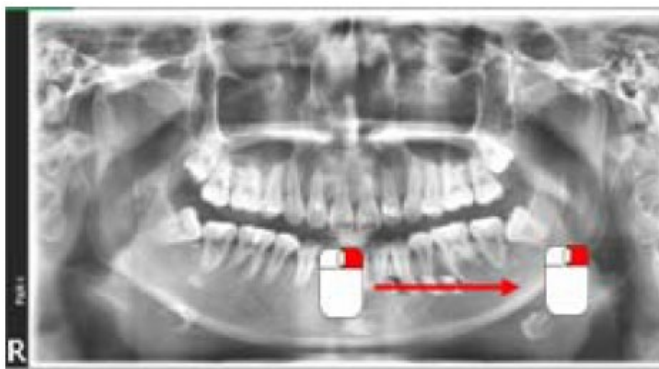
Windowing effect is also applied to the image displayed on the Consult module and the Report module. However, the windowing effect modified after the image is opened on the report is not applied.

### 2.1 Adjusting Brightness

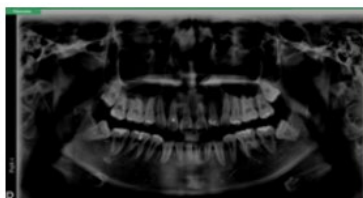
The [Brightness] option makes an image brighter or darker.



- To adjust the level of brightness, move the [Brightness] slider to the left or right. Or, right click and drag the mouse left or right.



- Comparison of brightness -100 image and brightness 100 image is as below.



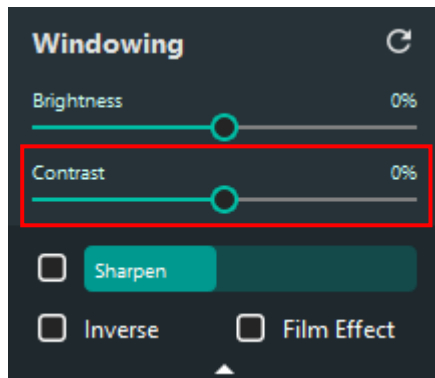
Brightness -100



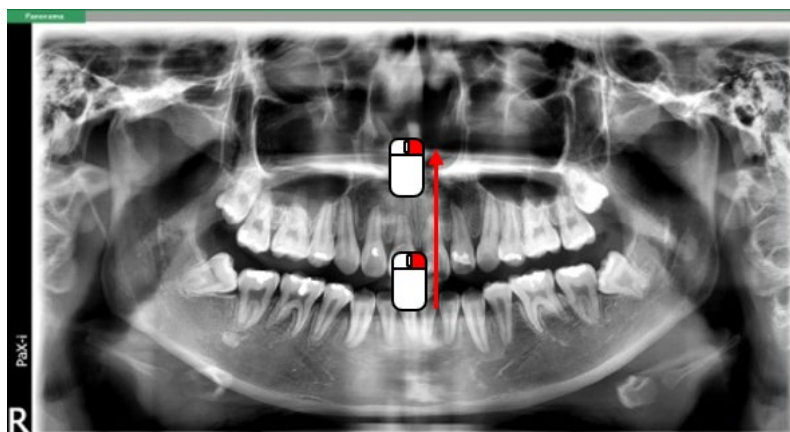
Brightness 100

## 2.2 Adjusting Contrast

The [Contrast] option makes distinctive comparison of black and white region of an image. Higher contrast makes black pixels more black and white pixels whiter. Image details are much clearer with the effect of contrast. Blurry nerve or anatomical structures become more clearly distinguished.



- To adjust the level of contrast, move the [Contrast] slider to the left and right. Or, right click and drag up or down to adjust the image contrast.



- Comparison of contrast -100 image and contrast 100 image is as below.



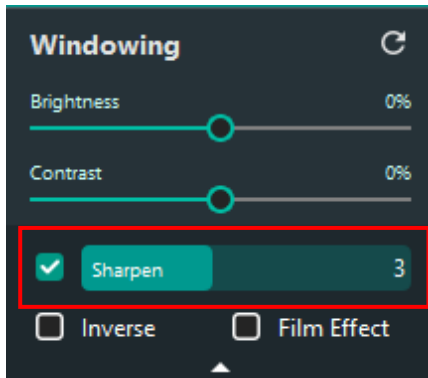
**Contrast -100**



**Contrast 100**

## 2.3 Adjusting Sharpness

Image details are further emphasized with the effect of image sharpness. Blurry nerve or anatomical structures become more clearly distinguished. To apply the [Sharpen] option, select Sharpen. If the user wants to increase the sharpen effect, select maximum level for the option.



- Comparison of images between not applied and applied Maximum Sharpness effect is shown below.



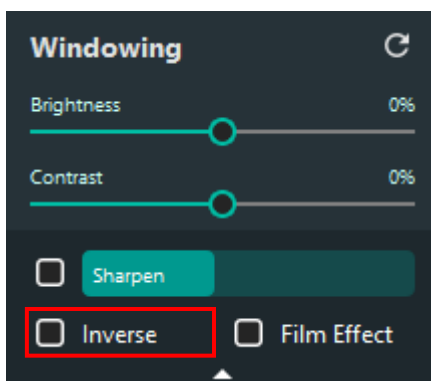
Original Image



Maximum Sharpness Image

## 2.4 Inverting Black and White

This is a function to inverse black pixels to white, and white pixels to black.



- To apply Inverse, select Inverse. A comparison between an original image and its inverse is shown below.



Original Image

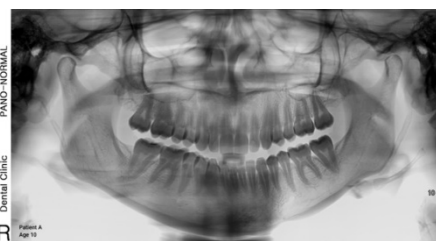
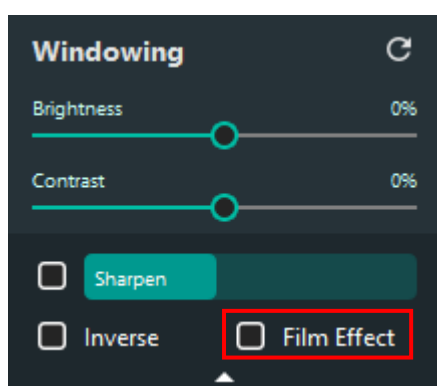


Image with Inverse Effect

## 2.5 Applying Film Effect

If the user wants Film type image, the [Film Effect] option can be selected.



- To apply Film Effect, select it. A comparison between an original image and an image with film effect is shown below.



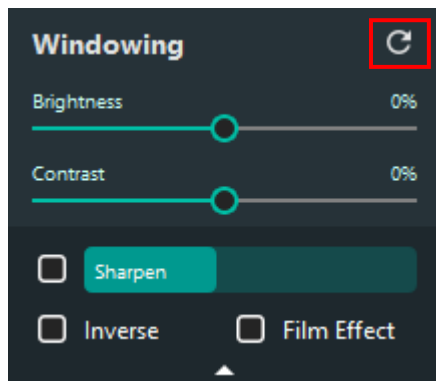
Original Image



Image with Film Effect

## 2.6 Reverting to the Original State

Revert all applied effects and initialize the image to the original state.





### 3. Simulating Implant

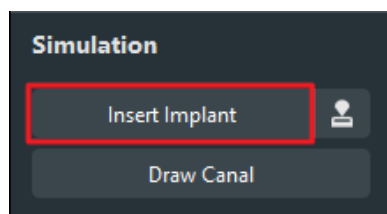
The implant simulation can be inserted in two different methods on Clever One. First, the user can insert the implant and locate it at the correct position manually. Second, based on length information of image, implant is selected and located at the correct position automatically.

#### 3.1 Implant Insert Option: Manual/Automatic

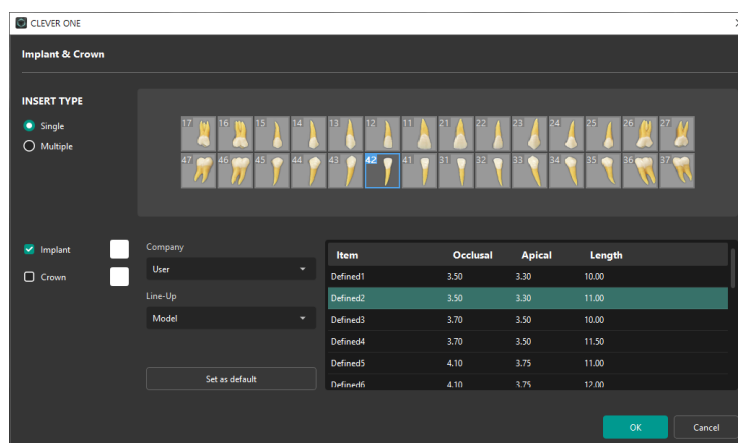


The Implant Insert method is set to Automatic by default. The method can be changed from [Settings > Simulation > General > Preset Implant].

1. Click the [Implant Insert] button from the simulation items. The [IMPLANT MANAGER] window appears.



1. Select the information of the implant to be inserted from the [IMPLANT MANAGER] window. Select the implant location with the corresponding tooth number. Select the implant manufacturer from the company section and the model name of the implant from the line up section. Select the correct size of the implant in the right side.

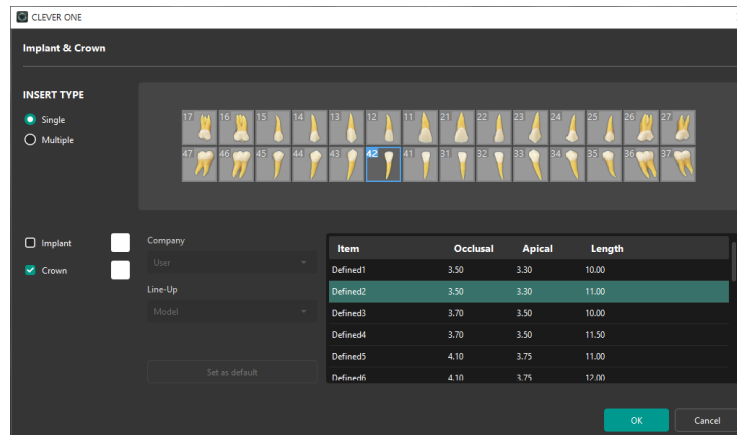


- [Single]: Insert an implant for one tooth.  
[Multiple]: Insert multiple implants at once by selecting teeth and implant information consecutively.
- Implant Item Color settings: Set default overlay colors for each implant item.
- Click the [Set as default] button to change the preset implant for each tooth number.
- If company, line up and STL are empty, check if implantDB.exe has been installed on the PC.

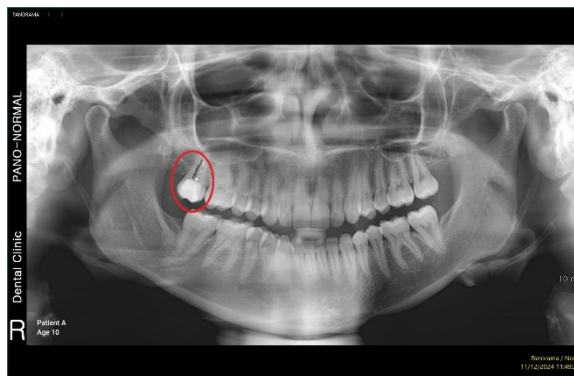


Based on to the tooth number, specific implants (implant company, Line-Up, and Model Name, etc.) are set by default. The preset implant can be modified from [Main menu > Settings > Simulation > Preset Implant].

2. If needed, click the [Crown] check box to perform the crown placement during the implant simulation.
  - Only crown without implant simulation is possible by checking the [Crown], not the [Implant] option.



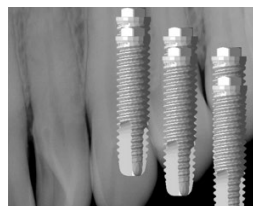
3. After the selection is done, click the [OK] button. The implant is placed in the designated location.



- Implant Automatic Insert: Implants are inserted at the specified location according to the selected tooth number.
- Implant Manual Insert: Implants are inserted at the user-selected location manually



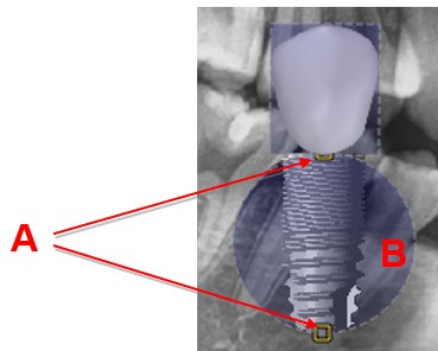
When inserting implants automatically on a modality image other than panorama, the implants are inserted from the left in order.



- Place the implant in the desired location by adjusting the direction of the implant and the crown size.



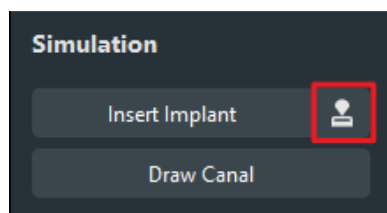
The following is the way to change the direction and size of implant.



- When dragging the inner part of the purple circle, the position of the implant can be controlled.
- When dragging the small yellow box the direction of implant can be controlled.

### 3.1.1 Quick Implant Inserts

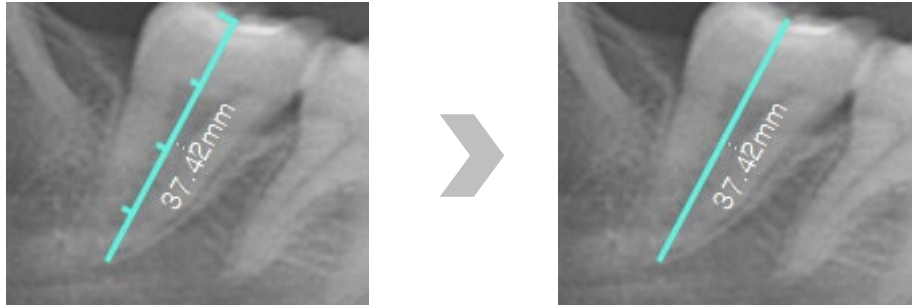
- Click the [Implant Stamp] button from the simulation items.



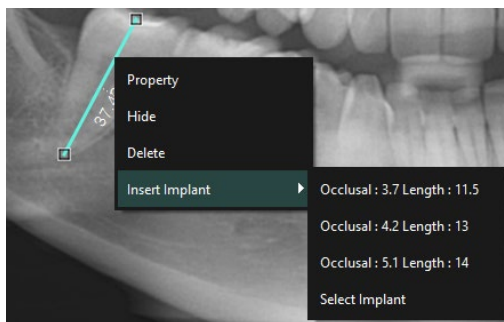
- The last used implant item is automatically selected, and can be inserted continuously.

## 3.2 Implant Insertion by Measuring Length

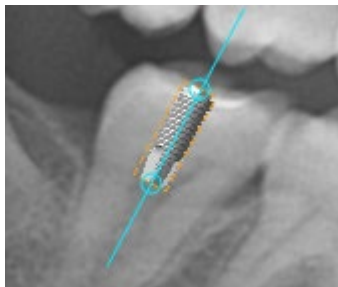
1. Click the [Length] icon and click two points to measure the length. The line for the measurement appears on the image and click the [Length] icon again to deselect



2. Click the measured line and right click to see list menu. Select the [Insert Implant] option from the list menu.

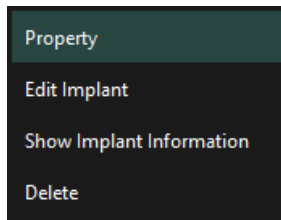


3. Three implant options are listed for the measured length. Click the desired implant option, and it will be inserted automatically.



### 3.3 Modifying Inserted Implant

1. Right click on the simulated implant and select the [Property] option.



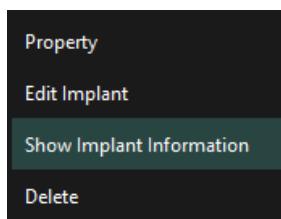
2. Modify the implant information as desired in the [Implant & Crown] window.

The implant properties such as Company, Line-Up, Model, and Item can be modified, and the [Crown] option can be also selected.

3. Click the [OK] button. Then, the modified implant appears.

### 3.4 Inserted Implant Information

1. Right click on the simulated implant and select the [Show Implant Information] option.



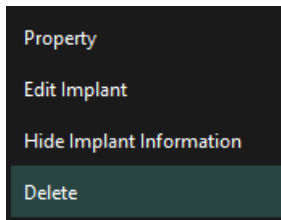
2. The implant information will be shown.



- Right click on the implant once again and select the [Hide Implant Information] option to hide the implant information.
- When you move the implant image, the information will move along with the image.

### 3.5 Deleting Inserted Implant

Right click on the implant and select the [Delete] option to remove the placed implant.



When using the [Initialize] icon on the toolbar, all previous [Free Draw] items including the inserted implant will be deleted.

## 4. Drawing Nerve Canal

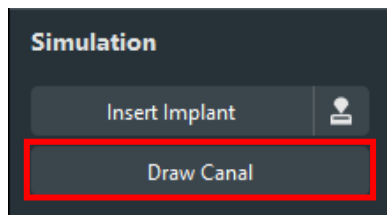
Prior to the implant simulation, the patient's mandibular nerve canal is usually referenced during the implant placement.

1. Calibrate the image prior to the mandible nerve canal simulation.

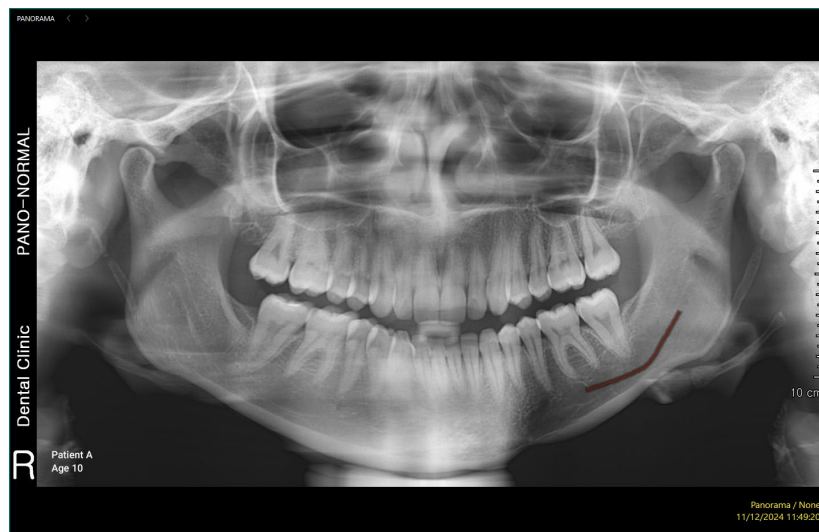


For more information on image calibration method. See "*Chapter 4. 2D Module > 8. Calibration*".

2. Click the [Draw Canal] button. The shape of the mouse cursor changes to a cross.





3. Click to plot points along the mandibular nerve. To delete the previously plotted point, right click.



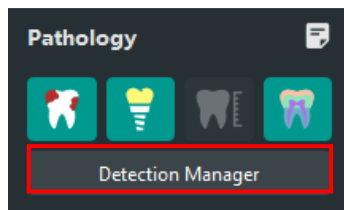
4. Double click to mark the end of the canal.

## 5. Third-Party Pathology Detection Service

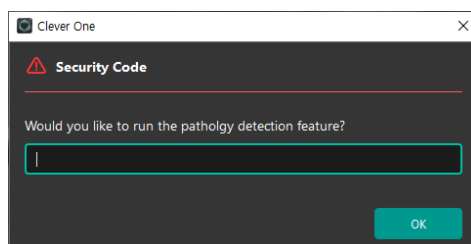
If you have a subscription to a pathology detection service, Clever One will work with the service to enable pathology detection for images (**Limited to adult patient images of the following: IO Sensor, Image Plate**).

 <p>CAUTION</p>	<ul style="list-style-type: none"> <li>Our company provides a viewer function only and does not perform analysis directly. Users must separately subscribe to and use FDA-approved analysis services. End users are required to verify and modify the analysis results as necessary.</li> <li>This service is a viewer service, not a diagnostic service, and requires final confirmation by the user. Interoperating software, such as pathology detection services, will only provide suggestions and the final diagnosis or decision must be made by a licensed medical professional.</li> </ul>
 <p>NOTE</p>	<ul style="list-style-type: none"> <li>The feature is available after enabling it in Settings and obtaining account permissions. For details, see Chapter 2. Setting Up Clever One &gt; 9. Service &gt; 9.2 Pathology Detection.</li> <li>The pathology detection feature is only available for images with calibration values.</li> <li>Supported interoperable pathology detection services.             <ul style="list-style-type: none"> <li>Second Opinion(Pearl)</li> </ul> </li> </ul>

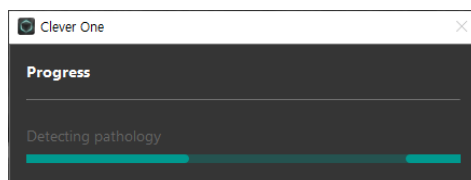
1. Click the [Detection Manager] button on the Pathology group.



2. Enter security code for the current user account.

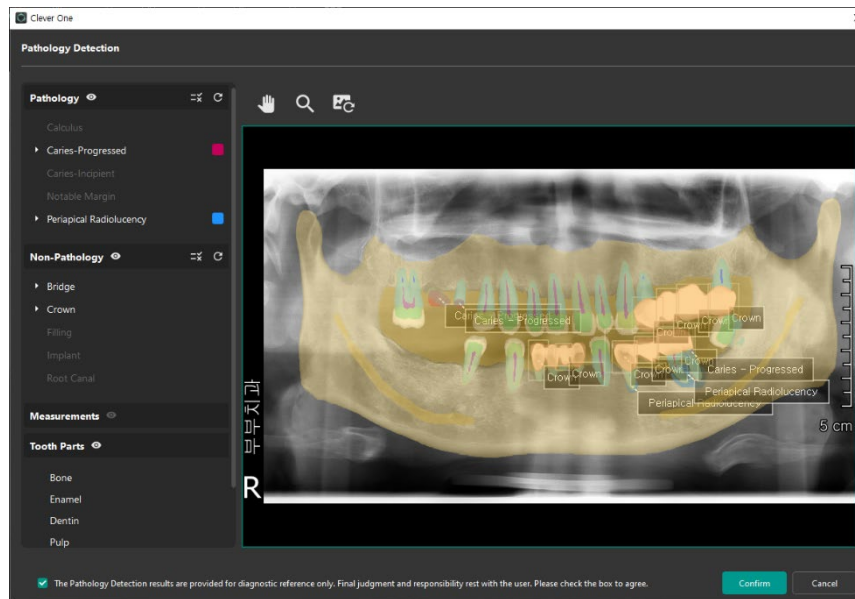


3. A progress bar appears until the pathology detection service receives the results.





- The Pathology Detection window displays the detection results for each pathology, and you select which ones you want to accept.



- Click [Confirm], the detection result will be displayed on the image as an overlay, and the pathology detection function is completed.

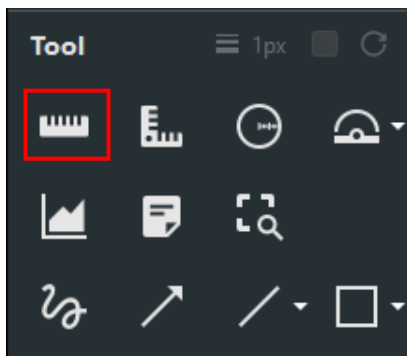
## 6. Tool Group

Use tools from the Tool group to measure length, angle, volume, bone density profile or enter annotations ranging from memos, draw, arrows, lines, and shapes. All entered content can be hidden or deleted on the screen. Also, the user can change the properties of the entered items.

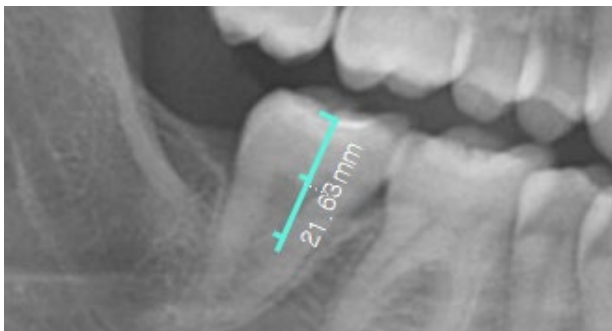
### 6.1 Measuring Length

#### 6.1.1 Measuring Length on Image

1. Click [Length] icon to measure the length as below.



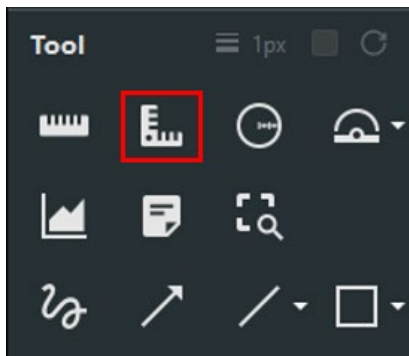
2. Click two points to measure the length. Then the numerical value appears on the screen.



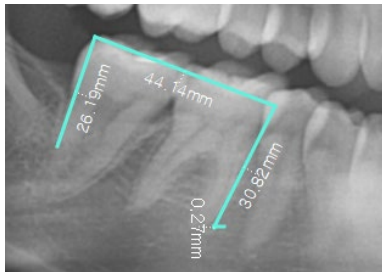
3. Click [Length] icon again or right-click the image to finish measuring.

## 6.2 Measuring Multi length

1. Click the [Multi Length] icon on the toolbar.



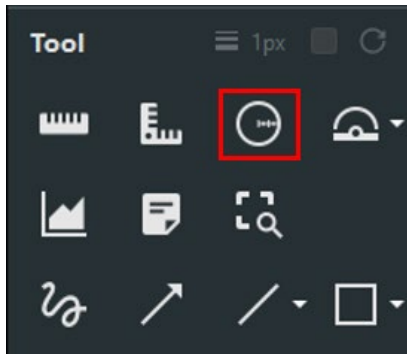
2. Click all points to measure length on the image. The measured length is displayed as shown in the following figure.



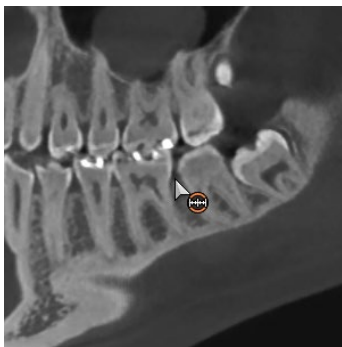
3. Double click on the last point to stop measuring.
4. Click the [Multi Length] icon again or right click on the image to end measuring

## 6.3 Measuring Circle Radius

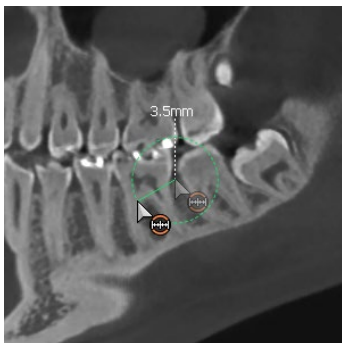
1. Click [Circle Measure] icon to measure radius of circle.



2. Click the first point at desired position to measure in view.

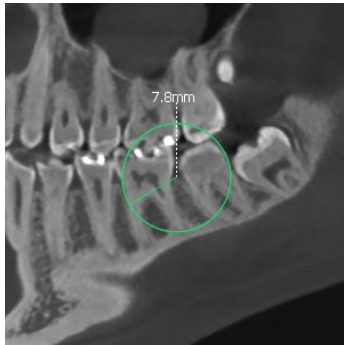


3. Drag the mouse to adjust circle size, then second point of the circle follows the mouse pointer.

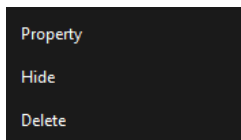


4. Click the position where to stop measurement to complete circle measurement.

5. The measured value is displayed in billboard format, and the circle is displayed in solid line.

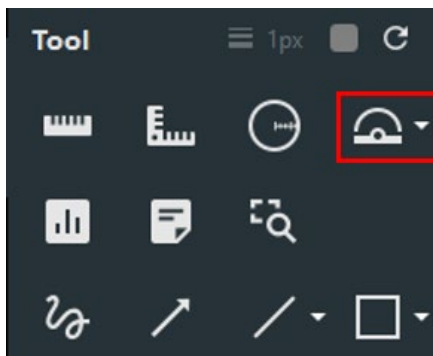


6. Select the inserted circle overlay by right-clicking to display context menu.
7. The user can view property of the overlay, and hide or delete the overlay by using Property, Hide, and Delete menu.

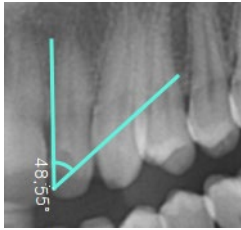


## 6.4 Measuring Angles

1. Click [Angle] icon and measure the angle as shown below:



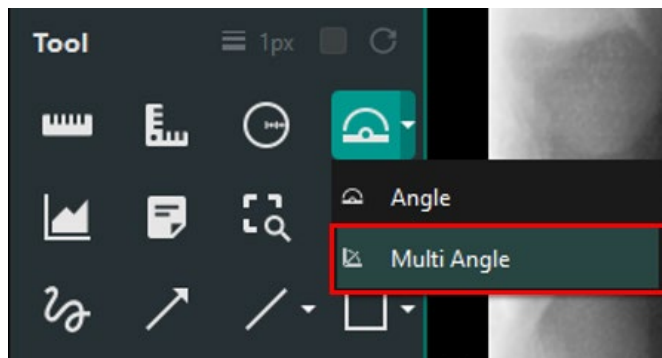
- Click three points to measure the angle. Then the numerical value appears on the screen.



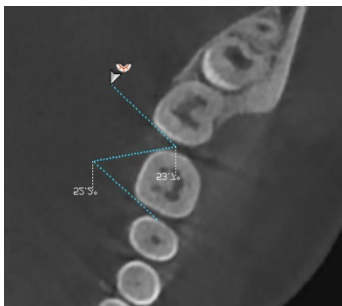
- Click [Angle] icon again or right-click the image to finish measuring.

## 6.5 Measuring Multi Angle

- Click [Angle] icon and select the [Multi Angle] option to measure the angle as shown below:

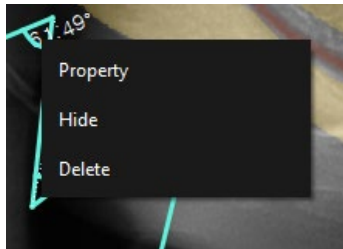


- Click all points to measure angles in a row in 2D Image View.



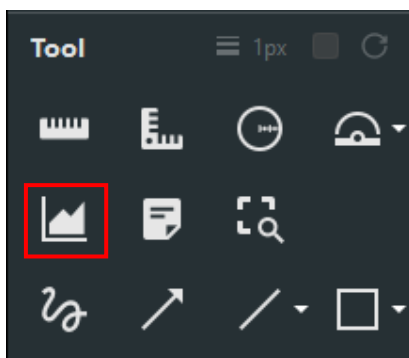
- Values are displayed where angles are made.'
- Double click the last input point to complete measurement or hit Enter key in keyboard. Then, valid multi-angles are inserted to the last inserted point.

- Right click the inserted multi-angle overlay to display context menu. The user can view property of the overlay, and hide or delete the overlay by using Property, Hide, and Delete menu.



## 6.6 Profile

- Click [Profile] icon to see the bone density as shown below:



- Click two points to see the bone density value based on your 2D image.



3. The Profile window appears. This profile graph shows the bone density between two points. Move the mouse on the profile line and control the area. The maximum, minimum, and the average value change in real time based on the selected area.



CAUTION

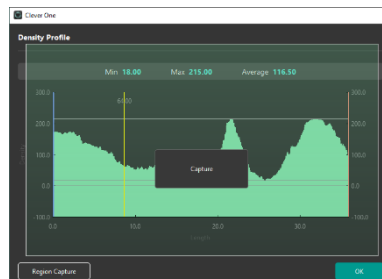
There are many cases where CBCT has different CT Number values, which are the standard of bone density standard, depending on the equipment.

Users should be aware of this limitation before diagnosing and performing simulation according to the bone density value. The treatment based on the incorrect measurement may cause failure in operation or complications.


#### • Capture Profile

Click the [Profile Capture] button at the bottom left of the window to capture the Profile Dialog and Profile Object.

1. Click the [Profile Capture] button. The mouse cursor changes to capture mode.
2. Drag the mouse to select desired region then the [Capture] button appears. Click the capture button to capture the selected region.




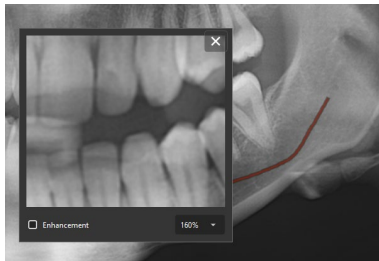
## 6.7 Entering Memos

1. Click Memo button() in Tool group.
2. Click the desired position to enter memo.
3. Enter comment in memo input field. You can insert a preset comment by right clicking to run context menu during memo input mode.
4. Enter ESC key or click outside of memo to exit memo input mode.




## 6.8 Viewing with Magnifier

1. Click the [Magnifier] button() in Tool group.
2. The magnifier appears and can be moved to show an enhanced view of the area.




3. Enter ESC key or click the [X] button to exit magnifier mode.


## 6.9 Free Drawing

1. Click the [Free Draw] button() in Tool group.
2. Click the desired position to draw on the 2D image.
3. Enter ESC key or re-click the [Free Draw] button to exit draw mode.

## 6.10 Entering Arrows or Lines

1. Click the [Arrow] or [Line] button() in Tool group.
2. Click the starting point at the desired position.
  - When using the Arrow tool, the arrow is placed towards the ending point.
3. Click the ending point at the desired position.
4. Enter ESC key or re-click the [Arrow] or [Line] button to exit draw mode.
  - When using the Polyline tool, double click or enter the ESC key to exit polyline tool.

## 6.11 Entering Shapes

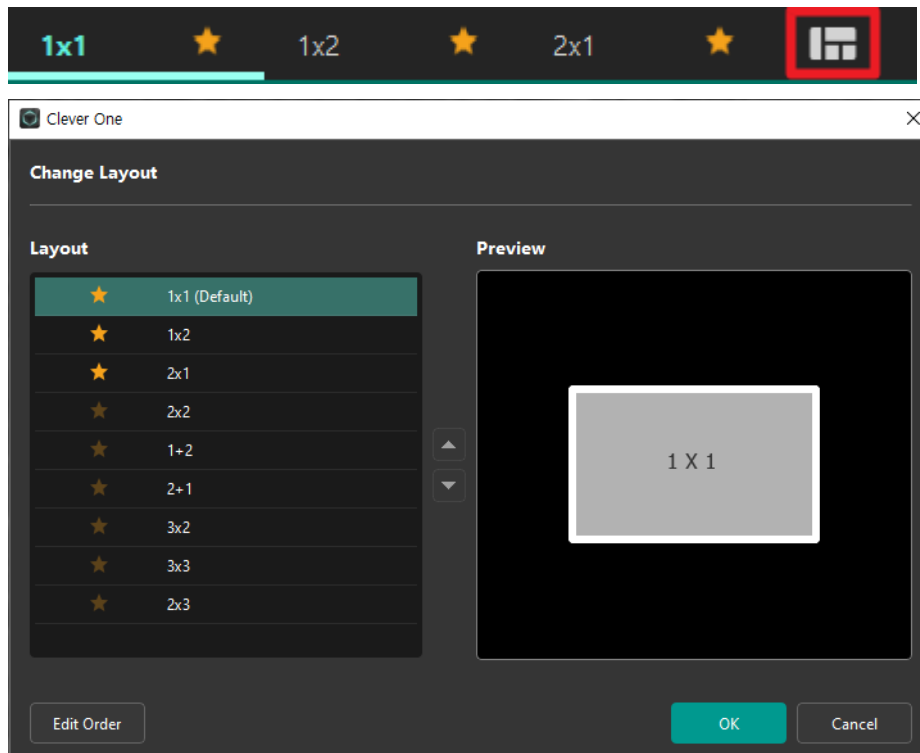
1. Click the [Rectangle] or [Ellipse] button() in Tool group.
2. Click the starting point at the desired position.
3. Click the lower right point of the shapes at the desired position.
4. Enter ESC key or re-click the [Rectangle] or [Ellipse] button to exit draw mode.

## 7. Changing Layout

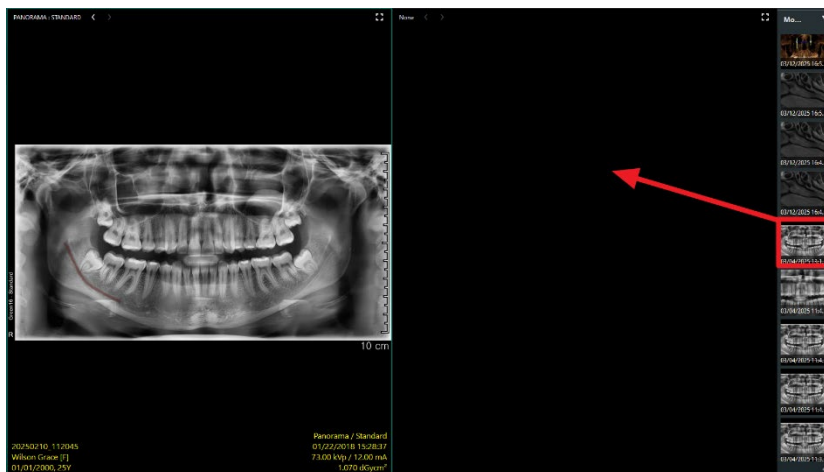
Workspace can be split, choosing one of approximately 25 supported layouts. As a result, users can view more than 2 images on a screen. This feature is named Layout.

### 7.1 Changing Layout

1. Click the [Change Layout] button. The [Change Layout] window appears.

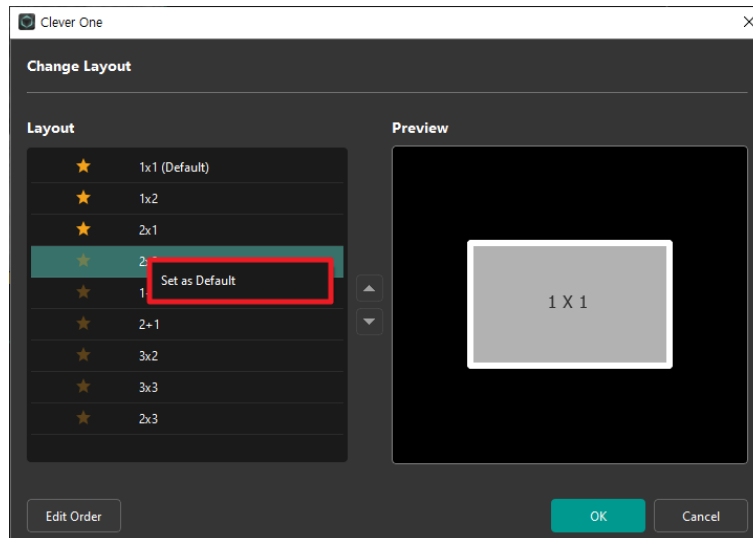


2. Double click the desired layout, or select then click the [OK] button. The selected layout appears on the workspace.
3. Drag and drop the thumbnail image in the image view screen.



## 7.2 Setting as Default Layout

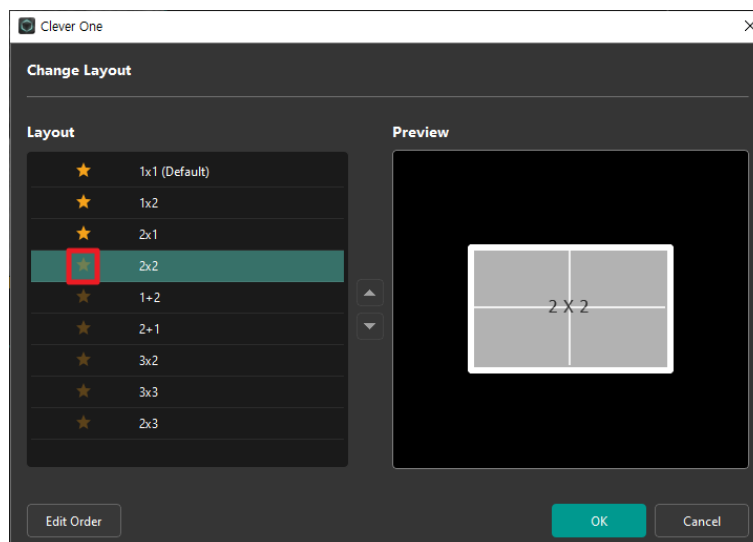
1. Click the [Change Layout] button. The [Change Layout] window appears.
2. Select the desired layout, and right click to select the [Set as Default] option.



3. Click the [OK] button. The selected layout appears on the workspace.

## 7.3 Adding to Favorites

1. Click the [Change Layout] button, and the [Change Layout] window appears.
2. Click to select a layout, and right click on the layout and then click the star mark on the layout.



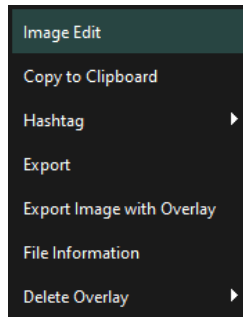
3. The star mark is enabled on the selected layout, and click the [OK] button. The selected layout is added to the layout list on the Control Panel.



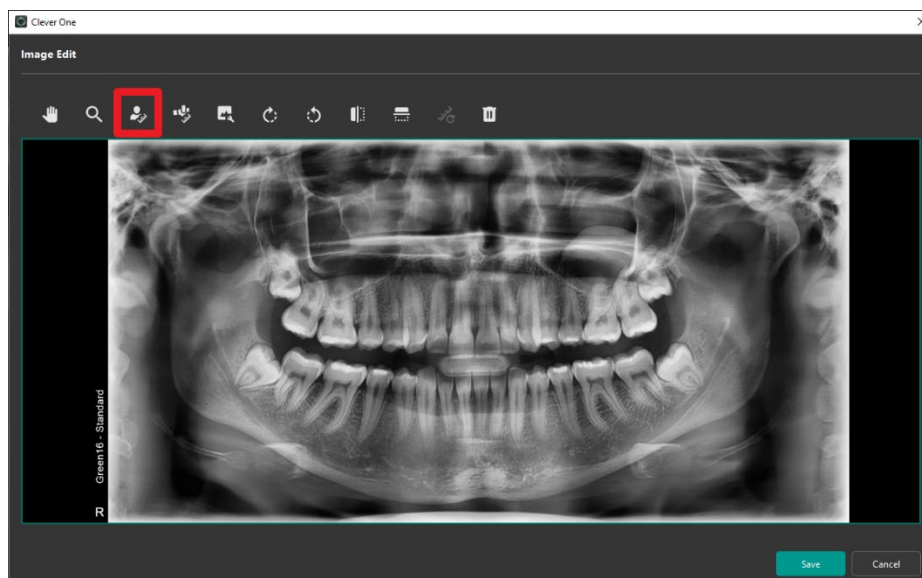
## 8. Calibration

A different measuring ratio is employed for different images and the exact length of an image is hard to measure. The image calibration allows the user to enter the exact length manually.

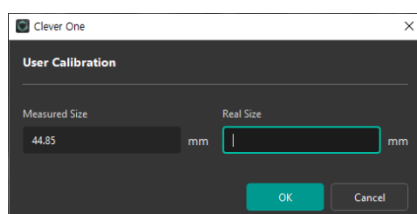
1. Right click on the workspace and select the [Image Edit] option.



2. On the [Image Edit] window, select the [User Calibration] icon from the toolbar. And then draw a line using [User Calibration] tool. Click the [User Calibration] icon once again to deselect.



3. Enter the actual length of the tooth and then click the [OK] button.



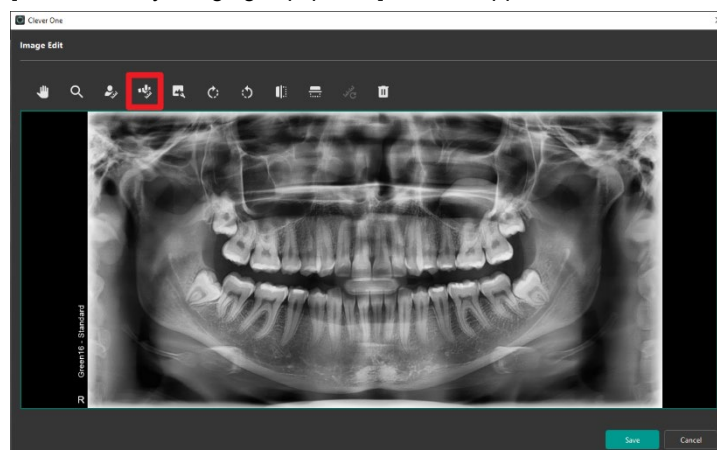
4. After calibration, the scale appears at the right side of image. You can check whether the image has been calibrated.



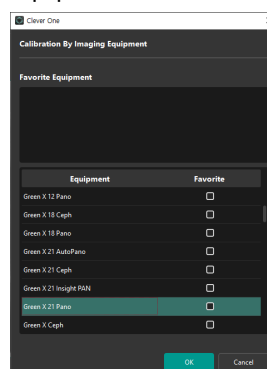
After the calibration, the length is measured by the newly calibrated [Length] tool.

User can input the Calibration value easily using the Calibration Preset list provided through [Calibration by Imaging Equipment] function.

1. Click the [Calibration by Imaging Equipment] icon in the [Image Edit] window. The [Calibration by Imaging Equipment] window appears.



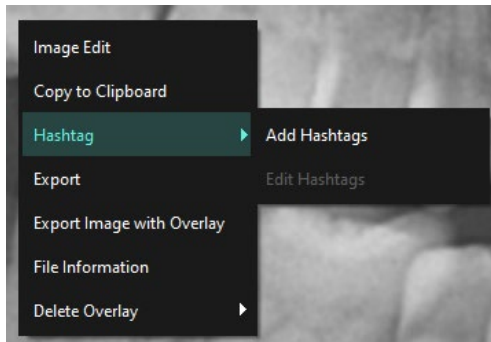
2. Select equipment to apply and click [OK]. Frequently used equipment can be added to Favorite Equipment by selecting corresponding checkboxes in the equipment list. Favorite equipment is also displayed in the equipment list.



For DICOM images, a message is displayed when the calibration value applied is different from the value in its DICOM header. Click [reset to DICOM Pixel Spacing] from the toolbar to reset the calibration value to the value in the DICOM header.

## 9. Adding Hashtags to Images

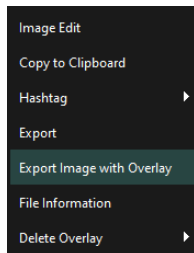
Add or edit a hashtag to images by right clicking an image in the viewer and selecting the [Hashtag] option. For more information, refer to '*Chapter 3. Patient Module >6. Adding Hashtags to Images*'



## 10. Exporting Image with Overlay

You can export an image with overlay. The applicable functions are windowing, filter, overlay, and ruler.

1. Select an image with overlay.
2. Right-click on the image, and a context menu will appear. Click [Export Image with Overlay].



3. See '*Chapter 3. Patient Module > 4. Export/Import > Exporting Images > Save on Local Disk*' for subsequent steps.

## 11. Patient and Image Information

### 11.1 Adding Image Information



1. Click the [Patient Info] button on the tool bar.



2. The corresponding information is displayed on the left and right corners. Users can set the color and the size of font on [Settings] – [View] – [General].

















3. To hide the image information, click the [Image Information] button again.

 NOTE	<p>Information items are identical to information provided in presentation mode.</p> <p>: Name, Chart Number, Birthday, Gender, Date</p>
 NOTE	<p>Anonymization Information Displayed on Screen</p> <p>If you have chosen to use the Privacy Policy Settings (found in [Settings &gt; Others]), the patient information displayed on the 2D module will be marked with asterisks (*).</p>



## 12. Tools

Icons	Designation	Description of Features
	Panning	Move the image freely.
	Zoom	Zoom in and out of the image by clicking and dragging.
	Reset View	Initialize Move, Zoom
	Pointer	Draw freely on the 2D image.
	Patient Info	Show/Hide patient and image information.
	Grid	Display grid on the image to check the asymmetry of patients.
	Overlay	Show/ Hide all displayed objects.
	Delete All Overlay	Delete all overlay entered.
	Reset All	Delete the all applied tool effect. The initialized image is saved to DB.
	View Frame Capture	Capture the entire view frame and save it to DB.
	Region Capture	Capture the current image. The captured image is saved to DB.
	Origin Capture	Capture the current image. Image is captured according to the original image size and calibration values.
	View Capture	Capture the image of one image in a layout. The captured image is saved to DB.
	Export Image	Save the current image as a file.



NOTE

Users can not use [Magnifier] function when image window size is smaller than magnifier. To make the image window larger or smaller, go to [Settings > Measurement Annotation > Tools > Magnifier Size].



Press the <Esc> key on the keyboard to cancel and close the corresponding function while inserting Overlay.



The spacing, line color, line thickness, and the line opacity of grid can be set in the [Settings > Measurement/Annotation > Tools > Grid] menu.

## Chapter 5. 3D Module

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# 1. 3D Module Configuration

The 3D Module is divided into 3 sub-module, each supporting a different view point.

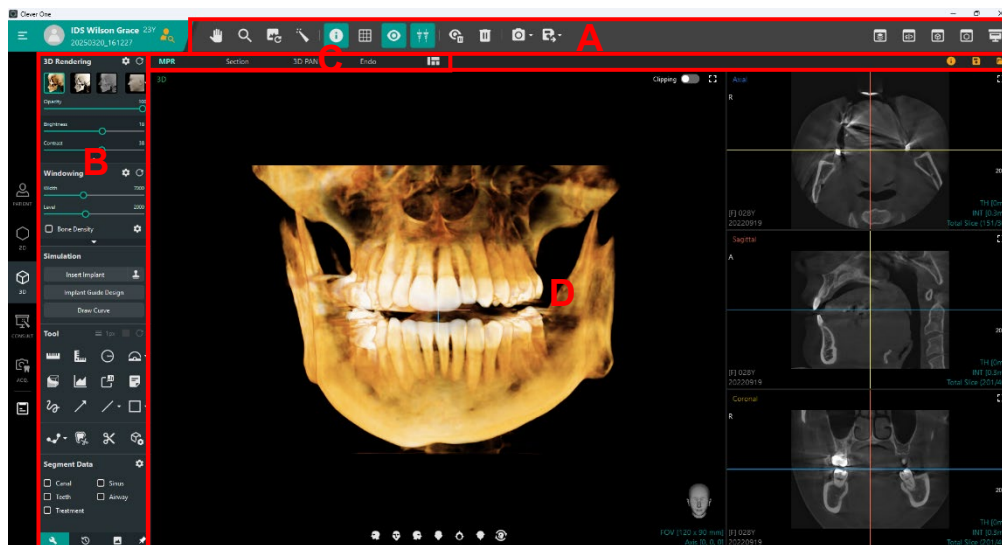
The MPR sub-module supports 3D VR (Volume Rendering) images as well as Axial, Sagittal, and Coronal images: a cross sectional image from the vertical, lateral and frontal point of view. MPR sub-module supports Axial View of TMJ, the Condyle/Fossa images in 3D and the Section images, and supports functions to separate the Condyle/Fossa and display the bone density.

The Section sub-module allows the user to examine the clinical structure of an image. Functions include Axial View, Panorama View, Section View, arch drawing and mandibular nerve drawing.

The 3D PAN sub-module provides the user the ability to simulate implant placement at a desired tooth location. The implant simulation capability of Clever One includes the implant placement, the implant library and bone density estimation around the implants.

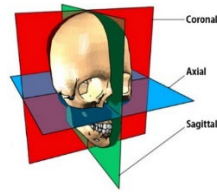
The Endo sub-module provides functions especially for Endodontics and enables users to set VOI and conduct Root Canal simulation.

## 1.1 MPR Sub-Module Workspace

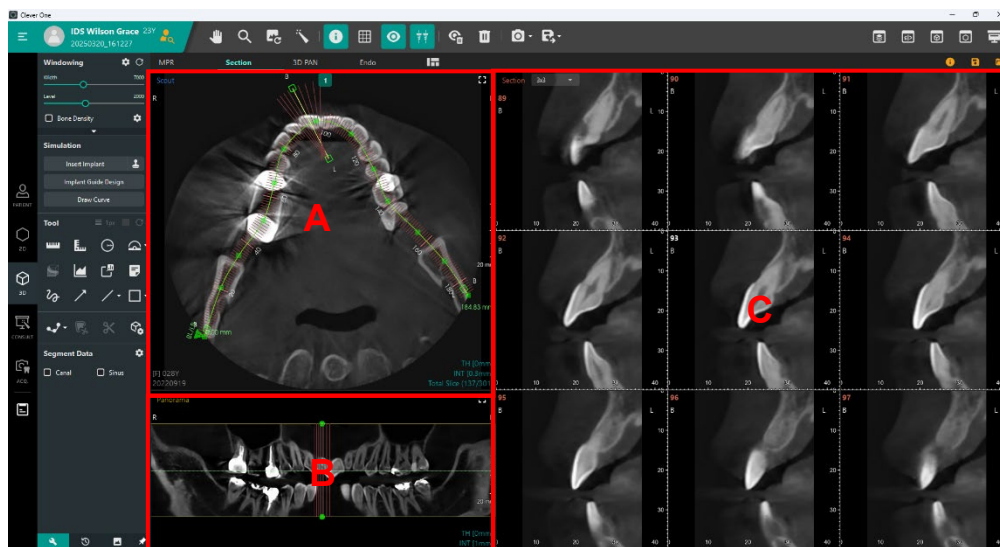


- A: Toolbar for viewing, capturing, and exporting tools for images.
- B: Control panel consisting of Tool, Work, and Images tab used in MPR sub-module.
- C: Shift between sub-modules to view CT files with a different view.
- D: View frame where the image is displayed in various view mode.
  - 3D Image Info  
On the bottom at the right corner of 3D view, the FOV of the CT image and the center point of three axes are shown on the MPR view.
  - 2D Image Info  
On the bottom at the right corner of 2D images, the thickness, interval, Slice Number (Current Slice/Total Slice) of the image are shown on the MPR view.

- Properties of Axial, Sagittal, Coronal plane

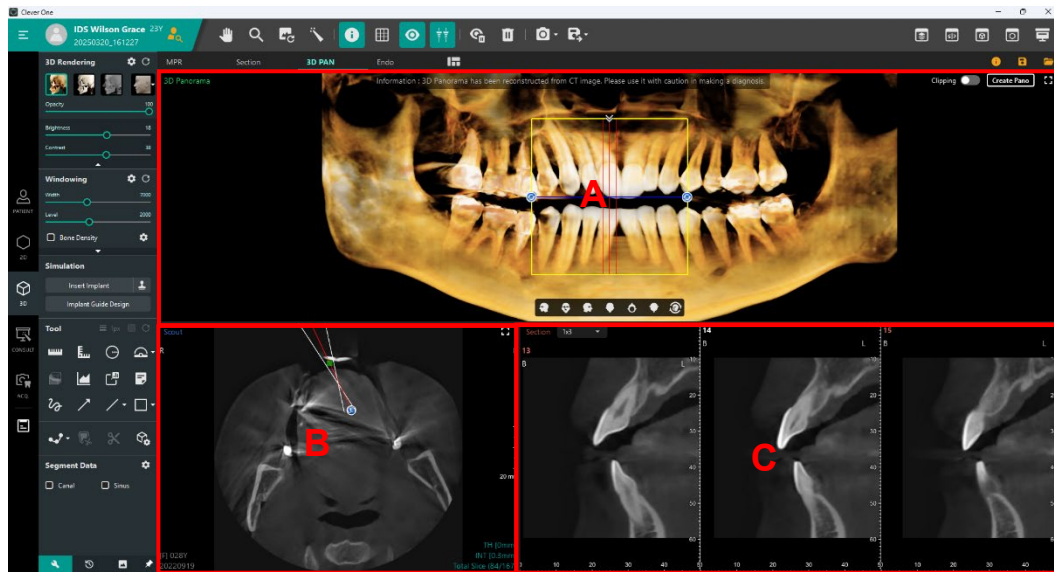


## 1.2 Section Sub-Module Workspace



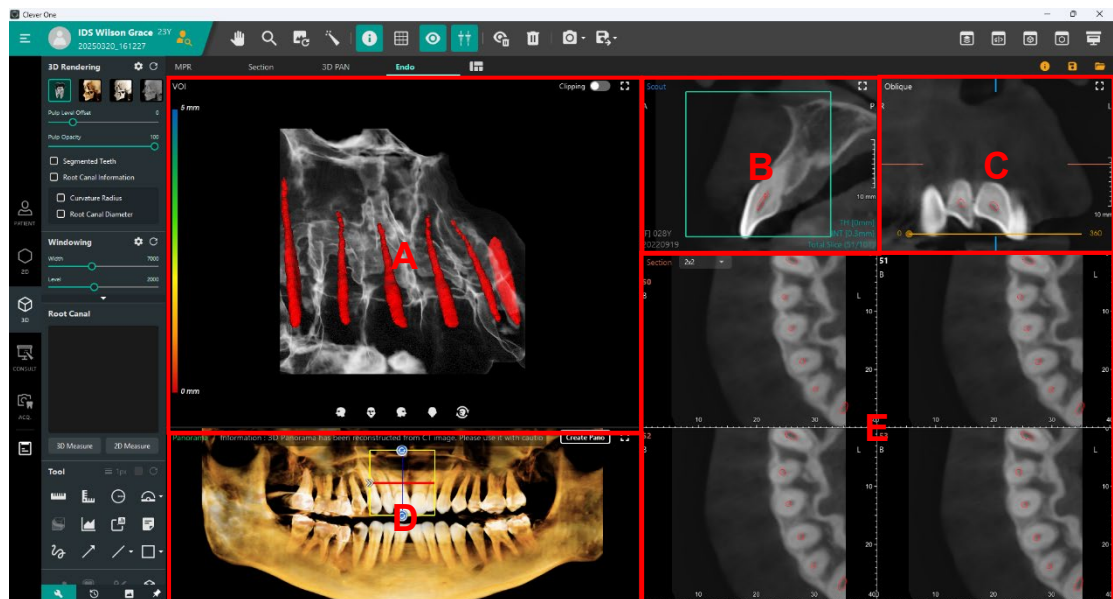
- A: Axial Window screen. The information about the arch can be examined. Click the [Draw Curve] button to draw a curve along the arch.
- B: Section Window screen. The information about a specific area of the image can be examined closely. Click the [Draw Canal] button to draw the canal along the mandibular nerve.
- C: Panorama Window screen. The information about the image of the mandibular nerve can be examined. Click the [Draw Canal] button to draw the canal along the mandibular nerve.

### 1.3 3D PAN Sub-Module Workspace



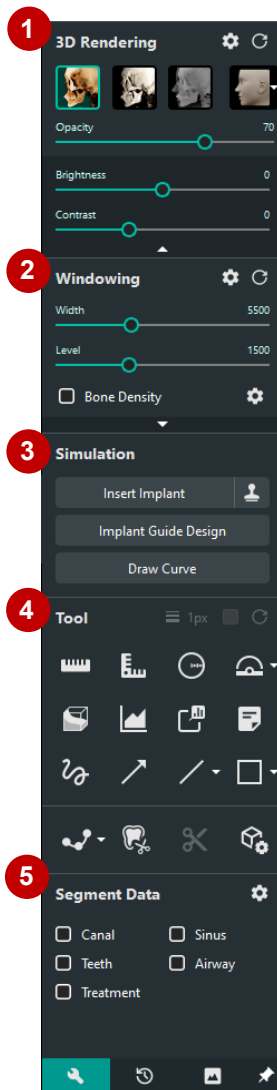
- A: 3D Volume Window screen.
- B: Scout Window screen.
- C: Section view window screen (2D view window), which is defined by the navigator of 3D view and by the controller of 2D view.

## 1.4 Endo Sub-Module Workspace



- A: VOI (Volume of Interest) Window to display selected area in Panorama View
- B: View Window to display cross-sectional image of Navigator/Root Canal Axis
- C: View Window to display cross-section of Endo Navigator Axis after rotating based on Axis
- D: View Window to display Panorama Curve area in 3D Panorama
- E: View Window to display cross-sections based on Endo Navigator/Canal cross-sections

## 1.5 Control Panel for MPR, Section, 3D PAN Sub-Modules

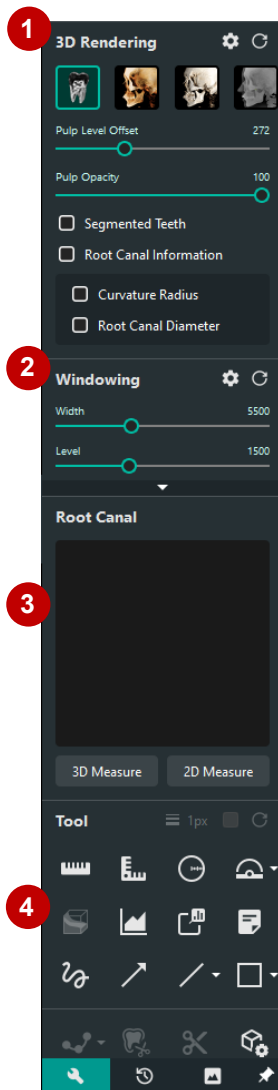


Control panel consists of important functions that manipulate the View. It is configured differently depending on the tab selected by the user.

No.	Name	Description
1	3D Rendering Group	Function to set the Rendering Mode, opacity, brightness, and contrast of data displayed in the 3D View
2	Windowing Group	Function to adjust the Width / Level value and to set the image effect of 2D images
3	Simulation Group	Group of buttons to execute functions such as drawing curves, inserting implant, extracting tooth, and measuring Airway.
4	Tool Group	Group of button to execute functions such as annotations or measurements.
5	Segment Data Group	View and manage segment data included in the opened 3D image.



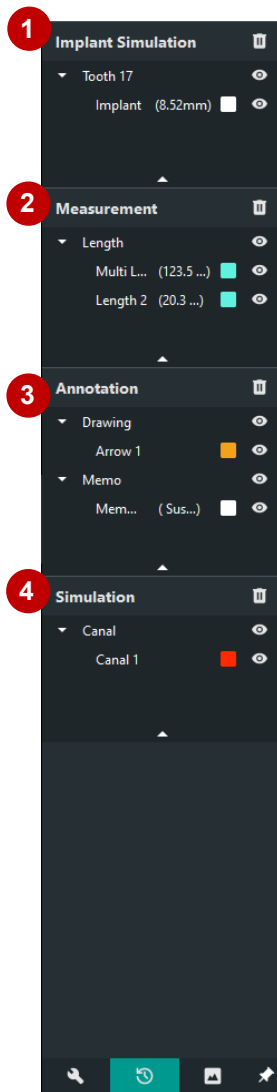
## 1.6 Control Panel for Endo Sub-Module



Control panel consists of important functions that manipulate the View. It is configured differently depending on the tab selected by the user.

No.	Name	Description
1	3D Rendering Group	Function to set the Rendering Mode, opacity, brightness, and contrast of data displayed in the 3D View
2	Windowing Group	Function to adjust the Width / Level value and to set the image effect of 2D images
3	Root Canal Group	Function group to insert Root Canal and select to view the inserted Root Canal
4	Tool Group	Group of buttons to execute functions such as annotations or measurements.
5	Segment Data Group	View and manage segment data included in the opened 3D image.

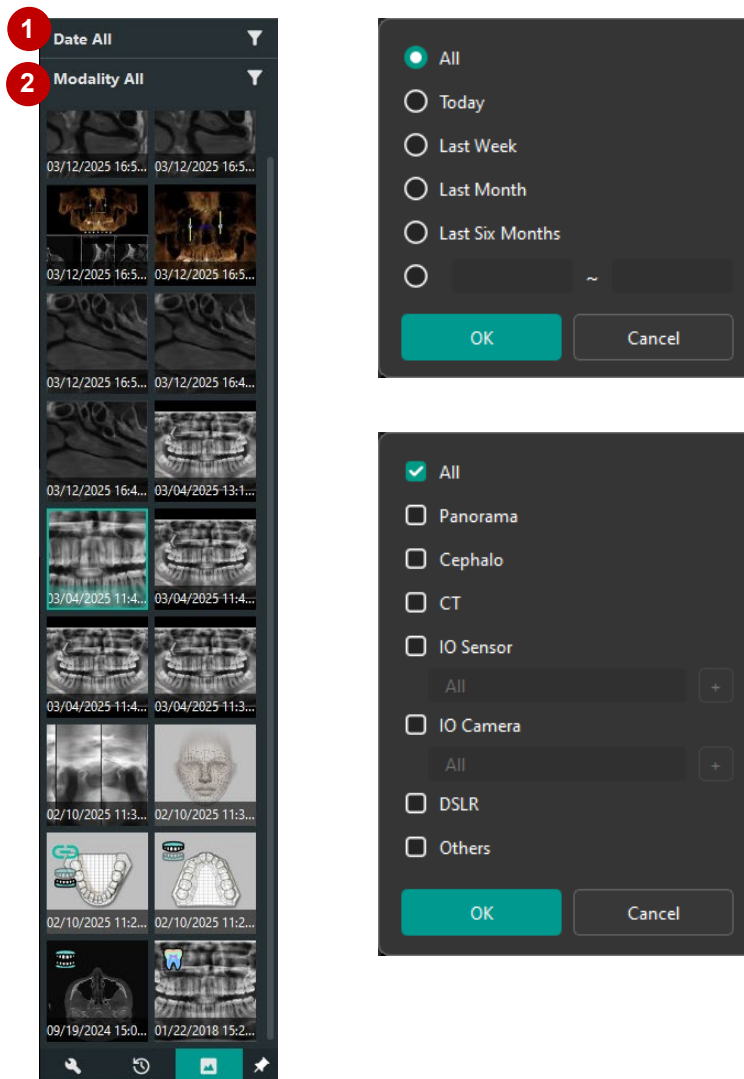
## 1.7 Control Panel – Work Tab



The Work tab shows all the implants, measurements, annotations and simulations entered in the image. Show/hide or change the colors displayed. Implants and simulations can be displayed on other sub-modules.

No.	Name	Description
1	Implant Simulation Group	Displays implants, sleeves, crowns, and paths by teeth code.
2	Measurement Group	Displays length, angles, volume measures, profile, and ROI.
3	Annotation Group	Displays drawing, shape and memos.
4	Simulation Group	Displays airway and canal simulations entered by the user.

## 1.8 Control Panel – Images Tab

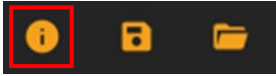


Images tab shows all the images saved in the server, and can be viewed by date or modality.

No.	Name	Description
1	Filter by Date	Function to filter images by Today, Last Week, Last Month, Last Six Month, or user defined range.
2	Filter by Modality	Function to filter images by modality. IO Sensor and IO Camera images can be additionally filtered by teeth number.

## 1.9 Viewing File Information

1. Click the [File Information] icon on the upper-right.

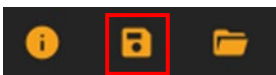


2. The File Information dialog appears. Patient information, file information, and acquisition information is displayed.

## 1.10 Saving Files as Projects

The current file can be saved with a different name.

1. Click the [Save Project] icon on the upper-right.



2. When the [Save as Project] window appears, input the project name and the comment, and then click the [OK] button to save.

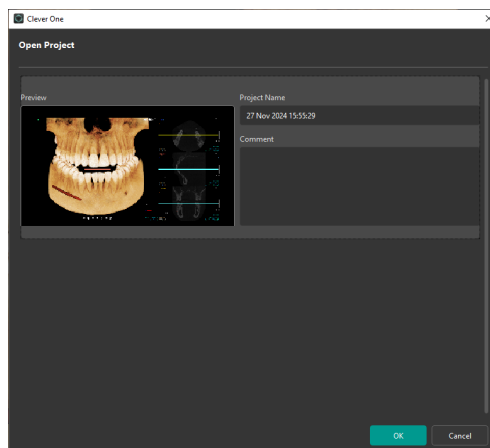
## 1.11 Opening Saved Projects

Open a saved project.

1. Click the [Open Project] icon on the upper-right.



2. The [Open Project] window appears. Select the project to open from the Project list and then click the [OK] button. The selected project appears in the Workspace.

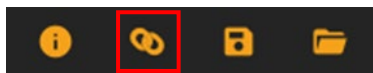


## 1.12 Changing Series (DCM with multiple series)

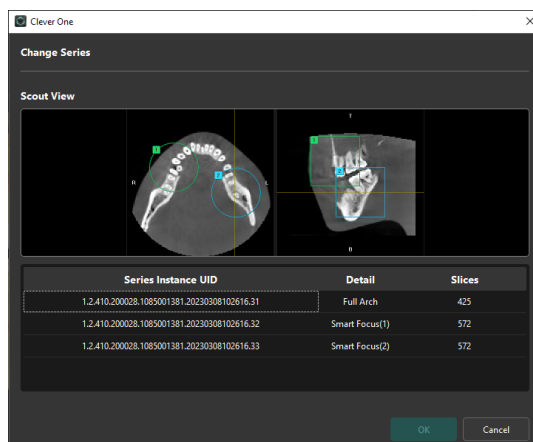


[Change Series] menu is enabled only when Multi Series Volume is opened.

1. Click the [Change Series] icon on the upper-right.



2. The following Change Series dialog appears



3. Select another series to change and click OK. The changed series is applied to the screen.

## 2. Changing 3D Rendering Mode








### 2.1 VR Coloring

The image coloring is optimized with the rendering value that the user has chosen.

1. The preset rendering values are as follows: Tooth, Bone, MIP, Soft Tissue, Soft Tissue 2, and VR Coloring.
2. Control the VR coloring icons to change the 3D VR values and to make fine adjustment to the values.
3. The opacity, brightness and contrast of the image can be adjusted by moving the slider to the left or right.

- Pre-set coloring mode

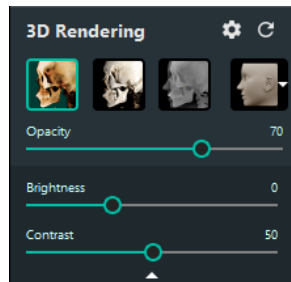
Click an icon among the following icons with pre-set value for VR coloring function. The screen will display the image according to the selected mode.

Icons	Designation	Description of Functions
	Teeth	Tooth mode view
	Bone	Bone mode view
	MIP	MIP mode view
	Soft Tissue	Soft Tissue mode view
	Soft Tissue 2	View Soft Tissue with low transparency
	Endo	Endo mode view
	VR Coloring	View the VR coloring graph panel

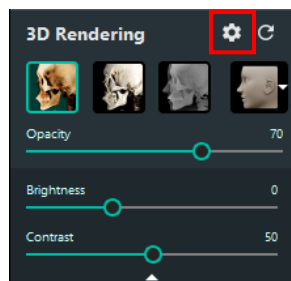
## 2.2 Fine Tuning The VR

3D volume VR is adjusted and optimized by utilizing one of the preset options: Teeth, Bone, MIP, Soft Tissue, and Soft Tissue 2 mode. The opacity, brightness, and contrast of 3D volume VR can be adjusted by clicking the VR Coloring icon.

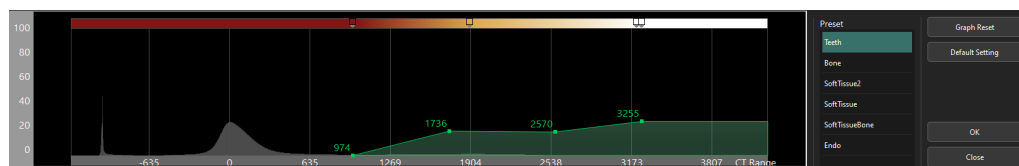
1. Select one of VR Coloring modes to tune VR finely.



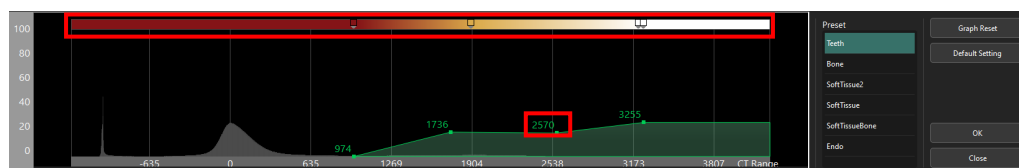
2. Select the VR Coloring icon as follows.



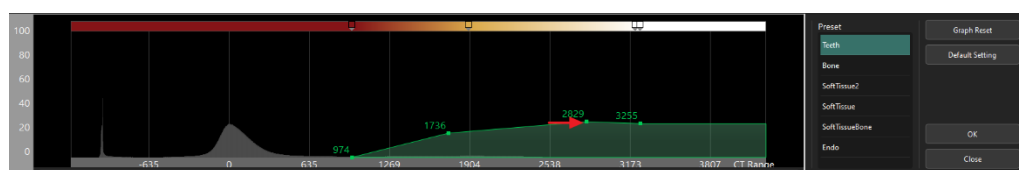
3. The Volume Coloring graph appears in the following screen.



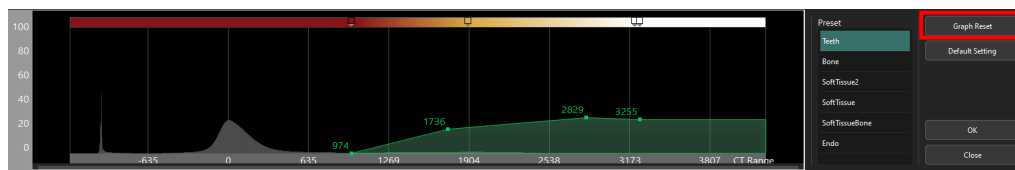
4. Click the opacity, color point on the graph and drag it to the desired point to adjust the VR Coloring. The adjusted coloring value appears on the screen in real time.



5. To move the whole graph line, click and drag the graph area as follows; by doing so, the value of VR Coloring is changed.



6. To initialize all changes, click [Reset] button

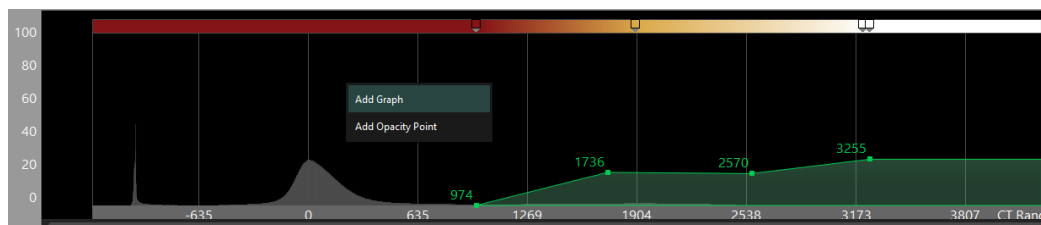


With the [Default Setting] button, users can set up the default value in various modes.

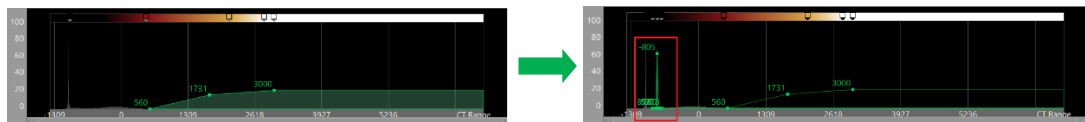
## 2.3 Adding and Deleting VR Coloring Graph

When 2 or more adjusted values are required to view, for instance, soft tissue and bone at the same time, the user can add VR coloring graphs to view the image optimized for each requirement.

1. Right click on the outside of existing VR coloring graph then the context menu appears.



2. Click [Add Graph] to add a VR coloring graph. The maximum number of graphs is 3.



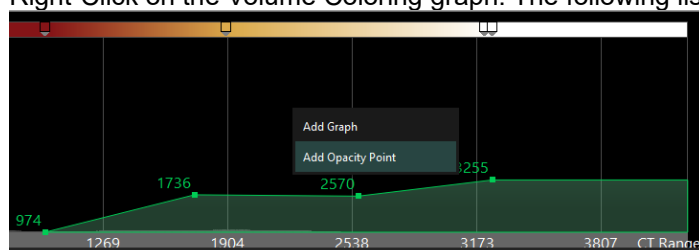
3. Right click on the graph to delete and select [Delete Graph] from the context menu to delete the graph. At least 1 VR coloring graph must exist.

## 2.4 Editing the Volume Coloring Graph

The Volume Coloring graph can be edited by adding and deleting an opacity point, or a color point. The transparency, brightness and contrast of VR can also be adjusted, optimizing each diagnosis.

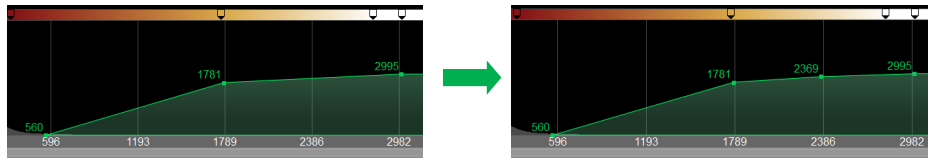
- Add Opacity Point

1. Right-Click on the Volume Coloring graph. The following list appears:





2. Click [Add Opacity Point], then a new point is added on the graph as shown in the following screen:

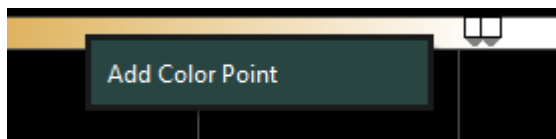


- [Add Color Point]

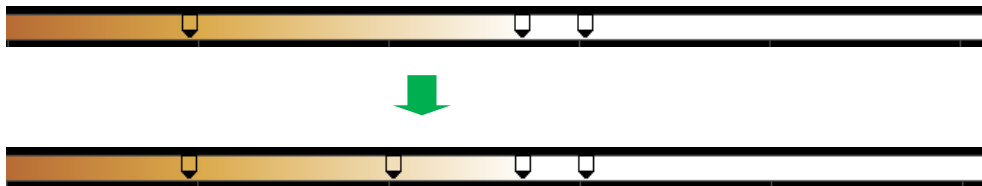
1. Right-click on the desired color area in the above of Volume Coloring graph.



2. Click [Add Color Point].



3. A new Color Point is added, as shown here:

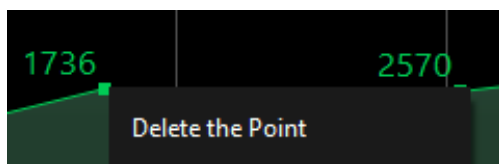


- Delete Opacity Point

1. Right-click on a point on the graph



2. Click [Delete the Point] button to delete

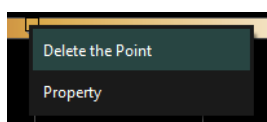


- Delete Color Point

1. Right-click a point on the color area

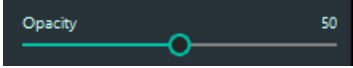





2. Click [Delete the Point] button to delete



## 2.5 Controlling VR Coloring Mode







While viewing the image in the VR coloring mode, user can move the slider to adjust the display if necessary.

	Opacity	Adjust the transparency of 3D image.
	Brightness	Adjust the brightness of 3D image.
	Contrast	Adjust the contract of 3D image.
	Reset	Initialize the filtering setting values except for the VR Coloring mode.




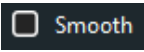

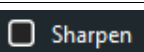
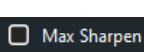

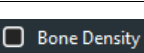


### 3. Adjusting 2D images

By adjusting the brightness and contrast levels of a 2D image, the user can optimize their image for accurate diagnosis. To adjust the brightness and contrast of the 2D image, move the slider to the left or right. Or right-click on the image and drag to manipulate the brightness and contrast value.

#### ▪ 3D Rendering Icons

Icons	Designation	Description of Functions
	Opacity	Adjust the opacity of the image. An additional bar with the added data name will be created to adjust the opacity of the data. 
	Brightness	Adjust the brightness of the image.
	Contrast	Adjust the contrast of the image.
	VR Opacity	Adjust the opacity of CT volume in the Endo sub-module.
	Pulp Opacity	Adjust the opacity of pulp objects.

#### ▪ Windowing Icons

Icons	Designation	Description of Functions
	Width	Adjust the brightness of the image.
	Level	Adjust the contrast of the image.
	Windowing Graph	Use the graph to adjust Windowing value.
	Smooth	Make the image smooth
	MIP	Reduce the burring area of metal and make the image clearer (MIP: Maximum Intensity Projection)
	Sharpen	Sharpen the edge of image
	Max Sharpen	Sharpen the edge of image to its maximum level
	Inverse	Inverse of black and white
	Bone Density	Show bone density. This filter cannot be combined with other filters.
	Bone Density Settings	Use the graph to adjust the Bone Density value.
	Reset	Initialize all effect applied on images.



CAUTION

Adjusting bone density range depending on the equipment that you have is required to use the bone density function more accurately. (There are many cases where CBCT has different CT Number values, which are the standard of bone density standard, depending on the equipment.)

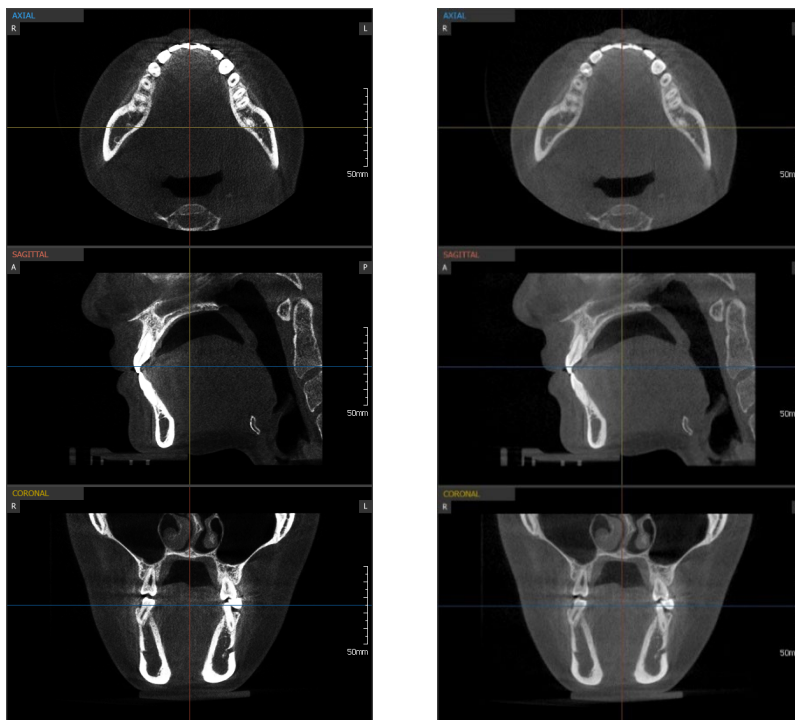
Users should be aware of this limitation before diagnosing and performing simulation according to the bone density value. The treatment based on the incorrect measurement may cause failure in operation or complications.



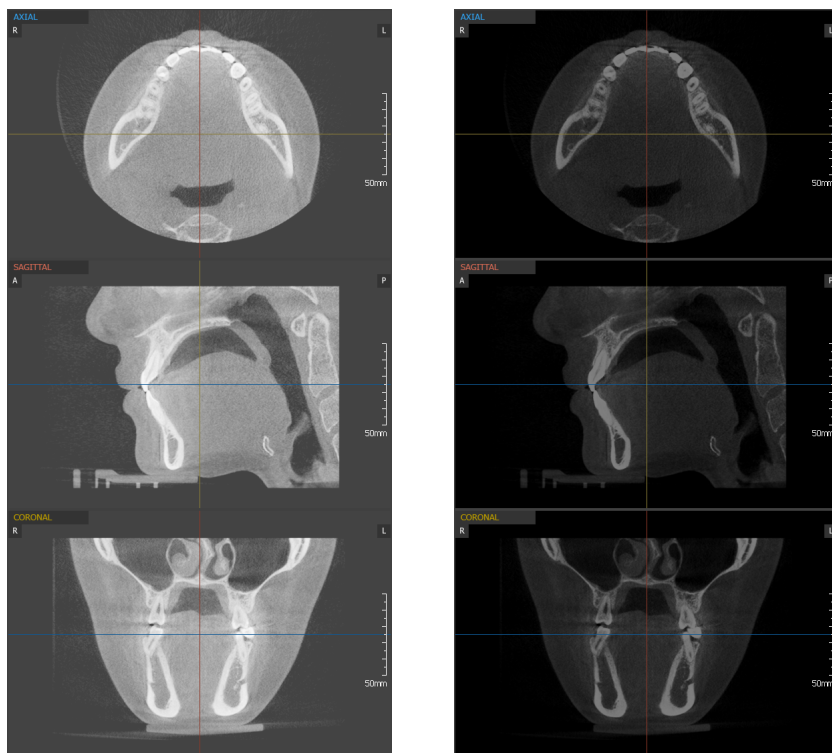
NOTE

Because the CT Number can be different by acquisition equipment, the values can be set according to the user's equipment in the Settings. Bone density area (D1 - D5) can be changed to appropriate CT Number based on the user's acquisition equipment in the [Settings > Simulation > Bone Density > Bone Density Area], and also the color can be changed.

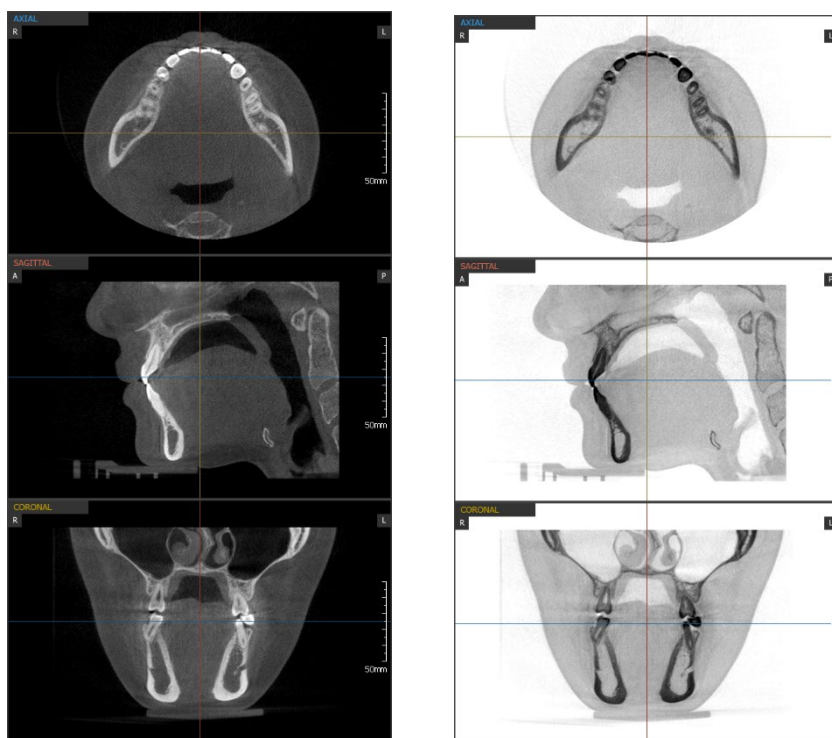
▪ Comparison of the 2D image brightness [Width]



- Comparison of 2D image contrast [Level]



- Comparison of the 2D image inverse [Inverse]



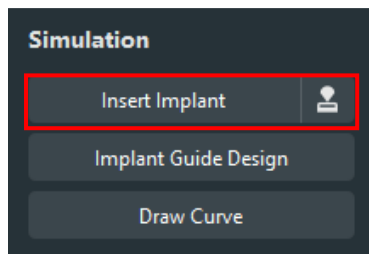
## 4. Implant Simulation

Implant can be inserted with Insert Implant button including Smart, Axis, Click Point options, or by measuring length of a certain tooth.

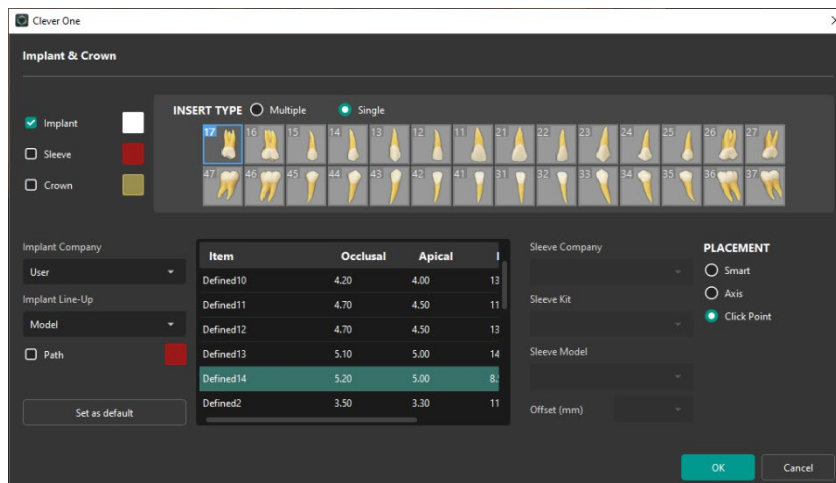
- Smart Placement: An implant/ implants will be inserted into the tooth position matching the selected tooth codes automatically.
- Axis Placement: An implant will be inserted on the axis automatically.
- Click Point Placement: The mouse cursor will change to the insertion mode and an implant/ implants will be inserted at the point where the mouse is clicked.
- Implant Placement by Measuring Length: Regardless of the [Placement] option, an implant can be inserted after measuring the length of the tooth.

### 4.1 Inserting Implant

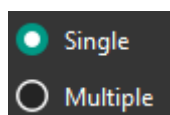
1. Click the [Insert Implant] button.



2. The [Implant Property] dialog appears.



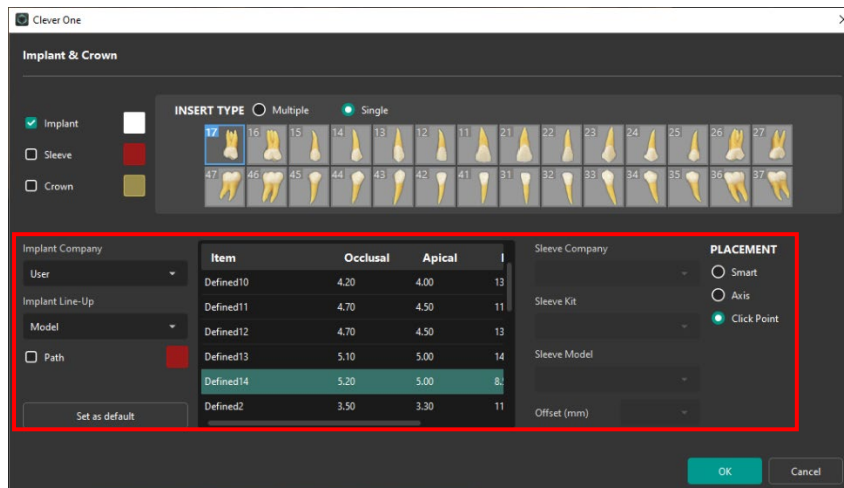
3. Select the Single option to insert only one implant or Multiple option to insert two or more implants in a row.



4. Click the tooth code to insert.

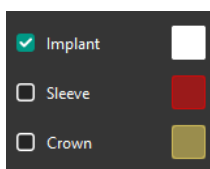


5. The default implant properties for the selected tooth number is shown as follows. Select the desired implant company, line-up and model from the list.



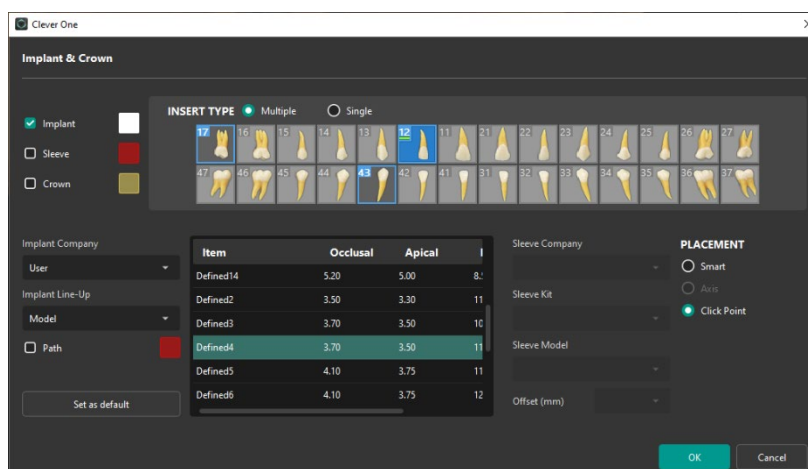
Press the [Set as default] button to set the selected implant as the default for the tooth number. The default implant value can be modified in the [Settings > Simulation > Implant].

6. Select Implant options to insert Implant (with/without Guide and/or Path) or Crown.



\* Please refer to 'Chapter 5. 3D Module > 4.1.2. Implant Placement Option: Axis' to see the result image according to the different selection of Implant, Guide, Path and Crown options.

7. If you choose Multiple option, repeat from 4 to 6 until you select all tooth codes to insert.

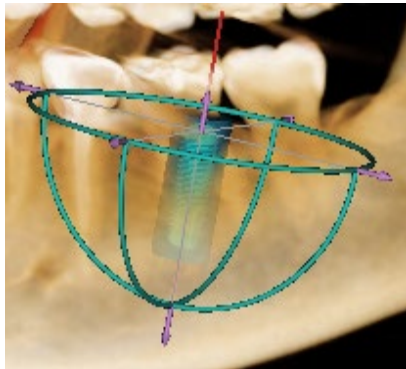


8. Select the Placement option between Smart, Axis, Click Point and click the [Insert] button for implant simulation.

\* Please refer to the following 'Chapter 5. 3D Module > 4.1.1 Implant Placement Option: Smart, 4.1.2 Implant Placement Option: Axis and 4.1.3 Implant Placement Option: Click Point' to learn the result of Smart, Axis, Click Point placement.

9. Click the [Insert] button then the implant will be shown on the image.

After inserting an implant, click the implant and drag, or double click the implant and use the controller to adjust the implant position.



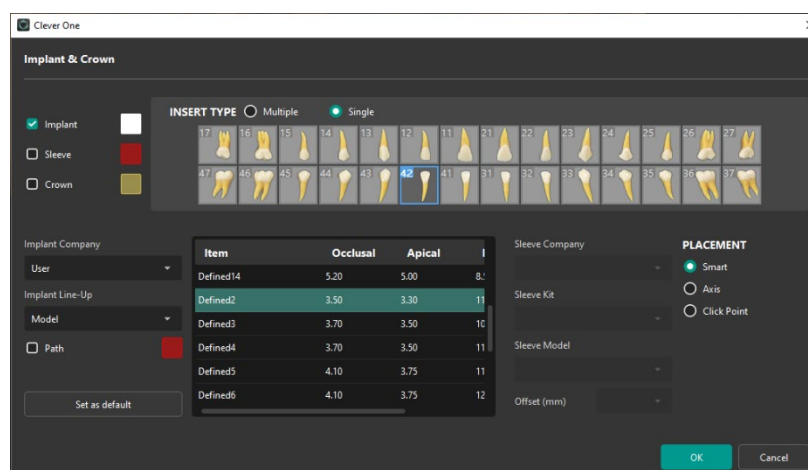
### 4.1.1 Implant Placement Option: Smart

An implant will be inserted automatically if the [Placement] option is set to [Smart].



Please note that the Smart placement is available only when there exists a segmented data. Please complete segmentation with the DAVIS Toolkit for Segmentation before using this option.

1. Click the [Insert Implant] button.
2. Select the tooth number and implant information on the [Implant Property] window.





- The selected Implant is inserted automatically into the tooth position that matches the selected tooth code.



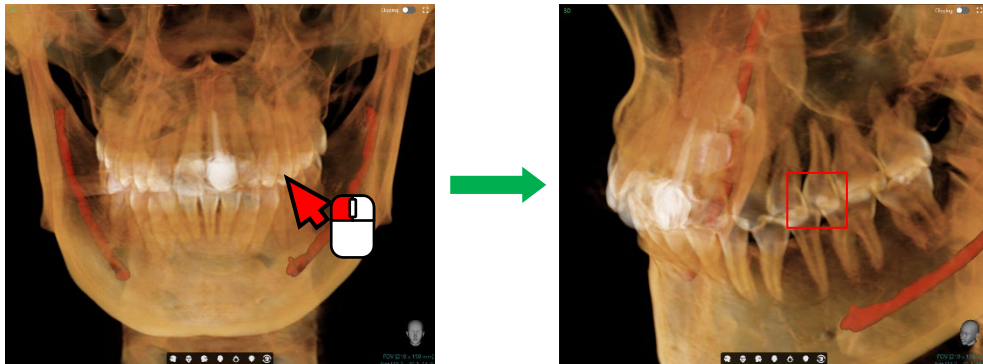
#### 4.1.2 Implant Placement Option: Axis



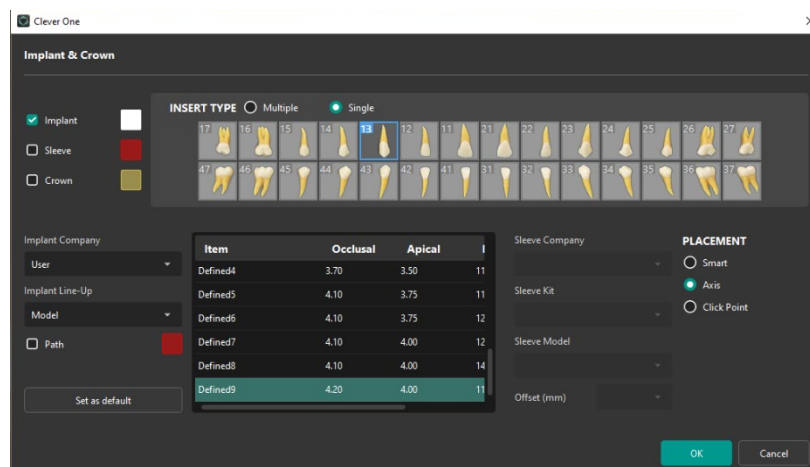
Please note that Axis placement only supports Single implant placement. The Axis option will be disabled when selecting Multiple option.

An implant will be inserted at the center of the axis if the [Placement] Option is set to [Axis].




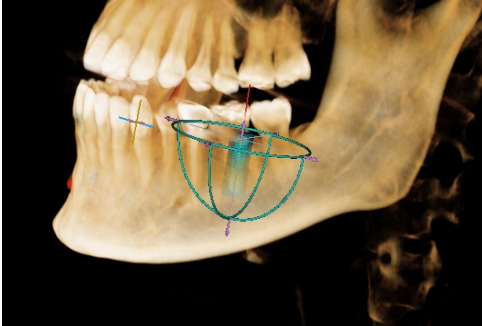












- Double click the tooth to place an implant. The screen will automatically rotate and zoom the image to display the selected tooth on the axis.



- Click the [Insert Implant] button.
- Select the tooth number and implant information on the [Implant Property] window.



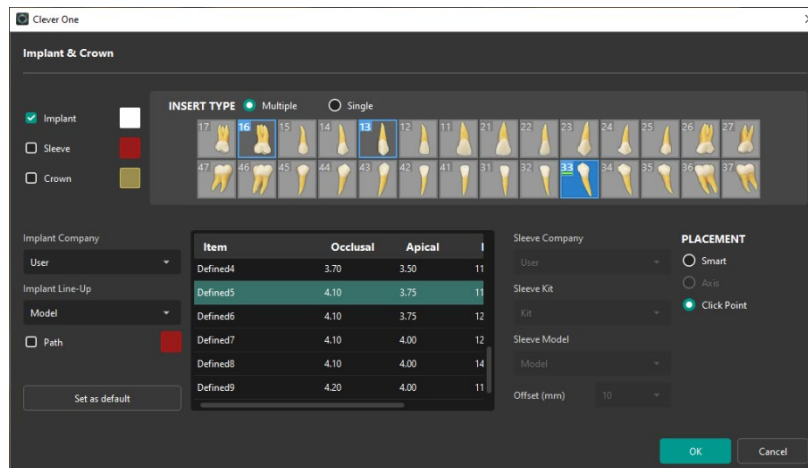
4. Click the [Insert] button, then the selected implant will be inserted at the center of the axis.

	Options	Result Image
Implant Only	<input checked="" type="checkbox"/> Implant  <input type="checkbox"/> Sleeve  <input type="checkbox"/> Crown 	
Implant & Crown	<input checked="" type="checkbox"/> Implant  <input type="checkbox"/> Sleeve  <input checked="" type="checkbox"/> Crown 	
Crown Only	<input type="checkbox"/> Implant  <input type="checkbox"/> Sleeve  <input checked="" type="checkbox"/> Crown 	
Implant with Guide & Path	<input checked="" type="checkbox"/> Implant  <input checked="" type="checkbox"/> Sleeve  <input type="checkbox"/> Crown 	

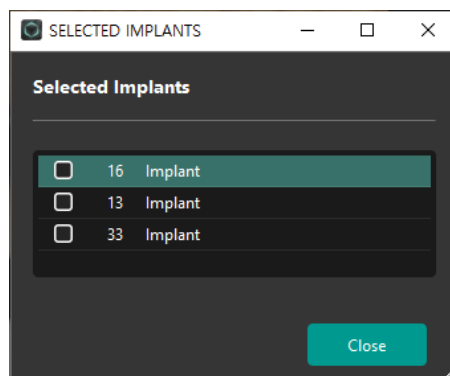
### 4.1.3 Implant Placement Option: Click Point

An implant will be inserted at the selected point of the image if the [Placement] option is set to [Click Point].

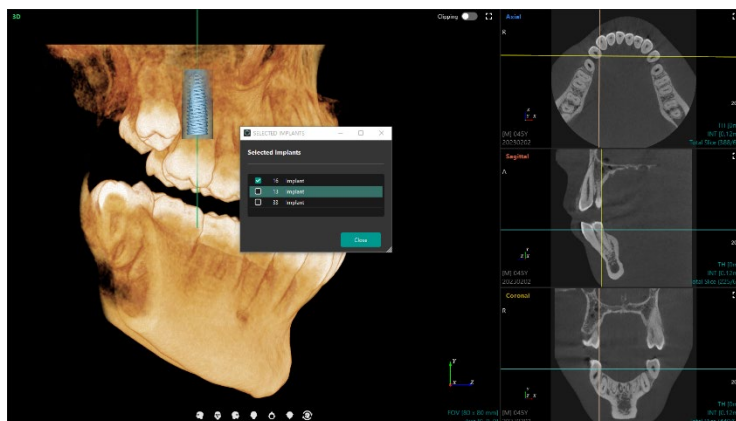
1. Click the [Insert Implant] button.
2. Select the tooth number and implant information on the [Implant Property] window



3. The list of selected implants is displayed to show the current implant placement status of all selected tooth codes.



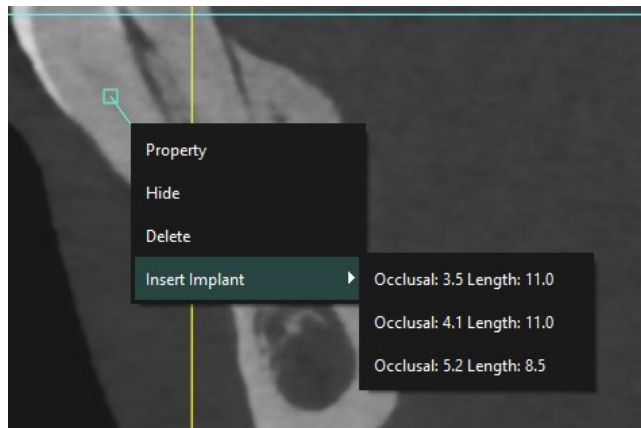
4. Click the position to insert an implant on the image.
5. The inserted implant is shown on the image.



6. Click the points to insert the rest of the implants on the list.

#### 4.1.4 Implant Insertion by Measuring Length

1. Click the [Length] icon on the toolbar to measure 2D length.
2. Click the measured length on the image. Right click it and select the [Insert Implant] menu. It will display recommended implant options that are similar to the measurement.



The implant options are selected from the implant list for each tooth that are set in the [Settings > Simulation > Implant].

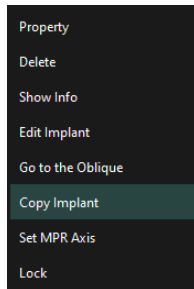
3. Click the proper implant and it will be inserted.

After inserting an implant, right click to delete or hide the implant or to change its properties. If the implant is deleted from the 3D image, it will also be deleted on the 2D image.

## 4.2 Editing Implant

### 4.2.1 Copying and Pasting Implant

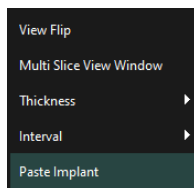
1. Right click on the inserted implant to open the context menu.
2. Click the [Copy Implant] option to copy the selected implant.



NOTE

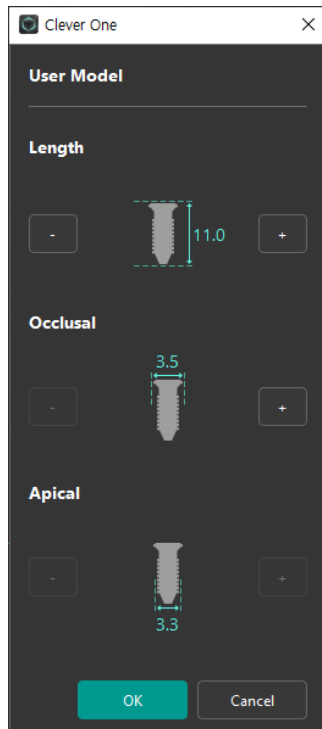
The Tooth Code is not included in the copied implant information.  
Enter or edit the Tooth Code in the Property menu of the copied implant.

3. Right click on the point where you want to insert implant to open the context menu.
4. Click the [Paste Implant] option. The copied implant is inserted.



### 4.2.2 Editing Implant

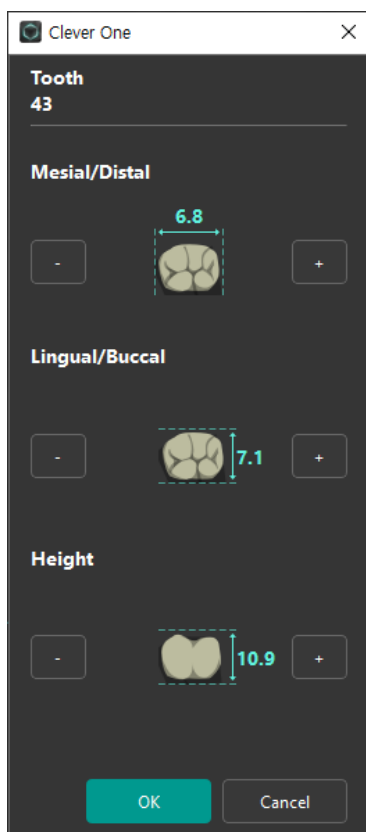
1. Right click on the inserted implant to open the context menu.
2. Click the [Edit Implant] option.
3. Use the + / - button to edit the Length, Occlusal, and Apical information.



- The Company and the Model (line-up) can be modified if they are applied from the same company and the model group.
- Occlusal Diameter can be only adjusted to the width that the currently selected Length supports.
- Apical Diameter can be only adjusted to the width that the currently selected Occlusal Diameter supports.

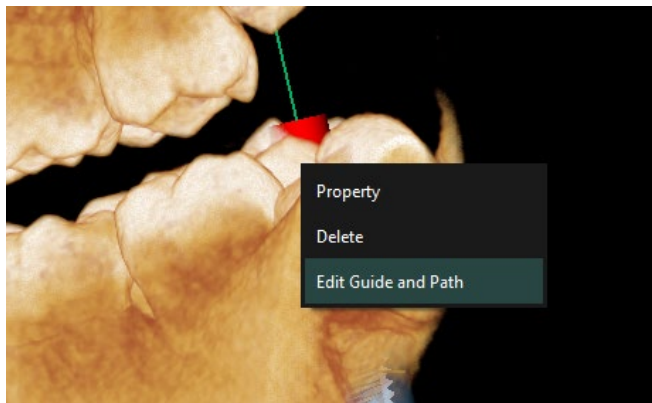
### 4.2.3 Editing Crown

1. Right click on the crown of the inserted implant to open the context menu.
2. Click the [Edit Crown] option.
3. Use the + / - button to edit the Mesial/Distal, Lingual/Buccal, and Height information. in the [Edit Crown] window.

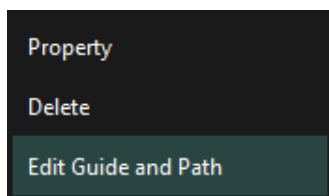


## 4.2.4 Editing Implant Sleeve & Path

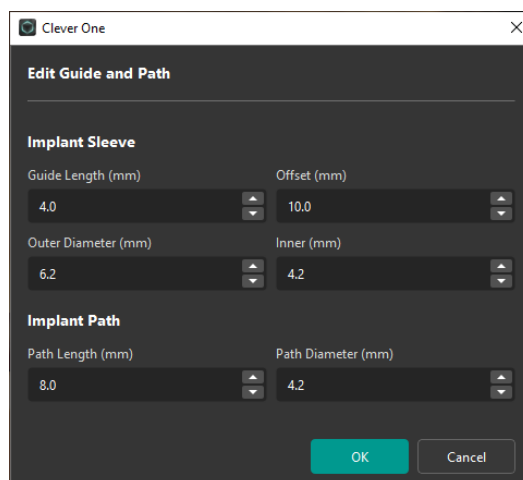
1. Right click on the inserted implant sleeve and/or implant path.



2. Select the [Edit Guide & Path] option.



3. The [Edit Guide & Path] window appears. Change the values in the [Implant Guide] and [Implant Path] option on the dialog.



NOTE

An error message appears when values out of range are inserted.

4. After setting the values, press the [OK] button to apply changed values [Cancel] button to restore the original values.

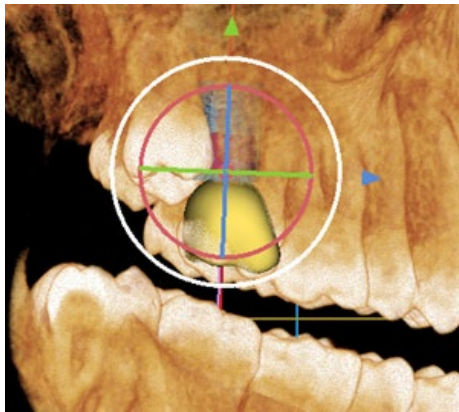


## 4.3 Moving, Rotating and Locking Implant

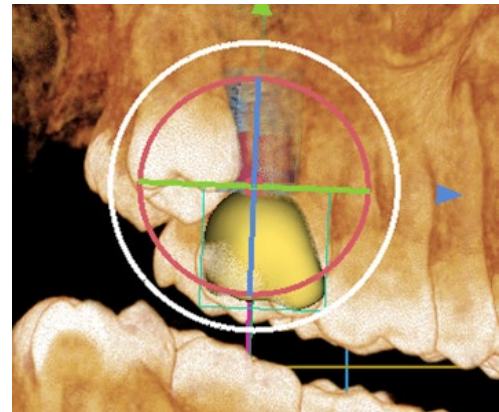
### 4.3.1 Moving ,Rotating and Locking 3D image

The inserted implant can be moved on the 3D image. The selected implant moves horizontally with the direction of the current 3D image.

Double click or right click on the implant to show the controller. Click and drag the arrow of the controller to move or rotate the implant as desired.



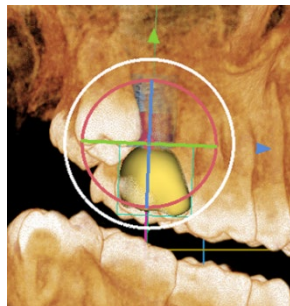
Implant Controller



Crown Controller

#### ▪ Moving

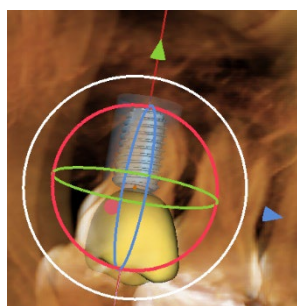
- Click one of the six arrows. The color of the selected arrow changes.



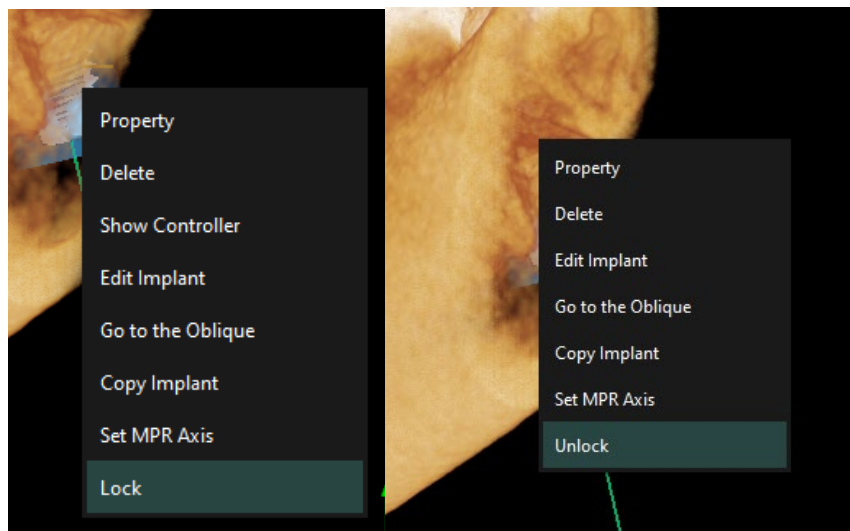
- Move with the up/down arrow keys on the keyboard: down arrow key moves to the left by -0.1mm and the up-arrow key moves to the right by +0.1mm.
- Click the other arrows or rotation controller to cancel the selection.

#### ▪ Rotating

- Click one of the three rotation controllers. The color of the selected controller changes.

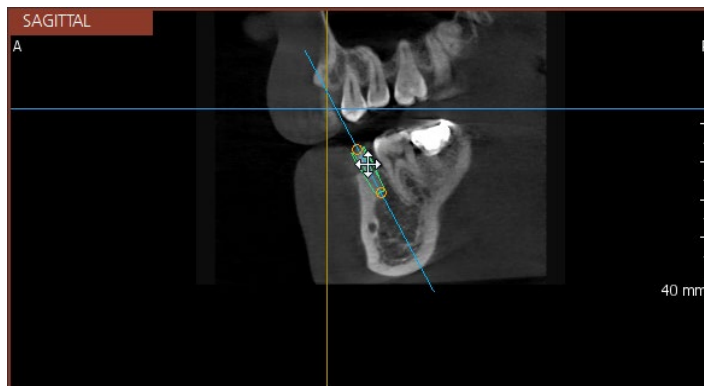




- Move with the up/down arrow keys on the keyboard: up arrow key turns it clockwise by one degree and the down arrow key turns it counterclockwise by one degree.
  - Click the other arrows or rotation controller to cancel the selection. Click the other arrows or rotation controller to cancel the selection.
- Locking/ Unlocking
- Right click on the implant and select the [Lock] option to fix the location of the implant.
    - ♦ Right click on the crown and select the [Lock] option to fix the location of the crown.
    - ♦ An implant guide and/ or implant path follows the attribute of the implant regarding the Lock/ Unlock option.
  - Right click on the locked implant and select [Unlock] option to change the location of the implant.

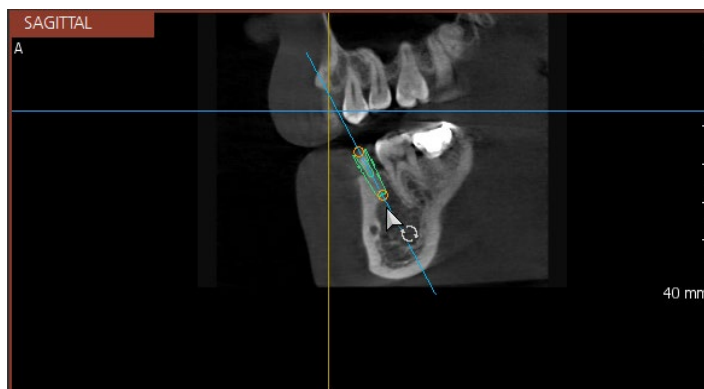


### 4.3.2 Moving, Rotating and Locking 2D image

After choosing the implant from a 2D image, a control line is created to rotate the implant. Click and drag a point to move and rotate the implant.



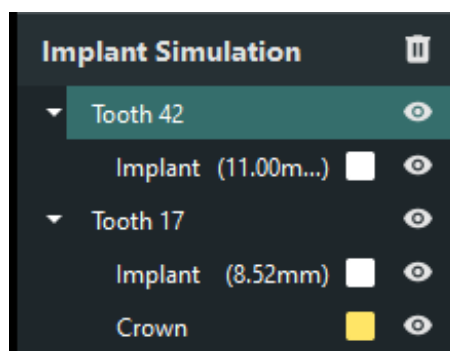
Click on the implant. When the mouse cursor changes to the cross , the implant can be moved. And when the mouse cursor changes to the curved arrow , the implant can be rotated.



Right click on the implant and select the [Lock] option to fix the location of the inserted implant on 2D images as well as 3D images.

## 4.4 Showing and Hiding Implant

1. Click the show/hide icon of an inserted implant, crown, or implant guide & path in the Work tab.



2. The selected implant, crown or Implant guide & path will not be displayed in the view.

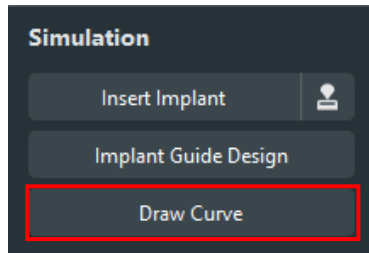
## 5. Drawing Curve

### 5.1 Drawing Curve in MPR Sub-Module

Draw Curve function is to insert a curve line according to the clinical points on MPR image and to check the consecutive images perpendicular to the inserted curve Line.

To draw a curve:

1. Click the [Draw Curve] button



2. Click on clinical point on the MPR Sectional image to insert curve point. The inserted curve point automatically makes an overlay, which forms a curve. Right click while drawing the canal line to delete the previously plotted input point.
3. Double click the left mouse button to finish drawing curve. When the drawing is completed, the screen will be switched to Section sub-module and the curve will be added to Curve List.



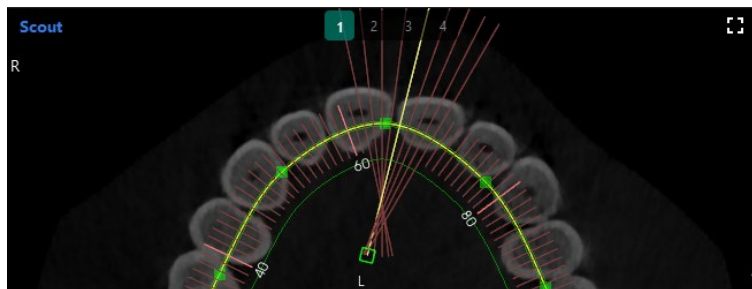
To cancel the drawing, press the <Esc> key on the keyboard. The curve will be deleted.

## 5.2 Drawing Curve in Section Sub-Module

Enter the criteria for your panoramic image generation (interval, thickness). Then, click to draw a curve on the axial image and panoramic images are generated automatically.

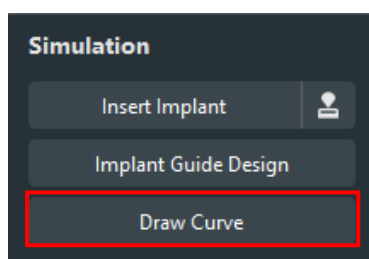
### 5.2.1 Drawing Curve

A curve is detected and registered as the button 1 of curve list when entering to Section sub-module. When it fails to detect a curve, the default curve defined in the program is applied.

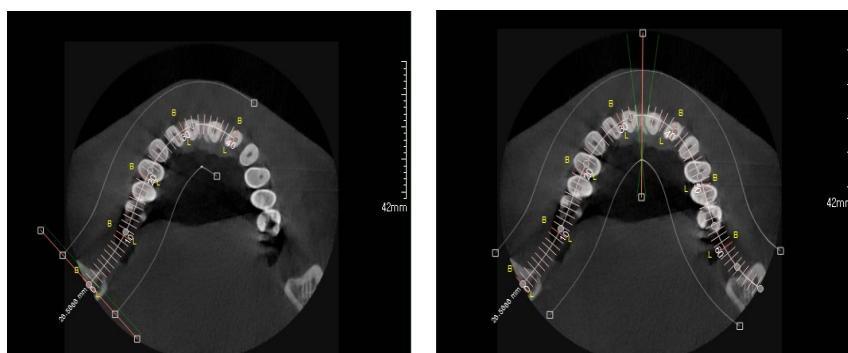


After drawing a curve in the MPR sub-module, the screen will be automatically switched to Section tab, and the inserted curve will be added to the curve list. Refer to the '*Chapter 5. 3D Module > 5.2 Drawing Curve in MPR Sub-Module*' for the direction on how to insert a curve in the MPR sub-module.

1. Click the [Draw Curve] button and the mouse cursor will change into drawing mode.

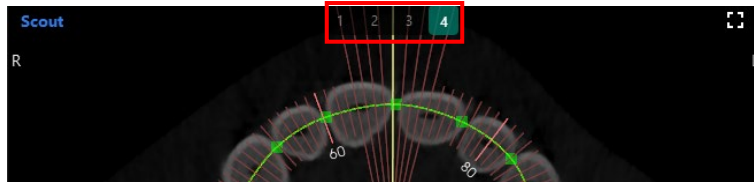


2. Click points on the Axial Window to draw the curve line on the arch. Draw the curve line from left to right. Double click to complete the curve line.



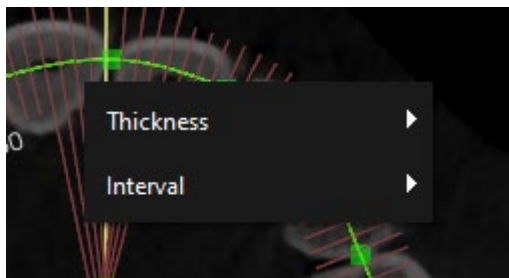
- Click the [Draw Curve] button while drawing the curve line to cancel the Draw Curve function.

- Click the right mouse button while drawing the curve line to delete the previously inputted point.
- The drawn curve is added to the Curve List. The number buttons on the Curve List will be activated according to the curves drawn.



If the curve line is drawn from right to left side, users will get a horizontally inverted image on the Panorama pane.

- The interval and the thickness of slice image created based on the curve can be changed by right clicking and selecting the options.



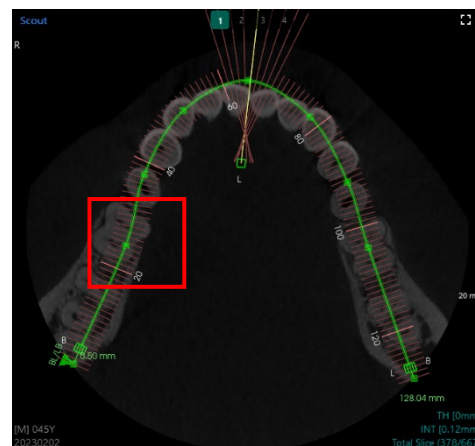
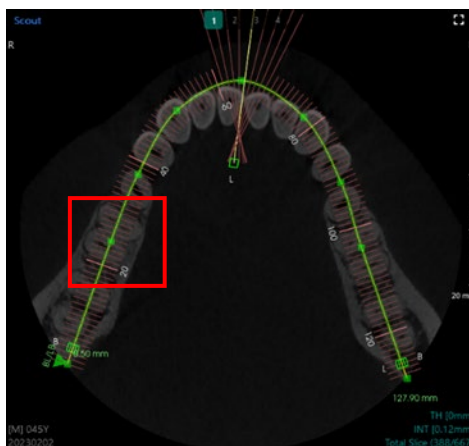
Use the mouse wheel to change the curve interval while drawing the curve line.

## 5.2.2 Modifying Input Curve

Click a point on the curve and drag it to the desired point to modify the line.

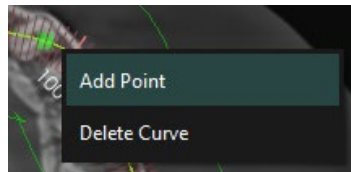
- Moving point

Click one of the curve points to select. And drag and drop the point to curve line.



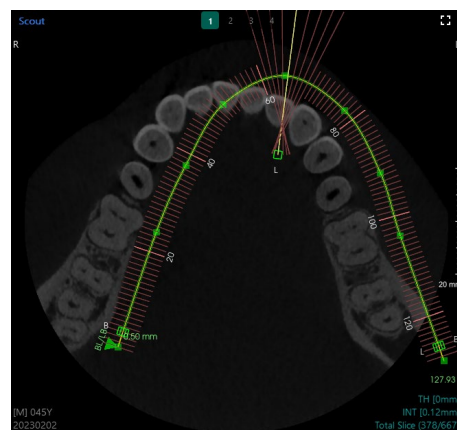
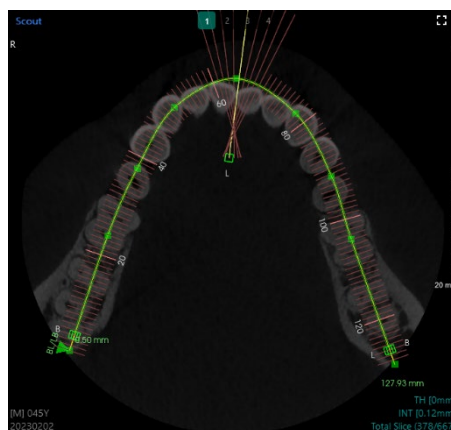
- Adding point

After selecting the curve line, right-click to display a menu. Click the [Add Point] menu to add a new point.



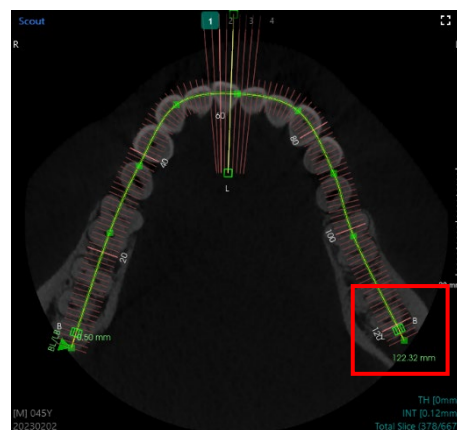
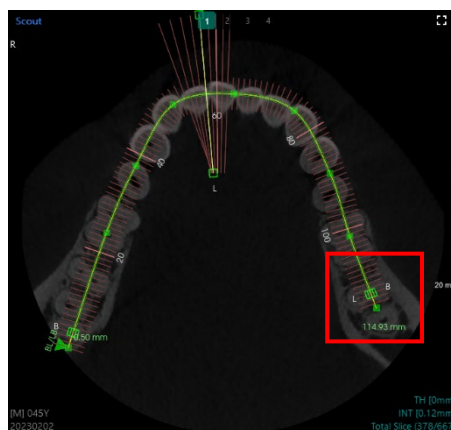
- Moving curve

To move the whole curve line, click the entire curve line and drag it to the desired location.



- Adjusting curve length

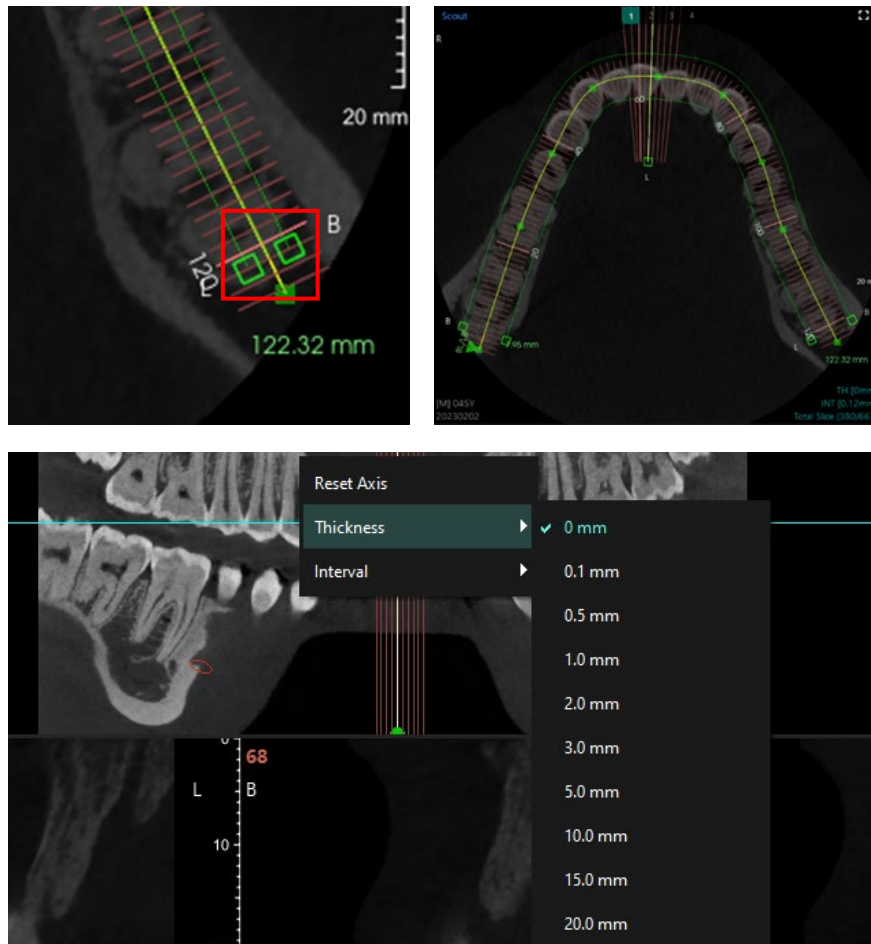
Move the start point and the end point of the curve line to adjust the length of the curve line.





- Changing panorama thickness

Click and drag the L/B point of the Panorama Thickness Line to adjust the thickness of the panorama view. Or right click on the image of the Panorama View to change the thickness.

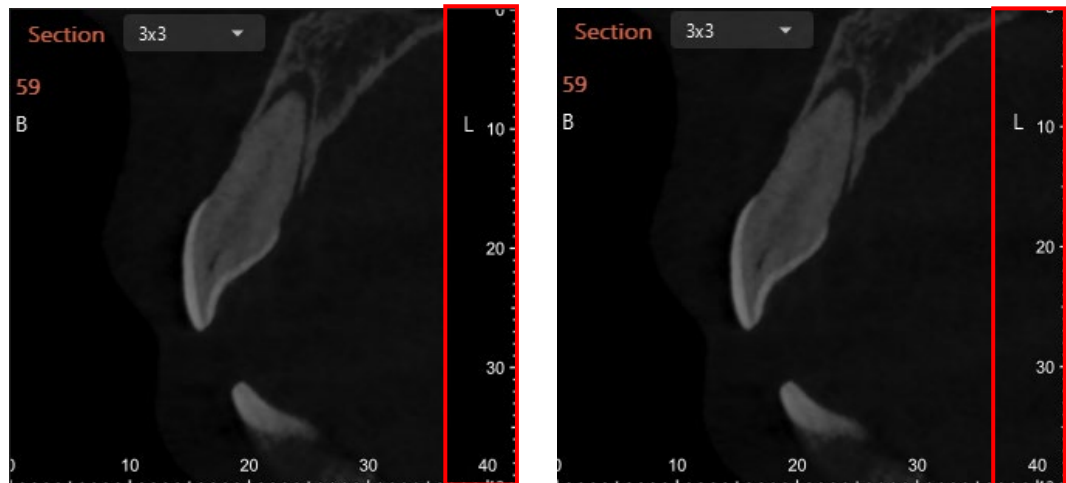


- Changing width of Section images

Click and drag the Section Width Point on the curve line to adjust the width of the Section images.







Modifying the input curve will be reflected in real-time with the section view and panorama view.

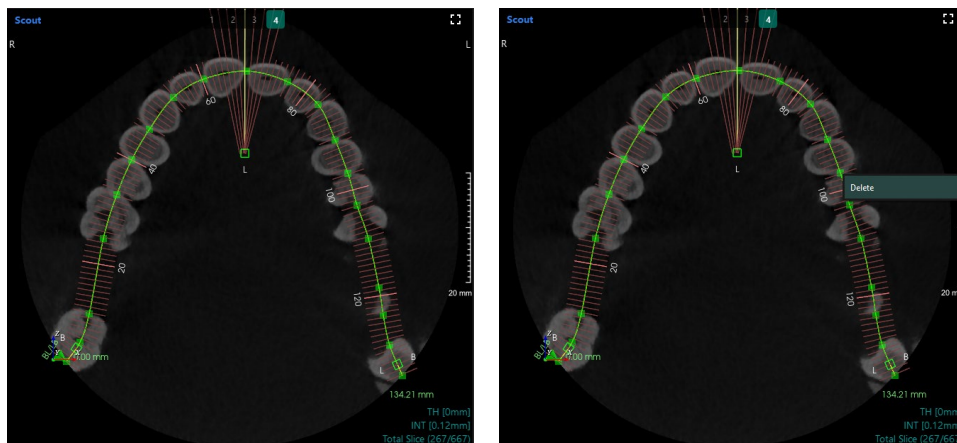
- Switching L/B Direction

Right click on the sectional line on the curve then click the [L/B Switching] button to change the sectional line direction.

Please note that switching L/B direction does not change the direction of slices.

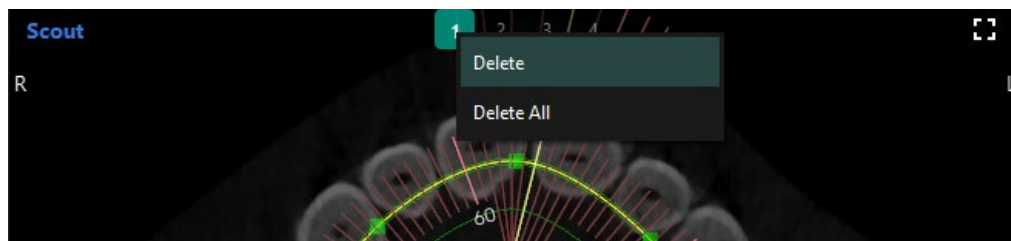
### 5.2.3 Deleting Curve Point

Select a point on the curve and right-click. Click the [Delete Point] menu to delete the selected point.



### 5.2.4 Deleting Curve

1. Right click the number button to delete the corresponding curve.
2. Click the [Delete] option to delete the selected curve only. And click the [Delete All Curves] option to delete all inserted curves.



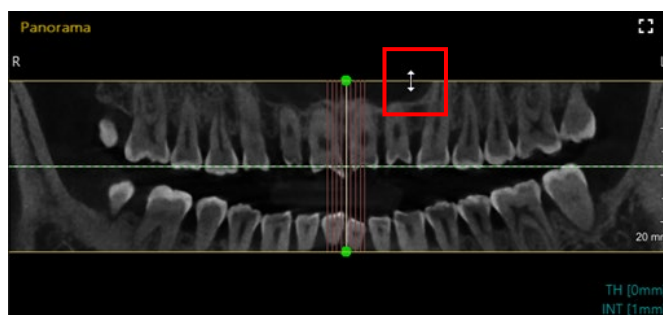
3. If a curve is deleted, the numbers for inserted curves are rearranged automatically in the order of drawn time.

### 5.2.5 Adjusting Section Panorama

The section images can be adjusted through the Panorama window of Section sub-module.

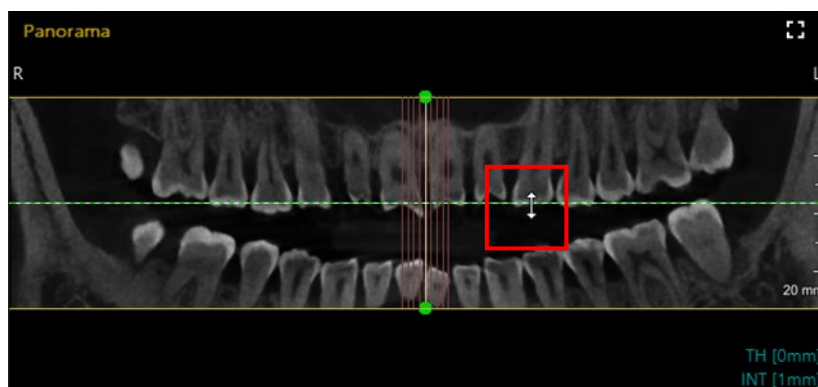
- Resizing Panorama Image (Vertical)

Drag the edge of the Panorama image to resize.



- Moving Section line

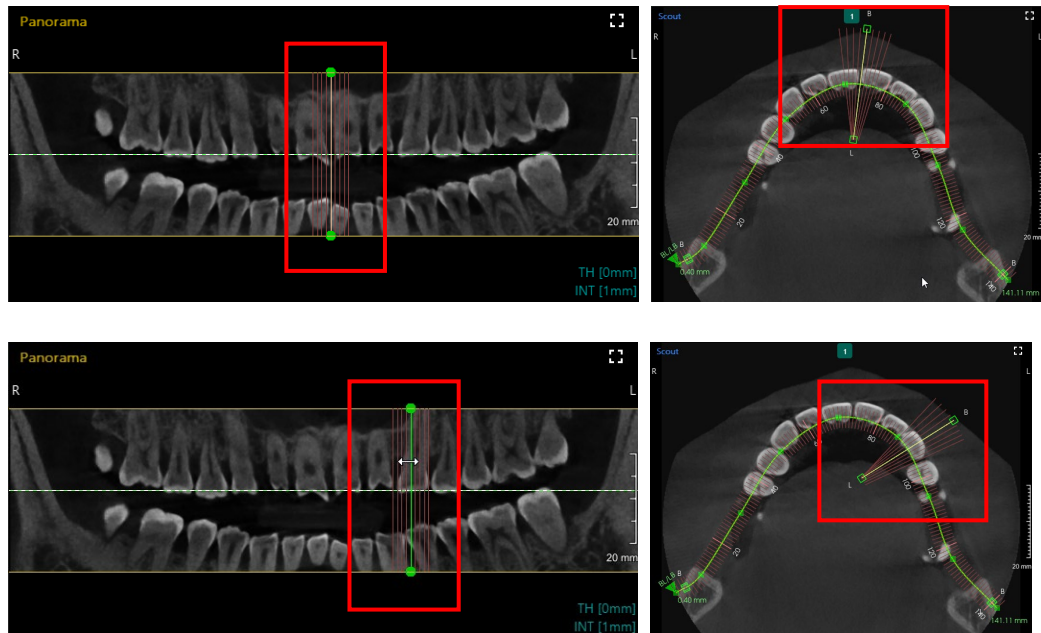
Click the green line on the Panorama image and drag it upward or downward. The Section image are adjusted accordingly.



Set to show/hide sectional lines on Panorama View in the Settings. See 'Chapter 2. Clever One Settings > 3. View > 3.3 2D View' for more information.

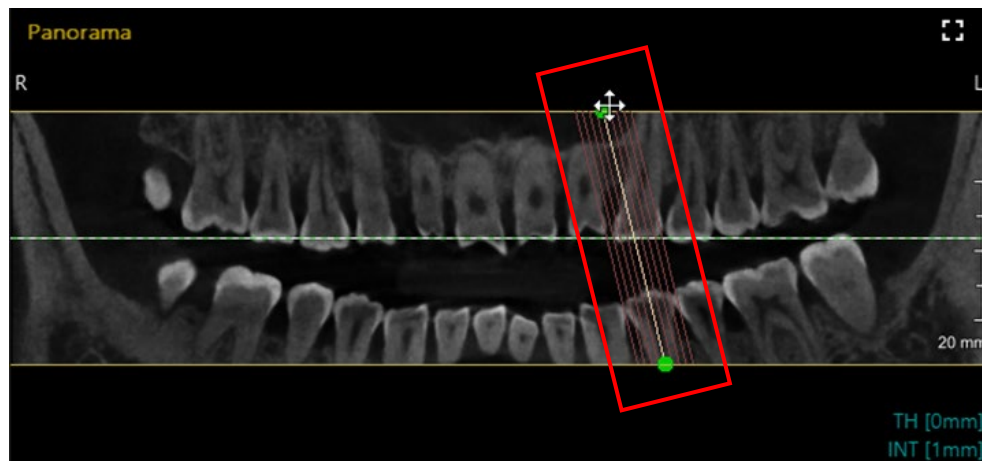
- Moving Curve Positioning Line

Click the pink line on the Panorama image and drag it to the left or right to move the Curve Positioning Line.



- Adjusting Curve Positioning Line

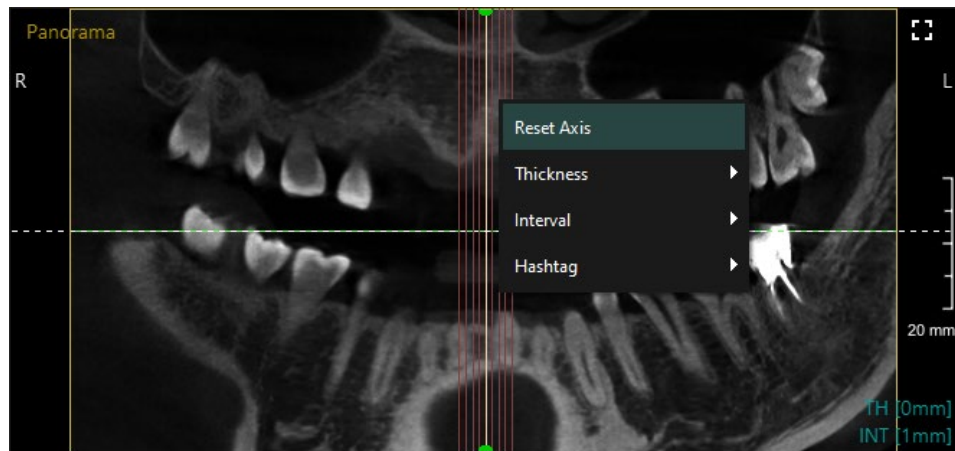
Click the end points of the pink line on the Panorama image and drag it to the left and right to adjust the Curve Positioning Line.



When the Curve Positioning Curve is not set in the 90 degrees, the pointed part on the Panorama image may not be displayed as the sectional image.

- Resetting Curve Positioning Line

Right click on the Curve Positioning Line to open the context menu. Click the [Reset Axis] option to reset the adjusted Curve Positioning Line.



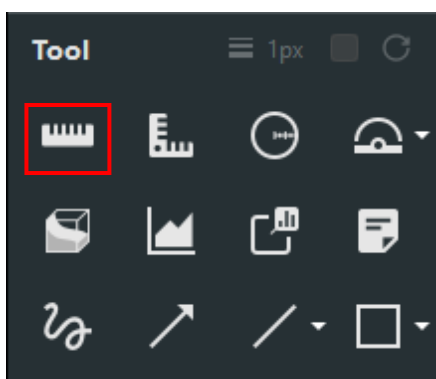
## 6. Tool Group

Use tools from the Tool group to measure length, angle, volume, bone density profile or enter annotations ranging from memos, draw, arrows, lines, and shapes. All entered content can be hidden or deleted on the screen. Also, the user can change the properties of the entered items.

### 6.1 Measuring Length

#### 6.1.1 Measuring Length on 2D Image

1. Click [Length] icon to measure the length as below.



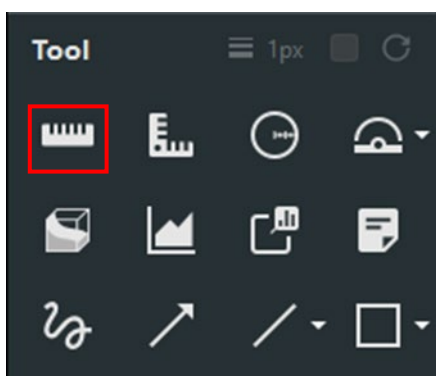
2. Click two points to measure the length. Then the numerical value appears on the screen.



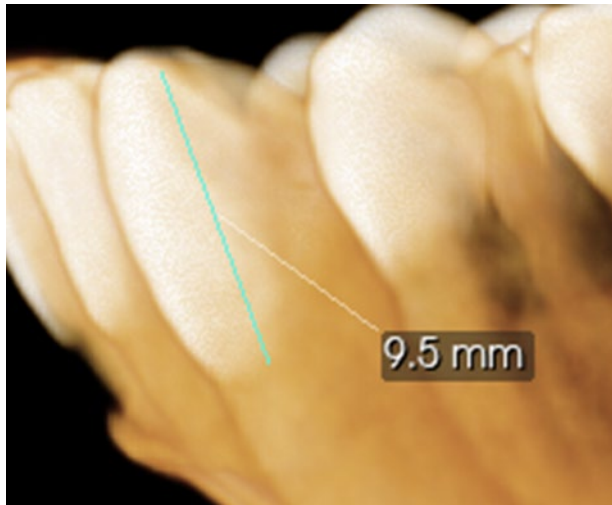
3. Click [Length] icon again or right-click the image to finish measuring.

#### 6.1.2 Measuring Length on 3D Image

1. Click [Length] icon to measure the length as below.



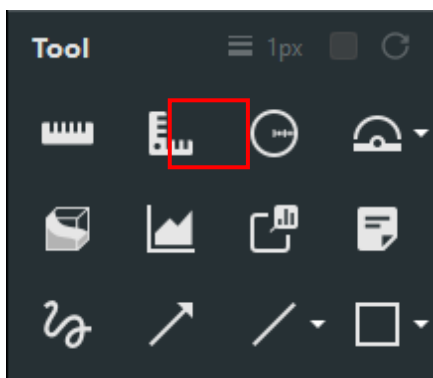
- Click two points to measure the length. Then the numerical value appears on the screen.



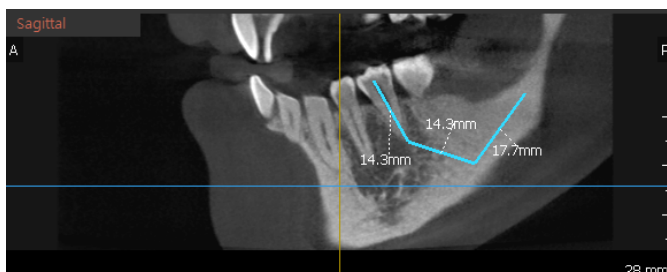
- Click [Length] icon again or right-click the image to finish measuring.

## 6.2 Measuring Multi length

- Click the [Multi Length] icon on the toolbar.



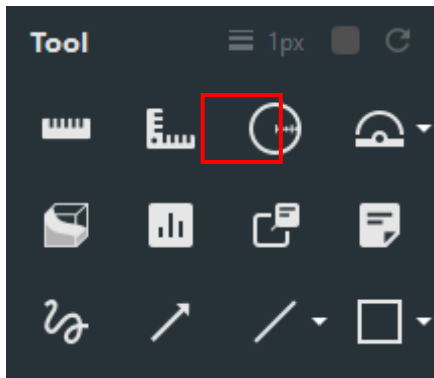
- Click all points to measure length on the 2D image. The measured length is displayed as shown in the following figure.



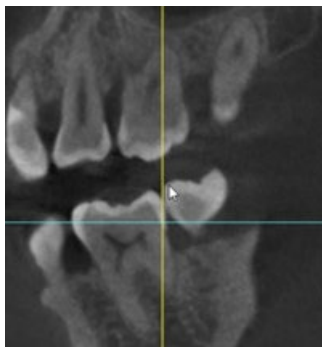
- Double click on the last point to stop measuring.
- Click the [Multi Length] icon again or right click on the image to end measuring

## 6.3 Measuring Circle Radius

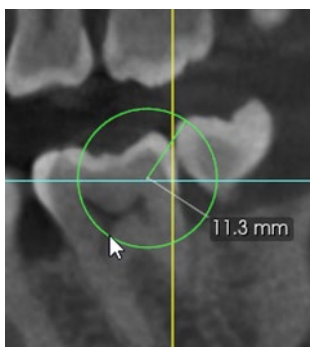
1. Click [Circle Measure] icon to measure radius of circle as shown below:



2. Click the first point at desired position to measure in 2D image View.

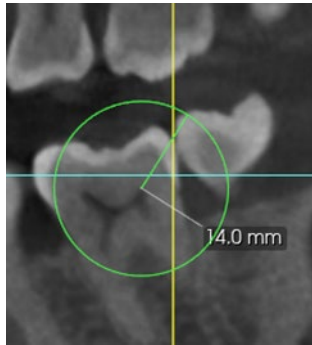


3. Drag the mouse to adjust circle size, then the second point of the circle follows the mouse pointer.

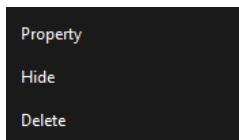


4. Click the position where to stop measurement to complete circle measurement.

5. The measured value is displayed in billboard format, and the circle is displayed in solid line.



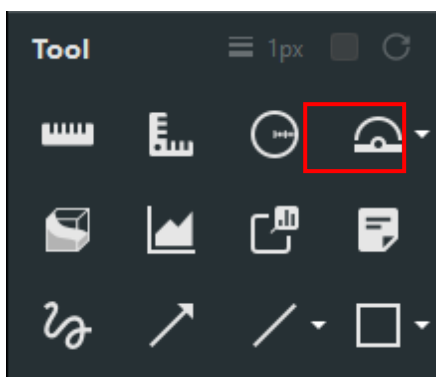
6. Select the inserted circle overlay by right-clicking to display context menu.
7. The user can view property of the overlay, and hide or delete the overlay by using Property, Hide, and Delete menu.



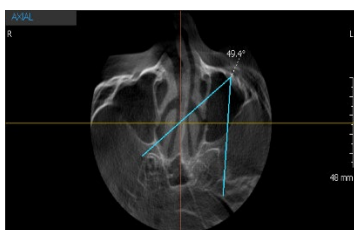


## 6.4 Measuring Angles

1. Click [Angle] icon and measure the angle as shown below:



2. Click three points to measure the angle. Then the numerical value appears on the screen.



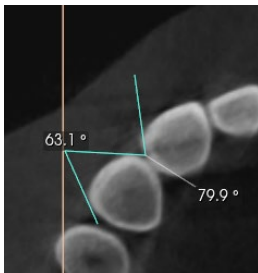
3. Click [Angle] icon again or right-click the image to finish measuring.

## 6.5 Measuring Multi Angle

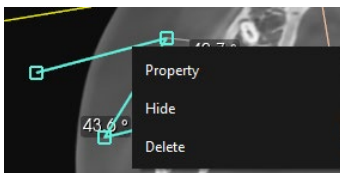
1. Click [Angle] icon and select the [Multi Angle] option to measure the angle as shown below:



2. Click all points to measure angles in a row in 2D Image View.



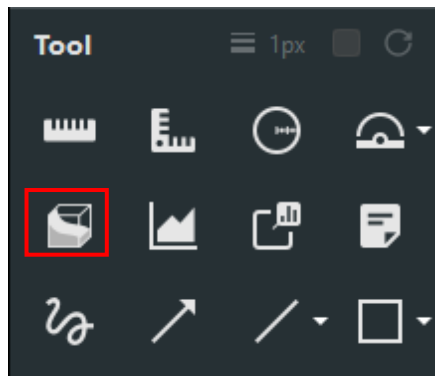
3. Values are displayed where angles are made.'
4. Double click the last input point to complete measurement or hit Enter key in keyboard. Then, valid multi-angles are inserted to the last inserted point.
5. Right click the inserted multi-angle overlay to display context menu.



6. The user can view property of the overlay, and hide or delete the overlay by using Property, Hide, and Delete menu.

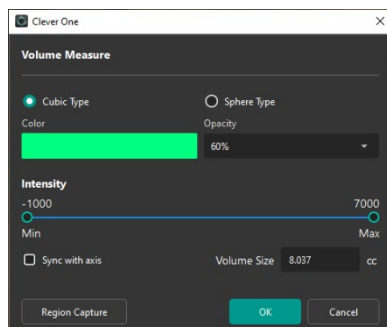
## 6.6 Measuring Volume

1. Click the [Volume] icon to measure the volume as shown below.

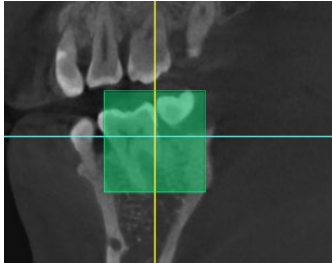
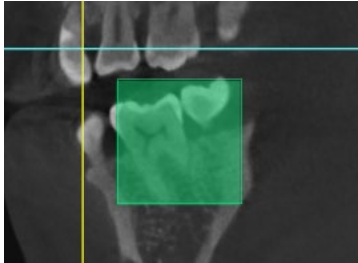


The volume cannot be measured when the image is sculpted.

2. The Volume Measure window appears, and the numerical value of volume is shown. On this window, the user can change the volume color and adjust the opacity and the intensity. If the intensity is changed, only the volume of the selected area according to the adjusted intensity will be calculated.



3. The user can edit Axis and ROI as well as change slice. By selecting the [Sync with axis] check box, ROI volume and MPR axis are synchronized. The default value is deselecting. Volume is measured as follows by selecting/deselecting the checkbox.

[Sync with axis] Selected	[Sync with axis] Deselected
<ul style="list-style-type: none"> <li> <b>Moving ROI:</b>  Move or rotate MPR axis or drag and drop volume measurement ROI to move the volume.  </li> <li> <b>Changing ROI size:</b>  Drag and drop control points of ROI to resize the ROI. </li> <li> <b>Changing Interval:</b>  The function is disabled. </li> </ul>	<ul style="list-style-type: none"> <li> <b>Moving ROI:</b>  Drag and drop volume measurement ROI to move the volume.  </li> <li> <b>Changing ROI size:</b>  Drag and drop control points of ROI to resize the ROI. </li> <li> <b>Changing Interval:</b>  Scroll the mouse wheel on a 2D view to change its slice. </li> </ul>

4. Click the [OK] button, and the volume is displayed on the 3D and 2D screens as below.



5. The user can delete the displayed volume on the 3D and 2D screen.

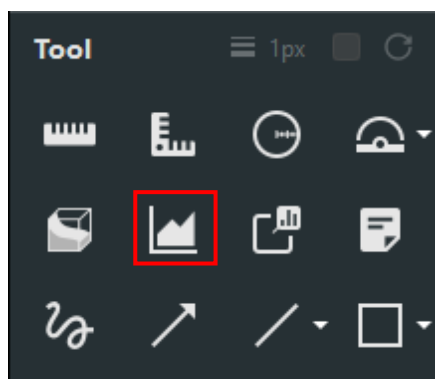
Right click the volume box on the 2D image and then the following list appears on the screen.



Click the [Delete] menu to delete the volume from the screen.

## 6.7 Profile

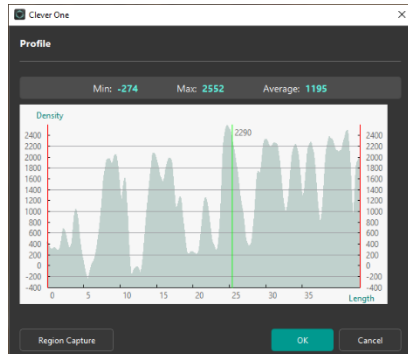
1. Click [Profile] icon to see the bone density as shown below:



2. Click two points to see the bone density value based on your 2D image.



3. The Profile window appears. This profile graph shows the bone density between two points. Move the mouse on the profile line and control the area. The maximum, minimum, and the average value change in real time based on the selected area.



CAUTION

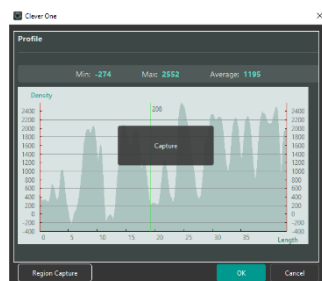
There are many cases where CBCT has different CT Number values, which are the standard of bone density standard, depending on the equipment.

Users should be aware of this limitation before diagnosing and performing simulation according to the bone density value. The treatment based on the incorrect measurement may cause failure in operation or complications.

#### • Capture Profile

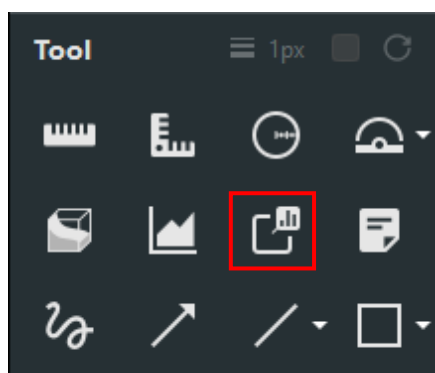
Click the [Profile Capture] button at the bottom left of the window to capture the Profile Dialog and Profile Object.

1. Click the [Profile Capture] button. The mouse cursor changes to capture mode.
2. Drag the mouse to select desired region then the [Capture] button appears. Click the capture button to capture the selected region.

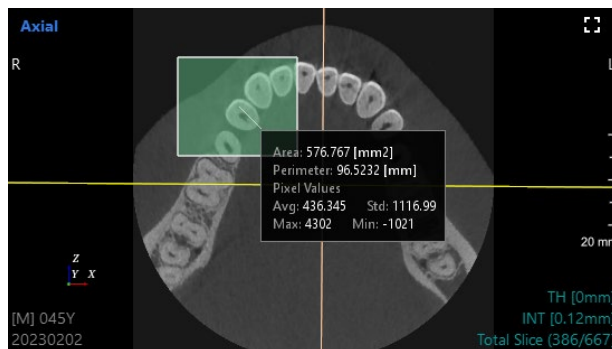


## 6.8 ROI

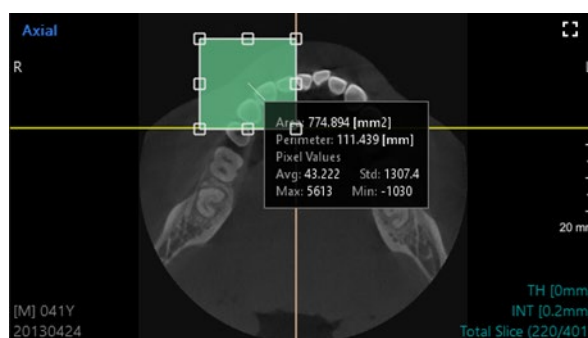
1. Click ROI button to get the information of pixel, average value, maximum value and standard deviation.



2. By selecting ROI in a 2D image, users can check the information on that area.



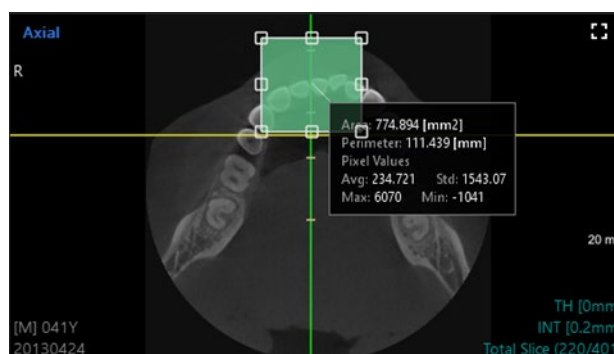
- Changing the ROI box size



Place the mouse cursor at the edge of the ROI box. The controller appears. While pressing the left button of the mouse, drag the box to change the size. The ROI information changes accordingly.

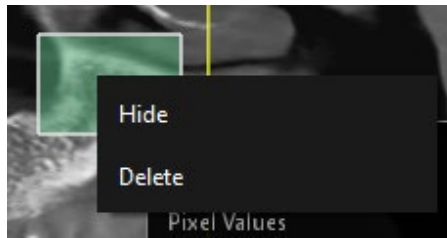
The box size cannot be adjusted using a keyboard.

- Left/right/top/bottom: The size of box changes in the direction selected according to amount of the mouse movement.
- Diagonal: The size of box changes with a fixed ratio according to the amount of the mouse movement.
- Moving the ROI box




Place the mouse cursor at the edge of the ROI box. The cursor changes to move the location. While pressing the left button of the mouse, drag the box to the new location.

- Deleting and hiding the ROI box




Right click the ROI box to delete or hide the box.


## 6.9 Entering Memos

1. Click Memo button() in Tool group.
2. Click the desired position to enter memo.
3. Enter comment in memo input field. You can insert a preset comment by right clicking to run context menu during memo input mode.
4. Enter ESC key or click outside of memo to exit memo input mode.


## 6.10 Free Drawing

1. Click the [Free Draw] button() in Tool group.
2. Click the desired position to draw on the 2D image.
3. Enter ESC key or re-click the [Free Draw] button to exit draw mode.

## 6.11 Entering Arrows or Lines

1. Click the [Arrow] or [Line] button() in Tool group.
2. Click the starting point at the desired position.
  - When using the Arrow tool, the arrow is placed towards the ending point.
3. Click the ending point at the desired position.
4. Enter ESC key or re-click the [Arrow] or [Line] button to exit draw mode.
  - When using the Polyline tool, double click or enter the ESC key to exit polyline tool.

## 6.12 Entering Shapes

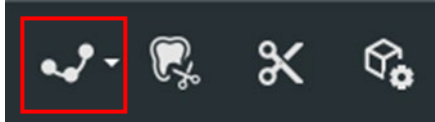
1. Click the [Rectangle] or [Ellipse] button() in Tool group.
2. Click the starting point at the desired position.
3. Click the lower right point of the shapes at the desired position.
4. Enter ESC key or re-click the [Rectangle] or [Ellipse] button to exit draw mode.



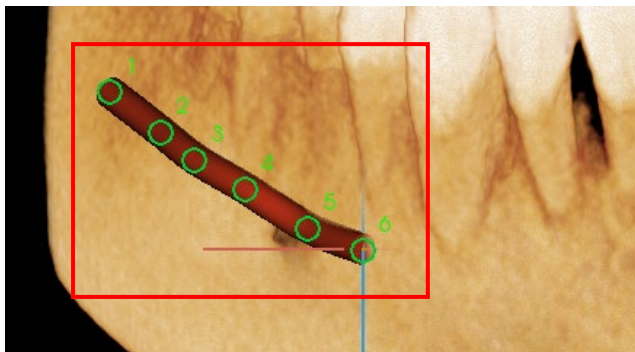
## 7. Drawing Canal

### 7.1 Drawing Canal

1. Click the [Draw Canal] icon on the advanced tool group. The mouse cursor changes to the drawing mode.

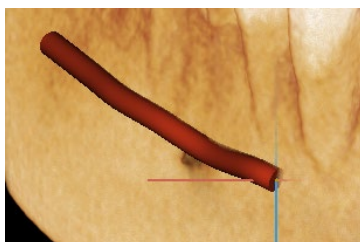


2. To draw the canal line, click points along the mandibular nerve on a 2D or 3D image. Also, existing canals on a 2D or 3D image can be extended.



- The drawing method is the same on the 2D and 3D viewers, but on 3D viewer, clipping and sculpting precede drawing canal.
- Right click while drawing the canal line to delete the previously plotted input point.
- Keyboard shortcuts for Canal Drawing (Available only when the Canal Drawing function is on)
  - Volume Rotation: Ctrl + Right Click + Drag
  - Panning: Shift + Right Click + Drag
  - Zooming: Ctrl + Mouse wheel

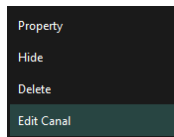
3. Double click to complete the canal line.



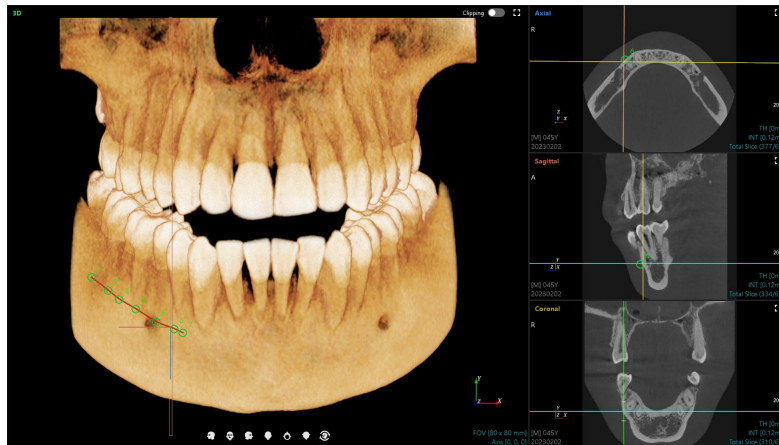
- The completion of canal line can be verified after all points are connected.
- Clicking the [Draw Canal] icon while drawing the canal line will cancel the Draw Canal function. The function can also be canceled by pressing the <Esc> key on the keyboard.
- The canal drawn is displayed on all tabs, and particularly it appears the same in the 3D VR coloring mode.

## 7.2 Editing Canal

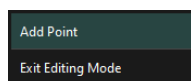
1. Right click on the inserted canal the following context menu appears.



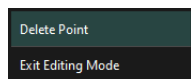
2. Click the [Edit Canal] menu. The inserted canal points and the line connecting the points appear on the 3D image, and the canal points appear on the 2D image.



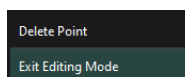
- Right click on the line connecting the canal point to add points.



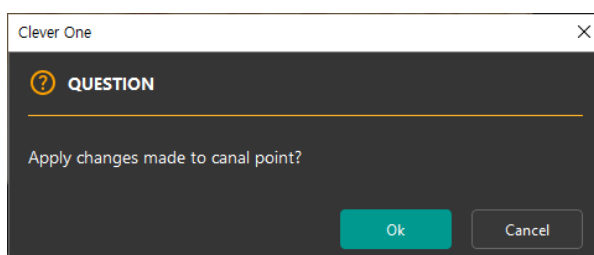
- Right click on the canal point to delete points.



3. Right click on the canal and click the [Exit Editing Mode] menu after editing the canal.



4. There appears a message asking, “Apply changes made to canal point?”



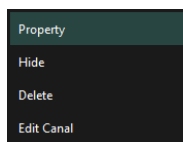
5. Press the [OK] button, the new canal points will be applied to the canal.



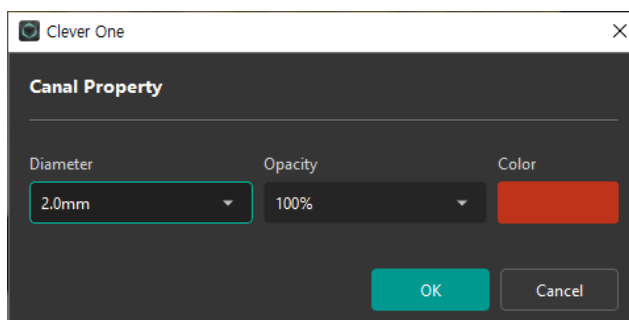
- The image can be moved, zoomed in or out only using the shortcut keys while editing canal.
- When the canal point is selected on the 3D image, the MPR axis is adjusted automatically to display the sectional image where the corresponding point is inserted.
- User can only add or delete the canal points on the 3D image.
- User can only move or delete the canal points on the 2D image.
- Double click to end the canal edit mode.

## 7.3 Changing Properties of Canal

1. Select the canal line and click the right mouse button. The following list appears.



2. Click [Property] and the [Canal Property] window appears.

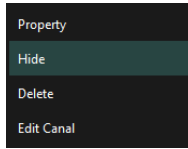


3. Click the [Canal Diameter] dropdown menu to select the diameter of the canal line. Click the [Opacity] to select the opacity of the canal line. [Canal Color] and select the color of the canal line.
4. Click the [OK] button and the changes are reflected in the canal line.

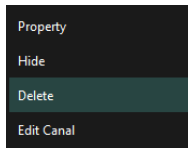
## 7.4 Hiding or Deleting Canal

Select the canal line and click the right mouse button. The following list appears.

- Click [Hide] and the canal line disappears from the screen.



- Click [Delete] to delete the selected canal line.



## 8. Airway Measurement



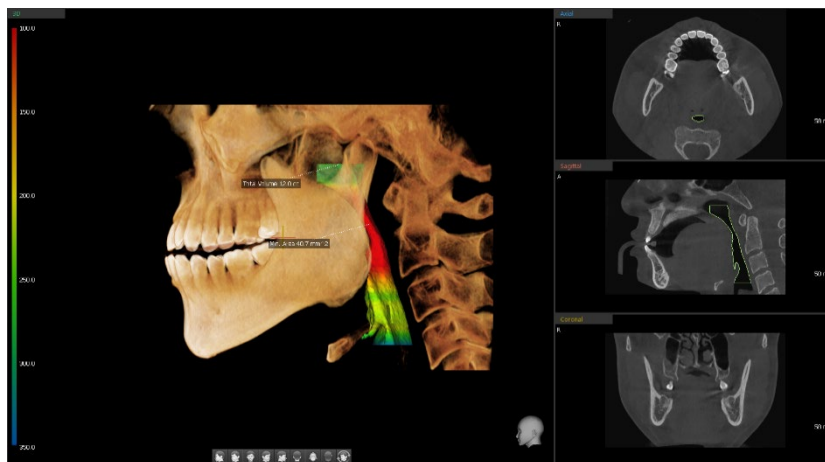
CAUTION

The Airway measurement may have incorrect error range and values depending on the CBCT equipment value.

Users should be aware of this limitation before diagnosing and performing simulation according to the bone density value. The treatment based on the incorrect measurement may cause failure in operation or complications.

The measured Airway is displayed in different colors depending on the area, and the Gradient Bar, which guides the color by Airway area, is also shown with the Airway.

The total volume (cc) and the area (mm<sup>2</sup>) of the smallest area among the cross sectional areas are also displayed in the measured Airway volume.



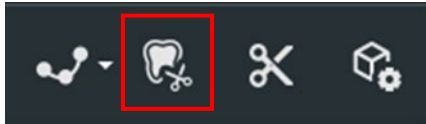
- The color for the six points can be changed in the [Main Menu > Settings > Simulation > Airway] menu.
- The measured airway is displayed on the 2D images as a form of outline so that the user can check the cross-sectional areas of each axis.
- The Airway Volume is not displayed on the CT data when opening the CT data with the results of the Airway Measurement. Click the checkmark of the Airway option in the Segment Data group to display the Airway.
- The progress window appears when recalculating the Airway. When there is no result of Airway measurement, the checkbox of the Airway option in the VR Coloring Group is disabled.

## 9. Extract Tooth

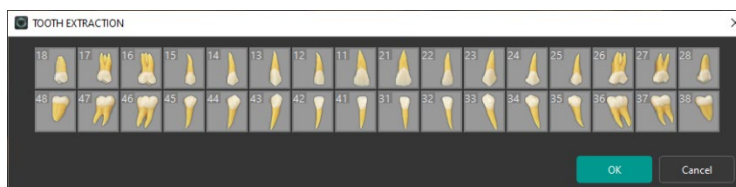
Extract Tooth function is to simulate tooth extraction before conducting implant simulation or orthognathic simulation on the 3D View. As tooth extraction is required in many treatment cases, this function enables users to simulate under the condition similar to the real environment.

This function is available only when there exists segmented data. Please complete tooth segmentation or import segmentation data before using this function.

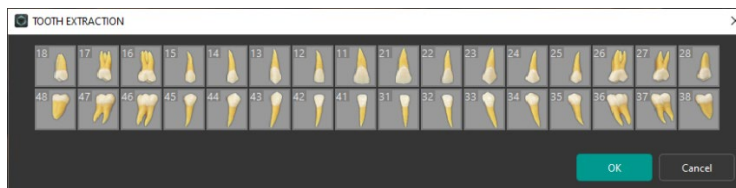
1. Click the [Extract Tooth] Button in the advanced Tool group.



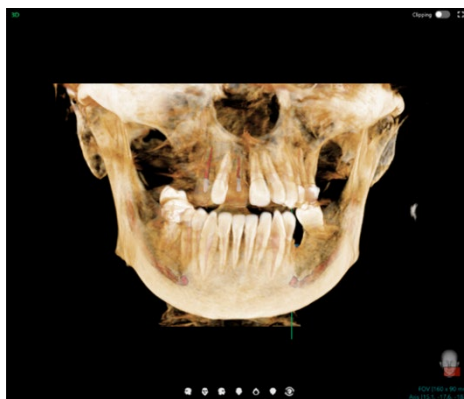
2. The [Extraction] dialog appears, and segmented tooth objects are displayed on the 3D View.



3. Click the number buttons of teeth to extract and press the [OK] button.



4. The selected teeth are not shown on the image.

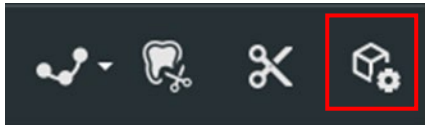


## 10. Data Manager

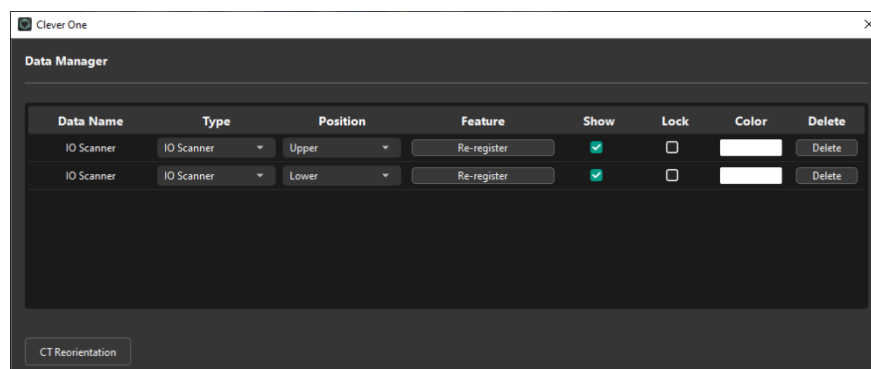
Data Manager Dialog manages the properties of 3D objects, IO Scanner data, Secondary CT data in the server or imported from local external sources.

### 10.1 Data Manager Layout

1. Click the [Data Manager] icon in the advanced Tool group.



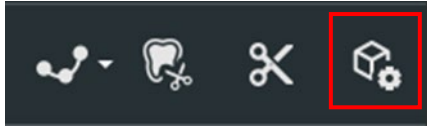
2. The [Data Manager] dialog appears.



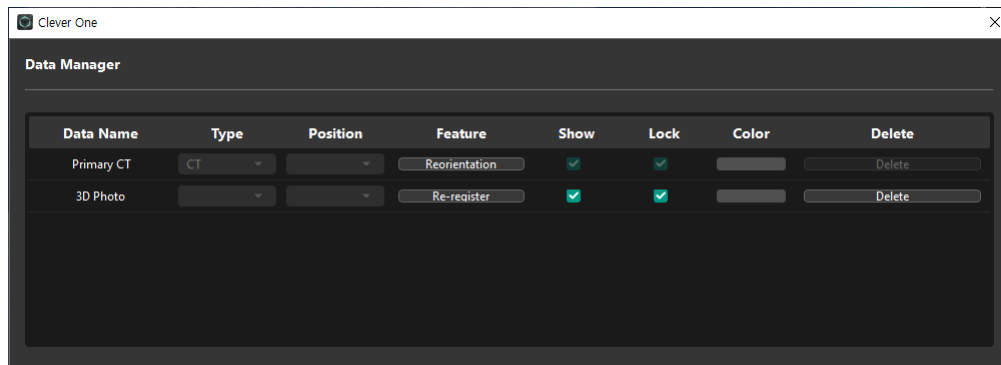
- Data Name: The user can modify object name by double clicking object name.
- Type: The user can choose the file type of the 3D object
- Position: The user can set whether the model data is maxillary or mandible, or set its tooth code.
- Feature: Click [Re-register] button to edit or fix registration of non-primary CT files.
- Show: Show or hide objects in the View
- Lock: Lock or unlock to stop or allow changing object location
- Color: Select the colors of objects
- Delete: Click the Delete button to remove the selected object in the view.

## 10.2 CT Reorientation

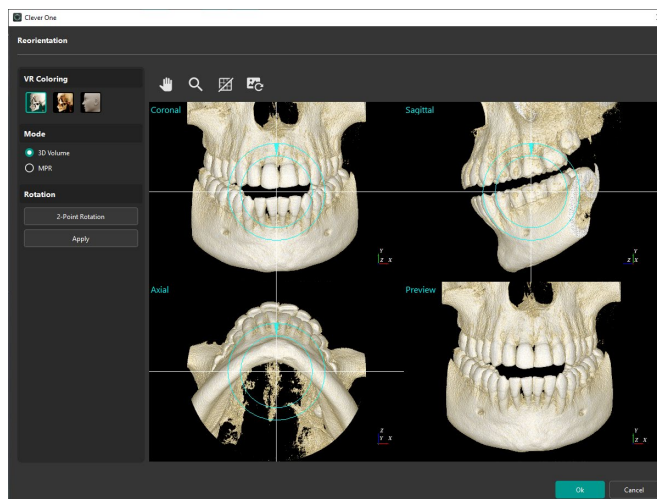
1. Click the [Data Manager] icon in the advanced Tool group.



2. The [Data Manager] dialog appears.



3. Click the [CT Reorientation] button on the left side. The Reorientation dialog appears.
4. Proceed to reorient the CT file with provided axis.



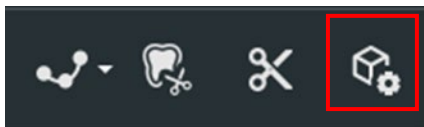


## 10.3 Data Registration

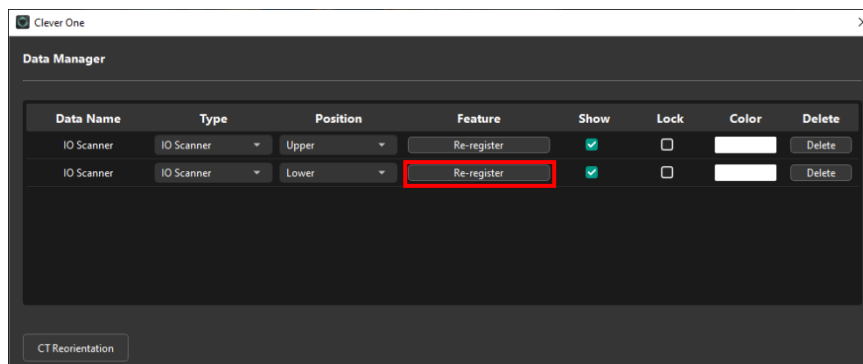
1. Drag and drop data from the server images panel or from external sources.
2. Data is automatically registered to the CT file.
3. To view the registered data properties, click the [Data Manager] icon in the advanced Tool group.

## 10.4 Data Re-register

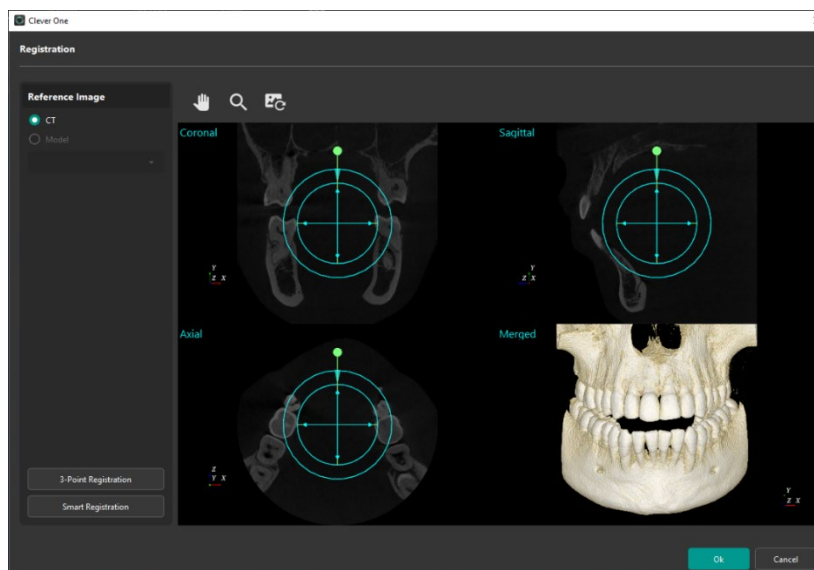
1. Click the [Data Manager] icon in the advanced Tool group.



2. The [Data Manager] dialog appears.
3. For objects to be registered, press the [Re-register] button below the [Feature] option.



4. The [Registration] dialog appears automatically.



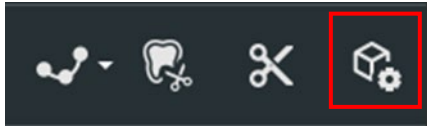
5. Proceed with data registration.
6. The registered data can be seen on the Merged View of Registration dialog.
7. Complete registration by clicking the [OK] button.

## 10.5 Changing Name of Data

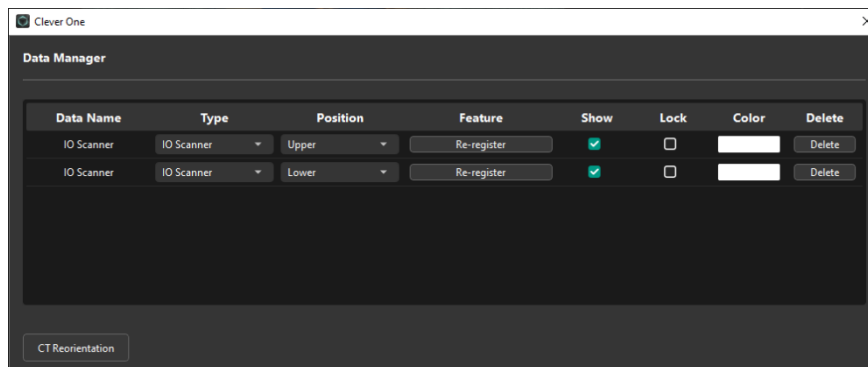


Primary CT, Secondary CT, 3D Photo names cannot be changed.

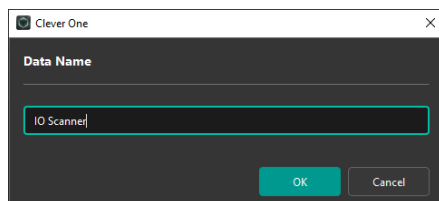
1. Click the [Data Manager] icon in the advanced Tool group.



2. The [Data Manager] dialog appears.



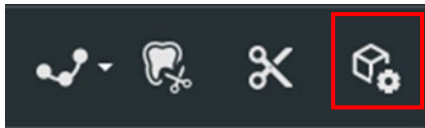
3. Double click the object name to change the name of the object.
4. [Data Name] dialog appears.



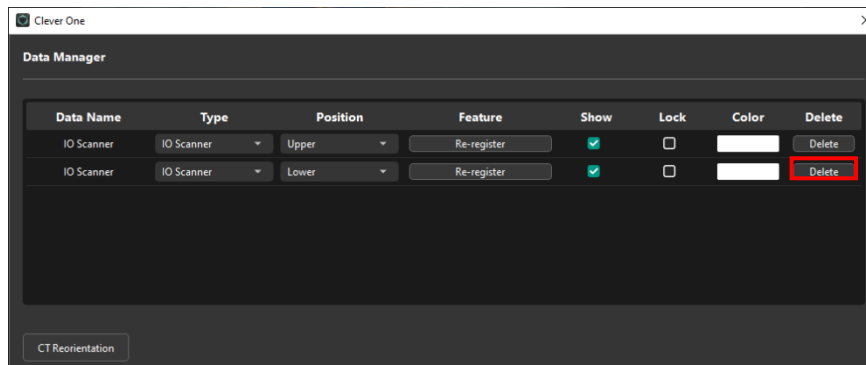
5. Change the name in the [Data Name] option and click the [OK] button.

## 10.6 Deleting Data

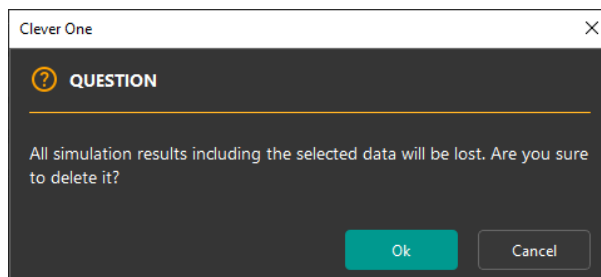
1. Click the [Data Manager] icon in the advanced Tool group.



2. The [Data Manager] dialog appears.
3. Click the [Delete] button.



4. When the delete message appears, click the [OK] button to delete the object from the current project.



## 11. Segmenting Data

Segmentation function is to segment image into each data, such as bone and teeth, as separate objects to be used during simulation such as tooth extraction and 3D measuring root canals.

Teeth and Bone segmentation data is required to simulate Smart Insert Implants, Extract Tooth, 3D Measure, Segmented Teeth function, etc. Segmentation will automatically proceed when newly acquiring CT data. Segmentation can also be executed on CT with no prior segmentation.

Segment Data group enables users to conduct teeth segmentation and bone segmentation or import segmented data as well as to manage segregated data. Also, users can manage objects included in each segmentation group through list of segmentation in the Segment Data group in the control panel or each sub-module.

### 11.1 Segmenting CT with No Segment Data



Newly acquired data will be automatically segmented when saving to EzServer.  
No additional action is required.

1. Open a CT with no prior segmentation data.
2. Click the [Settings] button in the Segment Data group from the control panel. The Segmentation dialog will appear.
3. Click [Start Segmentation] to proceed with segmentation. The Segmentation dialog will close.
4. Please wait until segmentation process is completed.
5. Once segmentation is completed, a message will appear on the lower right side of the screen.
6. Select segmented data from the Segment Data group by clicking the checkbox from the control panel to display on the view area. The segment data will appear on all sub-modules.

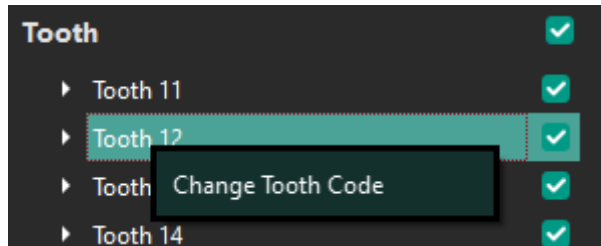
### 11.2 Managing Segmented Data

View and select data to show/hide on the view panel or change the teeth code between segmented tooth items in the Segmentation dialog.

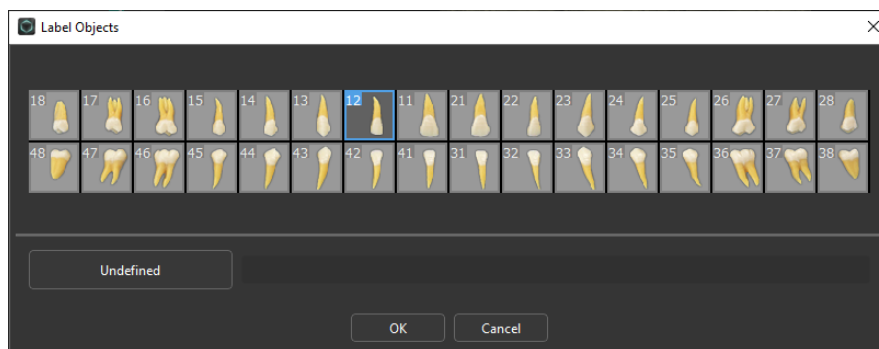
#### 11.2.1 Changing Teeth Codes

1. Click the [Settings] button in the Segment Data group from the control panel. The Segmentation dialog will appear.

- Right click tooth item from the segmentation item list and select the [Change Tooth Code] option.



- Select a new teeth code to apply to the selected teeth code.



Assigning a preassigned teeth code to another tooth will change the prior tooth code to [Undefined] value.

- The new teeth code is applied to the tooth and all pertaining items.

### 11.2.2 Mirroring Enamel Objects

Simulate crowns for missing teeth by mirroring the opposite tooth.

- Right click an enamel object in the view area and select the [Mirroring Crown] option.
- A crown object is created on the opposite tooth code. The new crown object is added to the Data Manager.

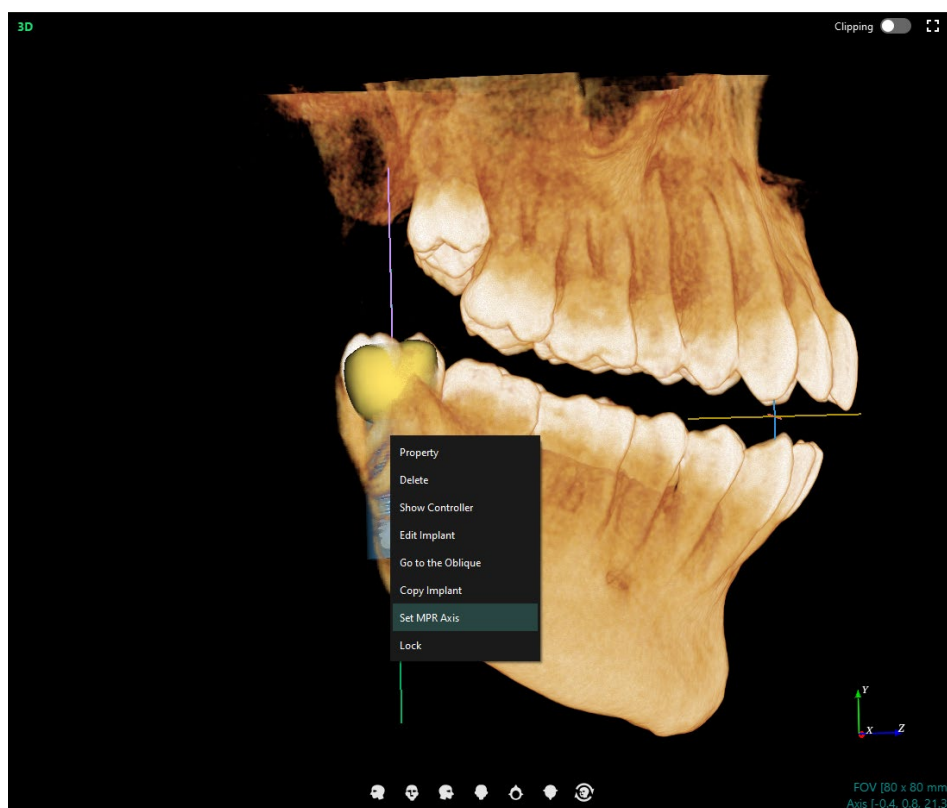
## 12. MPR Sub-Module

Following functions are only or mainly supported in the MPR sub-module and may not be supported in other sub-modules.

### 12.1 Setting MPR Axis

The position of MPR axis can be reset according the axis of the inserted implant.

1. Right click on the implant, which will be the standard for the axis rearrangement, to open the context menu.
2. Click the [Set MPR Axis] option. The MPR axis changes in the direction of the implant axis.



This MPR axis setting function does not work in the Section sub-module, 3D PAN sub-module, and the Multi Slice View.

## 13. 3D PAN Sub-Module

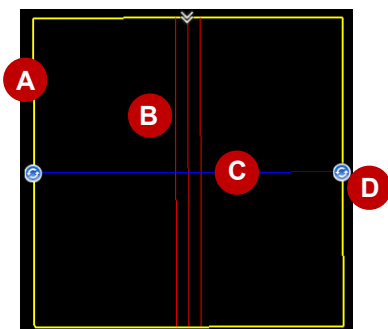
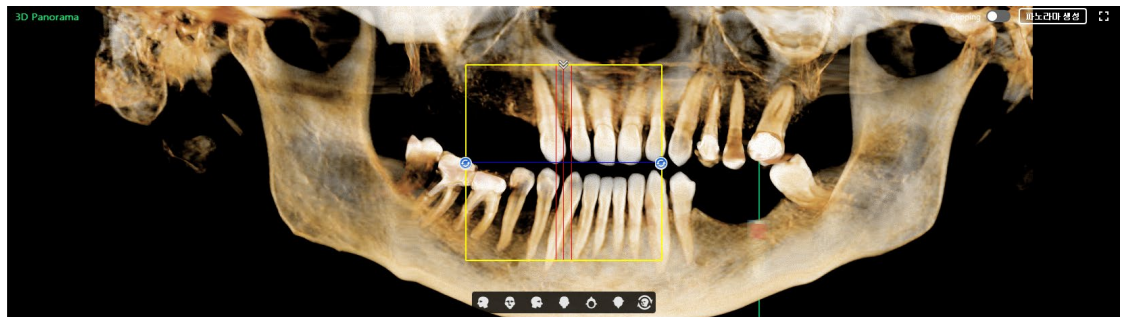
Following functions are only or mainly supported in the 3D PAN sub-module and may not be supported in other sub-modules.

### 13.1 Navigator

Navigators on 3D and 2D images are used to adjust the image view and display the cross-sectional view.

#### 13.1.1 3D Navigator on 3D image

The 3D navigator consists of a frame that indicates the cross-sectional image of panorama 3D and the indicator lines that displays the corresponding cross-sectional images.



No	Name	Description
A	Frame	The default size of the frame is 30mm x 35mm x 35mm, and the size can be changed in the [Settings > View > 3D View > Volume Panorama Navigator].
B	Axial Indicator Line	Also called Axial line. It displays and sets the location of Axial View, which divides the image within the navigator horizontally.
C	Sectional Indicator Line	Also called Section line. It displays and sets the location of Section View, which divides the image within the navigator vertically.
D	Rotating Controller	The Rotating controller rotates the Navigator to view cross sectional images.

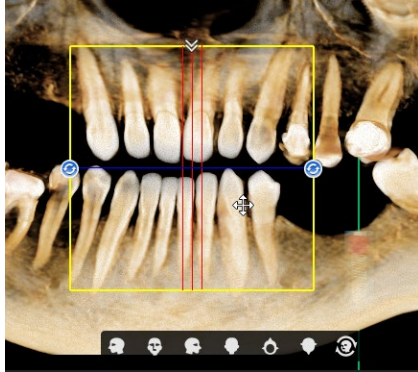


- The navigator can be displayed or hidden by pressing the Space Key on the keyboard.
- The navigator is only displayed when the 3D panorama volume is set in the Front view.

### 13.1.2 Moving Navigator

User can move the Navigator and change the displayed range.

- Drag the inside of the Navigator to change its location. When moving, the rotation value and the position of section line are maintained.



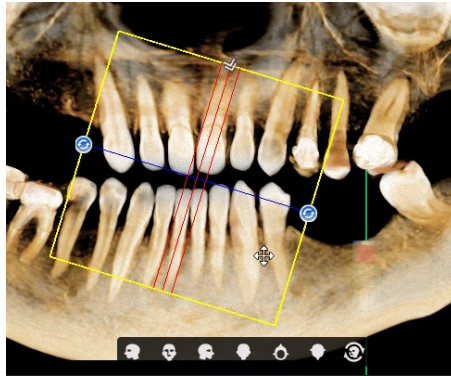
- Double click the desired spot to view the cross-sectional image. The navigator moves to the selected position. In this case, the rotation value and the position of section line are reset. Also, if the user double clicks the inside of Navigator, the navigator rotates back to its original position based on the clicked spot.



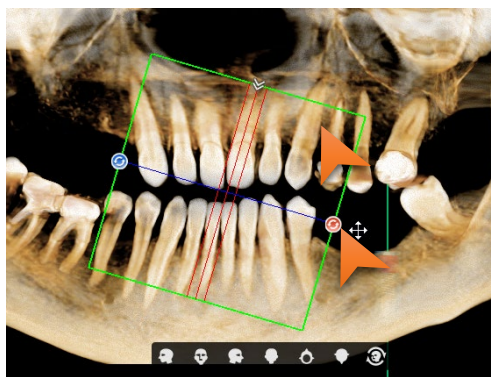
### 13.1.3 Rotating Navigator

User can rotate the Navigator and change the displayed range.

- Click the Navigator and scroll the mouse wheel. The navigator rotates based on the intersecting point between the Axial Line and the Section Line.



- Drag the Control buttons on either side of Navigator Box. The navigator rotates based on the other unselected button.

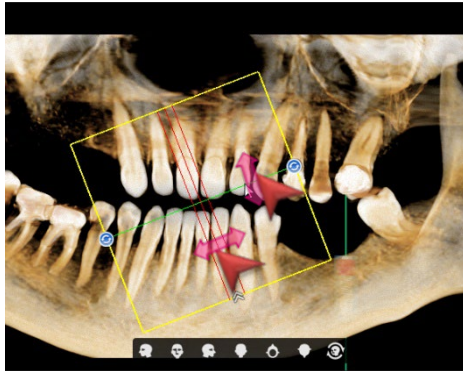


The Overlay displaying the direction of Axial View automatically changes as the navigator rotates.

### 13.1.4 Moving Indicator Line

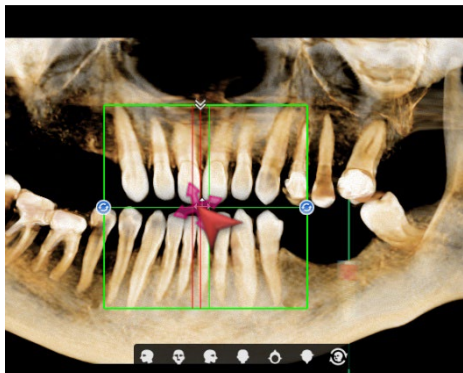
User can move the Line Indicator and view the cross-sectional images for corresponding point accordingly.

- Drag and move the Line Indicator. The 2D images change accordingly.



Line Indicator moves while maintaining the interval. The interval and thickness can be changed in the Setting.

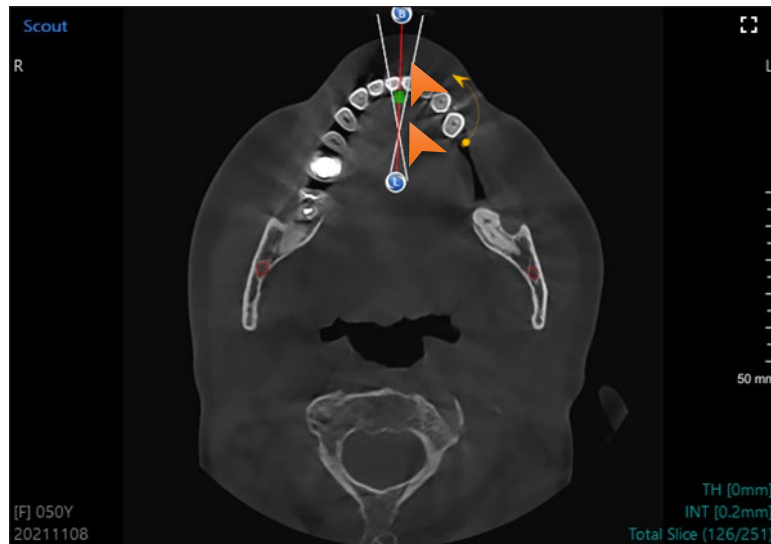
- Click the intersecting point between the Section Line and Axial Line and drag to move the lines at the same time.



## 13.2 Axial Navigator

Axial Navigator is the controller that displays the same location of Section line of 3D Navigator and can be adjusted on the Axial view. The Section Line only can be rotated.

Drag the Rotation button at both ends of the Section Center Line to rotate the Section line in the Axial direction. The Section Line rotates based on the intersecting point between the predefined Arch Line and the Section Center Line and the intersecting point cannot be moved.



The Section Controller and the Section Line can be displayed or hidden by pressing the Space Key on the keyboard.

### 13.3 Panorama View

User can select an area to view in panorama from the 3D PAN sub-module.



3D Panorama has been reconstructed from CT image.

Users should be aware of this limitation before diagnosing and performing simulation according to the panorama image. Please use it with caution in making a diagnosis.

1. Click the [Create Pano] button. The [Create Panorama] dialog appears to select an area.



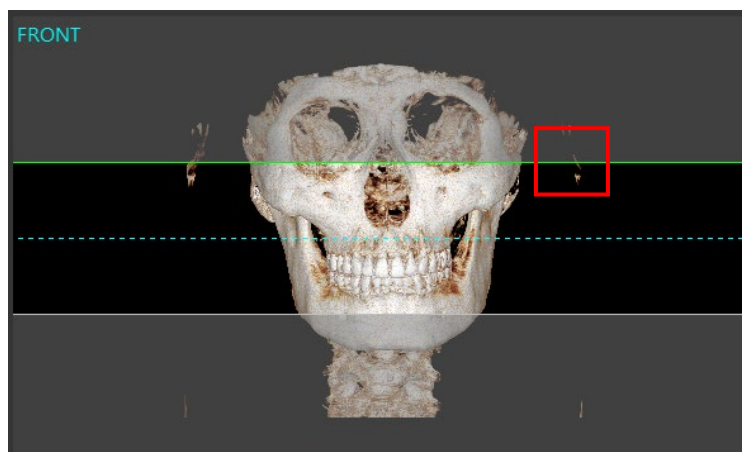
Click to use tools to move or zoom the image and to edit the curve point.

Clever One

Define Arch



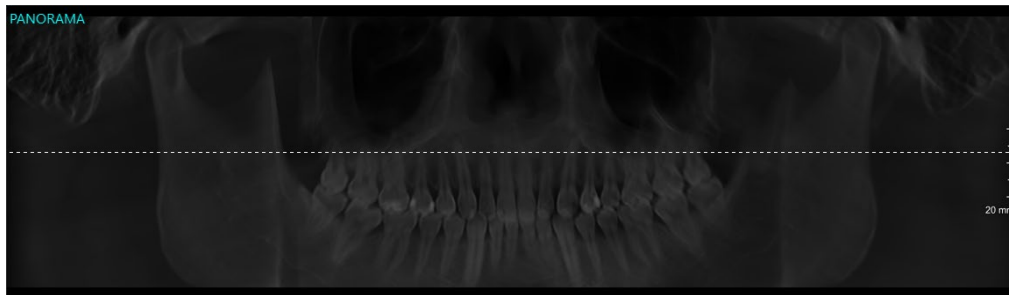
2. Drag and drop the lines to adjust the area in the Front view window.



3. Drag the curve point and L/B point to adjust the selected area in the Curve view.



4. Review the 2D image in the Panorama window based on the selected area in the Front and Curve view windows, and then click the [OK] button. The Create Panorama dialog closes and the Volume Panorama for the selected area is displayed.



The imported STL is not displayed in the 3D Panorama pane, but only in the Section image pane.

## 14. Endo Sub-Module

Following functions are only or mainly supported in the Endo sub-module and may not be supported in other sub-modules.

Below are shortcut keys for functions in the Endo sub-module.

Category	Action	Operation
Endo sub-module	Press space bar on the keyboard.	Show / Hide Root Canal label.
	Scroll the mouse wheel in Scout View.	Move the Scout View Navigator
	Scroll the mouse wheel in Oblique View.	Rotate Oblique View

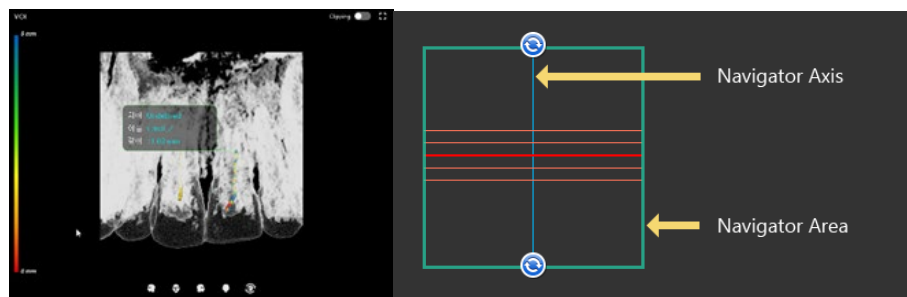
### 14.1 Endo Navigator

Image can be viewed using Endo navigator in Panorama View. VOI area is updated according to the change of Endo navigator location and direction. Basic operations of the navigator is the same as 3D PAN sub-module.

#### 14.1.1 Displaying Navigator Area

##### ▪ VOI View

Image is rendered into Endo mode to easily view Root Canal in VOI View.

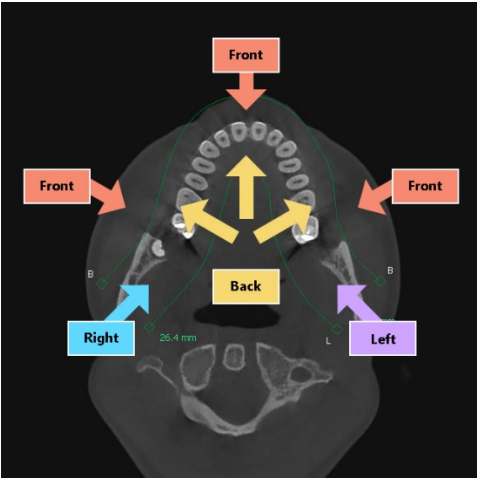


NOTE

Functions including zooming in/out, moving, and rotating can be conducted, and basic operations are the same as 3D View.

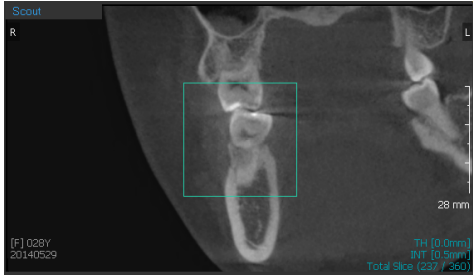
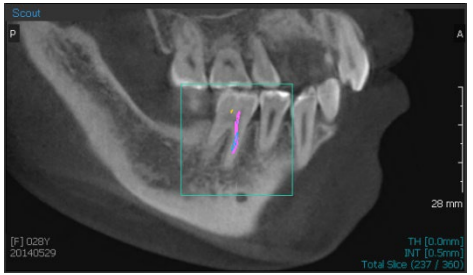
However, shortcut key for zooming function is replaced with Ctrl + Mouse scrolling. Mouse scrolling can be used to move Curvature Overlay according to Canal cross-sections.

Volume orientation can be selected by clicking direction buttons at the bottom, and each direction faces the following direction.



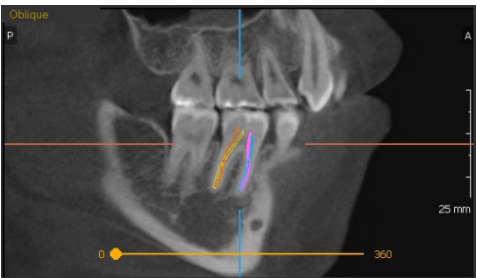
▪ **Scout View**

Basic properties of Scout View displayed in a mode where sectional image can be selected using Endo navigator are the same as those of MPR image.

When selecting Endo Navigator	When selecting Canal cross-sections
	
<ul style="list-style-type: none"><li>▪ Sectional Axis: Vertical Line to display progress direction of Endo Navigator Sectional Line.</li><li>▪ Section Line: Sectional Line Overlay of Endo Navigator.</li><li>▪ However, Sectional Axis/Line cannot be moved/rotated. Function to change Scout image slice is not supported.</li></ul>	<p>Axis is updated to the position of Section Center View in Canal cross-sections function.</p>

▪ **Oblique View**

User can move cross-sectional image to view while rotating based on Sectional Axis.

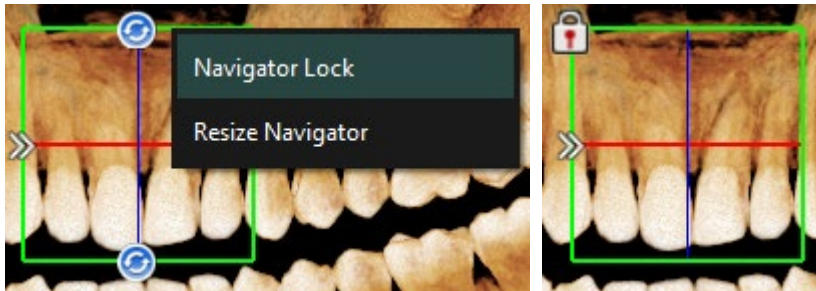


- Guideline: Guideline is displayed at the location of Section Center View

- Oblique Controller : Image is rotated (0~360 degree) based on Section Axis  
Oblique View is displayed with magnification ratio of MPR image.

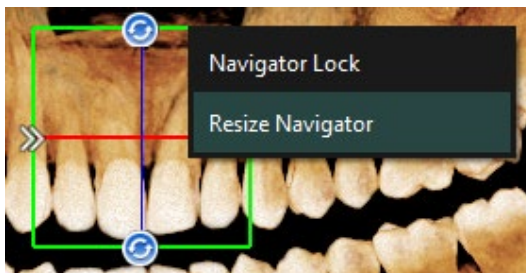
### 14.1.2 Locking/Unlocking ENDO Navigator

1. Right click the navigator of overlay in Panorama View.
2. Click the [Navigator Lock/Unlock] provided in context menu to lock/unlock.



### 14.1.3 Changing Navigator Size

1. Right click the Navigator.
2. Click the [Resize Navigator] provided in context menu.



3. Section Line moves to the center of Endo Navigator and is hidden.
4. The user can adjust size by selecting a point and moving
5. When completed, right click the navigator and click [Exit Resizing Mode] button in context menu.



NOTE

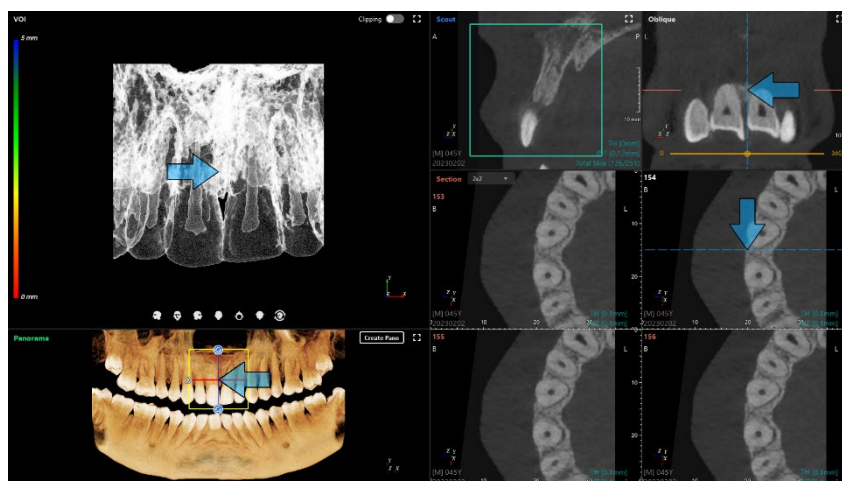
Navigator cannot be rotated while changing Navigator size.



## 14.2 Scout View

Basic properties of Scout View displayed in a mode where sectional image can be selected using Endo navigator are the same as those of MPR image.

A blue arrow will indicate the direction of the oblique view.



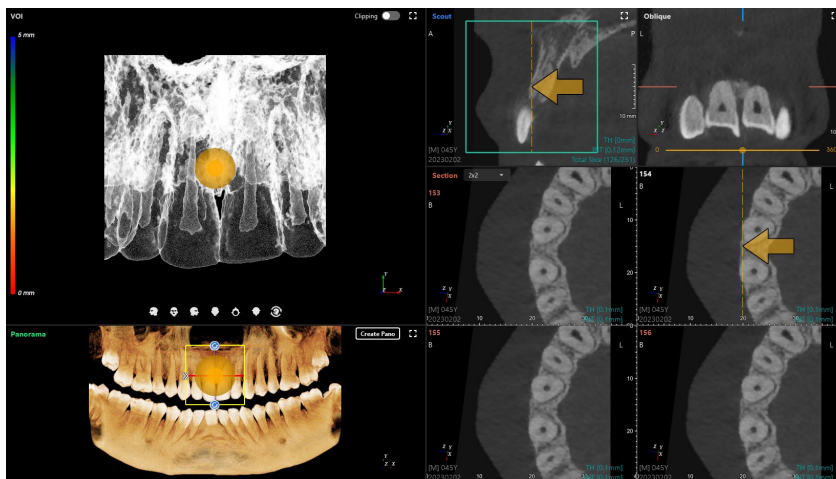
### 14.3 Oblique View

Oblique is a 2D View based on the selected point by user and to check images by rotating images based on the Center point of the Plane.

Rotate the Oblique view with the slider bar from 0 to 360 degrees.



An orange arrow will indicate the direction of the Scout view.

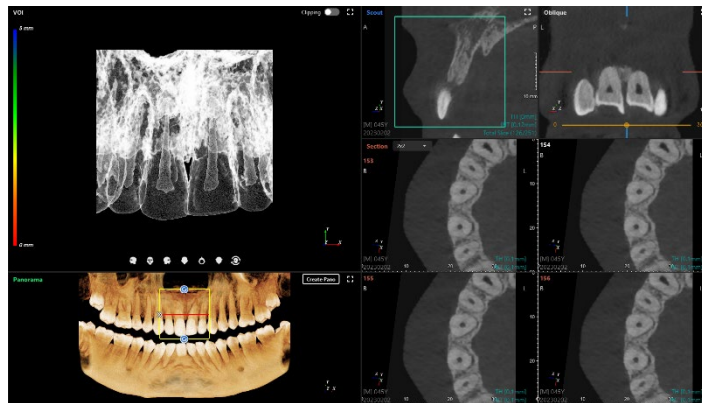


## 14.4 Curve Detection

Curve is displayed on the screen when entering Endo sub-module tab. If it fails to detect curve, the user can set a curve.

### 14.4.1 Displaying Curve

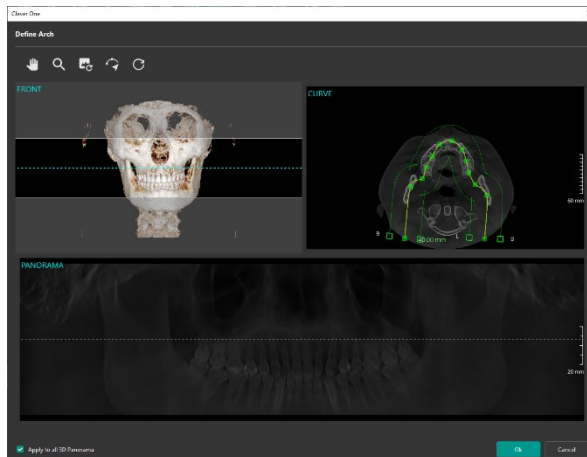
1. Open CT data.
2. Panorama Curve is displayed when Endo sub-module is selected.



3. When arch is successfully displayed, each view displays corresponding image to create 3D Panorama.

### 14.4.2 Defining Arch by User

1. Open CT data.
2. Panorama Curve is displayed when Endo sub-module is selected.
3. When curve is not properly displayed, an error message appears.
4. Click the [Yes] button to automatically display [Define Arch] dialog.



5. Define Arch by using editing/inserting Arch functions.
6. Click [OK] button to apply changes

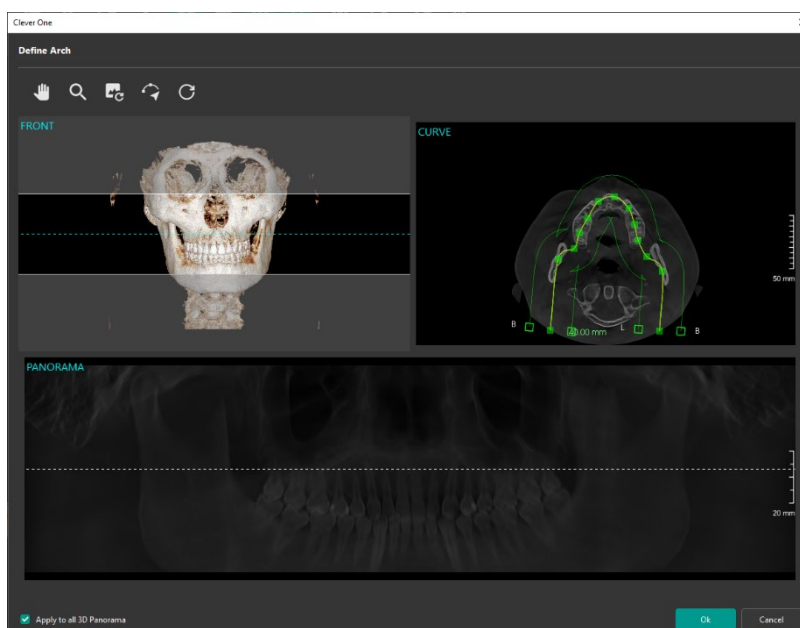


The arch set by user-define function is initially shared with 3D PAN/ Endo sub-module, then edited/managed separately.

Checking the [Applies to all 3D Panorama] checkbox at the bottom left of the [Define Arch] dialog will share the arch set by user-define function with all 3D panorama. Uncheck the checkbox to prevent the arch from being shared.

### 14.4.3 Editing Curve

1. Click [Create Pano] button in Control Panel.
2. [Define Arch] dialog appears.



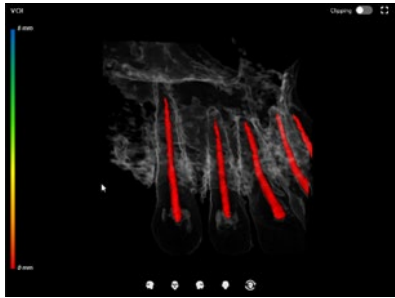
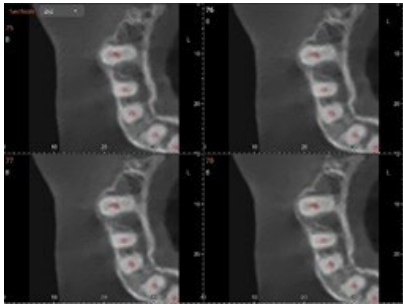
3. Change the Curve of Panorama.
4. Click [OK] to apply changes.



Endo Navigator is initialized when the edited Curve is applied.  
 Canal cross-sections option is changed to be unchecked when the edited curve is applied.  
 Image is updated in the View Frame based on the edited Panorama Curve

## 14.5 Drawing Root Canal

Basic operations of Root Canal Simulation function are the same as Canal drawing. Please refer to the following table for more details about overlays displayed in 2D/3D area.

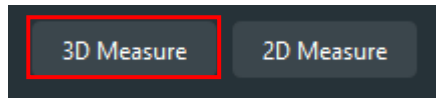
3D	2D
	
<ul style="list-style-type: none"> <li>▪ Information of the selected Root Canal is displayed in Billboard format in VOI View.</li> <li>▪ Root Canal Label can be selected and moved by a user.</li> <li>▪ Name and total length of Root Canal are displayed.</li> <li>▪ Root Canal Label is displayed at the first entered Root Canal Point in [Draw Root Canal] function.</li> <li>▪ Connection Line of Root Canal Label is displayed as dotted line.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Root Canal Overlay of cross-section is displayed as a line in 2D View.</li> <li>▪ Line of the selected Root Canal is displayed thicker.</li> </ul>

### 14.5.1 Drawing Root Canals via 3D Measure

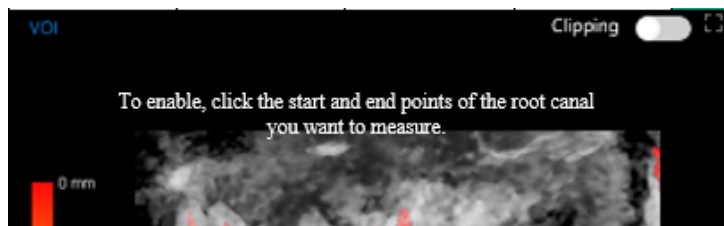


This method of drawing root canals requires segmented data and is drawn in the VOI view. Please proceed after segmentation and only click in the VOI view area.

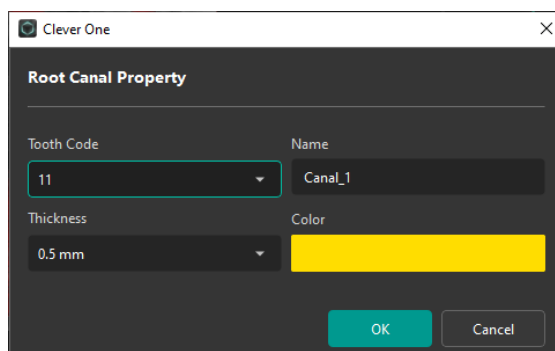
1. Click the [3D Measure] button in the Root Canal group of the Control Panel.



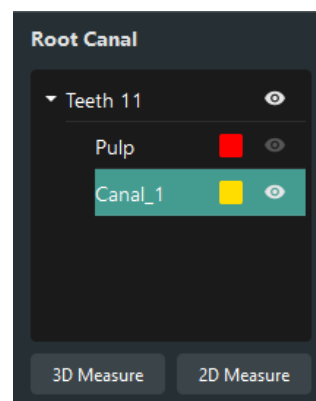
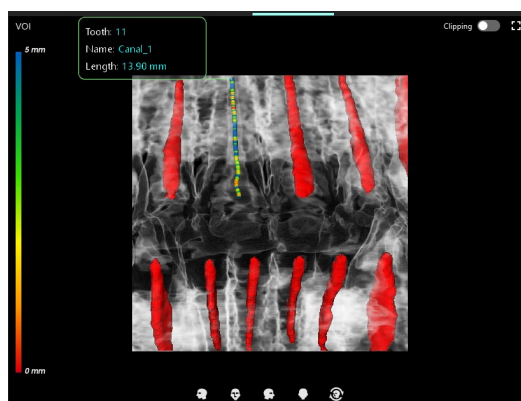
The following message will be displayed.



2. Click the starting point of the root canal in the VOI view.
3. Click the ending point of the root canal in the VOI view. Clicking the end point of the root canal will show the following dialog.
4. Enter root canal teeth code, name, thickness, and color.

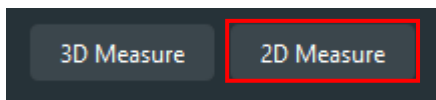


5. New Root Canal item with the entered information is added to Root Canal List, and Root Canal overlay is displayed in all Views.

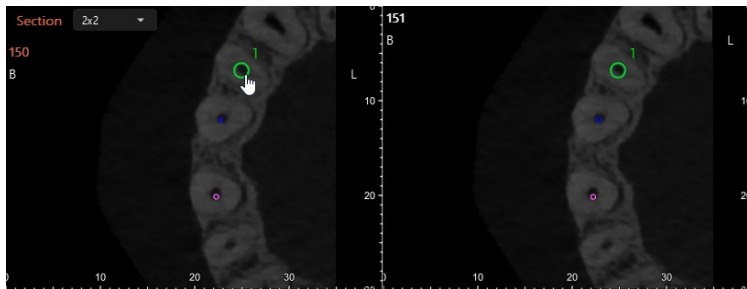


## 14.5.2 Drawing Root Canals via 2D Measure

1. Click [2D Measure] button in Control Panel.

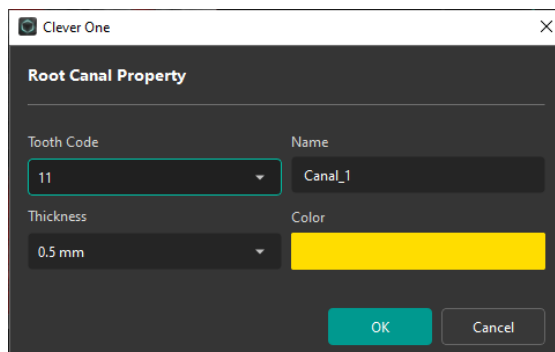


2. Insert point by clicking the position where Root Canal exists in 2D View.

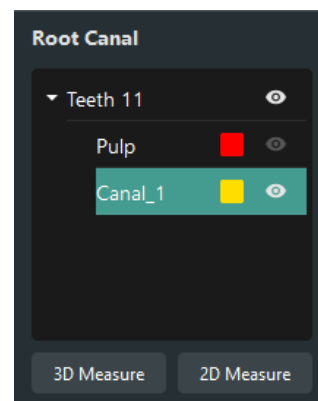


The entered point is displayed both in 2D and 3D View, and Endo Navigator can be moved/rotated while drawing Root Canal.

3. Select [2D Measure] button to terminate when entering point is complete.
4. Click [2D Measure] button to terminate when entering point is complete in the VOI view. Clicking the end point of the root canal will show the following dialog.
5. Enter root canal teeth code, name, thickness, and color.



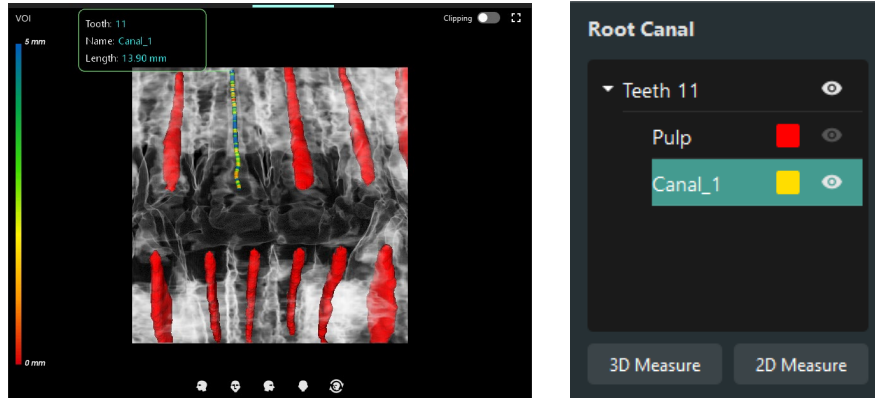
6. New Root Canal item is added to Root Canal List, and Root Canal overlay is displayed in all Views.



- 7.

### 14.5.3 Selecting Root Canal

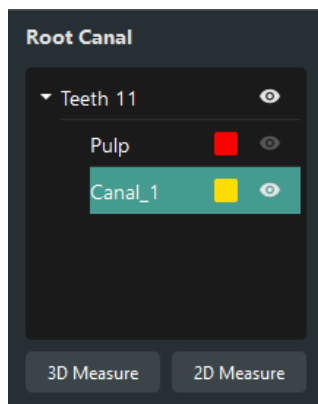
1. The entered Root Canal is displayed in the list up to 100.
2. The user can select desired Root Canal from Root Canal List or click directly on the View to select.



3. VOI is updated with the selected Root Canal.
4. Endo Navigator, Section Plane, and 2D Image are updated based on the updated VOI.

### 14.5.4 Showing/Hiding Root Canal

1. Select/Deselect Show check button in Root Canal List.



2. The selected Root Canal is displayed in View while unselected Root Canal is hidden from the View.

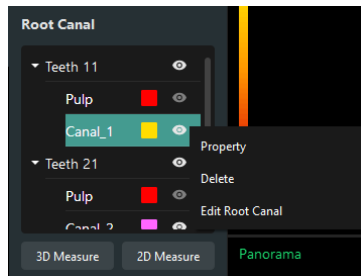


Press the Space key while selecting a root canal in the VOI view to show/hide root canal labels.

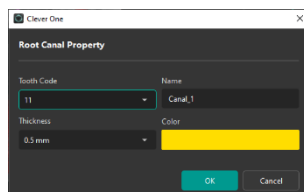


### 14.5.5 Setting Root Canal Properties

1. Select an item in Root Canal List or VOI View, and right click.
2. Select Property to open Root Canal Property dialog.



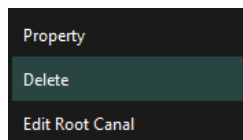
3. Edit properties including Name, Diameter, and Color.



4. Click [OK] button to save changes. The list is updated according to the Root
5. When Root Canal Property is changed, the list is updated.

### 14.5.6 Deleting Root Canal

1. Select an item in Root Canal List or VOI View, and right click.
2. Select Delete menu.

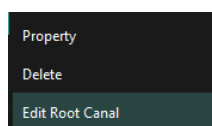


3. The selected Root Canal is deleted from the list.

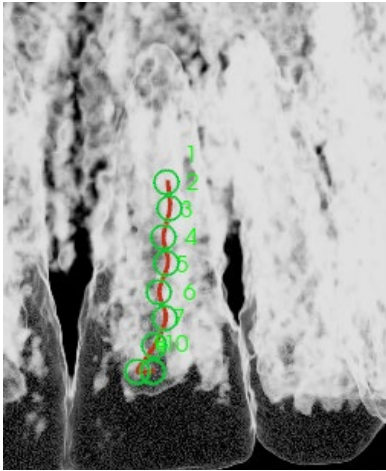
### 14.5.7 Editing Root Canal Point

Shape of the entered Root Canal can be edited by moving points in Edit mode. Basic operations are the same as editing canal in MPR sub-module.

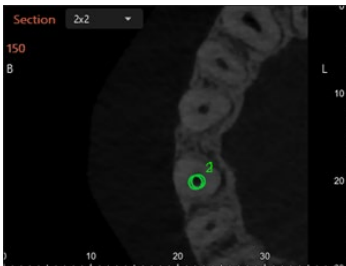
1. Select an item in Root Canal List or VOI View, and right click.
2. Select Edit Root Canal menu.



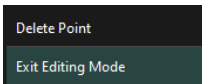
3. The selected Root Canal enters Edit mode, and points consisting Root Canal overlay are displayed.



4. Drag and drop a Root Canal point to the desired position.



5. To add a Root Canal point, right click on the desired point of the Root Canal overlay on VOI view then, select the [Add Point] from the context menu.
6. Select Exit Root Canal menu to complete.

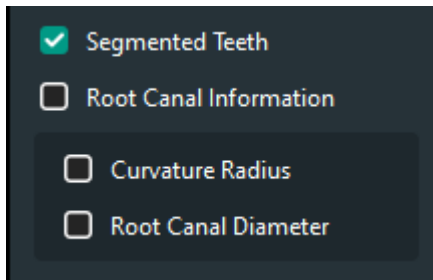


## 14.6 Displaying VOI

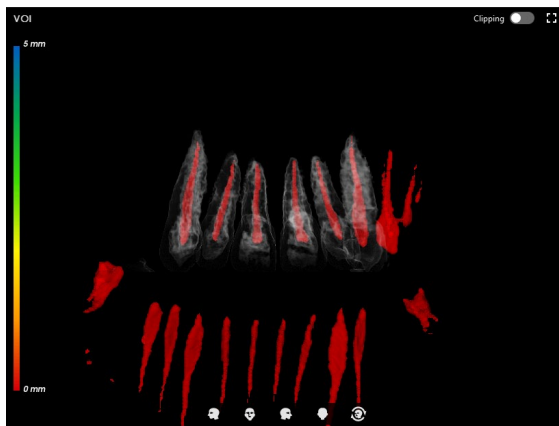
### 14.6.1 Displaying Tooth Data

This is a function to display Tooth Segmentation result in VOI.

1. Select Segmented Teeth check button. The button is disabled when there is no Tooth Segmentation result.



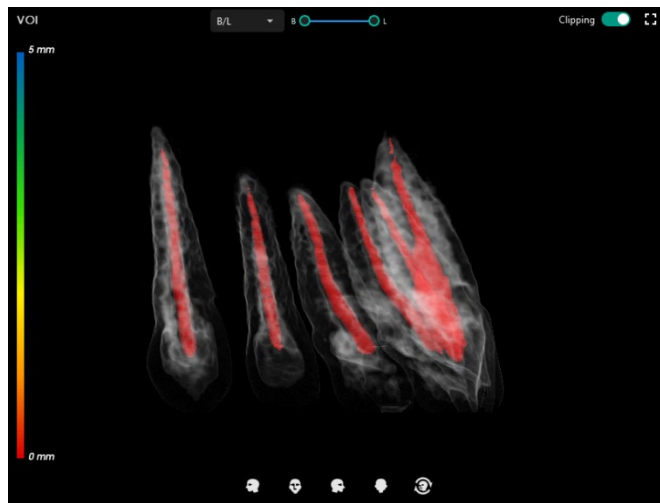
2. Only Tooth Segmentation data area is displayed in VOI, and only Root canals included in VOI is displayed in overlay.



3. Click the [Clipping] button then select the desired region using the slider bar.



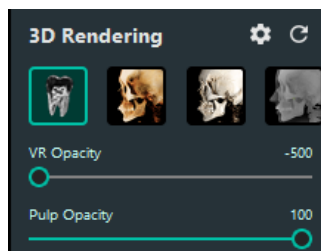
- Only the region selected is displayed on the VOI view



### 14.6.2 VR Opacity

This is a function to move the CT Range of VR Coloring graph without entering to the VR Coloring mode.

- Move the VR Opacity slider in 3D Rendering Group to adjust the CT Range for the whole graph.



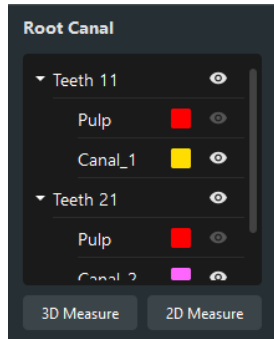
- The adjusted pulp level applies to VOI view as shown in the following table.

-500	0	+2000

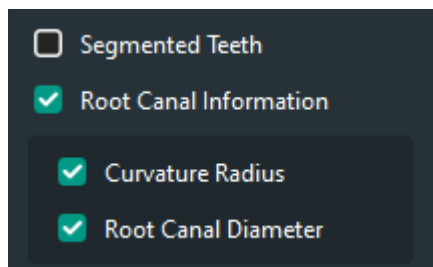
## 14.7 Displaying Curvature Overlay

This is a function to view curvature of Root Canal in each position.

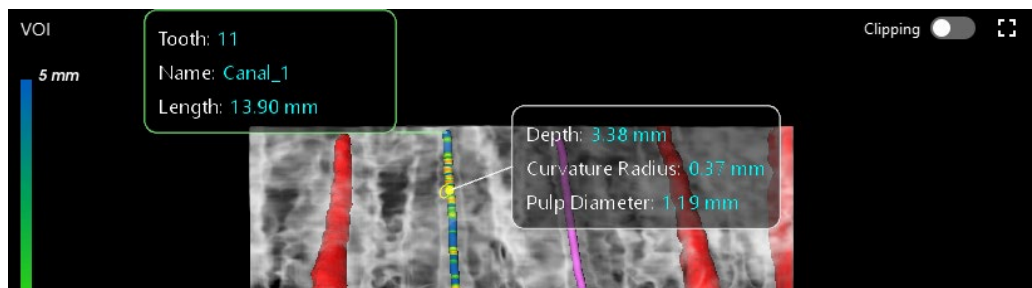
1. Select a Root Canal item in Root Canal List.



2. Check Display Curvature check button in VOI group



3. Root Canal Curvature overlay is displayed where the measured value (Curvature Circle Radius) is the smallest among the selected Root Canal in VOI view.



4. Curvature can be viewed while moving position by scrolling mouse in VOI View



The circle indicator overlay can be shown/hidden in the Settings.

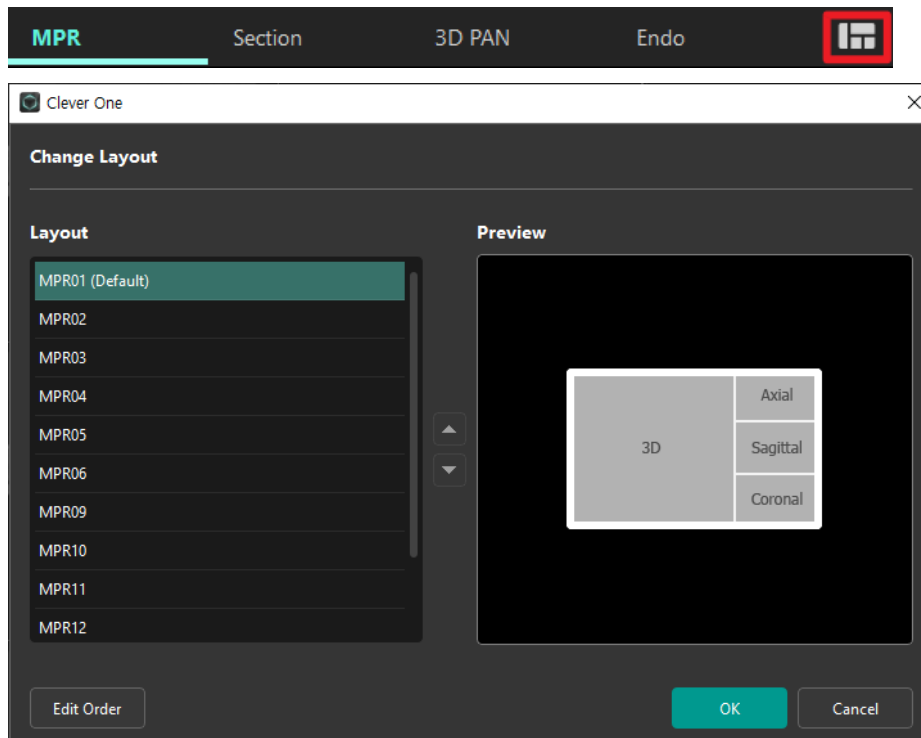
- Measured position of Curvature is displayed as a point in Root Canal. Drag and drop the measured value overlay to the desired place.
- Connection line from measured position to the center of circle is displayed.
- Measured value is displayed on the upper right of the curvature circle, and connection line to center of circle is displayed in dotted line.

## 15. Changing Layout

Workspace can be split, choosing one of approximately 25 supported layouts. As a result, users can view more than 2 images on a screen. This feature is named Layout.

### 15.1 Changing Layout

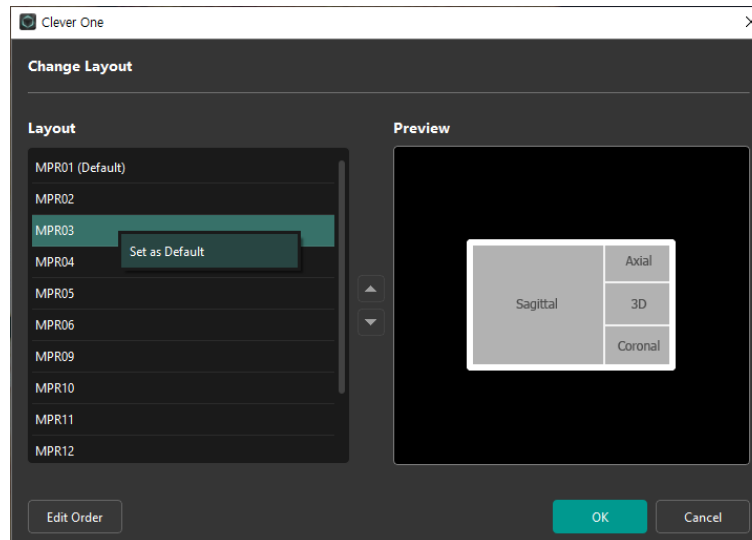
1. Click the [Change Layout] button. The [Change Layout] window appears.



2. Double click the desired layout, or select then click the [OK] button. The selected layout appears on the workspace.

## 15.2 Setting as Default Layout

1. Click the [Change Layout] button. The [Change Layout] window appears.
2. Select the desired layout, and right click to select the [Set as Default] option.

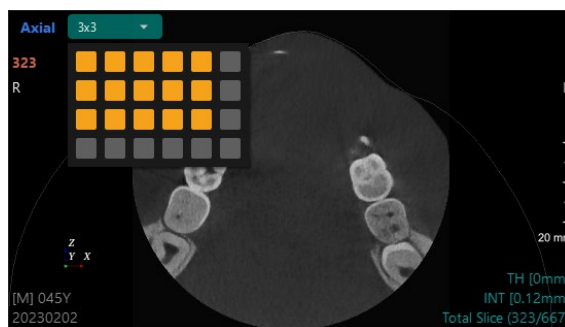


3. Click the [OK] button. The selected layout appears on the workspace.

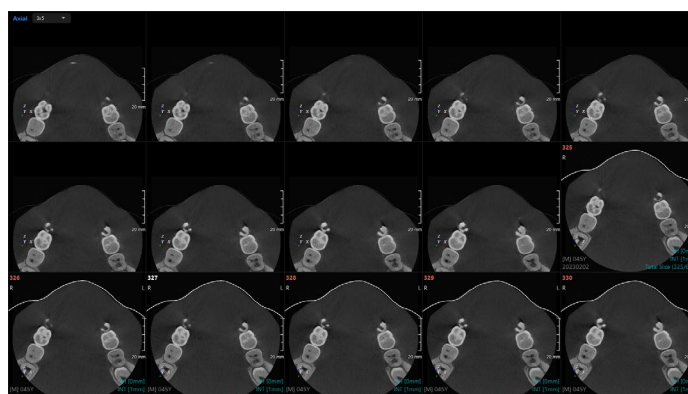
## 15.3 Adjusting Section Counts

Set the number of section counts for view areas that support adjusting section counts.

1. Click the view count option next to the view name, and select the desired display layout.



2. The selected view count layout is applied.



## 16. Clipping

Clipping cuts a 3D image in an axial direction and shows the cross-sectional view.

The Clipping function can be done by using the slider bar or a user can set the thickness and position of the image slice.

### 16.1 Clipping By Specifying Position

1. Click the [Clipping] button on the upper-right side of the main window image.



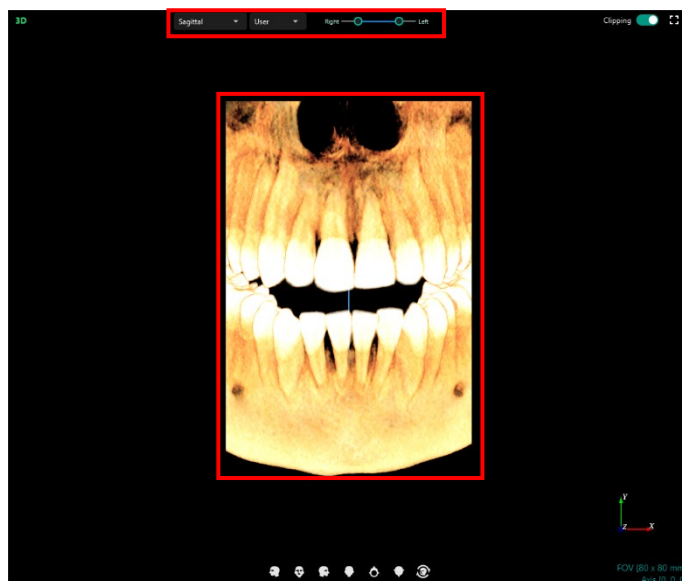
2. Select the axis of the ball by deleting the volume of the 3D images on the clipping window.



3. Slide the bar to the left and right to clip the image in the direction of the corresponding axis.



4. The 3D image cut is displayed as follows.



5. Click the [Clipping] button again to reset the image to the original condition.

- **Example of Clipping Image**



<Coronal>



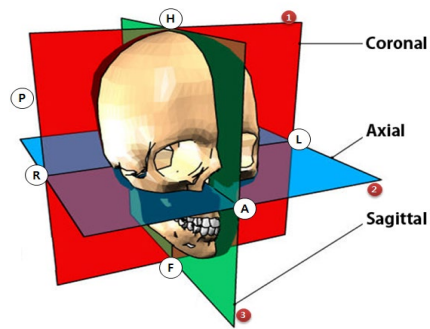
<Sagittal>



<Axial>

- **Clipping direction depending on the corresponding axis**

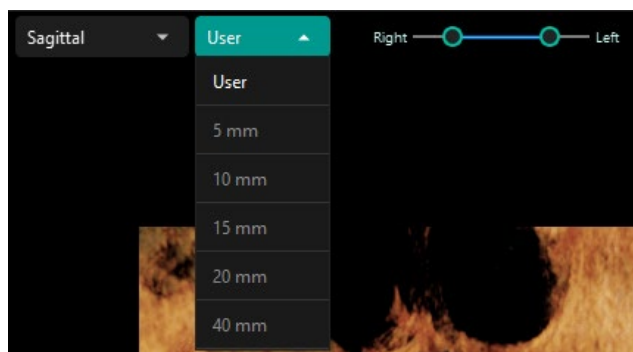




- When the coronal axis is selected, the slider bar setting is changed to A→P.
  - ♦ When the axial axis is selected, the slider bar setting is changed to F→H.
  - ♦ When the sagittal axis is selected, the slider bar setting is changed to R→L.

## 16.2 Clipping By Choosing Thickness

1. Click the box for the slice thickness selection.

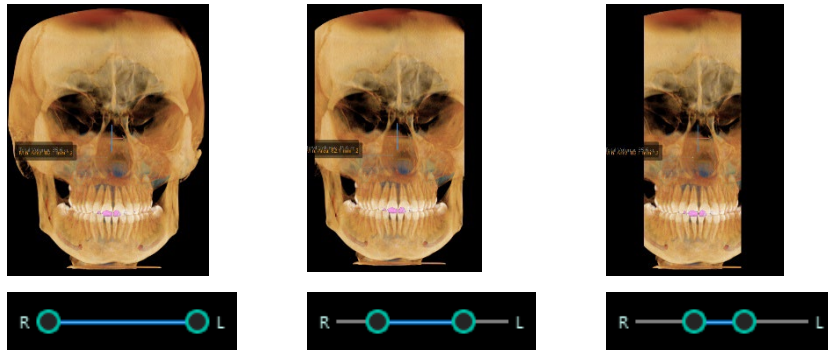


2. After selecting the size of the thickness, control the location and thickness of clipping with the slider bar.

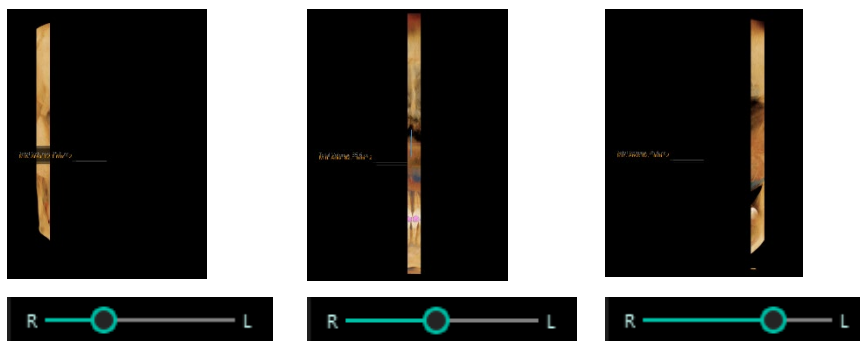


3. The 3D image is chopped as shown in the following screen.

- User Clipping



- Thickness Clipping: 10mm

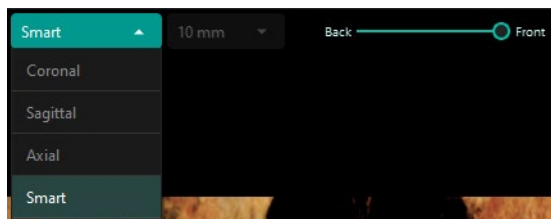


4. Click the [Clipping] button again to reset the image to the original condition.

## 16.3 Smart Clipping

Smart Clipping allows user to view the clipping result on the 3D image view.

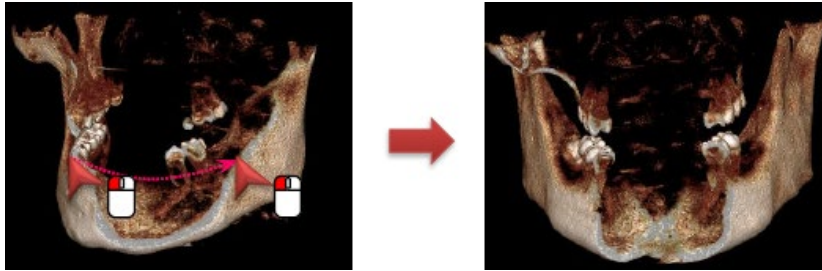
1. Select the [Smart] Clipping option from the dropdown box:



2. Control the location of clipping on the slider bar.




3. 3D image clipping is shown in the following screen.



4. Click the [Clipping] button again to reset the image to the original condition.

▪ Image Icons

Icons	Designation	Description of Functions
Coronal	Coronal Clipping	Crop image front and back around the Coronal axis.
Sagittal	Sagittal Clipping	Crop image front and back around the Sagittal axis.
Axial	Axial Clipping	Crop image front and back around the Axial axis.
Smart	Smart Clipping	Crop image front and back around the Z axis.
Right  Left	Clipping Slider	Set the area to crop.
User	Clipping Combo box	Set the thickness to delete the image volume.

## 17. Capturing Images from the Software

Use the capture icons on the tool bar to capture the view frame, selected area, or the selected window or multi images.

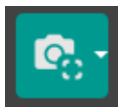
### 17.1 Capture the View Frame

To capture the view frame, click the [Capture] icon and select the View Frame Capture. Image is captured immediately.

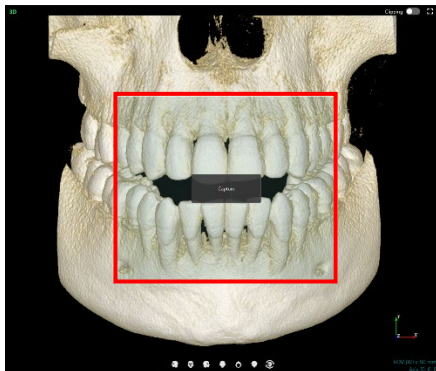


### 17.2 Capture the Selected Area

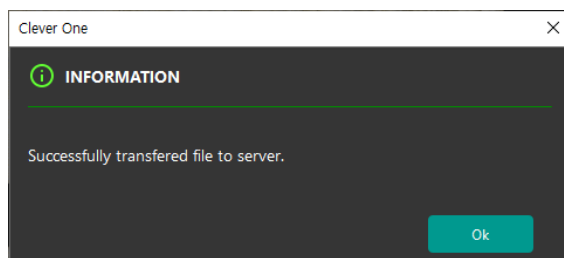
1. To capture the selected area, click the [Capture] icon and select the Region Capture option.



2. Click the area and the [Capture] button appears. Check the area and click the [Capture] button.



3. The following window appears, and the image is saved.

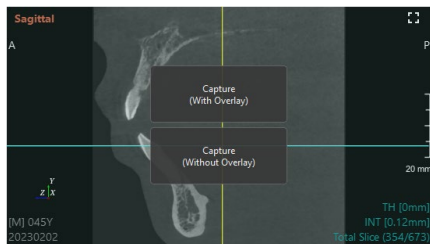


## 17.3 Capture Selected Window

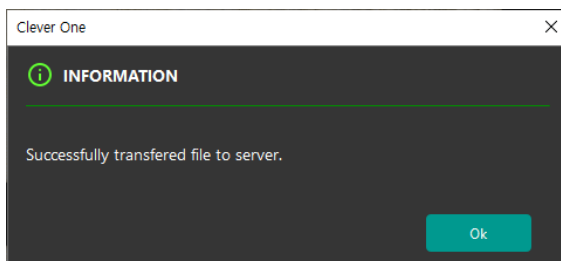
1. To capture the selected window, click the [Capture] icon and select the View Capture option.



2. Click to activate the window to capture. On the 3D viewer, click the [Capture] button, and on the Axial, Sagittal, or Coronal viewer, click the [Capture (With Overlay)] button or the [Capture (Without Overlay)] button to capture.



3. The following window appears, and the image is saved.



## 18. Exporting 3D Data

Export CT files or export the CT files as a surface model, recon ceph, or define the volume resolution.

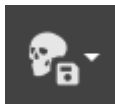
### 18.1 Exporting Images

Export the currently viewing CT data to a local disk or CD/DVD disc. For more details, see *'Chapter 3. Patient Module >4.4. Exporting'*

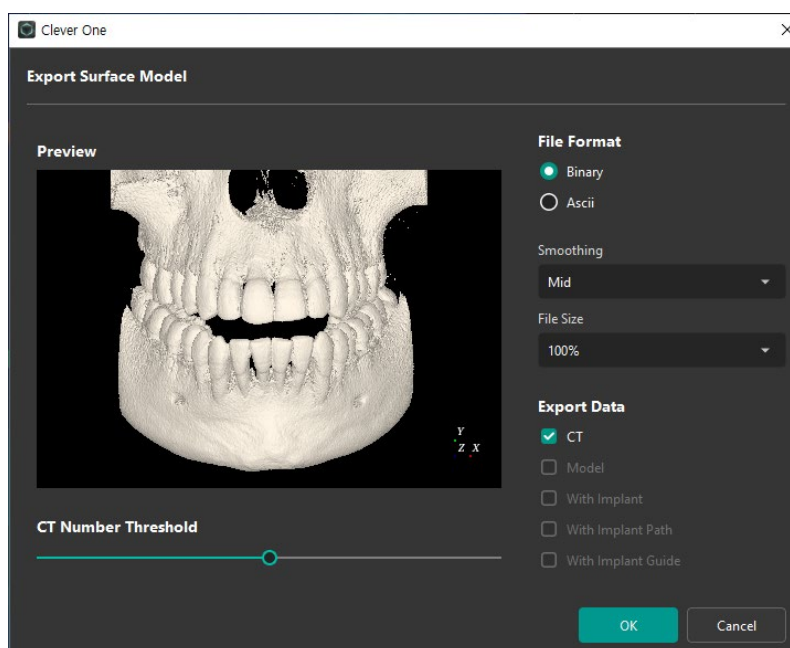
### 18.2 Export Surface Model

User can export the data displayed in 3D view to STL file.

1. Click the [Export Surface Model] button.



2. The [Export Surface Model] dialog appears.

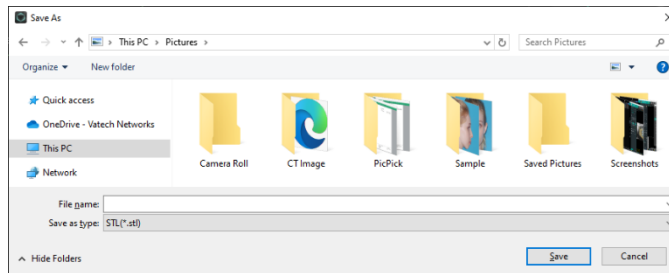


3. Select the format of file, quality, and option to export.
  - File Format: Choose the file format when exporting data between Binary and ASCII.
  - Smoothing: Smooth surface when exporting CT files with the selected level.
  - File Size: Reduce file size to the selected percentage when exporting CT files
  - Export Data: Select data type to be included to the exported data
  - CT Number Threshold: Adjust areas of CT number threshold

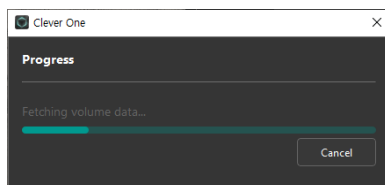


- [Smoothing], [File Size] and [CT Number Threshold] option only activated when exporting data including CT.
- Changes in selecting [Export Data] option are directly applied on the Preview right after the user re-select the [Export Data] options.
- The [With Implant Path] option can be selected only when choosing the [With Implant] option

4. Click the [OK] button and the dialog to set a file name and the path appears as follows.



5. Input the name of file and select the file type.
6. Click the [OK] button and the following windows appear.



When the exporting is completed, the progress bar disappears, and the program is available to use.

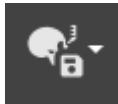


- The Export Surface Model menu is available only in the sub-modules where 3D View Window is provided. In the sub-modules or layouts that do not provide 3D View Window, the Export Surface Model menu is disabled.
- When exporting a surface model, only the sculpting currently applied to 3D image will be exported. The clipping applied to current 3D image will not be exported.

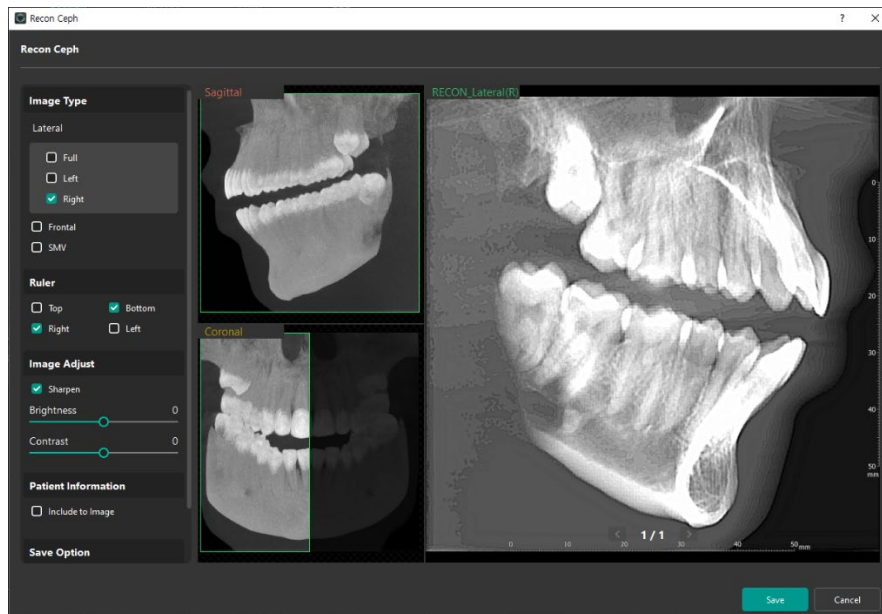
## 18.3 Export Recon Ceph

The Ceph Reconstruction function displays a layout to view Ceph images of different ranges as needed for patient counseling.

1. Select the [Export Recon Ceph] from the toolbar.

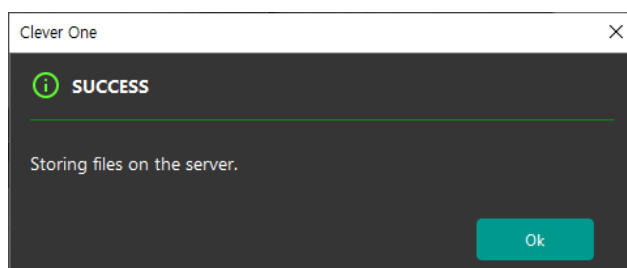


2. Recon Ceph dialog appears as follows.



### 18.3.1 Exporting Recon Ceph Image to the Server

1. Set the Save Option as [Server] and click the [Save] button to export the Recon Ceph image to the server.
2. Ceph image is created, and a progress bar is displayed until saving is completed.



The progress bar disappears, and the file is completely saved.



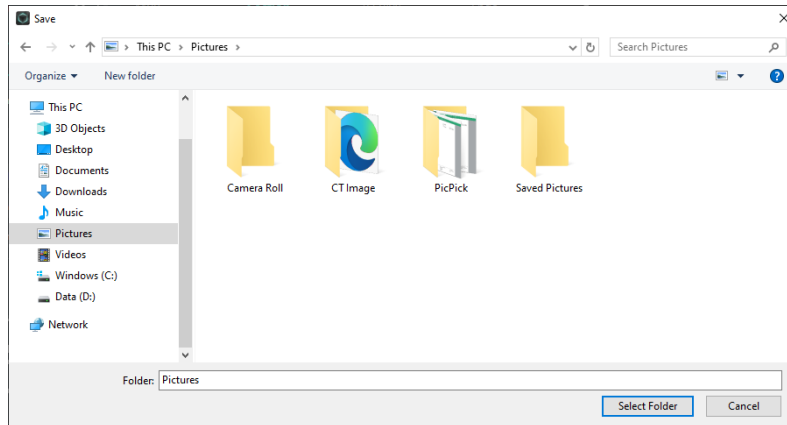
NOTE

- The modality is automatically set as Cephalo.
- The position(Lateral, PA, and SMV) of the image is automatically set in response to the selected image type.

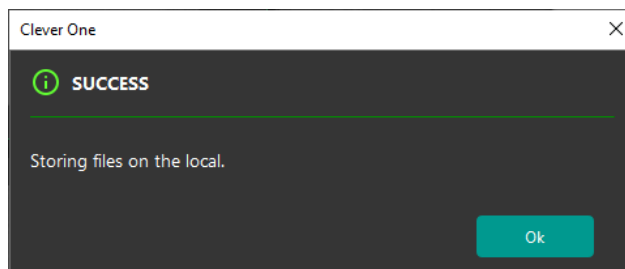


### 18.3.2 Exporting Recon Ceph Image to the Local PC

1. Set the Save Option to the [Local] and click the [Save] button to export the Recon Ceph image to the local PC.
2. Set file path, file name and file format in Save dialog. The supported file format is JPEG, BMP, PNG and TIF.



3. Click [Open] button to terminate both Save dialog and Recon Ceph dialog.
4. Ceph image is created, and a progress bar is displayed until saving is completed.



The progress bar disappears, and the file is completely saved.

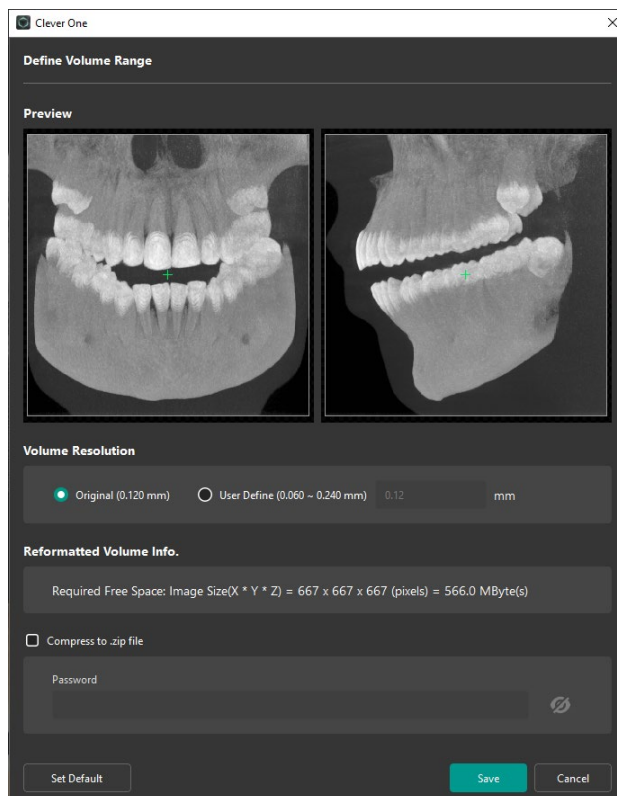
## 18.4 Export User Defined Volume Range

Export the area after setting the certain area of volume. The file format exported through the [Define volume range] menu is DICOM, and it complies with the DICOM v3.0 standard.

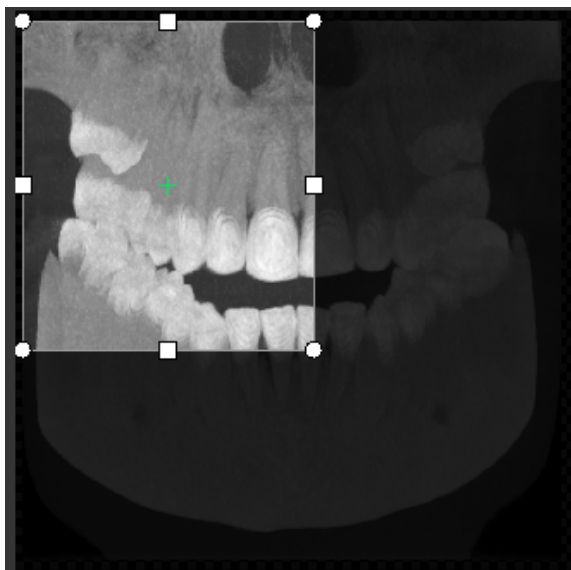
1. Click [Define Volume Range] button.



2. The Define Volume Range window appears.



3. Select an area to export and click the [Save] button.



## 19. Viewing with Extra Windows

View additional images or a variety of different views, such as multi-slice, oblique, or presentation mode.

### 19.1 Using the Multi-Slice View Window

Open an additional window to view multi-slice views of the selected view from axial, sagittal, or coronal.

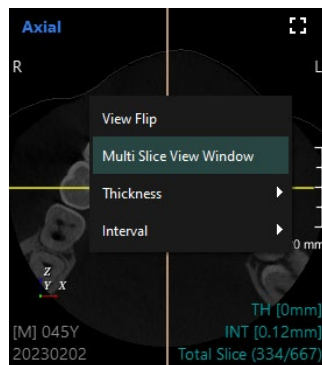


To view multi-slice images via a dedicated layout select from the MPR 2D image layouts, see 'Chapter 5. 3D Module > 16. Changing Layout > 16.3. Adjusting Section Counts'

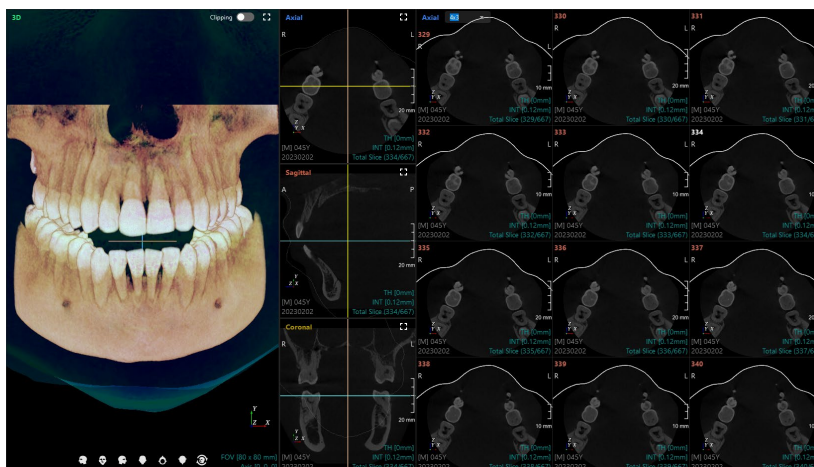
1. Click the Multi-Slice View Window from the upper-right to open the Multi-Slice Window.



- Alternatively, right click a 2D MPR view and select the [Multi Slice View Window] option.



2. The Multi-Slice Window is opened on the right of the current 3D view.

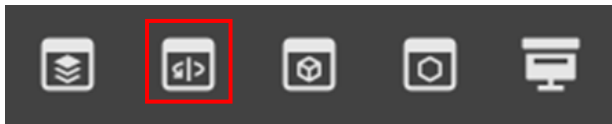


## 19.2 Using the Oblique View Window

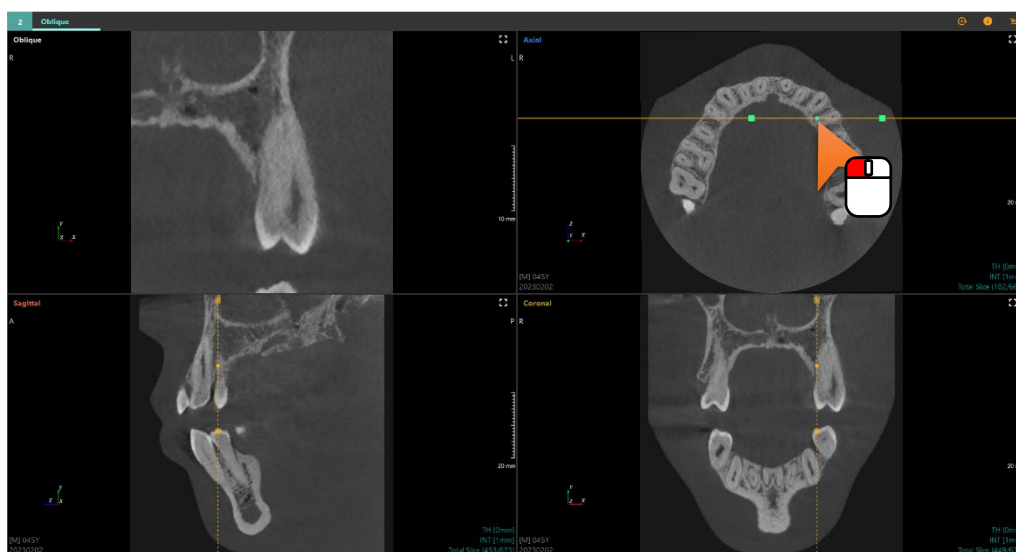
Oblique function is to create the Plane on the MPR 2D View based on the selected point by user and to check images by rotating images based on the Center point of the Plane.

### 19.2.1 Drawing Oblique Plane

1. Click the [Oblique View Window] Button on the upper-right to open the Oblique view window.



2. Click the Center point of Oblique Axis on the MPR View in the Oblique View Window.

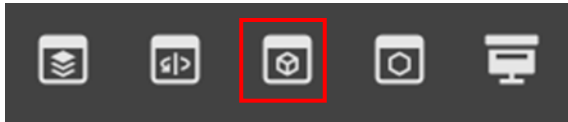


- Based on the Oblique Center point, the Oblique Line and the Oblique Guide Point are created.
  - Based on the created Oblique Line, the MPR Axis is updated and the rotating Oblique View is created based on the Oblique Line.
  - The 3D View Window is switched to display the Oblique View and the relevant image is displayed according to the Oblique Line.
    - The axis can be controlled only on the view where the Oblique is inserted.
    - Scroll the mouse wheel to zoom in or out the image on the Oblique View.
    - The interval cannot be changed on the Oblique View
3. Click the Oblique button again to close the Oblique view and the Oblique Plane will not be saved.

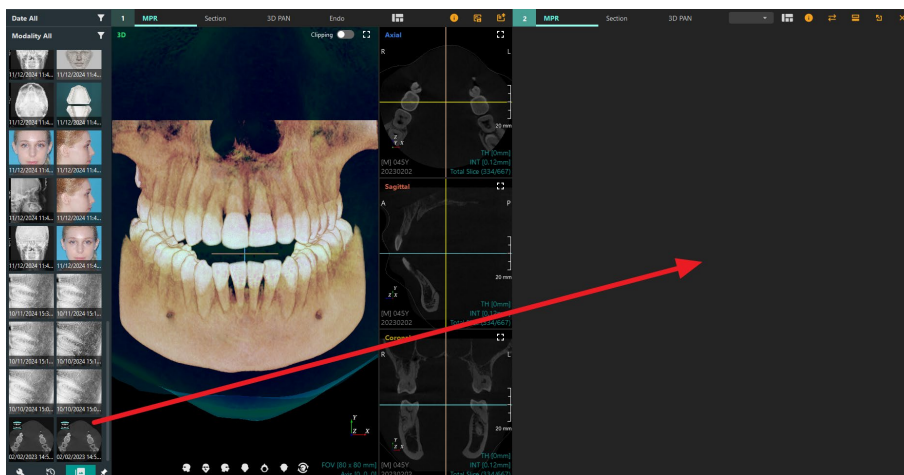
## 19.3 2nd CT Window

Open an additional window to view another CT file to view and compare with between two CT files.

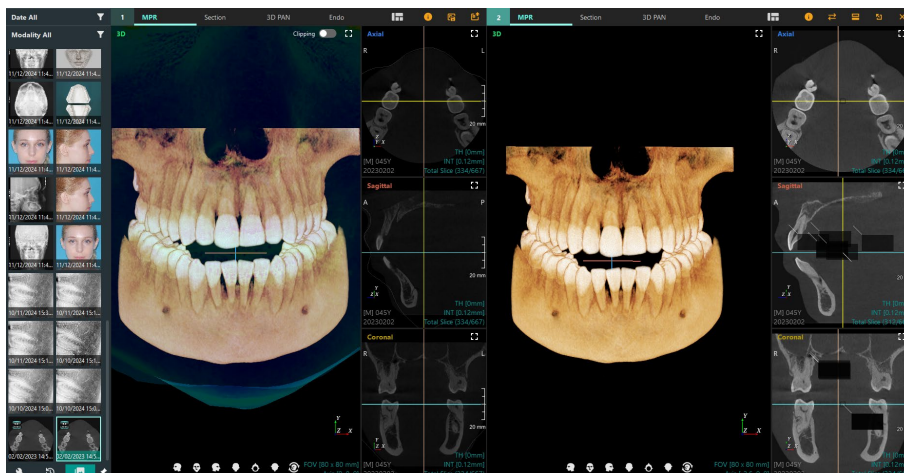
1. Click the 2nd CT Window from the upper-right to open the 2nd CT Window.



2. Drag and drop a CT file from image panel or external local sources.



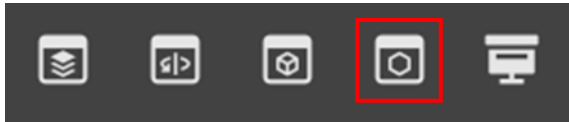
3. The secondary CT is displayed on the right side of the primary CT.



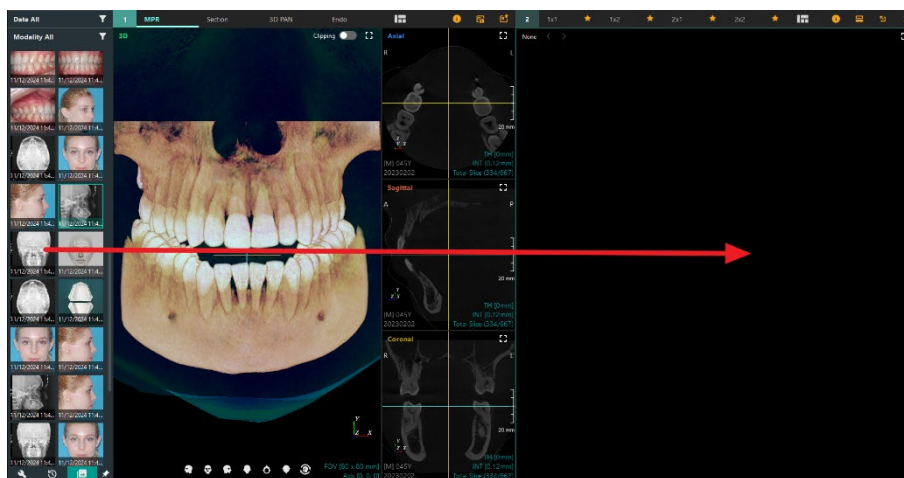
## 19.4 2D View Window

Open an additional window to view 2D images to view and compare with between CT and 2D image files.

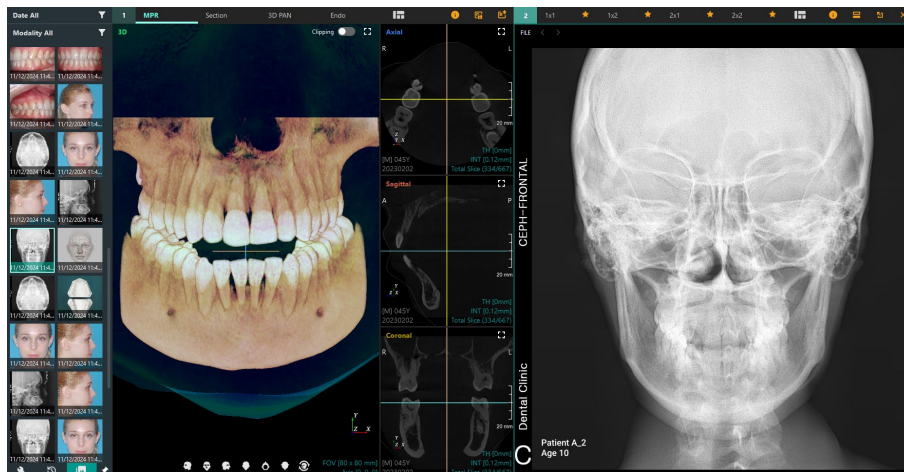
1. Click the 2D View Window from the upper-right to open the 2D View Window.



- The 2D View Window operates identically to the 2D Module.
2. Drag and drop a CT file from image panel or external local sources.



3. The 2D image is displayed on the right side of the primary CT.



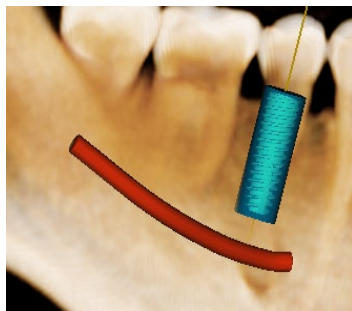


## 20. Collision Detection

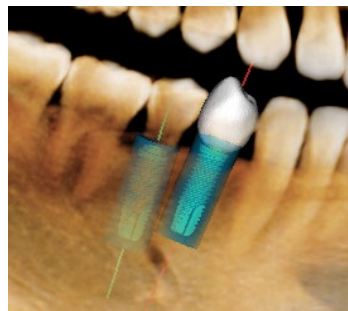
The Collision Detection function detects the collision between inserted implants and sinus or canal objects. The collision detection recognizes it as collision when the safety zone and the implant, sinus, or canal collides. When the two safety zones collide, it also recognizes it as collision.

- Safety Zone

The Safety zone displays the area where canal or implant cannot be inserted. The boundary size for safety zone can be changed in the [Settings > Simulation > Implant Guidance > Collision Detection], and the boundary size is indicated on the basis of implant.



Implant and Canal

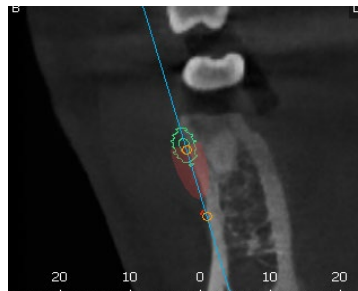
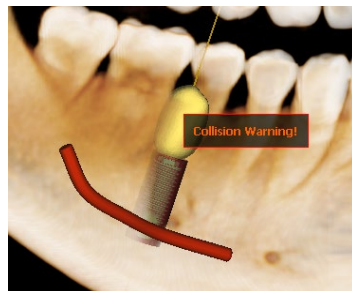


Implant and Implant

- Collision Detection

When collision is detected between implant and canal or between implant and implant, the color of safety zone changes and warning message 'Collision Warning!' pops up.

- Implant and Canal



- Implant and Implant

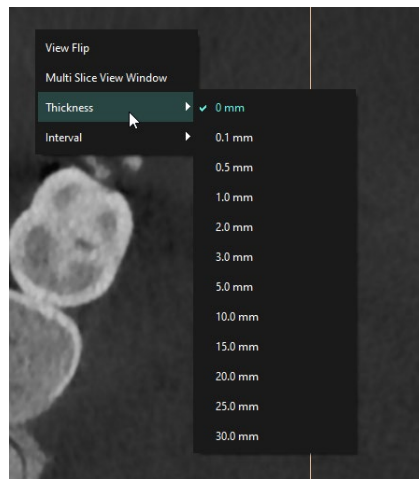


## 21. Changing Section View Thickness and Interval

The thickness and interval of the Section View, which displays the cross-sectional images where the navigator is located, can be changed.

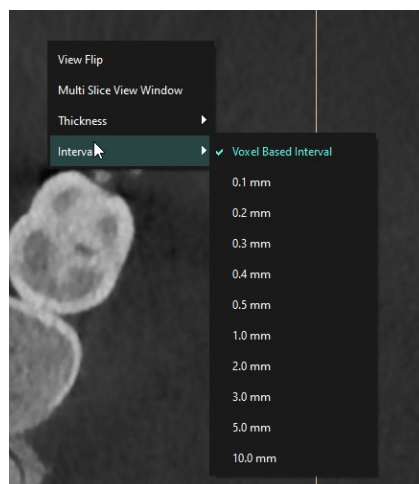
- Changing Thickness

1. Click the right mouse button on the cross-sectional view pane.
2. Click the [Thickness] option and select the thickness from the expanded list. The selected thickness will be applied to all cross-sectional images.



- Changing Interval

1. Click the right mouse button on the cross-sectional view pane.
2. Click the [Interval] option and select the interval from the expanded list. The selected interval will be applied to all cross-sectional images.



- The default value for thickness and interval can be changed in the [Settings > View > 3D View > Volume Panorama Navigator].
- Once the thickness or the interval has changed, the relevant option will disappear from the context menu.



## 22. Viewing Smart Focus Images

If the Full Arch CT image supports the Smart Focus feature, the area is displayed as a guide in the CT image. You can click on the area to view the Smart Focus image.



Show or hide the Smart Focus guide area that appears in the image by clicking the Smart Focus guide checkbox.

1. Open a Full Arch CT that supports the Smart Focus feature.



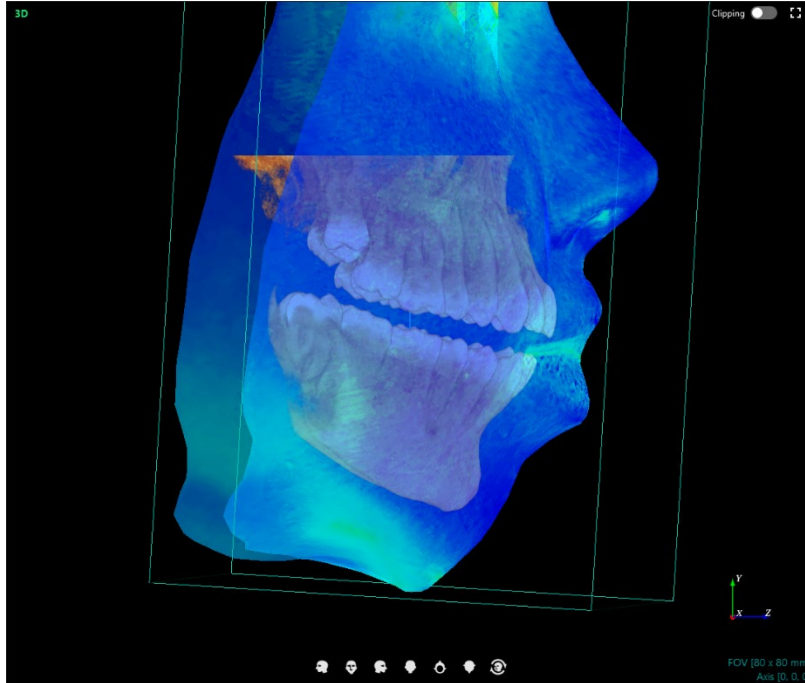
2. Right click the Smart Focus area and click [Switch to Focus CT].



3. The Smart Focus image appears.


















## 23. 3D Object Selection Guide

3D Object Selection Guide as a form of bounding guide appears when a 3D object is being selected in the 3D View.



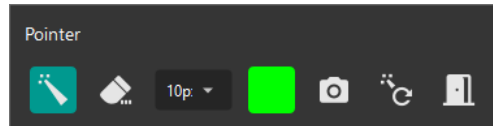
- The 3D Object cannot be controlled by the 3D Object Selection Guide.
- The 3D Object Selection Guide is able to move the selected object in the plane.

## 24. Tools in the Toolbar

Icons	Designation	Description of Features
	Panning	Move the image freely.
	Zoom	Zoom in and out of the image by clicking and dragging.
	Reset View	Initialize Move, Zoom
	Pointer	Draw freely on the 2D image.
	Patient Info	Show/Hide patient and image information.
	Grid	Display grid on the image to check the asymmetry of patients.
	Overlay	Show/ Hide all displayed objects.
	Implant Long Axis	Show/ Hide implant long axis.
	Delete All Overlay	Delete all overlay entered.
	Reset All	Delete the all applied tool effect. The initialized image is saved to DB.
	View Frame Capture	Capture the entire view frame and save it to DB.
	Region Capture	Capture the current image. The captured image is saved to DB.
	View Capture	Capture the image of one image in a layout. The captured image is saved to DB.
	Export Image	Save the current image as a file. See 'Chapter 3.4.4. Exporting' for more details.
	Export Surface Model	Save the currently viewing data as a STL file. See Chapter 5.20.2. Export Surface Model' for more details.
	Export Recon Ceph	Save the currently viewing data as a Ceph image. See 'Chapter 5.20.3.Export Recon Ceph' for more details.
	Export Define Volume Range	Save a user defined part of the currently viewing data. See 'Chapter 5.20.4.Export User Defined Volume Range' for more details.



- The data drawn using the [Pointer] function is not saved to the project file.
- All functions are disabled while the [Pointer] function is in use.
- Use the pointer function to draw on the current screen temporarily.
- Click the [Annotation > Pointer] icon on the tool bar, and then the following window appears.



- [Pointer]: Drag to draw and mark the area for View Frame.
- [Eraser]: Erase the pointer overlay. The point overlay inserted on the path of the Erase icon moves will be deleted.
- [Thickness]: Set the thickness of Pointer or Eraser.
- [Pointer Color]: Set the color of Pointer.
- [View Frame Capture]: Capture the View Frame while the pointer drawing mode is on.
- [Reset Pointer]: Delete all pointer objects inserted on the image.
- [Exit]: Close the Pointer function.

# Chapter 6. Consult Module

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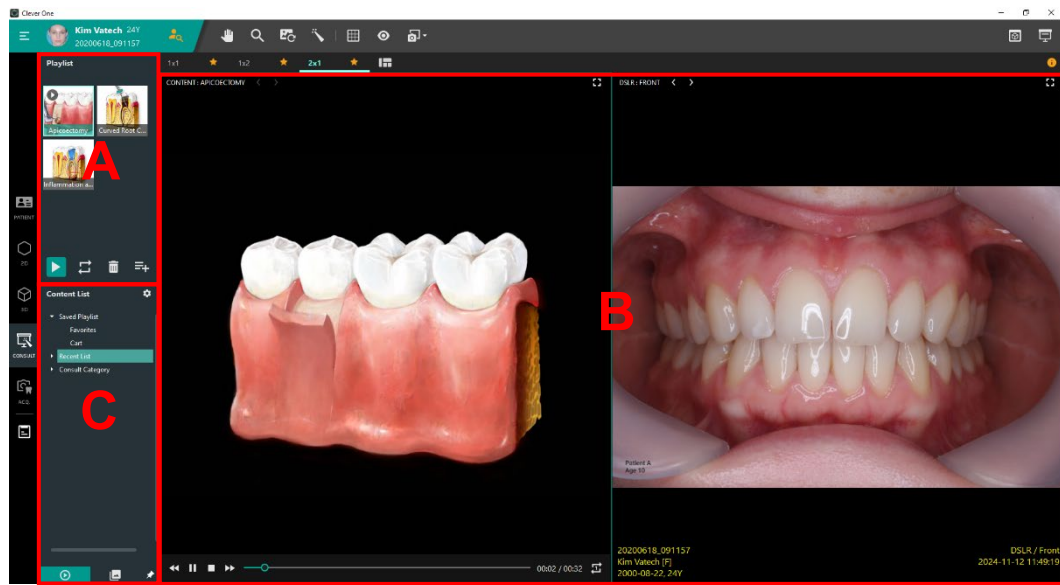


# 1. Consult Module Configuration

The Consult Module allows users to manage the image data necessary for counseling patients by organizing images into playlists depending on the treatment category.

Clever One can add, edit and delete the images in the cart as desired for patient counseling.

## 1.1 Workspace



- A: Consult content screen. List of videos and images for patient counseling to drag and drop one of the videos to automatically play..
- B: View area for images and consult content. Set the layout to view consult content and images.
- C is the screen showing the consult content. The user can drag and drop to play the videos and images in the list above for patient consultation.

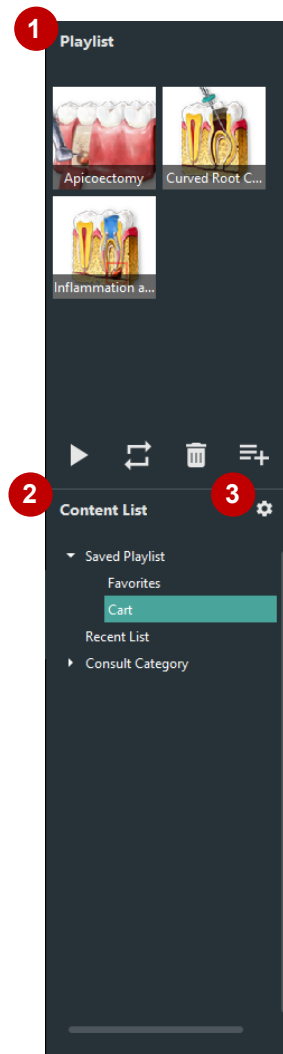


Right click the captured images in the B window to delete or save it with different name.

Also, the captured images in the thumbnail list can be added to the workspace, and the image on the workspace can be added to the Consult Image by right clicking the image.

Multi captured images cannot be viewed in the Report module.

## 1.2 Control Panel – Consult Content Tab

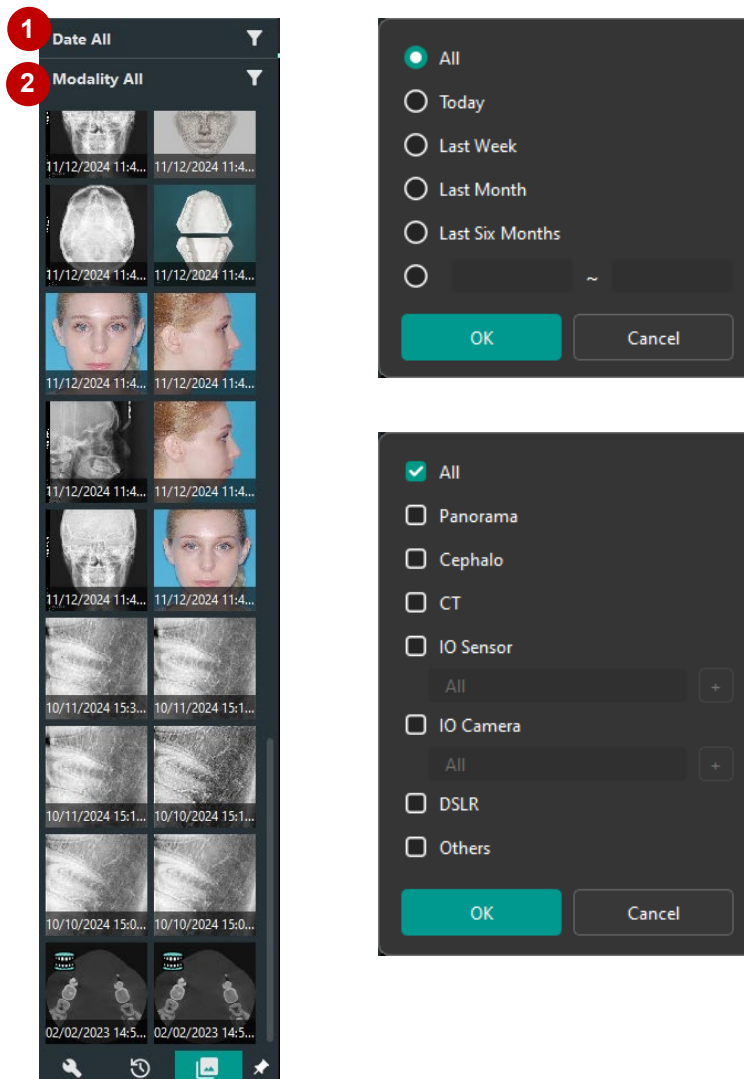


The Work tab shows all the implants, measurements, annotations and simulations entered in the image. Show/hide or change the colors displayed. Implants and simulations can be displayed on other sub-modules.

No.	Name	Description
1	Playlist	Manage contents as a playlist
2	Consult List	Displays implants, sleeves, crowns, guides, and paths by teeth code.
3	Consult Category	Add, modify, delete contents or content folders to



### 1.3 Control Panel – Images Tab



Images tab shows all the images saved in the server, and can be viewed by date or modality.

No.	Name	Description
1	Filter by Date	Filter images by Today, Last Week, Last Month, Last Six Month, or user defined range.
2	Filter by Modality	Filter images by modality. IO Sensor and IO Camera images can be additionally filtered by teeth number.

## 2. Managing Playlists

[Saved Playlist] category includes the user's created playlists, Favorite, Cart. The Favorite

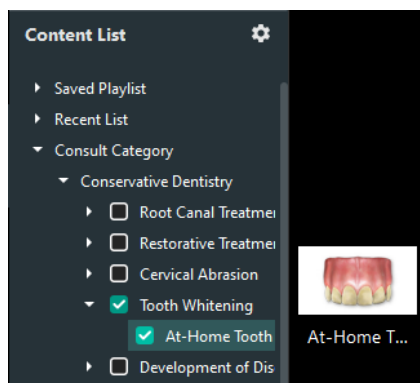


The [Favorites] and [Cart] category cannot be modified or deleted with Clever One. To modify the categories please refer to any Ezseries User Manual.

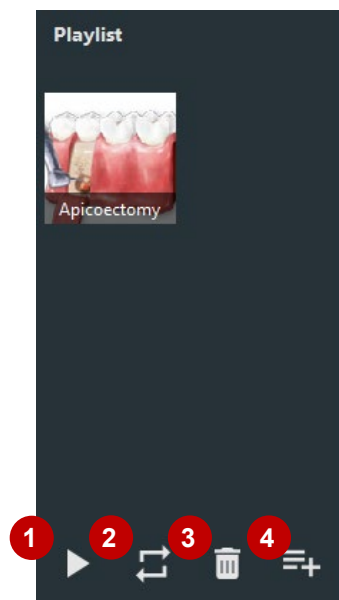
[Recent List] includes the user's most recently used consultation videos.

Users can add, change and delete categories in the playlist. Within a category, the user can add new content or create a new folder.

1. Select a consult content or a category from the Content list and click the checkbox.

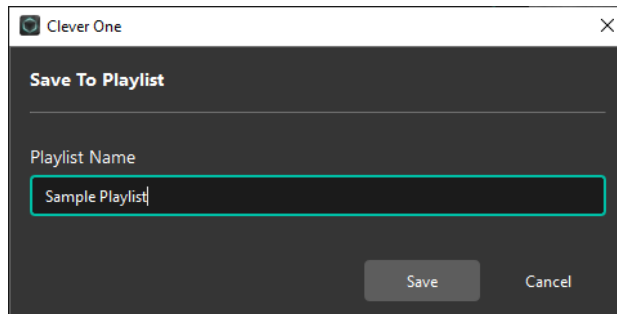


2. Select item(s) is displayed on the playlist



No.	Name	Description
1	Play	Play contents included in the playlist in order.
2	Play All Repeat	Play contents included in the playlist repeatedly.
3	Empty	Delete all content in the current playlist.
4	Save to Playlist	Save the current playlist to the [Saved Playlist] category.

3. After creating a playlist click the [Save to Playlist] button. The Save to Playlist dialog appears.
4. Enter the desired playlist name and click Save.

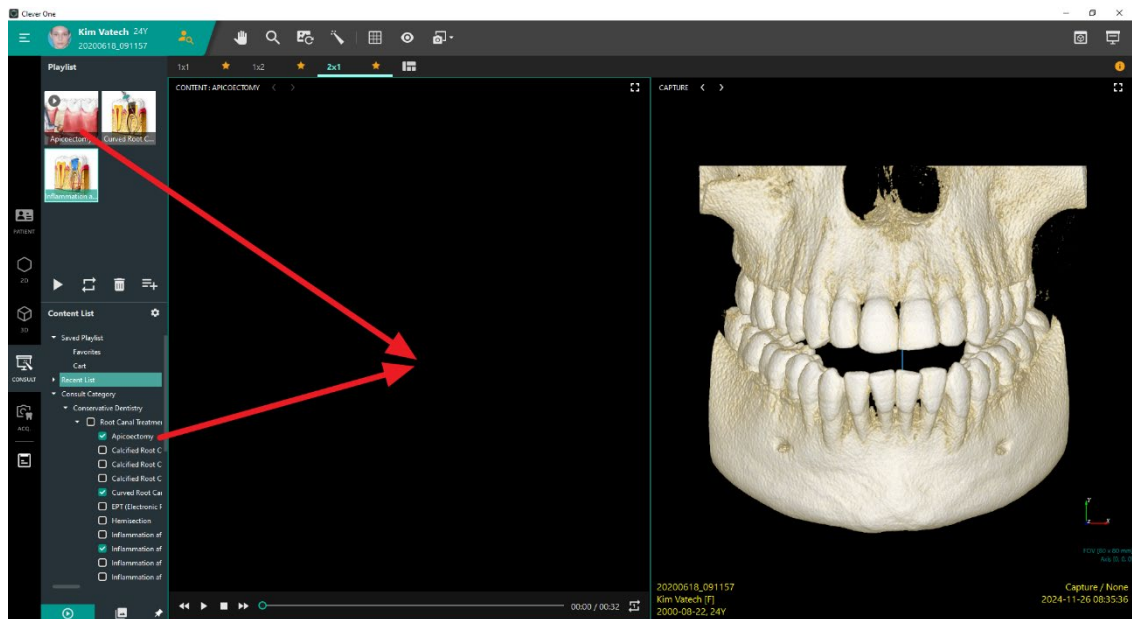


### 3. Managing Consult Content

Manage images and consult content in playlist and categories. Users can add captured images, patient images, and consult contents to view frame for consultation.

#### 3.1 Viewing Consult Contents

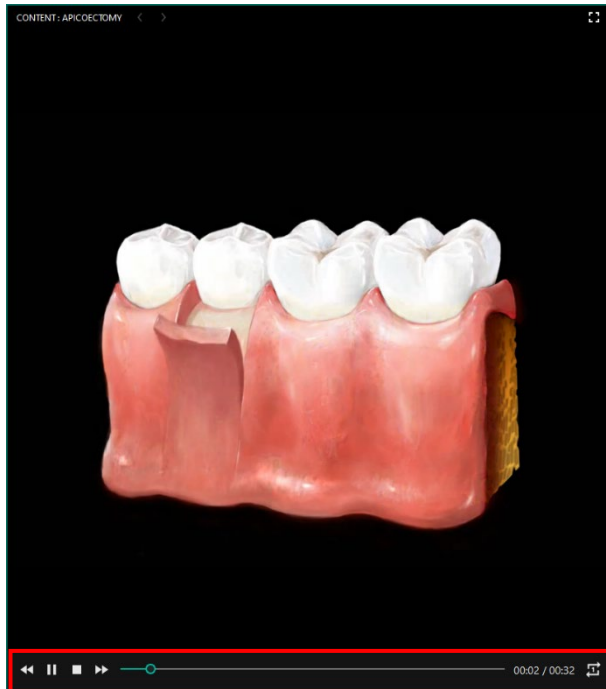
Drag and drop the image and consult content from the thumbnail view or playlist to the view frame respectively.



## 3.2 Playing Movie Clip

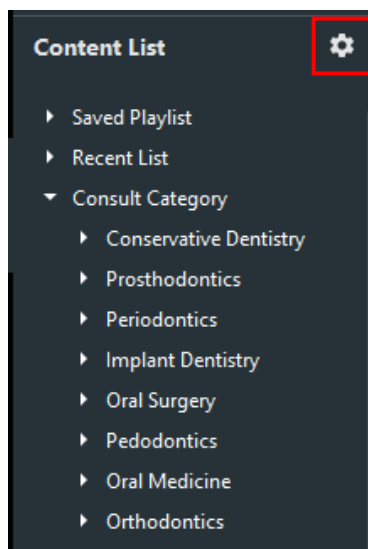
User can add consult contents such as movie clip to view frame and play for more efficient consultation.

Drag and drop the movie clip to the view frame. The control bar appears at the bottom of the Consult pane.

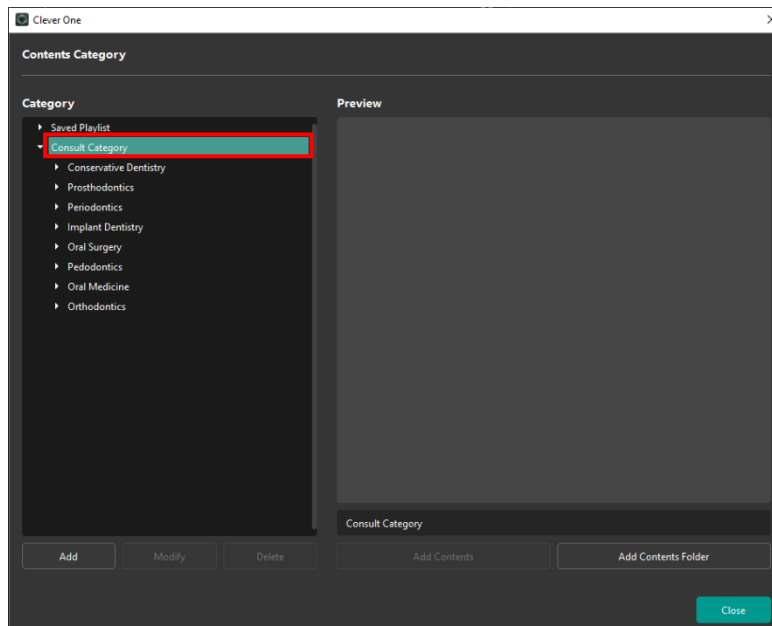


## 3.3 Adding New Category

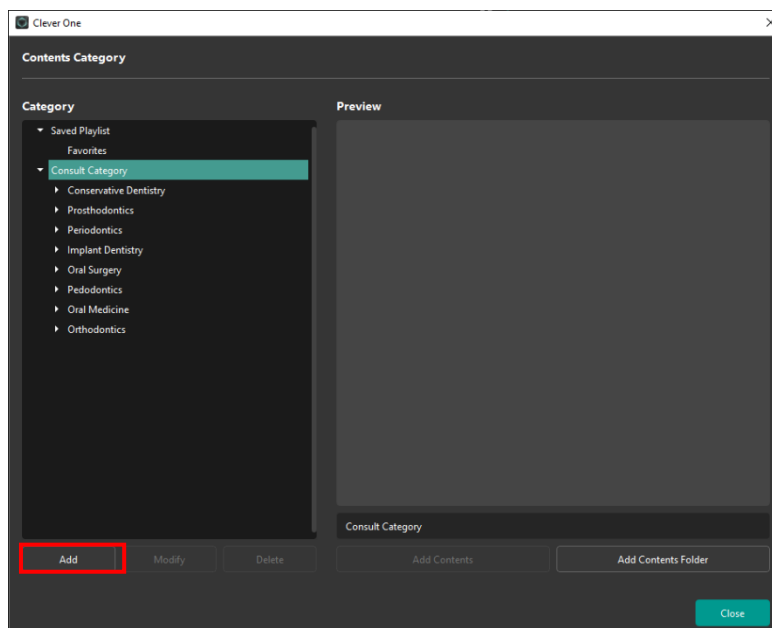
1. Click the [Settings] button for the Content list. The [Contents Category] window appears.



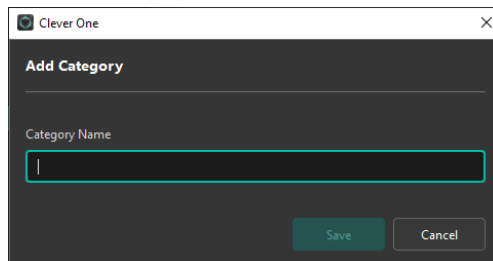
2. Click and select the category to add to a sub-category.



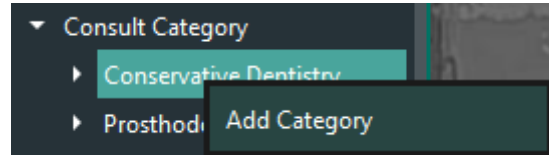
3. Click the [Add] button. The [Add Category] window appears.



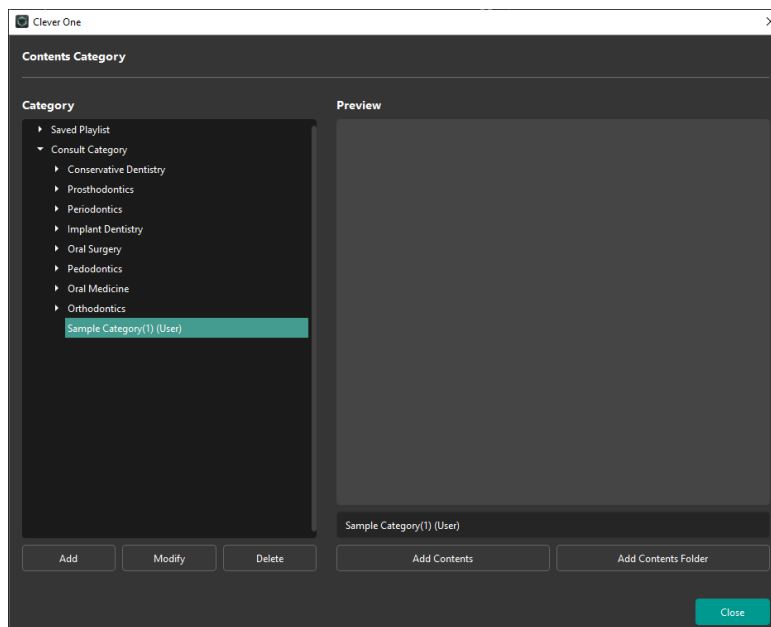
4. Enter the name of the category and then click the [OK] button to create the category.



Alternatively, right click and select the [Add Category] item from the Content List group.

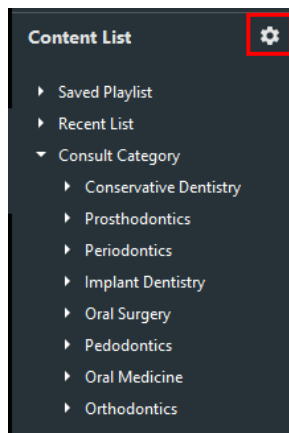


5. The word "(User)" will be added to the category created by user.

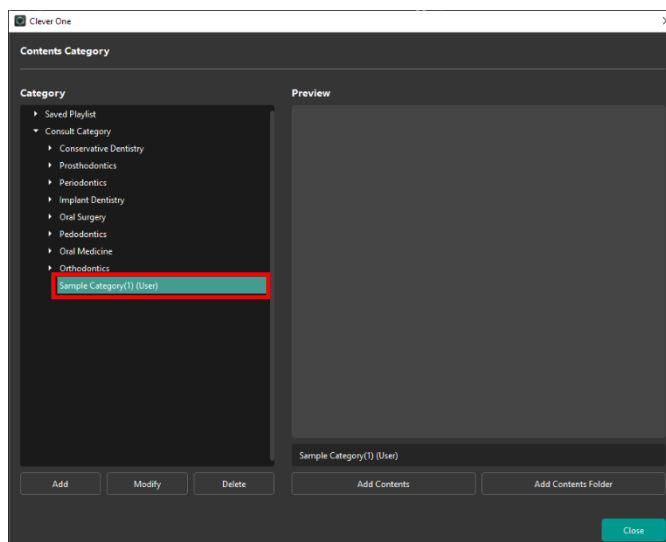


### 3.4 Modifying Category

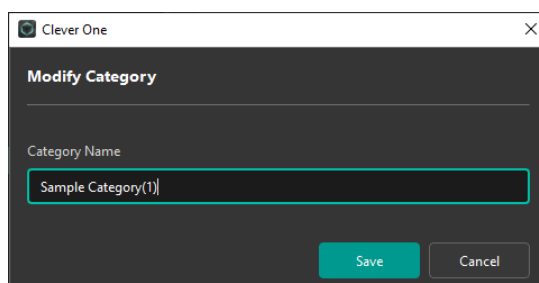
1. Click the [Settings] button for the Content list. The [Contents Category] window appears.



2. Click and select the category you wish to modify.



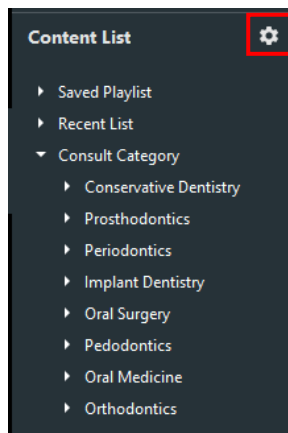
3. Click the [Modify] button. The [Modify Category] window appears.
4. Enter the new name of the category and then click the [OK] button to change the name.



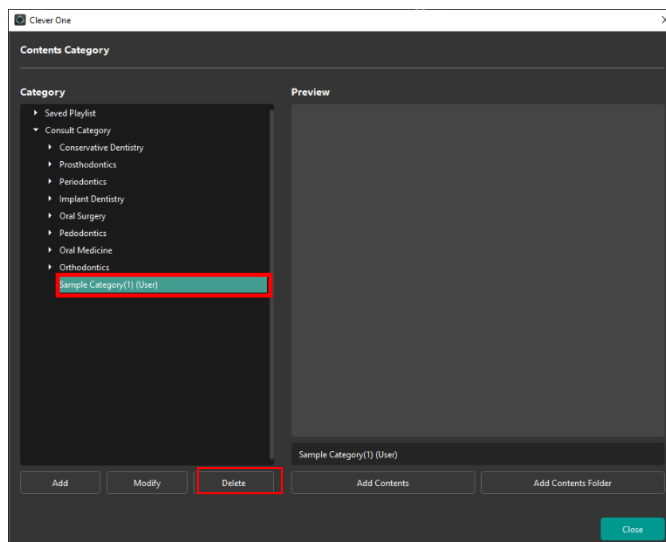


## 3.5 Deleting Category

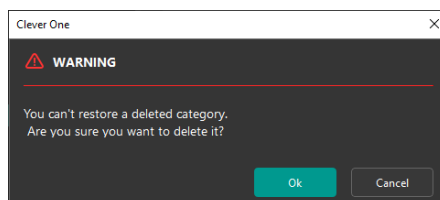
1. Click the [Settings] button for the Content list. The [Contents Category] window appears.



2. Select the category you wish to delete and then click the [Delete] button.

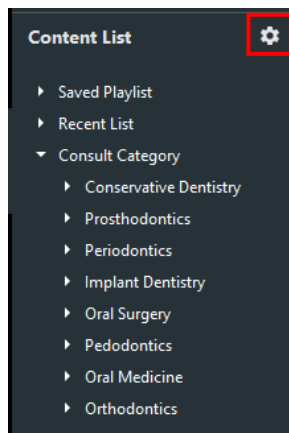


3. The following [Delete] window appears to confirm the deletion. Click the [Yes] button. The category is deleted.

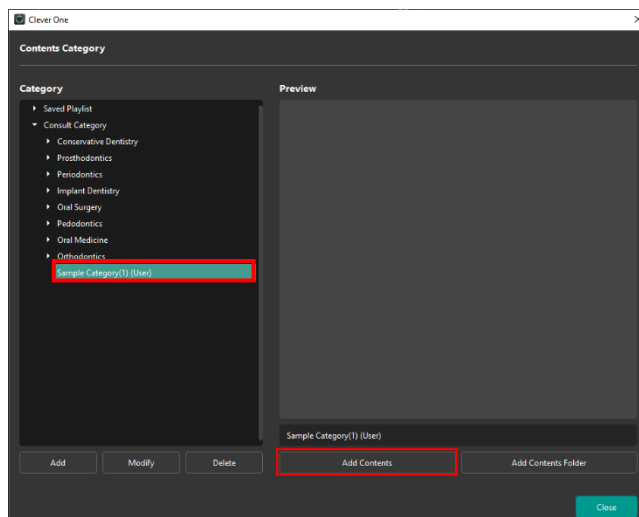


### 3.6 Adding Contents

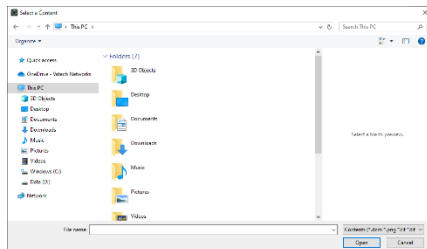
1. Click the [Settings] button for the Content list. The [Contents Category] window appears.



2. Select the category to add new contents, and then click the [Add Contents] button.



3. The following Select Content window appears. Click the content to add and then click the [Open] button to add. Image format (\*.bmp, \*.jpg, \*.png), video format (\*.avi, \*.mov, \*.mp4, \*.wma), and document format (\*.doc, \*.docx, \*.ppt, \*.pptx, \*.pdf) can be added.



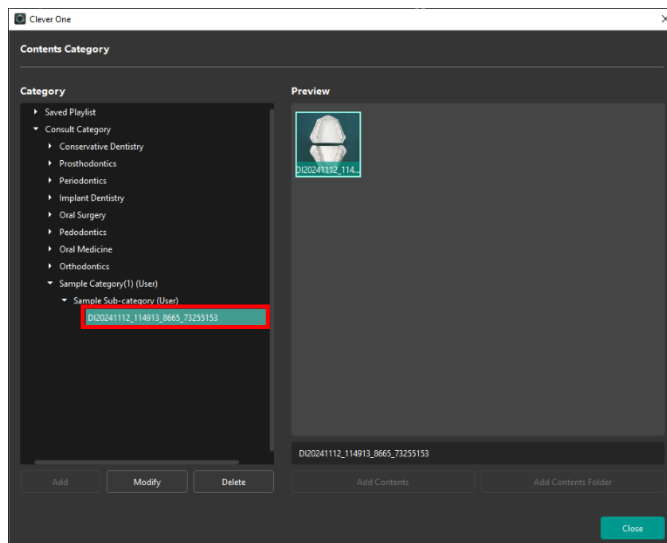
NOTE

When opening the document format contents, the file will not be opened with Clever One, but the relevant program will be executed to open the file.

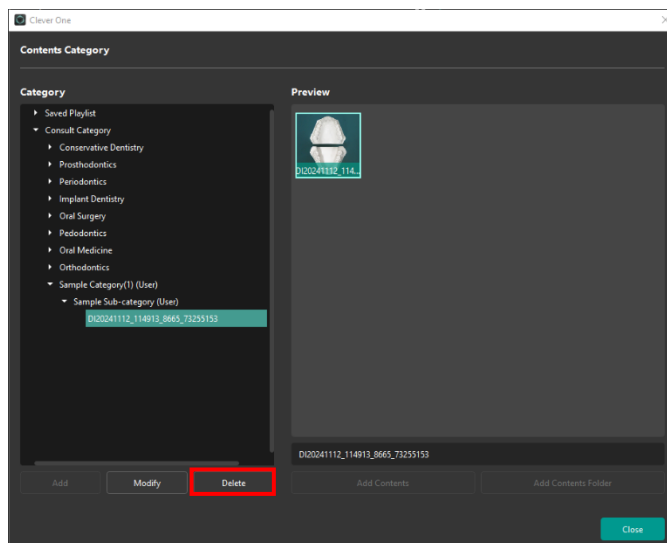
Contents cannot be added to the Basic category and the categories that have sub-categories. Users can only add contents to the categories that are added by user and that do not have sub-categories.

## 3.7 Deleting Contents

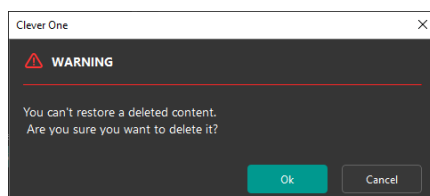
1. Click and select the category that includes the contents to delete.



2. Click the contents you want to delete and click the [Delete] button.

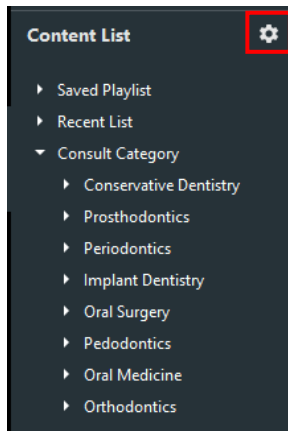


3. Click the [OK] button to confirm the deletion. The selected contents will be deleted.

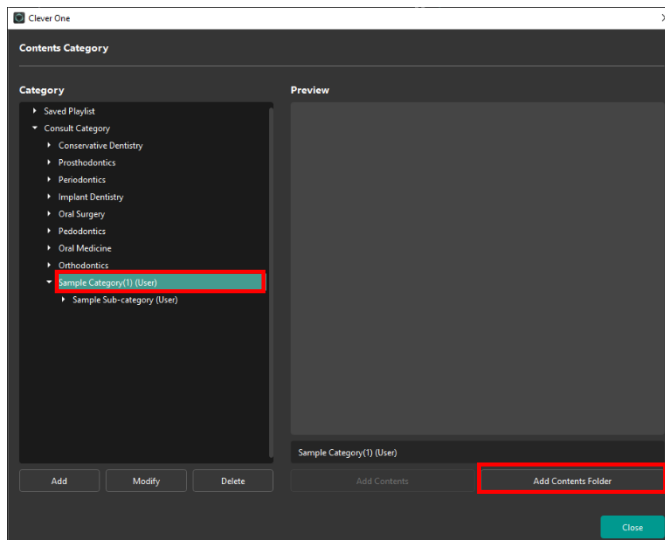


### 3.8 Adding Content Folder

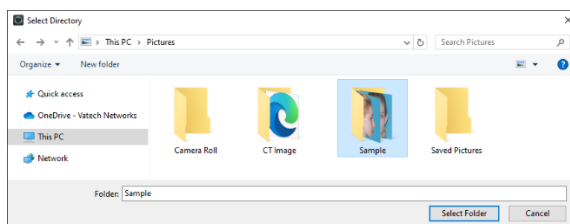
1. Click the [Settings] button for the Content list. The [Contents Category] window appears.



2. Select the category to add a content folder. Click the [Add Content Folder] button.



3. Select the folder to add in the [Select Directory] dialog.

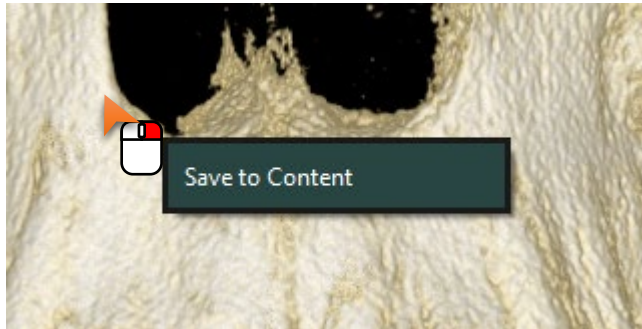


4. Click the [Select Folder] button. The added folder appears.

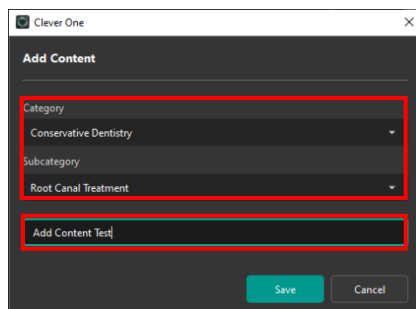
### 3.9 Adding Images to Consult Content

User can add captured images or patient images as consult contents.

1. Right click a CAPTURE image in the [CAPTURE] window and click the [Save to Content] option. The [Add Content] dialog appears.













2. Click to select a category to where the image is added, and enter the name of content.



3. Click the [Save] button. The image is added to the selected category.

## 4. Tools in the Toolbar

Icons	Designation	Description of Features
	Panning	Move the image freely.
	Zoom	Zoom in and out of the image by clicking and dragging.
	Reset View	Initialize Move, Zoom
	Pointer	Draw freely on the 2D image.
	Patient Info	Show/Hide patient and image information.
	Grid	Display grid on the image to check the asymmetry of patients.
	Overlay	Show/ Hide all displayed objects.
	Region Capture	Capture the current image. The captured image is saved to DB.
	View Capture	Capture the image of one image in a layout. The captured image is saved to DB.
	View Frame Capture	Capture the entire view frame and save it to DB.

## Chapter 7. Acquisition Module

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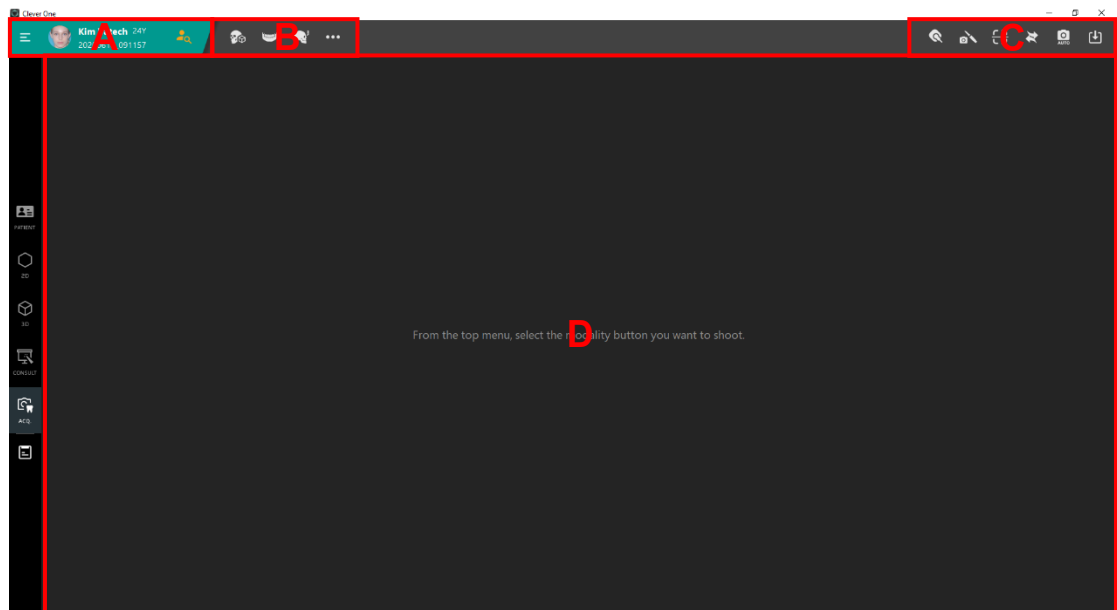


# 1. Acquisition Module Configuration

The Acquisition module provides the function to capture images with CT, Panorama, Cephalo, IO Sensor, IO Camera, and PSP Scanner equipment. The images can be stored on the server. An image can be imported from the PC server or local PC and saved as a patient image.

Clever One supports the maximum resolution that the acquisition equipment when acquiring through dental cameras other than 2D, 3D Imaging Systems, IO Sensor, IO Camera, PSP Scanner, and Twain.

## 1.1 Workspace

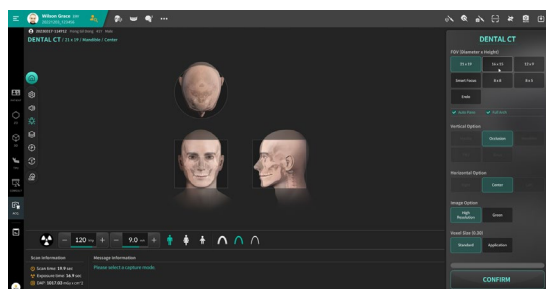


- A: Search for a patient. Whatever module the user is working on, the Search Patient bar is fixed so that the user can search for another patient at any time.
- B: Acquisition buttons for extraoral equipment.
- C: Acquisition buttons for intraoral equipment.
- D: The user can preview the captured images before saving.

## 2. Acquiring Images Using Extraoral X-ray System

To acquire images with CT, Panorama, or Cephalo acquisition equipment, Console version of the software should be installed, not Clever One Client. If it is installed properly, buttons for choosing modality type are displayed. To acquire images with the patient please see below.

1. Click the button of the desired extraoral X-ray system. The image acquisition program appears.
2. If you want to acquire images in the 3D Photo or Model Scan mode, click the [Others] button to display the image acquisition program.



3. Set the image acquisition program as desired and click the [Confirm] button.
4. Click the [Ready] button and take an image with the exposure switch. The captured image appears on the screen.



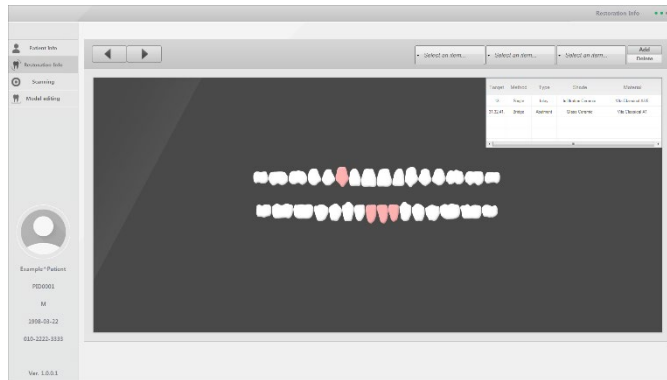
- All the latest equipment manufactured by Vatech utilizes the image acquisition program to acquire images. Refer to the Vatech equipment manual for the user instruction and related information about the image acquisition program.
- Clever One can be used as a viewer software for the Vatech Link manufactured by Vatech.

### 3. Acquiring Images Using IO Scanner



IO Scanner console program should be installed on the PC to acquire images from IO Scanner. Please refer to the manual of IO Scanner program for the user instruction and related information.

1. Click [IO Scanner] button on the Acquisition module.
2. The IO Scanner program starts as follows.



## 4. Acquiring Images Using Intraoral X-ray System

### 4.1 IO Sensor / IO Camera / PSP Scanner



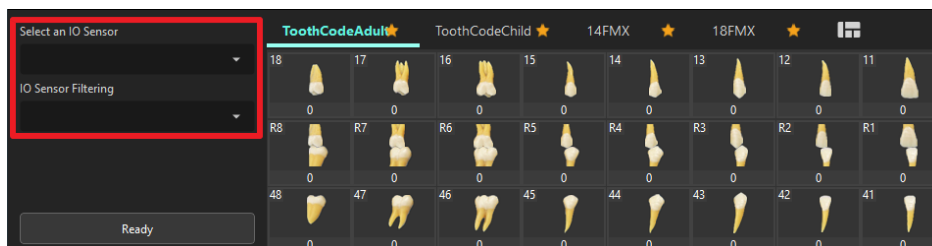
To acquire images with IO Sensor, the IO Sensor driver should be installed on your PC. Please refer to the IO Sensor manual or IO Camera manual for more information.

1. Click the [IO Sensor], [IO Camera], [PSP Scanner] button in the ACQUISITION tab. Once the IO sensor or IO camera is connected, template where the acquired image is located is changed. The numbered teeth are displayed on the screen.



2. Depending on the connected device, the image processing options can be selected before the image acquisition.

(1) IO Sensor: the IO Sensor and the IO Sensor Filtering option can be selected.



- IO Sensor: It lists the IO Sensors that are currently connected. It lists up to four IO Sensors, and user can select the desired IO Sensor device.
- IO Sensor Filtering: The filtering options that the selected IO Sensor device provides can be selected. If the v6.5 or lower version of Rayence Sensor driver is installed, the device or image processing options cannot be selected and the images cannot be acquired when two or more IO Sensor are connected to the PC.

(2) IO Camera: When acquiring images with IO Camera, Clever One supports the maximum resolution of the equipment.

(3) DSLR: The maximum size of DSLR images are up to 1920 X 1080 (Full HD). If a user saves image that exceeds the maximum size, the size of image will be automatically adjusted to 1920 X 1080.

(4) PSP Scanner: the PSP Scanner equipment can be selected.

3. Change the layout to capture multiple images continuously. Click the [Change Layout] button select the desired layout from the [Change Layout] dialog.



Add frequently used layouts to your favorites in the Change Layout window.

If FMX type layout is selected, user can enter a custom sequence. The entered custom sequence is available for both IO Sensor and IO Camera, and for only the corresponding FMX layout, the designated sequence can be saved as a preset by clicking the [Store] button.

- Select [Preset]: The custom order entered and stored by the user to acquire image from IO Sensor is set by default.

- Unselect [Preset]: Users can define the order to locate the acquired image from IO Sensor. Click the FMX one by one. This would then become a manual selection by the User. The last stored sequence preset is maintained by default.



- Click the [Ready] button after positioning a patient.
  - By double clicking the workspace of Acquisition module, Clever One can be ready for imaging acquisition. This has the same function as clicking the [Ready] button.
- If IO Sensor or IO Camera equipment is connected properly, the image acquisition mode is initiated
  - When using the IO Sensor, shoot the x-ray using the exposure switch
  - When using the IO Camera, press the capture switch to acquire image.
    - When using the IO Camera, user can use the keyboard. Under the 'Main Menu > Settings > Acquisition > IOX', set [IO Camera Capture Key], and the user can use the keyboard to acquire IO Camera images.
    - When acquiring images with IO Sensor, IO Camera, or Auto DSLR, the last acquired image appears as the first image in the FMX frame or in the Thumbnail list by default.
- For a continuous capture mode, all captured images are in the first tooth selected. Drag and drop the captured images to each proper tooth location.
  - In the Teeth Mode or the FMX layout of the IO Sensor, double click the right button of the mouse for a continuous capture.
  - When acquiring after setting the FMX sequence, the re-acquisition can be possible
  - When continuously acquiring images with IO Sensor using FMX layout, the user can skip a specific tooth number by clicking the [Skip] button if necessary.



NOTE

Sequence acquisition is not supported for PSP Scanners.

- Select images from the thumbnails, and then click the [Save] button. The captured images will be stored in the DB.
  - If user wants to select more than 2 images, first hold the Ctrl key on the keyboard and click the desired images displayed on thumbnail.
  - To change the way you store acquired images, change the option in settings. With the option, [Auto DB Save], automatically all acquired images are stored in DB.



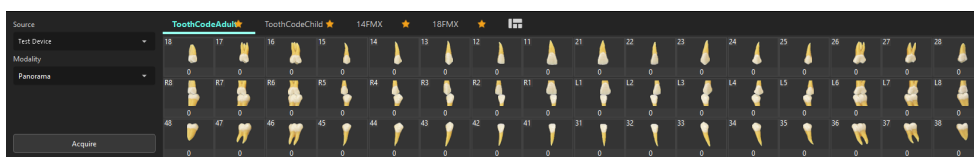
NOTE

Imaged acquired by IO Sensor are saved in DICOM file format.  
Importing IO Sensor images will save the image in original file formation.

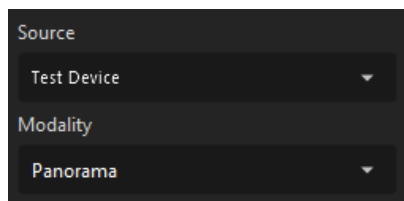
## 4.2 Twain

TWAIN is the standard image acquisition driver that connects the image acquisition software and image acquisition devices (scanner or digital camera). For any image acquisition devices supporting TWAIN, the image acquisition through Clever One is possible.

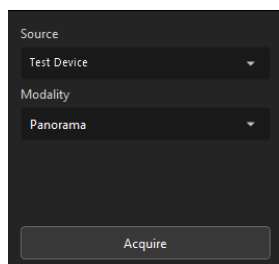
1. Click the [TWAIN] button from the Acquisition module. The screen will change when ready for TWAIN.



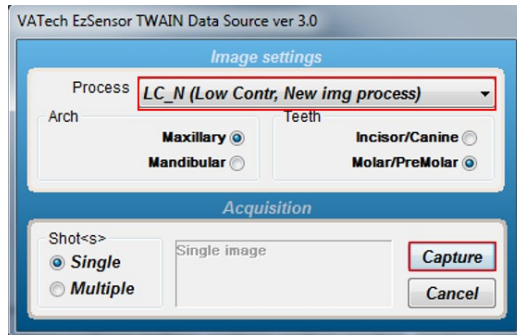
2. Click the [Source] and [Modality] dropdown menu and select the source and equipment type.



3. Click the [Acquire] button.



4. When the TWAIN window appears, select the imaging option provided by the equipment and click the [Capture] button.



NOTE

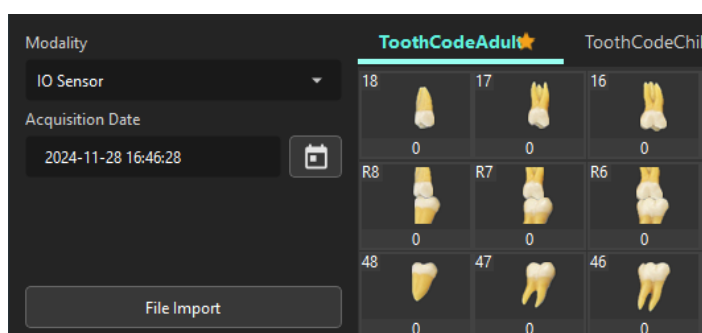
- The TWAIN sample image above has been obtained with EzSensor, the digital IO sensor from VATECH. Please refer to the user manual of other devices using TWAIN image acquisition methods.
- If there are two or more drivers for TWAIN, the program saves the last device that a user uses.

5. Acquired images appear in the thumbnail list.
6. Select the acquired images by clicking on the thumbnails and store them to the Clever One server. To select multiple images, select the images while holding down the Ctrl key. After selecting images, click the [Save] button.
  - If a modality changes while loading TWAIN images, only the unsaved images are moved to layout in where the modality is changed.
  - The layout cannot be changed while acquiring with TWAIN if the modality is set to Ceph or Panorama.
7. The acquired image is normally saved to DB, a separate window appears to inform the user that the image is saved successfully.

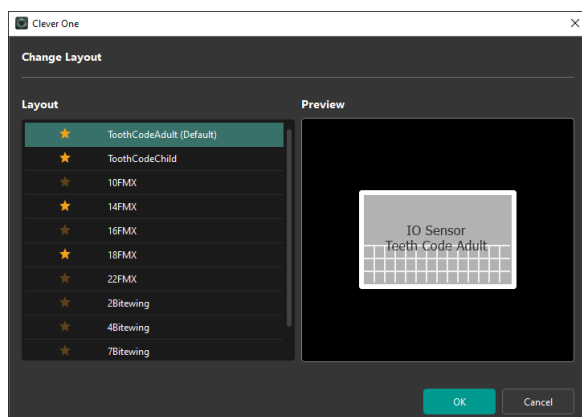
## 5. Importing Images from Local PC to Server

Images already captured and saved in the local PC are imported and saved to Clever One for each appropriate patient.

1. Click the [Import] button from the Acquisition tab. The screen is modified to fit [Import]. Then, select the equipment type as shown below.

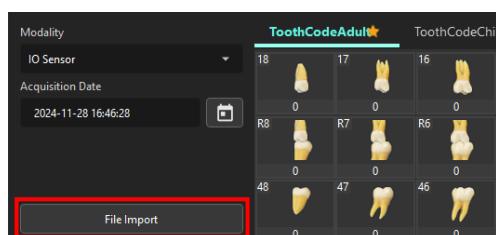


2. If needed, click the [Change Layout] button and select the desired layout. The layout is modified according to the new layout selection.



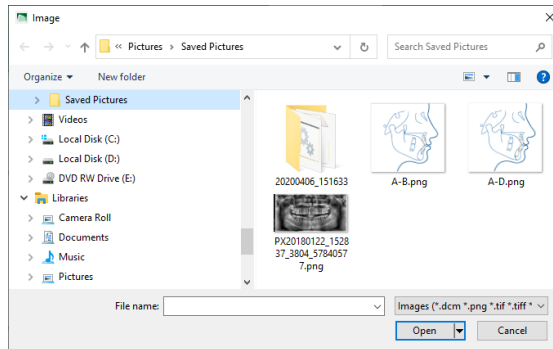
For the Teeth Code layout, the “Teeth Code Adult” layout is automatically applied if the patient’s age is 13 or over, and if the patient is younger than 13 years old, the “Teeth Code Children” layout is automatically applied. But if the layout is changed through the [Change Layout] button, the Teeth Code layout can be applied regardless of the age.

3. To Import the images stored in the local PC, click the [File Import] button. The [Image] window appears.





4. Select all desired images to import. If user wants to select more than 2 images, hold the <Ctrl> key on the keyboard and click the desired images.



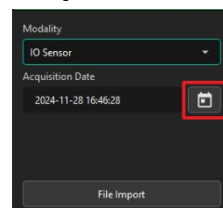
5. Upon completion, the imported images are shown on the thumbnail filmstrip as shown below.



If there are multiple images in the FMX or Teeth Box, scroll the mouse wheel or click the left/right arrows to move between images, and the image is displayed accordingly.







To Change the acquisition date and time of the imported image, click the [Change Date] button.



6. Select the acquired images by clicking checkboxes on all thumbnails to save to server. Click the [Save] button to save the images to DB.
7. The acquired image is normally saved to DB. A separate window appears to confirm that the image is saved successfully.

## 6. Tools

Icons	Designation	Description of Features
	90° CCW	Rotate 90 degree counter clockwise
	90° CW	Rotate 90 degree clockwise
	Flip Vertical	Flip the image vertically
	Flip Horizontal	Flip the image horizontally



NOTE

After changing the direction of the image, click the [Save] button to view the image with the new directional orientation in Clever One. It does not change the original image stored in the server.

## Chapter 8. Report Module

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# 1. Starting Report Dialog

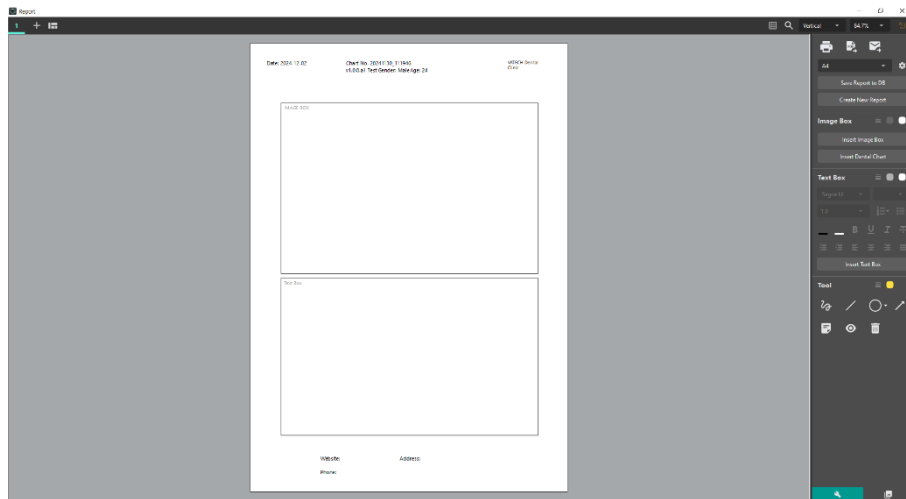
Report dialog allows users to keep diagnosis and counseling records. It can be used as a chart to record images of patient and treatment description.

Clever One can send the report to the patient directly via email as a PDF file.

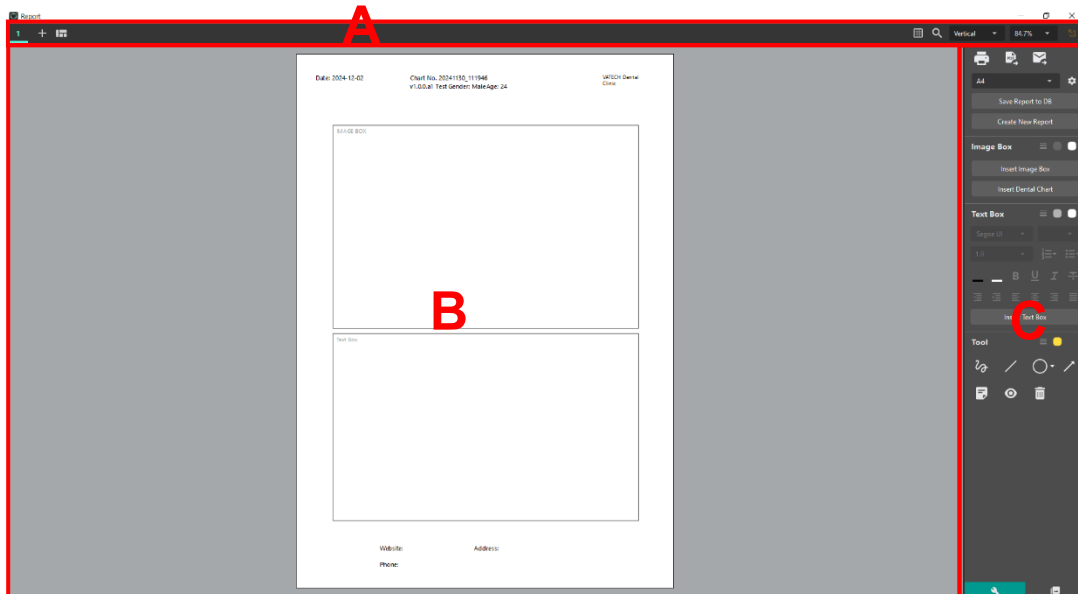
1. Click Report button at the bottom left of control panel.



2. Report dialog appears as follows.



## 2. Report Dialog Layout



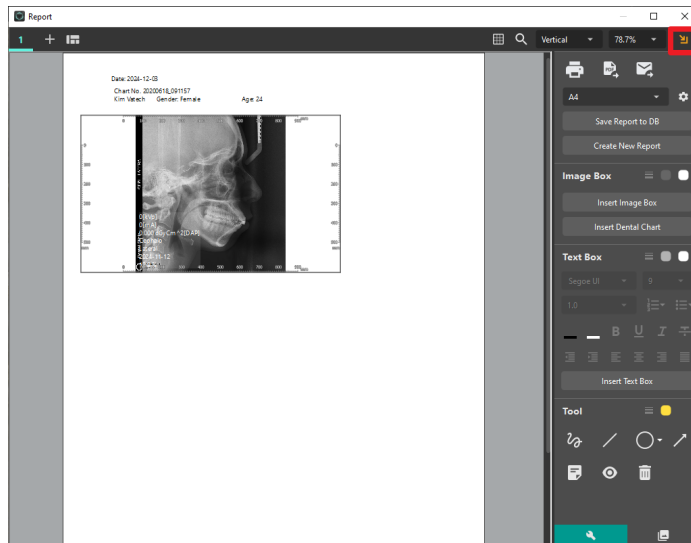
- **A: Page and Layout Control**
  - Add pages and change page layout
  - Viewing tools such as grids, zoom, and page orientation.
  - Open the report module as a popup.
- **B: Workspace**
  - Display template title
  - Display report template
  - Display image on the report
- **C: Control Panel**
  - Display tools to be used in the Workspace
  - Add item boxes
  - Print/Save/Open report

## 3. Viewing Report

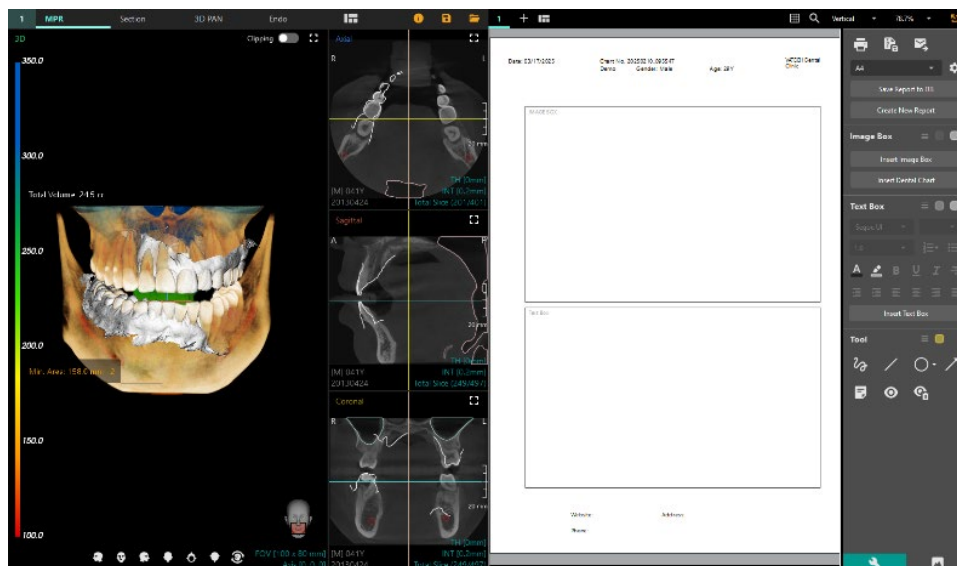
### 3.1 Docking the Report Window

Users can dock the report module next to 2D or 3D module to view with images.

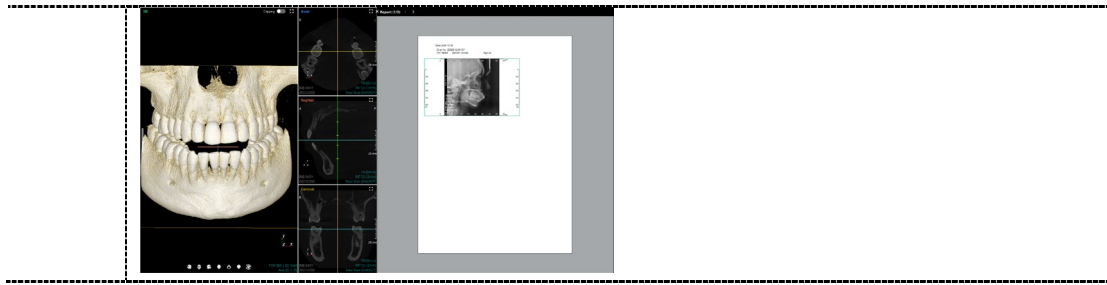
1. Open an image in the 2D or 3D module.
2. Open the Report module.
3. Click the [Dock] button on the upper-right corner of the Report module.



4. The Report module is docked and displayed next to the 2D or 3D module.



Viewing docked Report module in Presentation Mode will hide the control panel and only show the report pages.



## 4. Editing Report

### 4.1 Managing Report Page



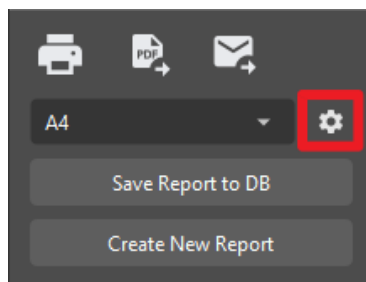
- Select a page number to move to the corresponding page.
- Select the [Add Page] icon to add a page.
- To delete a page, right click the page number and click the [Delete Page] option



Pages can be added up to 10.

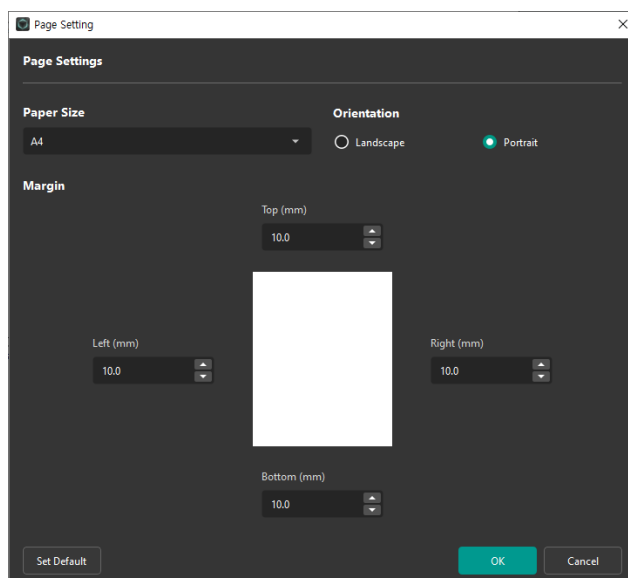
#### 4.1.1 Changing Page Settings

1. Click [Page Settings] button in the control panel to change the page settings. The page settings dialog appears.



2. Change the paper size, orientation, margins options.
3. Click the [OK] button to save and apply the changed settings.



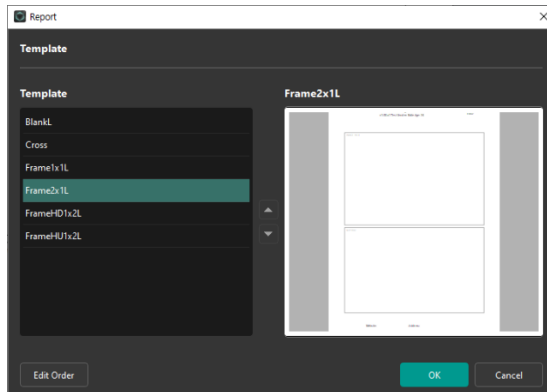


## 4.2 Changing Template

1. Select [Change Template] button to change report template.



2. Change Template dialog appears.

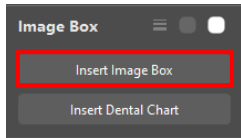


3. Select the desired template on the Template List and check the selected template on the Preview window.
4. Click OK to apply the selected template.
5. Image boxes are automatically filled with images from designated modules.

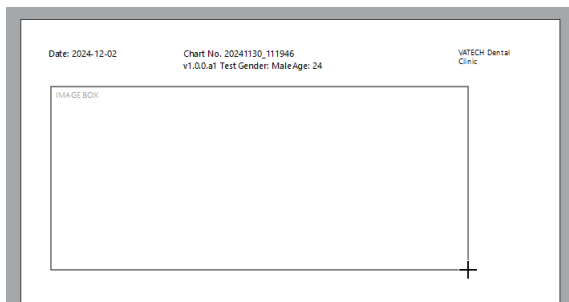
## 4.3 Adding/Deleting Item Box

### 4.3.1 Adding Image Box

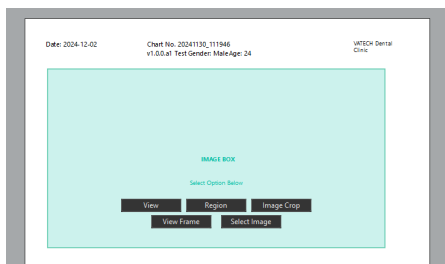
1. Select Insert Image Box button to create an image box on the selected report.



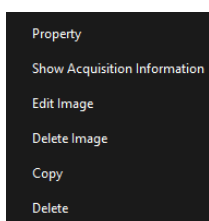
2. Click the starting point of the image box.
3. Adjust the size and click the end point of the image box to create image box.



4. Hover over the image box and select an image insert option from the supported option.

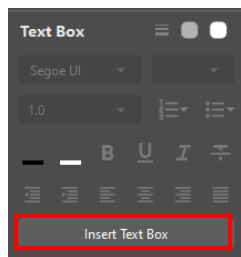


5. Right click while selecting image box to show context menu. You can edit or delete image as well as copy or delete image box by clicking each item on context menu.

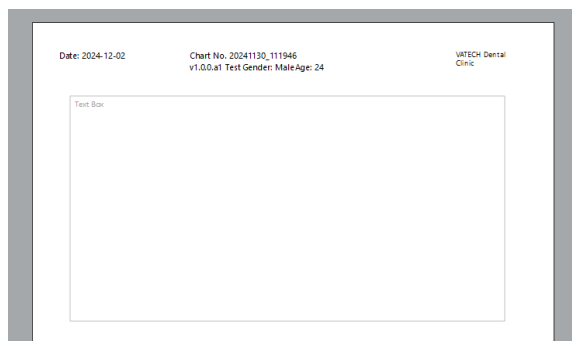


### 4.3.2 Adding Text Box

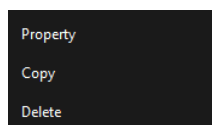
1. Click Insert Text Box button to a text box on the selected report.



2. Click the starting point of the text box.
3. Adjust the size and click the end point of the text box to create text box.

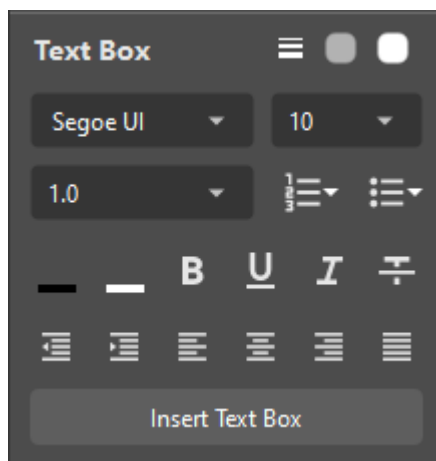


4. Drag and drop the inserted text box to move to the desired position. Or resize the text box by using the control point.
5. Right click while selecting text box to show context menu. You can copy or delete image box by clicking each item on context menu.



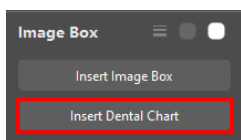
6. Double click text box to input or edit text.

When entering text, select the font, font size, line spacing, etc. in the Text Box group in the control panel.

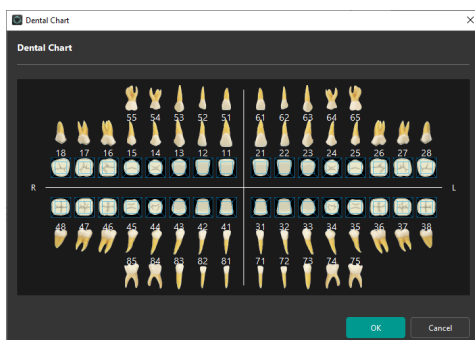


### 4.3.3 Adding Dental Charts

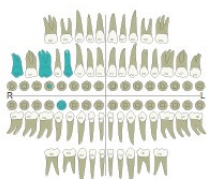
1. Select Insert Dental Chart button to create an image box on the selected report.



2. Select teeth number to highlight from the Dental Chart dialog.

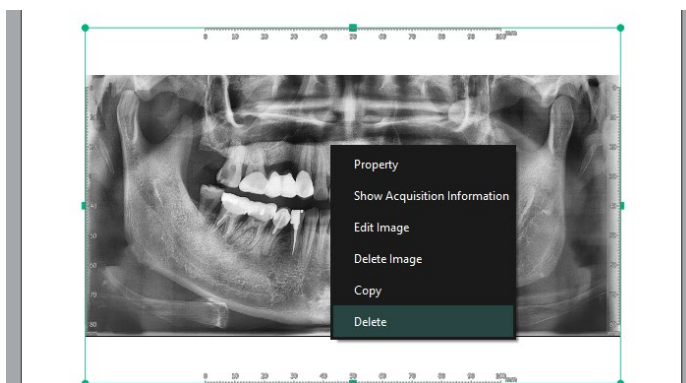


3. A dental chart with the corresponding points highlighted is inserted.



### 4.3.4 Deleting Item Boxes

1. Select an Item Box on the workspace of the report.
2. Right click on the item and click the [Delete] option.



3. The selected item is deleted from the workspace.



NOTE

Item boxes can also be deleted by...


Short Cut Key: Select Item Box + Delete Key

Context Menu: Select Item Box > Right-click > Select Delete on the context menu


## 4.4 Tool Group

Use tools from the Tool group to measure length, angle, volume, bone density profile or enter annotations ranging from memos, draw, arrows, lines, and shapes. All entered content can be hidden or deleted on the screen. Also, the user can change the properties of the entered items.


### 4.4.1 Free Drawing

1. Click the [Free Draw] button() in Tool group.
2. Click the desired position to draw on the 2D image.
3. Enter ESC key or re-click the [Free Draw] button to exit draw mode.


### 4.4.2 Entering Arrows or Lines

1. Click the [Arrow] or [Line] button() in Tool group.
2. Click the starting point at the desired position.
  - When using the Arrow tool, the arrow is placed towards the ending point.
3. Click the ending point at the desired position.
4. Enter ESC key or re-click the [Arrow] or [Line] button to exit draw mode.
  - When using the Polyline tool, double click or enter the ESC key to exit polyline tool.


### 4.4.3 Entering Shapes

1. Click the [Rectangle] or [Ellipse] button() in Tool group.
2. Click the starting point at the desired position.
3. Click the lower right point of the shapes at the desired position.
4. Enter ESC key or re-click the [Rectangle] or [Ellipse] button to exit draw mode.


#### 4.4.4 Entering Memos

1. Click Memo button() in Tool group.
2. Click the desired position to enter memo.
3. Enter comment in memo input field. You can insert a preset comment by right clicking to run context menu during memo input mode.
4. Enter ESC key or click outside of memo to exit memo input mode.

#### 4.4.5 Showing Hiding Overlay

1. Click Show/Hide Overlay button() in Tool group.
2. All the overlay is hidden.

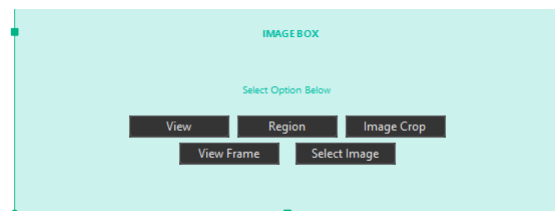
#### 4.4.6 Deleting All Overlay

1. Click Delete Overlay button() in Tool group.
2. All the overlay is deleted.

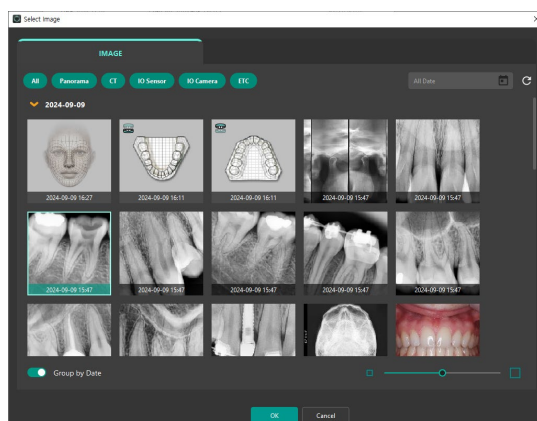
### 4.5 Inserting Images

#### 4.5.1 Inserting Server Image

1. Hover over an image box and select the [Select Image] button.



2. Click a thumbnail of image to insert from the Select Image dialog and click [OK].

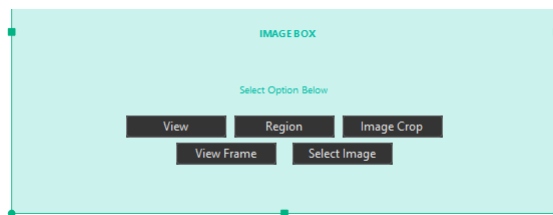


- The selected image is shown in the image box.

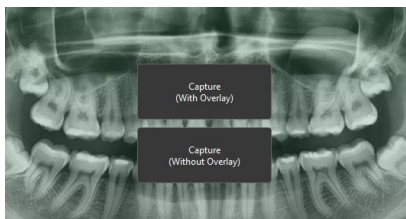


## 4.5.2 Capturing and Inserting Single Image

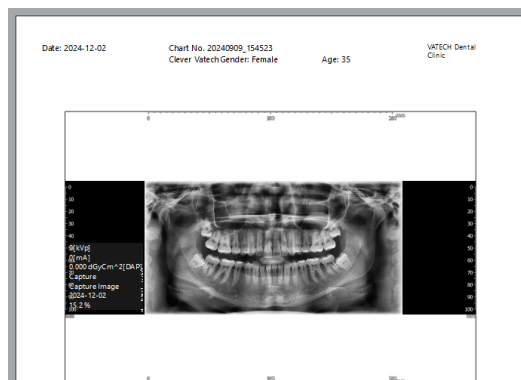
- Select between View/Region/Image Crop/View Frame buttons are displayed when hovering over image box.



- View: Select a View section to capture.
  - Region: Select a region from the view frame.
  - Image Crop: Select a region from a single image.
  - View Frame: Automatically capture the currently shown view frame.
- Click desired capture method button to start capturing images.
  - Hover over on the View to capture and click Capture button displayed on the View.



- The captured image is displayed in the image box on the report.

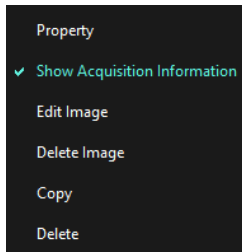




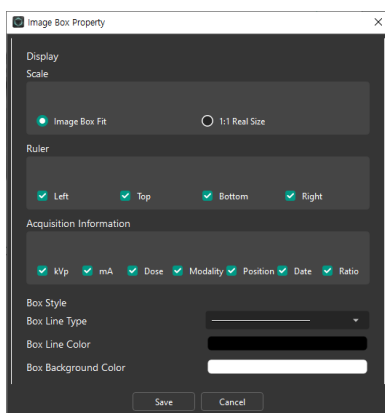
## 4.6 Changing Properties

### 4.6.1 Changing Properties of Image Box

1. Right click on an image box to display the context menu and click Property, or double click the image box.



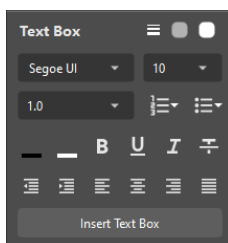
2. Image Box Property dialog appears.



3. Select Image Scale, Ruler, Acquisition Information and Box Style options.
  - Scale: set the scale for images fitting into the image box.
  - Ruler: set the position of the ruler in the image box.
  - Acquisition information: select which image information item to display in the image box.
4. Click Save button to apply changes.

### 4.6.2 Changing Properties of Text Box

1. Select the text options Text Box group in the control panel.



2. Change Box Line Type, Color, or Box Background Color of the text box.
3. Click Save button to apply changes.

## 4.7 Adding Header/Footers

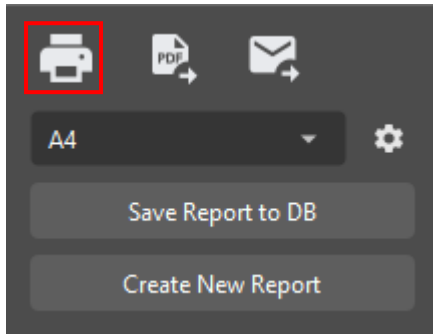
1. Right click the report page area.
2. Select the [Add Header] or [Add Footer] item.
3. Select an item to add as a header or footer such as Date, Patient Info, Clinic Logo, etc.
4. The selected information is added as a text box.

## 4.8 Grouping Items

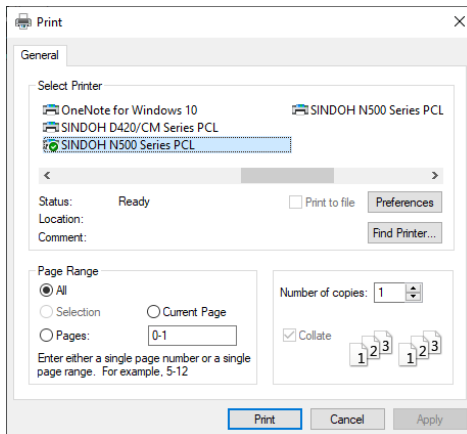
1. Multi-select items by pressing the [Ctrl] key and clicking items.
2. Right click to and select the [Group all objects] option.
3. To release grouping, right click the grouped objects and select the [Ungroup all objects] option.

## 5. Printing Report

1. Click Print button on Control Panel after report is completed.



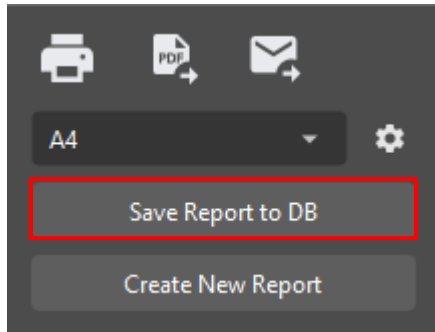
2. Once the Print dialog appears, click the Print button.



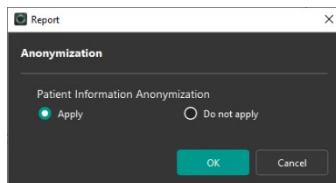
## 6. Saving/Exporting Report

### 6.1 Saving Report

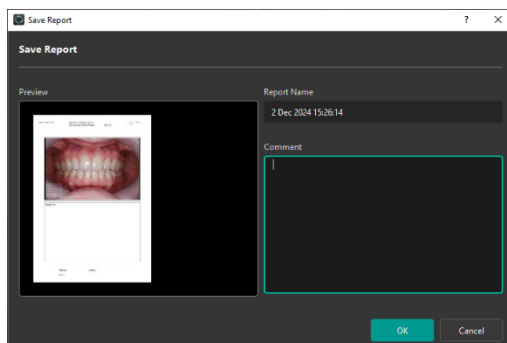
1. Click Save Report to DB button.



2. Select Use option when Anonymization dialog appears if you want to anonymize patient information, and click OK button.



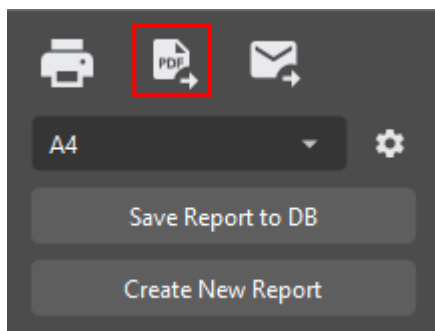
3. Save Report dialog appears.



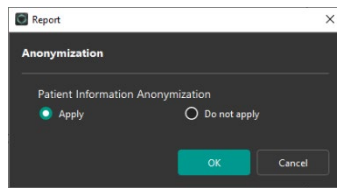
4. Enter comments and click OK button.

### 6.2 Exporting to PDF

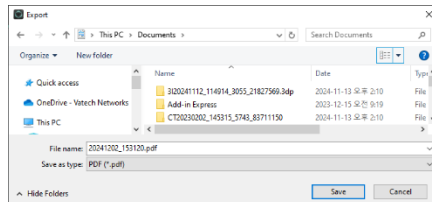
1. Click Export to PDF button on the control panel.



2. Select Use option when Anonymization dialog appears if you want to anonymize patient information, and click OK button.



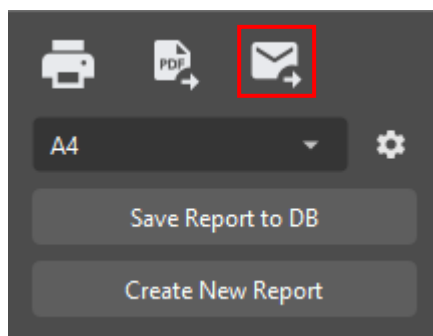
3. Set file path, file name, file format on the Save dialog and click Save.



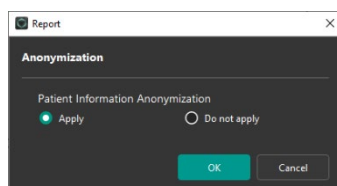
4. The report is exported after being converted into pdf file.

## 6.3 Sending E-mail

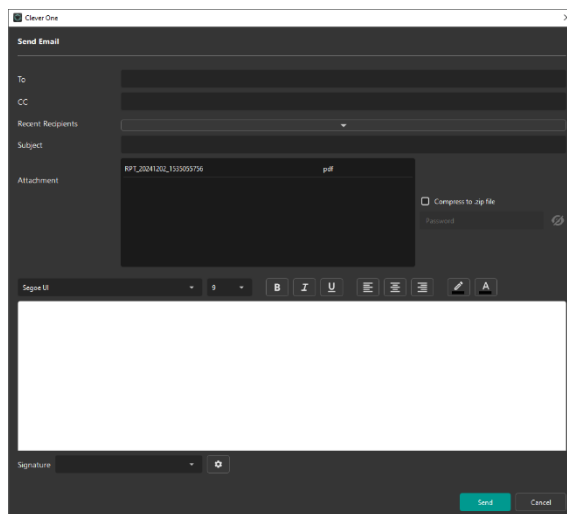
1. Click Send to Email button on the control panel.



2. Select Use option when Anonymization dialog appears if you want to anonymize patient information, and click OK button.



## 3. Send E-mail dialog appears with files attached.



NOTE

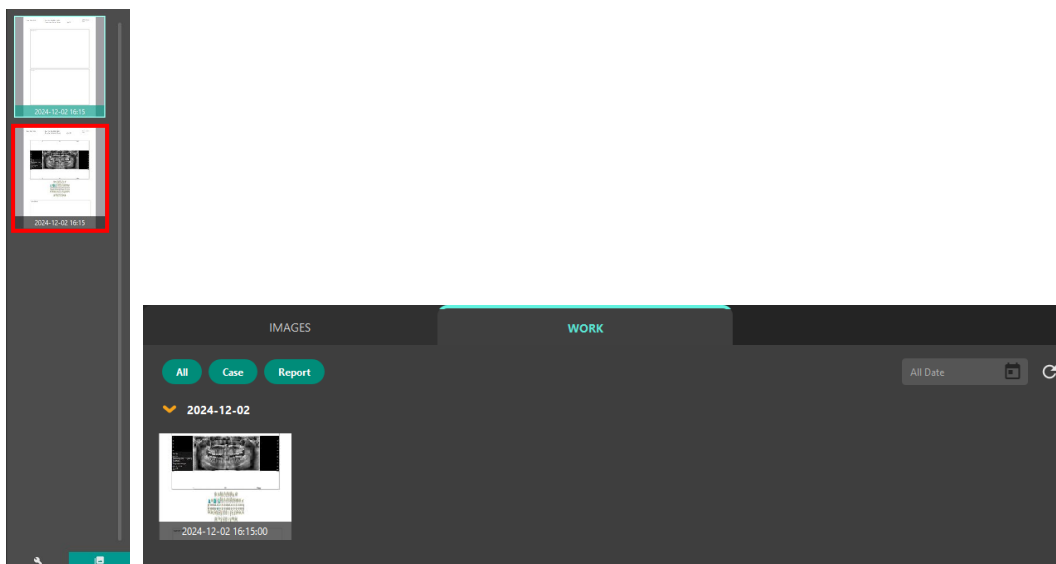
- Click [Edit Signature] to save a signature to use when sending emails. If there exists a signature previously added, the signature is displayed in the text box.
- The user can apply a password to an attachment file when sending an E-mail with attached files. The password complexity rules are as follows.
  - Empty spaces are not allowed.
  - Maximum text input limit is 256.

5. Fill the To, CC, Subject, and text box to send email.
6. Select Use for Anonymize Patient Information option if required.
7. Click Send button to complete sending email.

## 7. Opening/Creating Report

### 7.1 Opening Report

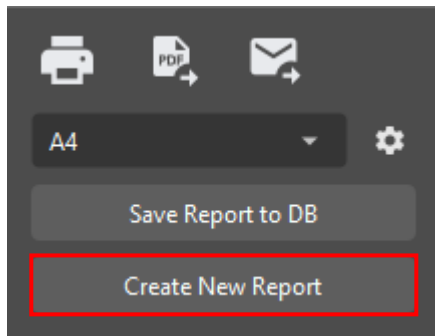
1. Double-click a report from the work tab of the control panel.
  - Alternatively, select a report from the work tab from the Patient module.



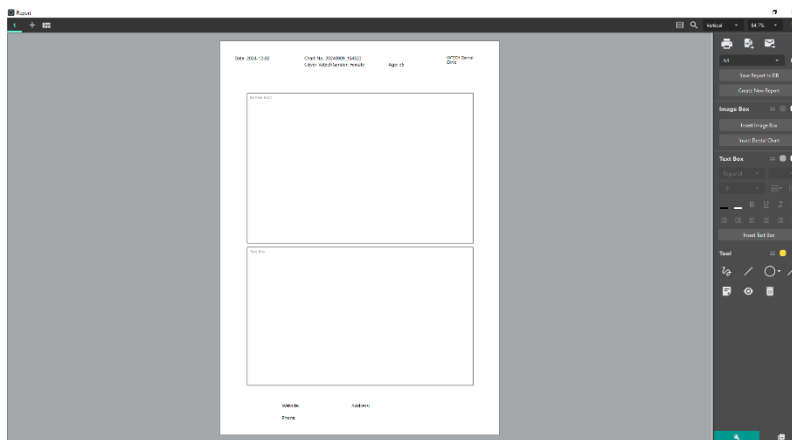
2. The selected report is opened.

## 7.2 Creating a New Report

1. Click Create New Report button.



2. New report is created and a default template is displayed.





## 7.3 Deleting a Report

1. Right click a report from the work tab of the control panel.
2. Click the [Delete] option.



3. Selected report is deleted.



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