

Using your

***KODAK PROFESSIONAL
Device Calibration Software***

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Product Description

The KODAK PROFESSIONAL Device Calibration Software automates the primary set up process for the KODAK PROFESSIONAL RFS 3570 Scanner with Speed Up and the KODAK PROFESSIONAL RFS 3570 Plus Scanner.

Note: Throughout this document, "scanner" refers to the KODAK PROFESSIONAL RFS 3570 Scanner with Speed Up or the KODAK PROFESSIONAL RFS 3570 Plus Scanner. Any other scanners are identified with the full product name.

The KODAK PROFESSIONAL Device Calibration Software also works with the KODAK Long Roll Scanning Software and the KODAK Professional Imaging Software.

Device calibration is an important part of a color managed digital photographic production system. This product automates the creation and integration of Look Up Tables and Slope Tables for KODAK Long Roll Scanning Software and KODAK Professional Imaging Software.

Additional scanner balancing tools include:

- KODAK Long Roll Scanning Software
- KODAK Professional Imaging Software
- KODAK PROFESSIONAL PORTRA Scanner Control Negatives (Size 120), Cat. No. 137-9460
- KODAK PROFESSIONAL PORTRA Printer Control Negatives (Size 120)
 - Control Negative (Normal), Cat. No. 846-0958
 - Very Underexposed Negative (Very Under, U2), Cat. No. 107-1398
 - Underexposed Negative (Under), Cat. No. 841-1902
 - Overexposed Negative (Over), Cat. No. 177-1302
 - Very Overexposed Negative (Very Over, O2), Cat. No. 144-5741
- Knoll Gamma Software (Adobe® Photoshop®)

Note: Your optical system must be fully optimized. Refer to *Appendix A: System Calibration (Digital/Hybrid Systems)*, p. 29.

Scanner Calibration Overview

This software product can be used with or without video-analyzer data. A system that uses video-analyzer data is referred to as a "digital/hybrid" system.

Without Video-Analyzer Data:

If you are using the scanner without integration of video-analyzer data, initial system calibration consists of four steps:

Step One: Perform the Open Gate Calibration procedure.

Step Two: Build a Look Up Table (LUT) using the KODAK PROFESSIONAL Device Calibration Software.

Step Three: Save the Look Up Table (LUT) into specific folders in the KODAK Long Roll Scanning Software. Once you have completed the steps for calibrating the scanner, you will not need to create or save new tables.

Step Four: Apply the Look Up Table (LUT).

Note: Using the LUT will help ensure that digital prints resemble optical prints made from the same color negative.

The LUT should be applied at the time of scanning to prepare the image data for output to one or more of the following digital color printers:

- KODAK PROFESSIONAL Digital Multiprinter (KPDM)
- KODAK LF CRT Printer (LF CRT)
- KODAK SF CRT Printer (SF CRT)
- KODAK LED Digital Color Printers 20R/20P (LED)

With Video-Analyzer Data:

If your lab uses a video analyzer, the scanner is used in conjunction with a long roll advance system and existing optical equipment to integrate the video-analyzer data. Matching optical input and output with digital input and output relies on using the values generated by the video analyzer.

To integrate the video-analyzer data, initial system calibration requires an additional step. After performing the Open Gate Calibration, building Look Up Tables, saving them into the Long Roll Scanning Software, and then applying them, you will:

Step Five: Set up and build Slope Tables. This allows you to use the data from the video analyzer to control the scanner.

For this step, you will:

- a) Set up your master film balance: PORTRA_KPRO.

Scanner Calibration Overview (continued)

With Video-Analyzer Data: (continued)

- b) Compare scanner output values with digital print output.
- c) Calibrate the monitor.
- d) Collect information to create a Slope Table.
- e) Enter Slope Table values.
- f) Activate the Slope Table.

Slope Tables balance your system for under- and overexposed negatives. In a digital/hybrid system, slope is applied during scanning to insure that the output matches the original video-analyzer data as closely as possible.

You will build Slope Tables during the initial scanner set up and calibration procedure. However, you should check your Master or Control Print periodically to ensure that your system is still within acceptable range.

Software Installation

The KODAK PROFESSIONAL Device Calibration Software is installed from the Kodak web site. This section provides a brief overview of the installation process. Follow the instructions that come with the CD for installing the software.

To install the software:

1. Insert the installation CD in the CD-ROM Drive on your machine.

The installation program will launch the web browser on your system and access the installation web site:

<http://www.kodak.com/global/en/service/software/kproHost/3570Scanner.shtml>

2. On the web page, select the correct software for your platform and operating system and click to download.

Download Software

Description	Operating System	File Size	Date	Download File
NT Calibration Utility	WINDOWS NT	9.8 MB	January 2000	KProCalibration Utilities
Macintosh Calibration Utility	Macintosh	1.3 MB	January 2000	KProCalibration Utilities

The above utilities will allow you to linearize your RFS 3570+ or RFS 3570 Sizzle scanner.

Warning: This software should only be used for portrait and social lab use only.

Note: The illustrations included in this section may appear differently on your monitor.

3. Follow the instructions to install the software on your system.

Software Download Instructions

1. Click on any link above to initiate a software download.
2. Save the installer to your hard drive.
3. Double-click on the downloaded file in order to start the installation.
4. Follow the prompts to install the updated software.
5. Review the readme file included with the installer.

Note: If you do not have a web browser installed on your system, contact your Kodak representative for information on how to install the software.

Software Installation (continued)

The KODAK PROFESSIONAL Device Calibration Software installation program will create a folder on your hard drive named *Scanner Calibration*. This folder will contain the following files and folders:



Getting Started

If your scanner has been turned on and calibrated using the calibration mask, you must remove the "CalibrationData" file before using the calibration software or launching the Long Roll Scanning application. This file is found in the same folder location as the Scan Engine installed with your Long Roll Scanning Software.

The KODAK PROFESSIONAL Device Calibration Software has been configured to use the following defaults:

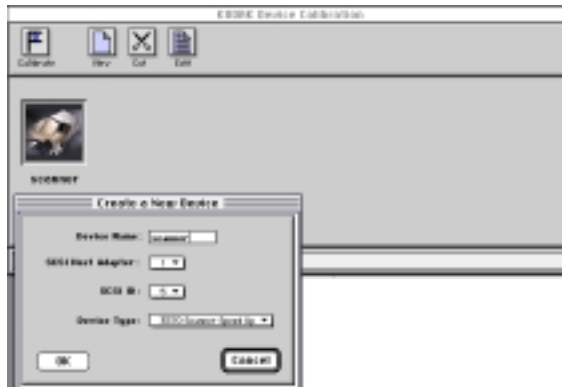
- Film Type: PORTRA_KPro
- Film Size: 62mm/6x7

To calibrate the scanner with these parameters, use the KODAK PROFESSIONAL PORTRA Scanner Control Negatives (size 120), Cat. No. 137-9460.

If you need to calibrate the scanner to a different film type or film size, see *Appendix C: Setting Film Type and Size, p. 31.*

Creating a New Device

1. Double click on the *Kodak Device Calibration* icon. This opens a blank *Kodak Device Calibration* screen.
2. Click on *NEW* and the *Create a New Device* screen will appear.



3. In the *Create a New Device* screen:
 - Enter a name for your scanner.
Note: Identify the scanner by film type or film format. This is particularly useful when you have more than one device type.

Creating a New Device (continued)

- From the *Device Type* pull-down list, select your scanner type.

- Locate the SCSI Host Adapter and SCSI ID number:

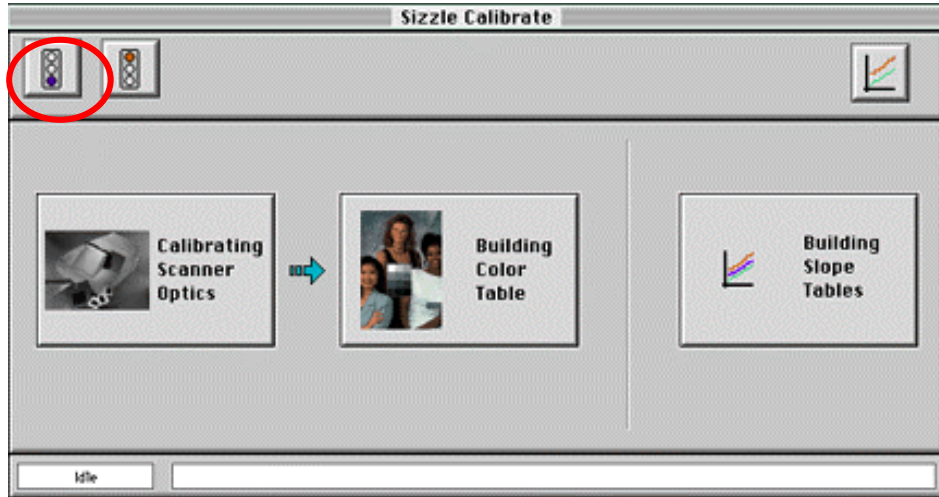
In the *Apple Menu*, select the *Apple System Profiler*. Select *Device Information*. On the *Device Information* screen, check the buses until you find your scanner. The Bus number is the SCSI Host Adapter, and the ID is the SCSI ID number.

Note: You can also find the SCSI ID Number on the back of your scanner.

- On the *Create a New Device* screen:
 - Select the appropriate SCSI Host Adapter.
 - Check that the SCSI ID number is correct.
4. After you have entered the above information, click *OK* to save the information. You will return to the *Device Calibration* screen. You can identify other devices or calibrate the device you named earlier.
 5. To calibrate the device, click on the scanner icon for the scanner you would like to calibrate.

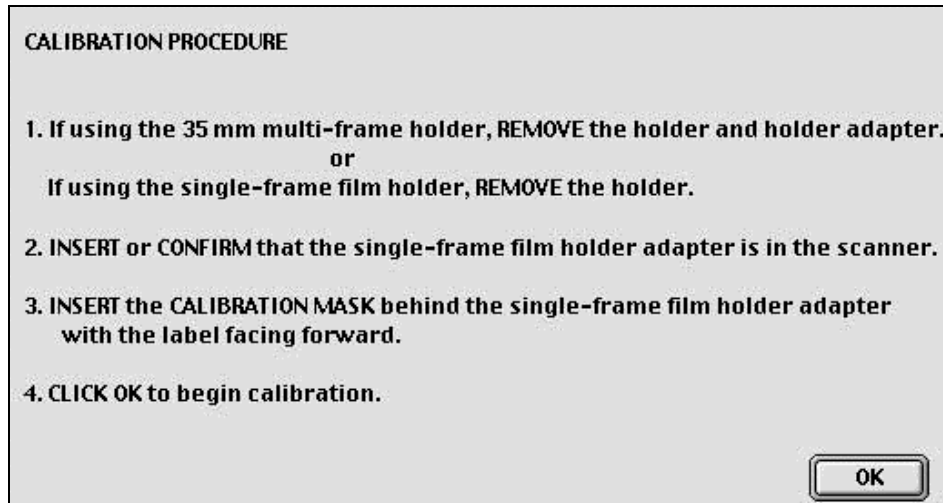
Calibrating the Scanner

1. When you click on the scanner icon for your scanner, the following screen appears:



2. Click on the green traffic light icon to start the calibration routine.

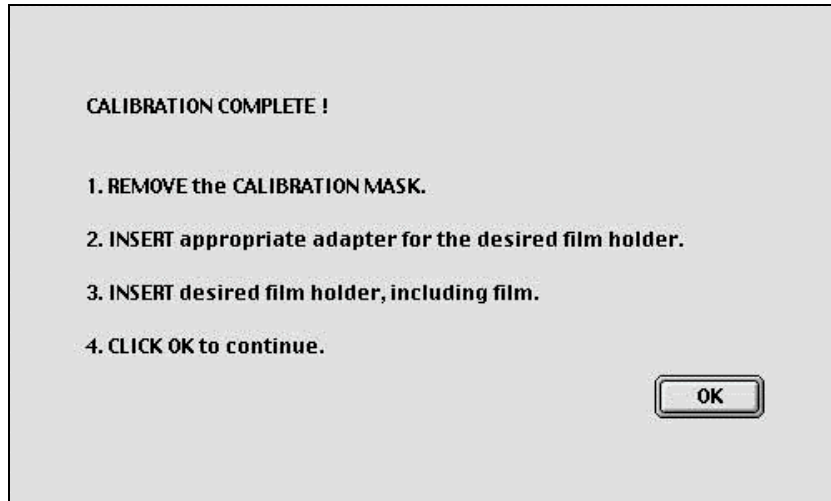
The *Calibration Procedure* screen requesting the calibration mask for the scanner will appear.



Open Gate Calibration

To calibrate the scanner, follow the instructions on the screen. This procedure is known as an *Open Gate* calibration.

3. Insert the calibration mask in the scanner and click *OK*.
4. At the completion of *Open Gate* calibration, the window requesting the calibration target will appear. Follow the instructions on the screen.



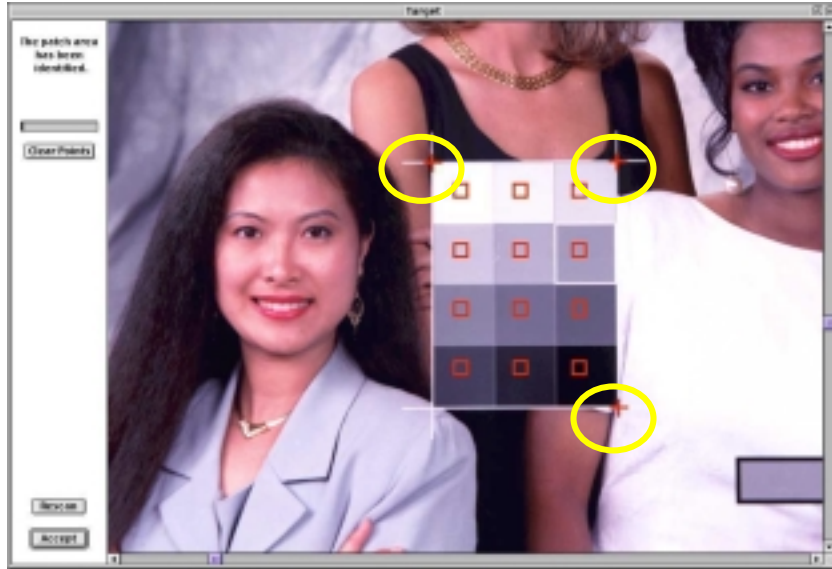
Building a Look Up Table (LUT)

The next step is to build a Look Up Table (LUT) which will help ensure that digital prints resemble optical prints made from the same color negative. This procedure is also sometimes referred to as "linearizing the scanner."

Note: The Look Up Table is referred to as the Color Table on the Calibrate screen in the box that says "Building Color Tables."

5. Insert the KODAK PROFESSIONAL PORTRA Scanner Control Negative (Size 120), (Cat. No. 137-9460) in the gate and click *OK*.
6. The software will scan the Scanner Control Negative and then display the scanned image.

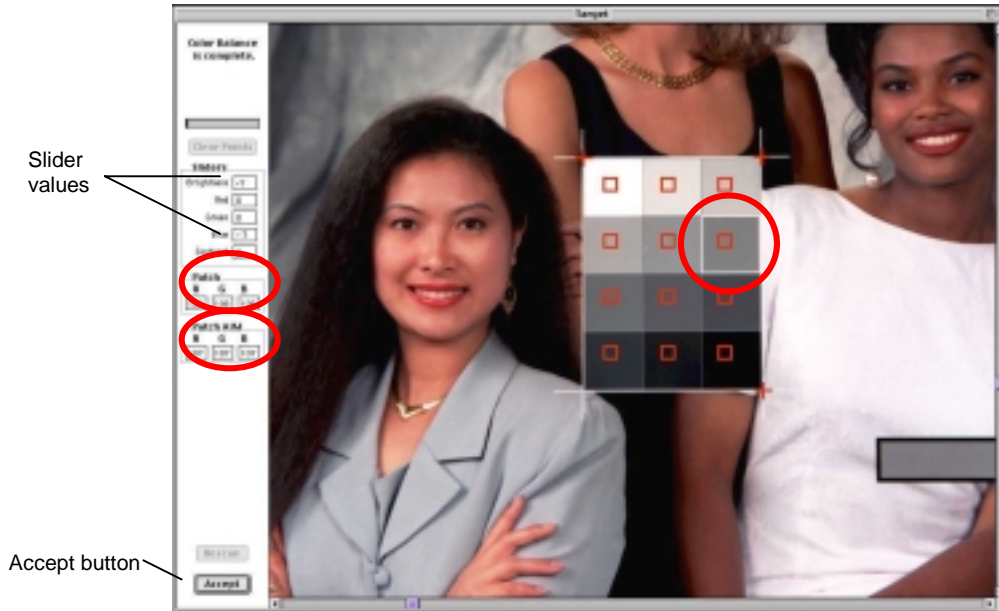
Building a Look Up Table (LUT) (continued)



Note: The image should appear as above.

7. On the displayed image, locate and mark three corners of the gray patch target with the cursor (upper left, upper right and lower right). The software will mark a square in the center of each patch.
8. When the squares appear to be properly centered in each patch, click on the *Accept* button. If the squares are not properly centered, rescan the negative and try again.
9. Once the software has calibrated your scanner to the target, "Color balance is complete" will be displayed at the upper left corner of the screen. The slider values for Brightness, Red, Green, Blue, and Contrast are displayed to the left of the image.

Building a Look Up Table (LUT) (continued)



Note: In the illustrations of the Scanner Control Negative, one patch is surrounded by a white border (see red circled patch above). This is sometimes referred to as Patch #6. The Patch and Patch Aim values refer to the values for this patch.

- Compare the values in the Patch field to those in the Patch Aim field. If these are not within 02 of their respective aims and 03 of each other, rescan the target or rerun the calibration routine.

Note: For the following procedure you will need the *Balance Point for FilmType Worksheet*. See *Appendix D: Balance Point for FilmType Worksheet*, p. 33 for an example. The FilmType name (e.g., Kodak PORTRA) can be found in the pull-down menu on the *LR_Scanner1* window.

- On the *Balance Point for FilmType Worksheet*, record the Patch Aim values and the Slider values for the FilmType. These will be necessary to create new settings.

Sample worksheet:

	FilmType name (<i>exactly as it appears in popup menu</i>)	Scanner Codes (<i>Patch Aims</i>)			Corrections (<i>Slider Values</i>)				
		R	G	B	B	R	G	B	C
Primary	PORTRA_KPRO	107	105	106	-7	0	-2	-1	0

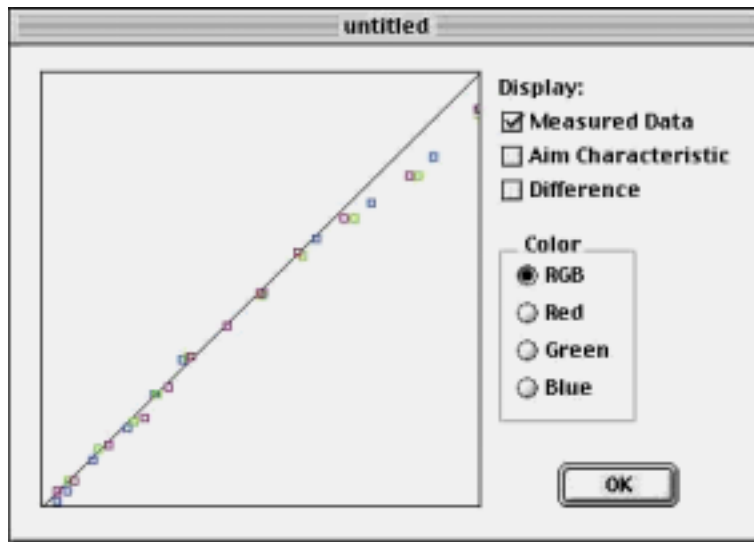
Building a Look Up Table (LUT) (continued)

12. If the target image and the values are acceptable, click on the *Accept* button.

The window displaying the data or Look Up Table (LUT) will be displayed. Look for large aberrations in the measured data. Rescan if necessary to match Aim as closely as possible.

Note: The line on the screen represents the Aim values. Aberrations are indicated when the color blocks representing the Patch values of the scanned image form a curve that is greatly different from the line.

The following illustration represents an acceptable LUT.

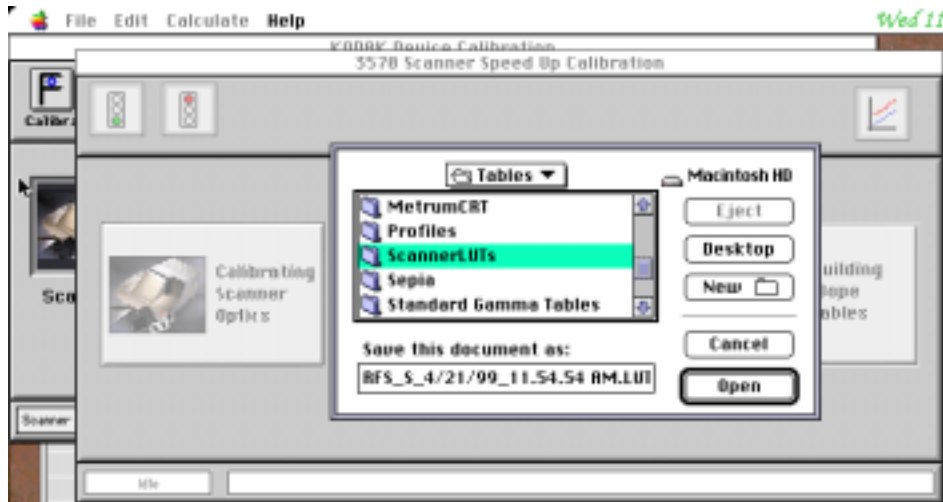


13. If the LUT is acceptable, click *OK* to save the Look Up Table.

Saving the Look Up Table (LUT) in the Long Roll Scanning Software

To use the data generated by the *Device Calibration Software* with the Long Roll Scanning Software you must save this information so that the Long Roll Scanning application can access the correct LUT during daily calibration and scanning.

1. When you click *OK* to save the LUT, the following screen will be displayed.



2. Select the *CompositeMachine* Folder on your hard drive.
3. Select the *Tables* folder.
4. Select the *ScannerLUTs* folder.

If this is the first time, do the following:

- a. In the *Tables* folder, make a new folder called *ScannerTables* and then open it.
- b. Make 2 new folders: *SlopeTables* and *ScannerLUTs*.

Note: There should be no spaces in the folder names.

5. Enter the file name of the LUT. For example, *RFS_S_PORTRA_date.LUT* (S means Speed Up).
6. Click on *SAVE*.

This will return you to the *Device Calibration* screen.

You will now need to apply the LUT to be used for calibration and scanning.

Applying the Look Up Table (LUT)

Once you have saved the LUT, you must launch the Long Roll Scanning software and apply the correct LUT to be used for daily calibration and scanning.

Launching the Long Roll Scanning Software

Note: Store the LR_Scanner folder on the hard drive. You can create an alias on the desktop for easier access.

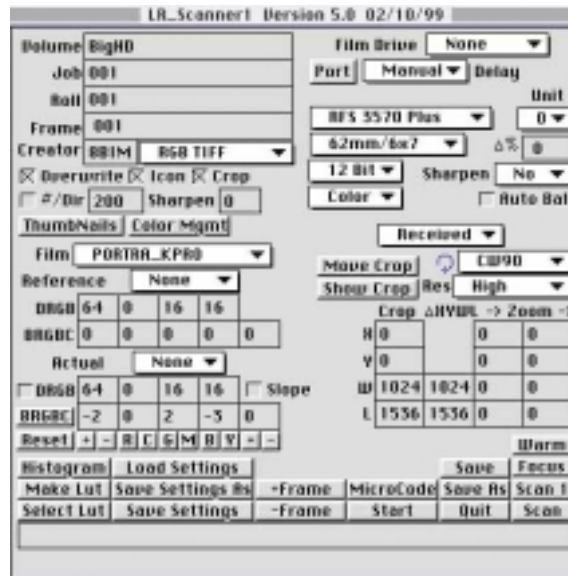
To launch the Long Roll Scanning software:

1. Double click on LR_Scanner folder.
2. Launch ScanEngine1.

Note: Wait until "Idle" appears in the command bar.

3. Drag LR_Scanner1 to ScanEngine1.

The following screen appears:



In the Long Roll Scanning Software screen (*LR_Scanner1*) enter the following settings:

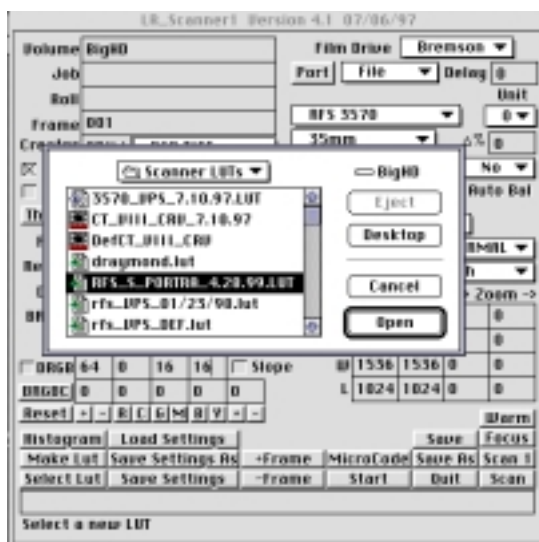
- Job and roll number (can be any alphanumeric characters for calibration)
- Select *RFS 3570/Sizzle* or *RFS3570 Plus*
- Select *High V* to maximize image area scanned
- Choose Film type: *PORTRA_KPRO*
- Set Film size to *62mm/6x7* for Printer Control Negative
- Set $\Delta\%$ at *Zero* (i.e., % of change from 62mm)
- Set Sharpen to Off: left-hand Sharpen to *0*, right-hand Sharpen to *No*

Applying the Look Up Table (LUT) (continued)

- Autobalance should NOT be selected
- Enter starting **DRGB** values for the Normal negative for your lab (e.g., 64, 0, 16, 16) for both Reference and Actual values (or use your reference video analyzer values)
- Enter starting **BRGBC** values using the Slider values from the *Balance Point for FilmType Worksheet* (e.g., as in the worksheet example page 11: -7, 0, -2, -1, 0) in **Actual BRGBC** only, leaving the Reference values at zero

Select the LUT you created using the Device Calibration software:

1. Click on the *Select LUT* button. The following screen appears for selecting the LUT. Check to be sure the path is:
BigHD \ CompositeMachine \ Tables \ ScannerTables \ ScannerLUTs.

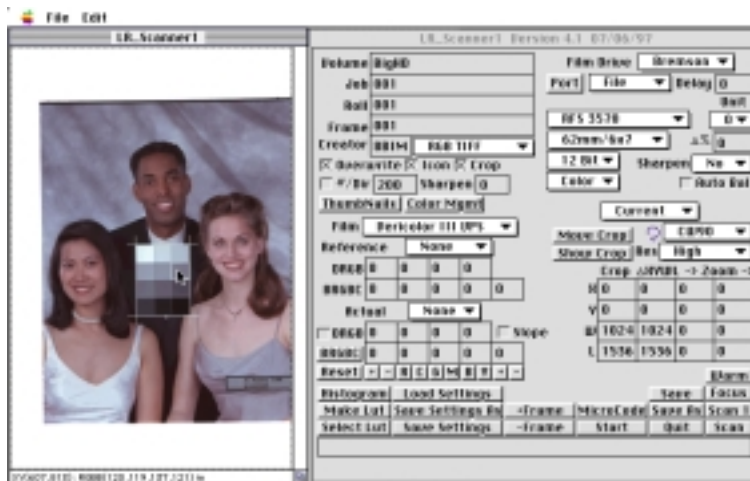


2. Select the newly saved file *RFS_S_PORTRA_date.LUT*.
3. Click on the *Open* button. Once complete, the LUT will be displayed in the *LR_Scanner1* window.
4. Click on the *Save Settings As* button.
5. Save in the *BigHD \ LR_Scanner_Settings* folder. Name the file *Calmaster_PORTRA*.
6. Also click on the *Save Settings* button to save the settings to the *Preferences* folder.
7. Scan the KODAK PROFESSIONAL PORTRA Scanner Control Negative using the new LUT.

Applying the Look Up Table (LUT) (continued)

Note: It may be necessary to calibrate the scanner at this time. Follow the calibration instructions that appear on the screen.

The scanned image is displayed next to the *LR_Scanner1* window.



Verify that the LUT is active:

1. On the Target screen, compare the Patch values to the Patch Aim values to determine that the code values for Patch #6 are on aim.

Note: Patch #6 is the patch surrounded by a white border. The Patch and Patch Aim values refer to the values for this patch.

The Patch values can be seen on the bottom of the screen. They change according to the location of the cursor. Place the cursor in the Patch #6 to see the values for that patch. The Patch Aim values for Patch #6 were recorded on the *Balance Point for FilmType Worksheet* (see *Appendix D: Balance Point for FilmType Worksheet*, p. 33.)

2. If necessary, adjust the slider values (**Actual DRGB**) to get Patch #6 (± 03) on aim.
3. If you have changed the slider values, check that all patch values are on aim (click on the window for each patch and note the values at the bottom of the screen - all should be within ± 03 of the values on the *Balance Point for FilmType Worksheet*).
4. If any values have been changed, click on *Save Settings As* and save the LUT as *Calmaster_PORTRA*.
5. Also click on the *Save Settings* button to save the settings to the *Preferences* folder.

Applying the Look Up Table (LUT) (continued)

Without Video Analyzer: If you are using digital equipment without a video analyzer and do not intend to use analyzer data, the calibration is complete. Additional refinements or corrections can be made to the scanned images at any time by re-calibrating the scanner or changing the color values in the Long Roll Scanning software.

With Video Analyzer: If you are using the scanner with an optical system and video analyzer you can build Slope Tables at this time.

Building Slope Tables

In a digital/hybrid system that integrates video-analyzer data, you should build Slope Tables to balance your system for under- and over-exposed negatives.

This procedure takes place within the Long Roll Scanning application. Complete the following steps and then insert the values in the Device calibration software: Calculated and Required Values screens.

Setting up your Master Film Balance: PORTRA

This procedure allows you to fine tune the scanner to the color preferences for your lab.

For this procedure, you will need the KODAK PROFESSIONAL PORTRA Printer Control Negatives:

- Control Negative (Normal), Cat. No. 846-0958
- Very Underexposed Negative (Very Under, U2), Cat. No. 107-1398
- Underexposed Negative (Under), Cat. No. 841-1902
- Overexposed Negative (Over), Cat. No. 177-1302
- Very Overexposed Negative (Very Over, O2), Cat. No. 144-5741

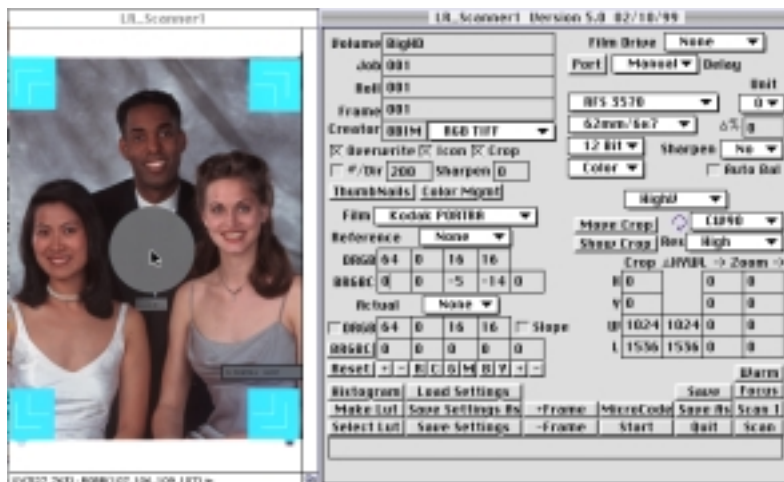
You will also need the best optical print of the KODAK Printer Control Negative (Normal) from your lab for comparison purposes. If possible, read the Status A density of the center gray patch from this best print and use those values as a reference for adjusting the scanner output.

1. On the *LR_Scanner1* window, click on the *Load Settings* button to load settings for your master scanner setup.

Note: You should have entered the most popular film size and aperture for your lab in the *Master Scanner Set Up* folder during set up and installation of your scanner.

2. Place your Control Negative (Normal) into the scan gate.
3. Click on the *Scan1* button. The following screen is displayed.

Setting up your Master Film Balance: PORTRA (continued)



- Click on the gray patch on the screen and adjust the slider values (**Actual BRGBC**) until the code values displayed on the screen are at the desired aims ± 02 for your optical control image. (The patch values can be seen on the bottom of the screen under the image. They change according to the location of the cursor.)

You will have to convert your lab's print densities to the corresponding code values to be able to compare the aims. For example, if the print density was .75, .70, .70, the slider values should be adjusted to give code values of 105, 111, 111 on the screen's gray patch, when the calibration process is done correctly.

Use your lab's Target Aim Print Densities. Check the Print Density to Code Value conversion table (G2.2/INV) for the correct values (path: *KPIS \ Tables \ KodakCRT \ CRT Gamma Choices Full \ G2.2/INV.*) See *Appendix F: Print Density to Code Value Worksheet, p. 35*, for an example of the Worksheet and *Appendix G: G2.2/INV File, p. 36*, for the complete table.

Sample of Print Density to Code Value Conversion Table (CVS)

Digital Code Value	Optical Print Densities		
	R	G	B
69	112	112	112
70	111	111	111
71	110	110	110
72	108	108	108

Note: C (Contrast) should not be adjusted during the balancing process.

- Create a *Reference Images* folder on the hard drive (path: *BigHD \ Reference Images *).
- Click on the *Save As* button to save the image in the *Reference Images* folder.

Setting up your Master Film Balance: PORTRA (continued)

7. Click on *New Folder* and name it *Balance*.
8. Click on the *Create* button and then type in the filename (e.g., *N_6,O,O,-6,2_PORTRA_date* - using the BRGBC values and filmtyp as part of the name). This file will be printed.
9. Click on the *Save Settings As* button and save as the same name to add these offsets to your settings.
10. Also click on the *Save Settings* button to save the settings to the *Preferences* folder.

Comparing Scanner Output Values with Digital Print Output

1. Make a print of the digital file of the master film balance printer control negative (Normal) to the desired output device (LF CRT, KPDM, or LED).
2. Be sure that the correct output table is used to print to the desired device. (e.g., path: *BigHD \ CompositeMachine \ Tables \ KodakCRT \ FullRange \ Gamma2.2/INV.*)
3. Compare this print (digital) to the master (optical) reference print.
4. Determine the needed corrections visually or use a densitometer.

Note: Make sure your processing equipment is in Control. The densitometer must be a known, calibrated densitometer.

5. Adjust the slider values (**Actual BRGBC**) on the *LR_Scanner1* window to the desired settings.
 - Use the brightness (B) if the overall density is equally light or dark.
 - Adjust the slider values so that the code values will equal the desired print density.
 - Use the individual slider values to match the individual desired code values. (Stay consistent with the rest of the lab where everything is normalized to red = 0.)
 - A one-slider value change can result in as much as a 3 to 5 code value change (print density).
 - Re-scan the control tool each time a slider value change is made and check the gray patch density; adjust the slider value, re-scan, and check the gray patch values until they are on aim.
 - Record the new aim code values in the *Balance Point for FilmType Worksheet* (see *Appendix D: Balance Point for FilmType Worksheet*, p. 33 for an example); the differences from the original aims are offsets or preferences which make the digital print match the optical print.
 - Click the *Save* button on the *LR_Scanner1* window and save the image to the *Reference Images \ Balance* folder you created earlier.

Comparing Scanner Output Values with Digital Print Output (continued)

6. Print the digital file of the master film balance printer control negative (Normal) again to verify the changes.
7. Compare the digital print to the optical print. If it is not acceptable, repeat steps 5 and 6.
8. If the image is acceptable, this becomes the master reference digital print.
9. Once on aim, enter the **Actual BRGBC** values into the **Reference BRGBC** line on the *LR_Scanner1 window*.
10. Click on the *Save Settings As* button and save using the same name.
11. Also click on the *Save Settings* button and save to the *Preferences* folder. When prompted to cancel or replace, click *Replace*.

Calibrating the Monitor

1. Adjust the monitor to match the digital reference print. Make sure the lighting condition of the print and monitor are the same (preferred viewing lights).
2. Use the Knoll Gamma routine in Adobe® Photoshop® to make adjustments.

Collecting Information to Create Slope Tables from KODAK Long Roll Scanning Software

Note: Make sure Slope is not active for this part of the procedure. Slope is active when the box next to *Slope* has a check mark on the *LR_Scanner1* window. If there is a check mark in the box, click on the box to remove it.

For this procedure you will need the *Slope Table Worksheet*. See *Appendix E: Slope Table Worksheet*, p. 34 for an example.

You will also need the KODAK Printer Control Negatives:

- Control Negative (Normal), Cat. No. 846-0958
- Very Underexposed Negative (Very Under, U2), Cat. No. 107-1398
- Underexposed Negative (Under), Cat. No. 841-1902
- Overexposed Negative (Over), Cat. No. 177-1302
- Very Overexposed Negative (Very Over, O2), Cat. No. 144-5741

Note: The values that appear in the **Reference BRGBC** slider value fields are based on your master film balance printer control negative (Normal). These values were entered during the procedure to set up your master film balance. See *Comparing Scanner Output Values with Digital Print Output*, step 9.

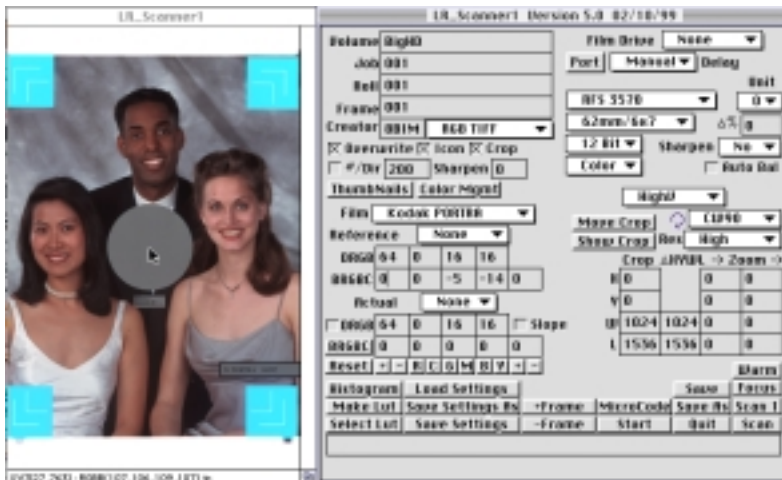
1. Place the Very Under (U2) negative in the scan gate.
2. Enter the values for very underexposed negatives:
 - a. Enter the standard values used by your lab for very underexposed negatives into the **Actual DRGB** slider value fields on the screen.
 - b. Click on the **Actual BRGBC** button.
 - c. Record the **Actual BRGBC** values from the screen into the *Calculated Corrections* area on the *Slope Table Worksheet* for the Under (U) negative.
 - d. Record the Contrast Value (C) in the Contrast Value box on the worksheet.

Important: The Contrast Value (C) should not be modified at any time other than during the initial photographic calibration on the Normal control negative.

Note: Although this value currently does not change, it is useful to record it.

Collecting Information to Create Slope Tables from KODAK Long Roll Scanning Software (continued)

- Click on the *Scan1* button to scan the negative. The following screen is displayed:



- Match the scanned image to your optical control image for the Very Under (U2) print. Do this by adjusting the **Actual BRGB** slider values for a visual or measured match.

Measured Match: The gray patch code values can be used for adjustment purposes. Make adjustments to the **Actual BRGB** values, reading the gray patch code values between each adjustment. (The patch code values can be seen on the bottom of the screen. They change according to the location of the cursor.) Match the patch code values to those of the Control Negative (Normal). This is a good way to start if you are way out.

- When this match is achieved, record the **Actual BRGB** numbers from the screen to the worksheet in the *Required Corrections* area in the row labeled Very Under (U2).
- Repeat *Steps 1 - 5* above for the Under (U), Over (O), and Very Over (O2) negatives. The data for both the *Calculated Corrections* and *Required Corrections* is required to generate an accurate slope table.
- Generate prints of the control negatives using the Calculated and Required numbers entered for each test negative. If changes are required, adjust the **Actual BRGB** values based on the required change. Be sure to update the worksheet with the final numbers.
 - Compare the digital Very Under to the optical Very Under. If there is a difference, record the necessary changes.
 - Compare the digital Under to the optical Under. If there is a difference, record the necessary changes.

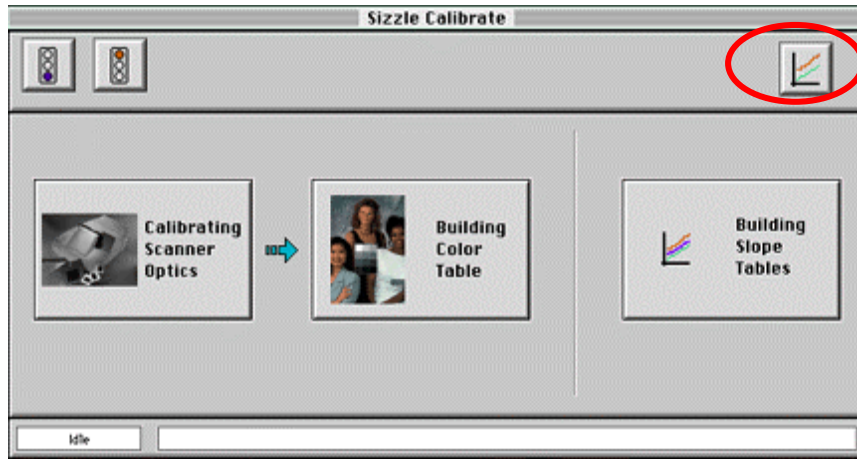
***Collecting Information to Create Slope Tables
from KODAK Long Roll Scanning Software (continued)***

- Compare the digital Over to the optical Over. If there is a difference, record the necessary changes.
 - Compare the digital Very Over to the optical Very Over. If there is a difference, record the necessary changes.
 - Adjust the slider values for the desired corrections and record the new required slider values.
 - Rescan the Very Under, Under, Over, and Very Over negatives and save the new images to be printed.
 - Print the Very Under, Under, Normal, Over, and Very Over digital images again.
 - Make the necessary corrections, if any, and repeat the process until they are acceptable.
8. When the values are acceptable, enter them into the slope table program.

Entering Slope Table Values

To use this portion of the software you must already have identified the scanner code values for under- and overexposed negatives. These values were determined during the previous procedures for building Slope Tables. Use the values recorded on the *Slope Table Worksheet* to enter values in the Calculated and Required Values screens.

1. Click on the *Building Slope Tables* icon in the upper right of the *Device Calibration* screen.



The Calculated Values screen will be displayed.



2. Enter the **Calculated Corrections** values from the *Slope Table Worksheet*. Click *OK*.

Entering Slope Table Values (continued)

The Required Values screen will be displayed.



3. Enter the **Required Corrections** values from the *Slope Table Worksheet*. Click **OK**.

A graph showing the slope curve and values will be displayed.

Activating Slope Tables

To use the data generated by building the Slope Table, you must save the Slope Table so that the Long Roll Scanning Software can access it during daily calibration and scanning. Save the Slope Table in the *SlopeTables* folder (path: *BigHD \ CompositeMachine \ Tables \ ScannerTables \ SlopeTables*).

Saving the Slope Table

1. When the Slope Table is displayed, in the *File* menu select *Save As*.

The *Save As* screen will be displayed. The *File Name* will be *untitled.tbl*.

2. Go to the *SlopeTables* folder (path: *BigHD \ CompositeMachine \ Tables \ ScannerTables \ SlopeTables*).
3. Rename the table to match the *FilmType* and click *Save*.

Important: The file name must match the *FilmType* in the pull-down menu on the *LR_Scanner1* window exactly (e.g., *PORTRA_KPRO*).

Opening the Slope Table

Make the *LR_Scanner1 window* the active window.

1. On the *LR_Scanner1 window*, check to select the *Slope* box near the *Actual* slider values.
2. Click on the *Actual BRGBC* button.

A directory screen will be displayed.

3. Locate the *Slopetables* folder.

The list of slope tables will be displayed.

Note: This applies to the first Slope Table. When you perform this process again, you must delete the path defined in the *LR_Scanner1.pref* file prior to launching the Long Roll Scanning Software.

4. Select the file with the correct "*FilmType*" name and click *Open*.

Appendix A: System Calibration (Digital/Hybrid Systems)

System calibration is not a single event. It is a series of refinements and/or decisions about how you want the final image to look. KODAK PROFESSIONAL Device Calibration Software is one part of calibrating your system. Labs matching a digital or digital/hybrid system to their optical system must insure that the optical system is optimized first. The data from your digital/hybrid system can and should be driven by the data from your video analyzer.

For the Master printer, check to make sure that:

- The printer is set up to dead heat for the Master film, paper, size, and Printer Control Negatives.
- Optical components are clean and in good working order. This includes the cold mirror, lens assembly, integrator, diffuser, cutoff filters, and balancing filters.
- Master Control reference print is on aim, visually - within lab tolerances.
- The filter table edit routine from the Accudata Controller has been used and selected.
- The correct reciprocity values are being used.
- Slope (correction) values for density or any one color are within reason. (± 3.0 for 3 Point Slope or ± 6 for 5 Point Slope).
- The required KCES negatives have been set up to be printed and the TM values have been generated. These values should be between 85 and 115 for TMs 5 and 9. TMs 6 and 8 should be between -07 and $+07$.

For the Master Video Analyzer, check to make sure that:

- The machine matrix has been derived recently.
- The aim points for the Master Film's Control set are set correctly.
- The film matrix values for the Master Film/Paper (Portra III) are set correctly.
- Contrast and brightness are set to match the monitor.
- The image you see on your screen of the Printer Control Negative visually matches the Control print at the printed DRGBs.

When you have an acceptable Master Reference Print, measure the densities of the gray patch using a densitometer. The densitometer must be a known, calibrated densitometer. Record these values. These values may be different from Kodak's recommended starting point because of individual lab preferences.

Important: The processor must be in good, if not excellent, Control.

For the digital output device, check to make sure that the device is:

- Set up
- Balanced
- Calibrated

Print the standard Printer Control Negative (Normal) image until the output device is on aim.

The scanner can be optimized once the optical system is correct and the digital output device is on aim. The Master or Reference prints from both the optical and digital output devices should match.

Appendix B: Assumptions

The scanner set up and system calibration procedure assumes:

- Labs matching a digital/hybrid system to an optical system have optimized the optical system first and are using a satisfactory Master or Control print.
- The digital output device has been calibrated, set up, and balanced as recommended and the Standard Control Tool is on aim.
- You are using the KODAK PROFESSIONAL Scanner Control Negative with this software. This tool is used for system balance and calibration procedures.
- Your scanner's power is on, and the scanner is ready for calibration.
- KPIS for the Macintosh is installed.
- The KODAK Long Roll Scanning Software is resident on the hard drive that will run the scanner
- Your monitor has been calibrated to match your digital output. Use the Gamma Knoll Software supplied with Adobe® Photoshop®.

Appendix C: Setting Film Type and Size

The KODAK PROFESSIONAL Device Calibration Software has been configured to use the following defaults:

- Film Type: PORTRA_KPro
- Film Size: 62mm/6x7

The scanner is then calibrated using the KODAK PROFESSIONAL PORTRA Scanner Control Negatives (size 120), Cat. No. 137-9460.

If you need to calibrate the scanner to a different film type or film size, you must change the parameters in both the settings.dft file and the Target_AIMS file.

Note: You must have the correct Scanner and Printer Control Negatives for the film type selected to calibrate the scanner properly.

Changing the Settings.dft file

The *Settings.dft* file sets the parameters for film type and size. Defaults are:

- Film Type: PORTRA_KPro
 - Film Size: 62mm/6x7
1. Locate the *settings.dft* file (path: *Kodak Device Cal App \ Templates \ 3570 Scanner Speed Up \ Config \ Settings.dft*).
 2. Drag and drop the *settings.dft* file on a text editor.
 3. Edit the *settings.dft* file to select the correct film type and film size.

Note: To select a parameter, remove the '#' in front of the selection. Make sure only one parameter is selected. If another one was previously selected, type the '#' in front of the parameter to remove the selection.

- Type the # in front of the previously selected Target Film Type and Film Size
 - Locate the appropriate Target Film Type and remove the # from the selection
 - Locate the appropriate Film Size for the negative and remove the # from the selection
4. Save and close the file.

Changing the Target_AIMS File

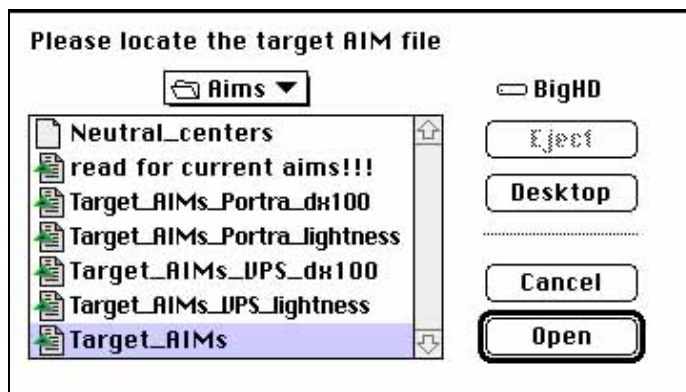
The *Target_AIMS* file identifies the AIMS parameters for calibrating your scanner. To access the correct AIMS parameters, the *Target_AIMS* file for the film type used in the scanner must be loaded.

Defaults are:

- Film Type: PORTRA_KPro
- Film Size: 62mm/6x7

To change the Target_AIMS file parameters:

1. Locate the folder created for your scanner (path: *BigHD \ Devices \ "ScannerName"*). See, *Creating a New Device*, p. 6 for information on naming the device.
2. Select the appropriate *Target_AIMS* file and open it.



3. From the File menu, select *Save As*.

Change the name to *Target_AIMS* and click *Save*. When prompted to replace or cancel, click *Replace*.

Appendix D: Balance Point for FilmType Worksheet

**Balance Point for FilmType
WORKSHEET**

	FilmType name *	Scanner Codes (Patch Aims)			Corrections (Slider Values)				
		R	G	B	B	R	G	B	C
Primary									

* Enter FilmType name *exactly* as it appears in pull-down menu on *LR_Scanner1* window.

Appendix E: Slope Table Worksheet

Use this worksheet to record values to use in building slope tables.

LONG ROLL SLOPE TABLE WORKSHEET

Date:

Customer Name:

Scanner ID:

Film Type:

Slope Table File Name:

	Calculated Corrections				Actual CVs			Video-Analysis Data			
	Brightness	Red	Green	Blue	Red	Green	Blue	Density	Red	Green	Blue
Negative											
Normal											
Very Under (U2)											
Under (U)											
Over (O)											
Very Over (O2)											

Contrast Value

	Required Corrections				Actual CVs			Video-Analysis Data			
	Brightness	Red	Green	Blue	Red	Green	Blue	Density	Red	Green	Blue
Negative											
Normal											
Very Under (U2)											
Under (U)											
Over (O)											
Very Over (O2)											

Actual CVs are Code Values taken from the screen.

Video-Analysis Data is taken from use of the video analyzer in the lab.

Appendix F: Print Density to Code Value Worksheet

Use this worksheet or something similar to record conversion values for your lab.

Gamma 2.2 Full range Print Density to Code Value Aims					
Usage: Find the desired print density in the Print Density column. Go left one column and find the corresponding code value.					
Code Value	Print Density				
71	110				
72	108				
73	107				
74	106				
75	105				
76	104				
77	103				
78	102				
79	101				
80	100				
81	99				
82	98				
83	96				
84	95				
85	94				
86	93				
87	93				
88	92				
89	91				
90	90				
91	89				
92	88				
93	87				
94	86				
95	85				
96	84				
97	83				
98	82				
99	82				
100	81				
101	80				
102	79				
103	78				
104	77				
105	77				
106	76				
107	75				
108	74				
109	73				
110	73				
111	72				
112	71				
113	70				
114	70				

Appendix G: G2.2/INV File

#Input Red Green Blue Black

0	255	255	255
1	254	254	254
2	253	253	253
3	252	252	252
4	250	250	250
5	248	248	248
6	245	245	245
7	243	243	243
8	240	240	240
9	237	237	237
10	234	234	234
11	231	231	231
12	228	228	228
13	224	224	224
14	221	221	221
15	218	218	218
16	215	215	215
17	212	212	212
18	209	209	209
19	206	206	206
20	203	203	203
21	200	200	200
22	197	197	197
23	195	195	195
24	192	192	192
25	189	189	189
26	187	187	187
27	184	184	184
28	182	182	182
29	179	179	179
30	177	177	177
31	175	175	175
32	172	172	172
33	170	170	170
34	168	168	168
35	166	166	166
36	164	164	164
37	162	162	162
38	160	160	160
39	158	158	158
40	156	156	156
41	154	154	154
42	152	152	152
43	150	150	150
44	148	148	148
45	147	147	147
46	145	145	145
47	143	143	143
48	141	141	141
49	140	140	140
50	138	138	138
51	137	137	137
52	135	135	135
53	134	134	134
54	132	132	132
55	131	131	131

56	129	129	129
57	128	128	128
58	126	126	126
59	125	125	125
60	123	123	123
61	122	122	122
62	121	121	121
63	119	119	119
64	118	118	118
65	117	117	117
66	116	116	116
67	114	114	114
68	113	113	113
69	112	112	112
70	111	111	111
71	110	110	110
72	108	108	108
73	107	107	107
74	106	106	106
75	105	105	105
76	104	104	104
77	103	103	103
78	102	102	102
79	101	101	101
80	100	100	100
81	99	99	99
82	98	98	98
83	96	96	96
84	95	95	95
85	94	94	94
86	93	93	93
87	93	93	93
88	92	92	92
89	91	91	91
90	90	90	90
91	89	89	89
92	88	88	88
93	87	87	87
94	86	86	86
95	85	85	85
96	84	84	84
97	83	83	83
98	82	82	82
99	82	82	82
100	81	81	81
101	80	80	80
102	79	79	79
103	78	78	78
104	77	77	77
105	77	77	77
106	76	76	76
107	75	75	75
108	74	74	74
109	73	73	73
110	73	73	73
111	72	72	72
112	71	71	71
113	70	70	70
114	70	70	70
115	69	69	69
116	68	68	68

117	67	67	67
118	67	67	67
119	66	66	66
120	65	65	65
121	64	64	64
122	64	64	64
123	63	63	63
124	62	62	62
125	62	62	62
126	61	61	61
127	60	60	60
128	60	60	60
129	59	59	59
130	58	58	58
131	58	58	58
132	57	57	57
133	56	56	56
134	56	56	56
135	55	55	55
136	54	54	54
137	54	54	54
138	53	53	53
139	52	52	52
140	52	52	52
141	51	51	51
142	51	51	51
143	50	50	50
144	49	49	49
145	49	49	49
146	48	48	48
147	48	48	48
148	47	47	47
149	46	46	46
150	46	46	46
151	45	45	45
152	45	45	45
153	44	44	44
154	44	44	44
155	43	43	43
156	43	43	43
157	42	42	42
158	41	41	41
159	41	41	41
160	40	40	40
161	40	40	40
162	39	39	39
163	39	39	39
164	38	38	38
165	38	38	38
166	37	37	37
167	37	37	37
168	36	36	36
169	36	36	36
170	35	35	35
171	35	35	35
172	34	34	34
173	34	34	34
174	33	33	33
175	33	33	33
176	32	32	32
177	32	32	32

178	31	31	31
179	31	31	31
180	30	30	30
181	30	30	30
182	29	29	29
183	29	29	29
184	28	28	28
185	28	28	28
186	27	27	27
187	27	27	27
188	26	26	26
189	26	26	26
190	25	25	25
191	25	25	25
192	25	25	25
193	24	24	24
194	24	24	24
195	23	23	23
196	23	23	23
197	22	22	22
198	22	22	22
199	21	21	21
200	21	21	21
201	21	21	21
202	20	20	20
203	20	20	20
204	19	19	19
205	19	19	19
206	18	18	18
207	18	18	18
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209	17	17	17
210	17	17	17
211	16	16	16
212	16	16	16
213	16	16	16
214	15	15	15
215	15	15	15
216	14	14	14
217	14	14	14
218	14	14	14
219	13	13	13
220	13	13	13
221	12	12	12
222	12	12	12
223	12	12	12
224	11	11	11
225	11	11	11
226	10	10	10
227	10	10	10
228	10	10	10
229	9	9	9
230	9	9	9
231	8	8	8
232	8	8	8
233	8	8	8
234	7	7	7
235	7	7	7
236	7	7	7
237	6	6	6
238	6	6	6

239	6	6	6
240	5	5	5
241	5	5	5
242	4	4	4
243	4	4	4
244	4	4	4
245	3	3	3
246	3	3	3
247	3	3	3
248	2	2	2
249	2	2	2
250	2	2	2
251	1	1	1
252	1	1	1
253	1	1	1
254	0	0	0
255	0	0	0

Color Matrix Data
Red Green Blue

256	0	0
0	256	0
0	0	256