FAQ: World of Fiery Webinar - 3 Key Steps to Getting the Right Color the First Try

Isn't RGB device independent? Is it not locked to a specific device and colors will print to the gamut of the device? When I convert to CMYK, does it not become device dependent?

RGB is by definition device dependent just like CMYK. To prove this to yourself make an RGB image in Photoshop and fill it with 255/0/0 R/G/B. Take the saved image to a nearby computer and open it there too. Compare the appearance on your monitor to the appearance on the monitor of the other computer. Looks different, right? For CMYK fill a block with 100/0/0/0 C/M/Y/K and print it on 2 different printers. When printing, set Color Handling to “Photoshop manages colors”. Looks different, right? Device Dependent means appearance of the color depends on the device reproducing it.

Please provide an explanation of the Gray and Black selection in "color setup" and what are best selections in RGB and CMYK modes for commercial printing. Separate RGB/Lab to CMYK is only selectable when RGB selection turned off in this mode. Please explain.

It is recommended to set Text/Graphics/Images to get black and white click charges for CMYK pages that are really K only. RGB can be set off or to Text/Graphics if you have RGB pages that are supposed to be grayscale and you want to pay only for a B&W click. RGB does need to be off to enable “Separate RGB/LAB” since if we convert from RGB source to CMYK source to output profile there is no way we could keep K only RGB pages. But this doesn’t matter – you’d only set “Separate” if you wanted to proof how your RGB would look on a device that is the CMYK source, like a SWOP press. This is almost never what you want – you want your RGB to go directly to the output profile so that you are not clipping any gamut going through the CMYK source profile.

What technology is used in device independence to achieve a complete gamut?

The “gamut” of device independent is the whole range of the human visual system as defined by visual experiments. These spaces don’t have a gamut – they give us the metric or measurement system to define the gamut of each device dependent color space.

Most of the graphic designers are using SWOP as a color space. Should we encourage them to switch to another type, like GRACoL?

SWOP is a fine choice. It is more likely you can really match the SWOP gamut on lower quality sheets. SWOP is the default used by many users. It is only slightly smaller than GRACoL and it is G7-based like GRACoL so that if you match to it precisely with color management you are by definition G7 compliant.

Could you please review what selections in the image window, job properties (or other RIP parameters) affect calibration (i.e., dpi selection, screen mode, etc)?

DPI and screen mode are the two that always have an impact. Other image quality settings have a minor effect and are not typically worth profiling for.

What is the best humidity level for a digital print environment?

50% would be perfect but 45%-55% is more realistic to actually maintain. In such an environment it is recommended to make custom calibration sets and profiles but they will last much longer than in an uncontrolled environment.

When calibrating, when should you use the restore button?

The restore button is intended for when re-calibration is not working and you want to go back to the factory default. You can either ignore it or some users click it every time before they recalibrate to be sure they are calibrating back to the original target.

What if measurement value is lower then target value? How can you justify this to end customer?

You can't justify this. If the measured value is lower than target then either:

The engine needs to be adjusted or perhaps serviced. This is the case if the paper you are calibrating on is exactly the same as the paper that was used to make the factory calibration. You may have to verify with the engine manufacturer - what paper was used for which profile since they specify it to EFI.

OR

The paper you are using is not the one used to make the factory calibration. In this case, make a custom calibration set using the "Manage" choice in the Calibrator selection menu. If you make your own calibration set, you will also need to make a new ICC profile to work with the paper. And if the Fiery System version is earlier than 10, there is also a special editing procedure required. To get the full procedures use either ReadMe: System 9R2 or ReadMe: System 10 and later (depending on the system version). Both these files can be found at http://help.efi.com/cps/.

When you print through the printer, what color settings should you have?

From Adobe applications, try setting "Let Printer Manage Colors". This will send the color to the RIP or DFE as device independent. If you set "Let the Application Manage Colors" then you will have to pick an output profile and that will need to be one of the two input profiles you have set on the RIP or DFE (RGB or CMYK input depending on if you are printing an RGB or CMYK file). This should give the same color result as "Let Printer Manage Colors" but you have to do the extra work to match the output profile you choose in the print dialog to the one you have set on the RIP.

Does creating a device link profile improve the match to a standard like GRACoL?

It can. Device linking generally improves the precision of the color match provided the output profile for your print system has a larger gamut than the standard such as GRACoL. Also, the process of iterating a device link can reach a point of diminishing returns so be prepared to delete the last iteration and save the device link if an iteration causes the precision to become worst (indicated by delta E values going up instead of down).

Do you have to purchase the Fiery profiling software?

Yes, unless it came bundled with your system. This is the case for some production-level Fiery-driven print systems.

How do you check the quality of the new output profile?

The best way is to print a small patch-set, like the IDEAlliance or FOGRA control bar, then measure it into a tool such as Color Profiler Suite Verify to find out how closely you match your CMYK source (reference) profile. Best practice is to print this test at the center of the sheet so that it prints where the press is most consistent.

How does FieryRGB differ from sRGB and AdobeRGB?

FieryRGB is based on sRGB so it is quite different than AdobeRGB, which has a larger gamut. FieryRGB can sometimes be useful if you are seeing blues turn purple when color managing them. But with a high quality modern output profile this is seldom the case. Choose sRGB or AdobeRGB for your RGB source profile depending on which one you or your customers are using in applications from the Adobe Creative Suite.

If we have multiple sites, do we need multiple versions of EFI profiler suite?

This depends on how frequently you profile and how close the sites are. If they are across the street or across town its probably reasonable to take the spectrophotometer (ES-1000 or ES-2000) back and forth when profiles are needed; the limitation is you will not be able to verify colorimetric precision at both sites simultaneously, and if you have a color failure and need to re-profile, you won't be able to do it instantly. If the plants are any distance apart and the device would need to be shipped this would represent lost profits or rejected jobs. Also remember you still need to at least have a spectrophotometer at all sites all the time for calibration.

How many press profiles do you need? Uncoated and coated?

Uncoated and coated should be the minimum. Maybe more if you run thick sheets since impression pressure and fuser temperature sometimes changes when you pick settings for a coated heavy or other special sheet. You can find out by calibrating and profiling your regular coated stock, verifying it back to your CMYK reference (like SWOP or GRACoL) in Color Profiler Suite Verify, then trying the same calibration and profile on the heavier sheet and verifying that. Did the delta E to your standard move by 3 or so? You are probably ok. Did it move by 8 or more? Then you'll need a new calibration and profile. If you are really picky about color match, make it a delta E difference of 5 rather than 8 that guides you to make a new setup for that paper.

What print settings are best for printing the patches to build a custom ICC profile using i1Profiler on Fiery 8 R2, specifically so that the patches are not color managed by the RIP?

You need to make a calibration set and then choose it and set bypass conversion for CMYK. But the DMax from your calibration set aren't going to be in your profile when you check it with color editor, meaning you won't get the gamut the calibration set was trying to make available to you.

Our Fiery Command WorkStation says to calibrate the ES-1000 but we have an ES-2000. Does the device difference matter?

No. Command WorkStation will run the ES-2000 in "compatibility mode" (no lights on the instrument probably) but it will work fine.

Is there a specific document to print that "warms" up your machine best? Swatch sheet? Demo sheets?

Warmup pages from latest Color Profiler Suite 4 Print Matcher are a really good choice. Some users print some less color critical jobs to warm up then calibrate and run the jobs that need higher quality.

What version of Command WorkStation do you need to manage color the way you've described?

Any Command WorkStation 5.x version but you might as well get the latest for presets and other benefits. This can be downloaded for free at efi.com/CWS5.

When creating profiles, what are optimal settings for printing out the color patches, for example? Are we to use current calibration or create new calibration?

Always create a new calibration set then choose use current rather than optimize. Optimize takes a shortcut that can work but may not in every case if the maximum color quality is your goal.

If you have a spot color in a PDF file, say PMS 295, and you import the job into the Fiery server, at what point does that spot color convert to CMYK when you choose to view it in ImageViewer? And what conversion does it use?

It is looked up in the Spot Color table you can see in Device Center -> Resources. There you can edit the conversion, print variations of it to find the one you like best, or optimize it colorimetrically if you have Color Profiler Suite 4.1 or newer.

I print multiple different jobs daily and calibrate between each job due to different types of papers. Am I calibrating too frequently?

It depends on the quality you require and the type of press. If you can batch together jobs of particular paper types you can calibrate only when paper type changes. If you have a press that makes you wait 1-5 minutes before the first sheet comes out because it is adjusting itself you can also calibrate less frequently than with a press that does no internal adjustment before printing.

If there is problem in hardware of the printer due to drum or other parts, will profile cover it or should the printer be consistent and uniform before creating profile?

New calibration and profile might cover it for a short time but this is a really inefficient way to fix color compared with calling for engine service.

I have Color Profiler Suite 3 or 4, with an ES1000, but I've never seen that mechanical device to control scanning the patches. Is that available for the ES-1000 and where would we get it?

The iO table we showed is available for ES-1000. The latest iO will support either an ES-1000 or ES-2000.

I've tried profiling using the i1 Profiler software that came with my i1 Pro. I am only able to export the profiles as .ICM. Can I use that with Command WorkStation or can I convert it to a usable format?

Command WorkStation will import ICM files or you can just rename them .icc and it will work. But the profiles you are making are not going to properly respect the calibration set dMaxes, or they may not, with that software.

We have a Xerox, but have an EFI ES-1000 calibrator. We do not use it for the Xerox. Is there a way to use for the Xerox?

Yes. ES-1000 will work with Command WorkStation to calibrate the Fiery for your Xerox.

Do the media affect the final print color?

Yes. Media color, weight, and coating all effect how prints look.

Can we color calibrate without a spectrophotometer?

On a system with scanner on the press you can use ColorCal but the precision will not be as good.

Is there a big difference between GRACoL and FOGRA?

Yes. GRACoL is a US press reference; FOGRA has over 40 references for various press types in Europe and the rest of world. FOGRA39L is most like GRACoL but not the same.

How are ICC profiles created under Color Profiler Suite incorporated into the Desktop application workflow for more accurate onscreen viewing of color?

To get real soft proofing working you should invest in a color accurate monitor and a monitor-side light booth. At that point you will have a much more sophisticated monitor profiling tool that comes with the high end display. Color Profiler Suite profiles help to approximate print appearance so that your designer is not totally disappointed with how bad CMYK prints look compared with RGB displays but without these other hardware pieces will not give you perfect screen-to-print match.

I'm using a Xerox 700 and don't have a spectrophotometer. Can I still create ICC profiles?

No. You need a spectrophotometer to measure the device independent color values used in an ICC profile. We bundle the ES-2000 that can also calibrate your press with Color Profiler Suite software to make ICC profiles.

I print on 100 lb gloss text and 100lb dull text. Do I need to calibrate for each one and make a profile?

Yes. Different media weight and coating effect how prints look.

When creating a device link in Color Profiler Suite, why doesn't it print targets to measure? It seems like it just takes the LAB values of what it should be per profile and creates a new ICC with the changes.

You need to choose “Optimize Device Link” in Color Profiler Suite 4.0 or newer and it will measure.

Do you have any recommendations for spectrophotometers? Which one is best for Fiery?

ES-2000 is the most versatile and cheapest. If you will profile many papers you might add an iO automation table or and iSis scanning spectrophotometer.

What is the best way to find the source to define my color settings?

Look at the settings in the design applications, such as Adobe CS.

If you calibrate daily or weekly, how often do you need to check the ICC profile?

Probably every 3rd or 4th time you calibrate, you should verify with a small patch set.

When you print the sheet from EFI Color Profiler Suite to create a profile for the printer, are there any specific color settings that should be set or should this be printed without any color settings?

Color Profiler Suite takes over the color settings so all you need to do is be sure your calibration set is loaded.

When creating profiles for papers, is there a way to duplicate the papers across multiple devices? We have multiple of the same machine as well as multiple types of Fiery servers.

Print Matcher in Color Profiler Suite 4.5 does this automatically. Otherwise, you can export the profiles from one Fiery and import them on another. If all the systems run Fiery System 10 or newer the Print Matcher in Color Profiler Suite will really make them match. Sharing a profile and calibration between multiple print systems does not always work if just exporting/importing since the gamut of each print system may be different.

We have a Konica Minolta Printer that has a built-in scanner. We are currently using this scanner to do calibration. Is this a waste of time? Should we just invest in a spectrophotometer?

The scanner is trying to act as a spectrophotometer but it isn’t really one. Not only will an ES-2000 give you better calibration, the procedure is often faster than with the scanner.

How can I get the ES-2000 driver? I am currently using the ES-1000 driver for my ES-2000.

To get the right driver so you select it as an ES-2000 in Calibrator, download and install the latest Command WorkStation. To use it in Color Profiler Suite you need version 4 or newer. If you are at version 3, there is an upgrade available.

How does Preflight or Distillller in Adobe fit into color management?

Preflight can tell you if you have RGB or CMYK or Spot colors in your source document so you can make sure you have the settings right for each. Distiller could convert the colors in a PostScript file when converting to a PDF, but unless you have a workflow reason to do this, it is more productive to just send the PostScript to the Fiery. You can import it in Command WorkStation just like a PDF file.

Would you create a profile for every stock type being used? Also would that profile need to be per stock per size?

It depends how many stocks I’m running. If its 2-5, then yes, it would be best practice to have a custom calibration set and profile for each. If you are running many more stocks than that I would profile the 5 most common ones and see how the profiles work for similar stocks, such as trying to share the profile you might use for on uncoated sheet with another uncoated sheet of a different

weight. The size of the paper never matters. You can make the profile on a small sheet and use in on a 12x18 sheet or vice versa as long as the paper is the same type and basis weight.

Can I use one color profile for different media?

See the above question and answer. You can always do this but if the stocks vary in coating, color, or vary significantly in basis weight, this may not be a very successful strategy depending on the quality of color you are trying to achieve.

If you do not have a spectrophotometer, how close would you be using ColorCal?

You can recalibrate only, which will work sufficiently well to get factory profiles to give good but perhaps not great color. You do need to use the exact paper types the factory profiles were made for. Find out more about what these paper types are in the Fiery Forums at http://fieryforums.efi.com/forumdisplay.php/127-Fiery-Color-amp-Imaging-Topics

What is the importance of measuring density as opposed to color? What is a densitometer vs. a spectrophotometer?

Density can be used to calibrate (linearize) a device but is not useful for making color profiles, since the Density scale just reports the Density value (also known as Absorbance and calculates as the logarithmic ratio of radiation falling on a material to the radiation being absorbed by the material) tells how dark a color is but not what it “looks like” in the human visual system or in device independent color space. We need to know the latter to make an ICC profile. A densitometer only measures Density by bouncing a light off a sample and measuring how much light was sent vs. how much is reflected back. A spectrophotometer measures the spectra of a color by bouncing a series of lights of know visible wavelengths off the sample and measuring how much light was sent vs. how much is reflected back for each visible wavelength of light. This spectral measurement typically consists of 32 values per measurement and can be converted into device independent color values for making a profile or into density measurements if calibrating only.

Do we need to create a profile every time even though the paper type used is same?

No. For a new paper, make a calibration set using Calibrator and profile with Color Profiler Suite. Then just re-calibrate each time the paper is used. After a lot of machine change due to aging or service, the color match will degrade and then a new calibration set and new profile may be required. If you use Color Profiler Suite Verify or Color Verifier Assistant in Command WorkStation to check color match on that paper after calibrating, you can see when the match degrades based on increasing reported delta E values.

I have the ES-2000 spectrophotometer. It offers monitor calibration but after calibration the colors don't really represent properly. What would you suggest for marrying your monitors to printer output?

See the earlier question. ES-2000 and Color Profiler Suite will give a good monitor profile but for perfect matching you need to invest in high-end monitors that generally come with a higher end profiling software that can take advantage of the hardware calibration technologies these monitors include.

Color profiling is good and necessary, but what about file preparation standards?

Making sure the same color definitions are used for each source color space or that if different definitions are used then profiles are embedded in the source document to define each space is required for a properly color managed workflow. See the recording of our World of Fiery Webinar: Best Practices for Preparing Files for Digital Print for more information.

What temperature in degree Celsius is best for the print room?

20° C or 68° F is a general guideline. You should confirm this with the manufacturer of your press.

What check can we do to find if the digital printer are in the best condition to get the best calibration profile?

Make sure the device has been recently certified by the press manufacturer and try comparing your custom profile to a factory default profile that came with the DFE to see that you achieved close to the same or a larger color gamut. You can use the Profile Inspector in Color Profiler Suite or a third party tool like Apple's Colorthink Utility or Chromix Colorthink software.

How often does ES-1000 need a self calibration?

Each time a measurement session is started, the ES-1000 will need to re-calibrate. The software will guide you through this.