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Schick 33 Sensor and USB Interface User Guide

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Safety Issues

Check Schick 33 Sensor and USB Interface before Using Them

Before each usage, check the outer surface of the Schick 33 Sensor and USB Interface for any signs of physical damage or defect. Schick 33 Sensor and USB Interface surfaces should have a smooth finish, with no evidence of chipping or damage. If detected, contact your local distributor of Sirona Dental products for further instructions.

To help ensure proper hygiene and to protect against infectious disease, refer to the Protective Measures section on page 48 of this document and observe all device cleaning and patient protection recommendations specified there.

Operate Schick 33 Sensor and USB Interface as Directed

Always use the Schick 33 Sensor and USB Interface in accordance with the directions and recommendations contained in this User Guide. Do not attempt to modify the Schick 33 Sensor and USB Interface or use it in system configurations not specified in this document.

Do Not Touch Exposed Connectors on Non-Medical Equipment and the Patient at the Same Time

When the Schick 33 Sensor and USB Interface are in use, avoid touching exposed connectors on non-medical electrical equipment and the patient at the same time. The human body is capable of conducting electrical current and may cause a shock hazard to patients if appropriate safety practices are not observed.

RF Interference Considerations

Although the Schick 33 Sensor and USB Interface are designed to provide a reasonable degree of protection from electromagnetic interference, according to IEC International regulations, they must be installed at an adequate distance from electricity transformer rooms, static continuity units, two-way amateur radios and cellular phones. To ensure proper operation, the latter (meaning, electricity transformer

rooms, static continuity units, two-way amateur radios and cellular phones) can be used only at a minimum distance of 5 feet (1.5m) from any part of the Schick 33 Sensor and USB Interface.

Any instrumentation or equipment for professional use located near the Schick 33 Sensor and USB Interface must conform to Electromagnetic Compatibility regulations, to which the EMC tables in this document's Appendix serve as guidance. Non-conforming equipment, with known poor immunity to electromagnetic fields, may not operate properly unless they are installed at a distance of at least 10 feet (3m) and supplied by a dedicated electrical line.

Apply Recommended Procedures for Cleaning the Equipment

Safe and proper operation of the equipment requires following a regular schedule of preventive maintenance. Refer to "Protective Measures" in this document for details.

Do Not Connect Items that are Not Part of the System

Only items specified for use with the Schick 33 Sensor and USB Interface are to be connected to it. The device should not be used adjacent to other equipment that is not part of the system. If, however, use with adjacent equipment is necessary, normal operation should be observed and verified in that configuration.

Installers to Ensure that Schick 33 Sensor and USB Interface Operate Optimally

Installers must ensure that the Schick 33 Sensor and USB Interface provide the user with the optimal use of the equipment. This includes, but is not limited to, ensuring that the system operates as described in this document. To avoid unintentional contact with the USB Interface by the patient, place the USB Interface in a location where accidental contact is prevented. Installers must also ensure that the system presents no physical obstacles or hazards during operation and when not in use. To verify this requirement, installers shall confirm that the Schick 33 Sensor and USB Interface are installed as described in this User Guide and shall perform the appropriate procedures therein.

Ensure Proper System and PC Workstation Installation and Operation

The Schick 33 Sensor and USB Interface have been determined to be in accordance with international safety standards and are deemed suitable for use within the patient area, which extends from the patient for a distance of 5 ft (1.5m). To comply with these standards, do not operate non-medical equipment (such as a PC workstation) inside the patient area. Outside the patient area, the presence of approved non-medical grade equipment and Listed / Approved / IEC 60950-1 certified Information Technology Equipment (ITE) computer equipment is acceptable.

The host computer (PC workstation) should be CE-approved and conform with the Low Voltage [73/23/EC] and EMC Directive [89/336/ERC]. Also, to help ensure optimal performance, ensure that all software programs residing on the workstation are virus-free and have been adequately tested so they will not impact imaging applications after installation.

Only Dentists or Authorized Designees Are Permitted to Operate the System

To ensure the correct use of the Schick 33 Sensor and USB Interface in a clinical environment, for purposes that correspond to its intended design and application, only dentists, or their designees, are authorized to operate the system.

Protect Sensor from Potential ESD Damage

Like other electronic devices, your Schick 33 Sensor is susceptible to electrostatic discharge (ESD), particularly when the device is used in or around carpeted areas or low-humidity environments. During cable replacement, when Sensor contacts are exposed, it is especially important to protect the device from potential ESD damage. Touching a metal surface prior to replacing the Schick 33 cable will reduce the risk of damaging Sensor components by accidental static discharge. Using anti-static floor mats or floor treatments (for example Staticide 2005/2002) will also help eliminate static build-up in your office.

Wait for Appropriate Prompts before Operating X-ray Source

To avoid exposing the patient to unnecessary X-rays, ensure that the CDR exam window viewbox is flashing green (default color) in

AutoTake mode, or that the message, “Waiting to take X-ray,” is displayed before triggering the X-ray Source.

Always Use Sheaths with Sensors

Use Sirona Dental sheaths every time the Schick 33 Sensor is used. **Never use the Sensor without a protective sheath. Never use a damaged sheath. Always dispose of the sheath after every patient.**

Protective sheaths are single-use devices and must not be reused under any circumstance. Reuse of single-use devices/instruments may cause them to become contaminated, compromise their intended function, and result in patient and user infection, injury and/or illness.

Take Appropriate Precautions during X-ray Operation

Always observe the safety guidelines and precautions supplied with your X-ray generator and by local regulatory authorities.

Follow All Instructions to Ensure Cable Replacement Procedures are Performed Correctly

Follow all instructions to ensure the successful replacement of your Schick 33 cables. When performing the cable replacement procedure, it is especially important to tighten the screws that attach the cable to the Sensor by turning them *at least one-quarter revolution clockwise after initial resistance or until they cannot be turned any further*. An improperly attached cable may cause an intermittent connection and prevent the Sensor from operating effectively. Refer to Section 6, Cable Replacement, on page 45, for complete instructions.

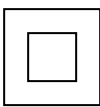






Product Manuals from Sirona Dental

The contents of this manual are subject to change without prior notice. For the latest version of this user guide and other product manuals from Sirona Dental, consult our website: www.schickbysirona.com.

Explanation of Symbols

Sirona Dental products display a number of markings which indicate compliance with regulatory requirements or which provide information in accordance with applicable technical standards.

Symbols and Descriptions

SYMBOL	DESCRIPTION
	Indicates Class II equipment in accordance with applicable medical device safety standards (IEC/EN/UL 60601-1)
	Indicates Type BF equipment in accordance with applicable medical device safety standards (IEC/EN/UL 60601-1)
	Indicates an attention to users to consult accompanying documents (this User Guide) for more information
	Indicates that the Schick 33/Elite USB Interface conforms to European Union Medical Devices Directive (MDD) 93/42/EEC
	Indicates that the Schick 33 Sensor conforms to European Union Medical Devices Directive (MDD) 93/42/EEC
	Indicates that this product meets North American safety standards. The TUV mark is a Nationally Recognized Testing Lab (NRTL) marking and indicates conformance with UL 60601-1 and CAN/CSA STD C22.2 NO 601.1-M90
	Indicates that in the European Union, at the end of product life this device must be disposed of in accordance with the requirements of the Waste Electrical and Electronic Equipment (WEEE) directive 2002/96/EC

Label Location



Schick 33/Elite USB Interface



Schick 33 Sensor

Waste Electrical and Electronic Equipment

Background

The European Union's Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) has been implemented in member states as of August 13, 2005. This directive, which seeks to reduce the waste of electrical and electronic equipment through re-use, recycling, and recovery, imposes several requirements on producers. Sirona Dental and its Dealers are committed to complying with the Directive.

WEEE Marking

All Schick products subject to the WEEE Directive and shipped after August 13, 2005 will be compliant with the WEEE marking requirements. These products will be identified with the “crossed-out wheeled bin” WEEE symbol shown below, as defined in European Standard EN 50419, and in accordance with WEEE Directive 2002/96/EC.



This “crossed-out wheeled bin” symbol on the product or its packaging indicates that this product must not be disposed of with other unsorted municipal waste. Instead, it is the user's responsibility to dispose of Electrical and Electronic Equipment (EEE) by handing it over to a designated collection point for the reuse or recycling of waste electrical and electronic equipment. The separate collection and reuse or recycling of Electrical and Electronic waste equipment will help to conserve natural resources and ensure that it is recycled in a manner that protects the environment and human health. For more information about where you can drop off your waste equipment for recycling, please contact your local officials.

Reporting

According to the WEEE Directive, Sirona Dental or its Dealers will ensure that information needed to calculate the financial obligations with respect to EEE products will be provided as required.

WEEE from Users other than Private Households

According to the WEEE Directive, Sirona Dental or its Dealers will fulfill its obligations for the management of WEEE from users other than private households.

Furthermore, as required by the WEEE Directive, in order to determine unequivocally when the equipment was put on the market, the manufacturer's date is placed on the equipment.

Information for Reuse Centers, Treatment and Recycling Facilities

As required by the WEEE Directive, Sirona Dental or its Dealers will provide reuse, treatment, and recycling information for each type of new EEE put on the market within one year of the date in which the equipment is put on the market.

Information will include the different EEE components and materials as well as the location of substances in these items. The information will be provided as a printed document or in electronic media (on CD-ROM or by web download, for example)

Schick 33 Sensor and USB Interface



Schick 33 Sensor with Schick 33/Elite USB Interface and USB Cable

1. Overview

1.1. Purpose

The Schick 33 Sensor and USB Interface represent the latest advances in our intraoral sensor technology, including:

- High resolution image acquisition
- New Sharpen slider for Schick 33 images
- Task-based user profiles
- Like CDR Elite Sensors, no separate calibration disks are required and serviceable Sensor cables are standard.

1.2. Indications for Use

The Schick 33 system is intended for any dental practice that uses X-ray equipment for intraoral diagnostic purposes. It can be used by trained dental professionals for patients receiving intraoral X-ray examinations and produces digital images that can be displayed, enhanced, printed, and saved.

1.3. System Description

The Schick 33 Sensor connects to the Schick 33/Elite USB Interface, which is connected to a compatible PC workstation via a USB A-B cable (supplied separately). The workstation runs a compatible Windows operating system and also provides the power source for the device. Additional details on the PC workstation may be found in Section 1.5 on page 3. Additional details on the USB cable may be found in Section 2.1 on page 5.

Support for the Schick 33 Sensor is provided by compatible software programs such as CDR DICOM for Windows, EagleSoft, and Patterson Imaging.

The Schick 33/Elite USB Interface includes a detachable holder so the device can be mounted either by screws to a wall or to another stable surface. Details on installing the Schick 33/Elite USB Interface holder may be found in Section 2.2 on page 6.

1.4. Replaceable Cable

The Schick 33 Sensor imaging system is designed to meet the practical, timely needs of dental professionals.

For this reason, Schick 33 Sensor sizes 0, 1 and 2 support a replaceable-cable design that enables customers to make immediate, in-office replacements of failed cables. Manufactured for safe and reliable operation, the replaceable cable provides appropriate strain relief, molded protection from electronic contacts and components, and easy installation.

Details on replacing Schick 33 cables may be found in Section 6 on page 45.

1.5. PC Workstation Description

The PC workstation connects to the Schick 33/Elite USB Interface via USB cable (supplied separately) and serves as the host for CDR DICOM or other compatible imaging software products. The workstation provides the capability to display, manipulate, store, and print images acquired from Schick Sensors.

Getting the best results from your CDR system begins with having a computer system suitable for capturing and displaying intraoral images. *For optimum performance*, we recommend the following:

1.5.1. Client or Standalone

- Windows 7 and Windows 7 x64, Windows Vista SP2, and Vista x64, XP Pro SP3 and XP Pro x64
- Intel i7 or equivalent
- 4 GB RAM
- 256 MB graphics card
- 500 GB hard drive (practice-specific, depends on number of patients)
- Intel USB 2.0 or 3.0.

1.5.2. Server

- Windows Server 2003 R2 (SP1 minimum) and Windows Server 2008 R2
- TCP/IP networking protocols (for DICOM Servers)
- 4 GB RAM (recommended)
- 1 TB (recommended).

NOTE: To achieve maximum image transfer-to-display time, we recommend quad-core processors, 8 GB RAM, Windows 7 operating system, and 512 MB graphics card. Recommended minimum display resolution is 1280×1024.

1.6. Relationship with CDR Elite Sensors

Schick 33 represents the next step in imaging technology innovations from Sirona Dental. Extending the forward evolution from CDR Elite, Schick 33 is the result of changes made inside the Sensor itself, in the enclosure around the Sensor, and performance enhancements incorporated in CDR DICOM software.

To benefit from new imaging features designed specifically for Schick 33 Sensors, customers will need to upgrade to the latest software (CDR 5.0 and higher). This software version is fully compatible with CDR Elite Sensors, as well as our other sensor and USB products.

Like CDR Elite Sensors, Schick 33 Sensors are detected automatically by CDR software when connected to a PC workstation (*by the AutoDetect feature, as described in Section 3.11 on page 27*). Also, the Schick 33/ Elite USB Interfaces used with CDR Elite Sensors will work as well with Schick 33 Sensors. Either Sensor will operate just by connecting it.

Please note that the Schick 33/Elite USB Interface enclosure is specifically designed for Schick 33 Sensors and CDR Elite Sensors and will not accommodate any other sensor type for which it was not intended.

2. Hardware

2.1. Connecting Cables to the Schick 33/Elite USB Interface

IMPORTANT! Do not connect the Schick 33/Elite USB Interface and cable to your computer until after you have successfully run the setup program. Procedures for installing these files are supplied in Section 3, "Software", on page 8.



The USB cable used with the device has a Series "A" USB plug on one side and a Series "B" USB plug on the other. The "A-type" plug connects to any available USB port on the computer. The "B-type" plug connects to the Schick 33/Elite USB Interface.

Cable part numbers and lengths can be found in Table 5 on page 51, as well as other orderable parts for Schick 33.

IMPORTANT! For normal operation of your Schick 33 system and to ensure compliance with regulatory EMC and EMI standards, use only the USB cables described and specified for your system.

An illustration of the Schick 33 Sensor and USB Interface are shown in Figure 1 (below). For a description of cable connections to the device, refer to Table 1 (below).

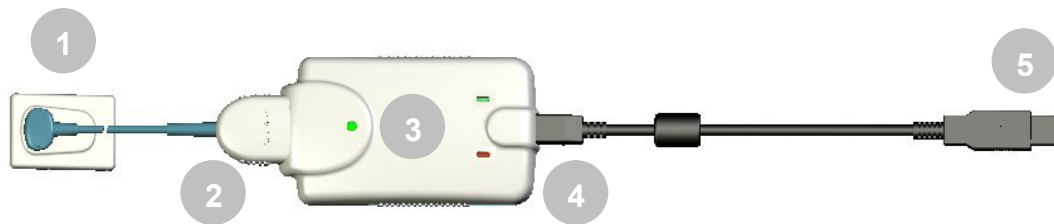


Figure 1. Schick 33/Elite USB Interface Cable Connections

Table 1. Description of Schick 33/Elite USB Interface Cable Connections

NUMBER	DESCRIPTION
1	Schick 33 Sensor
2	Schick 33 Sensor cable connection
3	Schick 33/Elite USB Interface
4	USB cable connection ("B" connector end of USB cable connects here)
5	USB cable connection ("A" connector end of USB cable connects to PC)

2.2. Installing the Schick 33/Elite USB Interface Holder

The Schick 33/Elite USB Interface holder is designed for several mounting options: (1) Wall-mounted with fastening hardware, or (2) Attached to a wall or other acceptable bonding surface with Velcro adhesive. When installing your Schick 33/Elite USB Interface choose a location that offers easy access and visibility during patient exams.

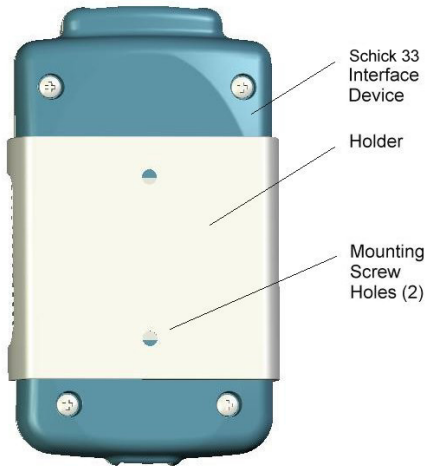


Figure 2. Schick 33/Elite USB Interface Holder

2.2.1. Wall-Mounting Option (with Fasteners)

IMPORTANT! When choosing a location for the holder, make sure there are no electrical wires or connections that could be contacted accidentally when drilling.

Install the holder by fastening it to a wall or other flat surface, as follows:

1. Remove the Schick 33/Elite USB Interface from its holder.
2. Position the holder on a smooth stable flat surface. Using the holes on the back of the holder as guides, fasten the holder securely to the wall using 2 (#4) dry wall screws (supplied) or other hardware appropriate to the mounting surface.

2.2.2. Wall-Mounting Option (with Adhesive)

Install the Schick 33/Elite USB Interface by attaching it with Velcro adhesive to a wall or other flat surface, as follows:

1. Remove the Schick 33/Elite USB Interface from its holder.
2. Cut and trim a piece of Velcro adhesive (not supplied) to the size of the back of the Interface. Remove one half of the tape and attach it to the Schick 33/Elite USB Interface.
3. Locate an accessible, stable, and flat surface for the interface. Apply the other half of the Velcro adhesive in that location and attach the interface securely.

3. Software

3.1. What You Will Need to Complete this Section

To expedite software installation, please have the following items available:

- CDR DICOM 5 Software CD
- Schick 33/Elite USB Interface Driver CD
- Schick 33/Elite USB Interface
- USB 2.0 A-B Cable (supplied separately)

3.2. Before You Install CDR DICOM 5 Software

Before installing CDR DICOM 5 software, exit the CDR DICOM program if it is open. Section 3.4 on page 9 describes the software installation procedure.

3.3. Before You Install the Schick 33/Elite USB Interface Driver

IMPORTANT! Please do not connect the Schick 33 Elite USB Interface and USB cable to your computer until after you have installed the device driver. Procedures for installing these files can be found on the following pages.

Before connecting the Schick 33/Elite USB Interface, you will need to install the device driver for it. You must install this driver successfully to ensure proper operation of your Schick 33/Elite USB Interface.

If you have a previous version of the driver for the Schick 33/Elite USB Interface, please uninstall it. Section 3.6 on page 17 describes the driver uninstallation procedure.

Section 3.7, Installing the USB Driver, on page 18, describes the driver installation procedure for Windows 7 (installation on other Windows operating systems is similar).

If you are not sure which operating system is installed on your computer, right click on the My Computer icon on your desktop and select Properties. (Pressing the Windows Start (⊞) and Break keys will also display System Properties.)

3.4. Installing CDR DICOM 5 Software

Installing CDR DICOM 5 software will uninstall older versions automatically. For standalone installations, install both the Server and the Client.

3.4.1. Server

STEP 1

- A. Exit the CDR DICOM program if open.
- B. Insert the CDR DICOM 5 disk into your DVD drive.
- C. Click **Install CDR Server** when the start page is displayed. *(If the start page does not display, browse the disk for the Server folder and double-click the CDR DICOM Server Setup file.)*
- D. Click **Install** to add the CDR Prerequisite Checker and, if prompted, Microsoft SQL Server files and other updates.

Depending on your system, the installation of several prerequisite programs may be required and these may take several minutes to install.

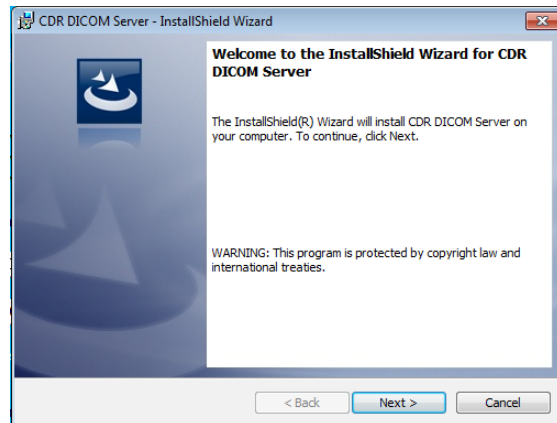
For a successful installation of CDR, it is necessary for these prerequisites to install successfully as well, so allow the installation to continue until complete.

- E. Restart your laptop or desktop PC, if prompted.



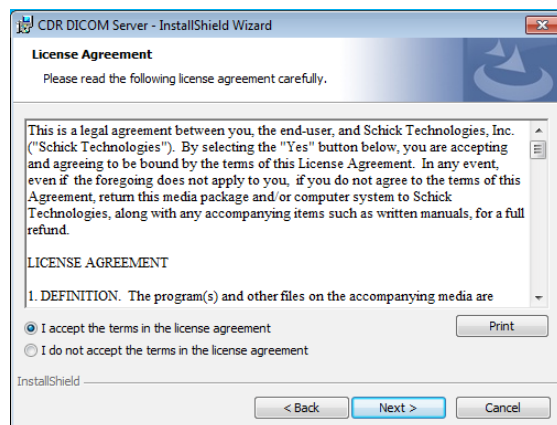
STEP 2

Click **Next** at the CDR DICOM Server Welcome screen.



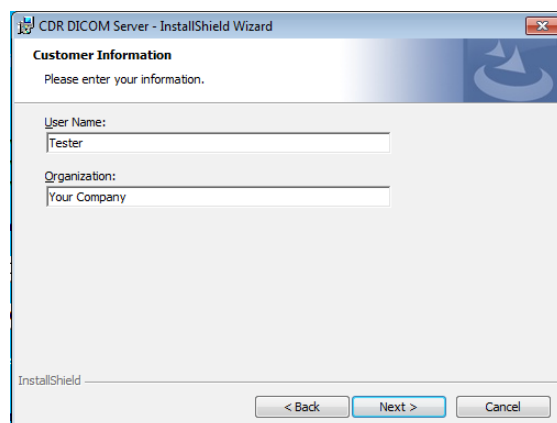
STEP 3

Click **Next** after agreeing to the software license agreement.



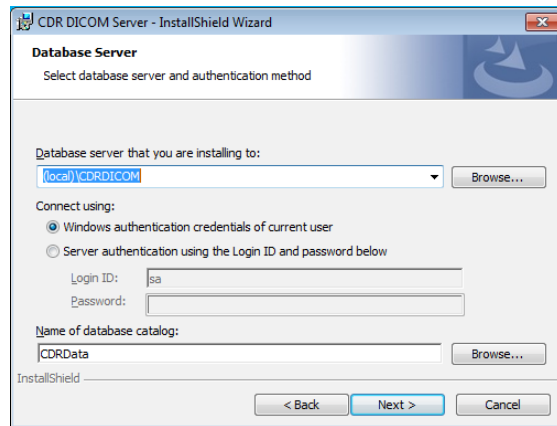
STEP 4

Click **Next** after entering customer information.



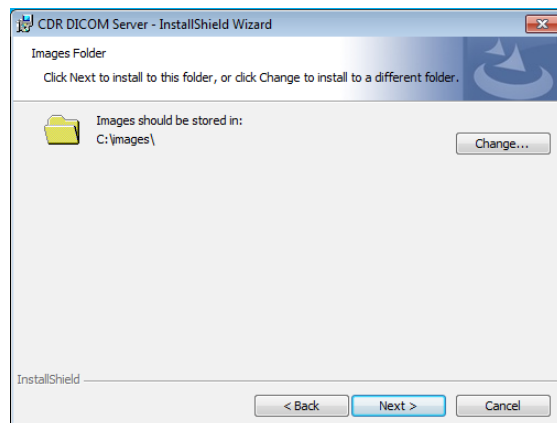
STEP 5

Click **Next** after choosing where your database server is located (for many users this will be (local)\CDRDICOM) and login preference.



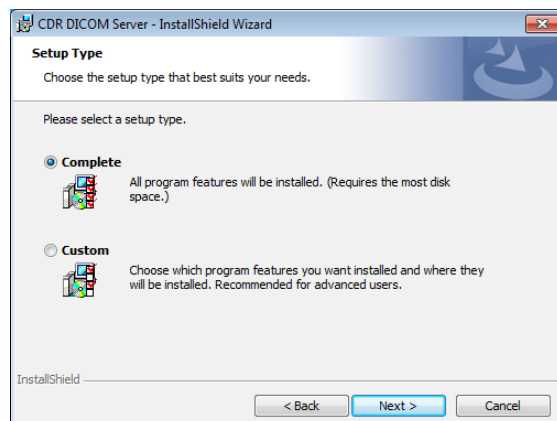
STEP 6

Click **Next** after choosing the folder where your images will be stored (typically, this is "C:\images", but if your images are stored at a different location, select it here).



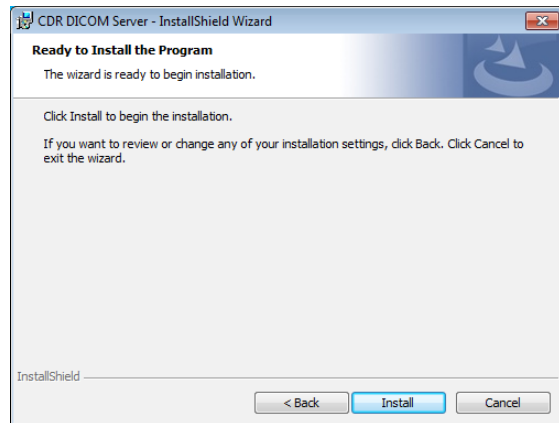
STEP 7

Click **Next** after choosing the type of setup (Complete).



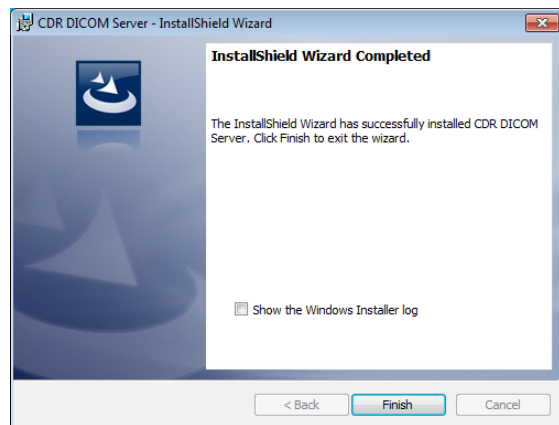
STEP 8

Click **Install**.



STEP 9

- A. Click **Finish**.
- B. Continue with the Client setup, described in the next section. If you are installing Client software at a different workstation, remove the CDR DICOM 5 disk and place it in the DVD drive of that system.



3.4.2. Client

STEP 1

- A. Click **Install CDR 5.0 Client** when the start page is displayed.

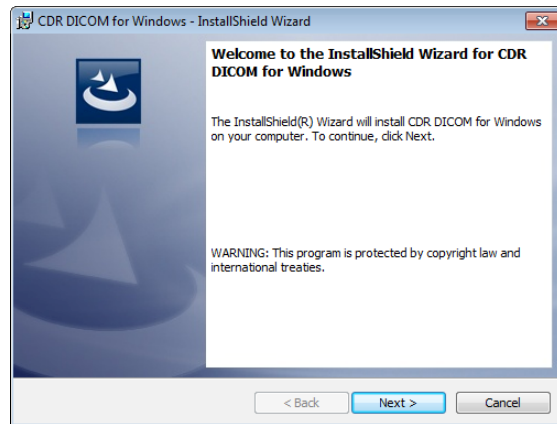
(If the start page does not display, browse the disk for the Client folder and double-click the CDR DICOM Client Setup file.)

- B. If prompted to install any updates, click Install.
- C. Restart your laptop or desktop PC, if prompted.



STEP 2

Click **Next** at the CDR DICOM Client Welcome screen.



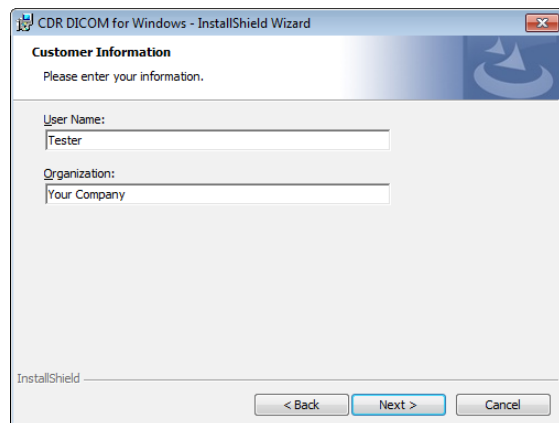
STEP 3

Click **Next** after agreeing to the software license agreement.



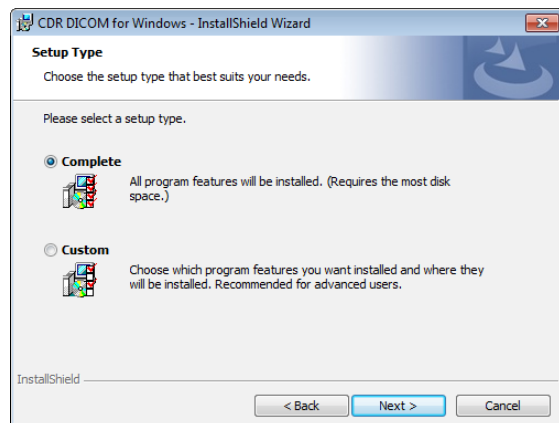
STEP 4

Click **Next** after entering customer information.



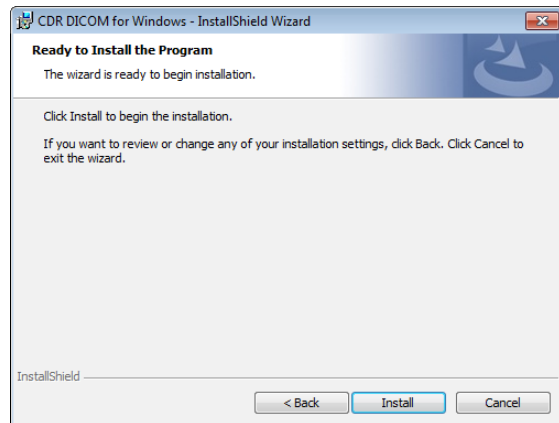
STEP 5

Click **Next** after choosing the type of setup (Complete).



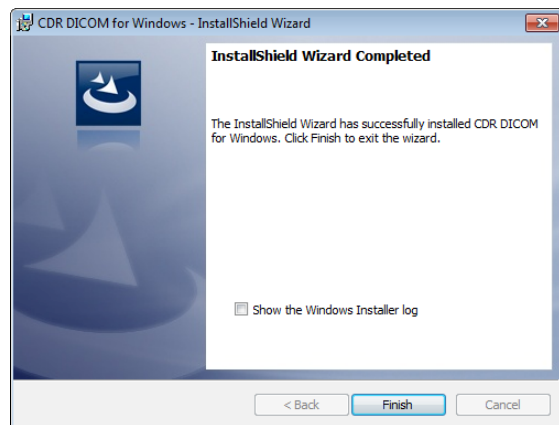
STEP 6

Click **Install**.



STEP 7

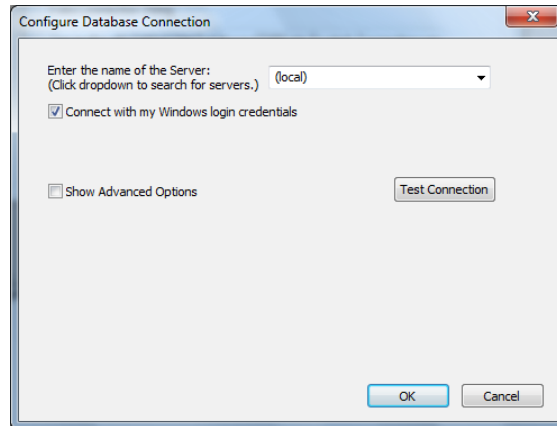
- A. Click **Finish**.
- B. Remove the CDR DICOM 5 disk.



3.5. Start CDR DICOM and Configure Database

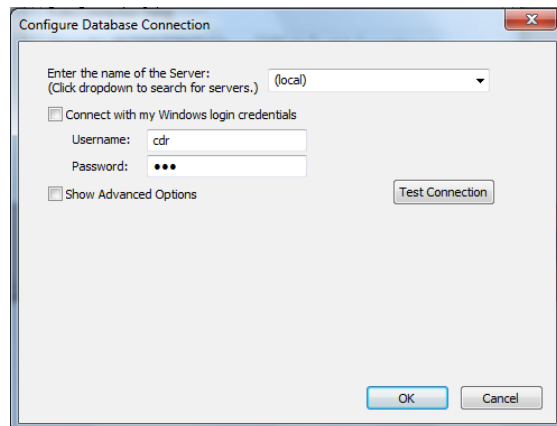
STEP 1

- A. Start CDR DICOM by double-clicking on the desktop shortcut. The Configure Database Connection dialog will display.
- B. If you are connecting to an external server, (for example, your images are stored on a workstation different from the one you're at currently), click on the down arrow and select your server from the list..
- C. Select the option, "Connect with my Windows login credentials."
- D. Click the **Test Connection** button.
 - If the connection is good, click **OK**. Installation is complete.
 - If the connection fails, continue with the next step.



STEP 2

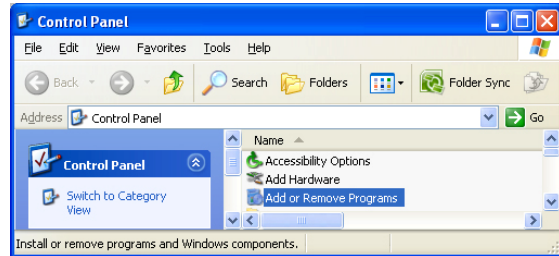
- A. De-select the option, "Connect with my Windows login credentials."
- B. Type in "cdr" (without quotes, all lower case) for the user name and the password.
- C. Click the **Test Connection** button. When the connection is good, click **OK**.



3.6. Uninstalling a Previous Version of the USB Driver

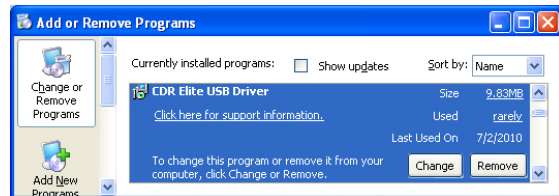
STEP 1

- A. Exit CDR DICOM (or EagleSoft or Patterson Imaging).
- B. Verify that the Schick 33/Elite USB Interface is NOT connected to laptop or desktop PC. If connected, disconnect the Schick 33/Elite USB Interface by unplugging the USB cable.
- C. Click Windows Start > All Programs > Control Panel and open the Add or Remove Programs item. *(In Windows 7, this group is called Programs and Features.)*



STEP 2

- A. Browse for the CDR Elite USB Driver and select it. If no entry for the CDR Elite USB Driver is found, close the Control Panel and skip to the last step.
- B. Click **Remove**. *(In Windows 7 this action is called Uninstall / Change.)*
- C. Close the Control Panel.
- D. Continue with the appropriate procedure in the next section to install the latest USB driver.

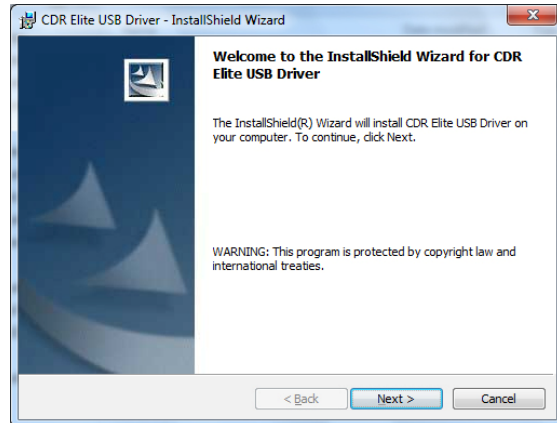


3.7. Installing the USB Driver

PLEASE NOTE: Installation on other operating systems is similar to Windows 7, described below.

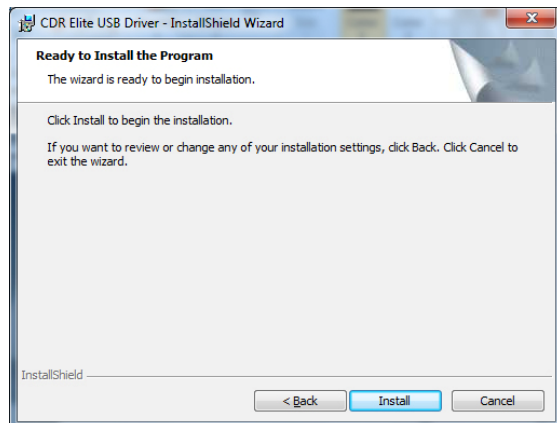
STEP 1

- A. Insert the Schick 33/Elite USB Interface Driver disk into your CD or DVD drive.
- B. Click **Run setup.exe** when prompted at the Autoplay message window.
- C. Click “Allow” when the message, “An unidentified program wants access to your computer” is displayed.
- D. Click **Next** to begin the setup process.



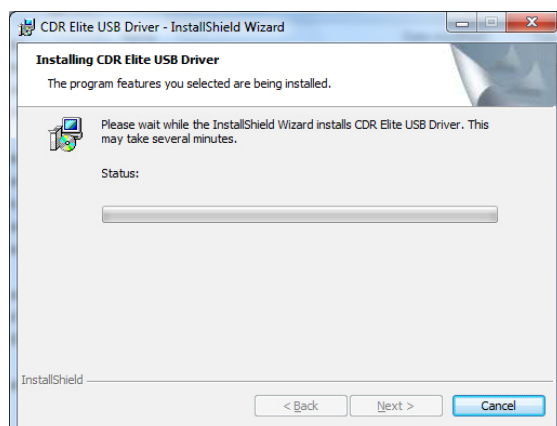
STEP 2

Click **Install**.



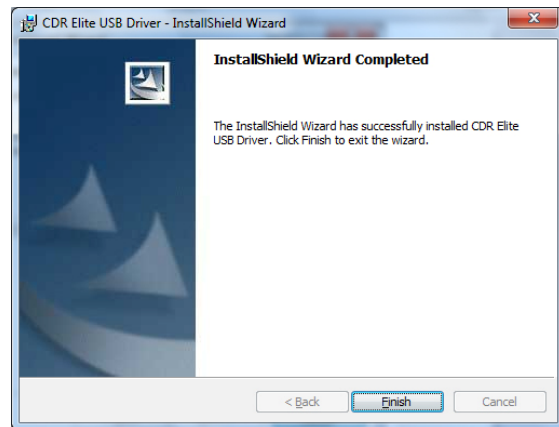
STEP 3

Setup will copy the drivers to your workstation.



STEP 4

- A. Click **Finish**.
- B. Connect the Schick 33/Elite USB Interface to your computer. When you do, you will receive a momentary message saying that new hardware has been installed and is ready for use.
- C. Remove the Schick 33/Elite USB Interface Driver CD.
- D. Continue with Section 5 on page 39 for details on using the Schick 33 system.



3.8. Sensor Calibration File Installation

Calibration data for Schick 33 Sensors is programmed directly into the Sensor so a separate calibration disk is no longer needed.

To install the calibration file, perform the following steps.

1. Verify that all Schick 33 system cables are connected securely.
2. Start CDR DICOM for Windows. CDR DICOM will automatically detect the Sensor and determine whether a calibration file has been installed for this Sensor previously. If the calibration file was not installed already, it will be copied from the Sensor itself.
3. A message will be displayed momentarily, "Reading sensor calibration file . . . please wait." Installation is completed in approximately 10 seconds.

3.9. High Resolution Image Acquisition

Schick 33 Sensors are capable of acquiring images in either high-resolution mode or normal mode. High-resolution mode, which is unique to Schick 33 Sensors, captures a level of detail of 33 LP/mm: higher than that found in other Sensor products currently available.

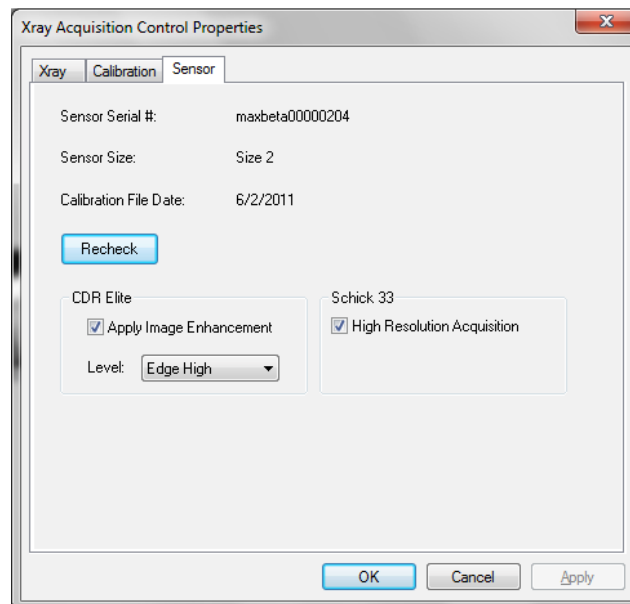
The increase in image information in high-resolution mode means also that the transfer from acquisition-to-display time may be higher. On newer PCs with multiple processors this difference is negligible. High-resolution images are also physically larger in terms of their file sizes: approximately 8 MB / image with a size 2 Sensor.

3.9.1. Enabling High Resolution Acquisition

Taking high-resolution images with Schick 33 Sensors is enabled by default (High Resolution Acquisition option selected). If this option has been turned off and you wish to re-enable it, open the X-ray acquisition options page and click on the High Resolution Acquisition checkbox. (In CDR DICOM, browse to the System menu, select X-ray Settings, click on the Sensor tab, and mark the High Resolution Acquisition checkbox. Click Apply, and click OK to close the X-ray acquisition options page.)

3.9.2. Disabling High Resolution Acquisition

Taking high-resolution images can be disabled at any time by clicking the “High Resolution Acquisition” checkbox to remove the checkmark. When the checkbox is cleared, Schick 33 Sensors will acquire images in normal resolution.



3.10. Sharpen and High-Resolution Images

Sharpen is a tool for image enhancement developed specifically for Schick 33 images. Sharpen uses a combination of different functions to optimize Schick 33 images for detail and contrast. It is applied automatically to every image taken with Schick 33 Sensors.

To adjust image sharpness dynamically, a Sharpen slider and a Sharpen cursor are available. The slider can be shown or hidden. It can also be positioned at the Top or Bottom areas outside the image, or as an Overlay on the image.

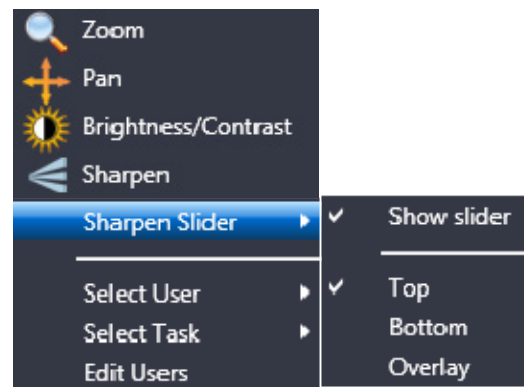


Figure 3. List of New and Updated Features for High-Resolution Images

3.10.1. Showing the Sharpen Slider

To show the Sharpen slider (if currently hidden), perform the following steps:

1. Move your cursor over a high-resolution image (taken with a Schick 33 Sensor).
2. Press the right-mouse button to open a short menu.
3. Select Sharpen Slider.
4. Click on Show Slider (this will *apply* the check mark and *display* the slider).

3.10.2. Hiding the Sharpen Slider

Although the Sharpen slider is shown by default when high-resolution images are displayed, it can also be hidden to maximize the image area inside the Zoom window. Please note that even with the slider hidden, image sharpness can be adjusted dynamically using the Sharpen cursor, by following the steps in the next paragraph.

1. Move your cursor over a high-resolution image (taken with a Schick 33 Sensor).
2. Press the right-mouse button to open a short menu.
3. Select Sharpen Slider.
4. Click on Show Slider (this will *remove* the check mark and *hide* the slider).

3.10.3. Positioning the Sharpen Slider

To position the Sharpen slider, perform the following steps:

1. Move your cursor over a high-resolution image (taken with a Schick 33 Sensor).
2. Press the right-mouse button to open a short menu.
3. Select Sharpen Slider.
4. Verify that the Show Slider item is checked. If checked, continue with the next step. If unchecked, click on this item and repeat steps 1 through 3.
5. Click on the position in the Zoom Window where the slider will be shown (Top, Bottom, or Overlay). For examples, see the following figures.



Figure 4. Sharpen Slider (Top Position)



Figure 5. Sharpen Slider (Bottom Position)



Figure 6. Sharpen Slider (Overlay Position)

3.10.4. Using the Sharpen Slider

The Sharpen slider is used to adjust image sharpness dynamically, as additional enhancement to the automatic sharpening that occurs when high-resolution images are displayed. A Sharpen percentage is shown on the slider and serves as an easy way to remember the specific Sharpen settings that are most useful to you.

User profiles, described in detail in Section 3.11 on page 27 can save Sharpness settings for various commonly-performed clinical tasks such as Endodontic, Periodontic, General Dentistry, and Restorative. For example, once you have set a particular Sharpness setting for a clinical task, the slider will move automatically to that position.

Please note that manual adjustments of image sharpness by using the Sharpen slider or the Sharpen cursor are not saved with the image.

3.10.5. Using the Sharpen Cursor

Adjusting the slider dynamically is one way of varying the effects of the Sharpen tool. It is also possible to use the Sharpen cursor to change the amount of sharpening. To adjust image sharpness dynamically by using the cursor, perform the following steps:

1. Move your cursor over a high-resolution image (taken with a Schick 33 Sensor).
2. Press the right-mouse button to open a short menu.
3. Select Sharpen.
4. Press the left-mouse button, which changes the Sharpen icon to a two-arrow cursor.
5. Keeping the mouse button depressed, move the cursor up to increase sharpness.
6. Keeping the mouse button depressed, move the cursor down to decrease sharpness.
7. Sharpen remains active until another tool (like Zoom, Pan, or Brightness / Contrast) is selected.

3.10.6. Using Sharpen with Other Image Enhancements

As Sharpen is applied automatically each time a Schick 33 image is displayed, the Sharpen enhancement cannot be saved with the image in the way that other image tools in the Zoom Window are (like Colorize, Equalize, etc.). For the same reason, Sharpen does not appear on the Change List (*Edit > List All Changes in the CDR Zoom Window*), nor are user adjustments in Sharpen retained when the Zoom Window is closed.

Please note that the image enhancements introduced with the CDR Elite product — Edge High, Edge Low, and Smooth — have no effect on images acquired with Schick 33 Sensors and their effects are effectively ignored. *(They are still available, when enabled, for images taken with CDR Elite Sensors.)*

3.11. Diagnostic Tasks and User Profiles

Schick 33 sensors and supporting software enable the clinician to optimize image presentation to a level appropriate for the diagnostic task being performed. These settings are applied at display time and do not affect the original image data. Diagnostic Task selections can be changed for any image, from one task to another, and back at will.

The different task selections optimize the contrast and brightness of the displayed image to improve visibility of the anatomical structures important for that diagnostic task. Refer to the table below.

In addition to contrast optimization, the visibility of some anatomical structures benefit from additional image sharpening. Selecting any diagnostic task applies an initial level of sharpening to the image. A slider control is available to dynamically change the level of image sharpness in real time. Users also use the slider in conjunction with the “Save As Default” button to change the default sharpen level to their personal viewing preferences for each of the clinical tasks described here.

The table below shows the diagnostic task to select to improve visibility of relevant dental anatomy.

DIAGNOSTIC TASK	OPTIMIZED ANATOMY	SHARPEN DEFAULT (USER CHANGEABLE)
General Dentistry	Balanced for general tooth and bone display	35%
Endodontic	Root apices, pulp chamber, lamina dura, periodontal ligament, cementum	40%
Periodontic	Alveolar and crestal bone, calculus	35%
Restorative	Enamel, Dentin, DEJ, CEJ	50%

To create your own user profile, or to perform other profile actions, complete the steps in the following paragraphs.

3.11.1. How to Add a User Name

1. In the Zoom Window, right-click on an image acquired with a Schick 33 Sensor.
2. Click on the Edit Users menu item.
3. Click on the Add User button.
4. Click inside the New User name text box and type in a user name.
5. Click Close.
6. To verify, right-click on the image again and click on Select User. The new user name will appear in the menu.

3.11.2. How to Edit a User Name

1. In the Zoom window, right-click on an image acquired with a Schick 33 Sensor.
2. Click on the Edit Users menu item.
3. Locate the user name you wish to edit.
4. Double-click on the user name, which becomes an editable text box.
5. Type in a new name for this user.
6. Click Close.
7. To verify, right-click on the image again and click on Select User. The edited name will appear in the menu.

3.11.3. How to Delete a User Name

1. In the Zoom window, right-click on an image acquired with a Schick 33 Sensor.
2. Click on the Edit Users menu item.
3. Select the user name you wish to delete from the list.
4. Click on the Delete user button.
5. Click Close.
6. To verify, right-click on the image again and click on Select User. The edited name will appear in the menu.

3.11.4. How to Edit a Task

1. In the Zoom window, right-click on an image acquired with a Schick 33 Sensor.
2. Click on the Select User menu item.
3. Select a user name from the list.

Note: The [default] name is not editable. To create your own custom profile, add a user name and then perform the following steps

4. Right-click on the image again and click on the Select Task.
5. Choose one of the task categories from the list.
6. Adjust the slider to a level of Sharpening that you feel is appropriate.
7. Click on the Save as default button.
8. When prompted, click Yes to save the new the Sharpen value as the default setting for this task category and this user.
9. To check or compare the Sharpen settings with other user profiles or default values, click on Edit User, which opens the user profile dialog.

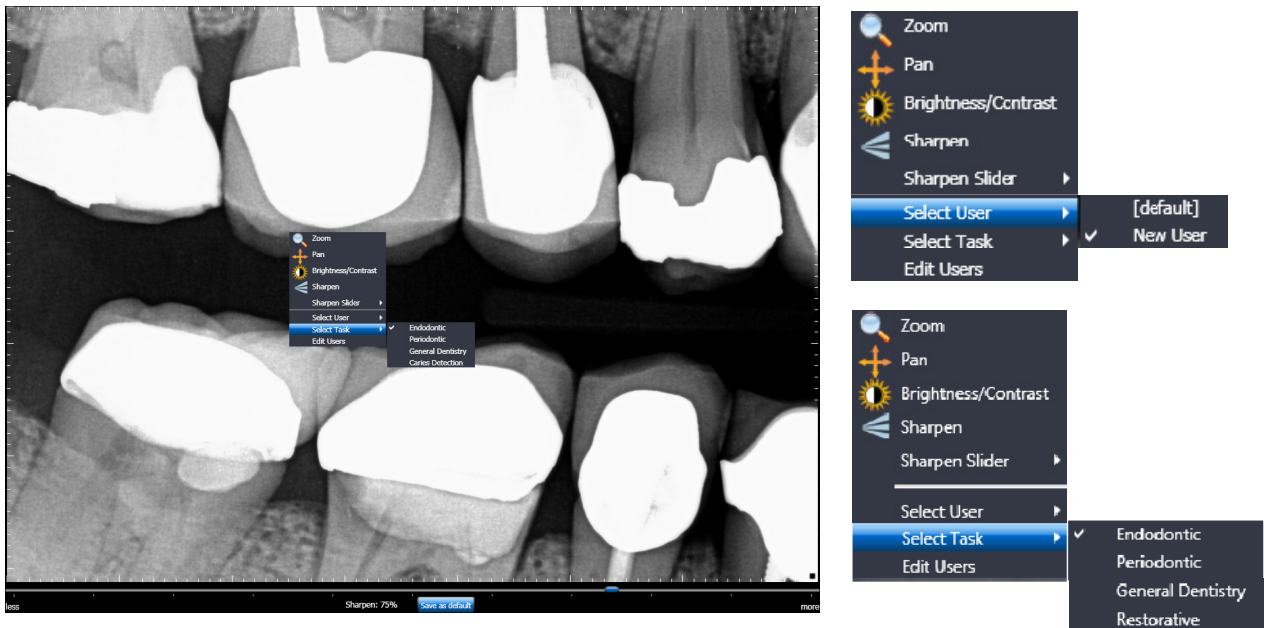


Figure 7. User Profile Menu Selections (shown expanded at right)

3.12.CDR AutoDetect

The CDR AutoDetect feature instantly recognizes when a different Schick USB device is connected — including standard (CDR 2000), high-speed (CDR Remote HS), Schick 33/Elite, and Wireless / SDX interfaces — skipping the step of manually selecting a new Schick USB device before using it.

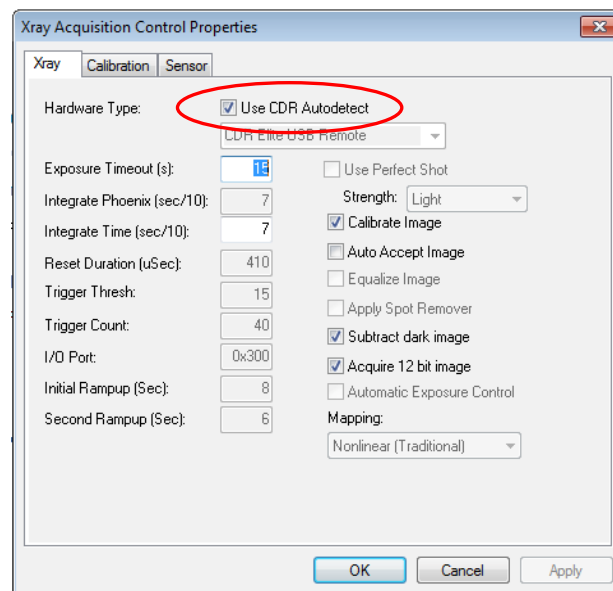
CDR AutoDetect will be most useful for offices that employ a mix of Schick USB interfaces and Sensors and use them interchangeably within one or several operatories.

3.12.1. Enabling CDR AutoDetect

CDR AutoDetect is enabled by default. If, however, it has been disabled and you wish to re-enable it, open the X-ray acquisition options page (in CDR DICOM, browse to the System menu and select X-ray Settings). If unchecked, click on the CDR AutoDetect to mark the checkbox and enable this option. You might also notice that the Hardware Type drop-down box becomes unavailable, as detection of Schick USB devices and Sensors will be performed automatically.

3.12.2. Disabling CDR AutoDetect

CDR AutoDetect can be disabled at any time by clicking the checkbox again, which removes the checkmark. By disabling CDR AutoDetect you will need to return to this property page when switching different hardware types on the same workstation and manually select the new device from the drop-down menu.

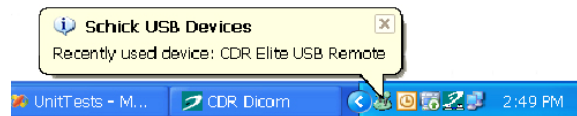


3.12.3. How CDR USB Devices are Detected

CDR AutoDetect requires that the Schick 33/Elite USB Interface (or Remote HS or Wireless / SDX interface) be connected for the system to recognize it. Once the USB device is connected, we say that it is “known” by CDR AutoDetect, which informs the imaging program to begin using that device. Only the CDR2000 USB Remote Module behaves differently, meaning that the USB device and the Sensor (both of them) must be connected for CDR AutoDetect to recognize the CDR2000 USB device. If no Schick intraoral USB device for X-ray acquisition is connected, a notification window reports this when the CDR DICOM application starts

3.12.4. Changing CDR USB Devices

When a known USB device is plugged into the system, a notification window appears momentarily, indicating that the device was just detected and has become active.



It is also possible to interact with the CDR AutoDetect feature by clicking on the notification window when it appears or by double-clicking on the CDR AutoDetect icon that is present in the Windows system tray when CDR AutoDetect is enabled. Performing this action will display a pop-up dialog that lists all the “known” USB devices currently connected to the system.



When the imaging software is loaded initially, or when CDR AutoDetect is initially turned on, the system will populate the dialog with all known currently connected devices. If several devices are listed, the one that is highlighted signifies the currently active device. To select a different device using the monitor, select the device (highlighting it), and then click the Select Device button.

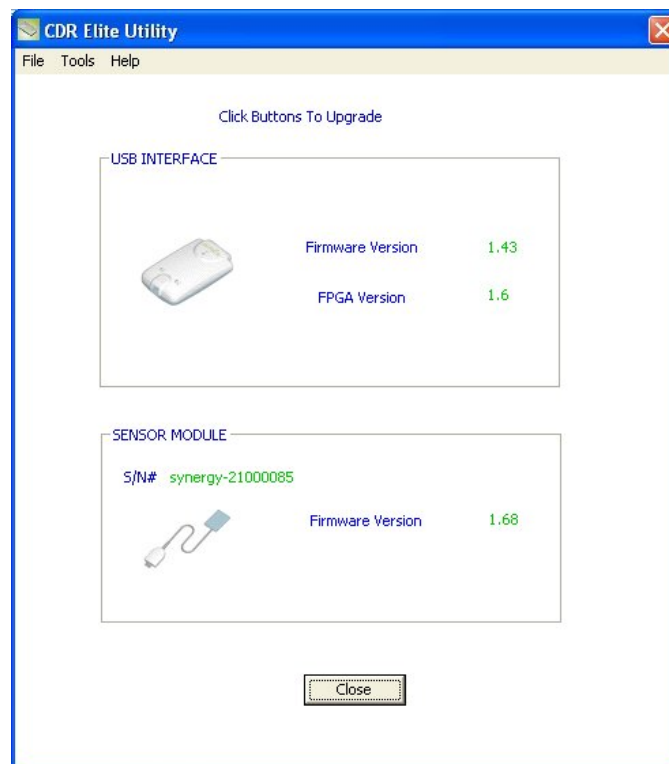
3.13. Using the Upgrade Utility

3.13.1. Introduction

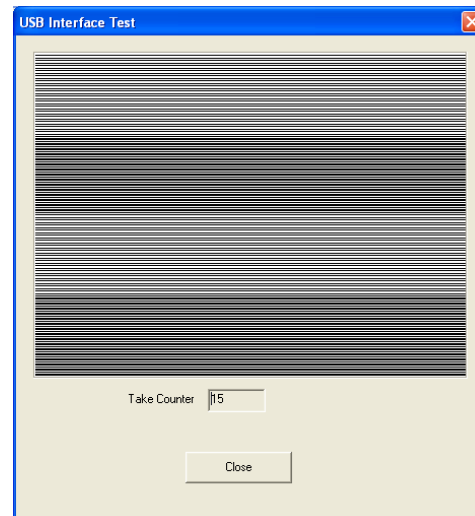
The Upgrade Utility is installed during the Driver setup program. This tool can be used to accomplish the following:

- Perform USB Interface tests
- Perform Sensor Pattern tests
- Perform USB Interface firmware upgrades
- Perform Sensor Module firmware upgrades

A sample screen of the Utility is shown below. *(Please note that the version numbers shown in the picture below are examples only and may differ from those reported for your system.)*



3.13.2. USB Interface Test



The USB Interface Test checks the connection between the *Schick 33/Elite USB Interface and the host computer*. During this check, a test pattern appears with alternating sections of black and white rows. A counter located below the image window updates as the pattern is generated.

A count of at least 10 test pattern images is usually sufficient to determine if

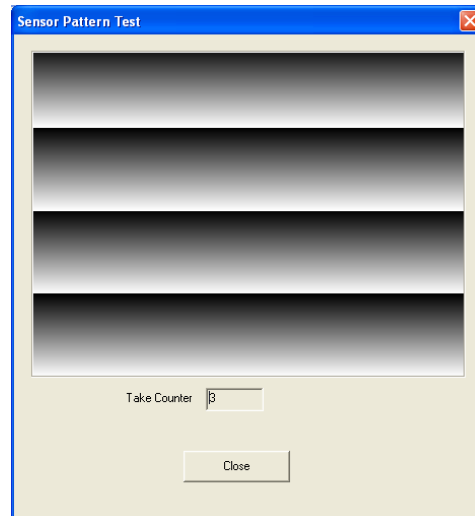
there are USB problems that would cause poor test patterns to be generated. The absence of any test pattern (blank image window), or the appearance of distorted lines, indicates a problem between the *Schick 33/Elite USB Interface and the host computer* to which it is connected.

There may be one or more reasons for poor test patterns, which can be the result of a problem with the Schick 33/Elite USB Interface or its USB connector, or the USB cable and / or port, or corrupt firmware inside the Schick 33/Elite USB Interface. Additional troubleshooting can be performed if another Schick 33/Elite USB Interface is available. In this case, connecting a different USB device to the USB cable and repeating the USB Interface Test may help to identify the possible cause of the problem.

Perform the following steps to run the USB Interface diagnostic test.

STEP	ACTION
1	Close the CDR DICOM or EagleSoft program (if running).
2	Verify that USB Interface is connected to the host computer.
3	Start the Utility (Start > All Programs > CDR DICOM for Windows > Upgrade Utility).
4	Click Tools > USB Interface Test.
<i>Note: After a momentary pause, a test pattern is displayed. The orange LED on the USB Interface blinks as the test pattern scrolls.</i>	
5	Click Close to exit this test.
6	Click Close to exit the Upgrade Utility.

3.13.3. Sensor Pattern Test



The Sensor Pattern Test checks the connection between the *Schick 33/Elite USB Interface and the Sensor*. During this check, a gradient test pattern appears with repeating sections. A counter located below the image window updates as the pattern is generated.

A count of at least 10 test pattern images is usually sufficient to determine if there are USB problems that would

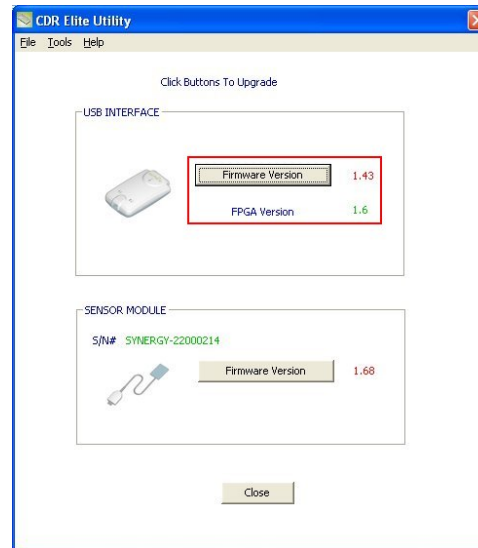
cause poor test patterns to be generated. The absence of any test pattern, or (blank image window) or the appearance of distorted lines indicates a problem between the *Schick 33/Elite USB Interface and the Sensor* to which it is connected.

There may be one or more reasons for poor test patterns, which can be the result of a problem with the Schick 33/Elite USB Interface or its Sensor connector, or the Sensor cable, or corrupt firmware inside the Schick 33/Elite USB Interface. Additional troubleshooting can be performed if another Schick 33 Sensor is available. In this case, connecting a different Schick 33 Sensor to the Schick 33/Elite USB Interface and repeating the Sensor Pattern Test may help to identify the possible cause of the problem.

Perform the following steps to run the Sensor Pattern diagnostic test.

STEP	ACTION
1	Close the CDR DICOM or EagleSoft program (if running).
2	Verify that Schick 33/Elite USB Interface is connected to the host computer.
3	Verify that the Sensor is attached to the USB Interface.
4	Start the Upgrade Utility (Start > All Programs > CDR DICOM for Windows > Upgrade Utility).
5	Click Tools > Sensor Pattern Test.
<i>Note: After a momentary pause, a test pattern is displayed. The orange LED on the USB Interface blinks as the test pattern scrolls.</i>	
6	Click Close to exit this test.
7	Click Close to exit the Upgrade Utility.

3.13.4. USB Interface Firmware Upgrades



Field updates to the *Schick 33/Elite USB Interface* can be accomplished by installing new firmware.

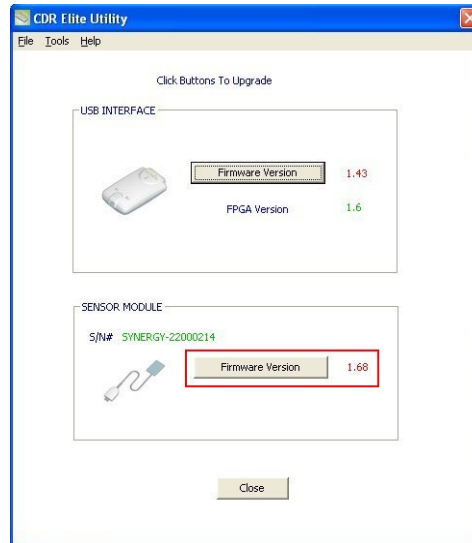
When new firmware is available, it is typically provided with software release and becomes part of the update to your existing system.

In the event that version information is displayed with red lettering, we recommend that you perform the upgrade,

referring to the procedure below. Perform the following steps to upgrade Schick 33/Elite USB Interface firmware.

STEP	ACTION
1	IMPORTANT! Close the CDR DICOM or EagleSoft program (if running).
2	Verify that USB Interface is connected to the host computer.
3	Start the Upgrade Utility (Start > All Programs > CDR DICOM for Windows > Upgrade Utility).
4	If the firmware version number is listed in red, click the Firmware Version button to upgrade. The firmware version number will change to green letters when the upgrade is completed successfully.
5	If the FPGA version number is listed in red, click the FPGA Version button to upgrade. The firmware version number will change to green letters when the upgrade is completed successfully.
6	Verify that the USB Interface firmware and FPGA version numbers are listed in green. If not, please contact your distributor of Sirona Dental products for additional information.
7	Click Close to exit the Upgrade Utility.

3.13.5. Sensor Module Firmware Upgrade



Field updates to the *Schick 33 Sensor* can be accomplished by installing new firmware.

When new firmware is available, it is typically provided with software release and becomes part of the update to your existing system.

In the event that version information is displayed with red lettering, we recommend that you perform the upgrade, referring to the procedure

below. Perform the following steps to upgrade Sensor firmware.

STEP	ACTION
1	IMPORTANT! Close the CDR DICOM or EagleSoft program (if running).
2	Verify that the Schick 33 Sensor is connected to the USB Interface host computer.
3	Start the Upgrade Utility. (Start > All Programs > CDR DICOM for Windows > Upgrade Utility).
4	If the firmware version number is listed in red, click the Firmware Version button to upgrade. The firmware version number will change to green letters when the upgrade is completed successfully.
5	Verify that the Sensor Module firmware version number is listed in green. If not, please contact your distributor of Sirona Dental products for additional information.
6	Click Close to exit the Upgrade Utility.

4.LED Indicators

4.1. *Schick 33/ Elite USB Interface Indications*

The Schick 33/Elite USB Interface has three LED indicators: amber, green (USB cable side), and green (Sensor cable side) for reporting its functional status.

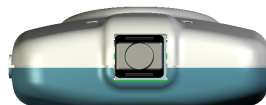
The location and description of the LEDs are shown in Figure 8 (below) and described in Table 2 on page 38.



TOP SURFACE






SENSOR CABLE SIDE



USB CABLE SIDE

Figure 8. Schick 33/Elite USB Interface LED and Connector Views

Table 2. Schick 33/Elite USB Interface LED Indications

SENSOR	CDR DICOM	 SENSOR STATUS	 READY TO ACQUIRE	 SENSOR CONNECTED	STATUS
Connected	Running	ON	Flashing every 1/2 - 1 1/2 seconds	ON	Ready for image acquisition
Connected	Running	ON	OFF	ON	Image acquisition
Connected	Not Running	OFF	OFF	ON	Start CDR DICOM to prepare for image acquisition
Connected	Not Running	OFF	ON	OFF	Cable short or over-current condition. Replace Sensor cable. Replace Sensor if problem persists.
Connected	Not Running	OFF	ON	Flashing Green	Low current condition. Replace Sensor cable. Replace Sensor if problem persists.
Connected or not connected	Running or not running	ON or OFF	ON or OFF	Amber	Low USB voltage condition. Use Schick USB cable or try different USB port / hub.
Connected	Running or not running	OFF	ON	OFF	Over current condition. Replace Sensor cable. Replace Sensor if problem persists.
Not connected	Not running	OFF	ON	OFF	Connect Sensor and start CDR DICOM

NOTE: The Schick 33/Elite USB Interface Interface is considered connected for the cases described above.

5. Operation

5.1. Operating the System

5.1.1. Power On

1. Turn on the PC workstation used with imaging applications.
2. Connect the “B-type” end of the USB cable to the Schick 33/Elite USB Interface.
3. Connect the “A-type” end of the USB cable to the PC workstation.
4. Connect the Schick 33 Sensor edge-card to the Schick 33/Elite USB Interface.
5. The amber LED on the USB side of Schick 33/Elite USB Interface blinks momentarily if CDR is running. The green LED on the same side will also be illuminated.
6. The green LED on the Sensor side of the Schick 33/Elite USB Interface illuminates also and remains steady on, indicating proper current condition for the Sensor.
7. Continue with Section 5.2 on page 40 for step-by-step instructions on acquiring X-ray images with CDR DICOM software.

5.1.2. Power Off

1. First, disconnect the USB cable from the PC workstation, and second, disconnect the USB cable from the Schick 33/Elite USB Interface.
2. Power is removed from the Schick 33/Elite USB Interface and Sensor, and the green LED on the Sensor side of the Schick 33/Elite USB Interface is turned off.

5.2. Using Your Schick 33 Sensor

5.2.1. Sensor Sheaths and Holders

Sheaths and the appropriate holders are required for Schick 33 Sensors. New sheaths and Sensor holders (if they are the disposable type) are required for each new patient and must be disposed of properly after patient use.





Before using a new sheath, select one that is appropriate for the size of the Sensor. You may find that the sheath seems slightly undersized, which is necessary to provide a secure barrier around the Sensor. Once you have selected the sheath, slide the Sensor into it.

Using an appropriate Sensor positioning system, adjusting the X-ray setting depending on intraoral position, and placing the X-ray source as close as possible to the imaging area of the Sensor: all of these contribute towards obtaining quality digital X-ray images. For proper placement and usage of CDR Sensor holders, please refer to the CDR Positioning System User Guide, distributed with Sensor Holder kits and also available on our website.

5.2.2. Sensor Cleaning and Disinfecting

Before using the Schick 33 Sensor the first time, and before every new patient, please perform the steps described in Section 7.2 on page 48.


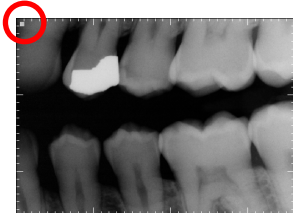


Table 3. Proper Sensor Removal from Protective Sheath

EXAMPLES	ACTIONS
	<p>1. Keeping the Sensor attached to the positioning tab and aiming bar, grasp the aiming bar where it joins the Sensor.</p>
	<p>2. Still grasping the bar underneath the sheath, use your thumb to start pushing the distal tip of the Sensor out of the sheath.</p>
	<p>3. Continue pushing the Sensor away from the closed, tight end of the sheath.</p>
	<p>4. As the Sensor is pushed into the wider area of the sheath, be careful to prevent the Sensor from falling on the floor. Handle both Sensor and cable gently.</p>

5.2.3. Sensor Positioning

To achieve stable Sensor positioning during X-ray exams, use the appropriate tabs and holders available with the CDR system. When positioning the Sensor, the inverse pixel box located on the Schick 33 Sensor can be used to determine the orientation of the resulting image.

Table 4. Examples of Schick 33 Sensor-to-Image Orientation

SENSOR LOCATION	SENSOR ORIENTATION	INVERSE PIXELS (CIRCLED) AND IMAGE ORIENTATION
Patient's left side		 Left Bitewing
Patient's upper jaw		 Anterior Periapical, Maxillary

5.2.4. Taking X-rays

NOTE: Refer to the CDR DICOM User Guide, Schick P/N 1051047, for detailed information on the use and operation of CDR DICOM software.

STEP 1

Start CDR DICOM from the Windows **Start** button or by clicking the shortcut to CDR DICOM for Windows on your desktop.

STEP 2

When the CDR exam window appears, click on **New Exam** under the **File** menu or just click the **New Exam** button on the toolbar.

STEP 3

- A. Enter the appropriate patient information and then click on **X-ray Series**. You may use a pre-defined intraoral series or create a new one.
- B. To customize an X-ray series for the current exam, click **Edit Series**, which opens the Edit Viewset dialog box. (Re-usable, customized series can be created at the **Series > New Intraoral Series** menu.)
- C. The numbers in the text boxes correspond to how many target frames (view boxes) are included in this series. You can edit the numbers, creating a series customized with the views you wish to include.
- D. Enter a name for this X-ray series. Click **OK**.

STEP 4

- A. Slide an appropriately-sized sheath over the Sensor. Select a CDR holder specific to the intraoral area intended for exposure and place it on the sheath. Attach a positioning arm and aiming ring, as needed
- B. Verify the X-ray exposure settings. Proper technique factors depend on several variables, among them, the type of X-ray tube, the anatomy of the patient, the source-to-Sensor distance, and the location of the Sensor in the oral cavity. *As a guideline, CDR Sensors require 85% less dosage than D-speed film.*

STEP 5

IMPORTANT! To avoid exposing the patient to unnecessary X-rays, ensure that the CDR exam window viewbox is flashing green (default color) in AutoTake mode, or that the message, “Waiting to take X-ray,” is displayed before triggering the X-ray source.

- A. If your acquisition mode is set to AutoTake, the first empty view box in the exam is pre-selected and flashes green (default setting). Skip ahead to step 7.
- B. If your acquisition mode is set to manual, select an empty target frame that corresponds to the Sensor’s location in the patient’s mouth. When the view box is highlighted, click on it again. If using a serial footpedal, press the amber pedal.

STEP 6

The system is ready to acquire an X-ray image. A “Please Wait” message may appear momentarily.

STEP 7

- A. In AutoTake mode, activate the X-ray source. The message, “Reading Image from Sensor” appears momentarily.
- B. In manual mode, activate the X-ray source when the message, “Waiting to take X-ray” appears.
- C. The acquired image appears automatically in the zoom or exam window, depending on system settings.

STEP 8

- A. In AutoTake mode, the next empty view box in the series sequence is selected. To acquire the next X-ray image, repeat this procedure starting at Step 7.
- B. In manual mode, close the zoom window. To acquire the next X-ray image, repeat this procedure starting at Step 5.

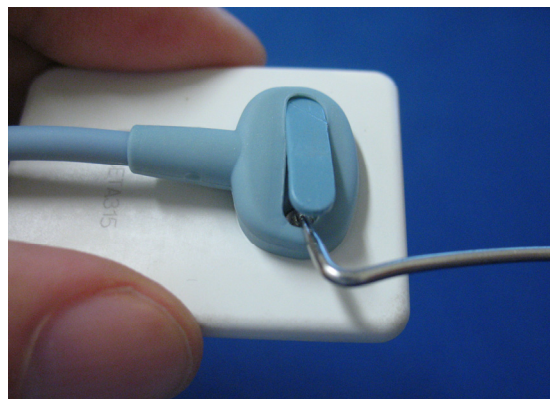
6. Cable Replacement

IMPORTANT! Always disconnect the Sensor from the USB interface before cable replacement to avoid potential damage to Sensor components. Close CDR DICOM or any other imaging application (EagleSoft or Patterson Imaging) prior to starting cable replacement. When performing cable replacement, always work outside the patient area, using the tools and materials supplied and / or recommended by Sirona Dental.

IMPORTANT! Like other electronic devices, your Schick 33 Sensor is susceptible to electrostatic discharge (ESD), particularly when the device is used in or around carpeted areas or low-humidity environments. During cable replacement, when Sensor contacts are exposed, it is especially important to protect the device from potential ESD damage. Touching a metal surface prior to replacing the cable will reduce the risk of damaging Sensor components by accidental static discharge. The use of anti-static floor mats or floor treatments (for example Staticide 2005/2002) will also help eliminate static build-up in your office.

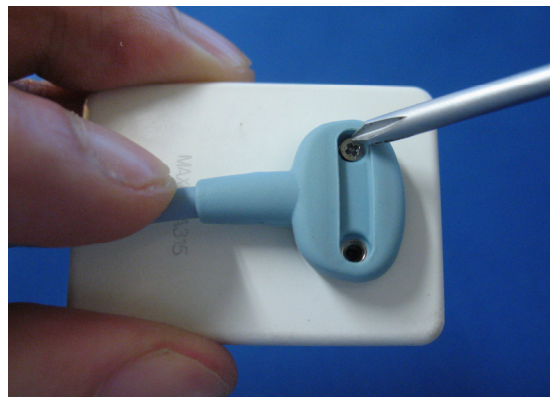
STEP 1

- A. Please clean and dry your hands before performing this procedure. Do not wear gloves since the powder inside them could be deposited on sensor contacts while replacing the cable.
- B. Make sure the Sensor is placed securely on a clean, moisture-free surface.
- C. Using a dental instrument, carefully lift and remove the tab cover from the back of the Sensor cable. Dispose of the tab cover as a new one will be used when the new cable is attached.



STEP 2

- A. Using the screwdriver provided, loosen and remove the 2 screws that secure the cable to the Sensor. Dispose of the screws as new ones are supplied.
- B. Remove the cable from the Sensor.

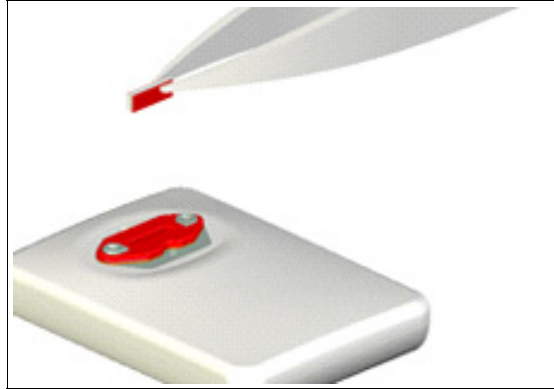


STEP 3

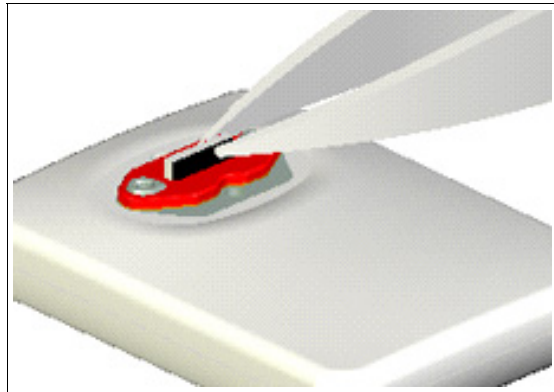
- A. Using tweezers, remove the small elastomeric strip from the Sensor. Dispose of this strip, as it will be replaced.

Take a new (red) strip from the Schick 33 spare parts kit, holding it in the tweezers as shown.

NOTE: Schick 33 parts are red.



- B. Insert the strip into its slot in the Sensor. Strip shown darker in this image for clarity.



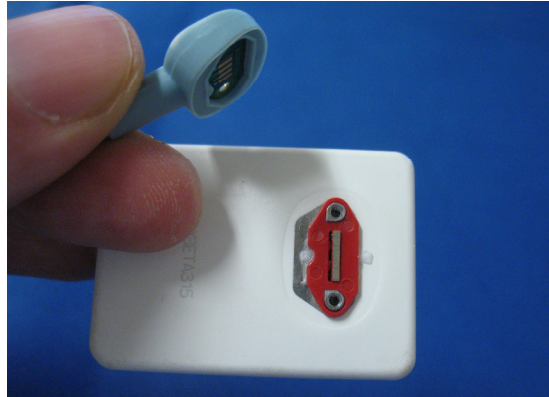
- C. After inserting the strip, apply a small amount of finger pressure to ensure the elastomer is seated squarely in the slot.

IMPORTANT! The elastomeric strip must be seated squarely in the slot for the Sensor to function.



STEP 4

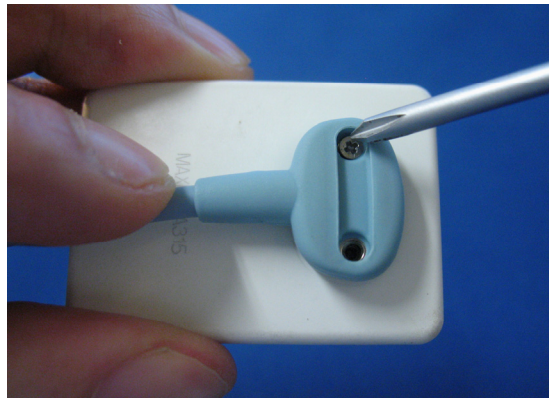
- A. Remove new cable from replacement kit.
- B. Align the new cable to Sensor as shown, making sure that the Sensor keying feature connects to the corresponding key in the cable assembly.
- C. When properly aligned, the cable fits the back of the Sensor evenly and the metal area on the Sensor is completely covered by the cable.



STEP 5

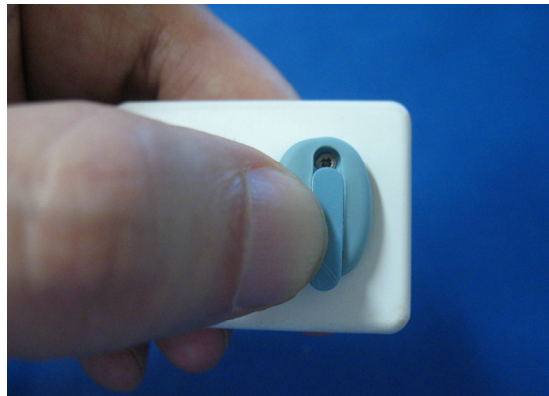
- A. Holding the cable to the Sensor, insert one of the screws into its hole.
- B. Using the screwdriver, tighten the first screw just until you feel some resistance. Repeat this action for the second screw.
- C. Returning to the first screw, fully tighten it; then, fully tighten the second screw.

IMPORTANT! Make sure that both screws are securely tightened before continuing.



STEP 6

- A. Place the new tab cover over the screw slot and slide it across the slot while applying downward pressure, especially at the middle of the tab.
- B. When the tab completely covers the slot, snap it into place.
- C. Verify that the tab cover fits evenly in its slot. Cable replacement is complete.



7. Protective Measures

7.1. Introduction

IMPORTANT! Be sure to disconnect the Schick 33/Elite USB Interface from the Sensor and the USB cable before performing any cleaning procedures.

The Schick 33 Sensor should be thoroughly cleaned after each use. The following cleaning and disinfection recommendations are intended to accomplish intermediate-level disinfection and will prepare the product to be safely used and reused during its life.

The Schick 33/Elite USB Interface is not intended to be moved or to come in contact with a patient during clinical use. If the USB Interface becomes soiled or comes into contact with a patient, it should be cleaned following the same protocol as the Schick 33 Sensor.

Sensor positioning accessories, such as aiming rings, arms, and holders, should be cleaned and disinfected following manufacturer's instructions. If you are using the Rinn holder system, refer to their product documentation or their website for more information.

Schick's disposable tabs and holders are single-use only, as are the hygienic barriers (sheaths) that are used with them.

7.2. Cleaning and Disinfecting

In a clinical use environment, the health care provider should wear protective disposable gloves and cover the Schick 33 Sensor with a hygienic barrier. Before using the Schick 33 Sensor the first time, and before every new patient, the following protocol is recommended:

- Remove and discard all protective hygienic barriers and / or sheaths from the Sensor prior to removing disposable gloves.
- Place the Sensor on a tray covered by a disposable liner, or in a receptacle that can be thoroughly disinfected.
- Remove and discard gloves.
- Wash hands and put on a new pair of disposable gloves.
- Disconnect Sensor from Schick 33/Elite USB Interface.
- If the Sensor or cable are visibly soiled (e.g., with blood or saliva), each should be cleaned with a soapy cloth or paper towel, and then dried with a clean lint-free cloth or paper towel.

- Thoroughly spray or wipe the Sensor and cable with one of the disinfecting products recommended in Section 7.3 on page 49. Do not expose the Sensor cable connectors to any amount of liquid.
- If using a spray disinfectant, allow it to remain on the Sensor for 5 minutes. If using a liquid disinfectant, allow it to remain on the Sensor for 30 seconds.
- Repeat steps 7 and 8. When the Sensor has been sprayed or wiped two times, continue with the following steps.
- Remove potential chemical build-up from the Sensor by wiping it with a lap sponge saturated with de-ionized water.
- Use a dry lap sponge to dry the Sensor or cable, as needed.
- Place the Sensor in a clean environment, ready for next use.
- Reconnect the Sensor.
- Remove and discard gloves.

7.3. Recommended Disinfectant

The following surface disinfectant has been found to be effective in achieving a desired level of disinfection and is available from Patterson Dental and other suppliers.

- Cavi-Wipes (Metrex Research, Kerr) or equivalent

8. Maintenance

8.1. Visual Inspection

Like all electrical equipment, the Schick 33 Sensor and USB Interface require not only correct use, but also visual inspection prior to operation, and routine checks at regular intervals. These precautions will help ensure that the Schick 33 Sensor and USB Interface operate accurately, safely, and efficiently.

Before operating the system, users shall check it for any signs of physical damage or defect. If detected, contact your local distributor of Sirona Dental products for further instructions.

8.2. Damaged Sensor

In the event of obvious physical damage to the Sensor, customers shall discontinue use of that Sensor, substitute another Schick 33 Sensor (if available), and contact their local Schick distributor for further instructions.

8.3. Periodic Maintenance

Periodic maintenance is performed as needed, but at least once a month. It consists of various checks performed by the operator or by a qualified service technician.

- Check that the labels are intact, readable, and adhere well to the surfaces on which they are positioned
- Check that all of the cables that connect to the Schick 33/Elite USB Interface are undamaged
- Check that there is no external damage to the Schick 33/Elite USB Interface which could compromise its ability to operate safely

Appendix A. Reference

A-1. Removal and Replacement

There are no user-serviceable parts in the Schick 33/Elite USB Interface and service of Schick 33 sensors is limited to cable replacement. Should you experience problems with the Schick 33 product, please contact your local distributor of Sirona Dental products. In the United States, Sirona Dental products are serviced exclusively through Patterson Dental, Inc. Call your local Patterson representative, local Patterson branch, or 1-800-873-7683 for more information.

A-2. Part Numbers

The following table provides customer-orderable part number information for Schick 33 Sensors, cables, and kits.

Table 5. Orderable Item Part Numbers

ITEM	SENSOR CABLE LENGTH	DESCRIPTION	FOR ORDERING	FOR REFERENCE
Size 0 Sensor Kit	6 ft (1.8 meters)	Schick 33 S0 Sensor Shipping Kit	B1309000	B1309000
Size 1 Sensor Kit	6 ft (1.8 meters)	Schick 33 S1 Sensor Shipping Kit	B1109000	B1109000
Size 2 Sensor Kit	6 ft (1.8 meters)	Schick 33 S2 Sensor Shipping Kit	B1209000	B1209000
Size 0 Sensor Assy	6 ft (1.8 meters)	Schick 33 S0 Sensor Assembly	—	B1309100
Size 0 Sensor Assy	9 ft (2.7 meters)	Schick 33 S0 Sensor Assembly	—	B1309101
Size 0 Sensor Assy	3 ft (0.9 meters)	Schick 33 S0 Sensor Assembly	—	B1309102
Size 1 Sensor Assy	6 ft (1.8 meters)	Schick 33 S1 Sensor Assembly	—	B1109100
Size 1 Sensor Assy	9 ft (2.7 meters)	Schick 33 S1 Sensor Assembly	—	B1109101
Size 1 Sensor Assy	3 ft (0.9 meters)	Schick 33 S1 Sensor Assembly	—	B1109102
Size 2 Sensor Assy	6 ft (1.8 meters)	Schick 33 S2 Sensor Assembly	—	B1209100
Size 2 Sensor Assy	9 ft (2.7 meters)	Schick 33 S2 Sensor Assembly	—	B1209101
Size 2 Sensor Assy	3 ft (0.9 meters)	Schick 33 S2 Sensor Assembly	—	B1209102
Cable Kit	6 ft (1.8 meters)	Schick 33 Cable Kit	—	B1209110
Cable Kit	9 ft (2.7 meters)	Schick 33 Cable Kit	—	B1209111
Cable Kit	3 ft (0.9 meters)	Schick 33 Cable Kit	—	B1209112
Spare Cable Kit	6 ft (1.8 meters)	Schick Elite/33 Spare Cable Kit	B1209120	B1209120
Spare Cable Kit	9 ft (2.7 meters)	Schick Elite/33 Spare Cable Kit	B1209121	B1209121
Spare Cable Kit	3 ft (0.9 meters)	Schick Elite/33 Spare Cable Kit	B1209122	B1209122
Cable with Covers	6 ft (1.8 meters)	Schick 33 Cable with Covers	—	B1209155
Cable with Covers	9 ft (2.7 meters)	Schick 33 Cable with Covers	—	B1209156
Cable with Covers	3 ft (0.9 meters)	Schick 33 Cable with Covers	—	B1209157
USB Cable Kit	16.5 ft (5 meters)	USB A/B Cable with Ferrite	B2250150	B2250150
USB Cable Kit	6.5 ft (2 meters)	USB A/B Cable with Ferrite	B2250151	B2250151
USB Cable Kit	1.6 ft (0.5 meters)	USB A/B Cable with Ferrite	B2250152	B2250152

A-3. Summary of Specifications

The Schick 33 system has passed North American Safety Certification and also complies with international EMC, safety, and quality standards listed below.

Table 6. Specifications

ITEM	VALUE	
EMC/Safety	IEC60601-1:2005 +CORR.1(2006) +CORR.2(2007)	Medical Electrical Equipment – Part 1: General Requirements for basic safety and essential performance
	IEC60601-1-2:2007	Medical Electrical Equipment – Part 1-2: General requirements for basic safety and essential performance - Collateral standard: Electromagnetic compatibility Requirements and tests
	UL60601-1	UL Standard for Safety Medical Electrical Equipment – Part 1: General Requirements for Safety – Edition 1, Issued 2003/04/25
Quality	AAMI TIR12:2004	Designing, testing and labeling reusable medical devices for reprocessing in health care facilities: A guide for device manufacturers
	CAN/CSA C22.2 No. 60601.1:08	Medical Electrical Equipment – Part 1: General Requirements for Basic Safety and Essential Performance
	93/42/EEC	Council Directive of 14/6/ 1993 concerning medical devices amended by directives 98/79/EC (27/10/98); 2000/70/EC(16/10/2000); 2001/104/EC(7/12/2001); 2007/47/EC(5/9/2007)
Classification	Class II, Type BF equipment Not Category AP Equipment Not Category APG Equipment	
Mode of Operation	Equipment is intended for continuous use	
Additional Notes	Equipment is not suitable for use in the presence of a Flammable Anesthetic Mixture with Air or with Oxygen or Nitrous Oxide.	
Supply Voltage	+5V DC (derived for PC USB port)	
Supply Current	250 mA	
Power Consumption	1.25W	
Dimensions	3.25 x 2.3 x 0.9 in. (1.28 x 0.91 x 0.35 cm)	
Weight	1.8 oz. (50g)	
Transport and Storage Conditions	Ambient temperature range: -40° F (-40° C) to 158° F (+70° C) Relative humidity range: 10 to 100%, including condensation Atmospheric pressure range: 500 hPa to 1060 hPa	
Operating Conditions	Ambient temperature range: 50° F (+10° C) to 104° F (+40° C) Relative humidity range: less than 75% Atmospheric pressure range: 700 hPa to 1060 hPa	
Restricted service statement	Unless otherwise specified, this unit should be serviced only by the manufacturer. It contains no user-serviceable parts.	
External power supply	None (power supplied via USB)	
Maximum cable length	5 m (5.5 yds)	

A-4. Leakage Current Statement

The Schick 33 system complies with the leakage current requirements of IEC 60601-1 safety standard. Variations, however, may exist in the construction of computers to which the Schick 33/Elite USB Interface is connected. Customers are advised to have a qualified electrician perform a leakage test on their equipment before using the Schick 33/Elite USB Interface.

A-5. EMC Tables

The following tables provide Schick 33 system compliance information to electromagnetic compatibility (EMC) and electromagnetic immunity (EMI) standards. To ensure conformance, the customer or user must use the Schick 33/Elite USB Interface in environments that are consistent with these standards.

The USB cable required with the Schick 33/Elite USB Interface must also comply with the same standards. The operation of the Schick 33/Elite USB Interface has been independently tested using USB cables identified in Table 5 on page 51. Compliance to EMC and EMI standards cannot be guaranteed by the use of alternate cables.

Table 7. Guidance and Manufacturer's Declaration - Electromagnetic Emissions


*PLEASE NOTE: The Schick 33/ Elite USB Interface is intended for use in the electromagnetic environment specified below.
The customer or user of the Schick 33/Elite USB Interface must ensure that it is used in such an environment.*

EMISSIONS TEST	COMPLIANCE	GUIDANCE
RF emissions CISPR 11	Group 1	The Schick 33/Elite USB Interface uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The Schick 33/Elite USB Interface is suitable for use in all establishments including domestic establishments and those directly connected to the public low-voltage supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class D	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Table 8. Guidance and Manufacturer's Declaration - Electromagnetic Immunity

PLEASE NOTE: The Schick 33/Elite USB Interface is intended for use in the electromagnetic environment specified below.
The customer or user of the Schick 33/Elite USB Interface must ensure that it is used in such an environment.

IMMUNITY TEST	IEC 60601 TEST LEVEL	COMPLIANCE LEVEL	GUIDANCE
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode ± 2kV common mode	± 1 kV differential mode ± 2kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	< 5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (>95% dip in U_T) for 5 SEC	< 5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (>95% dip in U_T) for 5 SEC	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Schick 33/Elite USB Interface requires continued operation during mains interruptions, it is recommended that the PC workstation to which the Schick 33/Elite USB Interface is connected be powered from an uninterruptible power supply or battery. NOTE: U_T is the AC mains voltage prior to application of the test level.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3A/m	3A/m	Mains power quality should be that of a typical commercial or hospital environment.
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communication equipment should be used no closer to any part of the Schick 33/Elite USB Interface, including its cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance: $d = 1.2\sqrt{P}$

IMMUNITY TEST	IEC 60601 TEST LEVEL	COMPLIANCE LEVEL	GUIDANCE
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	$d = 1.2\sqrt{P}$ for 80 MHz to 800 MHz $d = 2.3\sqrt{P}$ for 800 MHz to 2.5 GHz Where P is the maximum output rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, ^a should be less than the compliance level in each frequency range. ^b Interference may occur in the vicinity of equipment marked with the following symbol. 

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people

^a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Schick 33/Elite USB Interface is used exceeds the applicable RF compliance above, the Schick 33/Elite USB Interface should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the Schick 33/Elite USB Interface.

^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m

Table 9. Recommended Separation Distance Between Portable and Mobile RF Communications Equipment and the Schick 33/Elite USB Interface

PLEASE NOTE: The Schick 33/Elite USB Interface is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or user of the Schick 33/USB Interface can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Schick 33 Elite USB Interface as recommended below, according to the maximum output power of the communications equipment.

RATED MAXIMUM OUTPUT POWER OF THE TRANSMITTER (W)	SEPARATION DISTANCE ACCORDING TO THE FREQUENCY OF THE TRANSMITTER (M)	
	150 kHz to 800 MHz $d = 1.2\sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.23
0.1	0.38	0.73
1	1.2	2.30
10	3.8	7.3
100	12.0	23.00

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

Appendix B. Troubleshooting Tips

B-1. Introduction

In the event you experience a problem with the Schick 33 Sensor or Schick 33/Elite USB Interface, refer to the table of troubleshooting tips found on this page.

In the United States, Sirona Dental products are available exclusively through Patterson Dental, Inc. If the problem persists, please contact the Patterson Technology Center at 877-498-6505.

Outside the United States, please contact authorized international dealer for Sirona Dental products in your country or region.

B-2. Troubleshooting Table

ITEM	DESCRIPTION	POSSIBLE CAUSE	CORRECTIVE ACTION
1	Imaging software does not detect Sensor.	Replaceable cable screws require tightening	Carefully remove screw tab cover from replaceable cable and tighten screws. Place tab cover over screws after tightening.
2	Both green LEDs are off when CDR DICOM is not running.	Cable short or over-current condition	Replace Sensor cable.
3	The green LED on the Sensor side is blinking, whether CDR DICOM is running or not.	Low current condition	Replace Sensor cable.
4	Both green LEDs are off, whether CDR DICOM is running or not.	Over current condition	Replace Sensor cable.
5	The LED on the Sensor side, which is normally green, is amber, whether CDR DICOM is running or not.	Low USB voltage condition	Use Schick USB cable or try different USB port / hub.

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