# SMARTDent

## User Manual

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RAYUG-3201612E

Rev. 1.86

The manual described herein shall be incorporated for intent of using SMARTDent therefore must be studied prior to use of the product.

User manual distributed in conjunction with the product may be changed without prior notice depending on quality upgrades and specification changes.

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# Program Introduction

# 1

# 1 Program Introduction

This program provides efficient control of CT, Panorama and Cephalo images acquired by operating the RayScan Alpha System manufactured by RAY Co., Ltd and various image analysis functions (exclude CT images) depending on the diagnostic goal. Use the oral sensor and oral camera to obtain images easily and view images in FMX (Full Mouth X-ray) format conveniently as well as manage digitalized film images through the use of images obtained by scanner.

## 1.1 Program Features

- ✓ **Convenient and Stable Network Environment**

  Images can be accessed using SMARTDent from any PC connected to the network through a Web service based DBMS(Database Management System) and large image information is also safely managed. In addition, the software supports a function that transmits images to PACS system through the DICOM SCU service.

- ✓ **Touch environment considered Simple UI**

  Functions are easily and quickly learned for use through a minimized user interface design based on user experience and it is easily operated in Slate PC as well as Tablet PC which uses the Microsoft Windows operating system.

- ✓ **Convenient Image Analysis**

  Diverse Multi-view formats are supported to allow efficient pre/post treatment image comparisons and several images can easily be analyzed on one screen.

- ✓ **Addition of a Simple Implant Library**

  Image based implant library function is supported for simple addition of implants supplied by various manufacturers and by using the user implant function, a new implant may be created for implant simulation.

✓ **DICOM 3.0 Compatibility**

SMARTDent support the DICOM file format recognized as the standard medical image file. DICOM SCU, DICOM Worklist & DICOM Print functions are supported for easy interworking between RayScan Alpha System and PACS system.

✓ **Import/Export**

SMARTDent supports Import and Export functions for various file formats such as DICOM, raw and jpg.

✓ **Alternative Program Links**

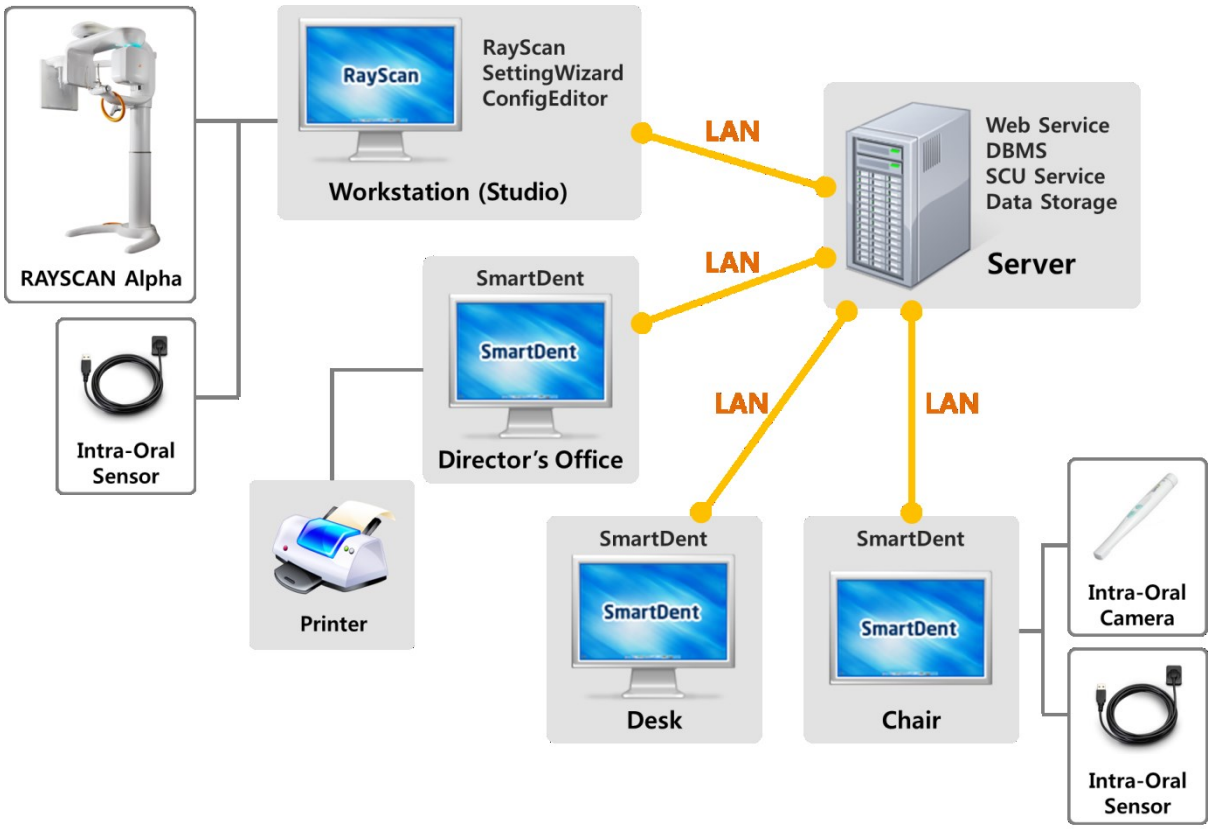
In addition to a link to 3D Viewer (Xelis) and orthodontic analysis program (V-Ceph).

## 1.2 Operating Environment

| Class | Minimum Requirements | Recommended Specifications |
|---|---|---|
| CPU | Pentium 4 or higher | Intel i5 or higher |
| RAM | 1GB or more | 2GB or more |
| Resolution | 1024 X 768 or higher | 1280 X 800 or higher |
| Video | Video Card with over 64MB RAM | Video Card with over 512MB RAM |
| Operating System | Windows XP Home Premium + Service Pack 3 | Windows 7 Professional |

## 1.3 System Configuration

Complete configuration of the RayScan Alpha System are as follows.



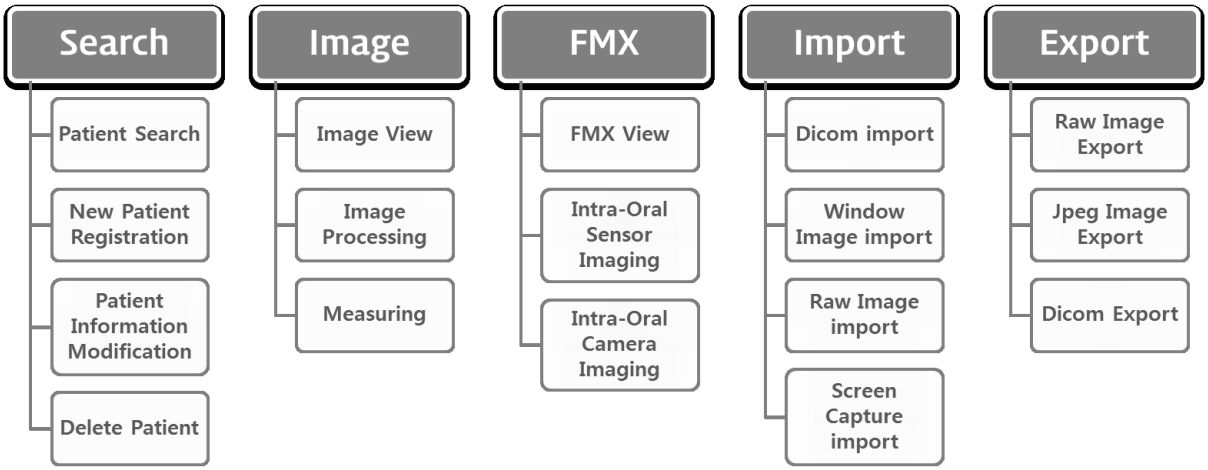

'RayScan', 'SMARTDent' program constructs a network along with the Web Service based server enabling all images used at the dental practice to be obtained and saved in addition to viewing images stored in the server from a PC where SMARTDent is installed. (Server, RayScan and SMARTDent program may be installed in a single PC.)

Web Service based server is where the patient information and image data are stored and by using the Workstation RayScan program, obtain CT, Panorama and Cephalo images from the RayScan Alpha equipment. Workstation or Chair PC SMARTDent supports the oral sensor image acquisition function and SMARTDent of the Chair PC is capable of obtaining the oral camera images.

Inquire patient information and analyze images from all PCs installed with SMARTDent in network environment and image analysis data entered using SMARTDent may be checked from any PC.

## 1.4 Program Configuration

SMARTDent is composed of 5 tabs and main functions of each tab are as follows.



# Patient Administration

# 2

# 2 Patient Administration

Use SMARTDent to search for patients registered in the RayScan Alpha System or execute functions such as new patient registration, patient information modification or delete.

Patient search is performed by entering patient ID or name to inquire the patient and frequently used period search button like Today, 3 days or 1 week is used to search for the latest visiting patients conveniently. Specify Modality (imaging type) to search only the patients undergone the applicable Modality and by setting Modality in conjunction with the period, lookup patients who have been scanned for specified images during a prescribed period.

Retrieved patient list indicates patient ID, name, gender, date of birth as well as number of each Modality scans for easy understanding of the scan status of each patient, also select a patient and choose either oral sensor imaging, oral camera imaging or Export button from below to immediately execute functions of the applicable button.

Screen composition of the 'Search' tab and contents of each item are as follows.

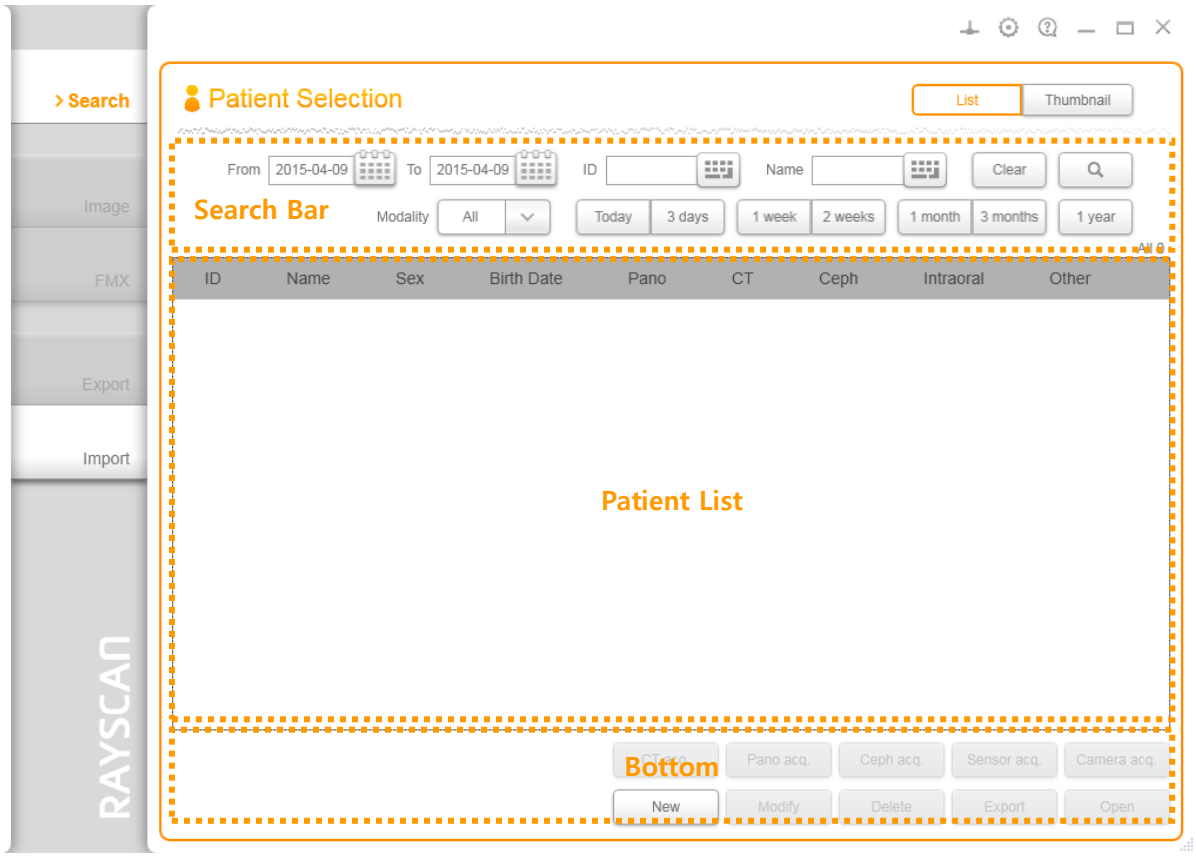
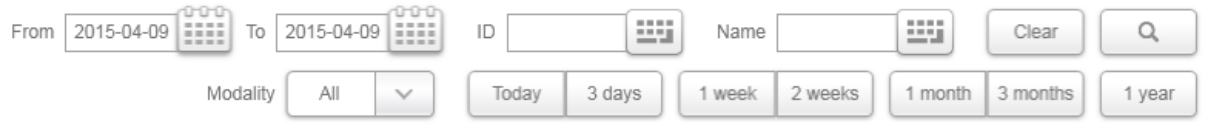



**Figure 1. 'Search' Tab screen**

## Search Bar




| Item | Description |
|---|---|
| **From** | Setup beginning date of the period to be searched. |
| **To** | Setup ending date of the period to be searched. |
| **Patient ID** | Patient ID |
| **Patient Name** | Name of the patient |
| **Modality** | Scan type |
| **Today** | Search for a list of patients registered or scanned today. |
| **3 days** | Search for a list of patients registered or scanned within 3 days. |
| **1 week** | Search for a list of patients registered or scanned within 1 week. |
| **2 weeks** | Search for a list of patients registered or scanned within 2 weeks. |
| **1 month** | Search for a list of patients registered or scanned within 1 month. |
| **3 months** | Search for a list of patients registered or scanned within 3 months. |
| **1 year** | Search for a list of patients registered or scanned within 1 year. |
| **Calendar** | Calendar display button |
| **Clear All** | Delete specified search criteria and return to initial condition. |
| **Search** | Search the scan list using a specified search criteria. |

## Patient List

| Patient ID | Patients Name | Patients Sex | Patients Birth Date | PX | CT | DX | IO | OT |
|---|---|---|---|---|---|---|---|---|
| PID2012-00002 | Maria Jackson | F | 1989-01-18 | 1 | 0 | 0 | 1 | 0 |
| PID2012-00001 | Linda Tailer | F | 1985-08-17 | 0 | 0 | 1 | 0 | 0 |

| Item | Description |
|---|---|
| **Patient ID** | Patient ID |
| **Patients Name** | Name of the patient |
| **Patients Sex** | Gender of the patient |
| **Patients Birth Date** | Patient's date of birth |
| **PX** | Number of Panorama image scans |
| **CT** | Number of CT image scans |
| **DX** | Number of Cephalo image scans |
| **IO** | Number of oral sensor image scans |
| **OT** | Number of oral camera image scans |

### Bottom

-Standard

-Buttons shown below are activated during patient list selection.

| Item | Description |
|---|---|
| **CT acq.** | Select patient then click to call RAYSCAN for CT acquisition. |
| **Pano acq.** | Select patient then click to call RAYSCAN for Pano acquisition. |
| **Ceph acq.** | Select patient then click to call RAYSCAN for Ceph acquisition. |
| **Sensor acq.** | Select patient then click to convert to screen for oral sensor imaging. |
| **Camera acq.** | Select patient then click to convert to screen for oral camera imaging. |
| **New** | Button for adding new patients. |
| **Modify** | Button for modifying selected patient information. |
| **Delete** | Button for deleting selected patient information. |
| **Export** | Select patient then click to convert to the Export screen. |
| **Open** | Select patient then click to Open patient and convert to image view screen. |

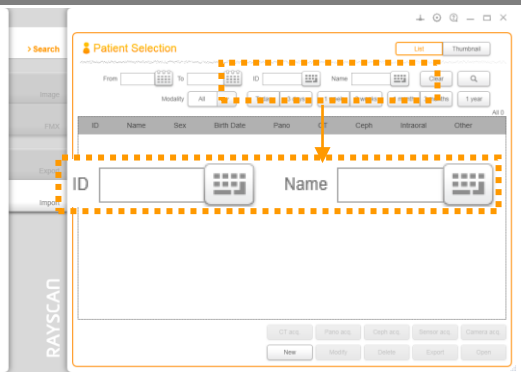
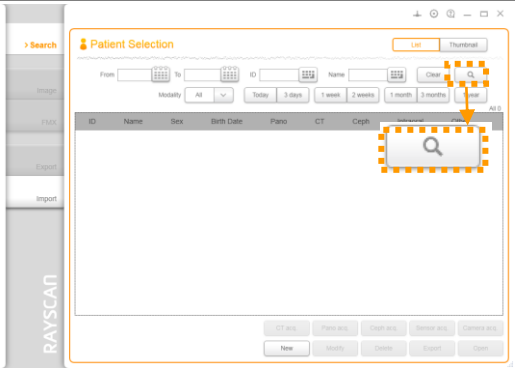
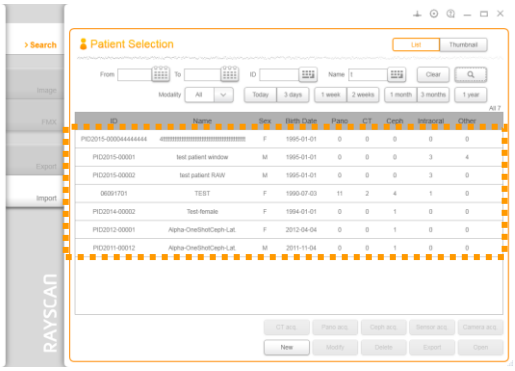
## 2.1 Search Patient

From the 'Search' tab screen, setup the search criteria to search for the patient.

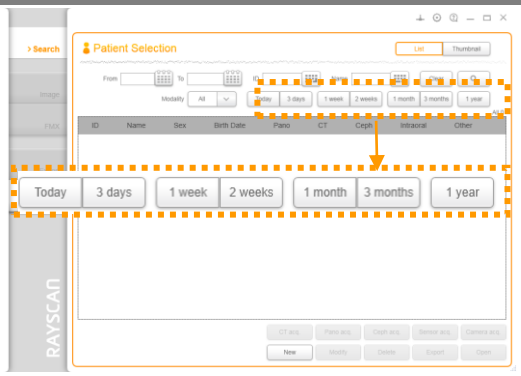
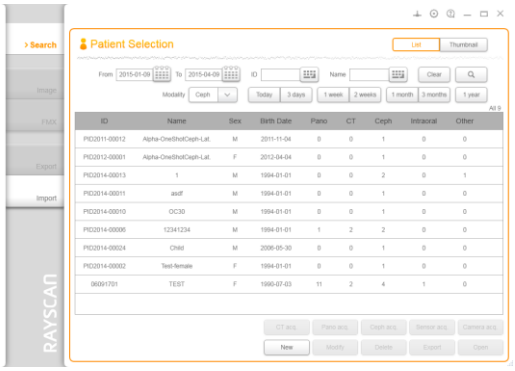
**'Search by Patient ID, Name'** where search is conducted by entering patient ID or name of the patient intended for search is entered, **'Search by using the period search button'** in which the patient having undergone imaging during a specified period is searched, **'Search by setting user period'**, where patients having obtained images during an arbitrary period is searched and **'Search by Modality'** function which searches for patients having obtained a specified image are supported.

| | |
|---|---|
| ***TIP*** | Select Modality then setup Period for search enabling easy search of patients having been scanned for certain images during the specified period.<br>※2.1 Patient Search → Search by Modality |

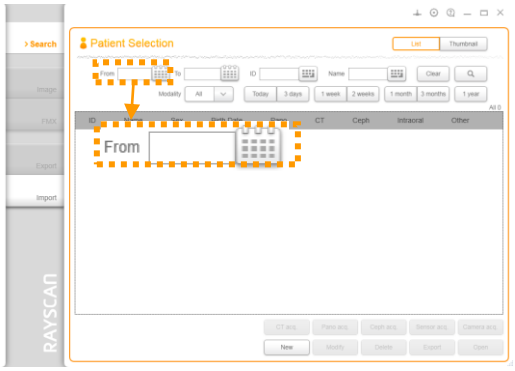
## Search by Patient ID, Name

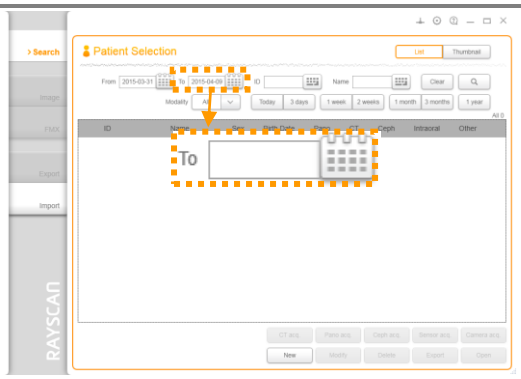
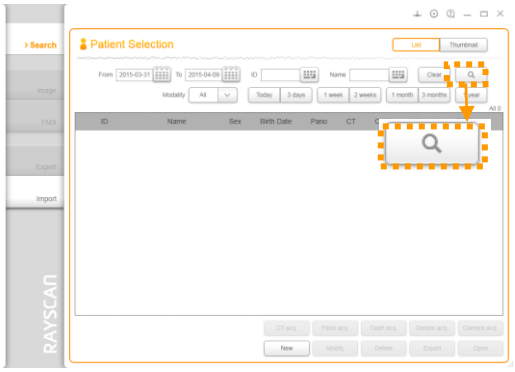
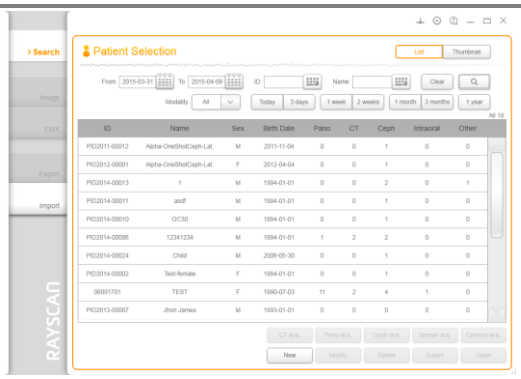
| No. | Figure | Description |
|---|---|---|
| 1 |  | Enter patient ID or name of the patient intended for search in 'Patient ID' or 'Patient Name' field located on upper center of the screen.<br><br>***Tip*** **– Entering first letter of the patient name or ID will retrieve list of patients whose name begins with the applicable letter.**<br><br>***Caution*** **– Entry of less than 50 characters, Eng·Numbers·Chinese characters·Japanese / Special characters '-'(Hyphen), ','(Comma), '.'(Period), and Space key are permitted.** |
| 2 |  | Click the [Search] button on upper right side of the screen. |
| 3 |  | Retrieved patient information is displayed on the patient list.<br><br>***Tip*** **– Click ' Patient ID, Patients Name, Patients Sex, Patients Birth Date, PX, CT, DX, IO, OT' on top of the patient list to arrange the patient list according to the applicable item.** |

## Search using the Period Search button

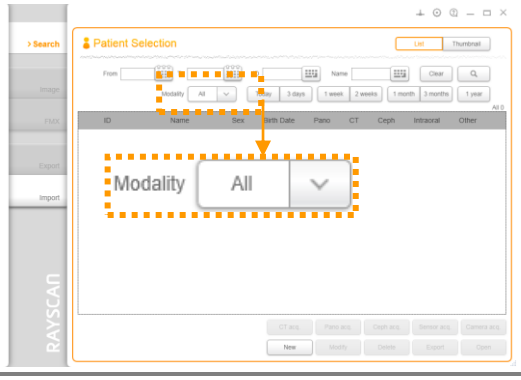
| No. | Figure | Description |
|---|---|---|
| 1 |  | Press the 'Period Search' button on top right side of the screen.<br><br>***Tip* – Total of 7 different period search function (Today, 3 days, 1 week, 2 weeks, 1 month, 3 months, 1 year) are provided.** |
| 2 |  | Retrieved patients are displayed on the patient list. |

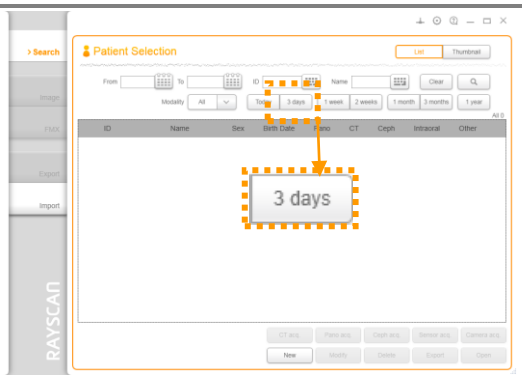
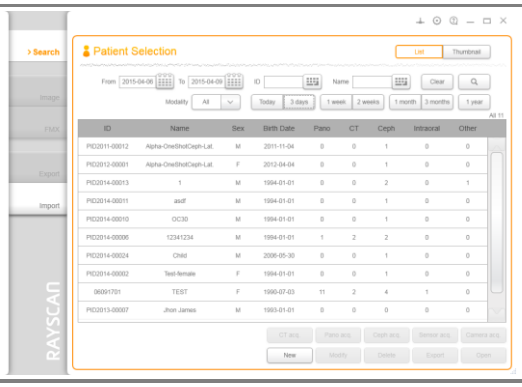
## Search by setting the User Period

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Calendar] button of the 'From' category on upper left side of the screen and in the appearing calendar, select the search begin date. |

| | | |
|---|---|---|
| 2 |  | Click the [Calendar] button of the 'To' category on upper left side of the screen and in the appearing calendar, select the search end date. |
| 3 |  | Click the [Search] button located on upper right side of the screen. |
| 4 |  | Retrieved patients are displayed on the patient list. |

## Search by Modality

| No. | Figure | Description |
|---|---|---|
| 1 |  | Select the search desired 'imaging type' in the 'Modality' item located on upper center of the screen.<br><br>***Tip*** **– Imaging type: All, CT, Pano(Panorama), Ceph(Cephalo), Intraoral, Other(Camera)** |

| | | |
|---|---|---|
| 2 |  | Click [Search] button or 'Shortcut period search' button located on upper center of the screen.<br><br>***Tip* – Clicking the [Search] button will search for patients having had the applicable Modality scan from the entire patient list.**<br>**Click the [1 week] button to search for patients having been scanned for the applicable Modality among all patients visiting the practice within 1 week**. |
| 3 |  | Retrieved patients are displayed on the patient list. |

## 2.2 Register New Patient

'RayScan Alpha System' allows new patient information registration through patient registration function or DICOM Worklist of RayScan Program.

The method for registering new patients in SMARTDent is described below.

Click [New] from the 'Search' tab screen then the 'New Patient' window will appear.

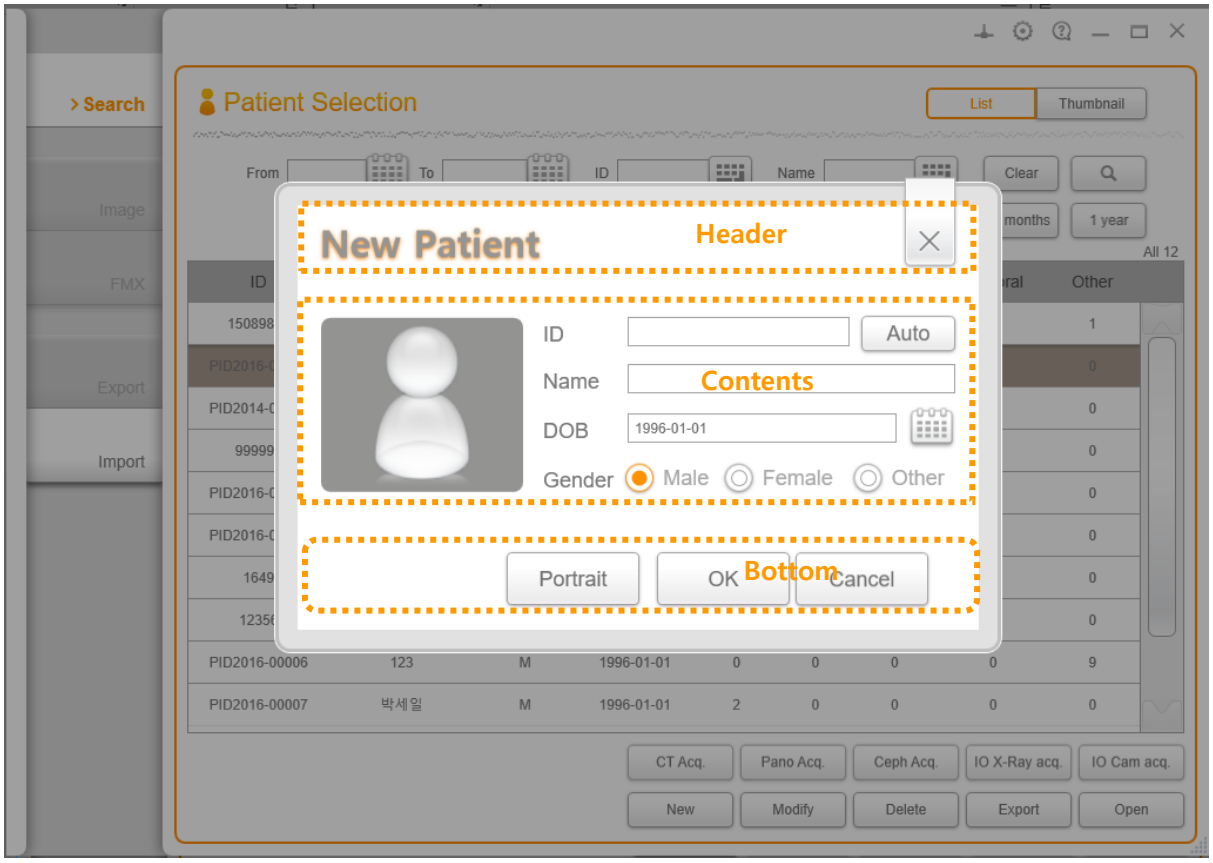



그림 1 New Patient (Full Name Format)

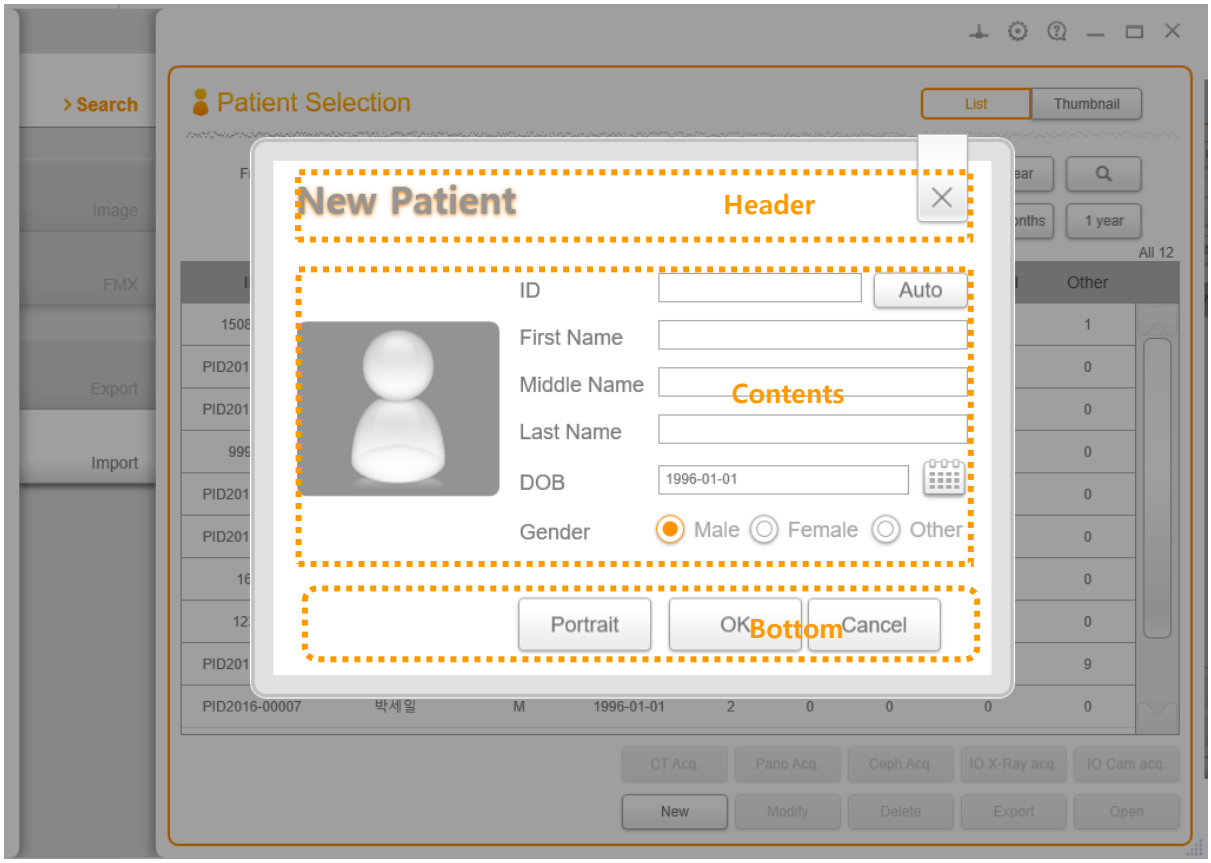


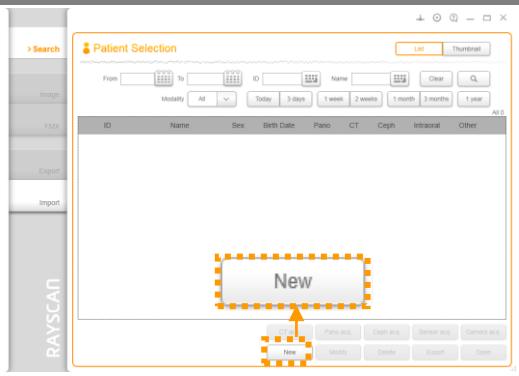
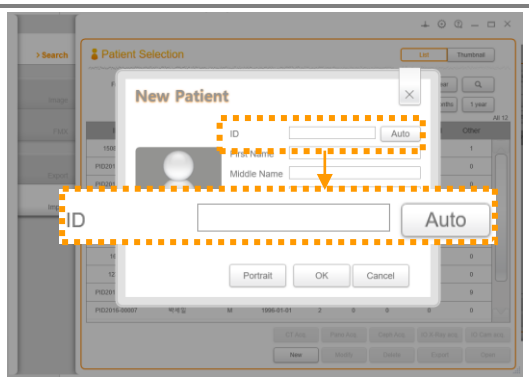
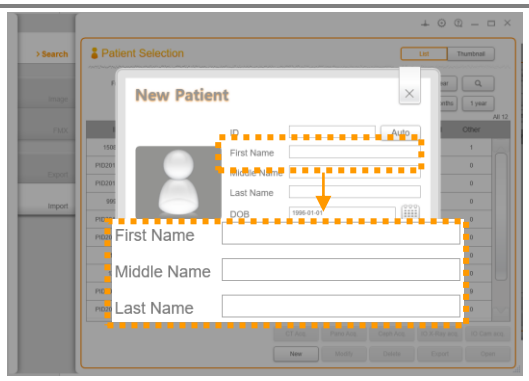

그림 2 New Patient (Last/First Name Format)

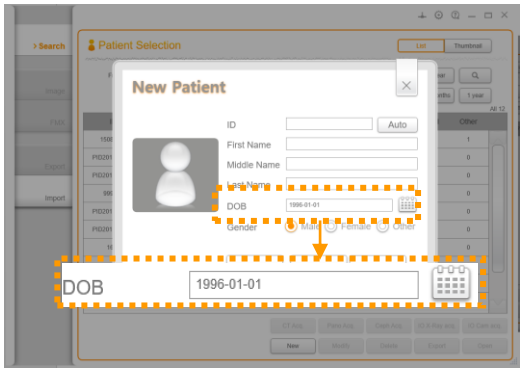
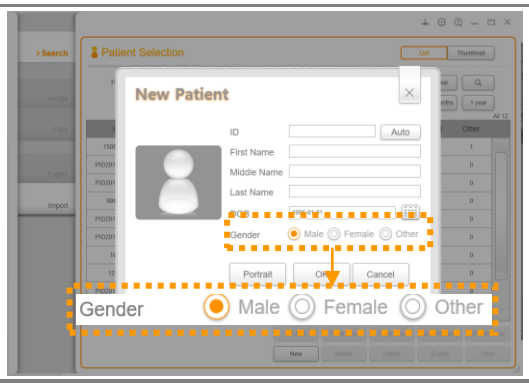
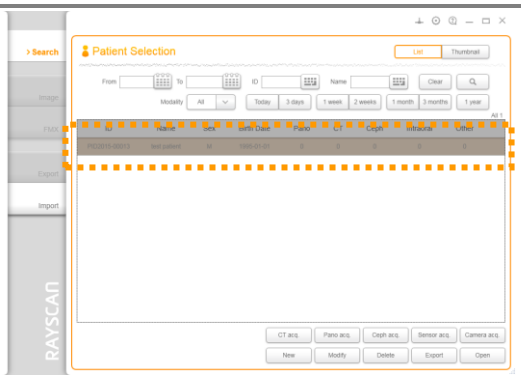
Details of the 'Contents' category in the 'New Patient' window are as follows.

## Contents

| Item | Description |
|---|---|
| **Patient ID** | Patient ID |
| **Auto** | Patient ID Auto Create button |
| **First Name** | First name of the patient |
| **Middle Name** | Middle name of the patient |
| **Last Name** | Last name of the patient |
| **Patients Sex** | Gender of the patient |
| **Patients Birth Date** | Patient's date of birth |
| **Calendar** | Calendar display button |

## Register New Patient

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [NEW] button located on right bottom side of the screen. |
| 2 |  | Enter 'Patient ID' in the New Patient registration window.<br><br>***Tip*** **– Create 'Patient ID' automatically by clicking the [Auto] button.**<br><br>***Caution*** **– Entry of less than 20 characters, English·Numbers·Chinese characters·Japanese / Special characters '-'(Hyphen), ','(Comma), '.'(Period), Space key is permitted.** |
| 3 |  | Enter 'Patient Name' in the New Patient registration window.<br><br>***Caution*** **– Patient name input criteria: less than 50 characters, English·numbers·Chinese characters·Japanese/ Special characters '-'(Hyphen), ','(Comma), '.'(Period), And space key are permitted.** |

| | | |
|---|---|---|
| 4 |  | Enter 'Year, Month, Date of birth' in the New Patient registration window.<br><br>***Caution*** **- The setting for Child is distinguished by age of the patient therefore accurately enter the date of birth. (Cut-off for Child is 12 years of age)** |
| 5 |  | Select 'Gender' from the New Patient registration window.<br><br>***Tip*** **- Type: [Standard] Male, Female, Other (-ex)Emergency)** |
| 6 | | When patient information entry is completed, click the [OK] button. |
| 7 |  | Verify creation of a new patient from the patient list. |

## 2.3 Modify Patient Information

Select patient from the 'Search' tab screen then click [Modify] to modify patient information.

| | |
|---|---|
| ***CAUTION*** | Patient information of a patient who has scanned image or order, may not be modified.<br>Please check patient information prior to an capture request. |

If select patient and click [Modify] button from Search tab, 'Modify' window will appear.

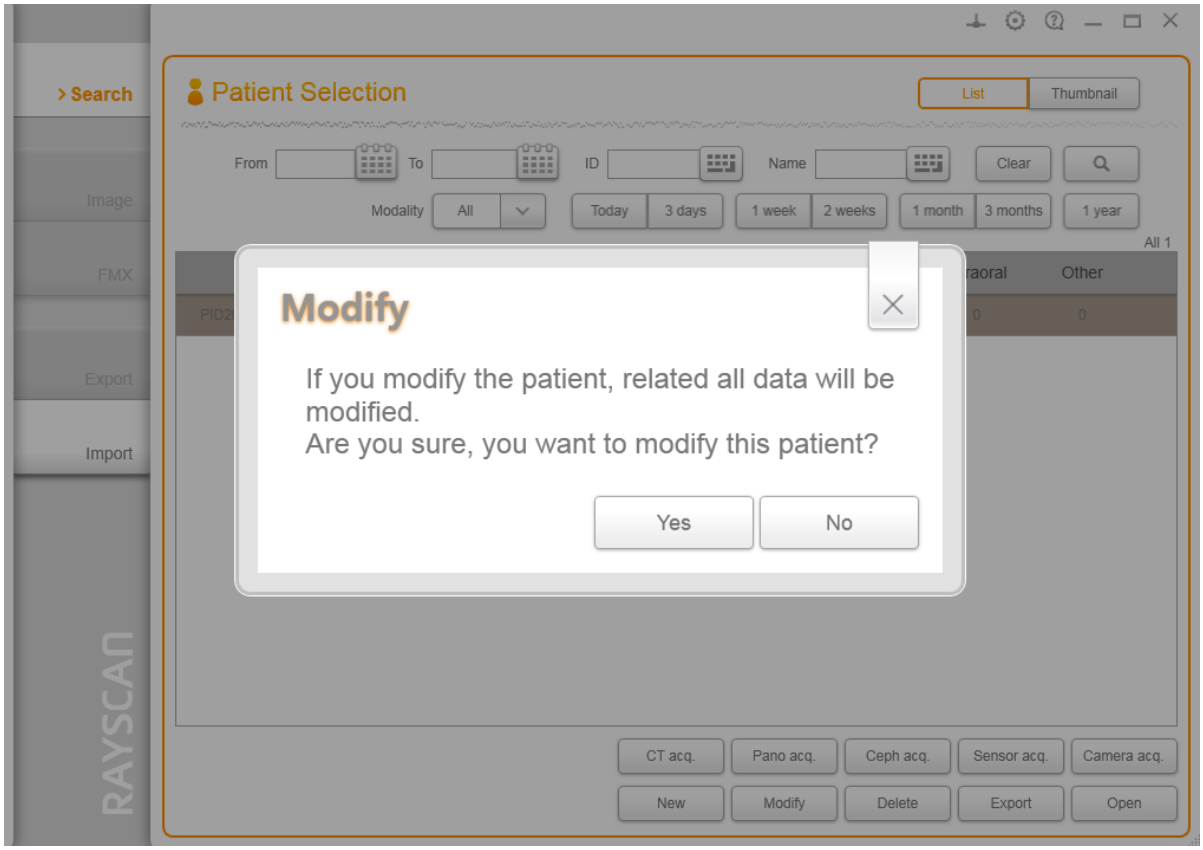



**Figure 2. Modify message**

If select [Yes] button from 'Modify' window 'Modify Patient' window will appear..

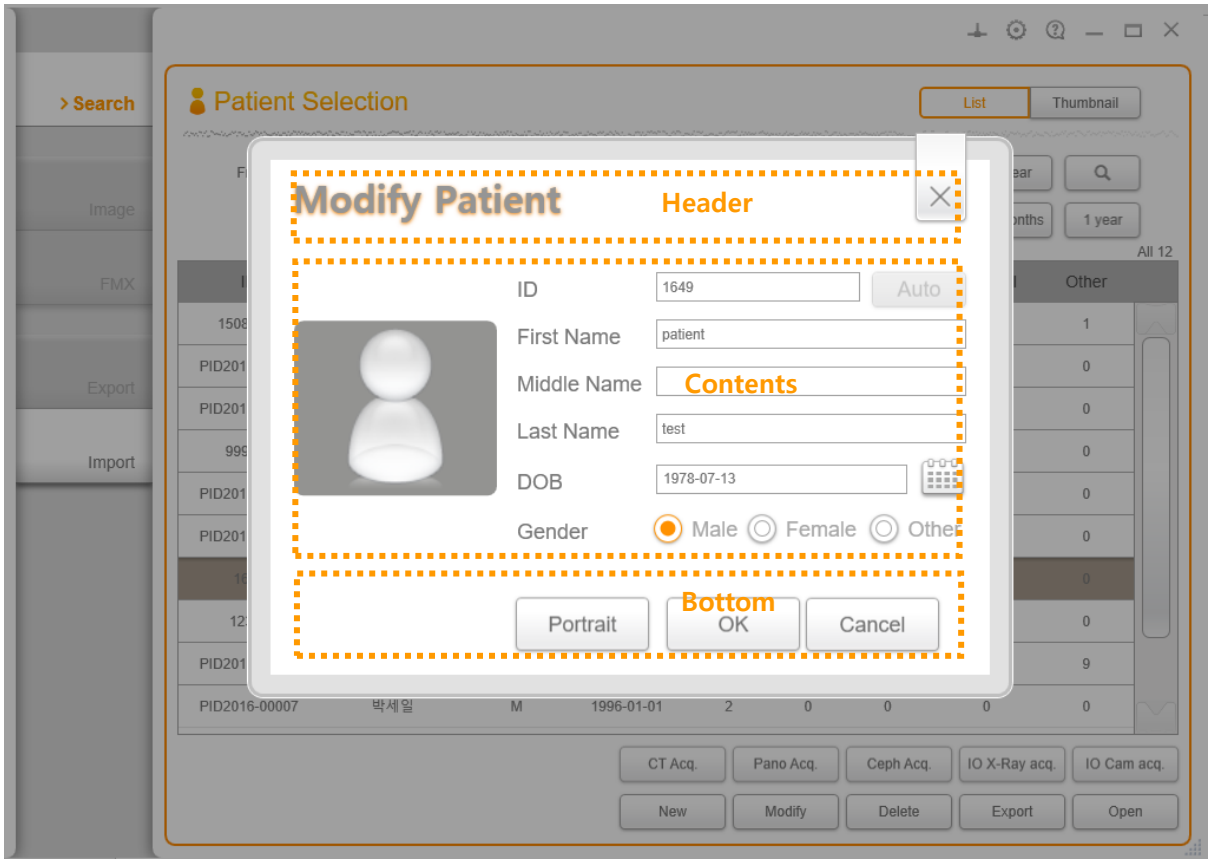


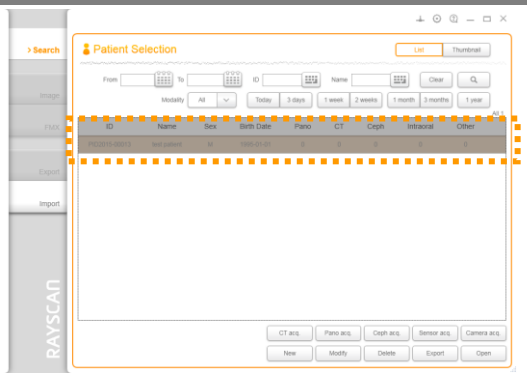
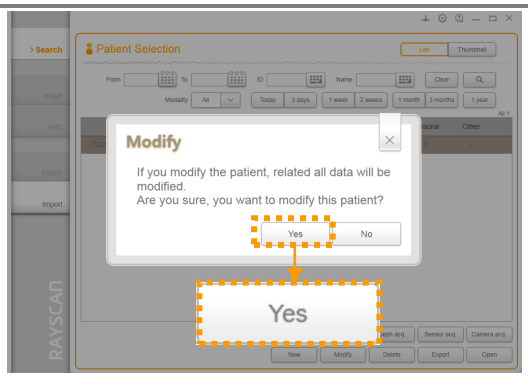
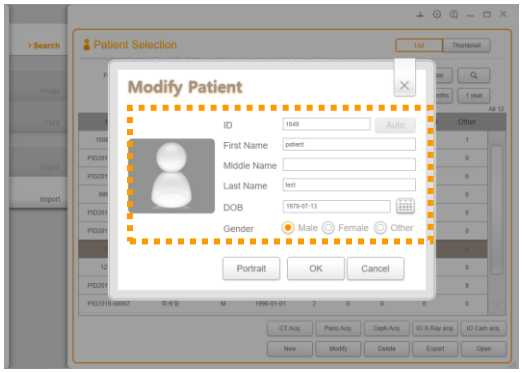

**Figure 3. Modify Patient**

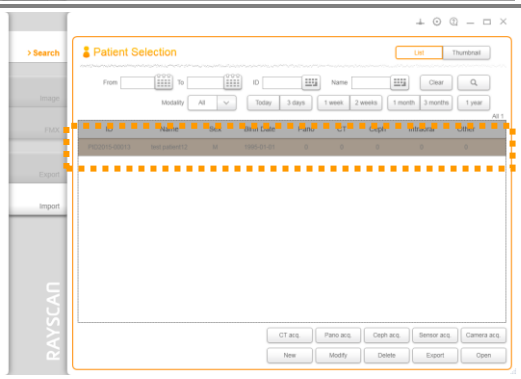
Details of the 'Contents' category in 'Modify Patient' window are as follows.

## Contents

| Item | Description |
|---|---|
| **Patient ID** | **This item is not subject to modification.** |
| **Auto** | This item remains inactive. |
| **First Name** | First name of the patient |
| **Middle Name** | Middle name of the patient |
| **Last Name** | Last name of the patient |
| **Patients Sex** | Gender of the patient |
| **Patients Birth Date** | Patient's date of birth |
| **Calendar** | Calendar display button |
| **Portrait of Patients** | Portrait of Patients |
| **Portrait of Patients** | Portrait of Patients button |

## Modify Patient Information

| No. | Figure | Description |
|---|---|---|
| 1 |  | Utilize the patient search function to look-up the patient whose patient information requires modification then select the appropriate patient list. |
| 2 | | Click the [Modify] button located on bottom right side of the screen. |
| 3 |  | Click [Yes] button. |
| 4 |  | Revise changes in the Modify Patient information window.<br><br>***Notice*** **– To prevent wrongful usage, SMARTDent does not support modification of the Patient ID. When Patient ID modification is required, please contact the customer service center.** |

| | | |
|---|---|---|
| 5 | | When all patient information are entered, click the [OK] button. |
| 6 |  | Verify modification of the patient information from the patient list. |

## 2.4 Delete Patient

Select patient from the 'Search' tab screen then click the [Delete] button to delete the selected patient.

> ***CAUTION*** If delete patient, the patient's information will be deleted.

If select a patient and click [Delete] button from Search tab 'Password' window will appear..

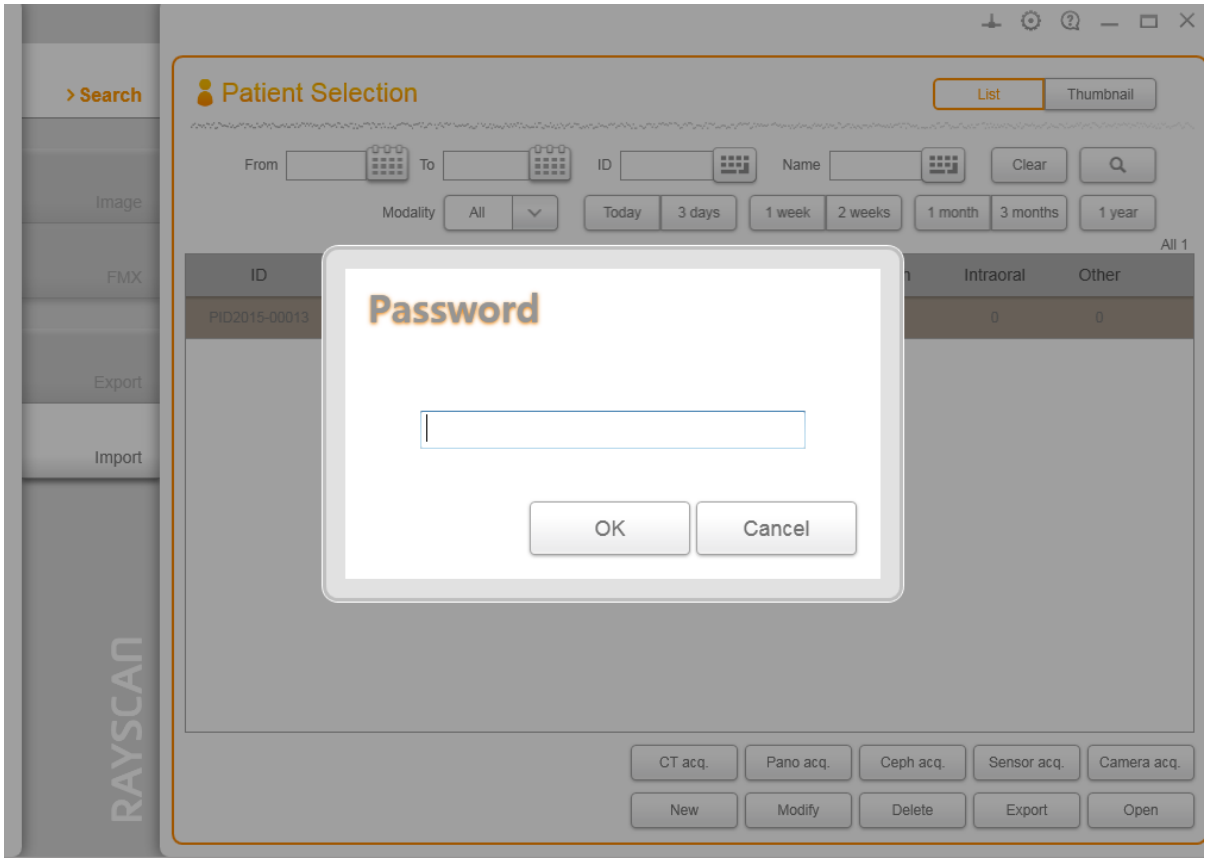



**Figure 4. Password window**

If insert password and press 'Enter' or click 'OK' button, 'Delete' button will appear.

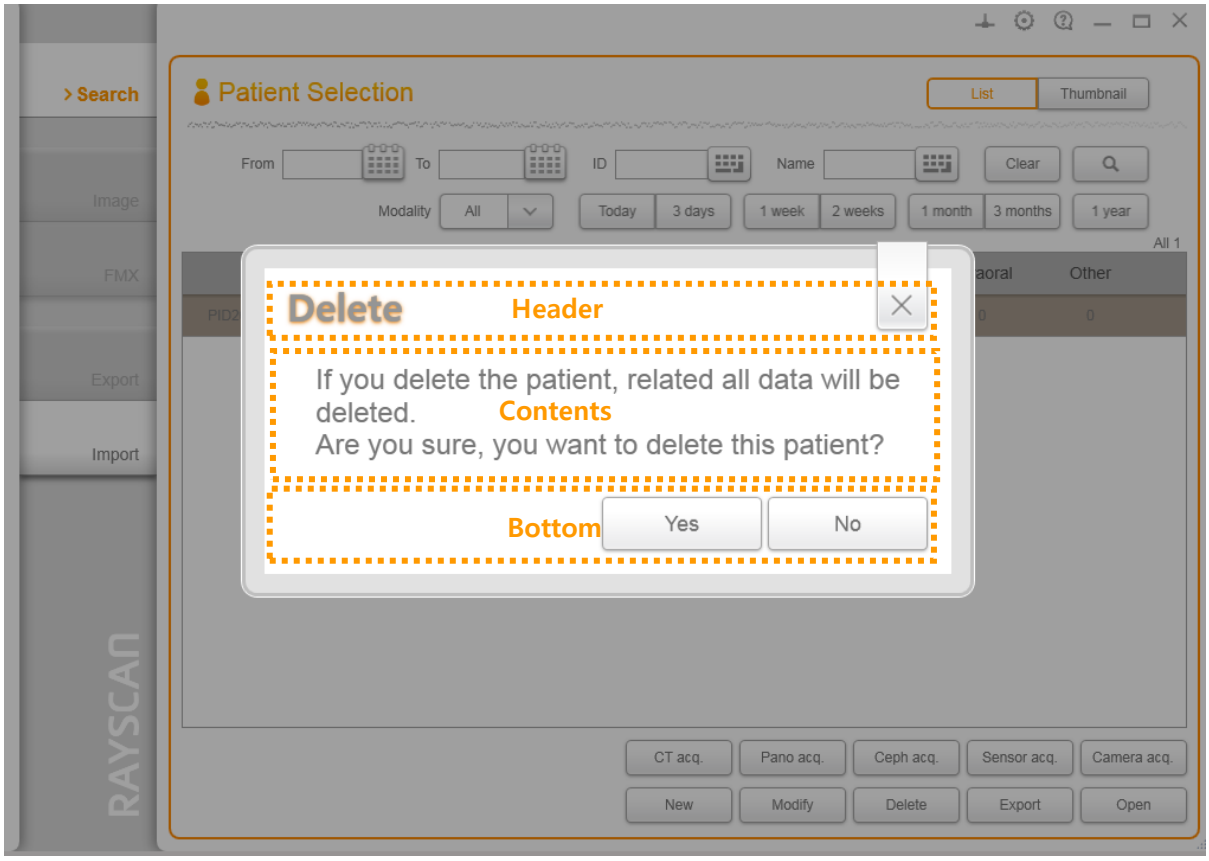


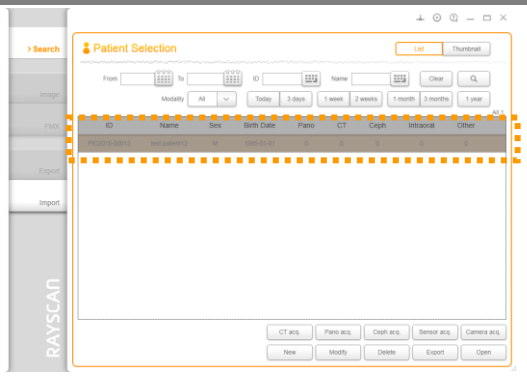
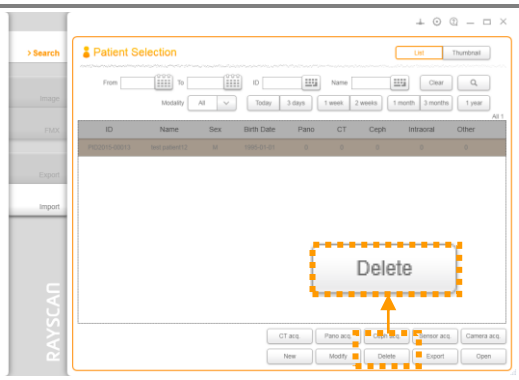
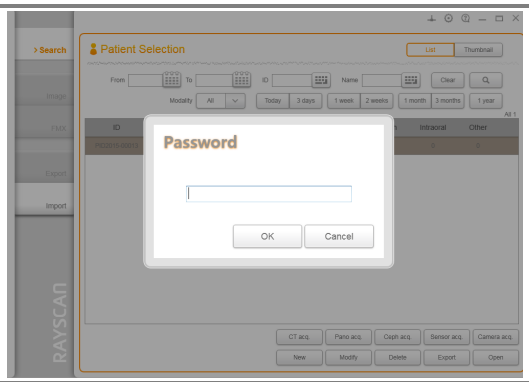
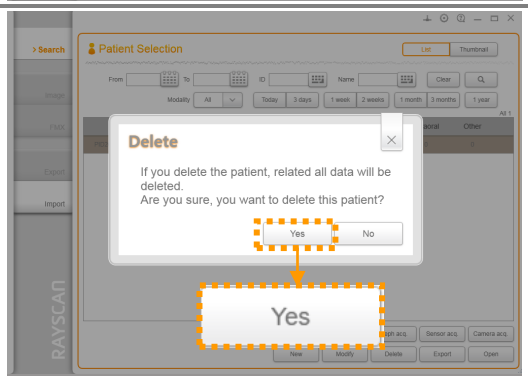

**Figure 5. Patient Delete**

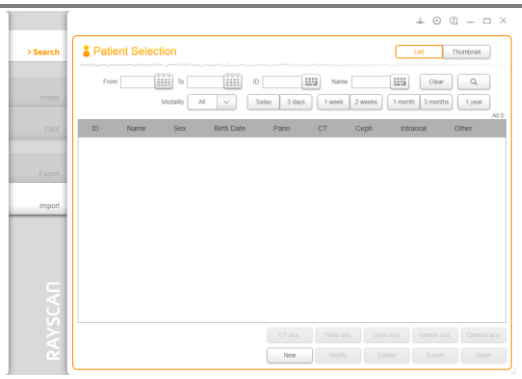
## Contents

| Item | Description |
|---|---|
| **Message** | Delete confirm message display |

If click 'Yes' button patient information will be deleted.

## Delete Patient

| No. | Figure | Description |
|---|---|---|
| 1 |  | Utilize the patient search function to search for the patient whose information must be deleted then select the appropriate patient list. |
| 2 |  | Click the [Delete] button located on bottom of the screen. |
| 3 |  | When delete a patient insert password.<br><br>***Notice*** **– The password is "SymphonY" and case-sensitive..** |
| 4 |  | When Delete confirmation pop-up window appears, click [Yes].<br><br>***Notice*** **– All information will be deleted include acquisition image*s.*** |

| | | |
|---|---|---|
| 5 |  | Confirm that applicable patient list is deleted from the patient list. |

## 2.5 Portrait of patients

If click [New] button from Search tab 'New Patient' window will appear.

Click [Modify] button to portrait image for existing patient.

If click Portrait button from New Patient window 'Portrait Of Patient' window will appear.

***Notice*** If there is no acquisition image or file default image will be shown instread.

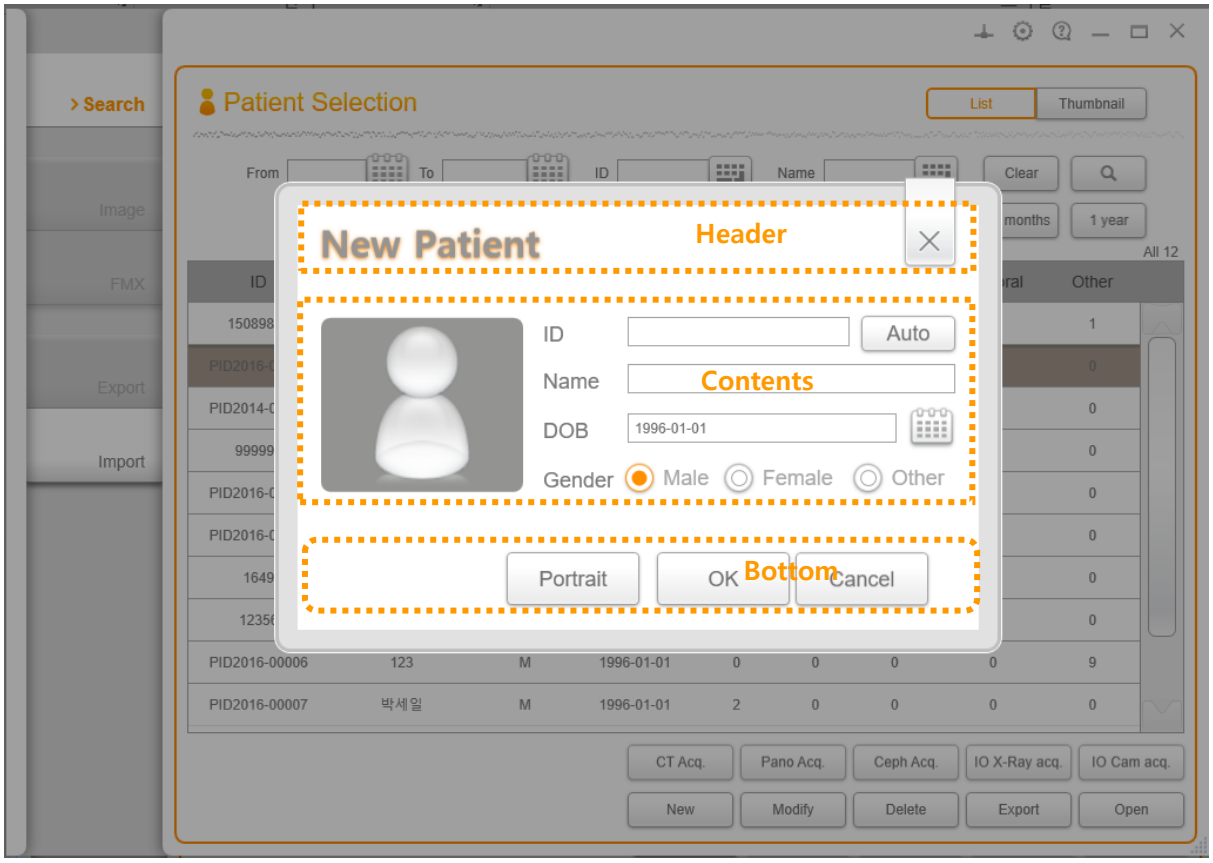



**Figure 6. New Patient**

## Buttom

| Item | Description |
|---|---|
| **Portrait** | Portrait of patients |

You can register a patient's photo by taking a photo or bringing image.

> ***Notice*** If there is no available acquisition device you only use [File] tab.

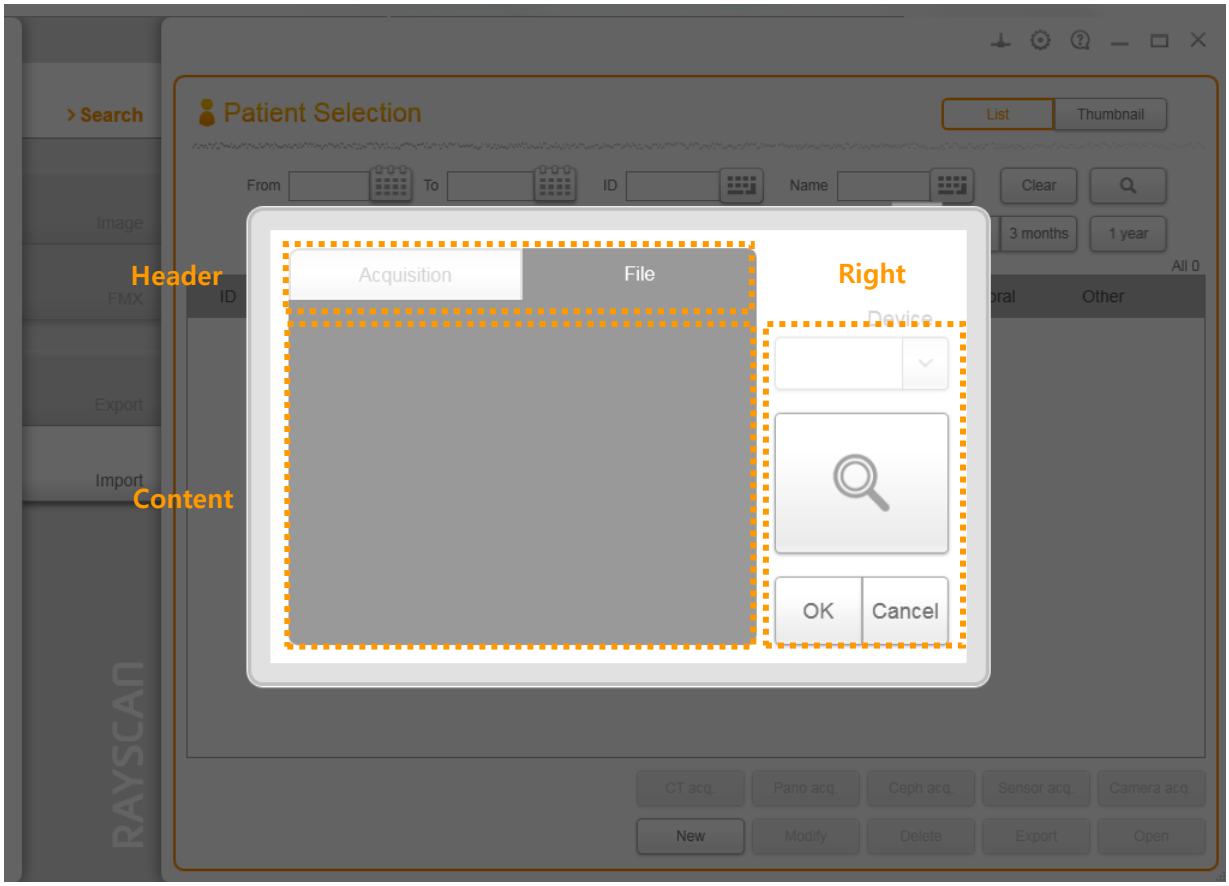
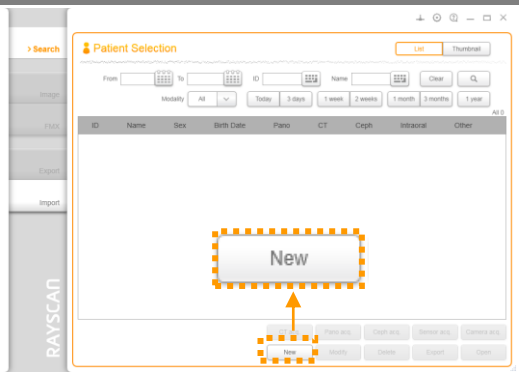
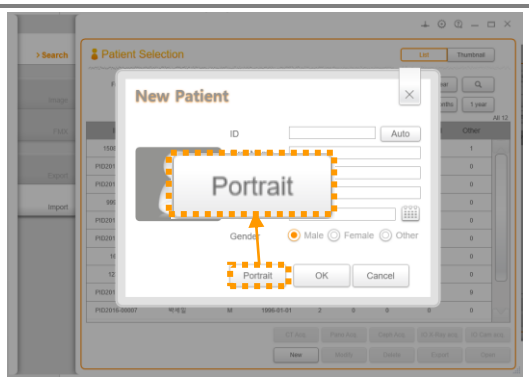
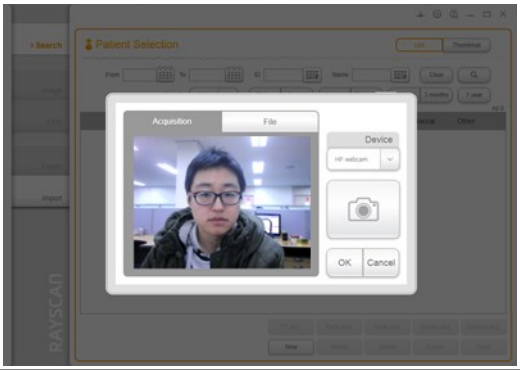
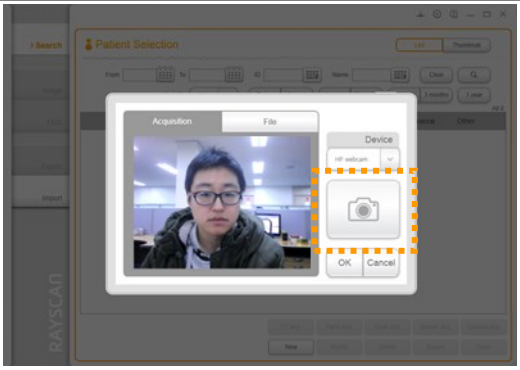


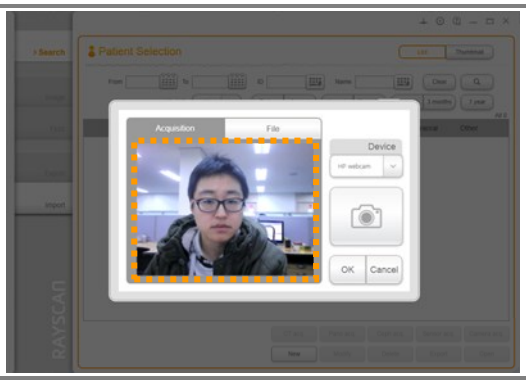
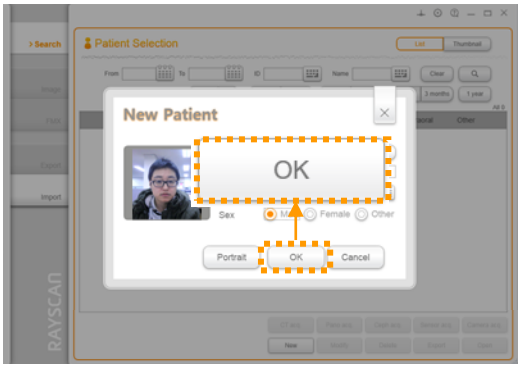

**Figure 7. Portrait of patients**

## Right

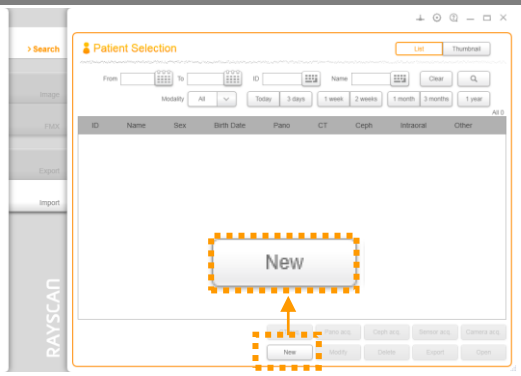
| Item | Description |
|---|---|
| **Device list** | Show connected devices (It is disabled in File tab) |
| **Acquisition** | (Show icon in 'Acquisition' tab) save current display |
| **Search** | ('Show icon in 'File' tab) Search file |
| **OK** | Save patient's information |
| **Cancel** | Cancel saving patient's information |

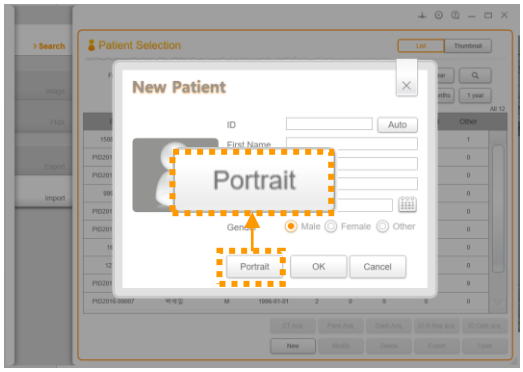
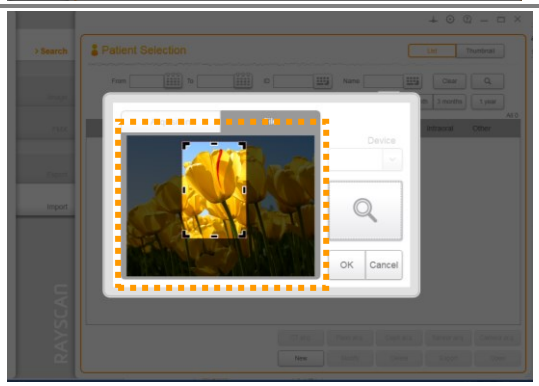
## Register portrait by taking photo

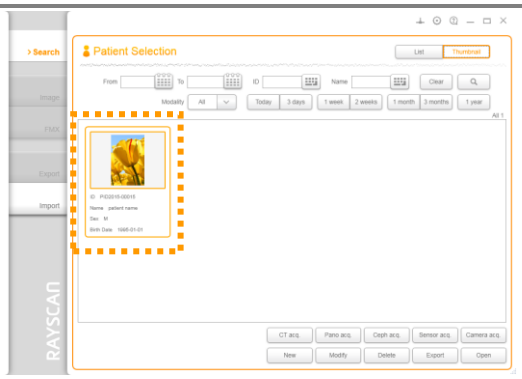
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [New] button. |
| 2 |  | Click the [Portrait] button. |
| 3 |  | If webcam is connected 'Acquisition' tab will be activated automatically |
| |  | If click [Capture] button current display will be captured.<br>***Notice* – If click [OK] button current display will be saved.** |

| | | |
|---|---|---|
| 5 |  | Move the rectangle which is setting "Image range" and click [OK] button. |
| 6 |  | You can check the photo in 'New Patient' window<br>After check the photo click the [OK] button. |
| 7 | | If click 'Thumbnail' mode from Search tab you can check portrait of patients. |

## Register portrait by bringing image

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click [New] button |

| | | |
|---|---|---|
| 2 |  | Click [portrait] button |
| 3 | | Click [Search] button from File tab to bring image<br><br>***Notice* – If webcam is connected real-time shooting is possible.** |
| 4 |  | Move the rectangle which is setting "Image range" and click [OK] button.<br><br>***Notice* – If click [OK] button current display will be saved.** |
| 5 | | You can check the photo in 'New Patient' window<br>After check the photo click the [OK] button. |

| | | |
|---|---|---|
| 6 |  | If click 'Thumbnail' mode from Search tab you can check portrait of patients. |

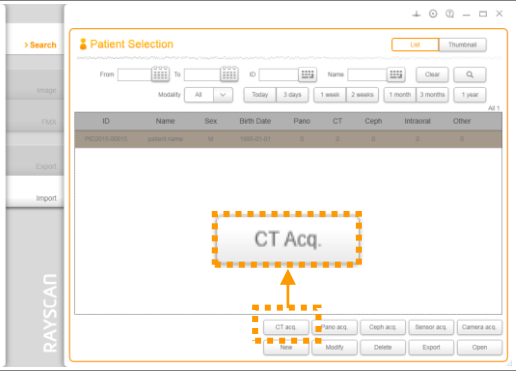
## 2.6 CT Acquisition

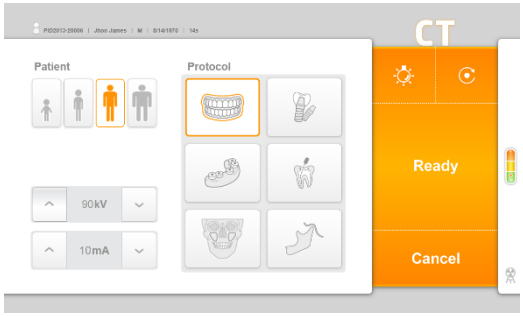
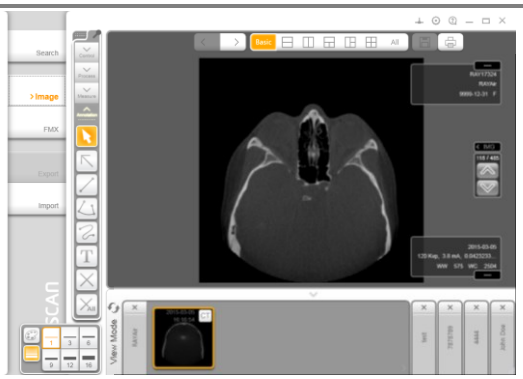
Click 'CT Acq.' Button. It calls RAYSCAN for CT Acquisition.

If CT Acquisition is completed normally, RAYSCAN will be shutdowned automatically and SMARTDent shows the images.

> ***Notice*** If Server and RAYSCAN do not exist in local PC, you cannot use this function.

### CT Acquisition

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the patient for CT Acquisition.<br>If the [CT Acq.] button is active click it. |

| | | |
|---|---|---|
| 2 |  | RAYSCAN will be shown and you can click the protocol for CT Acquisition. |
| 3 |  | If CT Acquisition completed, then click the [Comfirm] button. RAYSCAN will shutdown automatically and SMARTDent will show the image(s) in Image tab.<br><br>***Notice*** **– If CT Acquisition is canceled or an error occurs SMARTDent will not show the image(s).** |

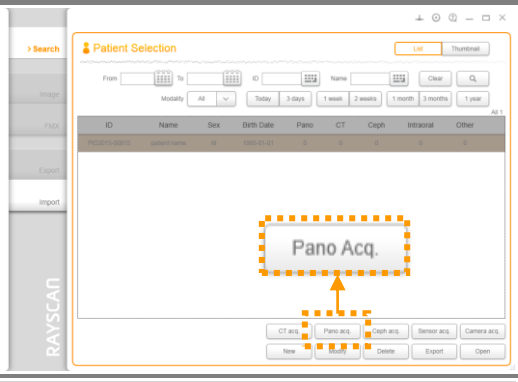
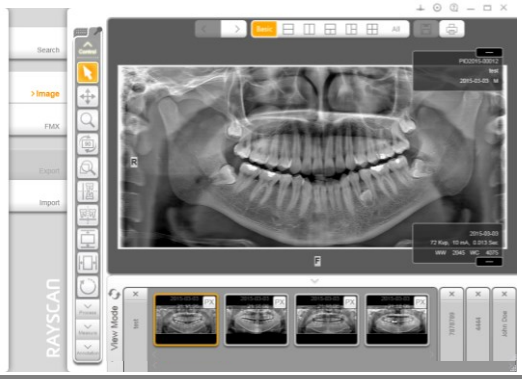
## 2.7 Pano Acquisition

Click 'Pano Acq.' Button. It calls RAYSCAN for Pano Acquisition.

If Pano Acquisition is completed normally, RAYSCAN will be shutdowned automatically and SMARTDent shows the images.

| | |
|---|---|
| ***Notice*** | If Server and RAYSCAN do not exist in local PC, you cannot use this function. |

### Pano Acquisition

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the patient for Pano Acquisition.<br>If the [Pano Acq.] button is active click it. |
| 2 | | RAYSCAN will be shown you can click the protocol for Pano Acquisition. |
| 3 |  | If Pano Acquisition completed, then click the [Comfirm] button. RAYSCAN will shutdown automatically and SMARTDent will show the images in Image tab.<br><br>***Notice*** **– If Pano Acquisition is canceled or an error occurs SMARTDent does not show the images.** |

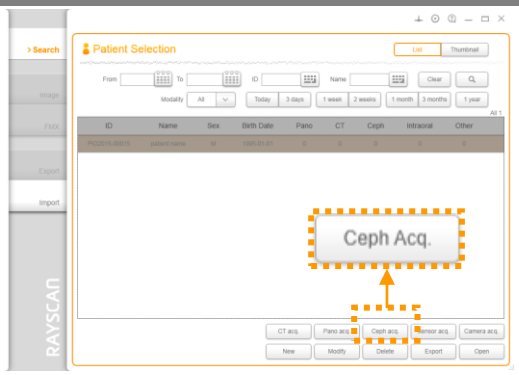
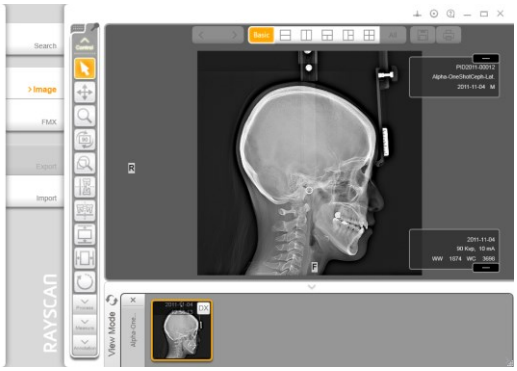
## 2.8 Ceph Acquisition

Click 'Ceph Acq.' Button. It calls RAYSCAN for Ceph Acquisition.

If Ceph Acquisition is completed normally, RAYSCAN will be shutdowned automatically and SMARTDent shows the images.

***Notice*** If Server and RAYSCAN do not exist in local PC, you cannot use this function.

## Ceph Acquisition

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the patient for Ceph Acquisition.<br>If the [Ceph Acq.] button is active click it. |
| 2 | | RAYSCAN will be shown and you can click the protocol for Ceph Acquisition. |
| 3 |  | If Ceph Acquisition completed, then click the [Comfirm] button. RAYSCAN will shutdown automatically and SMARTDent will show the images in Image tab.<br><br>***Notice*** – **If Ceph Acquisition is canceled or an error occurs SMARTDent does not show the images.** |

# Image Management

# 3

# 3 Image Management

'SMARTDent' provides a function that comprehensively controls all images used by dental practices. Enables optimized decipher of panorama, cephalo and intraoral sensor x-ray images in accordance with the diagnostic goal and through the use of length measurement, angle measurement and implant simulation functions, images may be analyzed and treatment plan can be established.

Use the various Multi-view functions to compare and analyze pre/post treatment of the same modality image. Functions that can construct images of various types on one screen, text insert and line drawing functions can be utilized for more efficient consult with the patients.

SMARTDent link to the VCeph which is orthodontic analysis and simulation program, and Xelis which is CT image diagnosis and simulation program. So it supports for convenient diagnosis of Cephalo, CT image as well as cephalometric analysis, CT image analysis and simulation functions.

Screen composition of the 'Image' tab and description of each item are as follows.

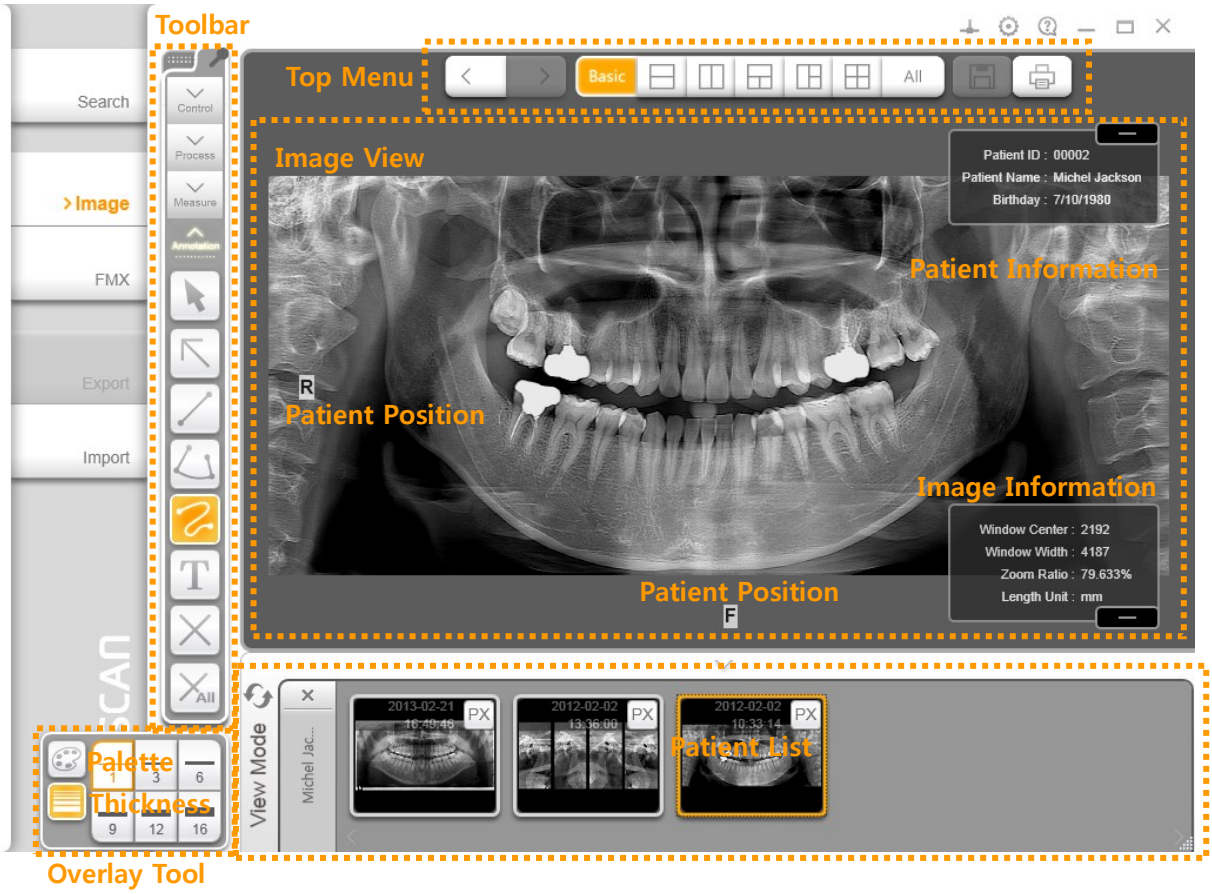



**Figure 8. 'Image' tab screen**

## Top Menu

| Item | Description |
|---|---|
| **Previous Series** | Shows the previous image of the currently selected image in the lower screen Thumbnail View. |
| **Next Series** | Shows the image following the currently selected image in th lower screen Thumbnail View. |
| **Basic View** | Displays a single image on one screen in basic layout. |
| **Vertical 2 View** | 2 images separated vertically are displayed. |
| **Horizontal 2 View** | 2 images separated horizontally are displayed. |
| **Vertical 3 View** | Screen is divided into 3 sections; upper, lower left and lower right displaying 3 images. |
| **Horizontal 3 View** | Screen is divided into 3; left, upper right and lower right displaying 3 images. |
| **4 View** | 4 images dividing the screen into up, down, left and right are displayed. |
| **Full Screen** | Displays the selected image on the full screen. |
| **Save** | Saves the Measure, Annotation and Windowing value of the currently selected image. |
| **Print** | Prints the image of the presently selected image. |

## Image View

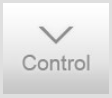
| Item | Description |
|---|---|
| **Image View** | Displays the selected image.<br>Upto 4 images can be viewed and by displaying 4 different images, they may be compared and analyzed. |
| **Patient Position** | Displays position information of the patient. |
| **Patient Information** | Displays the patient information.<br>Displays patient ID, patient name, date of birth and Protocol. |
| **Image Information** | Displays the image information.<br>Displays Window Center, Window Width, Zoom Ratio and Length Unit. |

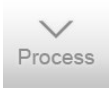
| | |
|---|---|
| ***TIP*** | Press the Patient Information and Image Information buttons to fold and unfold. |

| | |
|---|---|
| ***NOTICE*** | Patient position information is classified into the following.<br>[L]: Left, [R]: Right, [F]: Feet, [H]: Head, [A]: Anterior, [P]: Posterior |

| | |
|---|---|
| | Protocol is a further detailed imaging mode of Modality and are classified into the following.<br>PX – Normal, TMJ, Pedodontics, Sinus<br>CT – Standard, Implant Surgery, Surgical Guide, Endo Treatment, CT TMJ, CT Sinus<br>DX – Lateral, PA/AP, SMV, Carpus, Waters, Reverse-Towne<br>IO/OT – Tooth number |

## Tool bar

| Item | | Description |
|---|---|---|
|  | **Control Toolbar** | Collection of functions that control the basic image display such as move, rotate, zoom and shrink of the patient's images.<br>Press this button to expand on detailed functions for use and press again to hide the detailed functions. |
| | **Select** | Select the image in standard selection enabled status or choose the displayed Measure or Annotation. |
| | **Panning** | Provides a function capable of moving the image shown on screen. |
| | **Zoom** | Provides a function capable of enlarging or shrinking the image shown on screen. |
| | **Rotate** | Provides a function that can rotate the image shown on screen 90 degrees in clockwise direction.<br>When image is rotated then the patient position information is also changed when displayed. |
| | **Mgnify** | Provides a function which enlarges portion of the image shown on screen. |
| | **Vertical Flip** | Provides a function that turns upside down the image shown on screen.<br>Patient position information change coincides with the image alteration when displayed. |

| | | |
|---|---|---|
| | **Horizontal Flip** | Function reverses left and right side of the image shown on screen. Patient position information change coincides with the image alteration when displayed. |
| | **Vertical Fit on** | Size of the image displayed on screen is adjusted to fit the vertical size of the screen. |
| | **Horizontal Fit on** | Size of the image displayed on screen is adjusted to fit left and right side of the screen. |
| | **Initialize Control** | Changes for imaging effects that are standard functions such as move, rotate, zoom and shrink to patient's images are initialized. |
|  | **Process Toolbar** | Collection of functions that can modify Windowing adjustment and Image Processing to images of the patient.<br>Press this button to expand the detailed functions for use and press again to hide the detailed functions. |
| | **Select** | Select the image in standard selection enabled status or choose the displayed Measure or Annotation. |
| | **Color mapping** | Provides a function that changes the color of the images to a specified color for display. |
| | **Windowing** | Changes Windowing of the image currently on screen. |
| | **Invert** | Inverts color of the image currently shown on screen. |
| | **Median** | Applies Median filter to the image currently shown on screen to smooth out the overall image. |
| | **Sharpen** | The image currently shown on screen is clearer overall by applying the Sharpen filter. |
| | **Initialize Process** | All imaging process applied to the patient image displayed on screen is initialized. |
| | **Measure Toolbar** | Collection of functions that can add or delete the length, angle and Implant to the patient image.<br>Press this button to expand the detailed functions for use and press again to hide the detailed functions. |
| | **Select** | Select the image in standard selection enabled status or choose the displayed Measure or Annotation. |
| | **Multi Angle** | Provides a function that shows value of the angle to the patient image displayed on screen. |
| | **Length** | Provides a function that shows the length value to the patient image displayed on screen. |
| | **Multi Length** | Provides a function that shows multiple length values on the patient image displayed on screen. |
| | **Implant** | Provides a function that shown the Implant on the patient image |

| | | |
|---|---|---|
| | | displayed on screen. |
| | **Cobb's Angle** | Provides a function that can derive the inner angle of two lines of the patient image shown up on the screen. |
| | **Remove Overlay** | Provides a function that deletes the last entered Overlay which is either Measure or Annotation appearing on the screen. However, if a certain Overlay has been selected then the selected Overlay is deleted. |
| | **Remove All Overlay** | Provides a function that removes Measure or Annotation appearing on the screen. |
| Annotation | **Annotation Toolbar** | Collection of functions that can add and delete arrows, free curves and character input to the patient image. Press this button to expand the detailed functions for use and press again to hide the detailed functions. |
| | **Select** | Select the image in standard selection enabled status or choose the displayed Measure or Annotation. |
| | **Arrow** | Provides a function that marks an arrow to the patient image shown on the screen. |
| | **Line** | Provides a function that marks a signle line to the patient image shown on the screen. |
| | **Poly Line** | Provides a function that marks a line same as the Line. Capable of drawing consecutive Line until prior to conclusion. |
| | **Free Line** | Provides a function that enables marking of free curves to the patient image shown on the screen. |
| | **Text** | Provides a function that marks texts to the patient images shown on the screen. |
| | **Remove Overlay** | Provides a function that deletes the last entered Overlay which is either Measure or Annotation appearing on the screen. However, if a certain Overlay has been selected then the selected Overlay is deleted. |
| | **Remove All Overlay** | Provides a function that can delete all Measure or Annotation displayed on the screen. |

## Overlay Menu

| Item | Description |
|---|---|
| **Palette** | Setup pen color of the Overlay(Measure, Annotation) category. |
| **Thickness** | Setup pen thickness of the Overlay(Measure, Annotation) category. |

## Patient List

| Item | | Description |
|---|---|---|
| | Refresh | Executes the refresh function.<br>When new image of the patient is scanned while image of the applicable patient is being analyzed then press the Refresh button to re-load the patient list. |
| | Close | Closes the applicable patient list.<br>Closes image of the patient whose image is open in image view and removes information of the applicable patient from the patient list. |
| | Display Patient Name | Displays name of the applicable patient. |
| | Thumbnail List | Image list of the applicable patient is displayed in the Thumbnail list.<br>Double click on Thumbnail or Drag using the mouse and place in image view to display the applicable image. |

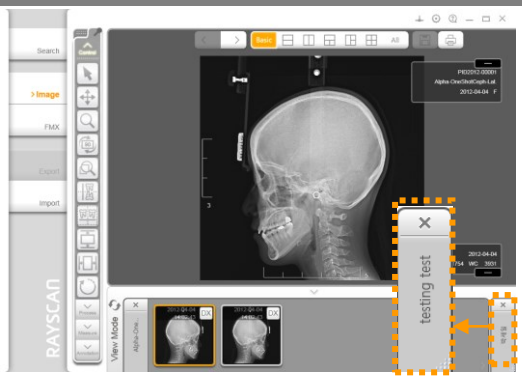
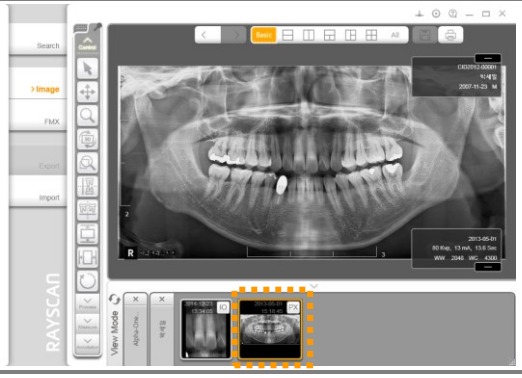
| | |
|---|---|
| ***TIP*** | Images by Modality type is listed for viewing in a pop-up menu which appears by clicking the right mouse button above the patient name.<br><br>Type : [All]: View all,<br>[PX]: View Panorama images only,<br>[CT]: View CT images only,<br>[DX]: View Cephalo images only,<br>[IO]: View intraoral sensor images only,<br>[OT]: View intraoral camera images only |

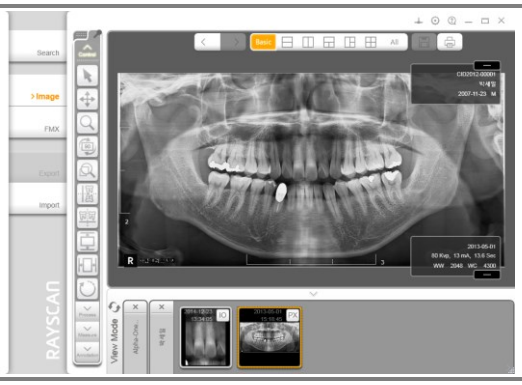
## 3.1 Image Display

Double click on 'patient list' from 'Search' tab or click the [Open] button, it will move to the 'Image' tab automatically. Opened patient is added to the patient list located below and scanned images are displayed as Thumbnail and the most recently scanned image is automatically displayed on the image view.

Double click on Thumbnail of the desired image from the bottom 'patient list' or Drag using the mouse and place in image view then the applicable image is displayed.

### Image Display

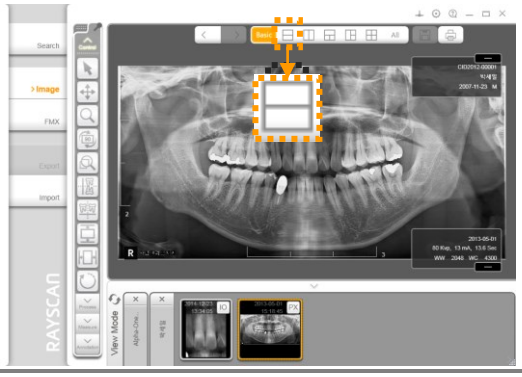
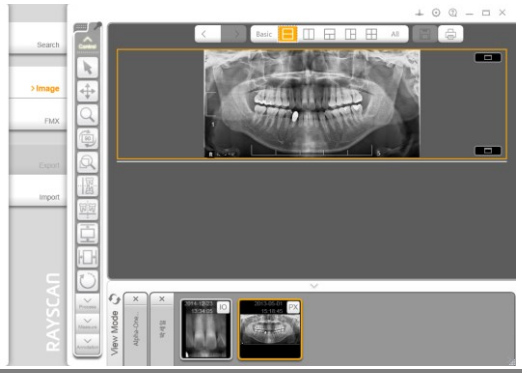
| No. | Figure | Description |
|---|---|---|
| 1 |  | Select desired patient from the 'patient list' in the lower section.<br><br>***Notice* – If desired patient is not opened then search in the 'Search' tab to open the applicable patient then the latest image of the applicable patient is automatically displayed.** |
| 2 |  | Double click on the image thumbnail or Drag using the mouse on to the image view. |

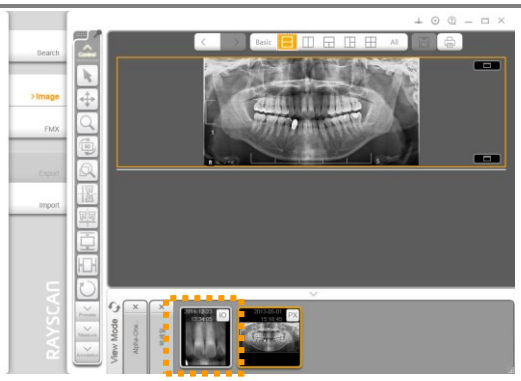
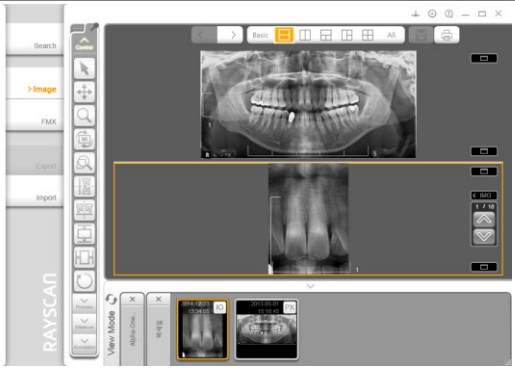
| | | |
|---|---|---|
| 3 |  | Image is displayed on the image view. |

## 3.2 Split Screen View

Use the 'Horizontal 2 split' / 'Vertical 2 split' screen to conveniently compare and analyze pre/post trement images and utilize 'horizontal 3 split' / 'vertical 3 split' / '4 split' screen to shown multiple images on one screen for more efficient consult.

### Split Screen View

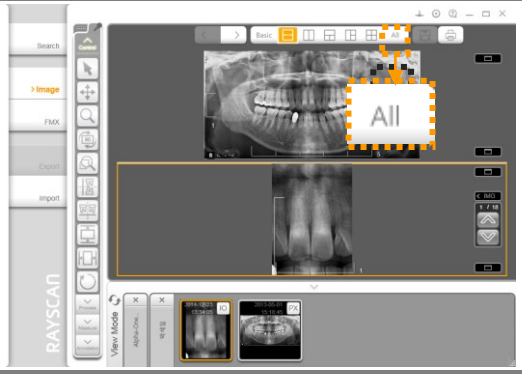
| No. | Figure | Description |
|---|---|---|
| 1 |  | Select by clicking the [Layout split] button from 'Top Menu' on top.<br><br>***Tip* – Basic view, horizontal 2 split, vertical 2split, horizontal 3 split, vertical 3 split and 4 split mode are supported.** |
| 2 |  | Confirm that screen has been splitted then select the patient whose image is intended for viewing. |

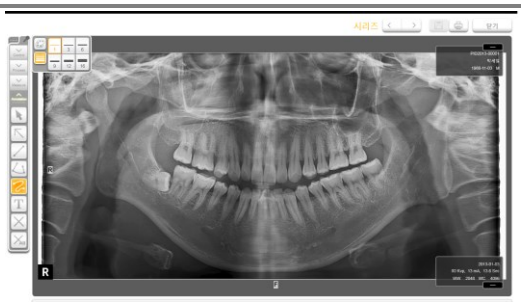
| | | |
|---|---|---|
| 3 |  | Double click on thumbnail of the image to be compared or Drag with the mouse and place on image view of the splitted screen.<br><br>When comparing images of different patients, select applicable patients from the 'patient list' on bottom then select the images.<br><br>(Double click or Drag&Drop) |
| 4 |  | Confirm that images are displayed on the splitted screen<br>.<br><br>***Notice* – Selected image view is indicated by an orange outer line in the split screen.** |

## 3.3 Full Screen View

Click the [Full Screen] button from 'Top Menu' or double click the mouse left button on image view to change full screen view.

### Full Screen View

| No. | Figure | Description |
|---|---|---|
| 1 |  | Select the desired image view then click the [Full Screen] button from 'Top Menu' on top.<br><br>***Tip* – Double click mouse in the applicable image view to change to full screen.** |

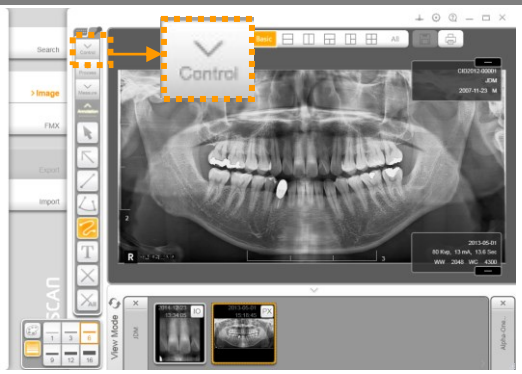
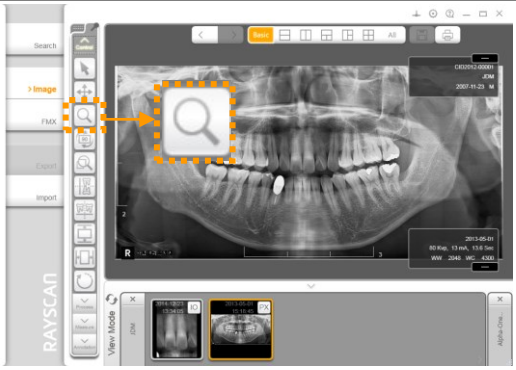
| | | |
|---|---|---|
| 2 |  | Converted to full screen. |

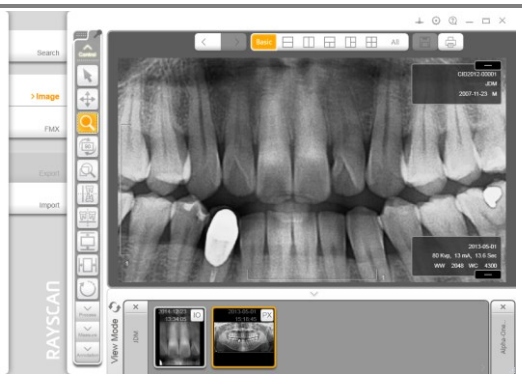
## 3.4 Image Zoom / Shrink

Use the 'Image Zoom / Shrink' function to adjust magnification of the image in accordance with the diagnostic goal.

Images may be zoomed upto 10 times and shrunk down to 1/10. However, images cannot shrink smaller than the screen size.

### Image Zoom / Shrink

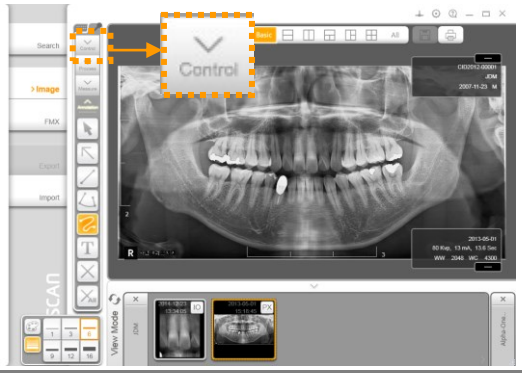
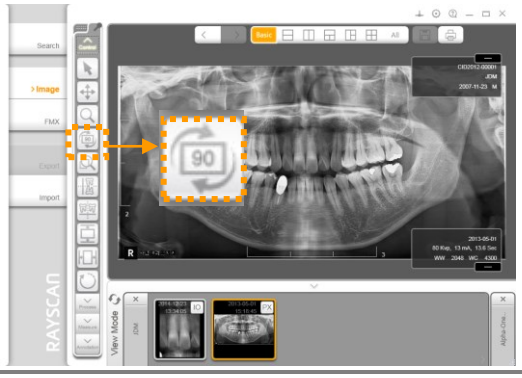
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Control Toolbar] button from 'Tool bar'. |
| 2 |  | Click on the [Zoom] button. |

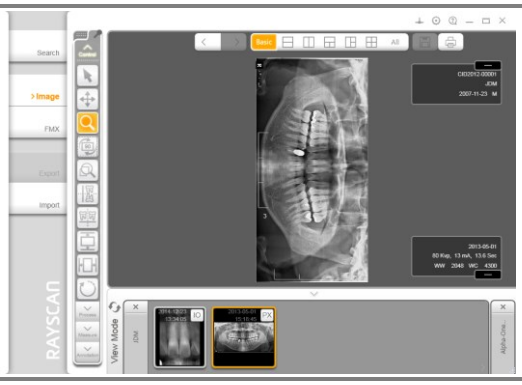
| | | |
|---|---|---|
| 3 |  | While left mouse button is clicked on top of the image, move toward right to zoom and left to shrink the image.<br><br>***Notice* – Zoom upto 10 times the actual image and shrink down to 1/10 of the actual image however may not shrink smaller than the screen size.** |

## 3.5 Image Rotate / Flip

If image is entered in tilted condition or up, down/ left, right reversal is required then utilize the 'Image Rotate / Flip' functions to edit. Image rotation and Flip information is not saved.

### Image Rotate / Flip

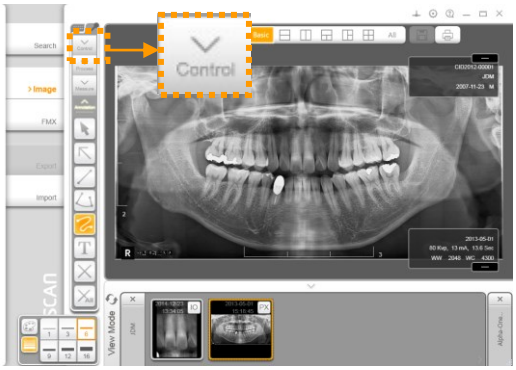
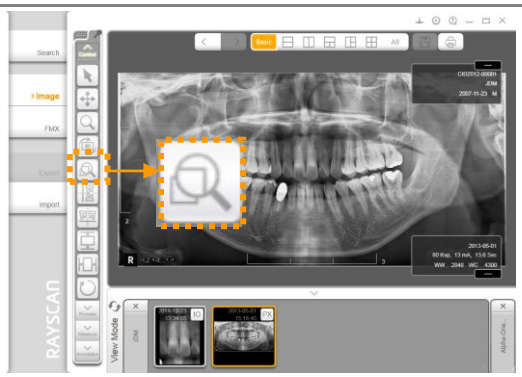
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Control Toolbar] button in 'Tool bar'. |
| 2 |  | Click the [Rotate] button for image rotation. To reverse the image up and down / left to right, click the [Vertical Flip] / [Horizontal Flip] button. |

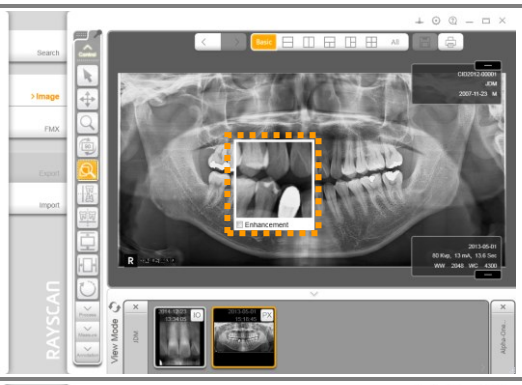
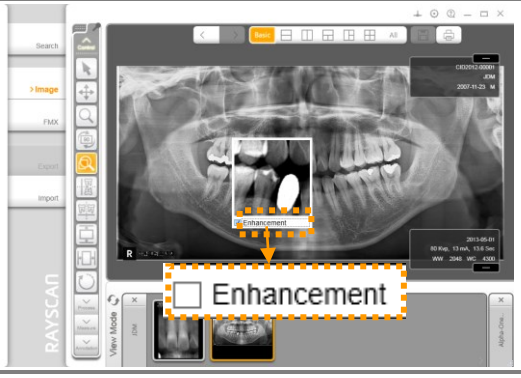
| | | |
|---|---|---|
| 3 |  | Confirm that image has rotated 90 degrees in clockwise direction.<br><br>***Notice* – Position information is also changed during Image Rotate / Flip.** |

## 3.6 Magnifying Glass

Utilize the 'Magnify' function to enlarge certain section of the image for precision analysis and by activating the 'Enhancement' function boundaries of the anatomical structure becomes even more evident.

### Using the Magnifier

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Control Toolbar] button in 'Tool bar'. |
| 2 |  | Click on the [Magnify] button. |

| | | |
|---|---|---|
| 3 |  | Magnified screen appears on the appropriate position by clicking the left mouse button on top of the image.<br>When moving while left mouse button is pressed down then the magnified screen moves in conjunction. |
| 4 |  | To view certain areas in strengthened contrast ratio, click on [Enhancement] of the magnified screen.<br>Enhanced regional image with maximized contrast ratio is displayed. |

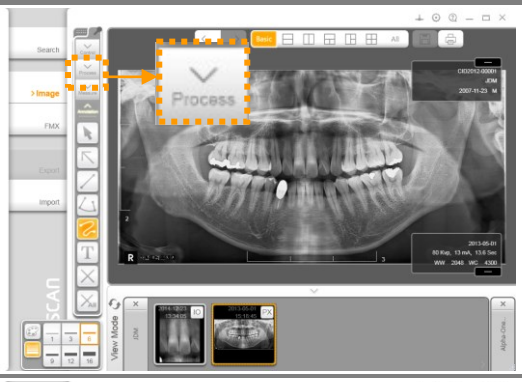
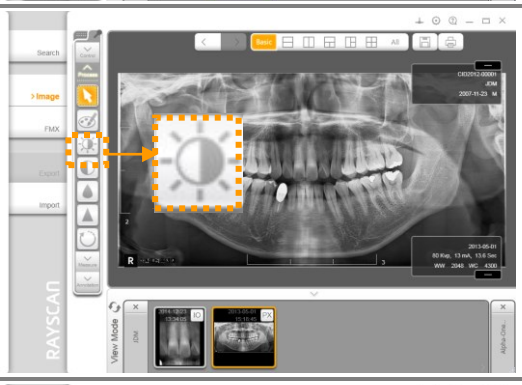
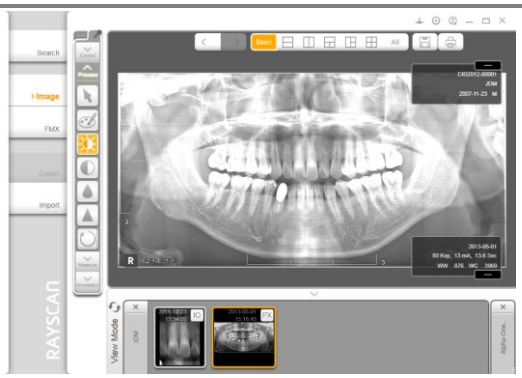
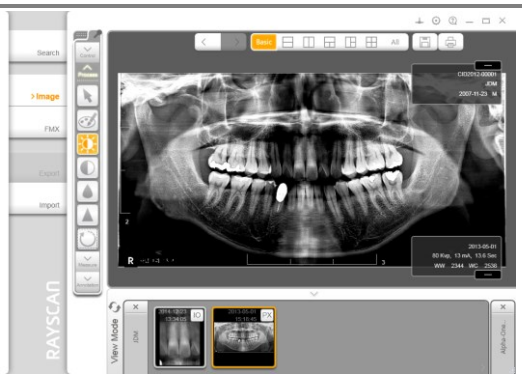
## 3.7 Windowing Adjustment

Use the Windowing adjustment function to optimize the image in further accurate diagnosis.

'Windowing Center' adjustment is a function for adjusting brightness of the image and 'Windowing Width' adjustment is a function for adjusting contrast ratio of the image. When Windowing information is altered then the Windowing information in 'Image Information' of the image view on lower right is also changed.

| | |
|---|---|
| ***TIP*** | After Windowing adjustment, click the [Save] button on upper right section to save the modified Windowing information allowing checking of the image in same condition continuously.<br>When closing the program after Windowing adjustment, a message requesting save status of the modified information appears. |

## Windowing Adjustment

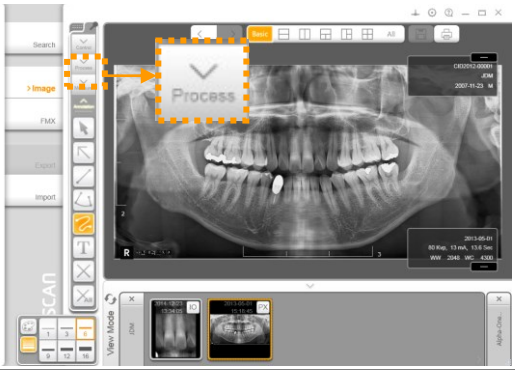
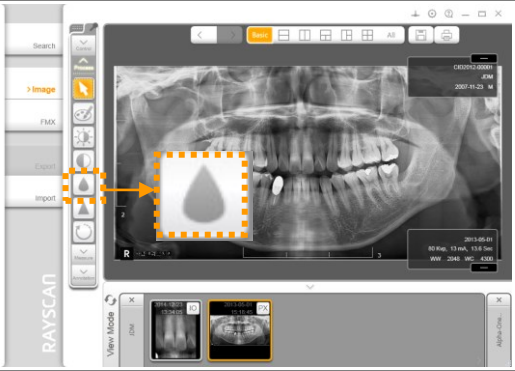
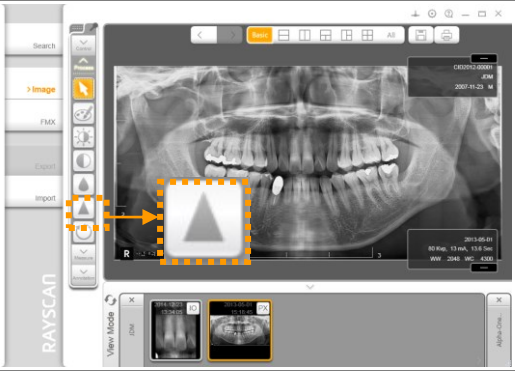
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Process Toolbar] button in 'Tool bar'. |
| 2 |  | Click the [Windowing] button. |
| 3 |  | From above the image while left mouse button is pressed down, move the mouse up and down to change the 'Window Center' value. To brighten the image, move the mouse upward (reduce Window Center value) and downward (increase Window Center value) to darken the image. |
| 4 |  | From above the image while left mouse button is pressed down, move the mouse left and right to change the value of the 'Window Width'.<br><br>To widen the contrast region, move mouse to the right (increase Window Width value) and to narrow the contrast region, move mouse to the left (reduce Window Width value). |

## 3.8 Image Median / Sharpen Display

'Median' reduce noise of the image but anatomical structure may become ambiguous. 'Sharpen' makes the anatomical structures clearly but noise of the image is increased.

> ***NOTICE*** Image information modified due to 'Median', 'Sharpen' functions are not saved.

### Image Median / Sharpen Display

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Process Toolbar] button in 'Tool bar'. |
| 2 |  | To display a smoother image, click the [Median] button.<br>Continue to click the button then the overlapped effect is applied.<br>Click the [Initialize] button to cancel immediately. |
| 3 |  | To display a sharpen image, click the [Sharpen] button.<br>Continue to click the button then the overlapped effect is applied.<br>Click the [Initialize] button to cancel immediately. |

## 3.9 Length Measurement

Enter two points to measure the length between two points. Select length measurement with [Select] mode, it enables start and end point to modify the length measurement.

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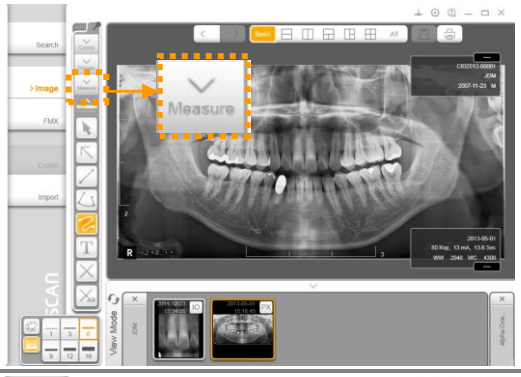
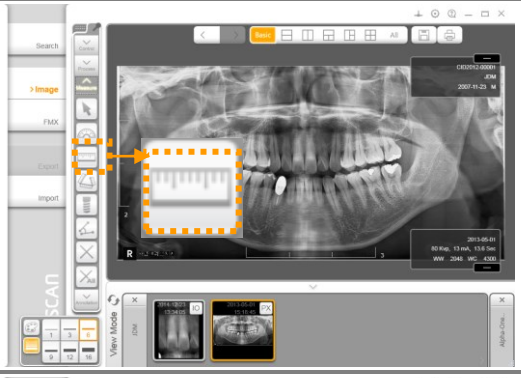
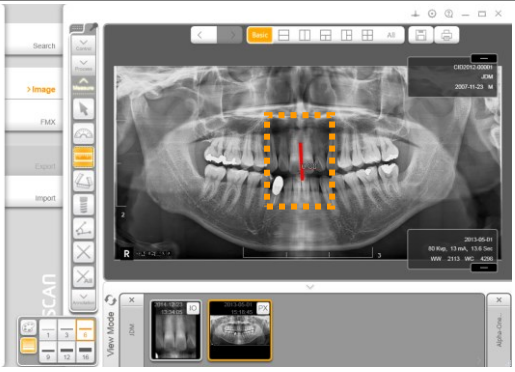
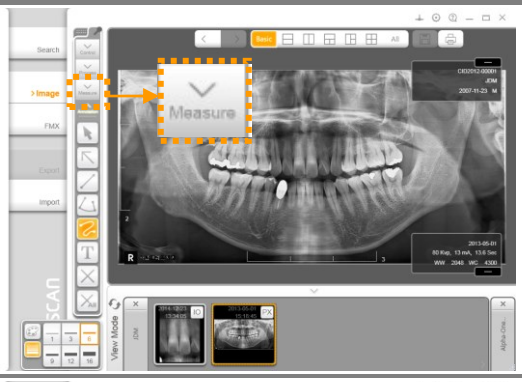
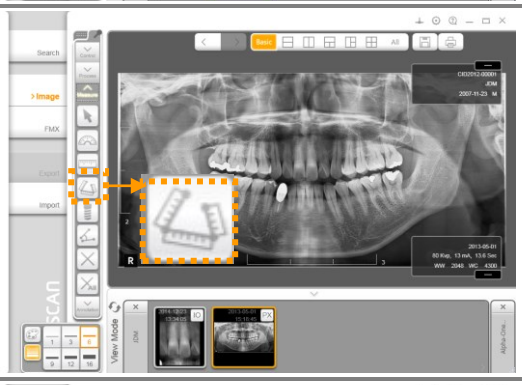
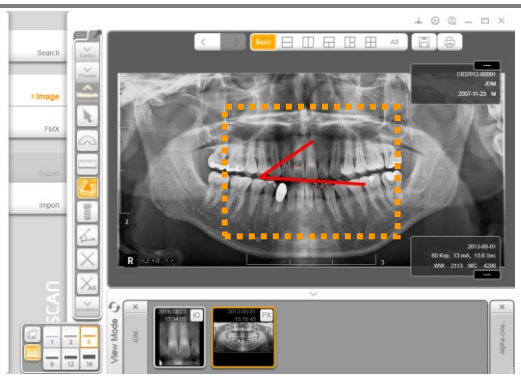
| ***TIP*** | When closing the program, a message can be displayed for saving the measurement information. |

### Length Measurement

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Measure Toolbar] button in 'Tool bar'. |
| 2 |  | Click the [Length] button. |
| 3 |  | From above the image, click the starting point and ending point in order of the area required for measurement then the length is displayed. Unit of the length is in 'mm' which represents the actual measurement unit.<br>***Tip*** **- Click the [Select] button to convert to mouse mode then select the appropriate Overlay to move its position or modify starting and ending points.** |

## Length Continuity Measurement

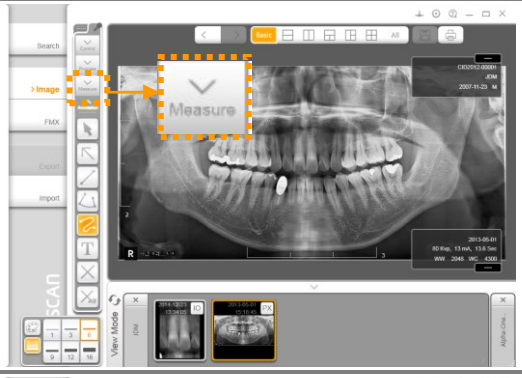
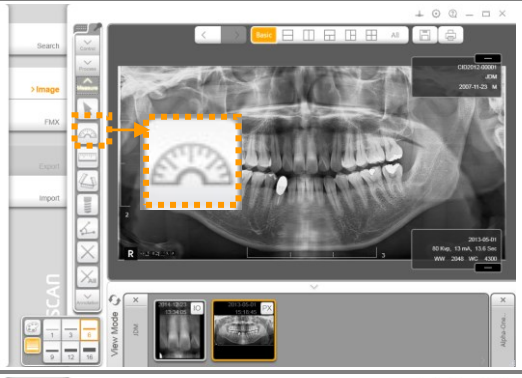
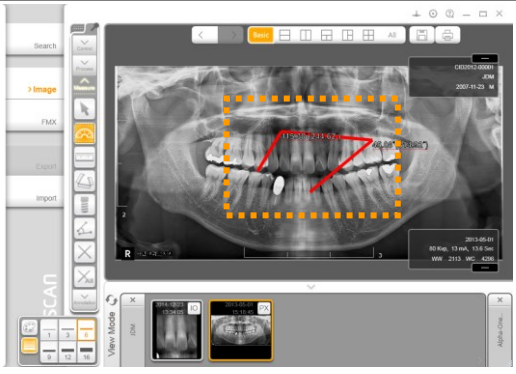
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Measure Toolbar] button in 'Tool bar'. |
| 2 |  | Click the [Multi Length] button. |
| 3 |  | From above the image, click the starting point and ending point of the area required for measuring in order to measure the length. Continue to click then the end point is recognized as the starting point for consecutive length measurement and double click the mouse to conclude the length measurement. Unit of the length is in 'mm' which represents the actual measurement unit.<br><br>***Tip* – Click the [Select] button to convert to mouse mode then select the appropriate Overlay to move position or modify starting, mean and end points.** |

## 3.10 Angle Measurement

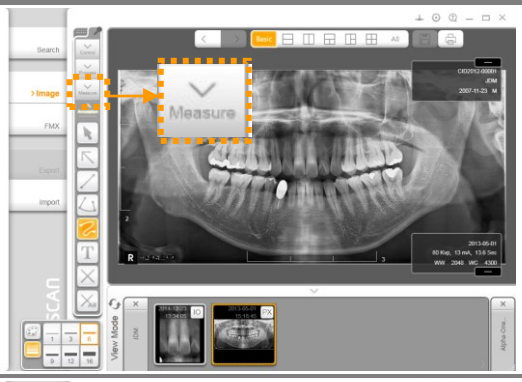
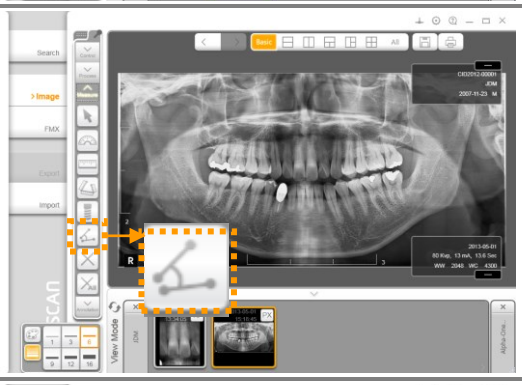
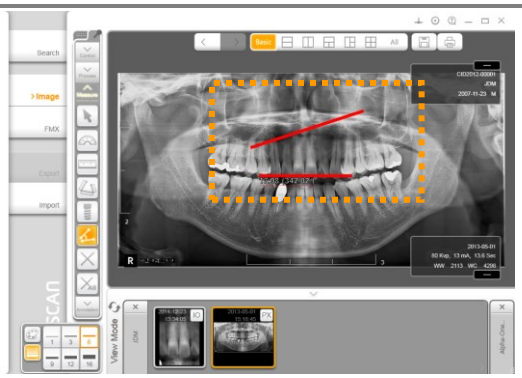
'Angle' is a function that measures internal angle (external angle) of 2 segments composed of 3 points and 'Cobb's Angle' is a function that measures internal angle (external angle) of 2 segments composed of 4 points.

| | |
|---|---|
| ***TIP*** | After angle measurement, click the [Save] button on upper right side to save it.<br>When closing the program following angle measurement, a message requesting save status of the modified information appears. |

### Random Angle Measurement

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Measure Toolbar] button in 'Tool bar'. |
| 2 |  | Click the [Angle] button. |
| 3 |  | Click the start, mid-point and end point, angle is displayed and if you double click, angle measurement will be finished. Angle is shown as internal angle (external angle) and unit is in 'Degree'.<br>***Tip* – Click the [Select] button to convert to mouse mode then select appropriate Overlay to move position or modify points.** |

### Cobb's Angle Measurement

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Measure Toolbar] in 'Tool bar'. |
| 2 |  | Click the [Cobb's Angle] button. |
| 3 |  | From above the image, click the starting and ending points sequentially in the area required for measurement and draw 2 lines (total of 4 points) then the Cobb's Angle will appear. Displayed angles are internal angle (external angle) and units are in 'Degree' representing the actual measurement angles.<br><br>***Tip* – Click the [Select] button to convert to mouse mode then select the appropriate Overlay to move position or modify starting, mean and end points.** |

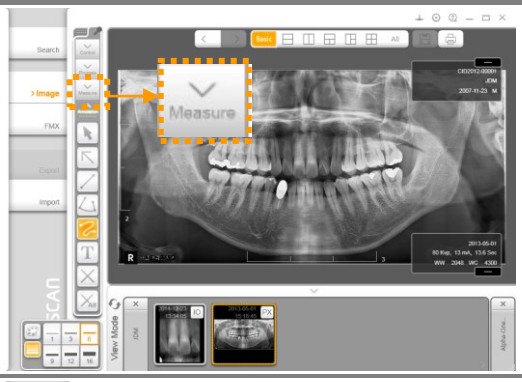
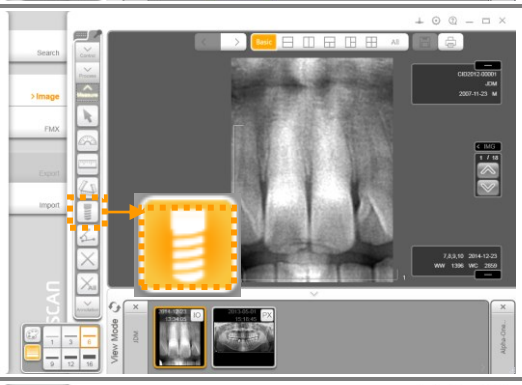
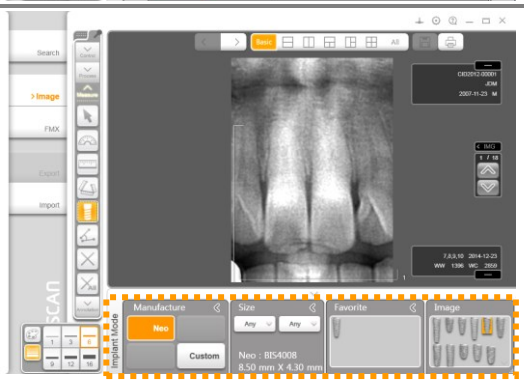
## 3.11 Implant Simulation

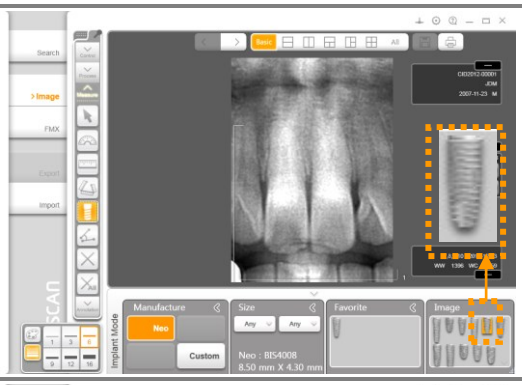
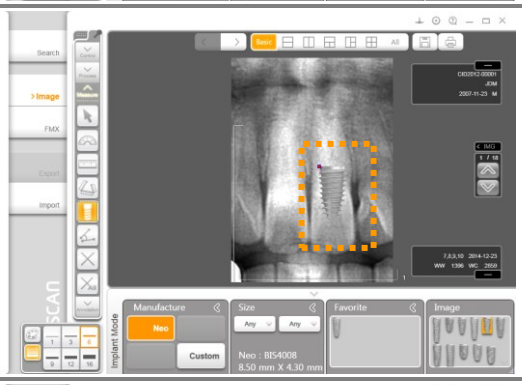
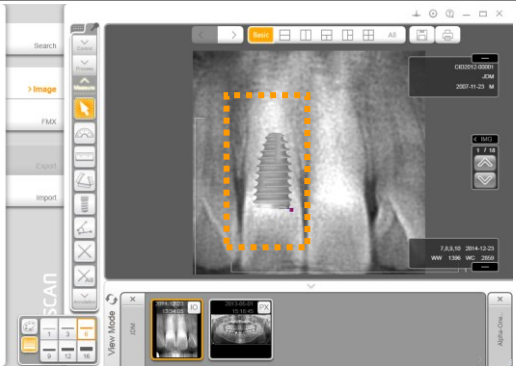
'Implant' is a simulation function to select optimal implant for patients. SMARTDent supports an

image based implant simulation function for further efficient consultation. It provides various implant library and you can use user implant function.

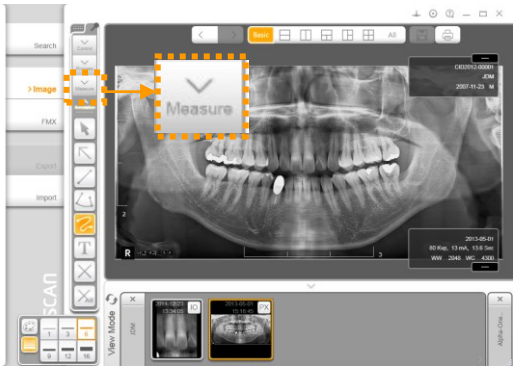
| | |
|---|---|
| ***TIP*** | Enter implant then click the [Save] button on upper right side to save it.<br>When closing the program following implant simulation, a message requesting to confirm save status of the modified information appears. |

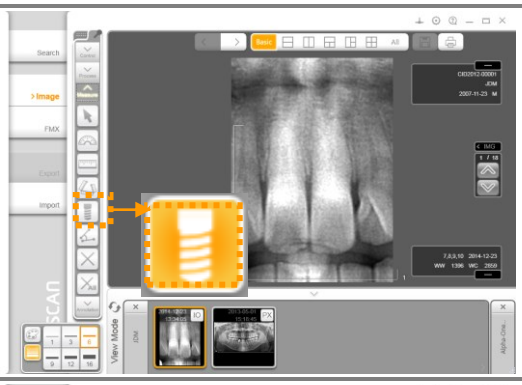
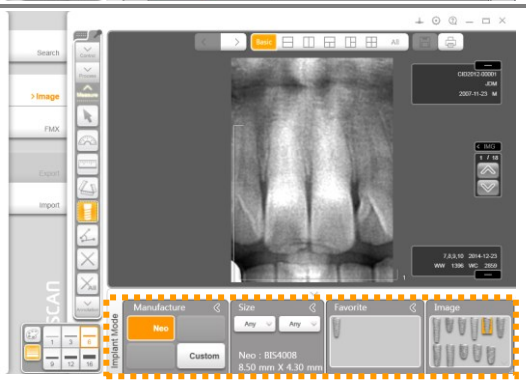
## Insert Implant

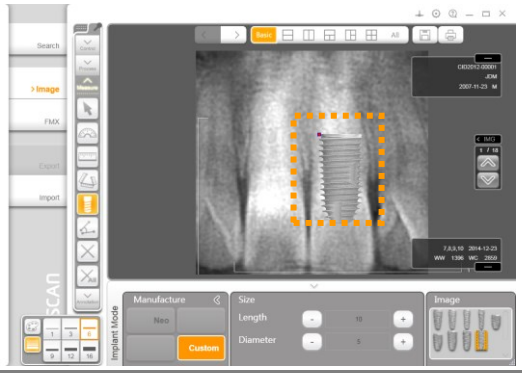
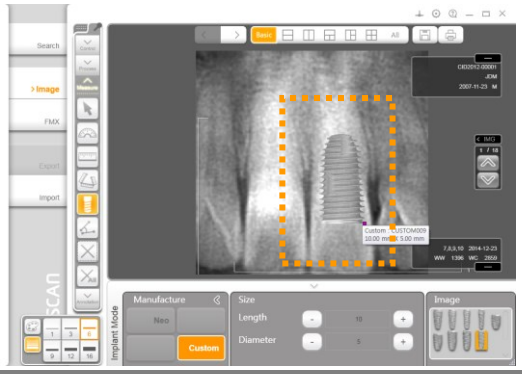
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Measure Toolbar] button in 'Tool bar'. |
| 2 |  | Click the [Implant] button. |
| 3 |  | 'Select Implant' window appears on bottom of the screen. |

| | | |
|---|---|---|
| 4 |  | Click on the desired Implant for selection.<br><br>***Tip* – Select length and diameter in Size to view desired sizes in array..** |
| 5 |  | Click left mouse button on the position where Implant insertion is required then the Implant appears over the image. |
| 6 |  | Click left mouse button over the Implant and drag, Implant position will be changed.<br>Click the red rectangle of the upper left side of Implant then move the mouse to rotate the Implant. |

## User Implant Insertion

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Measure Toolbar] button in 'Tool bar'. |

| | | |
|---|---|---|
| 2 |  | Click the [Implant] button. |
| 3 |  | 'Select Implant' window appear on bottom of the screen. |
| 4 | | Click the [Custom] button. |
| 5 | | Click on the desired Implant shape for selection. |

| | | |
|---|---|---|
| 6 | | Setup desired length and diameter. |
| 7 |  | Click the left mouse button on the position where Implant insertion is desired then the Impant appears over the image. |
| 8 |  | Click the left mouse button over the Implant and drag, Implant position will be changed.. Click the red rectangle on upper left side of the Implant then move the mouse to ratote the Implant. |

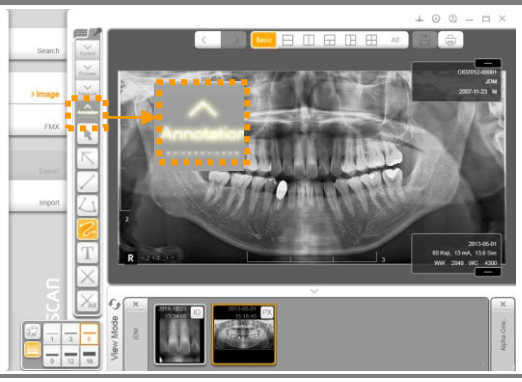
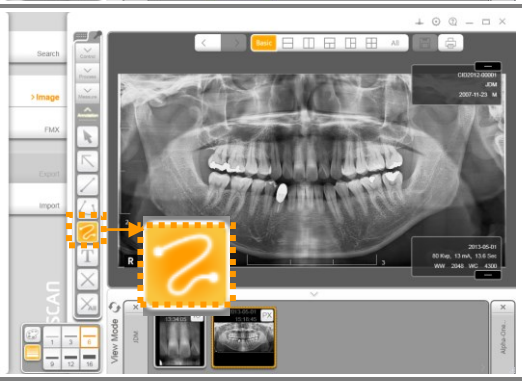
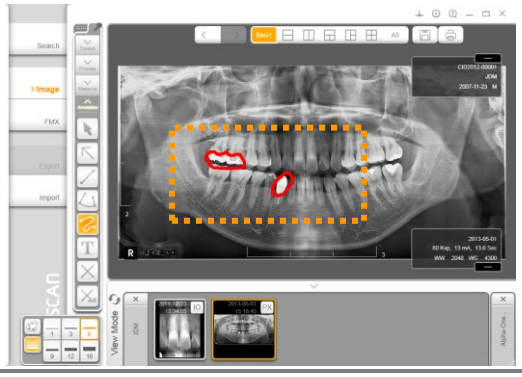
***Notice*** SMARTDent supports implant color setting function. (Configuration → Implant Setting)

## 3.12 Free Curve Drawing

Use the 'Free Line' function to record diagnostic information in the images and efficient consult with the patients.

| | |
|---|---|
| ***TIP*** | After drawing free curve, click [Save] button on upper right side to save it.<br>When you close the program after drawing free curve, a message will be displayed for requesting save it or not. |

### Free Curve Drawing

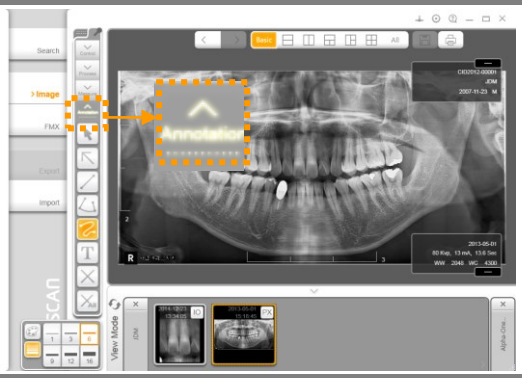
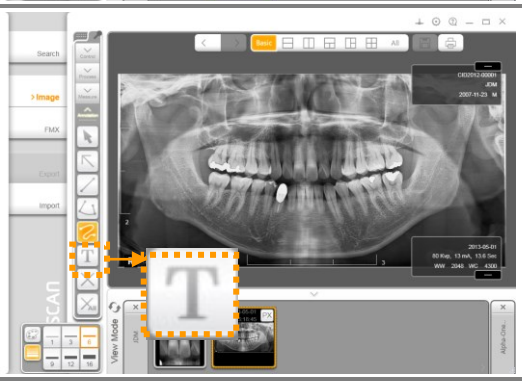
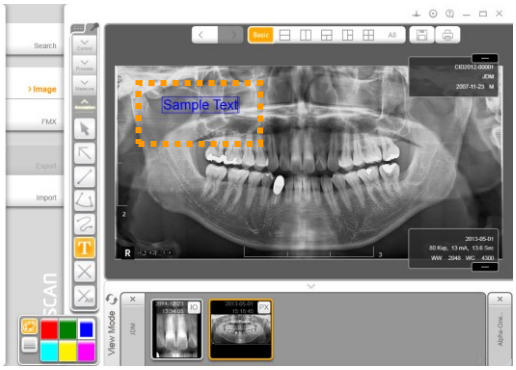
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Annotation Toolbar] button in 'Tool bar'. |
| 2 |  | Click the [Free Line] button. |
| 3 |  | From above the image while left mouse button is pressed down, draw a desired shape then the free curve is drawn on the screen.<br><br>***Tip* – Click the [Select] button to convert to mouse mode then select the appropriate Overlay to move position.** |

## 3.13 Insert Text

Use the 'Text' function to record diagnostic information of the image and patient complains for treatment.

| | |
|---|---|
| ***TIP*** | After entering texts, click the [Save] button on upper right side to save it.<br>When closing the program following text input, a message requesting to confirm save status of the modified information appears. |

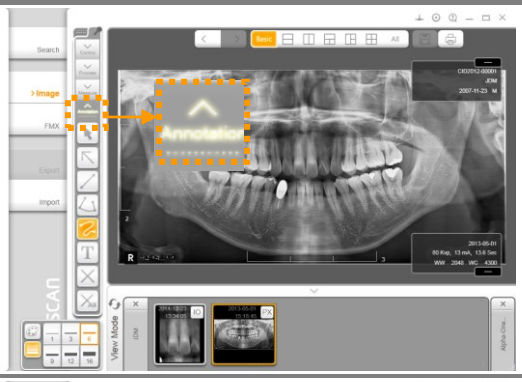
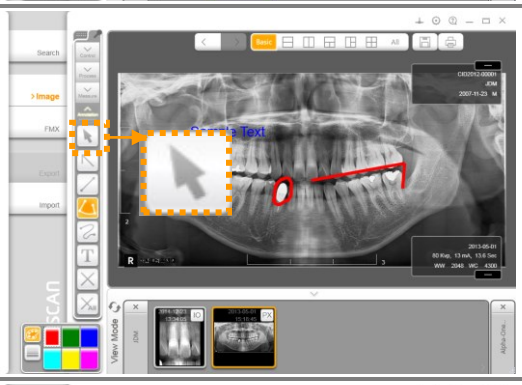
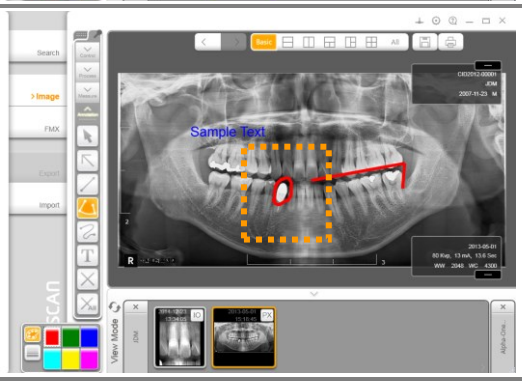
### Insert Text

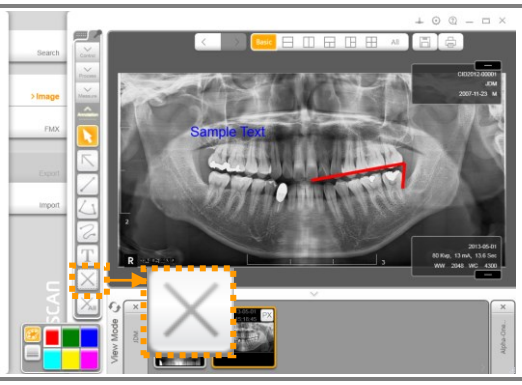
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Annotation Toolbar] button in 'Tool bar'. |
| 2 |  | Click the [Text] button. |
| 3 |  | Click the left mouse button on the position where text insert is desired then a window enabling text entry appears thereafter enter text then press the [Enter] key to complete the entry.<br><br>***Tip* – Click the [Select] button to select the item and double click it to modify text.** |

## 3.14 Remove Overlay

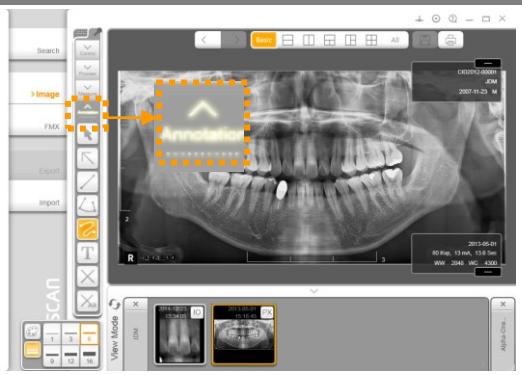
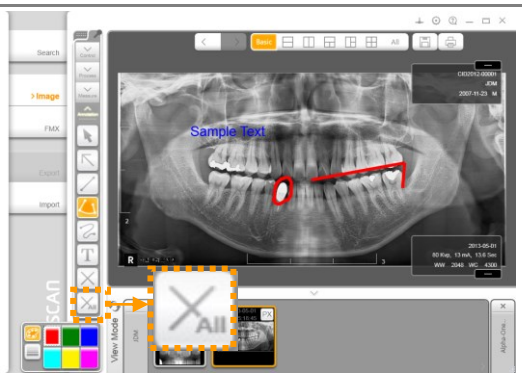
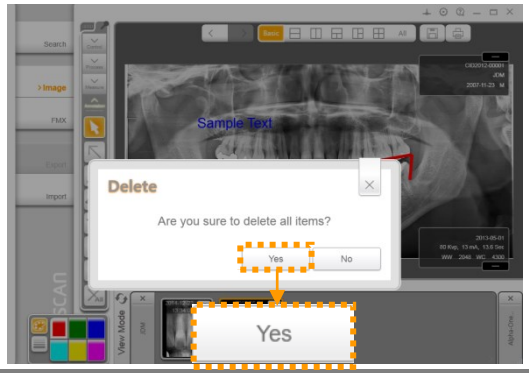
'Overlay' refers to additional categories entered on to images such as length, angle measurement information, implant, free curves and texts.
'Overlay' may be removed one at a time or all entered information as a singular event.

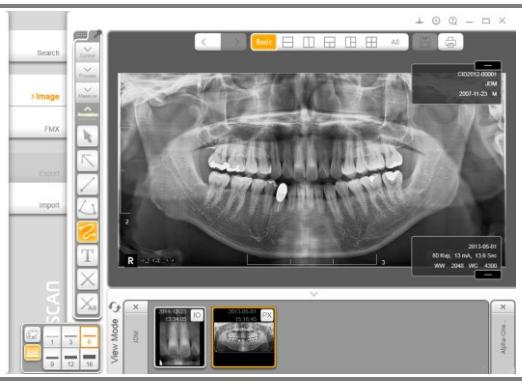
### Remove Single Overlay

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click [Measure Toolbar] button or [Annotation Toolbar] button in 'Tool Bar'. |
| 2 |  | Click the [Select] button. |
| 3 |  | Click the left mouse button over the deletion desired Overlay to select the appropriate Overlay. |

| | | |
|---|---|---|
| 4 |  | Click the [Remove Overlay] button to delete the applicable Overlay. |

## Remove All Overlay

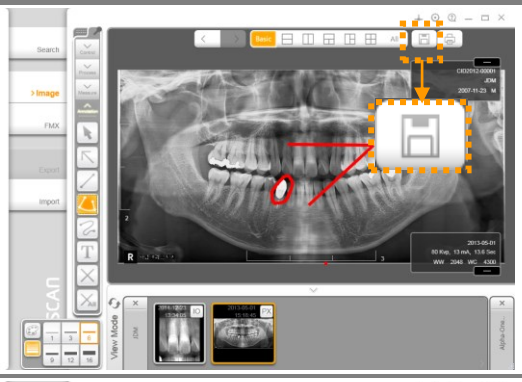
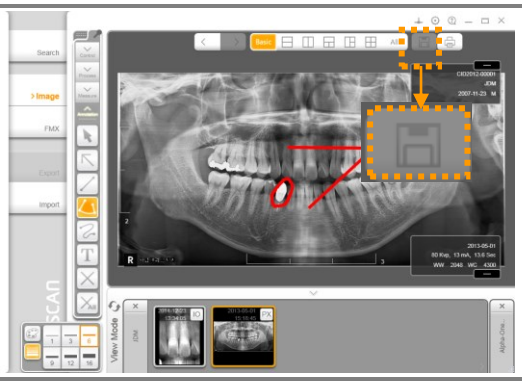
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click [Measure Toolbar] button or [Annotation Toolbar] button in 'Tool Bar'. |
| 2 |  | Click the [Initialize Overlay] button. |
| 3 |  | Click [Yes] in the delete confirm message window. |

| | | |
|---|---|---|
| 4 |  | All Overlays existing over the image is deleted. |

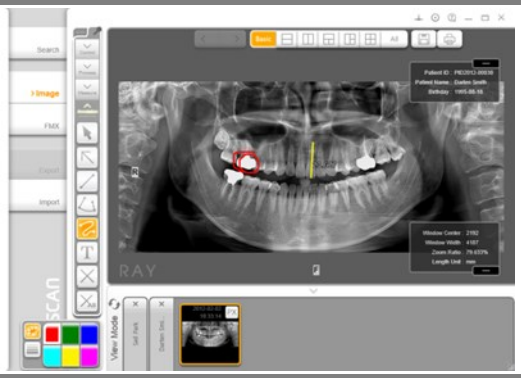
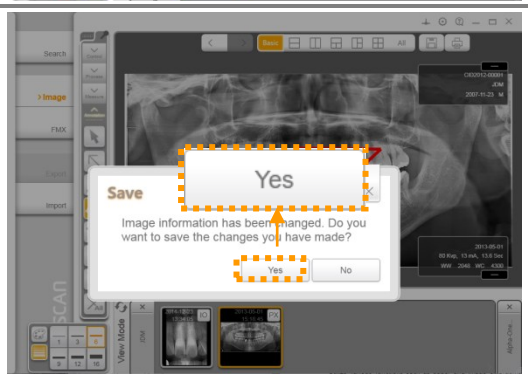
## 3.15 Saving Image Changes

When image changes are saved then the information is stored in the server allowing continuous use of the applicable information from any PC included in the network.

### Manual Save

| No. | Figure | Description |
|---|---|---|
| 1 |  | The [Save] button of the 'Top Menu' on top becomes active when Windowing value is changed or Measure, Annotation insert, change or delete is achieved. |
| 2 |  | By saving changes by clicking the [Save] button then the [Save] becomes inactive and when image is closed then opened again, the image displayed is in same condition as the last save. |

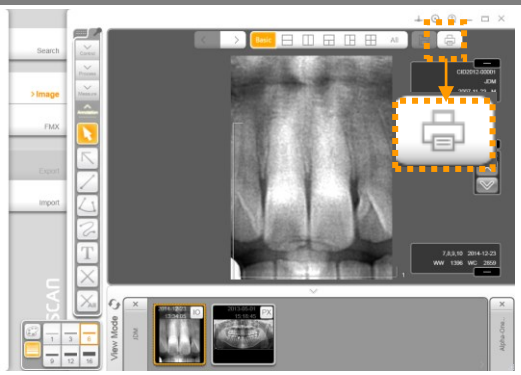
### Save while Closing

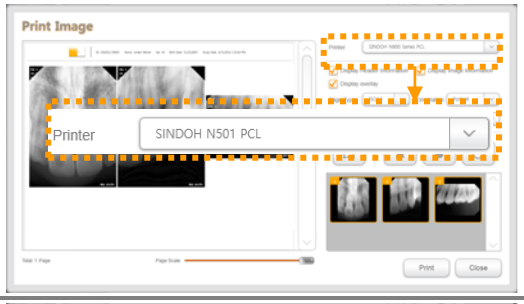
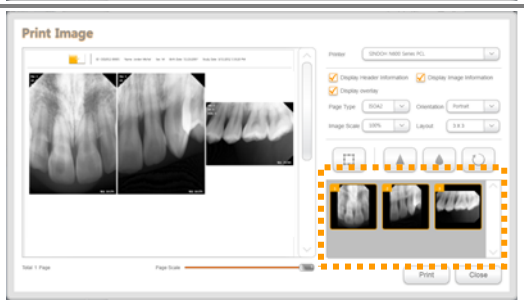
| No. | Figure | Description |
|---|---|---|
| 1 |  | When closing the patient list of the image where changes are made or ending the program, a message window requesting whether to save the changes will appear. |
| 2 |  | Click [Yes] to save the changes and when applicable image is re-opened, the image displayed is equivocal to the present condition. Click [No] then the changes made are not saved and when applicable image is re-opened, the image displayed is equivalent to the last saved condition prior to making changes. |

## 3.16 Image Print

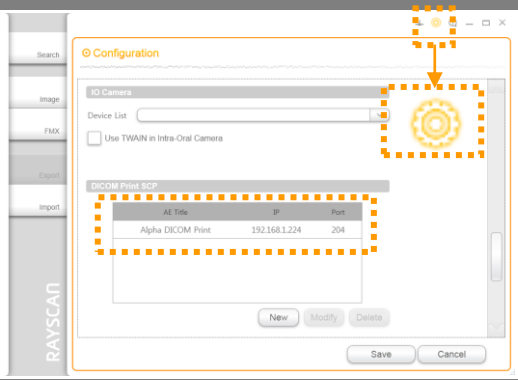
Images may be printed using either the 'General Printer' or 'DICOM Printer'.

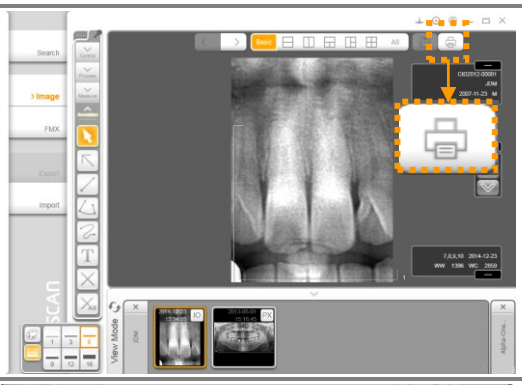
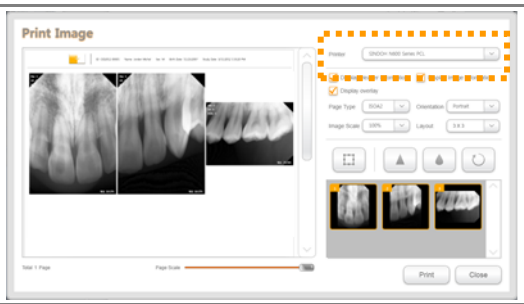
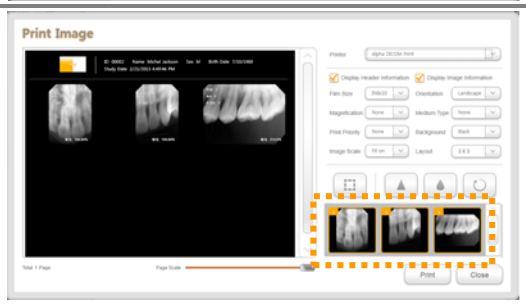
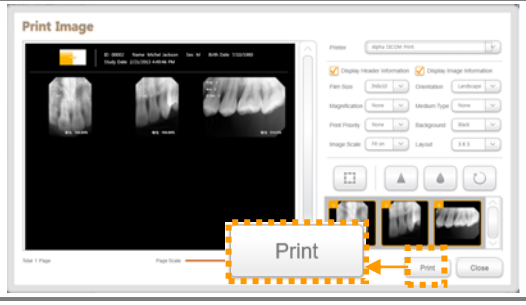
### General Printing

| No. | Figure | Description |
|---|---|---|
| 1 |  | Display print desired image on image view then click the [Print] button from the 'Top Menu] on top of the screen. |

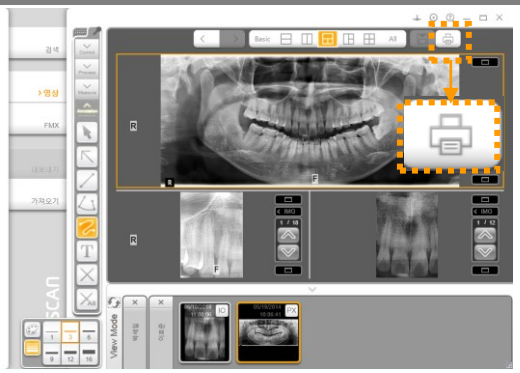
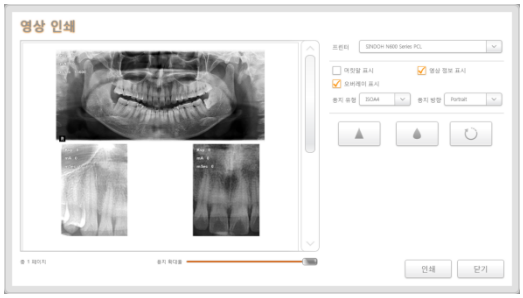
| | | |
|---|---|---|
| 2 | | 'Print Image' pop-up window appears. |
| 3 |  | Select 'General Printer' from the 'Printer' list. |
| 4 |  | Select only the images to be printed from the 'Thumbnail' list on bottom right side then setup the print properties.<br><br>***Tip*** **– Print properties: paper, print direction, Layout, image enlargement ratio, header print status, Overlay print status** |
| 5 | | Click the [Print] button to proceed printing. |

## DICOM Printing

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Configuration] button on upper right side of the program and confirm that desired printer item is included in the 'DICOM Print SCP' list.<br><br>***Notice*** **–Click [New] to add item and [Modify] to edit the setting value.** |

| | | |
|---|---|---|
| 2 |  | Display the print desired image on the image view then click the [Print] button in 'Top Menu' on top of the screen. |
| 3 | | Print pop-up window appears. |
| 4 |   | Select 'DICOM Printer' from the 'Printer' list. |
| 4 |   | Select only the images intended for printing from the 'Thumbnail' list on bottom right then setup the print properties.<br><br>***Tip*** **– Print properties: Film Size, Print Direction, Medium Type, Magnification, Print Priority, Layout, Image Enlargement Ratio, Header print status** |
| 5 |   | Click the [Print] button to proceed printing. |

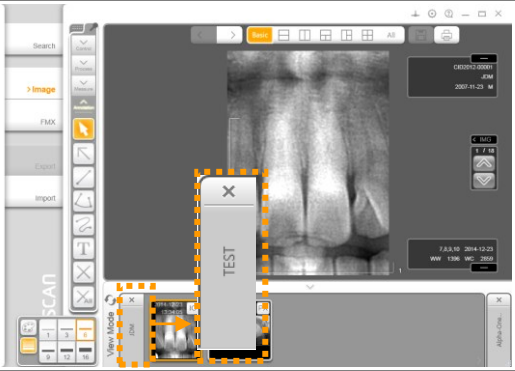
### Multiple Image Print

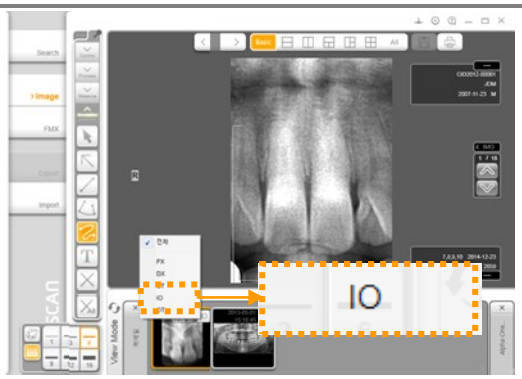
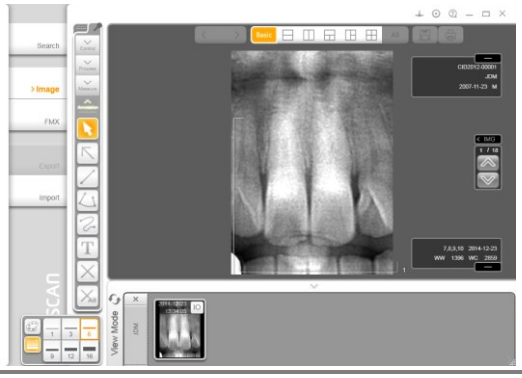
| No. | Figure | Description |
|---|---|---|
| 1 |  | Make multiple image view as the figure and click the [Print] button in the top menu. |
| 2 |  | Print pop-up window will appear.<br>Refer to [General Print] or [DICOM Print] and proceed to image print.<br><br>***Notice* – For Multiple Image Print, Thumbnail and Layout function do not offer.** |

## 3.17 List Image by Modality

In case of numerous images exist for the patient, you can select specific modality for sorting images.

### List Image by Modality

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the right mouse button on the patient name list. |

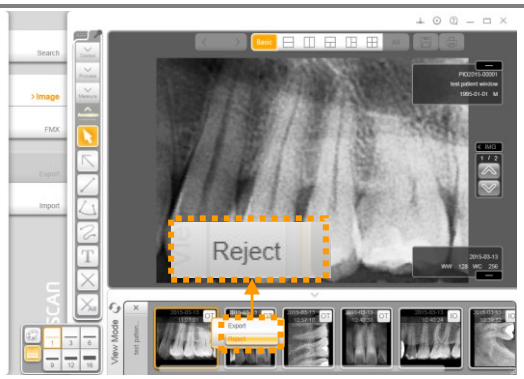
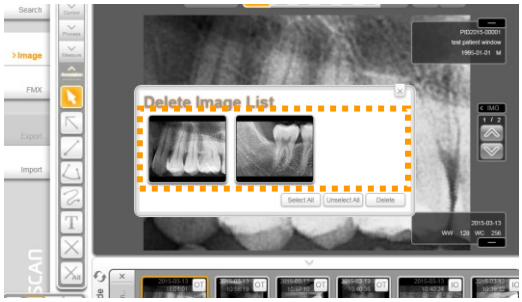
| | | |
|---|---|---|
| 2 |  | Select the 'Modality' what you want to view. |
| 3 |  | Only selected modality images are displayed. |

## 3.18 Delete Image

Use the 'Reject' function to delete images. 'Reject' is a function that prohibits search of the applicable image from the server. When 'Reject' image undergoes 'Confirm' in RAYSCAN program then the image is searched again from SMARTDent.

### Delete Image

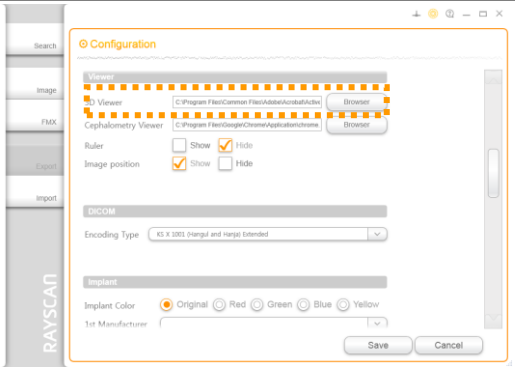
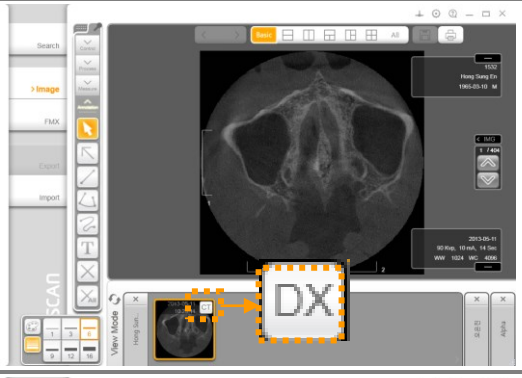
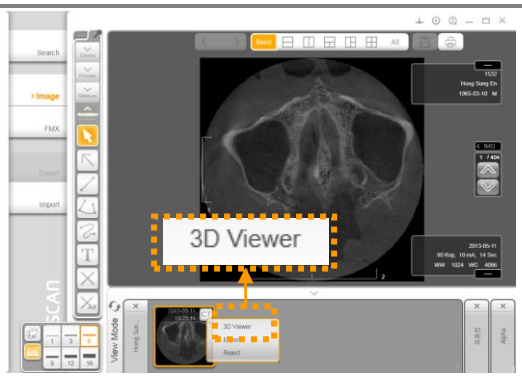
| No. | Figure | Description |
|---|---|---|
| 1 | | Click the [Modality] button on upper right side of the image thumbnail from the lower 'Patient List'. |

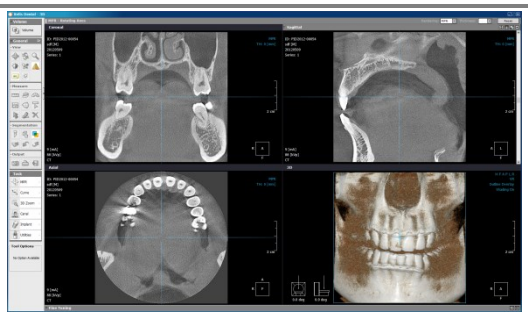
| | | |
|---|---|---|
| 2 |  | Select 'Reject' menu from the pop-up menu to make a selection. |
| 3 |  | Check the image(s) you want to delete then click the [Delete] button.<br>If you want to delete all images click the [Select All] button. |
| 4 | | Note that selected image(s) has been removed.<br><br>***Tip* – The applicable image is not permanently deleted rather converted to Reject status therefore may be converted back to 'Confirm' condition from the RayScan program.** |

## 3.19 3D Viewer Setting

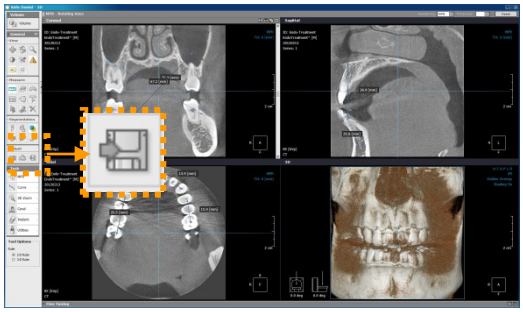
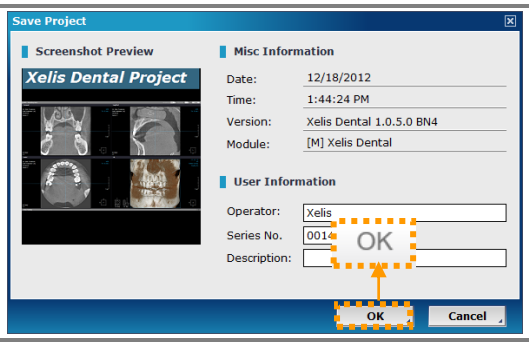
It supports 3D viewer setting for viewing the dental CBCT images.

### Xelis Link

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Configuration] button on upper right section of the program and confirm that Xelis program path in '3D Viewer' list is setup correctly.<br><br>***Notice* – If applicable item does not exist or setting is incorrect then click the [Browser] button and setup the Xelis program path.** |
| 2 |  | Click the [Modality] button on upper right side of the image thumbnail from the lower patient list. |
| 3 |  | Click '3D Viewer' menu from the pop-up menu to select..<br><br>***Notice* – '3D Viewer' menu is supported only for 'CT' images.** |
| 4 | | Confirm execution of Xelis program and transfer of applicable patient and image information then click the [OK] button. |

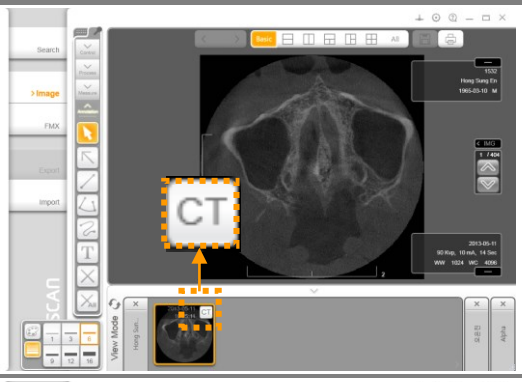
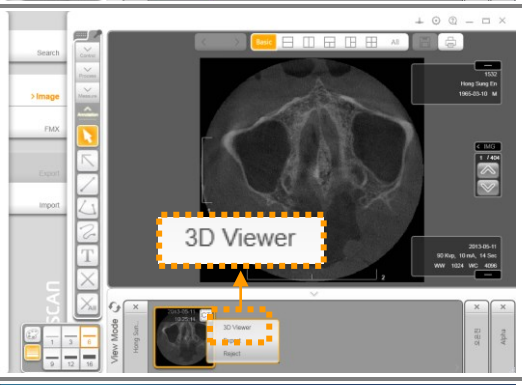
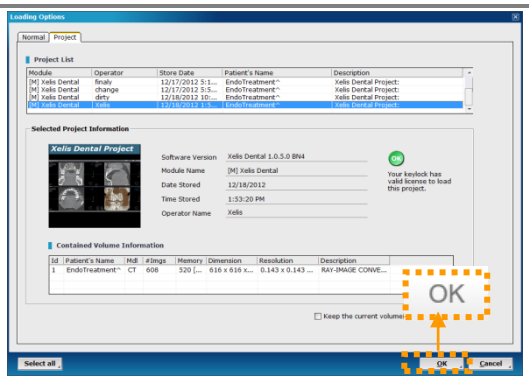
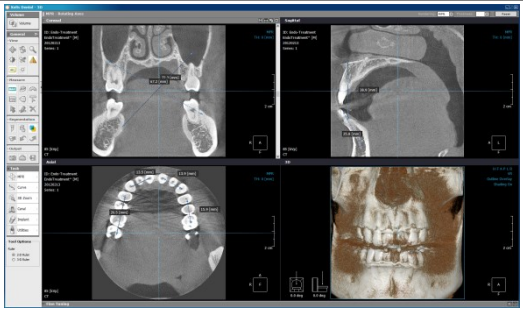
| | | |
|---|---|---|
| 5 |  | Proceed image analysis. |

## Save Xelis project

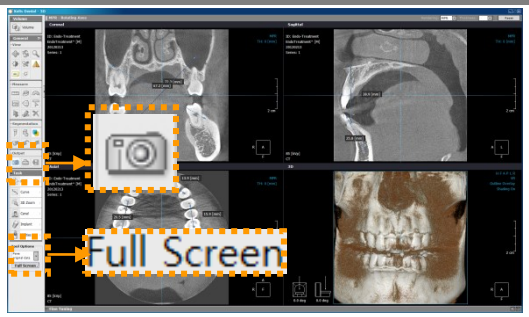
| No. | Figure | Description |
|---|---|---|
| 1 |  | After image analysis the analysis CT image can be saved To save project file click icon from output on central part of the left. |
| 2 |  | Write Operator, Series No. and Description section then click [OK] button to save it. |

| | |
|---|---|
| ***Notice*** | When select '3D viewer' from SMARTDent, run Xelis and then quit SMARTDent or change patients the data won't be saved in SMARTDent even if save in Xelis.. |

## Bring Xelis project

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click [Modality] button from the upper right corner of image thumbnail on the list at the bottom of the patient |
| 2 |  | Select to click '3D viewer' from the pop-up menu<br><br>***Notice* – '3D viewer' offer only for CT image** |
| 3 |  | Select project tab after run Xelis program the saved project file is appeared on current image, select project file that you want to bring and click the [OK] button. |
| 4 |  | Applying project and bring up the image. |

## Xelis Capture

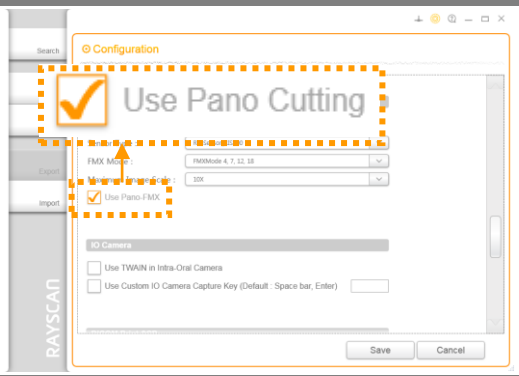
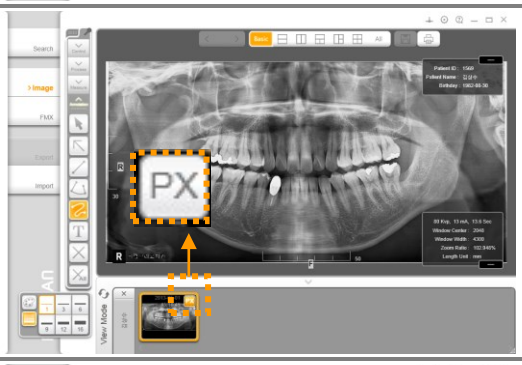
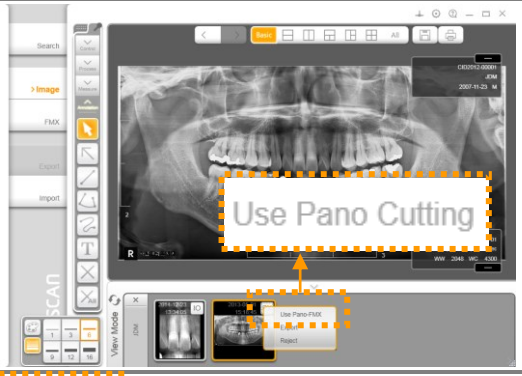
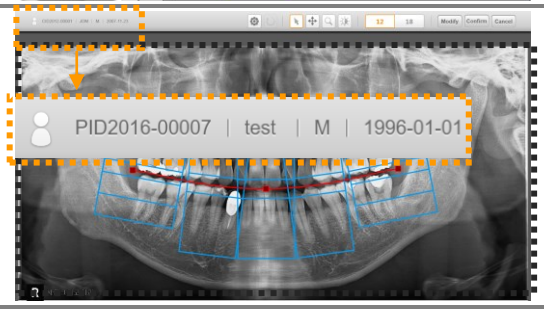
| No. | Figure | Description |
|---|---|---|
| 1 |  | Select image that you want to capture by clicking button on the central portion of the left or click [FullScreen] button on the lower part of the left<br><br>***Notice*** **– When occur** flashing effect, **normal capture processing is being.** |
| 2 | | Return to SMARTDent click button the captured images are shown |

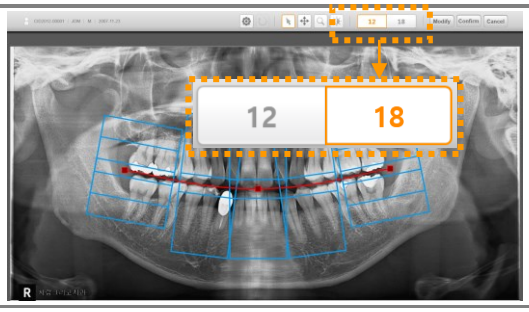
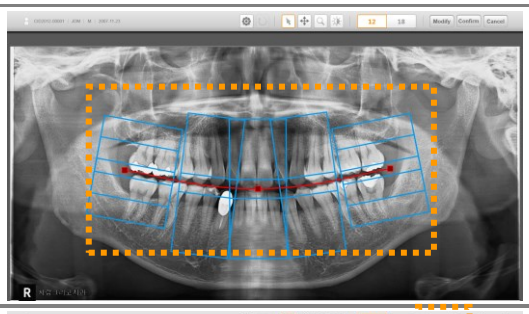
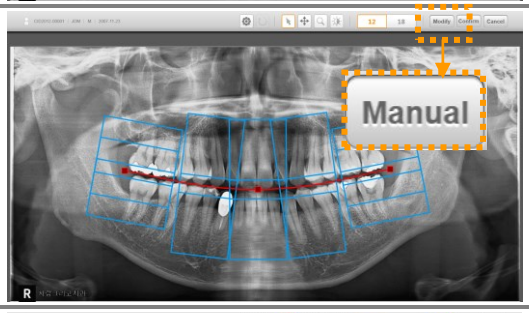
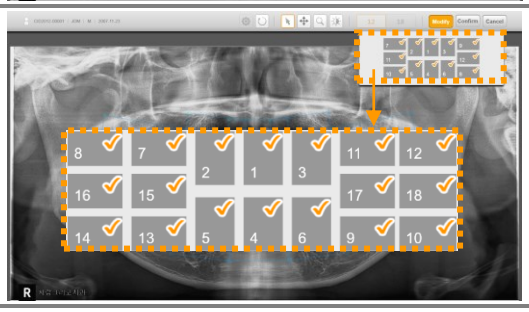
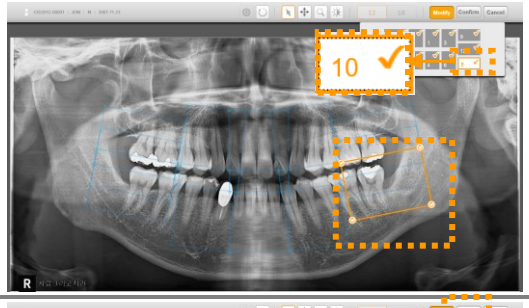
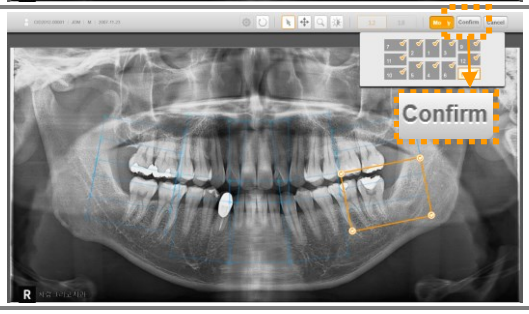
| | |
|---|---|
| ***Notice*** | **When select '3D viewer' from SMARTDent, run Xelis and then quit SMARTDent or change patients the data won't be saved in SMARTDent even if save in Xelis..** |

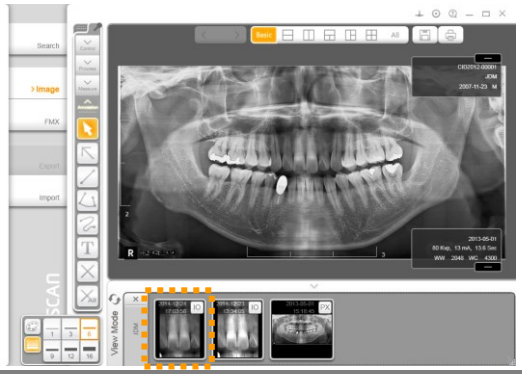
## 3.20 Pano-FMX

You can create IO sensor image to edit PX(Panorama) images.

### Use Pano-FMX Function

| No. | Figure | Description |
|---|---|---|
| 1 |  | Check [Use Pano-FMX] in Intraloral section from configuration tab. |
| 2 |  | Click [Modality] button on the top of image thumbnail from patient list. |
| 3 |  | Select 'Use Pano-FMX' from pop-up menu.<br><br>***Notice*** **– 'Use Pano-FMX' menu only offer for 'Panorama(PX)' images.** |
| 4 |  | You can see that the Edit image window appeared. |

| | | |
|---|---|---|
| 5 |  | Select FMX mode you want. |
| 6 |  | Set cutting position by moving Smile Line. |
| 7 |  | If you want a more detailed editing click the [Modify] button. |
| 8 |  | Unchecked unnecessary images from FMX view on the upper right corner. |
| 9 |  | Select image for a more detailed editing and Perform the movement and rotation of images. |
| 10 |  | Click the [Confirm] button when the editing is done. |

| | | |
|---|---|---|
| 11 | | After confirming the oral sensor image click the [Save] button. |
| 12 |  | Confirm the saved images. |

# FMX

# 4

# 4 FMX

In FMX, intraoral sensor and intraoral camera acquisition and view functions are available.

SMARTDent manages the images based on FMX for easier search of the intraoral snesor and intraoral camera images and management of position information. In case of the deciduous tooth, FMX 12 View is used and if only permanent teeth or permanent teeth accompanied by deciduous teeth then FMX 18 View is used.

| | |
|---|---|
| ***NOTICE*** | FMX is an acronym for Full Mouth X-ray and designed for efficient management of the complete arch intraoral radiation images and used widely around the world.<br>Used to FMX is used in intraoral camera images for managing of position information. |

'FMX' tab screen composition and details of each item are as follows.

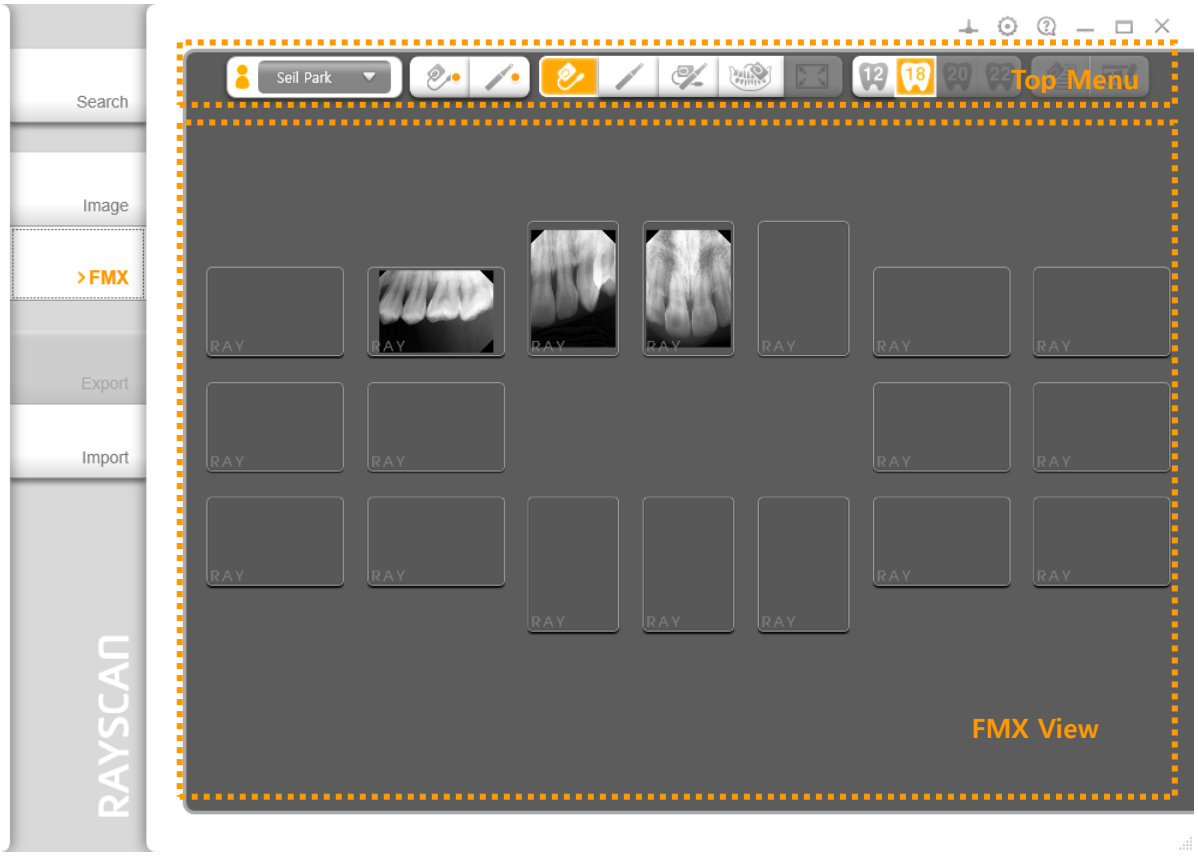



**Figure 9. 'FMX' Tab screen**

## Top Menu

| Item | | Description |
|---|---|---|
| | **Patient List** | Displays the currently opened patient. Patient change is also available.<br>Changing the patient also changes contents of the FMX View. |
| | **IO Sensor Acq** | Click to convert to the intraoral sensor acquisition screen<br>of the current selected patient. |
| | **IO Camera Acq** | Click to convert to intraoral camera acquisition screen of<br>the current selected patient. |
| | **IO Sensor View** | Displays intraoral sensor images of the current selected patient.<br>Most recent image by each of the position is displayed. |
| | **IO Camera View** | Displays intraoral camera images of the current selected patient.<br>Most recent image by each of the position is displayed. |
| | **IO Multi View** | Displays intraoral sensor images and intraoral camera images of the current selected patient simultaneously.<br>Most recent images by each of the position are displayed. |
| | **IO Sensor/Pano View** | Displays intraoral sensor image and panorama image of<br>the current selected patient simultaneously.<br>Each image shown is the most recent image. |
| | **FullScreen** | View selected image in full screen. |
| | **FMX View Mode** | Converts currently displayed FMX View Layout |
| | **Tooth History** | Enumerates past images in the same position as the currently selected images for viewing.<br>Images selected from the printed image list replace the applicable position of the FMX View. |
| | **Image Compare** | You can see by comparing the image of the same location as the image is currently selected.. |

| *NOTICE* | When FMX 12 / 18 View conversion, the deciduous teeth are not seen in FMX 18 View and vice versa permanent teeth are not seen in the FMX 12 View. |
|---|---|

### FMX View

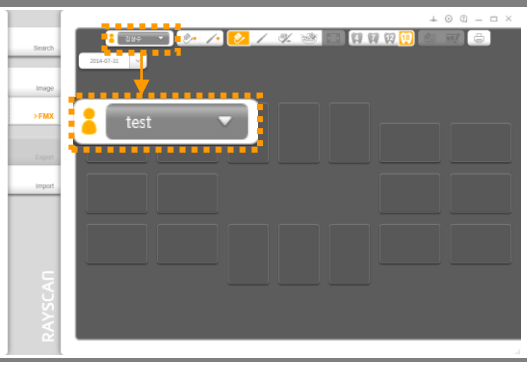
Changes the FMX Layout according to the mode selected in 'Top Menu' and displays the image coinciding with each position. As standard, latest image by each position is displayed and by clicking the [History] button in 'Top Menu', select and view the previous image of the applicable position.

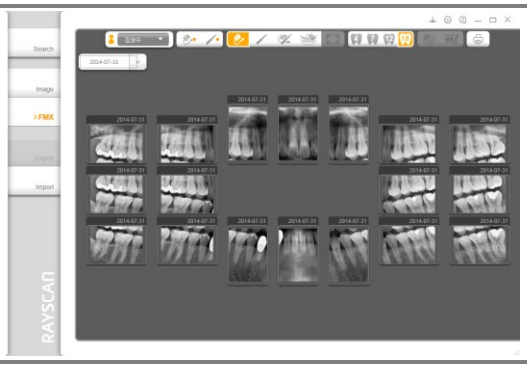
## 4.1 Image Display

Patients opened through the Search tab amatically added to the list of patients

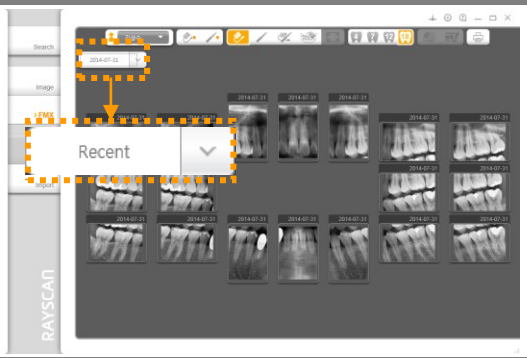
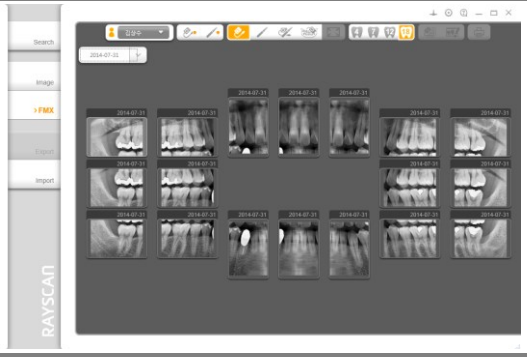
Select patient from the list latest images are listed on FMX view

### Display patient's image

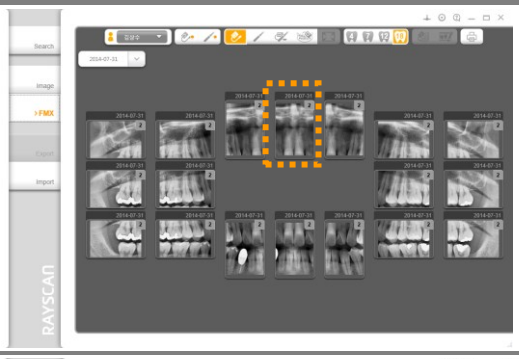
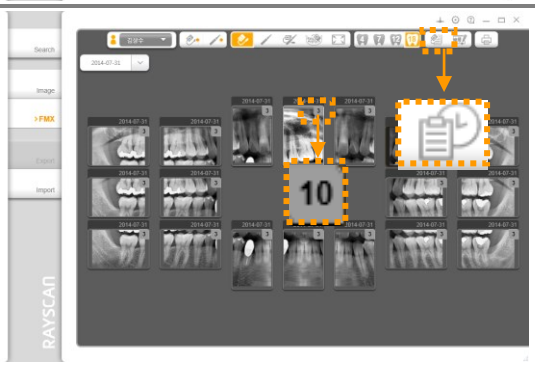
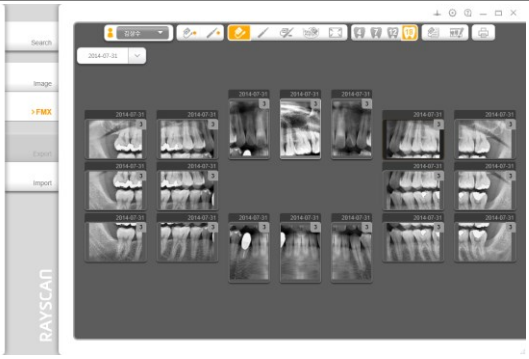
| No. | Figure | Description |
|---|---|---|
| 1 |  | Select patient at the top of the patients list.<br><br>***Notice*** **– Only the patients opend by double click from 'patient list' or click 'Open' button in Search tab are displayed** |

| | | |
|---|---|---|
| 2 |  | Latest images of patient is displayed on FMX view. |

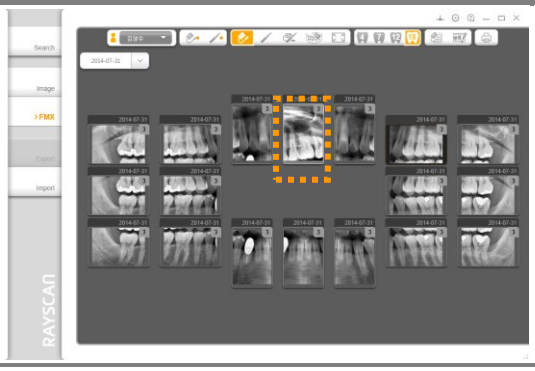
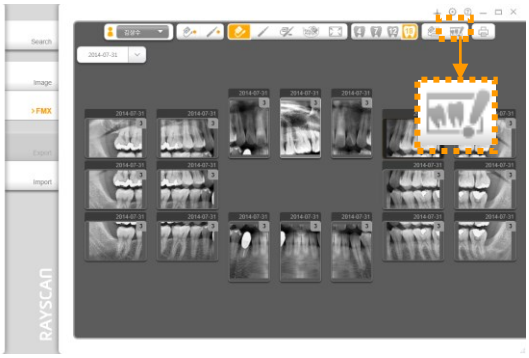
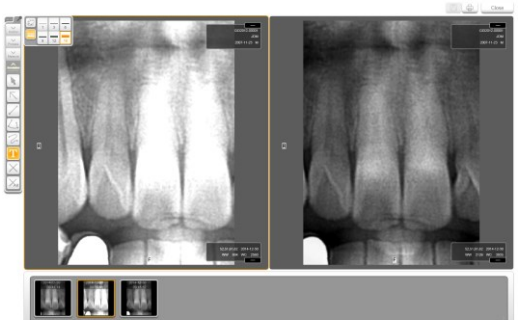
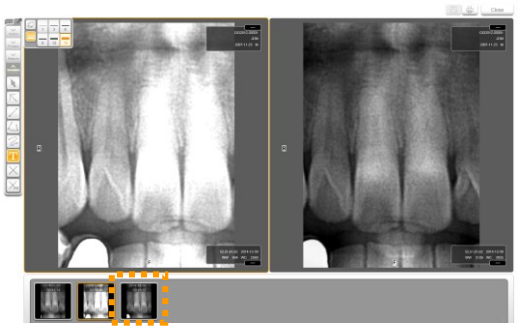
## Display patient images taken by date

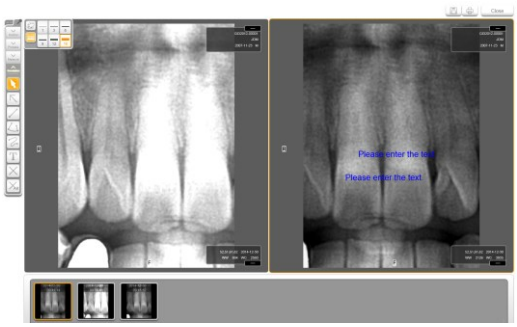
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the date list at the top of the FMX view and select acquisition date |
| 2 |  | Display images taken by selection date on FMX view |

## Display image history by location

| No. | Figure | Description |
|---|---|---|
| 1 |  | From FMX view, select location you want to display image history. |
| 2 |  | Click [Image History] button at the top or the number that shows history number at the top right of selection image |
| 3 | | Select image that you want to display.. |
| 4 |  | You can see the image you choose is displayed |

## Compare images

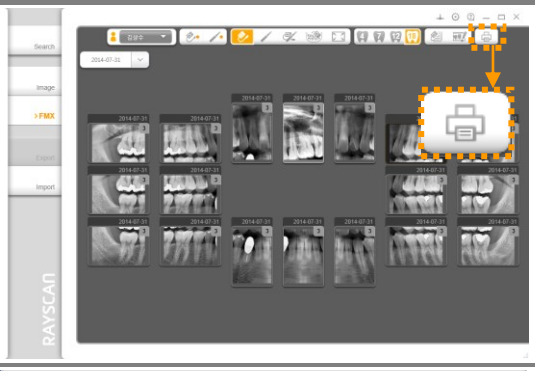
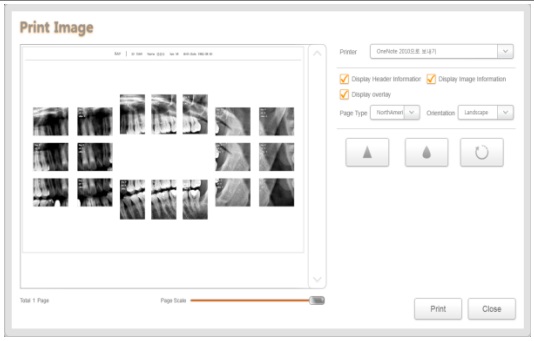
| No. | Figure | Description |
|---|---|---|
| 1 |  | Select tooth position that you want to compare from FMX view. |
| 2 |  | Click [image compare] button at the right top. |
| 3 |  | The window for comparing image will appear |
| 4 |  | Drag image from humbnail at the buttom intothe image view. |

| | | |
|---|---|---|
| 5 |  | Compare two displayed images |

## 4.2 Image Print

Print images displayed on FMX view.

### Print FMX view image

| No. | Figure | Description |
|---|---|---|
| 1 |  | Display the images you want to print and click [print] button at the top of the menu. |
| 2 |  | 'Print' pop-up window appear.<br>Refer to 3.16 [Image print] 또는 [DICOM print] section proceed image print.<br>***Notice* – When print FMX images Thumbnail and Layout functions are not offered.** |

## 4.3 Intraoral Sensor Acquisition

Select 'Patient List' from the 'Search' tab screen then click the [IO X-Ray acq.] button on bottom or click the [IO X-Ray Acqusition] button from the 'FMX' tab screen to convert to intraoral sensor acquisition screen.

Prior to the first time intraoral sensor acquisition, 'intraoral sensor setup' and 'intraoral sensor calibration' must be performed for proper capturing.

Intraoral sensor acquisition screen composition and contents of each item are as follows.

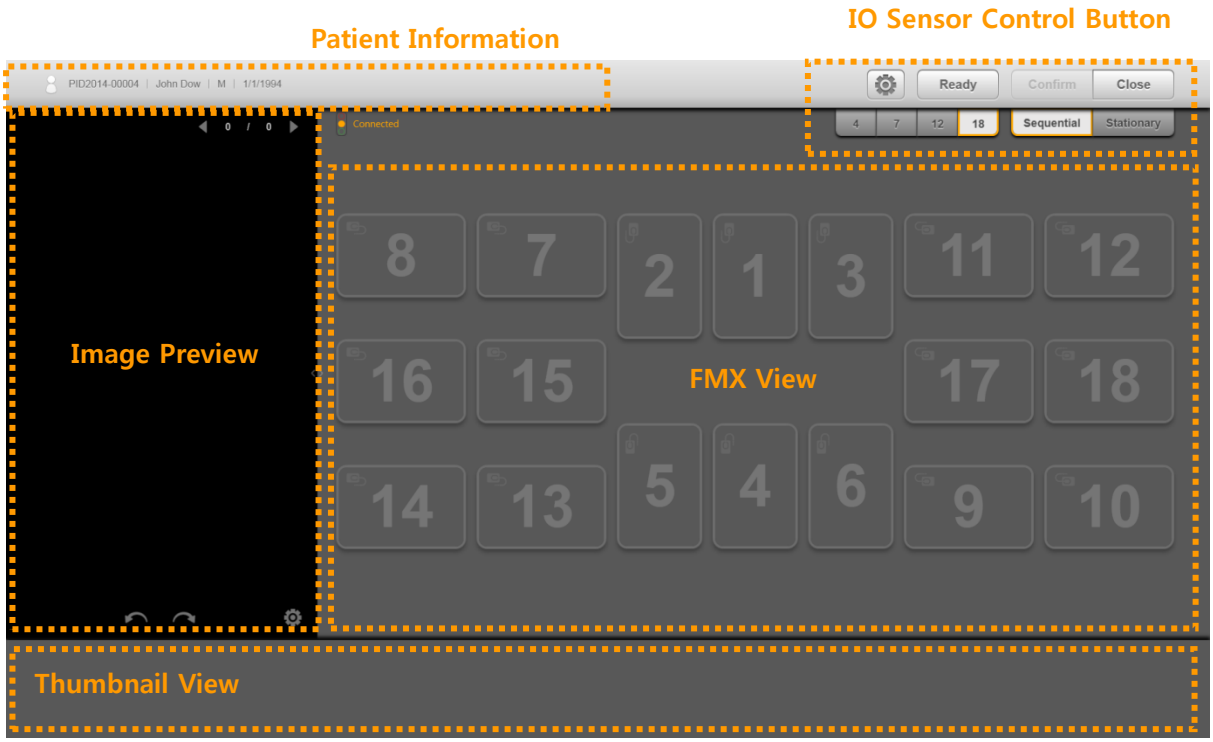
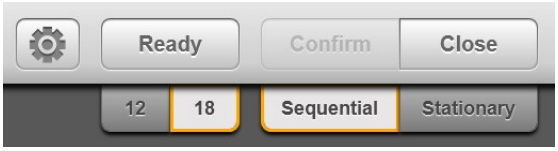



**Figure 10. Intraoral Sensor Acquisition Screen**

### IO Sensor Control Button



| Item | | Description |
|---|---|---|
| | Configuration | Modify setting values required for intraoral sensor acquisition. |

| | |
|---|---|
| **Ready / Cancel** | Imaging Ready / Cancel button and as standard, [Ready] is active. Click the [Ready] button to prepare for acquisition and when acquisition is ready then the button changes to [Cancel]. |
| **Confirm** | Saves the scanned image and closes the acquisition window. |
| **Close / Reject** | When there is no scanned image the [Close] button becomes active to execute the window close function.<br>When there is a scanned image then [Reject] button becomes active and save image and acquisition window are closed. |
| **4** | FMX View screen is displayed for 4 |
| **7** | FMX View screen is displayed for 7 |
| **12** | FMX View screen is displayed for the deciduous teeth (12). |
| **18** | FMX View screen is displayed for the permanent teeth (18). |
| **Sequential** | As the 'Sequential Acquisition' button, after acquisition the number selected in FMX View changes automatically to the next number. |
| **Stationary** | As the 'Stationary Acquisition' button, enables continuous acquisition in selected FMX View. |

| | |
|---|---|
| ***TIP*** | Images shot in FMX 12/18 View are displayed all on bottom as thumbnail.<br>Regardless of whether the images are shot in FMX 12 View then converted and saved in FMX 18 View, the images shot in FMX 12 View are still saved.<br>To move the images shot in FMX 12 View to FMX 18 View, convert to FMX 18 View then Drag the image thumbnail on bottom with the mouse and drop in the desired position. |

| | |
|---|---|
| ***TIP*** | Image information is saved in the server during Reject, but cannot be viewed in SMARTDent.<br>To display the Rejected image in SMARTDent for viewing, change status to 'Confirm' in 'Review' tab of the RayScan. |

## IO acquisition when uninstalled RAY IO

**For IO acquisition you must install RAY IO.**

**If RAY IO is not installed, the warning message appears when click IO acquisition button.**

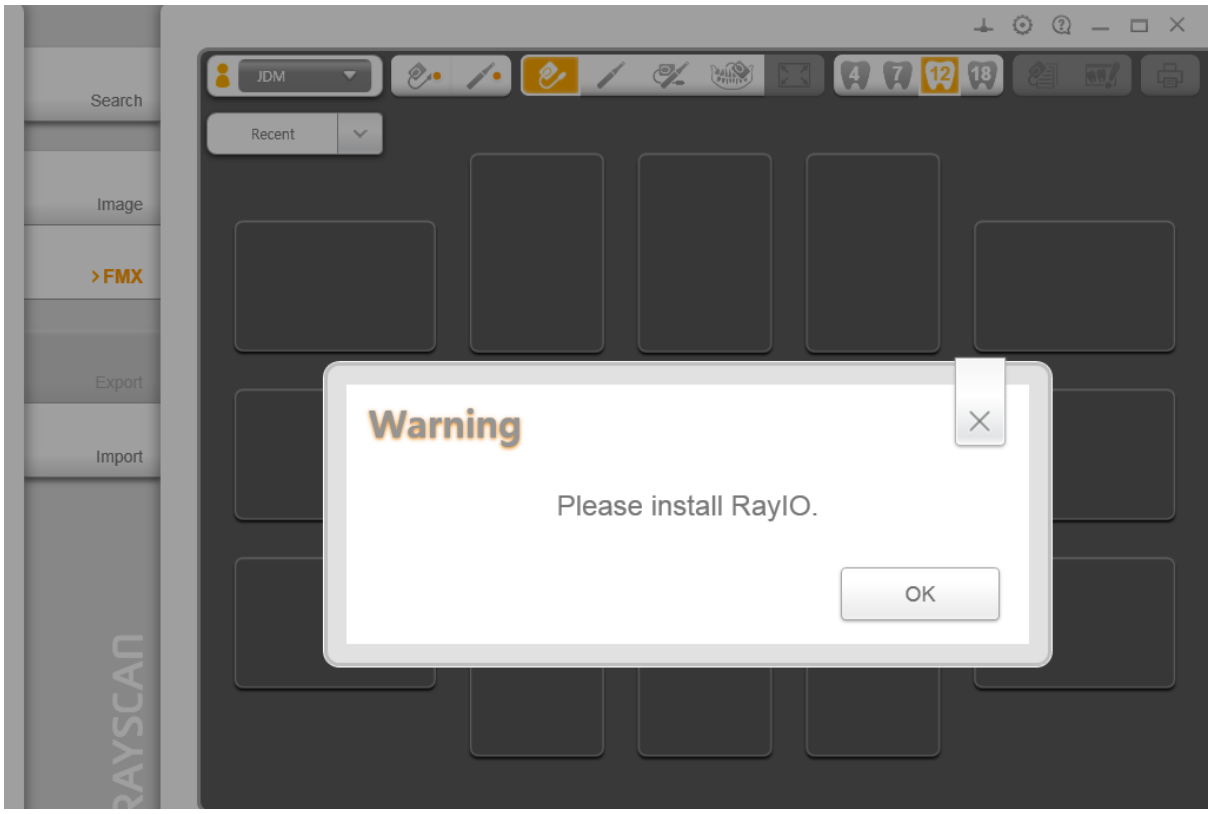


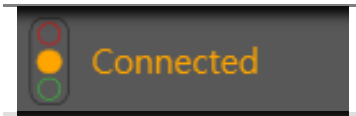
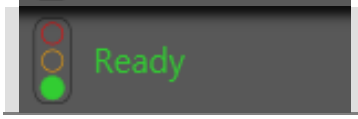

**Figure 11. Warning message**

## Sensor connection

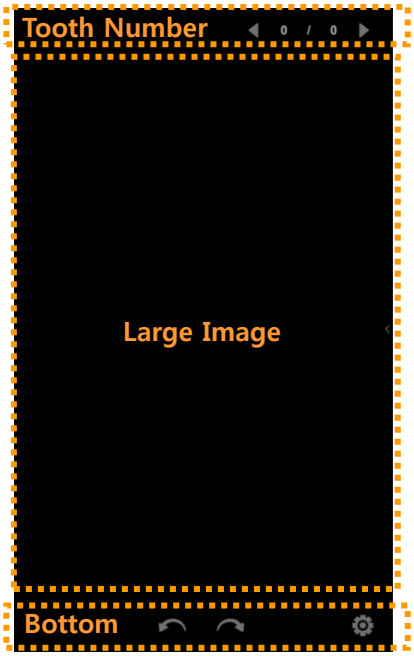
**Outputs a message that shows current Intraoral sensor connection status.**

**( All for four types – Device enable / disable, ready to shoot, Not ready to shoot due to memory leak)**

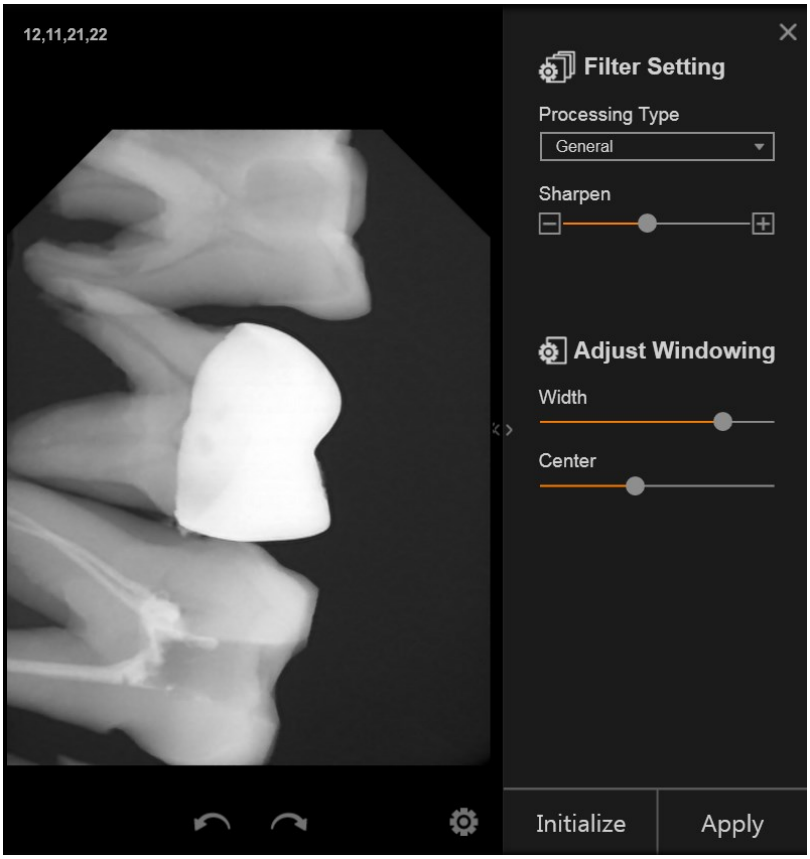
| Image | Description |
|---|---|
| | There is no connected device. |

| | |
|---|---|
|   | The device is connected. |
|   | Prepare for acquisition with the device. |

## Image Preview

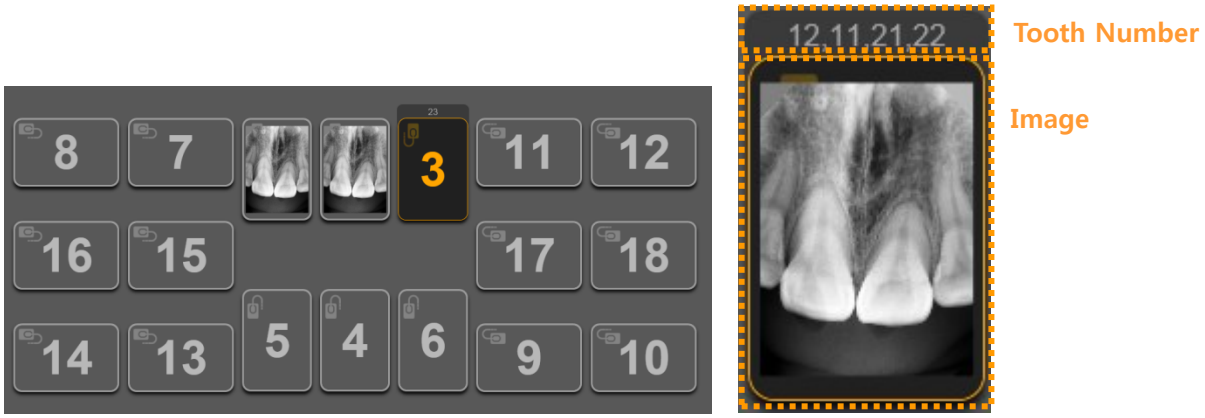



| Item | | Description |
|---|---|---|
| | **Tooth Number** | Displays tooth number of the scanned image. |
| | **Large Image** | Supports enlarged view of the scanned image. |
| | **Left Rotate** | Rotates the scanned image 90 degrees to the left. |
| | **Right Rotate** | Rotates the scanned image 90 degrees to the right. |
| | **Prev Image** | Displays the previous image scanned in the selected FMX View position. |
| | **Image Count** | Displays the 'number of the image currently displayed / total image count' of the selected FMX View position. |
| | **Next Image** | Displays the next image scanned in the selected FMX View position. |
| | **Filter Setting** | Display a Filter Setting Window. |




| Item | Description |
|---|---|
| **Processing Type** | Set Image processing type. |
| **Sharpen** | Set sharpen value. |
| **Width** | Set Window Width value. |
| **Center** | Set Window Center value. |
| **Initialize** | Initialize all values. |
| **Apply** | Save and apply setting values. |

## FMX View




| Item | Description |
|---|---|
| **Tooth Number** | Displays the tooth number of the position selected in FMX View. |
| **Image** | Displays the scanned image of the position selected in FMX View. |

## Thumbnail View

| Item | Description |
|---|---|
| **Tooth Number** | Displays the tooth number of the scanned image. |
| **Delete** | Deletes the scanned image. |
| **Thumbnail Image** | Displays the thumbnail image of the scanned image. |

### 4.3.1 Intraoral Sensor Calibration

Calibration is required prior to the initial acquisition for optimization of detector. This function is not for user, please do not put to use by yourself.

Click the [Calibration] button on lower part of the intraoral sensor setting screen then the pop-up window for calibration will be displayed.

| | |
|---|---|
| ***CAUTION*** | Abnormal images may be obtained if user performs Calibration at random. |

### 4.3.2 Intraoral Sensor Setting

Setup sensor characteristic values of [Gain] / [Trigger Level] / and [Filter Level] through the intraoral sensor setting function.

If intraoral sensor image acquisition fails or problem exists in the image quality, please contact the customer service center.

| | |
|---|---|
| ***CAUTION*** | Prohibit arbitrary modification of values for [Gain] / [Trigger Level] / and [Filter Level]. When values are modified, image may not be obtained or degrade the image quality. |

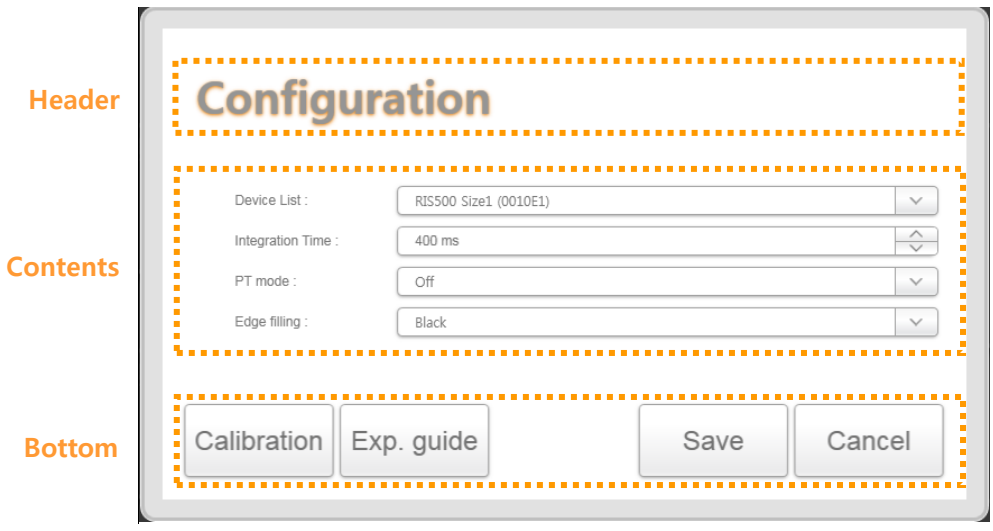



**Figure 12. Intraoral Sensor Setting Screen**

### Contents

| Item | Description |
|---|---|
| **Device List** | Displays devices connected to the present PC. |
| **Integration Time** | Settings for time used in case of the standard. |
| **PT mode** | On/off PT mode. |
| **Edge filling** | Set the type of imamge edge, |

### Bottom

| Item | Description |
|---|---|
| **Calibration** | Displays devices connected to the present PC. |
| **Exp. guide** | Shows Exposure Time Guide window. |
| **Save** | Save setting. |
| **Cancel** | Cencel to set Configuration |

Calibration screen composition and contents of each item are as follows.

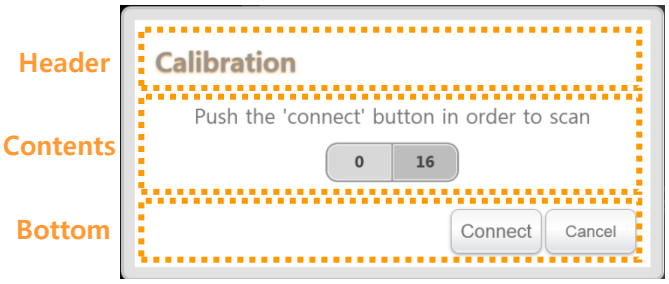



**Figure 13. Intraoral Sensor Calibration screen**

### Contents

| Item | Description |
|---|---|
| **Message** | Number of Sample imaging count is displayed.<br>For Calibration, Sample imaging of #16 is required. |

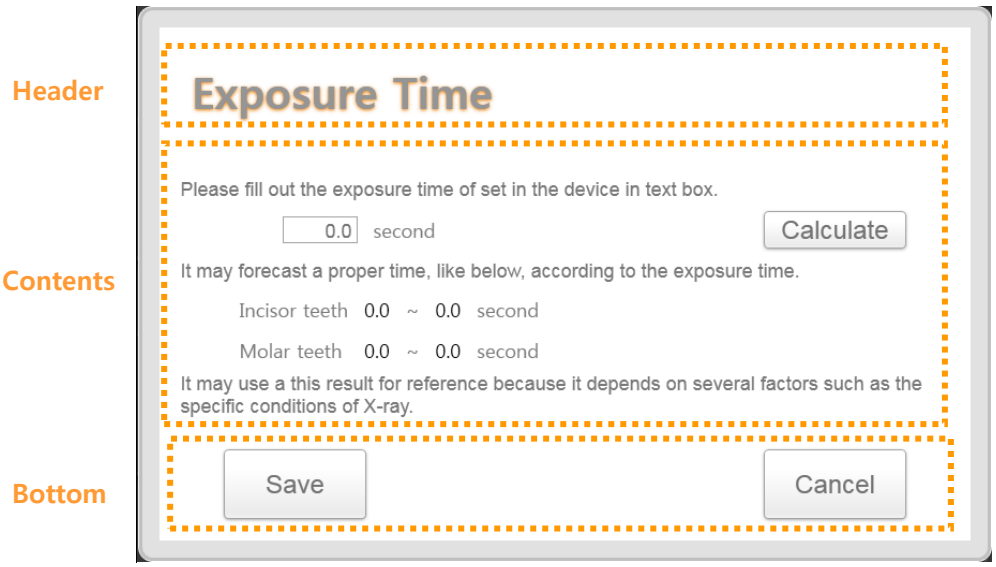
### Bottom

| Item | Description |
|---|---|
| **Connect** | Connect to device and proceed to Calibration imaging. |

| | |
|---|---|
| **Cancel** | Closes the window. |

| | |
|---|---|
| ***NOTICE*** | The installer performs calibration during installation therefore the user is not required to perform additional calibration. |

### 4.3.3 Exposure Time




#### Contents

| Item | Description |
|---|---|
| **Contents** | If enter the exposure time of conntected device, calculate the real exposure time for the teeth acquisition |

#### Bottom

| Item | Description |
|---|---|
| **Save** | Save and apply the exposure time. |
| **Cancel** | Cancel to set the exposure time |

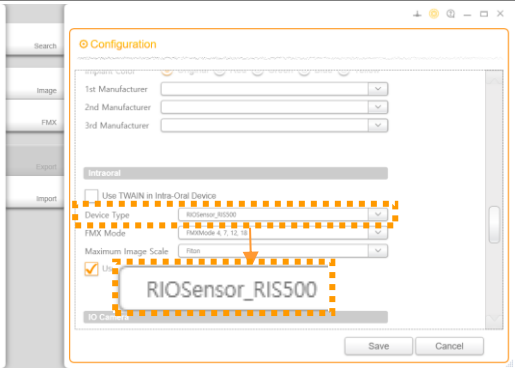
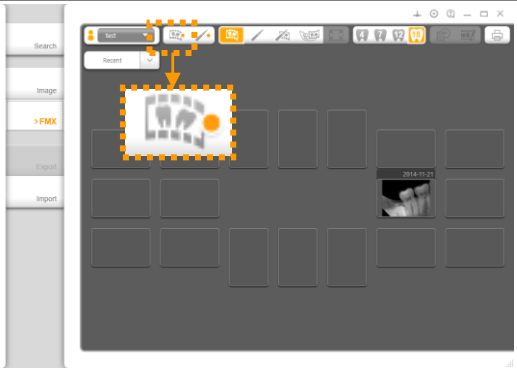
### 4.3.4 Intraoral Sensor Image Acquisition

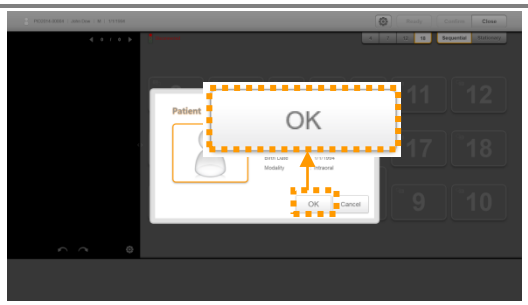
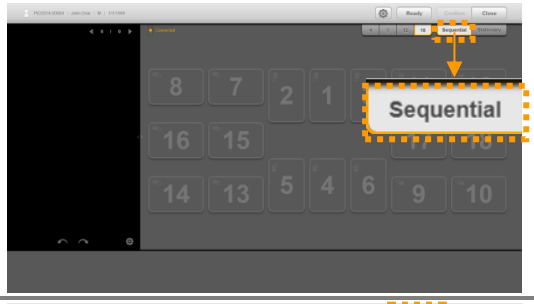
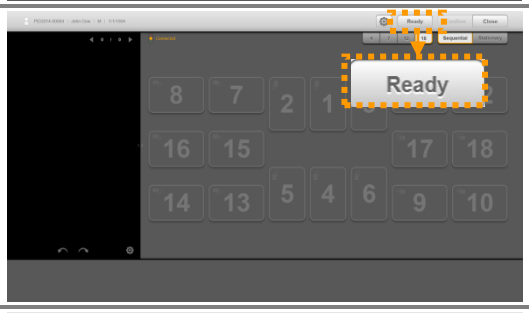
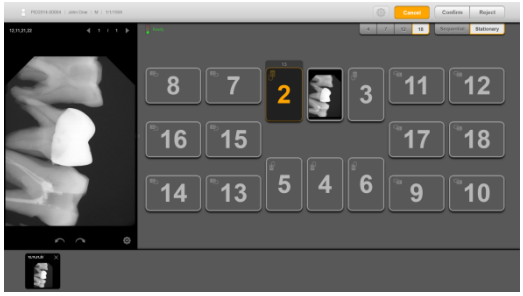
Intraoral sensor acquisition provides the 'sequential acquisition mode' which after capturing moves to the next FMX View position and 'stationary acquisition mode' which allows acquiring multiple images at a fixed position.

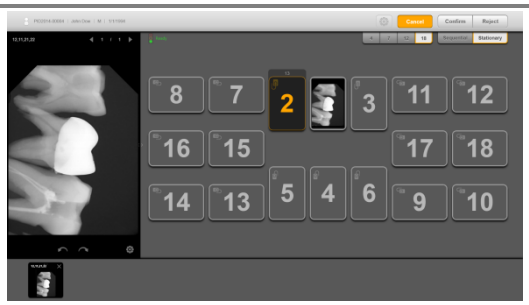
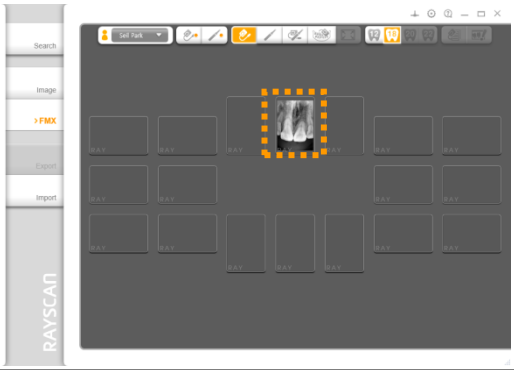
Images rotate automatically depending on the FMX View position. If rotation information is incorrect then from 'Image Preview' click [Left Rotate] or the [Right Rotate] button to rotate the image or click the right mouse button above the applicable image of the FMX View then the image rotates by 90 degrees in clockwise direction.

Image rotate and position information is not available once image is saved by clicking the [Confirm] or [Reject] button therefore perform image rotate, position move and image delete prior to closing the window.

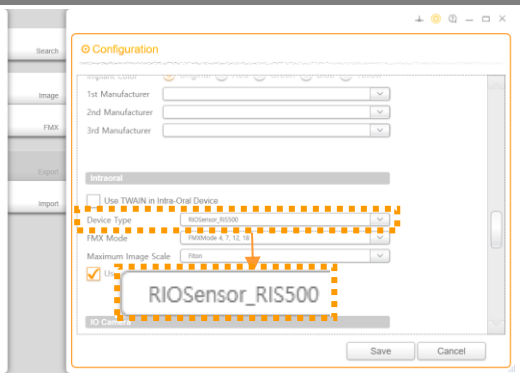
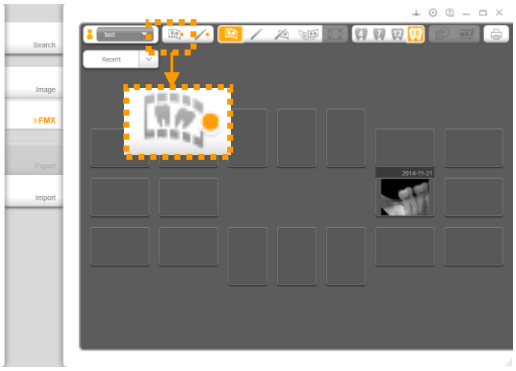
#### Sequential Acquisition Mode

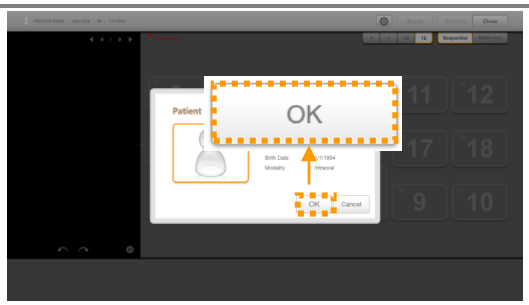
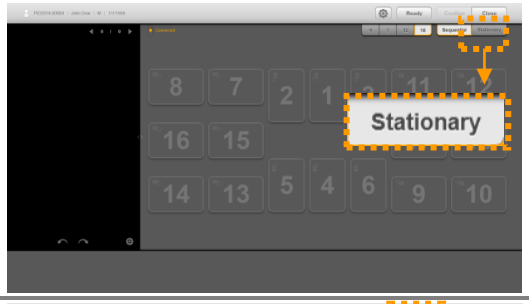
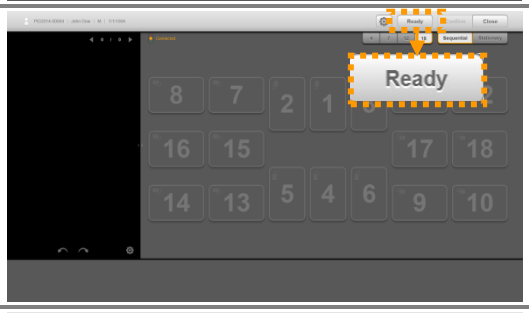
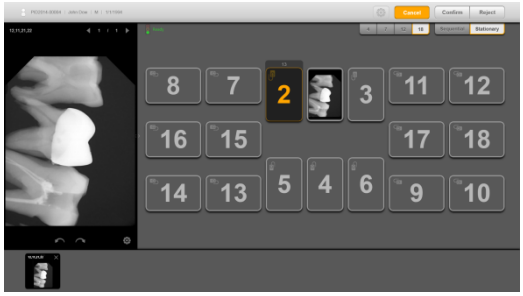
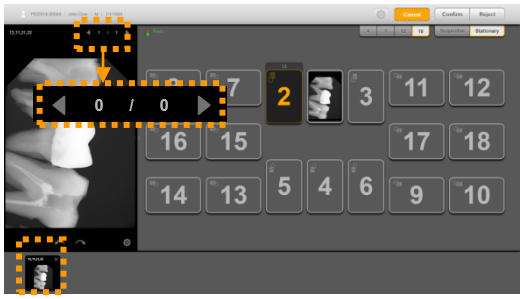
| No. | Figure | Description |
|---|---|---|
| 1 |  | Select device type to RIOSensor_RIS500 from Intraoral tab. |
| 2 |  | Select the patient undergoing capturing then click on the [IO X-Ray Acqusition] button.<br><br>***Tip* – Same function is performed by selecting the patient undergoing capturing from 'patient list' of the 'Search' tab then clicking the [IO X-Ray acq.] button on the bottom.** |

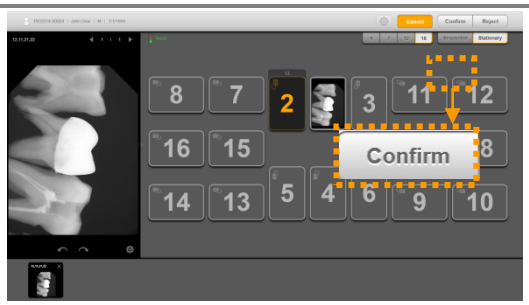
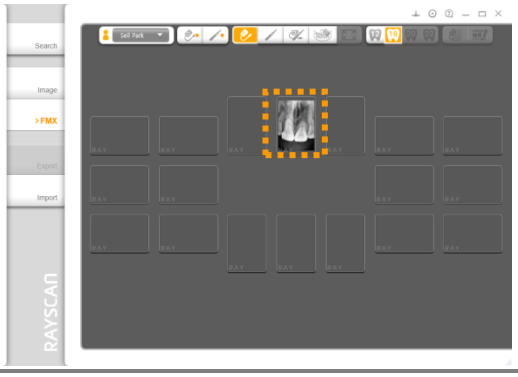
| | | |
|---|---|---|
| 3 |  | When selected patient information appears, click [OK] to proceed to capturing.<br>By clicking the [Cancel] button, end capturing and return to the 'FMX' tab.<br><br>***Caution*** **– If device is not connected then cannot find device message appears and returns to the 'FMX' tab.** |
| 4 |  | Click the [Sequential] button to proceed to sequential acquisition mode. |
| 5 |  | When preparation for capturing is completed, click on the [Ready] button. |
| 6 |  | When capturing is completed then the image is displayed in 3 locations; 'FMX View', 'Image Preview', 'Thumbnail Image'.<br>Drag the completed image to move to alternate position, rotate or delete.<br>***Tip*** **– In no relation to imaging preparation, FMX 4 / 7 /12 / 18 View and Sequential / Stationary conversion are available.** |

| | | |
|---|---|---|
| 7 |  | When capturing is completed, click on the [Confirm] button to save image and close the acquisition window.<br>If image save is not required then click on the [Reject] button to close the window.<br><br>***Tip* – Image is not displayed on FMX screen by clicking the [Reject] button. For display convert to 'Confirm' status in 'Review' tab of the RayScan.** |
| 8 |  | Acquired image is displayed in FMX View. |

## Stationary Acquisition Mode

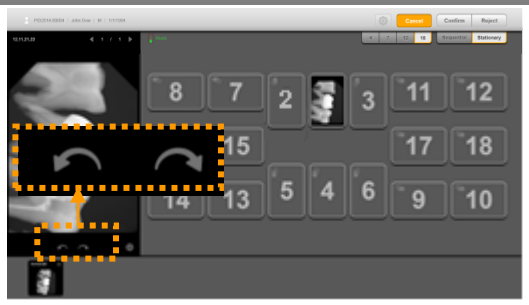
| No. | Figure | Description |
|---|---|---|
| 1 |  | Select device type to RIOSensor_RIS500 from Intraoral tab. |
| 2 |  | Select the patient undergoing capturing then click on the [IO X-Ray Acqusition] button.<br><br>***Tip* – Same function is performed by selecting the patient undergoing capturing from 'patient list' of the 'Search' tab then clicking the [IO X-Ray acq.] button on the bottom.** |

| | | |
|---|---|---|
| 3 |  | When information of the selected patient appears, click [OK] to continue capturing.<br>By clicking the [Cancel] button, end capturing and return to 'FMX' tab.<br><br>***Caution*** **– If device is not connected then cannot find device message appears and returns to the 'FMX' tab.** |
| 4 |  | Click on the [Stationary] button to proceed to the stationary acquisition mode. |
| 5 |  | When preparation for capturing is ready then select the capturing position and click the [Ready] button. |
| 6 |  | When capturing is completed, the image is displayed in 3 separate locations; 'FMX View', 'Image Preview' and 'Thumbnail Image'.<br><br>***Tip*** **- In no relation to capturing preparation, FMX 4 / 7 / 12 / 18 View and Sequential / Stationary conversion are available.** |
| 7 |  | When capturing is repeated then the image is overlapped in the same position.<br>Note that image thumbnail is added and the image count on the bottom of 'Image Preview' increases.<br>Completed acquiring images may be moved to an alternate position via Drag, rotate or deleted. |

| | | |
|---|---|---|
| 8 |  | When capturing is completed press the [Confirm] button to save the image and close the capturing window.<br>If image is unused then click the [Reject] button and close the window. |
| 9 |  | Acquired image is displayed in FMX View. |

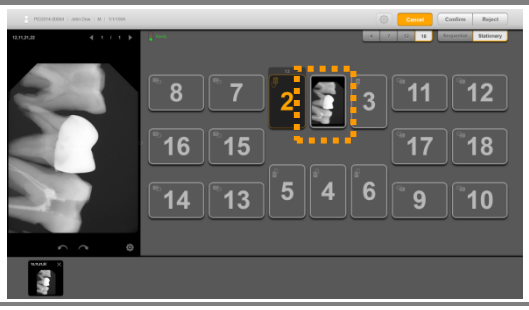
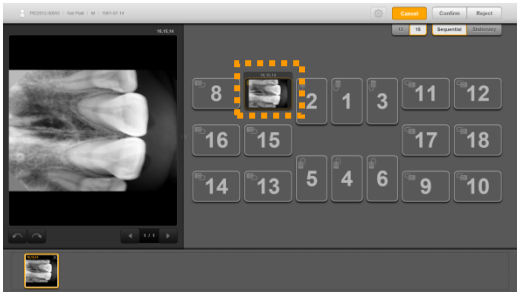
## Rotate Image

Before saving the acquired images, please rotate the images properly.

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click [Right Rotate] or [Left Rotate] button on bottom of 'Image Preview' of the scanned image.<br><br>***Tip* – From over the applicable image of the FMX View, click the right mouse button to rotate the image 90 degrees to the right.** |
| 2 | | Image is rotated. |

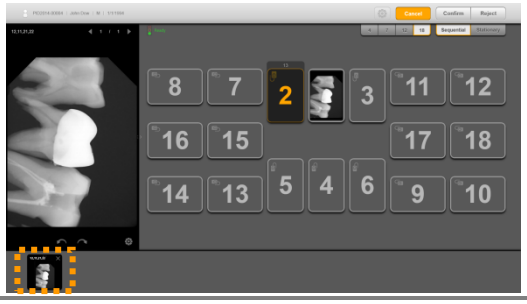
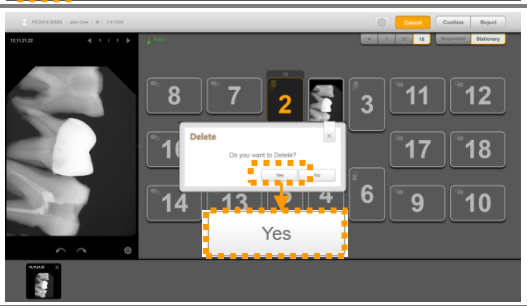
## Move Image Position

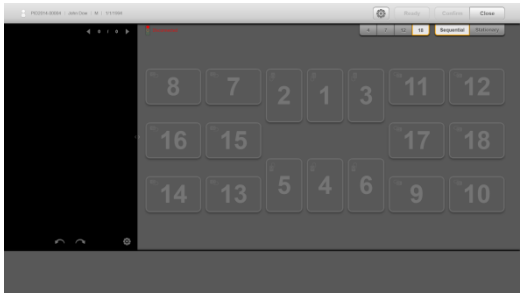
Before saving the acquired images, please move images to proper position.

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the left mouse button above the image required to be moved and Drag then drop the image at desired position. |
| 2 |  | Image is rotated automatically according to rotate information of the applicable position. |

## Delete Image

Before saving the acquired images, please delete the images which you do not want to save.

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Delete] button upper right part of thumbnail. |
| 2 |   | When delete confirm message window appears click [Yes].<br>If deletion is not desired then click [No].<br><br>***Caution* – Deleted images cannot be restored.** |

| | | |
|---|---|---|
| 3 |  | Applicable image is deleted from the thumbnail list. |

## 4.4 RIOScan Acquisition

Select 'Patient List' from the 'Search' tab screen then click the [IO X-Ray acq.] button on bottom or click the [IO X-Ray Acqusition] button from the 'FMX' tab screen to convert to RIOScan screen.

RIOScan acquisition screen composition and contents of each item are as follows.

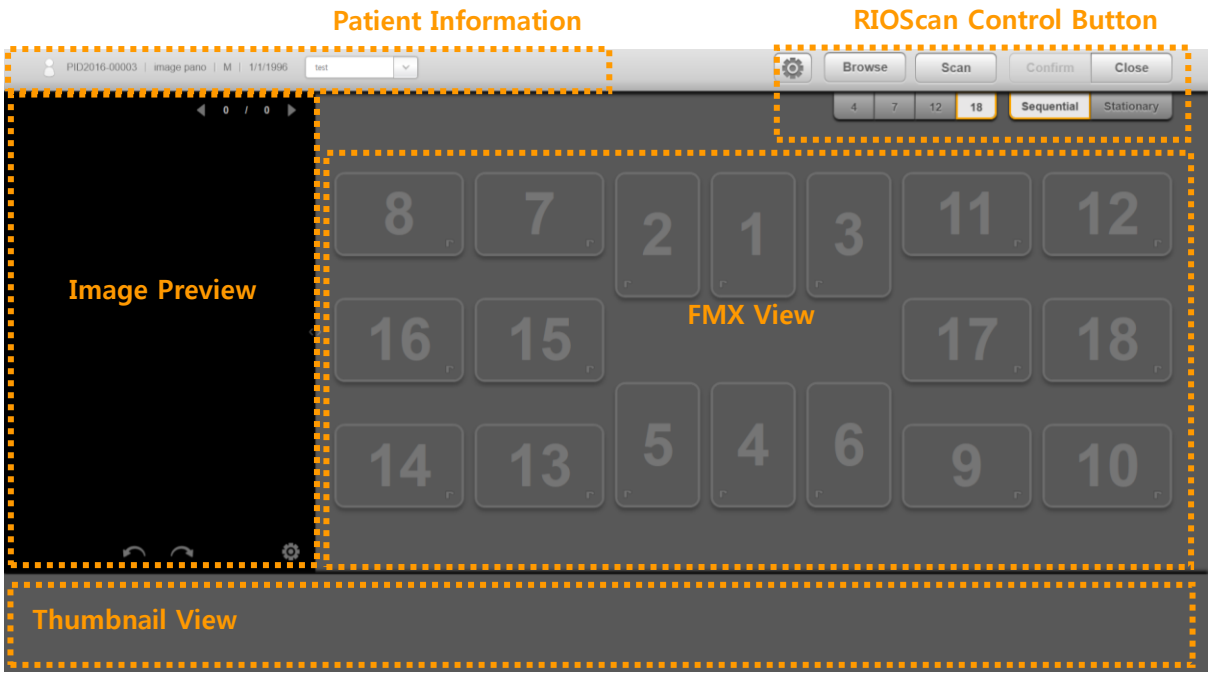



**Figure 14. RIOScan Acquisition Screen**

### IO Sensor Control Button

| Item | | Description |
|---|---|---|
| | **Configuration** | Modify setting IP Address list for RIOScan. |

| | |
|---|---|
| **Scan** | Ready for RIOScan Scan Mode. |
| **Browse** | Bring the images from RIOScanno |
| **Confirm** | Saves the scanned image and closes the acquisition window. |
| **Close / Reject** | When there is no scanned image the [Close] button becomes active to execute the window close function.<br>When there is a scanned image then [Reject] button becomes active and save image and acquisition window are closed. |
| **4** | FMX View screen is displayed for 4 |
| **7** | FMX View screen is displayed for 7 |
| **12** | FMX View screen is displayed for the deciduous teeth (12). |
| **18** | FMX View screen is displayed for the permanent teeth (18). |
| **Sequential** | As the 'Sequential Acquisition' button, after acquisition the number selected in FMX View changes automatically to the next number. |
| **Stationary** | As the 'Stationary Acquisition' button, enables continuous acquisition in selected FMX View. |

| | |
|---|---|
| ***TIP*** | Images shot in FMX 12/18 View are displayed all on bottom as thumbnail.<br>Regardless of whether the images are shot in FMX 12 View then converted and saved in FMX 18 View, the images shot in FMX 12 View are still saved.<br>To move the images shot in FMX 12 View to FMX 18 View, convert to FMX 18 View then Drag the image thumbnail on bottom with the mouse and drop in the desired position. |

| | |
|---|---|
| ***TIP*** | Image information is saved in the server during Reject, but cannot be viewed in SMARTDent.<br>To display the Rejected image in SMARTDent for viewing, change status to 'Confirm' in 'Review' tab of the RayScan. |

## IO acquisition when uninstalled RAY IO

**For IO acquisition you must install RAY IO.**

**If RAY IO is not installed, the warning message appears when click IO acquisition button.**

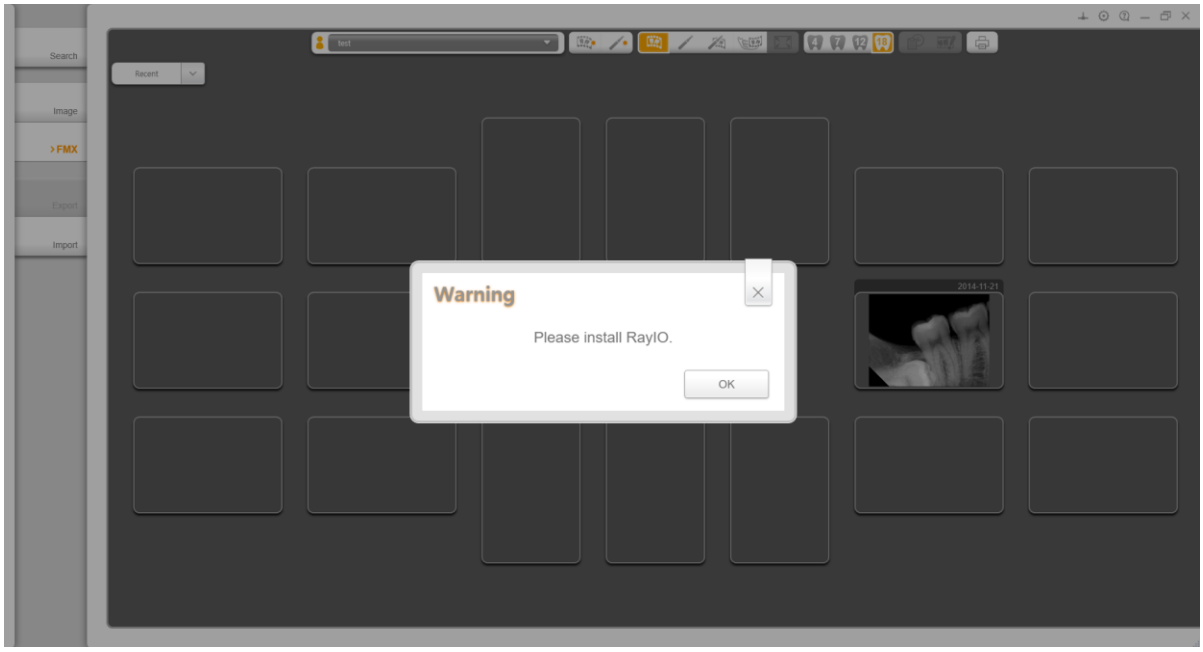
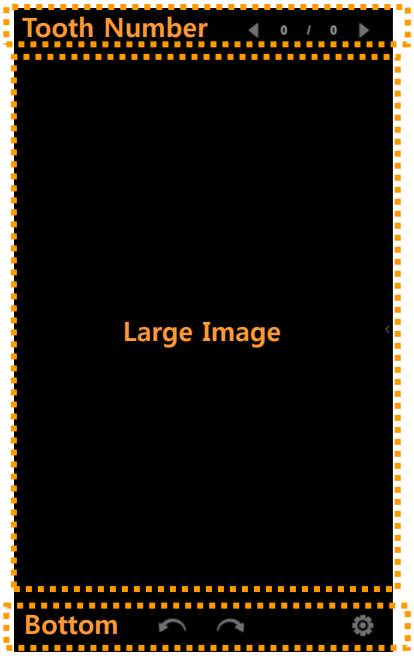



Figure 1. Warning message

## Image Preview



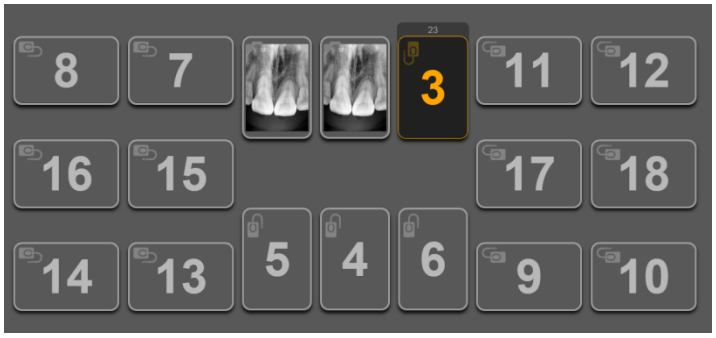

| Item | Description |
|---|---|
| Tooth Number | Displays tooth number of the scanned image. |

| | | |
|---|---|---|
| | **Large Image** | Supports enlarged view of the scanned image. |
| | **Left Rotate** | Rotates the scanned image 90 degrees to the left. |
| | **Right Rotate** | Rotates the scanned image 90 degrees to the right. |
| | **Prev Image** | Displays the previous image scanned in the selected FMX View position. |
| | **Image Count** | Displays the 'number of the image currently displayed / total image count' of the selected FMX View position. |
| | **Next Image** | Displays the next image scanned in the selected FMX View position. |
| | **Filter Setting** | Display a Filter Setting Window. |

| Item | Description |
|---|---|
| **Processing Type** | Set Image processing type. |
| **Sharpen** | Set sharpen value. |

| | |
|---|---|
| **Width** | Set Window Width value. |
| **Center** | Set Window Center value. |
| **Histogram** | Shows image histogram<br>The color bar below the histogram is for image exposure.<br>If image exposure is ideal the color bar will be displayed in white.<br>Closer to blue means under exposure, closer to red means over exposure. |
| **Initialize** | Initialize all values. |
| **Apply** | Save and apply setting values. |

## FMX View



Tooth Number

Image

| Item | Description |
|---|---|
| **Tooth Number** | Displays the tooth number of the position selected in FMX View. |
| **Image** | Displays the scanned image of the position selected in FMX View. |

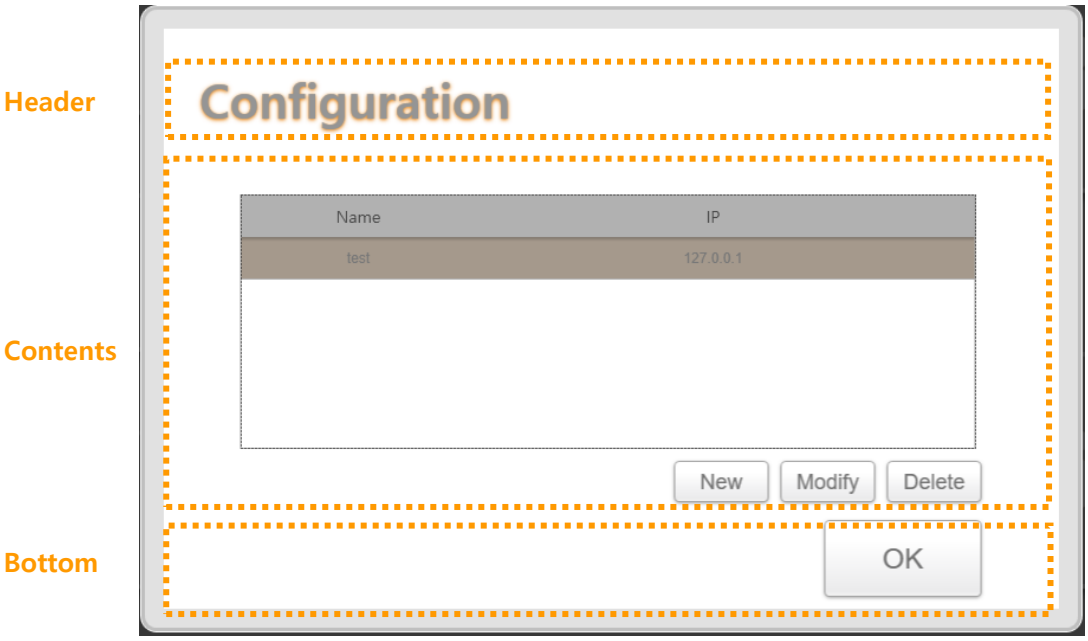
### Thumbnail View

| Item | Description |
|---|---|
| **Tooth Number** | Displays the tooth number of the scanned image. |
| **Delete** | Deletes the scanned image. |
| **Thumbnail Image** | Displays the thumbnail image of the scanned image. |

#### 4.4.1 RIOScan IP Address Setting

Before using the RIOScan, you should setup IP Address for RIOScan.

When click [OK] button, IP Address will be saved automatically.



### Contents

| Item | Description |
|---|---|
| **Name** | Name for IP Address |
| **IP** | IP Address |
| **New** | Add new IP Address. |
| **Modify** | Modify the IP Address. |
| **Delete** | Delete the IP Address. |

### Bottom

| Item | Description |
|---|---|
| **OK** | Close the IP Address List Setting Window |

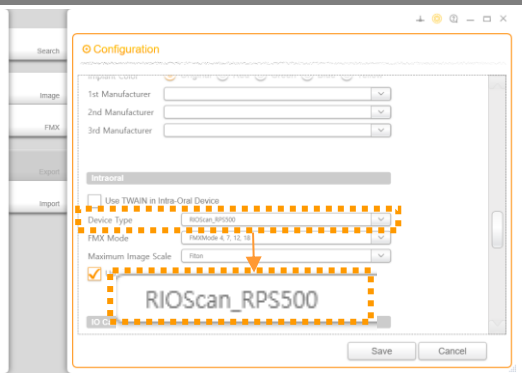
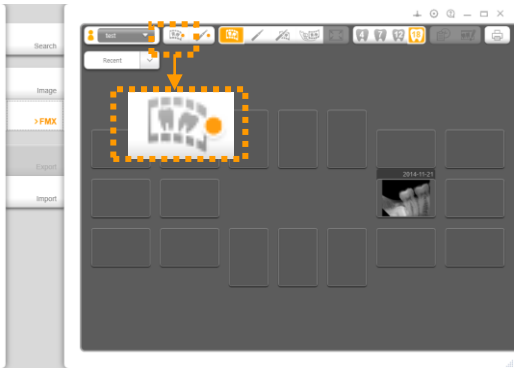
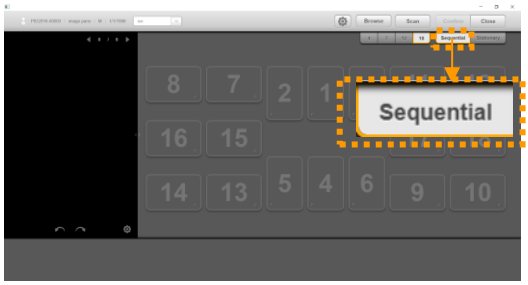
## 4.4.2 RIOScan Image Acquisition

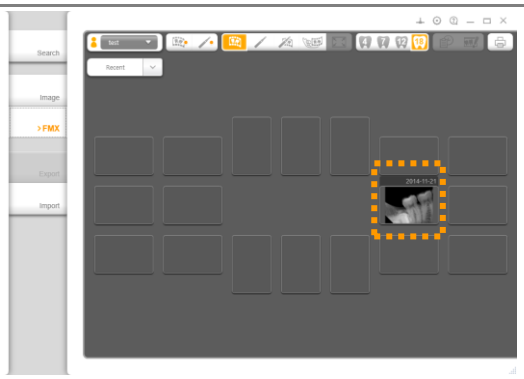
RIOScan Scan provides the 'sequential acquisition mode' which after capturing moves to the next FMX View position and 'stationary acquisition mode' which allows acquiring multiple images at a fixed position.

Images rotate automatically depending on the FMX View position. If rotation information is incorrect then from 'Image Preview' click [Left Rotate] or the [Right Rotate] button to rotate the image or click the right mouse button above the applicable image of the FMX View then the image rotates by 90 degrees in clockwise direction.

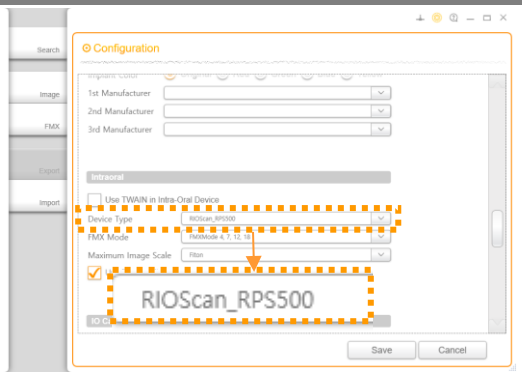
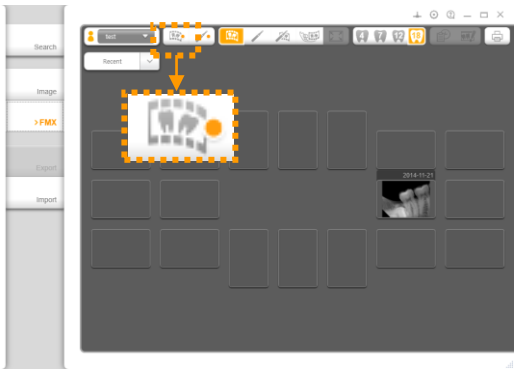
Image rotate and position information is not available once image is saved by clicking the [Confirm] or [Reject] button therefore perform image rotate, position move and image delete prior to closing the window.

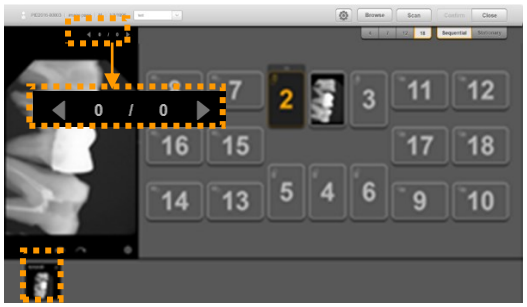
## Sequential Scan Mode

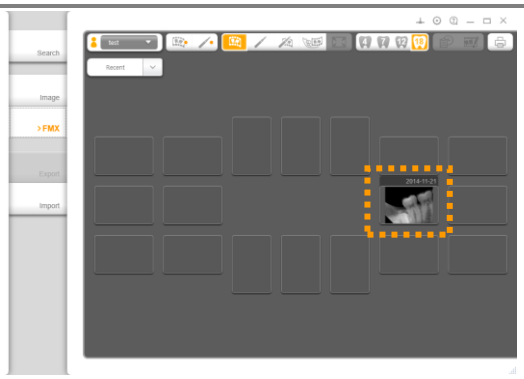
| No. | Figure | Description |
|---|---|---|
| 1 |  | Select device type to RIOScan_RPS500 from Intraoral tab. |
| 2 |  | Select the patient undergoing capturing then click on the [IO X-Ray Acqusition] button.<br><br>***Tip* – Same function is performed by selecting the patient undergoing capturing from 'patient list' of the 'Search' tab then clicking the [IO X-Ray acq.] button on the bottom.** |
| 3 | | When selected patient information appears, click [OK] to proceed to capturing.<br>By clicking the [Cancel] button, end capturing and return to the 'FMX' tab. |
| 4 |  | Click the [Sequential] button to proceed to sequential acquisition mode. |

| | | |
|---|---|---|
| 5 | | When preparation for scan is completed, click on the [Scan] button. |
| 6 | | When capturing is completed then the image is displayed in 3 locations; 'FMX View', 'Image Preview', 'Thumbnail Image'.<br>Drag the completed image to move to alternate position, rotate or delete.<br>***Tip* – In no relation to imaging preparation, FMX 4 / 7 / 12 / 18 View and Sequential / Stationary conversion are available.** |
| 7 | | When scanning is completed, click on the [Confirm] button to save image and close the acquisition window.<br>If image save is not required then click on the [Reject] button to close the window.<br>***Tip* – Image is not displayed on FMX screen by clicking the [Reject] button. For display convert to 'Confirm' status in 'Review' tab of the RayScan.** |
| 8 |  | Acquired image is displayed in FMX View. |

## Stationary Acquisition Mode

| No. | Figure | Description |
|---|---|---|
| 1 |  | Select device type to RIOScan_RPS500 from Intraoral tab |
| 2 |  | Select the patient undergoing capturing then click on the [IO X-Ray Acqusition] button.<br><br>***Tip*** **– Same function is performed by selecting the patient undergoing capturing from 'patient list' of the 'Search' tab then clicking the [IO X-Ray acq.] button on the bottom.** |
| 3 | | When information of the selected patient appears, click [OK] to continue capturing. By clicking the [Cancel] button, end capturing and return to 'FMX' tab.<br><br>***Caution*** **– If device is not connected then cannot find device message appears and returns to the 'FMX' tab.** |
| 4 | | Click on the [Stationary] button to proceed to the stationary acquisition mode. |

| | | |
|---|---|---|
| 5 | | When preparation for scan is completed, click on the [Scan] button. |
| 6 | | When capturing is completed, the image is displayed in 3 separate locations; 'FMX View', 'Image Preview' and 'Thumbnail Image'.<br><br>***Tip*** **- In no relation to capturing preparation, FMX 4 / 7 / 12 / 18 View and Sequential / Stationary conversion are available.** |
| 7 |  | When capturing is repeated then the image is overlapped in the same position.<br>Note that image thumbnail is added and the image count on the bottom of 'Image Preview' increases.<br>Completed acquiring images may be moved to an alternate position via Drag, rotate or deleted. |
| 8 | | When capturing is completed press the [Confirm] button to save the image and close the capturing window.<br>If image is unused then click the [Reject] button and close the window.<br><br>***Tip*** **- Image is not displayed on FMX screen by clicking the [Reject] button.**<br>**For display convert to 'Confirm' status in 'Review' tab of the RayScan.** |

| | | |
|---|---|---|
| 9 |  | Acquired image is displayed in FMX View. |

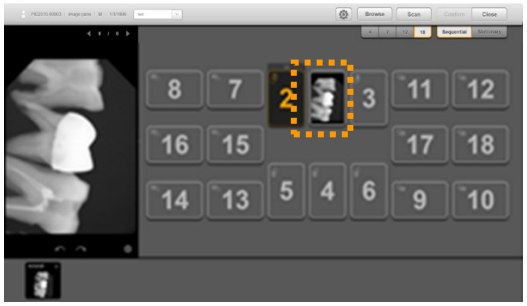
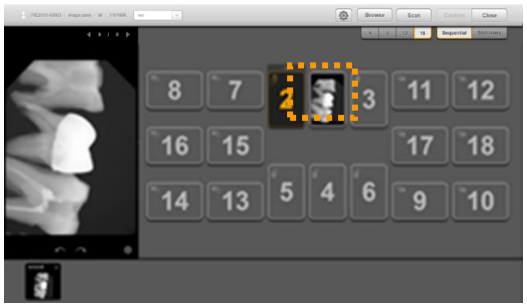
## Rotate Image

Before saving the acquired images, please rotate the images properly.

| No. | Figure | Description |
|---|---|---|
| 1 | | Click [Right Rotate] or [Left Rotate] button on bottom of 'Image Preview' of the scanned image.<br><br>***Tip* – From over the applicable image of the FMX View, click the right mouse button to rotate the image 90 degrees to the right.** |
| 2 | | Image is rotated. |

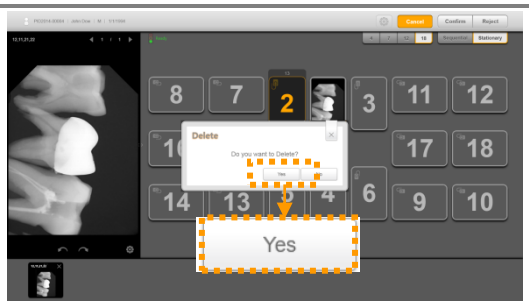
## Move Image Position

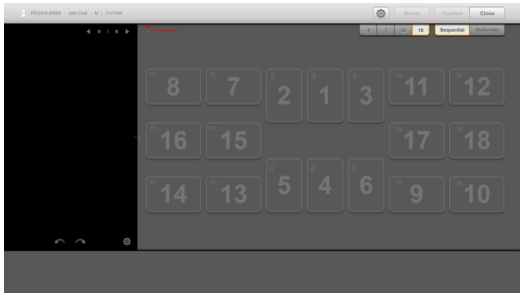
Before saving the acquired images, please move the image to proper position.

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the left mouse button above the image required to be moved and Drag then drop the image at desired position.<br><br>***Tip* – Same function is performed with a click and Drag of the thumbnail on bottom.**<br><br>***Tip* – Image transfer from FMX 12 -> 18 View or 18 -> 12 View is enabled.** |
| 2 |  | Image is rotated automatically according to rotate information of the applicable position. |

## Delete Image

Before saving the acquired images, please delete the images which you do not want to save.

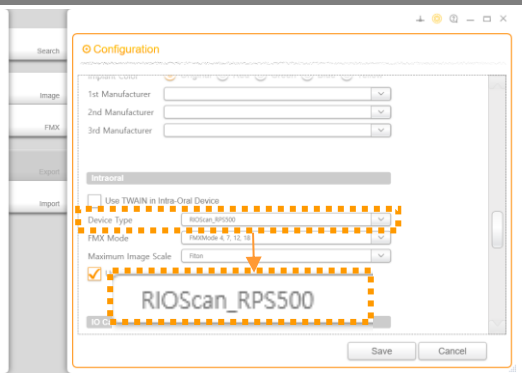
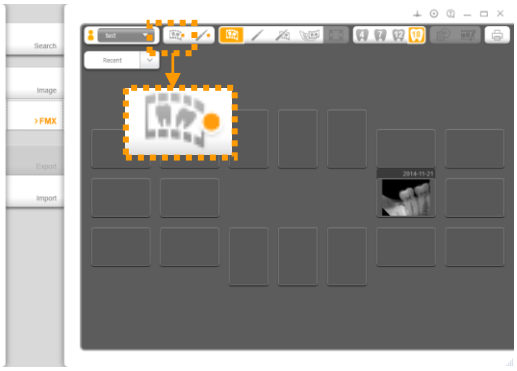
| No. | Figure | Description |
|---|---|---|
| 1 | | Click the [Delete] button upper right part of thumbnail. |
| 2 |  | When delete confirm message window appears click [Yes].<br>If deletion is not desired then click [No].<br><br>***Caution* – Deleted images cannot be restored.** |

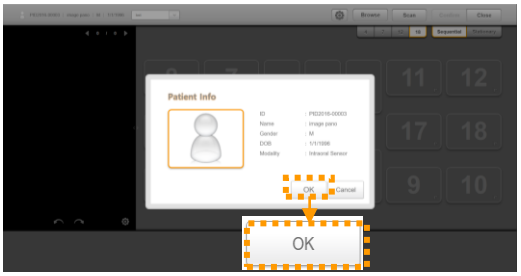
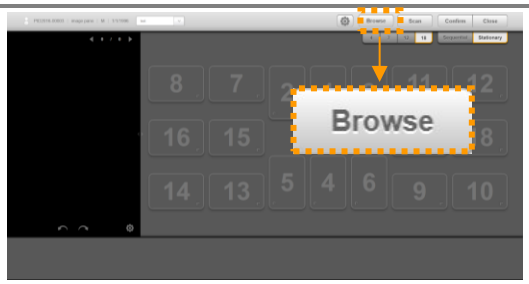
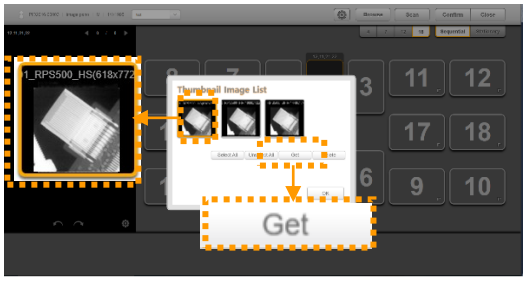
| | | |
|---|---|---|
| 3 |  | Applicable image is deleted from the thumbnail list. |

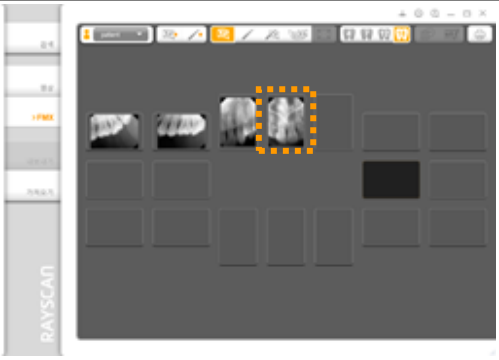
### 4.4.3 Save QuickScan Image

RIOScan Browse Image provides to receive the QuickScan images from RIOScan device.

**Browse & Save Image of RIOScan**

| No. | Figure | Description |
|---|---|---|
| 1 |  | Select device type to RIOScan_RPS500 from Intraoral tab. |
| 2 |  | Select the patient undergoing capturing then click on the [IO X-Ray Acqusition] button.<br><br>***Tip* – Same function is performed by selecting the patient undergoing capturing from 'patient list' of the 'Search' tab then clicking the [IO X-Ray acq.] button on the bottom.** |

| | | |
|---|---|---|
| 3 |  | When selected patient information appears, click [OK] to proceed to capturing.<br>By clicking the [Cancel] button, end capturing and return to the 'FMX' tab.<br><br>***Caution*** **– When SMARTDent cannot find device, it returns to the 'FMX' tab.** |
| 4 |  | Click on the [Browse] button. |
| 5 |  | Thumbnails from connected RIOScan device shows on the screen.<br>Select the images you want to get and click the [Get] button.<br><br>***Tip*****– The text on the top of the thumbnails show names for thumbnails.** |
| 6 | | When Browsing is completed then the image is displayed in 3 locations; 'FMX View', 'Image Preview', 'Thumbnail Image'.<br>Drag the completed image to move to alternate position, rotate or delete.<br>***Tip*** **– In no relation to imaging preparation, FMX 4 /7 /12 / 18 View and Sequential / Stationary conversion are available.** |

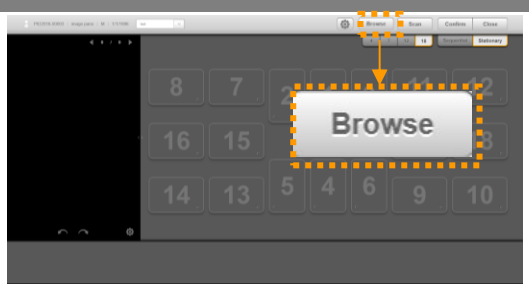
| | | |
|---|---|---|
| 7 | | Click [Confirm] to save images and close the window.<br>If image save is not required then click on the [Reject] button to close the window.<br><br>***Tip* – Image is not displayed on FMX screen by clicking the [Reject] button.**<br>**For display convert to 'Confirm' status in 'Review' tab of the RAYSCAN.** |
| 8 |  | Acquired image is displayed in FMX View. |

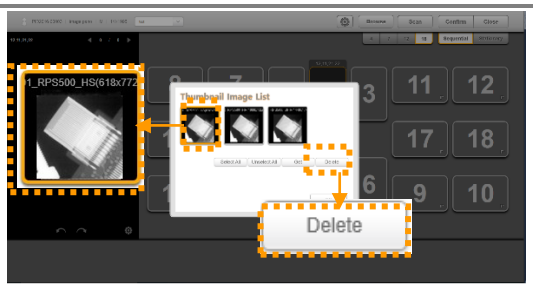
### 4.4.4 Delete QuickScan Image

If there are images in RIOScan device, user can delete the images.

> ***CAUTION*** Once delete QuickScan images, you cannot recovery the images.

**Delete QuickScan Image of RIOScan**

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click on the [Browse] button. |

| | | |
|---|---|---|
| 2 |  | Select images you want to delete and click the [Delete] button. |
| 3 | | Delete image from Thumbnail Image List. |

## 4.5 Intraoral Camera Acquisition

Select patient list from the 'Search' tab screen then either click the [Camera acq.] button on the bottom or [IO Camera Acq] from FMX tab screen to convert to the intraoral camera capturing screen. Intraoral camera capturing screen compositio n are as follows.

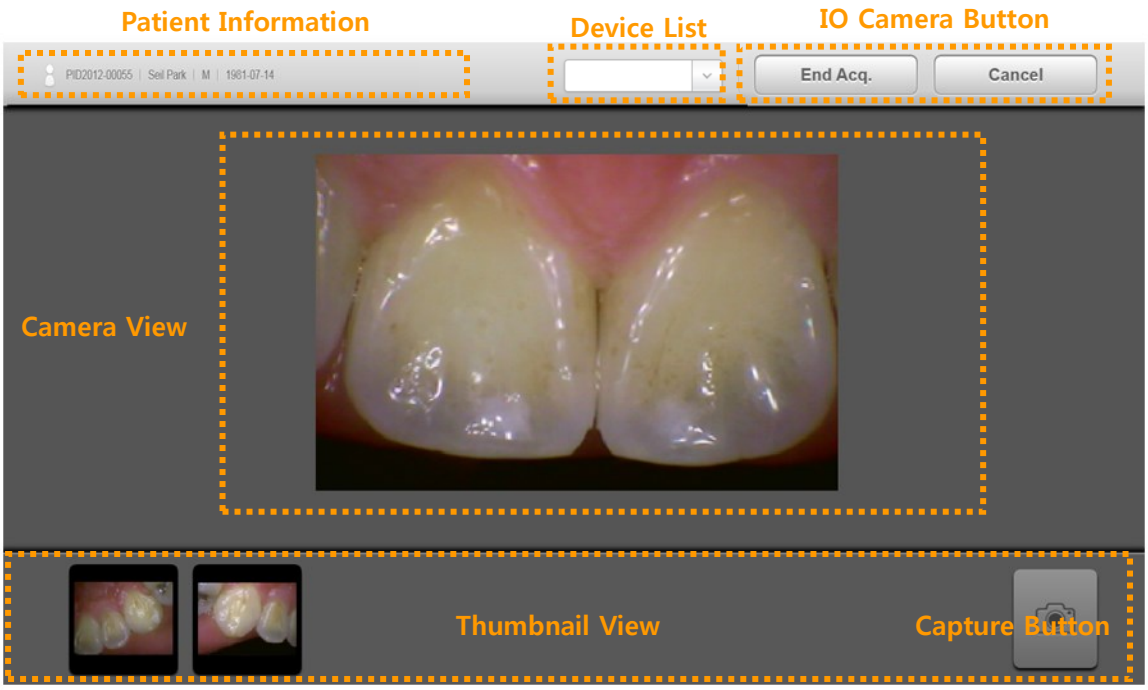



**Figure 2. Intraoral Camera Acquisition Screen**

### Device List

| Item | Description |
|---|---|
| **Device list** | Show connected devices. |

### IO Camera Button

| Item | Description |
|---|---|
| **End Acq.** | Exit acquisition mode and converts to a save mode. |
| **Cancel** | Cancel acquisition and goes to the FMX tab. |

### Camera View

Displays real-time preview image of the connected camera.

### Thumbnail View

| Item | Description |
|---|---|
| **Thumbnail List** | Thumbnail list of the captured image. |
| **Capture** | Captures the image displayed on Camera View.<br>The image captured saved into thumbnail |

| | |
|---|---|
| ***TIP*** | Capture is available by using Space Bar of the keyboard and button of the connected device. |

Following indicates composition of the intraoral camera save screen.

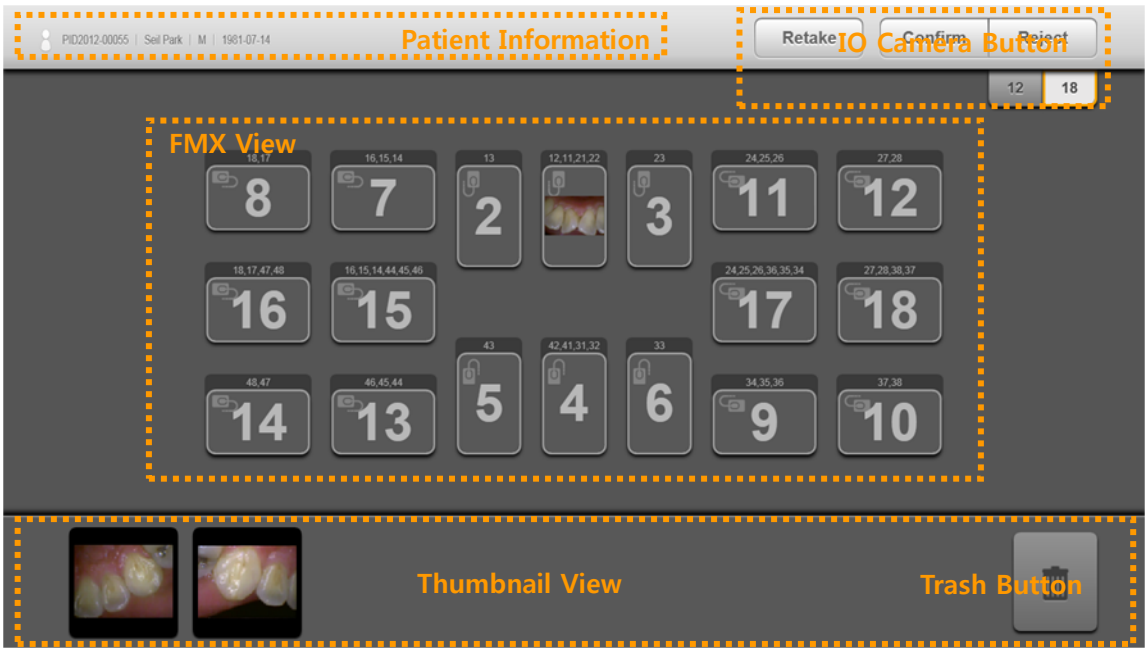



**Figure 3. Intraoral Camera save screen**

## IO Camera Button

| Item | Description |
|---|---|
| **Retake** | Images taken already are trashed and returns to the IO camera acquisition screen. |
| **Confirm** | Saves all FMX View and Thumbnail View items then closes the acquisition screen. Items saved in FMX View are available for viewing from the FMX tab. |
| **Reject** | Rejects FMX View and Thumbnail View items then closes the acquisition screen. Reject images are stored in the server, but cannot be displayed in SMARTDent. |
| **12** | FMX View screen is displayed for the deciduous teeth (12). |
| **18** | FMX View screen is displayed for the permanent teeth (18). |
| ***TIP*** | Reject images can be changed to Confirm status in Review tab of the RayScan. Images changed to Confirm status can be displayed in Image and FMX. |

## FMX View

Images are arranged according to the FMX Layout. Drag the image from thumbnail list and place

in FMX View then tooth number of the applicable position is also saved allowing display by position in the FMX screen.

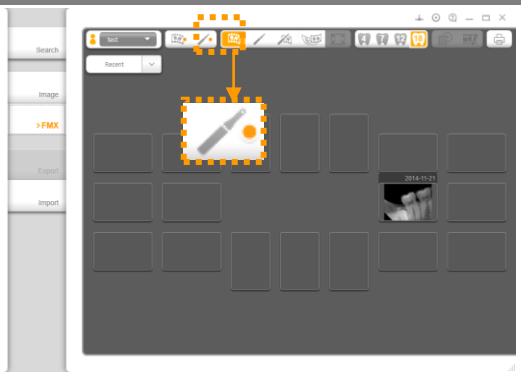
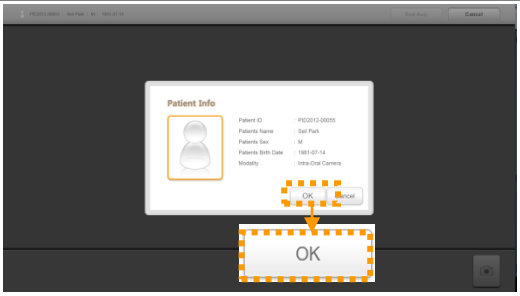
Images are rotated automatically according to the FMX View position and if rotate information is incorrect then click the right mouse button over the image to rotate image by 90 degrees in clockwise direction.

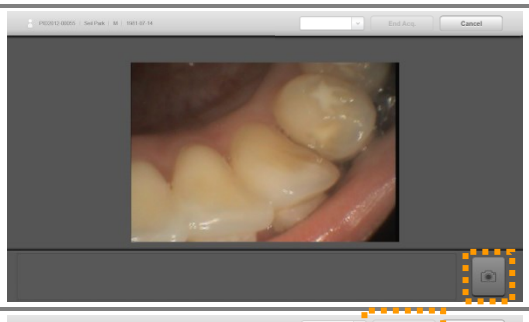
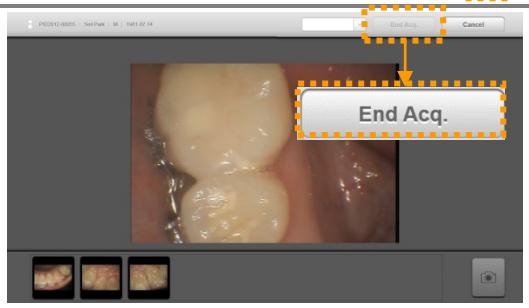
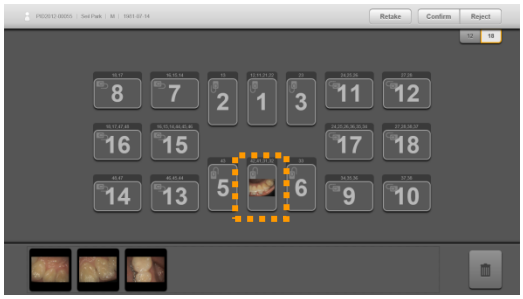
## Thumbnail View

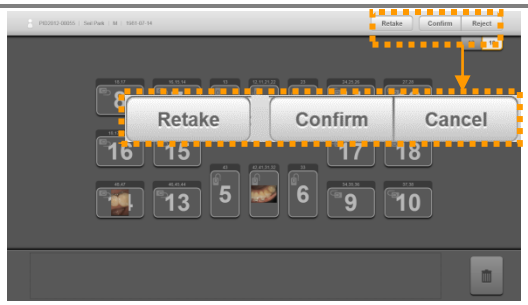
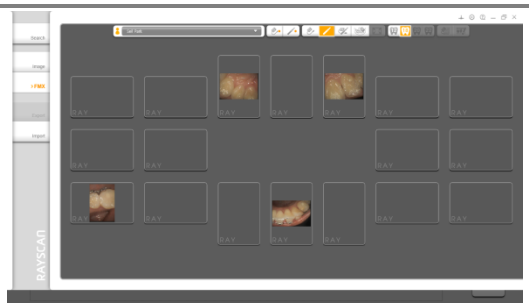
| Item | Description |
|---|---|
| **Thumbnail List** | Thumbnail list of the captured images. Images in the thumbnail list are saved without the tooth number during the save and not displayed on the FMX screen. |
| **Trash** | Deletes images. |

| | |
|---|---|
| ***NOTICE*** | Images designated in FMX 12, FMX 18 View are displayed by position in 'FMX' tab screen, but images in the thumbnail list on bottom are saved without the tooth number and available for viewing only in the 'Image' tab. |

## Intraoral Camera Capturing

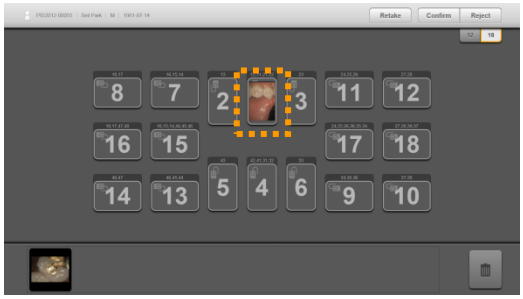
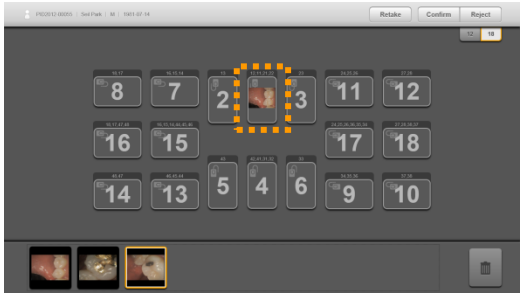
| No. | Figure | Description |
|---|---|---|
| 1 |  | Select the patient undergoing capturing then click the [IO Camera Acqusition] button.<br><br>***Tip* – Same function is achieved by selecting the patient list from 'Search' tab then clicking [IO Cam acq.] button on the bottom.** |
| 2 |  | When patient information appears click [OK] and proceed to capturing.<br>Click the [Cancel] button to end capturing and return to the 'FMX' tab.<br><br>***Caution* – If device is not connected then** |

| | | |
|---|---|---|
| | | **cannot find device message appears and returns to the 'FMX' tab.** |
| 3 |  | View the image displayed in [Camera View] and click on either the [Capture] button, [Space bar] or device button for capturing. |
| 4 |  | Thumbnail list is displayed on the bottom. When capturing is completed, click the [End acq.] button to enter the save mode. |
| 5 | | Click the left mouse button on the image thumbnail intended to move and Drag then place in the desired position of the FMX View. |
| 6 |  | Image rotates automatically according to the FMX position.<br>When moved to FMX View, the applicable image disappears from the thumbnail list on the bottom.<br><br>***Notice* – Images arranged in FMX View includes the tooth number when saved, but thumbnail images on the bottom are saved without the tooth number.**<br>**Images without a tooth number cannot be displayed in the FMX screen.** |

| | | |
|---|---|---|
| 7 |  | To save, click on the [Confirm] or [Reject] button.<br>To retake the image, click the [Retake] button.<br><br>***Tip* – Image is not displayed in FMX screen when [Reject] button is clicked. To display, change to Confirm status in 'Review' tab of the RayScan.** |
| 8 |  | Confirm that images are incorporated in the FMX screen by clicking the [Confirm] button. |

## Rotate Intraoral Camera Image

Image modification must be performed prior to clicking [Confirm] or [Reject] button.

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the right mouse button over the image. |
| 2 |  | Image rotates 90 degrees in clockwise direction. |

## Delete Intraoral Camera Image

Image delete must be performed prior to clicking [Confirm] or [Reject] button.

| No. | Figure | Description |
|---|---|---|
| 1 | | Select by clicking the thumbnail of the image intended for deletion. |
| 2 | | Click the [Trash] button.<br>Selected Thumbnail image is deleted.<br><br>***Tip* – Same function is achieved by Dragging the thumbnail and place over the [Trash] button.** |

# Export

# 5

# 5 Export

SMARTDent can be used to save image of the patient registered in the RayScan Alpha System into the designated media storage and during the save, user can setup the image format desired and Label of the saved folder.

The storage mediums are CD Publishing, CD/DVD and USB type.
For CD Publishing you can create CD comes with a Image Viewer easily.
For CD/DVD you can use Close Media and Eject when finiched function, for USB you offer local Hard Disk function..

'Export' tab screen composition and contents of each item are as follows.

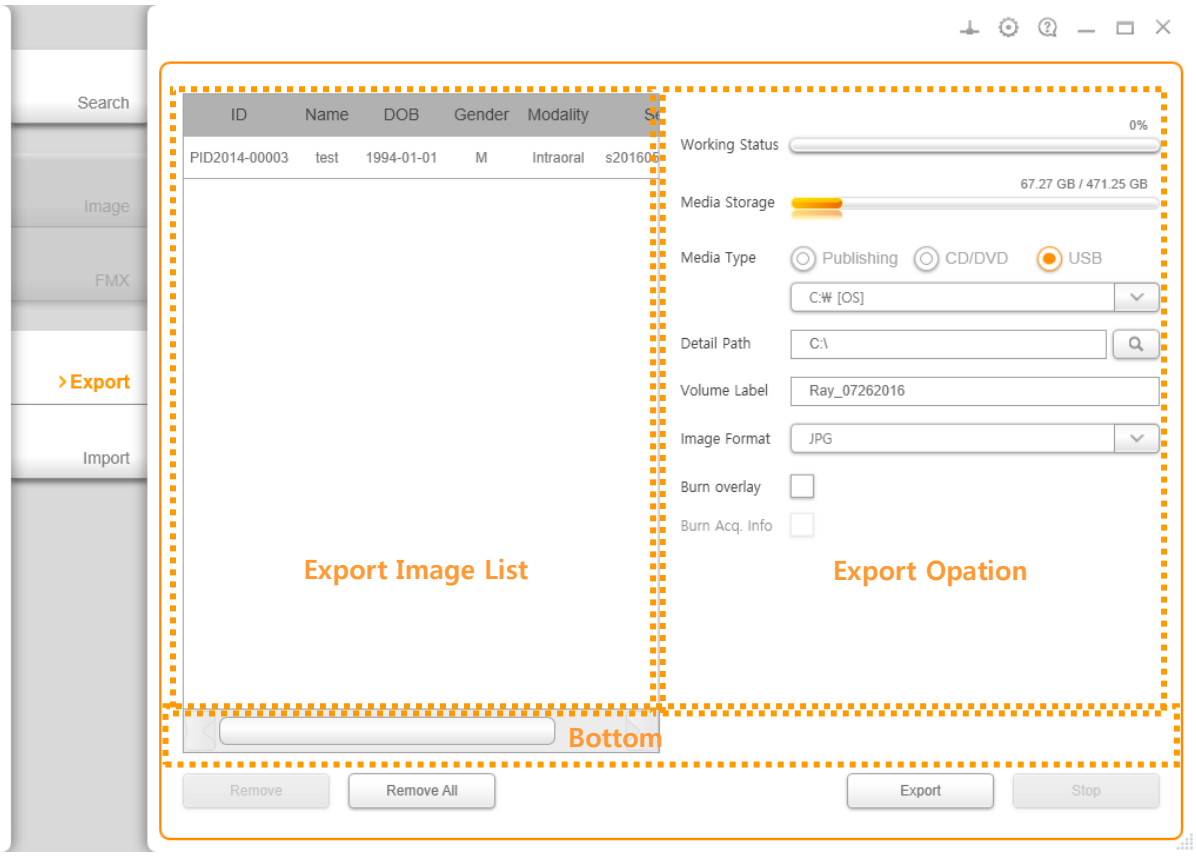
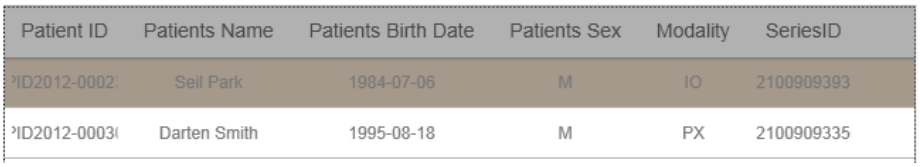



**Figure 4. 'Export' tab screen**

## Export Image List



| Patient ID | Patients Name | Patients Birth Date | Patients Sex | Modality | SeriesID |
|---|---|---|---|---|---|
| PID2012-0002 | Seil Park | 1984-07-06 | M | IO | 2100909393 |
| PID2012-0003 | Darten Smith | 1995-08-18 | M | PX | 2100909335 |

| Item | Description |
|---|---|
| **Patient ID** | ID of the registered patient |
| **Patient Name** | Name of the registered patient |
| **Patient Birth Date** | Birth date of the registered patient |
| **Patient Sex** | Gender of the registered patient |
| **Modality** | Imaging Modality of the registered image |
| **Series ID** | Series ID of the registered image |

## Export Option

| Item | Description |
|---|---|
| **Working Status** | Displays the progression status during Export. |
| **Media Storage** | Displays usable capacity / total capacity of the media storage. |

## Media type(Publishing)

| Item | Description |
|---|---|
| **Media Type** | Sets type of the media storage and save path. |
| **Addeditional files** | Select file to add into the CD. |

## Media type (CD/DVD)

| Item | Description |
|---|---|
| **Media Type** | Sets type of the media storage and save path. |
| **Volume Label** | Becomes the best route folder for where Export image is saved in case of the USB Type and for CD/DVD Type becomes Label name of the applicable CD/DVD. |
| **Image Format** | Sets image format of the registered image during Export.<br>JPG is set as standard and DICOM, RAW are additionally supported. |
| **Burn overlay** | Select whether or not to include an overlay image. |
| **Burn Acq. Info** | Select whether or not to include an image information |

## Media type (USB)

| Item | Description |
|---|---|
| **Media Type** | Sets type of the media storage and save path. |
| **Detail Path** | Full path of the save images except folder name |
| **Volume Label** | Becomes the best route folder for where Export image is saved in case of the USB Type and for CD/DVD Type becomes Label name of the applicable CD/DVD. |

| | |
|---|---|
| **Image Format** | Sets image format of the registered image during Export.<br>JPG is set as standard and DICOM, RAW are additionally supported. |
| **Burn overlay** | Select whether or not to include an overlay image. |
| **Burn Acq. Info** | Select whether or not to include an image information |

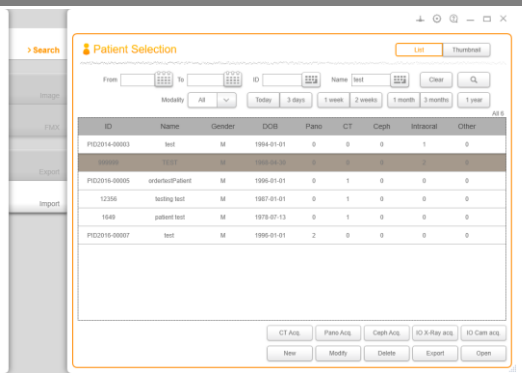
### Bottom

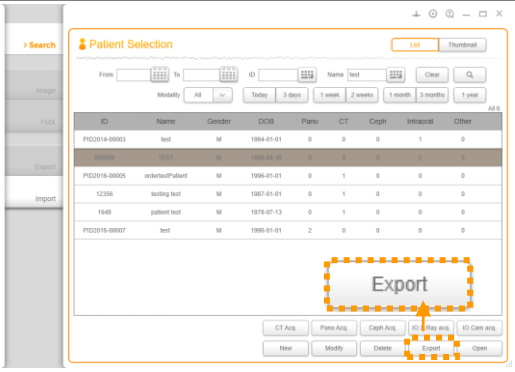
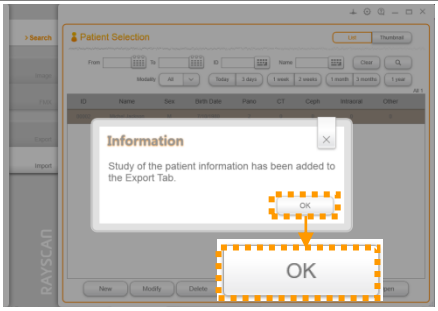
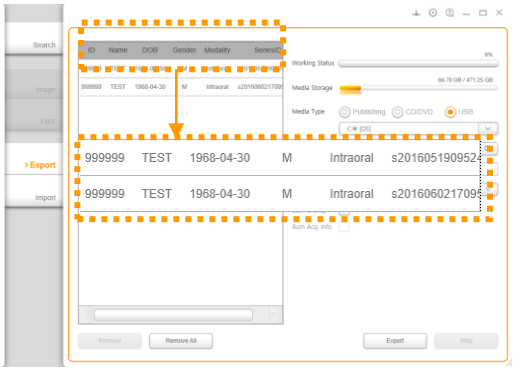
| Item | Description |
|---|---|
| **Remove** | Deletes the image selected by user from the Export Image List.<br>Image remove can delete 1 image at one time. |
| **Remove All** | Deletes all images registered in the Export Image List. |
| **Export** | Begins Export in settings of the Export Option.<br>Progression status of Export is displayed in the Working Status. |
| **Stop** | Cancels Export.<br>Activated after Export has been initiated. |

## 5.1 Export Image Registration

'Export' tab is in inactive condition when registered image does not exist.
There are 2 methods for registering images in 'Export' tab, first method is to register all selected patient images from the 'Search' tab and second method is to register only the selected Series images in 'Image' tab.

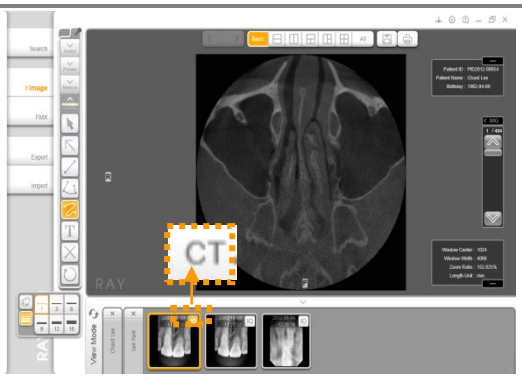
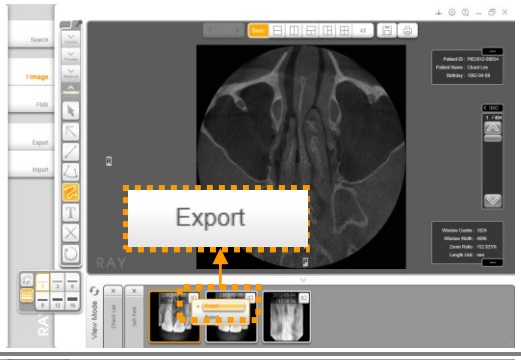
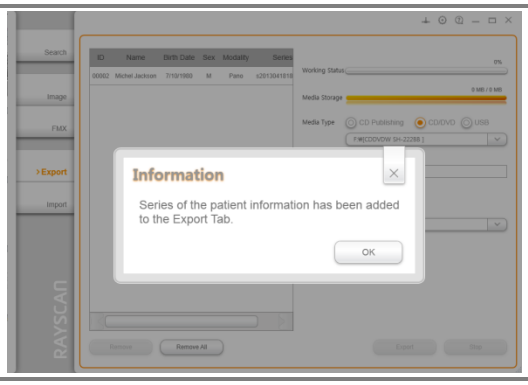
### Export registration in 'Search' tab

| No. | Figure | Description |
|---|---|---|
| 1 |  | Search the patient from 'Search' tab.<br><br>***Notice*** **– If select patient does not exist then [Export] button is inactive.** |

| | | |
|---|---|---|
| 2 |  | Select the patient intended for Export then click the [Export] button on bottom of the 'Search' tab screen.<br><br>***Notice* – Multiple selections for patient selection is not available. To register 2 or more patients, [Export] button click after patient selection must be repeated.** |
| 3 |  | When image registration successful message appears, click the [OK] button. |
| 4 |  | Goes to 'Export' tab automatically.<br><br>Confirm that images of the patient selected in 'Search' tab have been registered. |

## Registration in 'Image' tab

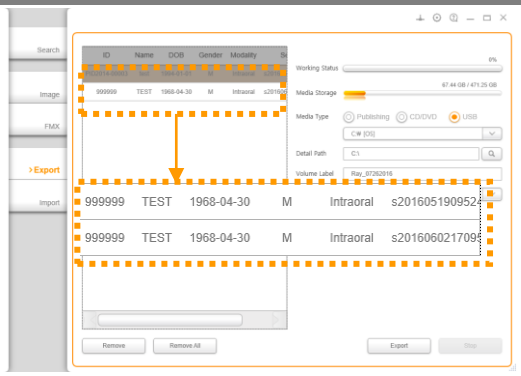
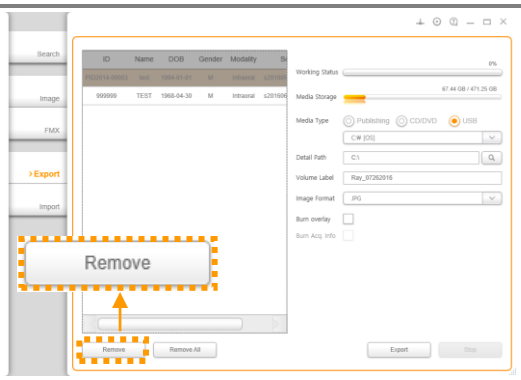
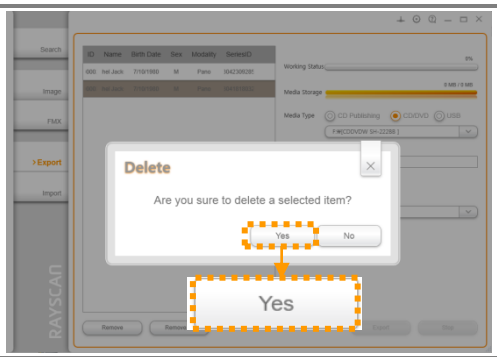
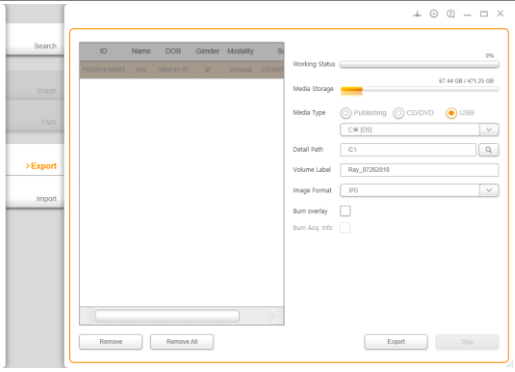
| No. | Figure | Description |
|---|---|---|
| 1 | | Select the image intended for Export from the 'Image' tab. |

| | | |
|---|---|---|
| 2 |  | Click the [Modality] button of the upper right image thumbnail. |
| 3 |  | Select 'Export' from the appearing pop-up menu. |
| 4 |  | Registration successful message appears then converts automatically to the 'Export' tab. |

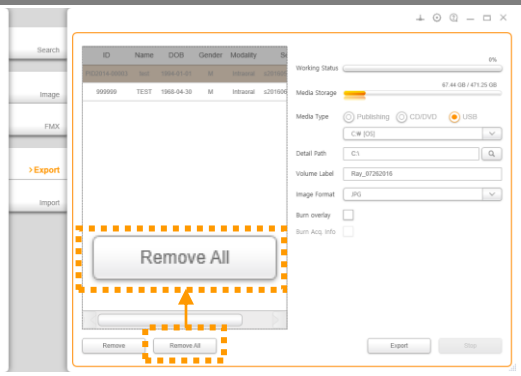
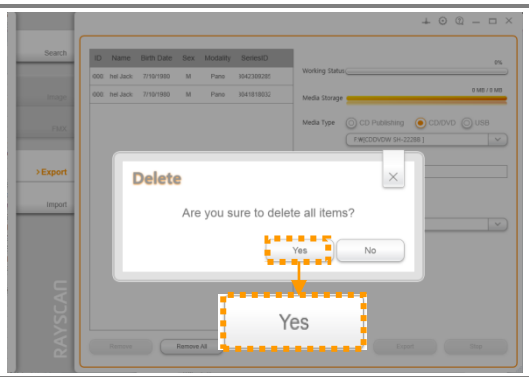
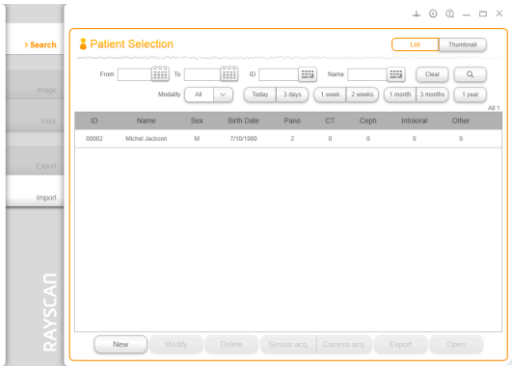
## 5.2 Delete Export Item

Delete items registered in the 'Export' tab. Deleting images registered in Export implies that deletion occurs only from the 'Export Image List', but the original image is not deleted. After all items registered in 'Export' tab are deleted, screen changes automatically to 'Search' tab.

## Delete Selected Export Item

| No. | Figure | Description |
|---|---|---|
| 1 |  | Select the items to be deleted. |
| 2 |  | Click the [Remove] button on bottom. |
| 3 |  | In the delete confirm message window, click [Yes]. |
| 4 |  | Confirm that selected items have been deleted.<br><br>***Notice* – When all items are deleted then changes to 'Search' tab automatically.** |

## Delete All Export Item

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Remove All] button on bottom. |
| 2 |  | In the delete confirm message window, click [Yes]. |
| 3 |  | Return to 'Search' tab. |

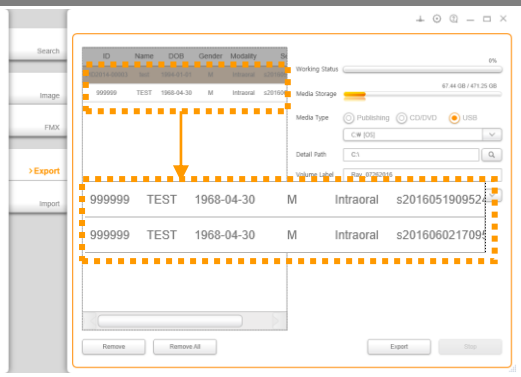
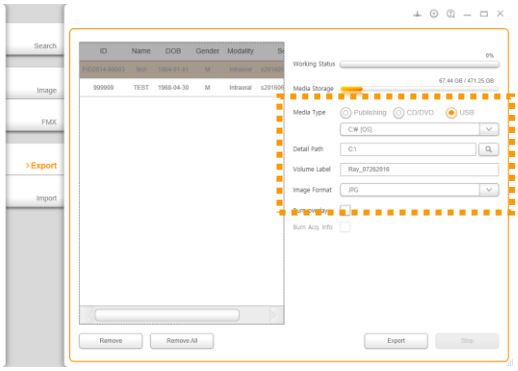
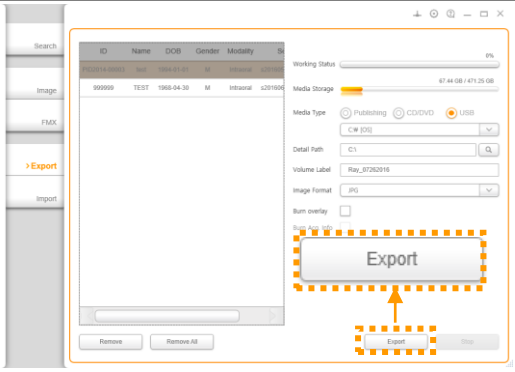
***Notice*** If all lists on the 'Export' tab are deleted the screen return to 'Search' tab.

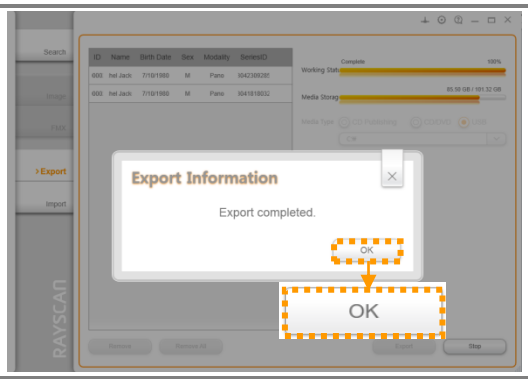
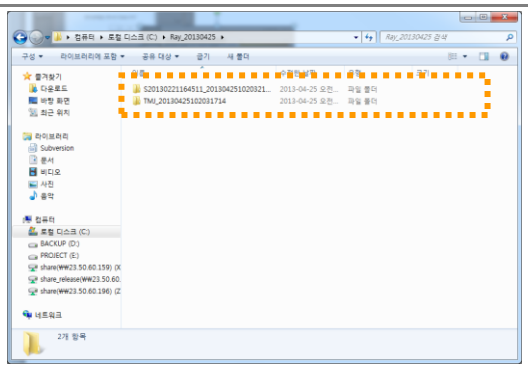
## 5.3 Image Export

Export images by designating the media storage, save path and save format.

the media storage are CD Publishing, CD/DVD and USB type. For USB type we offer DICOM, Raw, Jpg image type to export..

### Image Export

| No. | Figure | Description |
|---|---|---|
| 1 |  | Check the images in the list are right. |
| 2 |  | Setup 'Export Option' such as Media Type, Export Type and etc. |
| 3 |  | Click the [Export] button. |

| | | |
|---|---|---|
| 4 |  | Export progression status is displayed in Working Status and when Export completed message window appears, click the [OK] button. |
| 5 |  | Go to the applicable path and confirm the Export result.<br><br>***Notice* – Each image is saved in [SeriesID]_ [ExportTime] format folder.**<br>**Ex) SeriesID – S20121009132636**<br>**Time – 2012.10.09 14h 21m 39s**<br>**→S20121009132636_20121009142139** |

# Import

# 6

# 6 Import

In SMARTDent the images taken previous can be registered into the RayScan Alpha System with simple click of a button by using the 'Import' function.

For user convenience, image Import functions of various format are supported. Supported image formats include DICOM Image, Raw Image, and JPG/BMP as well as screen captured images are supported for Import.

'Import' tab screen composition and contents of each item are as follows.

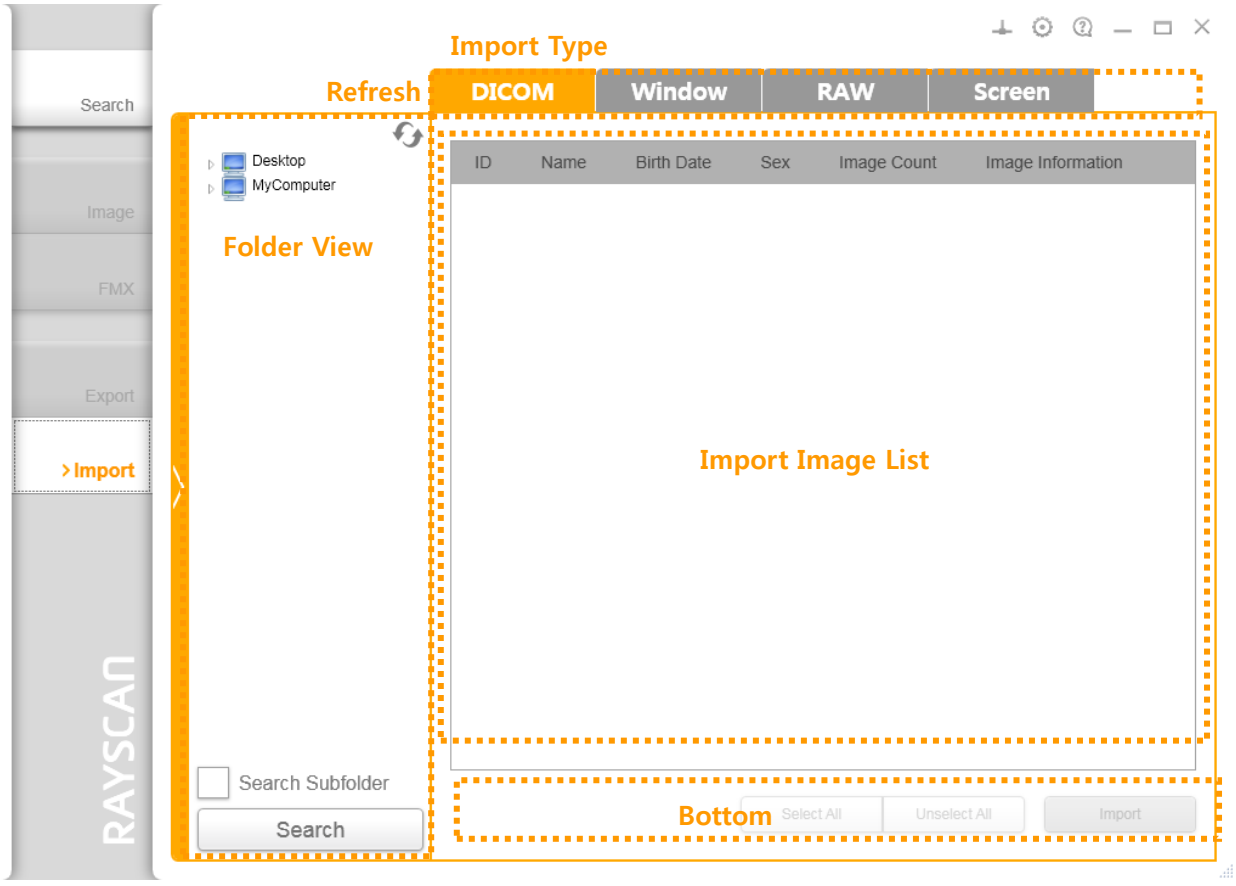



**Figure 5. 'Import' tab screen 1**

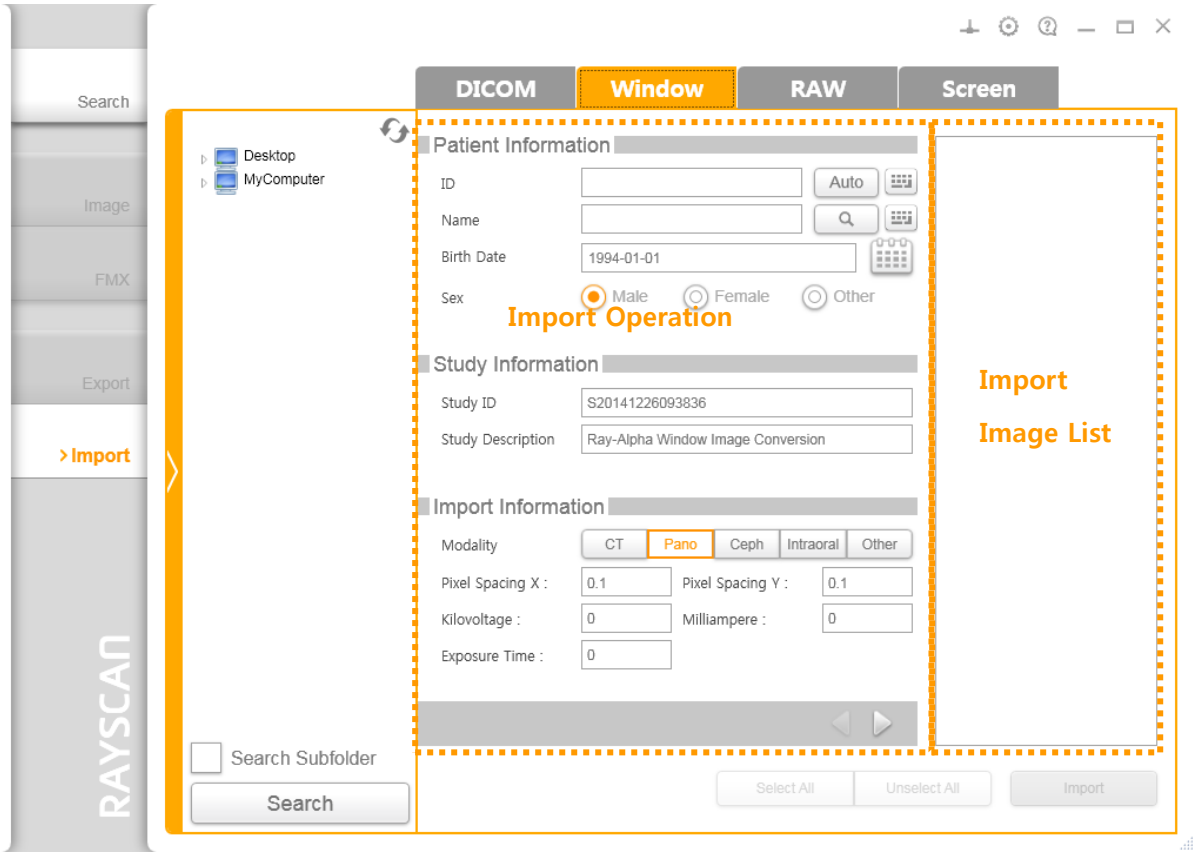



**Figure 6. 'Import' tab screen 2**

## Import Type

| Item | Description |
|---|---|
| **DICOM** | Imports DICOM format Images. |
| **Window** | Imports general Window Image format Images.<br>Supported image format: JPG / BMP / TIF / GIF / PNG |
| **Raw** | Imports Raw file format Images.<br>When Importing Raw files, the exact image information of the image intended for Import must be known to user. |
| **Screen** | Imports screen captured images. |

## Folder View

Assigns folder location of the Import targeted image file.

Folder View is used in DICOM / Window / Raw tab, but not used in Screen.

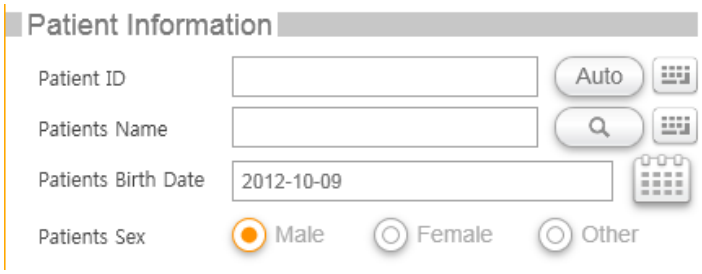
| Item | Description |
|---|---|
| **Folder View** | Displays in Tree format the Local Folder List of the PC operating the SMARTDent used to select the search folder required for Import by user. |
| **Search Subfolder** | Searches for images in the selected folder and sub-folder. |
| **Search Button** | Initiates the image search. |

## Import Image List

Click the [Search] button to display list of the retrieved images.

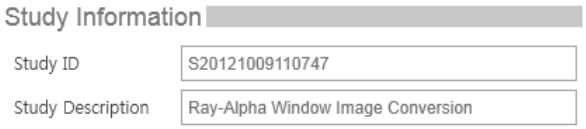
If selected tab is in DICOM mode then the retrieved images are shown in the list form,
but in other tabs the retrieved image list is shown in the thumbnail form. In case of Raw file, blank space instead of thumbnail is displayed until exact image information is entered.

## Import Option – Patient Information



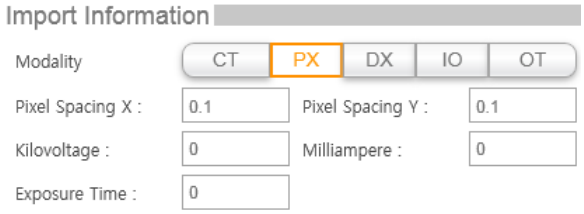

| Item | Description |
|---|---|
| **Patient ID** | Patient ID of the registered Image |
| **Patient Name** | Patient name of the registered Image |
| **Patient Birth Date** | Patient's birth date of the registered Image |
| **Patient Sex** | Patient gender of the registered Image |
| **Auto** | Automatically creates patient ID of the registered Image. |
| **Search** | Searches information of a patient previously registered. |
| **Screen Keyboard** | Calls for a screen keyboard used in an environment where typical Keyboard use is not feasible such as the Chair. |
| **Calendar** | Calls for a calendar that allows selecting dates with the mouse. |

## Import Option – Study Information




| Item | Description |
|---|---|
| **Study ID** | Study ID of the registered Image |
| **Study Description** | Study Description of the registered Image |

## Import Option – Import Information




| Item | Description |
|---|---|
| **Modality** | Modality of the registered Image |
| **Pixel Spacing X. Y** | X and Y Pixel Spacing of the registered Image |
| **Kilovoltage** | Imaging kVP specification of the registered Image |
| **Milliampere** | Imaging mA specification of the registered Image |
| **Exposure Time** | Imaging exposure time of the registered Image |

## Import Option – RawImage Attributes

| Item | Description |
|---|---|
| **Rows(Height)** | Height of the registered Image |

| | |
|---|---|
| **Columns(Width)** | Width of the registered Image |
| **Allocated Bits** | Allocated Bits of the registered Image |
| **Stored Bits** | Stored Bits of the registered Image |
| **Samples Per Pixel** | Samples Per Pixel of the registered Image |
| **Pixel Representation** | Data format type of the registered Image |
| **Refresh Preview** | Raw Image Attributes is applied to the searched List to refresh thumbnail. |

## Import Option – General Anatomy Option

| Item | Description |
|---|---|
| **Patient Orientation** | Patient position information of the registered Image<br>Here the first letter shows which position of the patient the right side of the image is indicating and the second letter shows which position of the patient the bottom of the image is indicating.<br>[L] - Left, [F] - Foot, [P] - Posterior, [A] - Anterior |
| **Image Laterality** | Patient direction information of the registered Image<br>B[Both] shows the left, right symmetry of the image presently displayed. R[Right] represents the right side, L[Left] the left side and U[Unpair] represents the left / right asymmetrical image. |

## Bottom

| Item | Description |
|---|---|
| **Paste** | Used only in the Screen tab.<br>Registers captured image as thumbnail. |
| **Delete** | Used only in the Screen tab.<br>Deletes the selected thumbnail. |
| **Select All** | Selects all registered image list.<br>If no registered image exists or image list is all selected then button becomes |

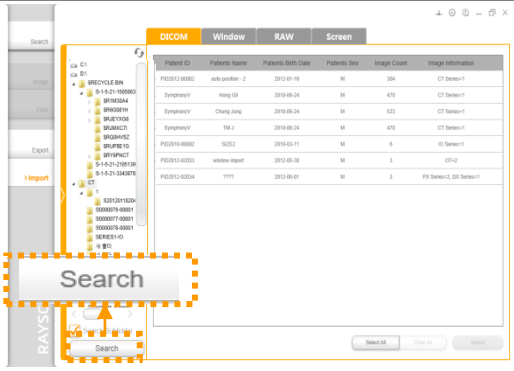
| | |
|---|---|
| | inactive. |
| **Clear All** | Cancels selection of the selected image list.<br>If there is no selected image list then the button becomes inactive. |
| **Import** | Initiates Import of the selected images.<br>Import progression status is displayed in "%" on the screen. |

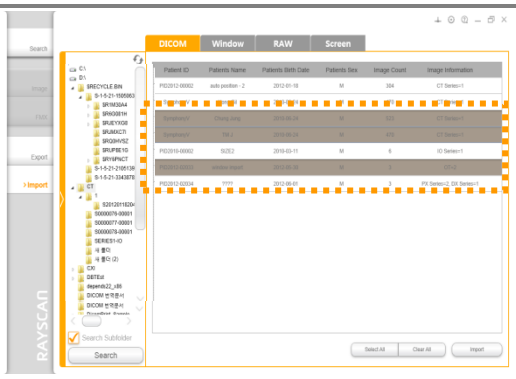
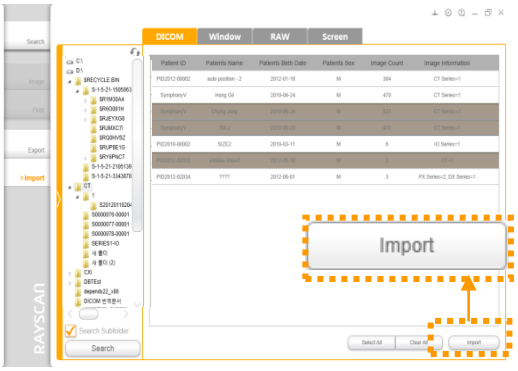
## 6.1 DICOM Image Import

Imports files whose file extension is dcm.

Image information is analyzed automatically for the image list display during image search by clicking the [Search] button.

### Dicom Image Import

| No. | Figure | Description |
|---|---|---|
| 1 | | Select the 'DICOM' tab from 'Import' tab. |
| 2 |  | Select the path where DICOM Image is located from the 'Folder View' then click the [Search] button. |

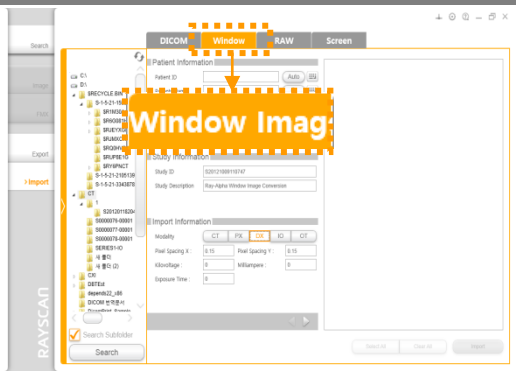
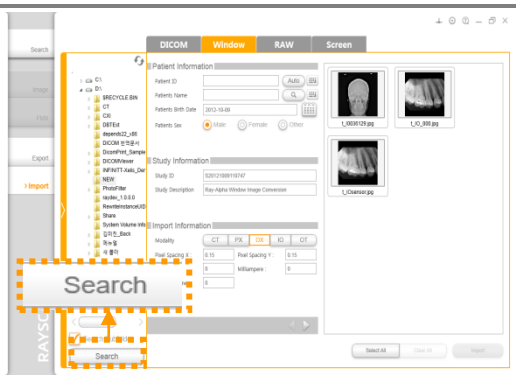
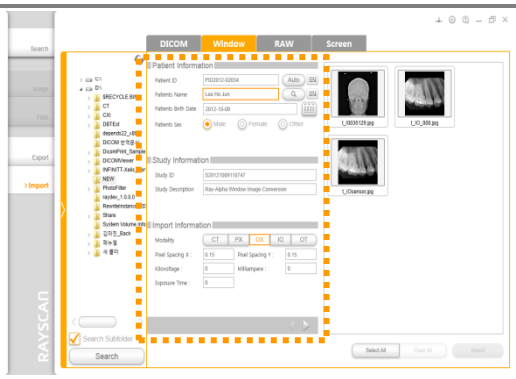
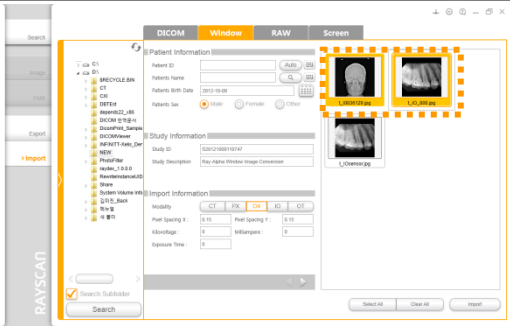
| | | |
|---|---|---|
| 3 |  | Select the desired item from the retrieved image list. |
| 4 |   | Click the [Import] button on bottom to initiate image Import. |
| 5 | | When Import completed message window appears then click [OK] and close the window check the registered images in the 'Search' tab. |

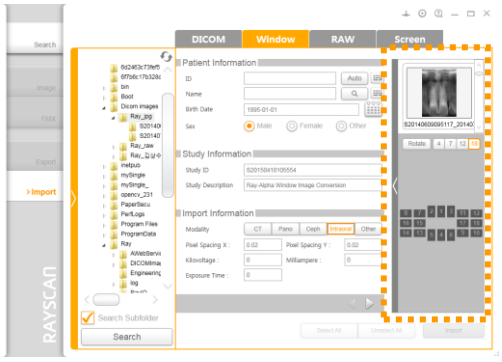
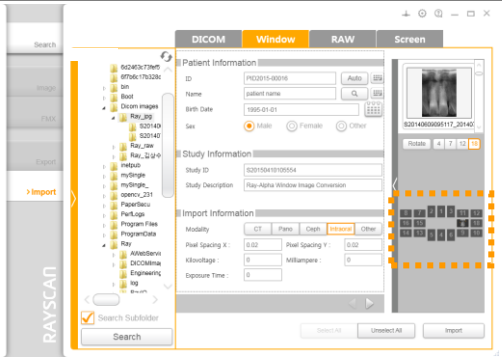
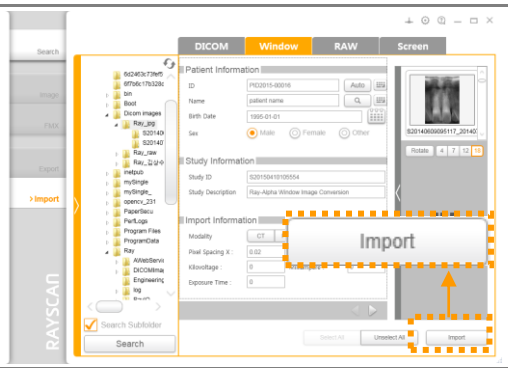
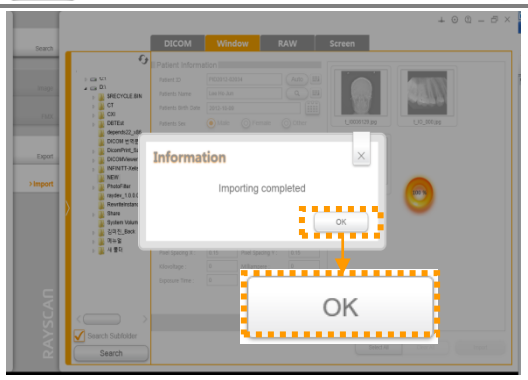
## 6.2 Window Image Import

Imports Windows image files with file extension jpg, bmp, png, tif or gif

Manual setting is required since patient and imaging information does not exist.

## Windows Image Import

| No. | Figure | Description |
|---|---|---|
| 1 |  | Select 'Window' tab from the 'Import' tab. |
| 2 |  | Select the path where Window Image is located from 'Folder View' then click the [Search] button. |
| 3 |  | Enter patient information and image information required for Import. |
| 4 |  | Select the desired image from thumbnail of the searched images. |

| | | |
|---|---|---|
| 5 |  | If selected Modality is 'IO' then click the FMX View you want.<br><br>If selected Modality is 'OT' then click the [Show FMX View] button on bottom and use the FMX View Layout.<br><br>If FMX View Layout is not used then click the [Hide FMX View] button. |
| 6 |  | Left mouse button over the image intended for Import and Drag then place in desired position of the FMX View.<br>You can move images to other position or delete to drag them. |
| 7 |  | Click the [Import] button to proceed to Import. |
| 8 |  | When Import completed message window appears then click [OK] and close the window then check the registered image in 'Search' tab. |

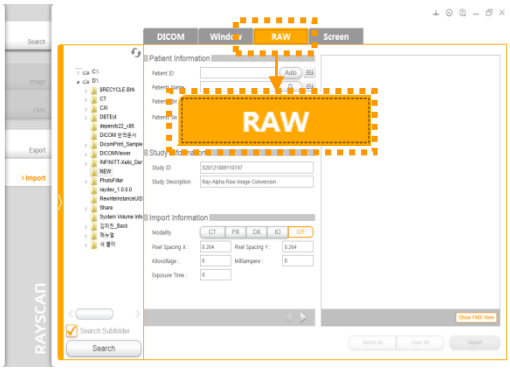
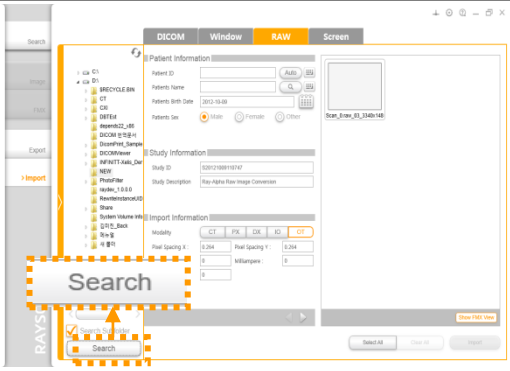
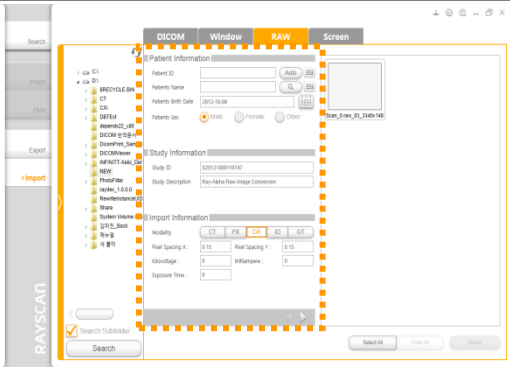
## 6.3 Raw File Import

Imports files with file extension raw.

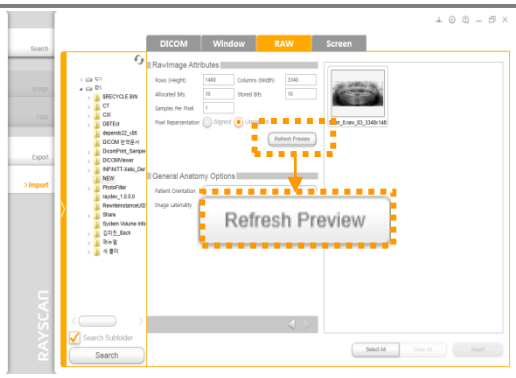
Manual setting is required since patient, imaging as well as image information does not exist.

If image information is incorrect the image cannot be displayed hence information pertaining to 'RawImage Attributes' must be entered prior to Import then click the [Refresh Preview] button and confirm that thumbnail is displayed correctly.

### Raw Image Import

| No. | Figure | Description |
|---|---|---|
| 1 |  | Select 'RAW' tab from the 'Import' tab. |
| 2 |  | Select the path where RAW Image is located from 'Folder View' then click the [Search] button. |
| 3 |  | Enter patient information and image information required for Import. |

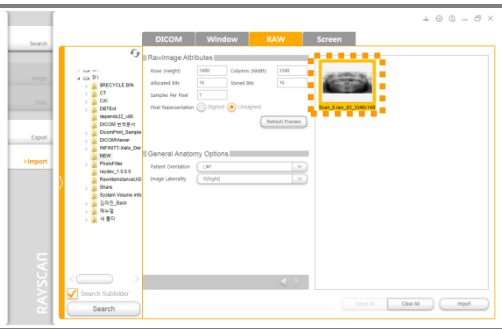
4




After entering Raw File information into 'RawImage Attributes', click the [Refresh Preview] button to confirm that Preview thumbnail image on the right is displayed correctly.

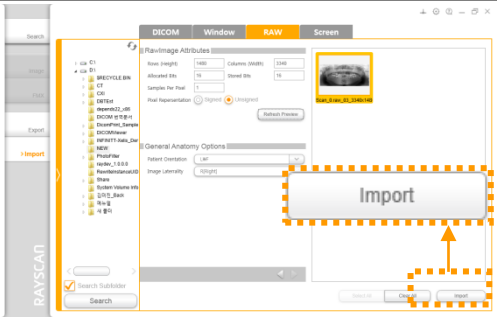
***Caution*** **– Image cannot be displayed if Raw File information is entered incorrectly.**
**Confirm proper display of the Preview thumbnail image during Raw image Import.**

5



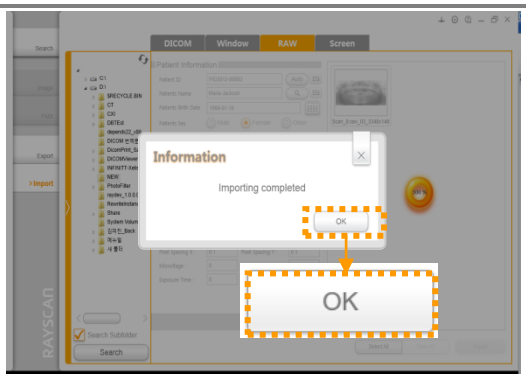

Select the desired image from the retrieved image thumbnail.

6




Click the [Import] button on bottom to proceed to Import.

7



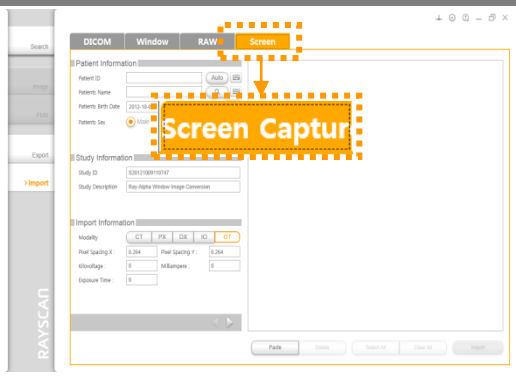
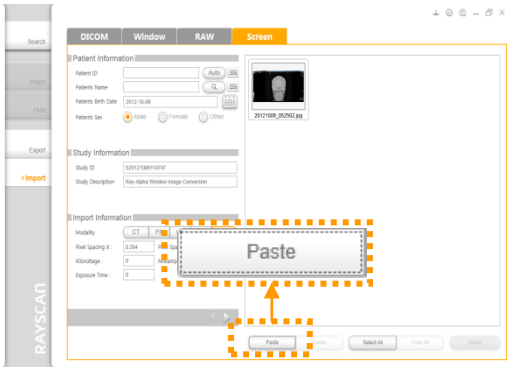
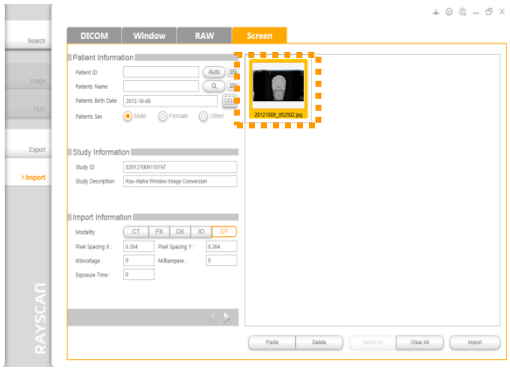

When Import completed message window appears, click [OK] and close the window then check the registered image in 'Search' tab.

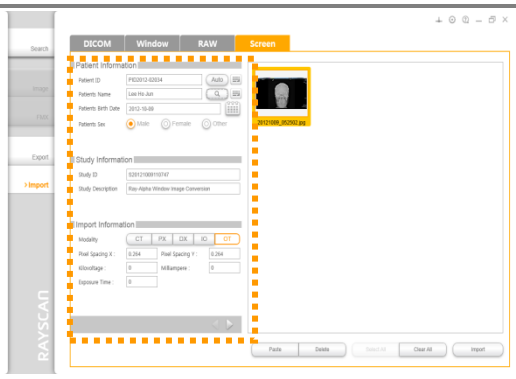
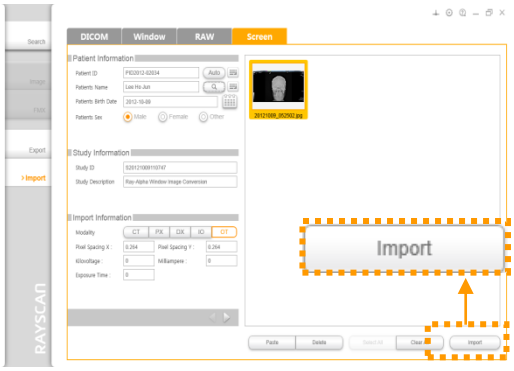
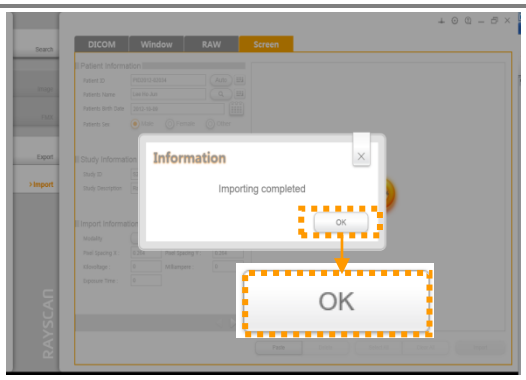
## 6.4 Screen Capture Import

Function which executes capture from the affiliates' programs and saves the captured screen by pressing 'PrtScn' key on the keyboard in the SMARTDent server.

Capture the screen and click the [Paste] button on bottom of the 'Screen' tab then thumbnail is registered in the image list on the right and since the applicable image lacks patient and imaging information, manual setting process is required.

### Captured Image Import

| No. | Figure | Description |
|---|---|---|
| 1 |  | Select 'Screen' tab from the 'Import' tab. |
| 2 |  | After screen capture, click the [Paste] button on bottom to upload the thumbnail in 'image list' on the right side.<br><br>***Notice*** **– When no capture image exists then the thumbnail is not registered after [Paste] button is clicked.** |
| 3 |  | Select desired image of the patient from the registered List. |

| | | |
|---|---|---|
| 4 |  | Enter patient information and image information required for Import. |
| 5 |  | Click the [Import] button to initiate Import. |
| 6 |  | When Import completed message window appears, click [OK] and close the window then check the image registered in 'Search' tab. |

# Configuration

# 7

# 7 Configuration

Modify setting values used in the SMARTDent program.

Click the [Configuration] button on upper right side of the program to enter the applicable screen.

'Configuration' tab screen composition and contents of each item are as follows.

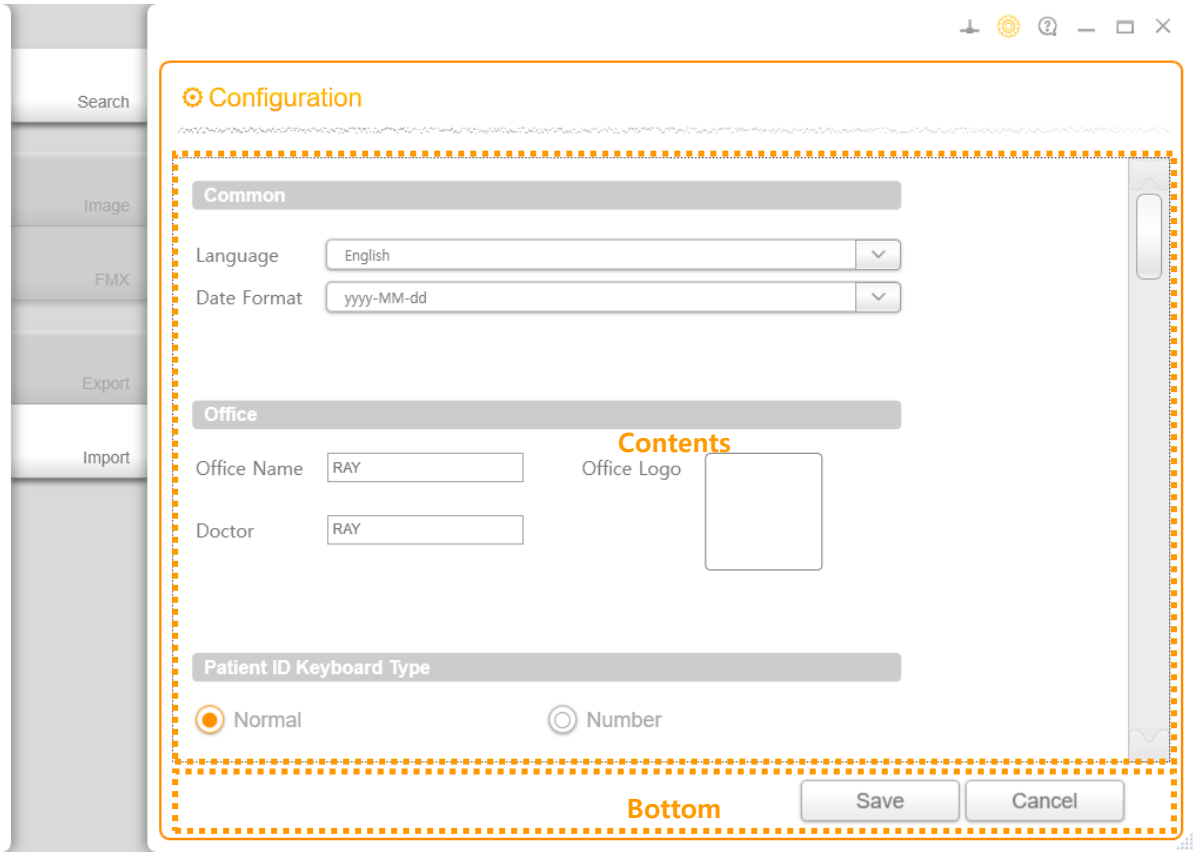



**Figure 7. 'Configuration' Screen**

## Contents

| Item | Description |
|---|---|
| **Common** | Setup the Language and date format. |
| **Institution** | Setup the institution information. |
| **Patient ID Keyboard Type** | Setup the keyboard type for patient ID |
| **Patient Name Display Format** | Setup the patient name format. |
| **Server** | Changes the server settings. |

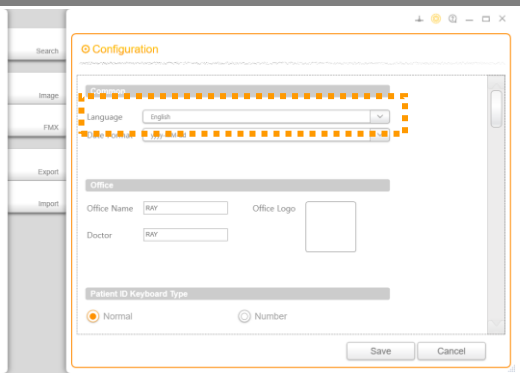
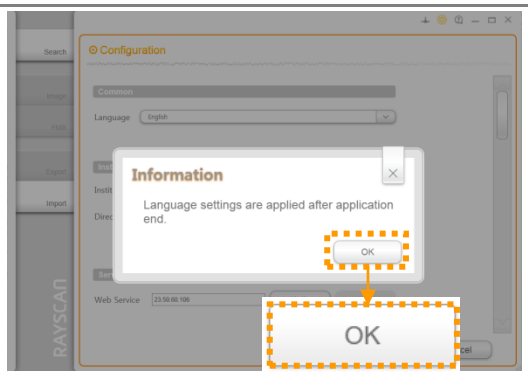
| | |
|---|---|
| **General** | Changes the general settings. |
| **Viewer** | Changes settings for the external program link. |
| **DICOM** | Changes settings for the record during DICOM file creation. |
| **Implant** | Changes settings associated with the Implant. |
| **IO Camera** | Changes settings related to the intraoral camera. |
| **DICOM Print SCP** | Changes the DICOM Print SCP settings. |

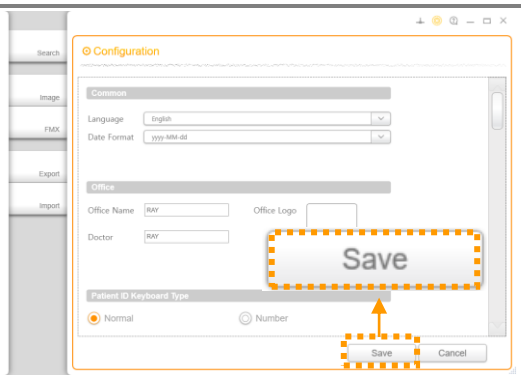
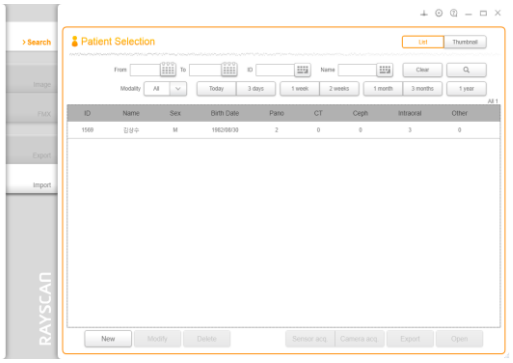
### Bottom

| Item | Description |
|---|---|
| **Save** | Saves the changed setting values and closes the Configuration screen. |
| **Cancel** | Closes the Configuration screen without saving the changed setting values. |

## 7.1 Language Setting

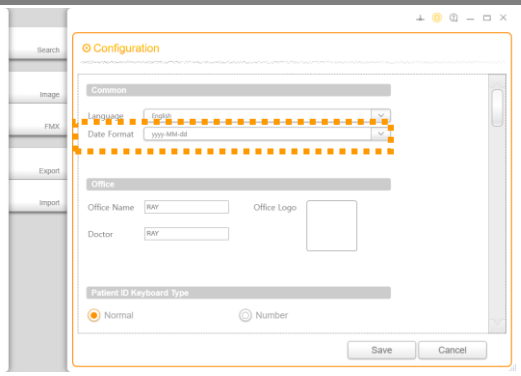
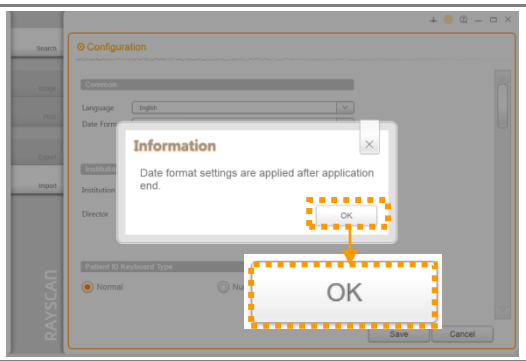
### Change Language Setting

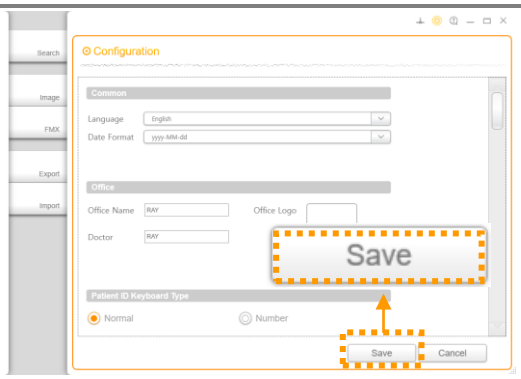
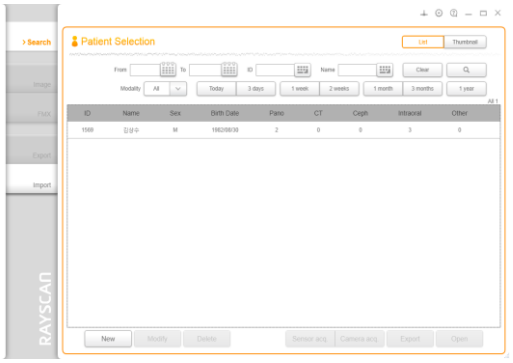
| No. | Figure | Description |
|---|---|---|
| 1 |  | Select language..<br>We offer 7 languages for SMARTDent.(Korean, English, French, Japanese, Russian, Polish, Spanish)<br>Languages not translated yet is displayed to English. |
| 2 |  | If select language "Language settings are applied after application end." Message will appear. |

| | | |
|---|---|---|
| 3 |  | Click [Save] button at the buttom, end the program and run it again. |
| 4 |  | You can see the language is changed that you choose. |

## 7.2 Date Foramt Setting

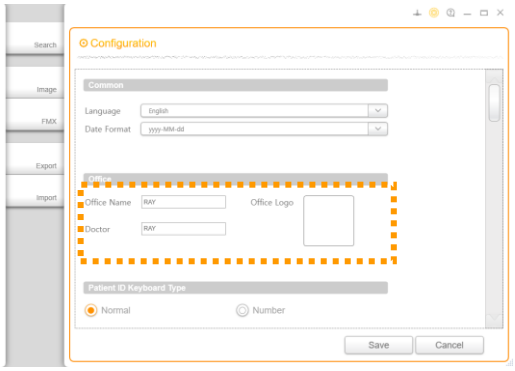
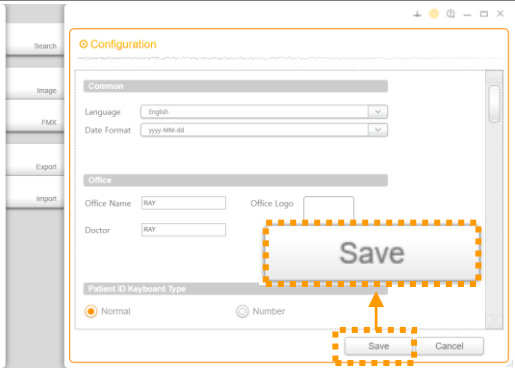
### Change Date Format Setting

| No. | Figure | Description |
|---|---|---|
| 1 |  | Select the desired date format.<br><br>***Notice* – y means year, M means month, d means day..** |
| 2 |  | When select Date Format "Date format settings are applied after application end" message will appear. |

| | | |
|---|---|---|
| 3 |  | Click [Save] button at the buttom, end the program and run it again. |
| 4 |  | You can see the date format is changed that you choose. |

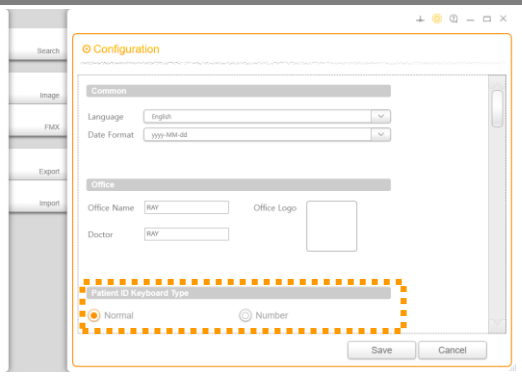
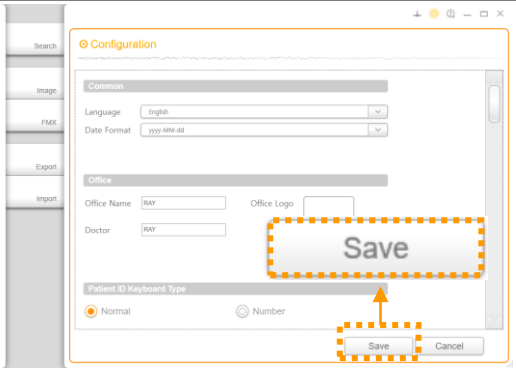
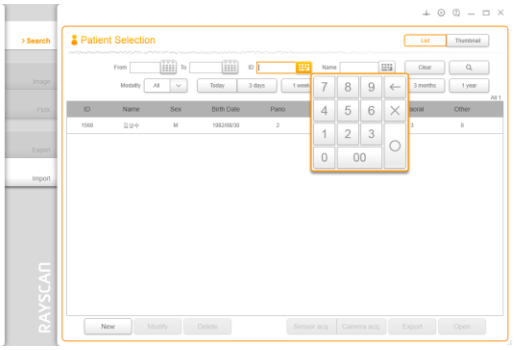
## 7.3 Institution Information Setting

### Institution Information Change

| No. | Figure | Description |
|---|---|---|
| 1 |  | Enter changed institution and institution director's name.<br>Move the mouse over to top of the institution logo image to activate the [Change] button.<br>Click the [Change] button and change the institution logo. |
| 2 |  | Click the [Save] button on bottom of the screen and save the changes. |

## 7.4 Patient ID Keyboard Type Setting

### Change Patient ID Keyboard Type

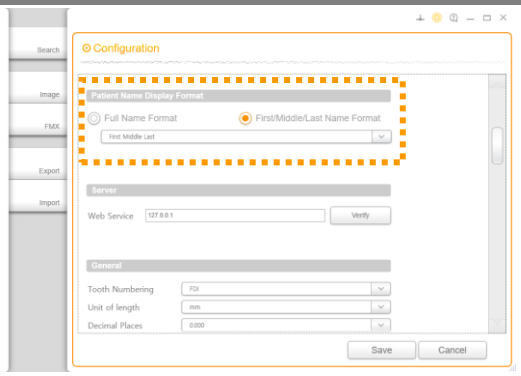
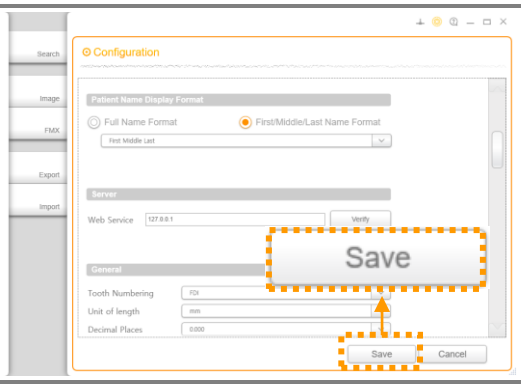
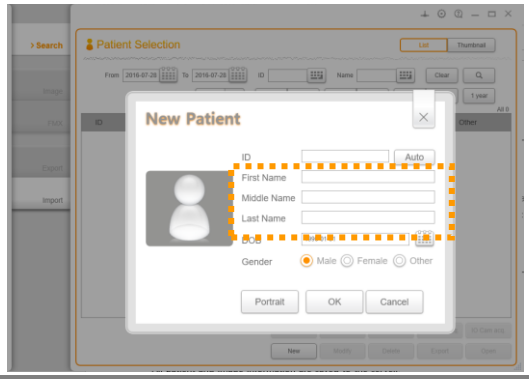
| No. | Figure | Description |
|---|---|---|
| 1 |  | Select keyboard type for patient ID search from Search tab. |
| 2 |  | Click [Save] button at the bottom and save the changes. |
| 3 |  | Click [Keyboard] button ID search view from search tab.<br>Check if the keyboard type is changed. |

## 7.5 Patient Name Format Setting

Change a patient name format.

There are two different format for patient name. One is Full Name Format, the other is Last/First Name Format.

## Patient Name Format change

| No. | 그 림 | 설 명 |
|---|---|---|
| 1 |  | Select patient name format from Patient Name Display Format tab. |
| 2 |  | Click [Save] button at the bottom and save the changes. |
| 3 |  | Click New button from Search tab and Confirm that the patient name format is changed. |

## 7.6 SMARTDent Server Setting

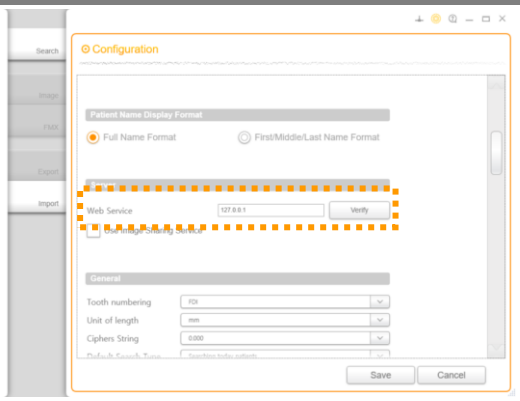
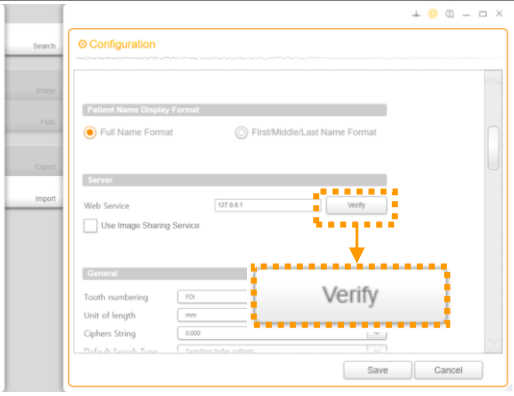
Change setting for SMARTDent Server and Sharing Image Service.

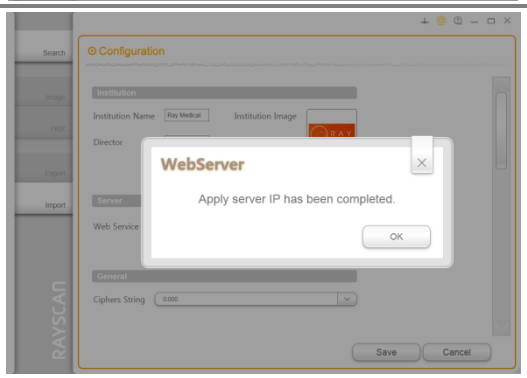
All patient and image information are saved to the SMARTDent server.
Patient information and image information in SMARTDent are retrieved by approaching the server therefore the server setting is essential.

Image Sharing Service offers to upload images to remote server for sharing of images.
The service user should insert proper ID and password.

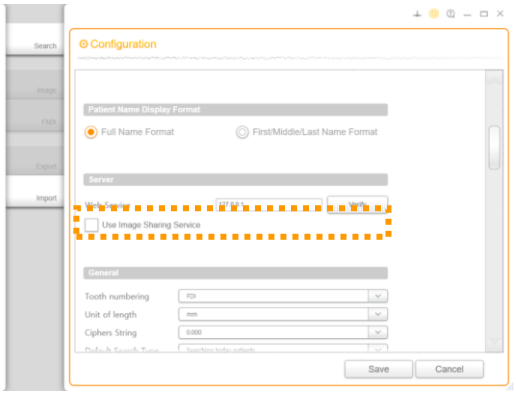
| | |
|---|---|
| ***CAUTION*** | **Image Sharing Service**<br>Accodring to the service user, the number of images for sharing is limited and uploaded images will be deleted periodically. |

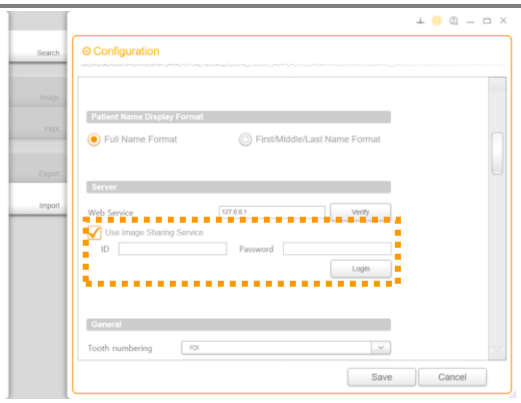
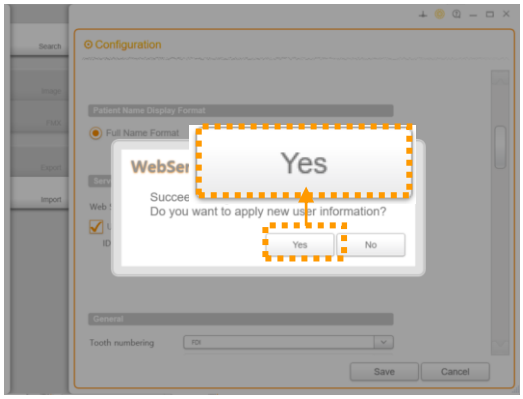
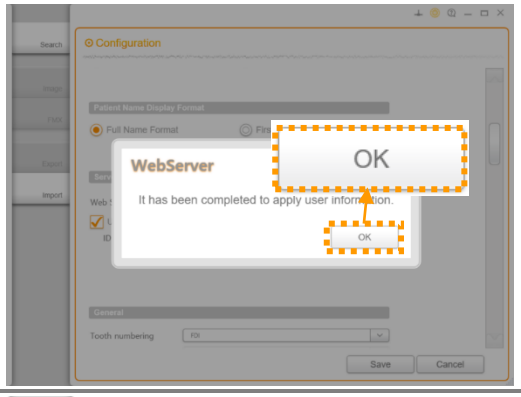
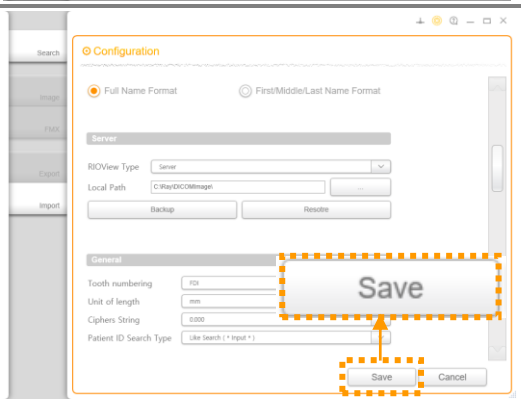
### Server Setting Change

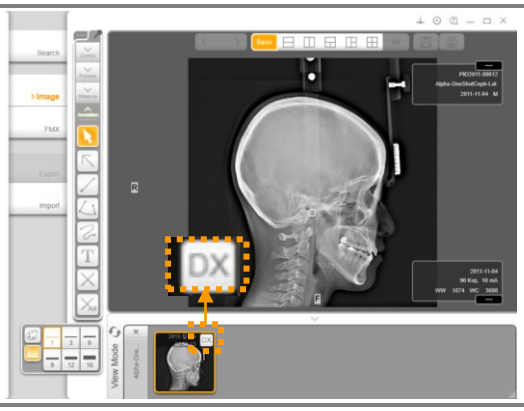
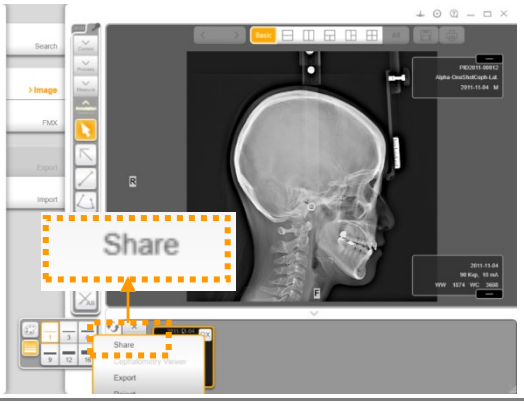
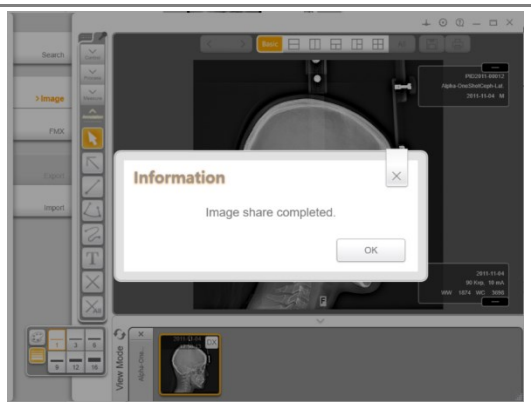
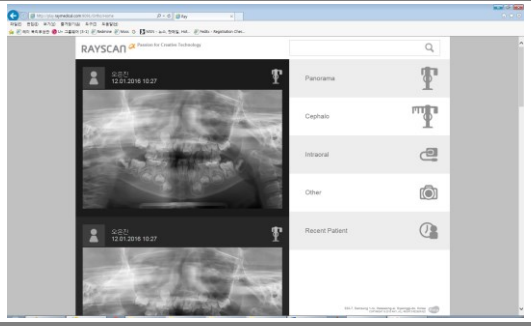
| No. | Figure | Description |
|---|---|---|
| 1 |  | Enter IP address of the changed server in the 'Web Service' field. |
| 2 |  | Click the [Verify] button and proceed to the server connection test. |

| | | |
|---|---|---|
| 3 | | When test successful message window appears, click the [OK] button. |
| 4 |  | When server setting change complete message window appears, click the [OK] button. |

## Image Sharing Service Setting

| No. | Figure | Description |
|---|---|---|
| 1 |  | Check 'Use Sharing Service'. |

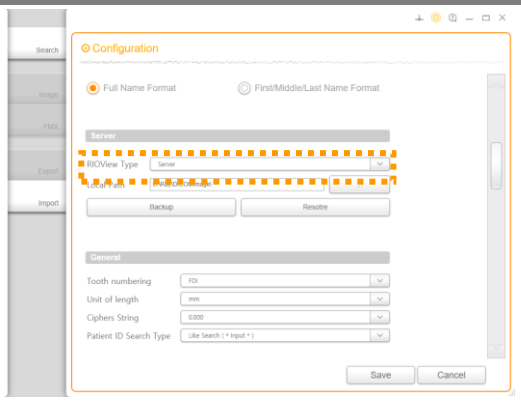
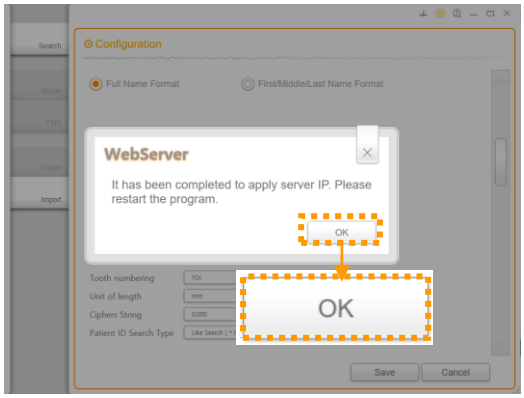
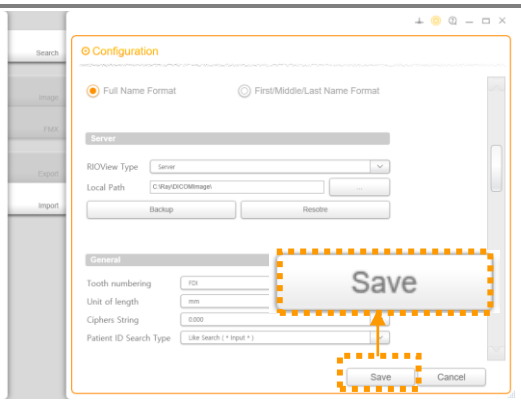
| | | |
|---|---|---|
| 2 |  | Enter the ID and Password and click [Login] button. |
| 3 |  | When Login Success Message appears, click [yse] button to save and apply user information. |
| 4 |  | When user information apply success message appears, click the [OK] button. |
| 5 |  | Click the [Save] button at the bottom of the screen to save the settings. |

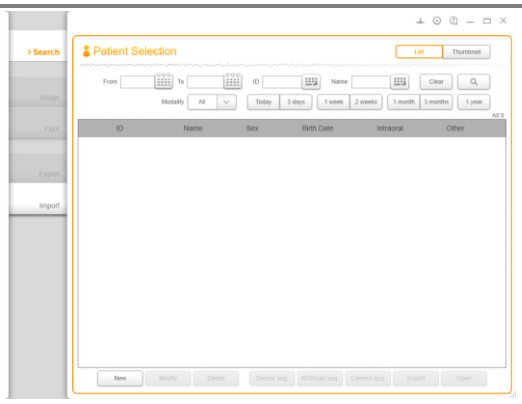
| | | |
|---|---|---|
| 6 |  | Click the [Modality] button on upper right side of the image thumbnail from the lower 'Patient List'. |
| |  | Select 'Share' menu from the pop-up menu to share this image(s).<br><br>***Notice – CT images do not provide this function.*** |
| 7 |  | When image sharing completed message appears, click the [OK] button. |
| 8 |  | Confirm the shared images in the website. |

## 7.7 RIOView Server/Client Setting

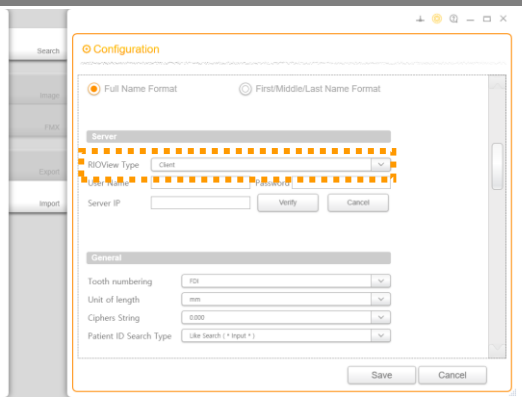
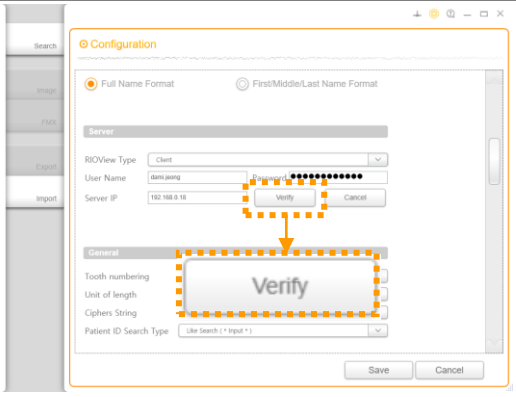
Through the server/client setting of RIOView, user of intraoral x-ray device can share the acquired images without server installation. RIOView work as server mode when it install. User can chage the setting in the configuration as below.

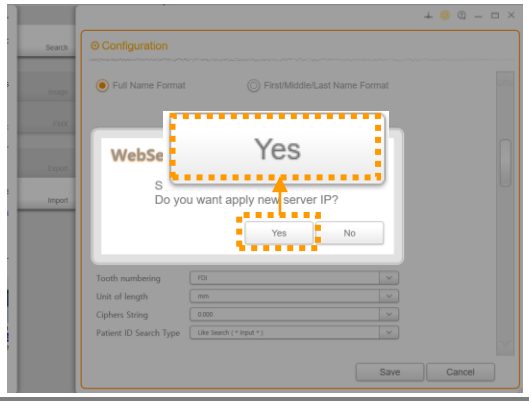
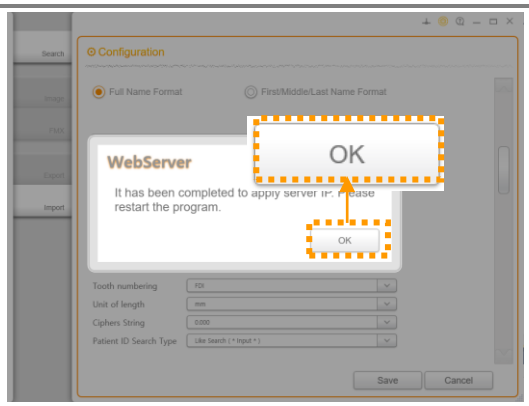
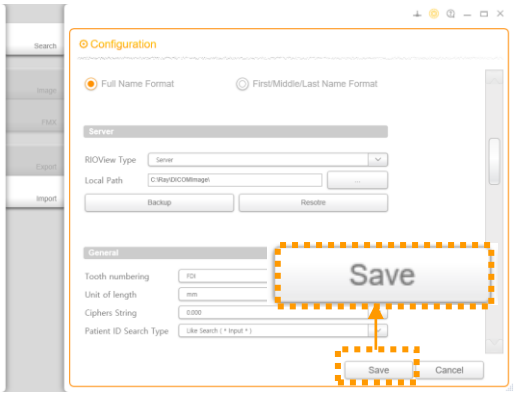
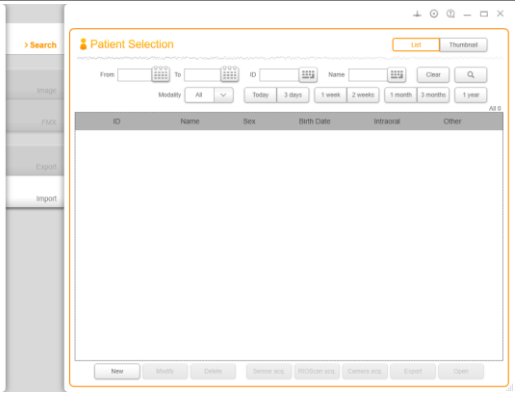
### Change to Server Mode

| No. | Figure | Description |
|---|---|---|
| 1 |  | Change 'RIOView Type' to Server. |
| 2 |  | When connection success message appears, click the [OK] button. |
| 3 |  | Click the [Save] button at the bottom of the screen to save the settings and restart RIOView. |

| | | |
|---|---|---|
| 4 |  | Confirm RIOView works in Server Mode. |

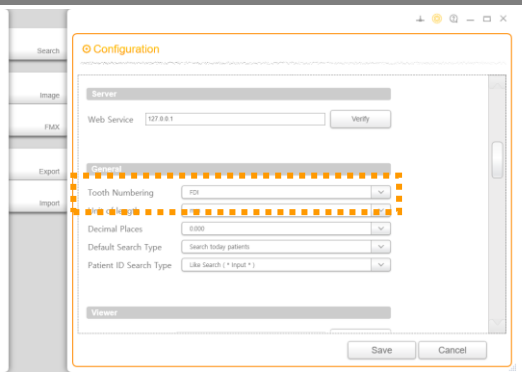
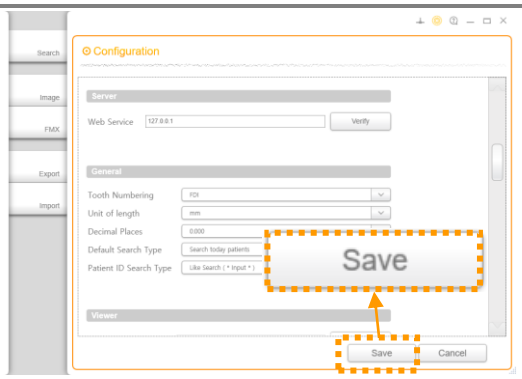
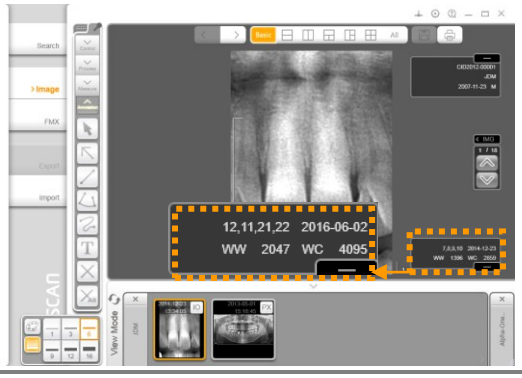
## Change to Client Mode

| No. | Figure | Description |
|---|---|---|
| 1 |  | Change 'RIOView Type' to Client. |
| 2 |  | Enter the User Information(user name and password) and Server IP.<br>Click the [Verify] button and proceed to the server connection test. |

| | | |
|---|---|---|
| 3 |  | When connection success message appears, click the [Yes] button to save the connect information. |
| 4 |  | When server setting change complete message appears, click the [OK] button. |
| 5 |  | Click the [Save] button at the bottom of the screen to save the settings and restart RIOView. |
| 6 |  | Confirm RIOView works in Client Mode. |

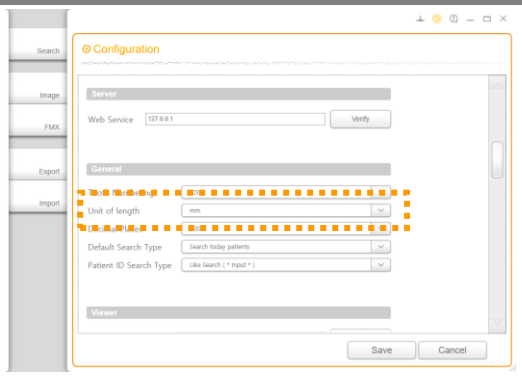
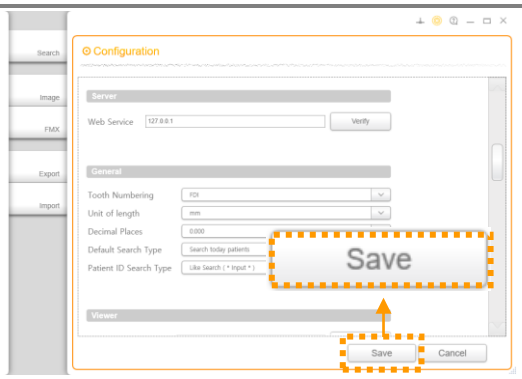
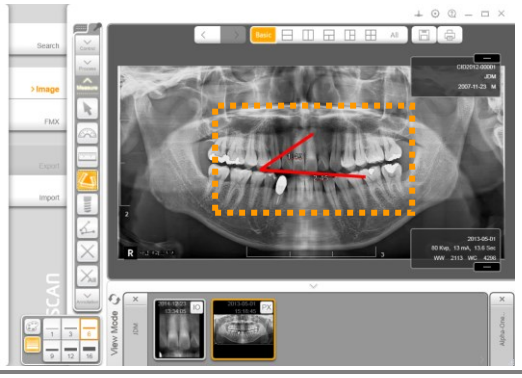
## 7.8 Tooth Numbering Setting

### Change a dental notation setting

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Tooth numbering] section and change the setting. |
| 2 |  | Click the [Save] button at the bottom of the screen to save the settings. |
| 3 |  | You can see the dental notation is changed. |

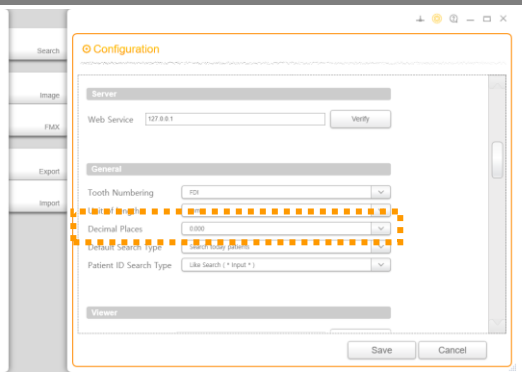
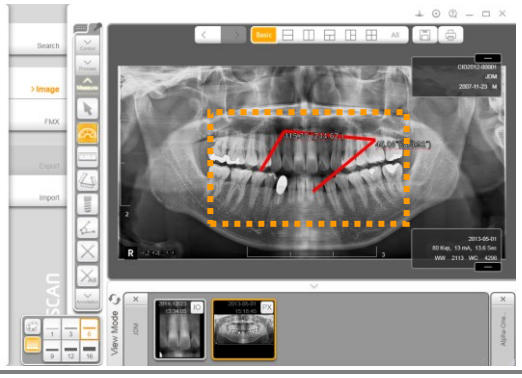
## 7.9 Unit of Length Setting

### Change the setting for Unit of Length

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the [Unit of Length] section and change the setting. |
| 2 |  | Click the [Save] button at the bottom of screen to save the settings. |
| 3 |  | You can see that the Unit of Length Setting is changed. |

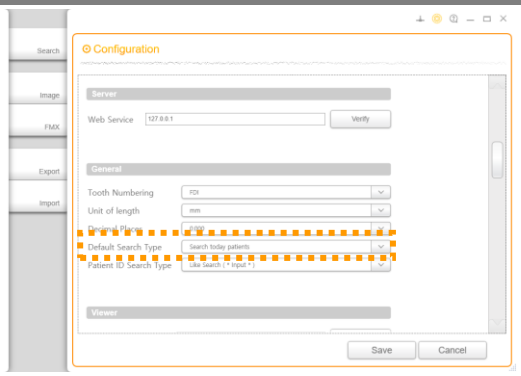
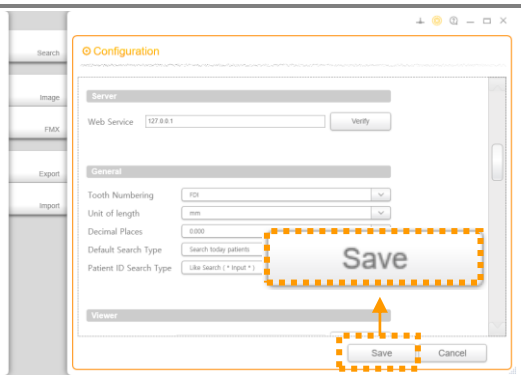
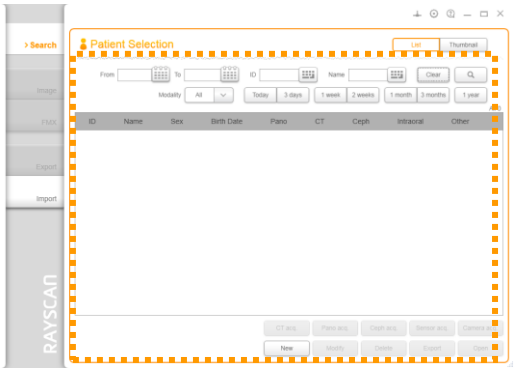
## 7.10 Decimal Places Setting

### Change Decimal Places

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click [Decimal Places] section and change the setting.<br><br>***Notice*** **– Changed Decimal Places is applied to image view and it affect to length information.** |
| 2 | | Click the [Save] button at the bottom of screen to save the settings. |
| 3 |  | You can see the Ciphers String Setting is changed when the length or angle measuring. |

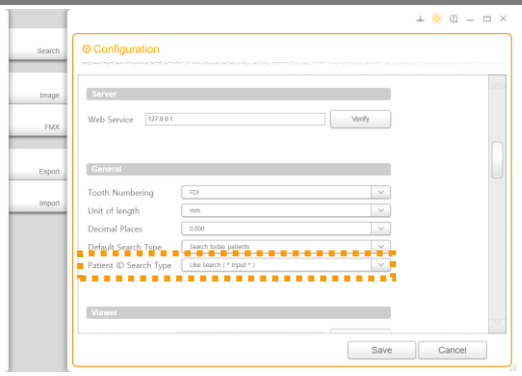
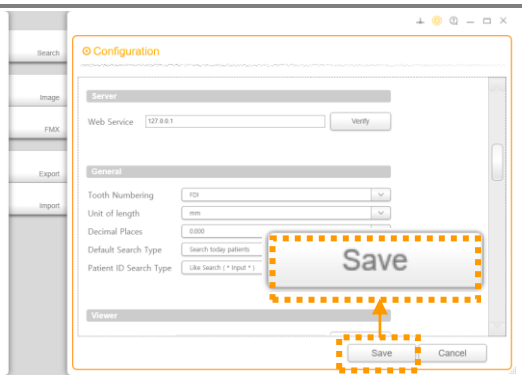
## 7.11 Default Searching type setting

### Change the setting for Default Searching Type

| No. | Figure | Description |
|---|---|---|
| 1 |  | Coose 'Default Search Type' [Searching today patient] or [No Searching]. It is for searching type when SMARTDent first run. |
| 2 |  | Click the [Save] button at the bottom of screen to save the settings. |
| 3 |  | When SMARTDent first run, it shows 'Today patient list' or not depending on the searching type. |

## 7.12 Patient ID Searching Type setting

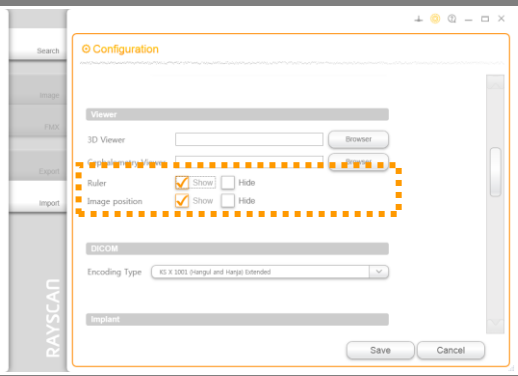
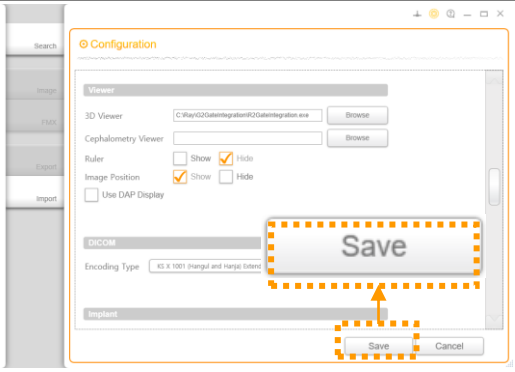
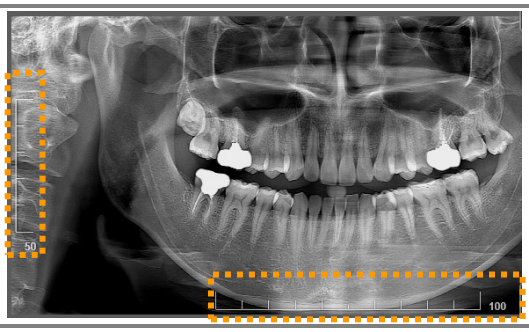
### Change the setting for Patient ID Searching Type

| No. | Figure | Description |
|---|---|---|
| 1 |  | Coose 'Patient ID Search Type' It is for searching type for patient ID. |
| 2 |  | Click the [Save] button at the bottom of screen to save the settings. |
| 3 | | When searching patient with patient ID the result shows depending on the patient ID searching type. |

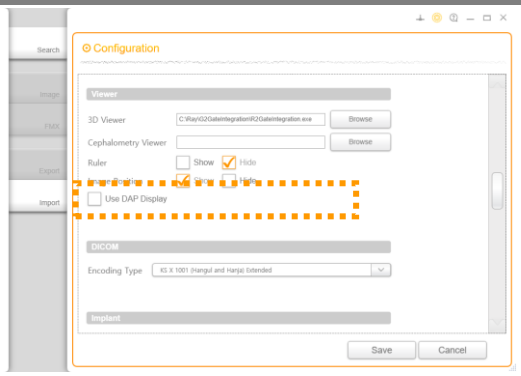
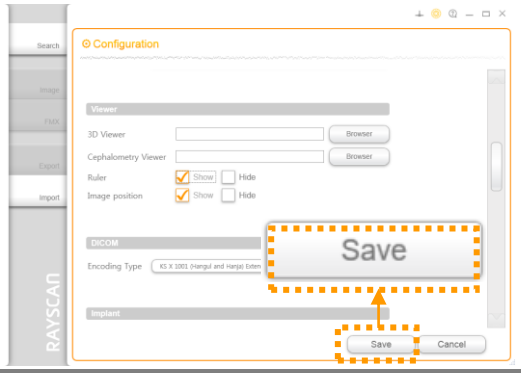
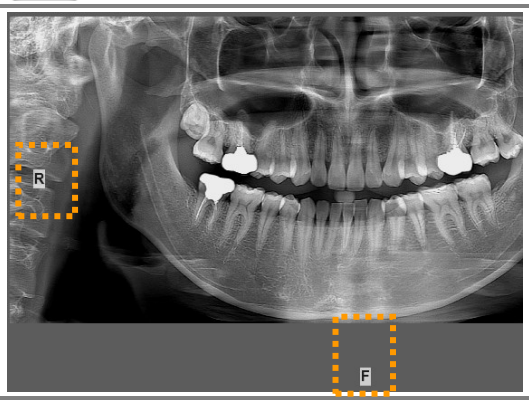
## 7.13 Image Overlay Setting

It is a function to set the show/hide oprtion for guide ruler, image position indicator, and DAP(Dose Area Product) value on Image tab.

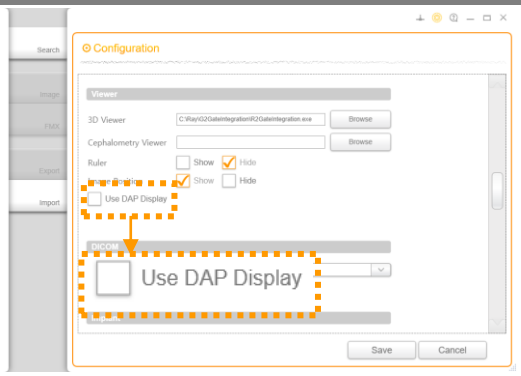
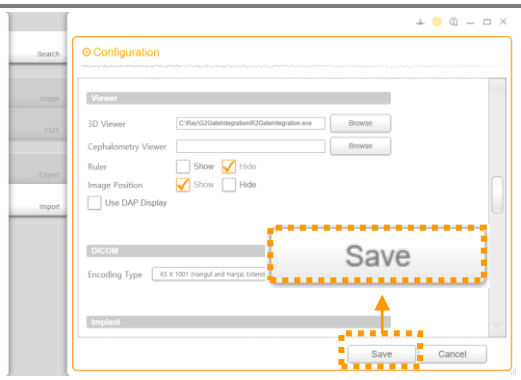
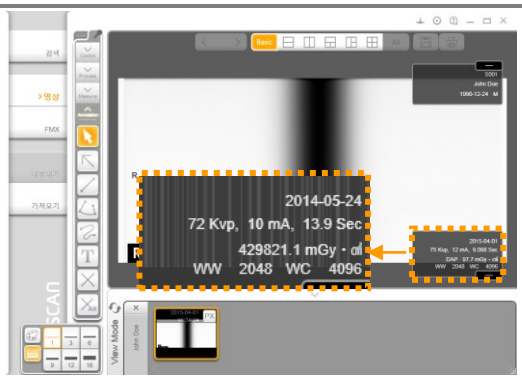
### Change Ruler Setting.

| No. | Figure | Description |
|---|---|---|
| 1 |  | Set Ruler function to check Show/Hide checkbox of Ruler.<br><br>***Notice*** **–Ruler displys at the left and bottom of images.** |
| 2 |  | Click the [Save] button at the bottom of screen to save settings. |
| 3 |  | The Ruler displys at the left and bottom of images. |

## Change setting for Image position

| No. | Figure | Description |
|---|---|---|
| 1 |  | Set Image position function to check Show/Hide checkbox of Image position.<br><br>***Notice* – Image Position displays at the left and bottom of images.** |
| 2 |  | Click the [Save] button at the bottom of screen to save settings. |
| 3 |  | Image Position information displays at the left and bottom of images. |

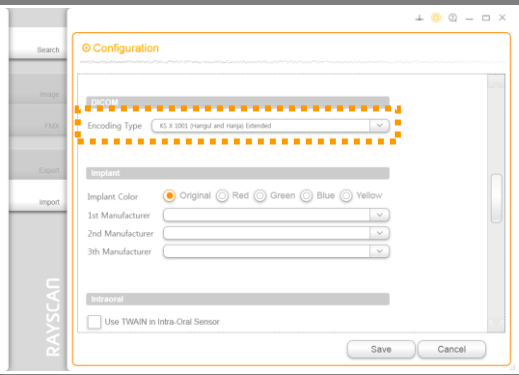
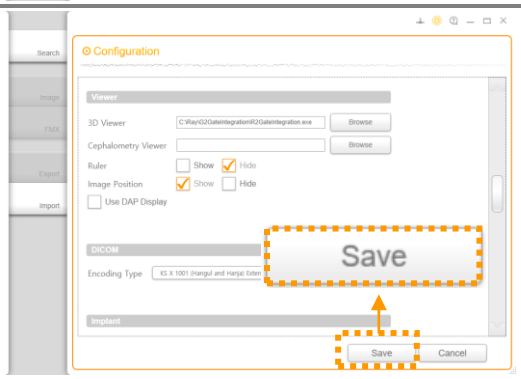
## Use DAP Setting Change

| No. | Figure | Description |
|---|---|---|
| 1 |  | Check 'Use DAP Display'. |
| 2 |  | Click the [Save] button on bottom of the screen and save the changes. |
| 3 |  | Confirm the DAP on the bottom right in Image tab. |

## 7.14 DICOM Setting

Encoding type according to the language setting must be designated. Patient information could appear incorrectly if encoding type is incorrectly assigned.

### Encoding Type Setting Change

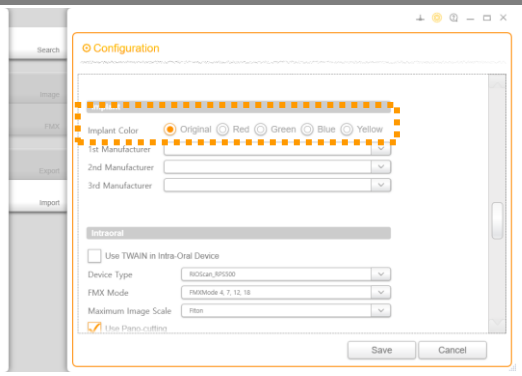
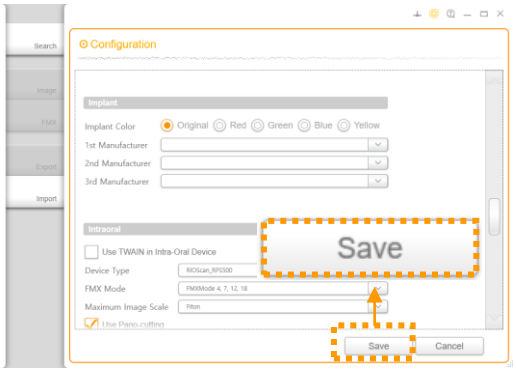
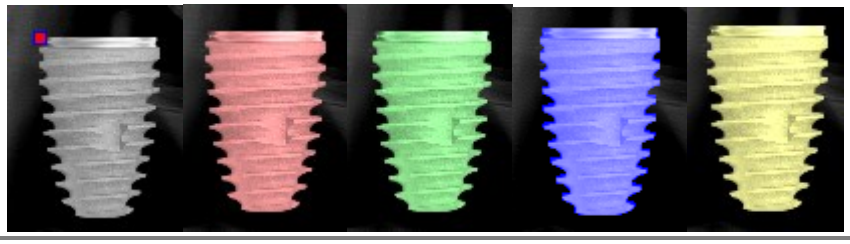
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the 'Encoding Type' category to change the encoding type setting.<br><br>***Notice* – Changed encoding type has an effect during DICOM file creation.** |
| 2 |  | Click the [Save] button on bottom of the screen and save the changes. |

## 7.15 Implant Setting

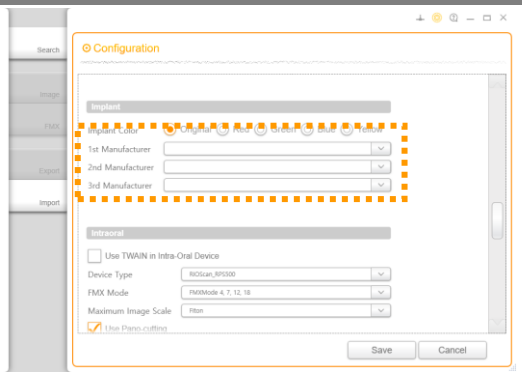
From the 'Image' tab, setup the Implant manufacturer and Implant color to be used during Implant insertion.

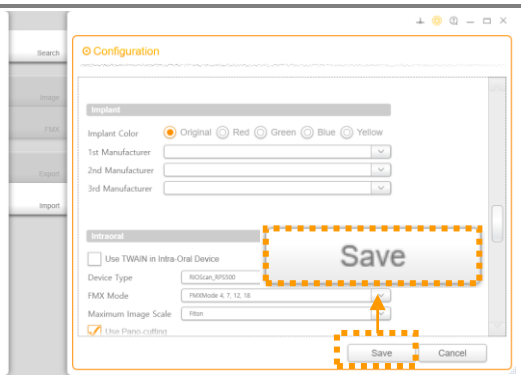
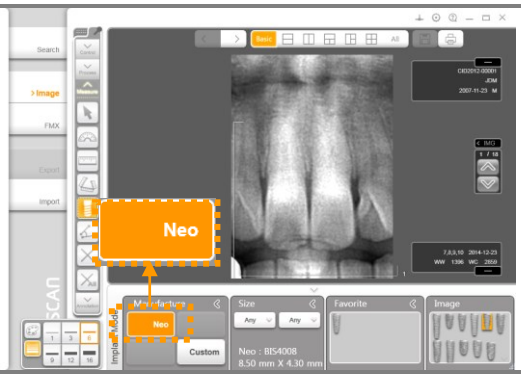
Selected manufacturer is added as a button in the Implant select window and by clicking the button the applicable manufacturer's Implant list is shown.

## Change Implant color

| No. | Figure | Description |
|---|---|---|
| 1 |  | Select one of the default, red, green , blue, yellow.<br><br>***Notice*** **– Selected color is applied into all implant of images immediately.** |
| 2 |  | Click the [Save] button on bottom of the screen and save the changes. |
| 3 |  | |

## Implant Manufacturer Setting Change

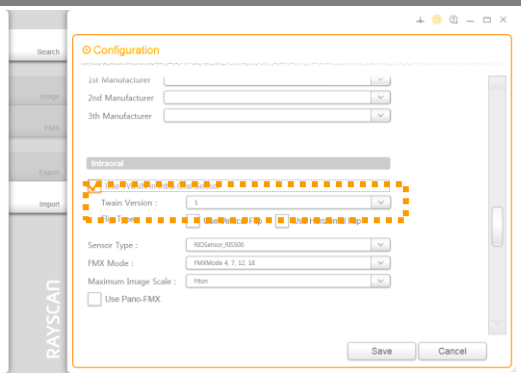
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click the '1st Manufacture, 2nd Manufacture And 3rd Manufacture' fields separately then select the Implant manufacturer.<br><br>***Notice*** **- Selected Implant manufacturer is added as a button on the bottom during 'Image' tab Implant selection and Implant of the applicable manufacturer is listed.** |

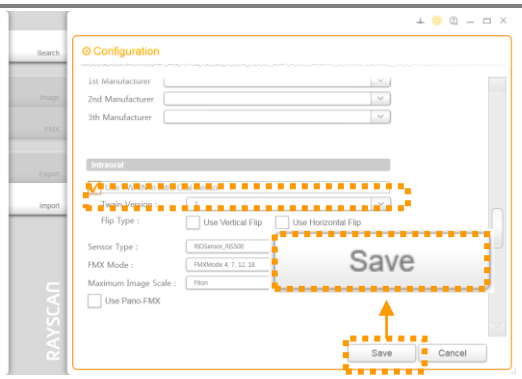
| | | |
|---|---|---|
| 2 |  | Click the [Save] button on bottom of the screen and save the changes. |
| 3 |  | You can see when inserting Implant the Implant Manufactture is added. |

## 7.16 Intraoral Sensor Setting

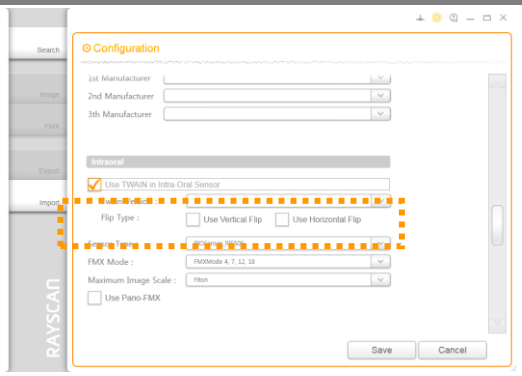
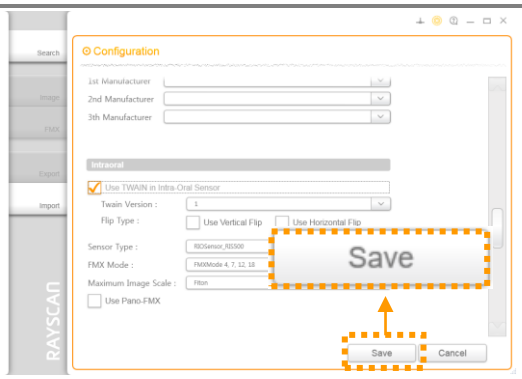
You can set TWAIN function, Sensor type, FMX mode, and Pano-FMX function.

### Set IO Sensor TWAIN Version

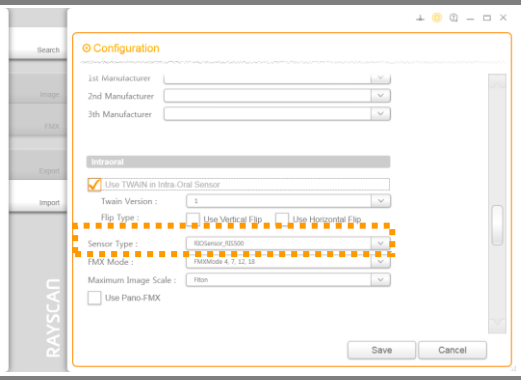
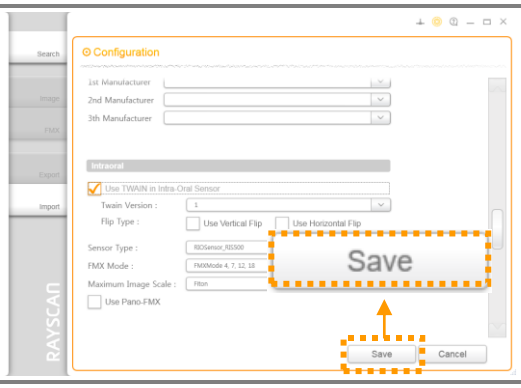
| No. | Figure | Description |
|---|---|---|
| 1 |  | Check 'Use TWAIN in Intral-Oral Sensor' in Intraloral section. |

| | | |
|---|---|---|
| 2 |  | Choose TWAIN version you want to use and then click the [Save] button. |

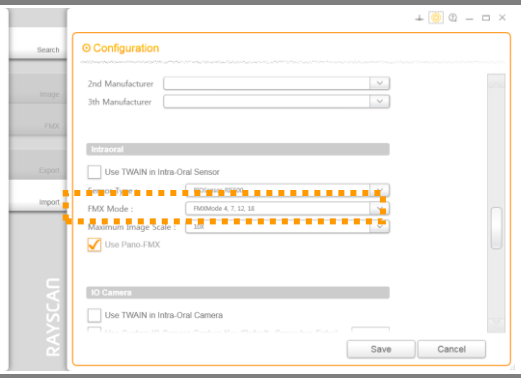
## Set 'Use TWAIN in Intral-Oral Sensor'

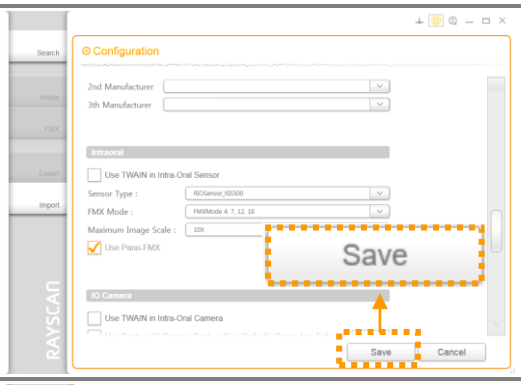
| No. | Figure | Description |
|---|---|---|
| 1 |  | Check 'Use TWAIN in Intral-Oral Sensor' in Intraloral section. |
| 2 |  | Set image reversion option and click the [save] button at the bottom of screen to save the setting. |

## Set IO Sensor Type

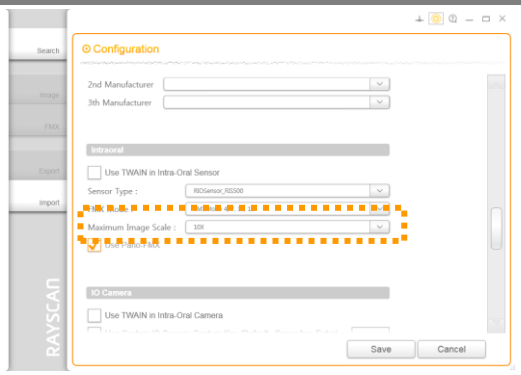
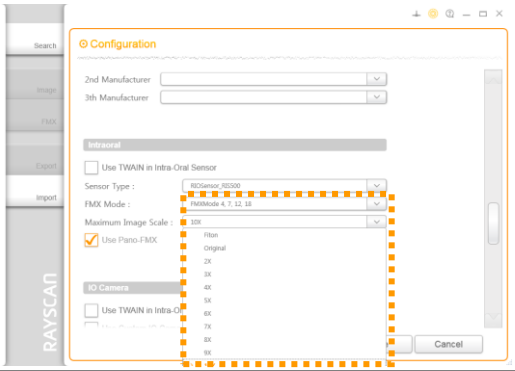
| No. | Figure | Description |
|---|---|---|
| 1 |  | Select sensor type in Intraloral section. |
| 2 |  | Click the [Save] button to save the settings. |

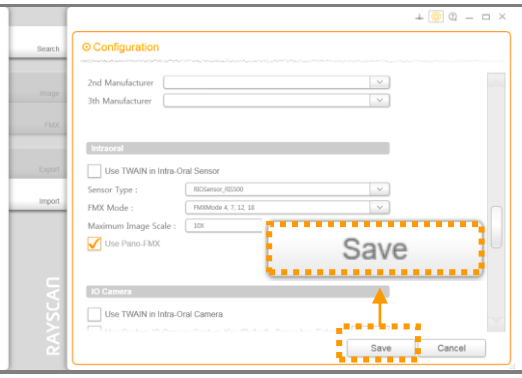
## Set FMX-Mode

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click [FMX mode] in Intraoral section and select FMX mode you want. |

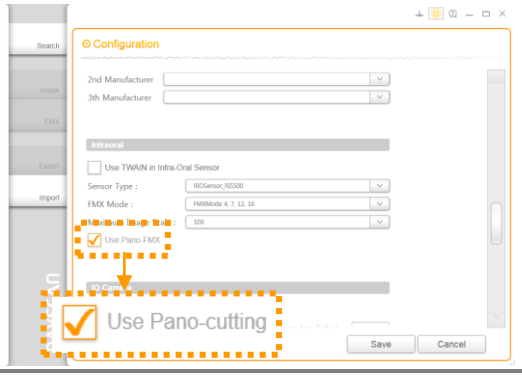
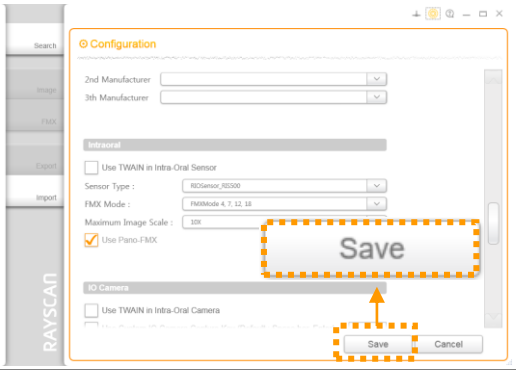
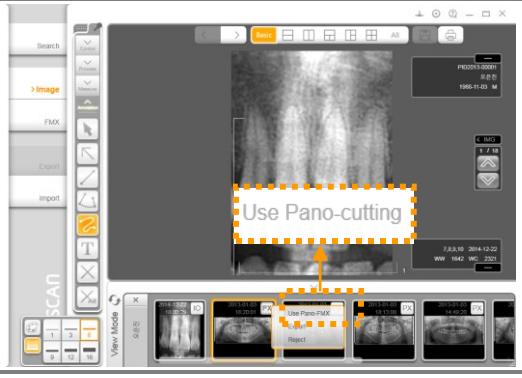
| | | |
|---|---|---|
| 2 |  | Click [Save] buttin at the bottom of screen to save setting. |
| 3 | | Check FMX-Mode is changed.. |

## Set Maximum Image Scale

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click [Maximum Image Scale] in Intraoral section.<br><br>***Notice* –It is for Intraoral image when you want to display it smaller than the screen size.** |
| 2 |  | Select Maximum Image Scale type you want. |

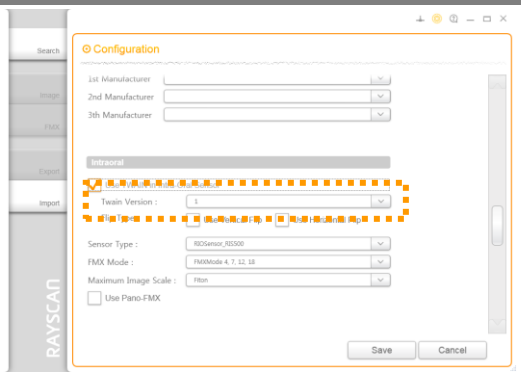
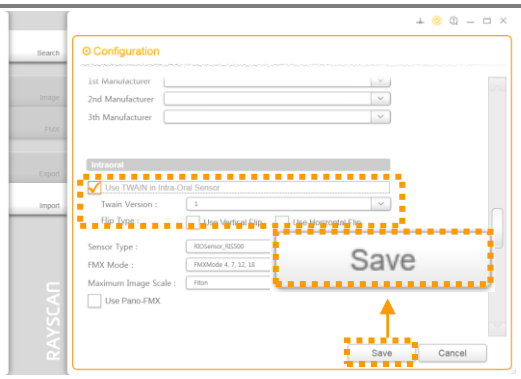
| | | |
|---|---|---|
| 3 |  | Click the [Save] button to save the settings. |

## Use Pano-FMX

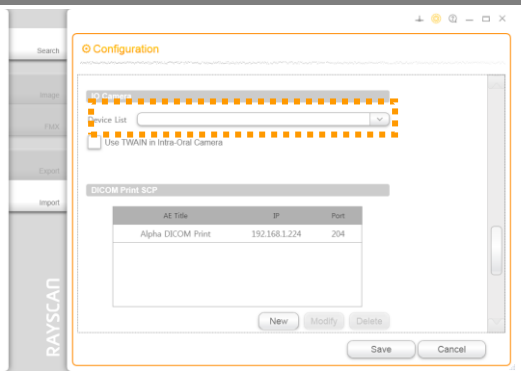
| No. | Figure | Description |
|---|---|---|
| 1 |  | Check [Pano-FMX] in Intraloral section. |
| 2 |  | Click [Save] buttin at the bottom of screen to save setting. |
| 3 |  | Check [Pano-FMX] is applied in Image tab. |

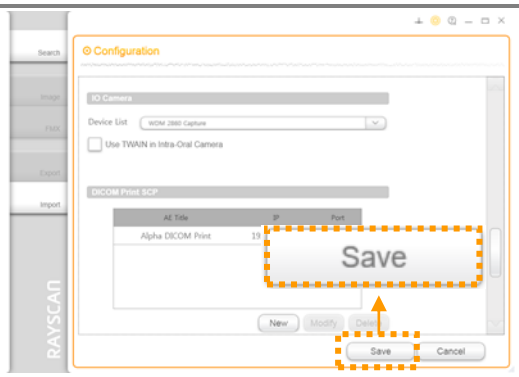
## 7.18 IO Camera Setting

### Set Intraoral Camera TWAIN Version

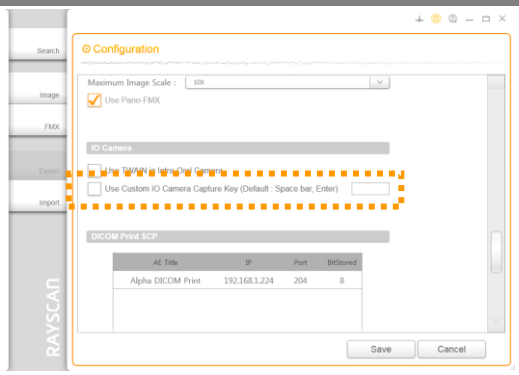
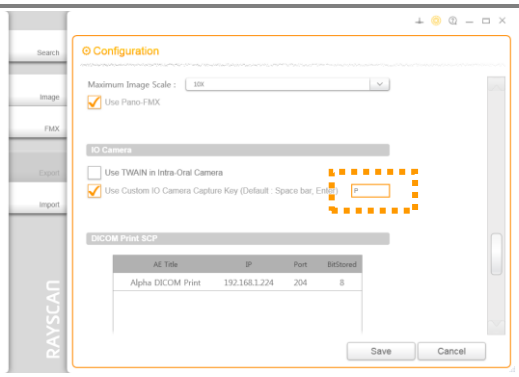
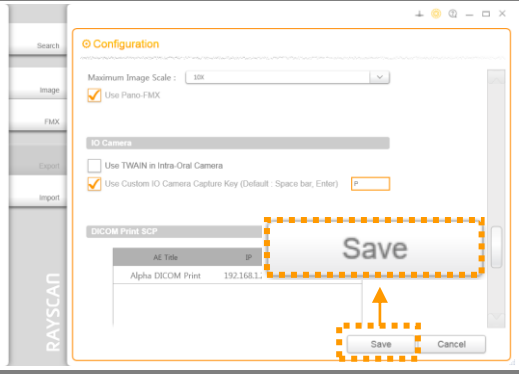
| No. | Figure | Description |
|---|---|---|
| 1 |  | Check 'Use TWAIN in Intral-Oral Camera' in IO Camera section. |
| 2 |  | Choose TWAIN version you want to use and then click the [Save] button. |

### Intraoral Camera Setting Change

| No. | Figure | Description |
|---|---|---|
| 1 |  | Select the IO camera to be connected from the Device List. |

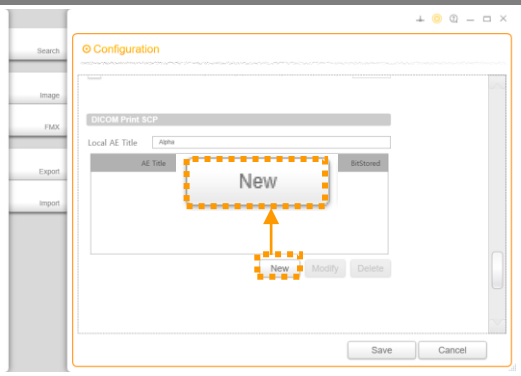
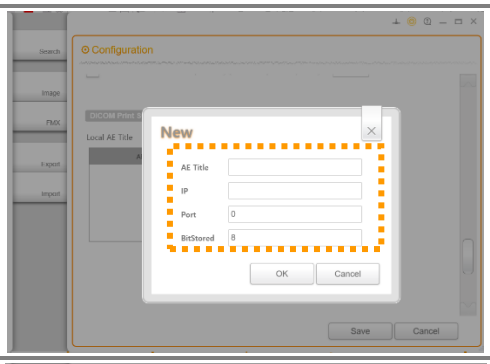
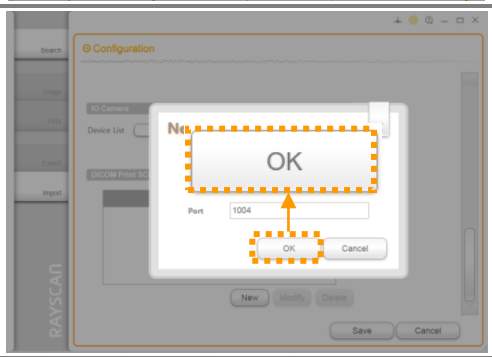
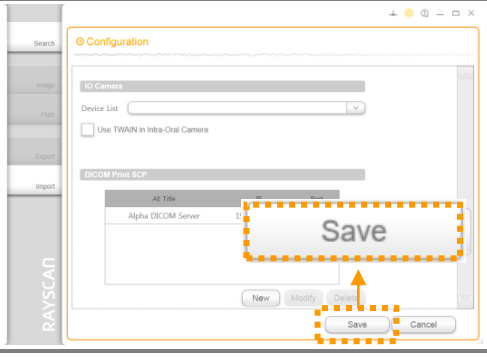
| | | |
|---|---|---|
| 2 |  | Click the [Save] button on bottom of the screen and save the changes. |

## Use Custom IO Camera Capture Key

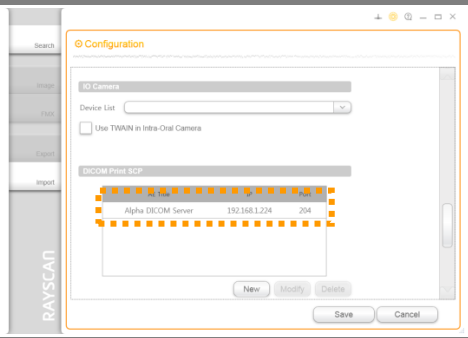
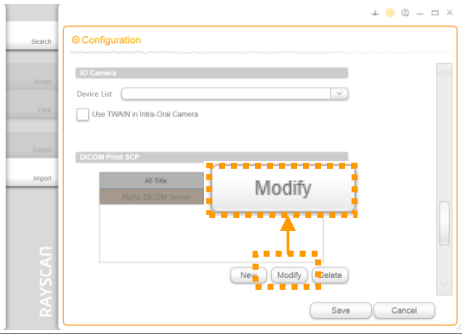
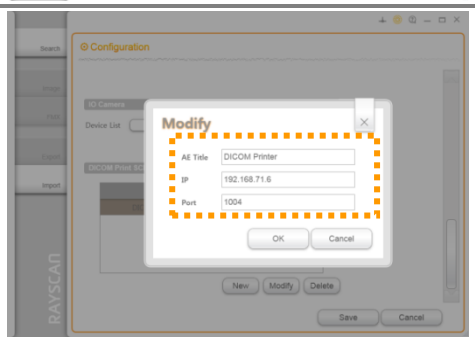
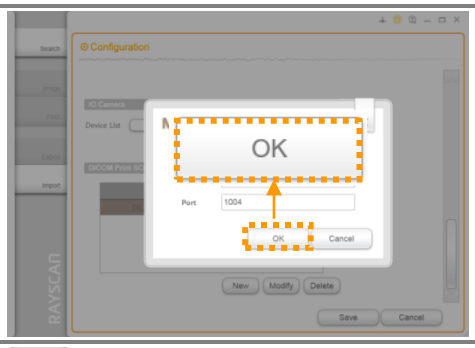
| No. | Figure | Description |
|---|---|---|
| 1 |  | Check [Use Custom IO Camera Capture Key] from IO Camera section. |
| 2 |  | Click textbox and insert key you want to use for capture key. |
| 3 |  | Click the [Save] button on bottom of the screen and save the changes. |

## 7.19 DICOM Print SCP Setting

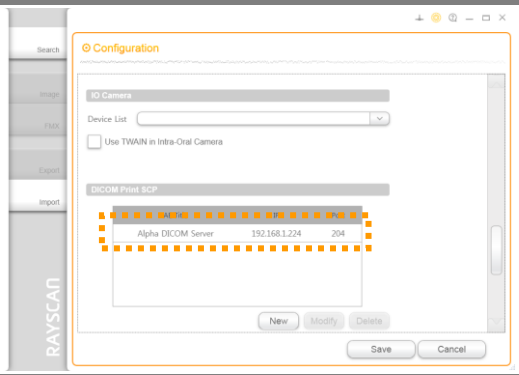
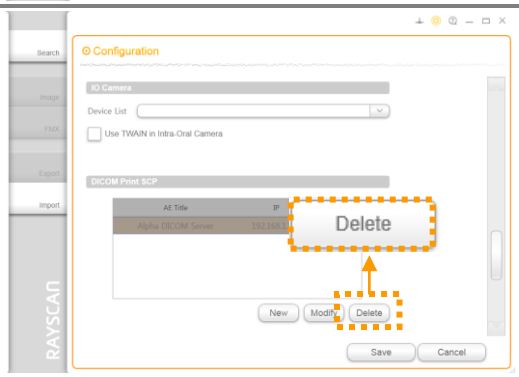
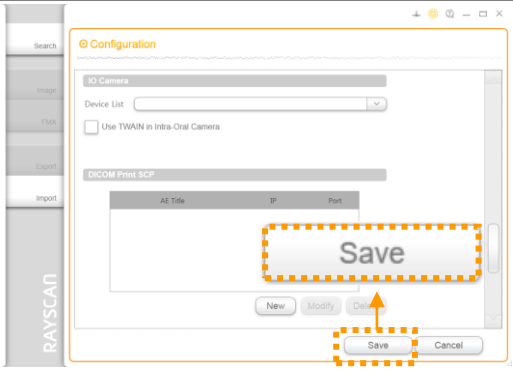
### Add Print SCP

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click [New] button. |
| 2 |  | When pop-up window for adding 'Print SCP' appears, enter AE Title, IP address and Port number. |
| 3 |  | Click the [OK] button. |
| 4 |  | Click the [Save] button on bottom of the screen and save the changes. |

## Modify Print SCP

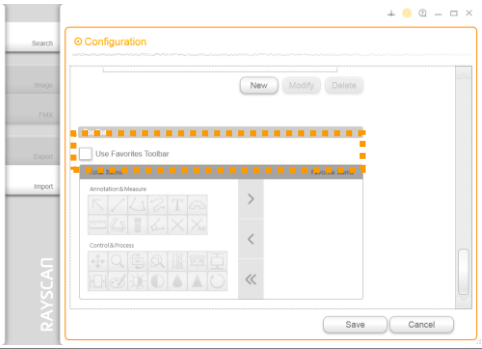
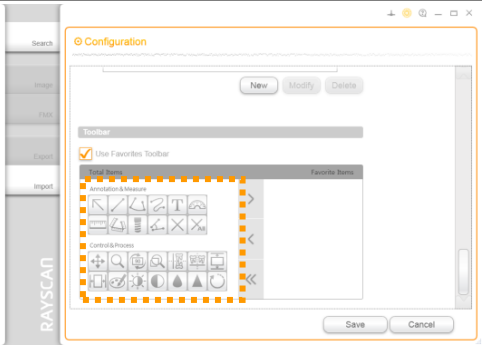
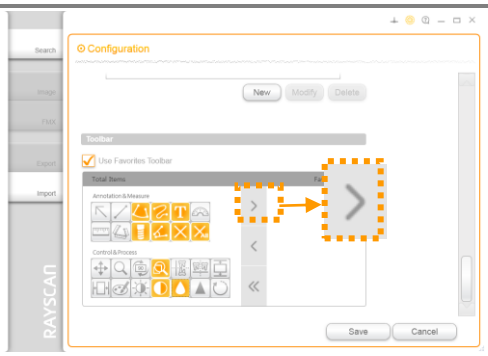
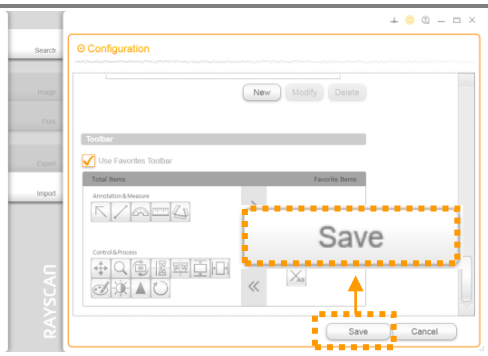
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click on the 'Print SCP' item intended for modification and select. |
| 2 |  | Click the [Modify] button. |
| 3 |  | Modify changes in the 'Print SCP' modification screen. |
| 4 |  | Click the [OK] button. |
| 5 | | Click the [Save] button on bottom of the screen and save the changes. |

## Delete Print SCP

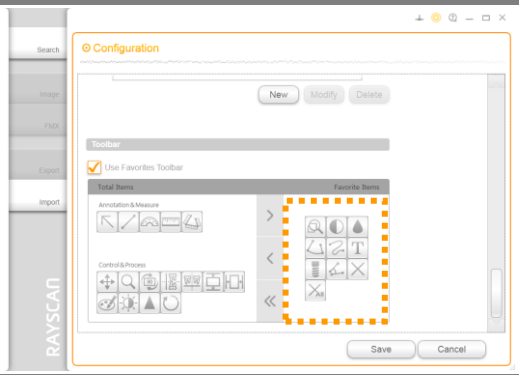
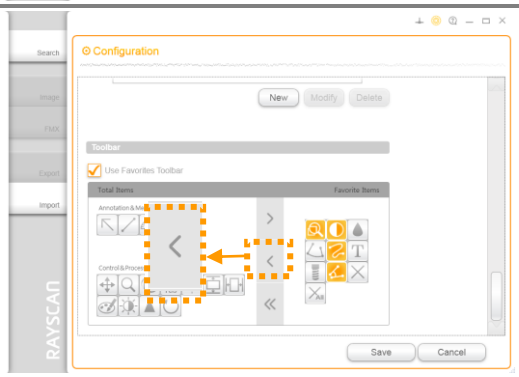
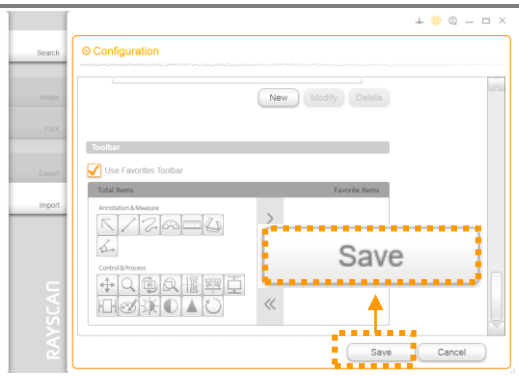
| No. | Figure | Description |
|---|---|---|
| 1 |  | Click on the 'Print SCP' item intended for deletion and select. |
| 2 |  | Click the [Delete] button. |
| 3 | | In the delete confirm message window, click [Yes]. |
| 4 |  | Confirm that selected item is removed from the 'Print SCP' list then click the [Save] button on bottom of the screen to save changes. |

## 7.20 Favorite Toolbar Setting

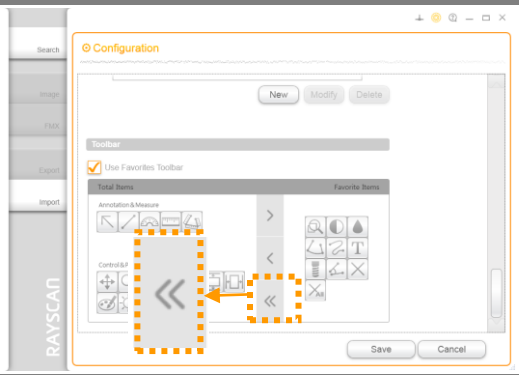
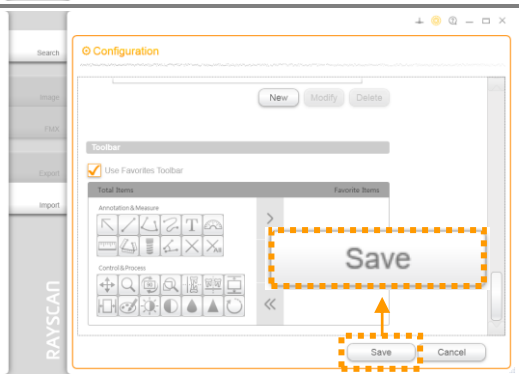
### Set Favorite Toolbar.

| No. | Figure | Description |
|---|---|---|
| 1 |  | Check [Use Favorite Toolbar]. |
| 2 |  | When [All tools] section is enabled select tools you want to use. |
| 3 |  | If you choose items, click [>] button to move the items to Favorite Items section.<br><br>***Notice* – Up to 11 items can be selected** |
| 4 |  | Click the [Save] button on bottom of the screen and save the changes. |

## Remove items from Favorite Toolbar

| No. | Figure | Description |
|---|---|---|
| 1 |  | Select items from 'Favorite Items' section.. |
| 2 |  | If you choose items, click [<] button to move the items to 'Total Items' section. |
| 3 |  | Click the [Save] button on bottom of the screen and save the changes. |

## Remove all items from Favorite Toobar

| No. | Figure | Description |
|---|---|---|
| 1 |  | Click [<<] button to move all items to 'Total Items' section. |
| 2 |  | All items in 'Favorite Items' section will be moved to 'Total Items' section. .<br>Click the [Save] button on bottom of the screen and save the changes.<br><br>***Notice* – If you save settings without seleted itmes the 'Use Favorite Toolbar' function is unchecked automatically.** |

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