

## KPI Comparative Lab Test Report

OCTOBER 2018

### Canon imagePROGRAF TM-300

vs. HP DesignJet T730

Advantage ✓	Canon imagePROGRAF TM-300	HP DesignJet T730
Colour Image Quality	✓	
Black Image Quality	✓	
Print Productivity	✓	
Banner Printing	✓	
Poster Printing	✓	
Direct Print Submission Functionality	=	=
Ink Consumption	✓	
Device Feature Set	✓	
Print Driver Feature Set	✓	

## TEST OBJECTIVE

Keypoint Intelligence - Buyers Lab was commissioned by Canon Europe to conduct confidential document imaging device performance testing on the Canon imagePROGRAF TM-300 and the HP DesignJet T730, and produce a report comparing the relative strengths and weaknesses of the two printers 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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On the strength of its productivity performance alone, the five-colour, 36-inch Canon imagePROGRAF TM-300 was a superb performer in Buyers Lab's evaluation, outshining its HP DesignJet T730 competitor in many key areas. Clearly, it was the more productive model, with significantly faster speeds whether printing Buyers Lab's jobstream (which replicates a typical mixed workflow for a large-format unit) or from a ready state, and especially in High/Best quality mode where at times it delivered output that was nearly 80% faster than those of the HP unit. In other productivity tests using Buyers Lab poster and banner targets, the Canon unit was not only more productive, but it successfully printed the whole banner image, whereas the HP model only printed the background of the banner and none of the actual image detail. The TM-300 offers additional noteworthy features that boost productivity further: it's capable of handling ink and paper outages with minimal impact on user productivity or causing unnecessary waste. Thanks to its hot-swap ink tank design, inks can be replaced on the fly. Moreover, when it is out of paper, the Canon unit pauses and alerts the operator, and once a new roll is installed and the paper type is confirmed, the unit continues to print the interrupted page in full followed by all successive pages, thus reducing waste. These scenarios are handled very differently by the HP model: ink cartridges cannot be replaced while the device is actively printing, leading to operator downtime. More seriously, when the HP T730 runs out of paper, it stops and automatically cancels the entire job in progress, even if it's in the middle of a large print job. Users are forced to set up the job again once paper is replenished and determine where to resume the job from the page on which it was interrupted, all of which requires additional intervention. Another area where the Canon model had an advantage was in Buyers Lab's ink consumption evaluation, where it used less ink in all three test scenarios.

In terms of image quality, results were mixed; output quality delivered by both printers was entirely congruous with the standard demanded by professionals working in Architectural, Engineering and Construction (AEC), Computer-Aided Design (CAD) and Geographic Information Systems (GIS) industries. The HP T730 produced higher optical densities for magenta (except in Standard/Normal mode), yellow and composite black, as well as larger colour gamuts in all settings when printing on plain paper. Yet, the Canon TM-300 delivered better quality overall. It produced higher optical densities for cyan; smoother circles; crisper text (with no bleed), consistent halftone coverage and sharper AEC graphics in High/Best mode printing on plain paper; more distinct detailing in dark and light contrast areas and more vibrant, saturated colours in photographic output; as well as more natural-looking skin tones than those produced by the HP T730. In addition, the TM-300 produced the larger colour gamut in High/Best mode when printing on photo-quality paper.

In terms of device and driver feature sets, the Canon imagePROGRAF TM-300 has plenty of advantages over its rival. It has a higher memory capacity to aid with job processing, smaller ink drop sizes, a uni-directional feature which eliminates banding on image output even when printing in Fast mode, borderless printing capability, and a flexible layout nesting option to save on paper. While the HP model offers a similar nesting feature, jobs are positioned automatically and it doesn't support the same flexibility and control over image placement. Canon users can integrate the imagePROGRAF TM-300 device with a small-format MFP to produce enlarged, poster-size copies via the free Color imageRUNNER Enlargement Copy Mode, a feature not offered by the HP model. Both units offer robust direct print submission functionality as well as support for mobile printing via proprietary mobile print apps for iOS and Android mobile devices, providing additional flexibility for workers who are travelling between sites or working remotely.

In conclusion, the Canon imagePROGRAF TM-300 is the stronger performer in Buyers Lab's large-format evaluation overall. Not only did it deliver faster productivity and top-class colour and black image quality, it handled Buyers Lab's banner test successfully (which the HP failed to output), and its driver and device feature sets are richer, providing many ways to boost productivity and enhance functionality.

## Colour Image Quality

Advantage ✓	Canon imagePROGRAF TM-300	HP DesignJet T730
Text	✓	
Fine Lines	=	=
Halftone Range	=	=
Halftone Fill	✓	
Solid Density		✓
AEC Graphics	✓	
GIS Graphics	=	=
Business Graphics	=	=
Photographic Images	✓	
Colour Gamut (Plain Paper, Fast)		✓
Colour Gamut (Plain Paper, Standard/Normal)		✓
Colour Gamut (Plain Paper, High/Best Quality)		✓
Colour Gamut (Photo, High/Best Quality)	✓	

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

- All image quality testing was conducted on CAD 90gsm inkjet plain paper.
- The Canon TM-300 delivered higher cyan optical density across all modes, and a higher magenta optical density for magenta in Standard mode. Overall, the HP model delivered higher optical densities for magenta (except in Standard/Normal mode), yellow and composite black in all modes.
- When printing on plain paper, the Canon model delivered smaller colour gamuts across the board compared with the HP unit; in Fast mode, it was 32.7% smaller, with a CIE volume of 134,983 versus 200,555 for the HP device; in Standard/Normal settings it was 12.1% smaller with a CIE volume of 204,531 versus 232,661 for the HP device; and in High/Best settings it was 10.0% smaller, with a CIE volume of 223,594 versus 248,331 for the HP model.
- + However, when printing on photo-quality paper using Canon's High quality setting and the HP DesignJet T730's Best setting, the Canon model delivered a 41.2% larger colour gamut than that of the HP unit, with a CIE volume of 649,451 compared with 460,023 for the HP unit.
- + The Canon TM-300 delivered superior colour text overall; it produced dark, pin-sharp Arial sans serif text that was legible down to the smallest (3-pt.) type size, with no breakup or ink bleed, in all tested modes. Serif characters, again, displayed no bleed and were legible down to 3-pt. size in Fast and High modes, and 5-pt level in Standard mode. The HP model produced sans serif fonts that were legible down to the 3-pt. level across all modes; its Times New Roman text was legible down to the 4-pt. level in Fast and Standard modes, and 3-pt. level in Best mode, though there was some ink bleed evident under all scenarios.
- Fine lines produced by both devices remained distinct down to the 0.1-pt. level in all modes. The fine lines produced by the HP model were rated as slightly more distinct in Fast mode, whilst the Canon device's fine lines were judged to be slightly better in the highest quality mode.
- Both devices delivered halftone output across the full range—from the 10% to 100% dot-fill levels in all modes, with distinct transitions between all levels.

- + The Canon TM-300 delivered smooth and consistent halftone fills in all modes, which were rated good in Fast mode, very good in Standard mode and excellent in the highest quality mode. The HP model's colour halftones were rated very good in Standard and Best quality modes, and good in Fast mode.
- + Both devices produced circles that were distinct down to the 0.1-pt. level in all modes, but the Canon device had the slight edge, with smoother circles in Standard/Normal and High/Best quality modes compared with those delivered by the HP device, which displayed slight stair-stepping.
- + Both models produced the 1x1 pixel grid in CMY with very good coverage across all colours, but the Canon model delivered more consistent dot formation than did the HP model.
- + When evaluating Architectural, Engineering and Construction (AEC) graphics in Standard/Normal mode, both units' output exhibited a very good level of detail, very distinct fine lines and clear text formation. However, in High/Best mode, the Canon TM-300 delivered superior results that were rated excellent, with sharper lines and crisper characters.
- O When evaluating Geographic Information Systems (GIS) graphics in High/Best mode on plain paper, both units delivered a fine level of detail and showed an equally good depth of field—a critical factor in delivering a more realistic three-dimensional rendering of topographical features.
- O Colour business graphics produced by both devices exhibited sharp details and very good colour saturation.
- + When comparing photographic images produced in Standard/Normal and High/Best modes, the Canon model's output exhibited very good detailing in dark and light contrast areas, smooth tonal transitions, and more vibrant colours compared with output from the HP device.
- + Skin tones produced by the Canon model were more natural-looking, while those produced by the HP device were distinctly yellowish-blueish in hue.
- + Results were mixed in Buyers Lab's assessment of colour image quality, but the Canon TM-300 had the slight advantage overall. Both models delivered excellent GIS graphics, good quality colour business graphics, distinct fine lines and a consistent halftone range. The Canon TM-300's photographic images were superior to those from the HP unit, with more vibrant colours and better detailing, while skin tones were more natural-looking; it also delivered smoother circles, higher optical densities for cyan, and a far larger colour gamut when printing on photo paper. Meanwhile, the HP model produced higher magenta optical densities (in two of the three modes tested), as well as higher yellow and composite black densities, and a larger colour gamut when printing in all modes on plain paper.

## Black Image Quality

Advantage ✓	Canon imagePROGRAF TM-300	HP DesignJet T730
Text	✓	
Fine Lines	=	=
Halftone Range	=	=
Halftone Fill	✓	
Solid density		✓
Business Graphics	✓	
Photographic Images	✓	

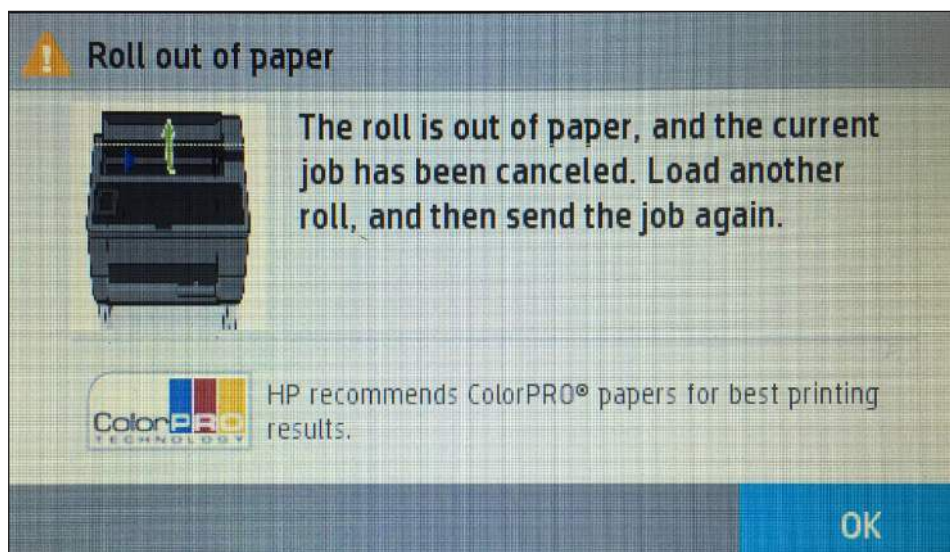
- The HP model delivered superior optical density for black across all tested modes.
- + Black serif text produced by the Canon TM-300 in Fast and Standard modes was legible down to the 5-pt. size with no breakup or ink bleed and rated very good; in High quality mode, Times characters were pin-sharp and legible down to the 3-pt. size and rated excellent. Sans serif characters were crisp, dark and legible down to the 3-pt. level for all modes and rated very good in Fast and Standard modes, and excellent in High quality mode. Serif and sans serif fonts produced by the HP T730 were legible down to the 3-pt. level for all modes and were rated very good.
- O Both devices produced fine lines that remained distinct down to the 0.1-pt. level in all modes, with no evidence of stair-stepping in the production of diagonal lines.
- + Whilst both devices delivered white-on-black fine lines at the 0.25-pt. level in all quality modes, the Canon output was rated as very good in Fast and High quality modes and good in Standard mode, compared with good ratings for the HP device in Fast and Normal modes and only fair in Best quality mode.
- + Circles produced by both models were fully formed at the 0.1pt level in all print modes, but those generated by the TM-300 were slighter smoother than those produced by the HP unit in both Fast and High/Best modes.
- O Both models delivered an excellent halftone range—from the 10% to 100% dot-fill levels in all modes, with distinct transitions between all levels.
- + Halftone fill coverage in Fast and Standard modes was rated very good for the Canon model, and excellent in High quality mode; in contrast, halftone fills were rated just good for the HP device as its greyscale coverage was slightly grainy.
- + When producing black AEC graphics in Standard/Normal mode, the Canon unit delivered superior detail and sharper fine lines than did the HP model.
- + The Canon model had the edge in quality, as well, when producing monochrome business graphics in High/Best mode on plain paper, with smooth halftone gradations and crisp text.
- + Monochrome photographic images in High/Best mode on plain paper were produced very accurately by both models, however the Canon TM-300 delivered much smoother halftone gradations (the HP model's images were grainy by comparison) and sharper detailing in light and dark contrast areas.
- + In Buyers Lab's monochrome image quality evaluation, each model delivered strengths in certain areas but the Canon model had the advantage overall. It excelled when producing photographic images, which exhibited smoother halftone coverage and sharper details; it delivered superior AEC graphics in Standard/Normal mode, as well smoother circles. The HP T730 produced darker solids and had higher optical densities across all quality modes.

## Print Productivity

Advantage ✓	Canon imagePROGRAF TM-300	HP DesignJet T730
First Page Out from Weekend Non-Use	✓	
First Page Out from Ready State	✓	
Throughput Speed (Fastest mode)	✓	
Throughput Speed (Default mode)	✓	
Throughput Speed (Highest-quality mode)	✓	
Job Stream	✓	



- + The Canon TM-300 delivered 11.4% faster first-page-out time of 87.59 seconds after a weekend of non-use, compared with 98.87 seconds for the HP T730 device. Start-up time before printing commenced, however, was slower for the Canon model at 36.42 seconds, compared with 26.09 seconds for the HP unit.
- + The Canon device delivered a 24.7% faster first-page-out time of 69.68 seconds from its ready state, compared with 92.53 seconds for the HP T730. Once again, start-up time before printing commenced was slower for the Canon model—24.89 seconds versus 19.06 seconds for the HP model.
- + When printing Buyers Lab's job stream, designed to simulate a typical mixed workflow for a large-format unit, the Canon TM-300 was 41.2% faster than the HP model in Fast mode, 42.0% faster in Standard/Normal mode, and 78.0% faster in High/Best mode.
- + When printing Buyers Lab's 12-page DWF test file in colour, the Canon TM-300 was faster than the HP unit in all modes tested; it was 38.4% faster in Fast mode; 40.1% faster in Standard/Normal mode; and 78.7% faster in High/Best mode.
- + Similarly, when printing Buyers Lab's 12-page DWF test file in monochrome, the Canon model was the faster model across the board; it was 37.2% faster in Fast mode; 5.8% faster in Standard/Normal mode and 78.3% faster in High/Best mode than the HP unit.
- + When printing Buyers Lab's single-page A0-size Cottage Architectural Plan test target in Standard/Normal mode, the Canon TM-300 delivered a first-page-out time (109.92 seconds) that was 28.7% faster than that of the HP T730 (154.06 seconds). The time to print five A0-size pages was 37.9% faster for the Canon TM-300 than for the HP device (472.50 seconds versus 760.28 seconds).
- + The Canon model's unique sub ink tank system provides a further boost to productivity. When ink needs replacing on the TM-300, it will continue to print, drawing ink from its sub tank while the cartridge is being replaced on the fly, so there's no operator downtime. For added convenience, the control panel alerts users to replace ink and also provides purchasing information. In contrast, when the HP T730 model runs out of ink, printing must stop for the cartridge to be replaced, which leads to operator downtime.
- + Both the Canon and HP models will pause and alert the operator when they run out of paper. After a new roll is installed, the Canon device resumes printing at the beginning of the interrupted page, rather than printing the portion of the page that remained before running out of paper, so less ink and paper is wasted. In contrast, when a roll is depleted on the HP T730, it automatically cancels the entire job, even if it's in the middle of a multi-page print run. This means the operator must resubmit the job again from the workstation once paper is replenished, which has a negative impact on productivity, since the operator must determine the number of the last page printed and then resubmit the job from that point to avoid wasting unnecessary paper and ink.



The HP unit's control panel alerts users to replace the media roll and that the current job has been cancelled.

## Banner Printing

Advantage ✓	Canon imagePROGRAF TM-300	HP DesignJet T730
Banner printing capability	✓	
Productivity	✓	

- + The Canon imagePROGRAF TM-300 successfully printed Buyers Lab's 36" x 105" banner (a 4,955-KB PDF file) in Fast mode, taking 11.21 seconds to generate a preview, and a further 1 minute, 58.84 seconds from preview to final paper cut. The HP DesignJet T730 was unable to print the banner. It printed the background only and none of the actual image detail; there was no error message displayed on the device.

## Poster Printing

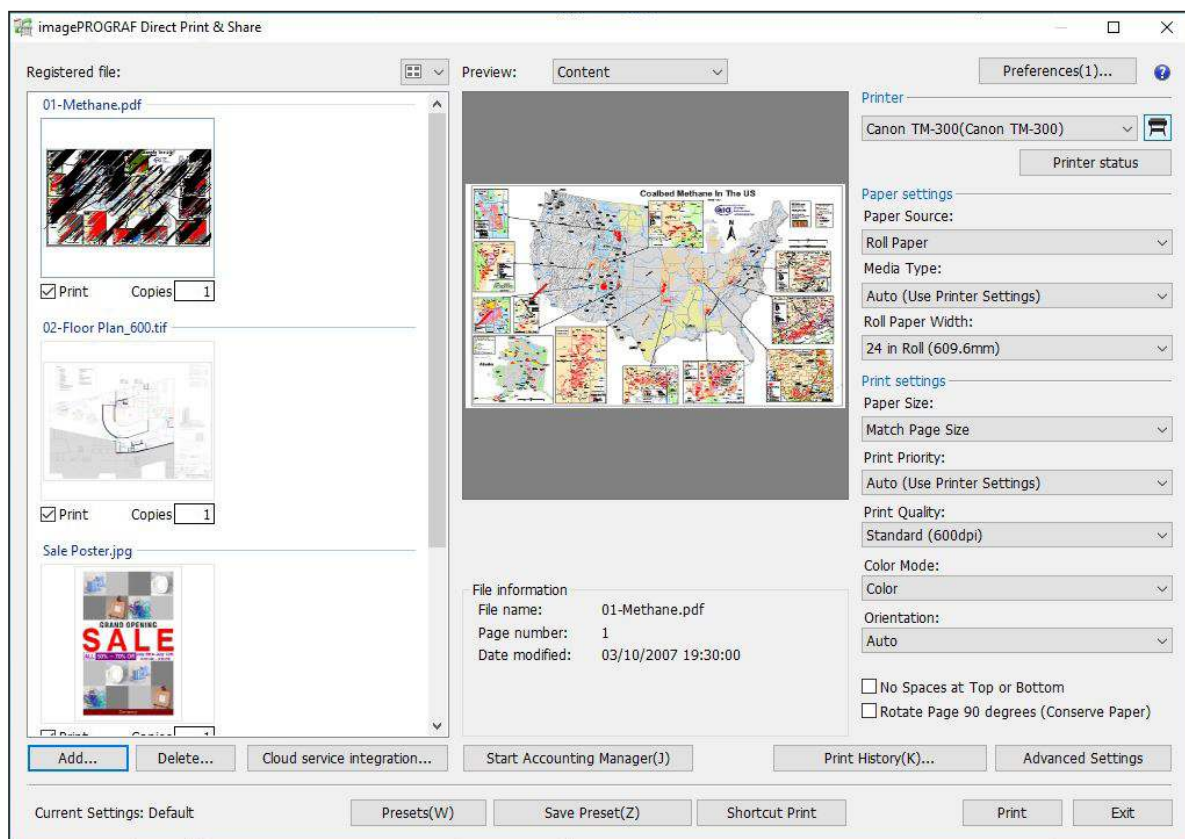
Advantage ✓	Canon imagePROGRAF TM-300	HP DesignJet T730
Image Quality (Fast mode)	✓	
Image Quality (Standard/Normal mode)	✓	
Image Quality (High/Best mode)	=	=
Productivity (Fast mode)	✓	
Productivity (Standard/Normal mode)	✓	
Productivity (High/Best mode)	✓	

- + When printing a poster in Fast mode at 300 dpi, the Canon model took 38.93 seconds to complete the job, while the HP unit took 49.18 seconds.
- + In terms of image quality, some banding was evident on output from the Canon TM-300 in Fast mode, but only in dark solid areas, while there was a great deal of banding evident with the HP model across the entire image, in both light and dark areas. When unidirectional printing was selected in the Canon driver (not available with the HP model), print time increased to 51.56 seconds and the banding was eliminated.
- + The Canon model took 57.42 seconds to print the poster in Standard mode at 600 dpi, while the HP T730 took 1 minute, 23.18 seconds in Normal mode.
- + In Standard/Normal mode, the Canon poster showed minimal banding in some dark areas and colours were vibrant with good detailing. The HP unit's poster still exhibited a higher level of banding in both light and dark areas across the whole image, but with good detailing.
- + When printing a poster in High quality (600 dpi) mode, the Canon model took 1 minute, 46.97 seconds, which is 65.1% faster than the HP unit's 5 minutes, 6.74 seconds result when printing in Best quality mode (1200 dpi).
- O In High/Best quality settings, there was no noticeable banding on output from either model and definition was equally good.

## Direct Print Submission Functionality

Advantage ✓	Canon imagePROGRAF TM-300	HP DesignJet T730
Ease of Use	=	=
Functionality	=	=
Mobile App Integration	=	=

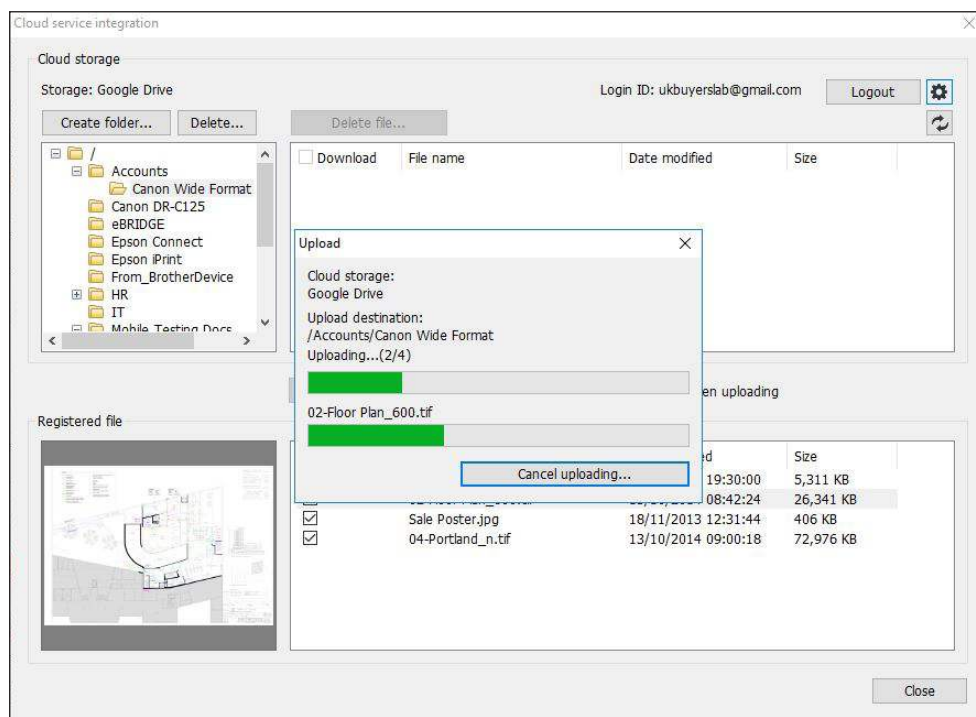
- Available as a free download from Canon's website, the newly enhanced imagePROGRAF Direct Print & Share utility enables the direct printing of PDF, JPEG, TIFF and HPGL/2 files without the need for native applications or print drivers. Via the utility, users can preview print layouts and select print 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.



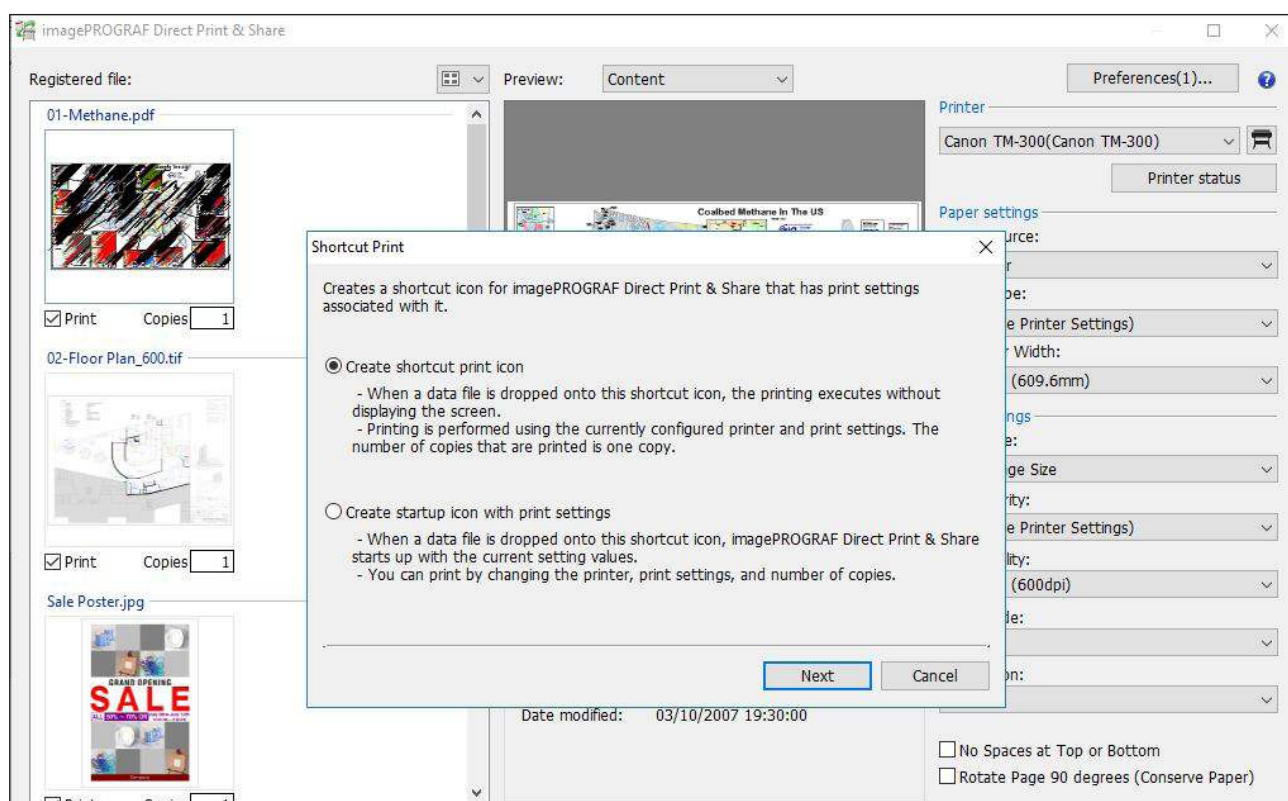
**Canon's imagePROGRAF Direct Print & Share utility provides users with an image preview. Users can maximize the utility's window to obtain a larger preview, which enhances usability.**

- 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.

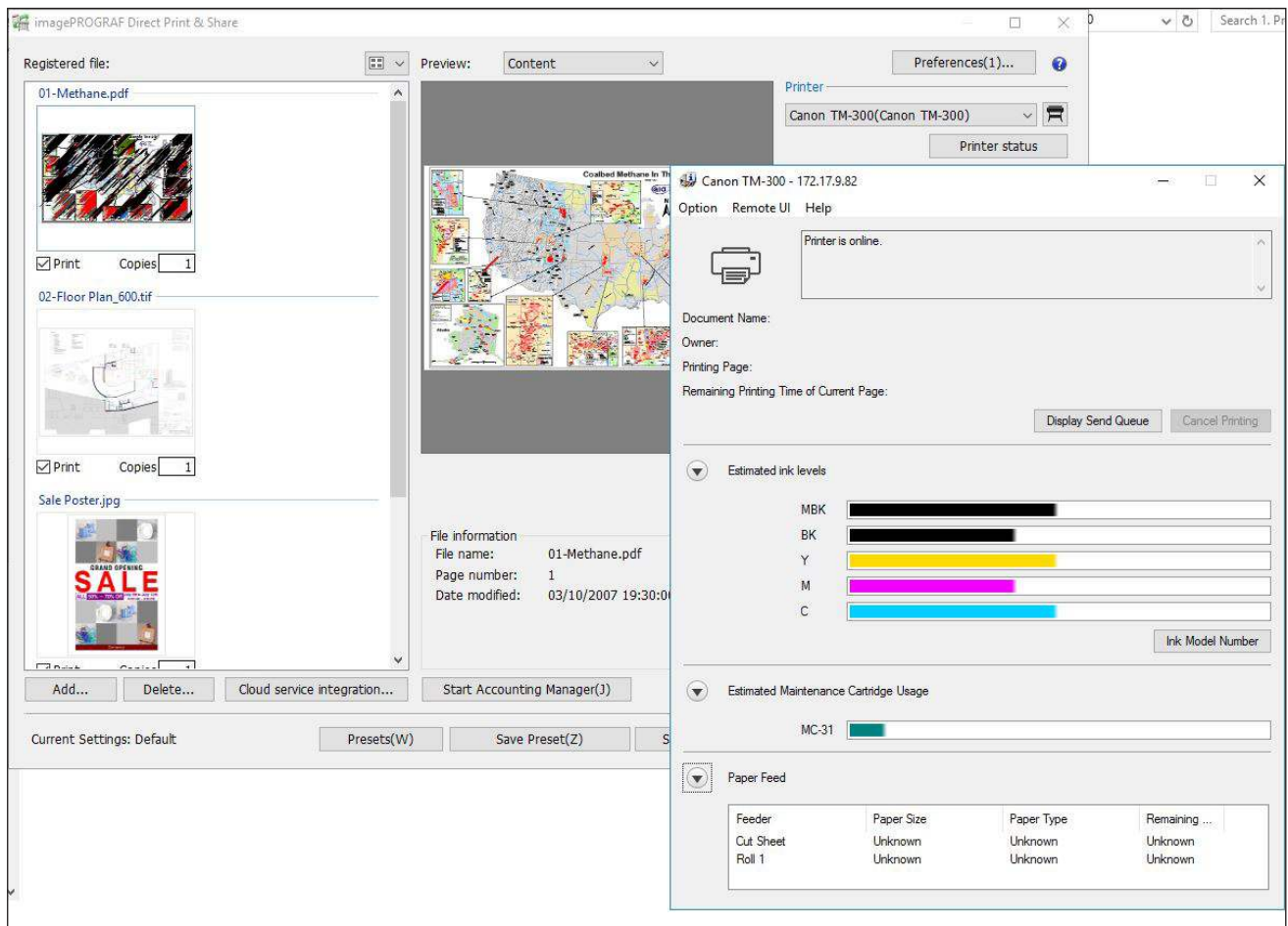




**imagePROGRAF Direct Print & Share lets users retrieve files from, as well as upload files to, Google Cloud for easier collaboration.**

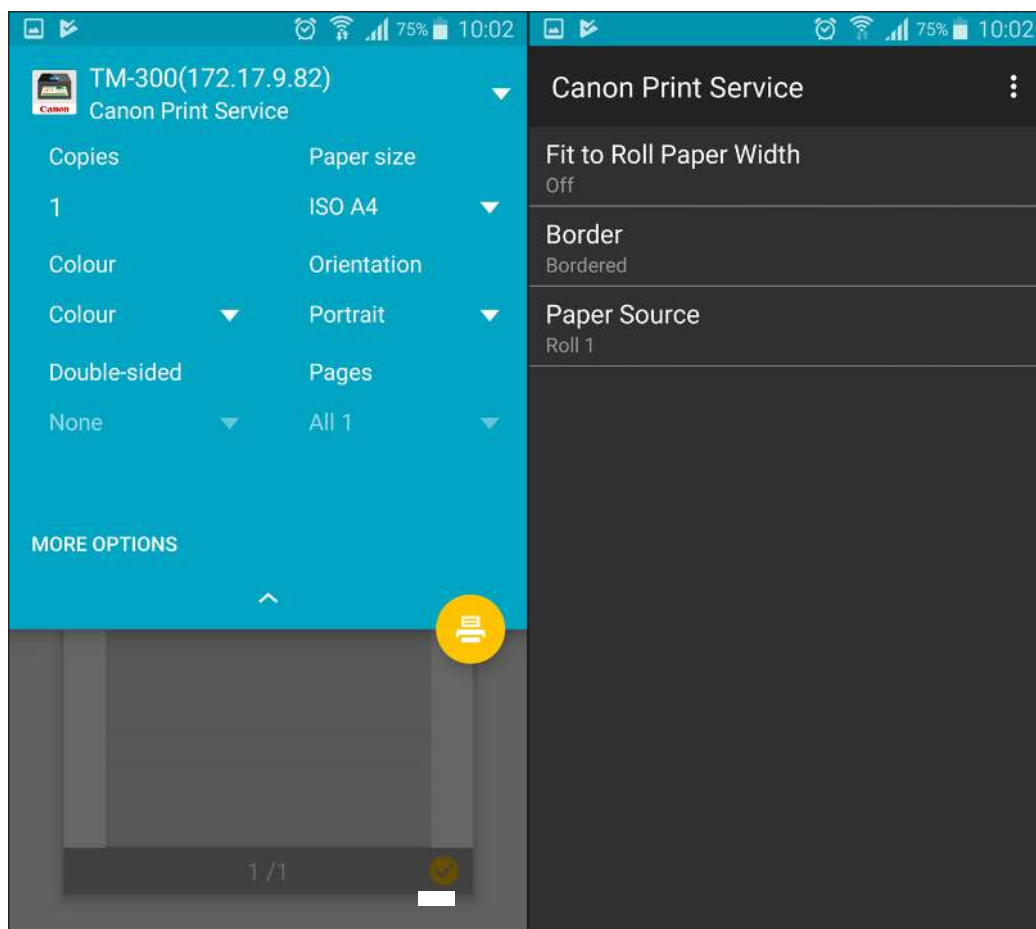


**To help standardize and streamline common print workflows, users can register and save job profiles in the utility as well as create desktop shortcuts that allow drag and drop automatic file printing with predefined print settings.**



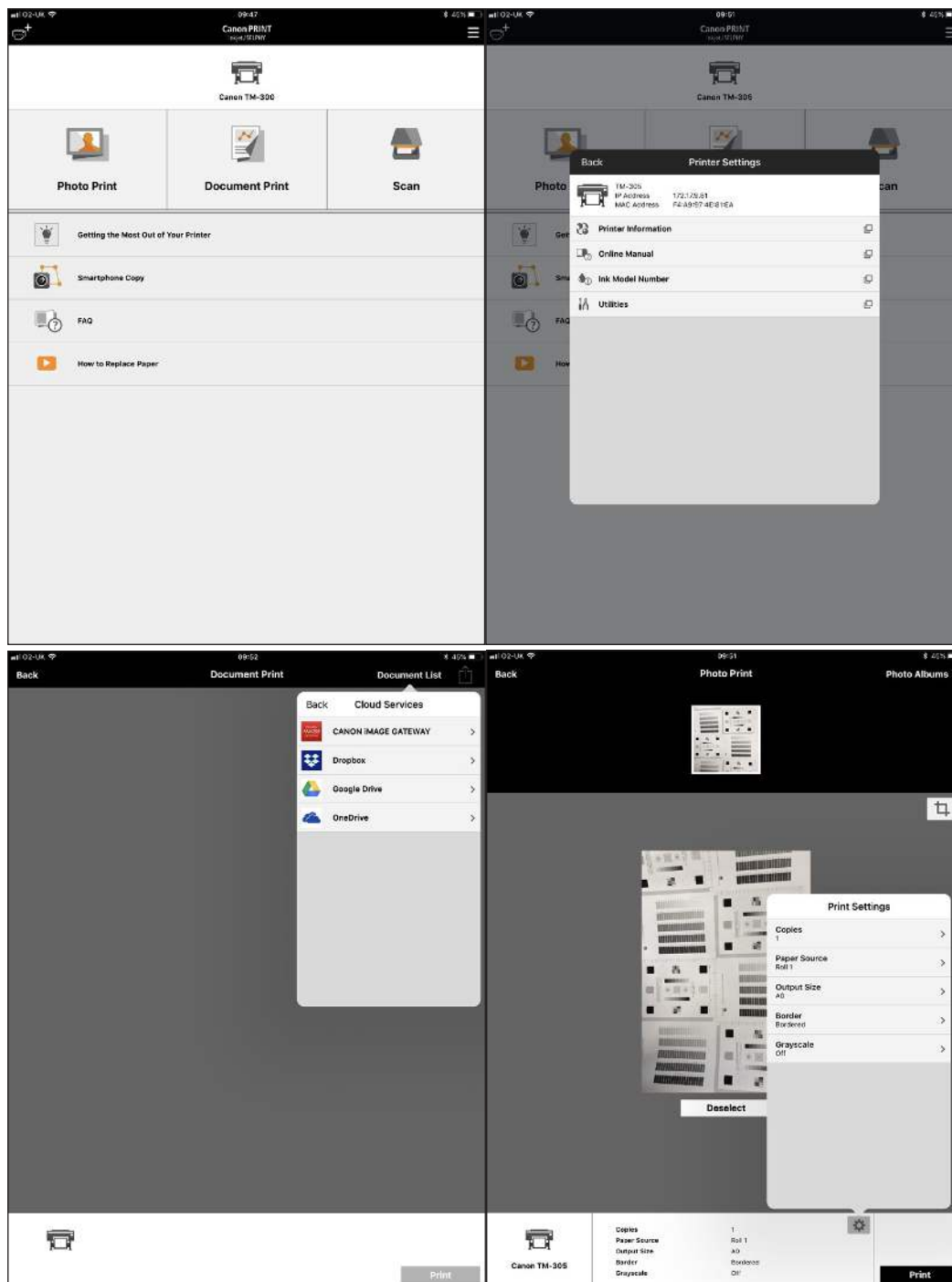
**Conveniently, users can view device and consumables status via the utility before sending jobs to print.**

- 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-300 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.



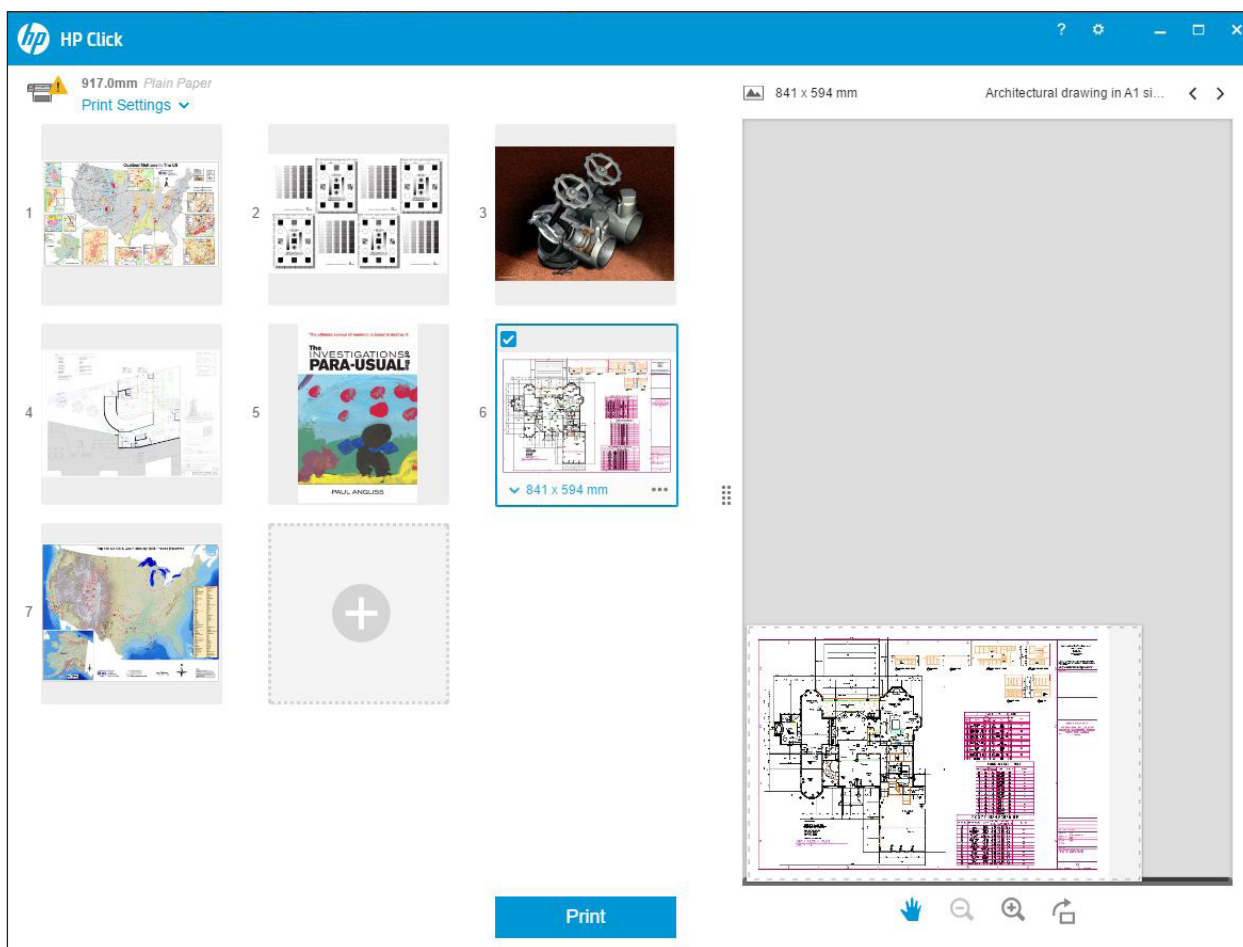
**The Canon Print Service mobile print plugin is an easy way for Android users print to the TM-300, and it offers a broad range of print settings, including colour, orientation, and borderless printing.**

- O 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.**

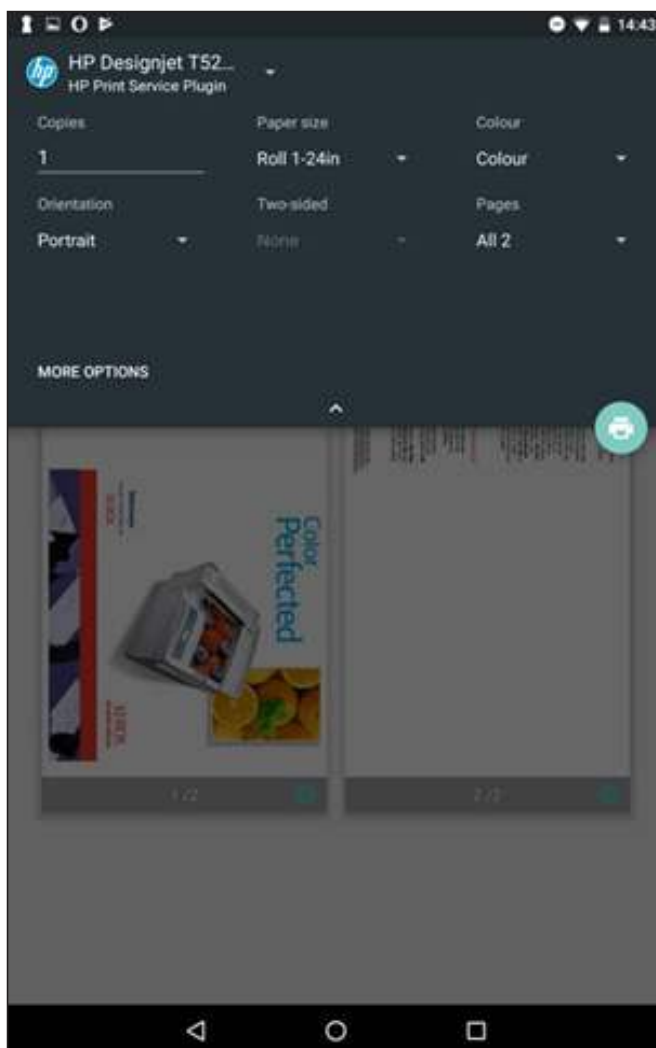
- Similar to Canon's utility, HP Click printing software, which is also available as a free download, enables direct printing of PDF, JPEG, TIFF and HPGL/2 files from the PC desktop, without the need for native applications or print drivers. Here, users can preview, resize and align images without the need to open up the driver properties. The utility also has an automatic nesting feature to reduce waste, and with select printers, users can access printer and print job status information via a link to the printer's embedded web server.



**Via HP Click, users can select basic print settings, preview images, manipulate images as well as utilize the automatic nesting feature to reduce paper waste.**

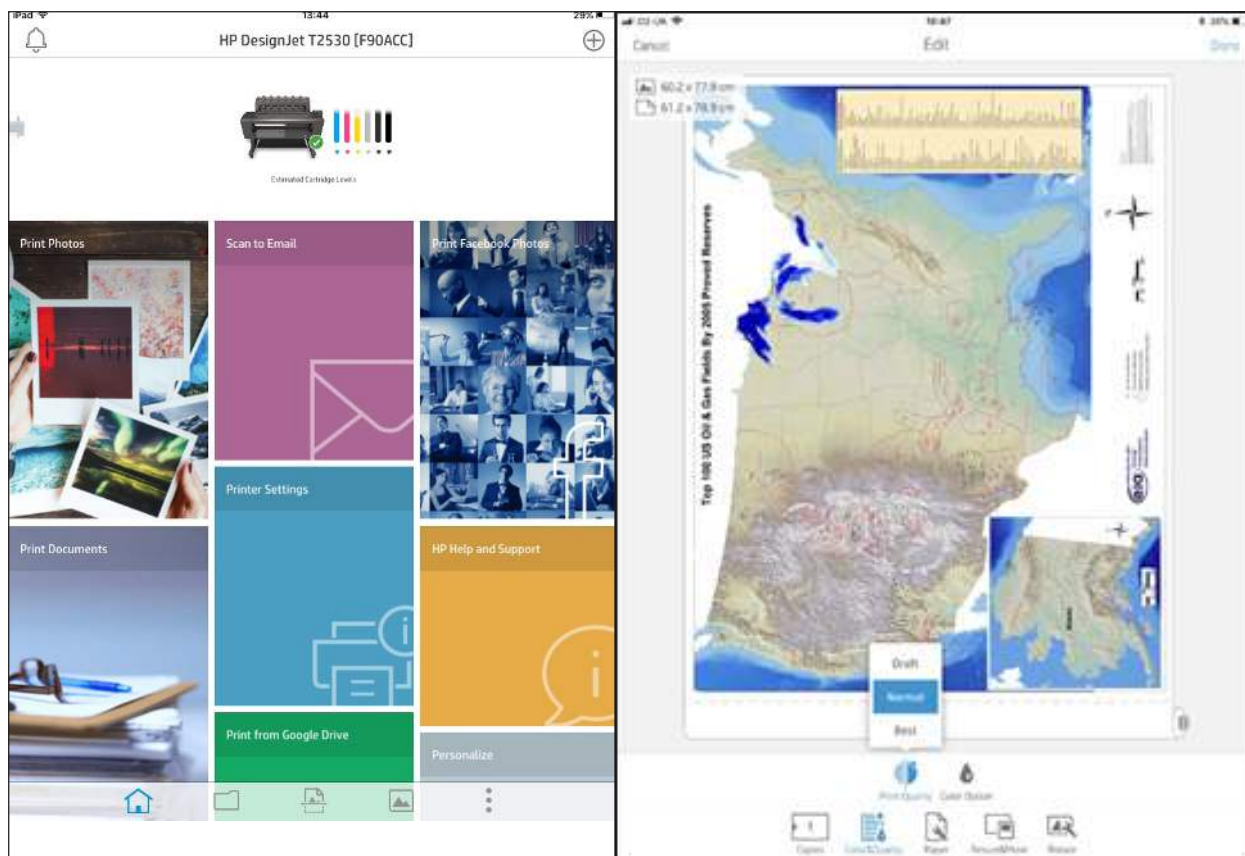
- O The HP Mobile Printing service allows users to print directly from an iOS or Android smart device to a compatible HP large-format device. Unlike the previous version (ePrint & Share), users do not need to create an account in order to access direct print functionality. Instead, the mobile device quickly pairs with the printer via a wireless network connection or by Wi-Fi Direct for direct job submission. Android users have an added step, however, of downloading and enabling the free HP Print Service Plugin app, which is available from Google Play, before being able to access the HP Printing service. Users can print a wide selection of file formats such as Microsoft Office documents, as well as PDF, JPEG and TIFF files. Whether a file is stored locally on the device, in a cloud service account, or sent as an email attachment, the user just needs to open the file and select the Share option, which then allows them to send the job to their preferred HP printer.





The HP Mobile Printing service enables Android (shown left) and iOS mobile devices to pair with the HP T730 and other compatible HP devices easily. Users can retrieve files from cloud storage, preview images and perform image adjustments.

- Users also have the option of printing from their Apple iOS and Android smartphones and tablets via the HP Smart mobile app (formerly known as HP All-in-One Printer Remote app). This free mobile printing app lets users scan documents directly to their mobile device; retrieve, print, or upload files to a variety of cloud storage services such as Dropbox, Box, Google Drive and Evernote; and monitor the printer status. A broad range of document editing options are available through the Preview function, as are a multitude of print settings.



**HP Smart App (formerly known as HP All-in-One Printer Remote app) is a free mobile printing app that allows users to print, scan, share and store documents from their Android or iOS mobile device to compatible HP output devices.**

- O In addition, the HP T730 supports HP ePrint functionality, whereby users are able to send print jobs remotely by email either via a workstation PC or a mobile device; PDF, TIFF and JPEG files (up to 10 MB) are supported.

## Ink Consumption

### Overall Weight of Ink Used (in Grams)

	Canon imagePROGRAF TM-300	HP DesignJet T730
Cottage Architectural Plan	14.9	21.3
Retail Sales Poster	63.5	71.1
GIS Map	34.4	45.8

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

- + When producing 50 prints of a Cottage Architectural Plan in Standard/Normal mode, the Canon unit used 30.0% less ink than the HP T730.

- + When printing a Retail Sales Poster in Standard/Normal mode, the Canon unit used 10.7% less ink than did the HP T730.
- + When printing a GIS Map in Standard/Normal mode, the Canon TM-300 used 24.9% less ink compared with the HP device.

## Device Feature Set

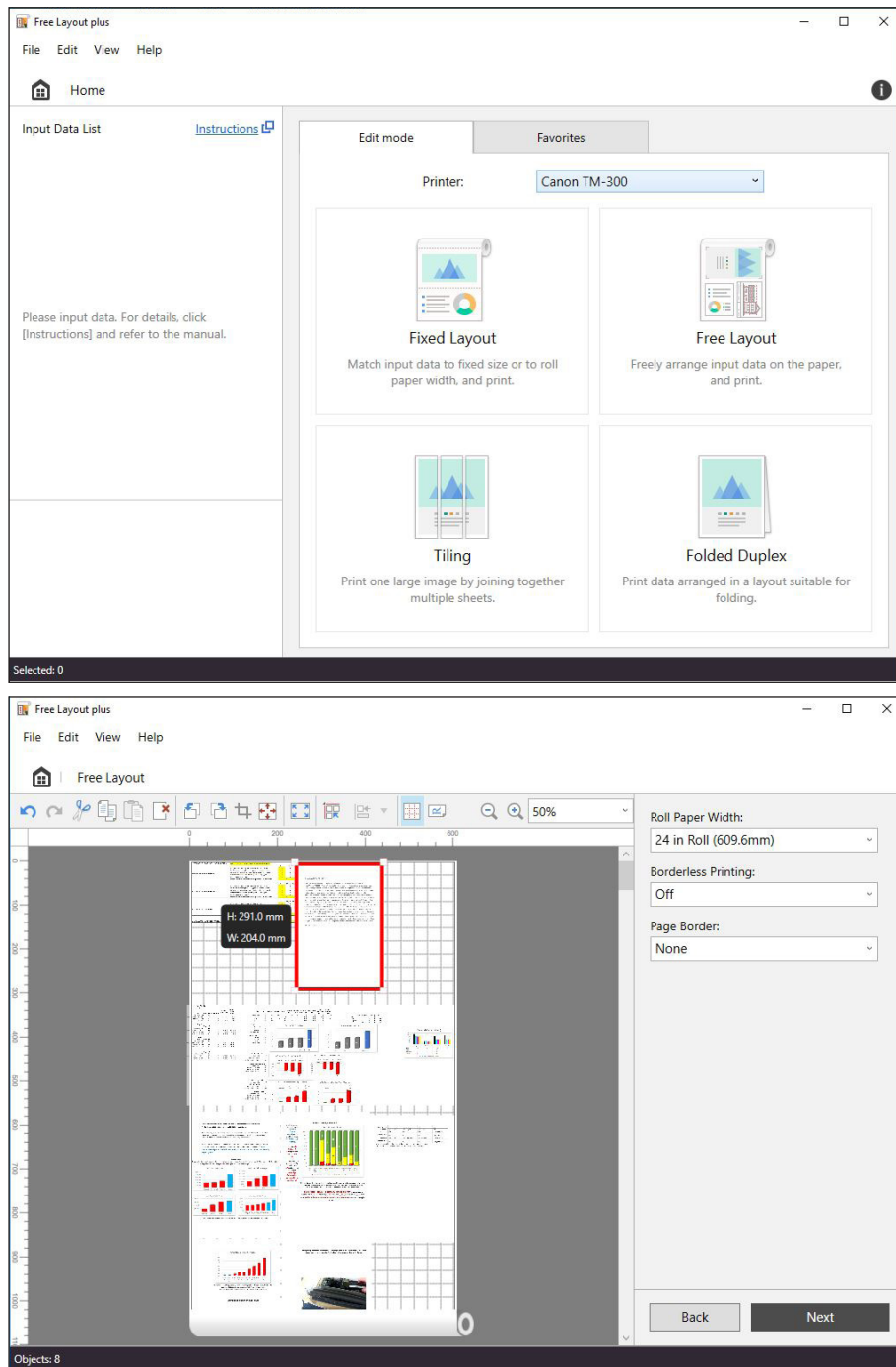
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- + The total capacity of the Canon TM-300's starter ink cartridges is 490 ml, which is higher than the 189 ml total starter ink volume available with the HP model.
- O Canon's replacement ink cartridge capacities are 130 ml and 300 ml for all colours, while the HP model offers 130 ml and 300 ml for CMY, and 300 ml for Matte Black.
- + While Canon's ink cartridges are replaceable during operation, which helps reduce downtime, the HP unit must stop before a cartridge can be replaced.
- + If the Canon device detects that printhead nozzles are becoming clogged, it automatically starts a cleaning routine when there are no more nozzles available to compensate for the clogged ones. This task would have to be done manually with the HP unit, although Buyers Lab technicians did not encounter any nozzle clogging issues with either model during testing.
- O Both units utilize a single user-replaceable printhead, which takes less than five minutes to replace.
- + The Canon TM-300 supports a larger diameter of roll paper (150 mm as opposed to 100 mm with the HP device), and a higher maximum media thickness (0.8 mm compared with HP's 0.3 mm). It accommodates borderless printing as well, unlike the HP device.
- The HP T730 supports a fractionally higher maximum cut-sheet media length of 1.676 m compared with 1.6 m for the Canon unit.
- Unlike the Canon device, the HP model offers USB 2.0 connectivity.
- O The catch trays of both models enable most printed sheets to be stacked neatly, with the Canon model offering the advantage of flat stacking. However, there was little to distinguish between the two models when the end of media rolls approached, as the tightly curled output from both models had a tendency to spill out of the baskets.
- + The Canon model offers a standard, non-upgradable RAM of 2 GB, while the HP unit has a standard non-upgradable RAM capacity of 1 GB.
- The HP T730 is a more lightweight device than the Canon model, weighing in at just 48 kg versus 59 kg for the Canon unit.
- O Both models offer a colour touchscreen user interface, which are similarly responsive and intuitive to navigate.
- The HP T730's power consumption while active (35 W) is much lower than that of the Canon model's (69 W). In standby mode (where the devices are likely to spend more of their time) the Canon model's power consumption (3.6 W) is also higher than the HP device (0.2 W).
- + Rated noise emissions are slightly lower for the Canon model (44 dB) compared to the HP device (48 dB) while the devices are printing.

## Print Driver Feature Set

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- + The Canon TM-300 has five speed settings (Fast 300, Fast 600, Standard 600, High 600 and High 1200), although not all settings are available with all media types. In contrast, the HP device has three settings (Fast, Normal and Best).
- + 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 HP driver does not offer this feature.
- + Six predefined profiles are available with the Canon driver, while the HP driver offers a range of five.
- + The Canon driver provides an overview of the settings for predefined profiles, unlike HP's HP-GL/2 driver.
- + The Canon driver supports multi-up (2 to 16) printing, while the HP driver does not.
- + The Canon driver offers a 2 by 2 poster mode, that's not available from the HP driver.
- + Unlike the HP driver, the Canon driver offers page stamping (Date, Time, Name and Page Number).
- + The Canon imagePROGRAF Printer Driver offers a broader range of built-in adjustments for CMY balance, brightness and contrast than the HP T730's HP-GL/2 driver. The Canon driver contains advanced colour-matching capabilities that include the ability to match ICC profiles and select the rendering intent based on different elements in the document. A wide range of colour management profiles are available when the HP driver and colour management tools (from the Printing Preferences menu) are downloaded from HP's website. Additionally, users can preview images before printing—features which were not included in the Startup driver disk supplied to Buyers Lab with the device.
- + 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. It enables users to integrate a Canon small-format MFP device with the TM-300, whereby documents scanned at the MFP are automatically routed to a hot folder that is monitored by the TM-300 driver. The image is then resized and printed, offering a fast, easy-to-use poster creation tool for office users. The HP driver lacks this feature.
- + 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. The HP unit offers a similar nesting feature, which can be activated directly on the control panel or from the print driver utility, or when using HP Click. However, unlike the Canon tool, it does not allow users to have precise control over the positioning of jobs, rather it will randomly position jobs to print across the width of a page, either in the order they were submitted or in 'optimized' layout order.

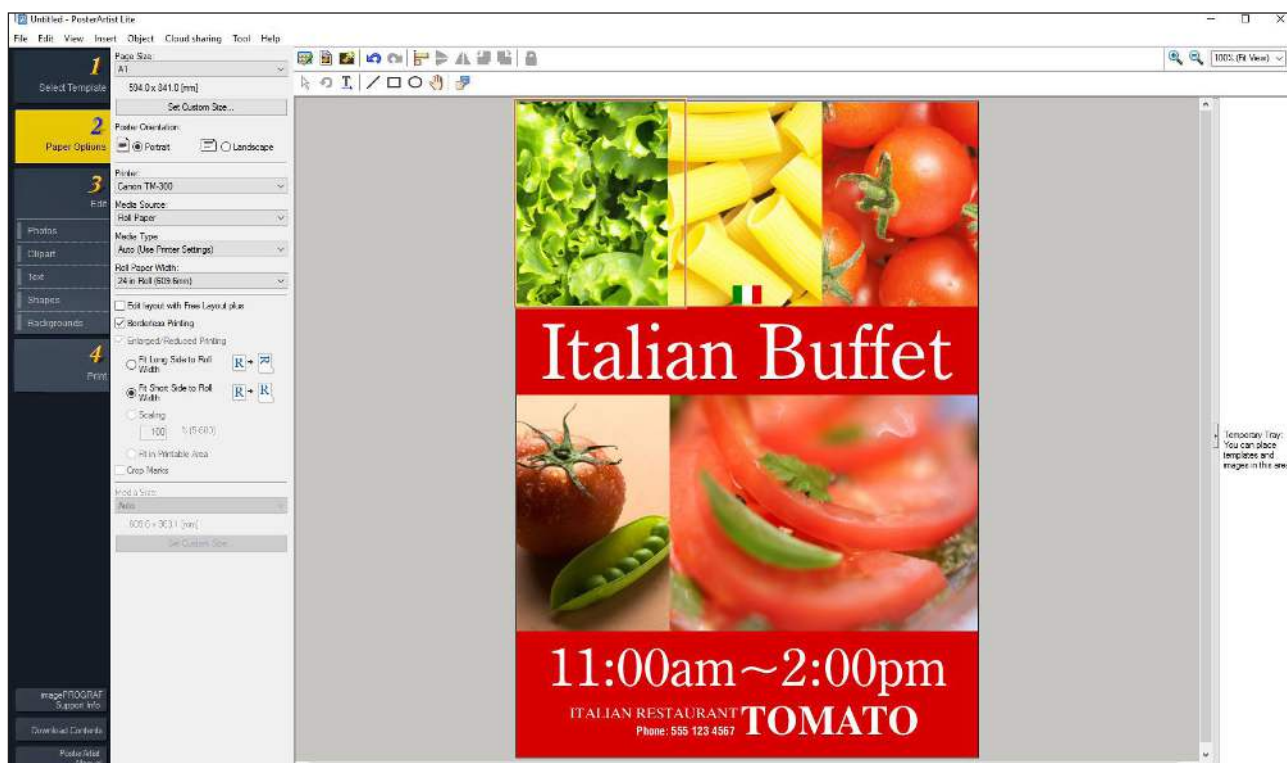


**Canon's Free Layout plus enables users to arrange documents from different applications on a page so as to use paper more efficiently. Within the utility, any two pages can be arranged on the layout so that they can be back-to-back when folded over after printing.**

- + 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. No such plug-in is available to HP users.
- O The Canon model includes PosterArtist Lite, Canon's software for creating posters and signage in simple steps. The full version of Canon PosterArtist, available as an option, offers more advanced features such as auto design, variable data printing, in-application editing features, plus additional templates, photos and clip



art. HP users can create posters via a redesigned poster application in the HP Applications Center (which also includes creative tools such as Adobe Stock, Unsplash, Vecteezy, and Pattern Design) and print them via HP Click.



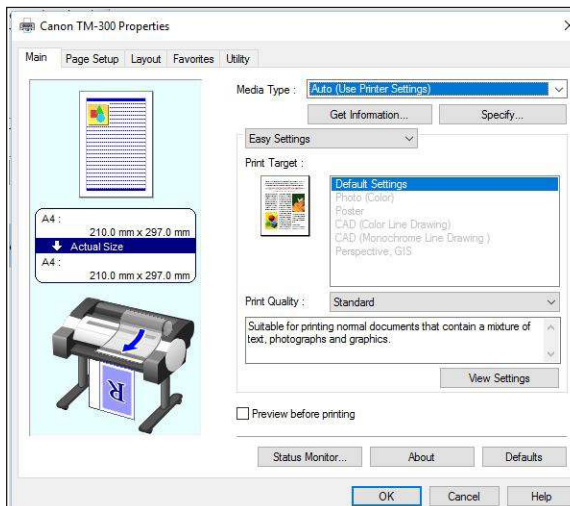
**Canon's PosterArtist Lite is an easy-to-use poster creation tool; newly-enhanced, it provides additional templates to create multi-language versions of a poster, 900 common expressions in 10 languages and a wide range of pictographic icons.**

- + 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. There's no equivalent software available with the HP T730.

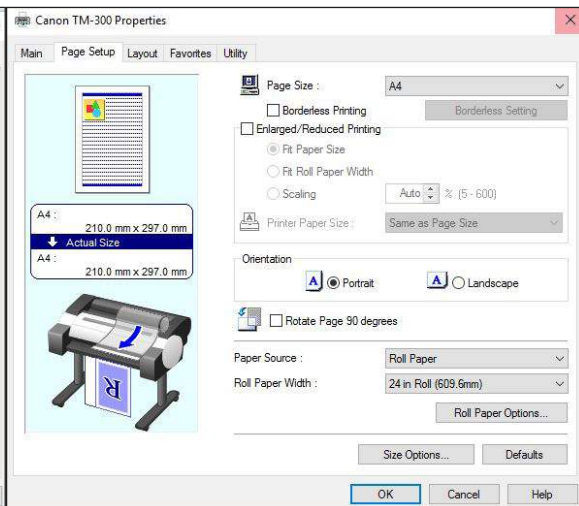


Canon Accounting Manager tool; users can double click on a job to view a breakdown of the individual costs.

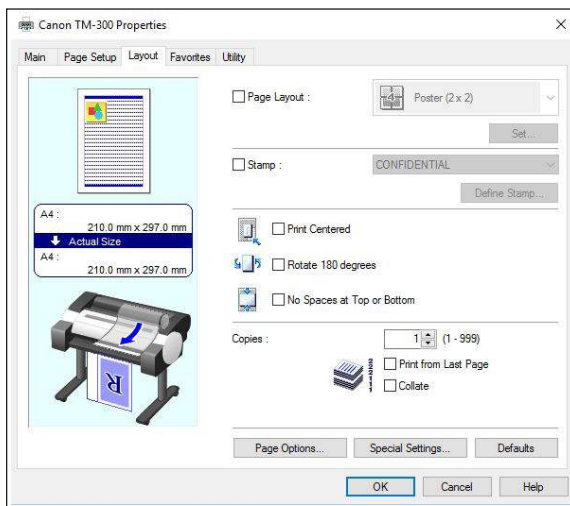
## Test Models' Print Driver Screenshots



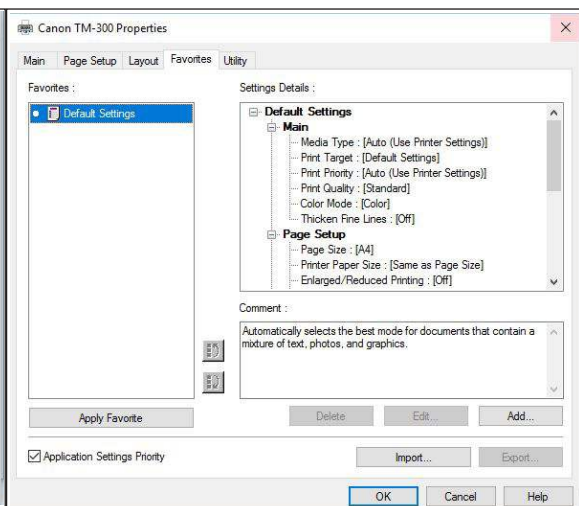
Canon imagePROGRAF TM-300 Main Tab



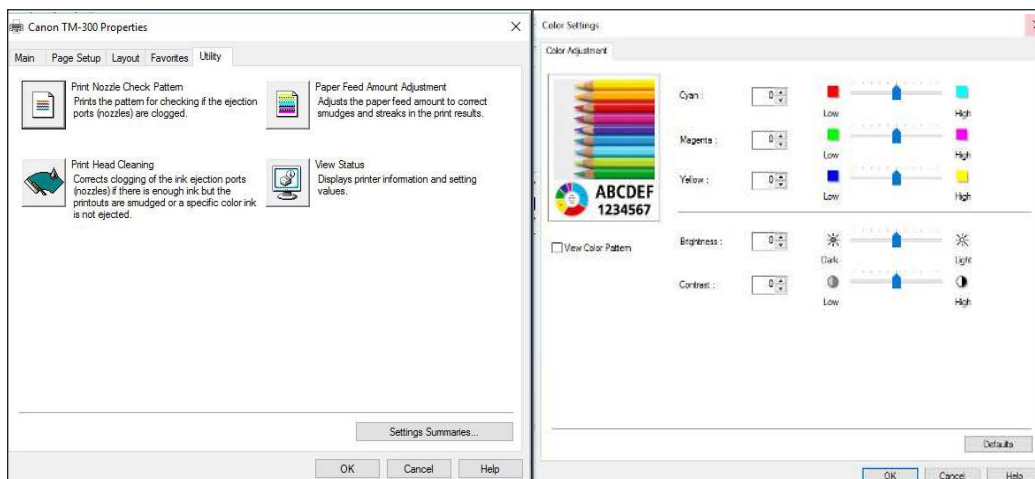
Canon imagePROGRAF TM-300 Page Setup Tab



Canon imagePROGRAF TM-300 Layout Tab

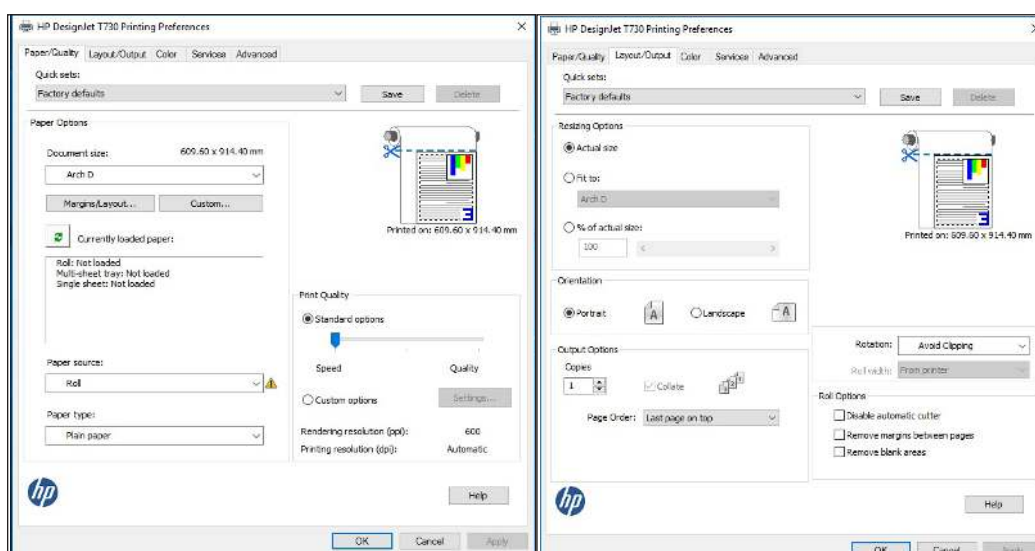


Canon imagePROGRAF TM-300 Favourites Tab



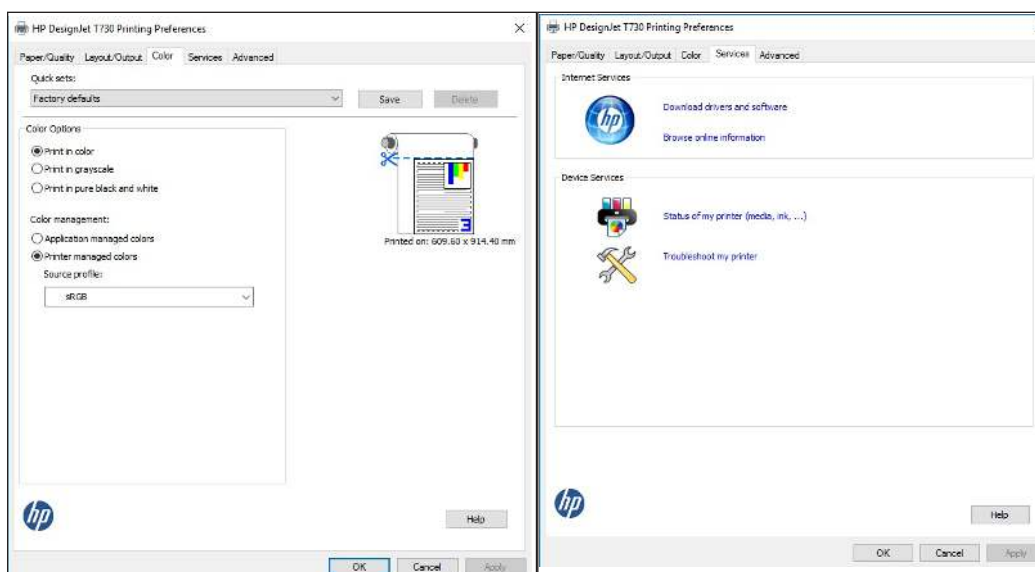
Canon imagePROGRAF TM-300 Utility Tab

Canon imagePROGRAF TM-300 Colour Adjustment Tab



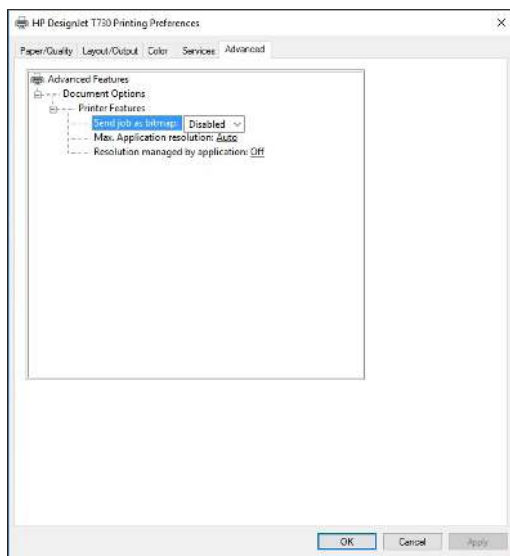
HP DesignJet T730 Paper/Quality Tab

HP DesignJet T730 Layout/Output Tab



HP DesignJet T730 Colour Tab

HP DesignJet T730 Services Tab



HP DesignJet T730 Advanced Tab

## SUPPORTING TEST DATA

### Print Productivity

#### Job Stream Productivity (in Seconds)

##### Mixed File Types, Same Size

Canon imagePROGRAF TM-300		HP DesignJet T730	
Fast	596.18	Fast	1,013.13
Standard	1,018.50	Normal	1,756.81
High	1,847.20	Best	8,394.62

Buyers Lab's job stream consists of nine files, including PDF, TIFF and DWF files totalling 19 pages, all at Arch D-size. This test replicates the type of traffic a typical wide-format device might experience in a real-world, multi-user environment. All of the files are submitted to the controller in a specific order and sent to the printer as a group, at which time the stopwatch begins; timing ends when the last page of the last file exits the device. Both devices were loaded with 914 mm rolls, with each file set to auto-rotate to save media.

#### Colour Productivity (in Seconds)

Canon imagePROGRAF TM-300		HP DesignJet T730	
Fast	387.71	Fast	629.84
Standard	670.31	Normal	1,119.84
High	1,219.05	Best	5,723.30

The 12-page DWF test file was printed using the device driver set to the plain paper/colour setting. Both devices were loaded with 914-mm rolls. 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 TM-300		HP DesignJet T730	
Fast	393.89	Fast	627.28
Standard	670.00	Normal	711.30
High	1,230.66	Best	5,681.55

The 12-page DWF test file was printed with the Canon driver set to the plain paper/monochrome setting and the HP driver set to plain paper, black mode. Both devices were loaded with 914-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 TM-300	HP DesignJet T730
Time Before Printing Commences	36.42	26.09
First Page Out	87.59	98.87

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

	Canon imagePROGRAF TM-300	HP DesignJet T730
Time Before Printing Commences	24.89	19.06
First Page Out	69.68	92.53

First-page-out times are achieved by sending an Arch D-size PDF file to print, timed from release to page out with the Canon driver set to the plain paper/monochrome setting and the HP driver set to plain paper, black mode. Both devices were loaded with 914-mm rolls.

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

	Canon imagePROGRAF TM-300	HP DesignJet T730
First Page Out	109.92	154.06
Five Pages Out	472.50	760.28

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



## Colour Image Quality

### Colour Optical Density Evaluation

Canon imagePROGRAF TM-300						
	Fast		Standard		High	
	50%	100%	50%	100%	50%	100%
Cyan	0.41	0.89	0.48	1.04	0.52	1.09
Magenta	0.35	0.73	0.41	0.90	0.42	0.96
Yellow	0.31	0.71	0.36	0.85	0.38	0.90
Black	0.43	1.33	0.51	1.31	0.54	1.30

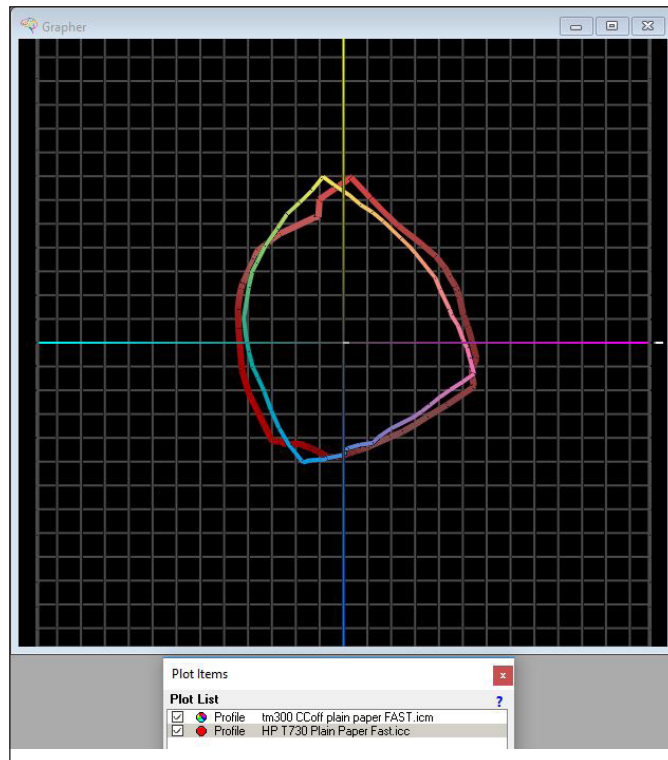
HP DesignJet T730						
	Fast		Normal		Best	
	50%	100%	50%	100%	50%	100%
Cyan	0.39	0.74	0.45	0.85	0.51	0.98
Magenta	0.51	0.83	0.58	0.86	0.60	0.99
Yellow	0.58	0.77	0.65	0.87	0.65	0.99
Black	0.57	1.47	0.62	1.52	0.60	1.39

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

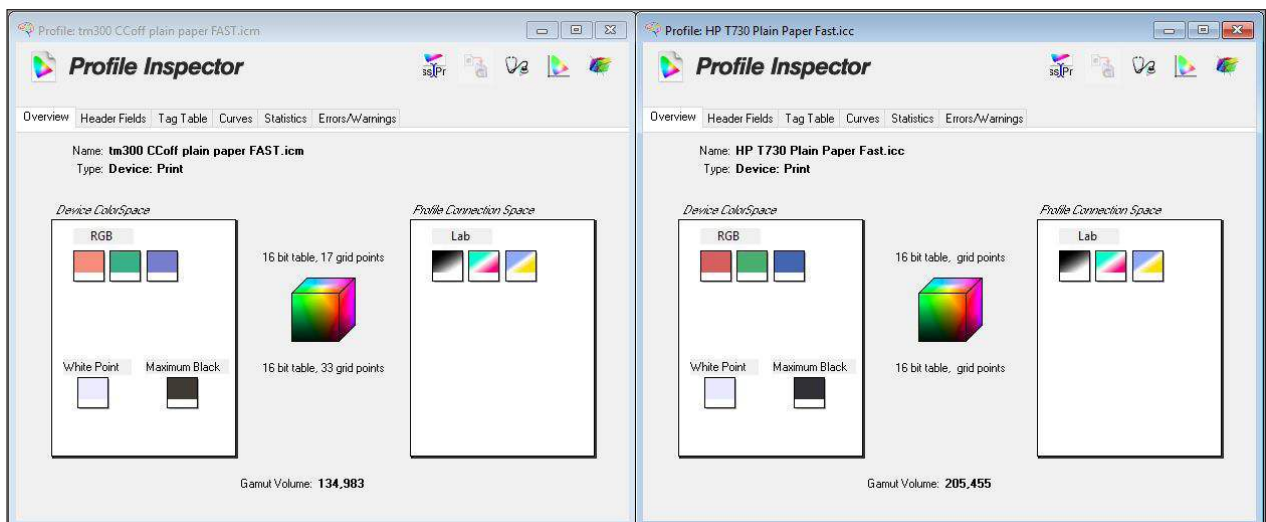
## Colour Gamut CIE Volume Comparison

Media Type/Quality Settings	Canon imagePROGRAF TM-300	HP DesignJet T730
Plain Paper Fast	134,983	200,555
Plain Paper Standard/Normal	204,531	232,661
Plain Paper High/Best	223,594	248,331
Gloss Photo High/Best	649,451	460,023

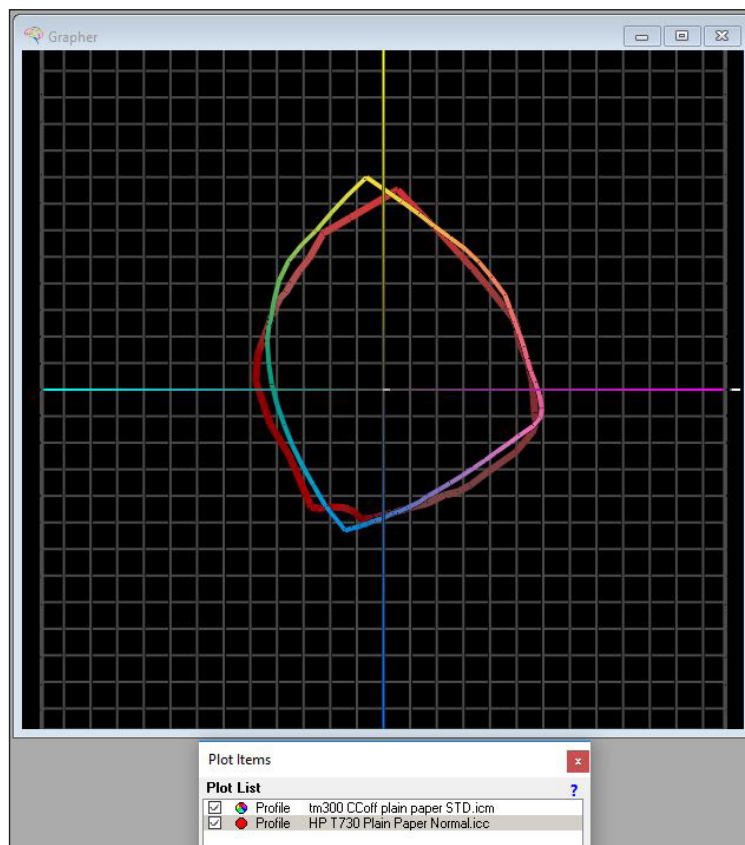
## Colour Gamut Comparison



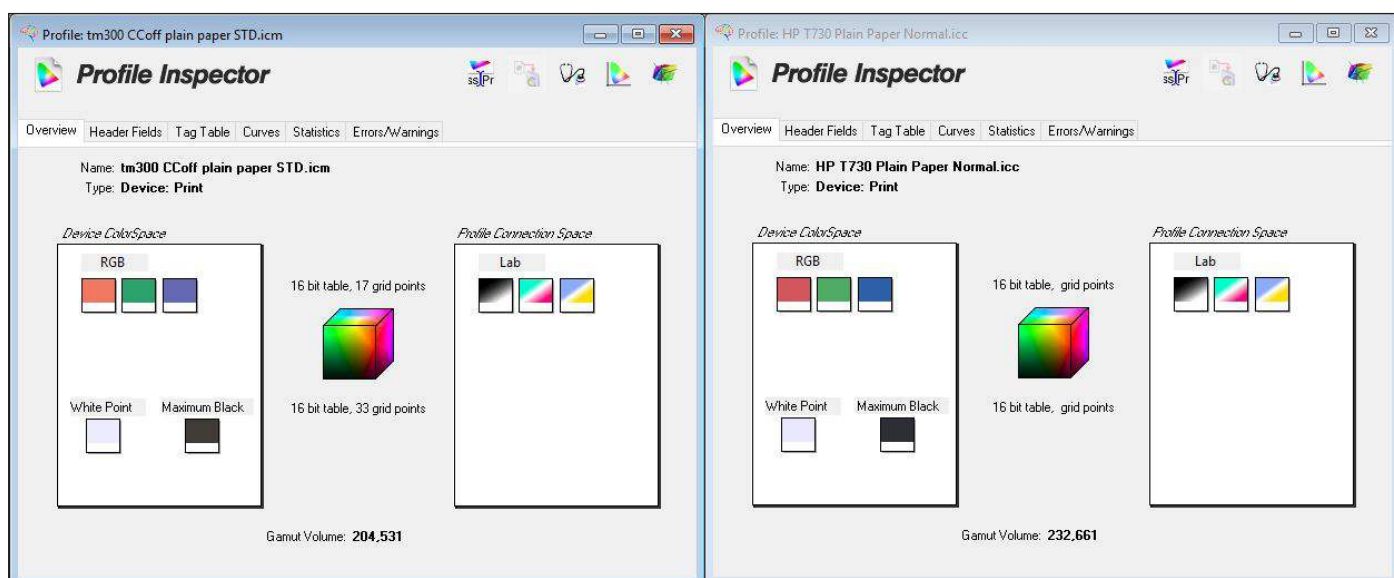
**Canon imagePROGRAF TM-300 colour gamut (shown chromatically) on plain paper in Fast settings versus HP DesignJet T730 colour gamut (red) on plain paper in Fast settings.**



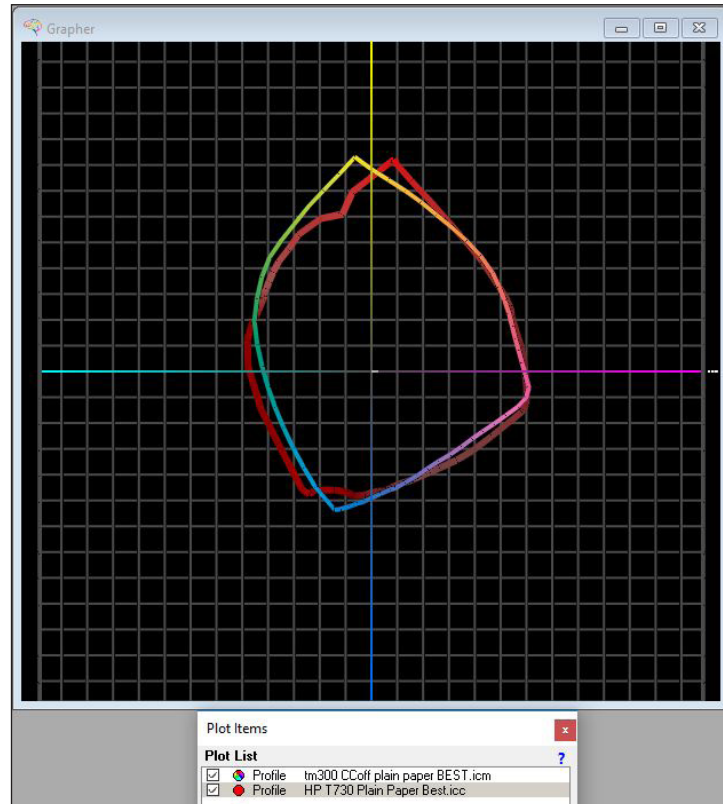
**Colour gamut profiles for the Canon TM-300 (left) and HP DesignJet T730 (right) on plain paper in Fast mode.**



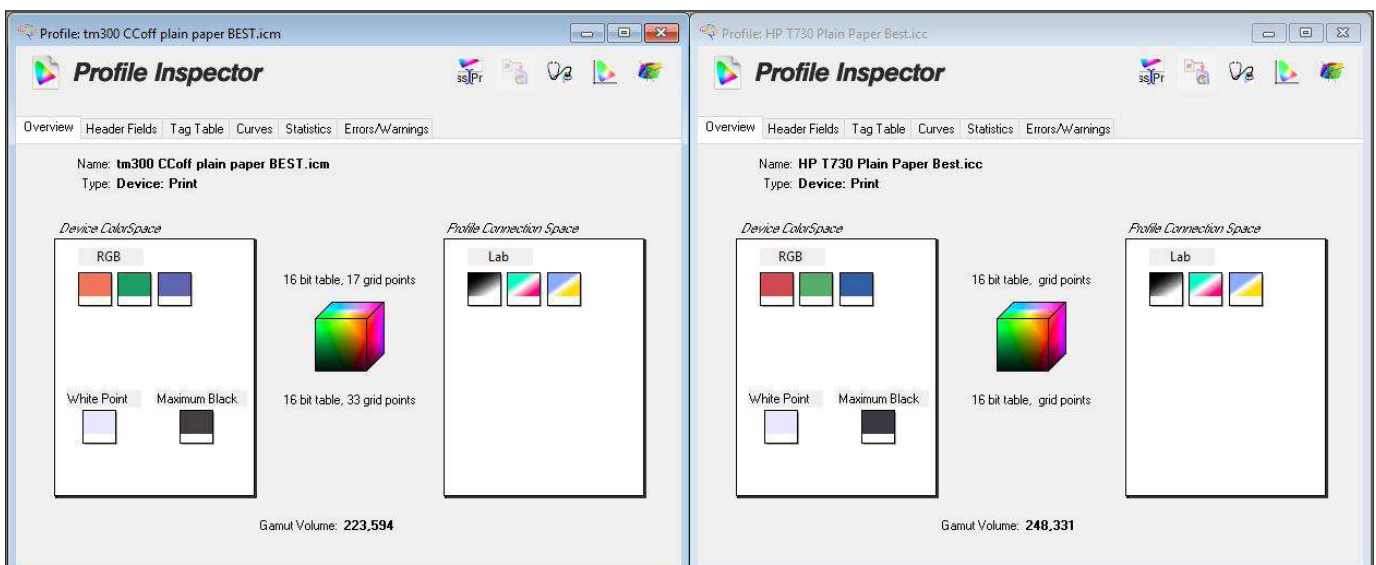
Canon imagePROGRAF TM-300 colour gamut (shown chromatically) on plain paper in Standard settings versus HP DesignJet T730 colour gamut (red) on plain paper in Normal settings.



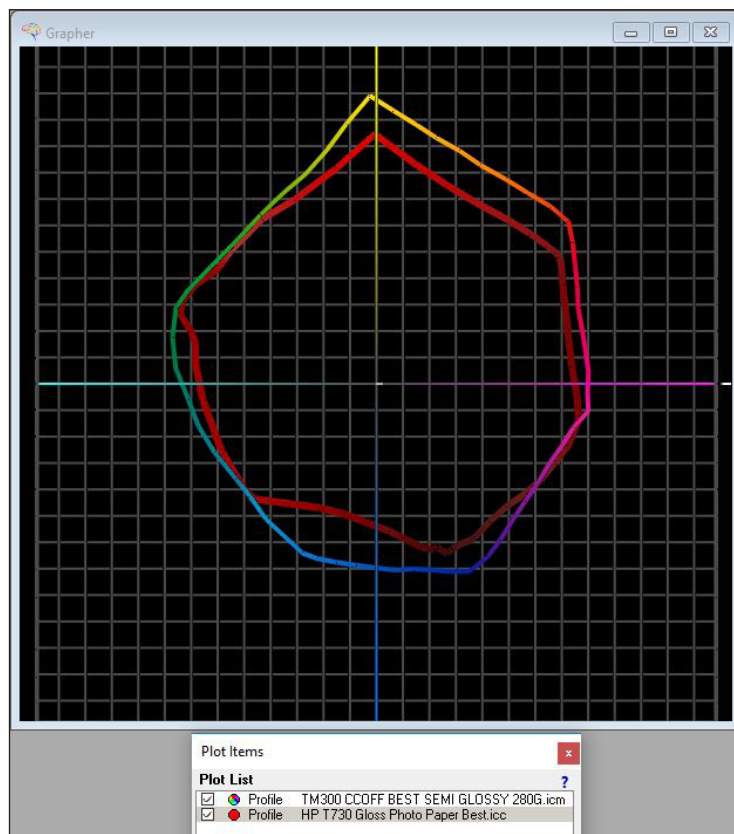
Colour gamut profiles for the Canon TM-300 (left) and HP DesignJet T730 (right) on plain paper in Standard/Normal modes.



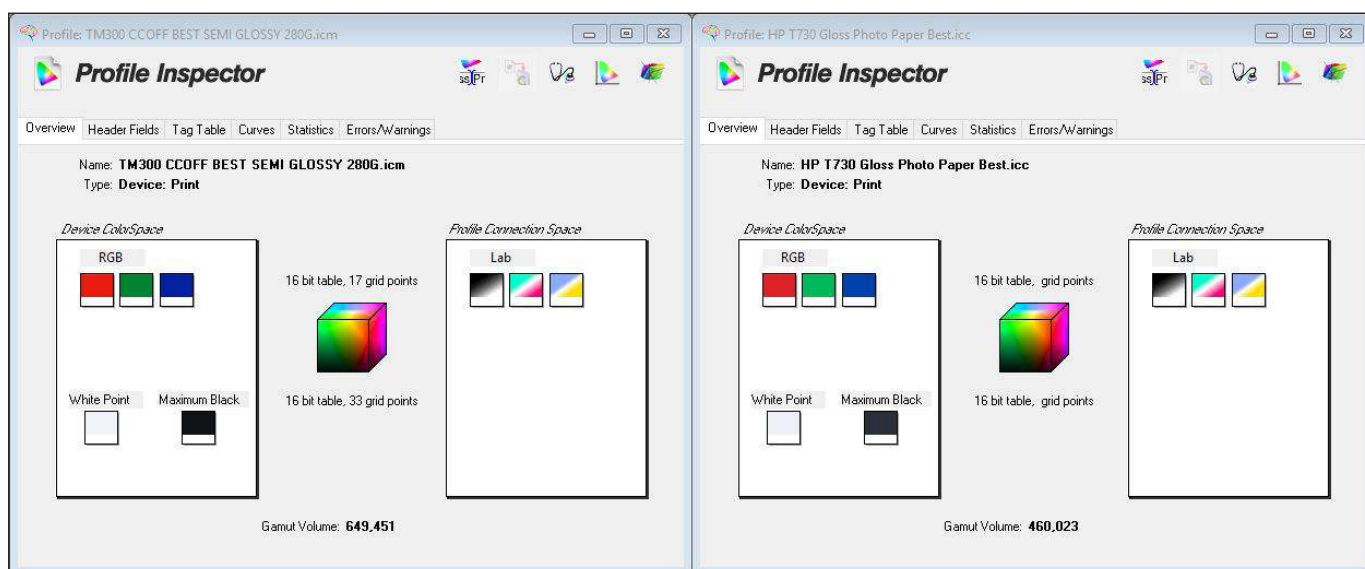
**Canon imagePROGRAF TM-300 colour gamut (shown chromatically) on plain paper in High setting versus HP DesignJet T730 colour gamut (red) on plain paper in Best setting.**



**Colour gamut profiles for the Canon TM-300 (left) and HP DesignJet T730 (right) on plain paper in High/Best quality modes.**



**Canon imagePROGRAF TM-300 colour gamut (shown chromatically) on photo quality paper in High quality setting versus HP DesignJet T730 colour gamut (red) on photo quality paper in Best setting.**



**Colour gamut profiles for the Canon TM-300 (left) and HP DesignJet T730 (right) on photo quality paper in High/Best quality modes.**



## Black Print Quality

### Black Optical Density Evaluation

Canon imagePROGRAF TM-300				HP DesignJet T730		
Density Block						
	Fast	Standard	High	Fast	Normal	Best
1	1.40	1.35	1.31	1.53	1.57	1.44
2	1.41	1.36	1.34	1.52	1.56	1.39
3	1.37	1.33	1.28	1.55	1.58	1.47
4	1.35	1.35	1.29	1.55	1.55	1.45

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 HP driver set to plain paper, black mode. Density was measured using an XRite 508 densitometer and XRite exact<sup>®</sup> densitometer.

## Device Feature Set

	Canon imagePROGRAF TM-300	Advantage ✓	HP DesignJet T730
Max. image resolution	2400 x 1200 dpi		2400 x 1200 dpi
Number of inks	5	✓	4
Ink tanks replaceable during operation	Yes	✓	No
Ink-drop size	5 picoliter	✓	CMY: 6 picoliter; K: 12.6 picoliter
Starter ink cartridge capacity	490 ml total (130 ml MBk; 90 ml CMYK)	✓	189 ml (3 x 40 ml, 1 x 69 ml)
Ink cartridge capacity	130 ml and 300 ml (all colours)		K: 300 ml; CMY: 130 ml and 300 ml
Number of nozzles	MBk: 5,120 nozzles; other colours: 2,560 nozzles each; 15,360 nozzles in total	✓	1,376 each, 5,504 in total
Number of printheads	1 (User-replaceable)		1 (User-replaceable)
Line accuracy	+/-0.1%		+/-0.1%
Minimum line width	0.02 mm		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: Top: 3 mm, Bottom: 12.7 mm, Side: 3 mm		5 mm
Borderless (0 mm) printing	Yes (Roll only)	✓	No
Maximum outside diameter of roll paper	150 mm	✓	100 mm
Maximum printable paper roll length	18 m (varies according to the OS and the application)		INA
Maximum cut-sheet media length	1.6 m	✓	1.676 m

	Canon imagePROGRAF TM-300	Advantage ✓		HP DesignJet T730
Maximum media thickness for roll paper	0.8 mm	✓		0.3 mm
Maximum media width	914 mm (36 inches)			914 mm (36 inches)
Media loading	Top			Rear
Optional media handling	Roll holder set (supports 2" and 3" media cores)	✓		None
Standard RAM	2 GB	✓		1 GB
Maximum RAM	2 GB	✓		1 GB
Hard drive	None			None
Interface	10/100/1000Base-T Ethernet, USB Built-in High Speed, Wireless LAN			10/1000Base-T, Ethernet, Hi-Speed USB 2.0, Wi-Fi
PDL	SG Raster (Swift Graphic Raster), HPGL/2, HP RTL, JPEG (Ver. JFIF 1.02)			HP-GL/2, HP RTL, HP PCL3 GUI, URF, JPEG, TIFF, CALS G4
Net weight (unpacked)	59 kg		✓	48 kg
Power consumption when in standby	3.6 W		✓	0.2 W
Power consumption when active	69 W		✓	35 W
Acoustic pressure	Operation: 44 dB (A) or less; Standby: 35 dB (A) or less	✓		Operation: 48 dB (A); Standby: 16 dB (A) or less
Acoustic power	Operation: 6.0 Bels			Operation: 6.5 Bels

INA – Information not available

## Printer Driver Feature Set

	Canon imagePROGRAF TM-300	Advantage		HP DesignJet T730
Speed settings	5 (Fast 300, Fast 600, Standard 600, High 600 and 1200)	✓		3 (Fast, Normal, Best)
Economy mode	Yes (in Fast mode)			Yes (in Fast mode)
Predefined profiles	6 (Default, Photo (colour), Poster, CAD (colour line drawing), CAD (mono line drawing), and Perspective GIS)	✓		5 (Default, CAD, GIS, Photo, B/W Photo)
Overview of profile settings provided	Yes	✓		No
IQ optimized for print profiles	Yes			Yes
Watermark	Yes	✓		No
Sharpen text	Yes			Yes (Max. Detail setting)
Thicken fine lines	Yes			Yes (Max. Detail setting)
Mirror image	Yes	✓		No
Multi-up printing	Yes, 2 to 16	✓		No
Poster print mode	Yes (2 by 2)	✓		No

	Canon imagePROGRAF TM-300	Advantage		HP DesignJet T730
Page stamping	Yes (Date, Time, Name, Page Number)	✓		No
Image rotation	Yes, 90 degrees and 180 degrees	✓		Yes, auto 90 degrees
Option to preview before print	Yes	✓		No
CMYK balance adjustment	Yes	✓		No
Brightness adjustment	Yes	✓		No
Contrast adjustment	Yes	✓		No
Saturation adjustment	No			No
Advanced colour management options	Yes			Yes
Enlargement Copy Mode	Yes			INA
Free Layout Capability	Yes (flexible placement)	✓		Yes (automatic placement)
MS Office Plug-in	Yes	✓		No
Accounting capability	Yes	✓		No
Disable automatic cutter	Yes			Yes
Unidirectional printing selection option	Yes	✓		No
Integration with MFP	Yes	✓		No

The Canon imagePROGRAF TM-300 comes bundled with PosterArtist Lite.

## Ink Consumption

Table 1: Amount of Ink in each Canon imagePROGRAF TM-300 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 HP DesignJet T730 Cartridge (in Grams)**

	Cyan	Magenta	Yellow	Black
Weight of cartridge prior to installation	412.5	414.5	414.6	418.8
Weight of cartridge at end of life	105.6	105.6	105.6	105.6
Net weight of ink	306.9	308.9	309	313.2
Total ink weight across four cartridges				1,238.0

**Table 3: Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Standard Mode) on the Canon imagePROGRAF TM-300 (in Grams)**

	Matte Black	Black	Yellow	Magenta	Cyan
Test Run 1 Net weight of ink used	6.7	0.8	0.8	2.4	1.2
Test Run 2 Net weight of ink used	10.9	1.0	1.4	2.0	2.5
Test Run 3 Net weight of ink used	9.9	0.7	1.0	1.9	1.4
Average amount of ink used across three runs	9.2	0.8	1.1	2.1	1.7
Total ink weight across five cartridges for 50-page run (based on averages)					14.9

**Table 4: Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Normal Mode) on the HP DesignJet T730 (in Grams)**

	Cyan	Magenta	Yellow	Black
Test Run 1 Net weight of ink used	6.2	2.7	0.8	12.0
Test Run 2 Net weight of ink used	6.2	2.7	0.8	11.9
Test Run 3 Net weight of ink used	5.9	2.5	0.7	11.4
Average amount of ink used across three runs	6.1	2.6	0.8	11.8
Total ink weight across four cartridges for 50-page run (based on averages)				21.3

**Table 5: Ink Used in Three 50-Page Runs of Retail Sales Test Document (Standard Mode) on the Canon imagePROGRAF TM-300 (in Grams)**

	Matte Black	Black	Yellow	Magenta	Cyan
Test Run 1 Net weight of ink used	21.7	1.3	8.7	23.6	5.8
Test Run 2 Net weight of ink used	21.6	1.1	10.1	23.6	6.5
Test Run 3 Net weight of ink used	22.1	0.7	9.4	25.6	8.6
Average amount of ink used across three runs	21.8	1.0	9.4	24.3	7.0
Total ink weight across five cartridges for 50-page run (based on averages)					63.5

**Table 6: Ink Used in Three 50-Page Runs of Retail Sales Test Document (Normal Mode) on the HP DesignJet T730 (in Grams)**

	Cyan	Magenta	Yellow	Black
Test Run 1 Net weight of ink used	15.6	28.3	22.8	5.0
Test Run 2 Net weight of ink used	13.5	28.2	22.8	5.2
Test Run 3 Net weight of ink used	14.5	29.2	22.7	5.4
Average amount of ink used across three runs	14.5	28.6	22.8	5.2
Total ink weight across four cartridges for 50-page run (based on averages)				71.1

**Table 7: Ink Used in Three 50-Page Runs of GIS Map Test Document (Standard Mode) on the Canon imagePROGRAF TM-300 (in Grams)**

	Matte Black	Black	Yellow	Magenta	Cyan
Test Run 1 Net weight of ink used	11.0	1.1	4.4	6.8	10.3
Test Run 2 Net weight of ink used	10.7	0.8	2.8	6.1	9.7
Test Run 3 Net weight of ink used	12.9	1.0	5.4	9.0	11.1
Average amount of ink used across three runs	11.5	1.0	4.2	7.3	10.4
Total ink weight across five cartridges for 50-page run (based on averages)					34.4

**Table 8: Ink Used in Three 50-page Runs of GIS Map Test Document (Normal Mode) on the HP DesignJet T730 (in Grams)**

	Cyan	Magenta	Yellow	Black
Test Run 1 Net weight of ink used	18.4	9.4	14.2	3.9
Test Run 2 Net weight of ink used	18.3	9.1	13.7	3.6
Test Run 3 Net weight of ink used	19.0	9.4	14.4	4.0
Average amount of ink used across three runs	18.6	9.3	14.1	3.8
Total ink weight across four cartridges for 50-page run (based on averages)				45.8

## Ink Consumption Test Methodology Overview

Buyers Lab's ink consumption analysis was conducted using three document types (Cottage Architectural Plan, Retail Sales 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 TM-300 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 Canon imagePROGRAF Printer Driver was used for all testing with media selection set to plain paper and the image set to print at actual size. For the Cottage Architectural Plan, print priority settings were set to

Line Drawing/Text with quality set to Standard (600 dpi). For the Retail Sales Poster and the GIS map, print priority settings were set to Image with quality set to Standard (600 dpi).

The HP DesignJet T730 was installed in Buyers Lab's lab with the latest "CANDELPR2N001.1548A.00" level of firmware (as of January 2016) and connected to a Windows 10 workstation using a 1000BaseT TCP/IP connection. The HP GL/2 driver was used for all testing and left in default colour setting, with media selection set to plain paper and the image set to print at actual size. All three document types were printed with quality set to Normal 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, 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 exactXp 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.

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