KEYPOINT INTELLIGENCE Buyers Lab

Custom Test Report

KPI Comparative Lab Test Report

FEBRUARY 2018

Canon imagePROGRAF TX-4000

vs. Epson SureColor SC-T7200D

Advantage ✔	Canon imagePROGRAF TX-4000	Epson SureColor SC-T7200D
Colour Image Quality	✔	
Black Image Quality	✔	
Print Productivity	✔	
Banner Printing	✔	
Poster Printing	✔	
Direct Print Submission Functionality	✔	
Ink Consumption	✔	
Device Feature Set	✔	
Print Driver Feature Set	✔	

TEST OBJECTIVE

Keypoint Intelligence – Buyers Lab was commissioned by Canon Europe to conduct confidential document imaging device performance testing on the Canon imagePROGRAF TX-4000 and the Epson SureColor SC-T7200D, and produce a report comparing the relative strengths and weaknesses of the two products in the areas of image quality, productivity, banner and poster printing, direct print submission functionality, device feature set, driver functionality, and ink consumption. All testing was performed in Buyers Lab's European test facility in Wokingham, UK.

Executive Summary

The Canon imagePROGRAF TX-4000 outperformed the Epson SureColor SC-T7200D in most areas of Buyers Lab's evaluation. Specifically, it demonstrated higher productivity for both colour and black output across the board, superior image quality, and richer device and driver feature sets. Whether printing after a weekend of non-use, from a ready state, or printing Buyers Lab's jobstream test, which simulates a typical mixed workflow for a large-format printer, the Canon TX-4000 was the faster model. Notably, Buyers Lab technicians observed that the speed advantage of the Canon model became more pronounced as the quality level was increased, which enables Canon users to focus on achieving optimum image quality without sacrificing productivity. A significant advantage that further enhances productivity is the Canon model's hot-swap ink tank design, which lets users replace an empty ink cartridge while the machine is actively printing. In contrast, when the Epson SC-T7200D runs out of ink, printing has to stop for the cartridge to be replaced, leading to operator downtime. The Canon model used less ink in two of the three ink consumption tests, as well.

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 devices was of a high standard and would easily satisfy customer needs. The Epson SC-T7200D produced larger colour gamuts on plain paper as well as higher solid black densities in two of the three tested modes, but all things considered, the Canon model had the advantage for image quality in both colour and black modes. The TX-4000 delivered superb crisper text and fine lines, smoother circles and halftone coverage, superior fine detail in business graphics and brighter colours and better depth of field in photographic images. Neither model produced very natural-looking skin tones, which were yellowish and reddish in the output of the Canon and Epson devices, respectively, while the Epson model's skin tones were also distinctly grainy. One further plus for the Canon model is its unidirectional print driver option, which when selected, eliminated banding on the Canon TX-4000's poster output in Fast mode. It should be noted that whilst Buyers Lab analysts observed banding on the Epson device's output only when printing posters in Speed mode, the device does not offer a unidirectional feature to rectify such issues.

The two models have several comparable features in their respective driver and device feature sets, but overall the Canon TX-4000 has the richer offerings. For maximum convenience and minimum downtime, both offer a dual-roll design, which gives users the added flexibility of switching between different media types or sizes without the need to reload the media each time, plus both support direct printing of JPEG, TIFF and PDF files from a USB flash drive providing convenience to mobile workers. Advantages for the Epson SC-T7200D include lower rated energy consumption while printing—64 watts versus 107 watts—and a feature set that comprises higher print resolution, smaller (variable) ink droplet sizes, and a slightly higher standard ink cartridge capacity, although, as Canon supplies standard-yield cartridges as 'starter' cartridges, they have three times the capacity of Epson's starter cartridges. Additional advantages for the Canon model include higher standard and maximum memory capacities and a 500-GB hard drive as standard that aid with job processing and storage. (Epson offers a 320 GB hard drive only as an option.) Moreover, the TX-4000 has the aforementioned unidirectional print capability, hot swap ink tanks, a single user-replaceable printhead and the free Canon imagePROGRAF Direct Print & Share utility, which supports direct PDF submission without the need to open an application. The Epson SC-T7200D only supports direct print functionality as an extra-cost option.

In conclusion, the Canon TX-4000 is judged as the stronger performer overall, for its superior image quality, faster productivity across the board, lower ink consumption overall, and richer driver and device feature sets.

Colour Image Quality

Advantage ✔	Canon imagePROGRAF TX-4000	Epson SureColor SC-T7200D
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)		✔
Colour Gamut (plain paper, Standard/Quality)	=	=
Colour Gamut (plain paper, High/Max Quality)		✔
Colour Gamut (matte coated paper, High/Max Quality)	✔	

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

O All image quality testing was conducted on CAD 90gsm inkjet plain paper.

O The Canon TX-4000 delivered superior composite black optical density on plain paper in all print modes, higher magenta density in Standard and High modes, as well as higher cyan density in High mode, while the Epson SC-T7200D produced higher optical densities for yellow in all modes, and for cyan and magenta in Fast mode. Both models had comparable densities for cyan in Standard/Quality mode.

— When printing on plain paper using Fast/Speed settings, the Canon model delivered a 21.5% smaller colour gamut than that of the Epson unit, with a CIE volume of 132,214 versus 168,336 for the Epson device.

O Both models produced comparable colour gamuts when printing on plain paper using Standard/Quality settings—with a 201,752 CIE volume for the Canon model versus 202,953 for the Epson device.

— When printing on plain paper in High/Max Quality settings, the Canon TX-4000 delivered a fractionally (by 3.5%) smaller colour gamut than did the Epson SC-T7200D, with a CIE volume of 221,323 versus 229,339 for the Epson model.

+ When printing on matte coated paper using Canon's High quality setting and the Epson SC-T7200D's Max Quality setting, the Canon model delivered a 19.1% larger colour gamut than that of the Epson unit, with a CIE volume of 410,918 compared with 345,122 for the SC-T7200D.

+ The Canon TX-4000 delivered superior colour text reproduction overall, with sharper, more distinct serif and sans serif characters in all tested modes; fonts were legible down to the smallest 3-pt. level with no breakup or bleed. In contrast, the Epson model's serif fonts were fully legible only down to the 5-pt. level in Speed mode and 3-pt level in Quality and Max Quality modes, while Arial text was fully formed at the 4-pt. level in Speed and Quality modes and 3-pt. size in Max Quality mode. Some ink bleed was apparent on the Epson model's output produced in Speed and Quality modes, as well.

+ Fine lines produced by both devices remained distinct at the 0.1-pt. level across all modes, but the Canon TX-4000 delivered very clean and crisp lines which were rated very good in Standard and High modes. In contrast, there was slight blurring evident on fine lines produced by the Epson unit in Speed and Quality modes, though not in Max Quality mode.

+ Both models delivered fully formed circles at 0.1pt, but the Canon TX-4000 had a slight advantage, exhibiting smoother circles in Fast/Speed and Standard/Quality modes than the Epson device.

+ The Canon TX-4000 produced the 1x1 pixel grid in CMY with no quality issues, and coverage was consistently very good across all colours and modes. By comparison, the Epson SC-T7200D delivered poor and incomplete dot fill coverage in Speed mode, though quality improved at the higher quality settings, with coverage rated fair in Quality mode and good in Max Quality mode.

O Both devices delivered colour 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 TX-4000 delivered very good, consistently smooth colour halftone fills in all modes, while the Epson unit delivered halftone coverage that was rated good in all modes.

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

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

+ Colour business graphics produced by the Canon TX-4000 in Fast/Speed and Standard/Quality modes exhibited slightly sharper details and superior colour saturation than the Epson device.

+ When Buyers Lab analysts compared photographic images produced on plain paper in Standard/Quality mode, the output produced by both models exhibited an excellent level of detail in light contrast areas. However, the Canon TX-4000 delivered better depth, finer detailing in dark contrast areas and brighter colours in all modes when compared with images produced by the Epson unit.

O Skin tones produced by the Canon TX-4000 were slightly yellow in all modes, while those produced by the Epson model were reddish in all modes, which also exhibited distinct graininess in Quality (standard) mode.

+ Overall, Buyers Lab technicians judged the Canon TX-4000 as the superior performer in Buyers Lab's colour image quality evaluation. The model delivered superb crisp text and fine lines, smoother circles, sharper colour business graphics, brighter, more saturated colours, and sharper detail in dark contrast areas in photographic images. The Epson SC-T7200D delivered higher colour densities for yellow in all modes, and larger colour gamuts at the Speed and Max Quality settings when printing on plain paper. Importantly, as befitting the needs of their target market, both models produced distinct fine lines in AEC drawings and an excellent level of detail in GIS graphics, with very good depth of field even on plain paper.

Black Image Quality

Advantage ✔	Canon imagePROGRAF TX-4000	Epson SureColor SC-T7200D
Text	✔	
Fine Lines	✔	
Halftone Range	=	=
Halftone Fill	✔	
Solid density (Fast/Speed mode)	✔	
Solid density (Standard/Quality mode)		✔
Solid density (High/Max Quality mode)		✔
Business Graphics	✔	
Photographic Images	✔	

\+ When printing in monochrome, the Canon model delivered higher black optical densities in Fast/Speed mode.

– However, the Epson model delivered higher densities in Standard/Quality and High/Max Quality modes.

\+ Black text produced by the Canon TX-4000 was fully formed and legible down to the 3-pt. size with no breakup or bleed in all modes; characters were consistently rated very good, except in Standard mode where text was rated excellent. The Epson device delivered black Times fonts legible down to the 3-pt. size in Quality mode, and 4-pt. size in Speed and Max Quality modes; Arial black text was fully formed and legible down to the 4-pt. size in Speed mode and 3-pt. level in the higher quality modes and rated very good, and there was no ink bleed evident.

\+ In Buyers Lab's line art reproduction test, both models' fine lines remained distinct at the 0.1-pt. level in all modes. However, the Canon TX-4000 delivered the better quality overall, with crisp and distinct fine lines, which were rated very good in Fast and High modes, and excellent in Standard, while fine lines were consistently rated good the Epson model. White-on-black fine lines produced by both models were visible at the 0.25-pt. level in all quality modes and rated very good for the Canon model across the board, but only fair for the Epson SC-T7200D as they were less distinct.

\+ Circles produced by both models were fully formed at 0.1pt, but those produced by the Canon TX-4000 were observed to be smoother and crisper.

\+ Both models produced the 1x1 pixel grid in black with no quality issues; coverage was consistently good for the Epson unit, but it was rated very good in Fast mode for the Canon model and excellent in Standard and High modes, as dots were sharper and more uniform.

O Both models delivered black halftone output across the full range—from the 10% to the 100% dot-fill levels—with distinct transitions between all levels.

\+ Although greyscale coverage was slightly grainy on the 80% to 100% fills in Fast and Standard modes (and rated good) for the Canon model, halftone coverage was smooth in High mode and judged very good. In contrast, halftone coverage was rated only fair for the Epson device as there was some graininess evident at the highlight end (10% to 30%) of the range in all modes.

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

+ Monochrome business graphics were produced more accurately by the Canon model, with smoother halftone gradations, whereas some graininess was visible in output produced by the Epson unit, even without magnification.

+ Despite some graininess in dark solid areas on greyscale photographic images produced on plain paper by the Canon TX-4000, it delivered better depth, smoother tonal gradations and superb fine detailing in light and dark contrast areas in all modes overall, than did the Epson model.

+ In Buyers Lab's monochrome image quality assessment, the Epson model yielded higher optical densities in two out of three modes, but there was no other aspect where it truly stood out. The Canon TX-4000 produced better image quality in black, with superior text and fine lines, smoother circles, and exhibited greater depth and finer detailing in photographic images.

Print Productivity

Advantage ✔	Canon imagePROGRAF TX-4000	Epson SureColor SC-T7200D
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)	✔	
Dual-roll Job Stream	✔	

+ The Canon TX-4000 delivered a much faster first-page-out time of 89.35 seconds after a weekend of non-use, compared with 177.40 seconds for the Epson SC-T7200D. Start-up time before printing commenced was faster for the Canon model at 58.10 seconds, compared with 114.03 seconds for the Epson unit.

+ The Canon device delivered a 38.7% faster first-page-out time of 45.59 seconds from its ready state, compared with 74.36 seconds for the Epson device. Although start-up time before printing commenced was slower for the Canon model—21.95 seconds versus 11.65 seconds for the Epson model— the Canon TX-4000 is the faster device overall after taking into account the two measurements.

+ When printing Buyers Lab's job stream, designed to simulate a typical mixed workflow for a large-format unit, the Canon TX-4000 delivered a far superior performance in High/Max Quality mode, running 43.6% faster than the Epson model. In the other tested modes, it was also faster—by 16.7% in Fast/Speed mode and 29.9% in Standard/Quality mode.

+ As both models offer a dual-roll design, Buyers Lab conducted a second job stream test to assess roll switching efficiency by printing the same files, but alternating them between the two rolls. The Canon TX-4000 completed

the dual-roll job stream in Fast mode in 762.86 seconds—15.2% faster than the 900.09 seconds taken by the Epson SC-T7200D in Speed mode.

+ Buyers Lab analysts observed that, although Canon's faster speed gave it the overall edge when printing to dual rolls, the actual time taken to switch between rolls (around 22 seconds) was comparable for both models.

+ When printing Buyers Lab's 12-page DWF test file in colour, the Canon unit was 25.1% faster in Fast/Speed mode, 31.3% faster in Standard/Quality mode, and 54.0% faster in High/Max Quality mode.

+ Similarly, when printing Buyers Lab's 12-page DWF test file in monochrome, the Canon unit was 26.8% faster than the Epson model in Fast/Speed mode, 30.9% faster in Standard/Quality mode, and 53.9% faster in High/Max Quality mode.

+ When printing Buyers Lab's single-page A0-size test in Standard/Quality mode, the Canon TX-4000 delivered a 5.9% faster first-page-out time of 117.55 seconds than that of the Epson unit (124.90 seconds). The Canon model was also 13.6% faster than the Epson SC-T7200D when printing five A0-size pages (523.25 seconds versus 605.72 seconds).

+ The Canon model's unique sub ink tank system provides a further boost to productivity. When the Epson SC-T7200D model runs out of ink, printing must stop for the cartridge to be replaced, which leads to operator downtime. In contrast, when ink needs replacing on the Canon model it will continue to print, drawing ink from its sub tank, while ink is replaced, so there's no operator downtime. For added convenience, the control panel alerts users to replace ink and also provides purchasing information.

O Both the Canon and Epson models will pause and alert the operator when they run out of paper. After a new roll is installed, each 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 are wasted.

Banner Printing

	Canon imagePROGRAF TX-4000	Epson SureColor SC-T7200D
Image Quality	✔	
Productivity	✔	

+ The Canon TX-4000 successfully printed Buyers Lab's 36" x 105" banner (a 4,955-KB PDF file) in Fast mode. It took 6.06 seconds to generate a preview at the workstation, and an additional 2 minutes, 0.41 seconds from preview to final paper cut. The Epson SureColor SC-T7200D took longer to print the banner file in Speed mode, taking 33.6 seconds to generate a preview, and an additional 2 minutes, 20.0 seconds from the file preview to final paper cut. With a total preview and print time of 2 minutes, 6.47 seconds, the Canon TX-4000 is clearly the faster model. In addition, the Epson device failed to deliver a complete banner due to its inability to print background detail during the final stages of printing it.

Poster Printing

Advantage ✔	Canon imagePROGRAF TX-4000	Epson SureColor SC-T7200D
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 37.88 seconds to complete the job, while the Epson unit at 360 x 720 dpi had a slightly quicker time of 34.96 seconds. Slight banding was evident with both models, but only in the dark areas. When unidirectional printing (not supported on the Epson model) was selected in the Canon print driver, banding was eliminated and the time to print the banner increased to 56.74 seconds.

+ When printing a poster in Standard/Quality mode at 600 dpi, the Canon model took 1 minute, 0.52 seconds, while the Epson unit at 360 x 720 dpi took 1 minute, 6.42 seconds. There was no banding evident on output with either model.

+ When printing the poster in High quality (600 dpi), the Canon model took 1 minute, 43.26 seconds, which is 35.1% faster than the Epson unit's 2 minutes, 39.11 seconds result when printing in Max Quality (720 x1440 dpi) mode.

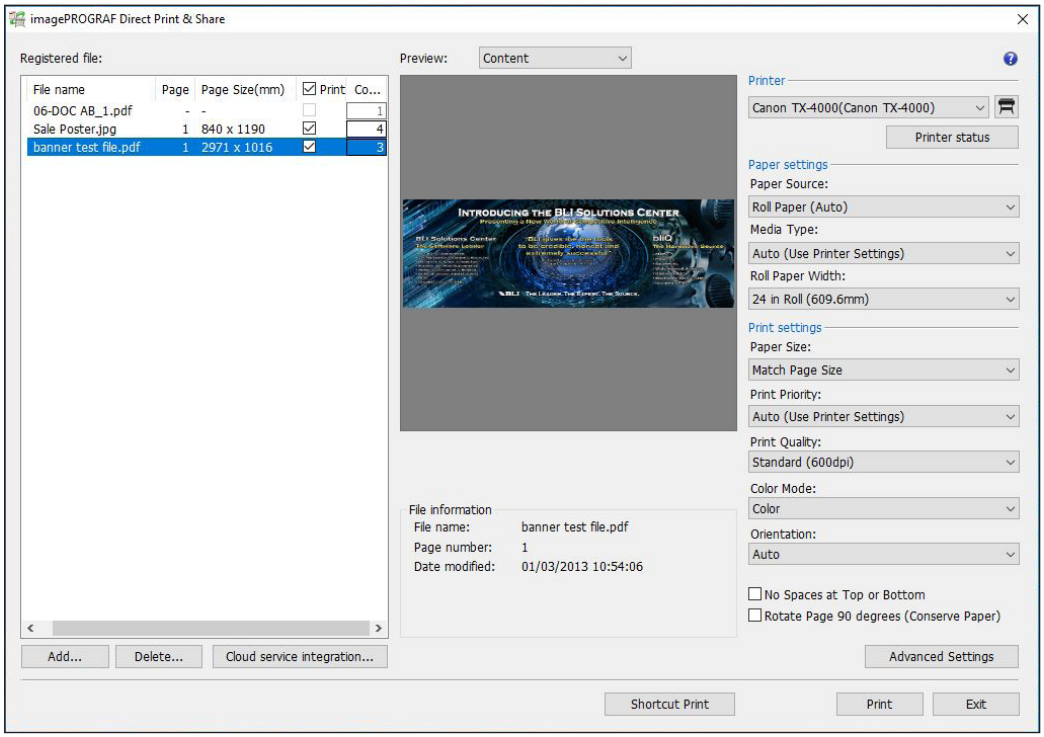
O At the High/Max Quality settings, image quality was equally good on output from both models, with vibrant, saturated colour, and good definition of fine details.

Direct Print Submission Functionality

Advantage ✔	Canon imagePROGRAF TX-4000	Epson SureColor SC-T7200D
Functionality/Cost	✔	*
Mobile App Integration	✔	

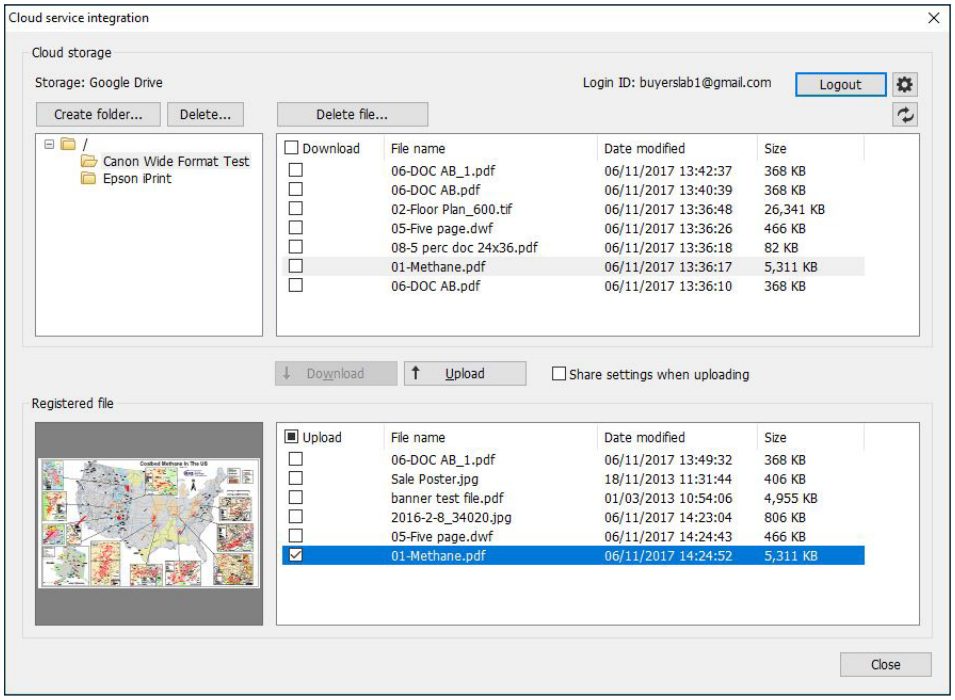
* Buyers Lab technicians did not test Epson's optional, extra-cost PostScript module, and therefore did not assess its functionality.

O Available as a free download from Canon's website, the imagePROGRAF Direct Print & Share utility enables the direct printing of PDF, JPEG, TIFF and HPGL/2 files without the need for native applications or print drivers. Via the utility, users can preview print layouts and select print settings without the need to open up the driver properties. For added convenience, it also lets users print multiple files simultaneously.



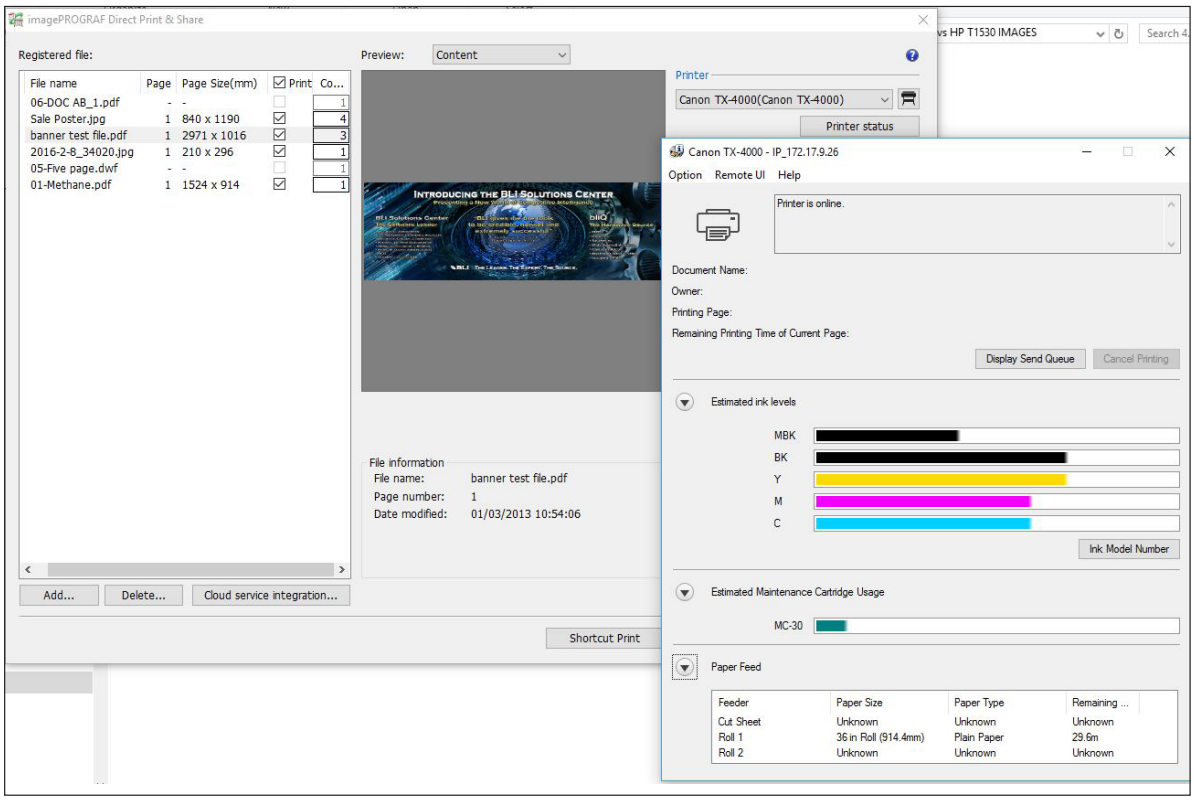
Canon's imagePROGRAF Direct Print & Share utility gives users an image preview.

O The imagePROGRAF Direct Print & Share utility supports "Shortcut Print" functionality, enabling users to create a desktop shortcut that includes commonly used print settings. Akin to a hot folder workflow, files are automatically printed with the predefined settings when users drag-and-drop the files to the desktop icon. Multiple desktop icons can be created for different print settings or combinations of print settings.



Retrieving files from Google Cloud using imagePROGRAF Direct Print & Share.

- Users can download stored files from Google Drive and AutoCAD 360 cloud storage services for printing via the imagePROGRAF Direct Print & Share utility, and can upload files directly to cloud storage as well, which boosts collaboration. For added convenience, the utility also offers the option of sharing files simultaneously with one or more users (via Google Drive only), who will receive an email notification with a link to download the shared file without the need to log in.



Users can view device status information via the utility.

- The Canon TX large-format series supports Canon Print Service, a mobile print app for Android users (with support for Apple iPad devices to follow in 2018), which is a productivity boost in environments where workers are travelling between sites or working remotely.

- An optional (extra-cost) PostScript module will provide Epson users with direct printing functionality, allowing them to print PDFs direct from programs such as AutoCAD—its functionality also works via hot-folder 'drag-and-drop' with configurable job processing options.

Ink Consumption

Overall Weight of Ink Used (in Grams)

	Canon imagePROGRAF TX-4000	Epson SureColor SC-T7200D
Cottage Architectural Plan	23.2	23.0
Retail Poster	65.7	69.8
GIS Map	37.8	61.4

Results are averaged across three sets of 50-page A1 printing in Standard/Quality mode.

O When producing 50 prints of a Cottage Architectural Plan in Standard/Quality mode, both units used a comparable amount of ink.

\+ When printing a Retail Poster in Standard/Quality mode, the Canon unit used 5.9% less ink than did the Epson SC-T7200D.

\+ When printing a GIS Map in Standard/Quality mode, the Canon TX-4000 used 38.4% less ink compared with the Epson device.

Device Feature Set

\+ The total capacity of the Canon TX-4000's starter ink cartridges is 970 ml, which is higher than the 550 ml total starter ink volume available with the Epson model.

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

\+ Canon's ink cartridges are replaceable during operation, which helps reduce operator downtime for users. Epson's cartridges cannot be replaced during operation.

\+ If the Canon device detects that printhead nozzles are becoming clogged, it automatically starts a cleaning routine when there are no more nozzles available to compensate for the clogged ones. This task would have to be done manually with the Epson unit, although Buyers Lab analysts did not encounter any nozzle clogging issues with either model during testing.

\+ Canon's single printhead is user-replaceable, taking less than five minutes to replace, whereas Epson's single printhead is only service-replaceable.

O Both models offer USB 2.0 and Gigabit Ethernet connectivity.

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

O For maximum convenience and minimum downtime, both models offer the advantage of a dual-roll design, giving users the added flexibility of switching between different media types or sizes without reloading the media each time. Both models also provide excellent ease of access when loading or unloading the second roll.

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

O Both devices support borderless printing regardless of what media type is being used.

\+ The Canon model offers a standard, non-upgradable RAM of 128 GB, while the Epson unit has a standard non-upgradable RAM of 1 GB.

\+ The Canon model has a 500-GB hard drive capacity as standard, while the Epson model has a 320-GB hard drive, but only as an extra-cost option.

\+ The Canon TX-4000 comes with robust security features, including newly added hard drive encryption, and protocol locking to prevent unauthorised access to the device; it also supports SNMP v3 (secure network protocol) and IPsec which provides further security by authenticating and encrypting data over the network. The Epson model supports IPsec and SSL as part of its security features.

\+ The Canon model is lighter (114 kg versus 133 kg), device than the Epson unit.

\+ The Canon TX-4000's high-capacity stacker can accommodate up to 100 A0-sized CAD prints (depending on paper weight and thickness).

O The output catch baskets of both models are very simple designs that collect output from media rolls in a random order. The Epson catch basket is attached to the device, whereas Canon's stacker/basket assembly is separate and must be wheeled up to the device.

O Both models offer a colour touchscreen user interface that are equally responsive and intuitive to navigate.

– The Epson SC-T7200D power consumption while printing is lower—65 watts versus 107 watts—than that of the Canon model.

O Rated noise emissions are comparable—51 dB for the Canon model and 50 dB for the Epson device—while they are printing.

Driver Feature Set

\+ The Canon TX-4000 has five speed settings (Fast 300, Standard 600, Fast 600, High 600 and High 1200), which are matched by three settings on the Epson device (Speed, Quality and Max Quality), although not all speed settings are available with all media types on the Canon model.

O Both the Canon imagePROGRAF Printer Driver and the Epson ESC/P driver provide a useful overview of the settings for predefined profiles.

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

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

– Although both devices offer a poster mode, the Canon imagePROGRAF Printer Driver offers only a 2 by 2 poster mode, while the Epson model supports 4 by 4 posters.

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

O Both the Canon and Epson drivers' offer a wide range of built-in adjustments for CMYK (CMY for the Canon driver) balance, brightness and contrast. ICC profile settings are also available with both drivers—in the case of Canon's driver in its Matching Tab under Colour Settings. Canon operators can select four modes—Driver Matching, ICC Profile Matching, ICM (and choose one of four rendering methods auto, perceptual, colorimetric or saturation) or Off.

– The Epson driver provides a handy thumbnail preview for users to check the effects of the image as colour adjustments are made. 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.

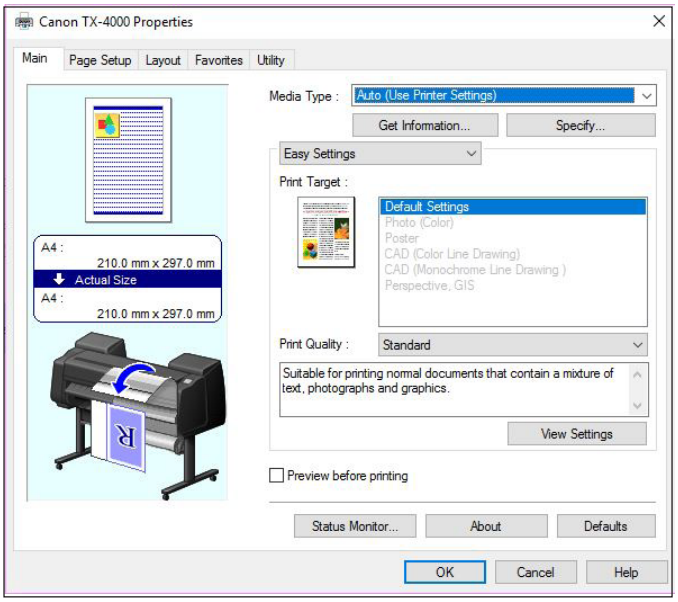
+ The Canon driver offers the option of unidirectional printing, even in Fast mode, which helps to avoid banding across output because the printhead travels in only one direction to create the desired image. The Epson driver does not offer this feature.

+ The Canon driver includes the Color imageRUNNER Enlargement Copy Mode utility, which is standard with the 32-bit version of the driver and is available as a download for the 64-bit version of the driver via the Printer Driver Extra Kit. This enables users to integrate a Canon small-format MFP device with the TX-4000, whereby documents scanned at the MFP are automatically routed to a hot folder that is monitored by the TX-4000 driver. 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.

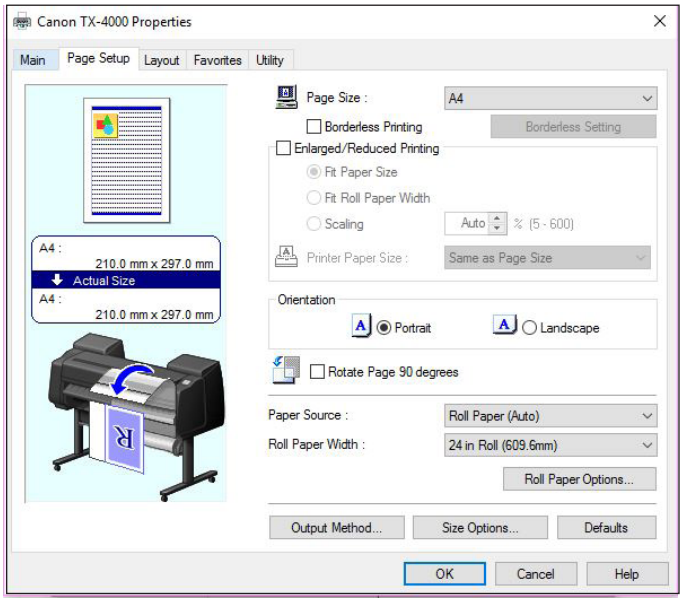
O The Canon driver offers a Free Layout nesting tool (also available for free download via the Printer Driver Extra Kit) that enables files—even those created with different applications—to be scaled, resized, or grouped together as a single job from the printer driver. Images can be dragged and dropped to the 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.

O 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.

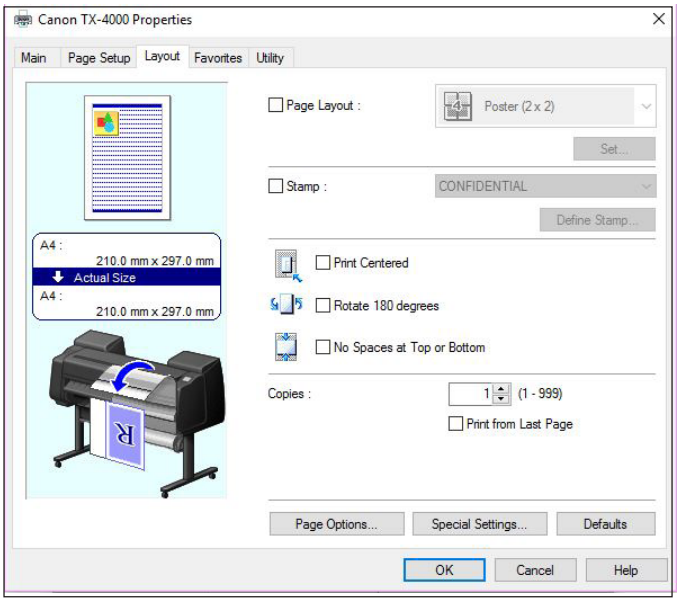
Test Models' Print Driver Screenshots



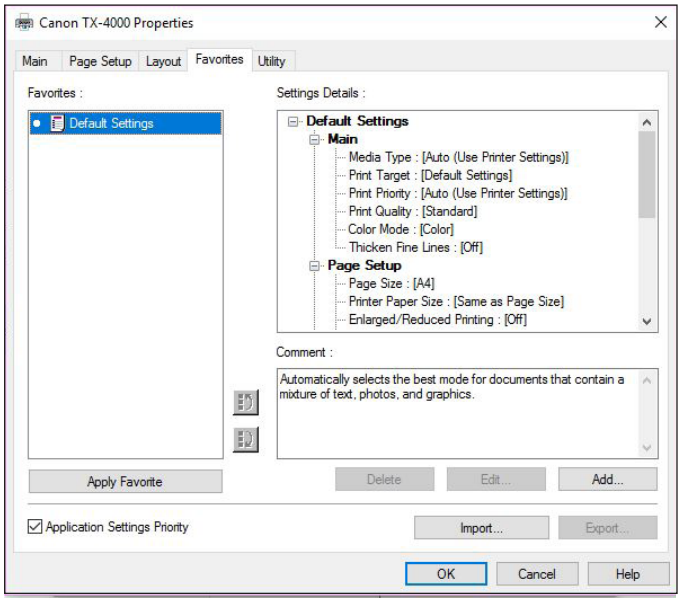
Canon imagePROGRAF TX-4000 Print Driver Main Tab



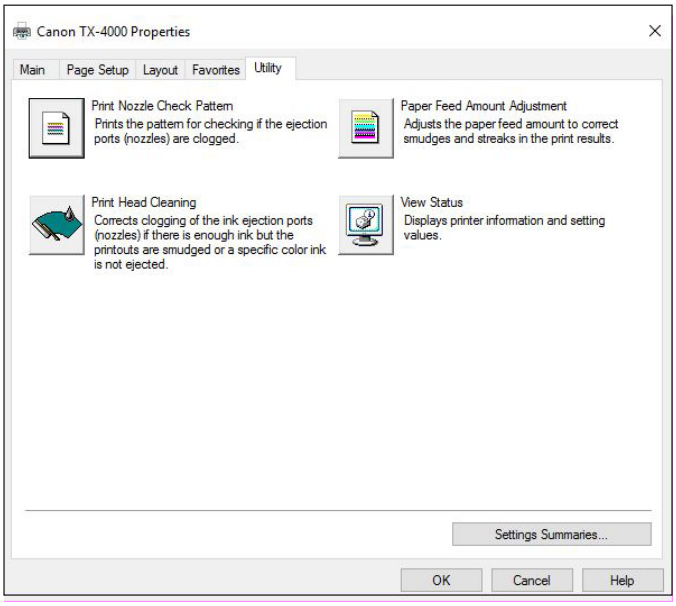
Canon imagePROGRAF TX-4000 Print Driver Page Setup Tab



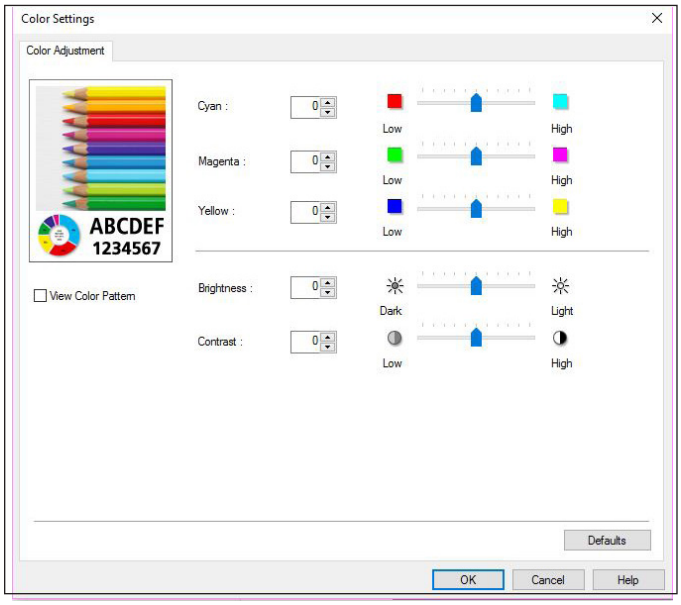
Canon imagePROGRAF TX-4000 Print Driver Layout Tab



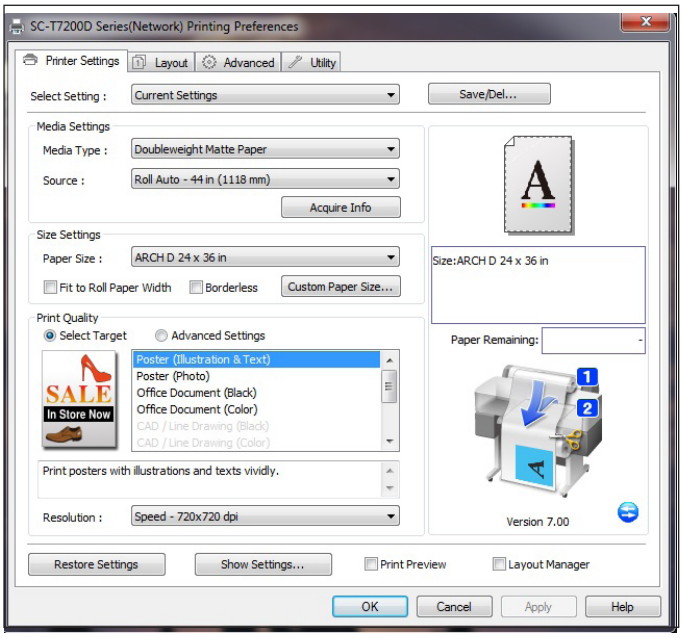
Canon imagePROGRAF TX-4000 Print Driver Favourites Tab



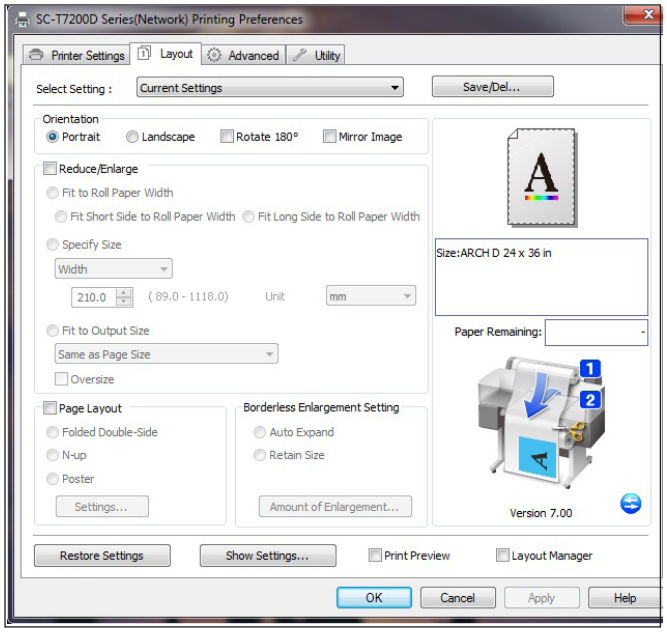
Canon imagePROGRAF TX-4000 Print Driver Utility Tab



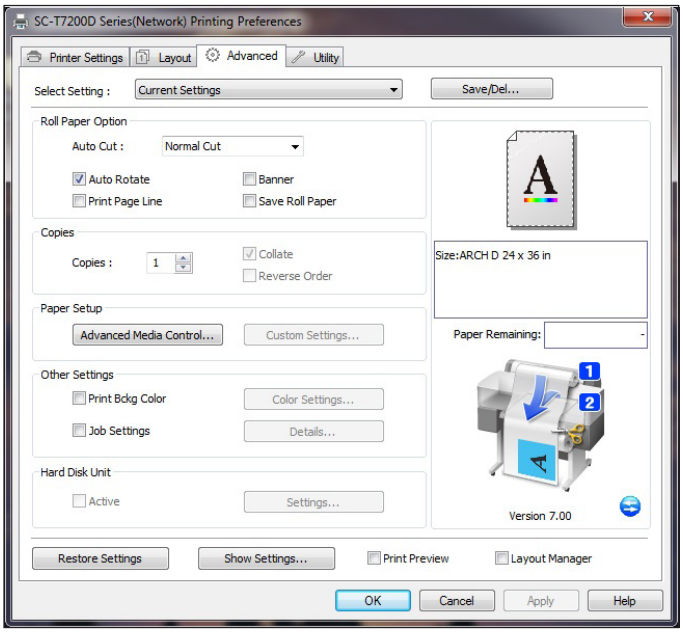
Canon imagePROGRAF TX-4000 Print Driver Colour Adjustment Tab



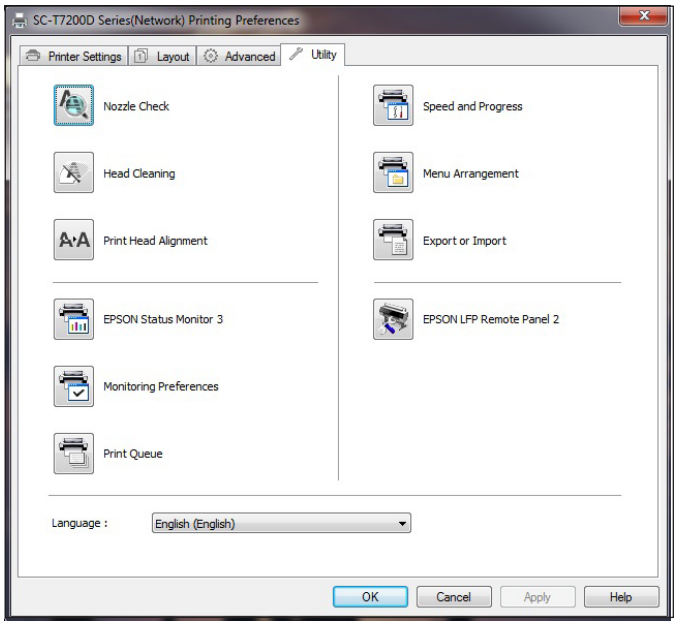
Epson SureColor SC-T7200D Driver Printer Settings Tab



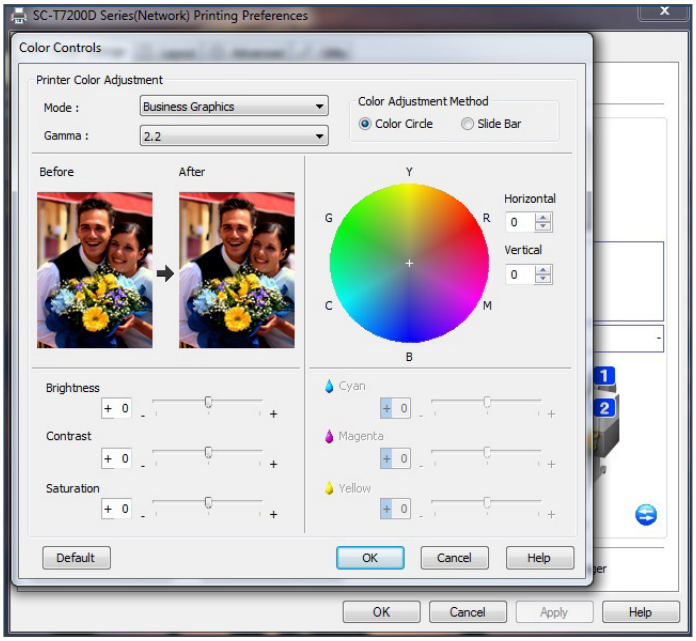
Epson SureColor SC-T7200D Driver Layout Tab



Epson SureColor SC-T7200D Driver Advanced Settings Tab



Epson SureColor SC-T7200D Driver Utility Tab



Epson SureColor SC-T7200D Driver Colour Control

SUPPORTING TEST DATA

Print Productivity

Job Stream Productivity (in Seconds)

Mixed File Types, Same Size, Single Roll

Canon imagePROGRAF TX-4000		Epson SureColor SC-T7200D	
Fast	593.83	Speed	712.75
Standard	914.85	Quality	1,304.53
High	1,844.69	Max Quality	3,273.43

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

Mixed File Types, Same Size, Dual Roll

Canon imagePROGRAF TX-4000		Epson SureColor SC-T7200D	
Fast	762.86	Speed	900.09

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

Colour Productivity (in Seconds)

Canon imagePROGRAF TX-4000		Epson SureColor SC-T7200D	
Fast	337.95	Speed	451.50
Standard	578.90	Quality	843.10
High	1,063.65	Max Quality	2,313.50

The 12-page DWF test file was printed using the device driver set to the plain paper/colour setting. Both devices were loaded with 44-inch rolls. 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 (in Seconds)

Canon imagePROGRAF TX-4000		Epson SureColor SC-T7200D	
Fast	347.76	Speed	474.95
Standard	581.16	Quality	841.60
High	1,069.90	Max Quality	2,323.33

The 12-page DWF test file was printed with the Canon driver set to the plain paper/monochrome setting and the Epson driver set to plain paper, black mode. Both devices were loaded with 44-inch rolls. 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 (in Seconds)

	Canon imagePROGRAF TX-4000	Epson SureColor SC-T7200D
Time Before Printing Commences	58.10	114.03
First Page Out	89.35	177.40

First-Page-Out Productivity from Ready State (in Seconds)

	Canon imagePROGRAF TX-4000	Epson SureColor SC-T7200D
Time Before Printing Commences	21.95	11.65
First Page Out	45.59	74.36

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

A0 First-Page-Out and Throughput Productivity (in Seconds)

	Canon imagePROGRAF TX-4000	Epson SureColor SC-T7200D
First Page Out	117.55	124.90
Five Pages Out	523.25	605.72

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

Colour Image Quality

Colour Optical Density Evaluation

Canon imagePROGRAF TX-4000						
	Fast		Standard		High	
	50%	100%	50%	100%	50%	100%
Cyan	0.41	0.87	0.49	1.03	0.51	1.07
Magenta	0.35	0.72	0.42	0.90	0.43	0.95
Yellow	0.32	0.71	0.38	0.86	0.40	0.91
Black	0.43	1.43	0.52	1.41	0.54	1.41

Epson SureColor SC-T7200D						
	Speed		Quality		Max Quality	
	50%	100%	50%	100%	50%	100%
Cyan	0.38	1.02	0.34	1.03	0.38	1.02
Magenta	0.33	0.85	0.27	0.86	0.29	0.92
Yellow	0.38	0.81	0.37	0.89	0.35	0.94
Black	0.65	1.11	0.64	1.28	0.63	1.32

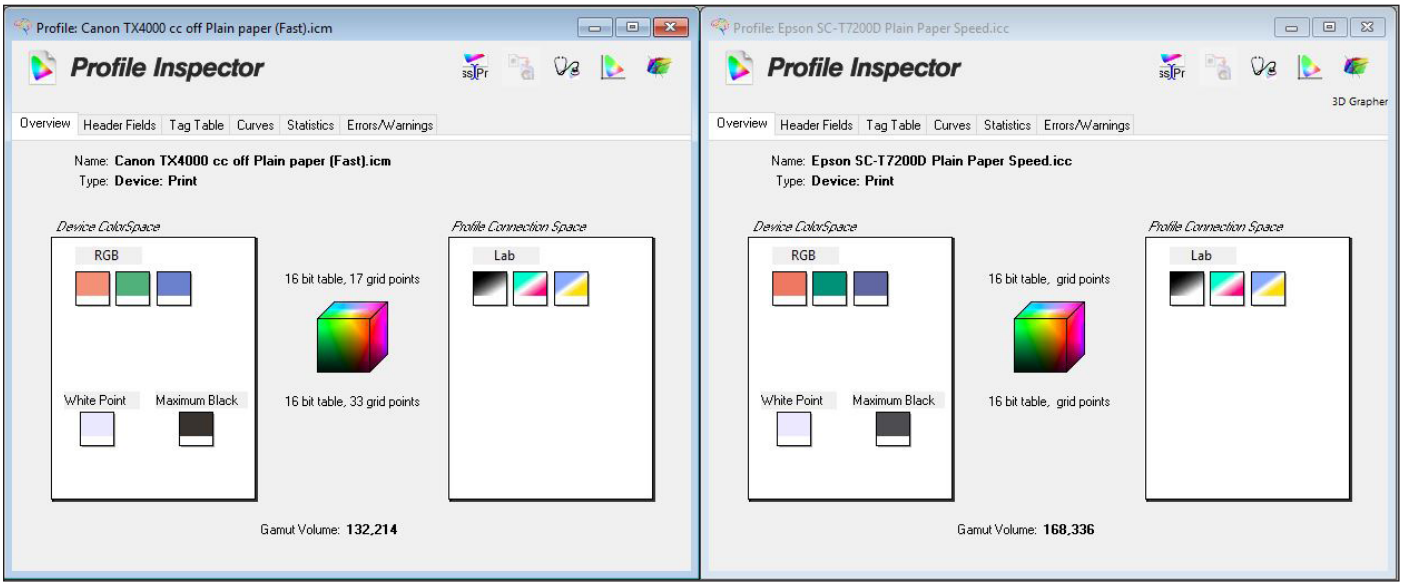
Note: Colour density readings were assessed by printing a Buyers Lab proprietary PDF test target file on plain paper in default colour settings at all quality settings available and measuring the density of 100% dot fill and 50% dot fill using an XRite 508 densitometer and XRite exact^{Xp} densitometer.

Colour Gamut Comparisons

Media Type/Settings	Canon imagePROGRAF TX-4000	Epson SureColor SC-T7200D
Plain Paper Fast/Speed	132,214	168,336
Plain Paper Standard/Quality	201,752	202,953
Plain Paper High/Max Quality	221,323	229,339
Matte Coated High/Max Quality	410,918	345,122

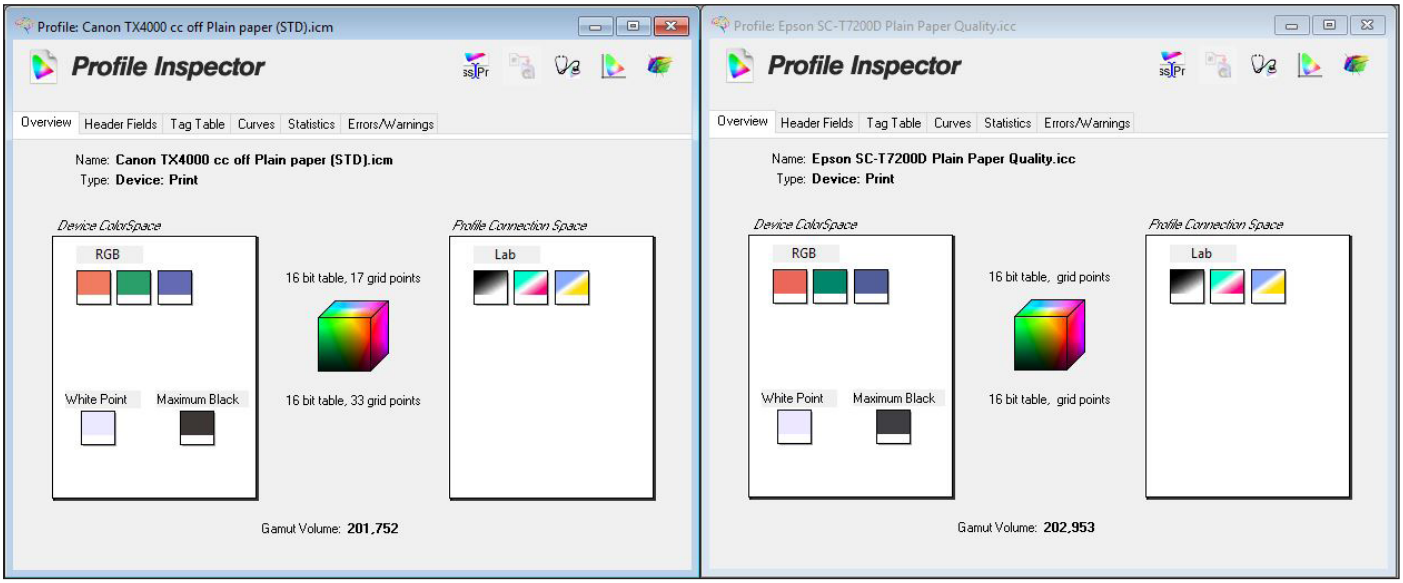
Colour Gamut Comparison

Canon imagePROGRAF TX-4000 colour gamut on plain paper in Fast settings (shown chromatically) versus Epson SureColor SC-T7200D colour gamut (shown in red) on plain paper in Speed settings.



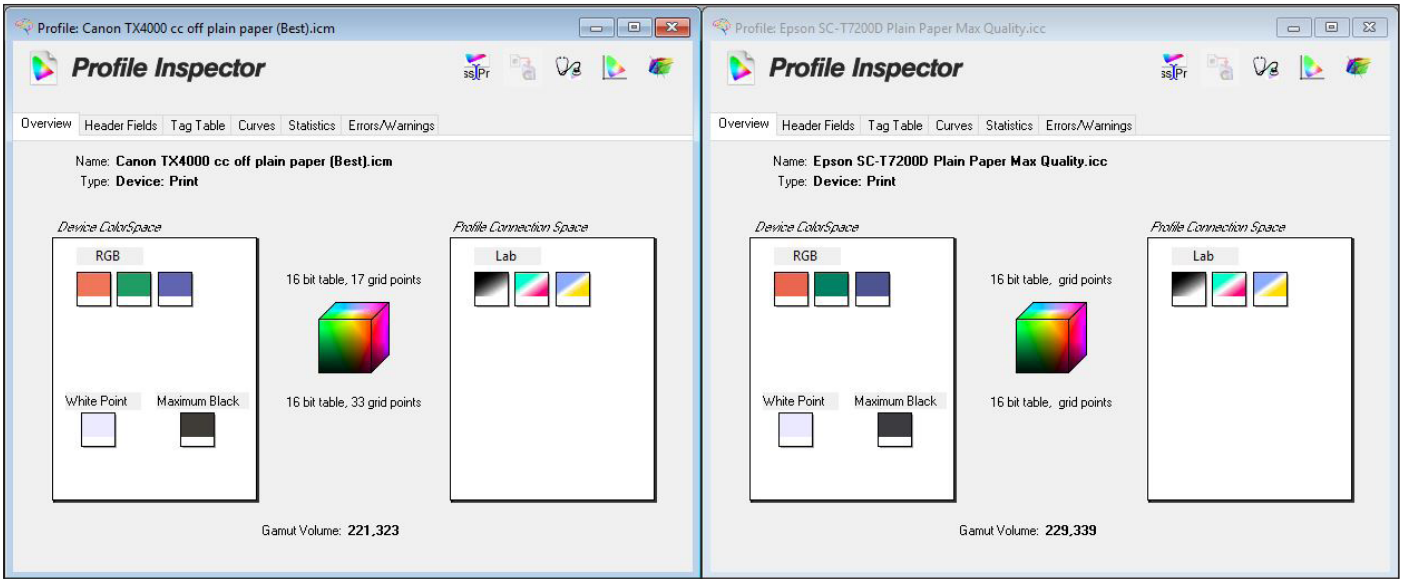
Colour gamut profile for Canon imagePROGRAF TX-4000 (left) and Epson SureColor SC-T7200D (right) on plain paper in Fast/Speed modes.

Canon imagePROGRAF TX-4000 colour gamut on plain paper in Standard settings (shown chromatically) versus Epson SureColor SC-T7200D colour gamut (shown in red) on plain paper in Quality settings.



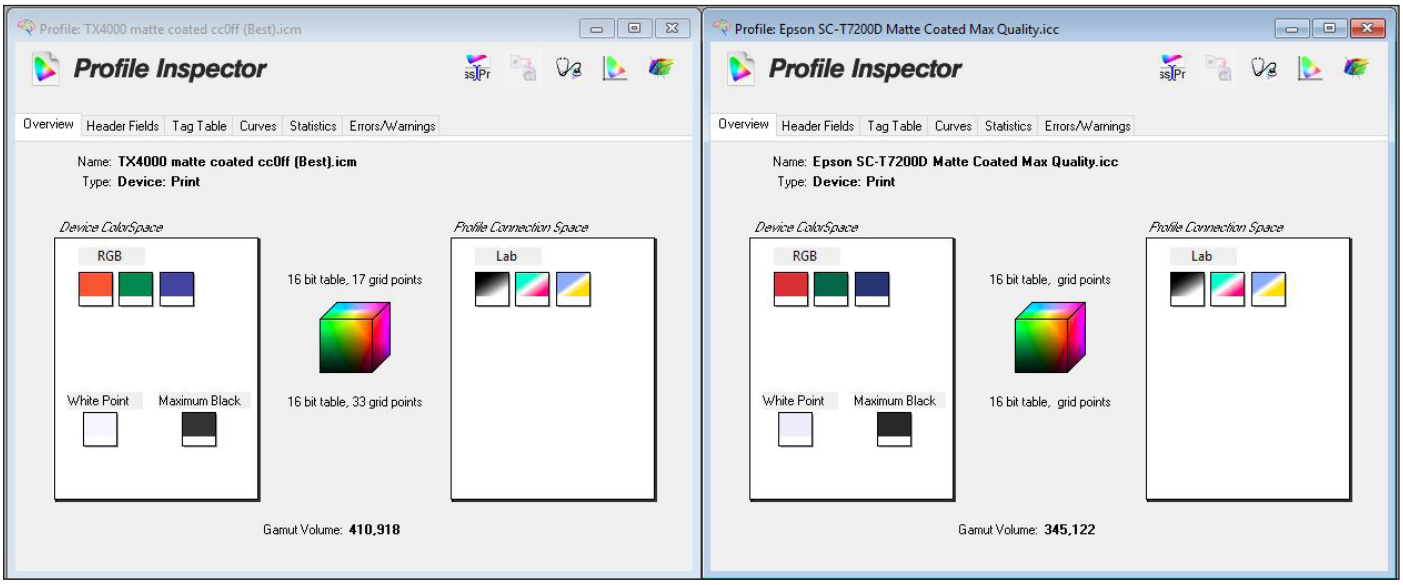
Colour gamut profile for Canon imagePROGRAF TX-4000 (left) and Epson SureColor SC-T7200D (right) on plain paper in Standard/Quality modes.

Canon imagePROGRAF TX-4000 colour gamut on plain paper in High quality settings (shown chromatically) versus Epson SureColor SC-T7200D colour gamut (shown in red) on plain paper in Max Quality settings.



Colour gamut profile for Canon imagePROGRAF TX-4000 (left) and Epson SureColor SC-T7200D (right) on plain paper in High/Max Quality modes.

Canon imagePROGRAF TX-4000 colour gamut on matte coated paper in High quality settings (shown chromatically) versus Epson SureColor SC-T7200D colour gamut (shown in red) on matte coated paper in Max Quality settings.



Colour gamut profile for Canon imagePROGRAF TX-4000 (left) and Epson SureColor SC-T7200D (right) on matte coated paper in High/Max Quality modes.

Black Print Quality

Black Optical Density Evaluation

	Canon imagePROGRAF TX-4000			Epson SureColor SC-T7200D		
Density Block						
	Fast	Standard	High	Speed	Quality	Max Quality
1	1.38	1.36	1.28	1.19	1.43	1.51
2	1.39	1.32	1.39	1.19	1.41	1.52
3	1.37	1.37	1.34	1.19	1.43	1.50
4	1.40	1.37	1.36	1.18	1.44	1.50

Note: Solid black density measurements are based on four readings taken from a Buyers Lab 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 and XRite exact[tXp] densitometer.

Device Feature Set

	Canon imagePROGRAF TX-4000	Advantage		Epson SureColor SC-T7200D
Max. image resolution	2400 x 1200 dpi		✔	2880 x 1440 dpi
Number of inks	5			5
Ink tanks replaceable during operation	Yes	✔		No
Ink-drop size	5 picoliter		✔	3.5 picoliter (variable)
Ink capacity out of the box	970 ml (330 ml MBk; 160 ml CMYK)	✔		550 ml (110 ml x 5)
Ink cartridge capacity	160/330/700 ml (CMYK, MBk)		✔	350 ml/700 ml for CMYK, MK
Number of nozzles	MBk: 5,120 nozzles; other colours: 2,560 nozzles each; 15,360 nozzles in total	✔		3,600 in total (720 per colour)
Number of printheads	1 (User-replaceable)	✔		1 (Service-replaceable)
Line accuracy	+/-0.1% or less			+/-0.1%
Minimum line width	0.02 mm			0.02 mm
Minimum print margins	3 mm			3 mm
Borderless (0 mm) printing	Yes (Roll only)		✔	Yes
Maximum outside diameter of roll paper	170 mm	✔		150 mm
Maximum printable paper roll length	18 m			INA
Maximum cut-sheet media length	1.6 m	✔		1.5 m
Maximum media thickness for roll paper	0.8 mm	✔		0.5 mm
Maximum media width	44 inches			44 inches
Media loading	Top and Front			Front

	Canon imagePROGRAF TX-4000	Advantage		Epson SureColor SC-T7200D
Dual Roll	Optional Multifunction Roll System (with auto Take Up)			Optional Dual
Optional media handling	Roll holder set			Roll media adapter
Standard RAM	128 GB	✔		1 GB
Maximum RAM	128 GB	✔		1 GB
Hard drive	500-GB (Standard)	✔		320-GB (Optional)
Interface	10/100/1000Base-T/TX Ethernet, USB 2.0			10Base-T/100Base-TX /1000Base-T Ethernet, USB 2.0
PDL	HP-GL/2, HP RTL			HP-GL/2, HP RTL, Epson ESC/P-R
Net weight (unpacked)	114 kg	✔		133 kg
Power consumption when in standby	INA			3 W
Power consumption when active	107 W		✔	65 W
Acoustic pressure	Operation: 51 dB (A) or less; Standby: 35 dB (A) or less			Operation: 53 dB (A); Standby: 39 dB (A)
Acoustic power	INA			Operation: 6.8 Bels

INA – Information not available

Driver Feature Set

	Canon imagePROGRAF TX-4000	Advantage		Epson SureColor SC-T7200D
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	6 (Default, Photo (colour), Poster, CAD (colour line drawing), CAD (mono line drawing) and Perspective GIS)		✔	8
Overview of profile settings provided	Yes			Yes
Media profiles	53 + 10 user customizable special options	✔		20
IQ optimized for print profiles	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

	Canon imagePROGRAF TX-4000	Advantage		Epson SureColor SC-T7200D
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, 90 degrees and auto 180 degrees	✔		Yes, auto 180 degrees
Option to preview before print	Yes			Yes
CMYK balance adjustment	Yes (CMY)		✔	Yes
Brightness adjustment	Yes			Yes
Contrast adjustment	Yes			Yes
Saturation adjustment	No		✔	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

The Canon imagePROGRAF TX-4000 comes bundled with PosterArtist Lite.

Ink Consumption

Table 1: Amount of Ink in each Canon imagePROGRAF TX-4000 Cartridge (in Grams)

	Matte Black	Black	Yellow	Magenta	Cyan
Weight of cartridge prior to installation	952.9	777.6	805.8	786.2	785.2
Weight of cartridge at end of life	205.5	205.5	205.5	205.5	205.5
Net weight of ink	747.4	572.1	600.3	580.7	579.7
Total ink weight across five cartridges					3,080.2

Table 2 Amount of Ink in each Epson SureColor SC-T7200D Cartridge (in Grams)

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

Table 3: Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Standard Mode) on the Canon imagePROGRAF TX-4000 (in Grams)

	Matte Black	Black	Yellow	Magenta	Cyan
Test Run 1 Net weight of ink used	8.4	3.5	3.6	3.6	4.5
Test Run 2 Net weight of ink used	7.8	3.1	3.4	4.1	4.3
Test Run 3 Net weight of ink used	8.1	3.3	3.5	3.8	4.6
Average amount of ink used across three runs	8.1	3.3	3.5	3.8	4.5
Total ink weight across five cartridges					23.2

Table 4 Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Quality Mode) on the Epson SureColor SC-T7200D (grams)

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

Table 5 Ink Used in Three 50-Page Runs of Retail Poster Test Document (Standard Mode) on the Canon imagePROGRAF TX-4000 (in Grams)

	Matte Black	Black	Yellow	Magenta	Cyan
Test Run 1 Net weight of ink used	22.5	4.0	5.5	24.3	8.3
Test Run 2 Net weight of ink used	22.7	3.7	5.2	27.9	9.2
Test Run 3 Net weight of ink used	23.2	4.1	5.2	23.4	8.1
Average amount of ink used across three runs	22.8	3.9	5.3	25.2	8.5
Total ink weight across five cartridges					65.7

Table 6 Ink Used in Three 50-Page Runs of Retail Poster Test Document (Quality Mode) on the Epson SureColor SC-T7200D (in Grams)

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

Table 7: Ink Used in Three 50-Page Runs of GIS Map Test Document (Standard Mode) on the Canon imagePROGRAF TX-4000 (in Grams)

	Matte Black	Black	Yellow	Magenta	Cyan
Test Run 1 Net weight of ink used	10.9	3.3	5.4	10.5	10.3
Test Run 2 Net weight of ink used	10.0	2.9	4.9	9.7	10.9
Test Run 3 Net weight of ink used	9.2	3.1	5.1	10.1	7.3
Average amount of ink used across three runs	10.0	3.1	5.1	10.1	9.5
Total ink weight across five cartridges					37.8

Table 8 Ink Used in Three 50-page Runs of GIS Map Test Document (Quality Mode) on the Epson SureColor SC-T7200D (in Grams)

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

Ink Consumption Test Methodology Overview

Buyers Lab's ink consumption analysis was conducted using three document types (Cottage 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 TX-4000 was installed in Buyers Lab's lab with the latest "01.10" level of firmware (as of October 2017) and connected to a Windows 10 workstation using a 1000BaseT TCP/IP

connection. The Canon imagePROGRAF Printer Driver was used for all testing 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 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-T7200D was installed in Buyers Lab's lab with the latest "MW028E7,F7.10,5000" level of firmware (as of October 2014) and connected to a Windows 7 workstation using a 1000BaseT TCP/IP connection. The device was left in default configuration throughout testing. The Epson ESC/P driver was used for all testing and was left in default colour setting, with media selection set to plain paper and the image set to print at actual size. Print priority settings were set to Quality.

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

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

Test Environment

Products were tested in Buyers Lab's environmentally controlled UK test lab, which replicates typical office conditions.

Test Equipment

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

Test Procedures

The test methods and procedures employed by Buyers Lab in its lab testing include Buyers Lab's proprietary procedures and industry-standard test procedures. In addition to a number of proprietary test documents, Buyers Lab uses industry standard files including a Buyers Lab 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 XRite i1 profile software and an i1 Pro colour spectrophotometer, and analysed using Xrite i1i0 Advanced Scanning Table. Density of black and colour output was measured using XRite 508 and XRite exact^{Xp} densitometers.

About Keypoint Intelligence - Buyers Lab

Keypoint Intelligence is a one-stop shop for the digital imaging industry. With our unparalleled tools and unmatched depth of knowledge, we cut through the noise of data to offer clients the unbiased insights and responsive tools they need in those mission-critical moments that define their products and empower their sales.

For over 50 years, Buyers Lab has been the global document imaging industry's resource for unbiased and reliable information, test data, and competitive selling tools. What started out as a consumer-based publication about office equipment has become an all-encompassing industry resource. Buyers Lab evolves in tandem with the ever-changing landscape of document imaging solutions, constantly updating our methods, expanding our offerings, and tracking cutting-edge developments.

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