

BLI Comparative Lab Test Report

OCTOBER 2014

Canon imagePROGRAF iPF780 vs. Epson SureColor SC-T5200



Canon imagePROGRAF iPF780



Epson SureColor SC-T5200

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5200
Advantage ✓		
Colour Image Quality	✓	
Black Image Quality	✓	
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-T5200, 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 delivered a superb overall performance in BLI's testing, with superior results to those of the Epson SC-T5200 in most areas of the evaluation. Specifically, it delivered much higher productivity for both colour and black output in all modes tested—particularly in High quality mode, where it delivered output in less than half the time required for the Epson device.

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 comparable photographic output quality, with the Canon model producing better output in dark contrast areas and the Epson unit producing better quality in light contrast areas. One area in which the Epson SC-T5200 outshone the Canon iPF780 was its ability to produce the larger colour gamut in Speed and Max Quality when printing on plain and photo-quality paper. That said, the Canon model proved to be the stronger and, importantly, more consistent performer overall in both colour and black image quality, with crisp and clean serif and sans serif fonts, excellent fine lines and circles, higher colour densities and sharper business graphics reproduction. In addition, the Canon model produced more natural-looking flesh tones, which were reddish in output produced by the Epson unit in Max Quality mode. Further, the Canon model has 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. The Epson device does not offer this feature, and while it did not experience any banding issues when producing the output for BLI's image quality test, there was some banding evident on the Epson device's poster output in Quality mode.

The Epson SC-T5200, however, has a more robust device feature set that includes higher standard and maximum memory capacities than those of the Canon unit plus a very useful optional 320-GB hard drive (although Canon offer this option with the iPF785 sister model, which also has a 320-GB hard drive), and higher ink cartridge capacity, which helps to 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. Both models, however, use only 0.5 watts in standby mode (the state in which they are likely to spend more time).

Another advantage of the Canon iPF780 is that it is capable of handling ink 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 replenished on the fly while printing is in progress. In contrast, when the Epson SC-T5200 runs out of ink, printing has to stop for the cartridge to be replaced, leading to operator downtime. In BLI's ink consumption testing the Canon unit used less ink overall than the Epson device, with the sole exception of printing the Cottage Architectural Plan in Fast/Speed mode.

In conclusion, the Canon imagePROGRAF iPF780 delivered a superior performance to that of the Epson SureColor T5200 model in nearly all categories tested, while also offering several unique advantages, such as its unidirectional print capabilities, support for mobile printing from iPads, hot swap ink tanks and Canon iPF Direct Print & Share, a free utility that can be downloaded from the company's website, which supports direct PDF submission without the need to open an application.

Colour Image Quality

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5200
Advantage ✓		
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 (photo paper, High/Max Quality settings)		✓

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

- There was no banding evident in output produced by both models, across all tested modes.
- + Overall, the Canon iPF780 delivered the higher optical densities for cyan and magenta across all tested modes; both models delivered comparable optical densities for yellow.
- When printing on plain paper using Fast/Speed settings, the Epson model delivered a colour gamut 7.7% larger than that of the Canon unit, with a CIE volume of 207,966 versus a CIE volume of 193,062 for the Canon device.
- Both models produced comparable colour gamuts when printing on plain paper using Standard/Quality settings—222,735 CIE volume for the Epson model versus 221,132 CIE volume for the Canon device.
- When printing on plain paper in High/Max Quality settings, the Epson SC-T5200 delivered a 5.2% larger colour gamut than did the Canon iPF780, with a CIE volume of 236,304 versus a CIE volume of 224,605 for the Canon model.
- When printing on photo-quality paper using Canon's High quality setting and the Epson SC-T5200's Max Quality setting, the Canon model delivered a colour gamut 8.4% smaller than that of the Epson unit, with a CIE volume of 643,228 compared with 702,544 for the SC-T5200.
- + The Canon model delivered consistently excellent text quality in colour across all tested modes; serif and sans serif fonts were legible down to the 3-pt. level with no breakup. With the Epson model, serif fonts were fully legible only down to the 5-pt. level and sans serif fonts down to 4-pt. level, but with no breakup evident across all tested modes.

- + 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 even in Fast/Speed mode. However, the fine lines produced by the Epson model suffered from slight ink bleed and were not as crisp as those delivered by the Canon unit.
- 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.
- + The Canon iPF780 delivered very good and consistent halftone fill in all modes, while halftone fill produced by the Epson model was slightly grainy on plain paper up to the 40% level.
- When evaluating Architectural, Engineering and Construction (AEC) graphics in Standard/Quality and High/Max Quality modes, both models exhibited an excellent level of detail and distinct fine lines.
- When evaluating Geographic Information Systems (GIS) graphics in High/Max Quality mode on plain paper, both units delivered a fine level of 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 High/Max Quality mode, the Canon model produced better dark contrast areas, with excellent detail and good saturation.
- However, the Epson T5200 delivered superior results in light contrast areas in photographic images, which displayed a finer level of detail over the output from Canon.
- + 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, though unbroken, were irregular in appearance and poorly defined in all modes.
- + Skin tones produced by the Canon model were more natural-looking, while those produced by the Epson device were distinctly reddish in Max Quality mode.
- + The Canon iPF780 produced the 1x1 pixel grid in CMY with no quality issues, and coverage was excellent and consistent across all colours. The Epson SC-T5200 delivered comparable coverage to that of the Canon unit in Speed mode, but in Quality and Max Quality modes, it failed to produce pixel grids that were complete.
- + Overall, the Canon model emerges as the stronger and more consistent performer in BLI's assessment of colour image quality, with a finer level of detail in colour business graphics, more natural skin tones and very clean and crisp text, fine lines and circles, which displayed none of the fuzziness that output from the Epson device showed under magnification. The Epson model excelled in producing a larger colour gamut in Speed and in Max Quality and on both media types, and it produced a finer level of detail in light contrast areas in photographic images. 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. In addition, both exhibited a very good depth of field on plain paper. The iPF780 produced superior pixel grids and halftone fills, and had the advantage in density for cyan and magenta. The Canon model also offers a unidirectional printing option which helps to eliminate banding issues. While output from the Epson device with the majority test of targets in this particular test was free from banding, there was some banding evident in Quality mode during BLI's poster printing evaluation.

Black Image Quality

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5200
Advantage ✓		
Text	✓	
Fine Lines	✓	
Halftone Range	=	=
Halftone Fill	=	=
Solid density	✓	
AEC Graphics	=	=
Business Graphics	✓	
Photographic Images	✓	

- + The Canon model delivered a higher optical density for black in Fast/Speed and High/Max Quality modes, while its results were comparable with the Epson device in Standard/Quality mode.
- + Fonts produced by the iPF780 were crisp and legible down to the 3-pt level across all modes—a consistent performance unmatched by the Epson device. Epson’s serif fonts were legible down to the 5-pt level (Speed) and 6-pt level (Quality/Max Quality), while its sans serif fonts were legible down to the 4-pt level (Speed/Quality) and 5-pt level (Max Quality).
- + 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, with no evidence of stair-stepping in diagonal lines. However, there was some slight breakup evident with the Epson model’s output in Max Quality. Both devices delivered distinct white-on-black fine lines at the 0.25-pt. level in Standard/Quality mode.
- + 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, particularly in Max Quality mode.
- Both models delivered halftone fill across the full range—from the 10% to 100% dot-fill levels in all modes.
- Halftone fill results in all modes were very good for both models, with both delivering a consistent grey halftone shade throughout the range.
- No mottling was evident in output from both models.
- Both models delivered detailed and distinct fine lines in AEC graphics in Standard/Quality and High/Max Quality modes in black.
- + Monochrome business graphics output in High/Max Quality mode on plain paper was produced more accurately by the Canon model, with smooth halftone gradations and crisp text, whereas some graininess was visible in output produced by the Epson unit, even without magnification.

- Photographic images in High/Max Quality mode on plain paper were produced with smoother gradations and better detail in dark contrast areas on the Canon iPF780 when compared with output from the Epson model. However, the Epson model produced better light contrast areas with finer detail and sharper definition.
- + BLI's analysts found the Canon device provided overall superior black image quality performance. It delivered excellent fine lines and circles, higher optical densities in Fast and High quality 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 consistently legible fonts, and it displayed some ink bleed or overspray in text and line art in all modes when viewed under magnification. Both models delivered detailed and distinct fine lines in AEC graphics.

Print Productivity

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5200
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)	✓	

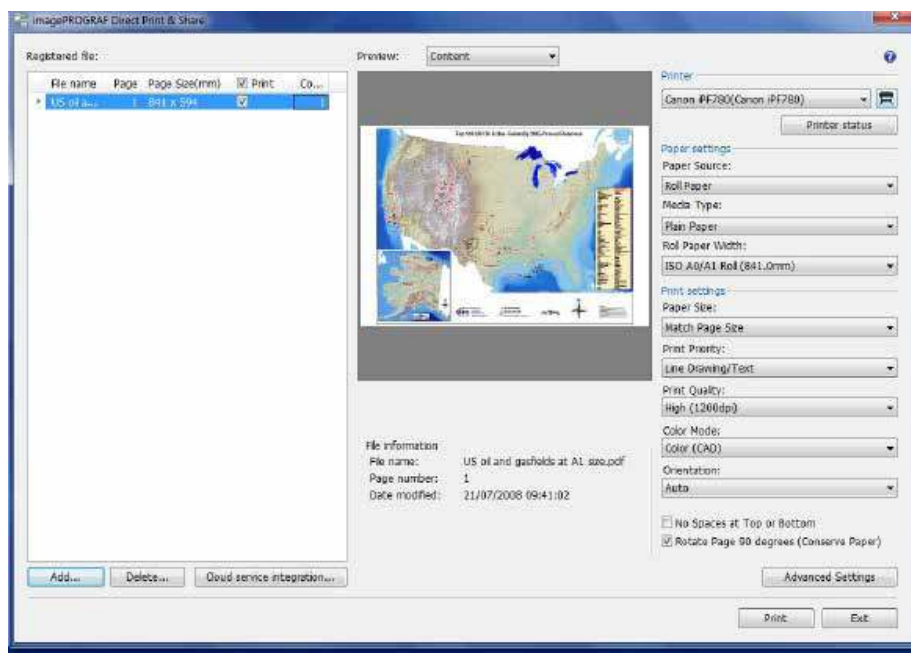
- One factor impacting productivity is that when the Epson SC-T5200 model runs out of ink, printing has to stop for the cartridge to be replaced, leading to operator downtime. However, printing resumes seamlessly from the same point in the page, with no discernible line or break in output and no difference 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 and provides ink purchasing information. Inks can be replaced while printing is in progress, so again no ink or paper is wasted and there's no operator downtime.
- When the Canon iPF780 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. 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-T5200 will also print the interrupted page in its entirety after a new roll is installed.
- 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 faster first-page-out time of 97.92 seconds after a weekend of non-use, compared with 115.0 seconds for the Epson device. Start-up time before printing commenced was 47.31 seconds for the Canon model, 45.8% faster when compared with 87.31 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 75.62 seconds for the Epson device. While the Epson device demonstrated the quicker start-up time before printing commences (12.59 seconds versus 17.07 seconds for the Canon model), taking into account the two measurements together, the iPF780 was the faster device overall.
- + When printing BLI's job stream, designed to simulate a typical mixed workflow for a large-format unit, the Canon iPF780 delivered a superior performance in High/Max Quality mode, running 44.2% faster than the Epson model. In the other tested modes, it was marginally faster—1.0% faster in Fast/Speed mode and 1.8% faster in Standard/Quality mode than the Epson device.
- + When printing BLI's 12-page DWF test file in colour, the Canon unit was 9.3% faster than the Epson unit in Fast/Speed mode, 8.0% faster in Standard/Quality mode, and 53.0% faster in High/Max Quality mode.
- + Similarly, when printing BLI's 12-page DWF test file in monochrome, the Canon unit was 6.8% faster than the Epson model in Fast/Speed mode, 8.7% faster in Standard/Quality mode, and 52.6% faster in High/Max Quality mode.
- + 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 that of the Epson unit (124.46 seconds). The Canon model was also 21% faster than the Epson SC-T5200 when printing five A0-size pages (477.11 seconds versus 604.87 seconds).

Direct PDF Print Submission Functionality

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5200
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 allows users to retrieve files from Google cloud storage for printing.
- + The latest version (v2.0) of iPF Direct Print & Share supports "Shortcut Print" functionality which defines several print settings represented by 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.



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

- An optional (extra-cost) PostScript module will enable Epson users to print PDFs without the need for additional drivers—functionality operates via hot-folder 'drag-and-drop' with configurable job processing options.

Banner Printing

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5200
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-T5200 printed BLI's banner, taking 34.16 seconds to generate a preview, and an additional 2 minutes, 21.02 seconds from the file preview to final paper cut. While it was faster than the Canon model, the Epson device did not successfully print the entire banner image due to its inability to print background detail during the final stages of printing; BLI analysts attribute this to the device running out of memory and expect the issue would be resolved if the optional hard drive was installed.

Poster Printing

	Canon imagePROGRAF iPF780	Epson SureColor SC-T5200
Advantage ✓		
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 46.50 seconds to complete the job and the Epson unit at 360 x 720 dpi took just 34.69 seconds. Banding was much less evident with the Canon iPF780 than with its predecessor, the Canon iPF760, demonstrating the impact of its improved printhead; there was no banding evident with the Epson model. When unidirectional printing was selected in the Canon print driver, it took 62.93 seconds to print and the banding was eliminated.
- + When printing a poster in Standard/Quality mode at 600 dpi, the Canon model took 59.22 seconds. The Epson unit at 360 x 720 dpi took 1 minute, 6.53 seconds, and there was some banding evident in one particular dark area on the poster.
- + Printing a poster 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, 38.10 seconds—a 34.2% 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 reds, rich saturation and good definition.

Ink Consumption

Results averaged across three sets of 50-page A1 printing in various modes (specified below)	Canon imagePROGRAF iPF780	Epson SureColor SC-T5200
Advantage ✓		
COTTAGE ARCHITECTURAL PLAN (Fast/Speed mode) Overall weight of ink used (grams)	19.5 g	15.5 g
COTTAGE ARCHITECTURAL PLAN (Standard/Quality mode) Overall weight of ink used (grams)	20.5 g	23.1 g
RETAIL POSTER (Standard/Quality mode) Overall weight of ink used	59.3 g	70.9 g
GIS MAP (Standard/Quality mode) Overall weight of ink used	44.5 g	62.2 g

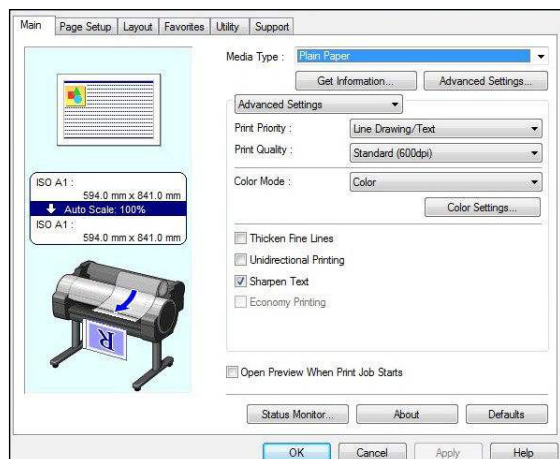
- When producing 50 prints of a Cottage Architectural Plan in Fast/Speed mode, the Canon unit used 25.8% more ink than the Epson SC-T5200.
- + When producing 50 prints of a Cottage Architectural Plan in Standard/Quality mode, the Canon unit used 11.2% less ink than the Epson SC-T5200.
- + When printing a Retail Poster in Standard/Quality mode, the Canon unit used 16.4% less ink than did the Epson SC-T5200.
- + When printing a GIS Map in Standard/Quality mode, the Canon iPF780 used 28.4% less ink compared with the Epson device.

Device Feature Set

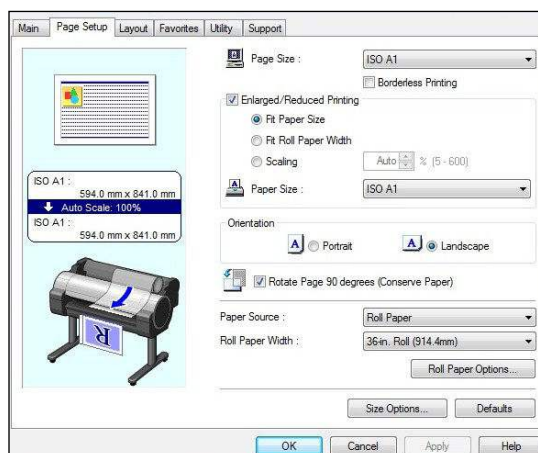
- The capacity of the Canon cartridges (130 ml and 300 ml for black, cyan, magenta and yellow) is lower than those of the Epson model (110 ml, 350 ml and 700 ml), and as a consequence they will need replacing more frequently than with the Epson device.
- + If the Canon device detects that printhead nozzles 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.
- Both models offer easy and quick roll paper set with auto paper feed—once the user loads paper on to the device, alignment and width adjustments are automatically carried out by the model without further user intervention.
- The catch trays of both models enable printed sheets to be stacked very neatly (and in the correct sequence), making collating output much easier, with little to distinguish between the two models.
- The Canon model offers a standard, non-upgradable RAM of 256 MB, while the Epson unit has a standard RAM of 1 GB, plus an extra-cost optional 320-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 84 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 Epson SC-T5200'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 is on a par with that of the Epson device (0.5 W).
- + Rated noise emissions are slightly lower for the Canon model (48 dB) compared to the Epson device (50 dB).

Driver Feature Set

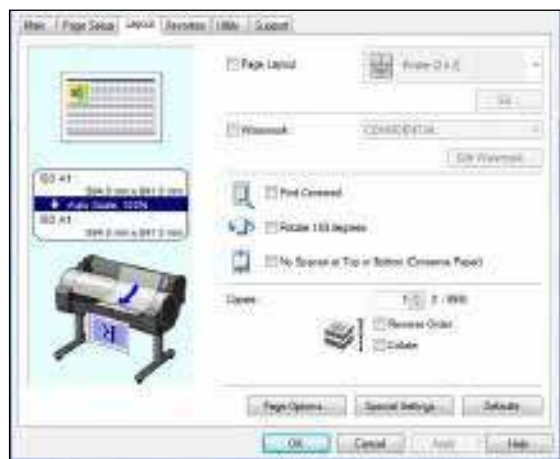
- + The Canon iPF780 has five speed settings (Fast 300, Standard 600, Fast 600, High 600 and 1200) while the Epson device offers three settings (Speed, Quality and Max Quality), although not all speed settings are available with all media types.
- Both the Canon GARO driver and the Epson ESC/P driver provide a useful overview of the settings for pre-defined profiles.
- Seven predefined profiles are available with the Canon driver, while the Epson driver offers a range of eight settings.
- + The Canon driver supports multi-up (2 to 16) printing, while the Epson driver supports 2 to 4 multi-up printing.
- + The Canon iPF780 now supports mobile printing from iPads—a feature not available with the Epson SC-T5200.
- 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), while the Epson driver offers a much 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, however it exhibited no banding in the image quality evaluation and only some banding in the Poster test. Overall, the Canon device has the advantage as it offers users the ability to select a setting which eliminates the possibility for banding to occur.
- + 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 Copy Factory utility.
- The Canon driver offers 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 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.



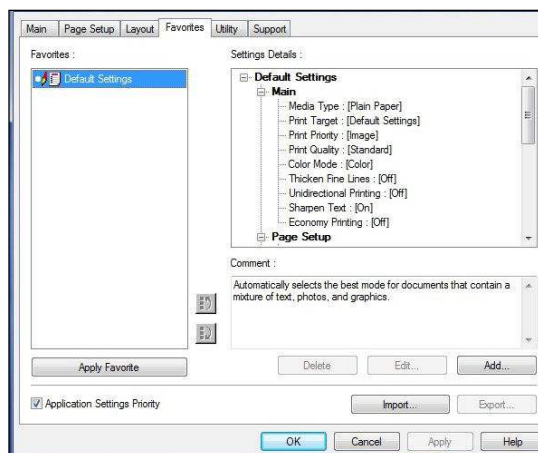
Canon Print Driver Main Tab



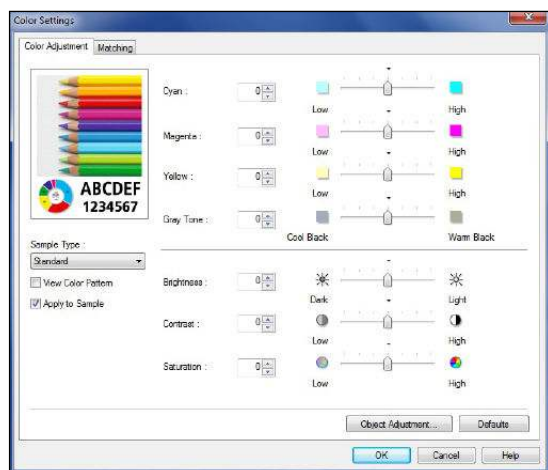
Canon Print Driver Page Setup Tab



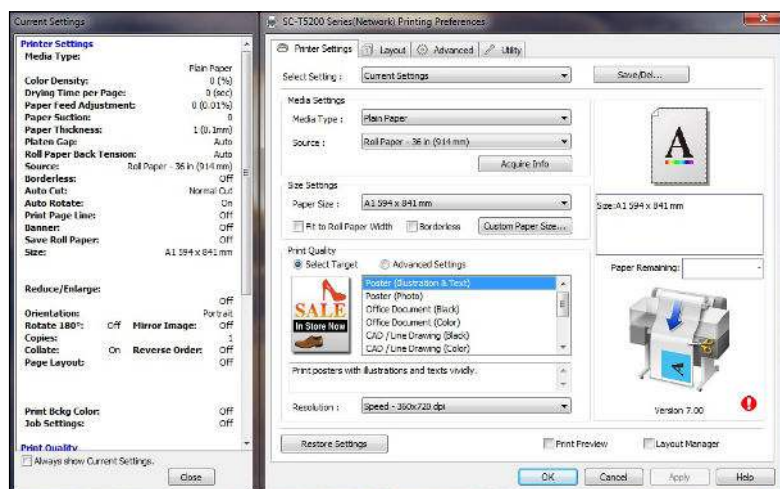
Canon Print Driver Layout Tab



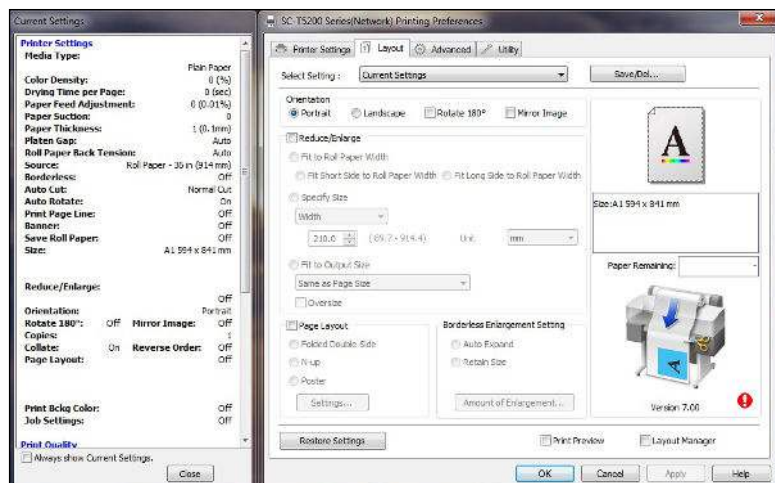
Canon Print Driver Favourites Tab



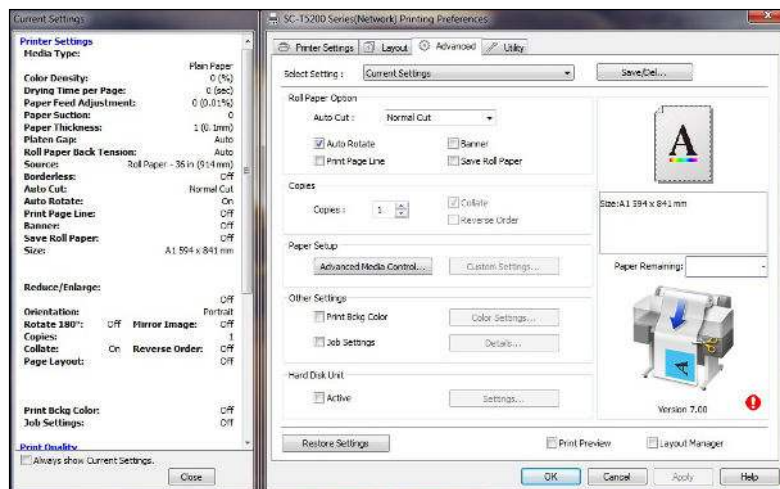
Canon Print Driver Colour Adjustment Tab



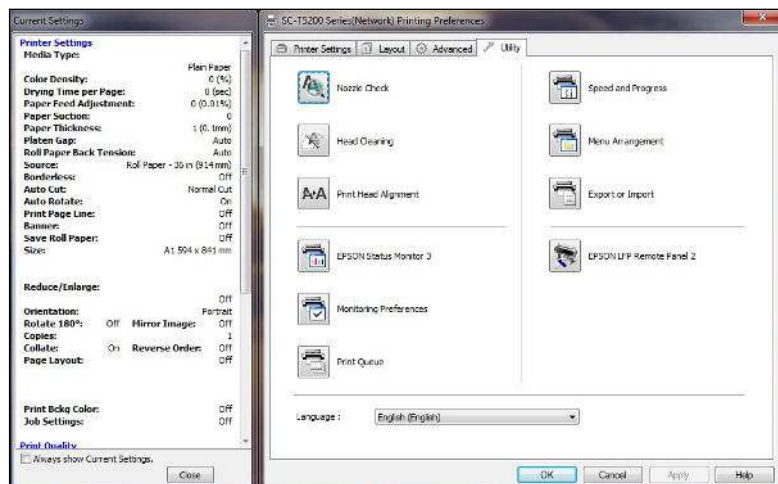
Epson Print Driver Printer Settings Tab



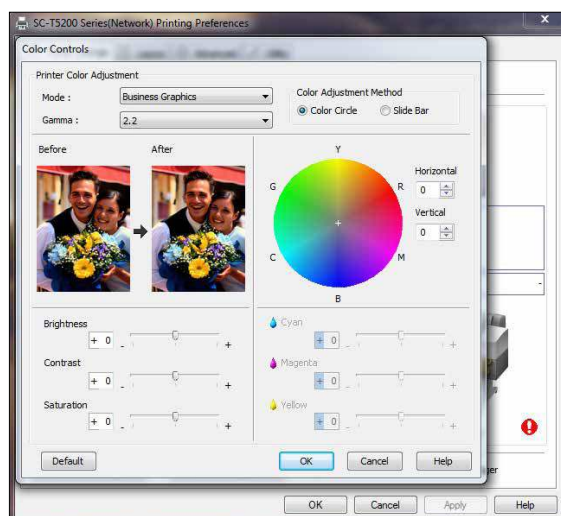
Epson Print Driver Layout Tab



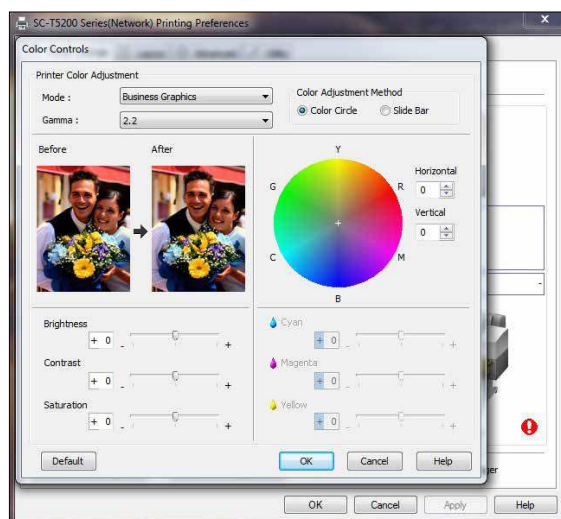
Epson Print Driver Advanced Tab



Epson Print Driver Utility Tab



Epson Print Driver Colour Controls



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-T5200 (time in seconds)	
Fast	693.09	Speed	700.28
Standard	1,254.66	Quality	1,277.34
High	1,828.93	Max Quality	3,277.50

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-T5200 (time in seconds)		
Fast	Standard	High	Speed	Quality	Max Quality
408.28	768.39	1,100.79	450.05	835.39	2,344.18

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-T5200 (time in seconds)		
Fast	Standard	High	Speed	Quality	Max Quality
410.18	766.92	1,111.91	440.07	839.88	2,348.19

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 (time in seconds)	Epson SureColor SC-T5200 (time in seconds)
Time Before Printing Commences	47.31	87.31
First Page Out	97.92	115.00

First-Page-Out Productivity from Ready State

	Canon imagePROGRAF iPF780 (time in seconds)	Epson SureColor SC-T5200 (time in seconds)
Time Before Printing Commences	17.07	12.59
First Page Out	67.82	75.62

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-T5200 (time in seconds)
First Page Out	98.97	124.46
Five Pages Out	477.11	604.87

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

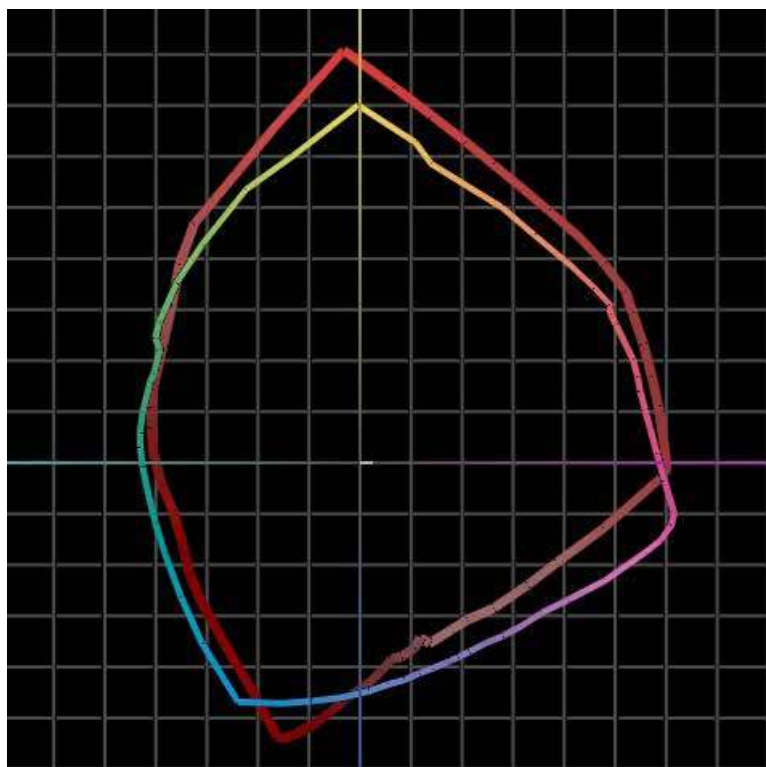
Canon imagePROGRAF iPF780						
Plain Paper						
	Fast		Standard		High	
	50%	100%	50%	100%	50%	100%
Cyan	0.50	1.07	0.54	1.12	0.51	1.14
Magenta	0.46	0.99	0.50	1.04	0.48	1.11
Yellow	0.39	0.78	0.43	0.84	0.41	0.86
Black	0.65	1.39	0.74	1.43	0.70	1.44

Epson SureColor SC-T5200						
Plain Paper						
	Speed		Quality		Max. Quality	
	50%	100%	50%	100%	50%	100%
Cyan	0.39	1.12	0.36	1.08	0.39	1.07
Magenta	0.34	0.92	0.28	0.89	0.29	0.97
Yellow	0.37	0.87	0.38	0.95	0.35	0.98
Black	0.66	1.32	0.64	1.45	0.64	1.40

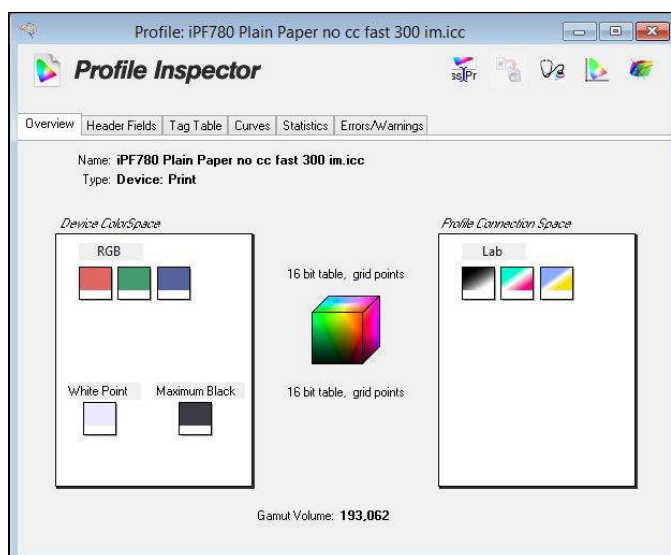
Note: Colour density readings were assessed by printing a BLI proprietary PDF test target file on plain paper in default colour settings at all quality settings available and measuring the density of 100% dot fill and 50% dot fill using an XRite 508 densitometer.

Colour Gamut Comparison

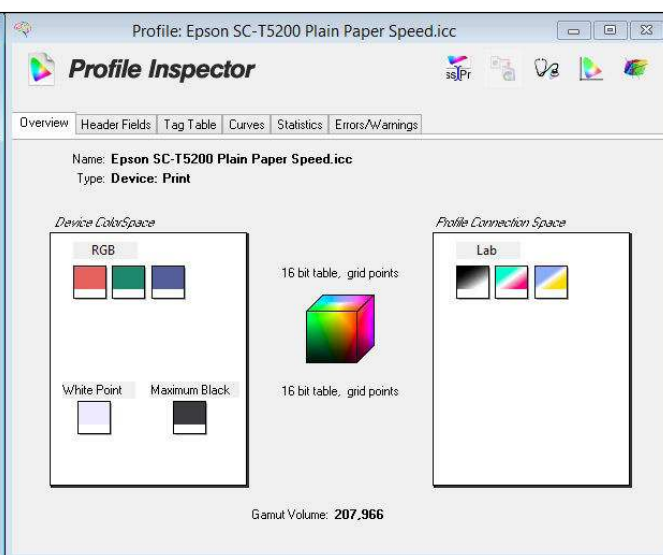
Media Type/Settings	Canon imagePROGRAF iPF780	Epson SureColor SC-T5200
Plain Paper Fast/Speed	193,062	207,966
Plain Paper Standard/Quality	221,132	222,735
Plain Paper High/Max Quality	224,605	236,304
Glossy Photo High/Max Quality	643,228	702,544



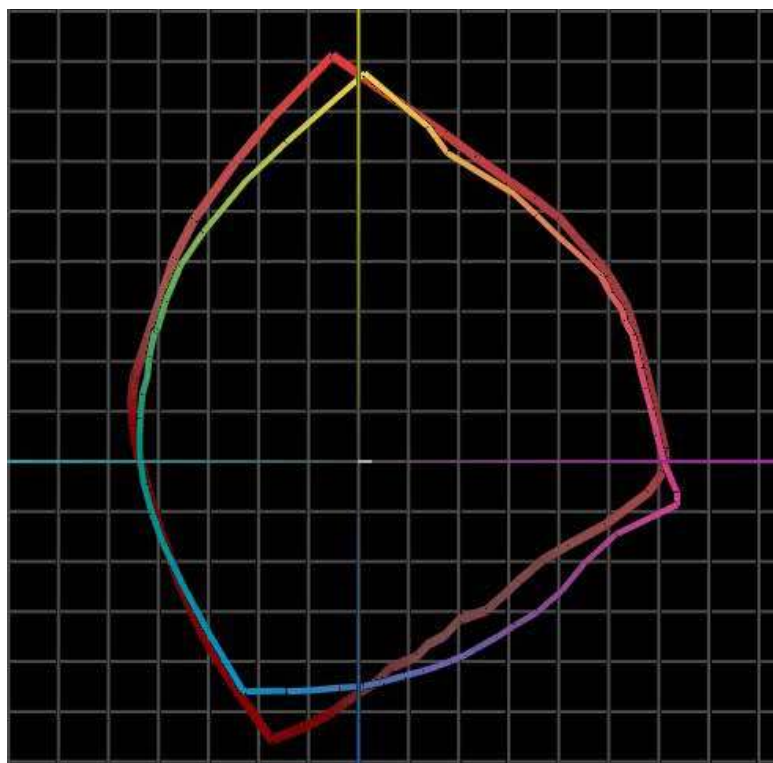
Epson SureColor SC-T5200 colour gamut on plain paper in Speed settings (red) versus Canon imagePROGRAF iPF780 colour gamut (shown chromatically) on plain paper in Fast settings.



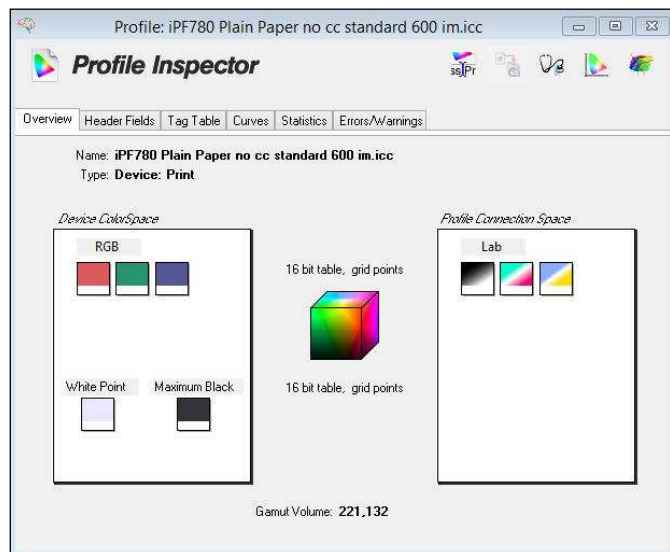
Canon imagePROGRAF iPF780 on plain paper in Fast mode



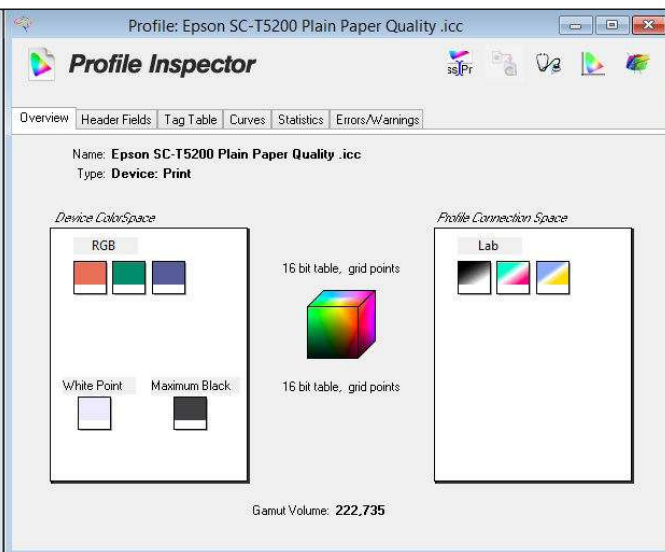
Epson SureColor SC-T5200 on plain paper in Speed mode



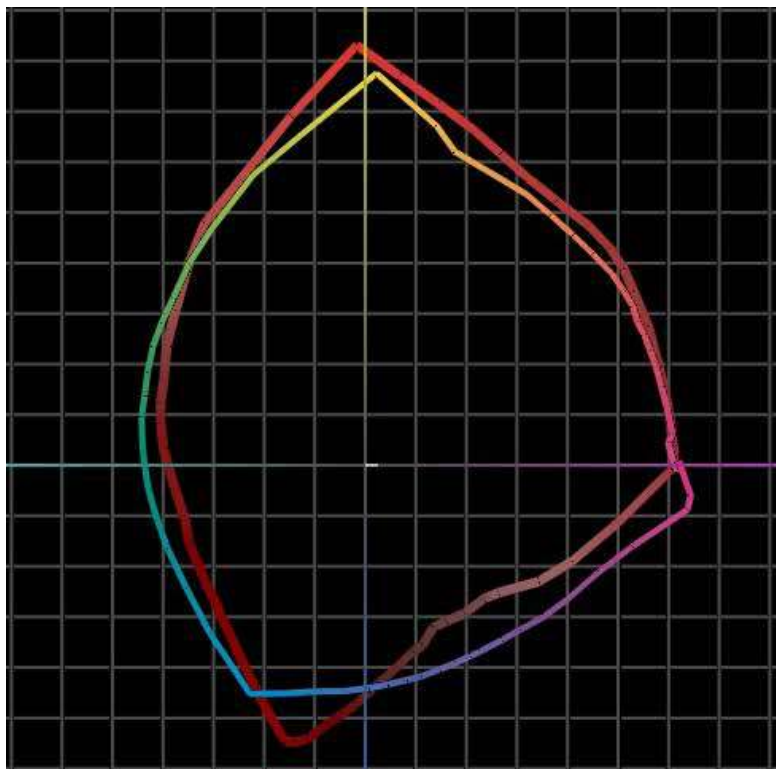
Epson SureColor SC-T5200 colour gamut on plain paper in Quality settings (red) versus Canon imagePROGRAF iPF780 colour gamut (shown chromatically) on plain paper in Standard settings.



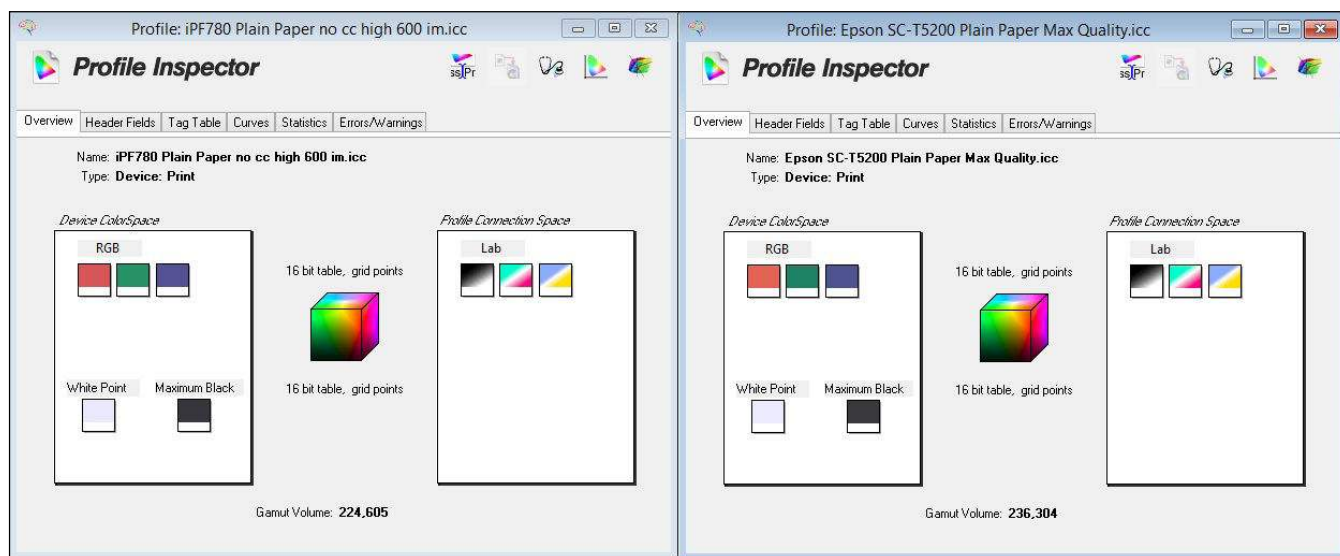
Canon imagePROGRAF iPF780 on plain paper in Standard mode



Epson SureColor SC-T5200 on plain paper in Quality mode

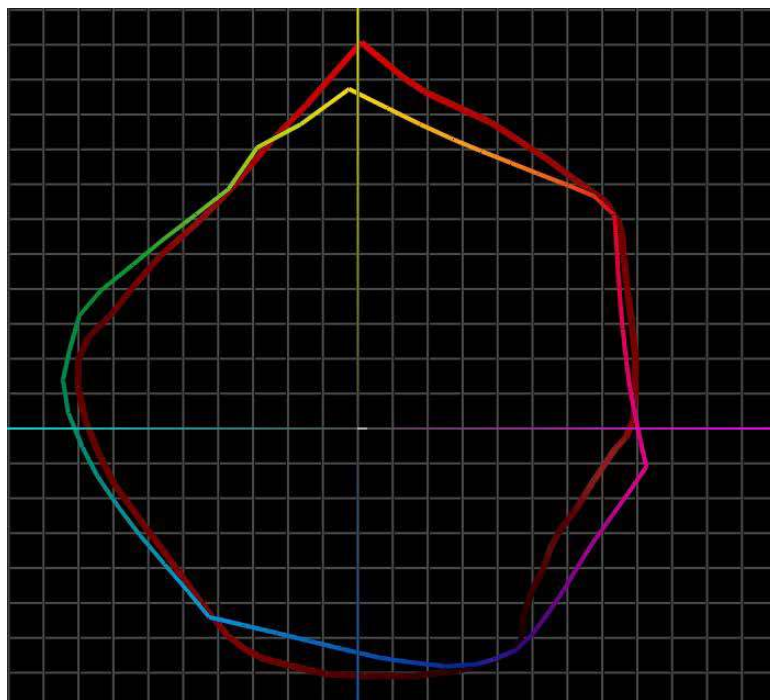


Epson SureColor SC-T5200 colour gamut on plain paper in Max Quality settings (red) versus Canon imagePROGRAF iPF780 colour gamut (shown chromatically) on plain paper in High settings.

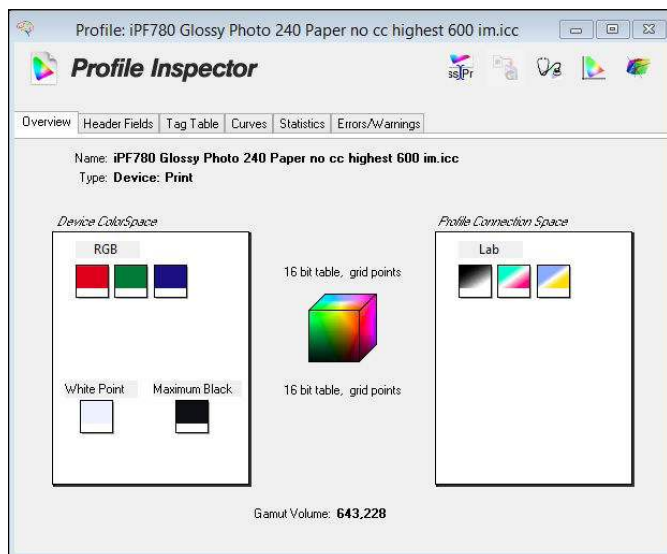


Canon imagePROGRAF iPF780 on plain paper in High mode

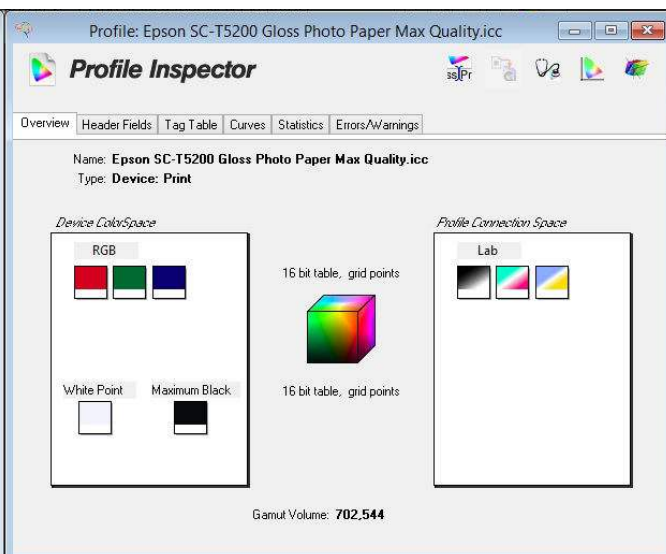
Epson SureColor SC-T5200 on plain paper in Max Quality mode



Epson SureColor SC-T5200 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 quality mode



Epson SureColor SC-T5200 on photo quality paper in Max Quality mode

Black Image Quality

Canon imagePROGRAF iPF780				Epson SureColor SC-T5200		
	Fast	Standard	High	Speed	Quality	Max Quality
Density Block						
1	1.38	1.43	1.46	1.40	1.44	1.35
2	1.39	1.44	1.44	1.39	1.45	1.37
3	1.36	1.42	1.45	1.39	1.42	1.36
4	1.35	1.42	1.44	1.38	1.43	1.35

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-T5200
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 thickness for roll paper	0.8 mm			0.8 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)		✓	1 GB
Maximum RAM	256 MB (iPF785 has 32-GB virtual memory)		✓	1 GB
Hard drive	None (iPF785 has 320-GB HDD)		✓	Optional 320-GB
Interface	10/100/1000Base-T/TX Ethernet, USB 2.0			10/100/1000Base-T/TX Ethernet, USB 2.0
PDL	GAR0, HP-GL/2, HP RTL			HP-GL/2, HP RTL, Epson ESC/P
Net weight (unpacked)	67.9 kg	✓		84 kg
Power consumption when in standby	0.5 W			0.5 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-T5200
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	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
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 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-T5200 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 (Fast Mode) by 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) by the Epson SureColor SC-T5200 (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	4.2	0.7	3.0	7.4	0.3
Test Run 2 Net weight of ink used	4.3	0.6	2.9	7.6	0.2
Test Run 3 Net weight of ink used	4.2	0.8	2.9	7.3	0.2
Average amount of ink used across three runs	4.2	0.7	2.9	7.4	0.2
Total ink weight across five cartridges for 50-page run (based on averages)					15.4

Table 5

Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Standard Mode) by 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 (Quality Mode) by the Epson SureColor SC-T5200 (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	5.3	1.4	3.6	11.6	1.1
Test Run 2 Net weight of ink used	5.2	1.3	3.6	11.8	1.0
Test Run 3 Net weight of ink used	5.4	1.5	3.5	11.8	1.1
Average amount of ink used across three runs	5.3	1.4	3.6	11.7	1.1
Total Ink Weight across five cartridges for 50-page run (based on averages)					23.1

Table 7

Ink Used in Three 50-Page Runs of Retail Poster Test Document by 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 by the Epson SureColor SC-T5200 (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	16.4	13.4	35.0	4.8	1.5
Test Run 2 Net weight of ink used	16.5	13.2	35.5	4.5	1.1
Test Run 3 Net weight of ink used	16.4	13.4	35.4	4.5	1.1
Average amount of ink used across three runs	16.4	13.3	35.3	4.6	1.2
Total Ink Weight across five cartridges for 50-page run (based on averages)					70.8

Table 9

Ink Used in Three 50-Page Runs of GIS Map Test Document by 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 by the Epson SureColor SC-T5200 (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	30.9	11.9	14.1	4.0	1.2
Test Run 2 Net weight of ink used	31.2	12.0	14.2	4.0	1.1
Test Run 3 Net weight of ink used	30.9	12.0	14.1	4.0	1.1
Average amount of ink used across three runs	31.0	12.0	14.1	4.0	1.1
Total Ink Weight across five cartridges for 50-page run (based on averages)					62.2

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 July 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-T5200 was installed in BLI's lab with the latest level of firmware (as of July 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-T5200: 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.

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