Digital Image Receptor

The PaxScan 2520 XI/V X-ray imager is designed for high-speed fluoroscopic and radiographic imaging

Abstract
The PaxScan® 2520 XI/V Operating Instructions (P/N 26229) covers safety, setup, operation, and maintenance of the PaxScan 2520 XI/V digital radiography imager. The imager is a component sub-system intended for integration by a qualified systems integrator.

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Notice

The PaxScan® 2520 XI/V is an associated equipment x-ray medical equipment with respect to electrical shock, fire and mechanical hazards only in accordance CAN/CSA-C22.2 NO. 601.1-M90, 2005 (Medical Electrical Equipment Part 1 General Requirements for Safety), IEC 60601-1 Medical Electrical Equipment Part 1 General Requirements for Safety – edition 2, UL 60601-1 Medical Electrical Equipment Part 1 General Requirements for Safety – edition 1.

Updates
For updates to these instructions, please refer to the *Release Notes.*

CE Mark
Varian Medical Systems' imaging products are designed and manufactured to meet the Low Voltage Directive 2006/95/EC and MDD 93/42/EEC.

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If help is needed, please contact our applications support group by e-mail or telephone at the following locations.

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Chapter Summary

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Introduction

The PaxScan 2520 XI/V is a real time, fluoroscopic and radiographic digital X-ray imaging device commonly referred to as a flat panel detector (FPD). The detector together with real-time image processing software (Virtual Command Processor) is designed to meet the imaging requirements for new generation diagnostic imaging equipment. The imaging system has three main components: The FPD, Virtual Command Processor software, and a single 15 VDC output power supply. The single 15 VDC output power supply is optional equipment

Shipment Contents

Flat Panel Detector Assembly

PaxScan Software CD

> Virtual CP/ViVA System Software L.01 (or higher)

PaxScan Receptor Install CD

> (Files specific to the detector in shipment)

2520 XI/V Operating Instructions

Optional Parts

External Power Supply – (OEM) XP Power - (optional)

Immediately upon receipt, inspect the shipment and its contents against the Delivery Note enclosed with the shipment for evidence of damage or missing components. Save all shipping containers in case a return is warranted. If there is any discrepancy, please call the PaxScan Service Center at (800) 432-4422 or (801) 972-5000.

Intended Use

The 2520 XI/V is specifically designed to meet the needs of fluoroscopy and radiography applications utilizing multiple sensitivity ranges and extend dynamic range modes. PaxScan 2520 XI/V will acquire image at usual video frame rates over a wide range of dosage while providing maximum access to the patient, with a minimum possible border on the active imaging area.

PLEASE READ THIS ENTIRE MANUAL BEFORE USING. PRIOR TO USING PLEASE READ AND UNDERSTAND THE WARNING, PRECAUTIONS AND ADVERSE EFFECTS RELATING TO THIS DEVICE.

Safety Warnings, Precautions and Contraindications

Important:

The PaxScan 2520 XI/V is designed to be integrated into a complete X-ray system by qualified system integrator. The system integrator is responsible for obtaining FDA clearance for medical use.

No part of the PaxScan 2520 XI/V is intended to be attached to a patient and/or to contact the patient.

It is possible that during normal usage the Receptor could inadvertently contact the patient. The closeness of the Receptor to the patient is dependent upon the operator and the technique being performed.

All parts of the PaxScan 2520 XI/V are suitable for use within the patient environment.

WARNING: The 2520 XI/V is not intended to be used as a primary barrier to X-rays. The user is responsible for insuring the safety of the operator, bystanders, and the subjects being radiographed.

WARNING: The metal enclosure of the 2520 XI/V must be connected to earth ground.

WARNING: The equipment is not suitable for use in the presence of a flammable anaesthetic mixture with air, oxygen or nitrous oxide.

Explanation of Symbols

| On (power: connection to the mains)

⚠ Caution / Warning / Important: Describes action or conditions that could result in equipment damage, data loss, or personal injury

⏚ Protective Earth Ground

∿ Alternating Current

○ Off (power: disconnection from the mains)

━ Direct Current

Handle With Care

▶ Indicates step-by-step description of the respective function follows

Useful / Important information

EC | REP Authorized Representative in the European Community/European Union

Manufacturer

Consult Instructions for Use

Getting Started

Connecting the Cables

Connect the cables as described below in Table 1-0 and shown in Figure 1-0. ▶

Table 1-0 Cable Connection Details

| Step	Action / Description
	The Flat Panel Receptor includes a cable that terminates into two separate connectors: (a) Receptor Synch Connector to Generator Interface and (b) the Power Supply Connector (optional). Also included is an Ethernet connection cable. The connections are described below.
1.	**Flat Panel Receptor** The Receptor cable provides connection from the receptor to the power supply and the user's X-ray generator equipment. Connect the single-end of this connector to the receptor.
2.	**Receptor Synch Connector to Generator Interface** This connector is intended to provide the user with a means to synchronize the end-user system-level application with the imager. This connector provides the connections for two opto-isolated signals, one output, and one input. The output signal named "Expose OK" signals that the receptor is ready for the generator to produce X-rays and the input named "User Sync" allows the user to trigger the panel readout. See Appendix A, diagram 1.0 for "Expose OK" and "User Sync" signal schematic.
3.	**Power Supply - (optional)** This connection provides power to the receptor. Connect the power supply connector and plug in the main AC supply cable to the Power Supply.
4.	**Gigabit Ethernet Connection** Connect the Ethernet connector to a gigabit capable interface in the user's host computer. Please note that the interface must use the Intel PRO/1000MT or Intel PRO/1000GT ethernet adapter and Varian supplied driver. An optional Intel PRO/1000GT adaptor PCI-board (PN 23872) is also available from Varian.

Note: The X-Ray Generator Interface is user supplied equipment.

Warning: The Receptor should be mounted onto user supplied equipment using the holes provided in the integral flange.

Figure 1-0 Cable Connection
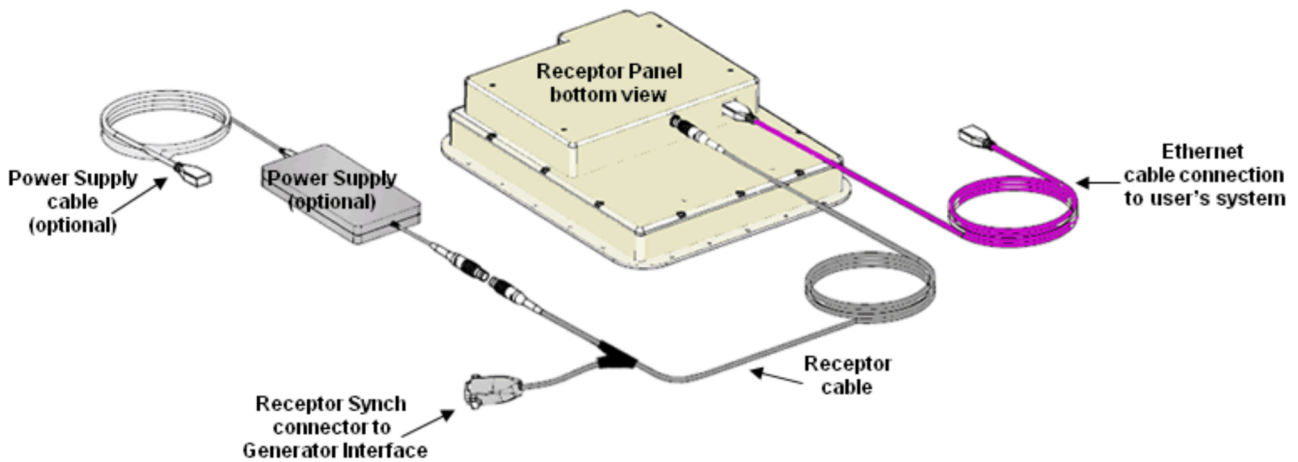
Warning: The receptor is not sealed against dripping moisture.

Caution Accessory or optional equipment connected to the analog and digital interfaces must be certified to the respective IEC standards (i.e., IEC 60950-1 for data processing equipment and IEC 60601-1 for medical equipment). Furthermore, all configurations shall comply with the system standard IEC 60601-1-1. Anyone connecting additional or optional equipment to the signal inputs or signal outputs as part of a configuration for medical equipment is therefore responsible for compliance with the equipment standard IEC 60601-1. If in doubt, consult our technical support personnel.

Warning: Precautions should be taken to not open the receptor module. Depending upon the type of scintillator used, opening the receptor module may expose the user to potentially toxic materials.

Paxscan System Software

There are two CDs supplied with this product. The Software CD allows installation of the Virtual CP which provides the API to the receptor, allowing control and image transfer functionality; see the Virtual CP Communications Manual for more information. The Software CD also includes ViVA™ software which is the viewing application used to perform detector calibration, detector set-up, image acquisition, and image corrections in a Windows PC environment. NOTE: ViVA™ is intended to be used for development, testing, and maintenance purposes only. ViVA™ includes file translators for saving image files in .viv, .raw, .jpg, .bmp file formats and is Windows® XP compatible. The Receptor software CD is specific to the panel providing calibration and configuration files. Installation of the *Software* and *Receptor* files is briefly discussed in the following sections. Refer to the *ViVA Online help documentation* for complete details on installation and assistance operating ViVA™.

Software Installation

The Setup.exe in the root directory of the PaxScan CD provides an automated software installation process. Setup.exe automatically launches the PaxScan System Software Install Shield Wizard when the CD is inserted into a CD drives unless the Auto-Run CD option is turned off.

To start Setup.exe manually, use the run command under the Windows Start button, select Browse, My Computer, and your DVD/CD ROM Drive that contains the PaxScan CD. Select the Setup.exe will enter as file name. Select open and okay – will launch the PaxScan ViVA System Software Install Shield Wizard. ▶

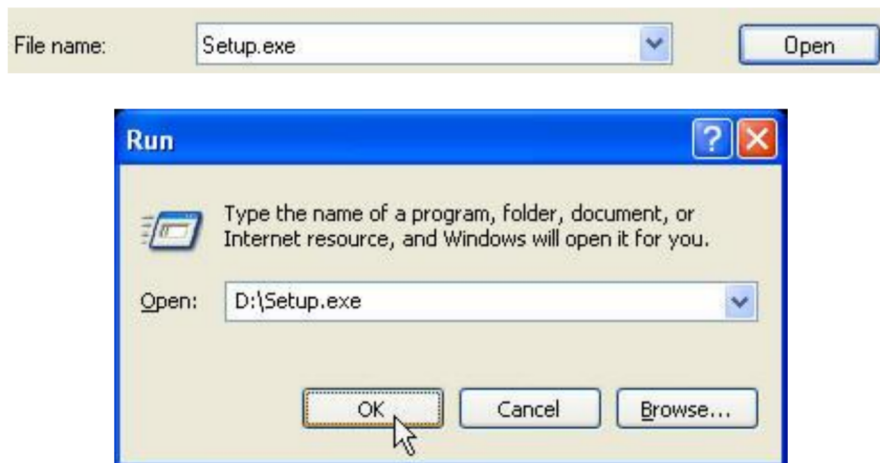
| Step	Action / Results

1. For a normal install, you may simply accept all the defaults in progressing to the *Install Shield Wizard Complete* screen.

2. Open *Pleora* installation instructions to complete driver installation. You may only install the iPORT™ High-Performance IP Device Driver if you have the Intel Pro/1000 adapter; this is the recommended configuration. An alternative which gives lower overall data handling capability is the filter driver which may be installed to almost any ethernet adapter on the computer. If the filter driver is installed, make sure to disable it on any adapters NOT used for connection to the Pleora. *See Note below regarding drivers.*
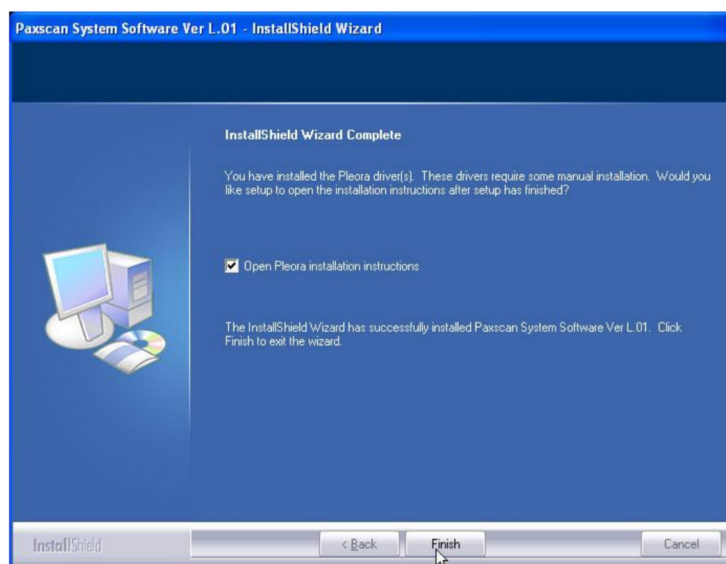
Note: Pleora provide three options for the Ethernet driver. For fastest possible operation install the Pleora Performance driver on to the Ethernet adapter of the host computer; but, this is only possible with specific Ethernet adapter – namely, the Intel Pro/1000. Other gigabit Ethernet adapters may be used without noticeable loss of speed for radiography (single shot) modes. Operation is possible with the native Windows driver which requires no additional installation; however, performance will vary depending on the computer system. The Pleora Filter driver provides a third option that gives performance intermediate between the other two. The filter driver solution is better than the Windows driver though still not nearly as good as the performance driver. We strongly recommend using only the Performance driver for medical applications. The user must validate that any configuration used is suitable for the intended application.

Receptor Files Installation

Follow through the install screens to complete the PaxScan Receptor installation. You must restart your computer for installation to take effect. ▶
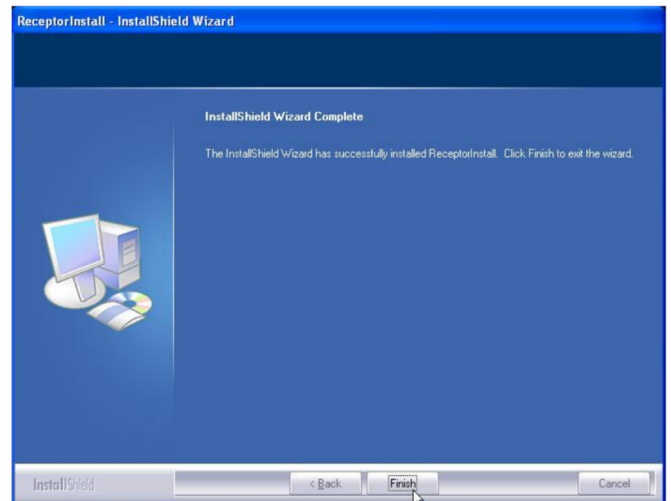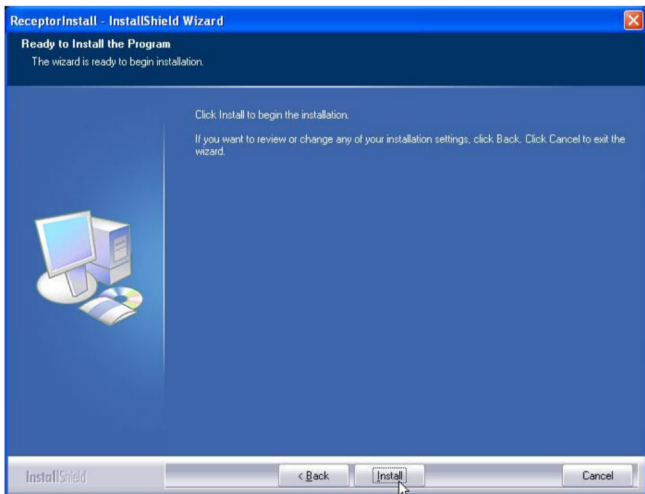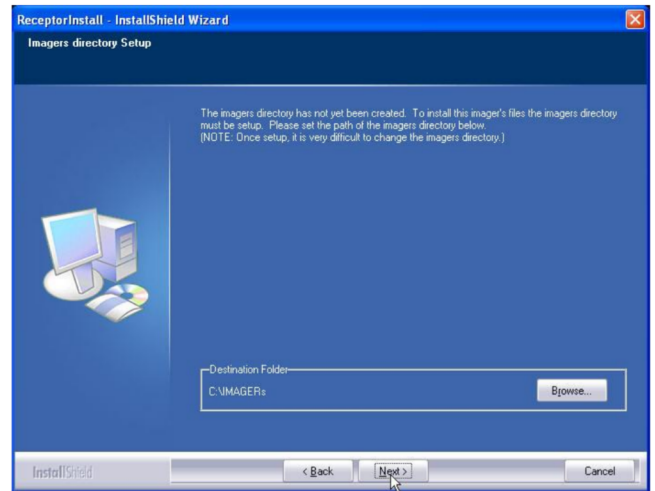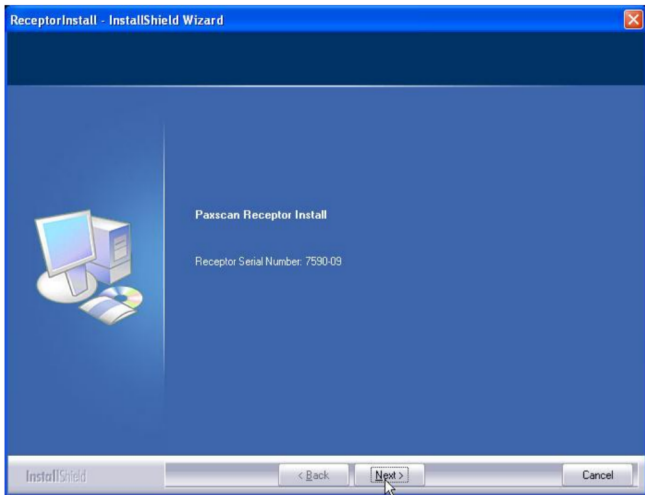
Modes of Operation

The PaxScan 2520 XI/V supports a number of modes of operation as defined in Table 2.0. In general, there is a trade off between varying operation modes of resolution, or field of view, or frame rate, or noise.   The sensitivity of the imager is optimized to match the X-ray dose used in each mode.

The purpose of each mode is to configure the detector to achieve optimal performance during specific imaging procedures.   Modes are defined by a combination of factors, such as pixel binning, frame rates, analog gain, field-of-view, and continuous versus single acquisition. Each mode requires a unique set of calibration files. Refer to the ViVA Online help documentation for complete details.

Each operating mode employs all types of calibration.   In accumulation-type acquisitions, the PaxScan 2520 XI/V will sum a number (limited by available memory) of frames, and normalize the result before displaying a new image via the video output ports.

Note:

The system can only be in one mode at a given moment.

Not every mode will be available with every system. The OEM should work with PaxScan technical support for configuration of the mode(s) which best suit the customer's intended application.

Table 2-0 PaxScan 2520 XI/V Operational Modes

Mode	Max Frame Rate (Hz)	Pixel Binning	Image Area	Frame Size	Acquisition Type
Radiography	10	1 x 1	Full Field	1,536 x 1,920	Accumulation
Fluoroscopy	30	2 x 2	Full Field	768 x 960	Continuous
Full-Resolution Fluoroscopy	10	1x1	Full Field	1,536 x 1,920	Continuous

Default Mode

Mode 0 is the default, although this can be configured to meet the customer's specific application requirements. The default mode will be invoked automatically upon system power-up when a link is opened or receipt of a reset state command. ViVA will normally remember the last mode used and select it for future launches.

Operation States

The operational states of the imager can be categorized as follows:

- **Continuous acquisition**: (Fluoroscopy-type)

- **Accumulation acquisition**: (Radiography-type)

- **Offset Calibration**: (OEM-initiated)

- **Gain calibration**: (always-OEM initiated)

- **Analog offset calibration**: (always OEM-initiated)

Calibration Procedures

Offset Calibration

Prior to acquiring images, an offset calibration must be performed for each mode you intend to use. Offset calibration compensates for fixed pattern pixel intensity variations in the image, associated with the dark current and electronic offsets. The Offset reference image is an average of a series of frames acquired without X-ray illumination and referred to as dark fields. ▶

- Offset calibration should not be performed during X-ray.

- The X-ray-to-digital conversion factor does not change as a result of calibration.

- An offset calibration should be performed as often as necessary for acceptable images in the application the receptor is being used in. The offset varies as a function of panel temperature and frame rate.

- A different offset reference image is necessary for each operating mode, therefore it is important to update the offset data for each of the operating modes.

| Step	Action / Results
1.	To perform offset calibration, click the *ViVA* icon launches the application.

Step	Action / Results

2. Select the *Link to Virtual CP* (VCP) option under Acquisition from the menu bar or the *Link / Mode* drop down box. The main purpose of the VCP is to establish connection to the PaxScan imaging system to control the acquisition of digital images captured.

3. Then, select desired Mode from the *Link / Mode* drop down *box*: The 2520 XI/V supports Fluoroscopy or Radiography modes of operation as defined in Table 2.0.
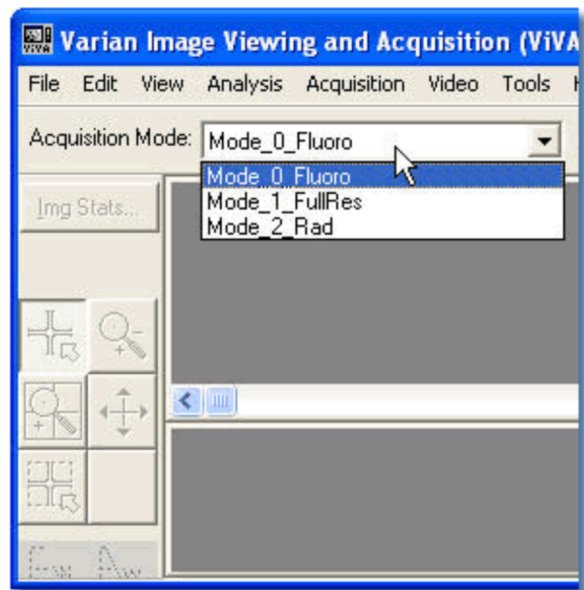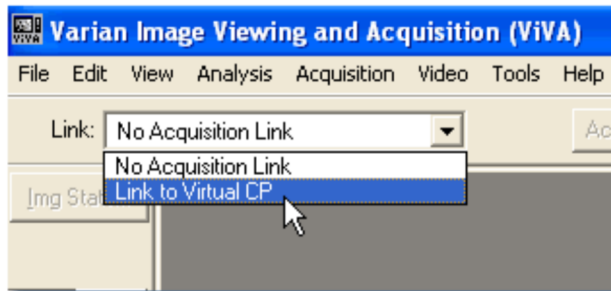

Note: It is recommended that a delay of at least 20 seconds be allowed after an X-ray exposure, before commencing with offset calibration. Since there is some inherent lag in the detector, this delay avoids introduction of a latent image into the offset reference image.

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Step	Action / Results

4. Click Offset Calibration button or select from the menu bar under Acquisition.
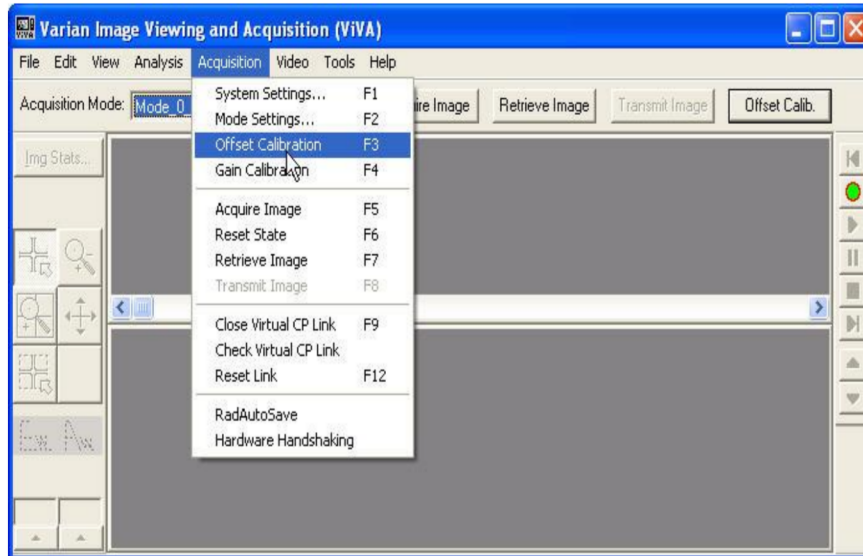
3. An accumulating Dark Frames window appears followed by an offset calibration acquisition completion. Offset calibration is required for each additional receptor, respectively.

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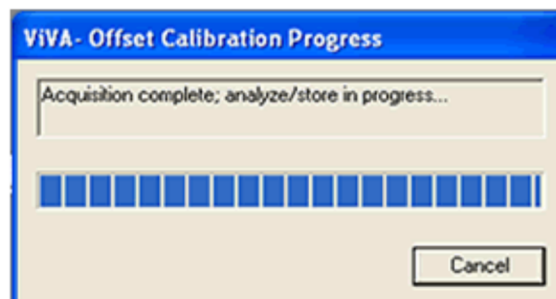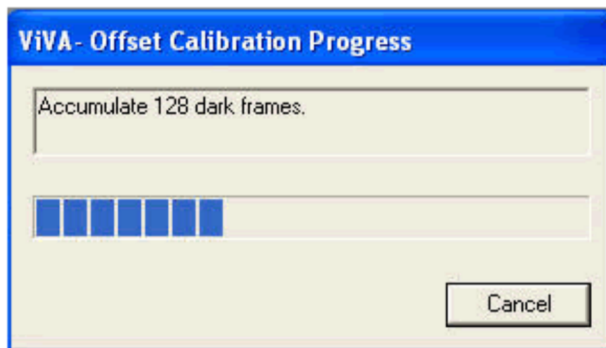
Gain Calibration

To compensate for non-uniformities in the Receptor, a gain reference image (flat field) is used by the Corrections module as required to correct all images.   The flat field image must be captured by the Virtual Command Processor (VCP) prior to acquiring images. The process of capturing the flat field image is known as Gain Calibration.

Gain calibration is based upon the linear response of the Receptor to dose. Normalization is achieved by applying the flat field image acquired during the Gain calibration to all images corrected by the VCP. Normalization will fail with pixels that are responding to dose in a non-linear manner. Pixels responding to dose in a non-linear manner are usually caused by the saturation of the Receptor, or a low signal-to-noise ratio.

Note: It is critical to acquire the flat field image within a range that is large enough to be higher than the background noise created by the X-ray source and readout electronics of the Receptor, but lower than the saturation point of the imager.

Flat field images acquired near or exceeding the saturation point will cause normalization failures with all images acquired until a Gain calibration with the correct dose is performed.   We recommend that flat field images be acquired with a median count of 1600 - 4800 (for 14-bit receptors). This range will ensure that Gain calibration will meet both the upper and lower dose requirements under all modes of operation. Dose requirements are determined by the settings of the generator X-ray source.

To reduce the effects of noise, the average of each pixel in the flat field image is calculated by accumulating a number of frames into an internal memory buffer, then dividing the sum of each pixel by the number of frames acquired.

Note: Using larger numbers of calibration frames to capture the flat field image will result in more accurate calibration.

The number of calibration frames used during Gain and Offset calibrations can be adjusted under the *Mode Settings* pull down menu. We recommend accumulating 128 frames in fluoroscopic modes, and 32 frames in radiographic and full-resolution modes. For low frame rates, such as one frame per second, this may be too long a period. In such cases, it may be necessary to lower the number of calibration frames to more tolerable time periods, not going below eight frames.

The general procedure for Gain calibration for all modes is as follows in Table 3-0 and described below. Detailed instructions on performing gain calibrations are covered in the ViVA Online help documentation.

Table 3-0 Gain Calibration: All Modes

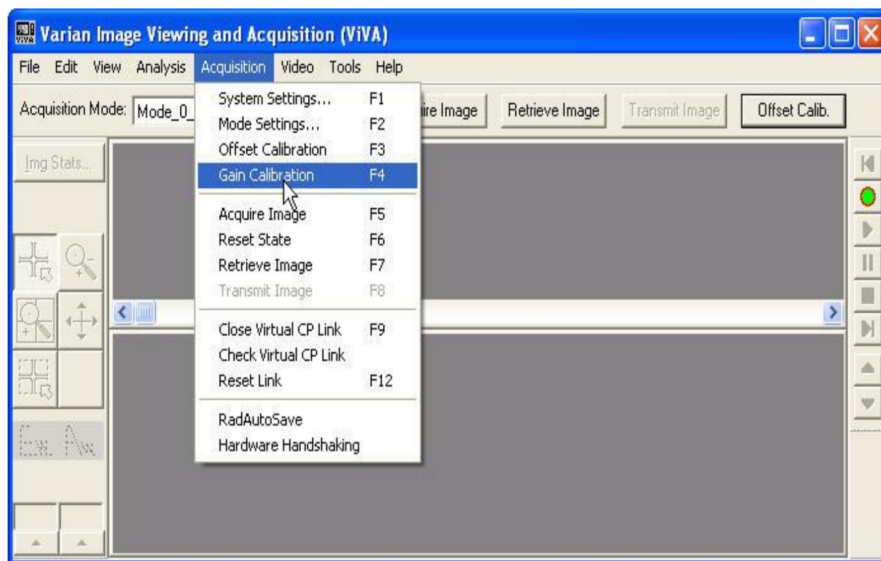| Step	Action	Results
1.	Warm Up	To ensure proper warm up, the PaxScan 2520 XI/V Receptor must be operational for a least two (2) hours prior to Gain calibration.
2.	Radiation	A uniform flat field with no object in the path of the X-Ray beam. The radiation should ideally be at a level and technique representative of the typical radiation dose for the Receptor during typical procedures, keeping in mind general consideration outlined above.
		Note: The exact level of the radiation during calibration will not influence the calibration as long as the signal level is not saturated.
3.	Offset Calibration	Software automatically performs a new Offset calibration referred to as dark field acquisition.
		Note: X-Rays *must not be used* for this part of the calibration.
4.	Repeat	The above procedure must be repeated for each of the stored imaging modes.

Important: Gain calibration procedures differ for fluoroscopic and radiographic modes. In radiographic mode, steps 2 and 3 listed above table are reversed. Gain calibration requires the production of X-rays and therefore certain actions from a human operator.

## Fluoroscopic Mode Gain Calibration

Take the following steps to complete fluoroscopic gain calibration. ▶

Step	Action / Results

1. Select desired mode setting from the *Acquisition Mode dropdown*. For this example *Fluoroscopy* is chosen.

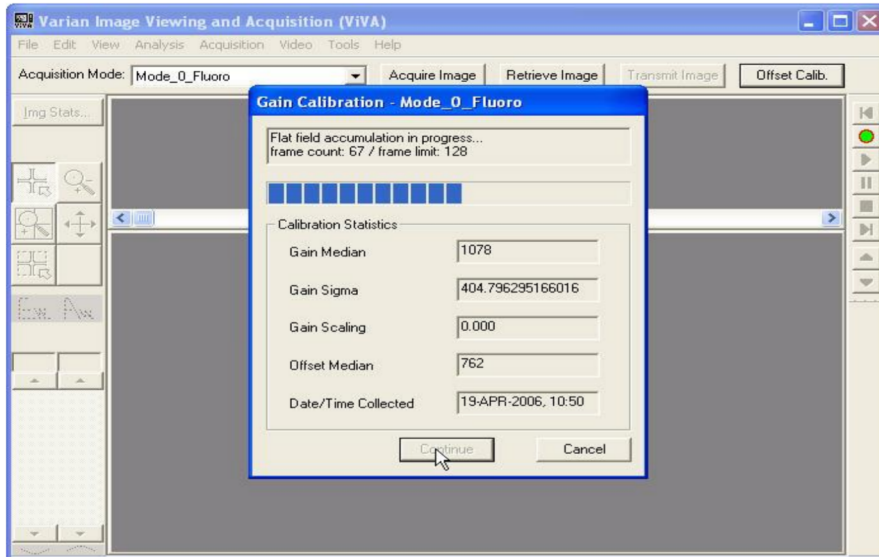**2.** Select Gain Calibration from the menu bar under *Acquisition*

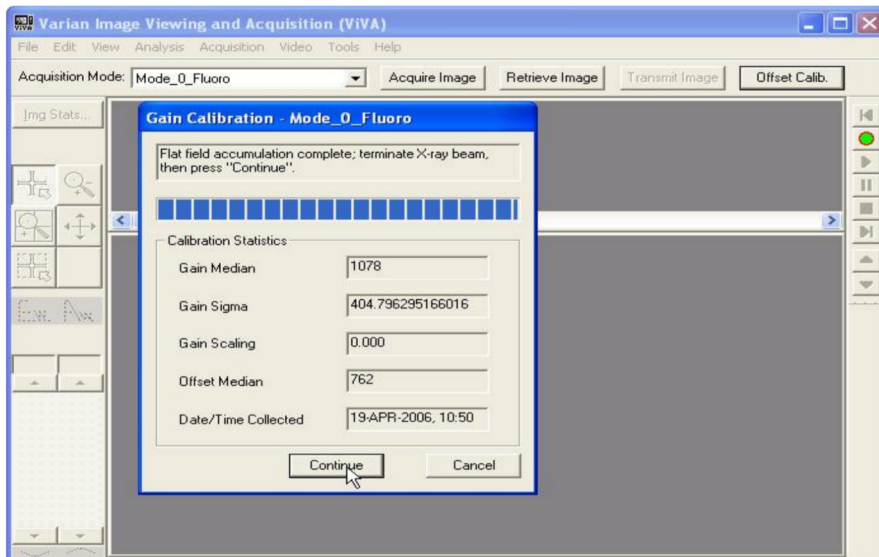**3.** Remove all objects from beam, initiate X-ray exposure, then press "Continue".
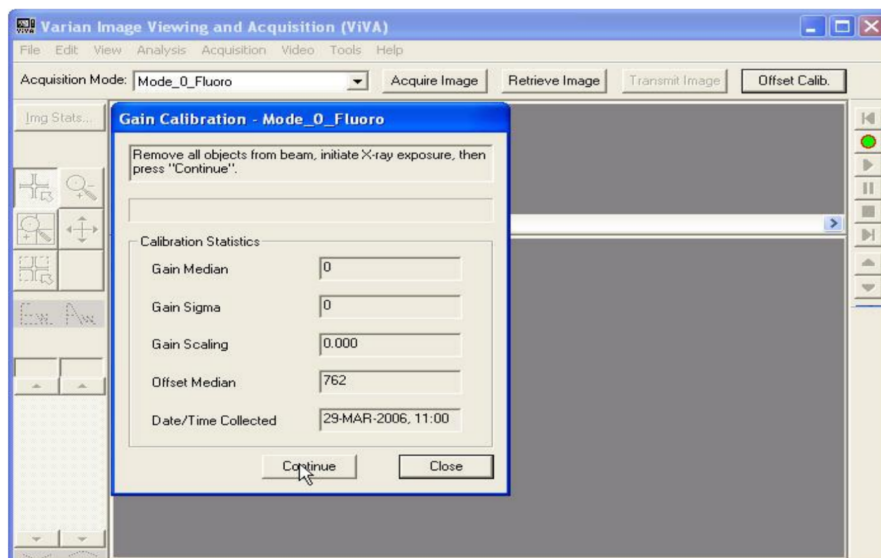
Step	Action / Results

4. Flat Field accumulation in progress screen.

5. Flat Field accumulation complete, terminate X-ray beam, press "Continue".

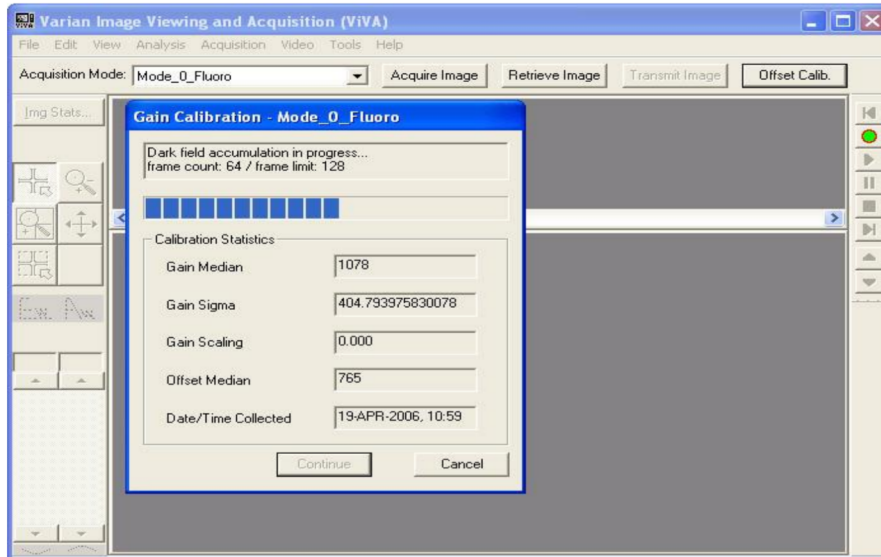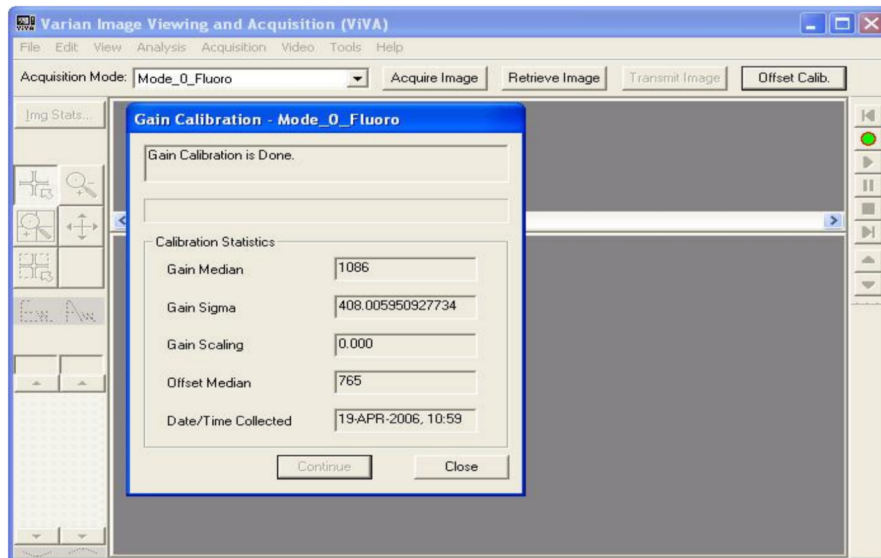**© Varian Medical Systems | X-Ray Products**

Step	Action / Results

6. Dark field accumulation begins.

7. Gain calibration complete.

Important: *Points of note about Fluoroscopic Gain calibration*:

• If the median value is higher than 4,000, the dose used needs to be decreased and the gain calibration repeated.

• If the median valued is lower than 2,000, the dose needs to be increased and the gain calibration repeated

• Gain calibration should be performed at regular intervals, typically once every three (3) months, or whenever the central beam of the X-ray source has been moved relative to the Receptor.

• Replacement of the X-ray tube will require a new gain calibration to be performed.

• We recommend accumulating a minimum of 32 frames for gain calibration for optimal image quality. However, the actual number of calibration frames used must be determined solely by the system integrator depending upon their specific performance requirements.

Note: For additional assistance operating ViVA™, use the ViVA Online help documentation.

Note: *Operator Control* is user supplied equipment.

Radiographic Mode Gain Calibration

Radiography Gain calibration differs from fluoroscopy Gain calibration in that an Offset calibration is performed prior to collecting the Flat Field image. Illuminated frames are then offset-corrected and accumulated in the VCP internal buffer.

A series of accumulated frames equals one exposure. Exposures are averaged to obtain the Flat Field image used by the VCP correction module. The number of exposures acquired can be varied by clicking the **Finish** button after collecting the desired number of exposures.

Important: Gain calibration procedures differ for fluoroscopic and radiographic modes. In radiographic mode, steps 2 and 3 listed Table 3.0 are reversed. Gain calibration requires the production of X-rays and therefore certain actions from a human operator.
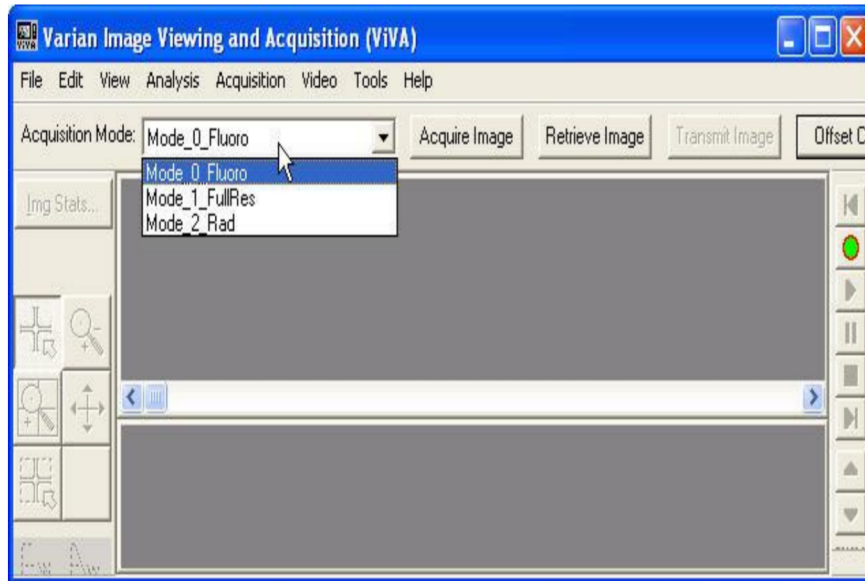
Important: Repeat the steps in Table 3.0 for Radiographic Mode Gain Calibration – remembering to reverse steps 2 and 3.

ViVA Mode Settings

The calibration and system settings are verified as follows. To view these settings take the following steps. ▶
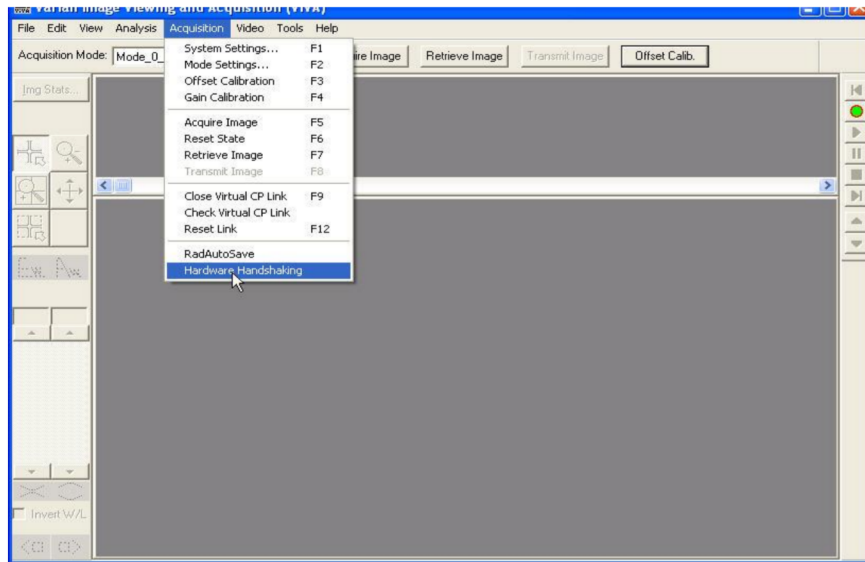
Step	Action / Results

**1.** Make sure the desired mode setting is selected.

Step	Action / Results

2. Only <u>if no I/O box is in use</u> **verify that the "Hardware Handshaking" is** *unchecked.* It may default to *checked* when ViVA is first launched.   Depending on the ViVA version it may default to *checked* each time the communication link is opened. However, later versions of ViVA will remember your preference for future launches.
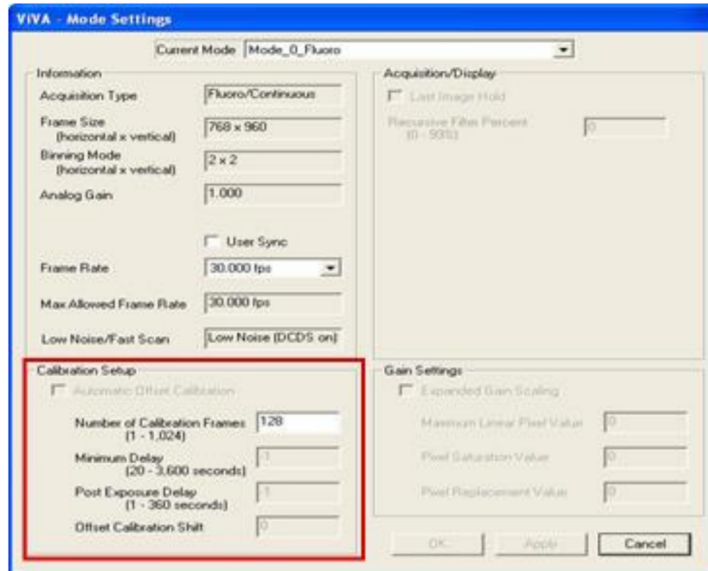

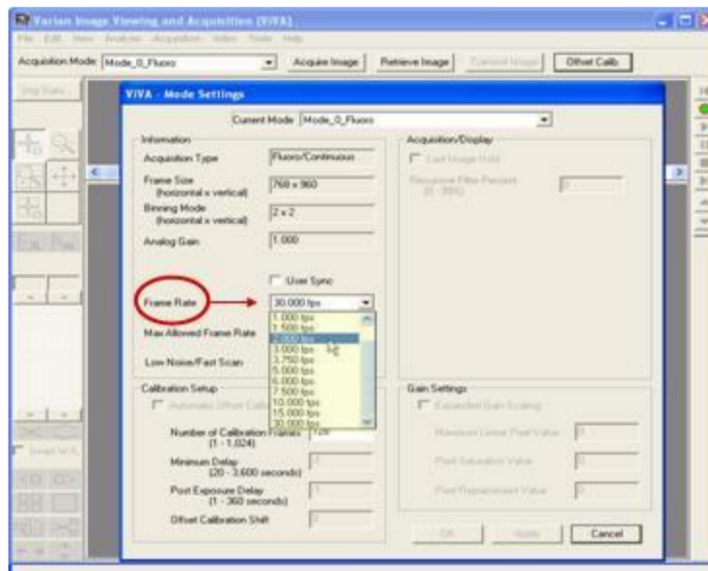**3.** Select Acquisition / Mode Settings from tool bar drop down menu.
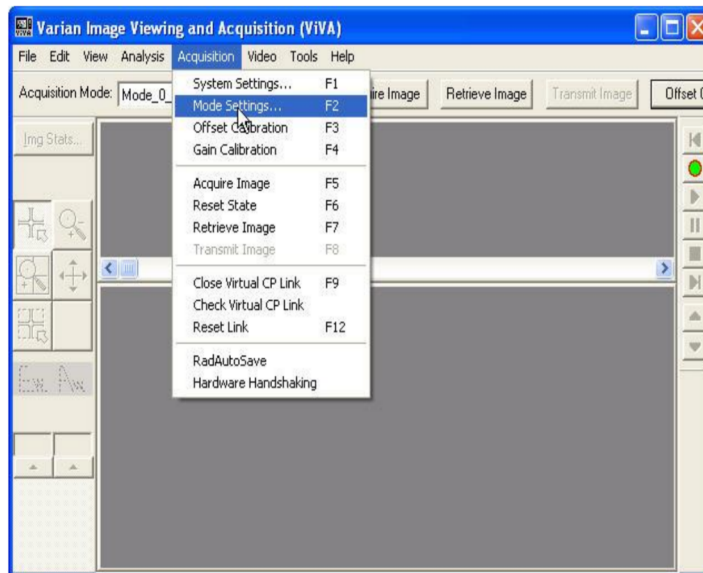
Step	Action / Results

4. Calibration settings.
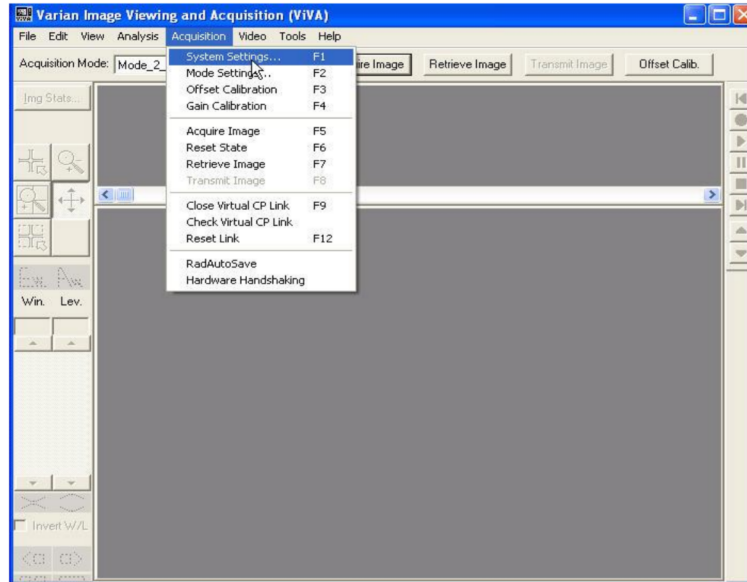

5. Frame Rate settings.

Step	Action / Results

1. System settings are verified as follows.

2.

Image Acquisition

Once Offset and Gain Calibration is performed, you are ready to acquire images.

Fluoroscopy Normal / Fluoroscopy Full – Res Mode

The Fluoroscopy mode is commonly used for its ability to provide real-time moving images for positioning and verification. ▶

Step	Action / Results

1. Select the *ViVA* icon [icon] launches the application.

2. Select Acquisition / Open Virtual CP Link from either the *Acquisition Mode drop down* menu or the *Acquisition tool bar.* The main purpose of the VCP is to establish connection to the PaxScan imaging system to control the acquisition of digital images captured..
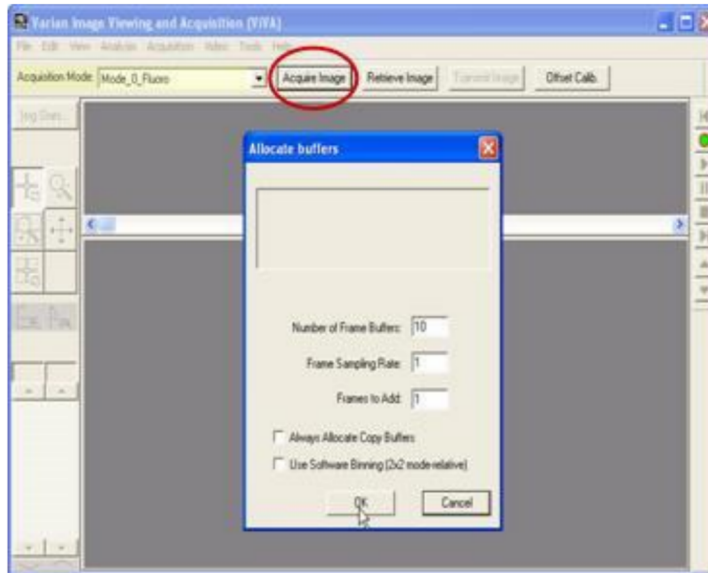
Acquisition Mode Drop Down Menu
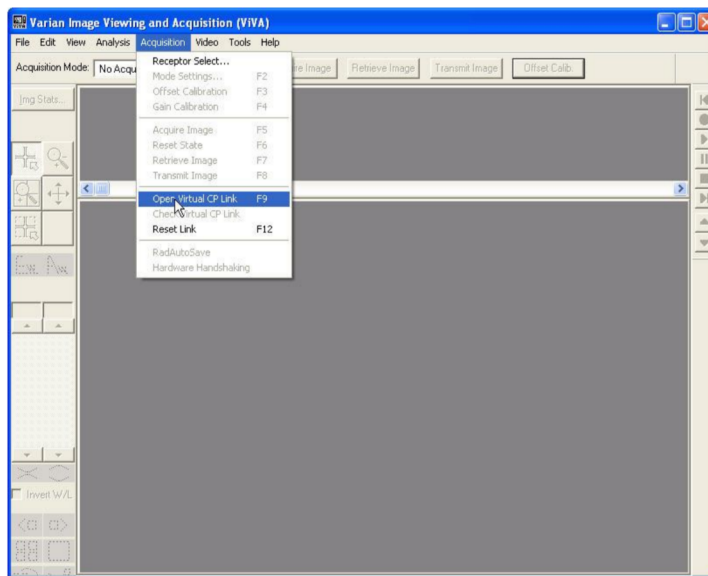
Acquisition Tool Bar
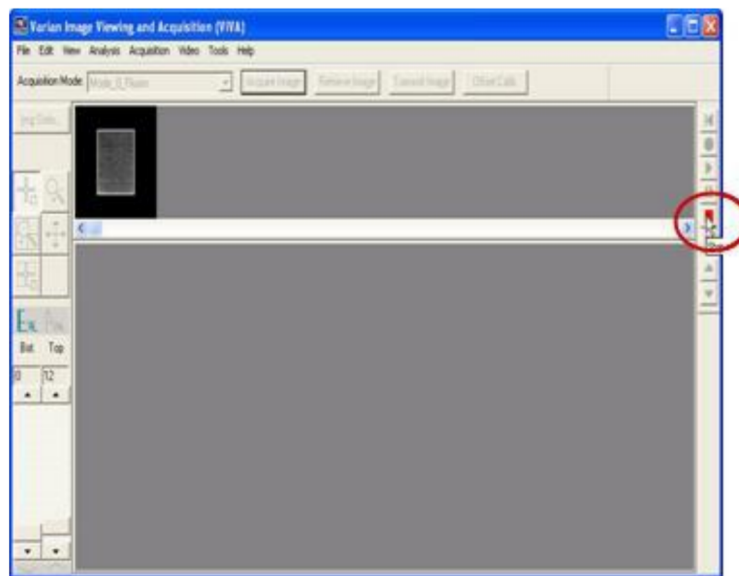
Step	Action / Results

3. Select desired mode from *Acquisition Mode drop down menu* – for this example *mode 0 fluoroscopy* is chosen. *Select* the *Acquire Image* button, and at open allocate buffer window, select *ok..*
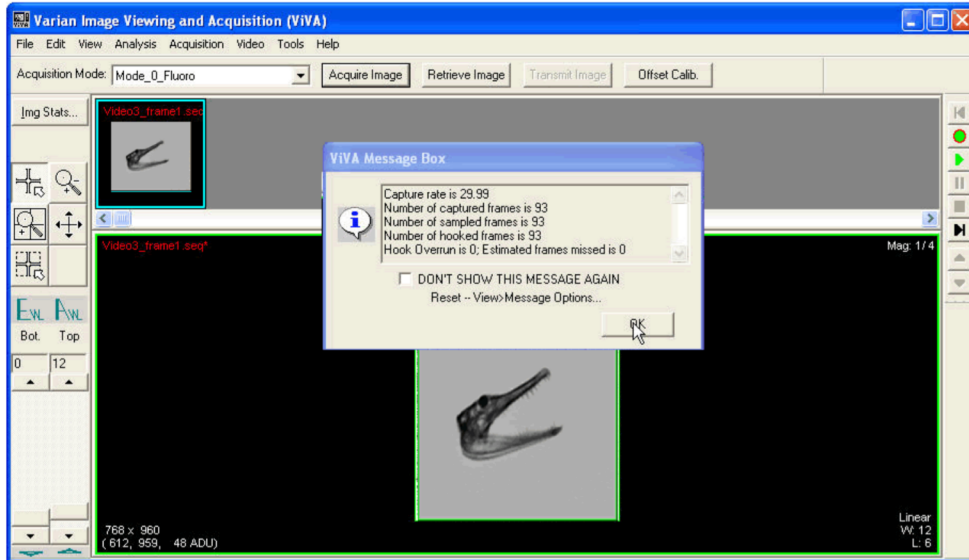

4. The following window indicates the Receptor is actively acquiring "live" images. Click the "*stop*" on the right navigation panel.

Step	Action / Results

5. The following window will appear providing active image capture data.

6. Acquired image can be saved in desired format by selecting File / Save As.
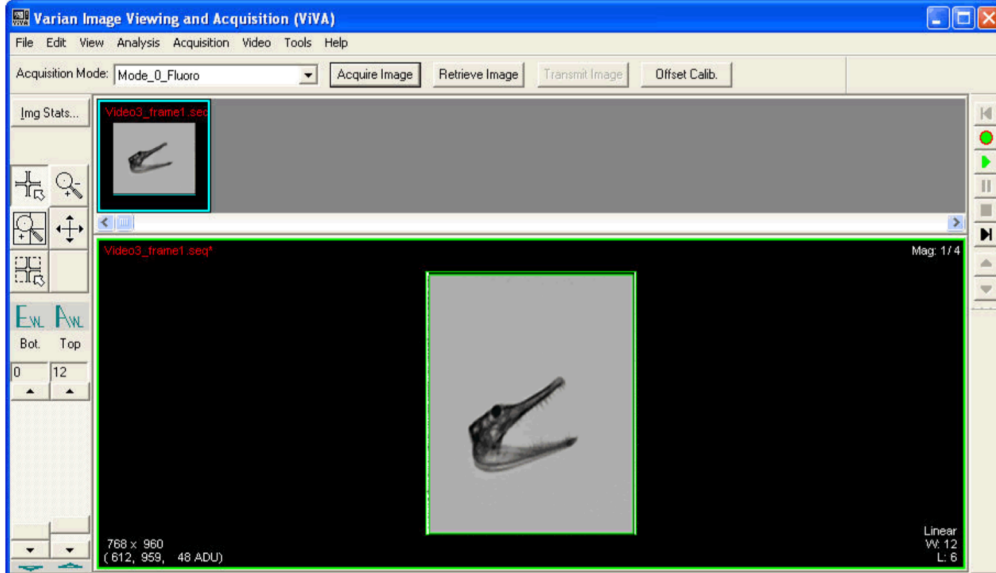
Radiography Mode

The Radiography mode provides the technician with superior single-shot, higher resolution images, for diagnosis.

Step	Action / Results

1. Select *mode settings* from *Acquisition Mode* drop down menu. For this example, *Mode 2 Radiography* is selected.
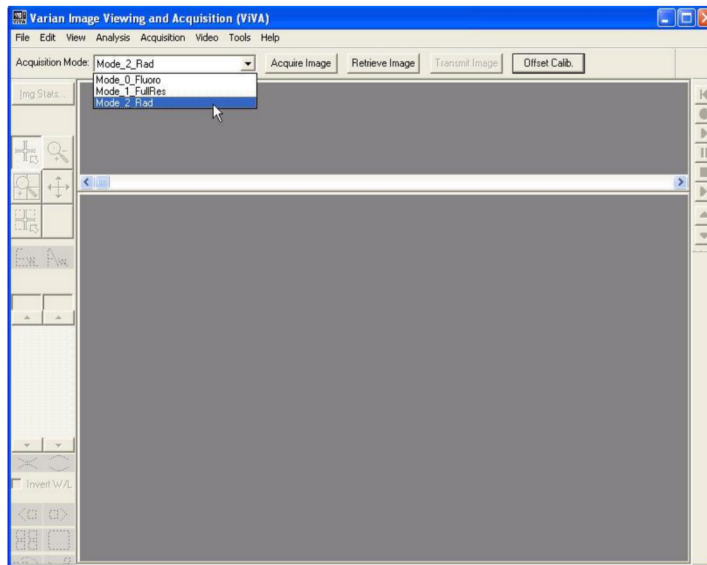
2. Make sure hardware handshaking is unchecked Only if no I/O box is in use.
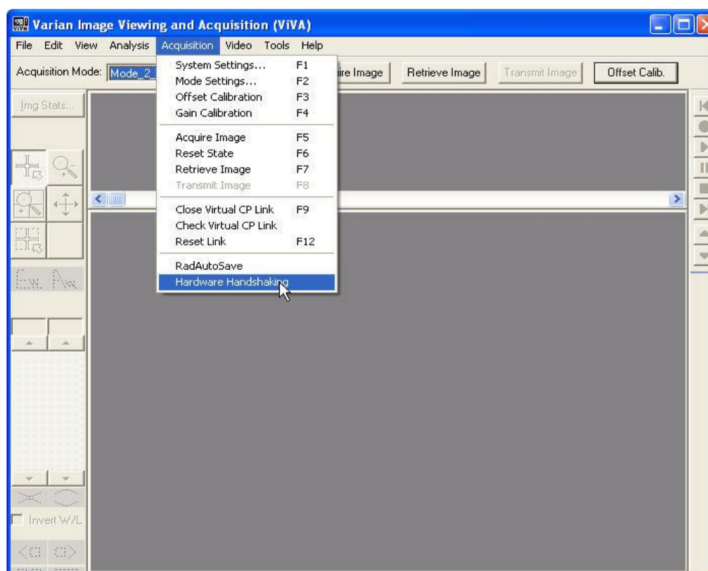
Step	Action / Results

3. Select the *Acquire Image* button and *"start"* invokes imager to begin acquiring images.
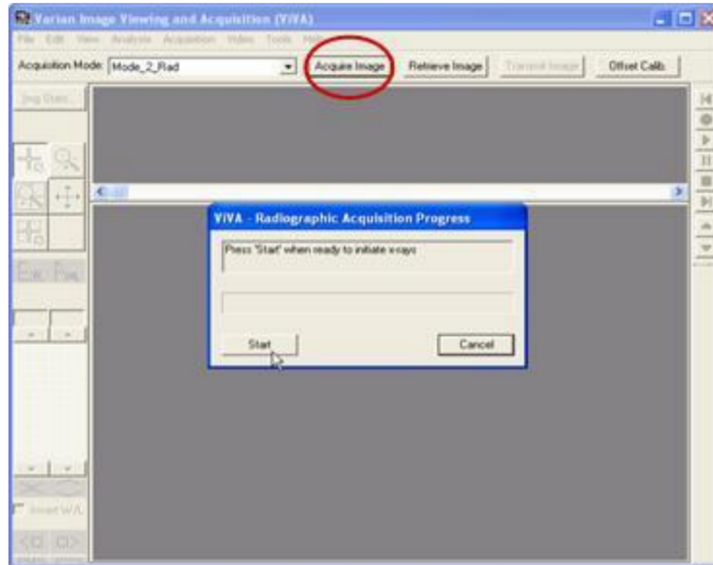
4. "Expose" position indicates the appropriate time for X-ray delivery.

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Acquired image can be saved in desired format by selecting File / Save As.

Safety

Electro-Magnetic Interference

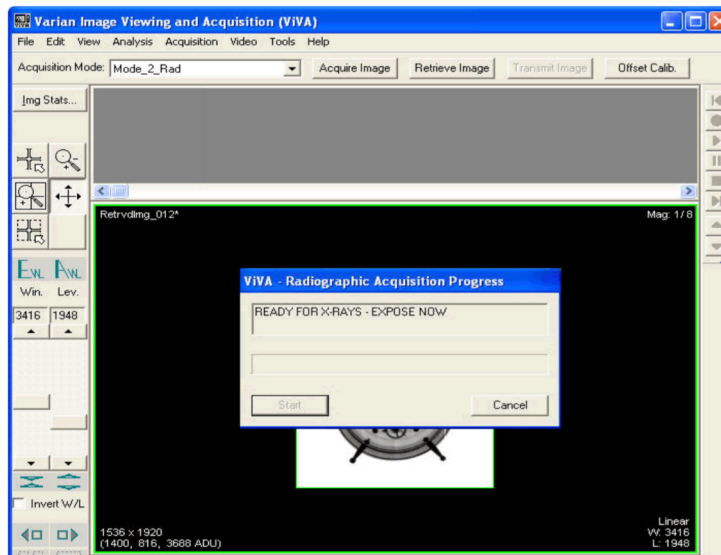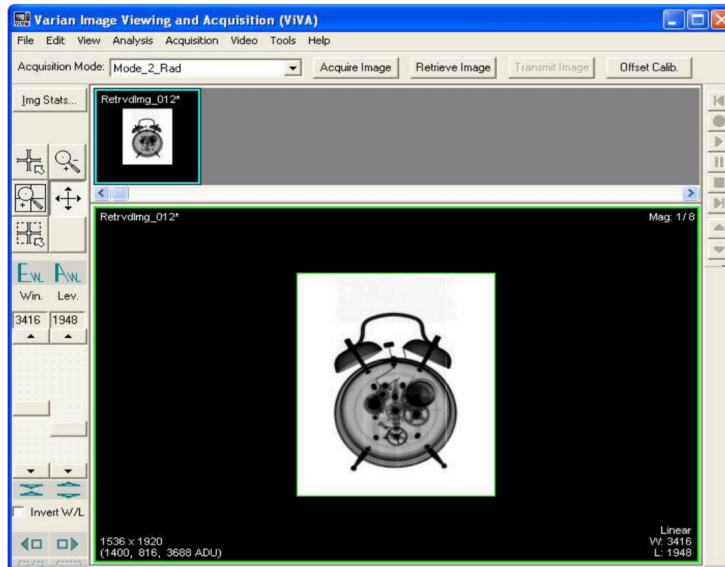This equipment generates, uses and can radiate radio frequency (RF) energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity. In any and all circumstances; however, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to other devices, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the measures listed in the **Troubleshooting** section.

Electrical Shock Protection

- Compliance with CAN/CSA-C22.2 NO. 601.1-M90, 2005 (Medical Electrical Equipment Part 1 General Requirements for Safety), IEC 60601-1 Medical Electrical Equipment Part 1 General Requirements for Safety – edition 2, UL 60601-1 Medical Electrical Equipment Part 1 General Requirements for Safety – edition 1

- External Power Supply Specification - (optional):
  – type: XP Power model PCM50US15, ratings: Input Voltage 90 – 264 VAC, Input Frequency 47 to 63 Hz, Input Current 1.35 A max at 115 VAC, 0.7 A max at 230 VAC, DC Output 15V

- Panel electrical rating if the power supply is not provided with the unit:
  – Continuous power rating is: 25 Watts
  – Input voltage is: 15VDC +/- 0.5VDC @1.6A

- Class I

Environment Limits

Rigorous environmental testing is conducted on an engineering basis using a sample imager.

Altitude Limits

The Paxscan Digital Imager Receptor is rated to operate at an altitude $\leq$ 3000m.

Temperature & Humidity

Category	Limits
Storage & Transport (ambient)	-20º C to +70º C
Storage & Transport Humidity (non-condensing)	10% to 90%
Normal Operation Temperature (measured at the center of the back cover)	10º C to +35º C
Operation Humidity (non condensing)	10% to 90% RH

Maintenance

Cleaning and Disinfection

The flat panel receptor and connected cables are likely to be soiled during use. The specific material most likely to become soiled is the X-ray grade carbon fiber input window and aluminum housing.

Cleaning and disinfecting of the input window should be performed as needed.   Wiping the surfaces with a soft cloth dampened with soap and water will generally clean the surfaces.

Proper disinfection requires that a disinfectant solution be used; such as a hospital grade, EPA registered low to intermediate-level product for hard, non-porous surfaces and equipment.   Use disinfectants in accordance with the manufacturer's instructions.

Repairs

Note: No user serviceable parts. If repairs are necessary, please see *How To Reach Us.*

The least replaceable units (LRU) are:

• Receptor Assembly

• Main Power Cable - (optional)

Proper Disposal

The 2520 XI/V receptor should be returned to Varian Medical Systems for disposal.   We request that you obtain an RMA number using the same procedure for warranty/returns of products.

Contact: PAXSCAN.RMA@VARIAN.COM

Warning: Precautions should be taken to not open the receptor module. Depending upon the type of scintillator used, opening the receptor module may expose the user to potentially toxic materials.

Troubleshooting

Problem	Solution
Imager fails to respond	1. Check cables.
Imager causes Electro-Magnetic Interference	1. Reorient or relocate the receiving device. 2. Increase the separation between the equipment. 3. Connect the other device(s) into an outlet on a different circuit. 4. Consult the manufacturer or field service technician for help.
Poor Image Quality.	1. Confirm that image corrections are all selected in the Systems Settings dialog box in ViVA . 2. Re-acquire gain and offset images. 3. Assure that the exposures are appropriate for gain calibration images (not saturated).
Software hangs up.	Restart ViVA.
Acquired image is completely dark.	Increase the exposure and acquire a new image. If the image is still dark, verify that all cables are properly connected. Turn the power "OFF" and "ON". Acquire a new image.
Out of virtual memory.	Close some of the windows that are currently open.
Residual x-ray image from previous exposure shows in current image.	Charge on the sensor pixels from a super saturated exposure may cause a residual image. It can be erased by taking another image or multiple images without X-rays until the residual image is gone.
ViVA error message	1. Please complete PaxScan 2520 XI/V Problem Report. 2. Email the error log file generated to: paxscan.service@varian.com. This log file is normally found at C:\Documents and Settings\All Users\Documents\DrWatson\ drwtsn32.log

How To Reach Us

In order to provide you with the most comprehensive technical support, (hardware or software), please complete the problem report on following page before contacting your Varian representative.   If you prefer E-mailing the information to us, a .pdf version of this form is included on the CD you received with your system. You may also fax the completed form.

To speak with our technical support personnel:

- Call (800) 432-4422 or (801) 972-5000.
- E-mail the report to paxscan.service@varian.com, or
- Fax a copy of the Problem Report to (801) 972-5023

PaxScan 2520 XI/V Problem Report Customer Information

Date:	Your Name	Company/Unit Name:
Email:	Phone Number:	Fax Number:

Product Information.
PaxScan Part Number: Imager Serial Number: Software Revision #:
Operation I was trying to perform (be as specific as possible:
What happened (use additional sheets as necessary):

Fax to: (801) 972-5050 or E-mail: paxscan.service@varian.com

Appendix A

Diagram

Diagram 1-0

Schematic for the "Expose OK" and "User Sync" Signal