Carestream® CS 3500

Intraoral Workflow Guide

GLIDEWELL LABORATORIES

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Accessing the Acquisition Interface Using Dental Imaging Software

⚠️ **Important: For ease of use, watch the "CS 3500: Capturing a Partial Arch" training video, and read the CS 3500 User and Installation Guide. To access the videos and documentation, insert the CS 3500 Installation Wizard flash drive into the USB port, select Run wizard.exe, and click the appropriate button on the Autorun window.**

To access the **CS 3500 Acquisition** interface from the **Dental Imaging Software**, follow these steps:

1. On your desktop, double-click to open the **Dental Imaging Software**.

2. Find or create the patient record.

3. Double-click the patient record to access the imaging window.

4. In the imaging window, click to open the **CS 3500 Acquisition** interface.

5. Select your preference settings.

Setting Up Preferences

Set up your preferences before using the CS 3500. To set up the preferences, follow these steps:

1. On the **Acquisition** interface, click . The **Preferences** dialog box is displayed.

2. Click to set the general preferences.

3. Click to set the CS 3500 preferences.

4. Click to set the tools preferences.

You can now start acquiring 3-D still images.

The reusable tip attaches to the body of the CS 3500 and provides a sanitary shield for the patient.
Always disinfect the body of the CS 3500, and clean and sterilize the tip after each use.

> ⚠️ **Important: The removable scanner tip is autoclavable up to 20 cycles. After 20 cycles, discard the tip. See the CS 3500 Safety, Regulatory, and Technical Specifications User Guide for more information.**

To prepare the CS 3500, follow these steps:

1. Make sure the lens window at the base of the CS 3500 is clean by wiping it with a moist, lint-free cloth or lens tissue.

2. Push the tip onto the CS 3500 as illustrated, with the lens facing downward (A) for a lower jaw view or upward (B) for an upper jaw view.
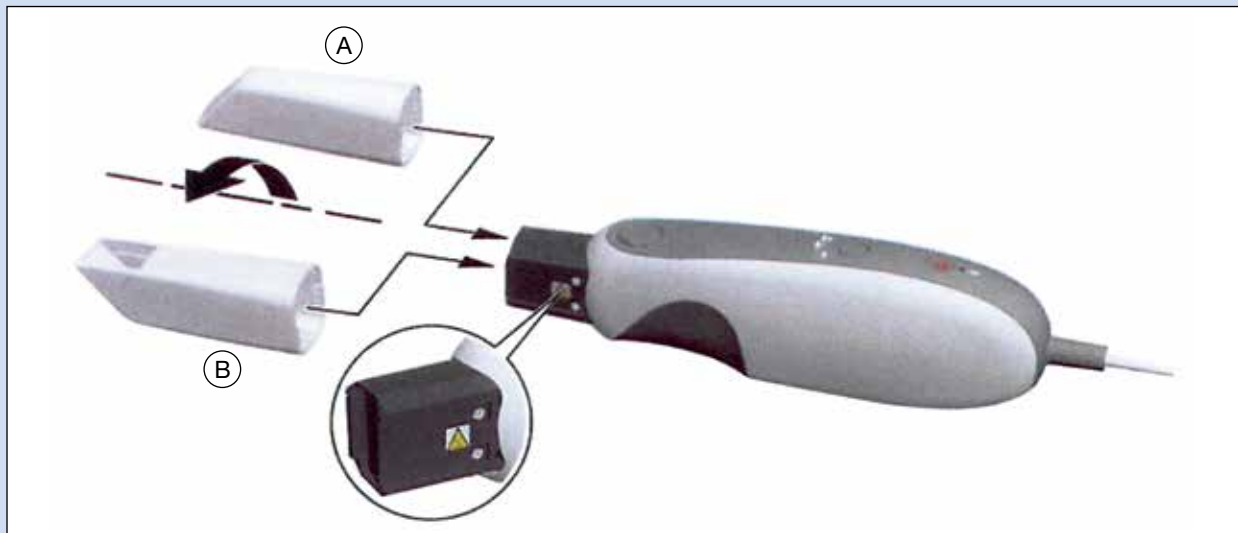
> ⚠️ **WARNING: The base of the CS 3500 becomes heated when the CS 3500 is turned on. Do not touch the heating element at the base of the CS 3500.**

3. Press the power button for one second to power on the CS 3500.

4. Let the CS 3500 warm up for approximately three minutes to enable the antifog feature on the tip.

To acquire images, follow these steps:

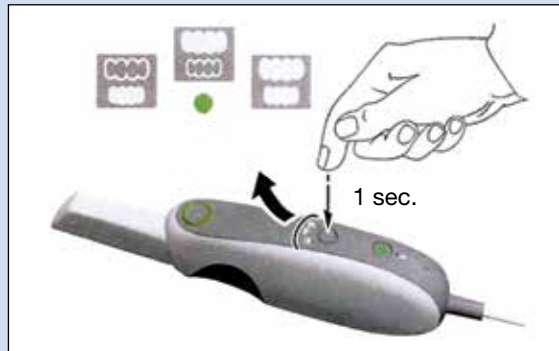1. Dry the teeth thoroughly before starting an acquisition.

2. Access the **CS 3500 Acquisition** interface by clicking in the **Dental Imaging Software**.

3. On the **Acquisition** interface, select the **Upper Jaw** acquisition mode.

   OR

   On the CS 3500, press the mode button for one second to select the acquisition mode. The mode indicator LED turns green.

4. Hold the CS 3500 at a 90-degree angle to the occlusal surface of the preparation area. Rest the tip on the tooth surface to steady the CS 3500. Live video is displayed on the video preview screen.

   When the CS 3500 is stable and the image is clear, the acquisition begins. Images are automatically acquired and transferred to the 3-D model display screen.

   The example below shows several acquisitions of the upper jaw.

Tip: Watch the demo at the lower-left of the **Acquisition** interface for information on how to scan the teeth. Float your mouse over the image of the jaw, and click **Show Scanning Sample** to launch the demo.

After an acquisition, the feedback indicator displays the following:

- — Indicates the image was acquired successfully.

- — Indicates that there is not enough overlap between the last image and the newest image. Reacquire the image, being sure to overlap with the previous tooth by approximately 30%.

- — Indicates the CS 3500 was not stable. Reacquire the image.

> ⚠ **Important: When scanning a tooth, keep approximately a 30% overlap with the last image.**

5. Slowly move the CS 3500 tip along the occlusal surface to scan the remaining teeth in the preparation area, keeping approximately a 30% overlap with the last image.

6. When the occlusal surface scan is complete, scan the lingual surface of the teeth in the preparation area. Hold the CS 3500 at a 45-degree angle to the lingual surface of the teeth.

7. When the lingual surface scan is complete, scan the buccal surface of the preparation area. Hold the CS 3500 at a 45-degree angle to the buccal surface of the teeth.

> ⚠ **Important: Re-dry the teeth as appropriate throughout the acquisition process.**

The example below shows a 3-D model of the upper jaw when the occlusal, lingual and buccal surfaces have been completely scanned.
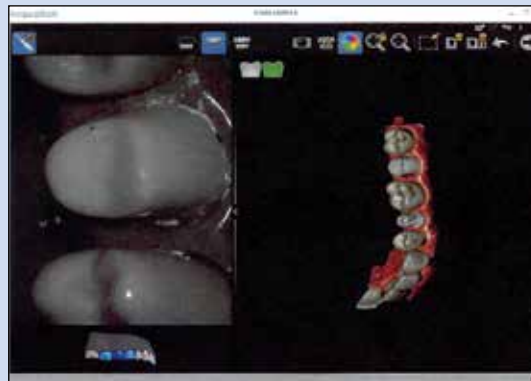

> ⚠ **Important: If holes are displayed in the scanned image on the preparation area, re-scan the area until the holes are filled. Use the mouse wheel to zoom in on the preparation area for a closer look.**

8. Once the upper jaw has been scanned, you can begin scanning the lower jaw. Click and repeat steps 3 through 7 until the teeth in the area of restoration on the lower jaw are scanned.

The example below shows a 3-D model of the lower jaw when the occlusal, lingual and buccal surfaces have been completely scanned.
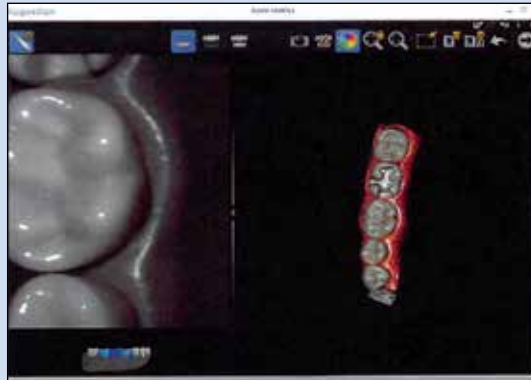
9. Visually inspect the 3-D model for any holes. If holes are present near the restoration area, re-scan the area until the holes are filled.

10. When you are satisfied with the 3-D model, continue with the buccal bite registration acquisition.

⚠ **Important: If you acquire images of teeth from both the upper and lower jaw, you must also acquire the buccal bite registration.**

# Scanning the Buccal Bite Registration

To acquire a buccal bite registration, follow these steps:

1. Click .

2. Have the patient bite down.

3. Position the CS 3500 at a 90-degree angle to the buccal surface of the preparation area, and align the point where the upper and lower teeth meet in the middle of the video preview screen. Rest the tip on the tooth surface to help steady the CS 3500.

   When the CS 3500 is stable and the image is clear, the acquisition begins.

The example below shows a buccal bite registration.
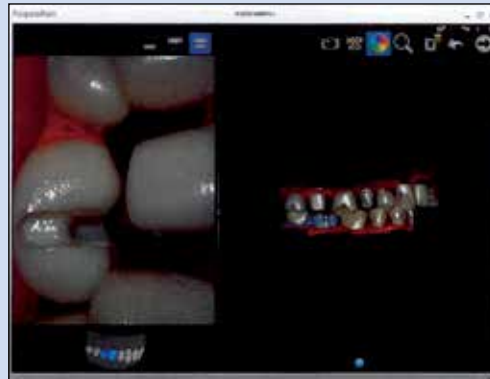
A dot is displayed at the bottom of the window to indicate the capture was successful. A successful bite image includes both the upper and lower arch.

Half of a dot (only one arch, upper or lower) indicates a partial buccal bite. The following image indicates that one complete buccal bite image and one-half of a buccal bite image have been acquired.

To complete a partial buccal bite image, move the CS 3500 slightly more gingival, *toward the missing arch*, and ensure that there is at least a 30% overlap between the second buccal bite acquisition and the previous one.

Tip: If you need to acquire a second buccal bite image because an opposing arch is missing, always move **toward** the opposing arch with the CS 3500.

Once both arches are displayed in the **Acquisition** interface, the bite image is successful, and you can acquire additional bite images, which will increase the accuracy of the bite.

4. Acquire at least two more buccal bite images, one on either side of the preparation area. You can take up to six bite images for a full arch. The dots at the bottom of the window indicate the number of successful bite images you have acquired.

5. Once the bite has been registered, rotate the model and zoom the view to ensure that the bite is accurate and that there are no areas where the bite is mismatched. Click a dot to view the bite for that acquisition.

The example below shows several buccal bite registrations.
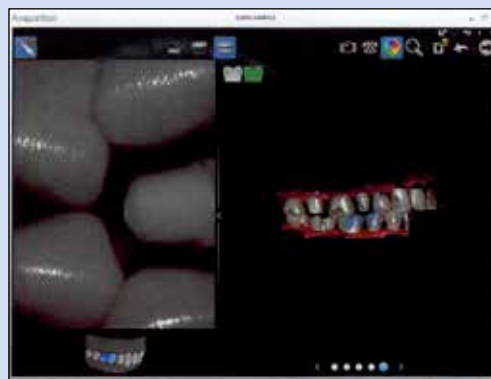
6. When you have finished acquiring the buccal bite registration, proceed to the refinement selection process.

The refinement selection step enables you to select specific teeth in the 3-D model display area and automatically refine them so that these teeth have the highest accuracy.

> ⚠️ **Important: If you have acquired fewer than five teeth, the software skips refinement selection, and the entire image is refined. You would then continue with Step 5.**

To select specific teeth on the 3-D model for refinement, follow these steps:

1. Click [→] to perform refinement selection.

2. Click [▭].

3. Place the cursor over the area you want to refine, and left-click and drag the mouse to select the teeth for refinement. You should include the preparation, the adjacent surfaces of neighboring teeth, the teeth on the opposite arch, and at least one buccal bite registration acquisition in this selection.
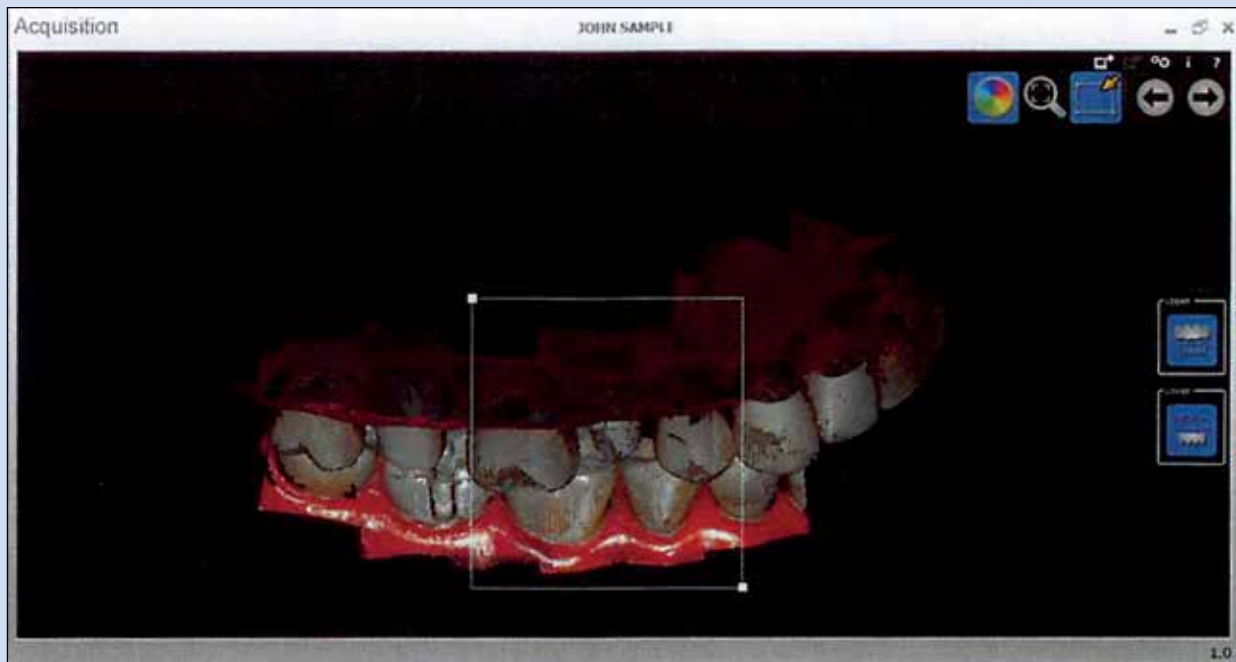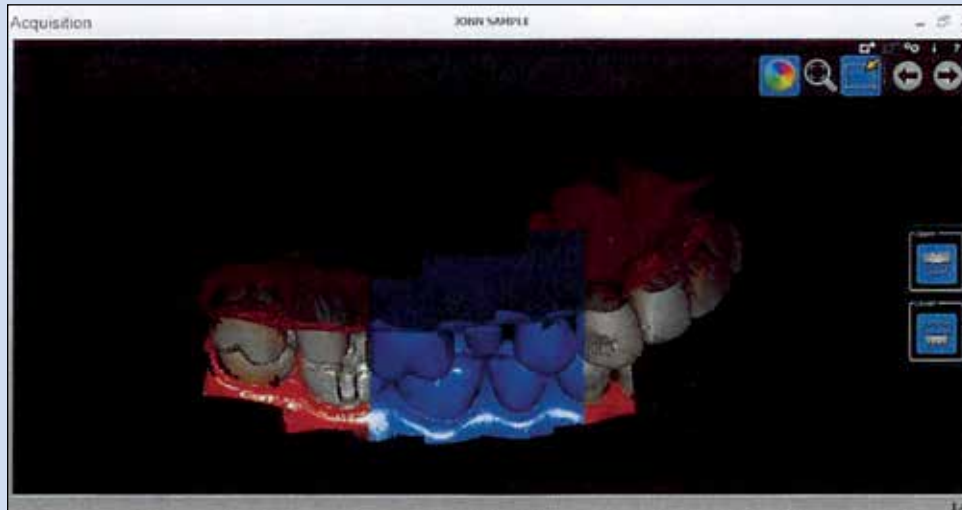

> ⚠️ **Important: Use the mouse to angle the image, and select teeth from above — not from the side. This prevents teeth behind the target teeth from being refined.**

> ⚠️ **Important: You cannot select more than half an arch, or you will not be able to continue with the refinement process.**

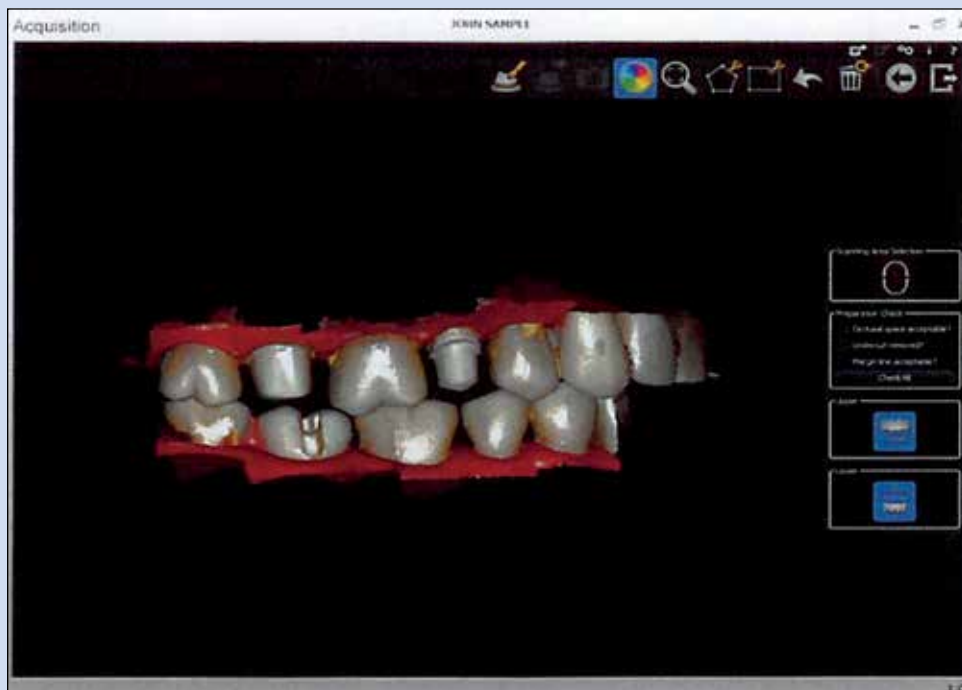Release the mouse button. The selected teeth are highlighted in blue.

Tip: If necessary, you can select additional areas for refinement. Press **Ctrl**, place the cursor over the additional area to refine, and left-click and drag the mouse to select the additional teeth.
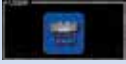
4. Click to refine the image.

5. Manipulate the refined 3-D model using the following methods:

  • Right-click and hold on the 3-D model to move it in the window.

  • Left-click and hold on the 3-D model to rotate it.

  • If your mouse has a scroll wheel, use the wheel to zoom in or zoom out on the 3-D model.

  • Click to scale the model to its best view.

  • Click or to hide the upper or lower jaw. Click the button again to restore the view of the jaw.

  • Click or to select and delete excess soft tissue in the image.

6. If you find holes in the model, click and re-scan the teeth that are missing data.

7. Repeat steps 1 through 6 until you are satisifed with the 3-D model.

8. When you have successfully finished the refinement process, proceed to the preparation check process.

Preparation Check

The preparation check step enables you to verify that the 3-D model is satisfactory before the 3-D model file is sent for the final restoration process.

When performing the preparation check, you must examine the model for each of the following:

  • Occlusal space

  • Undercut

  • Margin line

  • Identify the appropriate arch

  • Identify the appropriate teeth in the preparation area

To complete the preparation check, follow these steps:

1. Examine the occlusal space on the 3-D model and do one of the following:

  • If the occlusal space is acceptable, click the corresponding option in the **Preparation Check** section.

  • If the occlusal space is not acceptable, click and re-scan the affected teeth.

2. Examine the undercut on the 3-D model and do one of the following:

   • If the undercut is acceptable, click the corresponding option in the **Preparation Check** section.

   • If the undercut is not acceptable, make the necessary adjustments to the preparation and then re-scan the preparation area and surrounding teeth.

3. Examine the margin line on the 3-D model and do one of the following:

   • If the margin line is acceptable, click the corresponding option in the **Preparation Check** section.

   • If the margin line is not acceptable, click ⬅ and re-scan the affected teeth.

4. Click ⬭ . The arch diagram is displayed.
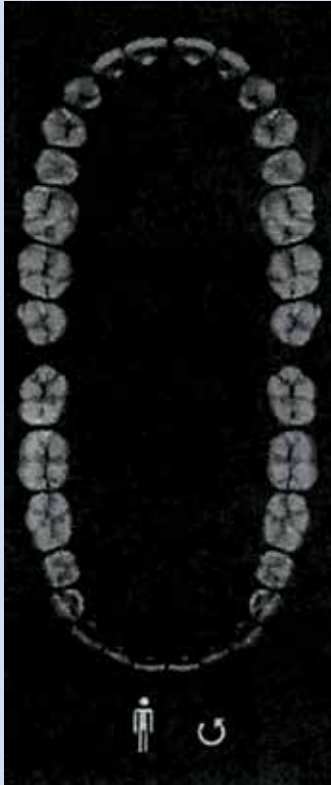
5. Click the adult or child icon to display the appropriate arch.

6. Select the teeth on the arch that were acquired for the 3-D model, including those on the upper and lower jaw.

7. If you are exporting the 3-D model to a lab, you can draw a margin line reference on a snapshot of the 3-D model. See "Drawing Margin Lines" on the next page for instructions on how to draw a margin line.

8. When you are satisfied with the 3-D model, click ⬛ to send the 3-D model to the **Dental Imaging Software**.

Drawing Margin Lines

If you are exporting the 3-D model to a lab, you can draw a margin line reference on a snapshot of the 3-D model that can be exported with the model.

1. Click ![icon] . The **Margin Line** window containing the 3-D model is displayed.

2. Left-click and drag to draw the margin line around the preparation.
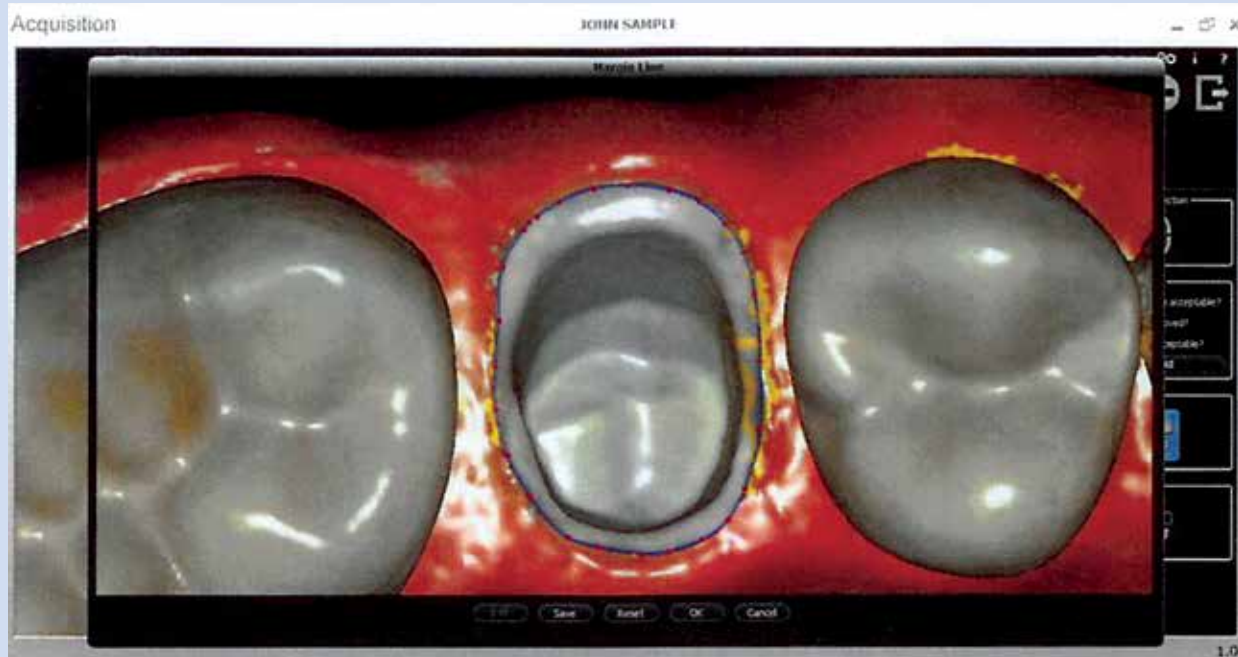
3. When you are finished, click **Save**. You can draw up to five margin line references, which are saved in JPEG format.

4. To review the margin line references, click ![icon] to open the **Margin Line Viewer** window.

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