

Canon imagePROGRAF iPF780 vs. Epson SureColor SC-T5000



Canon imagePROGRAF iPF780 and Epson SureColor SC-T5000 under test in BLI's European test lab

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5000
Advantage ✓	✓	
Colour Image Quality	✓	
Black Image Quality	✓	
Colour Print Productivity	✓	
Black Print Productivity	✓	
Direct PDF Submission Functionality	✓	
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 iPF780 and the Epson SureColor SC-T5000, 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.

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Executive Summary

The Canon imagePROGRAF iPF780 outperformed the Epson SC-T5000 in most areas of the evaluation, demonstrating higher productivity, superior image quality in colour and black modes and lower ink consumption. In terms of productivity, BLI analysts noted that the higher the quality mode, the greater was the performance differential between the Canon and Epson models. For example, in BLI's job stream, designed to simulate a typical real world mixed workflow for a large-format device, the iPF780 was 4.0% faster in Fast mode, 9.2% faster in Standard/Quality mode and an impressive 45.7% faster in High quality mode. Moreover, the iPF780 had the advantage in ink consumption, using less ink for three of the four document tests, with the added bonus of allowing inks to be replenished during operation to maintain productivity and reduce operator downtime.

The Epson SC-T5000 offered a number of strong features of its own, including higher standard and maximum memory capacities than the Canon unit plus an optional 250-GB hard drive (although Canon do offer this option with the iPF785 sister model, which has a 320-GB hard drive), and higher ink cartridge capacity, which helps reduce the frequency of replacing them. In addition, it has a lower energy consumption—65 watts while printing compared with 140 watts for the Canon model. However, the Canon model only uses 0.5 watts in standby mode (the state in which it is likely to spend more time) which is comparable with the Epson model's standby power consumption of 0.4 watts.

The Canon iPF780 is capable of handling ink and paper outages without having an impact on user productivity or causing unnecessary waste. When the Canon model runs out of ink, it continues to operate while alerting the user to replace the cartridge, and, thanks to its hot swap ink tanks, inks can be replaced on the fly while printing is in progress. When it runs out of paper, the Canon unit pauses, alerts the operator, and after a new roll is installed, prompts the operator to confirm the paper type and begins printing the interrupted page in full followed by all successive pages, hence only half a page is wasted. In contrast, the Epson model resumes printing the same page after paper is replenished, which is more wasteful. When the Epson SC-T5000 runs out of ink, printing has to stop for the cartridge to be replaced, leading to operator downtime. However, once the cartridge has been replaced, printing resumes seamlessly from the point at which it stopped with no discernible break or loss of image quality, helping to save on ink and paper. Moreover, BLI's analysts noted how easy it was to load new paper rolls on the Canon unit, whereas this process is much more cumbersome with the Epson model.

As expected of models aimed at the Architectural, Engineering and Construction (AEC), Computer-Aided Design (CAD) and Geographic Information Systems (GIS) markets, the image quality produced by both models would easily satisfy customer needs. Both models delivered high quality AEC and GIS graphics and photographic output quality was, again, on a par with good saturation and excellent definition in dark and light contrast areas. However, the Canon iPF780 surpassed its Epson competitor with a larger colour gamut for three of the four tests when printing on plain and photo-quality paper (the Epson model's colour gamut is only larger when printing on plain paper using High/Max Quality settings) and excellent serif and sans serif fonts and business graphics reproduction. The Canon model produced more natural-looking flesh tones, which were reddish in output produced by the Epson unit. The Canon model also carries a significant advantage with its unidirectional print driver option. When selected, this option eliminates banding on the Canon iPF780's output, even in Fast mode, which is evident on the Epson device's output across the full width of the image in every mode except Max Quality.

In conclusion, the Canon imagePROGRAF iPF780 delivered a superior performance in the majority of categories tested, with superior colour and black image quality, faster productivity (notably in High/Max Quality modes), superior banner productivity and lower ink consumption than the Epson SureColor SC-T5000. The Canon model also offers several unique features over the Epson device, such as its unidirectional print capabilities and its Canon Direct Print & Share, a free utility that can be downloaded from the company's website. This supports direct PDF submission without the need to open an application. In addition, it offers flexibility for files to be retrieved and shared from cloud storage services such as Google Drive and other online solutions—Microsoft SharePoint and AutoCAD 360—via the WebDAV protocol, for printing. No such utility is available with the Epson device.

Colour Image Quality

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5000
Advantage ✓		
Text	✓	
Fine Lines	=	=
Halftone Range	=	=
Halftone Fill	✓	
Solid Density	=	=
AEC Graphics	=	=
GIS Graphics	=	=
Business Graphics	✓	
Photographic Images	=	=
Colour Gamut (plain paper, Fast/Standard settings)	✓	
Colour Gamut (plain paper, High/Max Quality settings)		✓
Colour Gamut (photo paper, High/Max Quality settings)	✓	

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

- + One major factor influencing overall image quality is the Canon model's unidirectional print feature, which is available in all modes. The Epson model offers only bidirectional printing, which means that the printhead travels in both directions over the image, creating a noticeable pattern of banding across the full width of the image, especially when using the Speed setting. While output from the Canon device is free from any banding—even in Fast mode—when unidirectional printing is selected, there is some trade-off in productivity as a result.
- The Epson SureColor SC-T5000 delivered a higher optical density on plain paper for yellow in all quality modes, while both models delivered comparable optical densities for cyan; the Canon iPF780 had a higher density for magenta in all but one of the optical measurements.
- When printing on plain paper in High/Max Quality settings, the Epson SC-T5000 delivered a 2.9% larger colour gamut than did the Canon iPF780, with a CIE volume of 231,073 versus a CIE volume of 224,605 for the Canon model.
- + However, when printing on plain paper using Fast/Standard settings the Canon model delivered 5.1% and 2.2% larger colour gamuts, respectively—with CIE volumes of 193,062 and 221,132 compared with CIE volumes of 183,751 and 216,417 for the Epson device in both modes.
- + When printing on photo-quality paper using Canon's High quality setting and the Epson SC-T5000's Max Quality setting, the Canon model delivered a colour gamut 21.0% larger than that of the Epson unit, with a CIE volume of 643,228 compared with 531,496 for the SC-T5000.

- + Canon delivered excellent consistent text quality in colour across all tested modes; serif and sans serif fonts were legible down to the 3-pt. level with no breakup. For the Epson model, in Speed and Quality modes fonts were only fully legible down to the 6-pt. level with no breakup; in Max Quality mode, serif fonts were legible only down to the 5-pt. level and down to 4-pt. level for sans serifs. It also suffered from double imaging in Max Quality mode, even after BLI analysts had run full alignment checks.
- + The Epson model exhibited some bleed into the (plain) paper in both text and line art in all modes, when viewed under magnification, whereas no bleed was detected with the Canon model.
- Fine lines produced by both devices remained distinct down to the 0.1-pt. level in Fast/Speed mode, although white-on-black fine lines were only visible at 0.25-pt. level and perfectly acceptable with both models. In High/Max Quality mode there were no differences between the two models for fine line accuracy.
- Colour halftone range was excellent with both models, with distinct transitions between all levels.
- + Colour halftone fill was slightly grainy on plain paper with the Epson model.
- When evaluating Architectural, Engineering and Construction (AEC) graphics in Standard/Quality and High/Max Quality modes, both the Canon and the Epson units exhibited an excellent level of detail and very distinct fine lines.
- When evaluating Geographic Information Systems (GIS) graphics in High/Max Quality mode on plain paper, both units delivered very good detail and showed an equally good depth of field—a critical factor in delivering a more realistic three-dimensional rendering of topographical features.
- + Colour business graphics produced by the Canon iPF780 unit exhibited sharper details than did the Epson device.
- When comparing photographic images in Standard/Quality and High/Max Quality modes, once again there was very little difference between the two models, with both delivering excellent detailing in dark and light contrast areas and good saturation.
- + In Standard/Quality and High/Max Quality modes, the Canon unit produced far superior circles—at 0.1-pt. level circles were smooth and unbroken. The Epson device delivered circles at 0.1-pt. level which were unbroken but irregular in appearance, while in circles produced in Max Quality were poorly defined with some stair stepping evident.
- + Skin tones produced by the Canon model were more natural-looking, while those produced by the Epson device were distinctly reddish in Speed mode.
- + The Canon iPF780 produced the 1x1 pixel grid in CMY with no quality issues, and coverage was excellent across all colours. Conversely, the Epson SC-T5000 delivered inconsistent coverage across all grids.
- + Overall, the Canon model emerges as the stronger performer in BLI's assessment of colour image quality. While the Epson model offered higher optical density for yellow and a larger colour gamut on plain paper in High/Max Quality settings, there was not one aspect where it truly stood out. As befitting the needs of their target markets, both models produced distinct fine lines in AEC drawings and an excellent level of detail in GIS graphics. Again, both exhibited a very good depth of field on plain paper. However, the Epson model's text and line art suffered from some ink bleed or overspray when viewed under magnification, while the output produced by Canon did not. In addition, the Canon device delivered superb text, fine lines and circles; a larger colour gamut in other tests on plain and photo quality papers, as well as more natural looking skin tones. The Canon unidirectional printing option was also considered an advantage, as it eliminated banding issues that were evident across all output from the Epson device, except prints produced using the driver's Max Quality mode.

Black Image Quality

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5000
Advantage ✓		
Text	✓	
Fine Lines	✓	
Halftone Range	=	=
Halftone Fill	✓	
Solid density	✓	
AEC Graphics	=	=
Business Graphics	✓	
Photographic Images	✓	

- + In all tested modes (Fast, Standard and High), the Canon model delivered higher optical densities for black.
- + In Fast/Speed and Standard/Quality modes, fonts produced by both models were legible down to the 3-pt. level, while in High/Max Quality mode, there was a clear difference between the two models with fonts legible down to the 3-pt. level with the Canon model but only at the 8-pt. level with the Epson unit, together with distinct breakup in some characters. This consistent performance, along with the higher density, gave the Canon model a distinct edge overall.
- + The Epson device exhibited some ink bleed or overspray in text and line art in all modes, but only when viewed under magnification.
- 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, but both could only deliver white-on-black fine lines in 0.25-pt. level in Standard/Quality mode. There was no sign of stair-stepping in diagonal lines with either device.
- + Circles produced by both models were fully formed; the iPF780's circles were smoother than those produced by the Epson, which were slightly irregular and wavy in appearance.
- Both models delivered a very good halftone range—from the 10% to 100% dot-fill levels in all modes.
- + Halftone fill results in all modes were very good for the Canon device, while the Epson unit was rated only good as some graininess was visible across all output, even without magnification.
- + The Canon unit delivered darker solids with higher optical density and exhibited no mottling when compared with the same output from the Epson model.
- When evaluating AEC graphics in Standard/Quality and High/Max Quality modes in black, both models delivered detailed and distinct fine lines.
- + Monochrome business graphics in High/Max Quality mode on plain paper were produced more accurately by the Canon model, with smooth halftone gradations and crisp text, whereas some graininess was visible with the Epson unit, even without magnification.

- + Photographic images in High/Max Quality quality mode on plain paper were produced with smoother gradations on the Canon iPF780 when compared with output from the Epson model.
- + BLI's analysts marked out the Canon device for distinction given its overall superior black image quality performance. It delivered excellent halftone fills, darker solids, a higher optical density in all modes, smoother gradations in photographic and business graphics and text that was legible down to a smaller size (3-pt.), with no breakup. The Epson model was unable to match the Canon in delivering smooth circles and it displayed some ink bleed or overspray in text and line art in all modes when viewed under magnification. Both models delivered excellent AEC graphics.

Print Productivity

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5000
Advantage ✓		
First Page Out From Ready State	=	=
First Page Out From Weekend Non-Use		✓
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)	✓	

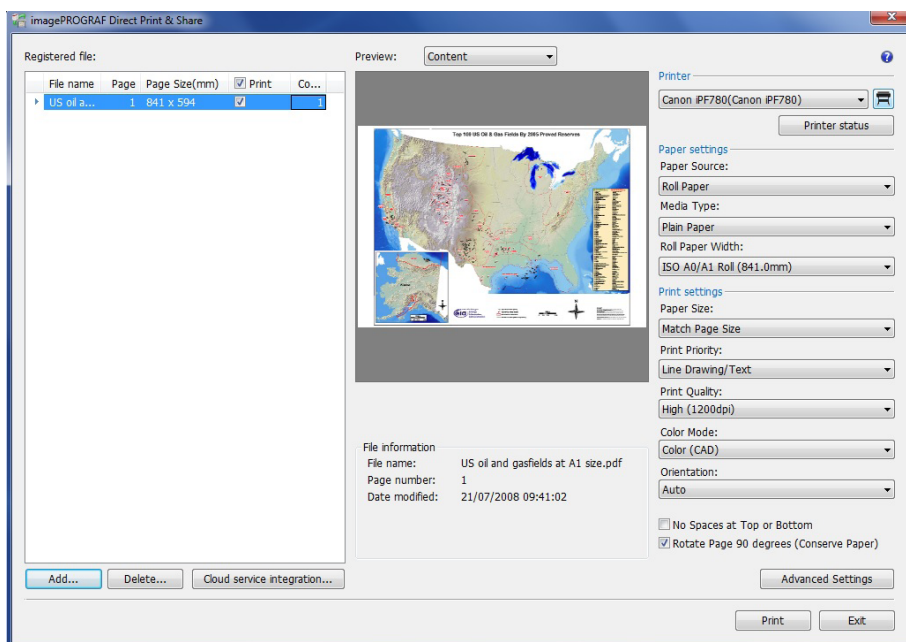
- One factor impacting on productivity is that when the Epson SC-T5000 model runs out of ink, printing has to stop for the cartridge to be replaced, leading to operator downtime. However, printing resumes seamlessly from the same point in the page, with no discernible line or break in output and no difference in image quality, so no ink or paper is wasted.
- + In contrast, the Canon model will continue to print (drawing ink from its sub tank) when ink needs replacing, while its control panel conveniently alerts the user to replace ink as well as provides ink purchasing information. Inks can be replaced while printing is in progress, so again no ink or paper is wasted and with no operator downtime.
- + The Epson SC-T5000 stops printing when it runs out of paper. Once a new roll is installed, it resumes printing only the remaining portion of the page, thus printing two partial pages. This would have an adverse effect on productivity in longer print runs. Conversely, when the Canon unit runs out of paper, it pauses and alerts the operator. After a new roll is installed, it prompts the operator to confirm the paper type, after which the job will continue printing from the beginning of the interrupted page, so less ink and paper is wasted.

- Printed sheets are stacked neatly and sequentially in each model's output catch tray, which makes collating output easier and helps to reduce operator intervention and downtime.
- The Canon iPF780 delivered a slower first-page-out time of 97.92 seconds after a weekend of non-use, compared with 78.59 seconds for the Epson device. Start-up time before printing commenced was 47.31 seconds for the Canon model, but only 15.53 seconds for the Epson unit.
- The Canon device delivered a faster first-page-out time of 67.82 seconds from its ready state, compared with 74.53 seconds for the Epson device. Start-up time before printing commenced was 17.07 seconds for the Canon model compared with 11.28 seconds for the Epson model.
- + When printing BLI's job stream, designed to simulate a typical mixed workflow for a large-format unit, the Canon iPF780 was 4.0% faster than the Epson model in Fast/Speed mode, 9.2% faster in Standard/Quality mode, and 45.7% faster in High/Max Quality mode.
- + When printing BLI's 12-page DWF test file in colour, the Canon unit was 7.7% faster in Fast/Speed mode, 14.0% faster in Standard/Quality mode, and 51.1% faster in High/Max Quality mode when compared with the Epson device.
- + Similarly, when printing BLI's 12-page DWF test file in monochrome, the Canon unit was 11.7% faster than the Epson model in Fast/Speed mode, 13.7% faster in Standard/Quality mode, and 50.6% faster in High/Max Quality mode when compared with the Epson model.
- + In BLI's single-page A0-size test, the Canon iPF780 delivered a first-page-out time (98.97 seconds) that was 20.5% faster than the Epson unit (124.45 seconds). The time to print five A0-size pages was 20.7% faster for the Canon iPF780 than for the Epson device (477.11 seconds versus 601.34 seconds).

Direct PDF Print Submission Functionality

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5000
Advantage ✓		
Ease of Use	✓	
Functionality	✓	

- + A free download from Canon's website, the iPF Direct Print & Share utility enables PDFs to be printed without opening Adobe Acrobat. iPF Direct Print & Share also allows users to retrieve files from cloud storage for printing. The latest version (v2.0) of iPF Direct Print & Share (not tested with this model) supports "Shortcut Print" functionality which defines several print settings via a desktop icon. Files are automatically printed with the predefined setting with a simple drag-and-drop operation on the icon. Multiple desktop icons can be created for different print settings.



Canon's iPF Direct Print & Share utility

- + There is no direct PDF submission functionality available for the Epson device, nor does the company offer cloud storage/connectivity.

Banner Printing

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5000
Advantage ✓		
Ease of Use	=	=
Productivity	✓	

- + The Canon iPF780 successfully printed BLI's 36" x 105" banner (a 4,955-KB PDF file) in Fast mode, taking just 32.7 seconds to generate a preview, and a further 3 minutes, 26.06 seconds from preview to final paper cut.
- + In Speed mode, the Epson SureColor SC-T5000 successfully printed BLI's banner, taking 79.24 seconds to generate a preview; however, an additional 17 minutes, 39.47 seconds were required from the file preview until the banner completed printing and was cut, pausing between each line for data to arrive from memory. BLI analysts expect this time would improve if the optional hard drive was installed.

Poster Printing

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5000
Advantage ✓		
Image Quality (Fast and Standard modes)	✓	
Image Quality (High/Max Quality mode)	=	=
Productivity (Fast and Standard modes)	=	=
Productivity (High/Max Quality mode)	✓	

- When printing a poster in Fast/Speed mode at 300 dpi, the Canon model took 46.50 seconds to complete the job and the Epson unit at 360 x 720 dpi took just 35.44 seconds. Banding was much less evident with the Canon iPF780 than with its predecessor, the Canon iPF750, demonstrating the impact of its improved printhead; while it was evident with the Epson model across the full width of the poster. When unidirectional printing was selected in the Canon print driver, it took 62.93 seconds to print and the banding was eliminated.
- + When printing posters in Standard/Quality mode at 600 dpi, the Canon model took 59.22 seconds and the Epson unit at 360 x 720 dpi took 67.84 seconds, but no banding was evident with either model across the full width of the poster.
- + Printing posters in High quality (600 dpi) mode on the Canon model took 1 minute, 43.94 seconds, while the Epson model in Max Quality (720 x1440 dpi) mode took 2 minutes, 38.44 seconds—a 52.4% longer print time for the Epson model.
- At these High/Max Quality settings, image quality was equally good on output from both models, with vibrant reds, rich saturation and clarity of definition.

Ink Consumption

RESULTS		
Results averaged across three sets of 50-page A1 printing in Fast/Speed and Standard/Quality Modes	Canon imagePROGRAF iPF780	Epson SureColor SC-T5000
COTTAGE ARCHITECTURAL PLAN (Fast Mode)		
Overall weight of ink used (grams)	19.5 g	15.5 g
Percentage of total ink used averaged across all colours	1.20%	2.67%
COTTAGE ARCHITECTURAL PLAN (Standard Mode)		
Overall weight of ink used (grams)	20.5 g	22.0 g
Percentage of total ink used averaged across all colours	1.26%	3.79%
RETAIL POSTER (Standard Mode)		
Overall weight of ink used	59.2 g	84.5 g
Percentage of total ink used averaged across all colours	3.65%	14.56%
GIS MAP (Standard Mode)		
Overall weight of ink used	44.4 g	59.5 g
Percentage of total ink used averaged across all colours	2.74%	10.25%

- When producing 50 prints of a Cottage Architectural Plan in Fast Mode, the Canon unit used 25.8% more ink than the Epson SC-T5000.
- When producing 50 prints of a Cottage Architectural Plan in Standard/Quality Mode, the Canon unit used 6.4% less ink than the Epson SC-T5000.
- + When printing a Retail Poster in Standard/Quality Mode, the Canon unit used 29.8% less ink compared with the Epson SC-T5000.
- + When printing a GIS Map in Standard/Quality Mode, the Canon iPF780 used 25.2% less ink compared with the Epson device.

Device Feature Set

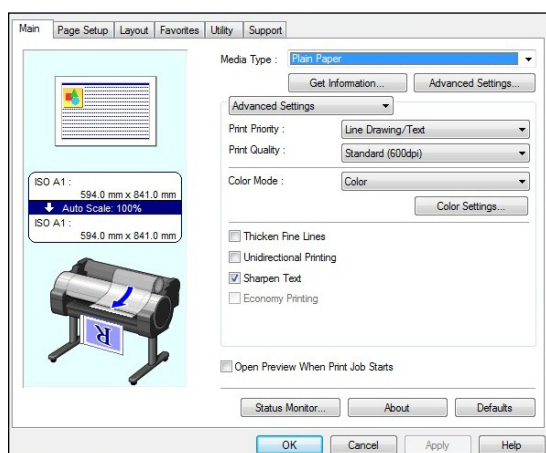
- The capacity of the Canon cartridges (130 ml and, 300 ml for black, cyan, magenta and yellow) is lower than those of the Epson model (110 ml, 350 ml and 700 ml), and as a consequence they will need replacing more frequently than with the Epson device.
- + If the Canon device detects that printhead 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 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 both USB 2.0 and Gigabit Ethernet connectivity.
- + The Canon device supports easy and quick roll paper set with auto paper feed, while manual paper feed is required with the Epson model, which takes more time.
- + The catch trays of both models enable printed sheets to be stacked very neatly (and in the correct sequence), making collating output much easier. However, the Canon unit has the advantage of supporting flat stacking, whereas the Epson unit only supports hanging stacking.
- The Canon model offers a standard and maximum RAM of 256 MB, while the Epson unit has a standard and maximum RAM of 512 MB, plus an extra-cost optional 250-GB hard drive, which this Canon model doesn't offer. However, the Canon iPF785 sister model comes with a standard 320-GB hard drive and 32-GB virtual memory.
- + The Canon model is a lighter (67.9 kg versus 75 kg), more compact device than the Epson unit.
- The Epson model includes a colour LCD while the Canon model has a monochrome LCD display.
- + The HP-GL/2 functionality supported by Epson lacks certain features such as Pen Selecting, Centering and Scaling, which are available with the Canon model.
- The Epson SC-T5000's power consumption while active is much lower—65 watts versus 140 watts.
- However, in standby mode (where the devices are likely to spend more of their time) the Canon model's power consumption (0.5 W) is comparable with that of the Epson device (0.4 W).
- + Noise emissions are slightly lower for the Canon model (48 dB) compared to the Epson device (50 dB).

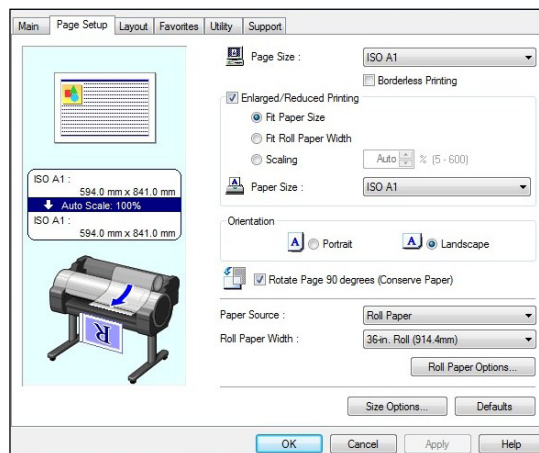
Driver Feature Set

- + The Canon iPF780 has five speed settings (Fast 300, Standard 600, Fast 600, High 600 and 1200), which are matched by three settings with the Epson device (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 pre-defined profiles.
- + Seven predefined profiles are available with the Canon driver, while the Epson driver offers a smaller range of three settings.
- + The Canon driver supports multi-up (2 to 16) printing, while the Epson driver supports 2 to 4 multi-up printing.
- Although both devices offer a poster mode, the Canon GARO driver offers a 2 by 2 poster mode, while the Epson model supports 4 by 4.

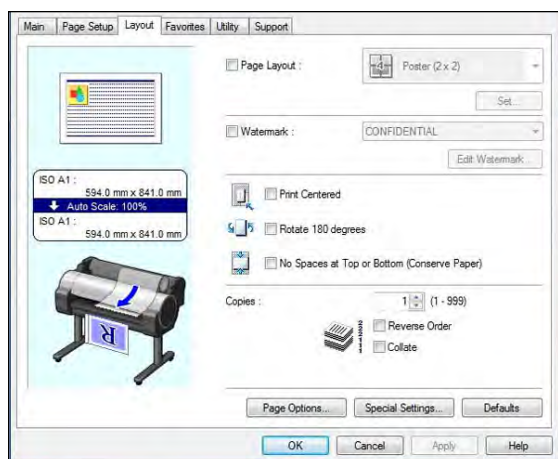
- The Canon driver offers page stamping (Date, Time, Name and Page Number), but the Epson driver offers a wider range of options, including all the image quality attributes.
- Both the Epson driver and the Canon GARO driver offer a wide range of built-in adjustments for CMYK balance, brightness, contrast 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 model 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 Canon driver includes the Color imageRUNNER Enlargement Copy Mode utility, which enables users to integrate a Canon small-format MFP device with the iPF780. Documents scanned by the Canon MFP are automatically routed to a hot folder that is monitored by the driver of the iPF780. 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 CopyFactory Utility.
- + The Canon driver also includes a Free Layout nesting tool 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 save on paper.
- Epson also offers resizing functionality via the Layout Manager utility.
- The Canon model also 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.



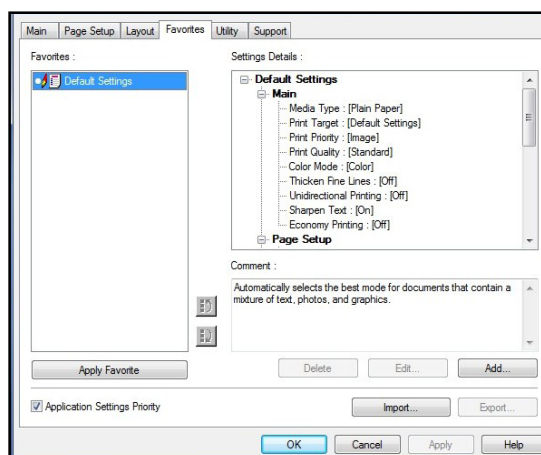
Canon Print Driver Main Tab



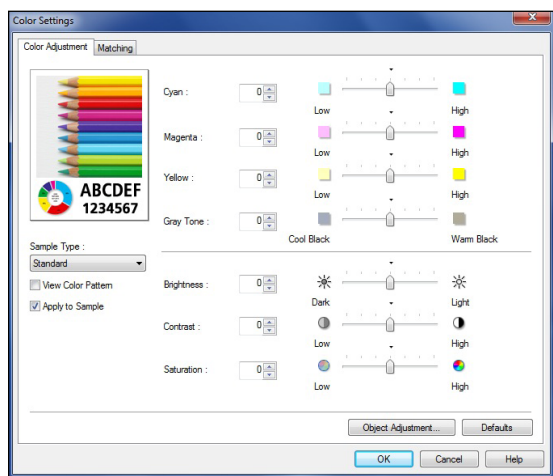
Canon Print Driver Page Setup Tab



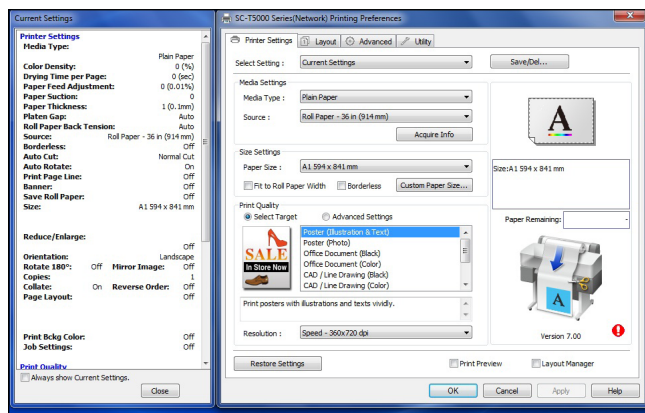
Canon Print Driver Layout Tab



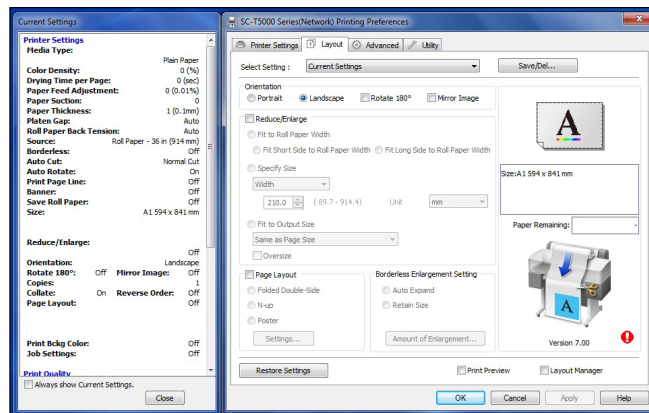
Canon Print Driver Favourites Tab



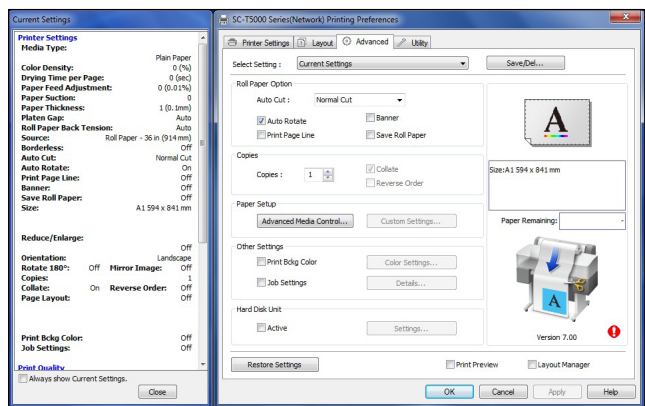
Canon Print Driver Colour Adjustment Tab



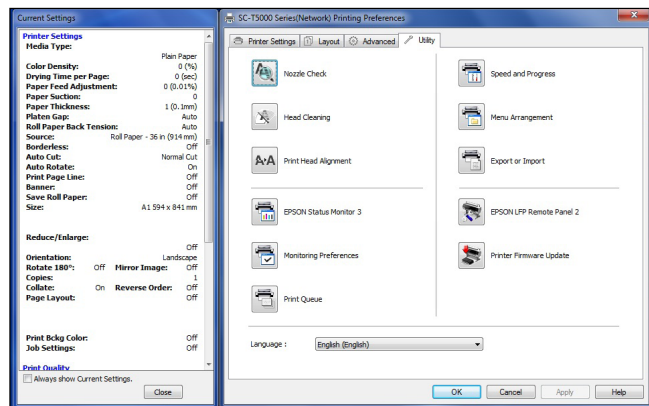
Epson Print Driver Printer Settings Tab



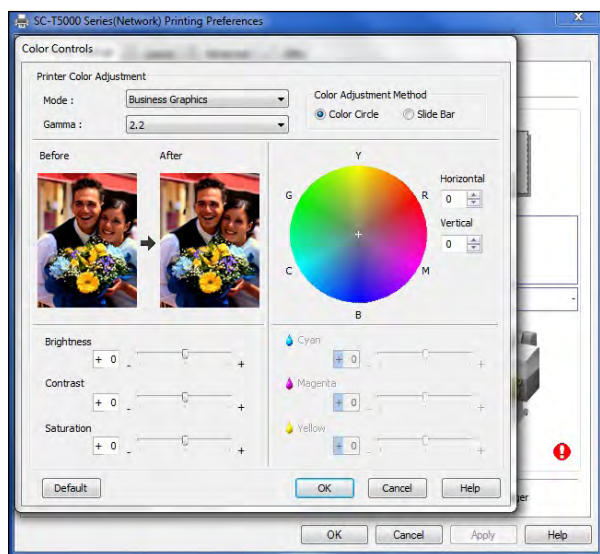
Epson Print Driver Layout Tab



Epson Print Driver Advanced Tab



Epson Print Driver Utility Tab



Epson Print Driver Colour Controls

SUPPORTING TEST DATA

Job Stream Productivity

Mixed File Types, Same Size

Canon imagePROGRAF iPF780 (time in seconds)		Epson SureColor SC-T5000 (time in seconds)	
Fast	693.09	Speed	721.80
Standard	1,254.66	Quality	1,381.22
High	1,828.93	Max Quality	3,367.19

BLI's job stream consists of nine files, including PDF, TIFF and DWF files totalling 19 pages, all at Arch D-size. 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 914 mm rolls, with each file set to auto-rotate to save media.

Colour Productivity

Canon imagePROGRAF iPF780 (time in seconds)			Epson SureColor SC-T5000 (time in seconds)		
Fast	Standard	High	Speed	Quality	Max Quality
408.28	768.39	1,100.79	442.45	893.31	2,252.27

The 12-page DWF test file was printed using the device driver set to the plain paper/colour setting. Both devices were loaded with 914-mm 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 iPF780 (time in seconds)			Epson SureColor SC-T5000 (time in seconds)		
Fast	Standard	High	Speed	Quality	Max Quality
410.18	766.92	1,111.91	464.22	888.76	2,252.41

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 914-mm 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 iPF780	Epson SureColor SC-T5000 (time in seconds)
Time Before Printing Commences	47.31	15.53
First Page Out	97.92	78.59

First-Page-Out Productivity from Ready State

	Canon imagePROGRAF iPF780 (time in seconds)	Epson SureColor SC-T5000 (time in seconds)
Time Before Printing Commences	17.07	11.28
First Page Out	67.82	74.53

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 914-mm rolls, with each file set to auto-rotate to save media.

A0 First-Page-Out and Throughput Productivity

	Canon imagePROGRAF iPF780 (time in seconds)	Epson SureColor SC-T5000 (time in seconds)
First Page Out	98.97	124.45
Five Pages Out	477.11	601.34

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 Print Quality

Colour Optical Density Evaluation

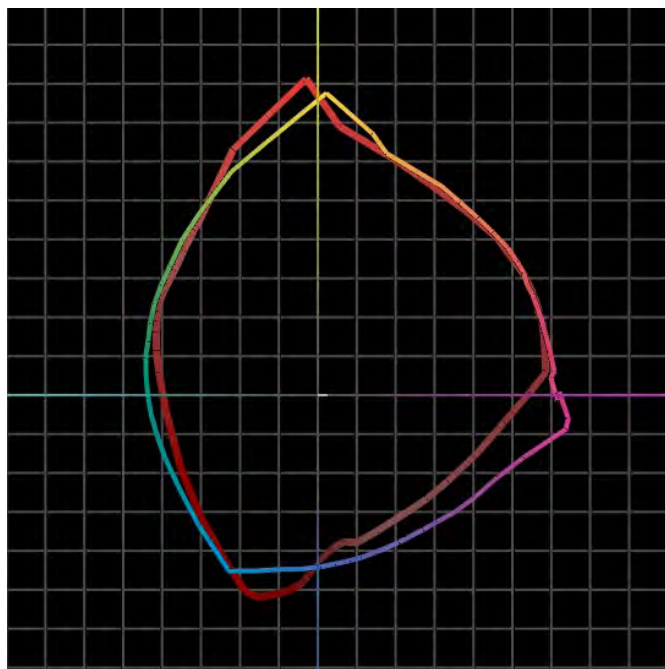
Canon imagePROGRAF iPF780						
Plain Paper						
	Fast		Standard		High	
	50%	100%	50%	100%	50%	100%
Cyan	0.50	1.07	0.54	1.12	0.51	1.14
Magenta	0.46	0.99	0.50	1.04	0.48	1.11
Yellow	0.39	0.78	0.43	0.84	0.41	0.86
Black	0.65	1.39	0.74	1.43	0.70	1.44

Epson SureColor SC-T5000						
Plain Paper						
	Speed		Quality		Max Quality	
	50%	100%	50%	100%	50%	100%
Cyan	0.56	1.01	0.55	1.00	0.58	1.01
Magenta	0.47	0.85	0.46	0.84	0.48	0.91
Yellow	0.50	0.82	0.50	0.87	0.52	0.91
Black	0.55	1.16	0.54	1.31	0.56	1.32

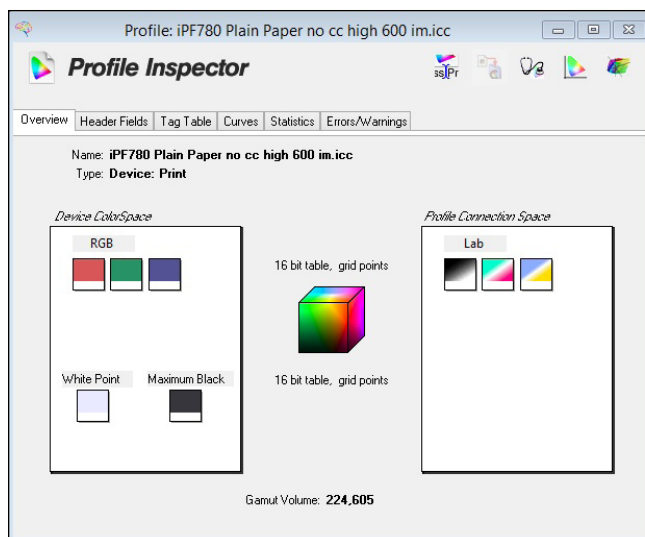
Note: Colour density readings were assessed by printing an IT8 test file on plain paper in default colour settings at all quality settings available and measuring the density of 100% dot fill and 50% dot fill using an XRite 508 densitometer.

Colour Gamut Comparison

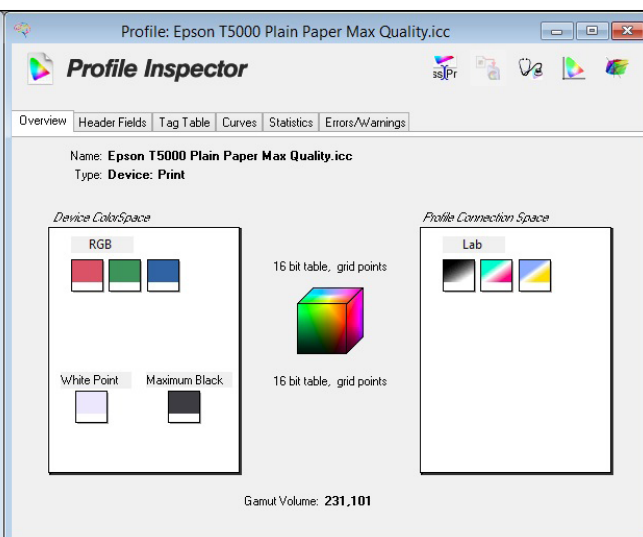
Media Type/Settings	Canon imagePROGRAF iPF780	Epson SureColor SC-T5000
Plain Paper Fast	193,062	183,751
Plain Paper High	224,605	231,073
Plain Paper Standard	221,132	216,417
Glossy Photo High	643,228	531,496



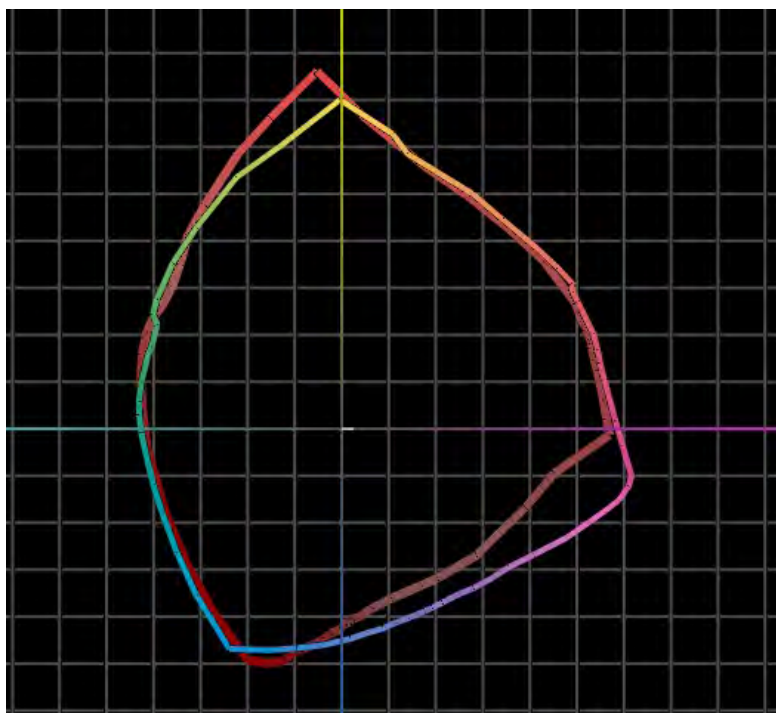
Epson SureColor SC-T5000 colour gamut on plain paper in Max Quality settings (red) versus Canon imagePROGRAF iPF780 colour gamut (shown chromatically) on plain paper in High settings.



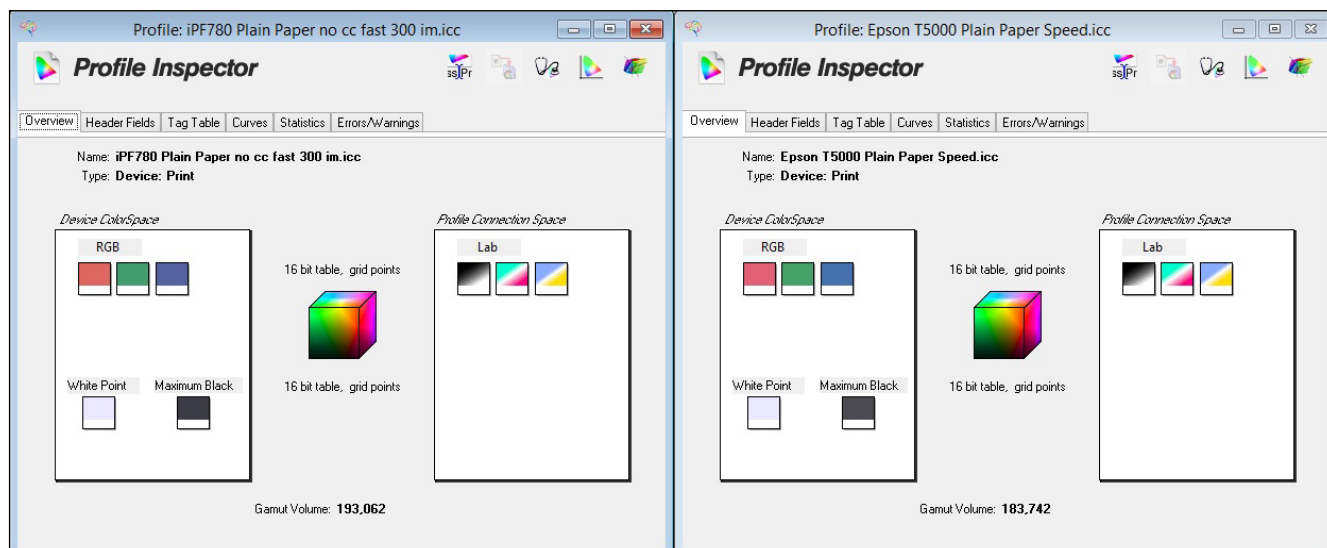
Canon imagePROGRAF iPF780 on plain paper in High mode



Epson SureColor SC-T5000 on plain paper in Max Quality mode

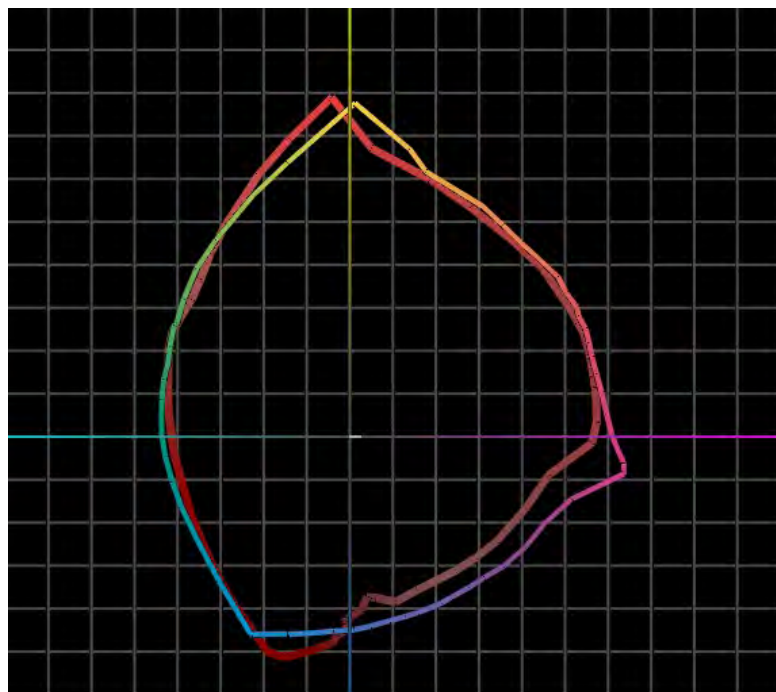


Epson SureColor SC-T5000 colour gamut on plain paper in Speed settings (red) versus Canon imagePROGRAF iPF780 colour gamut (shown chromatically) on plain paper in Fast settings.

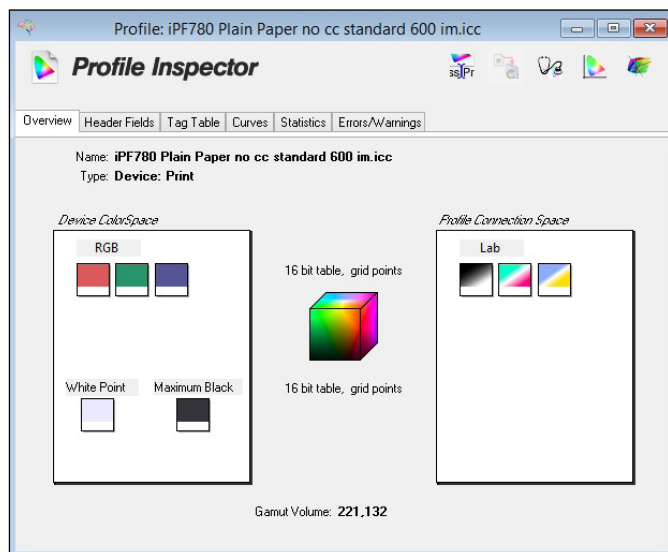


Canon imagePROGRAF iPF780 on plain paper in Fast mode

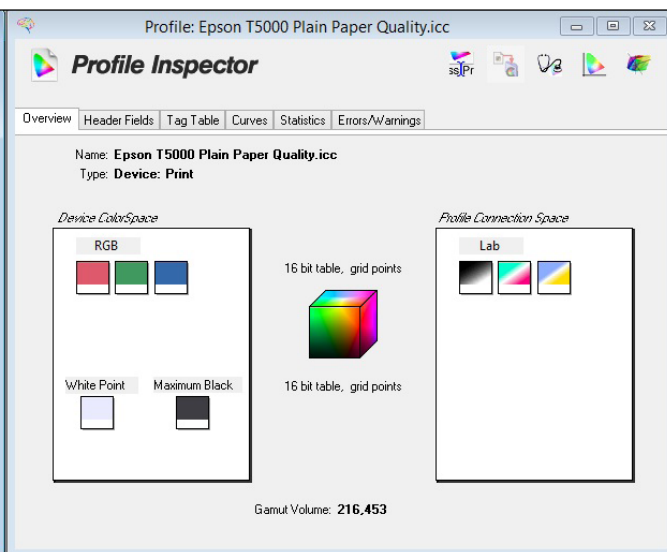
Epson SureColor SC-T5000 on plain paper in Speed mode



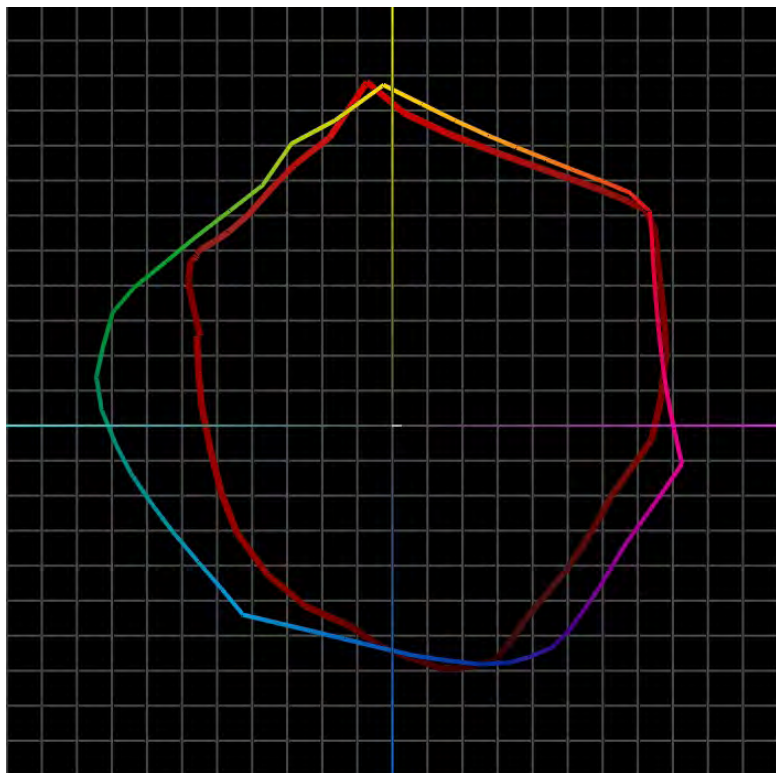
Epson SureColor SC-T5000 colour gamut on plain paper in Quality settings (red) versus Canon imagePROGRAF iPF780 colour gamut (shown chromatically) on plain paper in Standard settings.



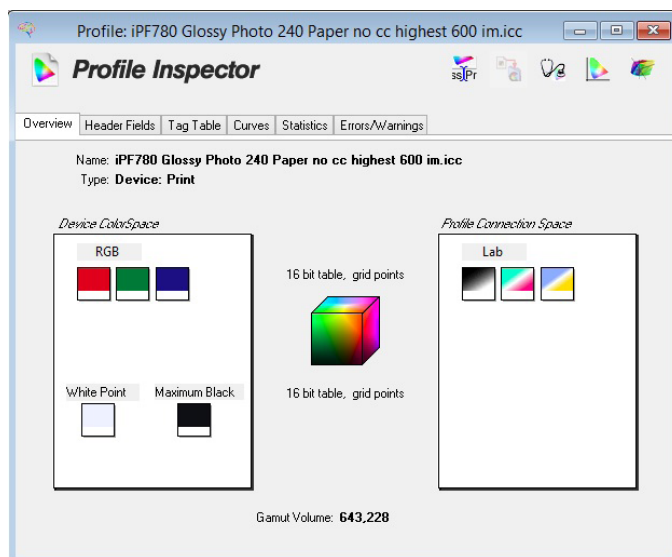
Canon imagePROGRAF iPF780 on plain paper in Standard mode



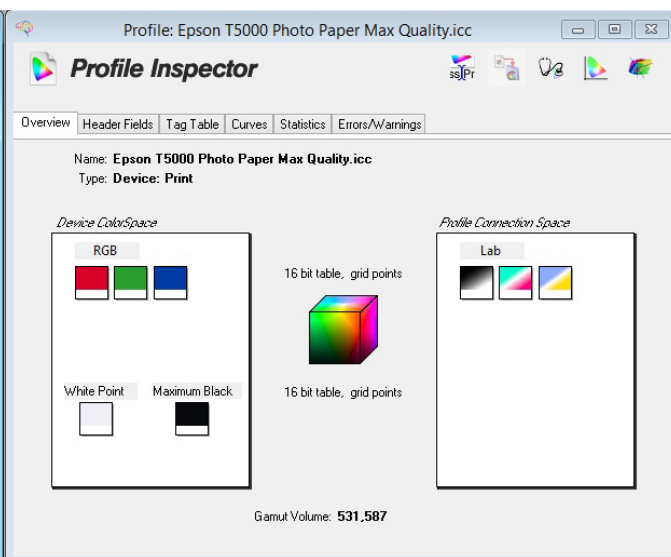
Epson SureColor SC-T5000 on plain paper in Quality mode



Epson SureColor SC-T5000 colour gamut on photo quality paper in Max Quality settings (red) versus Canon imagePROGRAF iPF780 colour gamut (shown chromatically) on photo quality paper in High quality settings.



Canon iPF780 on photo quality paper in High mode



Epson SureColor SC-T5000 on photo quality paper in Max Quality mode

Black Print Quality

	Canon imagePROGRAF iPF780			Epson SureColor SC-T5000		
	Fast	Standard	High	Speed	Quality	Max Quality
Density Block						
1	1.38	1.43	1.46	1.22	1.29	1.27
2	1.39	1.44	1.44	1.21	1.32	1.27
3	1.36	1.42	1.45	1.23	1.30	1.24
4	1.35	1.42	1.44	1.21	1.31	1.25

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 iPF780	Advantage		Epson SureColor SC-T5000
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)
Ink cartridge capacity	90 ml, 130 ml MBK (Starter), 130 ml and 300 ml		✓	110 ml, 350 ml, 700 ml
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			149.86 mm
Maximum printable paper roll length	18 m (varies according to the OS and applica- tion)			Limited by application, OS and driver/RIP used
Maximum cut-sheet media length	1.6 m	✓		914 mm
Maximum media width	36 inches			36 inches
Media loading	Front			Front
Optional media handling	Roll holder set			Roll media adapter
Standard RAM	256 MB (iPF785 has 32-GB virtual memory)		✓	512 MB
Maximum RAM	256 MB (iPF785 has 32-GB virtual memory)		✓	512 MB
Hard drive	None (iPF785 has 320-GB HDD)		✓	Optional 250-GB
Interface	10/100/1000Base-T/TX Ethernet, USB 2.0			100Base-TX/1000Base-T Ethernet, USB 2.0
PDL	GARO, HP-GL/2, HP RTL			HP-GL/2, HP RTL, Epson ESC/P
Net weight (unpacked)	67.9 kg	✓		75 kg
Power consumption when in standby	0.5 W			0.4 W
Power consumption when active	140 W		✓	65 W
Acoustic pressure	Operation: 48 dB (A) or less; Standby: 35 dB (A) or less	✓		Operation: 50 dB (A); Standby: INA
Acoustic power	Operation: 6.5 Bels	✓		Operation: 6.8 Bels

Driver Feature Set

	Canon imagePROGRAF iPF780	Advantage		Epson SureColor SC-T5000
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	✓		3
Overview of profile settings provided	Yes			Yes
Media profiles	44 + 5	✓		20
IQ optimized for options	Yes			Yes
Watermark	Yes	✓		No
Sharpen text	Yes			Yes
Thicken fine lines	Yes	✓		No
Mirror image	Yes			Yes
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
Link to device web server from driver	No (there is a link to Status Monitor)			Yes, with optional hard drive (there is also a link to Status Monitor 3)
CMYK balance adjustment	Yes			Yes
Brightness adjustment	Yes			Yes
Contrast adjustment	Yes			Yes
Saturation adjustment	Yes			Yes
Advanced colour management options	Yes			Yes
Disable automatic cutter	Yes			Yes
Unidirectional printing selection option	Yes	✓		No
Integration with MFP	Yes	✓		No

Ink Consumption

Table 1

Amount of Ink in Each Canon iPF780 Cartridge (grams)

	Cyan	Magenta	Yellow	Matte Black	Black
Weight of cartridge prior to installation	401.5	397.5	394.9	398	403.7
Weight of cartridge at end of life	75.0	75.0	75.0	75.0	75.0
Net weight of ink	326.5	322.5	319.9	323.0	328.7
Total ink weight across five cartridges					1,620.6

Table 2

Amount of Ink in Each Epson SureColor SC-T5000 Cartridge (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Weight of cartridge prior to installation	229.1	227.3	231.1	229.5	228.3
Weight of cartridge at end of life	113.0	113.0	113.0	113.0	113.0
Net weight of ink	116.1	114.3	118.1	116.5	115.3
Total ink weight across five cartridges					580.3

Table 3

Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Fast Mode) on the Canon iPF780 (grams)

	Cyan	Magenta	Yellow	Matte Black	Black
Test Run 1 Net weight of ink used	3.5	1.9	1.2	11.9	1.1
Test Run 2 Net weight of ink used	3.6	2.1	1.6	12.0	1.3
Test Run 3 Net weight of ink used	2.8	1.7	1.1	11.8	0.9
Average amount of ink used across three runs	3.3	1.9	1.3	11.9	1.1
Total Ink Weight across five cartridges for 50-page run (based on averages)					19.5

Table 4

Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Speed Mode) on the Epson SureColor SC-T5000 (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	4.3	0.6	3.2	7.7	0.1
Test Run 2 Net weight of ink used	4.2	0.7	2.9	7.6	0.1
Test Run 3 Net weight of ink used	4.1	0.6	3.0	7.4	0.1
Average amount of ink used across three runs	4.2	0.6	3.0	7.6	0.1
Total ink weight across five cartridges for 50-page run (based on averages)					15.5

Table 5

Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Standard Mode) on the Canon iPF780 (grams)

	Cyan	Magenta	Yellow	Matte Black	Black
Test Run 1 Net weight of ink used	2.7	2.1	1.4	13.1	1.0
Test Run 2 Net weight of ink used	2.6	1.4	1.4	13.4	1.4
Test Run 3 Net weight of ink used	2.2	1.6	1.4	14.3	1.4
Average amount of ink used across three runs	2.5	1.7	1.4	13.6	1.3
Total Ink Weight across five cartridges for 50-page run (based on averages)					20.5

Table 6

Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Standard Mode) on the Epson SureColor SC-T5000 (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	4.9	1.3	3.5	10.9	0.9
Test Run 2 Net weight of ink used	4.7	1.3	3.4	11.3	1.0
Test Run 3 Net weight of ink used	4.7	1.5	3.6	11.6	1.1
Average amount of ink used across three runs	4.8	1.4	3.5	11.3	1.0
Total Ink Weight across five cartridges for 50-page run (based on averages)					22.0

Table 7

Ink Used in Three 50-Page Runs of Retail Poster Test Document on the Canon iPF780 (grams)

	Cyan	Magenta	Yellow	Matte Black	Black
Test Run 1 Net weight of ink used	11.1	28.4	13.2	5.2	1.7
Test Run 2 Net weight of ink used	10.0	28.7	12.2	5.7	1.8
Test Run 3 Net weight of ink used	10.8	29.7	12.0	5.9	1.4
Average amount of ink used across three runs	10.6	28.9	12.5	5.6	1.6
Total ink weight across five cartridges for 50-page run (based on averages)					59.2

Table 8

Ink Used in Three 50-Page Runs of Retail Poster Test Document on the Epson SureColor SC-T5000 (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	23.0	15.7	40.2	5.5	1.0
Test Run 2 Net weight of ink used	22.9	15.6	40.2	5.5	1.0
Test Run 3 Net weight of ink used	22.5	14.3	40.0	5.1	1.0
Average amount of ink used across three runs	22.8	15.2	40.1	5.4	1.0
Total Ink Weight across five cartridges for 50-page run (based on averages)					84.5

Table 9

Ink Used in Three 50-Page Runs of GIS Map Test Document on the Canon iPF780 (grams)

	Cyan	Magenta	Yellow	Matte Black	Black
Test Run 1 Net weight of ink used	14.6	9.6	8.7	9.1	2.0
Test Run 2 Net weight of ink used	14.0	9.1	8.7	10.1	2.2
Test Run 3 Net weight of ink used	14.3	9.6	8.9	9.7	2.8
Average amount of ink used across three runs	14.3	9.4	8.8	9.6	2.3
Total Ink Weight across five cartridges for 50-page run (based on averages)					44.4

Table 10

Ink Used in Three 50-page Runs of GIS Map Test Document on the Epson SureColor SC-T5000 (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	29.5	11.2	13.7	3.8	1.1
Test Run 2 Net weight of ink used	29.7	11.3	13.8	3.8	1.2
Test Run 3 Net weight of ink used	29.8	11.1	13.6	3.7	1.1
Average amount of ink used across three runs	29.7	11.2	13.7	3.8	1.1
Total Ink Weight across five cartridges for 50-page run (based on averages)					59.5

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 iPF780 was installed in BLI's lab with the latest level of firmware (as of March 2014) 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-T5000 was installed in BLI's lab with the latest level of firmware (as of March 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 Speed and standard Quality setting (360 x 720 dpi). For the Retail Poster, Print Priority settings were set to Poster with Quality set to Speed (360 x 720 dpi) and Quality (360 x 720 dpi), and for the GIS map Print Priority settings were set to Perspective GIS with Quality set to Speed (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.

Canon imagePROGRAF iPF780: one cartridge was then run to exhaustion and the weight of the empty cartridge was recorded.

Epson SureColor SC-T5000: one cartridge was then run to exhaustion and the weight of the empty cartridge was recorded.

The percentage of ink used per cartridge was calculated by dividing the net weight of ink used in the print run by the overall weight of ink in each cartridge and multiplying by 100.

The percentage of total ink used per printer was calculated by adding the percentages used of each of the cartridges and dividing by the number of cartridges.

Test Environment

Testing was conducted in BLI's European test lab, in an atmospherically controlled environment monitored by a 24/7 Dickson Temperature/RH chart recorder, ensuring that typical office conditions were maintained. All paper used in testing was allowed to acclimatize inside the facility for a minimum of 12 hours before being used.

Test Equipment

BLI's dedicated test network in Europe, consisting of Windows 2008 servers, Windows 7 workstations, 10/100/1000BaseTX network switches and CAT5e/6 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 an IT8 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 that was read using 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.