



SureSmile®

Validating a CBCT Scanner with a Phantom Scan

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Use of CBCT Scanners with SureSmile

The following CBCT scanners are certified for use with SureSmile.

System Model	Configured with
Orthophos® S	Sidexis 4 or later
Orthophos® SL	
Axeos	
i-CAT® Classic	<ul style="list-style-type: none"> • 14-bit Detector Panel • Carbon Fiber Headrest • Xoran version 3.1.62 or later
i-CAT® Next Generation	Software version 1.9.0.19 or later
i-CAT® FLX	<ul style="list-style-type: none"> • SmartScan 2.0 or later • Treatment Studio 5.2 or later
CS 9300® or 9500®	<ul style="list-style-type: none"> • CS Orthodontic Imaging Software version 11.7.0 or later • CS 3D Imaging version 3.4.3 or later
CS 8100 3D®	
ProMax® 3D Classic	<ul style="list-style-type: none"> • Romexis 4.3.0 or later • ProMax 3.7.0 or later
ProMax® 3D Mid	
ProMax® 3F Plus	<ul style="list-style-type: none"> • Romexis 4.3.0 or later • ProMax 3.9.10 or later

If you have a certified scanner and are unsure whether it meets these requirements, please call the manufacturer. See the manufacturer's specifications for space measurements and connection requirements

Prerequisites

The CBCT equipment at your practice must be validated by Dentsply Sirona to work with SureSmile before the Digital Lab can accept CBCT Scans from your practice. To start this process, visit SureSmileU.com.

You can also go to Help Center in the SureSmile software or contact SureSmile Customer Care at 1.888.672.6387 and request a copy of the form.

Tools and Materials Needed

- CT Validation Phantom (ASSY-000435) preassembled
- Plastic or clear glass bowl-shaped container, about 1-quart capacity
- About 16 oz. of tap water

Cybersecurity Guidelines

1. Keep your computer's operating system up to date with patches and fixes.
2. Install and maintain an anti-virus program.
3. Install and maintain a firewall between your LAN and the internet.
4. Avoid installing browser add-ins or plug-ins.
5. Avoid downloading or installing software from unknown sites
6. Create a hard to guess password by using at least 8 characters of mixed case letters, numbers, and symbols.
7. Avoid using common words or phrases.
8. Do not reuse the same password for any accounts.
9. Consider using a password program to manage passwords, such as KeePass or LastPass
10. Do not display your password where others can see it.
11. Change your password periodically, every 60 to 90 days.
12. Logout or lock your workstation when leaving your desk.
13. Avoid clicking on links in email. Instead, go directly to the site and login using your user-id and password.

Introduction

Use these instructions to acquire the data needed for Dentsply Sirona validation of your CBCT Scanner for use with SureSmile.

Instructions are included for the following CBCT scanners:

- Dentsply Sirona: Orthophos S, Orthophos SL, and Axeos
- Imaging Sciences: Classic i-CAT®, Next Generation i-CAT® and i-CAT® FLX
- Carestream Dental CS 9300, 9500 and CS 8100 3D
- Planmeca ProMax® 3D

SureSmile uses a phantom scan to determine whether a CBCT scanner is properly calibrated and capable of providing data for use with SureSmile. This document describes:

- a. how to set up and perform the phantom scan
- b. which data needs to be sent to SureSmile for evaluation

Phantom Scan Process Overview

The SureSmile CT validation phantom (ASSY-000435) is a half-inch-thick acrylic block about 3 inches square that is embedded with precisely positioned steel and ceramic spheres in an arch pattern similar to a dental arch. (Fig. 1)



Fig. 1: SureSmile CT Validation Phantom device

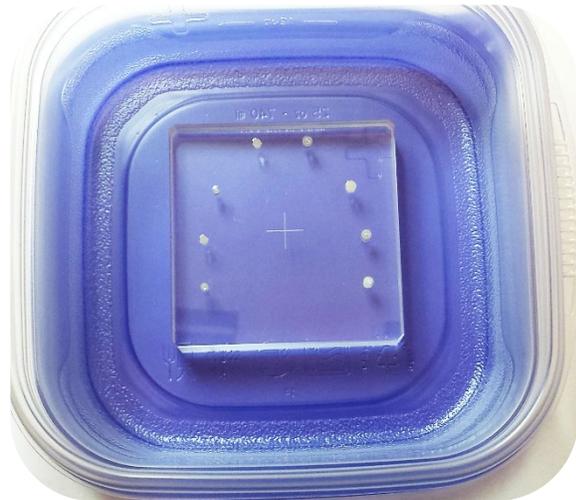


Fig. 2: Overhead view of SureSmile CT Validation Phantom placed flat in plastic bowl

Although detailed instructions for the Dentsply Sirona, Imaging Science, Carestream Dental, and Planmeca scanners follow, here are the basic steps common for the phantom scan process:

1. Place the SureSmile CT Validation Phantom device in a quart-sized plastic container and cover it with tap water so that it is completely submerged. The water serves as a surrogate for a patient's bone and tissue.
2. Position and secure the container on a stand, camera tripod or other stable platform.
3. Align and perform a scan of the phantom device, just as if it were a patient.
4. Reconstruct the scan using the protocols or parameters appropriate for your scanner.
5. Export the multi-file formatted data as a DICOM file to a CD, DVD or network drive.
6. Send the scan data to SureSmile for analysis and verification.

Since Dentsply Sirona already knows the precise location and size of the steel and ceramic spheres, Dentsply Sirona can evaluate the accuracy and completeness of your scanner's data.

Validating your Dentsply Sirona Imaging System

Follow these steps in order to validate Dentsply Sirona scanner:

1. Place the SureSmile CT Validation Phantom device in a quart-sized plastic container and cover it with tap water so that it is completely submerged.

The water serves as a surrogate for a patient's bone and tissue. If the container has a plastic lid, you may put the lid on to keep the water from spilling as shown in the photos below.



2. Position and secure the container on the CT model stand. A makeshift stand, such as a camera tripod, may be used if needed.
 - ✓ Make sure the stand is stable and does not vibrate or move during the scan.
 - ✓ Try to keep the container level.
 - ✓ The water should completely cover the phantom during the scan.
3. Center the plastic container using the scanner's alignment lasers. Center the horizontal and vertical lasers to the center of the plastic container.

NOTE: You may need to raise the model stand and move the gantry forward to bring the container into the field of view.

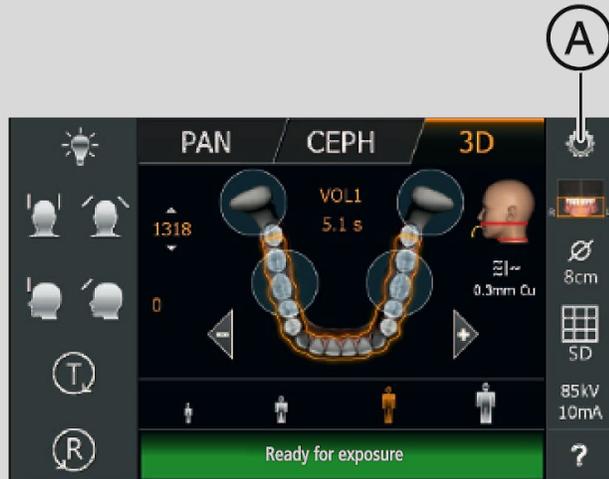
Select Software Settings

Open Sidexis, select or create patient and start a 3D capture. On the EasyPad select the following 3D parameters:

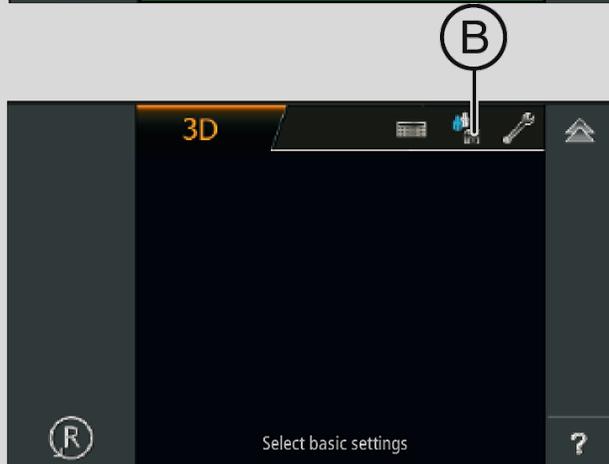
- Vol 1 (8x8)
- HD Mode
- Third Patient Symbol
- Front Rotation Center.

3D exposure mode and patient symbol:

- Touch the toothed wheel (A) in the upper right corner of the touchscreen.



- Touch the diskette symbol (B) at the top of the touchscreen. The start settings are displayed.
- Select HD exposure mode. The selection is highlighted in orange.
- Touch the save symbol (C).



- Select the patient symbol that you want to preset. The selection is highlighted in orange.
- Touch the save symbol (C).

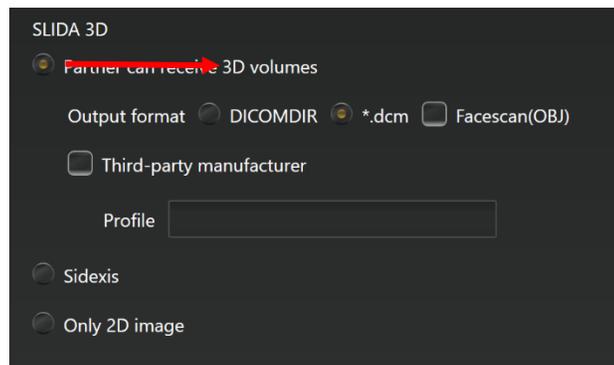
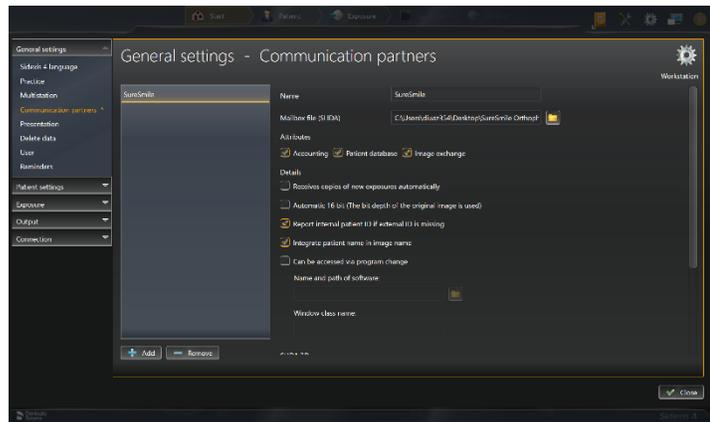
- Take the scan according to the manufacturer instructions.

TIP: Remember to press and hold the exposure button until the end of the acquisition.

- Drain the water from the container. Dry the phantom and store for future use.
- After electronic transfer setup has been completed, open the imaging software and return to the patient chart that was created for the test scan.
- Set up a share folder for CBCT data

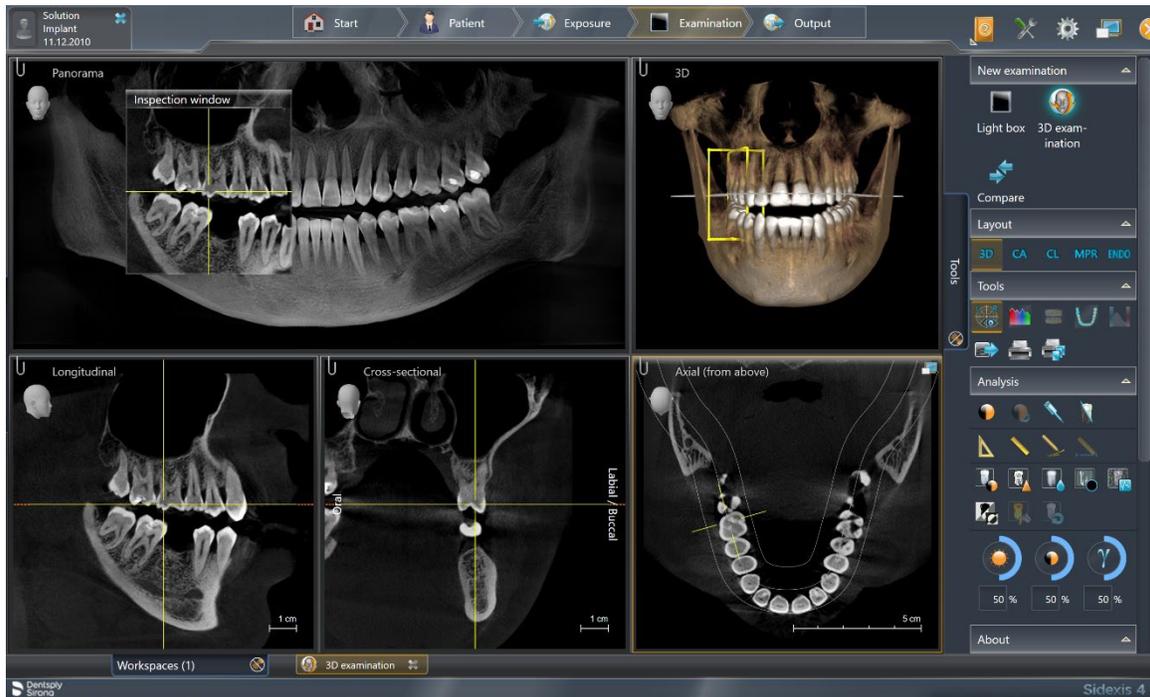
To facilitate SureSmile orders based on CBCT data, export your CBCT scan data from your CBCT system to a folder on your practice network. This folder can be located on the CBCT computer itself, a practice computer, a practice server or on some type of physical media with the Sidexis. You will need to have your IT support provider, or your Network Administrator set this up for you as SureSmile Customer Support cannot make changes to your practice network.

- Within Sidexis, go to General Settings → Communications partner
- Click  to add a communication partner.
- Enter a “SureSmile” as a name
- Locate the **Mailbox file** (SLIDA). Click on the  icon to the right to select the pathway for the mailbox file (Slida)
- Select all the other details as shown in the illustration to your right.
- Click **Close**.
- Restart Sidexis 4.



Export the CBCT Data

1. Within Sidexis 4, open the 3D dataset of interest
2. Open Tools
3. Click on “Send image to communication partner” . The CBCT will be automatically stored within your “SureSmile” folder for subsequent upload.



Validating your Imaging Sciences Scanner

Follow these steps in order to validate Imaging Science scanner:

1. Place the SureSmile CT Validation Phantom device in a quart-sized plastic container and cover it with tap water so that it is completely submerged.
The water serves as a surrogate for a patient's bone and tissue. If the container has a plastic lid, you may put the lid on to keep the water from spilling as shown in the photos below.
2. Position and secure the container on the CT model stand. (Figs. 3 – 4) A makeshift stand, such as a camera tripod, may be used if needed.
 - ✓ Make sure the stand is stable and does not vibrate or move during the scan.
 - ✓ Try to keep the container level.
 - ✓ The water should completely cover the phantom during the scan.



Fig. 3: Classic iCAT®



Fig. 4: Next Generation iCAT®

3. Center the plastic container using the scanner's alignment lasers. Center the horizontal and vertical lasers to the center of the plastic container.

NOTE: You may need to raise the model stand and move the gantry forward to bring the container into the field of view.

4. Start a new scan and select the protocol or parameters for the scan, based on the machine type:
 - **Classic i-CAT®** – Use the **OraMetrix 6cm, 40sec 0.2Voxel Protocol**.
 - **Next Generation i-CAT®:**
 - If using Vision Q version 1.6**, double-click the “SureSmile Filters” Icon on the desktop to activate the SureSmile Reconstruction Filters.
 - If using Vision Q version 1.9**, the SureSmile filters are built-in and no icon is shown on the desktop. If configured, use the **SureSmile Quick Pick**. Otherwise, select:
 - **Field of View:** “Dia 16cm H 8cm” or “8cm Landscape”
 - **Protocol:** 26.9 sec. and 0.2mm Voxel
 - **i-CAT® FLX** – Use the protocol named **SureSmile Dentition** with the default settings of **16 x 8cm, 0.2Voxel, 26.9 sec**
5. Take a preview scan to determine if the Phantom is centered.
Adjust accordingly.

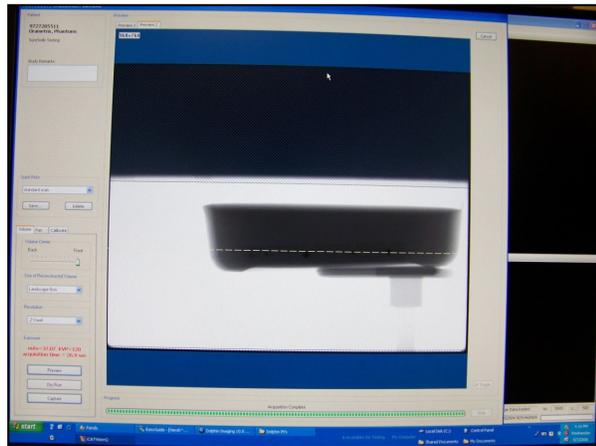


Fig. 5: iCAT® Vision Q showing Preview

6. Take the scan according to the manufacturer instructions.
7. Drain the water from the container. Dry the phantom and store for future use.
8. Export the data in **DICOM, Multi-File** format to the network drive that was created for this purpose.
Name the folder with the site's name and the date of the scan.
9. **Note to FLX users:** The FLX exports the data automatically to a folder at `icat > Imageroot > patient name or ID`.
To determine which folder contains the multi-file data, right-click each folder and check **Properties** to find the folder that contains about 400 files.

Validating your Carestream Dental Scanner

Follow these steps in order to validate Carestream Dental CS 9300[®] or 9500[®] scanner:

1. Place the SureSmile CT Validation Phantom device in a quart-sized plastic container and cover it with tap water so that it is completely submerged.
The water serves as a surrogate for a patient's bone and tissue.
2. Position and secure the container on the CT model stand. A makeshift stand, such as a camera tripod, may be used if needed.
 - ✓ Make sure the stand is stable and does not vibrate or move during the scan.
 - ✓ Try to keep the container level.
 - ✓ The water should completely cover the phantom during the scan.
3. Start a patient record and select the following settings:

For CS 9300

- On the bottom middle on the Program pane, select the Maxillary/Mandibular Exam Type.
- On the Program pane, select the (10cm x 10cm) Image Type.
- On the Patient Pane, select the medium patient size.



- On the Parameter Pane, select: kV: 85, mA: 4 and um (Voxel): 180.



For 9500

- On the Program Pane, select the Medium Field of View (9cm x 15cm).



- On the **Patient Pane**, select the medium patient size.



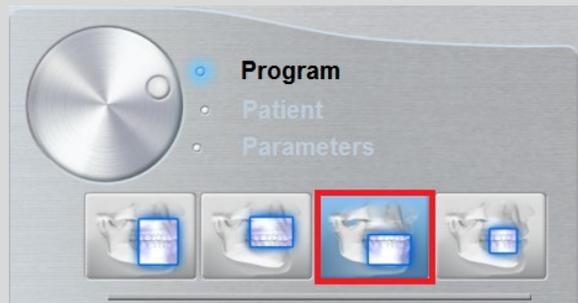
WARNING: Do not choose a large field of view. A large field of view cannot capture the minimum voxel size required by SureSmile.

- On the **Parameter Pane**, select kV: **85**, mA: **4** and um (Voxel): **200**.



For CS 8100

1. Insert the 3D bite block support (A) in the chin rest base.
2. Place the scanning platform (B) onto the 3D bite block support (A).
3. Place the black foam (C) on the scanning platform (B).
4. Place the SureSmile CT Validation Phantom device on the scanning platform
5. Start a patient record and select the following settings:
 - a. On the Program pane, select the **Lower jaw exam** (8 cm x 5 cm mandible)
 - b. On the Patient pane, select the **Medium Adult** patient size



c. On the Parameter pane, select

1. kV = 80
2. mA = 2.00



d. The Selected Parameter Display should read as follows:



4. Take the scan according to the manufacturer instructions.

TIP: Remember to press and hold the exposure button until the end of the acquisition.

5. Drain the water from the container. Dry the phantom and store for future use.

NOTE: Export the data in **DICOM, Multi-File** format to the network drive that was created for this purpose.

6. After electronic transfer setup has been completed, open the imaging software and return to the patient chart that was created for the test scan.

7. Right-click the **3D Volume** in the appointment gallery and choose **Export Object**.

8. When asked where to export the data, browse to the network drive that was created for exporting scans to SureSmile and click **Make New Folder**.

9. Name the folder with the site's name and the date of the scan.

Validating your Planmeca Scanner

Minimum software version of Romexis is 4.3.0

Follow these steps in order to validate Planmeca ProMax® 3D scanner:

1. Place the SureSmile CT Validation Phantom device in a quart-sized plastic container and cover it with tap water so that it is completely submerged.

The water serves as a surrogate for a patient's bone and tissue.

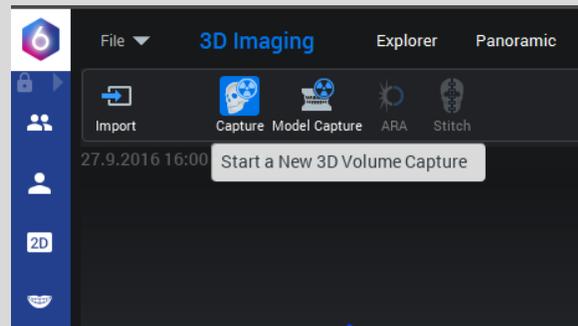
2. Position and secure the container on the CT model stand. A makeshift stand, such as a camera tripod, may be used if needed.

- ✓ Make sure the stand is stable and does not vibrate or move during the scan.
- ✓ Try to keep the container level.
- ✓ The water should completely cover the phantom during the scan.

3. Start a patient record and select the following settings:

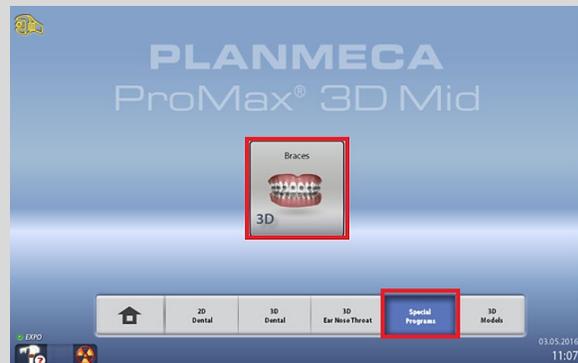
Select Software Settings

- a. Open **Planmeca Romexis**, select or create patient and start a 3D capture.



- b. Select **Special Programs**, then choose Braces

- In addition, this option will **NOT** allow for a sufficient amount of coverage if you plan to extract data from the 3D image for a ceph to be used for SureSmile.



- c. Select patient size. ProMax® gives suitable exposure values automatically.



.Click forward.



- d. Take Scout image

NOTE: Planmeca ProMax® 3D Classic: Lift the adapter to the highest position.



4. Take the scan according to the manufacturer instructions.

TIP: Remember to press and hold the exposure button until the end of the acquisition.

5. Drain the water from the container. Dry the phantom and store for future use.
6. After electronic transfer setup has been completed, open the imaging software and return to the patient chart that was created for the test scan.

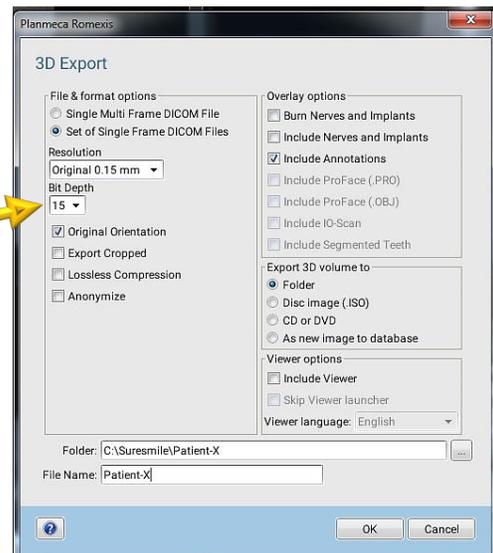
7. Right-click the **3D Volume** in the appointment gallery and choose **Export Object**.

NOTE: Export the data in **DICOM, Multi-File** format to the network drive that was created for this purpose.

Remember to export the phantom scan with 15-bit resolution.

8. When asked where to export the data, browse to the network drive that was created for exporting scans to SureSmile and click **Make New Folder**.

9. Name the folder with the site's name and the date of the scan.



Transferring the Data to Dentsply Sirona

OPTION 1 – for SureSmile Ortho, SureSmile Aligner, future SureSmile Advanced practices or imaging centers

Contact Customer Care to arrange data transfer via a service such as an FTP site, etc.

OPTION 2 – Use the CBCT Validation Scan Upload

Use the CBCT Validation Scan Upload

- Settings
- Administration
- CBCT Validation Scan Upload

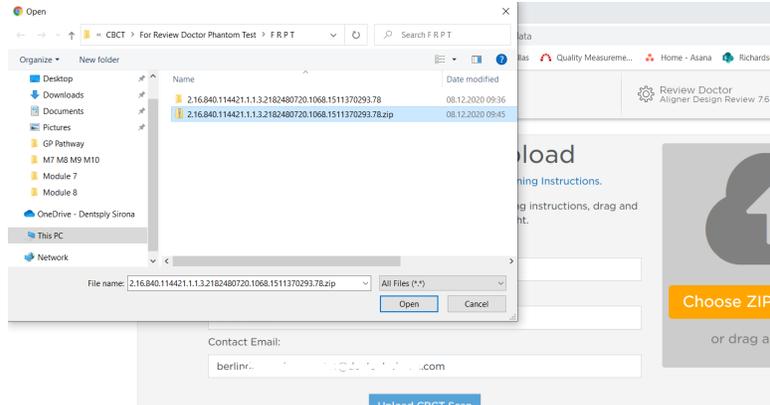
Practice Settings

The screenshot shows a vertical list of settings options. The 'CBCT Validation Scan Upload' option is highlighted with a red rectangular border. The options listed are: Users (Manage practice users and access rights.), Logo (Manage Logo.), Vouchers (View Vouchers available and used.), Access Schedules (Manage Access Schedules.), Access History (View Access Logs.), Custom Reports (Show, edit and generate practice reports.), Receipts (View your practice's previous prepay receipts.), and CBCT Validation Scan Upload (Upload a CBCT scan of the SureSmile Validation phantom. [Scanning Instructions](#)).

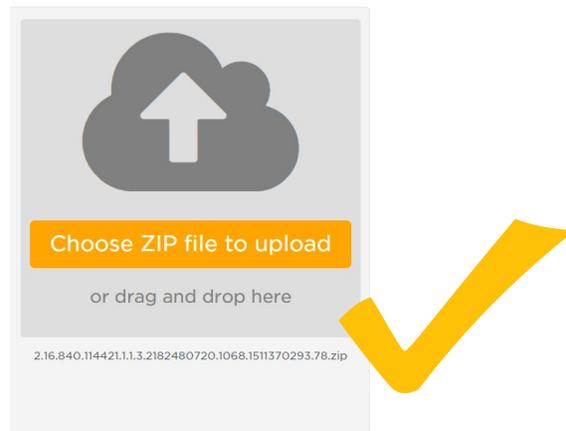
1. Click “Choose ZIP file to upload”

The screenshot shows the 'CBCT Validation Scan Upload' form. It includes a gear icon, the title 'CBCT Validation Scan Upload', and instructions: 'Upload CBCT Scan of the SureSmile validation phantom. [Scanning Instructions](#). After scanning the phantom using SureSmile Phantom Scanning instructions, drag and drop the compressed (Zipped) archive to the target to the right.' Below the instructions are four input fields: 'Contact Person:' (with 'Review Doctor' as a placeholder), 'Contact Phone Number:', 'Contact Email:', and 'berlind...@... .com' as a placeholder. To the right of the form is a large grey box with a cloud and an upward arrow icon, containing a yellow button that says 'Choose ZIP file to upload' and the text 'or drag and drop here'. At the bottom of the form is a blue button that says 'Upload CBCT Scan'.

2. Select the .zip file containing the Phantom Scan data
Click "Open"

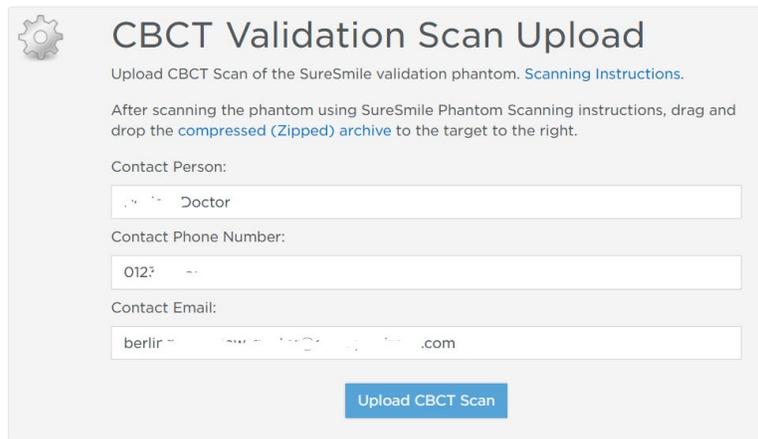


3. Once there is a 'Successful upload' proceed to next step: **Provide Contact details**



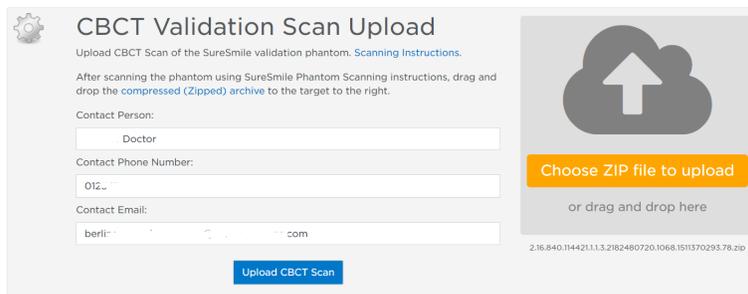
4. Provide contact details:

- Contact person
- Contact phone number
- Contact email address



5. After contact details are entered,

click on **Upload CBCT Scan**



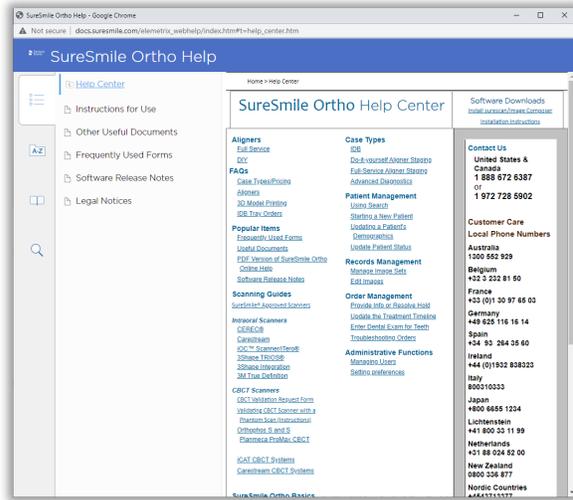
Evaluation of Measurement Data

- Team checks the individual measurements points, confirming correct results
- Test measurement passed: Office can start to use this CBCT machine for SureSmile records
- Deviations: Measurement needs to be repeated. Common mistakes:
 - ✓ Wrong settings
 - ✓ Measurement points not in Field of View
 - ✓ Wrong Export settings

Learning Resources

Search the **Help Center** in SureSmile for:

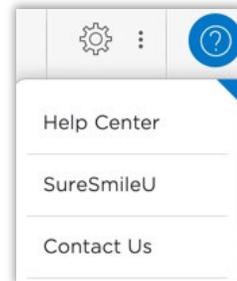
- Online help topics with step-by-step instructions
- Downloads including forms and reference documents
- Video demonstrations of software features



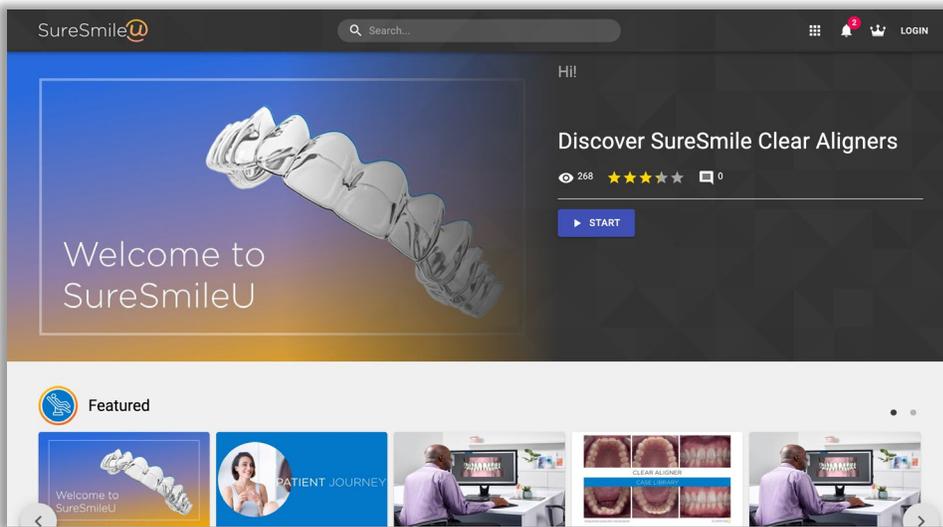
To open the Help Center, click the question mark  button and select **Help Center**.

Visit www.suresmileu.com for online learning resources including:

- Archived SureSmile webinars
- Recordings of presentations from events
- Class materials



To open SureSmileU from the SureSmile software, click the question mark button  and select SureSmileU.



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