Creation & Application of Custom ICC Profiles for the KODAK EASYSHARE All-in-One Printers

This technical memo will provide guidance on available solutions to alter the color reproduction aims of KODAK EASYSHARE All-in-One Printers through the creation and application of custom ICC (International Color Consortium) RGB output profiles. While the Kodak printers are optimized for excellent color reproduction right out of the box with no user intervention or additional color management required, some advanced users may require a specific color reproduction aim that does not match the printer’s default. The reproduction of a specific set of trade colors may be one example, while a change in the printer’s tonal response to meet an aesthetic preference may be another. Therefore, it is possible for users to both build and apply additional color management transforms prior to printing to the standard Kodak printer driver to achieve the color reproduction aim they desire.

On today’s desktop, the most common method for creating a custom look for a given output device is through the building, tuning, and application of ICC color profiles. To achieve this, two different pieces of software and one piece of hardware are usually required in addition to the printer itself. First, a piece of software is needed to either build, build and tune, or tune the ICC profile for the device. Building a new output profile is a more complicated process that usually requires the printing and measurement of color targets followed by a step that uses those measurements as a basis to create an ICC profile for the output device. Tuning is a process much like image editing where an already existing ICC output profile is modified through a series of software tools to change the profile’s internal structures to match a given tone and color preference, thus affecting the resulting printed output. Many different applications are available to do either or both for all different user levels and for all different levels of control over how the profile will modify the color of the output device. The ICC keeps an up-to-date list of available applications on their website, www.color.org. For the Kodak printers, a tool capable of RGB output profiling and/ or tuning is required, as the Kodak printer’s interface to the operating systems on both the PC and Mac platform is RGB code values.

As mentioned above, the creation of ICC output profiles will typically also require the spectrophotometric or colorimetric measurement of a target or targets supplied by the profiling software vendor and printed on the printer on a given media using a given set of application and printer driver settings that mimic those to be used when printing with the profiles. Therefore depending on the requirements of the ICC profiling software, a colorimeter or a spectrophotometer may be required to make the target measurements. Hardware measurement solutions are available at a variety of price ranges and the instrument cost depends on several factors, including instrument precision and accuracy along with instrument productivity. Different profile building packages vary in the number of color patches that have to be measured from less than one hundred to over one thousand. Understanding the software’s patch requirements is critical to understanding if a simple hand-held instrument will suffice for a small number of patch measurements or if an automated system is required that can measure thousands of patches quickly and with little user intervention. Again, the ICC maintains a list of vendors that offer both color measurement equipment and color measurement equipment bundled with ICC profiling software on their website, www.color.org. In the end, the user’s choice of hardware and software depends on their experience, budget, and required level of color control.

Once the profile is created for a given media, application software setup, and driver settings, an additional piece of software is typically required to apply the ICC profile to color manage the data prior to sending it to the standard Kodak printer driver. Two typical examples of applications that support
the application of ICC profiles as part of their workflows are ADOBE PHOTOSHOP CS3 for working on images and ADOBE ILLUSTRATOR CS3 for working on vector graphics. Both of the software packages are ICC profile enabled, allowing for the application of the printer profile prior to the color-managed data being sent to the supplied standard Kodak printer driver. For example, here is how a user may choose to print to a KODAK ESP 5 All-in-One Printer using a custom-built ICC profile in PHOTOSHOP CS3 and ILLUSTRATOR CS3 Print dialogue boxes. In these cases, the original data is only being color managed to the printer as part of the print process while keeping the original document in its native color space in the application, since Adobe provides an intermediate color management layer between the application and the printer driver.

PHOTOSHOP CS3

Color Management settings (Pull-down menu option on the top right side of the dialogue)
Document: (Input profile will be what is assigned to current image)
Color Handling: PHOTOSHOP Manages Colors
Printer Profile: YourCustomICCPPrinterProfile.icm (Profile you have created for the printer)
Rendering Intent: Perceptual (Typical setting for photographic images)
Black Point Compensation: On (PHOTOSHOP default) or Off depending on user preference
For more information on Black Point Compensation, see www.color.org/AdobeBPC.pdf
ILLUSTRATOR CS3

Color Management settings
Document Profile: (Input profile will be what is assigned to current image)
Color Handling: Let Illustrator determine colors
Printer Profile: YourCustomICCPrinterProfile.icm (Profile you have created for the printer)
Rendering Intent: Relative Colorimetric (Typical setting to match colors)

With the right tools to build, tune, and apply RGB ICC profiles, advanced control of the colors reproduced on Kodak’s inkjet printers using the standard supplied Kodak printer driver is achievable if the default color rendering is insufficient for the aesthetic requirements of a given user. Nothing in Kodak’s printing system prevents such control if a user so chooses to use custom RGB ICC profiles.

For more information on ICC color management, including white papers to aid in the understanding of profiles, rendering intents, and more, please visit ICC’s website at www.color.org.