

## KPI Comparative Lab Test Report

FEBRUARY 2018

# Canon imagePROGRAF TX-2000

vs. Epson SureColor SC-T3200

Advantage ✓	Canon imagePROGRAF TX-2000	Epson SureColor SC-T3200
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	✓	
Device Feature Set	✓	
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-2000 and the Epson SureColor SC-T3200, 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

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Canon's latest 24-inch large-format device, the Canon imagePROGRAF TX-2000, gave an outstanding overall performance in Buyers Lab's testing, with superior results to those of the Epson SC-T3200 in most aspects of the evaluation. For one, the TX-2000 delivered much faster colour and black productivity in all modes, particularly in High quality mode. In fact, Buyers Lab technicians observed the speed advantage of the Canon model over the Epson unit became more pronounced as the quality level increased, which enables Canon users to achieve optimum image quality without sacrificing productivity. One significant productivity-boosting feature is the Canon model's ability to handle 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 tank design, inks can be replaced on the fly. In contrast, when the Epson unit runs out of ink, printing must stop for the cartridge to be replaced, leading to operator downtime.

Image quality produced by the two models would easily satisfy the expectations of customers from the Architectural, Engineering and Construction (AEC), Computer-Aided Design (CAD) and Geographic Information Systems (GIS) markets. However, the Canon TX-2000 excelled with a finer level of detail in colour business graphics, more natural skin tones, and crisper text and line art output. The Epson model delivered larger colour gamuts when printing on plain paper in all modes and higher optical CMY densities overall, but its output showed some ink bleed when viewed under magnification. In addition, the Canon model has a significant advantage with its unidirectional print driver option. When selected, this option eliminates banding on the Canon TX-2000's output, even in Fast mode. The Epson device does not offer this feature, and while there was no banding on output for Buyers Lab's image quality tests, there was some banding evident on the Epson device's poster in Speed mode. Moreover, the Canon model used significantly less ink in two of the three ink consumption tests when printing on plain paper.

In terms of driver and device feature sets, the Epson model has some advantages such as lower power consumption when printing, smaller ink drop sizes, slightly higher standard ink cartridge capacity, and more driver profile options than the Canon TX-2000. However, the Canon TX-2000 offers superior features overall, with higher standard and maximum memory capacities, a standard 500-GB hard drive, a user-replaceable printhead (which avoids the added downtime that will be experienced with the Epson unit whose printhead is service-replaceable), a dual-roll option for flexible switching between media sizes, plus its aforementioned hot-swap ink tanks and unidirectional print feature.

Exhibiting faster productivity, superior image quality, lower ink consumption in two out the three tests, more robust driver and device feature sets, combined with its free Canon imagePROGRAF Direct Print & Share utility that supports direct PDF submission (that's only available for the Epson model with the extra-cost PostScript option), the Canon imagePROGRAF TX-2000 is clearly the stronger model in Buyers Lab's large-format evaluation.

## Print Quality

Advantage ✓	Canon imagePROGRAF TX-2000	Epson SureColor SC-T3200
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 (photo 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-2000 delivered higher optical densities for composite black in all modes and had a comparable optical density for magenta in Standard/Quality and for magenta and cyan in High/Max Quality modes, while the Epson SC-T3200 delivered higher optical densities for cyan and yellow in Speed and Quality modes, and for magenta in Speed mode.
- In the colour gamut assessment conducted on plain paper using Fast/Speed settings, the Canon TX-2000 delivered a 24.5% smaller colour gamut, with a CIE volume of 129,667 versus a CIE volume of 171,742 for the Epson device.
- The Canon model produced a 3.2% smaller colour gamut when printing on plain paper using Standard/Quality settings, with a CIE volume of 192,243 versus a CIE volume of 198,506 for the Epson model.
- When printing on plain paper in High/Max Quality settings, the Canon TX-2000 delivered a 2.9% smaller colour gamut than the Epson SC-T3200, with a CIE volume of 219,514 for the Canon model versus a CIE volume of 226,135 for the Epson model.
- + When printing on photo-quality paper using Canon’s High quality setting and the Epson SC-T3200’s Max Quality setting, the Canon model delivered a 3.0% larger colour gamut than the Epson unit, with a CIE volume of 671,916 compared with 652,492 for the SC-T3200.
- + When evaluating text in colour mode, there was a clear difference in quality between the two models. The Canon TX-2000 delivered consistently very good crisp text quality in colour across all tested modes on plain paper. In contrast, virtually all fonts produced by the Epson model were fully legible only down to the 4-pt. level in all modes, except for serif text in Speed mode, which was legible down to the 5-pt. level, while some ink bleed was observed in all modes.

- + Fine lines produced by both devices remained distinct down to the 0.1-pt. level. However, those produced by the Epson model suffered from slight ink bleed and were not as crisp as those delivered by the Canon unit, which were rated very good.
- + The Canon TX-2000 produced clean, smooth and fully formed 0.1-pt. circles that were rated good in Fast mode and excellent in Standard and High quality modes. Circles produced by the Epson SC-T3200 were fully formed at 0.1-pt but rated only fair in all modes as they were jagged.
- + The Canon model produced the 1x1 pixel grid in CMY with no quality issues, and coverage was consistently very good across all colours. In contrast, the dot laydown produced by the Epson unit was poor, and showed incomplete coverage.
- 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-2000 delivered very good, consistently smooth colour halftone fills in all modes, while the Epson model delivered smooth halftone coverage that was rated good in all modes.
- + When evaluating Architectural, Engineering and Construction (AEC) graphics in Standard/Quality and High/Max Quality modes, the Canon and Epson models' output exhibited an excellent level of detail, but the Canon device delivered better, more distinct fine lines and sharper text formation when viewed under magnification.
- O When printing 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 excellent depth of field—a critical factor in delivering a more realistic three-dimensional rendering of topographical features.
- + Colour business graphics produced by the Canon TX-2000 exhibited sharper details than did the Epson device.
- + When evaluating colour photographic images, Buyers Lab technicians observed little difference in the output of the two models, with both producing bright colours, smooth tonal transitions, and excellent detail in light contrast areas. However, the Canon TX-2000 delivered superior results in dark contrast areas in photographic images.
- + Skin tones produced by the Canon model were more natural-looking than those produced by the Epson device, which were distinctly reddish in all modes.
- + Overall, the Canon model delivered superior colour image quality with a finer level of detail in colour business graphics, a larger colour gamut on photo media, more natural skin tones, and very clean and crisp text, fine lines and circles. Its output displayed none of the fuzziness that was visible on image output from the Epson device when viewed under magnification. In contrast, the Epson model delivered larger colour gamuts when printing on plain paper in all modes and higher optical CMY densities overall. As befitting the needs of their target markets, both printers produced very good detailing in AEC drawings and an excellent level of detail and depth of field in GIS graphics.

## Black Image Quality

Advantage ✓	Canon imagePROGRAF TX-2000	Epson SureColor SC-T3200
Text	✓	
Fine Lines	✓	
Halftone Range	=	=
Halftone Fill	✓	
Solid density	✓	
AEC Graphics	✓	
Business Graphics	✓	
Photographic Images	✓	

- + When printing in monochrome, the Canon TX-2000 delivered darker solids with higher optical densities in all tested modes.
- + Serif and sans serif fonts produced by the TX-2000 were crisp and legible down to the 3-pt. level across all modes and rated very good in Fast mode and excellent in the higher quality modes, while the Epson device produced serif and sans serif text legible down to the 4-pt. level in all quality modes with some visible ink bleed.
- + Fine lines in Buyers Lab’s line art test target remained distinct down to the 0.1-pt. level printed in all modes on both devices. However, the Canon model produced crisper fine lines than the Epson unit, whose output was slightly blurred. White-on-black fine lines produced by both models were intact at the 0.25-pt. level in all quality modes, and were rated very good for the Canon TX-2000 across the board, but only fair for the Epson unit as the distinctness was impaired by ink bleed.
- + Circles produced by both models were fully formed at 0.1pt; the Canon TX-2000’s circles were far smoother than those produced by the Epson model, which displayed some stair-stepping even in Max Quality mode.
- O Both models delivered halftones across the full range—from the 10% to 100% dot-fill levels in all modes, with distinct transitions between all levels.
- + Halftone fill in all modes was rated very good for the Canon model, but only fair for the grainy output from the Epson unit.
- + Both models delivered high quality AEC graphics with crisp, clean fine lines in Standard/Quality and High/Max Quality modes in black. However, the Canon TX-2000 produced more distinct text formation when viewed under magnification.
- + Monochrome business graphics output in High/Max Quality mode on plain paper were produced more accurately by the Canon model, with smoother halftone gradations and crisper text, whereas some graininess was visible in output produced by the Epson unit.
- + Photographic images produced on plain paper by the Canon TX-2000 exhibited smoother gradations and better detail in dark contrast areas than output produced by the Epson model.

- + In Buyers Lab’s monochrome image quality assessment, the Canon TX-2000 produced superior quality, with crisper text and fine lines (with no ink bleed), sharper business graphics, higher optical densities, and better fine detailing in dark areas on photographic output. There was no single aspect in which the Epson SC-T3200 truly stood out, although it delivered very good detailing in AEC graphics and a full halftone range, as did the Canon model.

## Print Productivity

Advantage ✓	Canon imagePROGRAF TX-2000	Epson SureColor SC-T3200
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)	✓	

- + The Canon TX-2000 delivered a much faster (by 44.9%) first-page-out time of 87.06 seconds after a weekend of non-use, compared with 157.96 seconds for the Epson SC-T3200 device. Start-up time before printing commenced was faster for the Canon model at 58.28 seconds, compared with 84.24 seconds for the Epson unit.
- + The Canon device delivered a 43.9% faster first-page-out time of 48.91 seconds from its ready state, compared with 87.13 seconds for the Epson SC-T3200. Although start-up time before printing commenced was slower for the Canon model—21.94 seconds versus 12.38 seconds— the Canon TX-2000 is the faster device overall after taking into account the two combined measurements.
- + When printing Buyers Lab’s job stream, designed to simulate a typical mixed workflow for a large-format unit, the Canon TX-2000 delivered a superior performance in High/Max Quality mode, running 37.4% faster than the Epson model. In the other tested modes, it was also faster—31.8% faster in Fast/Speed mode and 18.7% faster in Standard/Quality mode.
- + When printing Buyers Lab’s 12-page DWF test file in colour, the Canon TX-2000 was faster than the Epson unit in all modes tested; it was 28.0% faster in Fast/Speed mode; 33.9% faster in Standard/Quality mode; and 46.1% faster in High/Max Quality mode.
- + Similarly, when printing Buyers Lab’s 12-page DWF test file in monochrome, the Canon unit was 20.9% faster than the Epson model in Fast/Speed mode, 32.6% faster in Standard/Quality mode, and 45.5% faster in High/Max Quality mode.
- + The Canon model’s unique sub ink tank system provides a further boost to productivity. When the Epson SC-T3200 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 the cartridge is being replaced, so there’s no operator downtime. For added convenience, the control panel alerts users to replace ink and also provides purchasing information.

- When the Canon imagePROGRAF TX-2000 runs out of paper, the device pauses and alerts the operator. After a new roll is installed, the operator is prompted to confirm the paper type and whether he or she wishes to continue printing the job. The device resumes printing at the beginning of the interrupted page, rather than printing the portion of the page that remained before running out of paper, so less ink and paper are wasted. Likewise, the Epson SC-T3200 will print the interrupted page in its entirety after a new roll is installed.

## Banner Printing

	Canon imagePROGRAF TX-2000	Epson SureColor SC-T3200
Image Quality	=	=
Productivity	✓	

- + Both models successfully printed Buyers Lab’s 36" x 105" banner (a 4,955-KB PDF file) in Fast/Speed mode. The Epson SureColor SC-T3200 took 24.66 seconds to generate a preview at the desktop, and a further 1 minute, 18.35 seconds from PC release to final paper cut. In contrast, the Canon model took 6.92 seconds to generate a preview at the desktop, and an additional 1 minute, 9.20 seconds from preview to final paper cut. With a total preview and print time of 1 minute, 16.12 seconds, the Canon TX-2000 is clearly the faster model.
- The Canon model printed the banner image in its entirety with no quality issues, as did the Epson unit using the Epson driver’s Poster settings.
- + However, when the file was printed using the Epson driver’s CAD settings (which may be selected, for example, when printing an oil well plot), it took the same time to print the banner, however more than 50% of the background was omitted from the final output.

## Poster Printing

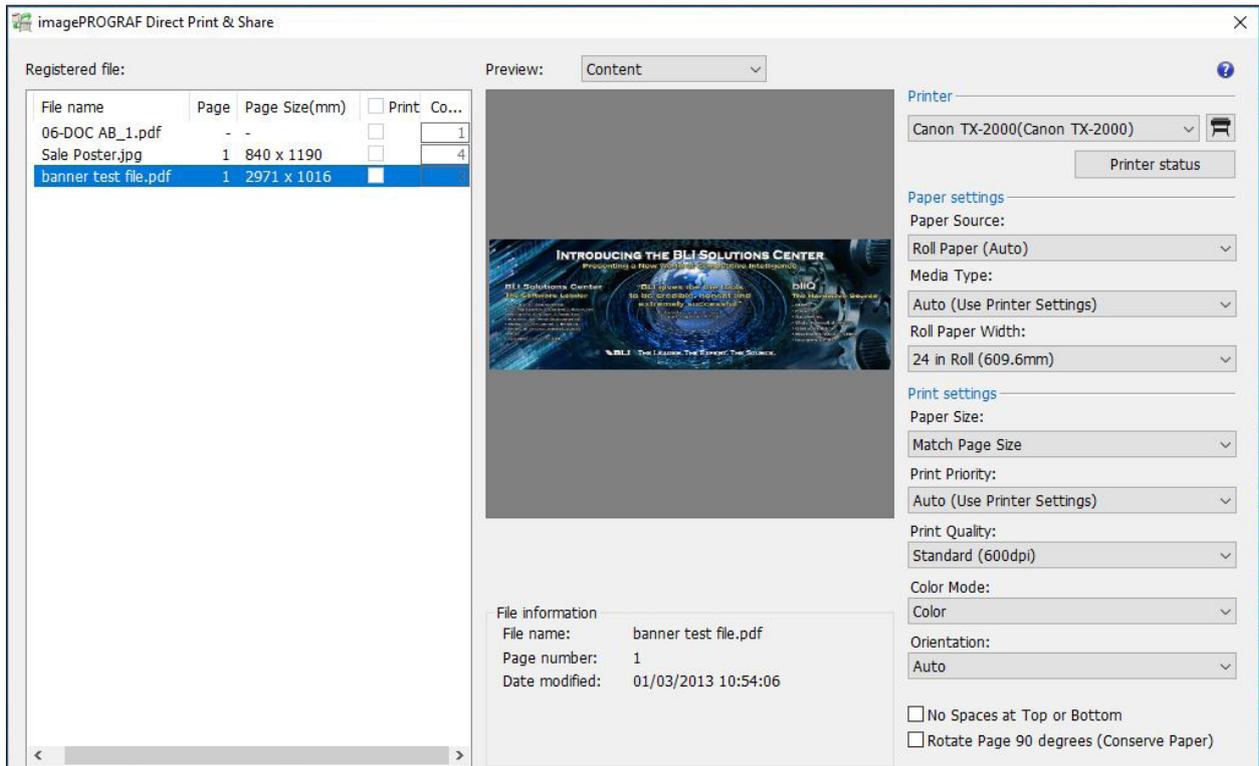
Advantage ✓	Canon imagePROGRAF TX-2000	Epson SureColor SC-T3200
Image Quality (Fast/Speed mode)	✓	
Image Quality (Standard/Quality mode)	=	=
Image Quality (High/Max Quality mode)	=	=
Productivity (Fast/Speed mode)	=	=
Productivity (Standard/Quality mode)	✓	
Productivity (High/Max Quality mode)	✓	

- When printing a poster in Fast/Speed mode at 300 dpi, the Canon model took 39.71 seconds to complete the job and the Epson unit at 360 x 720 dpi took 38.97 seconds.
- + Some banding was observed on output printed in Fast/Speed mode by both models (across the whole image with the Epson unit, but only in dark areas with the Canon model). When unidirectional printing was selected in the Canon print driver, which is not available for the Epson model, it took 65.44 seconds to print the banner and the banding was eliminated.
- + When printing a poster in Standard/Quality mode at 600 dpi, the Canon model took 1 minute, 12.36 seconds, while the Epson unit took 1 minute, 17.56 seconds. There was no visible banding on output from either model in this mode.
- + When printing a poster in High quality (600 dpi) mode, the Canon model took 2 minutes, 0.75 seconds, while the Epson model in Max Quality (720 x1440 dpi) mode took 3 minutes, 4.34 seconds—a 34.5% faster print time for the Canon model.
- At these High/Max Quality settings, image quality was equally good on output from both models, with vibrant saturated reds and good definition.

## Direct Print Submission Functionality

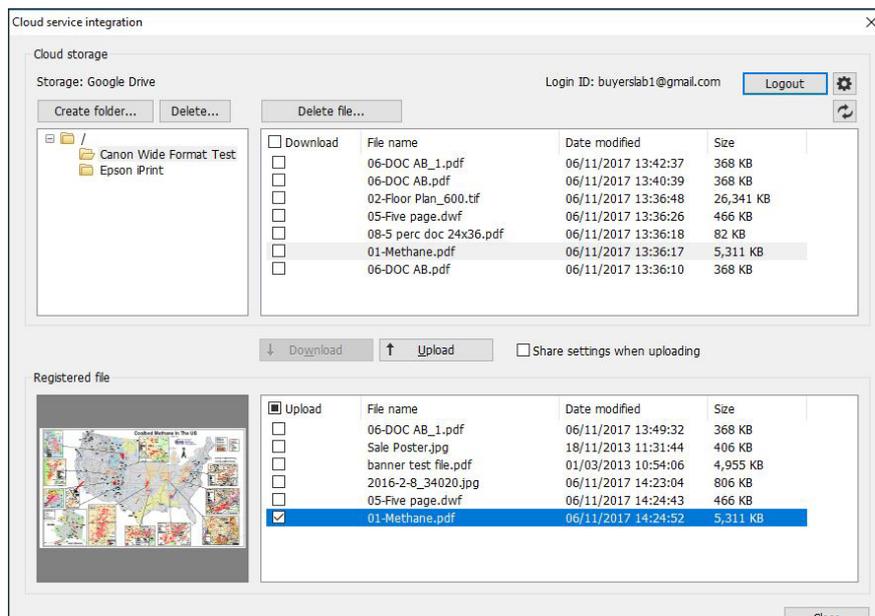
Advantage ✓	Canon imagePROGRAF TX-2000	Epson SureColor SC-T3200
Functionality / Cost	✓	*
Mobile App Integration	✓	

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



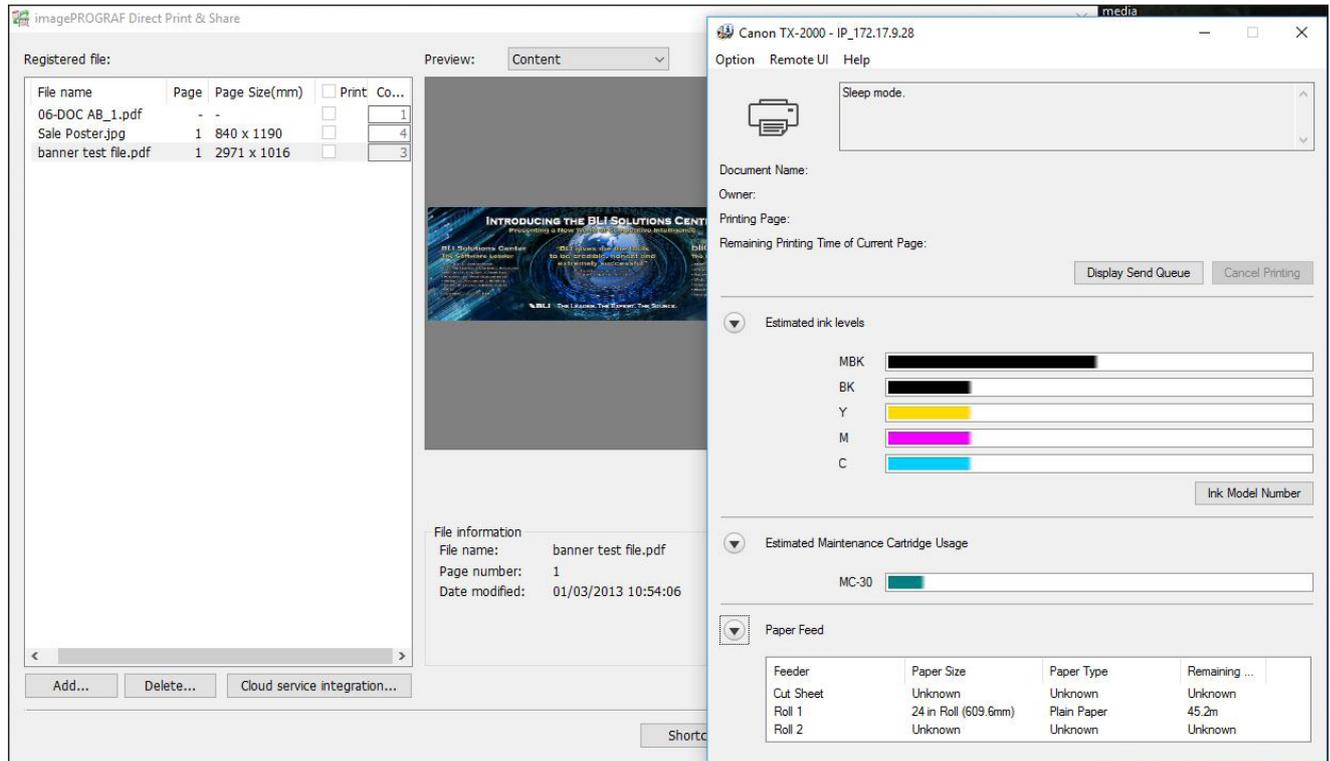
**Canon’s imagePROGRAF Direct Print & Share utility gives users an image preview.**

- 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 flexibly. There’s no equivalent app for the Epson device.
- 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-2000	Epson SureColor SC-T3200
Cottage Architectural Plan	24.1	23.5
Retail Poster	50.0	70.7
GIS Map	35.0	62.2

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

- When producing 50 prints of a Cottage Architectural Plan in Standard/Quality mode, the Canon unit used 2.6% more ink than the Epson SC-T3200.
- + When printing a Retail Poster in Standard/Quality mode, the Canon unit used 29.3% less ink than did the Epson SC-T3200.
- + When printing a GIS Map in Standard/Quality mode, the Canon TX-2000 used 43.7% less ink compared with the Epson device.

## Device Feature Set

- The 330-ml capacity of Canon’s standard-yield cartridges is slightly lower than the 350-ml capacity of the Epson cartridges; both offer 700-ml capacity high-yield cartridges for all colours.
- + Canon’s ink cartridges are replaceable during operation, which helps to reduce 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 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 printheads are user-replaceable, taking less than five minutes to replace, whereas Epson’s printheads are only service-replaceable.
- + The Canon unit supports a higher maximum cut-sheet media length of 1.6 m compared with 914 mm for the Epson unit.
- O Both models offer USB 2.0 and Gigabit Ethernet connectivity.
- O Both models offer 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.
- + For maximum convenience and minimum downtime, the Canon model offers an optional Multifunction Roll System, which gives users the added flexibility of switching between different media types or sizes without reloading the media each time, while the auto Take-Up feature allows large numbers of images or documents to be conveniently stored on a single roll. Epson offers only the single-roll printer.

- Both models accommodate both 2" and 3" core adapters, which provides additional flexibility for media handling.
- Both models 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 model is heavier (91 kg versus 67 kg) than the Epson unit.
- + The Canon TX-2000's high-capacity stacker can accommodate up to 100 A1-sized CAD prints (depending on paper weight and thickness).
- The output catch baskets of both models are very simple designs which collect output from media rolls in a random order.
- The catch trays of both models enable most printed sheets to be stacked neatly. However, when media rolls approached their end, the tightly curled output had a tendency to spill out of both trays.
- Both models offer a colour touchscreen user interface, which are both similarly responsive and intuitive to navigate.
- The Epson SC-T3200 power consumption while printing is lower—52 watts versus 91 watts—than that of the Canon model.
- 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

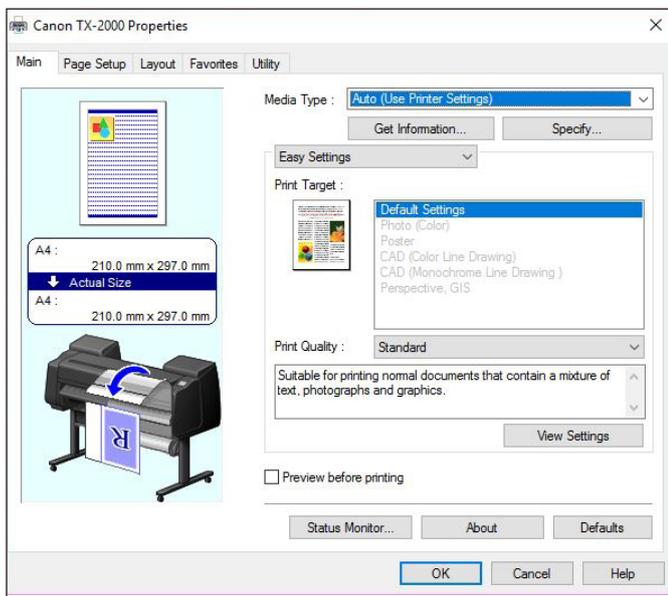
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- + The Canon TX-2000 has five speed settings (Fast 300, Standard 600, Fast 600, High 600 and High 1200), which are matched by three settings on the Epson device (Speed, Quality and Max Quality), although not all speed settings are available with all media types on the Canon model.
- 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 options, including a wide variety of image quality attributes.
- 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

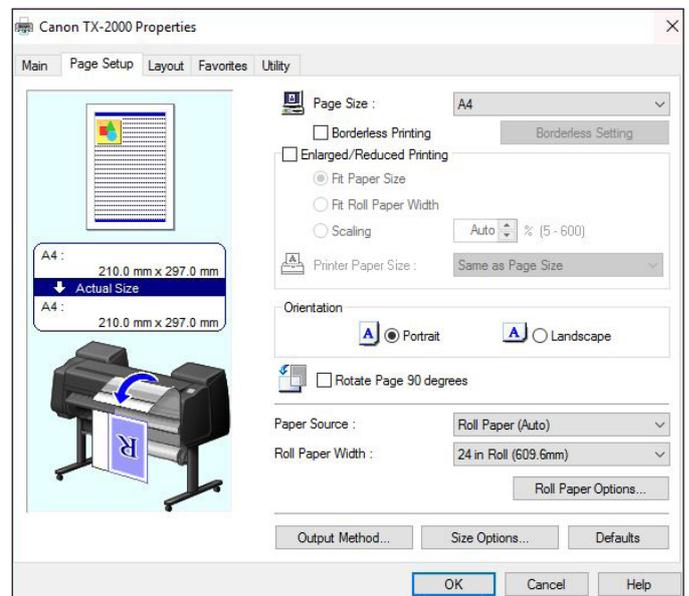
Matching, ICC Profile Matching, ICM (and choose one of four rendering methods—auto, perceptual, colorimetric (or saturation) or Off).

- The Epson driver provides a handy thumbnail preview for users to check the effects on 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 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-2000, whereby documents scanned at the MFP are automatically routed to a hot folder that is monitored by the TX-2000 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.
- 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.
- 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.

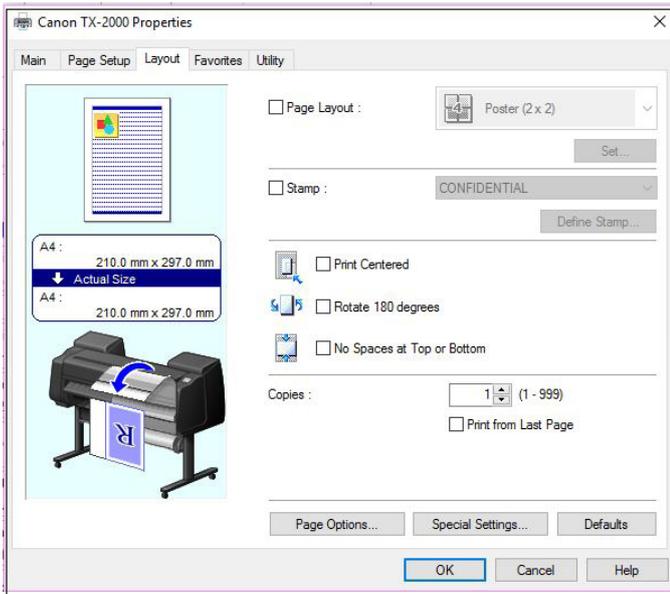
### Test Models' Print Driver Screenshots



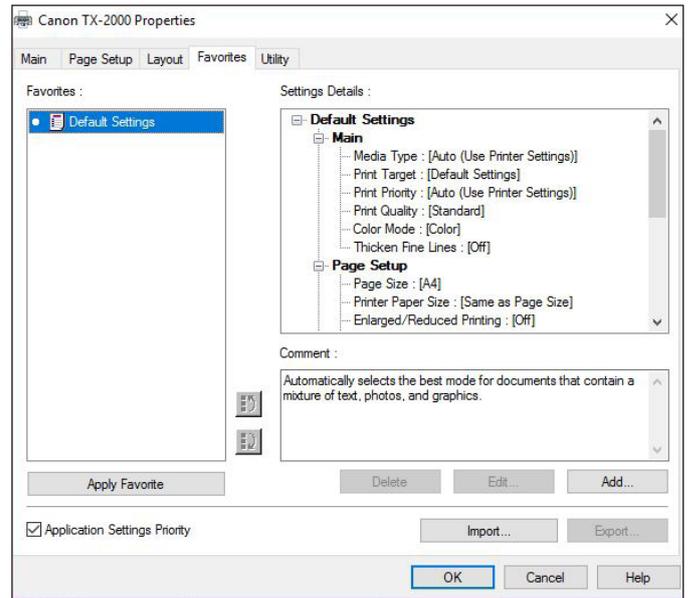
Canon imagePROGRAF TX-2000 Print Driver Main Tab



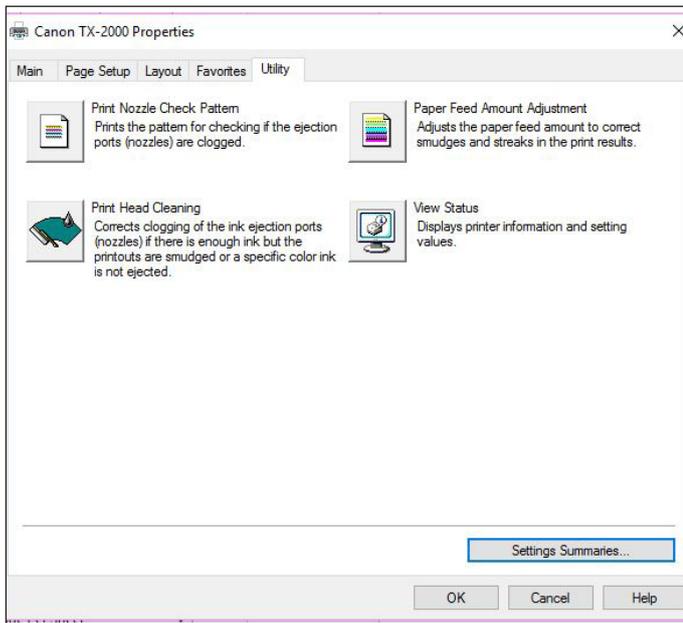
Canon imagePROGRAF TX-2000 Print Driver Page Setup Tab



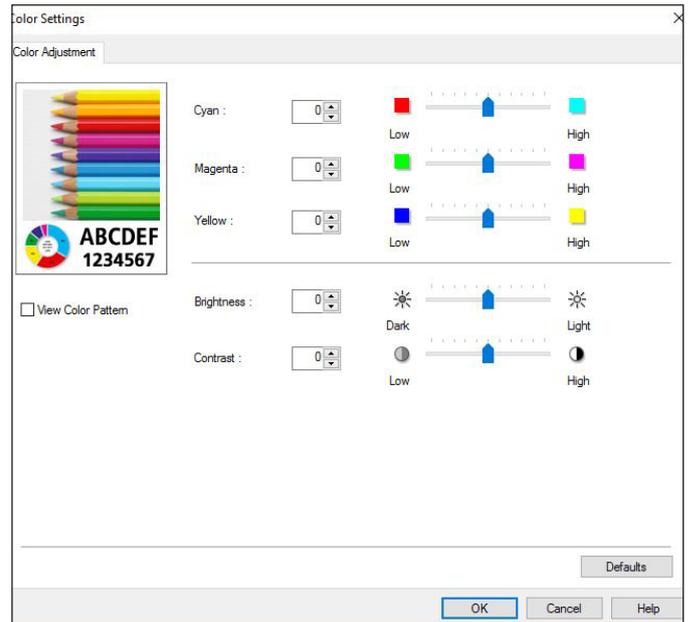
**Canon imagePROGRAF TX-2000 Print Driver Layout Tab**



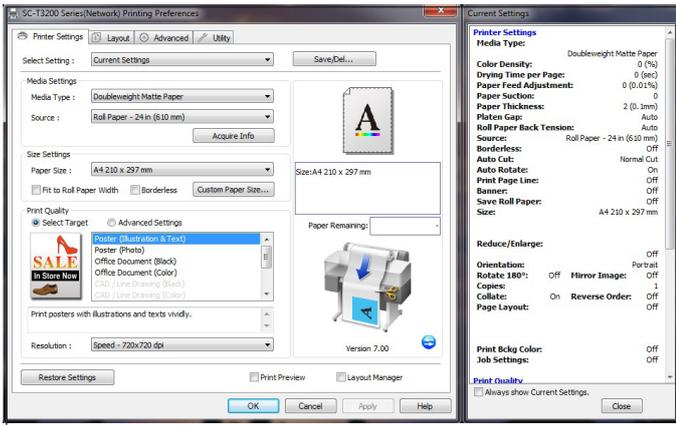
**Canon imagePROGRAF TX-2000 Print Driver Favourites Tab**



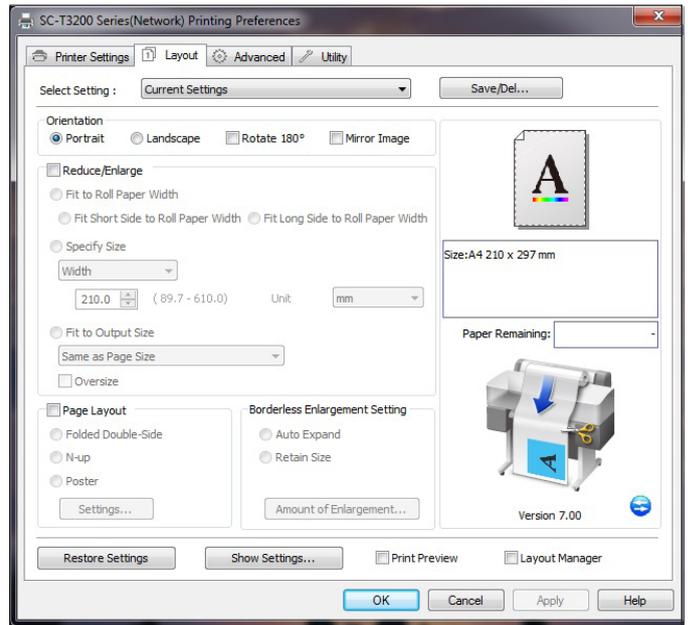
**Canon imagePROGRAF TX-2000 Print Driver Utility Tab**



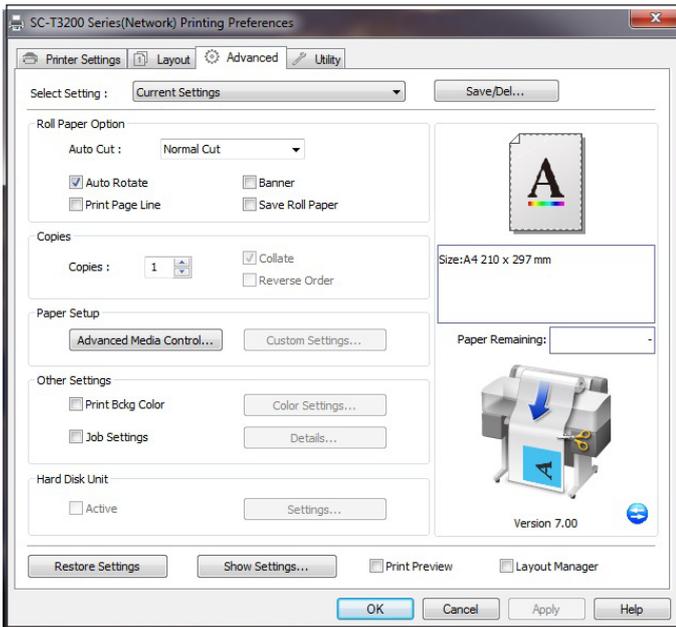
**Canon imagePROGRAF TX-2000 Print Driver Colour Adjustment Tab**



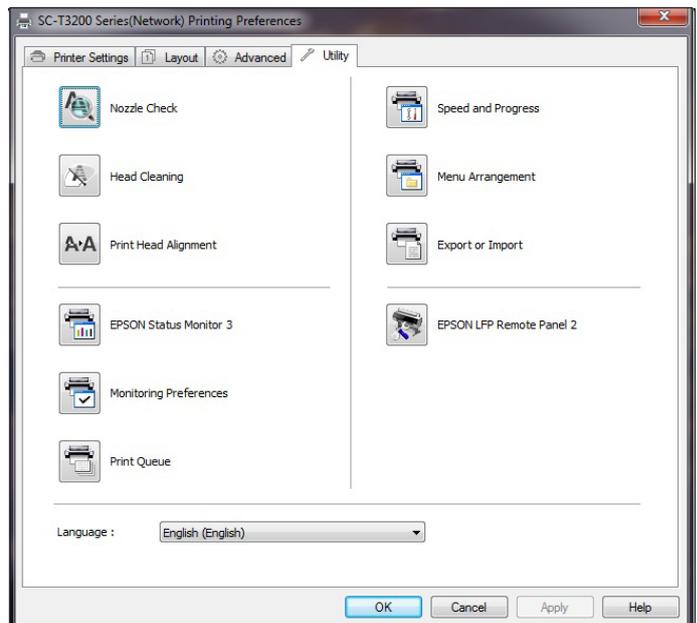
Epson SureColor SC-T3200 Driver Printer Settings Tab



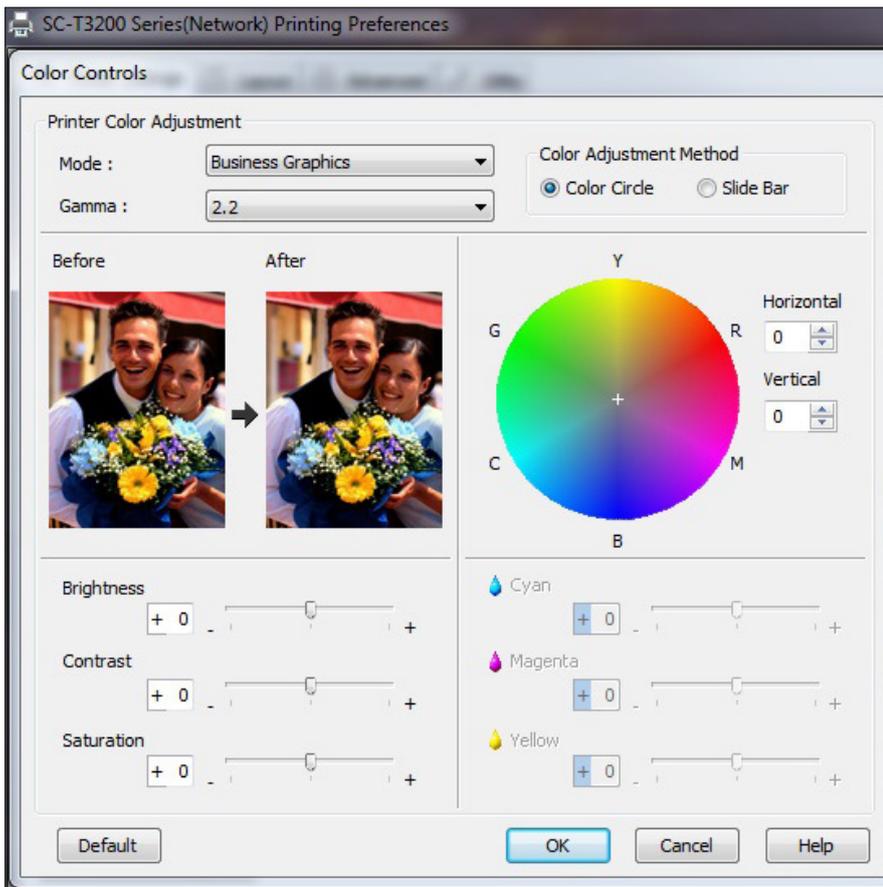
Epson SureColor SC-T3200 Driver Layout Tab



Epson SureColor SC-T3200 Driver Advanced Settings Tab



Epson SureColor SC-T3200 Driver Utility Tab



**Epson SureColor SC-T3200 Driver Colour Control**

## SUPPORTING TEST DATA

### Job Stream Productivity (in Seconds)

#### Mixed File Types, Same Size

	Canon imagePROGRAF TX-2000		Epson SureColor SC-T3200
Fast	565.80	Speed	829.47
Standard	1,177.85	Quality	1,448.28
High	2,318.12	Max Quality	3,704.44

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 of the last file exits the device. Both devices were loaded with 610-mm rolls, with each file set to auto-rotate to save media.

**Colour Productivity (in Seconds)**

Canon imagePROGRAF TX-2000		Epson SureColor SC-T3200	
Fast	371.03	Speed	515.34
Standard	601.84	Quality	911.18
High	1,382.27	Max Quality	2,566.31

The 12-page DWF test file was printed using the device driver set to the plain paper/colour setting. Both devices were loaded with 610-mm 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-2000		Epson SureColor SC-T3200	
Fast	409.20	Speed	517.41
Standard	615.10	Quality	912.31
High	1,395.88	Max Quality	2,562.91

The 12-page DWF test file was printed using the device driver set to the plain paper/monochrome setting, and the Epson driver set to plain paper, greyscale, black ink only. Both devices were loaded with 610-mm 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-2000	Epson SureColor SC-T3200
Time Before Printing Commences	58.28	84.24
First Page Out	87.06	157.96

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

	Canon imagePROGRAF TX-2000	Epson SureColor SC-T3200
Time Before Printing Commences	21.94	12.38
First Page Out	48.91	87.13

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 610-mm rolls.

## Colour Image Quality

### Colour Optical Density Evaluation

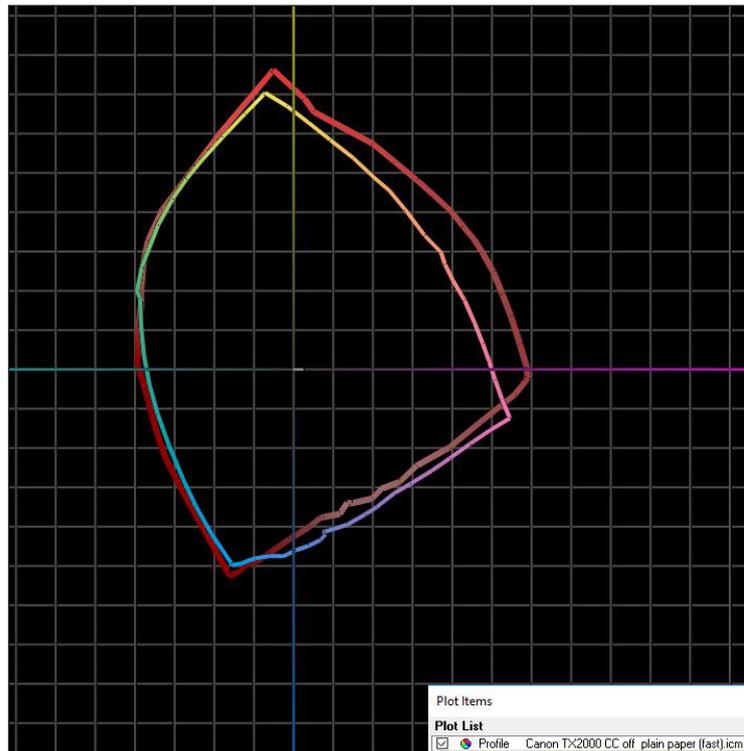
Canon imagePROGRAF TX-2000						
	Fast		Standard		High	
	50%	100%	50%	100%	50%	100%
Cyan	0.40	0.87	0.48	1.01	0.50	1.06
Magenta	0.35	0.72	0.42	0.88	0.43	0.95
Yellow	0.32	0.72	0.38	0.85	0.39	0.90
Black	0.42	1.44	0.51	1.40	0.52	1.38

Epson SureColor SC-T3200						
	Speed		Quality		Max Quality	
	50%	100%	50%	100%	50%	100%
Cyan	0.39	1.02	0.36	1.04	0.38	1.04
Magenta	0.35	0.86	0.28	0.88	0.29	0.94
Yellow	0.37	0.81	0.38	0.89	0.35	0.93
Black	0.66	1.10	0.65	1.27	0.65	1.30

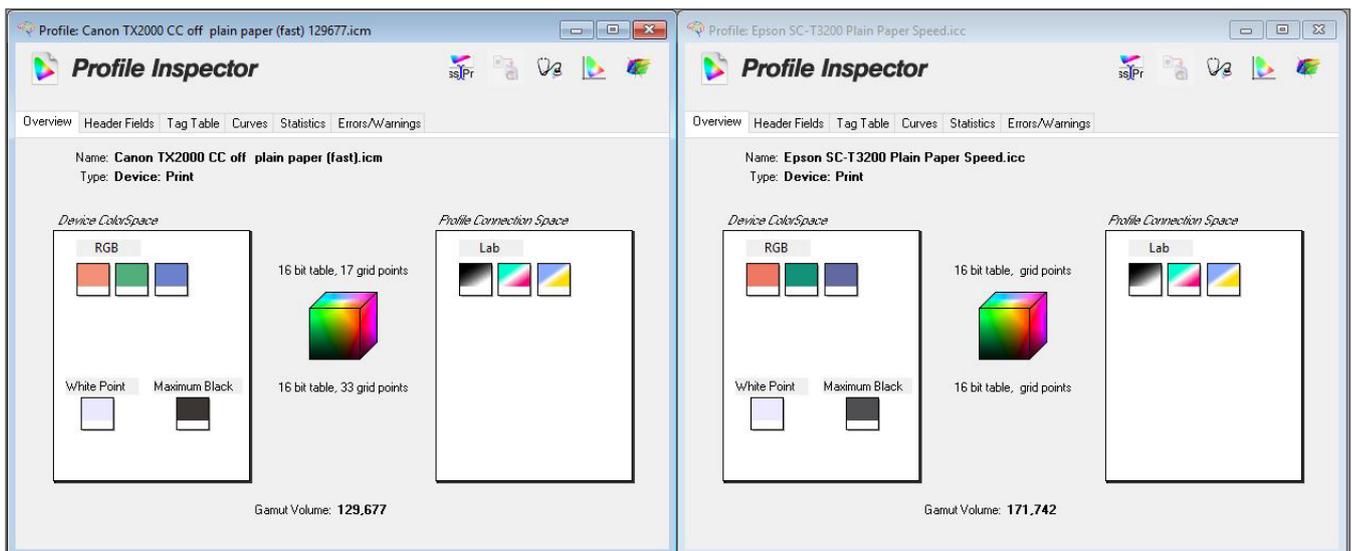
Note: Colour density readings were assessed by printing a Buyers Lab proprietary PDF test target file on plain paper in default colour settings at all quality settings available and measuring the density of 100% dot fill and 50% dot fill using an XRite 508 densitometer and an XRite exact<sup>XP</sup>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

## Colour Gamut Comparison

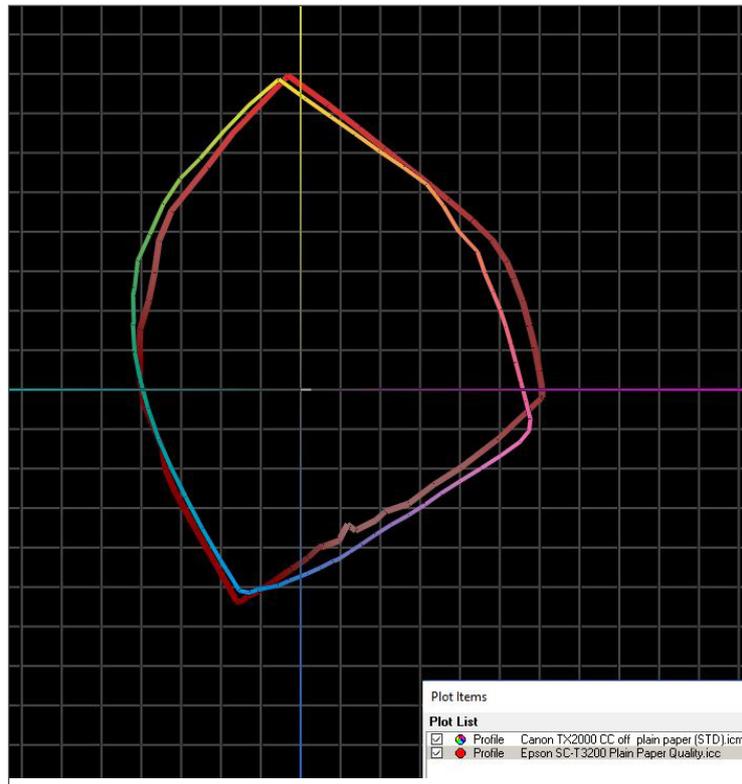
Media Type/Quality Settings	Canon imagePROGRAF TX-2000	Epson SureColor SC-T3200
Plain Paper Fast/Speed	129,667	171,742
Plain Paper Standard/Quality	192,243	198,506
Plain Paper High/Max Quality	219,514	226,135
Glossy Photo Coated High/Max Quality	671,916	652,492



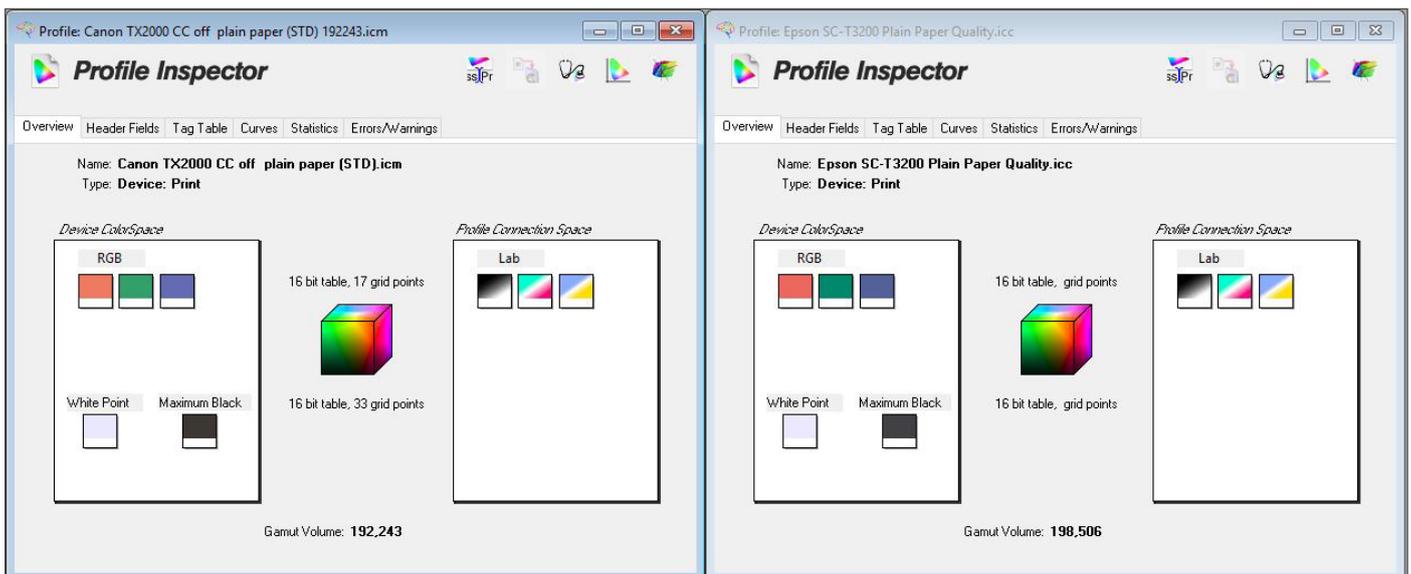
**Canon imagePROGRAF TX-2000 colour gamut on plain paper in Fast settings (shown chromatically) versus Epson SureColor SC-T3200 colour gamut (shown in red) on plain paper in Fast/Speed settings.**



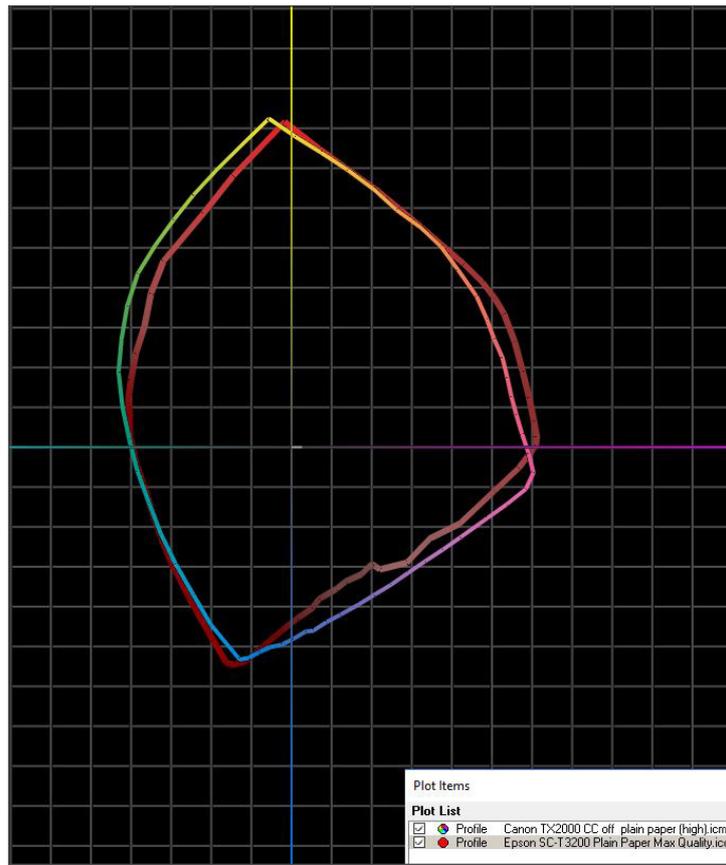
**Colour gamut profile for Canon imagePROGRAF TX-2000 (left) and Epson SureColor SC-T3200 (right) on plain paper in Fast/Speed mode.**



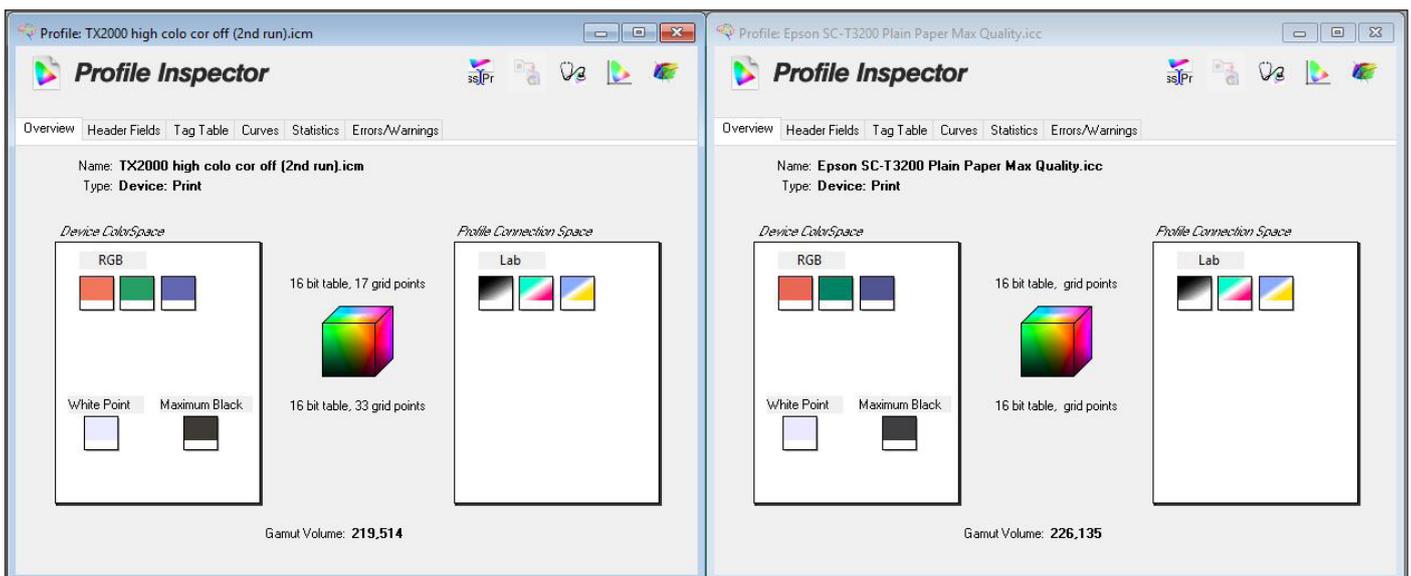
**Canon imagePROGRAF TX-2000 colour gamut on plain paper in Standard settings (shown chromatically) versus Epson SureColor SC-T3200 colour gamut (shown in red) on plain paper in Quality settings.**



**Colour gamut profile for Canon imagePROGRAF TX-2000 (left) and Epson SureColor SC-T3200 (right) on plain paper in Standard/Quality mode.**



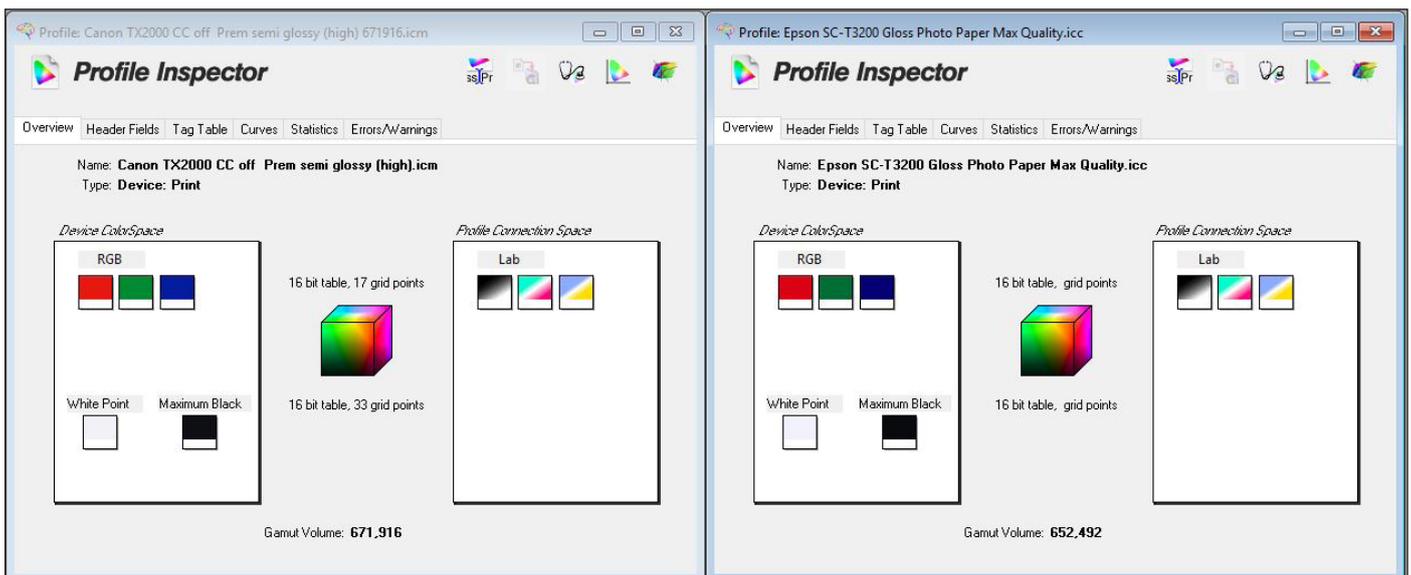
**Canon imagePROGRAF TX-2000 colour gamut on plain paper in High settings (shown chromatically) versus Epson SureColor SC-T3200 colour gamut (shown in red) on plain paper in Max Quality settings.**



**Colour gamut profile for Canon imagePROGRAF TX-2000 (left) and Epson SureColor SC-T3200 (right) on plain paper in High/Max Quality modes.**



**Canon imagePROGRAF TX-2000 colour gamut on glossy photo paper in High quality settings (shown chromatically) versus Epson SureColor SC-T3200 colour gamut (shown in red) on glossy photo paper in Max Quality settings.**



**Colour gamut profile for Canon imagePROGRAF TX-2000 (left) and Epson SureColor SC-T3200 (right) on glossy photo paper in High/Max Quality modes.**

## Black Print Quality

### Black Optical Density Evaluation

Canon imagePROGRAF TX-2000				Epson SureColor SC-T3200		
Density Block						
	Fast	Standard	High	Speed	Quality	Max Quality
1	1.46	1.43	1.40	1.17	1.35	1.34
2	1.44	1.43	1.38	1.17	1.34	1.35
3	1.45	1.42	1.41	1.17	1.34	1.34
4	1.46	1.45	1.42	1.17	1.33	1.32

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 exact<sup>®</sup> densitometer and an XRite exact<sup>®</sup> densitometer.

## Device Feature Set

	Canon imagePROGRAF TX-2000	Advantage	Epson SureColor SC-T3200
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)
Starter cartridge capacity	970 ml (330 ml MBK; 160 ml CMYK)		INA
Ink cartridge capacity	160 ml, 330 ml and 700 ml (all colours)	✓	110 ml, 350 ml and 700 ml (all colours)
Number of nozzles	MBK: 5,120 nozzles; other colours: 2,560 nozzles each; 15,360 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	✓	149.86 mm
Maximum printable paper roll length	18 m		INA
Maximum cut-sheet media length	1.6 m	✓	914 mm
Maximum media thickness for roll paper	0.8 mm	✓	0.5 mm
Maximum media width	24 inches		24 inches
Roll paper	Optional Multifunction Roll System (with auto Take Up)	✓	Single roll
Optional media handling	Roll holder set		Roll media adapter

	Canon imagePROGRAF TX-2000	Advantage		Epson SureColor SC-T3200
Media loading	Top and Front Loading Slot for Sheet Paper			Top
High-capacity stacker assembly	100 sheets			INA
Standard RAM	128 GB	✓		1 GB
Maximum RAM	128 GB	✓		1 GB
Hard drive	500-GB (Standard)	✓		320-GB (Optional)
Interface	Hi-Speed USB; 10/100/1000Base-T/TX Ethernet; USB 2.0			10/100/1000Base-T/TX Ethernet, USB 2.0
PDL	HP-GL/2, HP RTL			HP-GL/2, HP RTL, Epson ESC/P-R
Net weight (unpacked)	91 kg		✓	67 kg (with stand)
Power consumption when in standby	INA			3 W
Power consumption when active	91 W		✓	52 W
Acoustic pressure	Operation: 51 dB (A) or less; Standby: 35 dB (A) or less			Operation: 50 dB (A); Standby: INA
Acoustic power	INA			Operation: 6.8 Bels

INA – Information not available

## Driver Feature Set

	Canon imagePROGRAF TX-2000	Advantage		Epson SureColor SC-T3200
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			INA
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
Poster print mode	Yes (2 by 2)		✓	Yes (4 by 4)

	Canon imagePROGRAF TX-2000	Advantage		Epson SureColor SC-T3200
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 only)		✓	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 (flexible placement)			Yes
MS Office Plug-in	Yes			Yes
Disable automatic cutter	Yes			Yes
Unidirectional printing selection option	Yes	✓		No

The Canon imagePROGRAF TX-2000 comes bundled with PosterArtist Lite.

## Ink Consumption

Table 1: Amount of Ink in each Canon imagePROGRAF TX-2000 Cartridge (in Grams)

	Matte Black	Black	Yellow	Magenta	Cyan
Weight of cartridge prior to installation	369.0	389.0	428.4	435.1	424.6
Weight of cartridge at end of life	205.5	205.5	205.5	205.5	205.5
Net weight of ink	163.5	183.5	222.9	229.6	219.1
Total ink weight across five cartridges					1,018.6

Table 2 Amount of Ink in each Epson SureColor SC-T3200 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-2000 (in Grams)

	Matte Black	Black	Yellow	Magenta	Cyan
Test Run 1 Net weight of ink used	9.8	3.5	3.5	1.5	3.1
Test Run 2 Net weight of ink used	11.4	5.0	4.1	2.0	3.5
Test Run 3 Net weight of ink used	10.5	5.2	3.9	2.0	3.2
Average amount of ink used across three runs	10.6	4.6	3.8	1.8	3.3
Total ink weight across five cartridges					24.1

Table 4 Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Quality Mode) on the Epson SureColor SC-T3200 (grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	5.4	1.5	3.5	11.7	1.1
Test Run 2 Net weight of ink used	5.7	1.5	3.9	11.6	1.0
Test Run 3 Net weight of ink used	5.4	1.5	3.7	11.7	1.1
Average amount of ink used across three runs	5.5	1.5	3.7	11.7	1.1
Total ink weight across five cartridges for 50-page run (based on averages)					23.5

Table 5 Ink Used in Three 50-Page Runs of Retail Poster Test Document (Standard Mode) on the Canon imagePROGRAF TX-2000 (in Grams)

	Matte Black	Black	Yellow	Magenta	Cyan
Test Run 1 Net weight of ink used	19.6	4.3	4.1	15.3	3.6
Test Run 2 Net weight of ink used	19.4	4.2	6.4	18.5	5.8
Test Run 3 Net weight of ink used	19.4	4.1	4.4	17.3	3.4
Average amount of ink used across three runs	19.5	4.2	5.0	17.0	4.3
Total ink weight across five cartridges					50.0

Table 6 Ink Used in Three 50-Page Runs of Retail Poster Test Document (Quality Mode) on the Epson SureColor SC-T3200 (in Grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	16.3	13.3	35.5	4.7	1.2
Test Run 2 Net weight of ink used	16.2	13.1	35.4	4.7	1.3
Test Run 3 Net weight of ink used	16.1	13.3	35.3	4.7	1.2
Average amount of ink used across three runs	16.2	13.2	35.4	4.7	1.2
Total ink weight across five cartridges for 50-page run (based on averages)					70.7

Table 7 Ink Used in Three 50-Page Runs of GIS Map Test Document (Standard Mode) on the Canon imagePROGRAF TX-2000 (in Grams)

	Matte Black	Black	Yellow	Magenta	Cyan
Test Run 1 Net weight of ink used	9.5	3.4	3.1	8.2	10.2
Test Run 2 Net weight of ink used	9.9	3.1	2.9	6.5	11.8
Test Run 3 Net weight of ink used	11.4	5.0	4.4	5.8	9.7
Average amount of ink used across three runs	10.3	3.8	3.5	6.8	10.6
Total ink weight across five cartridges					35.0

Table 8 Ink Used in Three 50-page Runs of GIS Map Test Document (Quality Mode) on the Epson SureColor SC-T3200 (in Grams)

	Cyan	Yellow	Magenta	Matte Black	Photo Black
Test Run 1 Net weight of ink used	30.7	11.8	14.2	4.0	1.2
Test Run 2 Net weight of ink used	31.1	11.8	14.2	4.1	1.2
Test Run 3 Net weight of ink used	30.8	11.8	14.1	4.1	1.2
Average amount of ink used across three runs	30.9	11.8	14.2	4.1	1.2
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 (Cottage Architectural Plan, ISO Retail Poster and a 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-2000 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 TX Universal 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-T3200 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<sup>XP</sup> densitometers.

## About Keypoint Intelligence - Buyers Lab

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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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