

KPI Comparative Lab Test Report

SEPTEMBER 2018

Canon imagePROGRAF TM-200

vs. Epson SureColor SC-T3200

| Advantage ✓ | Canon imagePROGRAF TM-200 | Epson SureColor SC-T3200 |
|---|------------------------------|-----------------------------|
| Image Quality | ✓ | |
| Print Productivity | ✓ | |
| Ink Consumption | ✓ | |
| Direct Print Submission Functionality | ✓ | |
| Device Feature Set | ✓ | |
| Print Driver Feature Set | ✓ | |
| Printhead Reliability/Cleaning Routines | = | = |

TEST OBJECTIVE

Keypoint Intelligence - Buyers Lab was commissioned by Canon Europe to conduct confidential document imaging device performance testing on the Canon imagePROGRAF TM-200 and the Epson SureColor SC-T3200, and produce a report comparing the relative strengths and weaknesses of the two printers in terms of image quality, productivity, ink consumption, direct print submission functionality, device feature set, driver functionality, and printhead stability and cleaning routines. All testing was performed in Buyers Lab's European test facility in Wokingham, UK.

Executive Summary

When subjected to Buyers Lab's graphic arts lab evaluation, the Canon imagePROGRAF TM-200 outperformed the Epson SureColor-T3200 in most areas, with superior productivity, lower ink consumption, and richer device and driver feature sets. Image quality delivered by both printers was entirely congruous with the standard expected of models that are targeted at the graphical arts market and designed for technical printing applications. Both devices delivered highly accurate colour reproduction, consistent skin tone colours and smooth halftone coverage in both colour and black. However, the Canon model delivered superior image quality, overall. It had larger colour gamuts on plain and matte coated media overall, better fine detailing in light and dark contrast areas, more vibrant colours, and higher solid densities for CMY. The Canon unit exhibited less colour drift when FOGRA39 colour patches were compared before and after the ink consumption test, with a lower mean Delta E drift of 2.1 compared with 3.6 for the Epson device. Text and fine line reproduction in colour surpassed that of the Epson model, as well. The Canon TM-200 also delivered lower ink consumption across two different test scenarios, when printing three 50-page runs using a Retail Sales Poster and a GIS Map test target. Both models' printheads performed reliably throughout the evaluation, with neither experiencing any problems with nozzle clogging when powered off over a weekend.

In Buyers Lab's productivity evaluation, the Canon TM-200 had a clear advantage with faster speeds in the majority of tests, making it the more productive choice for high-resolution environments such as photographic studios as well as being well-suited for medium-resolution work such as signs and posters. The Epson SC-T3200 was the faster model when printing from ready state in Fast/Speed mode. 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 SC-T3200 runs out of ink, printing must stop for a cartridge to be replaced, leading to operator downtime. However, a far larger (700 ml versus 300 ml for the Canon model) capacity ink cartridge for the Epson model means fewer interrupted workflows.

Alongside its larger capacity ink cartridges, the Epson model has some further device and driver feature set advantages, such as an optional 320-GB hard drive (not available with the Canon TM-200); smaller ink drop sizes; lower power consumption when printing; and more driver profiles than the TM-200. Overall, however, the Canon model offers a far stronger device and driver feature set. It comes with a higher memory capacity, a unidirectional print driver option, greater number of media profiles, a user-replaceable printhead (that avoids the added downtime that will be experienced with the Epson unit's service-replaceable printhead), and its aforementioned hot-swap ink tanks. In addition, the TM-200 can produce enlarged poster-size copies; it supports Canon's imageRUNNER Enlargement Copy Mode, so documents scanned on a Canon MFP can be sent to the TM-200. Although Epson offers poster creation functionality, it is only available via an extra-cost Copy Factory utility.

Faster productivity, superior image quality, and lower ink consumption, combined with its free feature-rich Canon imagePROGRAF Direct Print & Share utility that supports direct PDF submission (only available for the Epson model via the extra-cost PostScript option), and versatile mobile print support, clearly demonstrate the Canon imagePROGRAF TM-200 to be the stronger model in Buyers Lab's large-format evaluation.

Image Quality

| Advantage ✓ | Canon imagePROGRAF TM-200 | Epson SureColor SC-T3200 |
|---|------------------------------|-----------------------------|
| Text | ✓ | |
| Fine Lines | ✓ | |
| 1x1 Pixel Grid | ✓ | |
| Halftone Range | = | = |
| Halftone Fill | = | = |
| Solid Density | ✓ | |
| Colour Drift across FOGRA39 | ✓ | |
| Consistency of three skin tones | = | = |
| Consistency of neutral grey | = | = |
| 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, High/Max Quality) | ✓ | |

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

- O Buyers Lab's image quality test evaluation was conducted using Canon Standard Plain Paper 2 and Epson Production Bond plain paper.
- + In terms of colour reproduction, the Canon TM-200 delivered superior quality overall, and a high standard of output appropriate for the poster printing market. The Epson model, in contrast, could not match the vibrancy that was evident in photographic images from the Canon unit.
- + The Canon model produced clearly formed and pin-sharp serif and sans serif fonts in black and in colour down to the smallest 3-pt. type size. Similarly, the Epson model delivered well-formed crisp sans serif fonts and serif fonts (in black) at the 3-pt. type size, however its colour serif characters displayed some break up even at the highest 8-pt. type size when viewed under magnification, but text was still legible and dark.
- + The Canon TM-200 model produced the 1x1 pixel grid in CMY with no quality issues, whereas the Epson's grids showed a full dot laydown but inconsistent dot sizes. The Canon TM-200 delivered a consistent dot laydown in the 1x1 black-on-white pixel grid, as did the Epson SC-T3200.
- + Both devices delivered excellent vertical and horizontal fine lines down to 0.1-pt size in black; in colour, the Canon TM-200 delivered excellent 0.1-pt. fine lines, but lines produced by the Epson model displayed minimal bleed. Circles produced by the Canon model were smooth and clean, and judged excellent, while circles produced by the Epson unit were well formed with no line break-up, but were slightly jagged in colour. Both models delivered smooth and distinct white-on-black circles and fine lines at the 0.25-pt.level.
- O Both models delivered colour and black halftone output across the full range—from the 10% to the 100% dot-fill levels—with distinct transitions between all levels.
- O Both models delivered an impressive range of halftone fills in colour mode, with no banding or graininess issues. Neutral greyscale halftone coverage was equally good from both units.

- + The Canon device produced higher optical densities for three colours compared with those produced by the Epson SC-T3200, while black optical density was comparable.
- O The production of three different skin tone colours yielded fairly consistent results for each model. Although the Epson unit displayed a slightly greater variance with one skin shade, it was not considered significant and would not be discernible to the naked eye.
- O Neutral grey consistency was maintained well by both models, with an equally low variance across the page indicated by low Delta E values, and again would not be discernible to the naked eye.
- + During Buyers Lab's colour drift analysis, in which the FOGRA39 media wedge is submitted to print before and after productivity and ink consumption tests, and measured using EFI Color Verifier software, the Canon TM-200 displayed a lower mean Delta E drift than the Epson device—2.1 versus 3.6.
- + When printing on plain media in highest quality settings, the Canon TM-200 delivered a 15.8% larger colour gamut than the Epson model, with a CIE volume of 322,698 versus 278,746 for the Epson SC-T3200.
- + Buyers Lab technicians analyzed a wide range of colour and greyscale images output by both devices and found them to be of an exceptionally high standard. However, the Canon TM-200 delivered more vibrant colours and superior fine detailing in light and dark contrast areas, while output from the Epson SC-T3200 was slightly grainy.
- + The Canon TM-200 produced very good natural-looking skin tones in photographic images, with good definition in the light contrast areas, while the Epson unit produced skin tones that were flat and pale in comparison.

Print Productivity

| Advantage ✓ | Canon imagePROGRAF TM-200 | Epson SureColor SC-T3200 |
|---|------------------------------|-----------------------------|
| First Print Out From Ready State Portrait Printing | ✓ | |
| First Print Out From Ready State Retail Poster Printing | ✓ | |
| Throughput Speed Portrait Printing (Fastest mode) | ✓ | |
| Throughput Speed Portrait Printing (Default mode) | ✓ | |
| Throughput Speed Portrait Printing (Highest-quality mode) | ✓ | |
| Throughput Speed Retail Poster (Fastest mode) | ✓ | |
| Throughput Speed Retail Poster (Default mode) | ✓ | |
| Throughput Speed Retail Poster (Highest-quality mode) | ✓ | |

- + When printing a single high-resolution portrait on plain media, the Canon model was faster overall than the Epson model in terms of speed of the first-print-out from ready state. In Fast/Speed mode, the TM-200 was 14.0% slower than the Epson unit, however it was 18.8% faster in Standard/Quality mode, and 43.4% faster in High/Max Quality mode compared with the Epson SC-T3200.

- + The Canon TM-200 displayed an overall speed advantage over the Epson model with faster first-print-out times from ready state when printing a single medium-resolution retail poster on plain media in two of the three tested modes. It was slower by 9.6%, in Fast/Speed mode when compared with the Epson device, but faster by 15.7% and 38.5% in Standard/Quality and High/Max Quality modes, respectively.
- + When printing five copies of a single-page A1-size high-resolution portrait test document, the Canon model displayed a speed advantage over the Epson model, with per-page speeds that were 31.6% faster in Fast/Speed mode, 31.0% faster in Standard/Quality mode, and 52.4% faster in High/Max Quality mode.
- + When printing five copies of a single-page A1-size medium-resolution retail poster test document, the Canon model delivered its output with speeds that were faster by 20.2% (Fast/Speed mode), 32.7% (Standard/Quality mode), and 56.5% (High/Max Quality mode) when compared with the Epson SC-T3200.

Ink Consumption

Buyers Lab technicians observed that, owing to the vagaries of inkjet technology (for example, head flushing and calibration routines can occur at any time during testing), the same test can produce different results at different times. Although Buyers Lab makes every effort to ensure that devices are tested on a level playing field, the test results should be regarded as an indicator of likely performance and not as a prediction of actual ink consumption in a real-world environment.

Overall Weight of Ink Used (in Grams)

| | Canon imagePROGRAF TM-200 | Epson SureColor SC-T3200 |
|---------------------|---------------------------|--------------------------|
| Retail Sales Poster | 63.0 | 117.3 |
| GIS Map | 29.5 | 56.4 |

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

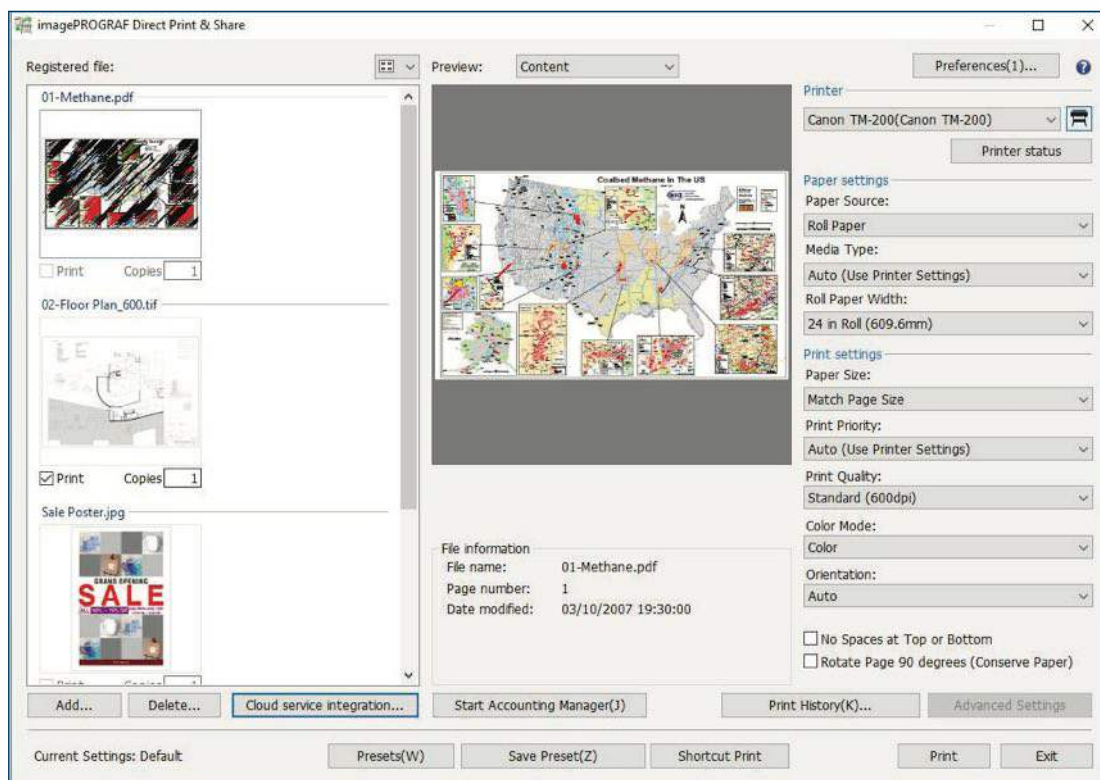
- + When printing 50 copies of a Retail Sales Poster in Standard/Quality mode on matte coated media, the Canon TM-200 used 46.3% less ink in terms of net weight than the Epson SC-T3200.
- + Similarly, when printing a GIS Map in Standard/Quality on plain media, the Canon unit used 47.7% less ink than the Epson SC-T3200 did.

Direct Print Submission Functionality

| | Canon imagePROGRAF TM-200 | Epson SureColor SC-T3200 |
|------------------------|---------------------------|--------------------------|
| Functionality / Cost | ✓ | * |
| Mobile App Integration | ✓ | |

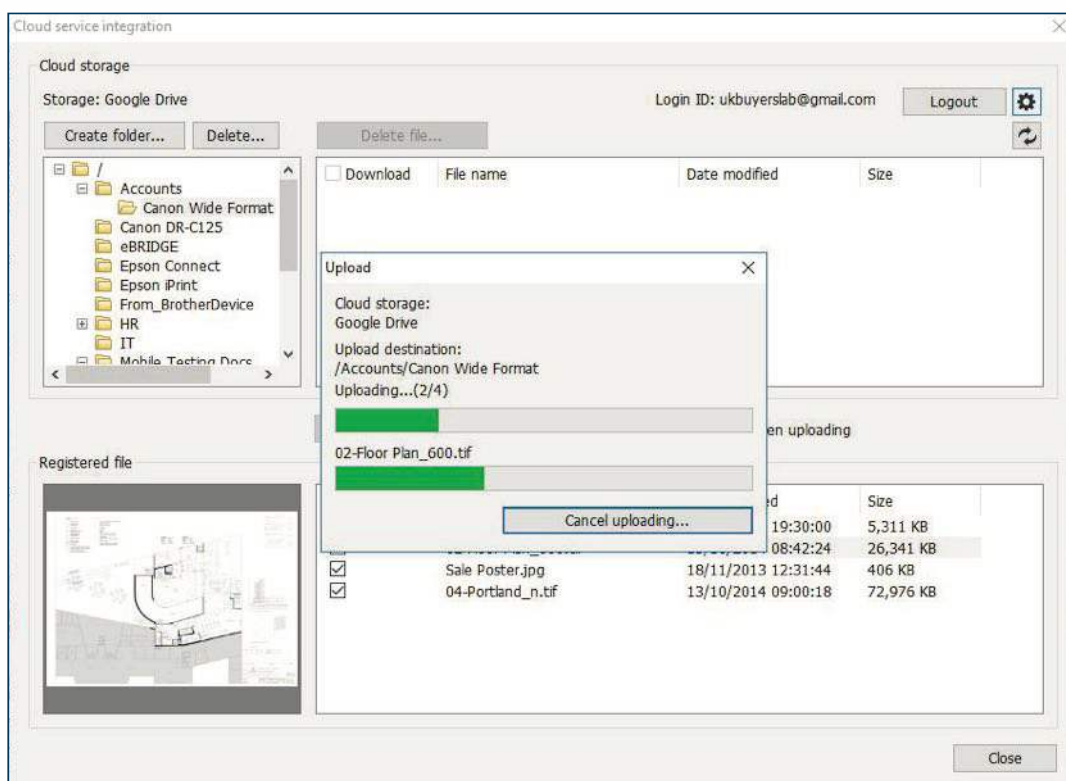
*Buyers Lab technicians did not test Epson's optional, extra-cost PostScript module, and therefore did not assess its functionality.

- + Available as a free download from Canon's website, the newly enhanced 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, the utility provides thumbnail previews of multiple print jobs and users can modify and print multiple files simultaneously.

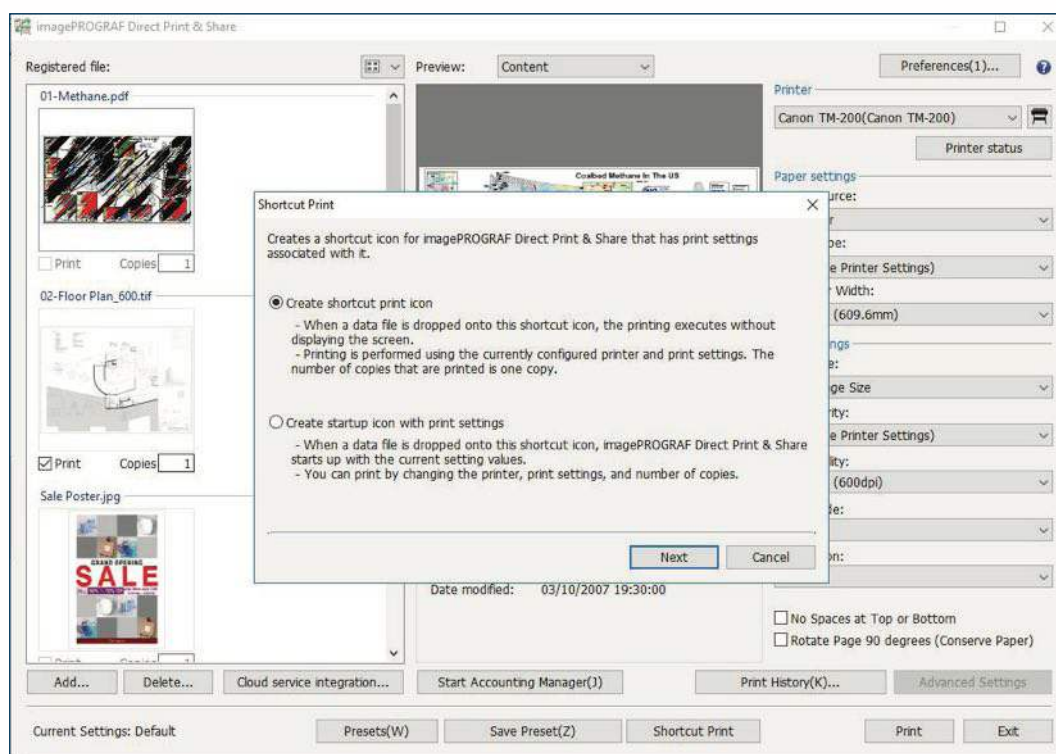


Canon's imagePROGRAF Direct Print & Share utility provides users with an image preview. Users can maximize the utility's window to obtain a larger preview, which enhances usability.

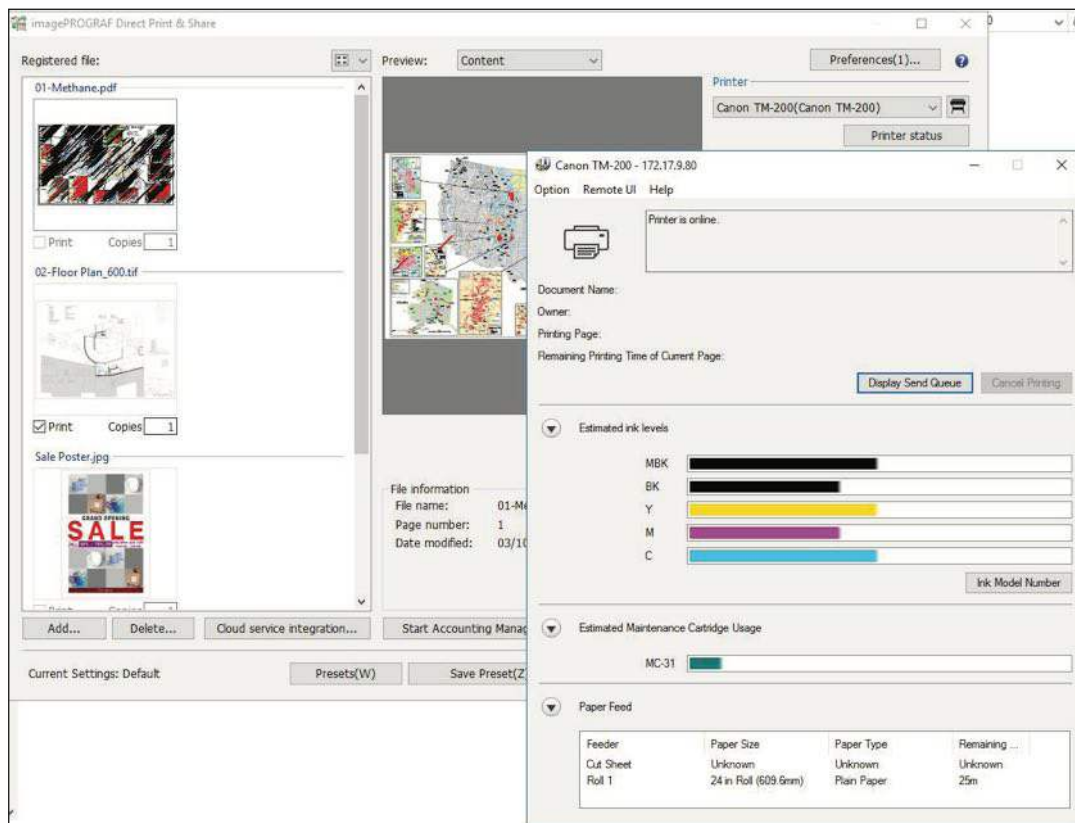
- O The imagePROGRAF Direct Print & Share utility supports "Shortcut Print" functionality, enabling users to create a desktop shortcut that includes commonly used print settings, including output printer, print quality, paper type and paper size. Akin to a hot folder workflow, files are automatically 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. In addition, users can register and save new job presets in the utility to expedite daily routine workflows.



imagePROGRAF Direct Print & Share lets users retrieve files from as well as upload files to Google Cloud for easier collaboration.

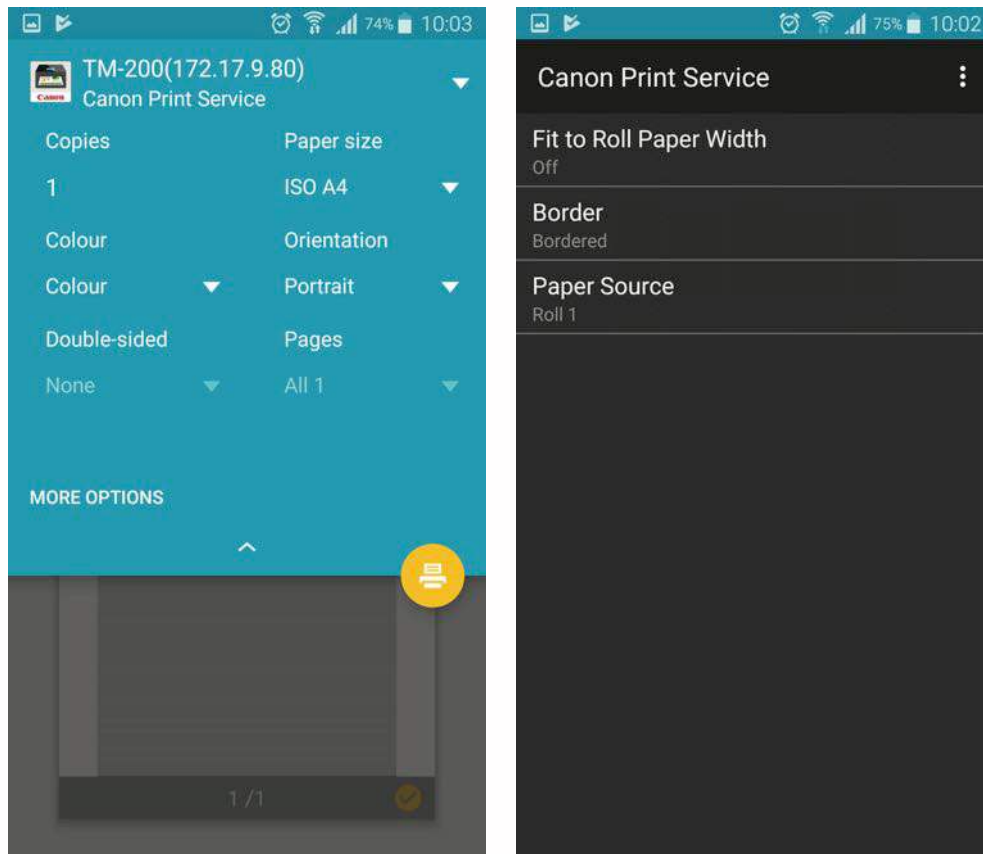


To help standardize and streamline common print workflows, users can register and save job profiles in the utility as well as create desktop shortcuts that allow drag and drop automatic file printing with predefined print settings.



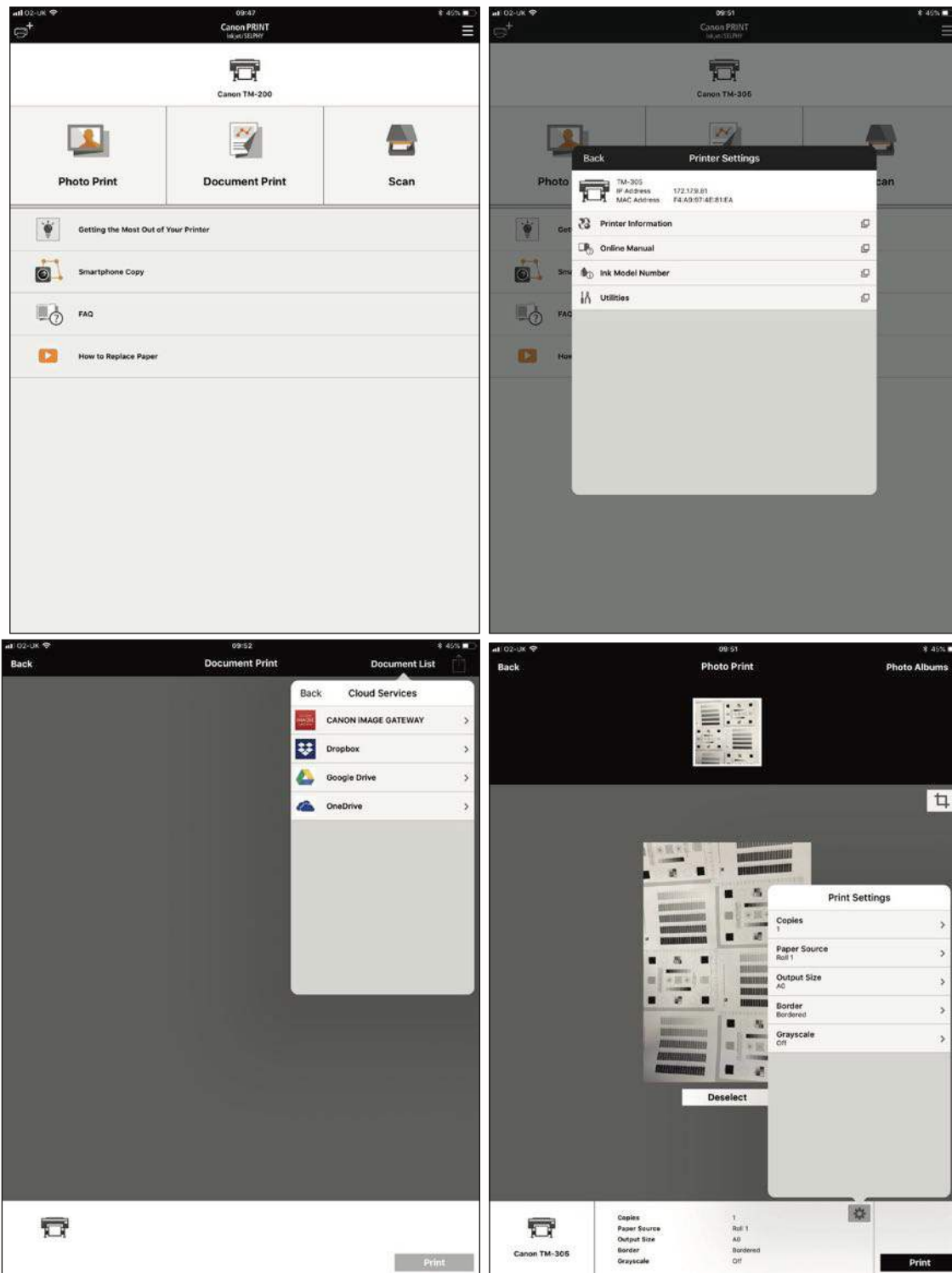
Conveniently, users can view device and consumables status via the utility before sending jobs to print.

- Users can download stored files from Google Drive and AutoCAD 360 cloud storage services for printing via the imagePROGRAF Direct Print & Share utility. Files can be uploaded directly to cloud storage as well. For added convenience and collaboration, the utility offers the option to share 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.
- Additional benefits provided by imagePROGRAF Direct Print & Share include quick and easy printing of jobs selected from the print history log using the same settings as before; the ability to view device and consumables status via a link to Status Monitor; and the option to insert a divider sheet in between jobs when outputting multiple files simultaneously for easier identification.
- + The free Canon Print Service (CPS) mobile print plugin lets Android users print wirelessly to the TM-200 and other compatible Canon printers on the same WiFi network. The service automatically detects compatible Canon printers, offers a broad range of print settings, and is very straightforward to use.



The Canon Print Service mobile print plugin is an easy way for Android users print to the TM-200, and it offers a broad range of print settings, including colour, orientation, and borderless printing.

- + Canon's TM large-format series also supports the versatile Canon Print Inkjet SELPHY app, which can be downloaded for free on Apple iOS and Android mobile devices. This mobile printing app lets users print PDFs, Microsoft Office documents and JPEG images, access and print files stored in cloud services, view device and consumables status via a link to the device's embedded web page, and stay informed when their jobs have been printed (or not) via push notification alerts. The app's user-friendly interface offers a broad range of print settings, as well as the ability to print multiple files at once.



Canon's imagePROGRAF TM series supports mobile printing via the Canon Print Inkjet SELPHY app. Android and iOS users can easily preview and print documents (including Microsoft Office files), and images stored on their mobile devices or from cloud accounts such as Dropbox or OneDrive, as well as view printer status, and select basic print settings.

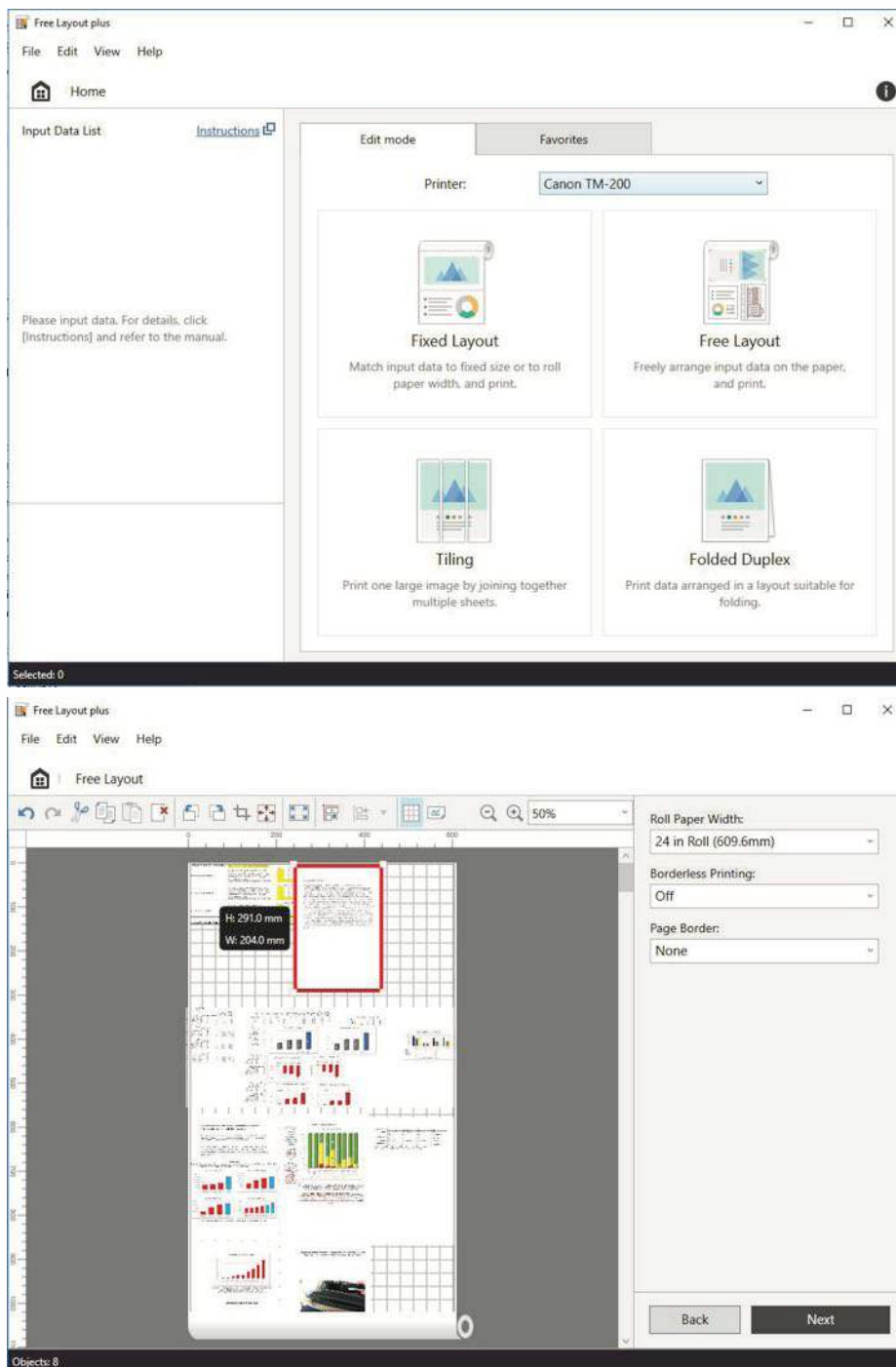
- An optional (extra-cost) PostScript module will provide Epson users with direct printing functionality, allowing them to print PDFs direct from programs such as AutoCAD—its functionality also works via hot-folder 'drag-and-drop' with configurable job processing options.

Device Feature Set

- Both models employ five inks that include two black inks (matte and photo black with the Epson unit; matte black and black with the Canon device).
- The Epson SC-T3200 standard ink cartridges have a larger capacity than those offered with the TM-200 (350 ml versus 300 ml), and it also offers 700 ml high-yield ink cartridges for all colours which means they will need replacing far less frequently than with the Canon unit.
- + Canon's ink cartridges are replaceable during operation, which helps to facilitate longer, uninterrupted print runs. Epson's cartridges cannot be replaced during operation.
- + The TM-200's single printhead contains more nozzles per colour than the Epson unit's single printhead—15,360 nozzles in total compared to 3,600 nozzles.
- + The Canon unit has a user-replaceable printhead, taking less than five minutes to replace, whereas the Epson unit's printhead is only service-replaceable.
- The Canon unit's ink delivery system dispenses a larger (5-picoliter) drop size for all colours than the Epson ink delivery system (3.5-picoliter for all colours).
- Both models offer borderless printing.
- Both models support a 150 mm diameter of roll paper.
- + The Canon model offers a standard, non-upgradable RAM capacity of 2 GB, while the Epson unit has a standard non-upgradable RAM capacity of 1 GB.
- A 320-GB hard drive is available as an option with the Epson model, which this Canon unit doesn't offer.
- The Epson model has a lower advertised operational peak energy value (52 W) than the Canon unit (69 W).
- Both models offer user-friendly media loading options (at the top of the device).
- Both models accommodate both 2" and 3" core adapters, which provides additional flexibility for media handling.
- Both models offer a colour touchscreen user interface, both of which are similarly responsive and intuitive to navigate.
- 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.
- 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.
- The Canon TM-200 comes with strong security features, including 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 unit supports IPv6 and IPsec network security to help keep data confidential by preventing unauthorised access to sensitive information.

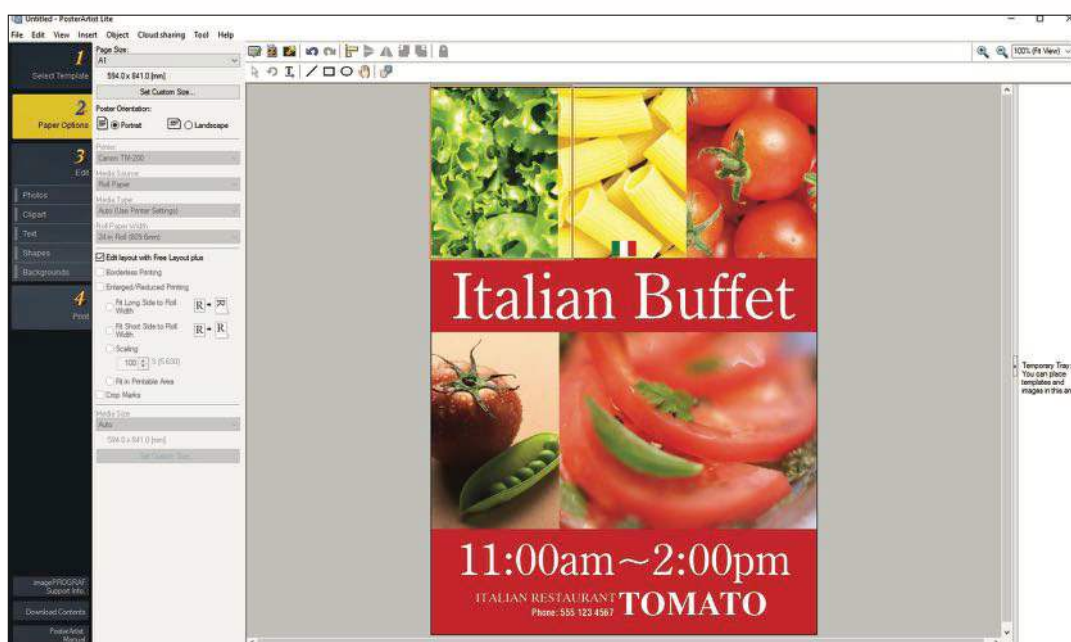
Print Driver Feature Set

- + The Canon TM-200 has five speed settings (Fast 300, Standard 600, Fast 600, High 600 and High 1200), although not all speed settings are available with all media types. In contrast, the Epson device has three settings (Speed, Quality and Max Quality).
- 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 nine settings.
- + The Canon driver includes 50 media profiles plus 10 user customizable special options versus 20 for the Epson ESC/P driver.
- + The Canon driver includes a watermark capability and a Thicken Fine Lines image enhancement option; the Epson driver does not.
- + The Canon driver offers N-up printing (up to 16), while the Epson driver supports 2 to 4 multi-up printing.
- Although both devices offer a poster mode, the Canon driver offers 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.
- 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.
 - Not available with the Canon model, the Epson driver provides a handy thumbnail preview for users to check the effects on the image as they make colour adjustments. In addition, the Epson driver displays a list of all the current settings on each tab window, providing users with a quick, at-a-glance summary.
- + The Canon driver offers the option of unidirectional printing, even in Fast mode, which helps to eliminate 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 TM-200, whereby documents scanned at the MFP are automatically routed to a hot folder that is monitored by the TM-200 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 Canon's Free Layout plus software 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 save on 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.



Canon's Free Layout plus allows users to arrange documents from different applications on a page so as to use paper more efficiently. Within the utility, any two pages can be arranged on the layout so that they can be back-to-back when folded over after printing.

- The Canon model also offers a plug-in for printing from Microsoft Office applications, which includes useful tools for automatic media resizing, nesting and borderless printing. Epson offers similar software, LFP Print Plug-in for Office (available as a free download), which enables users to click on a file name and, without opening the application, set individual options such as print size, rotation, print quality and number of copies before printing. Supported file formats include PDF, TIFF, JPEG and PPT.



Canon's PosterArtist Lite is an easy-to-use poster creation tool; newly-enhanced, it provides additional templates to create multi-language versions of a poster, 900 common expressions in 10 languages and a wide range of pictographic icons.

- Available for the TM series, Canon's Accounting Manager can be downloaded for free from Canon's website and offers comprehensive accounting management for all print jobs. Users enter the actual costs for individual inks and media types, and the cost per job is calculated automatically and displayed. For each job, the media type, area, ink used and total print time are listed, and more detailed cost and consumption information can be obtained by double-clicking on an individual job name or by highlighting a range of different jobs. Job cost information can then be saved in .CSV format and opened in Excel. Epson's LFP Accounting Tool, a free download from Epson's website, offers comparable accounting functionality, while the Epson LFP Ink Cost Calculator app provides users with an ink-cost-per-page breakdown based on different image types.

Job Properties

Document Name : \\ukfs2\Public2\Private Testing\Canon\Canon Wide Format Summer 2018
NEW\AEC CAD Wide Format Tests\AEC CAD Test Files\12 Page Productivity DWF
Productivity File.dwf
Printer : TM-200
Printing Results : Complete
Owner : UKTEST12
Account ID :
Account ID2 :
Print Job Start Time : 2018/07/27 11:08:52
Print Time : 00:18:23
Pages : 12
Print Quality : 2
Output Image Size : 60.960 x 91.440[cm]
Total Job Cost : 1.361[£]
Total Paper Cost : 0.042[£]
Total Ink Cost : 1.319[£]
Total of Other Costs : 0.000[£]
Total Ink Consumed : 2.168[ml]
Total Paper Consumed [Area] : 6.689[square meter]
Paper Width : 60.960[cm]
Job Cost and Consumption Details:

| Item | Amount | Cost |
|---|--------|-------|
| BK(Black) Ink Consumed [ml] | 0.166 | 0.101 |
| C(Cyan) Ink Consumed [ml] | 0.157 | 0.096 |
| M(Magenta) Ink Consumed [ml] | 0.152 | 0.093 |
| MBK(Matite Black) Ink Consumed [ml] | 1.540 | 0.936 |
| Y(Yellow) Ink Consumed [ml] | 0.153 | 0.093 |
| Plain Paper Amount Consumed[Square meter] | 6.689 | 0.042 |

OK

Canon Accounting Manager; users can double click on a job to view a breakdown of the individual costs.

Job Information List

EPSON SC-T3200 Series
S/N:URRE005069
Data Acquisition 27/07/2018 08:22:35

Printer: EPSON SC-T3200 Series S/N:URRE005069 Add Printer Price Settings Preferences Refresh Data

Period: Starting Month: Starting Day: Jobs to display: 50 Search Filter Settings

| Job Name | Total Cost | Media Type | Media Usage | Ink Usage | Completion | User Name | Job Status |
|------------------|------------|-----------------|-------------|-----------|-----------------|-----------|------------|
| Nozzle Check | £ 0.11 | Plain Paper | 0.06 m² | 0.00 ml | 24/07/2018 1... | Printer | Completed |
| Portrait.tif | £ 7.63 | Plain Paper | 2.65 m² | 5.22 ml | 13/07/2018 1... | UKTEST12 | Completed |
| Portrait.tif | £ 8.39 | Plain Paper | 2.65 m² | 6.64 ml | 13/07/2018 1... | UKTEST12 | Completed |
| Sale Poster.j... | £ 63.00 | Singleweight... | 0.00 m² | 117.65 ml | 16/07/2018 1... | UKTEST12 | Completed |
| Sale Poster.j... | £ 62.37 | Singleweight... | 0.00 m² | 116.48 ml | 16/07/2018 1... | UKTEST12 | Completed |
| Sale Poster.j... | £ 62.43 | Singleweight... | 0.00 m² | 116.59 ml | 17/07/2018 1... | UKTEST12 | Completed |
| topfields.pdf | £ 31.18 | Plain Paper | 0.00 m² | 58.24 ml | 17/07/2018 1... | UKTEST12 | Completed |
| Nozzle Check | £ 0.11 | Plain Paper | 0.06 m² | 0.00 ml | 19/07/2018 1... | Printer | Completed |
| topfields.pdf | £ 30.99 | Plain Paper | 0.00 m² | 57.88 ml | 17/07/2018 1... | UKTEST12 | Completed |
| topfields.pdf | £ 30.91 | Plain Paper | 0.00 m² | 57.72 ml | 17/07/2018 1... | UKTEST12 | Completed |

Summary of Selected Period

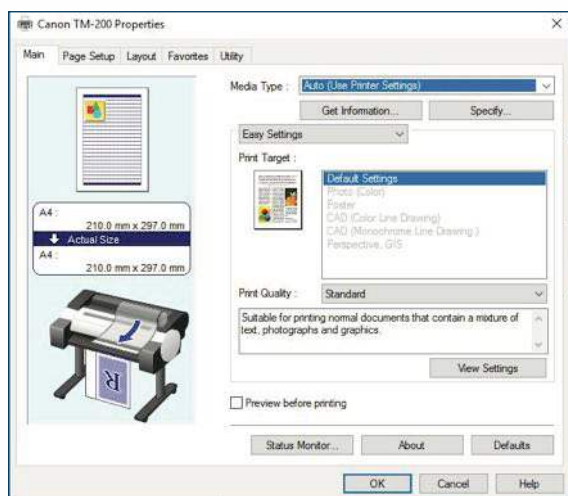
| Item | Value | Cost |
|-------------|-----------|----------|
| Total Jobs | 10 | |
| Total Ink | 536.42 ml | £ 287.23 |
| Total Media | 5.42 m² | £ 9.90 |
| Other Costs | | £ 0.00 |
| Total Cost | | £ 297.13 |

Selected Period: Export to CSV Detailed Job Info

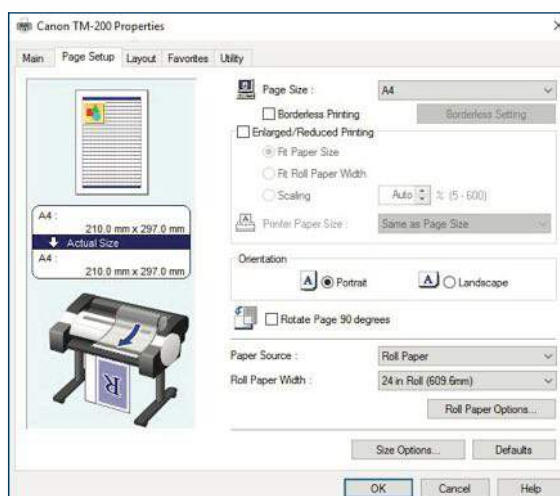
Previous 1 / 1 Next Help

Epson's LFP Accounting Tool

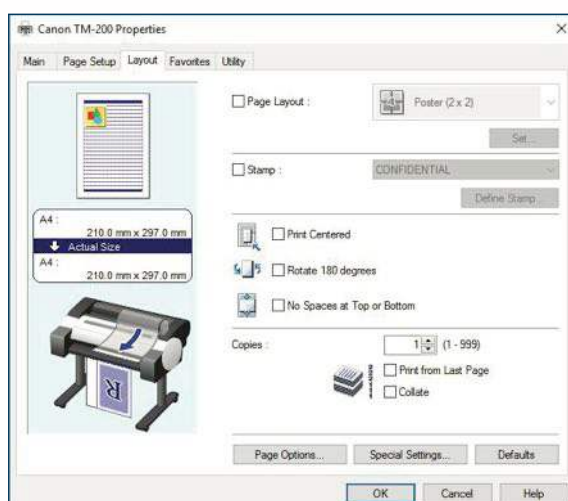
Test Models' Print Driver Screenshots



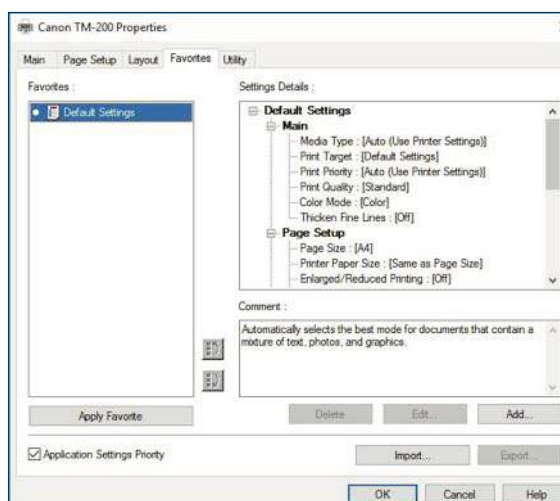
Canon imagePROGRAF TM-200 Main Tab



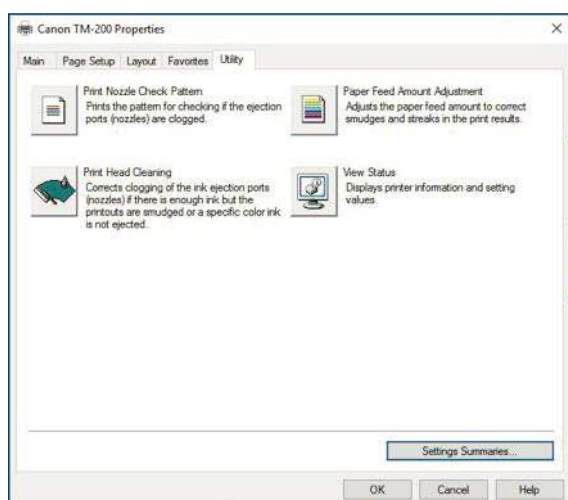
Canon imagePROGRAF TM-200 Page Setup Tab



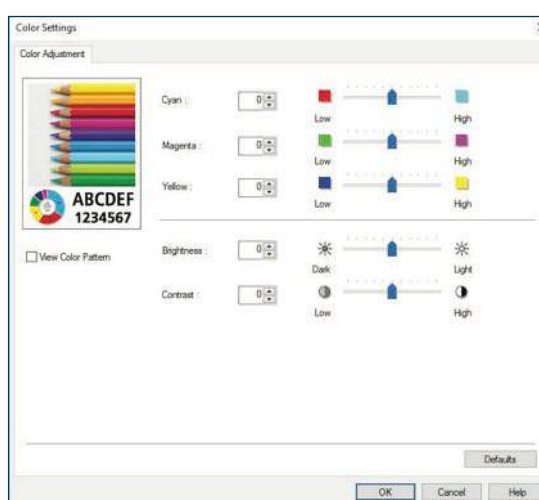
Canon imagePROGRAF TM-200 Layout Tab



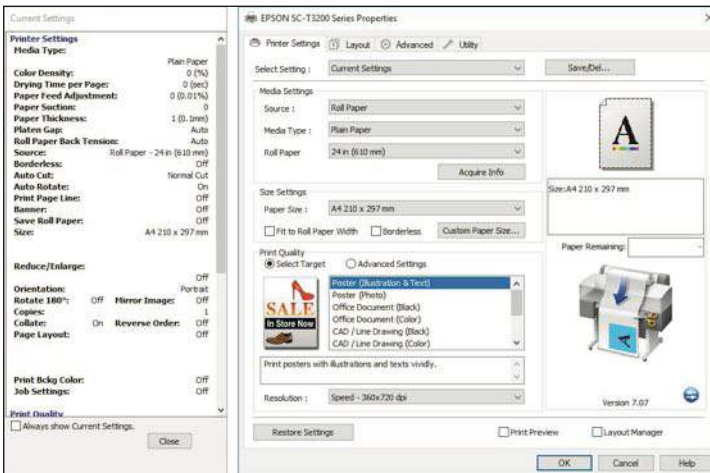
Canon imagePROGRAF TM-200 Favourites Tab



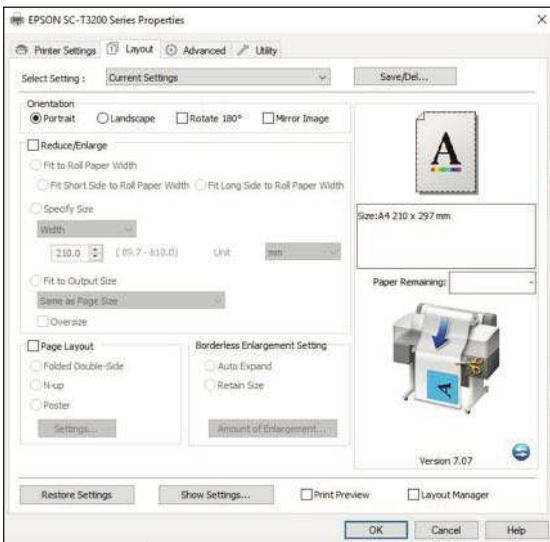
Canon imagePROGRAF TM-200 Utility Tab



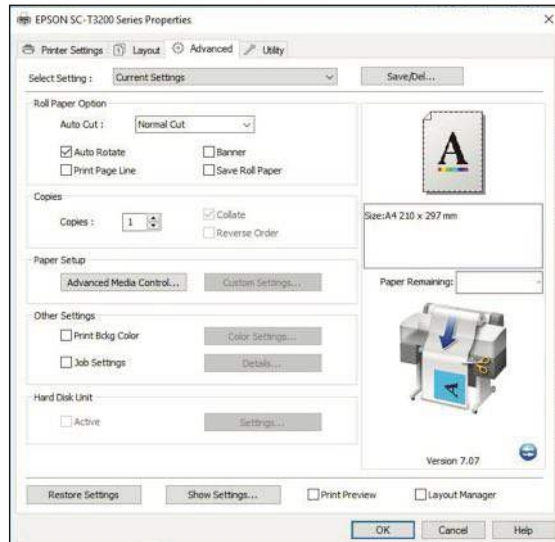
Canon imagePROGRAF TM-200 Colour Adjustment Settings



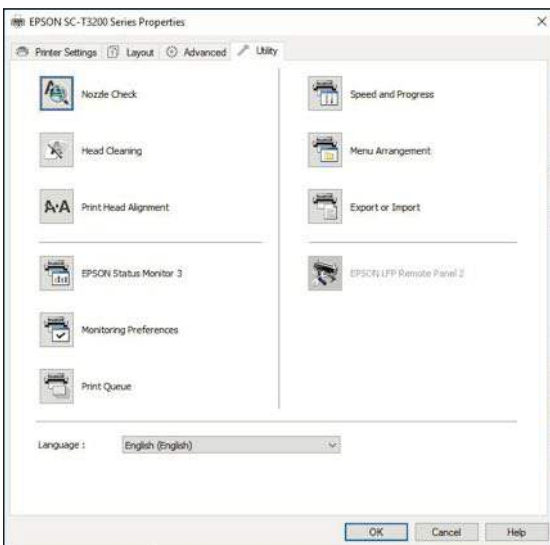
Epson SureColor SC-T3200 Printer Settings Tab



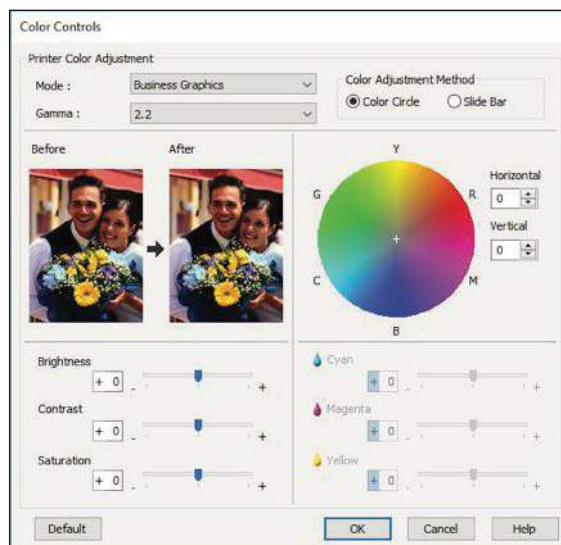
Epson SureColor SC-T3200 Layout Tab



Epson SureColor SC-T3200 Advanced Tab



Epson SureColor SC-T3200 Utility Tab



Epson SureColor SC-T3200 Colour Controls

Printhead Reliability / Cleaning Routines

- The Canon TM-200 offers users the ability to run a printhead nozzle check pattern at the control panel. The default setting is Standard; additional settings are 'after one page', 'after 10 pages' or 'disable'. There are three printhead cleaning options available: Cleaning, Deep Cleaning and System Cleaning and under each option, there are three additional settings available for cleaning all colours, Pattern 1 and Pattern 2. The Epson SureColor SC-T3200 offers one option to run a nozzle check, which is easy to find in the Maintenance menu under Set Up option on the Home screen.
- When a clogged nozzle is detected on the Canon unit, it pauses during operation and automatically runs a cleaning cycle to maintain image quality and consistency; it resumes printing once the cleaning cycle is completed, with no user intervention required. The Epson model does not offer any indication that it conducts automatic printhead maintenance. However, if the user initiates a nozzle check at the control panel, the display will update automatically to show printhead clean options. User can select either individual colour channels or all channels to clean.
- After both devices were shut down completely over the course of a weekend, neither model had problems with nozzles clogging, and both units printed a faultless nozzle check pattern upon request.
- + A standard cleaning cycle performed on the Canon model takes approximately two minutes on average to complete, whilst on the Epson model, a cleaning cycle takes approximately 10 minutes, 55 seconds.

SUPPORTING TEST DATA

Productivity

Colour Throughput Time – A1 High-Resolution Portrait Printing (in Seconds)

| Canon imagePROGRAF TM-200 | | | Epson SureColor SC-T3200 | | |
|---------------------------|----------|-------|--------------------------|---------|-------------|
| Fast | Standard | High | Speed | Quality | Max Quality |
| 31.31 | 54.11 | 97.07 | 45.75 | 78.41 | 203.72 |

A single-page high-resolution A1 portrait was printed as a five-page job using the device driver set to the plain paper/colour setting. Both devices were loaded with 24" rolls, with each job set to auto-rotate to save media. The time indicated is the average number of seconds (based on timing from the cutting of the first page to the cutting of the final page and dividing by four to exclude the initial processing time).

Colour Throughput Time – A1 Medium-Resolution Retail Poster Printing (in Seconds)

| Canon imagePROGRAF TM-200 | | | Epson SureColor SC-T3200 | | |
|---------------------------|----------|-------|--------------------------|---------|-------------|
| Fast | Standard | High | Speed | Quality | Max Quality |
| 35.12 | 63.06 | 98.03 | 44.03 | 93.66 | 225.22 |

A single-page medium-resolution A1 portrait was printed as a five-page job using the device driver set to the plain paper/colour setting. Both devices were loaded with 24" rolls, with each job set to auto-rotate to save media. The time indicated is the average number of seconds (based on timing the cutting of the first page to the cutting of the final page and dividing by four to exclude the initial processing time).

First-Print-Out Time from Ready State – High-Resolution Portrait Printing (in Seconds)

| Canon imagePROGRAF TM-200 | | | | Epson SureColor SC-T3200 | | |
|--------------------------------|-------|----------|--------|--------------------------|---------|-------------|
| | Fast | Standard | High | Speed | Quality | Max Quality |
| Time Before Printing Commences | 22.20 | 20.67 | 23.71 | 11.96 | 12.28 | 12.61 |
| First Print Out Time | 48.35 | 68.24 | 114.43 | 42.40 | 84.06 | 202.23 |

First-page-out times are determined by sending an A1 high-resolution portrait PDF file to print, timed from job release to page out, with both Canon and Epson drivers set to plain media. Both devices were loaded with 24" rolls.

First-Print-Out Time from Ready State – Medium-Resolution Retail Poster Printing (in Seconds)

| Canon imagePROGRAF TM-200 | | | | Epson SureColor SC-T3200 | | |
|--------------------------------|-------|----------|--------|--------------------------|---------|-------------|
| | Fast | Standard | High | Speed | Quality | Max Quality |
| Time Before Printing Commences | 19.66 | 19.85 | 22.06 | 10.64 | 9.21 | 9.68 |
| First Print Out Time | 43.31 | 64.52 | 113.34 | 39.53 | 76.56 | 184.31 |

First-print-out times are achieved by sending an A1 medium-resolution retail poster PDF file to print, timed from job release to page out with both Canon and Epson drivers set to plain media. Both devices were loaded with 24" rolls.

Colour Print Quality

Colour Optical Density Evaluation

| Canon imagePROGRAF TM-200 Canon Standard Plain Paper 2 | | | | | | |
|---|---------|------|------|------|------|------|
| | Highest | | | | | |
| | 1 | 2 | 3 | 4 | Max. | Min. |
| Cyan | 1.31 | 1.33 | 1.32 | 1.33 | 1.33 | 1.31 |
| Magenta | 1.20 | 1.23 | 1.20 | 1.22 | 1.23 | 1.20 |
| Yellow | 1.07 | 1.07 | 1.06 | 1.07 | 1.07 | 1.06 |
| Black | 1.46 | 1.46 | 1.47 | 1.47 | 1.47 | 1.46 |

| Epson SureColor SC-T3200 Epson Production Bond plain paper | | | | | | |
|---|-------------|------|------|------|------|------|
| | Max Quality | | | | | |
| | 1 | 2 | 3 | 4 | Max. | Min. |
| Cyan | 1.05 | 1.06 | 1.07 | 1.05 | 1.07 | 1.05 |
| Magenta | 0.96 | 0.97 | 0.96 | 0.95 | 0.97 | 0.95 |
| Yellow | 1.05 | 1.04 | 1.06 | 1.05 | 1.06 | 1.04 |
| Black | 1.46 | 1.45 | 1.47 | 1.46 | 1.47 | 1.45 |

Note: Colour density readings were assessed by printing a Buyers Lab test file on plain paper in high-quality colour settings and measuring the density of 100% dot fill using an XRite exact[®] densitometer.

Skin Tone and Neutral Grey Consistency

| Skin Tone 1 (Formula: C=6, M=15,Y=16,K=0) | | |
|---|------------------------------|-----------------------------|
| | Canon imagePROGRAF TM-200 | Epson SureColor SC-T3200 |
| Colour block | | |
| 2 | 0.3 | 0.4 |
| 3 | 0.3 | 0.2 |
| 4 | 0.5 | 0.2 |
| 5 | 0.5 | 0.1 |
| 6 | 0.5 | 0.4 |
| 7 | 0.4 | 0.5 |
| 8 | 0.1 | 0.2 |
| 9 | 0.5 | 0.3 |
| Max. Delta E Variance | 0.4 | 0.4 |

| Skin Tone 2 (Formula: C=30, M=63,Y=75,K=0) | | |
|--|---------------------------|--------------------------|
| | Canon imagePROGRAF TM-200 | Epson SureColor SC-T3200 |
| Colour block | | |
| 2 | 0.4 | 0.3 |
| 3 | 0.3 | 0.4 |
| 4 | 0.3 | 0.6 |
| 5 | 0.4 | 0.9 |
| 6 | 0.4 | 0.8 |
| 7 | 0.5 | 1.1 |
| 8 | 0.5 | 0.9 |
| 9 | 0.8 | 1.1 |
| Max. Delta E Variance | 0.5 | 0.8 |

| Skin Tone 3 (Formula: C=19, M=33,Y=50,K=0) | | |
|--|---------------------------|--------------------------|
| | Canon imagePROGRAF TM-200 | Epson SureColor SC-T3200 |
| Colour block | | |
| 2 | 0.3 | 0.1 |
| 3 | 0.3 | 0.3 |
| 4 | 0.1 | 0.5 |
| 5 | 0.2 | 0.3 |
| 6 | 0.2 | 0.4 |
| 7 | 0.2 | 0.5 |
| 8 | 0.4 | 0.4 |
| 9 | 0.4 | 0.3 |
| Max. Delta E Variance | 0.3 | 0.4 |

| Neutral Grey | | |
|-----------------------|---------------------------|--------------------------|
| | Canon imagePROGRAF TM-200 | Epson SureColor SC-T3200 |
| Colour block | | |
| 2 | 0.3 | 0.9 |
| 3 | 0.4 | 0.8 |
| 4 | 0.1 | 0.5 |
| 5 | 0.3 | 0.6 |
| 6 | 0.8 | 1.1 |
| 7 | 0.4 | 0.7 |
| 8 | 0.3 | 0.8 |
| 9 | 0.4 | 0.9 |
| Max. Delta E Variance | 0.7 | 0.6 |

Note: Skin tone and neutral grey consistency measurements are based on nine readings taken from a Buyers Lab proprietary PDF test target file comprising four A1-sized solid coverage documents of three skin tones and a neutral grey, with the High/Max Quality print driver setting selected in the driver and the target printed on the manufacturer's own brand of plain media. Colour differences across the A1 image were measured comparing eight locations to that of the colour measured at the top left of the page, using an EFI ES1000 colour spectrophotometer and Gretag MacBeth EyeOne Share colour comparison software.

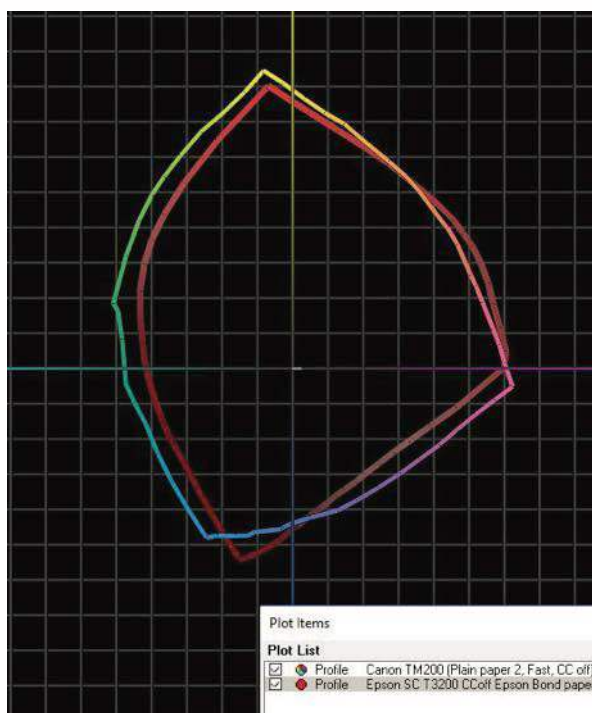
FOGRA 39 DRIFT TEST:

Comparison of FOGRA39 colour patches before and after ink consumption test

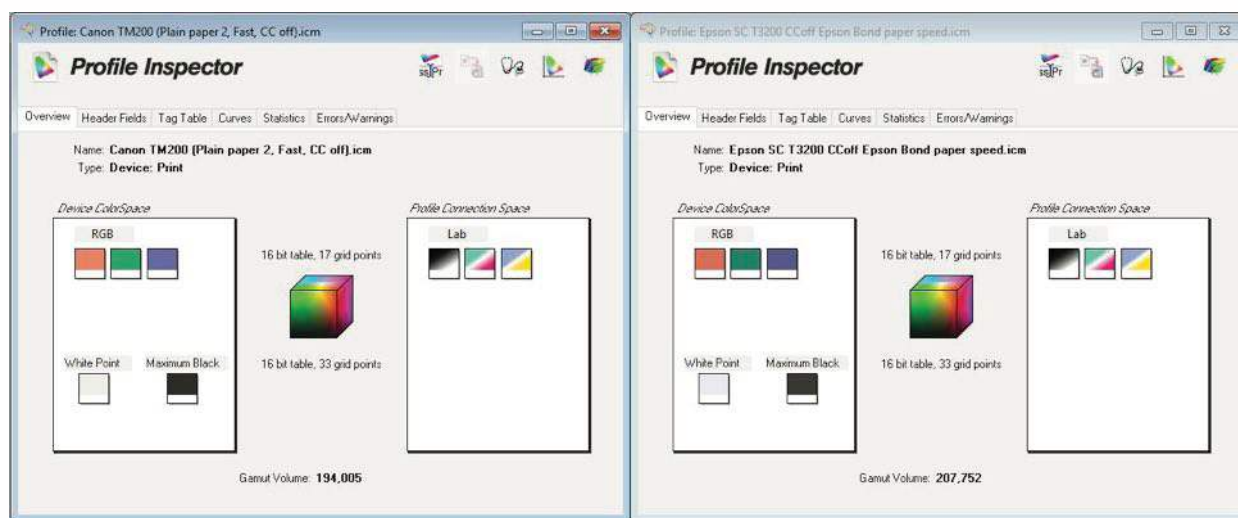
| | Canon imagePROGRAF TM-200 | Epson SureColor SC-T3200 |
|---------------|---------------------------|--------------------------|
| Delta E Drift | 2.1 | 3.6 |

Colour Gamut Comparison

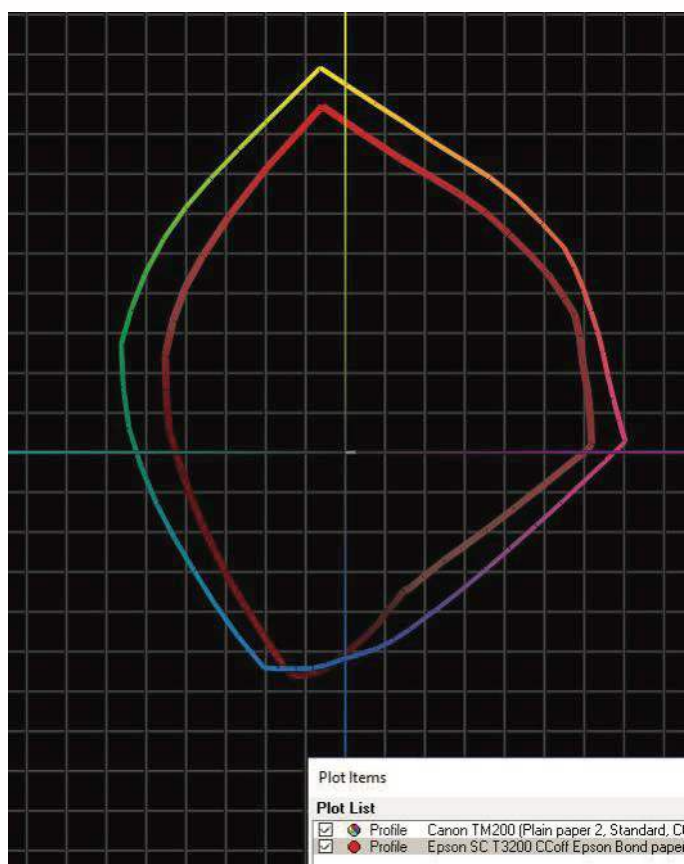
| Media Type/Settings | Canon imagePROGRAF TM-200 | Epson SureColor SC-T3200 | Canon % larger/smaller (-) than Epson |
|-------------------------------|---------------------------|--------------------------|---------------------------------------|
| Plain Paper Fast/Speed | 194,005 | 207,752 | -6.6% |
| Plain Paper Standard/Quality | 323,403 | 250,035 | 29.3% |
| Plain Paper High/Max Quality | 322,698 | 278,746 | 15.8% |
| Matte Coated High/Max Quality | 413,801 | 321,099 | 28.9% |



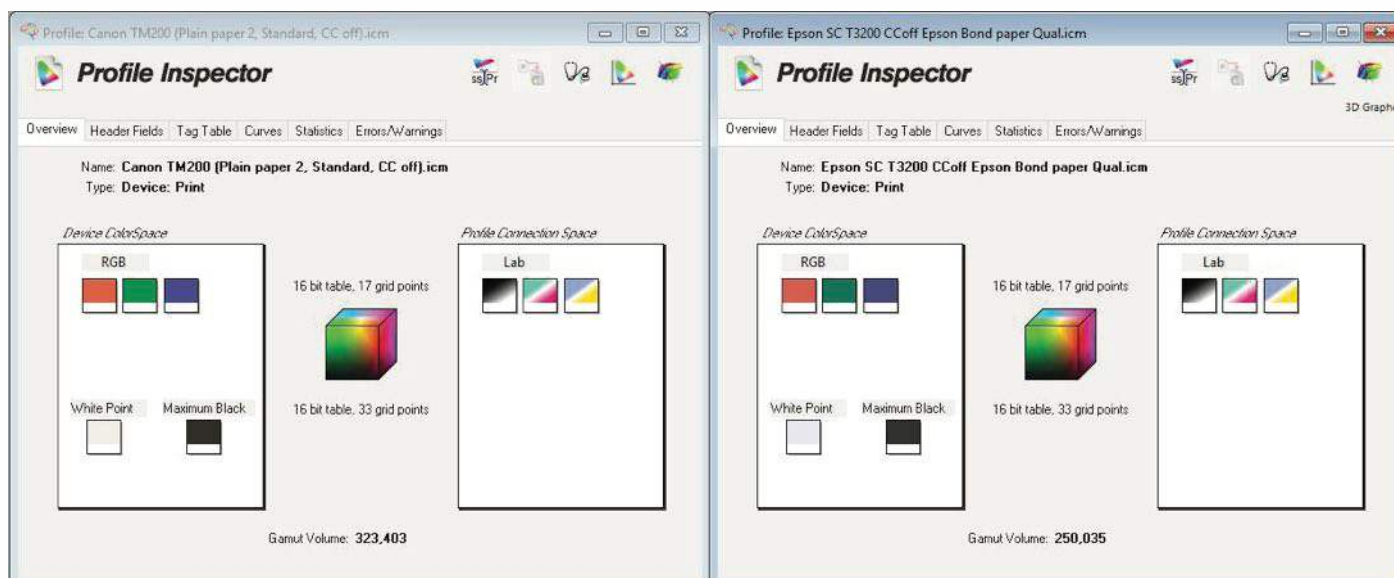
Canon imagePROGRAF TM-200 colour gamut on plain paper in Fast settings (shown chromatically) versus Epson SureColor SC-T3200 colour gamut (shown in red) on plain paper in Speed settings.



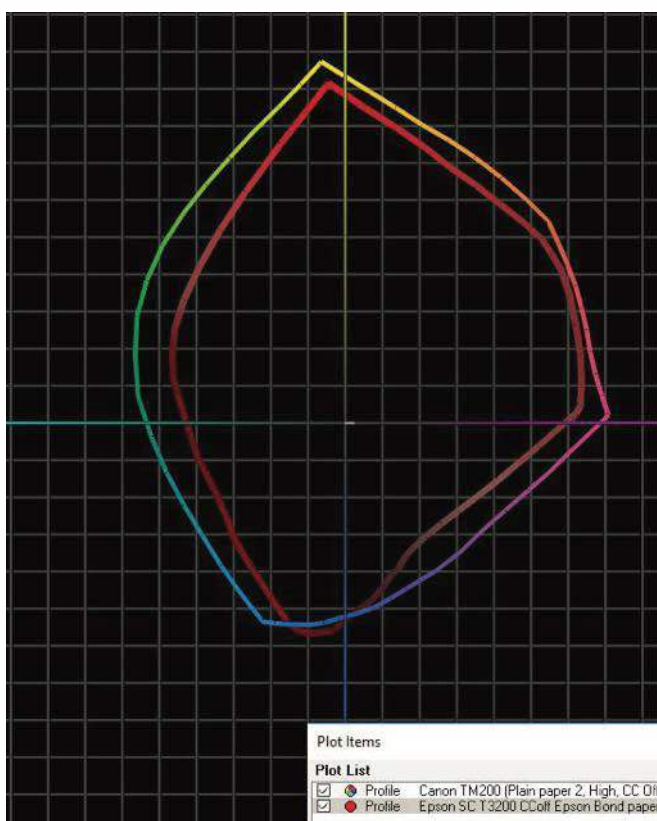
Colour gamut profile for Canon imagePROGRAF TM-200 (left) and Epson SureColor SC-T3200 (right) on plain paper in Fast /Speed mode.



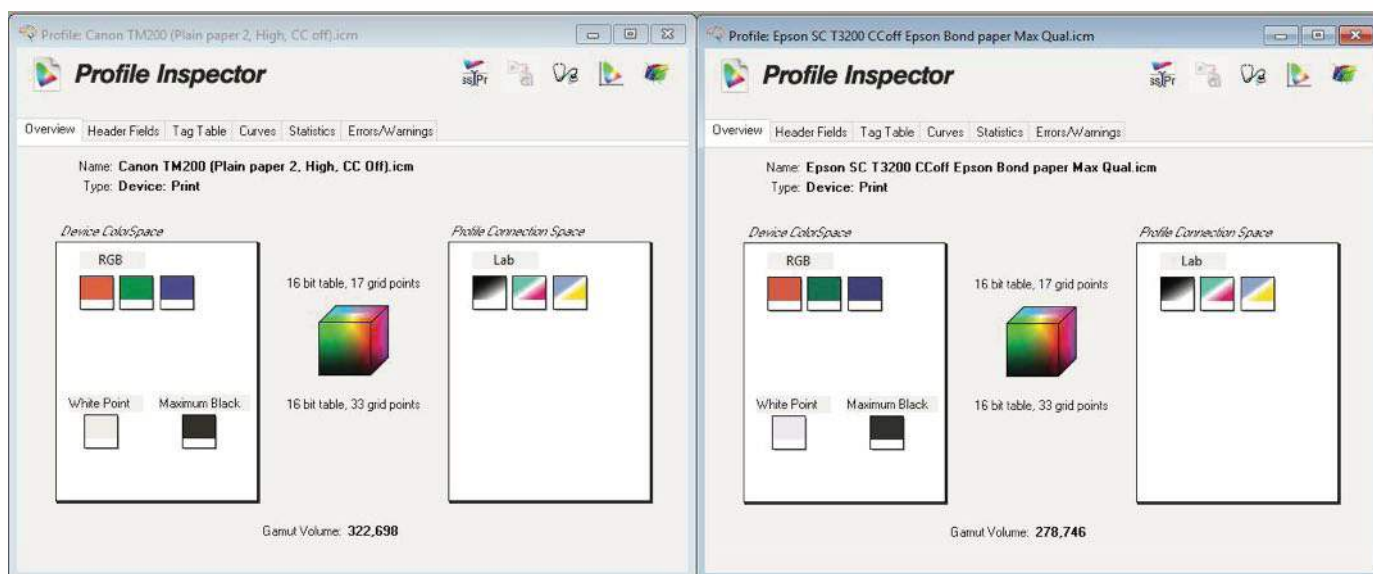
Canon imagePROGRAF TM-200 colour gamut on plain paper in Standard settings (shown chromatically) versus Epson SureColor SC-T3200 colour gamut (shown in red) on plain paper in Quality settings.



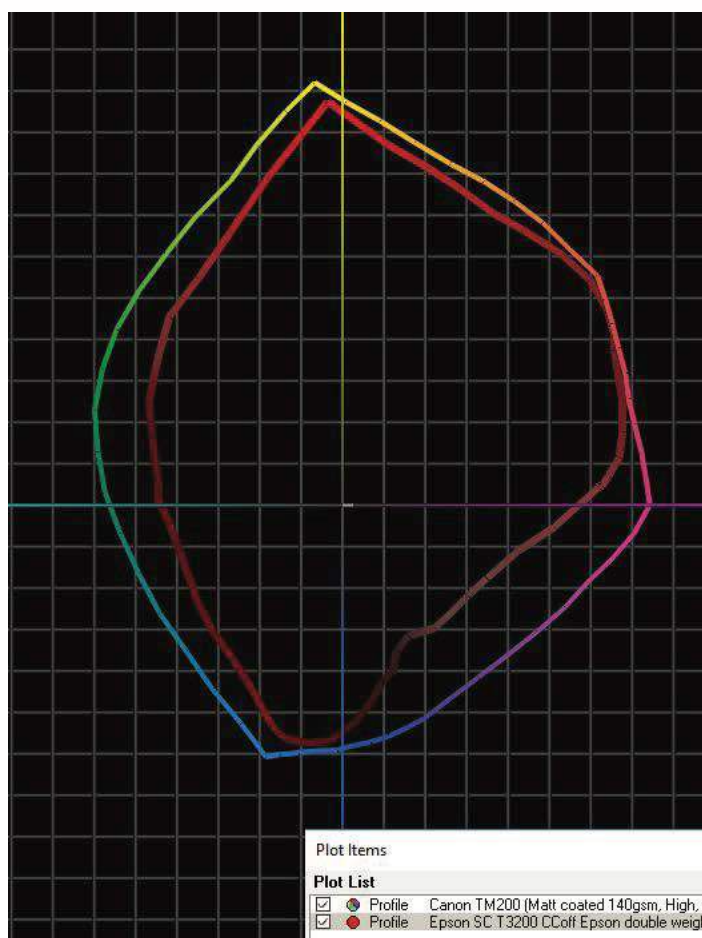
Colour gamut profile for Canon imagePROGRAF TM-200 (left) and Epson SureColor SC-T3200 (right) on plain paper in Standard/Quality mode.



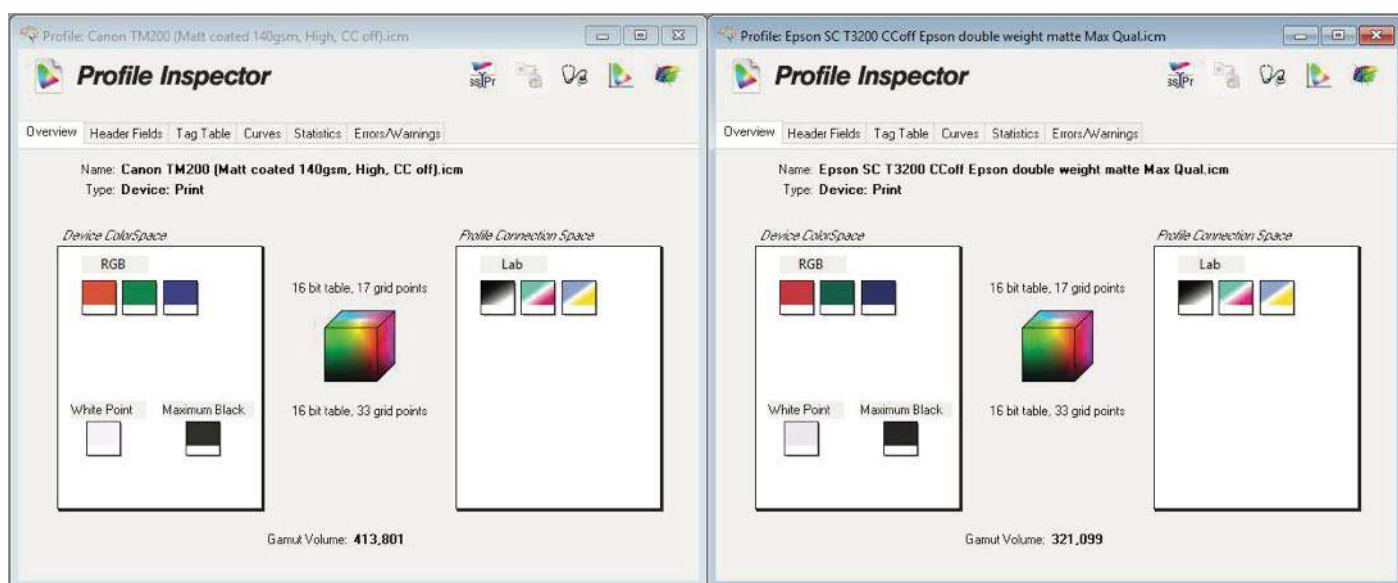
Canon imagePROGRAF TM-200 colour gamut on plain paper in High settings (shown chromatically) versus Epson SureColor SC-T3200 colour gamut (shown in red) on plain paper in Max Quality settings.



Colour gamut profile for Canon imagePROGRAF TM-200 (left) and Epson SureColor SC-T3200 (right) on plain paper in High/Max Quality mode.



Canon imagePROGRAF TM-200 colour gamut on matte coated paper in High quality settings (shown chromatically) versus Epson SureColor SC-T3200 colour gamut (shown in red) on matte coated paper in Max Quality settings.



Colour gamut profile for Canon imagePROGRAF TM-200 (left) and Epson SureColor SC-T3200 (right) on matte coated paper in High/Max Quality mode.

Device Feature Set

| | Canon imagePROGRAF TM-200 | Advantage | | Epson SureColor SC-T3200 |
|---|--|-----------|---|--|
| Max. print 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 ink capacity | 490 ml total (130 ml MBk; 90ml CMYK) | | | INA |
| Ink cartridge capacity | 130 ml and 300 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 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 | INA | | | 0.02 mm |
| Minimum print margins | Roll paper: Borderless or 3 mm (all sides); Cut sheet: 3 mm (Top, Side), 20 mm (Bottom); Cut sheet for Apple AirPrint only: 3 mm (Top, Side); 12.7 mm (Bottom) | | | 3 mm |
| Borderless (0 mm) printing | Yes (Roll paper) | | | Yes |
| Maximum outside diameter of roll paper | 150 mm | | | 150 mm |
| Maximum printable paper roll length | 18 m (varies according to the OS and application) | | | INA |
| Maximum cut-sheet media length | 1.6 m | ✓ | | 914 mm |
| Maximum media thickness | 0.8 mm | ✓ | | 0.5 mm |
| Maximum media width | 610 mm (24 inches) | | | 610 mm (24 inches) |
| Media loading | Top | | | Top |
| Optional media handling | Roll holder set (supports 2" and 3" media cores) | | | Roll media adapter |
| Standard RAM | 2 GB | ✓ | | 1 GB |
| Hard drive | Not supported | | ✓ | 320-GB (Optional) |
| Interface | 10/100/1000Base-T Ethernet, USB Built-in High Speed, USB Memory Direct, Wireless LAN | | | 10/100/1000Base-T/TX Ethernet, USB 2.0 |
| PDL | SG Raster (Swift Graphic Raster), HP-GL/2, HP RTL, JPEG (Ver. JFIF 1.02) | | | HP-GL/2, HP RTL, Epson ESC/P-R |
| Net weight (unpacked) | 69 kg | | | 67 kg (with stand) |
| Power consumption when in standby | INA | | | 3 W |
| Power consumption when active | 69 W | | ✓ | 52 W |
| Acoustic pressure | Operation: 44 dB (A) or less; Stand- by: 35 dB (A) or less | ✓ | | Operation: 50 dB (A); Standby: INA |
| Acoustic power | Operation: 6.0 Bels or less | | | Operation: 6.8 Bels |
| Option to integrate with a spectrophotometer? | No | | | INA |

INA – Information not available

Print Driver Feature Set

| | Canon imagePROGRAF TM-200 | Advantage | | Epson SureColor SC-T3200 |
|--|---|-----------|---|---|
| Speed settings | 5 (Fast 300, Fast 600, Standard 600, High 600 and 1200) | ✓ | | 3 (Speed, Quality, Max Quality), depending on paper chosen |
| Economy mode | Yes (Fast setting) | ✓ | | No |
| Predefined profiles | 6 (Default, Photo (colour), Poster, CAD (colour line drawing), CAD (mono line drawing) and Perspective GIS) | | ✓ | 9 (Poster Illustration & Text; Poster Photo; Office Document Black; Office Document Colour; CAD/Line Drawing Black; CAD/Line Drawing Colour; Perspective/GIS; CAD/Line Drawing Bi-Level; Standard) |
| Overview of profile settings provided | Yes | | | Yes |
| Media profiles | 50 + 10 user customizable special options | ✓ | | 20 |
| IQ optimized for various types of output | Yes | | | Yes |
| Watermark | Yes | ✓ | | No |
| Sharpen text | Yes | | | Yes |
| Thicken fine lines | Yes | ✓ | | No |
| Mirror image | Yes | | | Yes |
| Multi-up printing | Yes, 2 to 16 | ✓ | | Yes, 2 and 4 |
| Poster print mode | Yes (2 by 2) | | ✓ | Yes (4 by 4) |
| Page stamping | Yes (Date, Time, Name, Page Number) | | ✓ | Yes (Date, Time, Document/ User/Printer Name, Media Type, Print Quality Level, Resolution, Print Mode, High Speed, Finest Detail, Edge Smoothing, Colour Adjustment and Value, Colour Density, and Free Text Comment) |
| Image rotation | Yes, 90 degrees and 180 degrees | ✓ | | Yes, auto 180 degrees |
| Option to preview before print | Yes | | | Yes |
| Link to device web server from driver | No (there is a link to Status Monitor) | | | No (there is a link to Epson Status Monitor 3) |
| 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 (flexible placement) |
| MS Office Plug-in | Yes | | | Yes |
| Adobe Photoshop Plug-in | INA | | | INA |
| Accounting Capability | Yes | | | Yes |
| Disable automatic cutter | Yes | | | Yes |

| | Canon imagePROGRAF TM-200 | Advantage | | Epson SureColor SC-T3200 |
|--|---------------------------|-----------|--|--------------------------|
| Unidirectional printing selection option | Yes | ✓ | | No |
| Integration with MFP | Yes | ✓ | | No |

The Canon imagePROGRAF TM-200 comes bundled with PosterArtist Lite.

Ink Consumption

Table 1: Amount of Ink in each Canon imagePROGRAF TM-200 Cartridge (in Grams)

| | Matte Black | Black | Yellow | Magenta | Cyan |
|---|-------------|-------|--------|---------|---------|
| Weight of cartridge prior to installation | 395.2 | 391.7 | 389.9 | 395.4 | 388.0 |
| Weight of cartridge at end of life | 74.3 | 74.3 | 74.3 | 74.3 | 74.3 |
| Net weight of ink | 320.9 | 317.4 | 315.6 | 321.1 | 313.7 |
| Total ink weight across five cartridges | | | | | 1,588.7 |

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 | 505.4 | 502.8 | 502.8 | 508.9 | 506.6 |
| Weight of cartridge at end of life | 129.8 | 129.8 | 129.8 | 129.8 | 129.8 |
| Net weight of ink | 375.6 | 373.0 | 373.0 | 379.1 | 376.8 |
| Total ink weight across five cartridges | | | | | 1,877.5 |

Table 3: Ink Used in Three 50-Page Runs of Retail Sales Poster Test Document (Standard Mode) on the Canon imagePROGRAF TM-200 (in Grams)

| | Matte Black | Black | Yellow | Magenta | Cyan |
|---|-------------|-------|--------|---------|------|
| Test Run 1 Net weight of ink used | 22.8 | 0.9 | 8.4 | 24.3 | 6.5 |
| Test Run 2 Net weight of ink used | 22.1 | 0.9 | 8.5 | 24.4 | 6.5 |
| Test Run 3 Net weight of ink used | 22.0 | 1.2 | 9.8 | 24.5 | 6.1 |
| Average amount of ink used across three runs | 22.3 | 1.0 | 8.9 | 24.4 | 6.4 |
| Total ink weight across five cartridges (based on averages) | | | | | 63.0 |

Table 4: Ink Used in Three 50-Page Runs of Retail Sales 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 | 25.6 | 24.0 | 56.6 | 8.6 | 4.0 |
| Test Run 2 Net weight of ink used | 25.0 | 23.5 | 55.3 | 8.3 | 3.9 |
| Test Run 3 Net weight of ink used | 25.0 | 23.8 | 55.6 | 8.5 | 4.1 |
| Average amount of ink used across three runs | 25.2 | 23.8 | 55.8 | 8.5 | 4.0 |
| Total ink weight across five cartridges for 50-page run (based on averages) | | | | | 117.3 |

Table 5: Ink Used in Three 50-Page Runs of GIS Map Test Document (Standard Mode) on the Canon imagePROGRAF TM-200 (in Grams)

| | Matte Black | Black | Yellow | Magenta | Cyan |
|---|-------------|-------|--------|---------|------|
| Test Run 1 Net weight of ink used | 10.4 | 1.5 | 3.2 | 4.9 | 8.1 |
| Test Run 2 Net weight of ink used | 9.0 | 1.3 | 4.1 | 6.0 | 9.0 |
| Test Run 3 Net weight of ink used | 9.3 | 1.2 | 4.2 | 6.5 | 9.9 |
| Average amount of ink used across three runs | 9.6 | 1.3 | 3.8 | 5.8 | 9.0 |
| Total ink weight across five cartridges (based on averages) | | | | | 29.5 |

Table 6: 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 | 26.2 | 9.9 | 12.9 | 5.1 | 2.1 |
| Test Run 2 Net weight of ink used | 26.4 | 10.3 | 12.9 | 4.9 | 2.1 |
| Test Run 3 Net weight of ink used | 26.1 | 10.1 | 12.8 | 5.0 | 2.3 |
| Average amount of ink used across three runs | 26.2 | 10.1 | 12.9 | 5.0 | 2.2 |
| Total ink weight across five cartridges for 50-page run (based on averages) | | | | | 56.4 |

Ink Consumption Test Methodology Overview

Buyers Lab's ink consumption analysis was conducted using two document types (Retail Sales poster and GIS Map). Each document was formatted as a PDF and sized at ISO A1.

The Canon imagePROGRAF TM-200 was installed in Buyers Lab's lab with the latest "01.02" level of firmware (as of July 2018) and connected to a Windows 10 workstation using a 1000BaseT TCP/IP connection. The device was left in default configuration throughout testing. The Canon driver was used for all testing and was left in default colour setting configuration. The Retail Sales document was printed on 140gsm matte coated media in Standard mode, and the GIS map was printed on plain media in Standard mode.

The Epson SureColor SC-T3200 was installed in Buyers Lab's lab with the latest "DN028HB,F9.68,5000" level of firmware (as of July 2018) and connected to a Windows 10 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 the image set to print at actual size. The Retail Sales document was printed on matte coated media in Quality mode, and the GIS map was printed on plain media in Quality mode.

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.

For both models, one cartridge was then run to exhaustion and the weight of the empty cartridge was recorded and used as the empty weight for each colour.

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 in Europe, consisting of Windows 2012 servers and Windows 10 Professional workstations, 10/100/1000BaseTX network switches and CAT5e/6 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 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.

For more information, please call David Sweetnam at +44 (0) 118 977 2000 or email him at david.sweetnam@keypointintelligence.com