BLI Comparative Performance Evaluation

MAY 2015

Canon imagePROGRAF iPF830 vs. Epson SureColor SC-T7200

Canon imagePROGRAF iPF830

Epson SureColor SC-T7200

Advantage ✔	Canon imagePROGRAF iPF830	Epson SureColor SC-T7200
Colour Image Quality	✔	
Black Image Quality	✔	
Print Productivity	✔	
Direct PDF Submission	✔	
Banner Printing	✔	
Poster Printing	=	=
Ink Consumption	✔	
Device Feature Set	=	=
Print Driver Feature Set	✔	

TEST OBJECTIVE

Buyers Laboratory LLC (BLI) was commissioned by Canon Europe to conduct confidential document imaging device performance testing on the Canon imagePROGRAF iPF830 and the Epson SureColor SC-T7200, and produce a report comparing the relative strengths and weaknesses of the two products in terms of image quality, productivity, ink consumption, direct PDF submission, device feature set, driver functionality, and banner and poster printing. All testing was performed in BLI's test facility in Wokingham, UK. Productivity, ink consumption and image quality are based on the Canon imagePROGRAF iPF850 which uses the same engine.

TABLE OF CONTENTS

Executive Summary

The Canon imagePROGRAF iPF830 gave an outstanding overall performance in BLI's testing, outshining the Epson SureColor SC-T7200 in most areas of the evaluation. For one, it offers a clear speed advantage over its Epson rival for both colour and black output as demonstrated in BLI's productivity tests. It delivered the faster first-page-out times from ready state in all modes and excelled with its performance when printing BLI's job stream, designed to simulate a typical mixed workflow for a large-format unit. Notably, in High quality mode the iPF830 delivered output in less than half the time required for the Epson device, which enables Canon users to achieve optimum image quality without sacrificing productivity.

While both models delivered high quality results when printing Architectural, Engineering and Construction (AEC) and Geographical Information Systems (GIS) graphics—results that would easily satisfy customer requirements—the Canon model has the edge for image quality in both colour and black modes. The iPF830 delivered a much larger colour gamut in all tested modes, higher-density cyan, magenta and composite black output overall, and sharper fine details in colour business graphics and photographic images. Neither model produced very natural-looking skin tones, which were reddish in the output of both devices, while Epson's skin tones were also distinctly grainy. In other respects, there was little to differentiate between the two models, with both delivering consistently good text quality, distinct fine lines and a full halftone range. One further plus for the Canon model is its unidirectional print driver option. When selected, this option eliminated banding on the Canon iPF830's poster output in Fast mode; whilst it should be noted that BLI analysts only observed banding on the Epson device's output when printing posters in Speed mode, the Epson device does not offer a unidirectional feature which can rectify such issues. The Canon unit also outperformed the Epson unit in BLI's ink consumption testing, using less ink than the Epson device did with all three test documents used.

The two models are closely matched in their device feature sets. The Canon iPF830 has higher standard and maximum memory capacities and a 320-GB hard drive as standard (Epson does offer a 320-GB hard drive as an extra-cost option). Another significant advantage is that Canon's hot-swap ink tanks enable users to replace empty inks while actively printing, without having a negative impact on productivity. In contrast, when the Epson SC-T7200 runs out of ink, printing has to stop for the cartridge to be replaced, leading to operator downtime. The Epson SC-T7200 has much lower energy consumption—64 watts while printing and 3 watts in standby mode, compared with 190 watts while printing and 5 watts in standby mode for the Canon model—a higher print resolution, smaller (variable) ink droplet sizes and slightly higher standard ink cartridge capacities, although, as Canon supplies its standard-yield cartridges as 'starter' cartridges, they have three times the capacity of Epson's starter cartridges.

Overall, the Canon imagePROGRAF iPF830 was the stronger performer in nearly all categories tested, and also offers several noteworthy advantages that its customers can enjoy as standard. These include its unidirectional print capabilities, hot swap ink tanks and its free Canon iPF Direct Print & Share utility, which supports direct PDF submission without the need to open an application. The Canon model also supports an app which enables PDF printing from Apple iPad devices to facilitate workflows for mobile workers.

Colour Image Quality

Advantage ✔	Canon imagePROGRAF iPF830	Epson SureColor SC-T7200
Text	=	=
Fine Lines	=	=
Halftone Range	=	=
Halftone Fill	=	=
Solid Density	✔	
AEC Graphics	=	=
GIS Graphics (plain paper)	=	=
Business Graphics	✔	
Photographic Images	✔	
Colour Gamut (plain paper, Fast/Speed settings)	✔	
Colour Gamut (plain paper, Standard/Quality)	✔	
Colour Gamut (plain paper, High/Max Quality)	✔	
Colour Gamut (matte coated paper, High/Max Quality settings)	✔	

+, — and ○ represent positive, negative and neutral attributes, respectively.

○ There was some banding evident in the poster output produced by both models in Fast/Speed mode. On the Canon iPF830, this was eliminated when the unidirectional printing option was selected.

\+ Overall, the Canon iPF830 delivered the higher optical densities for cyan and magenta when printing in colour across all tested modes, and in two of the three modes for composite black (Standard and High); both models delivered comparable optical densities for yellow.

\+ When printing on plain paper using Fast/Speed settings, the Canon model delivered a colour gamut 41.8% larger than that of the Epson unit, with a CIE volume of 238,781 versus 168,336 for the Epson device.

\+ The Canon model also produced a 40.7% larger colour gamut when printing on plain paper using Standard/Quality settings—with a 285,581 CIE volume for the Canon model versus 202,953 for the Epson device.

\+ When printing on plain paper in High/Max Quality settings, the Canon iPF830 delivered a 30.5% larger colour gamut than did the Epson SC-T7200, with a CIE volume of 299,268 versus 229,339 for the Epson model.

\+ When printing on matte coated paper using Canon's High quality setting and the Epson SC-T7200's Max Quality setting, the Canon model delivered a colour gamut 76.0% larger than that of the Epson unit, with a highly impressive CIE volume of 607,470 compared with 345,122 for the SC-T7200.

○ Both models delivered consistently good text quality in colour in High/Max quality modes, with both serif and sans serif fonts being legible down to the smallest 3-pt. level with no breakup. However, in Fast/Speed mode, some ink bleed was apparent in the output of both models, with serif fonts fully legible only down to the 5-pt. level in output produced by the Epson model and 4-pt. in output produced by the Canon model. In Standard/Quality mode, results for both serif and sans serif fonts were nearly identical for the two units, but ink bleed was slightly more apparent with the Epson unit.

○ Fine lines produced by both devices remained distinct down to the 0.1-pt. level in Fast/Speed and Standard/Quality modes, but with some slight blurring evident with the Epson model. In High/Max quality mode, there was no blurring visible and the output was rated good with the Canon model and very good for the Epson device.

○ Both devices delivered halftone output across the full range—from the 10% to 100% dot-fill levels in all modes, with distinct transitions between all levels.

○ Both models delivered good and consistent halftone fills in all modes.

○ When evaluating Architectural, Engineering and Construction (AEC) graphics in Standard/Quality mode, both models exhibited an excellent level of detail and distinct fine lines.

○ When evaluating Geographic Information Systems (GIS) graphics in Standard/Quality mode on plain paper, both units delivered an excellent level of detail and showed an equally good depth of field—a critical factor in delivering realistic three-dimensional renderings of topographical features.

+ Colour business graphics produced by the Canon iPF830 unit in Fast and Standard modes exhibited slightly sharper details and better colour saturation than the Epson device.

○ In High/Max Quality mode, both models delivered equally good and sharp colour business graphics.

○ When BLI analysts compared photographic images produced on plain paper in Standard/Quality mode, the output produced by both models exhibited an excellent level of detail in light contrast areas.

+ However, the Canon iPF830 delivered slightly better results in dark contrast areas in photographic images, which displayed a finer level of detail than did the output from the Epson device.

○ In Standard/Quality and High/Max Quality modes, both units produced 0.1-pt. circles that were smooth and unbroken, and rated as good and very good, respectively, in the two modes.

+ In Fast/Speed mode, however, there was some stair-stepping in circles at the 0.1-pt. level with the Epson model, which were rated Fair, whilst circles were rated good with the Canon device.

+ Skin tones produced by both models were somewhat reddish, although slightly less so on output produced by the Canon device, while those produced by the Epson unit were also distinctly grainy in Quality (standard) mode.

+ The Canon iPF830 produced the 1x1 pixel grid in CMY with no quality issues, and coverage was consistently good (Fast mode) and very good (Standard/High modes) across all colours. The Epson SC-T7200 delivered poor and incomplete dot fill coverage compared with that of the Canon unit in Speed mode; quality did improve when using the higher quality settings, with coverage rated fair in Quality mode and good in Max Quality mode.

+ Overall, the Canon iPF830 delivered the stronger performance in the colour image quality assessment, with higher-density cyan and magenta output, much larger colour gamuts across the board on both plain and (especially) matte coated paper, and a sharper level of detail in colour business graphics and dark contrast areas. Both models produced distinct fine lines in AEC drawings and an excellent level of detail and depth of field in GIS graphics. Other areas where the two were closely matched included fine detailing in light contrast areas in photographic images, smooth colour halftone fills and clean and crisp text reproduction in the highest quality settings, but some fuzziness caused by ink bleed was detectable when both models' output produced in the lower quality settings were viewed under magnification. While poster output from the Epson device in Max Quality mode was free from banding, there was some banding evident in Speed mode; one significant advantage for the Canon model is its unidirectional printing option which effectively eliminated the banding that was evident in Fast mode.

Black Image Quality

Advantage ✔	Canon imagePROGRAF iPF830	Epson SureColor SC-T7200
Text	=	=
Fine Lines	=	=
Halftone Range	=	=
Halftone Fill	✔	
Solid density (Fast/Speed mode)	✔	
Solid density (Standard/Quality mode)	✔	
Solid density (High/Max Quality mode)		✔
Business Graphics	=	=
Photographic Images	✔	

+, – and ○ represent positive, negative and neutral attributes, respectively.

○ When printing in monochrome, the Canon model delivered higher optical densities for black in Fast/Speed and Standard/Quality modes, but the Epson model delivered the higher density in High/Max Quality mode.

○ Black fonts produced by the Canon model were fully formed and legible down to the 3-pt. level across all modes, although there was slight ink bleed visible in Fast mode. The Epson device delivered crisp black fonts legible down to the 3-pt. level in most modes; although in some modes they were legible only down to the 4-pt. level, there was no ink bleed evident overall.

○ Fine lines in BLI's line art test target remained distinct down to the 0.1-pt. level in all modes in the output of both devices, although in Fast mode, there was some slight blurring evident in output produced by the Canon model. There was no stair-stepping in diagonal lines. Both devices delivered white-on-black fine lines at the 0.25-pt. level in Standard/Quality mode, but their distinctness was only rated fair as slight ink bleed made the contrast between lines and background quite fuzzy.

+ Circles produced by both models were fully formed in Standard/Quality and High/Max Quality modes; in Speed mode, the iPF830's circles were slightly smoother at the 0.1-pt. level than those produced by the Epson unit, which were slightly broken in appearance.

○ Both models delivered halftones across the full range—from the 10% to 100% dot-fill levels in all modes.

+ Halftone fill results using BLI's halftone test charts in all modes were rated good for the Canon model, but only fair for the Epson device as there was some graininess evident at the lower end (10% to 30%) of the range.

○ Both models delivered good detail and distinct fine lines in AEC graphics in Standard/Quality mode in black.

○ Monochrome business graphics in Fast/Speed mode on plain paper were produced more accurately by the Canon model, with smooth halftone gradations, whereas some graininess was visible in output produced by the Epson unit, even without magnification. In Standard/Quality and High/Max Quality modes, the Epson device delivered fractionally smoother black business graphics than those produced by the Canon model.

+ Photographic images in High/Max Quality mode on plain paper were produced with smoother gradations and better detail in light and dark contrast areas by the Canon iPF830 than they were by the Epson model, which were slightly grainy in comparison.

+ Results were mixed in the black image quality evaluation, however BLI's analysts found the Canon model had the slight edge overall. The Canon iPF830 delivered smoother gradations and better detailing in photographic images and more consistent greyscale fills, with none of the graininess evident with the Epson model. That said, the Epson delivered slightly smoother monochrome business graphics in the higher quality modes and its output had a higher optical density in the highest quality mode. Both models delivered fine lines of a comparable quality and text that was legible down to a very small size (3-pt. or 4-pt.) with no breakup. In addition, the two devices delivered distinct fine lines in AEC graphics and a full halftone range.

Print Productivity

Advantage ✔	Canon imagePROGRAF iPF830	Epson SureColor SC-T7200
First Page Out From Weekend Non-Use	✔	
First Page Out From Ready State	✔	
Throughput Speed (fastest mode)	✔	
Throughput Speed (default mode)	✔	
Throughput Speed (highest-quality mode)	✔	
Job Stream (multiple jobs submitted to device in fast succession simulating busy network environment)	✔	

+ The Canon iPF830 delivered a much faster first-page-out time of 124.71 seconds after a weekend of non-use, compared with 177.40 seconds for the Epson device. Start-up time before printing commenced was also much faster for the Canon model, at 61.35 seconds, compared with 114.03 seconds for the Epson unit.

+ The Canon device delivered a faster first-page-out time of 54.41 seconds from its ready state, compared with 74.36 seconds for the Epson device. While the Epson device demonstrated a fractionally quicker start-up time before printing commences (11.65 seconds versus 12.38 seconds for the Canon model), taking into account the two measurements together, the iPF830 is the faster device overall.

+ When printing BLI's job stream, designed to simulate a typical mixed workflow for a large-format unit, the Canon iPF830 delivered a superior performance in High/Max Quality mode, running 44.7% faster than the Epson model. In the other tested modes, it was also faster—9.5% faster in Fast/Speed mode and 14.1% faster in Standard/Quality mode.

+ When printing BLI's 12-page DWF test file in colour, the Canon unit was faster in Fast/Speed mode (404.84 seconds versus the Epson model's 451.50 seconds), 28.4% faster in Standard/Quality mode, and 52.2% faster in High/Max Quality mode.

+ When printing BLI's 12-page DWF test file in monochrome, the Canon unit was 16.5% faster than the Epson model in Fast/Speed mode, 29.6% faster in Standard/Quality mode, and 52.9% faster in High/Max Quality mode.

+ In BLI's single-page A0-size test, the Canon iPF830 delivered a first-page-out time (94.38 seconds) that was 24.4% faster than that of the Epson unit (124.9 seconds). The Canon model was also 26.3% faster than the Epson SC-T7200 when printing five A0-size pages (445.91 seconds versus 605.72 seconds).

+ One factor impacting productivity is that when the Epson SC-T7200 model runs out of ink, printing has to stop for the cartridge to be replaced, leading to operator downtime. In contrast, the Canon model continues to print (drawing ink from its sub tank) when ink needs replacing, while its control panel conveniently alerts the user to replace ink and provides purchasing information. Inks can be replaced while printing is in progress, so no ink or paper is wasted and there's no operator downtime.

○ When the Canon imagePROGRAF iPF830 runs out of paper, the device pauses and alerts the operator. After a new roll is installed, the operator is prompted to confirm the paper type and whether he or she wishes to continue printing the job. The device resumes printing at the beginning of the interrupted page, rather than printing the portion of the page that remained before running out of paper, so less ink and paper is wasted. The Epson SC-T7200 will also print the interrupted page in its entirety after a new roll is installed.

Direct PDF Print Submission Functionality

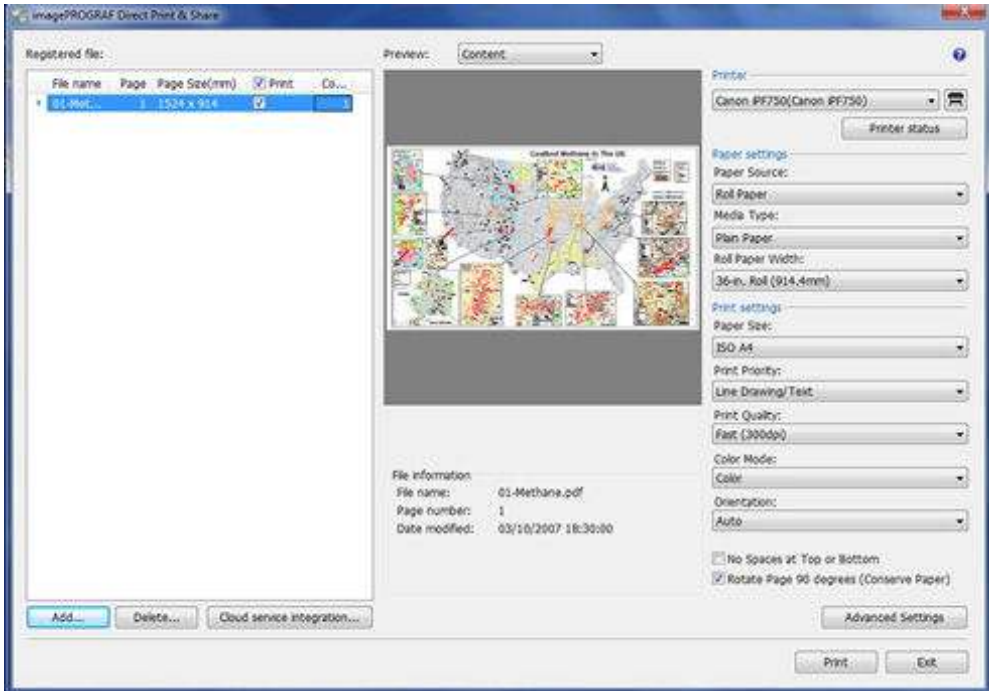
Advantage ✔	Canon imagePROGRAF iPF830	Epson SureColor SC-T7200
Functionality / Cost	✔	*

*BLI did not test Epson's optional, extra-cost PS module and therefore is unable to assess its direct printing functionality.

+ A free download from Canon's website, the iPF Direct Print & Share utility enables PDFs to be printed without opening Adobe Acrobat. It also allows direct printing of JPEG and TIFF files without the need for native applications or print drivers. iPF Direct Print & Share also allows users to retrieve files from Google and AutoCAD 360 cloud storage services for printing. The latest version (v2.0) of iPF Direct Print & Share supports "Shortcut Print" functionality, which enables users to define several print settings that might be commonly used in combination and represent them with a desktop icon. Files are automatically printed with the predefined settings when users drag-and-drop them to the icon. Multiple desktop icons can be created for different print settings or combinations of print settings.

○ Job submission options with the iPF830 will be extended to include support for Océ Publisher Select, a Windows-based large-format job submission solution, which allows direct printing from a variety of CAD applications (late 2015).

○ Although it could not be tested, an optional (extra-cost) PostScript module will provide Epson users with direct printing functionality, allowing them to print PDFs direct from programs such as AutoCAD—its functionality also works via hot-folder 'drag-and-drop' with configurable job processing options.



Canon's iPF Direct Print & Share utility gives operators an image preview.

Banner Printing

Advantage ✔	Canon imagePROGRAF iPF830	Epson SureColor SC-T7200
Image Quality	✔	
Productivity	=	=

+ Although in Speed mode the Epson SureColor SC-T7200 printed BLI's BLI's 36" x 105" banner (a 4,955-KB PDF file) banner in less time than did the Canon iPF830 in Fast mode—33.6 seconds to generate a preview, and only an additional 2 minutes, 20.0 seconds from the file preview to final paper cut, vs. 41.06 seconds to generate a preview, and a further 4 minutes, 0.93 seconds from preview to final paper cut for the Canon model, the Epson device failed to deliver a complete banner due to its inability to print background detail during the final stages of printing it.

Poster Printing

Advantage ✔	Canon imagePROGRAF iPF830	Epson SureColor SC-T7200
Image Quality (Fast/Speed mode)	=	=
Image Quality (Standard/Quality mode)	=	=
Image Quality (High/Max Quality mode)	=	=
Productivity (Fast/Speed mode)		✔
Productivity (Standard/Quality mode)	=	=
Productivity (High/Max Quality mode)	✔	

— When printing a poster in Fast/Speed mode at 300 dpi, the Canon model took 48.21 seconds to complete the job, while the Epson unit at 360 x 720 dpi took just 34.96 seconds. Some slight banding was evident with both models, but only in the dark areas. When unidirectional printing was selected in the Canon print driver, banding was eliminated but the time to print the banner increased to 53.30 seconds.

○ When printing a poster in Standard/Quality mode at 600 dpi, the Canon model took 1 minute, 7.05 seconds. The Epson unit at 360 x 720 dpi took a comparable time of 1 minute, 6.42 seconds.

+ Printing a poster in High quality (600 dpi) mode on the Canon model took 1 minute, 40.62 seconds, while printing the same poster on the Epson model in Max Quality (720 x1440 dpi) mode took 2 minutes, 39.11 seconds, which represents a 36.8% faster print time for the Canon model.

○ At these High/Max Quality settings, image quality was equally good on output from both models, with vibrant, saturated colours and good definition of fine details.

Ink Consumption

RESULTS		
Results averaged across three sets of 50-page A1 printing in Standard/Quality mode	Canon imagePROGRAF iPF830	Epson SureColor SC-T7200
COTTAGE ARCHITECTURAL PLAN		
Overall weight of ink used (grams)	22.8 g	23.0 g
RETAIL POSTER		
Overall weight of ink used	54.0 g	69.7 g
GIS MAP		
Overall weight of ink used	50.3 g	61.3 g

+ When producing 50 prints of a Cottage Architectural Plan in Standard/Quality mode, the Canon unit used a comparable amount of ink to that of the Epson unit—just fractionally (0.9%) less ink than the Epson SC-T7200.
+ When printing a Retail Poster in Standard/Quality mode, the Canon unit used 22.5% less ink than did the Epson SC-T7200.
+ When printing a GIS Map in Standard/Quality mode, the Canon iPF830 used 17.9% less ink compared with the Epson device.

Device Feature Set

— The 330-ml capacity of Canon's standard-yield cartridges is slightly lower than the 350-ml capacity of the Epson cartridges; both offer 700-ml capacity cartridges for all colours.

+ However, as Canon supplies its standard-yield cartridges as 'starter' cartridges, their capacity at 1,650 ml (5 x 330ml) is three times more generous than Epson's 550 ml (110 ml x 5).
+ If the Canon device detects that printhead nozzles are in danger of clogging, it automatically starts a cleaning routine. This task would have to be done manually with the Epson unit, although BLI analysts did not encounter any nozzle clogging issues during testing.
+ Canon's printheads are user-replaceable, taking less than five minutes to insert, whereas Epson's printheads are only service-replaceable.
+ Canon's ink cartridges are replaceable during operation, which helps to reduce downtime for Canon users.
+ The Canon unit supports a higher maximum cut-sheet media length of 1.6 m compared with 914 mm for the Epson unit.

○ Both models offer USB 2.0 and Gigabit Ethernet connectivity.

○ Both models offer easy and quick roll paper loading with auto paper feed—once the user loads paper on to the device, alignment and width adjustments are automatically carried out without further user intervention.

○ BLI analysts noted that both companies offer the option of adding an Auto-Take-Up-Roll feature with these models, which could be an extremely valuable feature in high-volume production environments, enabling large numbers of images or documents to be conveniently stored on a single roll.

+ The Canon model offers a standard, non-upgradable RAM of 32 GB, while the Epson unit has a standard non-upgradable RAM of 1 GB.
+ The Canon model has a 320-GB hard drive as standard.

○ A 320-GB hard drive is available for the Epson unit, but only as an extra-cost option.

○ The Canon model is designed with an operational panel lock to prevent unauthorised access to the device; it also supports SNMP v3 (secure network protocol) which further provides secure access to devices by authenticating and encrypting data over the network

○ Both models are of a comparable weight; the Epson unit's net weight is 133 kg versus 138 kg for the Canon unit.

○ The output catch baskets of both models are very simple designs which collect output from media rolls. The Epson catch basket is attached to the device, whereas Canon's is a separate assembly which must be wheeled up to the device. A large-size basket (standard with its sister model, iPF840), which can accommodate up to 20 B0-size documents (approx. 40" x 57"), is available as an option for the Canon unit.

— The Epson model includes a colour LCD while the Canon model has a monochrome LCD display. BLI analysts found both models' control panels very simple to navigate.

— The Epson SC-T7200's power consumption while active is much lower—64 watts versus 190 watts for the Canon model. In standby mode (where the devices are likely to spend more of their time) the Canon model's power consumption is also higher than that of the Epson device (5 W versus 3 W for Epson).

— Rated noise emissions are slightly higher for the Canon model (52 dB) compared to the Epson device (50 dB).

Driver Feature Set

+ The Canon iPF830 has five speed settings (Fast 300, Standard 600, Fast 600, High 600 and 1200), while the Epson device offers three settings (Speed, Quality and Max Quality), although not all speed settings are available with all media types.

○ Both the Canon GARO driver and the Epson ESC/P driver provide a useful overview of the settings for predefined profiles.

— Seven predefined profiles are available with the Canon driver, while the Epson driver offers a range of eight profile settings.

+ The Canon driver supports 2 to 16 multi-up printing, while the Epson driver supports 2 to 4 multi-up printing.

+ The Canon iPF830 supports Print Utility, which enables mobile printing from iPads—a feature not available with the Epson SC-T7200. Supported formats are PDF, JPEG and PNG image files.

— Although both devices offer a poster mode, the Canon GARO driver offers only a 2 by 2 poster mode, while the Epson model supports 4 by 4 posters.

— The Canon driver offers page stamping (Date, Time, Name and Page Number), while the Epson driver offers a much wider range of options, including a wide variety of image quality attributes.

○ Both the Epson driver and the Canon GARO driver offer a wide range of built-in adjustments for CMYK balance, brightness, contrast and saturation. ICC profile settings are also available with both drivers—in the case of Canon's GARO driver in its matching tab under Advanced Settings. Canon operators can select four matching modes (driver, ICC, driver ICM and host ICM matching) and choose one of four rendering methods (auto, perceptual, colorimetric or saturation).

— The Epson driver provides a handy thumbnail preview for users to check the effects on the image as they make colour adjustments. In addition, the Epson driver displays a list of all the current settings on each tab window, providing users with a quick, at-a-glance summary.

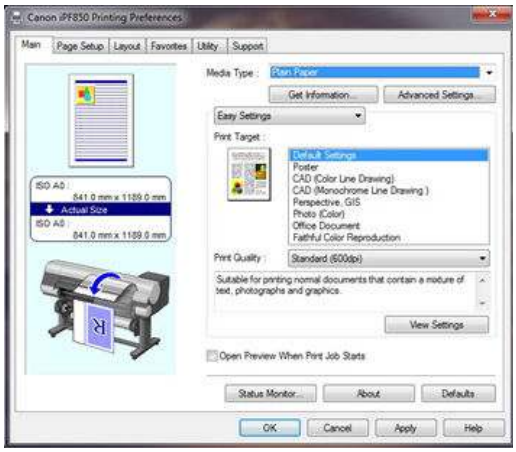
+ The Canon driver offers unidirectional printing, even in Fast mode. With the printhead travelling in only one direction to create the desired image, this helps to avoid any banding across output. The Epson driver does not offer this feature.

+ The 32-bit version of the Canon driver includes the Color imageRUNNER Enlargement Copy Mode utility (available as a download for the 64-bit version of the driver via the Printer Driver Extra Kit), which enables users to integrate a Canon small-format MFP device with the iPF830. Documents scanned by the Canon MFP are automatically routed to a hot folder that is monitored by the driver of the iPF830. The image is then resized and printed, offering a fast, easy-to-use poster creation tool for office users. Epson users can choose comparable functionality via the extra-cost Copy Factory utility.

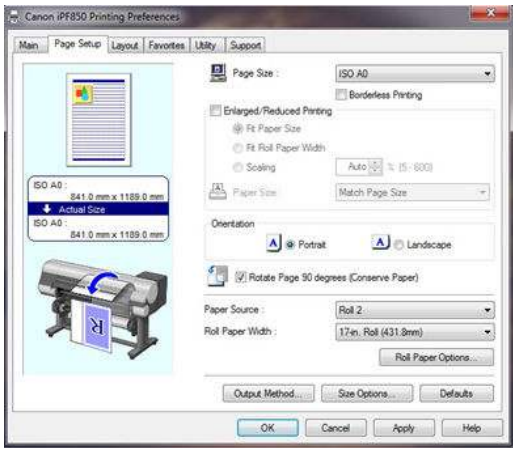
○ The Canon driver offers a Free Layout nesting tool (also available for free download via the Printer Driver Extra Kit) that enables files—even files created with different applications—to be scaled, resized, or grouped together as a single job from the printer driver. Images can be dragged and dropped to their desired locations and printed together on a single page, helping to conserve paper. Epson also offers resizing functionality and the ability for users to combine multiple documents to print on a single layout via its Layout Manager utility.

○ The Canon model offers a plug-in for printing from Microsoft Office applications, which includes useful tools for automatic media resizing, nesting and borderless printing. Epson offers similar software, LFP Print Plug-in for Office, to its users.

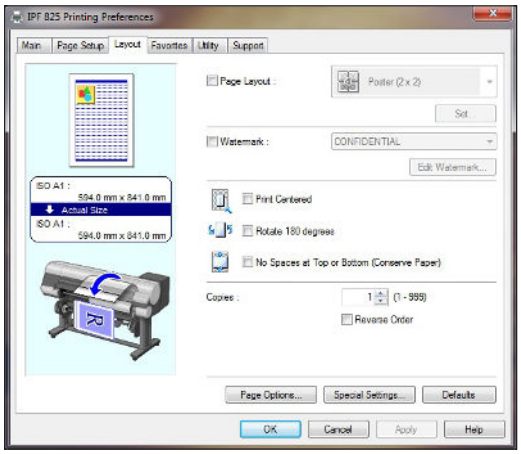
Note that these are taken from the iPF850 sister model which uses the same engine.



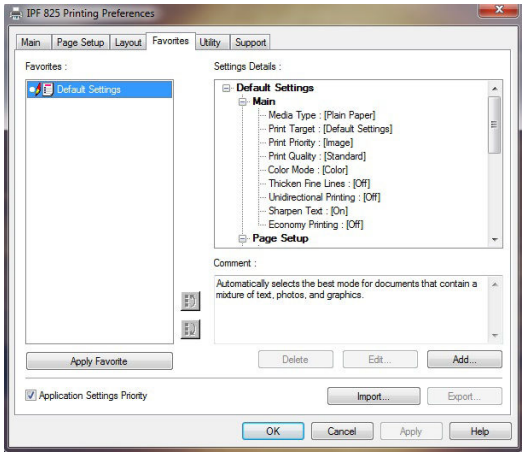
Canon Print Driver Main Tab



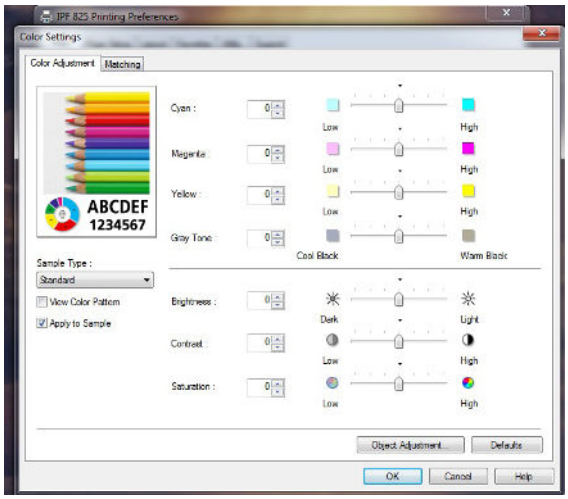
Canon Print Driver Page Setup Tab



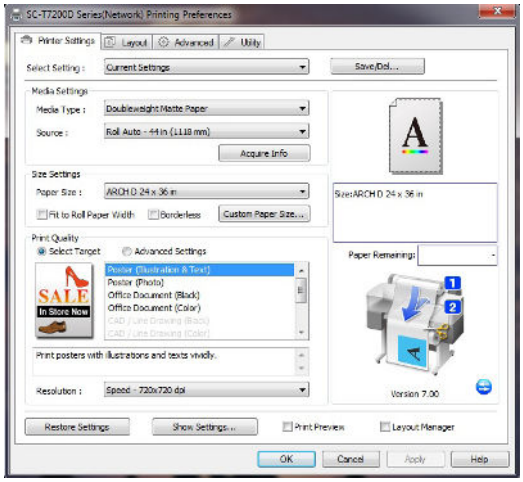
Canon Print Driver Layout Tab



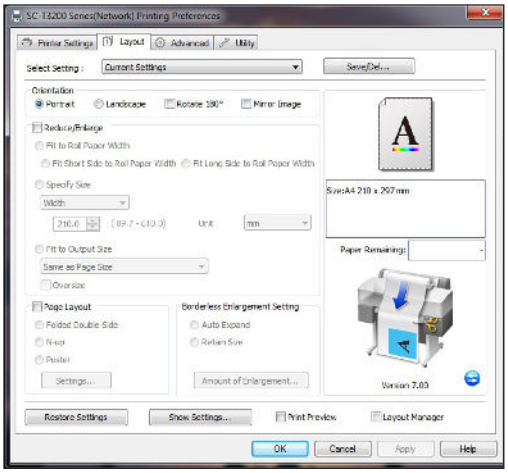
Canon Print Driver Favourites Tab



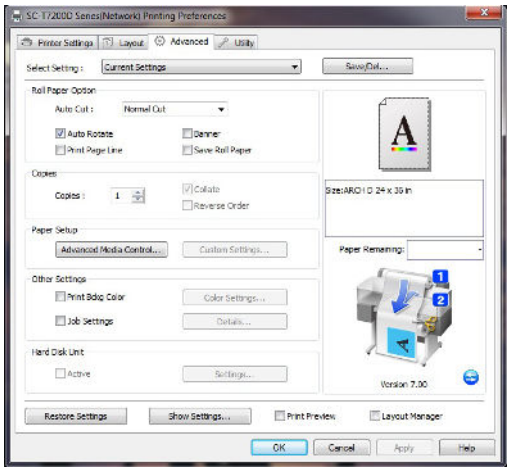
Canon Print Driver Colour Adjustment Tab



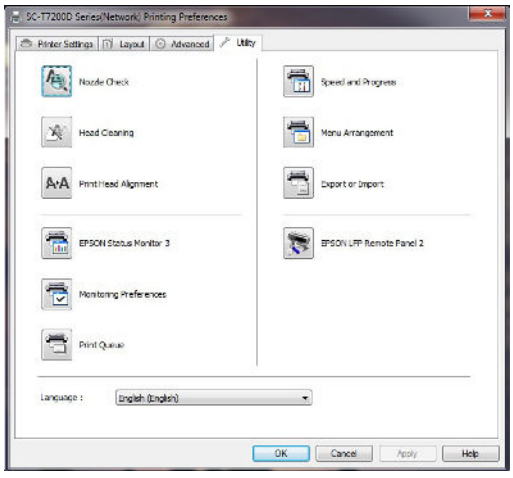
Epson Print Driver Printer Settings Tab



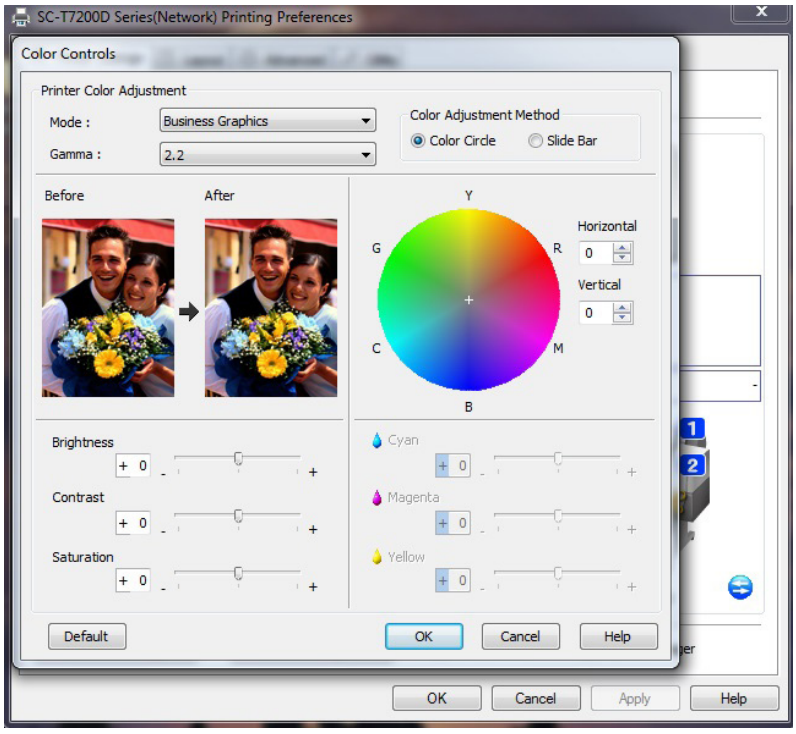
Epson Print Driver Layout Tab



Epson Print Driver Advanced Settings Tab



Epson Print Driver Utility Tab



Epson Print Driver Colour Controls

SUPPORTING TEST DATA

Job Stream Productivity

Mixed File Types, Same Size

Canon imagePROGRAF iPF830 (time in seconds)			Epson SureColor SC-T7200 (time in seconds)		
Fast	Standard	High	Speed	Quality	Max Quality
645.10	1,119.96	1,809.38	712.75	1,304.53	3,273.43

BLI's job stream consists of nine files, including PDF, TIFF and DWF files totalling 19 pages, all at Arch D-size, ensuring that DWF and PLT files are set to fit to page. This test replicates the type of traffic a typical wide-format device might experience in a real-world, multi-user environment. All of the files are submitted to the controller in a specific order and sent to the printer as a group, at which time the stopwatch begins; timing ends when the last page of the last file exits the device. Both devices were loaded with 44-inch rolls, with each file set to auto-rotate to save media.

Colour Productivity

Canon imagePROGRAF iPF830 (time in seconds)			Epson SureColor SC-T7200 (time in seconds)		
Fast	Standard	High	Speed	Quality	Max Quality
404.84	604.03	1,106.36	451.50	843.10	2,313.50

The 12-page DWF test file was printed using the device driver set to the plain paper/colour setting. Both devices were loaded with 44-inch rolls with each file set to auto-rotate to save media. The actual time indicated is the time it took to RIP, image and deliver all pages of the test document to the collection bin.

Monochrome Productivity

Canon imagePROGRAF iPF830 (time in seconds)			Epson SureColor SC-T7200 (time in seconds)		
Fast	Standard	High	Speed	Quality	Max Quality
396.75	592.09	1,094.53	474.95	841.60	2,323.33

The 12-page DWF test file was printed with the Canon driver set to the plain paper/monochrome setting and the Epson driver set to plain paper, black mode. Both devices were loaded with 44-inch rolls, with each file set to auto-rotate to save media. The actual time indicated is the time it took to RIP, image and deliver all pages of the test document to the collection bin.

First-Page-Out Productivity after a Weekend of Non-Use

	Canon imagePROGRAF iPF830 (time in seconds)	Epson SureColor SC-T7200 (time in seconds)
Time Before Printing Commences	61.35	114.03
First Page Out	124.71	177.40

First-Page-Out Productivity from Ready State

	Canon imagePROGRAF iPF830 (time in seconds)	Epson SureColor SC-T7200 (time in seconds)
Time Before Printing Commences	12.38	11.65
First Page Out	54.41	74.36

First-page-out times are achieved by sending an Arch D-size PDF file to print, timed from release to page out with the Canon driver set to the plain paper/monochrome setting and the Epson driver set to plain paper, black mode. Both devices were loaded with 44-inch rolls, with each file set to auto-rotate to save media.

A0 First-Page-Out and Throughput Productivity

	Canon imagePROGRAF iPF830 (time in seconds)	Epson SureColor SC-T7200 (time in seconds)
First Page Out	94.38	124.90
Five Pages Out	445.91	605.72

The single-page A0-size PDF test file was printed using the device driver with the plain paper/colour setting in default speed mode. The actual time indicated is the time it took to RIP, image and deliver all pages of the test document to the collection bin.

Colour Image Quality

Colour Optical Density Evaluation

Canon imagePROGRAF iPF830 Plain Paper						
	Fast		Standard		High	
	50%	100%	50%	100%	50%	100%
Cyan	0.60	1.06	0.66	1.15	0.64	1.15
Magenta	0.58	0.99	0.66	1.13	0.64	1.15
Yellow	0.45	0.77	0.53	0.88	0.51	0.88
Black	0.58	1.25	0.69	1.40	0.68	1.42

Epson SureColor SC-T7200 Plain Paper						
	Speed		Quality		Max Quality	
	50%	100%	50%	100%	50%	100%
Cyan	0.38	1.02	0.34	1.03	0.38	1.02
Magenta	0.33	0.85	0.27	0.86	0.29	0.92
Yellow	0.38	0.81	0.37	0.89	0.35	0.94
Black	0.65	1.11	0.64	1.28	0.63	1.32

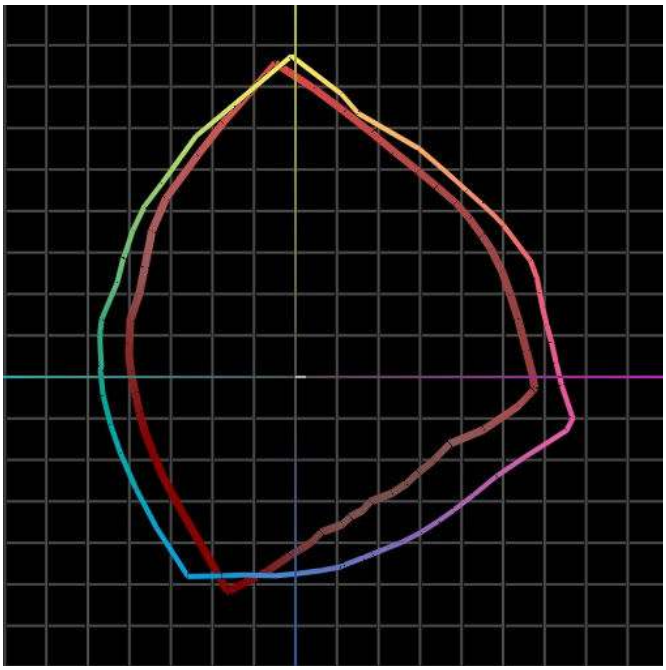
Note: Colour density readings were assessed by printing a BLI proprietary PDF test target file on plain paper in default colour settings at all quality settings available and measuring the density of 100% dot fill and 50% dot fill using an XRite 508 densitometer.

Colour Gamut Comparison

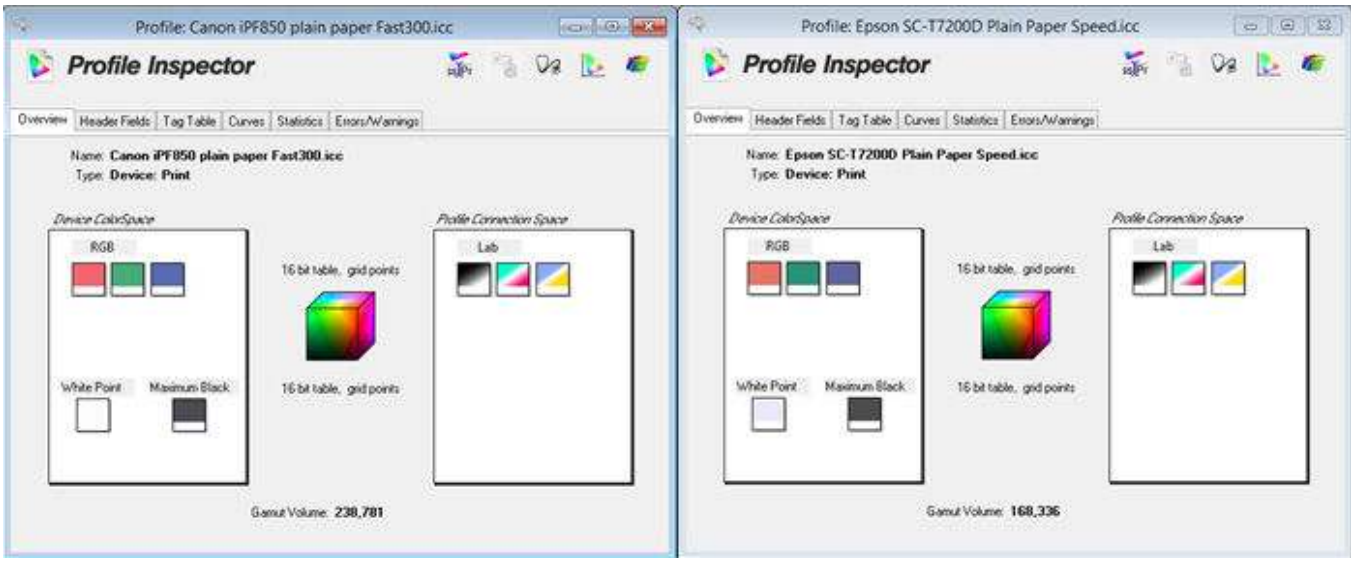
Media Type/Settings	Canon imagePROGRAF iPF830	Epson SureColor SC-T7200
Plain Paper Fast/Speed	238,781	168,336
Plain Paper Standard/Quality	285,581	202,953
Plain Paper High/Max Quality	299,268	229,339
Matte Coated High/Max Quality	607,470	345,122

Colour Gamut Comparison

Note: Colour gamut analysis was conducted on the Canon iPF850 which uses the same engine.

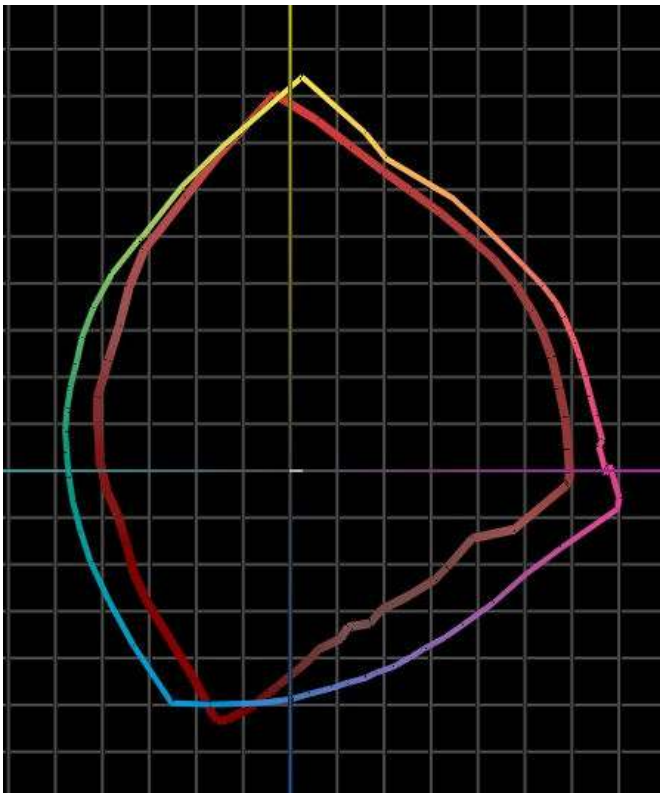


Epson SureColor SC-T7200 colour gamut on plain paper in Speed settings (red) versus Canon imagePROGRAF iPF830 colour gamut (shown chromatically) on plain paper in Fast settings.

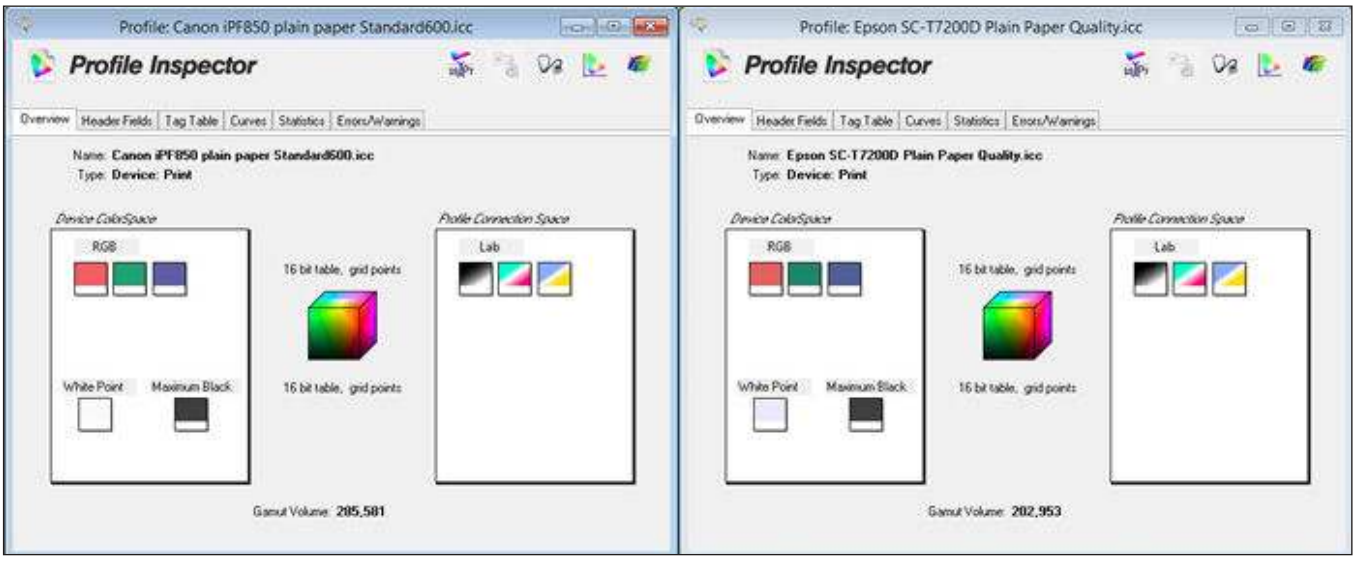


Colour gamut profile for Canon imagePROGRAF iPF830 (left) and Epson SureColor SC-T7200 (right) on plain paper in Fast/Speed modes.

Colour Gamut Comparison

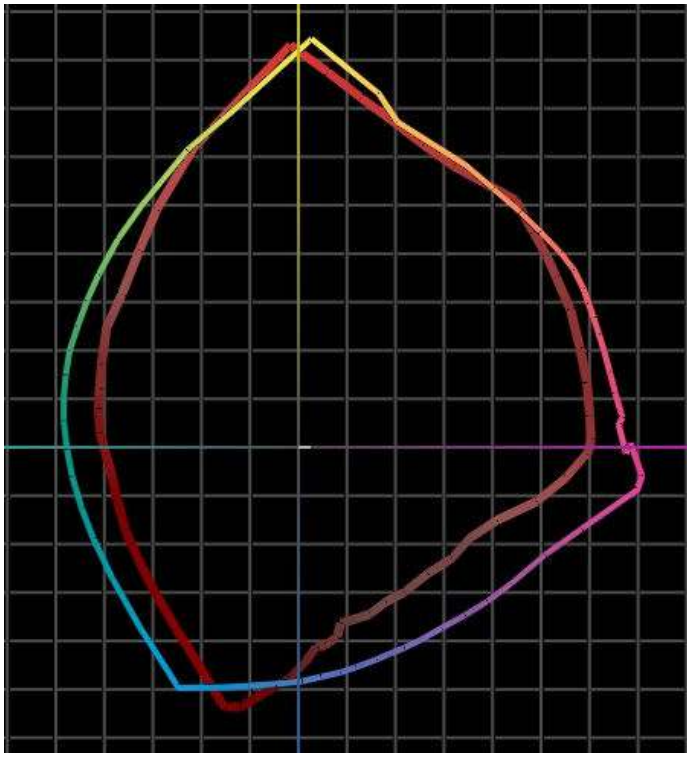


Epson SureColor SC-T7200 colour gamut on plain paper in Quality settings (red) versus Canon imagePROGRAF iPF830 colour gamut (shown chromatically) on plain paper in Standard settings.

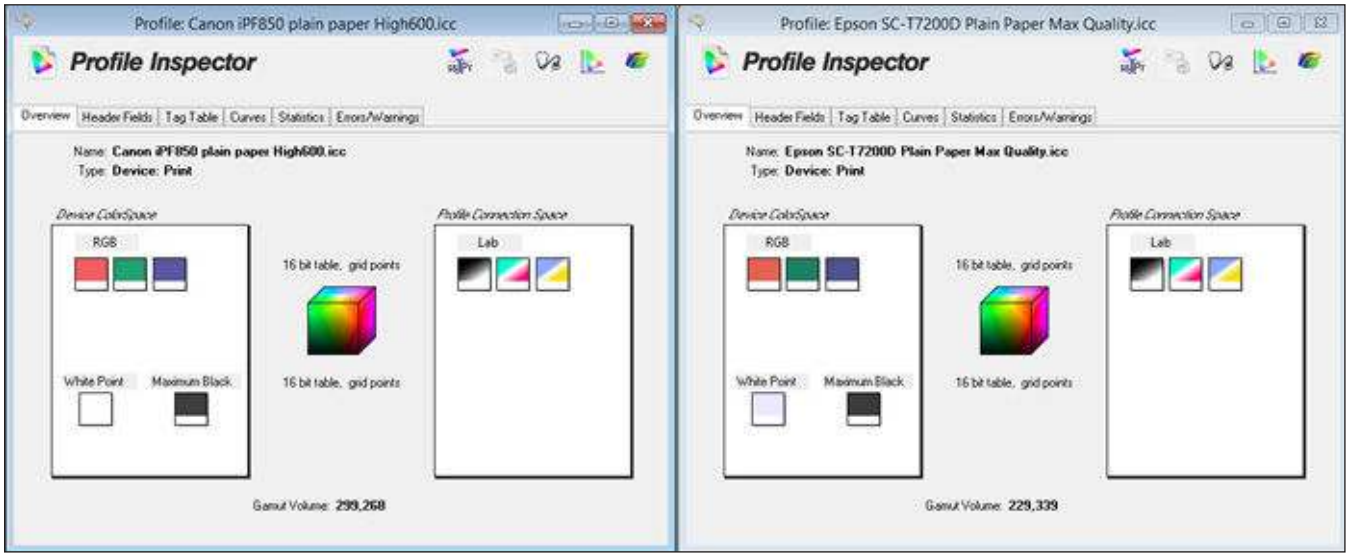


Colour gamut profile for Canon imagePROGRAF iPF830 (left) and Epson SureColor SC-T7200 (right) on plain paper in Standard/Quality modes.

Colour Gamut Comparison

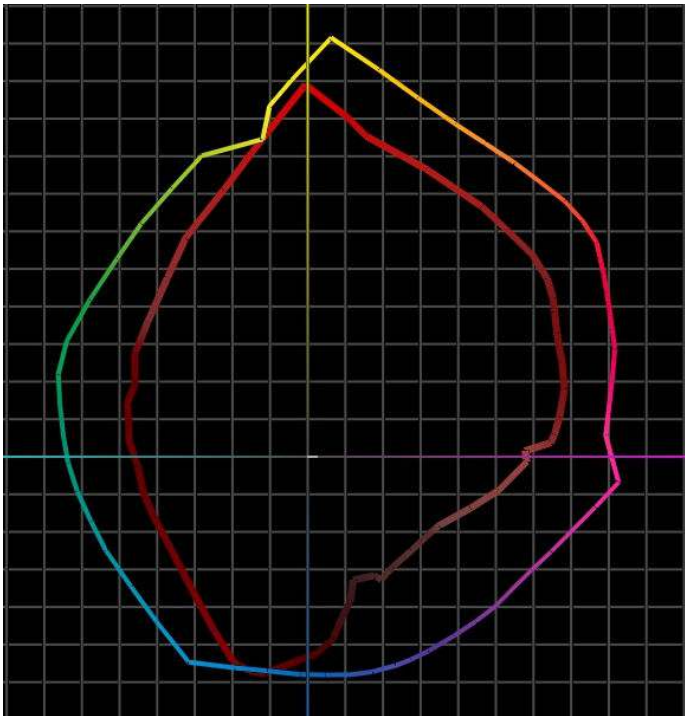


Epson SureColor SC-T7200 colour gamut on plain paper in Max Quality settings (red) versus Canon imagePROGRAF iPF830 colour gamut (shown chromatically) on plain paper in High settings.

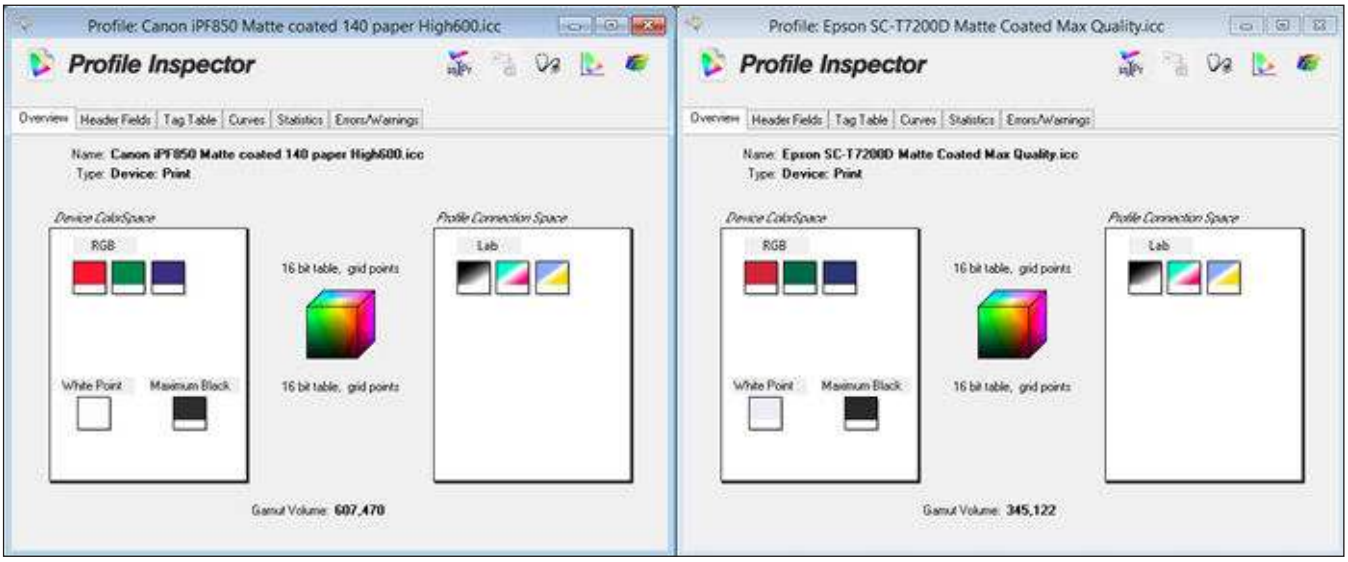


Colour gamut profile for Canon imagePROGRAF iPF830 (left) and Epson SureColor SC-T7200 (right) on plain paper in High/Max Quality modes.

Colour Gamut Comparison



Epson SureColor SC-T7200 colour gamut on matte coated paper in Max Quality settings (red) versus Canon imagePROGRAF iPF830 colour gamut (shown chromatically) on matte coated paper in High quality settings.



Colour gamut profile for Canon imagePROGRAF iPF830 (left) and Epson SureColor SC-T7200 (right) on matte coated paper in High/ Max Quality modes.

Black Image Quality

Black Optical Density Evaluation

	Canon imagePROGRAF iPF830			Epson SureColor SC-T7200		
	Fast	Standard	High	Speed	Quality	Max Quality
Density Block						
1	1.34	1.47	1.46	1.19	1.43	1.51
2	1.32	1.47	1.45	1.19	1.41	1.52
3	1.36	1.46	1.45	1.19	1.43	1.50
4	1.31	1.47	1.46	1.18	1.44	1.50

Note: Solid black density measurements are based on four readings taken from a BLI proprietary PDF test target file corresponding to four different 100% solid black locations on the output. The output was assessed at all quality settings available, with the Canon driver set to plain paper/monochrome setting and the Epson driver set to plain paper, black mode. Density was measured using an XRite 508 densitometer.

Device Feature Set

	Canon imagePROGRAF iPF830	Advantage		Epson SureColor SC-T7200
Max. print quality	2400 x 1200 dpi		✔	2880 x 1440 dpi
Number of inks	5			5
Ink tanks replaceable during operation	Yes	✔		No
Ink-drop size	4 picoliter		✔	3.5 picoliter (variable)
Printhead replacement	User replaceable	✔		Service replaceable
Starter ink capacity	1,650 ml (5 x 330 ml)	✔		550 ml (5 x 110 ml)
Ink cartridge capacity	330 ml and 700 ml for CMYK, MK		✔	350 ml, 700 ml for CMYK, MK
Number of nozzles	MBK: 5,120 nozzles, Other colours: 2,560 nozzles each, 15,360 in total	✔		3,600 (720 per colour)
Number of printheads	1			1
Line accuracy	+/-0.1%			+/-0.1%
Minimum line width	0.02 mm			0.02 mm
Minimum print margins	3 mm			3 mm
Borderless (0 mm) printing	Yes			Yes
Maximum outside diameter of roll paper	150 mm			150 mm

	Canon imagePROGRAF iPF830	Advantage		Epson SureColor SC-T7200
Maximum cut-sheet media length	1.6 m	✔		914 mm
Maximum media thickness for roll paper	0.8 mm			0.8 mm
Maximum media width	44 inches			44 inches
Media loading	Front			Front
Optional media handling	Roll holder set			Roll media adapter
Standard RAM	32 GB	✔		1 GB
Maximum RAM	32 GB	✔		1 GB
Hard drive Standard or Optional	Standard	✔		Optional
Hard drive	320-GB			320-GB
Interface	10/100/1000Base-T/TX Ethernet, USB 2.0			10Base-T/100Base-TX/1000Base-T Ethernet, USB 2.0
PDL	GARO, HP-GL/2, HP RTL			HP-GL/2, HP RTL, Epson ESC/P-R
Net weight (unpacked)	138 kg			133 kg
Power consumption when in standby	5 W or less		✔	3 W
Power consumption when active	190 W or less		✔	64 W
Acoustic pressure	Operation: 52 dB (A) or less; Standby: 35 dB (A) or less		✔	Operation: 50 dB (A); Standby: INA
Acoustic power	Operation: 6.8 Bels			Operation: 6.8 Bels

INA – Information not available

Driver Feature Set

	Canon imagePROGRAF iPF830	Advantage		Epson SureColor SC-T7200
Speed settings	5 (Fast 300, Standard 600, Fast 600, High 600 and 1200)	✔		3 (Speed, Quality, Max Quality), depending on paper chosen
Economy mode	Yes	✔		No
Predefined profiles	7		✔	8
Overview of profile settings provided	Yes			Yes
Media profiles	38 + 5	✔		20
IQ optimized for print profiles	Yes			Yes
Watermark	Yes	✔		No
Sharpen text	Yes			Yes
Thicken fine lines	Yes	✔		No
Mirror image	Yes			Yes

	Canon imagePROGRAF iPF830	Advantage		Epson SureColor SC-T7200
Multi-up printing	Yes, 2 to 16	✔		Yes, 2 and 4
Poster print mode	Yes (2 by 2)		✔	Yes (4 by 4)
Page stamping	Yes (Date, Time, Name, Page Number)		✔	Yes (Date, Time, Document/User/Printer Name, Media Type, Print Quality Level, Resolution, Print Mode, High Speed, Finest Detail, Edge Smoothing, Colour Adjustment and Value, Colour Density)
Image rotation	Yes, auto 180 degrees			Yes, auto 180 degrees
Option to preview before print	Yes			Yes
CMYK balance adjustment	Yes			Yes
Brightness adjustment	Yes			Yes
Contrast adjustment	Yes			Yes
Saturation adjustment	Yes			Yes
Advanced colour management options	Yes			Yes
Enlargement Copy Mode	Yes			Yes
Free Layout Capability	Yes			Yes
MS Office Plug-in	Yes			Yes
Disable automatic cutter	Yes			Yes
Unidirectional printing selection option	Yes	✔		No

Ink Consumption

Table 1

Amount of Ink in Each Canon iPF830 Cartridge (grams)

	Cyan	Magenta	Yellow	Matte Black	Black
Weight of cartridge prior to installation	949.1	935.7	936.8	947.4	952.4
Weight of cartridge at end of life	204.9	204.9	204.9	204.9	204.9
Net weight of ink	744.2	730.8	731.9	742.5	747.5
Total ink weight across five cartridges					3,696.9

Table 2

Amount of Ink in Each Epson SureColor SC-T7200 Cartridge (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Weight of cartridge prior to installation	512.5	511.4	510.9	517.7	512.1
Weight of cartridge at end of life	129.8	129.8	129.8	129.8	129.8
Net weight of ink	382.7	381.6	381.1	387.9	382.3
Total ink weight across five cartridges					1,915.6

Table 3

Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Standard Mode) on the Canon iPF830 (grams)

	Cyan	Magenta	Yellow	Matte Black	Black
Test Run 1 Net weight of ink used	5.2	2.0	4.1	9.8	1.7
Test Run 2 Net weight of ink used	4.9	1.5	4.6	9.1	1.6
Test Run 3 Net weight of ink used	4.9	3.0	4.8	9.6	1.7
Average amount of ink used across three runs	5.0	2.2	4.5	9.5	1.7
Total ink weight across five cartridges for 50-page run (based on averages)					22.9

Table 4

Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Standard Mode) on the Epson SureColor SC-T7200 (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	5.3	1.3	3.5	11.6	0.9
Test Run 2 Net weight of ink used	5.2	1.4	3.5	11.8	1.0
Test Run 3 Net weight of ink used	5.4	1.6	3.8	11.9	0.9
Average amount of ink used across three runs	5.3	1.4	3.6	11.8	0.9
Total ink weight across five cartridges for 50-page run (based on averages)					23.0

Table 5

Ink Used in Three 50-Page Runs of Retail Poster Test Document (Standard Mode) on the Canon iPF830 (grams)

	Cyan	Magenta	Yellow	Matte Black	Black
Test Run 1 Net weight of ink used	9.2	26.2	10.9	2.2	4.5
Test Run 2 Net weight of ink used	9.5	25.2	10.0	4.7	4.2
Test Run 3 Net weight of ink used	9.3	27.8	10.3	4.4	3.6
Average amount of ink used across three runs	9.3	26.4	10.4	3.8	4.1
Total ink weight across six cartridges for 50-page run (based on averages)					54.0

Table 6

Ink Used in Three 50-Page Runs of Retail Poster Test Document (Standard Mode) on the Epson SureColor SC-T7200 (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	15.9	13.2	34.7	4.5	1.1
Test Run 2 Net weight of ink used	16.6	13.5	34.2	4.2	1.0
Test Run 3 Net weight of ink used	16.5	13.7	34.6	4.4	1.1
Average amount of ink used across three runs	16.3	13.5	34.5	4.4	1.1
Total Ink Weight across five cartridges for 50-page run (based on averages)					69.8

Table 7

Ink Used in Three 50-Page Runs of GIS Map Test Document (Standard Mode) on the Canon iPF830 (grams)

	Cyan	Magenta	Yellow	Matte Black	Black
Test Run 1 Net weight of ink used	16.9	9.3	7.1	6.9	8.6
Test Run 2 Net weight of ink used	13.5	10.7	11.0	6.5	8.7
Test Run 3 Net weight of ink used	16.7	10.6	6.3	7.5	10.5
Average amount of ink used across three runs	15.7	10.2	8.1	7.0	9.3
Total Ink Weight across five cartridges for 50-page run (based on averages)					50.3

Table 8

Ink Used in Three 50-page Runs of GIS Map Test Document (Standard Mode) on the Epson SureColor SC-T7200 (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	30.2	11.8	13.8	3.9	1.3
Test Run 2 Net weight of ink used	30.5	12.0	13.9	4.0	1.1
Test Run 3 Net weight of ink used	30.4	11.9	13.9	4.0	1.2
Average amount of ink used across three runs	30.4	11.9	13.9	4.0	1.2
Total Ink Weight across five cartridges for 50-page run (based on averages)					61.4

Ink Consumption Test Methodology Overview:

Buyers Lab's ink consumption analysis was conducted using three document types (architectural plan, retail poster and GIS map). Each document was formatted as a PDF (except for the Cottage Architectural Plan, which was formatted as a DWG TrueView Drawing) and sized at ISO A1.

The Canon imagePROGRAF iPF830 was installed in BLI's lab with the latest "01.00" level of firmware (as of March 2015) and connected to a Windows 7 workstation using a 1000BaseT TCP/IP connection. The device was left in default configuration throughout testing. The Canon GARO driver was used for all testing and was left in default colour setting configuration with media selection set to plain paper and the image set to print at actual size. For the Cottage Architectural Plan, Print Priority settings were set to Line Drawing/Text with Quality set to Fast (600 dpi) and Standard (600 dpi). For the Retail Poster and the GIS map, Print Priority settings were set to Image with Quality set to Standard (600 dpi).

The Epson SureColor SC-T7200 was installed in BLI's lab with the latest "MW028E7,F7.10,5000" level of firmware (as of October 2014) and connected to a Windows 7 workstation using a 1000BaseT TCP/IP connection. The device was left in default configuration throughout testing. The Epson ESC/P driver was used for all testing and was left in default colour setting, with media selection set to plain paper and the image set to print at actual size. For the Cottage Architectural Plan, Print Priority settings were set to CAD/Line Drawing with the Standard Quality setting (360 x 720 dpi). For the Retail Poster, Print Priority settings were set to Poster with Quality set to Standard (360 x 720 dpi), and for the GIS map Print Priority settings were set to Perspective GIS with Quality set to Standard (360 x 720 dpi).

Before installing the ink cartridges, BLI technicians weighed and recorded the weight of each with all packaging removed. At the end of each 50-print test run, the cartridges were weighed again and the resulting weight of ink used for the test run calculated for each colour. To ensure that the sub-tank on the Canon model did not affect results, a procedure was followed to ensure that the sub-tank level was at its maximum before the print run commenced and again after the print run was completed, thereby ensuring that ink replenishment of the sub-tanks was taken into account for each print run.

For both models one cartridge was then run to exhaustion and the weight of the empty cartridge was recorded.

Test Environment

This product was tested in BLI's environmentally controlled 3,000-square-foot UK test lab, which replicates typical office conditions.

Test Equipment

BLI's dedicated test network, consisting of Windows 2008 and Microsoft Exchange servers, Windows 7 workstations, 10/100/1000BaseTX network switches and CAT6 cabling.

Test Procedures

The test methods and procedures employed by BLI in its lab testing include BLI's proprietary procedures and industry-standard test procedures. In addition to a number of proprietary test documents, BLI uses industry standard files including a BLI test file and an ASTM monochrome test document for evaluating black image quality. In addition to a visual observation, colour print quality and gamut size are evaluated using a profile software tool from Colour Confidence and an EFI ES-1000 colour spectrophotometer and analysed using Chromix ColorThink Pro 3.0 software. Density of black and colour output was measured using an X-Rite 508 densitometer.

About Buyers Laboratory Inc.

Buyers Laboratory LLC (BLI) is the world's leading independent provider of analytical information and services to the digital imaging and document management industry. For more than 50 years, buyers have relied on BLI to help them differentiate products' strengths and weaknesses and make the best purchasing decisions, while industry sales, marketing and product professionals have turned to BLI for insightful competitive intelligence and valued guidance on product development, competitive positioning and sales channel and marketing support. Using BLI's web-based bliQ and Solutions Center services, 40,000 professionals worldwide create extensive side-by-side comparisons of hardware and software solutions for more than 15,000 products globally, including comprehensive specifications and the performance results and ratings from BLI's unparalleled Lab, Solutions and Environmental Test Reports, the result of months of hands-on evaluation in its US and UK labs. The services, also available via mobile devices, include a comprehensive library of BLI's test reports, an image gallery, hard to find manufacturers' literature and valuable tools for configuring products, calculating total cost of ownership (TCO) and annual power usage. BLI also offers consulting and private, for-hire testing services that help manufacturers develop and market better products and consumables.

For more information on Buyers Laboratory, please call David Sweetnam on +44(0) 118 977 2000, visit www.buyerslab.com, or email david.sweetnam@buyerslab.com.