How to use the HP Latex 300 series as a color proofer for the HP Latex 3000
This document is complementary to the “Color Matching Guide on the HP Latex 360” document. It briefly describes the basic steps on how to configure ONYX 12 to properly use a Latex 300 printer series as a color proofer of a latex 3000 press.

Summary:

Proofing is the process of simulating the printing behavior of one printer, the target printer, on another printer, the proofer printer. To have good results in the proofing experience, there are four basic concepts to take into account:

- A good ICC profile should be created for each printer using the same physical device (spectrophotometer)
- The printers should be calibrated/linearized periodically or whenever any significant deviation in color reproduction is observed, and, of course, before the ICC profiles are created
- The proofer gamut (the color space of the proofer printer) should fully encompass the target gamut. This can be observed comparing both ICC profiles with an ICC profile viewer
- The proofing will be valid for just one specific condition (media, ink limit and print mode) of the target printer

This document describes the steps to follow to use a Latex 300 series as a color proofer for a Latex 3000 series (target) for a specific media and print mode combination on the target side. For each other media and print mode, another such process should be run.

Basically it consists of 4 steps; the first 3 are just one-time set-up and the 4th is the usual operator usage.

Regarding the usual operator usage, there are two main alternatives:

- Automatically create a proof job in the Latex 300 series queue whenever the operator rips a job for the Latex 3000 series. The user will print the job on the Latex 3000 manually once the Latex 300 proof is printed and accepted. In this case it might be decided (when creating the proofing characteristics) if the proof should be clipped.
- Manually rip and print the job for the Latex 300 specifying the Latex 3000 ICC profile as the “proof” profile in the ICC Profile Setup. Once the printed proof is accepted, the operator will rip and print the job on the Latex 3000.

1 Bear in mind that the final color consistency among the printers will depend greatly on the variability of the measuring instrument used and the variability of the printers.
Step-by-Step Instructions

The following describes the steps for the emulation of the HP Latex 3000 series using an HP Latex 300 series printer.

Equipment and materials

• Substrate: 1 roll of the same media per printer or 1 roll used for both printers
• HP Latex 3000 series (target printer)
• HP Latex 300 series (proofer printer)
• Spectrophotometer. The same physical spectrophotometer should be used for both printers
• ONYX 12 Thrive or ONYX 12 ProductionHouse
• PC workstation running Windows 7 or newer

General system requirements

For a good color matching between proof and print, the following recommendations should be followed:

• Use the same brand and type of substrate in both the target printer and the proofer
• For a given substrate, always and only use the maximum ink density available in the proofer baseline, to emulate any equal or lower ink density on the same substrate in the target printer
• Use print modes with comparable print quality (not necessarily the same number of print passes) on both printing systems. This might be quite time consuming until a corresponding print mode in the proofer is found to match a specific ink-density/print mode in the target.

Step 1: install both printers in ONYX RIP

ONYX RIP-Queue requires a minimum of two active printers for proofing: one for the final output (the HP Latex 3000) and one for the proofing (the HP Latex 300 in this case).

Step 2: HP Latex 3000 Setup

1. Set up the HP Latex 3000 target baseline, using your substrate. This includes:
   a. Select the base generic media preset in the printer’s Internal Print Server and clone it. The cloned preset is editable and will be the target to emulate. Rename it to a meaningful name.
b. Select the ink density to emulate. For instance, select 100% ink density, 6 passes print mode, 6 inks configuration.
c. Adjust all substrate settings (advance, temperature, vacuum, inter-pass delay…) to the desired values (In most cases the default values are fine).
d. Make sure print heads are aligned.
e. Print a diagnostic plot with ramps for all 4 primaries (C, M, Y and K) and measure with the spectrophotometer the maximum densities for each. Write them down as they will be used in step 3.

2. Color calibration of target printer baseline.

To start color calibration from the Internal Print Server (IPS), select Substrate > Color calibration, and then click the Calibrate button.

If a media cannot be calibrated by the printer (e.g. backlit media) the calibration/linearization should be performed by the ONYX RIP. Remember to choose a Basic workflow instead of an ICC only workflow in step 2.3.a in such case; and also remember that whenever in the document a printer calibration is stated, an internal RIP calibration/linearization is to be done, instead of the non-available calibration in the printer.

3. Color characterization of the printer baseline, that is, creation of the RIP media profile, including an ICC profile, of the target printer baseline.
   a. Start ONYX Media Manager to create the media profile for the just cloned media in the printer. Select the HP Latex 3000 to start the media creation and choose ICC Only workflow
   b. Make sure you select the just cloned media on the drop down menu to link the ONYX media preset to the media in the printer. In this example it is called “Cloned - self-adhesive vinyl.”
c. In the Basic Print Mode Settings dialog, select the print mode to emulate. In this example: “6p 6c 100%”
d. On the ICC Profile dialog, click Print Swatch to configure and print the ICC Swatch. Select and setup a spectrophotometer device. It is recommended to use the Ultra Accuracy swatch.

e. After the swatch has dried, click Read Swatch to measure the ICC Swatch.
f. Verify the “HP Latex” preset is selected in “Modify and manage advanced ICC build settings”
g. Click the Edit button to access the Build Options. Check that the options are as follows:

![Build Options](image1)

h. Once the ICC build settings have been modified, click Build ICC Profile to complete the profiling process.

![Edit an existing Print Mode (ICC Only)](image2)

i. The new media preset will be available in the HP Latex 3000 RIP.

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2 The down arrow on the Edit button allows users to configure and save custom setups. They will appear in the Predefined Build options drop-down menu.

3 Optimal black generation settings may vary from one device to another, depending on particular image formation characteristics. The HP Latex 3000 does benefit from heavy substitution of CMY inks by K ink, in all the space except in the light midtones and highlights, where an excess of K could make some images to look too grainy in these areas. The generous use of black ink improves print quality in several ways, better drying and curing, better optical density and gamut in dark areas, smoother transitions, on an optimal graininess level. The “GCR Plus” Black Generation option achieves these optimal settings.
Once the target baseline is set, remember to print using this media profile and print-mode whenever a print conforming to the proof will be needed.

Step 3: HP Latex 3000 Setup

The best color matching accuracy can only be obtained when the color gamut of the proofer baseline completely includes that of the target printer baseline. In other words, if the color gamut of the proofer encompasses (is a superset of) the color gamut of the target printer. Using the same substrate both in the target printer and proofer is also recommended. Also, please make sure you use the same spectrophotometer physical device to create the ICC profile on both printers.

The first basic step is to set up the widest gamut baseline in the proofer for the selected substrate. This can be accomplished by selecting the highest possible ink density on that substrate. For reflective media, including PVC Banner, Self-adhesive Vinyl, Paper, PP & PE Synthetics, Polyester Film or Canvas, the maximum possible ink density is 120%. For backlit media and textiles, the maximum possible ink density is 260%.

1. Print the same diagnostic plot as in step 2.1.a [which include primary colors (C,M,Y and K) ramps] from the printer front panel for different ink densities and print modes and select a baseline that has greater density for all primaries than the ones measured in step 2.1.a.  

4 This step might be quite time consuming until a proper baseline is selected.
2. Set up the HP Latex 300 emulation baseline, using the same substrate. This includes:
   a. Select the media preset selected in the previous step in the printer’s Front Panel and clone it. The cloned preset is editable and will be the emulation baseline. Rename it to a meaningful name.
   b. Select Modify > Add New Printmode in the front panel.
   c. Select Passes > 12 or higher for optimal print quality and drying efficiency.
   d. Select Color Saturation > 120% or higher, as it will provide the maximum proofer gamut on this substrate, which will improve accurate color matching; but should not show IQ defects.
   e. Adjust all substrate settings (advance, temperature, vacuum, inter-pass delay…) to the desired values (In most cases the default values are fine).
   f. Save the just created print mode.
   g. Make sure print heads are aligned.

3. Color calibration of the proofer baseline.
   a. To start color calibration from the Front Panel, select Substrate > Color calibration, and then click the Calibrate button.

As commented in Step 2, if the media is not calibratable by the printer, the calibration should be done by the RIP, and so, please select Basic Workflow instead of ICC only in the next step and perform a RIP calibration before the ICC profile creation.

4. Color characterization of the printer baseline, that is, creation of the RIP media preset and an ICC profile of the target printer baseline.
   a. Start ONYX Media Manager to create the media preset for the just cloned media in the printer. Select the HP Latex 300 to start the media creation and choose ICC Only workflow.
b. Make sure you select the just cloned media on the drop down menu to link the ONYX media preset to the media in the printer. In this example, it is called ‘Proofing - Self-adhesive vinyl’.

c. In the Basic Print Mode Settings dialog, select the created print mode. In this example “12p_CMYKcm_120.”
d. On the ICC Profile dialog, click Print Swatch to configure and print the ICC Swatch. Select and setup a spectrophotometer device, in our case the X-Rite i1Pro 2. It is recommended to use the Ultra Accuracy swatch.

e. After the swatch has dried, click Read Swatch to measure the ICC Swatch.

f. Select the “HP Latex” preset in “Modify and manage advanced ICC build settings”
g. Click Edit button to access the Build Options. Check that the options are as follows:

![Build Options](image)

h. Once the ICC build settings have been modified, click Build ICC Profile to complete the profiling process.

![Build ICC Profile](image)

i. The new media preset will be available in the HP Latex 300 printer.

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5 The down arrow on the Edit button allows users to configure and save custom setups. They will appear in the Predefined Build options drop-down menu.

6 Optimal black generation settings may vary from one device to another, depending on particular image formation characteristics. The HP Latex 3000 does benefit from heavy substitution of CMY inks by K ink, in all the space except in the light midtones and highlights, where an excess of K could make some images to look too grainy in these areas. The generous use of black ink improves print quality in several ways, better drying and curing, better optical density and gamut in dark areas, smoother transitions, on an optimal graininess level. The “GCR Plus” Black Generation option achieves these optimal settings.
5. Setup proofer Quick Set. As stated in the summary there are two methods to create the proofing: a manual way and an automatic way. The quickset generation is different in both ways.

   a. Automatic Proofing Quick Set:
      1) Select the HP Latex 300 printer and click on the Configure Printer icon.
      2) In the Quick Sets tab click the New button
      3) Set the Name, unselect the Get Media and Page Size From Printer setting and select the created media and printmode.

4) In RIP-Queue, highlight the printer you want to use as the final output printer, in our case the HP Latex 3000 printer. Click Configure Proofing. This opens the Proof Creation Settings dialog.
5) Use the Printer drop-down menu to select the printer you want to use as the proofing printer, in this case the HP Latex 360.

- Select the created Quick Set in the HP Latex 300 printer.
- Set the Maximum Width and Height for the proof using the appropriate fields. This does not set the actual width and height of your images. Instead, it sets a limit on the size of the proof.
- Enable Proof All Pages if you want to print all the pages of a multi-page document. Otherwise, only the first page will be printed.
- Select the Rendering Intent using the drop-down menu (Relative Colorimetric is recommended when using the same media on both printers).
- Select which colors you want to exclude from the workflow by selecting them in the Pure Hues.
- Click OK. You are now ready to proof.
6) In case you want to automate proofing job submission, you should enable “Create proof Automatically” in the advanced quick set options of the HP Latex 3000 printer. So, whenever a job is submitted to the HP Latex 3000, the proof job for the HP Latex 300 will be created automatically before printing.

b. Manual Proofing Quick Set:
   1) Select the HP Latex 300 printer and click on Configure Printer icon.
   2) In the Quick Sets tab click the New button
      i. Set the Name, unselect the Get Media and Page Size From Printer setting and select the created media and printmode.
ii. In the Color Management section create a new Color Management Quick Set by selecting Save As… in Change Profiles and assigning a meaningful name.

iii. Select Edit… from the Change Profiles drop down menu.
iv. Define the Proof Profile and Rendering Intent. The Proof Profile should be the Latex 3000 one created in step 2.3. In this case we have exported it using the Media Manager and specified the location it was saved. The recommended Rendering Intent for the proof is Relative Colorimetric.

- Regarding the other profiles, they are used when no ICC profile is specified in the source image (untagged images). Of course, it is recommended to use for both cases (when printing on the target printer and on the proofer printer) the same defaults (in this case ISOcoated for the CMYK images and sRGB for the RGB ones).
- Regarding the other Rendering Intents it is recommended to use always Relative Colorimetric also.
Step 4: Printing the Proof

A proof job can be created from RIP-Queue, Job Editor, or by using a Quick Set.

1. Automatic Proofing Method – Quick Set
   a. Select the created media on each printer
   b. Change the Start print setting to Manual on both printers.
   c. Open the job in the HP Latex 3000 queue
   d. If Create proof automatically was selected in the Quick Set, a proof job will be created automatically for the HP Latex 360.

2. Automatic Proofing Method – RIP-Queue
   If Create proof automatically was not selected in the Quick Set, follow these steps:
   a. Highlight the desired job in RIP-Queue.
   b. Right-click the job and select Proof. RIP-Queue creates a new job and appends “-Proof” to the job name. The original job is placed on hold until you release it.

   ![Thrive RIP-Queue](image)

   In both cases, notice that the “-Proof” job is sent to the HP Latex 360 and the original is on hold waiting for confirmation on the HP Latex 3000.

   i. Please, make sure that the correct media and printmode is selected on each printer.
   ii. Once it is printed on the Latex 300 printer and the proof is approved, then the printing job can be sent to the Latex 3000 by the operator.
   
a. Select the created media on each printer
b. Change the Start print setting to Manual on both printers.
c. Open the job in the HP Latex 360 queue
d. To Proof from Job Editor:
   
   1. Highlight the desired job in RIP-Queue and select Open Job in Job Editor
   2. Select the Color Management Quick Set defined in Step 3.b.2.ii. Make sure the default profiles and Rendering Intents are the correct ones. If you change any ICC default profile or any Rendering Intent, please make sure to specify the same settings when printing later on against the HP Latex 3000.
e. Printing to the HP Latex 3000 target printer
   1. Print with the same Color Management settings as done against the HP Latex 300 printer except that no proofing ICC profile nor Proofing Rendering Intent is to be selected.

4. Periodic printer calibration
   a. Please remember that periodically and whenever a color deviation is observed, the printer should be calibrated/linearized.
   b. If the Calibration does not bring the printer back to its original conditions, then please consider re-creating its ICC profile for the media and printmode. In the case you are following a manual proofing and the target printer ICC has been re-created, please export it from Media Manager and place it again in the Color Management quick set for the proofer as the Proof ICC Profile.

Resources
Additional help and or technical support can be found on the ONYX website.

Disclaimer
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