

# **e-BRIDGE Color Profile Tool Quick Start Guide**



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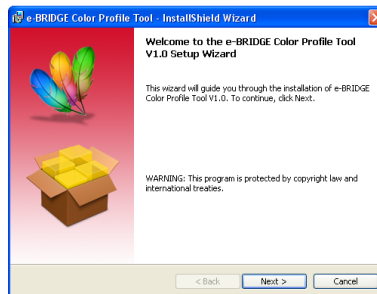
# 1. Installation

## 1.1. Installing the e-BRIDGE Color Profile Tool Software

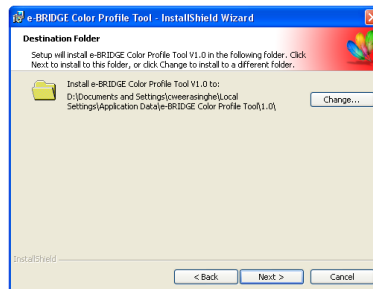
Before installing the e-BRIDGE Color Profile Tool (V1.0) it is important to note that the software requires installation of The Microsoft Visual C++ 2008 Redistributable Package on your computer prior to installing the software. This software can be downloaded from the Microsoft.com web site.

To install the e-BRIDGE Color Profile Tool (V1.0) software, use the following procedure.

Insert the Color Profile Tool CD-ROM into your CD-ROM drive. If you have “auto-run” enabled on your Windows XP computer, the Color Profile Tool installer will start automatically. If you have Windows Vista installed or “auto-run” disabled on your Windows XP computer, you should double click on the CD-ROM icon to display the contents of the CD-ROM drive. Then Right click on the e-BRIDGEColorProfileTool.msi icon and select Install from the menu that is displayed. The welcome screen shown below will be displayed.



Click the “Next” button to continue thru the install wizard. The installer will recommend an installation location in the screen below. You can change the installation location using the “Change” button.



By default the application will be installed in the private programs area for the current user on your computer. This destination can be changed to install the application in the Program Files directory or any other desired location.

After selecting the installation location, click the “Next” button to begin the installation on your computer.

Once the installation is complete, you will have a desktop shortcut to Color Profile Tool and a program group populated with all the applications and documentation for the e-BRIDGE Color Profile Tool.

## 1.1. Removing the e-BRIDGE Color Profile Tool

The e-BRIDGE Color Profile Tool software includes an uninstaller program to remove the application from your workstation. To use the uninstaller, open the Start / Programs menu, click e-BRIDGE Color Profile Tool and select "Uninstall e-BRIDGE Color Profile Tool".

## 1.2. Installing the Dongle

The e-BRIDGE Color Profile Tool (V1.0) software requires the installation of a USB activation dongle for full functionality. This activation dongle can be installed in any USB port on the workstation that is running e-BRIDGE Color Profile Tool. The dongle is automatically recognized by the software when it is installed. Without the dongle attached, Color Profile Tool will run with limited functionality.

## 1.3. Connecting the X-Rite i1 Pro Spectrophotometer

To install the X-Rite i1 Pro Spectrophotometer to your workstation the i1 Pro driver can be downloaded from the X-Rite Download site using the following link:  
[http://www.xrite.com/product\\_overview.aspx?ID=1014&Action=support&SoftwareID=768](http://www.xrite.com/product_overview.aspx?ID=1014&Action=support&SoftwareID=768)  
Download the file to a temporary folder on your hard drive and then unzip the package. When you attach your instrument to the computer and the "New Hardware" wizard starts, point it to this folder for the appropriate drivers. When the wizard completes, it is safe to remove the temporary folder as Windows copies the required files into its system folders. Be sure to install the X-Rite i1 Pro driver prior to using the e-BRIDGE Color Profile Tool software.

### Selecting the Device

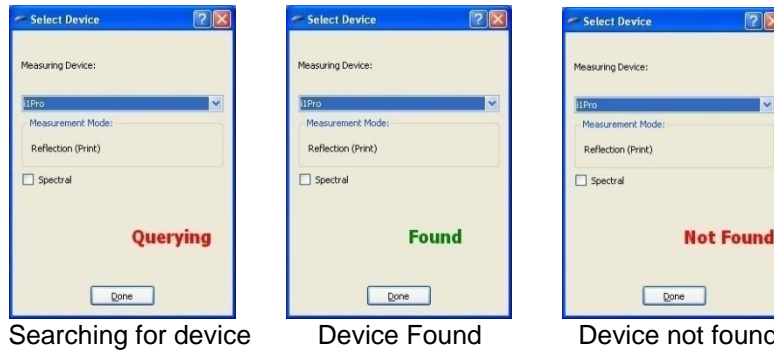
After completing installation of the X-Rite i1 Pro Spectrophotometer, you need to confirm that it can be recognized by the e-BRIDGE Color Profile Tool software. The Target Reader application will detect its presence and the target can then be measured.

Open the Target Reader application by clicking on the "Target Reader" Icon.



Click the "Select Device" icon. This brings up a window which indicates if the X-Rite i1 Pro is connected to the PC and recognized by the e-BRIDGE Color Profile Tool software. This process takes place automatically when Select Device is opened. At this time, only support for the i1Pro instrument has been implemented.

As the software searches for the device, a large red "Querying" message is displayed. After a short time a large green "Found" will be displayed. This indicates that the instrument has been discovered. Click "Done" to complete the device selection. If the device query is not successful, a red "Not Found" message will be displayed.



A “Not Found” display indicates that the device is not properly connected or that the device driver is not properly installed. If this occurs, check the USB connections and refer to the installation procedure for the i1 Pro device. It will not be possible to proceed without a connected i1Pro instrument.

If the Spectral box is checked, then spectral readings from 380 to 730 nm in 10 nm increments (for the i1 Pro) will be saved in addition to the XYZ and LAB data. The current version of e-BRIDGE Color Profile Tool does not use this data therefore it is recommended that the Spectral check box remain unchecked.

## 2. Profile Creation

### 2.1. Printer Characterization

For e-BRIDGE Color Profile Tool, the process of creating a useable profile requires characterization of the printer. The characterization process begins with the optimization of the MFP and ends with the production of a characterization data file that can be used to produce a custom ICC profile. In between, there are several distinct steps in the process.

#### 2.1.1. Optimizing the output of the MFP

- Preventive maintenance of MFP  
Perform any required maintenance on the machine to ensure that the copy/print quality is at an optimum level before proceeding.
- Warm-up the MFP  
Be sure that the machine is fully warmed up prior to performing calibration and characterization of the MFP.
- Calibrate the MFP  
Perform both copy and print calibration for all media types before printing characterization chart.

#### 2.1.2. Printing the Characterization Targets

Characterization is the process of printing a characterization target, then using that target to create a data file containing the device-space values (RGB or CMYK) corresponding to a series of printed patches, along with the colorimetric values (XYZ or L\*a\*b\*) measured on the same patches. This file is created in the Target Reader application. After calibrating the printer, a characterization target (that is, an arrangement of color patches on one or more pages) can be printed out and measured, under control of the program,

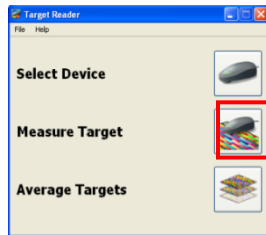
and the data values are written out to a file on disk. The file that is created is written in a standard format defined by the Committee for Graphic Arts and Technology Standards (CGATS), which can then be read and interpreted by the Profile Builder software.

The CMYK characterization targets are supplied in PDF format and can be accessed from the “Measure Targets” reference file selection window within the Target Reader application.

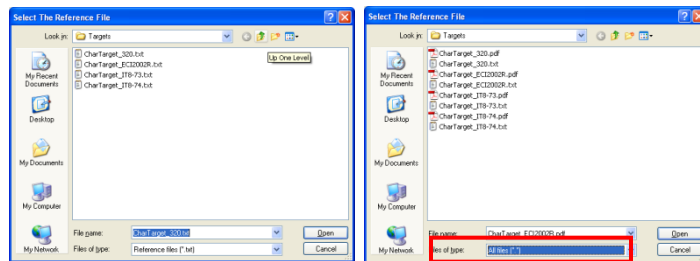
To print the Characterization Targets open the Target Reader application by clicking on the “Target Reader” icon.



Select “Measure Target” from the “Target Reader” menu. This will open the reference file selection window.



Select “All files (\*.\*)” from the “File of Type” dropdown at the bottom of the Reference File selection window. This will display



The following Characterization Targets are available.

Filename	Number of Patches	Number of Pages	Description
CharTarget_320.pdf	320	1	Toshiba TEC original
CharTarget_IT8-73.pdf	928	3	ANSI IT8.7/3
CharTarget_ECI2002R.pdf	1485	5	ECI
CharTarget_IT8-74.pdf	1617	6	ANSI IT8.7/4

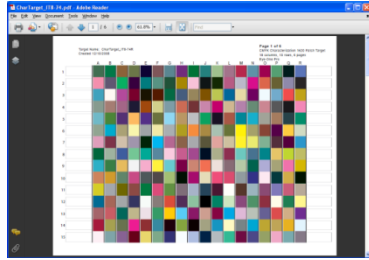
The recommended target for Basic profile creation is (**CharTarget\_320**), a 1 page, 320 Patch, CMYK Characterization Target with 20 columns and 16 rows for use with the Eye-One Pro. This target was developed by Toshiba specifically to provide the best match for

our MFPs and will provide good results with minimum effort when two pages are printed with 180° rotation and then averaged together.

Right click the PDF version of the Characterization Target file that you want to use and select “OPEN With” and choose Acrobat 8 or 9 from the menu.

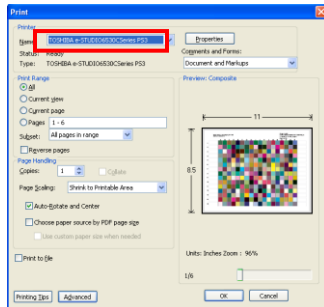
**Note:** It is recommended that you use Adobe Reader 9.x and 8.x to print the color characterization test targets.

In Acrobat choose “Print” from the “File” menu. This will open the printer interface.



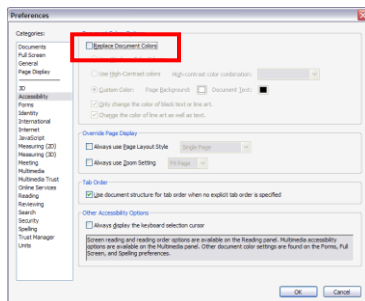
Confirm that the PostScript driver for appropriate MFP is selected in the Printer Name drop down.

**Note:** The CMYK characterization targets must be printed using a PostScript driver with all color management settings turned off.

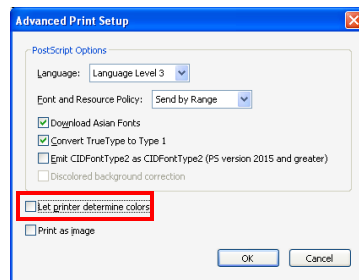


Use the following procedure to disable color management for the print job using the e-Bridge driver:

If you are using Acrobat Reader 8x uncheck “Replace Document Colors” under Edit / Preferences / Accessibility / Document Colors Options.

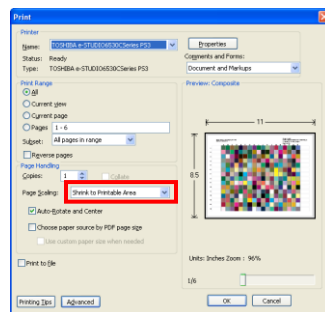


If you are using Acrobat *Reader* 9.x, Click on the “Advanced” button at the bottom of the driver window and make sure that the “Let printer determine colors” box is unchecked in the popup screen.

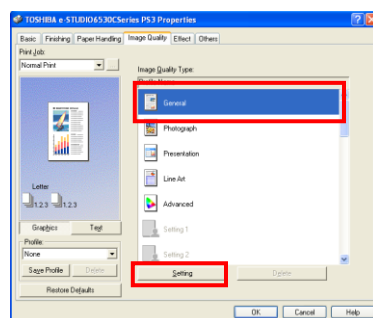


If you are using Adobe Acrobat 8.x or 9.x *Pro*, select “No Color Management (Same as Source)” under “Color Profile” in “Advanced Printer Setup”.

Turn off scaling by setting Page Scaling under Page Handling to “None”.

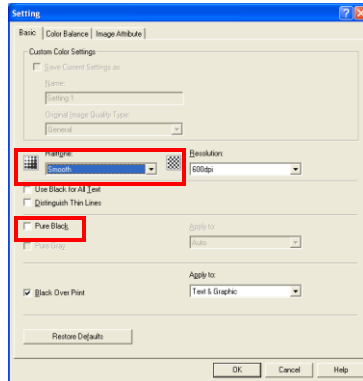


Click “Properties” and make the following setting changes in the “General”, “Settings” area of the “Image Quality” tab:

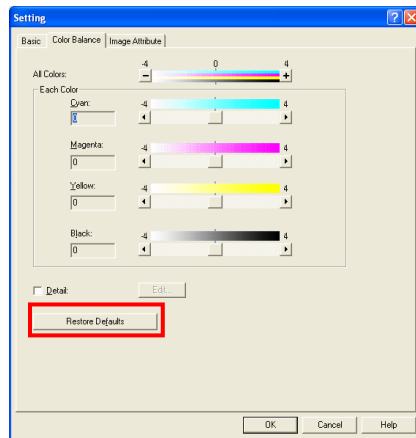




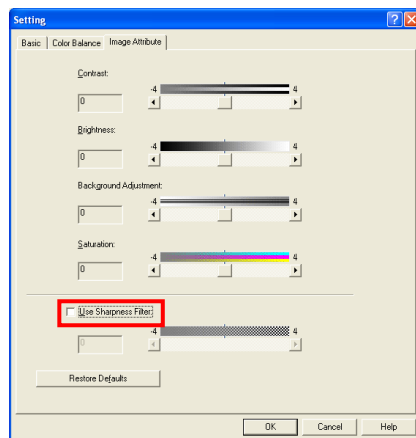
In the Basic tab, select “Smooth” in the “Halftone” drop down and uncheck “Pure Gray” and “Pure Black”.



In the “Color Balance” tab click the “Restore Defaults” button.



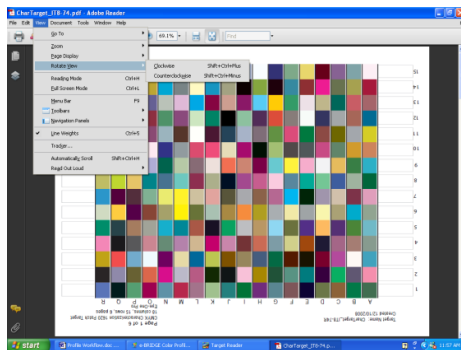
In the “Image Attribute” tab, uncheck “Use Sharpness filter”.



Click “OK” twice to save the changes and then click “OK” again to print the Characterization Target.

**Note:** To improve accuracy, it is recommended that you print a minimum of 2 targets rotated 180 degrees then average the two targets.

To do this, select “Rotate View” from the “View” menu in Acrobat and rotate the image 180° in either direction. Then repeat the steps to print a second target set.



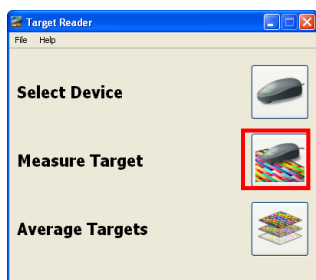
**Note:** Keep the two sets of characterization targets separate. They must be scanned in order as a set.

### 2.1.3.Measuring the Target

Click the “Target Reader” icon to open the application.

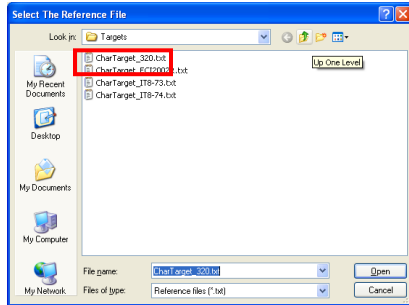


Click the icon for “Measure Target”.

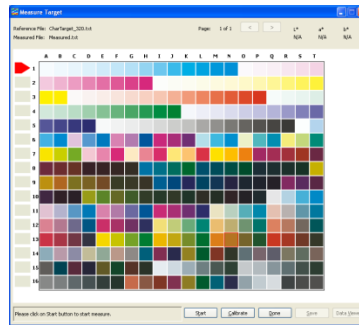


Select the CharTarget\_320.txt characterization target data file and click “Open”.

**Note:** If you used a different .pdf test target to create your printed target, select the corresponding .txt file.



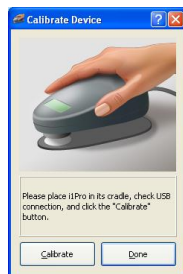
Click “Start” at the bottom of the Measure Target screen to begin the measurement.



### Calibrate the X-Rite i1Pro Spectrophotometer

You will be prompted to calibrate the i1 Pro device before reading the characterization target. This ensures a more accurate measurement. Calibration must be performed before target can be measured.

To calibrate the i1 Pro spectrometer, put the device in cradle and click the “Calibrate” button. Calibration is performed automatically.



When the “Calibration Done” message is displayed Click the [Done] button.



After calibrating the device you can begin measuring the printed target.

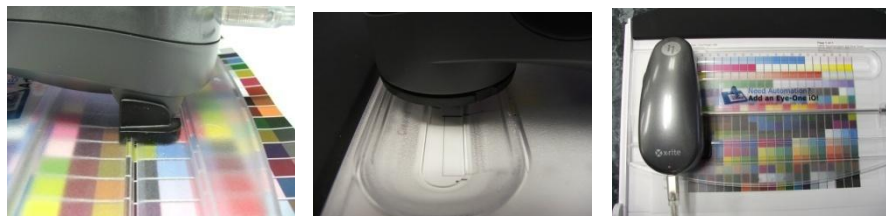
Place page 1 of the first printed target in the scanning tray with the top edge toward the clip. Make sure that it is aligned correctly in the center and held securely in place by the clipboard style clamp.



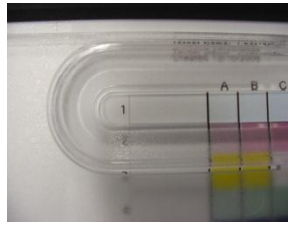
Insert the guide tray on top of the target to be scanned.



Insert the i1 Pro Spectrophotometer into the guide so that the feet on the rear of the device are fully inserted into the black transport carriage and the sensor window aligns with the opening in the guide as shown in the pictures below.



Align the opening in the guide with the first line of the test target.



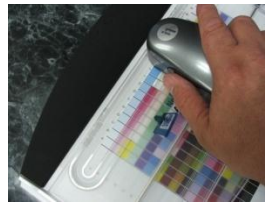
Move the i1 Pro Spectrophotometer to the white space to the right of the line number.

Press and hold the button on the left side of the i1 Pro Spectrophotometer and listen for a beep from the workstation. Be sure that the speaker volume is turned up on your workstation.

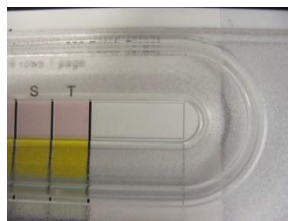


As soon as you hear the beep, continue to hold the button and begin moving the i1 Pro Spectrophotometer toward the right side of the target. Try to move the i1 Pro Spectrophotometer across the line at a steady rate of speed without stopping and starting. It should take about 2.5 to 3 seconds to scan the entire line.

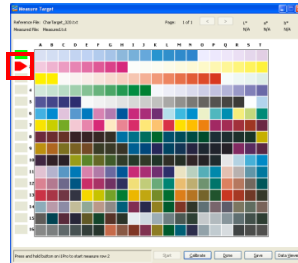
**Note:** Be sure to hold the clear plastic guide securely so that it does not move while scanning the image.



When you reach the white space at the right end of the line, stop the movement and release the button.



If the scan is successful, you will hear a double beep and a green square will appear at the left side of the first line and the red arrow will appear next to the second line. If the scan is not successful, you will hear a warning tone and the red arrow will remain alongside the line that you just scanned. Several issues can cause the scan to fail such as failing to hold the button down thru the entire scan, starting or stopping the scan when the device is not on the white area, scanning the wrong row, and scanning the line too fast or too slow. If this occurs simply rescan the line.

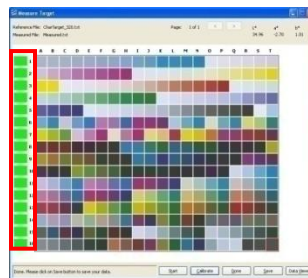


After successfully scanning the first line move the guide to the position of the second line and repeat the scanning process.



Repeat the process until all of the lines of the first test target have been scanned successfully as indicated by the green square to the left of all of the lines.

**Note:** The Target Reader application has built in pattern detection allowing the user to scan the lines from left to right or right to left. The application will also detect if the wrong line is scanned and indicate an error.



If the test target that you are scanning consists of multiple pages, repeat the process until all of the pages of the test target have been scanned.

**Note:** All pages of a multiple page test target must be scanned in sequential order.

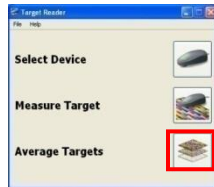
After completing the scan of the first test target, save the data by clicking the [Save] button. You can save the file anywhere on the workstation using any naming convention you desire. Please note the location and name of the file so that it can be accessed later.

Repeat the scanning process for the second test target and save that file under a different name.

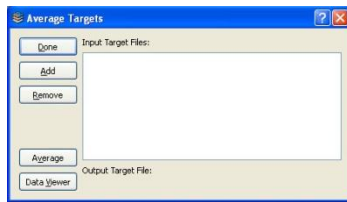
When you are finished saving the last file, click “Done” to close the window.

#### 2.1.4. Averaging the target data

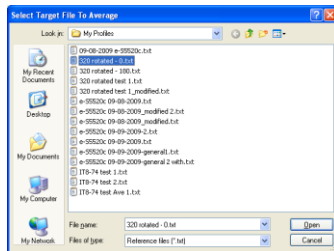
Click the Target Reader icon and select “Average Targets”.



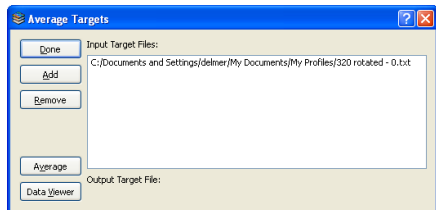
Click “Add” in the Average Targets window to select data to be averaged.



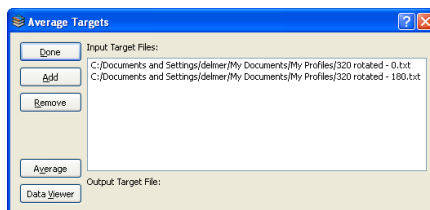
Select the first file to be averaged and click “Open”. The selected file will appear in the Average Targets window.



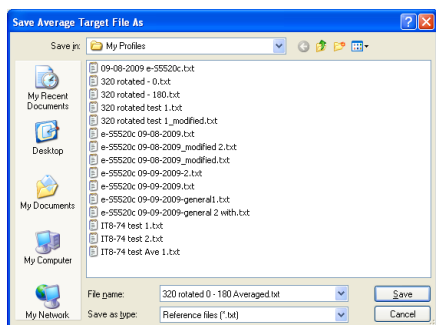
Click “Add” again and add additional files to be averaged.



When all of the files that you want to average have been added click the “Average” button.

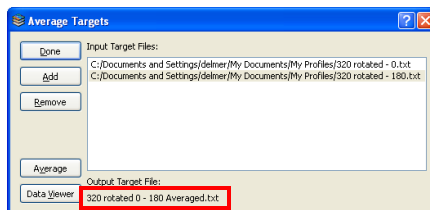


The data will be averaged and a “Save Average File As” screen will be displayed. Save the file using a name that can be easily identified for future use.



After saving the averaged data file you will be returned to the Average Targets screen. At the bottom you will notice the name of the “Output Target File” that you just saved is displayed.

Click the “Done” button at the top to close the Averaged Targets window.



## 2.1.5.Reviewing Data

Data Viewer provides several ways to view the data to determine if it is suitable for use in the creation of a profile.

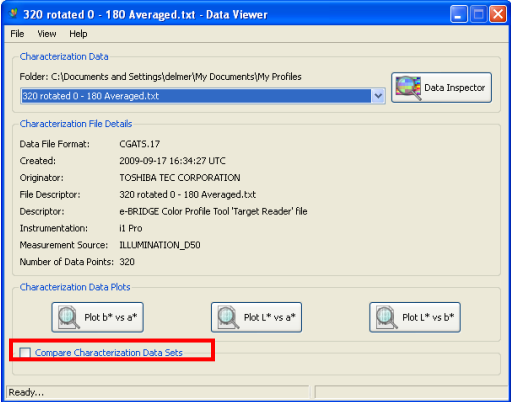
### 2.1.5.1. Comparing Data Sets

One way to confirm the accuracy of the data collected is to view the characterization data plots and compare each characterization data set.

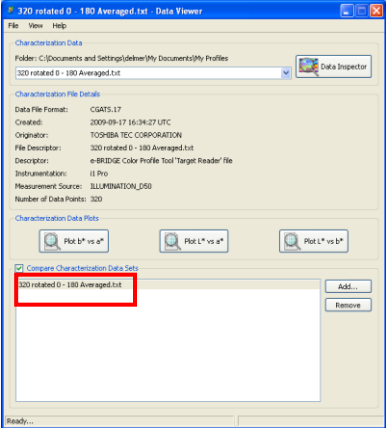
A Characterization Data Plot is a diagram that takes each color that was sampled and plots it in a chart indicating where that color lies within the CIE L\*a\*b\* color space. (See Appendix for information on CIE color space)



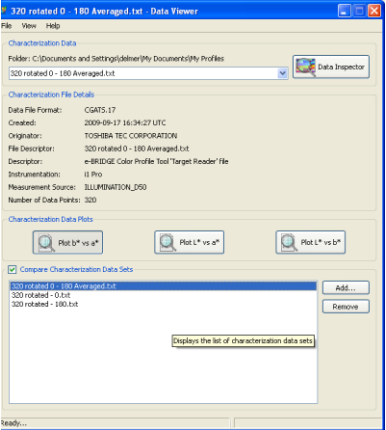
To do this you can click on the “Compare Characterization Data Sets” check box at the bottom of the Data Viewer window.



The averaged data file that you just created will be displayed in the list of files for comparison.

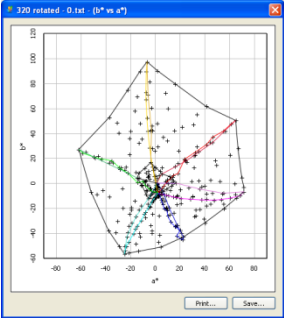


To compare the averaged data to the original data add the original data files by clicking the “Add” button and selecting the data files that you used earlier to create the averaged data file.

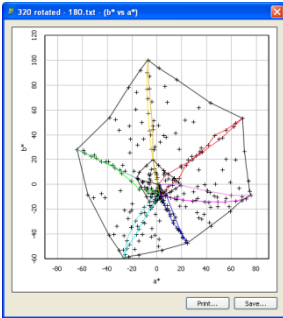


With the files listed in the comparison window you can click on the Characterization Data Plots buttons and display the characterization data plot for the file that is highlighted. If you leave the characterization data plot window open the image that is displayed will change each time a different file name is selected in the "Compare Characterization Data Sets" window.

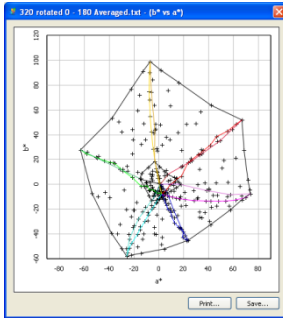
The following examples show characterization data plots using accurate target data. Notice how the plots are all similar in size and shape with minor differences.



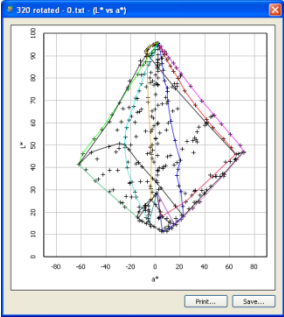
0° Target Data



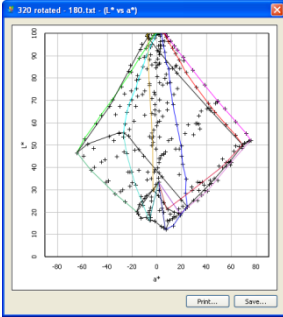
180° Target Data



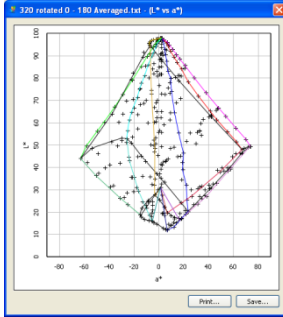
Averaged Target Data



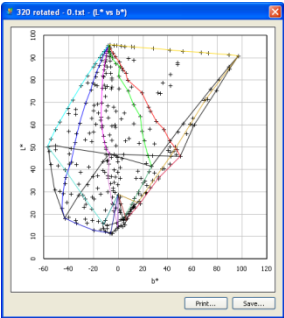
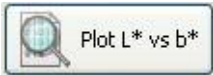
0° Target Data



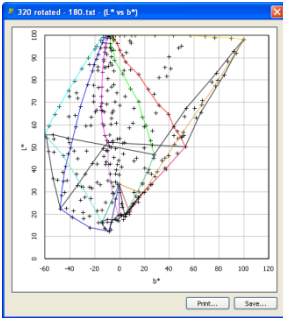
180° Target Data



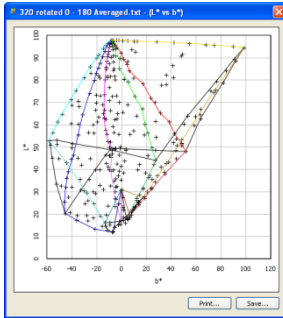
Averaged Target Data



0° Target Data

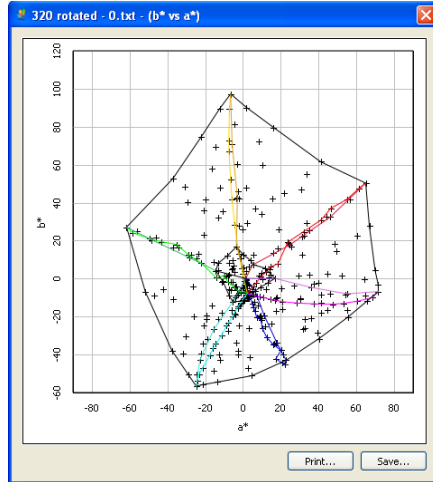


180° Target Data

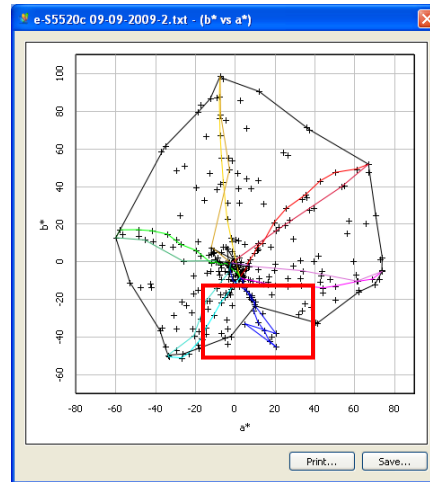


Averaged Target Data

The following comparison would be an example of inaccurate data. Notice the uneven edge on the lower portion of the plot. This would indicate an anomaly or inaccurate sampling of data. This would indicate an error in printing or scanning of the characterization target. If this occurs you should confirm image quality of the MFP and repeat the characterization process again to see if it improves.



Accurate data

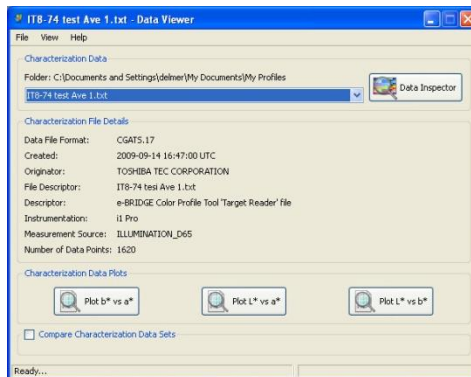


Inaccurate data

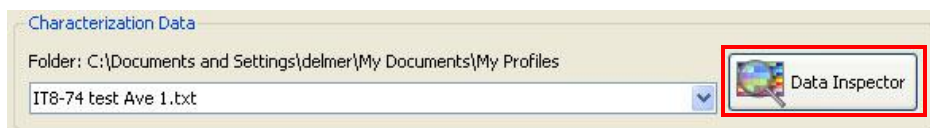
Another method of confirming the accuracy of the characterization data is using the Data Inspector application to confirm the “fit” of characterization data for creating the profile.

### 2.1.5.2. Data Inspector

Data Inspector not only displays the data but takes it through the forward model converting the data from CMYK to the LAB color space and displays adherence of the data to the forward model. If appropriate, the LAB values can be corrected manually.



To open the Data Inspector, click on the “Data Inspector” icon in Data Viewer.



The first screen that will be displayed is the Characterization Data Inspector “Colors” display grid. This window shows a visual representation of the color samples that were produced during the scanning of the characterization targets or the averaging of characterization data. The image displayed will vary depending on the data used and the number of patches in the sampling.

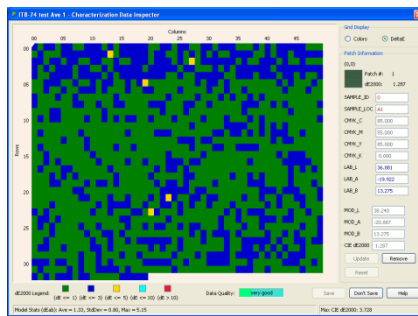


**CharTarget\_IT8-74R “Color”**

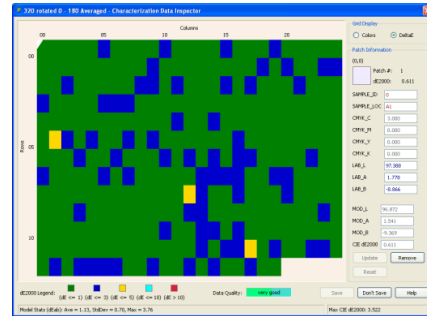


**CharTarget\_320 averaged “Color”**

The most useful information can be found in the “DeltaE” display grid. This window can be accessed by clicking on the “DeltaE” radio button in the “Display Grid” box in the upper right corner.

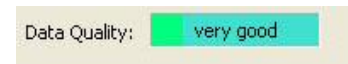
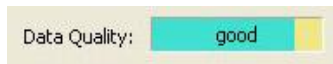


**CharTarget\_IT8-74R “DeltaE”**

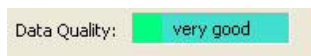


**CharTarget\_320 averaged “DeltaE”**

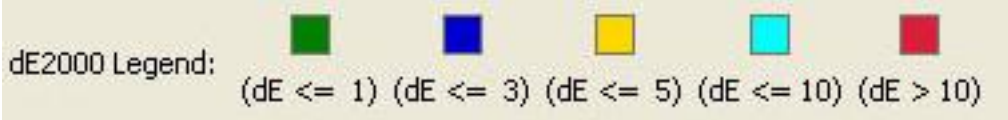
This screen shows a graphic representation of how the characterization data compares to the calculated Lab values of the forward model. This is done using colored squares to identify the quality of the data. The first thing that you want to look at is the overall quality of the data as indicated by the “Data Quality” bar at the bottom. This bar shows the overall quality of the data using a sliding bar graph that indicates varying degrees of quality from “Poor” to “Excellent”. The example below shows three different levels, “Poor”, “Good” and “Very Good”.



Even though the Data Quality bar only shows 4 different categories of quality, it can also indicate varying degrees of quality within each category. This is done by using a variable colored background to show different levels. The following sample shows 3 different levels of “Very Good” indicated by the amount of green in the background. The more green the higher the quality. At the highest level of quality “Excellent” the bar would be completely green. Data in the “Very Good” to Excellent” range, are ready to be used for profile generation and need no further processing.

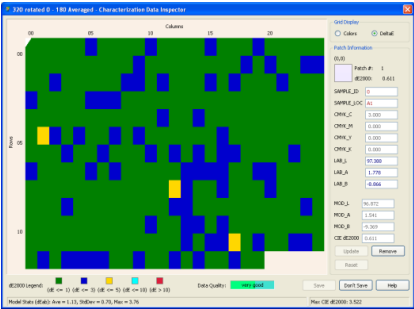


You can also see the quality of each individual patch indicated by its color. The patches have been color coded to show the difference between the measured and the calculated Lab values, reported in units of delta-E2000 measurement. The “dE2000 legend” at the bottom of the screen shows the meaning of the individual colors.

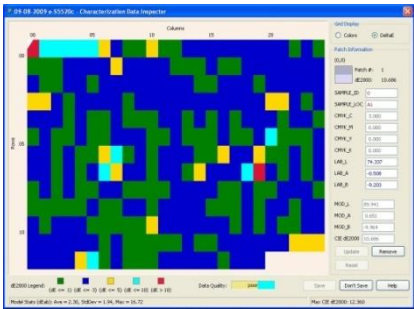


- Green deltaE is less than or equal to 1
- Blue deltaE is greater than 1 and less than or equal to 3
- Yellow deltaE is greater than 3 and less than or equal to 5
- Cyan deltaE is greater than 5 and less than or equal to 10
- Red deltaE is greater than 10

A representation of very good data would be mostly green and dark blue with a few scattered yellows. Good data would be indicated by a lower number of green patches with more dark blues and some yellow patches. Large quantities of yellow patches or any cyan or red patches would be considered poor quality data and should be troubleshoot to determine the cause before proceeding.

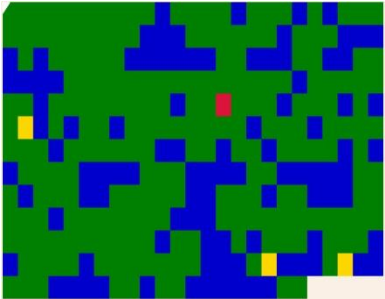


Very Good DeltaE



Poor DeltaE

It is possible to have overall good data (mostly green and blue) with 1 patch that is red or cyan. This is considered an “outlier” usually caused by an anomaly in the image production such as a spot or flaw in the paper in the area of that patch or a failure in the target scanning process like lifting the spectrophotometer momentarily during the scanning process. This should not occur if the target was printed twice and averaged. This is because the data from the two targets is averaged reducing the possibility of one patch being far out of range.



In the case of an outlier you should first confirm the cause for the poor quality data. Confirm that this was not the result of image quality issues on the MFP. If the anomaly is determined to be of unknown origin you can remove the data for one particular patch

causing it to be ignored during the profile generation process or you can modify the data to bring it more closely in line with the data of the forward model.

To delete the patch data select the patch and clicking on the “Remove” button in the lower right side of the screen. If this is done with one patch there should be little effect on the profile. However if the data from several patches is deleted the profile would be adversely effected. Keep in mind that deleting 1 patch from the data of the 320 patch target will have more impact than deleting the data for one patch of the 1617 patch target. Caution should be used when deleting patch data.

To modify the data compare the LAB\_\* measured data to the MOD\_\* calculated data and modify the LAB\_\* values to be closer to that of the same MOD\_\* value. For example changing the LAB\_L value in the following picture from 74.337 to 89.9, LAB\_A from -0.508 to 0.65 and LAB\_B from -9.203 to -9.9 would bring the data within range and restore the patch to green color. It is important to remember that as with deletion of patch data this can have an adverse effect on the profile itself if over used. Only use this method with “Outlier” data and only after determining that poor quality data was caused by an anomaly and not an image quality issue.

LAB_L	74.337	MOD_L	89.941
LAB_A	-0.508	MOD_A	0.651
LAB_B	-9.203	MOD_B	-9.964

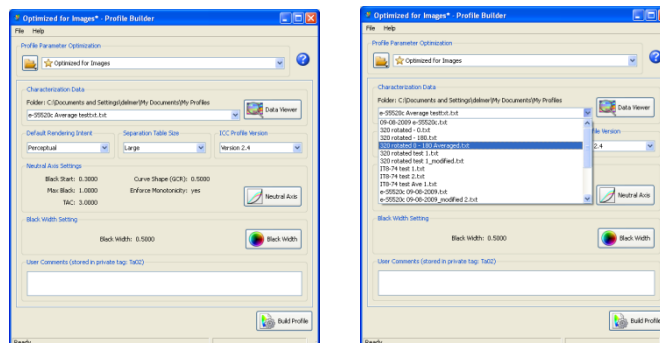
If you have made any changes to the characterization data you must save them using the “Save” button.

## 2.2. Building the profile

Click on the “Profile Builder” icon in e-BRIDGE Color Profile Tool main menu.



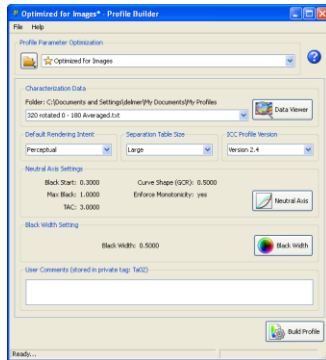
Open the “Characterization Data” selection box by clicking on the blue arrow button. And browse to the location of the averaged data file that you created earlier.



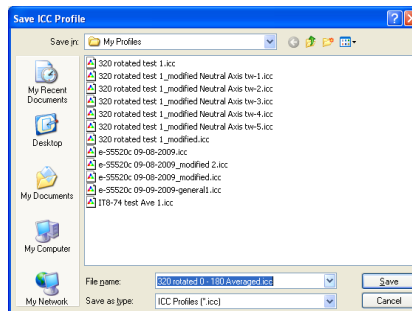
With the averaged data file selected, confirm the following default settings.

- “Profile Parameter Optimization” = “Optimized for Images”
- “Default Rendering Intent” = “Perceptual”
- “Separation Table Size” = “Large”
- “ICC Profile Version” = “Version 2.4”
- “Neutral Axis Settings” and “Black Width Setting” should remain unchanged.
- “User Comments” can contain any notes that the user wants to add about the specific profile. They can be viewed later.

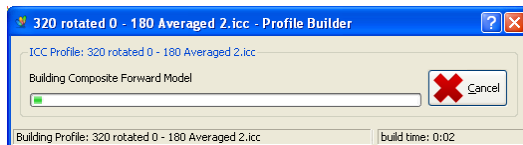
Click the “Build Profile” icon at the bottom to create your profile.



You will be prompted to name and choose a location to save your profile. When you are finished, click “Save” to save your profile.



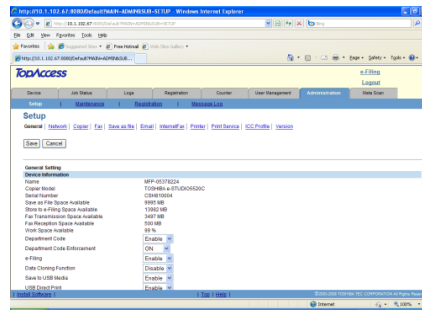
Profile Builder will create the profile and save the results. This step may take several minutes to complete



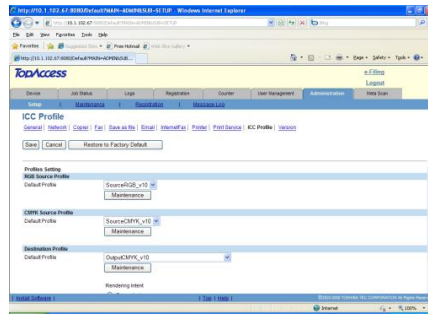
When the profile is successfully completed, you will return to the “Profile Builder” main screen and “Profile Build Completed” will be displayed at the bottom.

## 2.3.Importing the Profile to the MFP

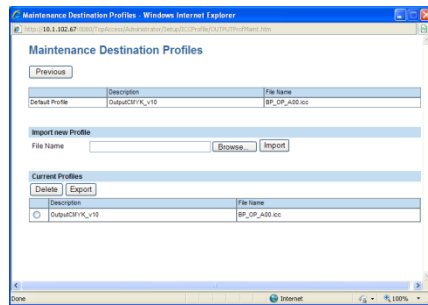
Open TopAccess for the desired MFP.  
Click administration tab and log in using the administrator password.



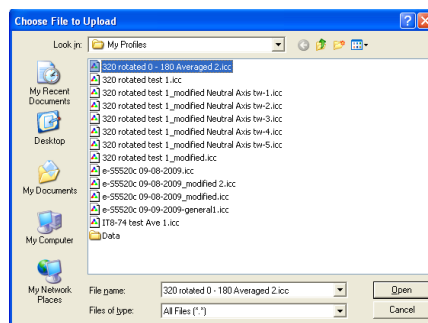
Select “ICC Profile” from the Setup menu.



Click the “Maintenance” button under “Destination Profile”.

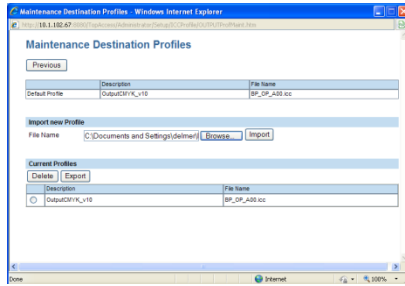


In the Destination Profiles Maintenance screen click the “Browse” button, browse to the location of the profile that you created earlier and click “Open”.

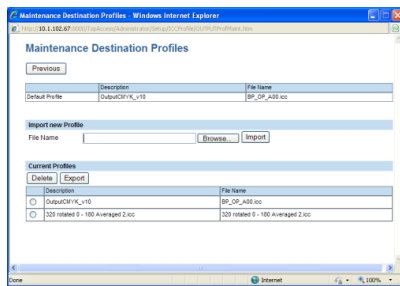




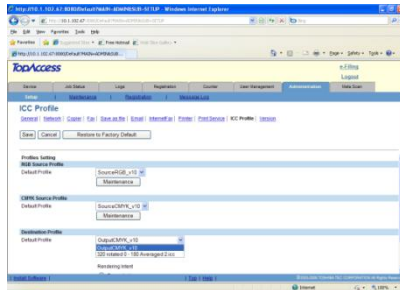
Confirm that the path to your ICC profile is listed in the File Name window and click “Import”.



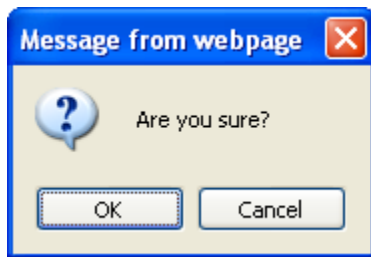
Confirm that the new profile is displayed in the “Current Profiles” list at the bottom and click “Previous” button at the top.



Confirm that the new profile is listed in the “Destination Profiles” drop down list and click “Save” at the top of the window.



Confirm that you want to save the profile by clicking the “OK” button when the “Are You Sure?” prompt is displayed. This completes the save process and makes your profile available from the print driver.



Your new profile is now accessible from the Advanced tab in Image Quality / Advanced / Settings of the PostScript print driver.



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