Operating Instructions

Calibration Guide

For safe and correct use, be sure to read the Safety Information in Setup Guide before using the machine.

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About Calibration

Calibrate the printer so that it prints colors as you expect them to appear. When you perform a calibration, the colors printed from the printer are compared to standard colors and the differences are adjusted for optimal print results.

You need to perform a calibration in the following cases:

- When you use a new paper for the first time
- When you change toner bottles
- If printed colors change over time

About calibration data

Calibration data is associated with the respective printer paper.

Use the same calibration data for multiple types of paper when the paper you are calibrating differs only in size. In the following cases, we recommend that you perform calibrations with different data, even when the paper is the same.

- When loading paper in different paper trays
- When using multiple halftone screens differently
- When performing calibrations according to the humidity of the air

Only one calibration can be associated with one paper type at a time, but you can change the association any time. For details about how to change the calibration associated with a paper, see page 3 "Selecting the Calibration for a Paper".

In addition to the six types of default calibration data that are registered, you can create new calibration data, if necessary. For details about how to create new calibration data, see each chapter.

About this guide

This document uses an X-Rite i1Pro2 spectrophotometer, test charts provided by the manufacturer, and one of the following software to explain how to calibrate the machine.

- i1Profiler
- ColorPort

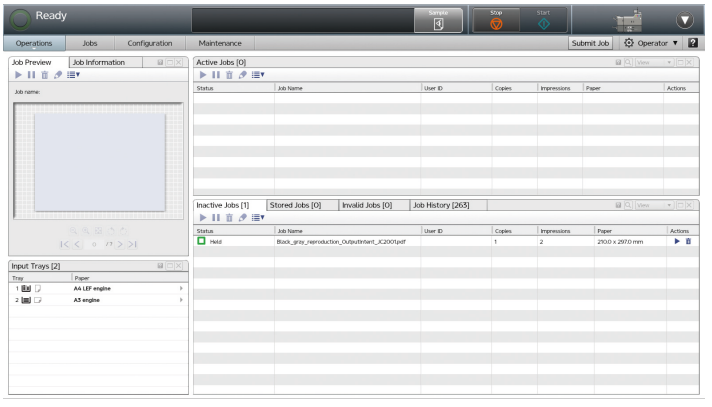
Note

- Production of ColorPort has been discontinued.

Selecting the Calibration for a Paper

This section explains how to change the calibration associated with a paper.

1. **On the remote or local console of the print server, do either of the following:**



   - To select a calibration for a paper in the paper catalog:
     1. On the [Configuration] hub, click the [Paper] tab and find the [Paper Catalog] pod.
     2. Select the paper and click , the edit icon.
   - To select a calibration for a paper that is loaded in an input tray:
     1. On the [Operations] hub or the [Printer] tab of the [Configuration] hub, find the [Input Trays] pod.
     2. Select the tray where the paper is loaded.
     3. When the [Operations] hub is selected, click [Paper Catalog...]. When the [Configuration] hub is selected, click , the edit icon, twice.
     4. Select [Manual mode].
2. **Click [Advanced].**
3. **Click , the edit icon, next to the [Calibration name] field twice.**
4. **In the Calibrations dialog, select a calibration and click , the load icon.**
5. **Click [Close].**
6. **Click [OK] twice.**

1. Creating New Calibration Data Using i1Profiler

This section explains the procedure for using i1Profiler to create new calibration data.

The procedures in this section are described using i1Profiler v1.6.3 on Windows 7.

Registering a Test Chart to i1Profiler

When using i1Profiler to perform a calibration for the first time, register the test chart to i1Profiler. You do not need to repeat this procedure.

Install i1Profiler and the applications provided with the spectrophotometer in the client computer in advance.

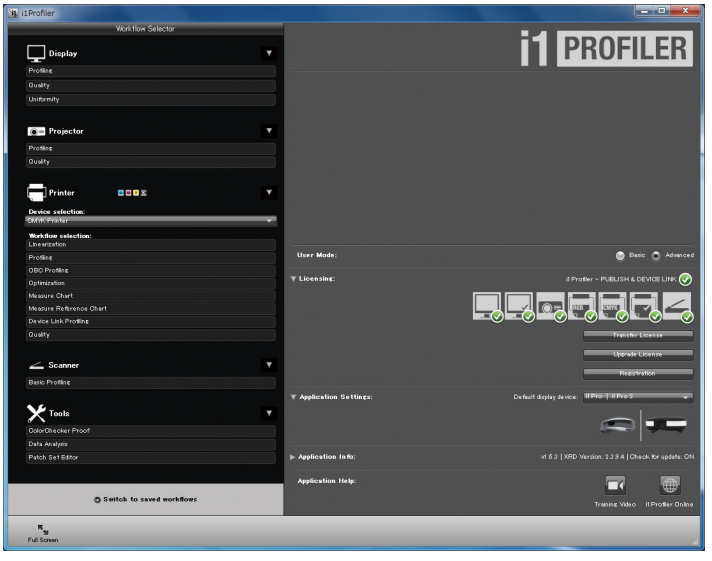
The extension for test charts is ".txf".

The test charts provided are as follows. Select a test chart according to the accuracy of the calibration and the spectrophotometer you are using.

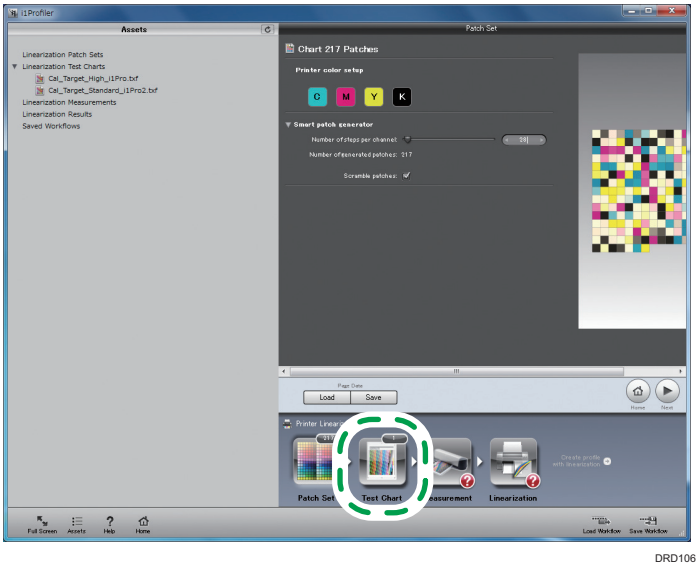
Spectrophotometer	Calibration accuracy	File name of the test chart
i1Pro2	Standard accuracy	Cal_Target_Standard_i1Pro2.txf
i1Pro2	High accuracy	Cal_Target_High_i1Pro2.txf
i1Pro	Standard accuracy	Cal_Target_Standard_i1Pro.txf
i1Pro	High accuracy	Cal_Target_High_i1Pro.txf

1. **Launch i1Profiler.**

2. Select [Advanced] in [User Mode].



3. Select [CMYK Printer] from the [Device selection] dropdown list in [Printer].
4. In [Workflow selection] in [Printer], click [Linearization].
5. Click [Test Chart] in [Printer Linearization Workflow] at the bottom of the screen.



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6. Click [Load].
7. Specify the folder where the test chart is stored, and select a standard accuracy test chart for the spectrophotometer you are using.
8. If a confirmation screen for copying appears, click [No].

9. **Click [Save] and save the test chart.**

   Test charts are stored in the following folders unless otherwise specified.

   When using Windows:

   `C:\ProgramData\X-Rite\i1Profiler\ColorSpaceCMYK\LinearizationTestCharts`

   When using a Mac:

   `/Library/Application Support/X-Rite/i1Profiler/ColorSpaceCMYK/LinearizationTestCharts`

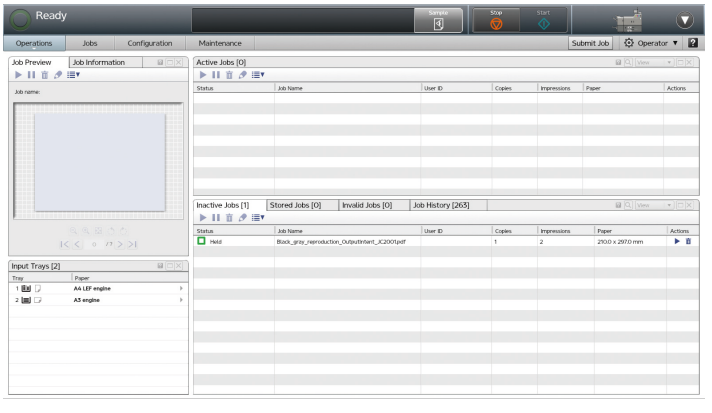
10. **Repeat Steps 6 through 9, select a high accuracy test chart, and save it.**
11. **Click the close button ([×]) to exit i1Profiler.**

Printing a Color Calibration Page (When Using i1Profiler)

This section explains how to print a test chart for measuring from the printer to be calibrated.

Before performing a calibration, adjust the image density of the printer.

1. **Press the [User Tools] key on the control panel of the printer.**
2. **Press [Adjustment Settings for Operators].**
3. **Press [Machine: Image Quality].**
4. **Press [Adjust Image Density/ DEMS].**
5. **Press [Image Density Adjustment: Manual Execute].**
6. **Press [OK].**
7. **Press [Exit].**
8. **Press the [User Tools] key.**
9. **Click the [Maintenance] hub on the remote or local console of the print server.**



10. **Click [Print Calibration Master] on the [Calibration] pod.**
11. **Select the paper tray in which to load the paper to be calibrated.**
12. **Enter in [Number of copies] the number of color calibration pages to be printed.**

    To ensure correct calibration, we recommend printing several color calibration pages, and then using the second and successive printouts for calibration.

13. **In [Accuracy], select the calibration accuracy.**

    When printing with SRA3, A3, or 11 × 17 paper, you can select [High] or [Standard].

    When printing with A4 or $8\frac{1}{2}$ × 11 paper, you can select [Standard].

14. **Click [OK].**

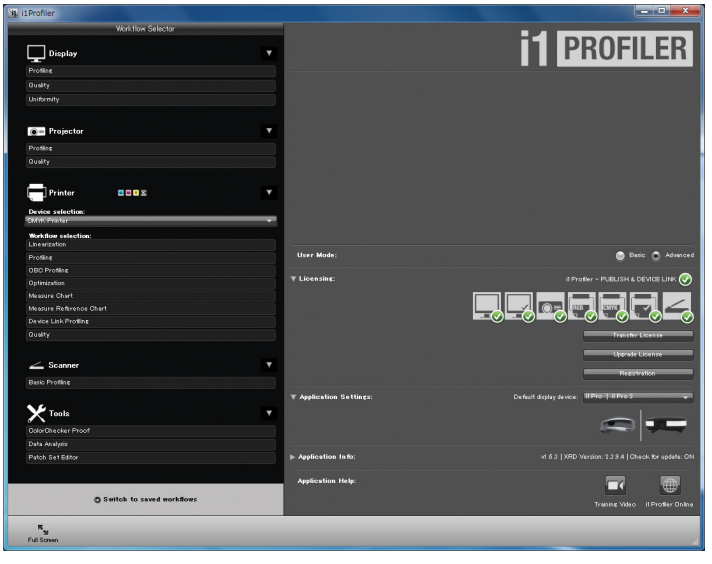
    Color calibration pages are printed.

Confirm that there are sufficient margins on the left and right sides of the calibration page that is printed.

Preparing a Color Calibration Page and Spectrophotometer (When Using i1Profiler)

This section explains how to place the printed color calibration page on the backup board and how to calibrate the spectrophotometer.

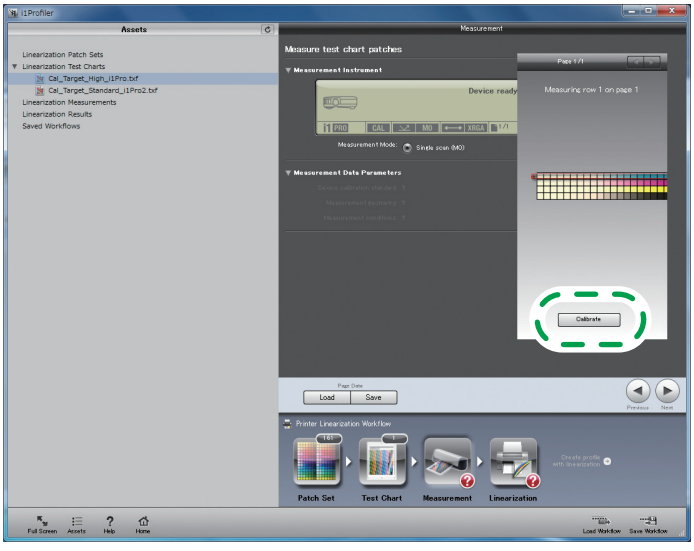
1. **Attach the spectrophotometer to the client computer.**
2. **Launch i1Profiler.**
3. **Click [Advanced] in [User Mode].**



4. **Select [CMYK Printer] from the [Device selection] dropdown list in [Printer].**
5. **Click [Linearization] in [Workflow selection] in [Printer].**
6. **Click [Test Chart] in [Printer Linearization Workflow] at the bottom of the screen.**
7. **Click [Load].**
8. **From the list, select a test chart supported by the spectrophotometer you are using. The accuracy of this test chart must be the same with the one performed on the calibration sheet already printed.**

   You can also select a test chart from [Linearization Test Charts] in the [Assets] menu on the left side of the screen.
9. **Click [Measurement] at the bottom of the screen.**
10. **Place the spectrophotometer on the calibration plate.**

11. Click [Calibrate].



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Perform a calibration using the spectrophotometer.

When using i1Pro as a spectrophotometer, select the measurement mode in [Measurement Mode]:

- [Spot (M0)]: Select this when measuring the test chart patch by patch.
- [Single scan (M0)]: Select this when measuring the test chart's patches band by band.

12. On the backup board, place a stack of unused sheets of paper of the same type that were used to print the color calibration pages.

Stack enough paper so that the backup board cannot be seen through the paper.

13. Place one of the printed calibration sheets on top of the paper stacked on the backup board.

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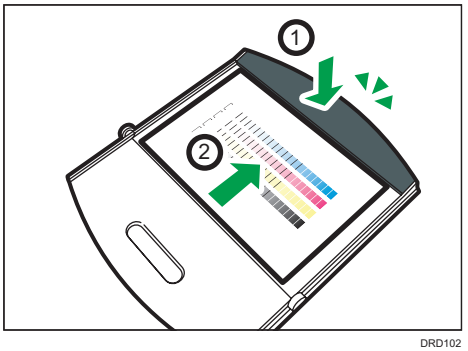
14. Open the backup board clip (①), insert the calibration sheet (②), and then fix it in place.



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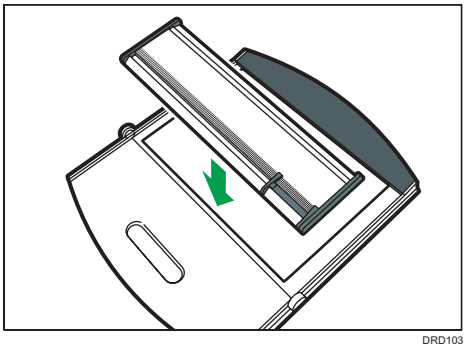
15. Place the ruler on the backup board.

If you have selected [Single scan (M0)] in [Measurement Mode], you must place the ruler on the backup board to use the i1Pro as a spectrophotometer.



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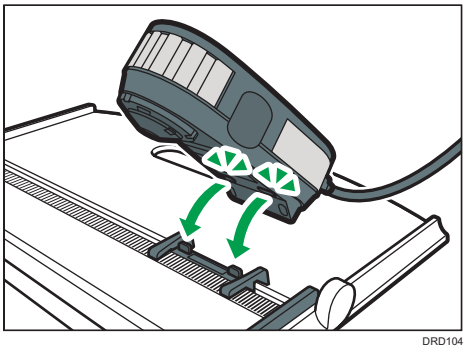
16. Place the spectrophotometer on the ruler.



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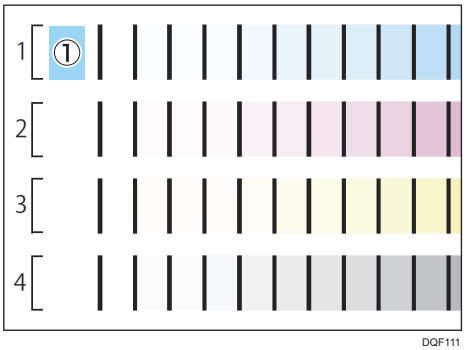
Scanning a Color Calibration Page (When Using i1Profiler)

Important

- Do not print any jobs while you are calibrating the printer. If calibration is interrupted, start again.

1. **Move the scanning head of the spectrophotometer to the left edge (①) of color 1 on the calibration page.**



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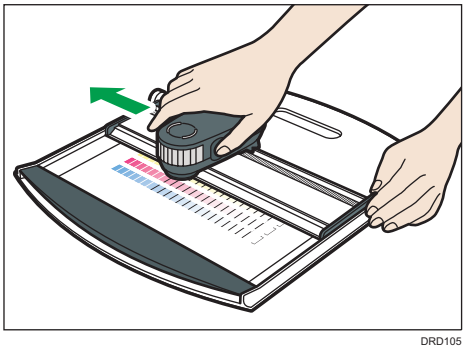
The color being scanned is displayed on the screen in a frame.

2. **Hold down the button on the left side of the spectrophotometer for about one second.**
3. **Continue to hold the button down. When you hear the computer beep, move the spectrophotometer to the right.**



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Slide it slowly at a constant speed.

4. **When color 1 has been scanned to the right edge, release the button on the spectrophotometer.**
5. **Check the scan results on the [Measurement] screen of i1Profiler.**

If the color was scanned correctly, the frame indicating the scan position moves to the next color.

If an error message appears, return to Step 1 and scan the color indicated on the screen once again.

If the scan results differ from the gradation variations on the test chart, return to Step 1, select the color to scan, and then scan it again.

6. **Repeat Steps 1 through 5 to scan all the colors.**

   When performing a calibration for standard accuracy, scan four bands of colors. When performing a calibration for high accuracy, scan eight bands of colors.

7. **After all colors are scanned, click [Save].**
8. **Select [CxF Files (*.cxf)] or [i1Profiler CGATS Custom (*.txt)] from [Save as type].**
9. **Specify the folder to save scanned data and name the file.**
10. **Click [Save].**
11. **If you have selected [i1Profiler CGATS Custom (*.txt)] in Step 8, configure the file format option as follows:**

    The machine cannot read calibration data if the configuration is different.

    - Data sets: Save all available data sets
    - Data fields: Select the following:
      - SampleID
      - SampleName
      - CMYK
      - Reflectance spectrum
      - L*a*b*
    - CIE Standard Illuminant: CIE illuminant D50
    - CIE Standard Observer: 2º
    - Decimal separator: Period [.]
    - Output scale: 0.0 to 1.0
    - Spectral range: 380 to 730 nm

    Do not select [Density] or [Minus Paper].

12. **Click [OK].**
13. **Click the close button ([x]) to exit i1Profiler.**

Note

- If you use i1Pro and set the measurement mode to [Spot (M0)], attach the spectrophotometer to the positioning target. Then touch the scanning head of the spectrophotometer to the patch specified on the screen. Click the button on the spectrophotometer side once per patch. For details about measurement modes, see page 10 "Preparing a Color Calibration Page and Spectrophotometer (When Using i1Profiler)".

- For details about how to use the spectrophotometer, see the manual.

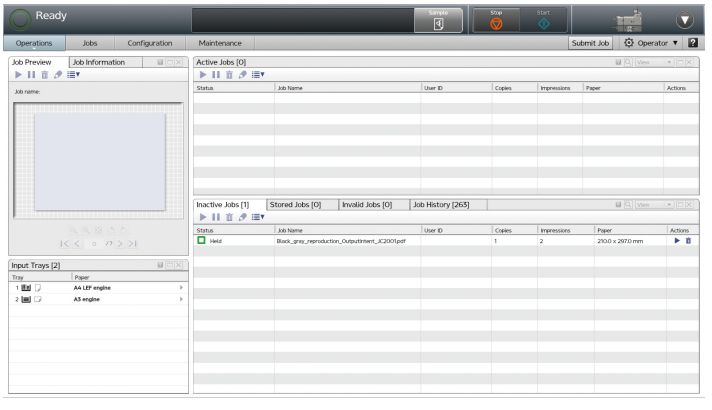
Loading Calibration Data (When Using i1Profiler)

You can import to the print server the calibration data that you created using i1Profiler. Also you can import the calibration data to the print server via a USB memory or network.

To load calibration data from a USB memory, copy the saved calibration data to a USB memory device, and then install it to the USB port of the printer server.

To load calibration data via a network, log in to the remote console as an administrator.

1. **Open the [Maintenance] hub on the remote or local console of the print server.**



2. **Click [Load Calibration].**
3. **Click [File Upload].**
4. **Specify the folder where calibration data is stored, and select the calibration data.**
5. **Click [Open].**
6. **Select [Print Verification Page] or [Apply Without Verification].**

   If you click [Apply Without Verification], proceed to Step 8.

   If you click [Print Verification Page], you will have two prints of the confirmation page. The first print contains the previous calibration results while the second print contains the current calibration results. If previous calibration results are not available, the first print contains the factory-set values.
7. **Click [Accept New Calibration].**
8. **Click [Accept New Calibration].**

   The new calibration result is applied to the paper.

2. Creating New Calibration Data Using ColorPort

This section explains the procedure for using ColorPort to create new calibration data.

The procedures in this section are described using ColorPort v.2.0.5 on Windows 7.

Registering a Test Chart to ColorPort

When using ColorPort to perform a calibration for the first time, register the test chart to ColorPort. You do not need to repeat this procedure.

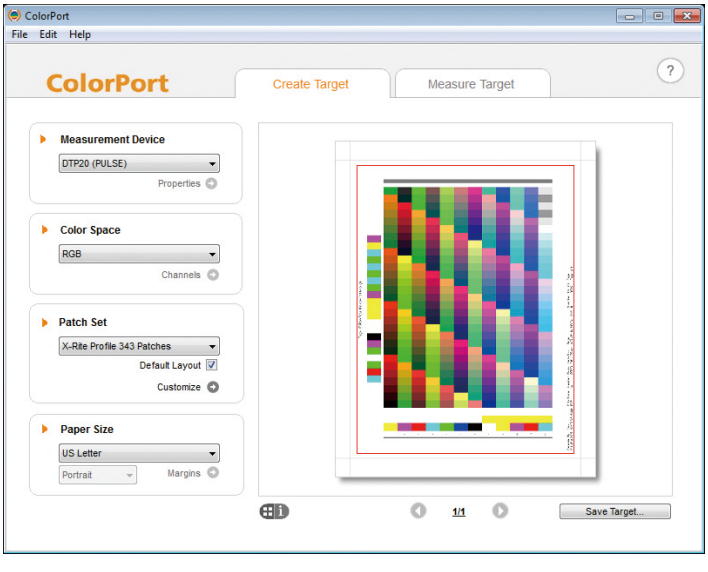
When perform a calibration, first configure a spectrophotometer and register ColorPort to the client computer. Install ColorPort as the on-screen installer instructs.

The extension for test charts is ".xml".

The test charts provided are as follows. Select a test chart according to the accuracy of the calibration.

Calibration accuracy	File name of the test chart
Standard accuracy	Calibration_Target_Standard.xml
High accuracy	Calibration_Target_High.xml

1. **Launch ColorPort.**
2. **Click the [Measure Target] tab.**



3. **Select [Target Manager] from the [Target] dropdown list.**

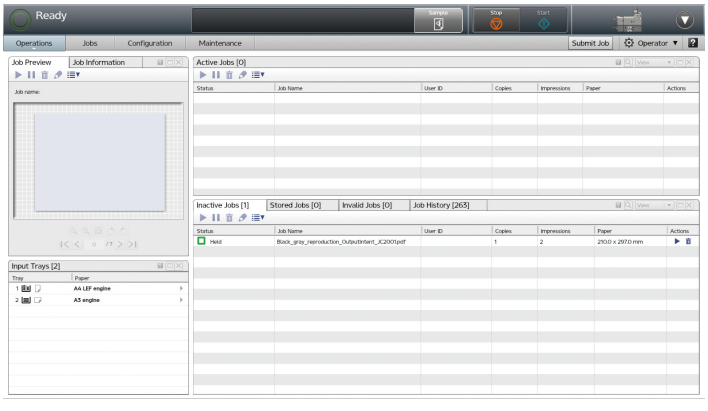
4. Click [Import].
5. Specify the folder where the test chart is stored, select standard accuracy for the test chart, and then click [Open].
6. Click [Import].
7. Select high accuracy for the test chart, and then click [Open].
8. Click [Close].
9. Click the close button ([×]) to exit ColorPort.

Printing a Color Calibration Page (When Using ColorPort)

This section explains how to print a test chart for measuring from the printer to be calibrated.

Before performing a calibration, adjust the image density of the printer.

1. **Press the [User Tools] key on the control panel of the printer.**
2. **Press [Adjustment Settings for Operators].**
3. **Press [Machine: Image Quality].**
4. **Press [Adjust Image Density/ DEMS].**
5. **Press [Image Density Adjustment: Manual Execute].**
6. **Press [OK].**
7. **Press [Exit].**
8. **Press the [User Tools] key.**
9. **Click the [Maintenance] hub on the remote or local console of the print server.**



10. **Click [Print Calibration Master] on the [Calibration] pod.**
11. **Select the paper tray in which to load the paper to be calibrated.**
12. **Enter in [Number of copies] the number of color calibration pages to be printed.**

    To ensure correct calibration, we recommend printing several color calibration pages, and then using the second and successive printouts for calibration.

13. **In [Accuracy], select the calibration accuracy.**

    When printing with SRA3, A3, or 11 × 17 paper, you can select [High] or [Standard].

    When printing with A4 or $8^{1}/_{2}$ × 11 paper, you can select [Standard].

14. **Click [OK].**

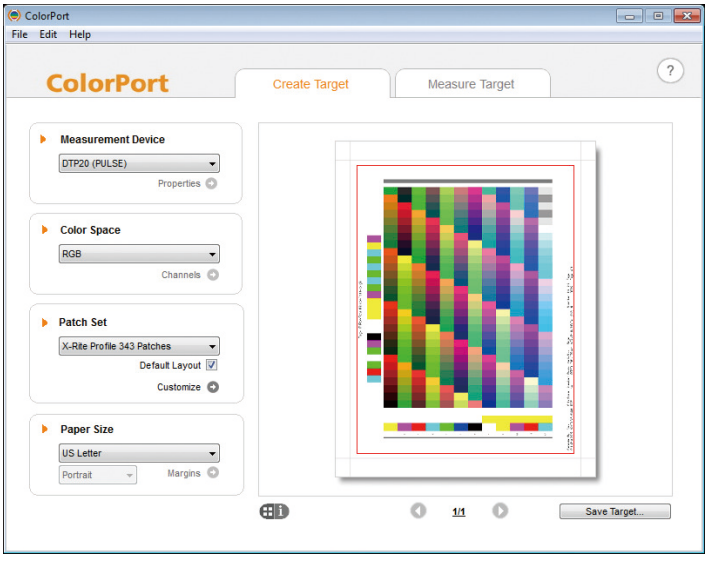
    Color calibration pages are printed.

Confirm that there are sufficient margins on the left and right sides of the calibration page that is printed.

Preparing a Color Calibration Page and Spectrophotometer (When Using ColorPort)

This section explains how to place the printed color calibration page on the backup board and how to calibrate the spectrophotometer.

1. **Attach the spectrophotometer to the client computer.**
2. **Launch ColorPort.**
3. **Click the [Measure Target] tab.**



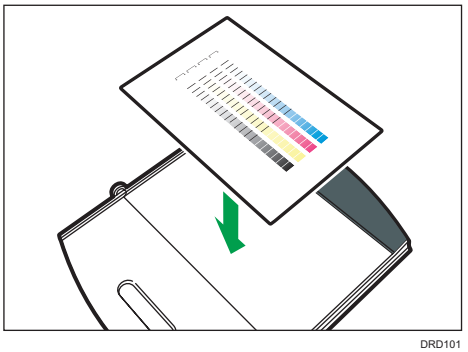
4. **Select the same accuracy for the test chart and the printed color calibration sheet from the [Target] dropdown list.**
5. **Select [i1Pro] from the [Measurement Device] dropdown list.**
6. **Click the icon ( ) to the right of the [Measurement Device] dropdown list.**
7. **Select the measurement mode from the [Measurement Mode] dropdown list.**
   - [Spot]: Select this when measuring the test chart patch by patch.
   - [Strip]: Select this when measuring the test chart's patches band by band.
8. **Click [Calibrate].**
9. **Place the spectrophotometer on the calibration plate.**
10. **Click [Calibrate].**

    Calibrate the spectrophotometer.
11. **Click [Close].**

12. **On the backup board, place a stack of unused sheets of paper of the same type that were used to print the color calibration pages.**

    Stack enough paper so that the backup board cannot be seen through the paper.

13. **Place one of the printed calibration sheets on top of the paper stacked on the backup board.**



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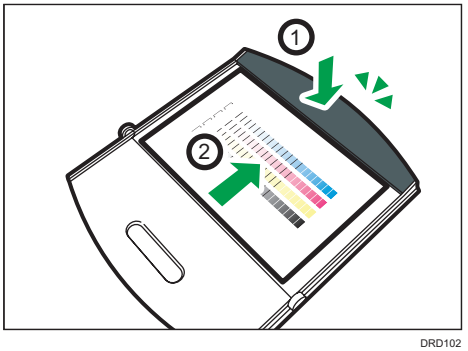
14. **Open the backup board clip (①), insert the calibration sheet (②), and then fix it in place.**



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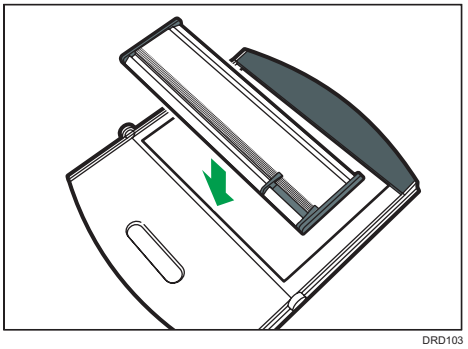
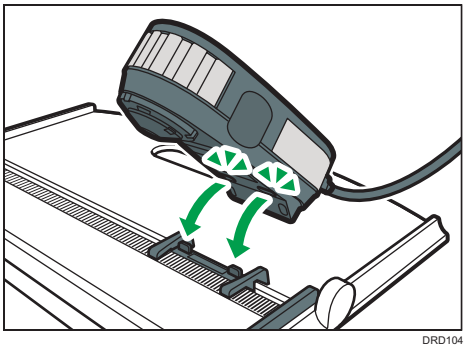
15. **If you have selected [Strip] in [Measurement Mode], place the ruler on the backup board.**



DRD103

16. **Place the spectrophotometer on the ruler.**



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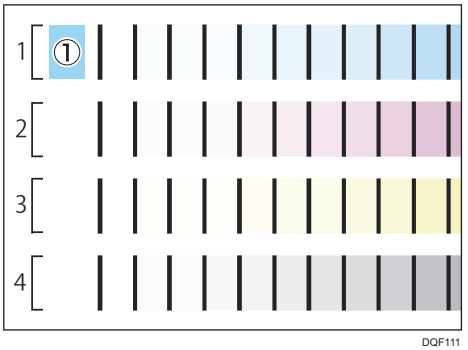
Scanning a Color Calibration Page (When Using ColorPort)

This section explains the procedure for [Strip] you select as a measurement mode. For details about measurement modes, see page 21 "Preparing a Color Calibration Page and Spectrophotometer (When Using ColorPort)".

Important

- **Do not print any jobs while you are calibrating the printer. If calibration is interrupted, start again.**

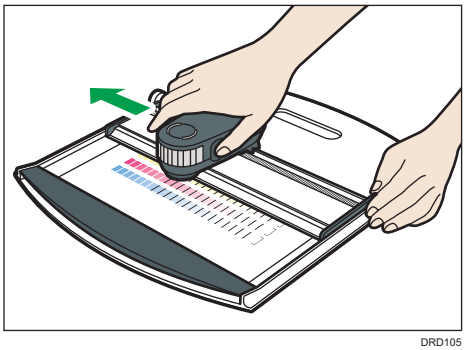
1. **Move the scanning head of the spectrophotometer to the left edge (①) of color 1 on the calibration page.**



DQF111

The color being scanned is displayed on the screen in a frame.

2. **Hold down the button on the left side of the spectrophotometer for about one second.**
3. **Keep holding down the button and move the spectrophotometer to the right.**


DRD105

Slide it slowly at a constant speed.

4. **When color 1 has been scanned to the right edge, release the button on the spectrophotometer.**

5. **Check the scan results using the [Measurement] screen of ColorPort.**

   If the color was scanned correctly, the frame indicating the scan position moves to the next color.

   If an error message appears, return to Step 1 and scan the color indicated on the screen once again.

   If the scan results differ from the gradation variations on the test chart, return to Step 1, select the color to scan, and then scan it again.

6. **Repeat Steps 1 through 5 to scan all the colors.**

   When performing a calibration for standard accuracy, scan four bands of colors. When performing a calibration for high accuracy, scan eight bands of colors.

7. **After all colors are scanned, click [Save Data].**

   Clicking [Clear Data] takes you back to the screen before starting measurements. The measured data is deleted.

8. **Select [ColorPort Linearization] from the [Format] dropdown list.**
9. **Select [None (XRGA)] from the [Conversion] dropdown list.**
10. **Click [Save].**
11. **Specify the folder to save scanned data and name the file.**
12. **Make sure that [LIN(*.lin; *.LIN)] is selected in [File Type], and then click [Save].**
13. **Click the close button ([×]) to exit ColorPort.**

Note

- If you set the measurement mode to [Spot], attach the spectrophotometer to the positioning target. Then touch the scanning head of the spectrophotometer to the patch specified on the screen. Click the button on the spectrophotometer side once per patch.
- For details about how to use the spectrophotometer, see the manual.

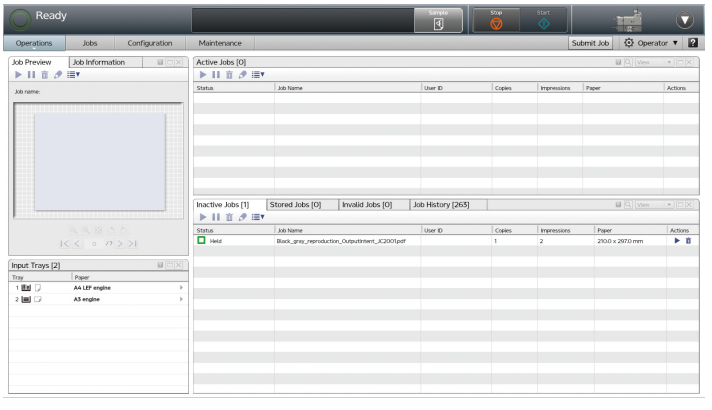
Loading Calibration Data (When Using ColorPort)

You can import to the print server the calibration data that you created using ColorPort. Also you can import the calibration data to the print server via a USB memory or network.

To load calibration data from a USB memory, copy the saved calibration data to a USB memory device, and then install it to the USB port of the printer server.

To load calibration data via a network, log in to the remote console as an administrator.

1. **Open the [Maintenance] hub on the remote or local console of the print server.**



2. **Click [Load Calibration].**
3. **Click [File Upload].**
4. **Specify the folder where calibration data is stored, and select the calibration data.**
5. **Click [Open].**
6. **Select [Print Verification Page] or [Apply Without Verification].**

   If you click [Apply Without Verification], proceed to Step 8.

   If you click [Print Verification Page], you will have two prints of the confirmation page. The first print contains the previous calibration results while the second print contains the current calibration results. If previous calibration results are not available, the first print contains the factory-set values.
7. **Click [Accept New Calibration].**
8. **Click [Accept New Calibration].**

   The new calibration result is applied to the paper.

3. Appendix

This section describes the trademarks.

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