KEYPOINT INTELLIGENCE Buyers Lab

Custom Test Report

KPI Comparative Lab Test Report

DECEMBER 2018

Canon imagePROGRAF TM-300 MFP L36ei

vs. HP DesignJet T830 MFP

Advantage ✔	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Print Quality	✔	
Copy Quality	✔	
Scan Capture Quality	=	=
Print Productivity	✔	
Copy Productivity	✔	
Scan Productivity	✔	
Banner Printing	✔	
Direct Print Submission Functionality	=	=
Walk-up Ease of Use	=	=
Device Feature Set	=	=
Driver Feature Set	✔	

TEST OBJECTIVE

Keypoint Intelligence - Buyers Lab was commissioned by Canon Europe to conduct confidential document imaging device performance testing on the Canon imagePROGRAF TM-300 MFP L36ei and the HP DesignJet T830 MFP, and produce a report comparing the relative strengths and weaknesses of the two printers in the areas of image quality, productivity, banner printing, direct print submission functionality, walk-up ease of use, device feature set, and driver functionality. All testing was performed in Buyers Lab's European test facility in Wokingham, UK.

Executive Summary

On the strength of its print, scan, and copy productivity performance alone, the five-colour, 36-inch Canon imagePROGRAF TM-300 MFP L36ei was a superb performer in Buyers Lab's evaluation, outshining its HP DesignJet T830 MFP 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 up to 75% faster than the HP unit. When using Buyers Lab's banner target, the Canon unit successfully printed the whole banner image, whereas the HP model only printed the background of the banner and none of the actual image detail. In the round of copy productivity tests, the Canon TM-300 MFP L36ei's performance advantage over the HP model increased along with the quality mode, so that its copy speeds were significantly faster in the highest quality setting. Similarly, the Canon unit was the dominant performer in Buyers Lab's scan productivity evaluation. Significantly, it allows users to scan while the device is printing (not available with the HP T830 MFP), and also enables batch scanning via its ScanApp Lei utility (in Plus mode), all of which boost productivity for users in scan-intensive environments. Other noteworthy features available with the Canon TM-300 MFP include the ability to handle 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 it is actively printing, leading to operator downtime. More seriously, when the HP T830 MFP 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.

In terms of operational ease of use, thanks to a new touchscreen user interface and improved text/graphical icon-led menu design, scan and copy operations are straightforward with the Canon MFP. The HP T830 MFP's touchscreen, which is larger than Canon's, provides easy and intuitive job programming as well, while a virtual keyboard aids input of filenames and email addresses which is a great convenience. In addition, users can print JPEG and TIFF files stored on a USB flash driver with the HP unit as well as scan directly to email, functions that aren't available with the Canon model. However, the Canon TM-300 MFP has a higher memory capacity to aid with job processing, smaller ink drop sizes, a unidirectional feature which eliminates banding on output even when printing in Fast mode, and a flexible layout nesting option that saves 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. 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. Overall, based on its superior print and copy image quality, all round faster productivity and stronger driver feature set, Buyers Lab judges the Canon imagePROGRAF TM-300 MFP L36ei as the superior performer in its large-format production evaluation.

Print Quality

Advantage ✔	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
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 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 HP Universal Bond.

\+ The Canon model delivered superior colour optical densities in all modes tested, except for magenta in Fast mode, while composite black optical density in Standard/Normal mode was comparable to that of the HP T830 MFP.

O In terms of black optical density, the Canon TM-300 MFP L36ei delivered darker solids in Fast mode and comparable black optical densities in High/Best quality mode, while the HP T830 MFP had higher optical density in Standard/Normal mode.

\+ Fonts produced by the Canon TM-300 MFP L36ei in colour were crisp and legible down to the smallest (3-pt. level) size across all quality settings, with no noticeable ink bleed and were rated very good. The HP model delivered fully legible colour text down to the 3-pt. level, as well (except for serif fonts in Fast mode which were fully formed at the larger 5.pt-level); fonts were rated good to very good as there was some ink bleed evident in all scenarios. Text produced by the Canon unit in black was pin sharp and cleanly formed at the 3.pt level in most settings (serif fonts in Fast and Standard modes were legible at the 5.pt level) and rated very good to excellent. Although the HP T830 MFP delivered very good dark fonts in black, character definition wasn't as precise as those from the Canon unit due to slight overspray.

\+ Fine lines produced by the Canon TM-300 MFP L36ei remained distinct down to the 0.1-pt. level in all modes and were crisp, distinct and rated very good. While the HP unit's fine lines were distinct at the 0.1-pt. level in all quality modes, they exhibited some fuzziness and were rated good.

+ White-on-black fine lines were visible at the 0.25-pt. level in Fast mode for both models, with the Canon unit's output rated very good and the HP T830 MFP's good on account of being slightly fuzzy. In Standard/Normal and High/Best quality modes, the Canon TM-300 MFP's output was intact at the 0.1pt level but faint, while the HP unit's reverse fine lines were well-formed but faint at the larger 0.25pt level.

+ The Canon TM-300 MFP L36ei produced 0.1-pt. level circles that were smooth, clean and unbroken, and rated very good overall, except in colour/Fast mode which yielded results that were less distinct. Circles produced by the HP model in colour were dark and rated very good in all modes with some ink bleed in Fast mode, while in black its circles were slightly fuzzy and rated good in all modes.

O Both models delivered a very good colour halftone range—from the 10% to 100% dot-fill levels in all modes, with distinct transitions between all levels and smooth fill coverage.

+ The Canon TM-300 MFP L36ei produced smooth and very good greyscale halftone range in all modes, with distinct transitions between all levels. The HP T830 MFP produced greyscale halftone fills that were rated good in Fast and Normal modes, with slight banding evident in the lower percentage fill areas; in Best quality mode, halftone fills were smooth and rated very good.

+ Architectural, Engineering and Construction (AEC) graphics produced in Standard/Normal and High/Best modes by both models exhibited excellent details and a pin-sharp level of accuracy, however the Canon model delivered more distinct crisp fine lines when viewed under magnification, with none of the ink bleed that was evident on the HP unit's output in all modes in black.

O When outputting Geographic Information Systems (GIS) graphics in Standard/Normal and High/Best modes, both units delivered a fine level of detail and showed an equally good depth of field—a critical factor in delivering a realistic three-dimensional rendering of topographical features.

+ Business graphics produced by the Canon TM-300 MFP exhibited crisp text and finer details than did those produced by the HP device.

+ 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, better depth of field and more vibrant colours compared with output from the HP device. Skin tones produced by the Canon TM-300 model were warm and natural-looking, while those produced by the HP model were reddish in all modes. The Canon model also produced superior black-and-white photographic images with better detailing in shadow areas and smoother tonal transitions.

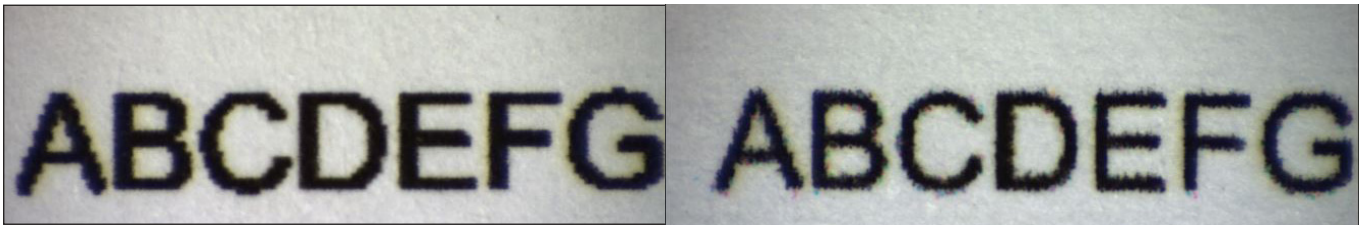
+ In Buyers Lab's colour gamut assessment, the Canon TM-300 MFP L36ei produced a larger colour gamut in two of the three quality modes when printing on plain paper; in Fast mode, the Canon model delivered a 14.3% smaller colour gamut with a CIE volume of 186,256 versus a CIE volume of 217,238 for the HP unit; in Standard/Normal mode, it produced a 46.9% larger colour gamut than the HP unit (with a CIE volume of 320,925 versus a CIE volume of 218,403 for the HP unit; and, in High/Best quality mode, the Canon model produced a 40.7% larger colour gamut, with a CIE volume of 326,414 versus a CIE volume of 231,922 for the HP unit. When printing on photo paper, the Canon model produced a 46.0% larger colour gamut with a CIE volume of 649,451 versus a CIE volume of 444,682 for the HP unit.

+ In Buyers Lab's assessment of colour and black image quality, the Canon TM-300 MFP L36ei had the advantage overall, with sharper fine lines, crisper text, higher colour densities, more vibrant colours, and better detailing in photographic images. In addition, skin tones were lifelike and smooth whereas those produced on the HP unit were reddish. Both models delivered excellent GIS graphics, and a consistent colour halftone range. Meanwhile, the HP model produced a larger colour gamut when printing in Fast mode on plain paper but in no other aspect did it truly stand out.

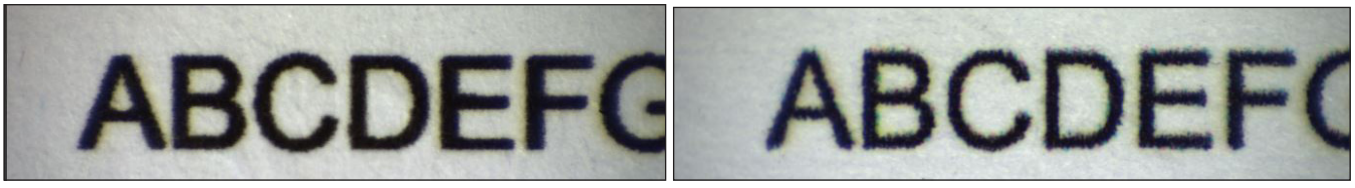
Copy Quality

Advantage ✔	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Text	✔	
Fine Lines	✔	
Solid Density		✔
Halftone Reproduction	=	=
Colour Fidelity	✔	

+ Using the QA-1 test chart, the Canon model produced superior text copy quality in all three quality modes, with dark fonts that were legible down to the 6-pt. size (the smallest level on this chart). In Draft and Standard modes, characters were distinct and showed no sign of break-up, however there was slight 'stepping' in the diagonals and curves that was not evident in High mode. In copied output produced by the HP device, fonts were legible at the 6-pt. level in all modes as well, but with weaker character definition, and some colour fringing was evident.

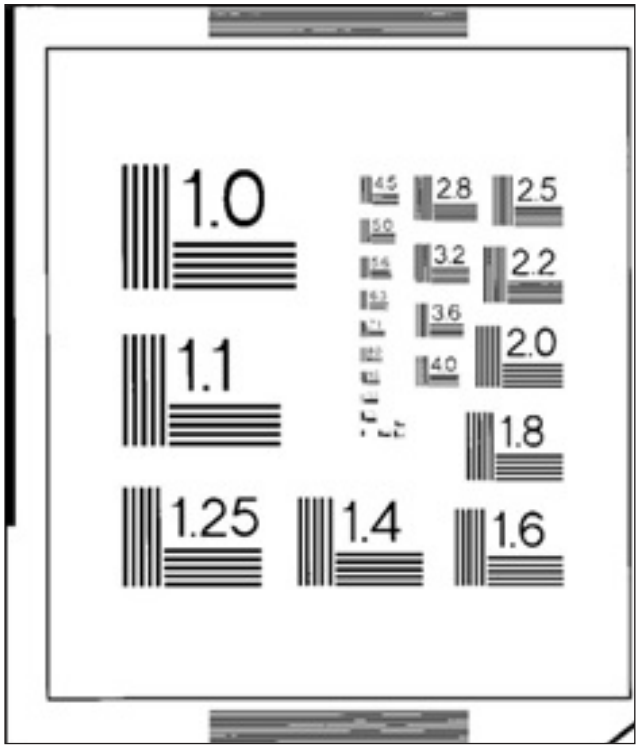


6pt copied text in Standard 300 dpi (Canon, left) and Normal 300 dpi (HP, right); characters are dark and well defined albeit with some blocky curves and diagonals on Canon's output, whereas characters are less well defined on HP's output.



6pt copied text in High 600 dpi (Canon, left) and Best 600 dpi (HP, right); character definition has improved on both model's output, but Canon's text is much bolder, smoother and more distinct when viewed under magnification.

+ When evaluating fine lines using the same QA-1 test chart (see below) where the emphasis is on whether there is a clear distinction between lines rather than the rendering of each line, the fine lines produced by the Canon model in Draft/Fast mode remained distinct up to the 2.5 cpm (cycles per millimeter) level, compared with up to 1.8 cpm for the HP unit. In Normal/Standard mode, fine lines were distinct up to the 2.5 cpm level for the Canon model and 2.8 cpm for the HP unit. And in Best/High quality mode, both models' lines were distinct up to the 3.2 cpm level, but the Canon TM-300 MFP produced clearer and more distinct fine lines.



Portion of QA-1 Image Evaluation Test Target used to evaluate fine line reproduction.

– Solid density was higher for all colours with the HP T830 MFP in all copy quality modes, overall.

O Halftones produced by both units in all quality settings were well graduated in copy mode. In High/Best quality mode, colour halftones were brighter on output from the HP model (as expected given its higher copy solid densities), while the Canon model delivered smoother transitions from light to dark areas.

\+ Solids on the QA-1 test chart reproduced with the Canon unit were smooth and consistent in all quality modes. Solids produced by the HP T830 MFP, however, were less consistent in coverage, with mottling evident on output in Fast and Normal modes that was largely reduced in Best mode.

\+ In Buyers Lab's colour fidelity testing which is based on a select range of 12 Pantone shades for corporate logos, the Canon device had a slightly lower (7.2%) average Delta E measurement of 7.7 compared with 8.3 for the HP unit in Standard/Normal mode.

Scan Capture Quality

Advantage ✔	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Resolution and Sharpness at Optical Resolution	=	=
Text	✔	
Fine Lines		✔
Geometric Accuracy	=	=
Halftone Capture Quality	=	=

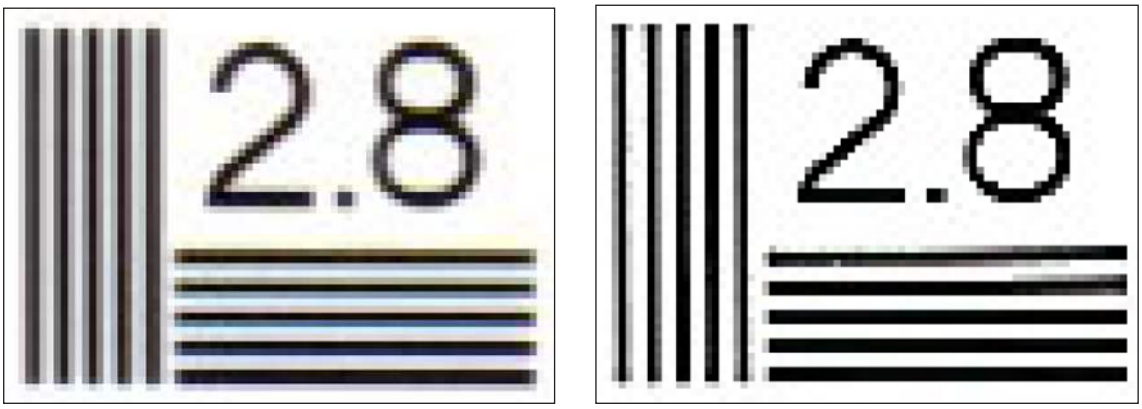
O As illustrated below (under magnification), both models delivered fonts that were clear and legible at smallest 6-pt. level in the highest quality scan setting.

\+ Text produced by both models in Standard/Normal mode at 300-dpi resolution was again very good, but there was more stair-stepping with HP's characters under magnification.

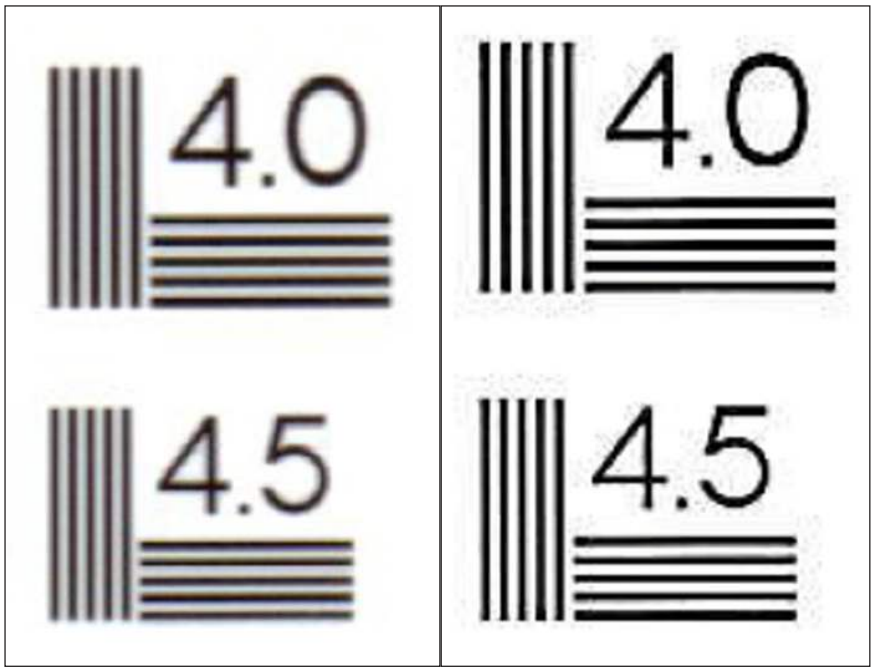
Canon (shown left) and HP (shown right) fonts at maximum resolution.

Canon (left) and HP (right) fonts in Standard/Normal resolution settings, at 300-dpi resolution. Note the pronounced stair-stepping in diagonal lines and curves (J, M, s, etc.) on the HP's output.

– Fine lines at 300-dpi resolution were far more distinct in output produced by the HP unit compared with the Canon model.



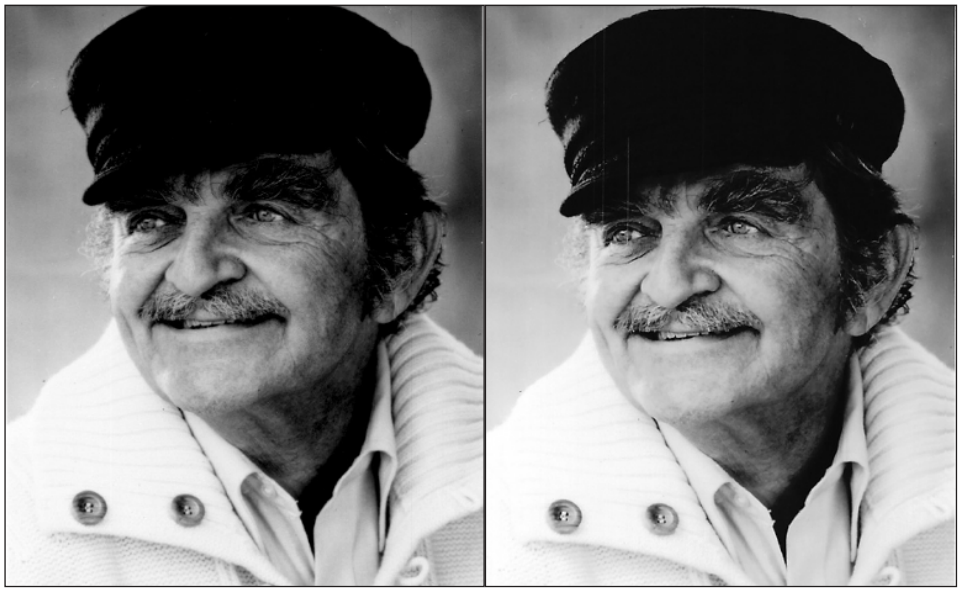
Canon (left) and HP (right) fine line pairs in Standard/Normal resolution; HP's fine lines at the 2.8 level are more distinct.



Canon (left) and HP (right) fine line pairs at maximum resolution.

O Using the Adobe Photoshop Measuring Tool to evaluate geometric accuracy (defined as the variation between the actual length of the document and the length of the scanned image), both the Canon and HP models delivered comparably impressive accuracy, with no variation in either landscape or portrait orientation for the Canon TM-300 MFP, and a variation of 0.1 mm in portrait and 0.0 mm in landscape for the HP unit. (See Supporting Test Data).

O When scanning the Buyers Lab mixed text/image test chart in full colour in Standard/Normal mode, the Canon TM-300 MFP L36ei delivered subtler gradations of halftone shades, especially in light contrast areas (the white wispy hair on the left hand side of the face, and the buttons on the jumper are more noticeable on the Canon model's output compared with the HP T830 MFP's halftone image). While the HP unit's halftone image is lighter overall and therefore loses some integrity of detail in the highlights, it has better fine detailing in shadow areas (the man's eyebrows and eye details, for example).



Halftone capture in full colour at 300 dpi Standard/Normal mode with the Canon model (left) and HP model (right).

Print Productivity

Advantage ✔	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
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 (Multiple jobs submitted to device in fast succession simulating busy network environment)	✔	

+ The Canon TM-300 MFP L36ei delivered 14.7% faster first-page-out time of 87.59 seconds after a weekend of non-use, compared with 102.74 seconds for the HP T830 MFP. Start-up time before printing commenced, however, was slower for the Canon model at 36.42 seconds, compared with 29.10 seconds for the HP unit.

+ The Canon TM-300 MFP L36ei was 28.9% faster than the HP model in the first-page-out from ready state evaluation, with a time of 69.68 seconds compared with 98.02 seconds for the HP device. Start-up time before printing commenced was comparable—24.89 seconds for the Canon model versus 24.02 seconds for the HP unit.

+ When printing Buyers Lab's job stream, designed to simulate a typical mixed workflow for a large-format unit, the Canon TM-300 MFP L36ei was 48.7% faster than the HP model in Fast mode, 48.4% faster in Standard/Normal mode, and 79.5% faster in High/Best mode.

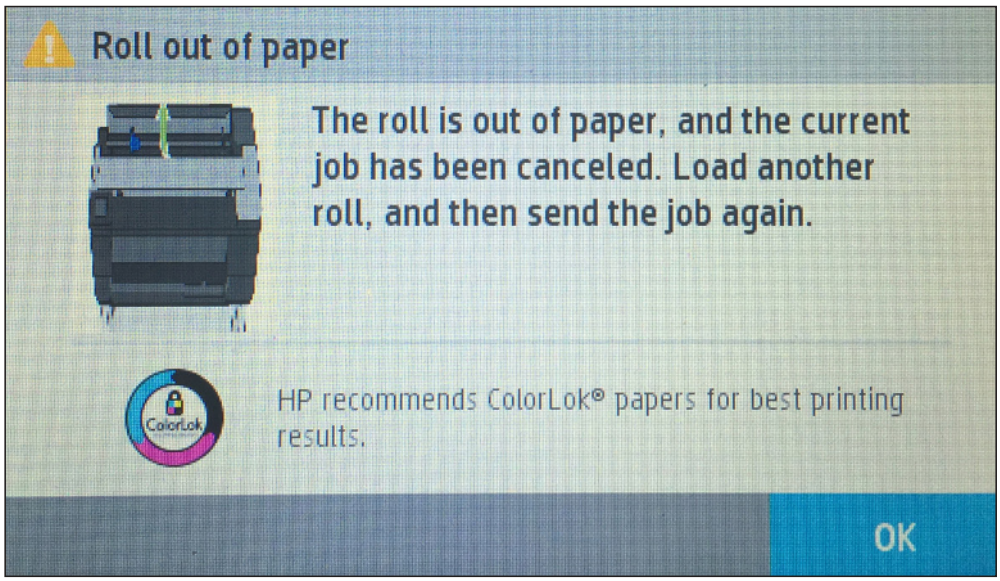
+ When printing Buyers Lab's 12-page DWF test file in colour, the Canon TM-300 MFP L36ei was faster than the HP unit in all modes tested; it was 41.2% faster in Fast mode; 40.5% faster in Standard/Normal mode; and 75.2% faster in High/Best mode.

+ 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 38.9% faster in Fast mode; 9.5% faster in Standard/Fast mode and 74.4% 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 MFP L36ei delivered a first-page-out time (109.92 seconds) that was 30.9% faster than that of the HP T830 MFP (159.10 seconds). The time to print five A0-size pages was 38.6% faster for the Canon unit than for the HP device (472.50 seconds versus 769.30 seconds).

+ The Canon model's unique sub ink tank system provides a further boost to productivity. When ink needs replacing on the TM-300 MFP, 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 T830 MFP 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 T830 MFP, it automatically cancels the entire job, even if it's in the middle of a multi-page print run. As a result, the operator must resubmit the job 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 display message alerts users to replace the media roll and that the current job has been cancelled.

Copy Productivity

Advantage ✔	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
A1 (Landscape) First Page Out	✔	
A0 First Page Out	✔	

+ In Buyers Lab's A1 (Landscape) testing in Draft/Fast mode in default dpi settings, the Canon TM-300 MFP's first-copy time in monochrome was 37.7% faster than that of the HP DesignJet T830 MFP; it was 42.1% faster in greyscale and 31.3% faster in colour than the HP unit.
+ In Buyers Lab's A1 (Landscape) testing in Standard/Normal mode in default dpi settings, the Canon TM-300 MFP's first-copy time in monochrome was 45.5% faster than that of the HP DesignJet T830 MFP; it was 44.2% faster in greyscale, and 48.1% slower in colour than the HP unit.
+ In the highest quality mode at 600 dpi, the Canon model was 72.4% faster in monochrome, 72.0% faster in greyscale, and 57.6% faster in colour than the HP unit.
+ In Buyers Lab's A0 testing in Fast mode in default dpi settings, the Canon TM-300 MFP's first-copy out time in monochrome was 47.7% faster than that of the HP model; it was 46.6% faster in greyscale, and 17.2% faster in colour.
+ In Standard/Normal mode, the Canon unit's A0 first-copy out time was 45.7% faster in monochrome, 47.3% faster in greyscale, and 40.4% faster in colour than the HP model.
+ In the highest quality mode in 600 dpi, the Canon model's A0 first-page out times were 72.7% faster in monochrome, 74.4% faster in greyscale, and 57.4% faster in colour than the HP unit.
+ Helping to boost productivity, users can scan at the Canon L36ei scanner concurrently as the Canon TM-300 is printing. The HP T830 MFP cannot scan and print simultaneously.

Scan Productivity

Advantage ✔	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
A1 Single-Page Scanning (Draft/Fast)	✔	
A1 Single-Page Scanning (Standard/Normal)	✔	
A1 Single-Page Scanning (High/Best)	✔	
A0 Single-Page Scanning (Draft/Fast)	✔	
A0 Single-Page Scanning (Standard/Normal)	✔	
A0 Single-Page Scanning (High/Best)	✔	
First Page Out to Desktop (monochrome/ greyscale modes)	✔	
First Page Out to Desktop (colour mode)	✔	
Batch Scanning	✔	

+ The Canon TM-300 MFP L36ei supports batch scanning (via ScanApp Lei's Plus mode) which is a big boost in scan-intensive environments. Batch scanning functionality is not supported on the HP T830 MFP.

+ In Buyers Lab's A1 (L) scan throughput testing, timing from initiation to the document exiting the scanner, the Canon TM-300 MFP L36ei was faster in all modes tested, with speeds that were 23.7% faster in monochrome in Draft/Fast mode, 19.7% faster in Standard/Normal mode, and 56.0% faster in High/Best mode; in greyscale mode, the Canon model was 26.9% faster in Draft/Fast mode, 22.8% faster in Standard/Normal mode, and 59.3% faster in High/Best mode; in colour mode, the Canon model's performance was 56.1% faster in Draft/Fast mode, 45.8% faster in Standard/Normal mode, and 53.5% faster in High/Best mode than the HP model.

+ In Buyers Lab's A0 scan throughput testing the Canon TM-300 MFP L36ei was, again, much the faster model in all quality and colour modes, except in colour/Standard/Normal mode.

+ In Buyers Lab's scan-to-desktop A1 (Landscape) testing, measuring the time taken from initiation to the scan appearing at the desktop, the Canon TM-300 MFP L36ei was faster than the HP model in all but one of the modes tested. It was 72.0% faster in monochrome in Draft/Fast mode, 72.6% faster in Standard/Normal mode, and 81.4% faster in High/Best mode; in greyscale mode, the Canon model was 75.5% faster in Draft/Fast mode, 67.7% faster in Standard/Normal mode, and 72.4% faster in High/Best mode; in colour mode, the Canon model's performance was 25.5% faster in Draft/Fast mode and 25.1% faster in High/Best mode than the HP model—in Standard/Normal, the models' results were comparable.

+ In Buyers Lab's scan-to-desktop A0 testing, the Canon TM-300 MFP L36ei was the faster performer in all quality and colour modes.

Banner Printing

Advantage ✔	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
A1 (Landscape) First Page Out	✔	
A0 First Page Out	✔	

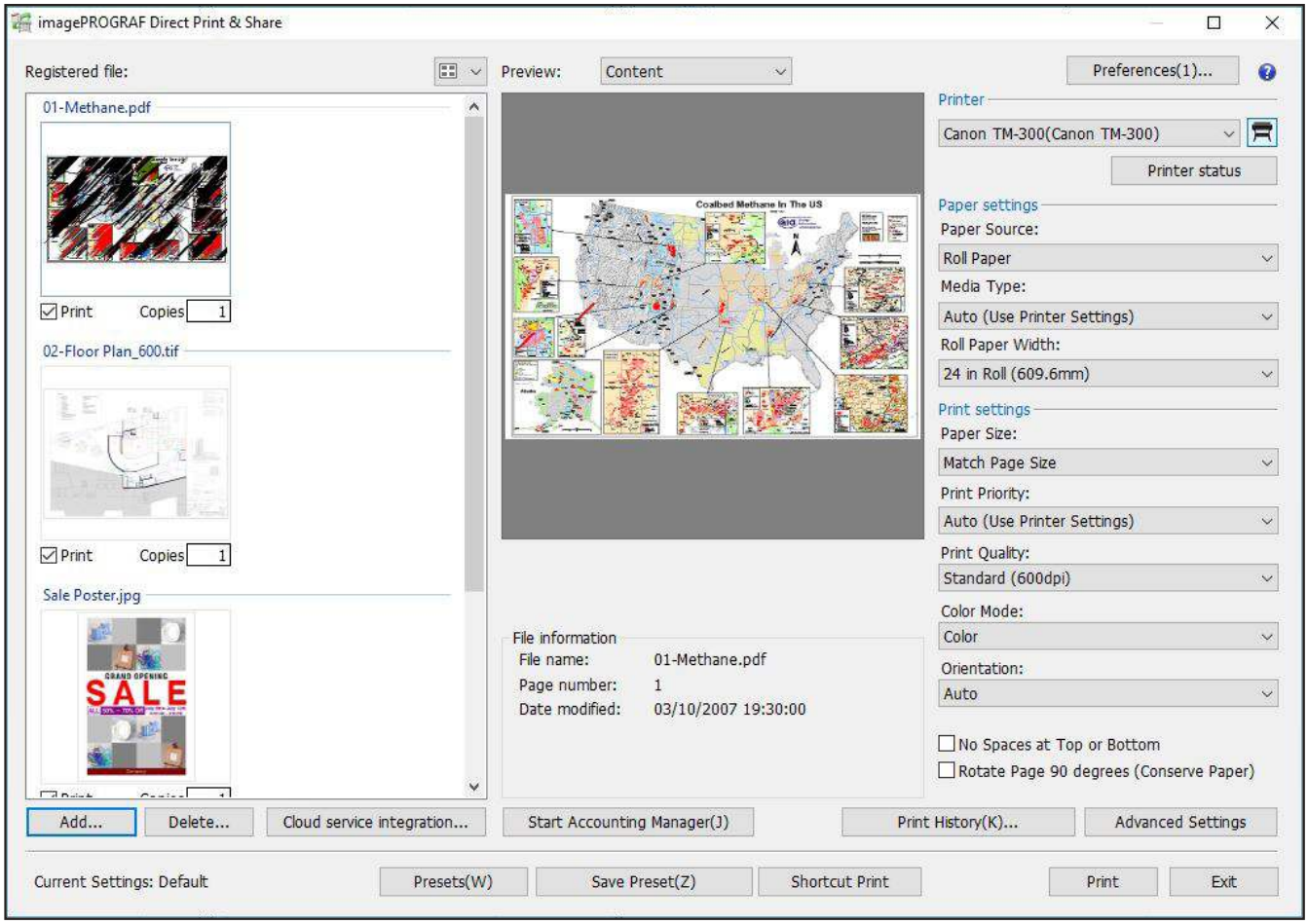
+ The Canon imagePROGRAF TM-300 MFP successfully printed Buyers Lab's 36" x 105" banner (a 4,955-KB PDF file) in Fast mode, taking 11.21 seconds to generate a preview, and a further 1 minute, 58.84 seconds from preview to final paper cut. The HP DesignJet T830 MFP was unable to print the banner in either Fast or Normal modes. It printed the background only, with a great deal of banding across the full width, and none of the actual image detail; furthermore, there was no error message displayed on the device.

Buyers Lab's Banner Test File

Direct Print Submission Functionality

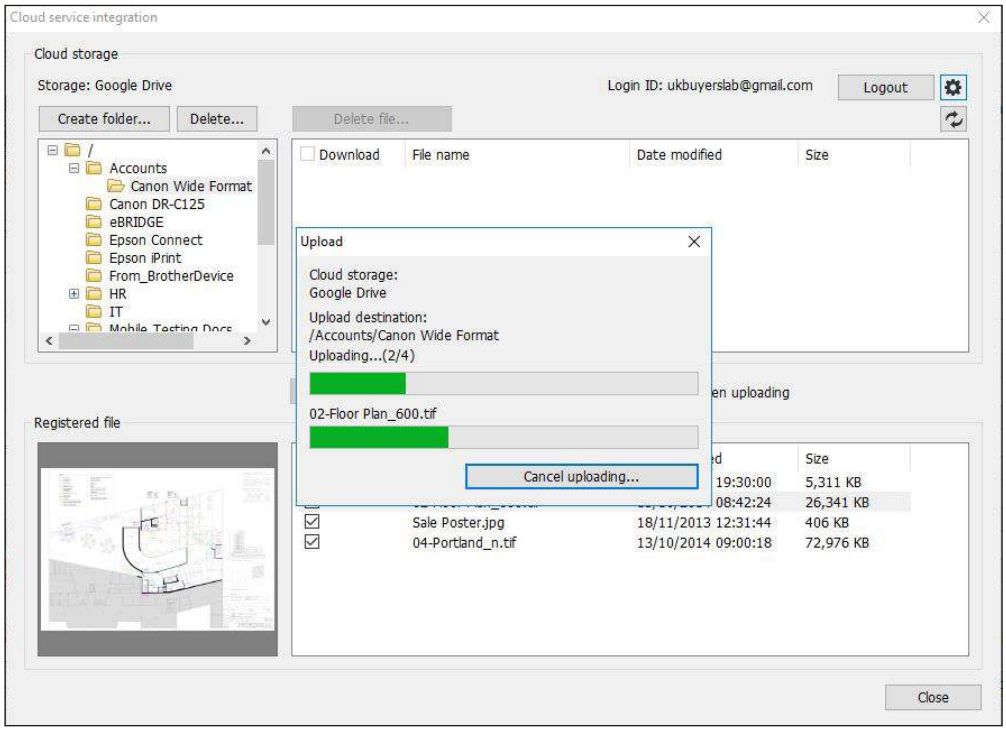
Advantage ✔	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Ease of Use	=	=
Functionality	=	=
Mobile App Integration	=	=

O 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.

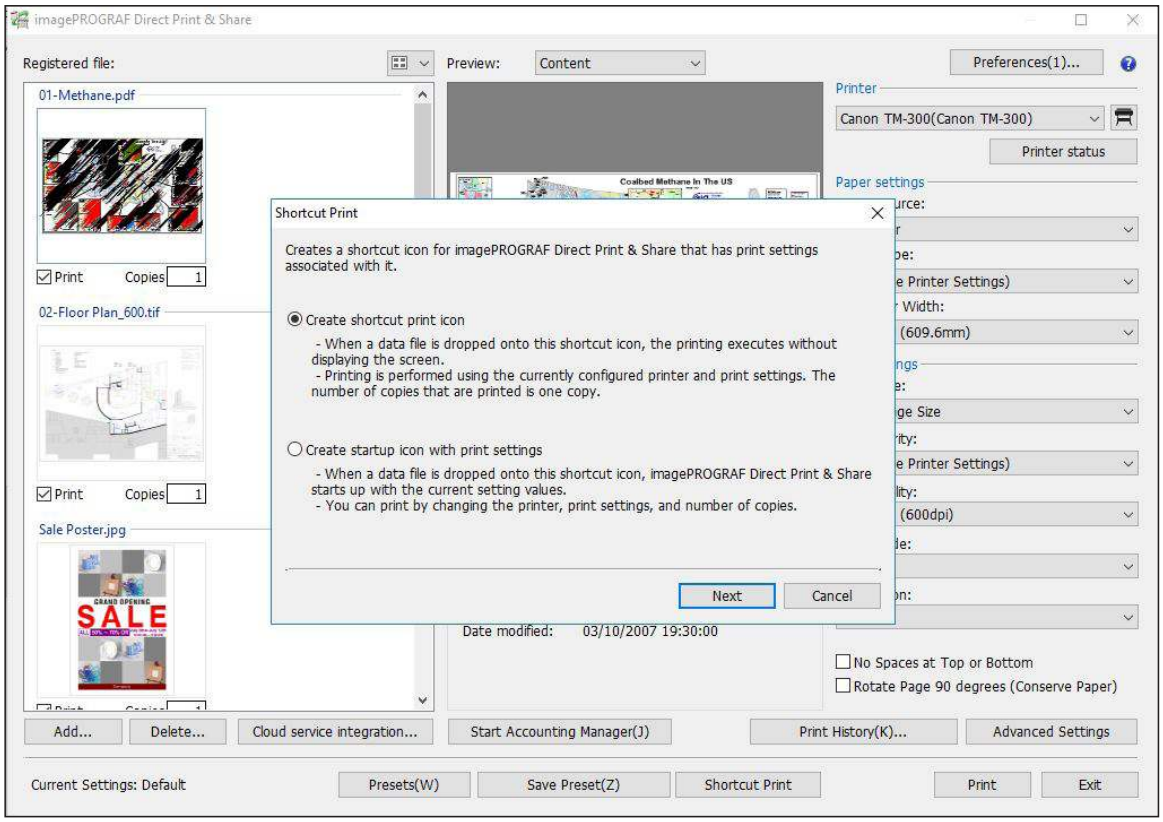


Canon's imagePROGRAF Direct Print & Share utility provides users with an image preview. Users can maximize the utility's window to obtain a larger preview, which enhances usability.

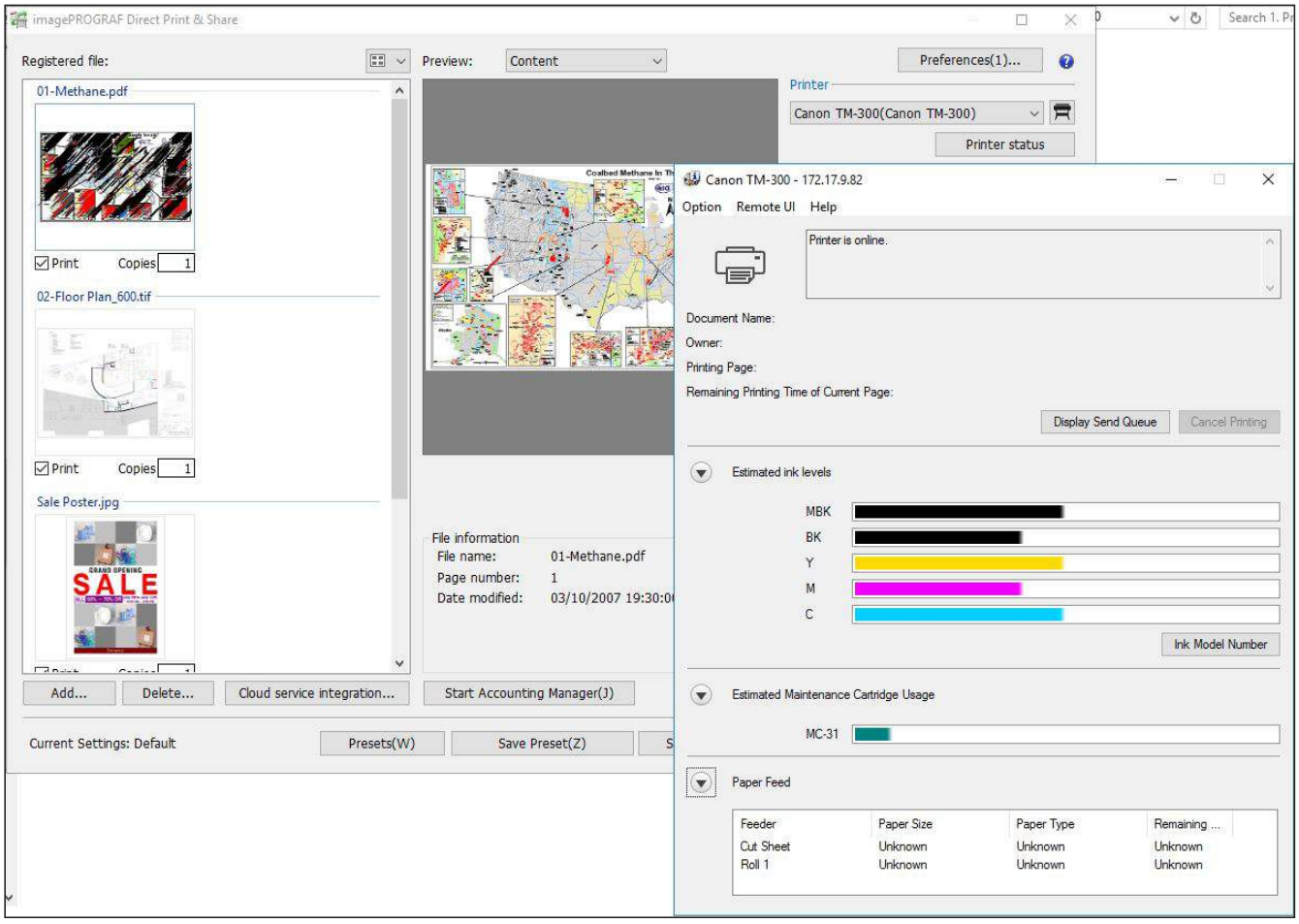
O The imagePROGRAF Direct Print & Share utility supports “Shortcut Print” functionality, enabling users to create a desktop shortcut that includes commonly used print settings, including output printer, print quality, paper type and paper size. Akin to a hot folder workflow, files are automatically printed 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.

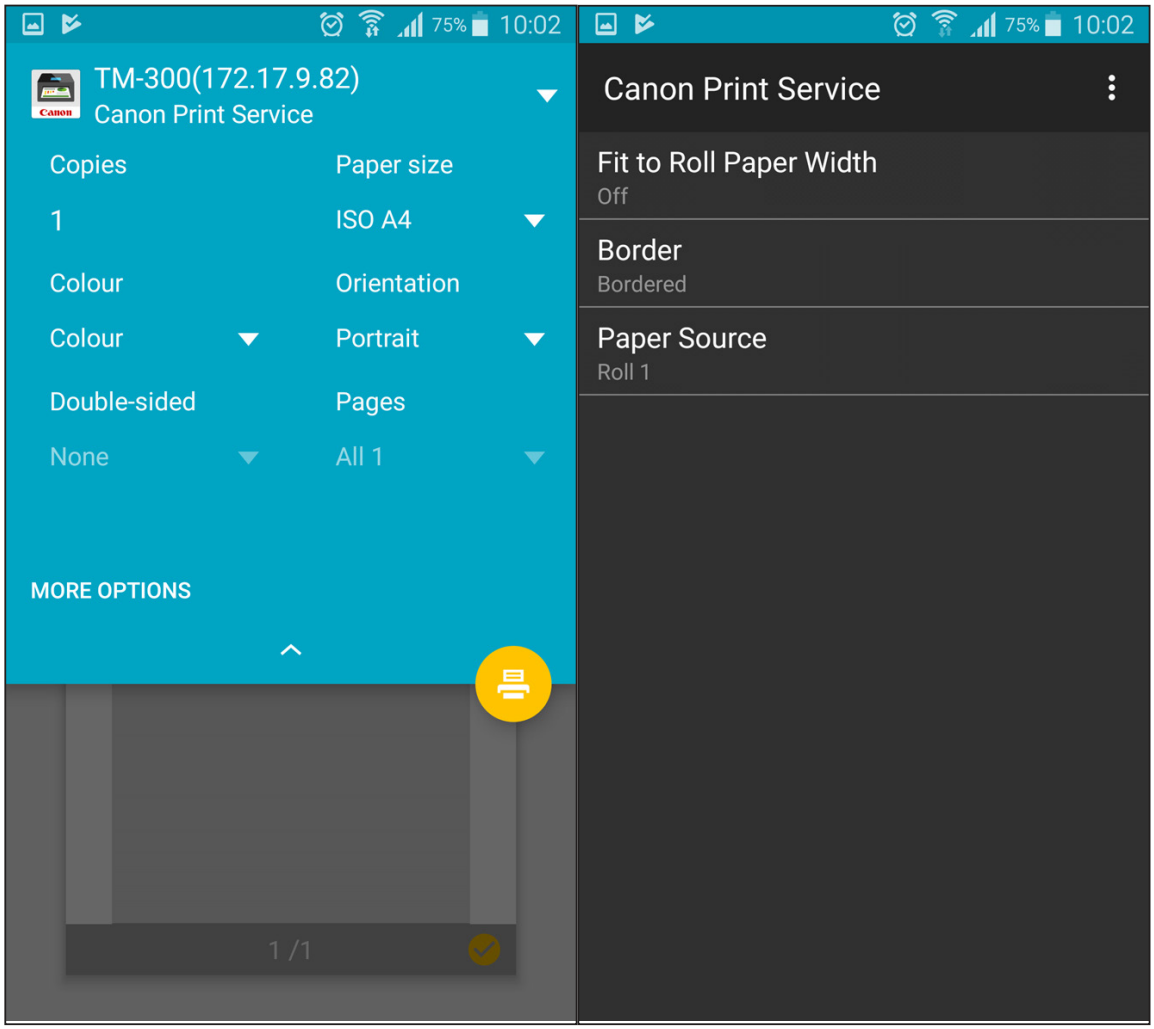


To help standardize and streamline common print workflows, users can register and save job profiles in the utility as well as create desktop shortcuts with predefined print settings that allow drag and drop automatic file printing.



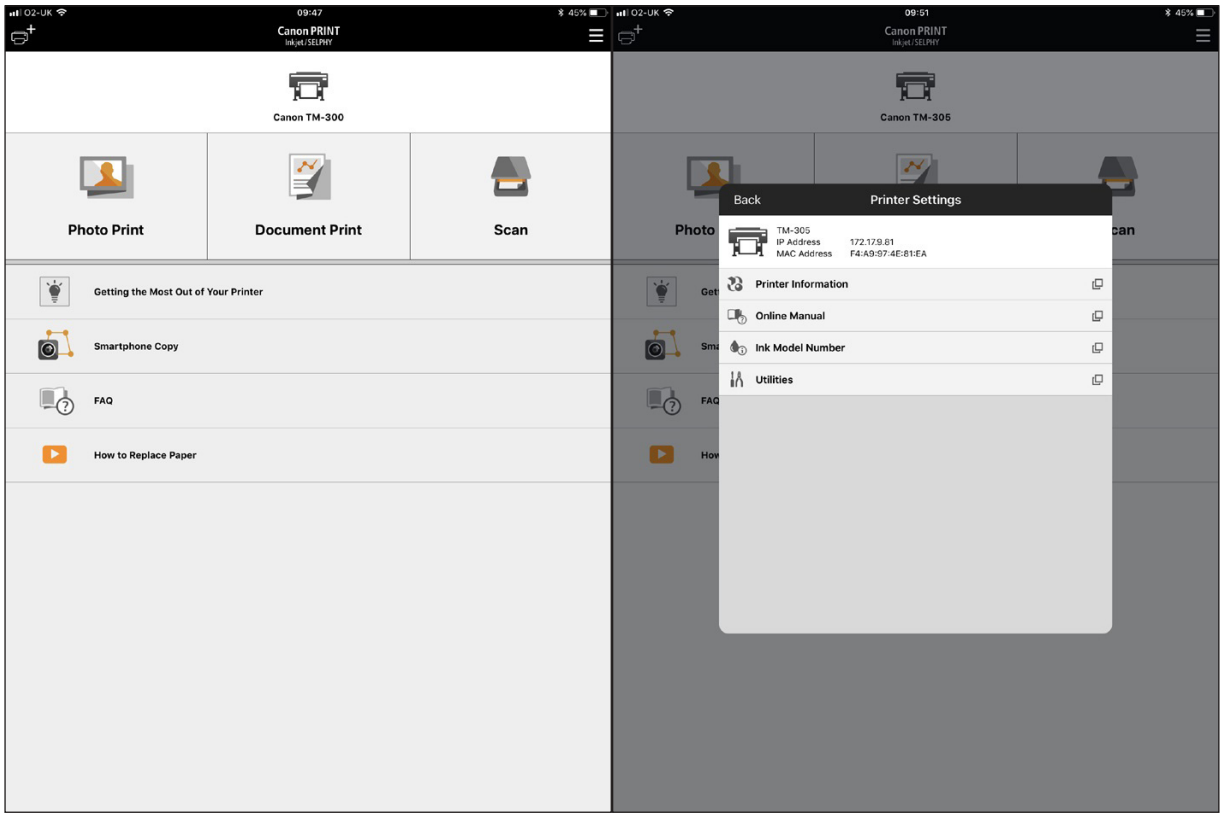
Conveniently, users can view device and consumables status via the utility before sending jobs to print.

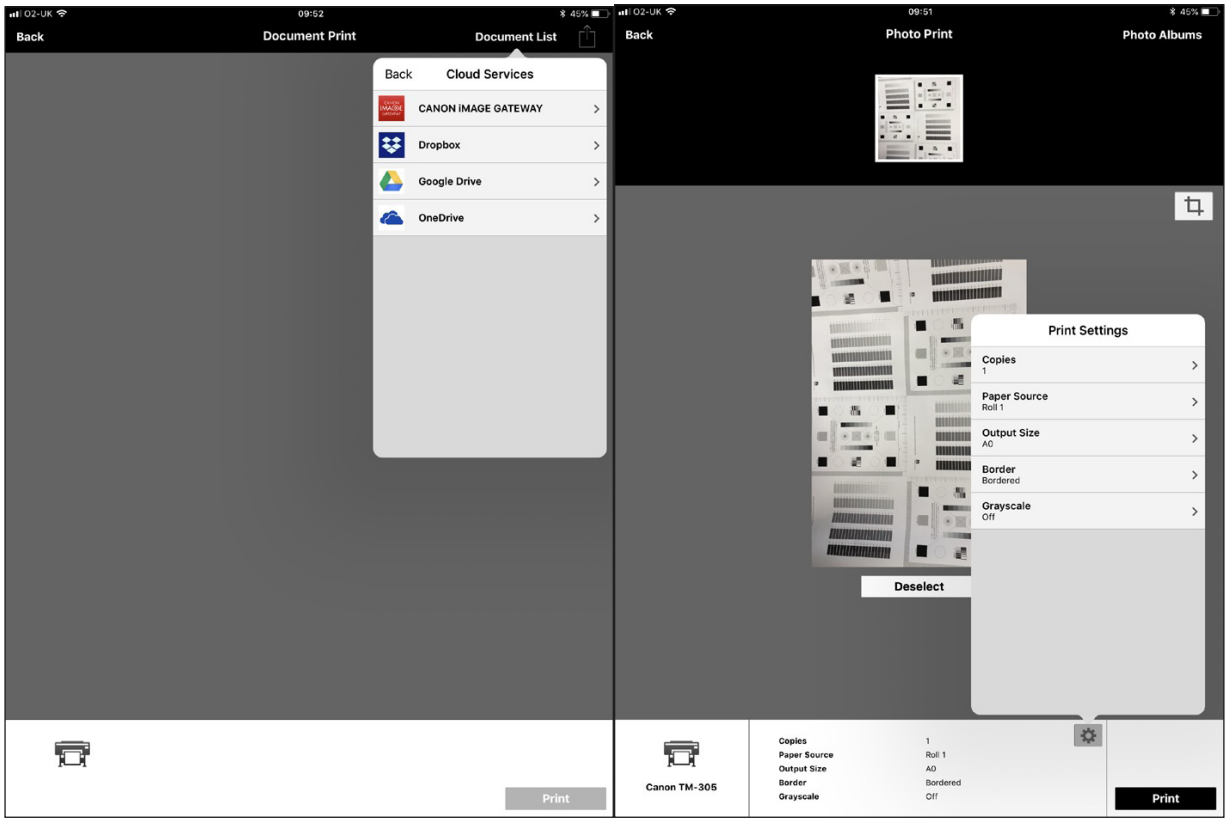
- Users can download stored files from Google Drive and AutoCAD 360 cloud storage services for printing via the imagePROGRAF Direct Print & Share utility. Files can be uploaded directly to cloud storage as well. For added convenience and collaboration, the utility offers the option to share files simultaneously with one or more users (via Google Drive only), who will receive an email notification with a link to download the shared files 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 the 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 MFP and other compatible Canon printers that are 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 MFP, and offers a broad range of print settings, including colour, orientation, and borderless printing.

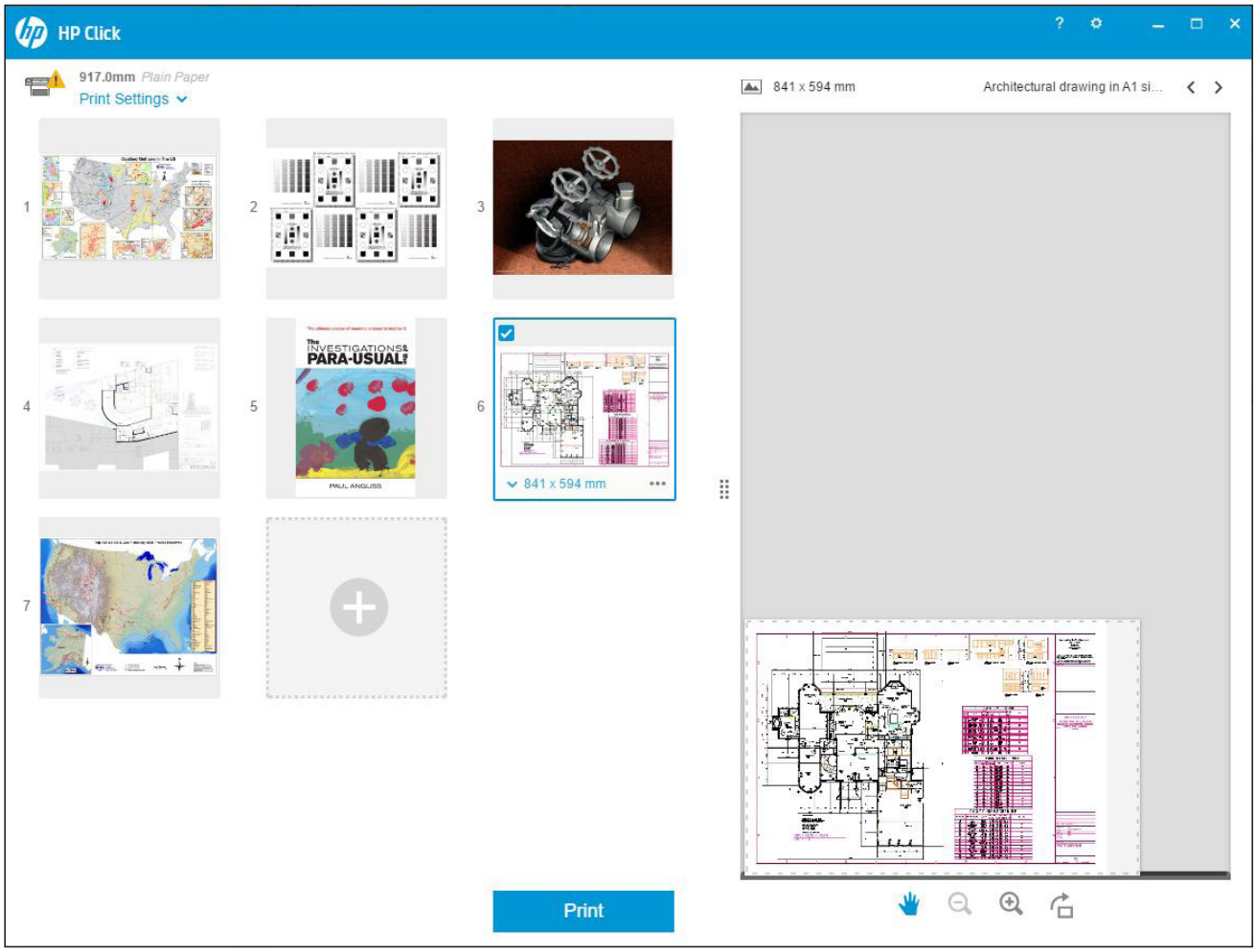
O Canon's TM large-format series also supports the versatile Canon Print Inkjet SELPHY app, which can be downloaded for free on Apple iOS and Android mobile devices. This mobile printing app lets users print PDFs, Microsoft Office documents and JPEG images; access and print files stored in cloud services; 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.





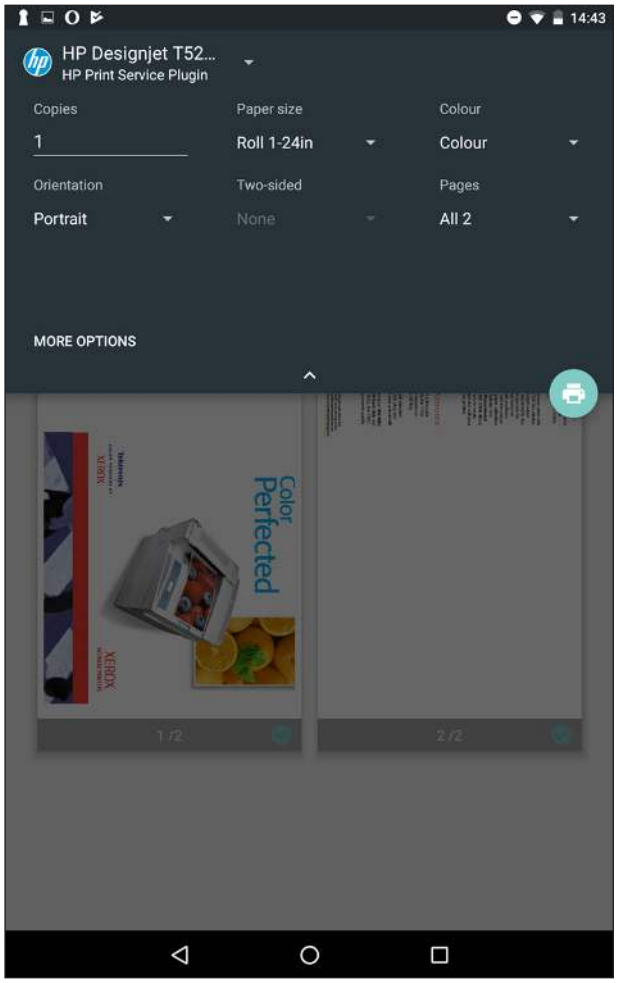
Canon's imagePROGRAF TM series supports mobile printing via the Canon Print Inkjet SELPHY app. Android and iOS users can easily preview and print documents (including Microsoft Office files), and images stored on their mobile devices or from cloud accounts such as Dropbox or OneDrive, as well as view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

O 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.



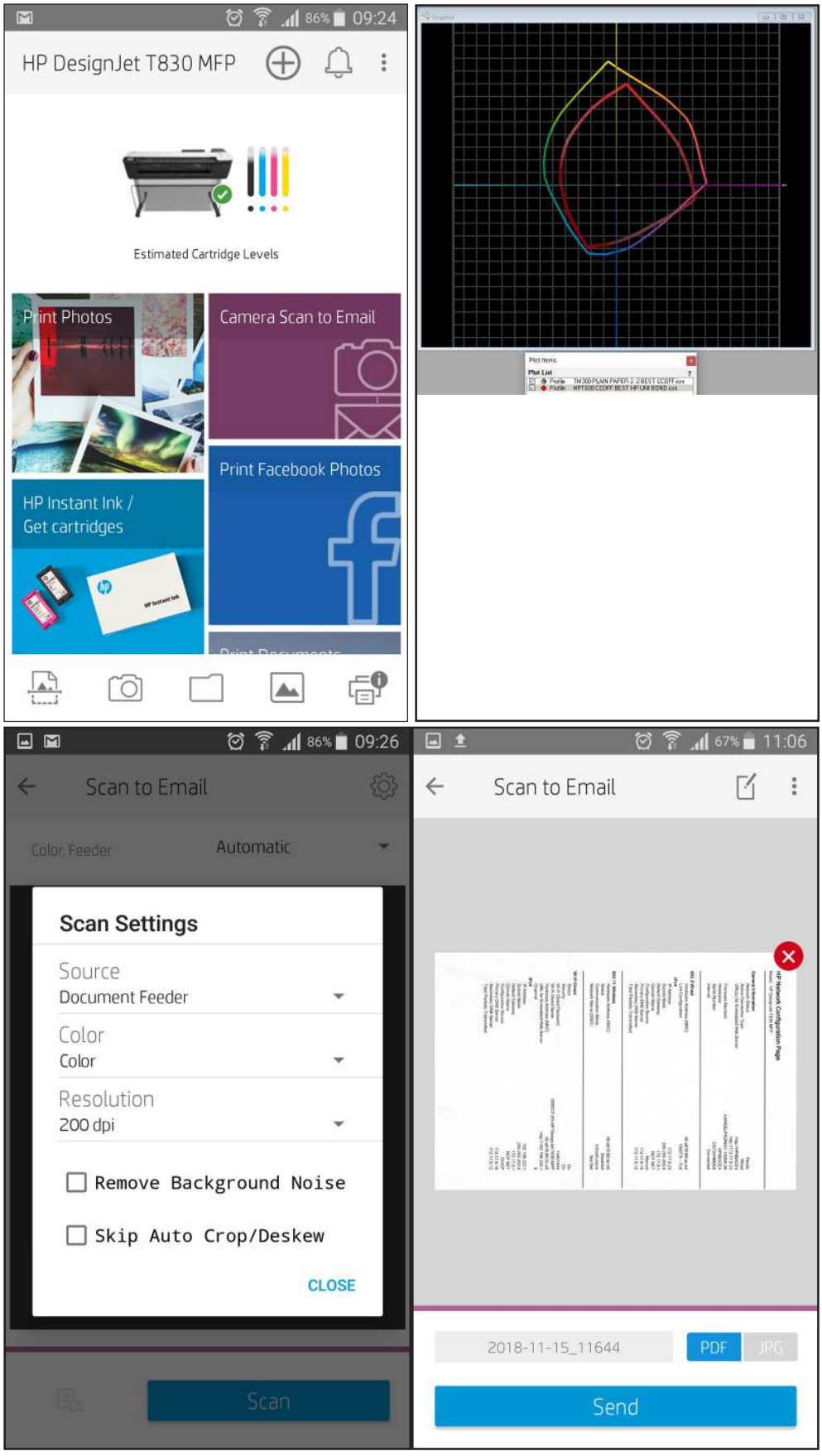
Via HP Click, users can select basic print settings, preview images, manipulate images as well as utilize the automatic nesting feature to reduce paper waste.

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 the preferred HP printer.



The HP Mobile Printing service enables Android (shown above) and iOS mobile devices to pair with the HP T830 MFP and other compatible HP devices easily. Users can retrieve files from cloud storage, preview images and perform image adjustments.

O 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.

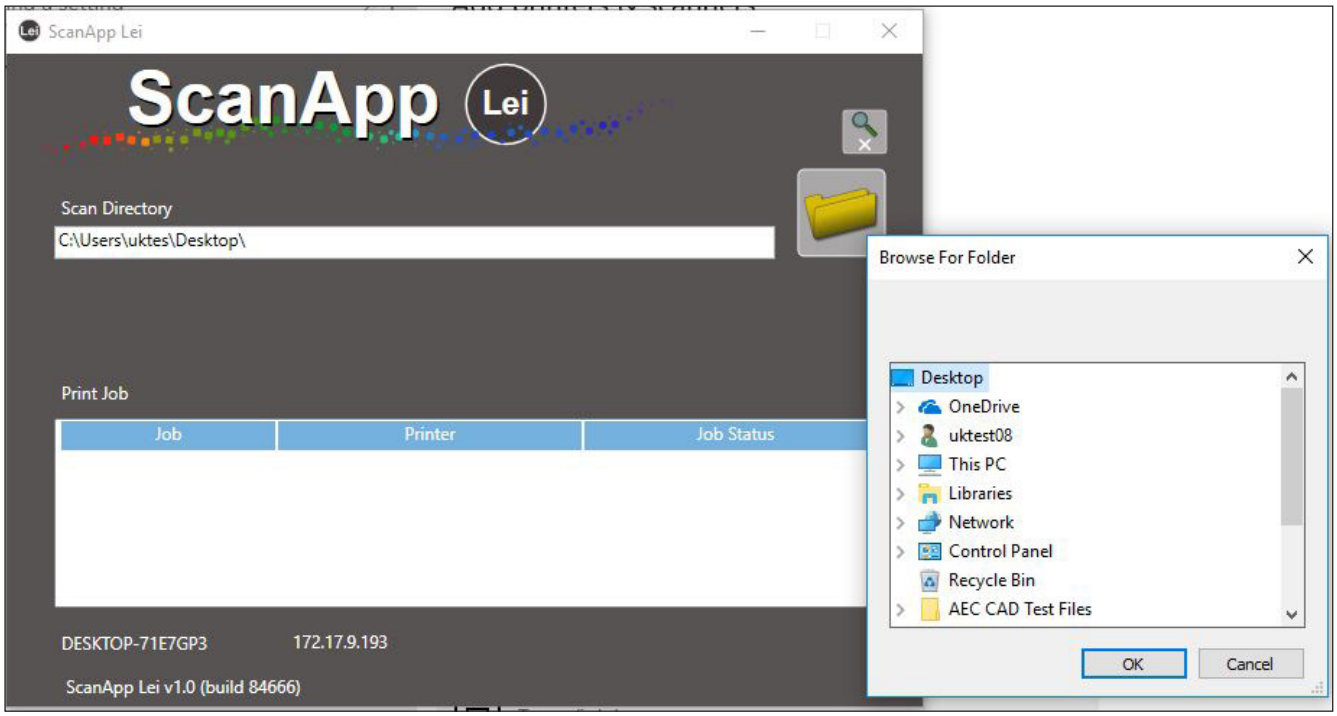
O In addition, the HP T830 MFP supports HP ePrint functionality, whereby users are able to send print jobs remotely by email either via a workstation PC or a mobile device; PDF, TIFF and JPEG files (up to 10 MB) are supported.

Walk-Up Ease of Use

Advantage ✔	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Interface	=	=
Scanner Media Handling	✔	
Print Media Handling	=	=
User Maintenance/Consumable Replacement	✔	
Copy Programming	=	=
Scan to Desktop/Network Folder Programming	=	=
Scan to Email/USB/Cloud Programming		✔
Stored Job Reprinting (including via USB key and cloud)		✔

Canon TM-300 MFP L36ei Single Sensor array extends across the full width of the scanner.

HP DesignJet T830 MFP scanner design employs a staggered array of RGB LEDs.



Canon TM-300 MFP L36ei's ScanApp Lei utility enables users to browse and select network folders to save scan files to.

- Canon's L36ei scanner provides enhanced functionality than its L36 scanner predecessor, such as a touchscreen user interface, batch scan capability, PDF/A file format support, and auto alignment support for fixed size documents, among others.

+ An additional Canon utility – ScanApp Lei – provides even greater functionality; it compresses scan data for JPEG, PDF, PDF/A and multi-page PDF file formats; acts as a spooler when copying so that data is sent to the PC during the scan process which means, according to Canon, the scanner is made available sooner for the next job; and, in Plus mode, supports batch scanning, which is a big advantage in scan-intensive environments. Batch scanning is not supported on the HP T830 MFP.

+ Configuring scan directories on the PC is an easy process with the Canon ScanApp Lei utility as it has a browse function to allow users to select their preferred folder; it is a trickier process when using HP's web utility as there is no ability to browse and users have to input the network path directly.

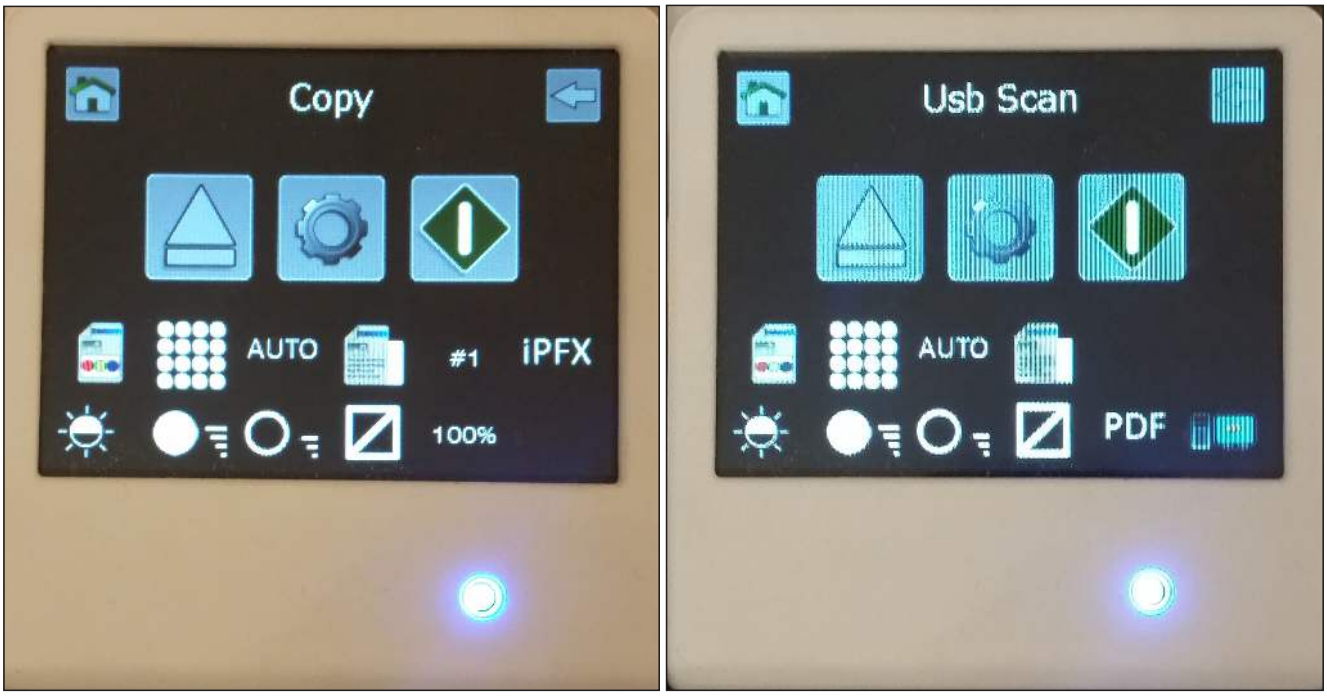
O Scan previews are not available with either model, hence both entail a similar workflow of Scan/Print/Check Print/Change Settings and Re-scan/Reprint/Repeat as necessary.

O The L36ei scanner's flip out control panel has a graphical look and feel, and sports a newly designed touchscreen user interface which boosts its usability. The three-inch display offers a graphics and text-led menu—an improvement on the L36 graphic-only menu for which novice users would have to refer to the separate accompanying icon guide to familiarize themselves with all the setting selections. Buyers Lab technicians found it very responsive and user-friendly; a stylus is included to aid the programming of jobs.

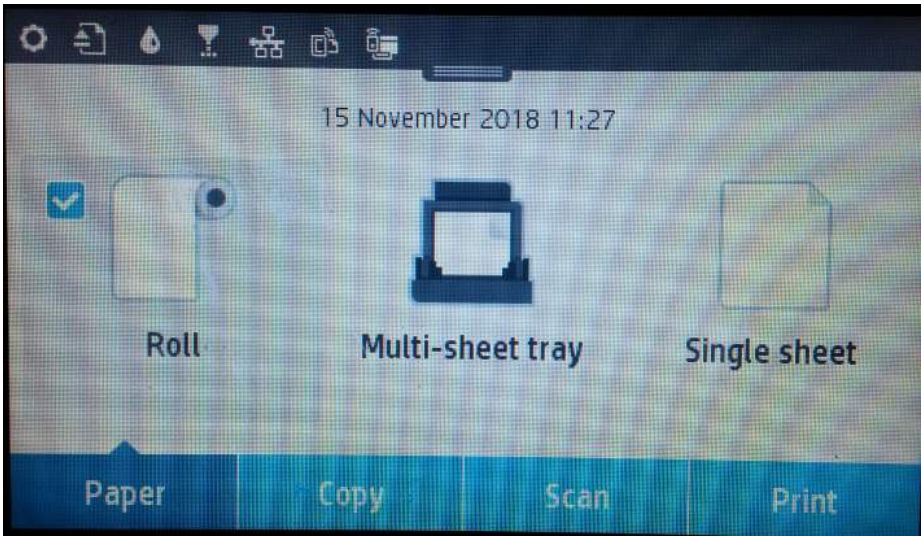
– The HP model's larger colour touchscreen is very easy to use. Job options are presented clearly and menus are simple to navigate making job programming a cinch. A virtual QWERTY keyboard appears to aid the entry of file names and email addresses.

O The Canon TM-300 MFP L36ei offers a 2.5-inch feeding ledge that has three paper feed supports positioned along the length of the scanner edge, which slide out to support media as it's fed into the scanner. The HP T830 MFP has a larger (four-inch) feeding ledge and a guide mark on the device to guide users on where to insert originals for scan and copy purposes.

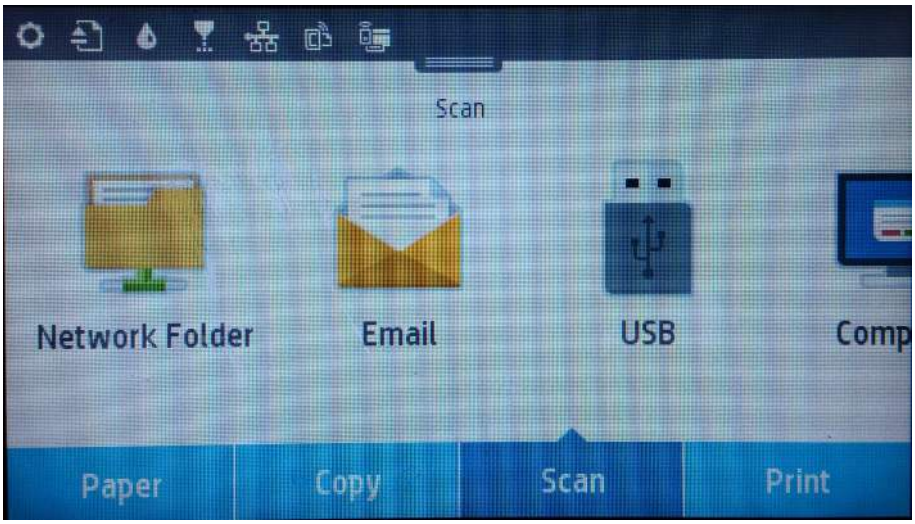
Canon's L36ei Scanner control panel offers redesigned colour icons to boost usability.



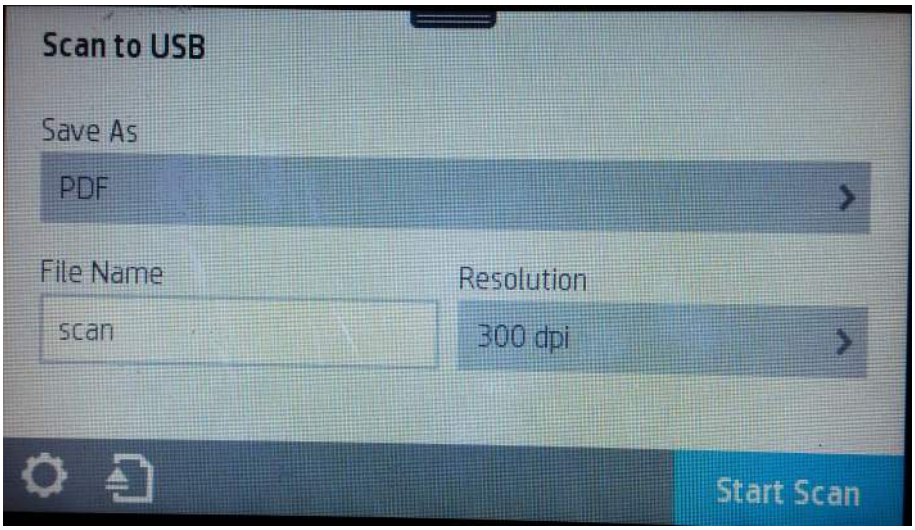
Canon TM-300 MFP L36ei Control panel displaying its Copy screen (left) and Scan to USB (now supported with the L36ei scanner) screen (right).



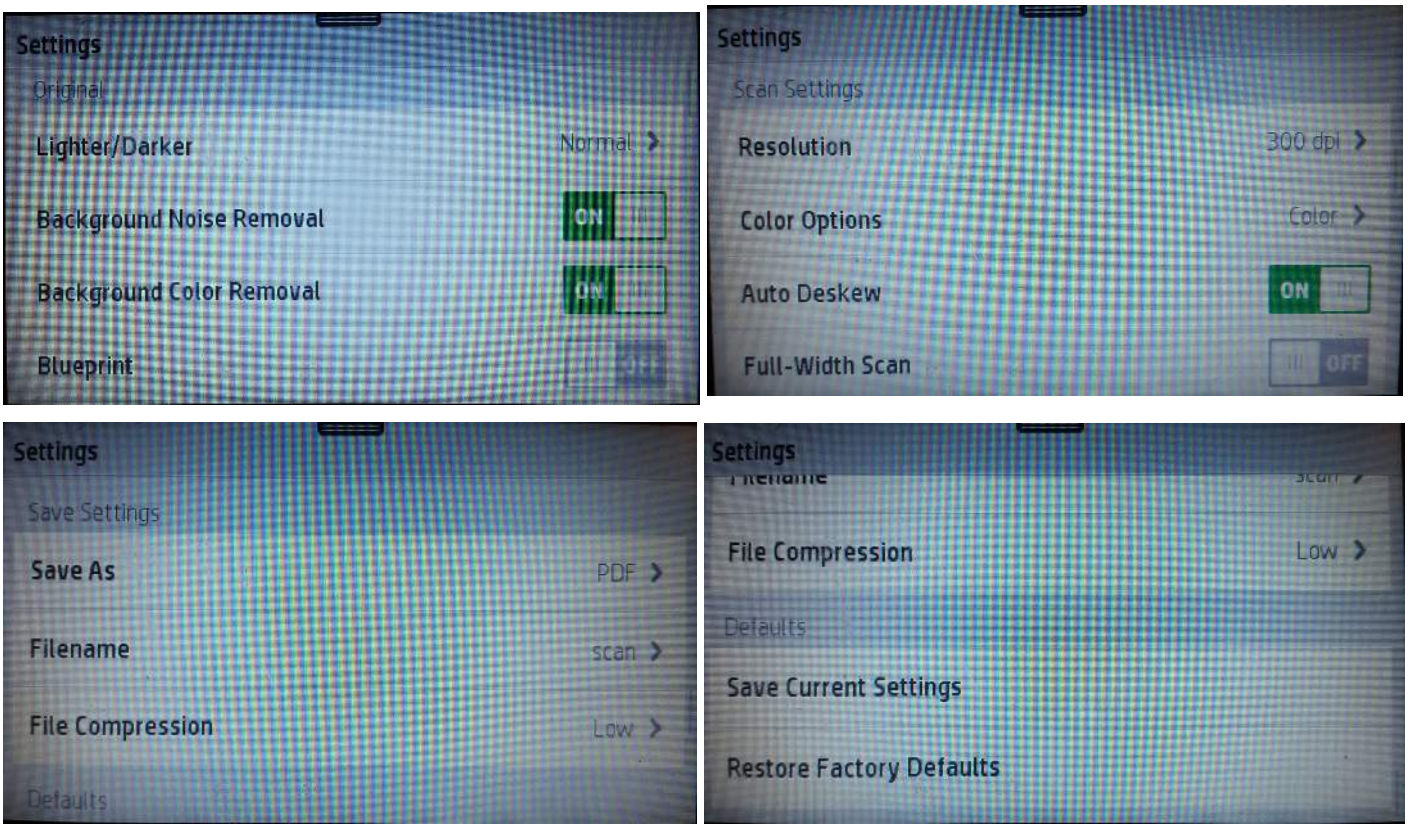
HP DesignJet T830 MFP Home Screen



HP DesignJet T830 MFP Scan Screen



HP DesignJet T830 MFP Scan to USB Screen



HP DesignJet T830 MFP Scan Settings Screens

Print Media Handling

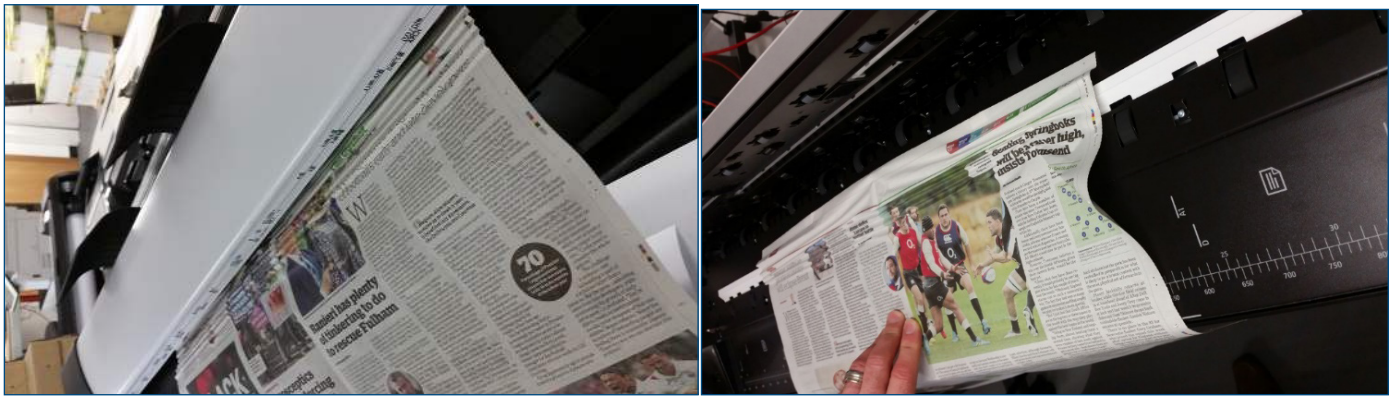
+ Both MFPs are compatible with a wide range of media types. The Canon unit supports 50 media types, plus ten user-defined media, while the HP unit supports 26, including Coated, Heavyweight Coated, Blueprint and, for photographs, Satin Photo, Premium Gloss and Semi-gloss media, among others. A specific drying time is built into many of the selections to ensure that prints will be dry after completion. Custom media types can be added and saved as well.

O Both models feature a single-roll design.

O Buyers Lab technicians found loading cut-sheet media to be equally straightforward on both models. The Canon model has an adjustable insertion guide that makes inserting cut-sheet media an easy process, and similarly, the HP T830 MFP has guides that can manually be positioned in tandem to hold the cut-sheet in place. Both devices require the removal of roll media before inserting a cut-sheet.

– However, the overall process to print on cut-sheet media is much easier on the HP T830MFP as it has a 5mm-deep sheet feeder that can accommodate several sheets at one time versus the Canon device, which accepts only one sheet at a time. Consequently, in cut-sheet mode, an operator will spend less time at the HP device feeding media. While the HP unit has a handy slide-out catch tray that holds printed sheets neatly, the Canon model does not and will require the operator to collect each printed sheet as soon as it exits the device.

- Both models were incapable of scanning and copying lightweight newsprint, such as a double page newspaper spread, in landscape. At each attempt, the newspaper original creased badly and jammed, requiring technicians to cancel the operation.



A failed attempt to feed newsprint in landscape on the Canon TM-300 MFP (left) and HP T830 MFP (right).

However, the Canon TM-300 MFP L36ei (shown left) successfully scanned the newspaper in portrait orientation, but the HP T830 MFP (right) could not.

- When using a lightweight 60gsm magazine double page spread, both models successfully scanned and copied it in both portrait and landscape without any issue.

Both models successfully scanned a magazine spread in 300 dpi default settings. Samples are magnified 400%.

\+ However, Buyers Lab technicians observed the Canon TM-300 MFP L36ei (shown above left) delivered more consistent results, with less banding than that seen on the results from the HP T830 MFP (shown right). The HP T830 MFP scan also shows a faint black keyline around the logo characters (right), whereas the Canon scan quality is a more faithful reproduction of the original content.

O Both units coped well when handling creased or folded originals.

O The catch baskets of both models enable most printed sheets to be stacked neatly. However, near the end of the media rolls, the tightly curled output from both devices had a tendency to spill out of the basket.

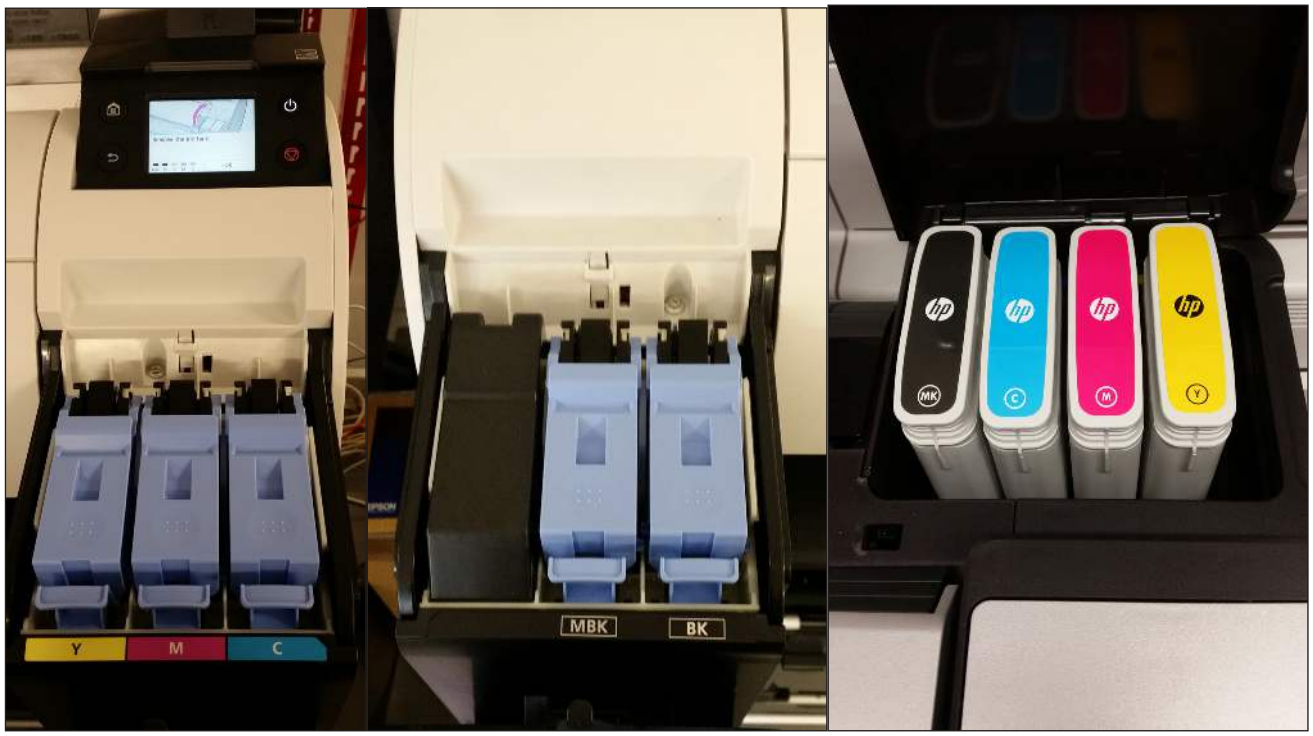
– The HP device includes an automatic scan deskew function, which is enabled on the control panel, allowing skew to be compensated for prior to the file being scanned to the desktop; the Canon model does not possess this capability.

\+ The Canon MFP L36ei comes with two handy magnetic paper edge guides that aid the positioning of originals on the scanner.

User Maintenance/Consumable Replacement

O Ink replacement is a very simple process for both devices.

\+ Ink cartridges can be replaced during operation with the Canon model but not with the HP device, helping to reduce downtime for Canon users.

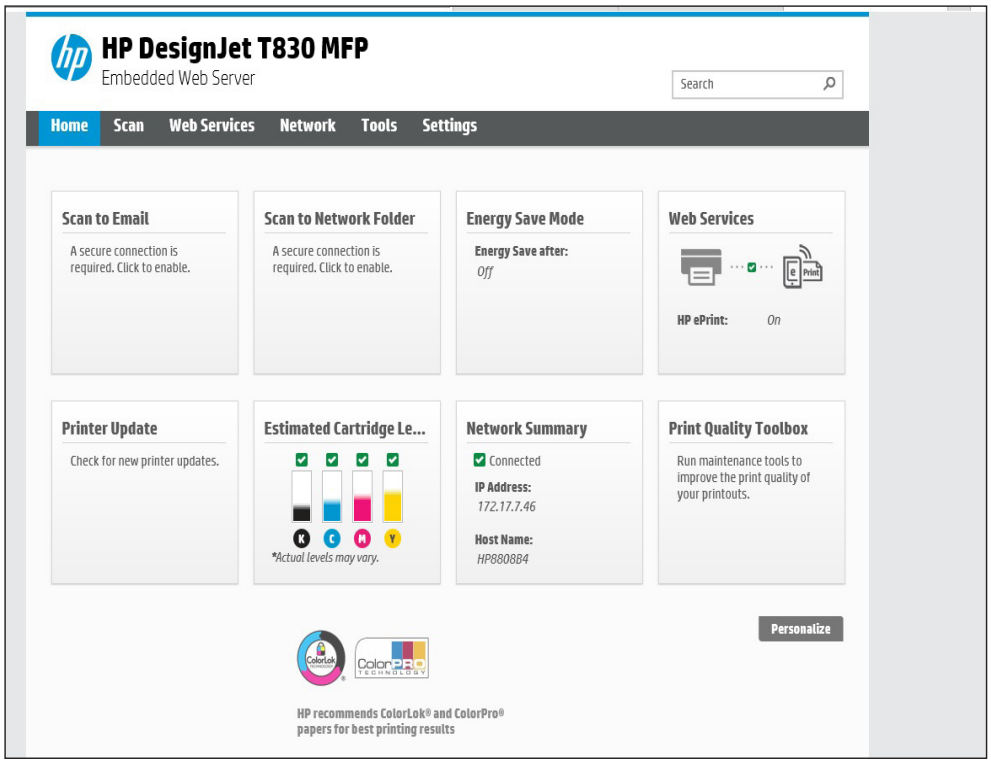


Ink replacement on both devices is straightforward. On the Canon model (shown left and center) users simply lift the ink housing cover on the printer's left (C,M,Y) or right (MBK, K) sides, then unlatch and remove the ink tank that is indicated by a blinking red light to be at a low level and replace it. Each of the four colour ink tanks on the HP T830 MFP (shown right) is slotted differently to prevent users from inserting a tank in the wrong position.

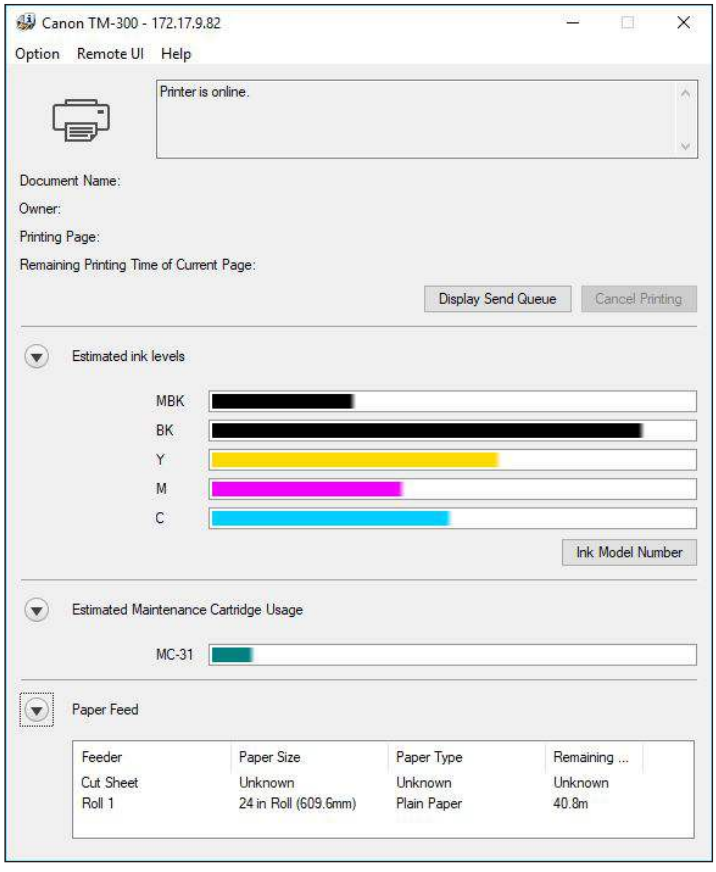
O The printheads are user replaceable and it's a straightforward process on both models.

O The Canon device includes a maintenance cartridge that will occasionally need to be changed, the process for which cannot be conducted during printing. Note: Buyers Lab did not need to replace any maintenance cartridge during its extensive tests.

O As the HP device recalibrates at every power cycle, operators need to be vigilant and ensure the scanner's calibration plaques on the scanner device are kept clean, otherwise the unit will calibrate in any dirty marks, which will affect image quality integrity.



The HP DesignJet T830 MFP embedded web server utility monitors jobs and consumable levels.



Canon's Status Monitor also provides feedback on consumable levels.

Copy Programming

O Programming a copy job on the Canon involves multiple key presses, but it's an intuitive process now that the user interface provides well-defined text and graphical icons. Users can select quantity, resolution, size, brightness, contrast and crop.

O The HP T830 MFP offers three image type presets (Image, Lines and Mixed originals). When a preset is selected, users can specify a number of job control settings, which include number of copies, paper source and quality mode. More advanced printer driver level job control options can be accessed via the settings cog icon on the touchscreen display. These include lighter/darker adjustments, background noise removal, background colour removal and auto-deskew, among others. Users can save the current settings as the new default settings to be applied to future jobs.

Scan to Desktop/Network Folder Programming

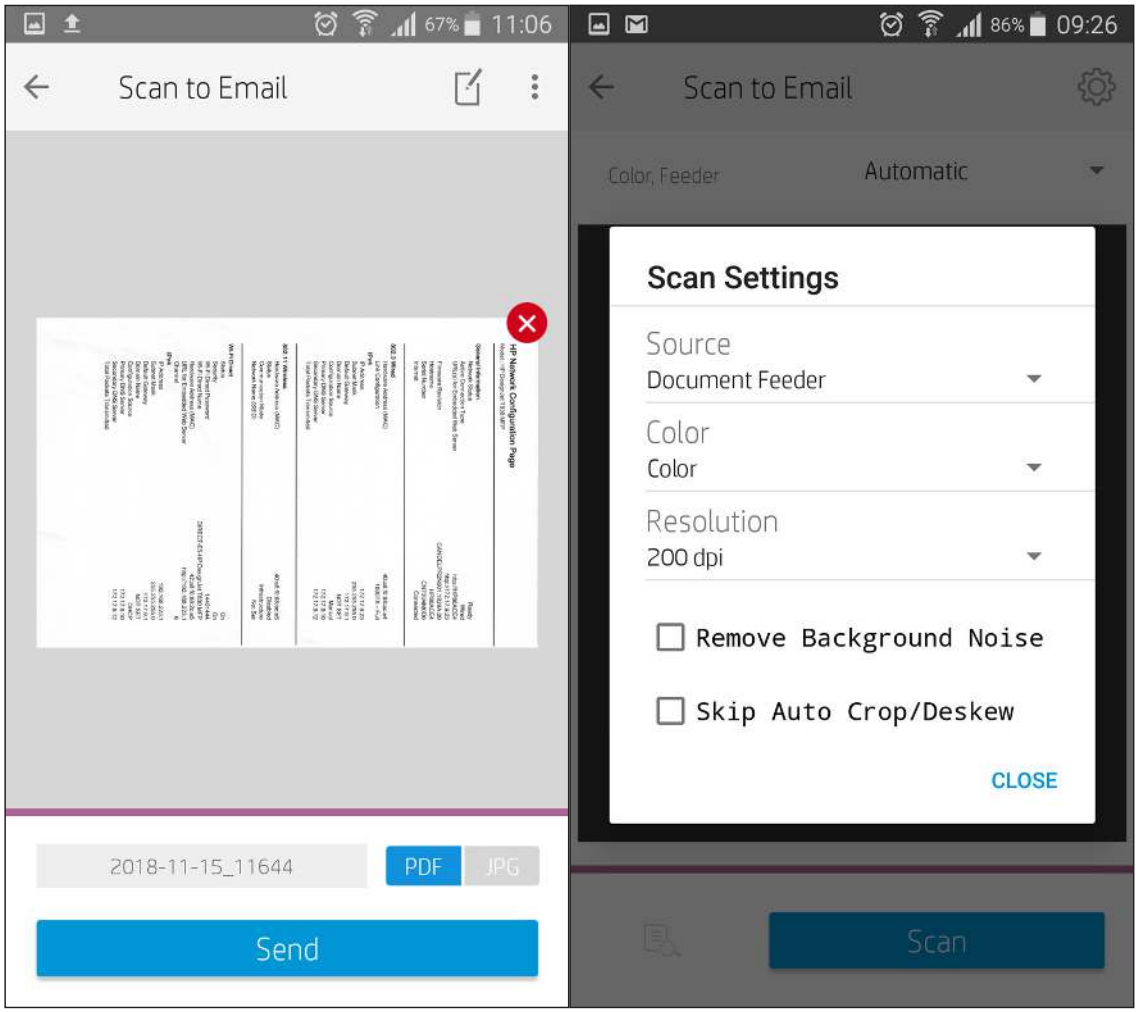
O When scanning a document on the TM-300 MFP L36ei, users cannot preview the scan adjustments or edit the file-name prior to release. The file name can be edited after the scan. Image adjustment settings include colour mode, crop, white point, black point and brightness. File formats supported are: PDF, PDF/A, JPEG, TIFF, and multi-page PDF. A scan file is saved to the designated destination specified in the ScanApp Lei utility.

O Users must use the web browser to set up the file destination for scan-to-network operations on the HP T830 MFP, and it cannot be changed at the device. As with the Canon device, users cannot preview the scan, but can make adjustments for settings such as lighter/darker, background noise and background colour removal. File formats supported are: PDF, JPEG, and TIFF. For added convenience, the filename can be edited (up to 20 characters) at the device which makes it easier to identify files when back at the desktop.

Scan to Email/USB/Cloud Programming

O Users are unable to directly scan to cloud or to email at the Canon TM-300 MFP L36ei, however they can scan to the imagePROGRAF Direct & Share utility via the ScanApp Lei utility and upload files to cloud storage.

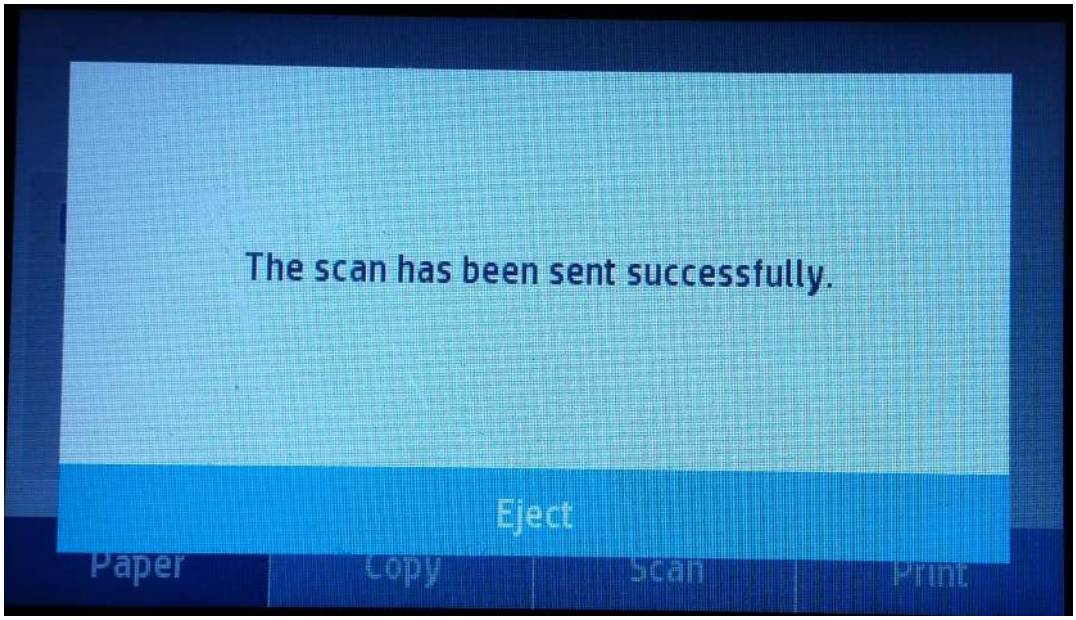
– Users are able to scan directly to email at the HP T830 MFP, and scan to cloud services via the HP Smart mobile app as well, which is an easy process. Users can preview and edit the image (crop and rotate) in the app, and save the file as a PDF or JPEG, as well as rename the file.



Scanning via the HP Smart app is straightforward.

O Users can scan directly to a USB drive inserted on the Canon TM-300 MFP L36ei, with file format support for PDF, PDF/A, JPEG and TIFF. When a USB drive is inserted, the USB drive menu does not pop up automatically so the user must initiate its use by selecting the Scan to USB icon on the control panel. During the scan process an hourglass icon is displayed to signify scanning is in progress, and users can see the file size increase as scanning takes place, but there's no notification message on the display screen to notify users that that the file was successfully saved to the USB drive; the display just reverts to the default screen once the scan is completed. Scan files are saved automatically to the USB's root directory. Users will find that the file has automatically been assigned a number ('SCAN0001') which can then be renamed at the PC.

— When a USB drive is inserted on the HP T830 MFP, the machine does not detect it and users must select the Scan to USB function on the touchscreen display. When scanning to USB, users can opt to save the file in JPEG, TIFF or PDF format, and make other selections like resolution and colour mode, and, usefully, they can input a file name. When scanning to PDF format, the T830 MFP prompts users to either add another page (allowing multi-page scan documents to be created) or complete the job. Users are notified when the scan job is completed and the file is saved successfully on the USB drive; users must actively eject the original from the device. Scan files are saved into a specific sub-folder (HPSCANS) which is automatically created on the USB drive.



Upon scanning an original on the T830 MFP, users are provided with a notification message and they must eject the original as well.

Stored Job Reprinting (including via USB key and cloud)

– Printing from a USB stick (not available with the Canon model) is a straightforward process on the HP T830 MFP, with full control over document settings, although the HP T830 MFP's lack of support for printing PDF files (only available with the more expensive PostScript version of the MFP) is clearly a limitation. Users can browse sub-folders to select files to print (TIFF or JPEG only) and once selected a preview will appear on the touchscreen.

O Jobs that need reprinting on the Canon TM-300 MFP L36ei can quickly and easily be retrieved from cloud storage using the imagePROGRAF Direct Print & Share utility, with the same Preview & Edit functionality giving full control over output quality and settings. The Canon Print Service mobile app lets users print directly from their Android mobile device to a TM-series printer model. Similarly, the HP Mobile Printing service allows users to print directly from an iOS or Android smart device to a compatible HP large-format device.

(See the section on Direct Print Submission above for Buyers Lab's assessment of the two utilities in terms of functionality and ease of use.)

Device Feature Set

O The Canon MFP's L36ei scanner offers three (200, 400 and 600 dpi) scanning resolutions, as does the HP unit's scanner.

O The Canon L36ei scanner can handle documents up to 914 mm x 2,768 mm (36" by 109") in size as can the HP T830 MFP scanner.

— The Canon L36ei scanner can only accommodate media up to 0.5 mm thick, while the HP unit's scanner can accommodate 0.8 mm thick originals.

+ The Canon L36ei supports batch scanning via the ScanApp Lei app (in Plus mode), as well as multi-page PDF documents. The HP T830 MFP lets users scan and create multipage PDF documents but doesn't support batch scanning, which could have an adverse impact in some environments.

+ Users can scan at the Canon L36ei scanner concurrently as the Canon TM-300 MFP is printing. The HP T830 MFP cannot scan and print simultaneously.

O Both models offer 300 ml cartridges for all colours.

+ The total capacity of Canon's starter cartridges (490 ml) is much more generous than the 189 ml provided by HP.

+ Ink cartridges can be replaced during operation with the Canon model, but not with the HP device.

+ The Canon unit supports a larger diameter of roll paper (150 mm as opposed to 100 mm with the HP device); it supports up to 0.8 mm as the maximum media thickness for the printer as opposed to the HP model's support for a maximum of 0.3 mm.

— The HP device supports a fractionally higher maximum cut-sheet media length of 1.676 m compared with 1.6 m for the Canon unit.

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

O Both models offer USB 2.0 and Gigabit Ethernet connectivity, and wireless connectivity.

+ The Canon model offers a standard, non-upgradable RAM capacity of 2 GB, while the HP unit has a standard, non-upgradable RAM of 1 GB.

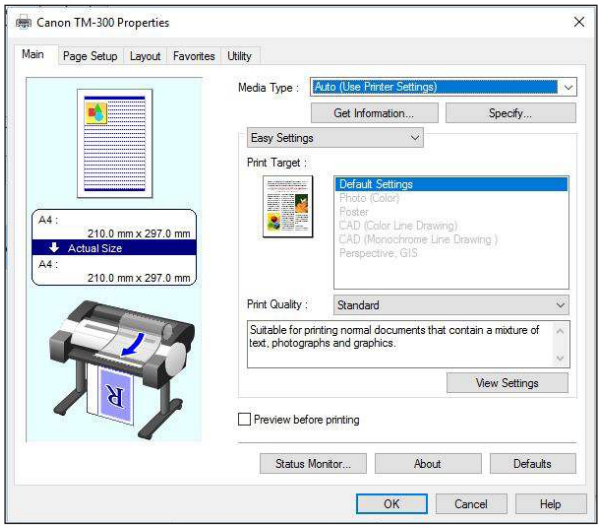
O Neither model offers a hard drive, even as an option.

— The HP T830 MFP's rated power consumption (35 W) is lower than that of the Canon model's (69 W) while printing. In standby mode (where devices are likely to spend most of their time), the Canon unit's power consumption (3.6 W) is higher than the HP model's 0.2 W power consumption.

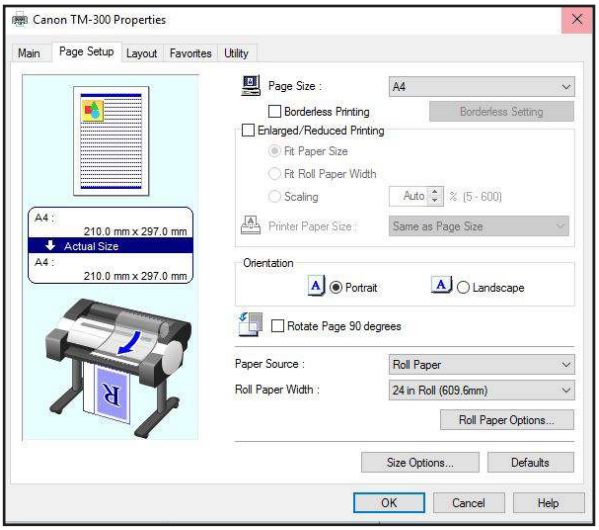
O Rated noise emissions while active are broadly comparable for both models.

— In standby mode, rated noise emissions are lower for the HP device (16 dB versus 35 dB with the Canon model).

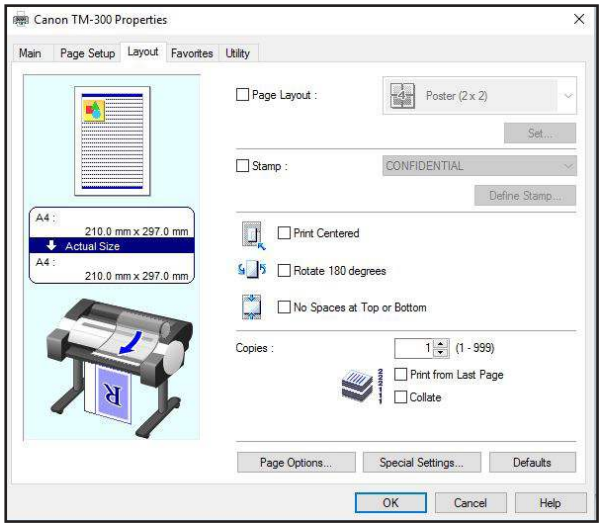
Test Models' Print Driver Screenshots



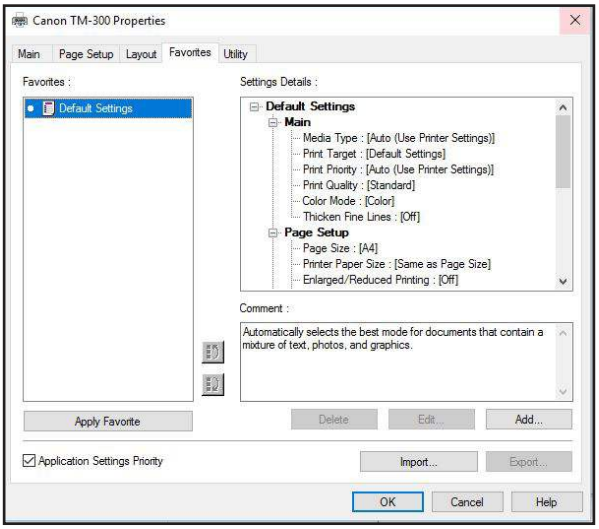
Canon TM-300 MFP L36ei Main Tab



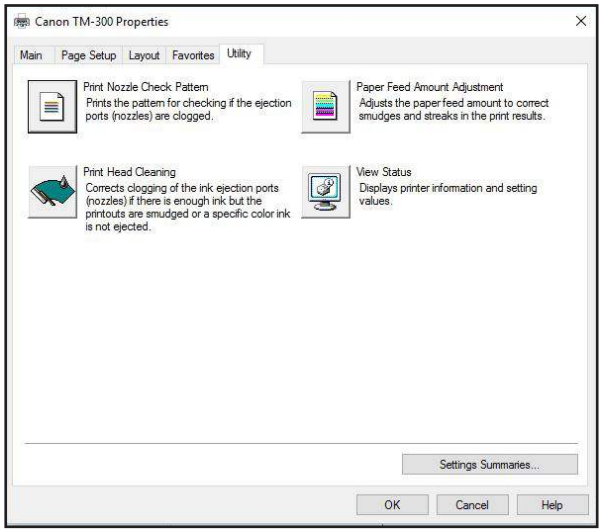
Canon TM-300 MFP L36ei Page Setup Tab



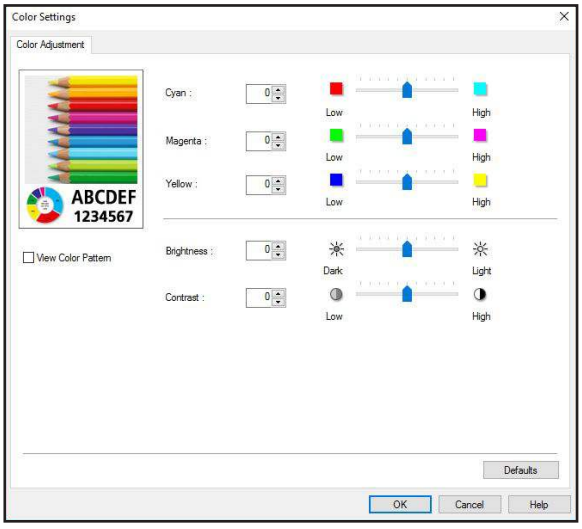
Canon TM-300 MFP L36ei Layout Tab



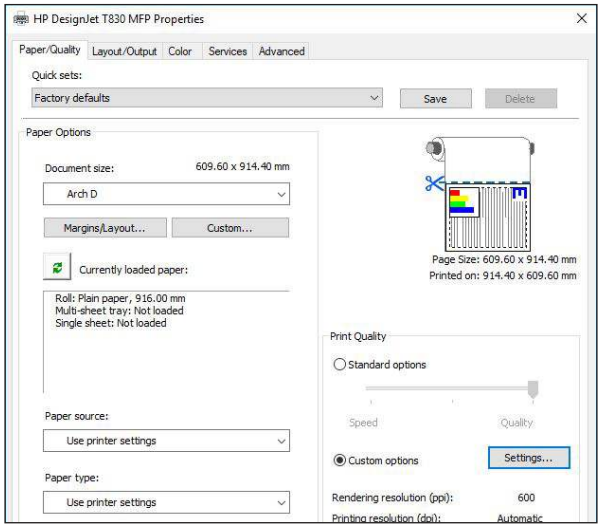
Canon TM-300 MFP L36ei Favourites Tab



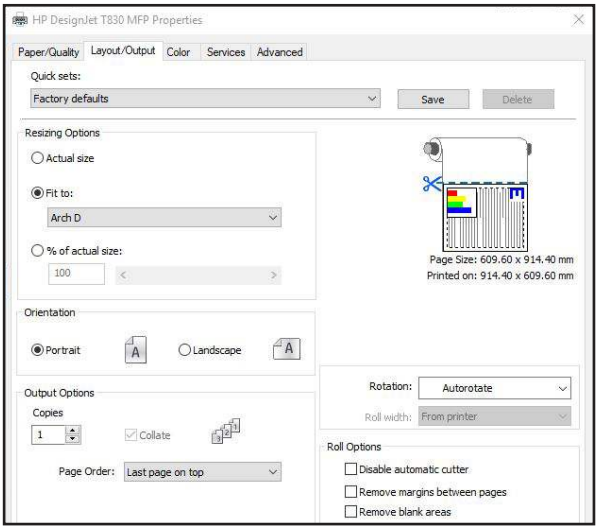
Canon imagePROGRAF TM-300 MFP L36ei Utility Tab



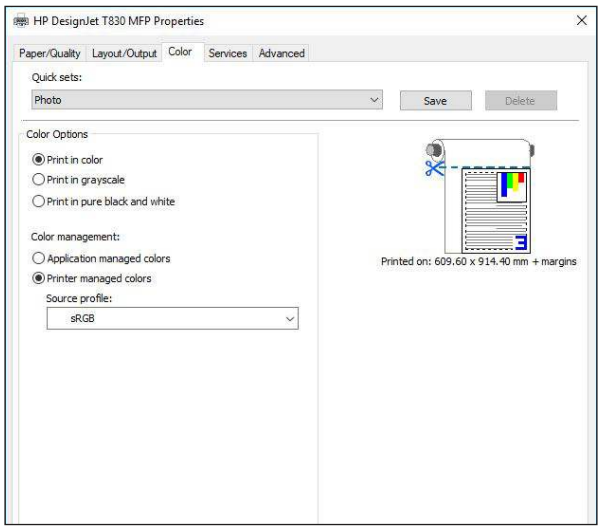
Canon imagePROGRAF TM-300 MFP L36ei Colour Adjustment Tab



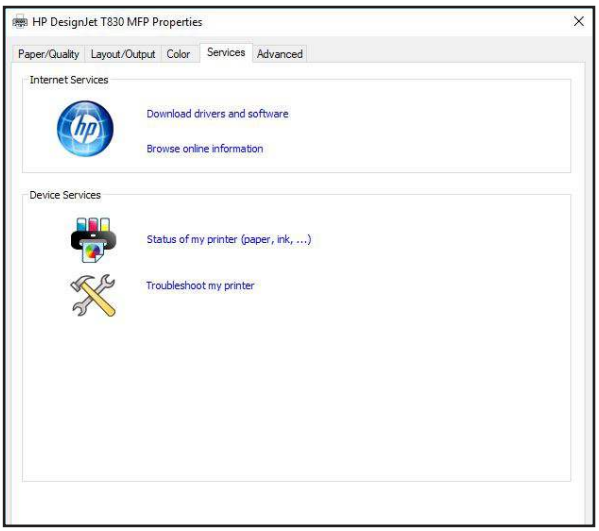
HP DesignJet T830 MFP Paper/Quality Tab



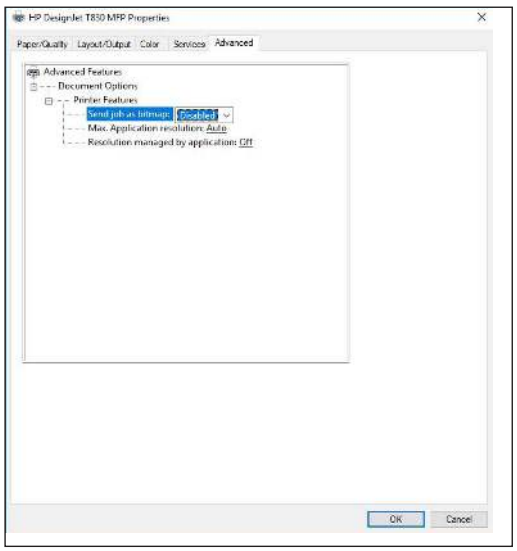
HP DesignJet T830 MFP Layout/Output Tab



HP DesignJet T830 MFP Colour Tab



HP DesignJet T830 MFP Services Tab



HP DesignJet T830 MFP Advanced Tab

Print Driver Feature Set

+ The Canon TM-300 MFP L36ei 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 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.

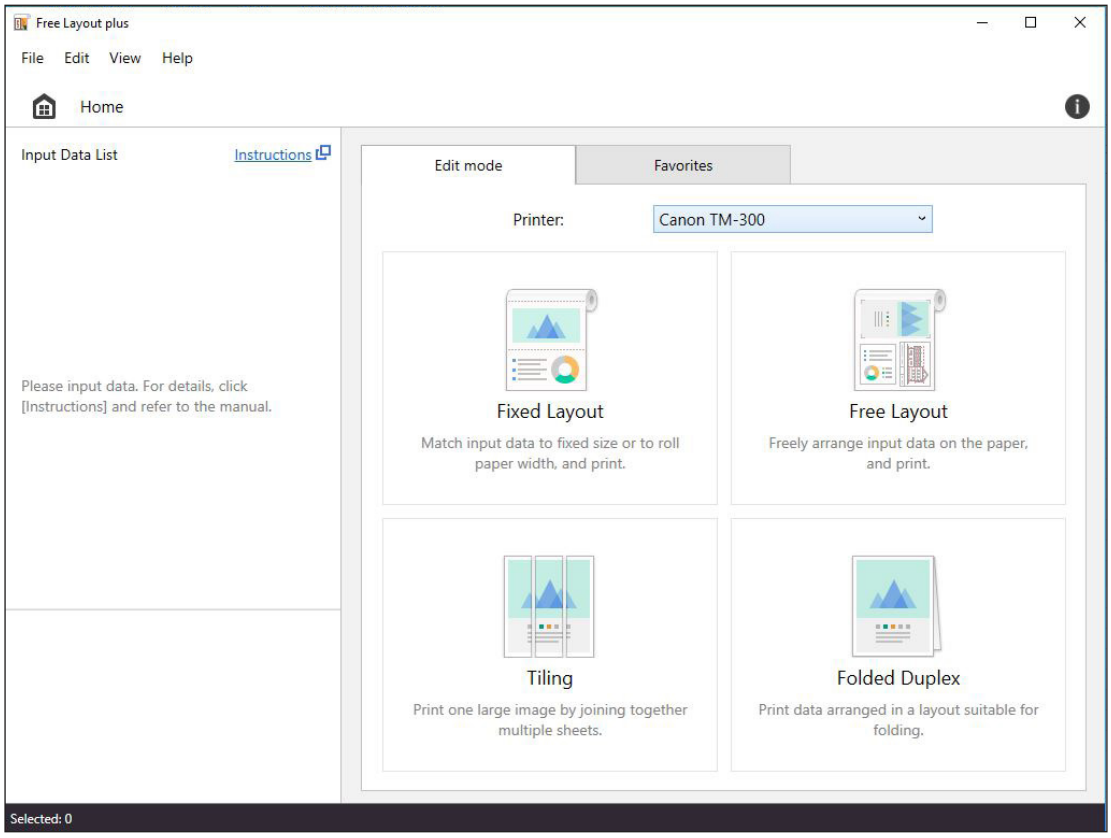
+ The Canon driver offers a 2 by 2 poster mode, that's not available from the HP driver.

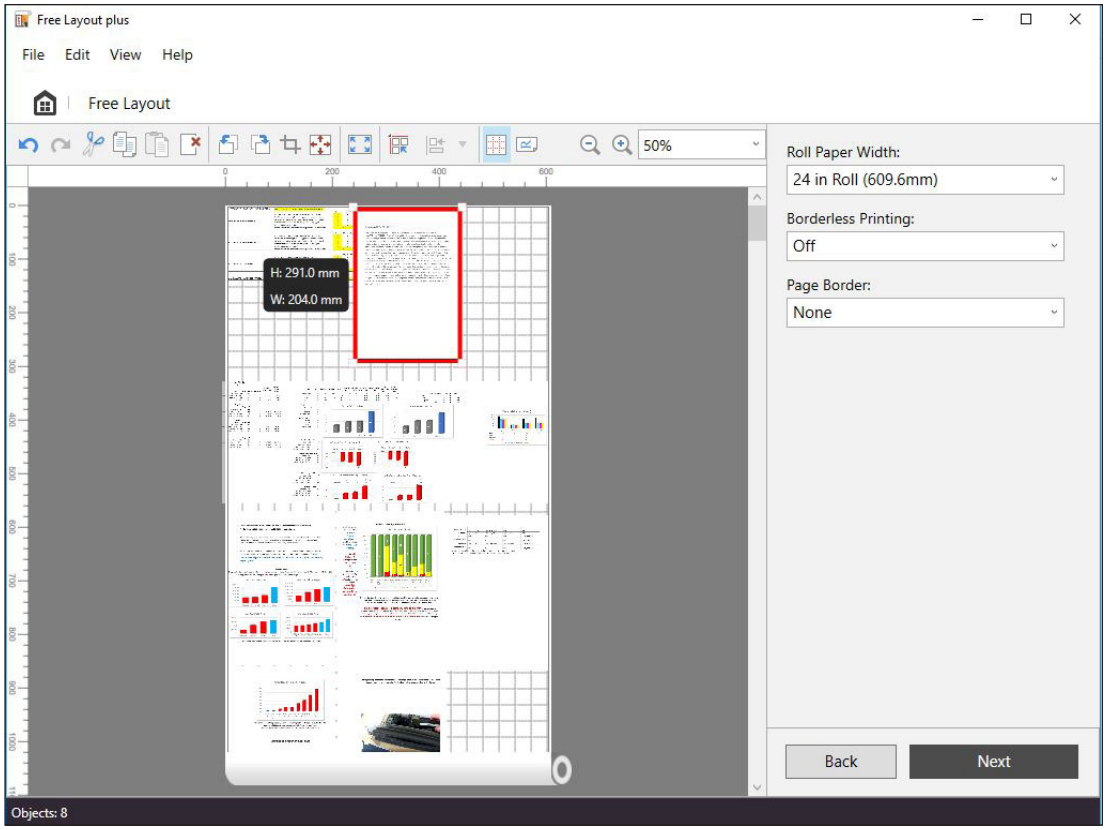
+ Unlike the HP driver, the Canon driver offers page stamping (Date, Time, Name and Page Number).

+ The Canon imagePROGRAF Printer Driver offers a broader range of built-in adjustments for CMY balance, brightness and contrast than the HP T830 MFP'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 Colour 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. There is no equivalent functionality in the HP driver.

+ 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.





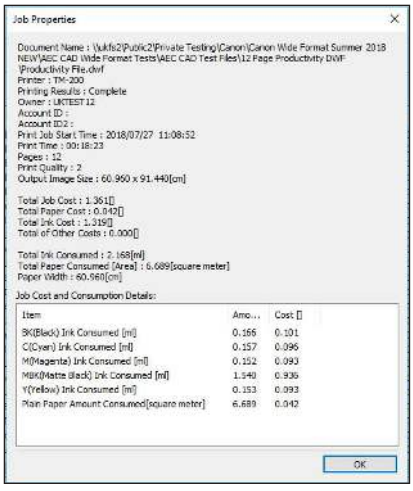
Canon's Free Layout plus enables users to arrange documents from different applications on a page so as to use paper more efficiently. Within the utility, any two pages can be arranged on the layout so that they can be back-to-back when folded over after printing.

+ 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 for the HP T830 MFP.



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

SUPPORTING TEST DATA

Print Productivity

Job Stream Productivity (in Seconds)

Mixed File Types, Same Size, Single Roll

Canon imagePROGRAF TM-300 MFP L36ei		HP DesignJet T830 MFP		Canon % Faster/ Slower (-) than HP
Fast	596.18	Fast	1,161.13	48.7%
Standard	1,018.50	Normal	1,972.10	48.4%
High	1,847.20	Best	9,015.82	79.5%

Buyers Lab's job stream consists of nine files, including PDF, TIFF and DWF files totalling 19 pages, all at Arch D-size, ensuring the files are set to fit to page. This test replicates the type of traffic a typical wide-format device might experience in a real-world, multi-user environment. All of the files are submitted to the controller in a specific order and sent to the printer as a group, 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 MFP L36ei		HP DesignJet T830 MFP	
Fast	387.71	Fast	659.53
Standard	670.31	Normal	1,126.14
High	1,219.05	Best	4,924.11

The 12-page DWF test file was printed using the device driver set to 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 MFP L36ei		HP DesignJet T830 MFP	
Fast	393.89	Fast	645.14
Standard	670.00	Normal	740.20
High	1,230.66	Best	4,811.41

The 12-page DWF test file was printed using the device driver set to the plain paper/monochrome setting, and the HP driver set to plain paper, greyscale, black ink only. 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 MFP L36ei	HP DesignJet T830 MFP	Canon % Faster/Slower (-) than HP
Time Before Printing Commences	36.42	29.10	-25.2%
First Page Out	87.59	102.74	14.7%

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

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP	Canon % Faster/Slower (-) than HP
Time Before Printing Commences	24.89	24.02	-3.6%
First Page Out	69.68	98.02	28.9%

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, greyscale, black ink only. Both devices were loaded with 914-mm rolls.

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

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP	Canon % Faster/ Slower (-) than HP
First Page Out	109.92	159.10	30.9%
Five Pages Out	472.50	769.30	38.6%
Speed per page without processing	90.65	152.55	40.6%

First-page-out times are obtained 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, greyscale, black ink only. Both devices were loaded with 914-mm rolls.

Copy Productivity

A1 (Landscape) First-Copy-Out Productivity: Fast mode (in Seconds)

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Mono	40.3	64.7
Greyscale	39.1	67.5
Colour	48.1	70.0

The single-page A1 (L) document was set to copy at 300-dpi scan resolution with copy settings left in default mode, with the exception of document size, which was set to A1 (Landscape). Print settings were set to Fast mode. Times were recorded from scan initiation to page exiting.

A1 (Landscape) First-Copy-Out Productivity: Standard/Normal mode (in Seconds)

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Mono	57.2	105.0
Greyscale	60.9	109.1
Colour	62.6	120.5

The single-page A1 (L) document was set to copy at 300-dpi scan resolution with document size set to A1 (Landscape). Print settings were set to Standard/Normal mode. Times were recorded from scan initiation to page exiting.

A1 (Landscape) First-Copy-Out Productivity: High/Best mode (in Seconds)

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Mono	103.0	372.9
Greyscale	103.8	370.5
Colour	166.6	392.8

The single-page A1 (L) document was set to copy at 600-dpi scan resolution with copy settings left in default mode, with the exception of document size, which was set to A1 (Landscape). Print settings were set to High/Best quality mode. Times were recorded from scan initiation to page exiting.

A0 First-Copy-Out Productivity: Fast mode (in Seconds)

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Mono	58.1	111.1
Greyscale	60.5	113.3
Colour	102.4	123.6

The single-page A0 document was set to copy at 300-dpi scan resolution with copy settings left in default mode, with the exception of document size, which was set to A0. Print settings were set to Fast mode. Times were recorded from scan initiation to page exiting.

A0 First-Copy-Out Productivity: Standard/Normal mode (in Seconds)

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Mono	101.9	187.6
Greyscale	100.9	191.6
Colour	130.6	219.2

The single-page A0 document was set to copy at 300-dpi scan resolution with copy settings left in default mode, with the exception of document size, which was set to A0. Print settings were set to Standard/Normal mode. Times were recorded from scan initiation to page exiting.

A0 First-Copy-Out Productivity: High/Best mode (in Seconds)

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Mono	196.7	721.6
Greyscale	191.7	749.4
Colour	328.2	770.3

The single-page A0 document was set to copy at 600-dpi scan resolution with copy settings left in default mode, with the exception of document size, which was set to A0. Print settings were set to High/Best quality mode. Times were recorded from scan initiation to page exiting.

Scan Productivity

Batch Scanning Productivity

Batch Throughput Speed A1 (Landscape) Time in seconds to scan 10 pages

	Canon imagePROGRAF TM-300 MFP L36ei		HP DesignJet T830 MFP	
	Scan Time (seconds)	A1 (L) Pages/Hour	Scan Time (seconds)	A1 (L) Pages/Hour
Black 200 dpi	175.66	204.9	NA*	NA*
Black 300 dpi	203.39	177.0	NA*	NA*
Grey 200 dpi	304.82	118.1	NA*	NA*
Grey 300 dpi	174.6	206.2	NA*	NA*
Full Colour 200 dpi	200.4	179.7	NA*	NA*
Full Colour 300 dpi	303.9	118.4	NA*	NA*

* Batch Scanning is not supported by the HP device.

The 10-page A1 (L) document was scanned in batch mode with the Canon device left in default mode, with the exception of document size, which was set to A1 (Landscape) and colour mode and resolution option changes as reflected in the table above. Applications were set to save jobs as PDFs on the test PC with auto-naming enabled. Timing was taken from initiation to final page exiting scanner.

A1 Single-Page Scanning Productivity (in Seconds)

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP	Canon % Faster/Slower (-) than HP
Black 200 dpi	8.4	11.0	23.6%
Black 300 dpi	11.1	13.8	19.6%
Black 600 dpi	19.0	43.3	56.1%
Grey 200 dpi	8.2	11.2	26.8%
Grey 300 dpi	11.1	14.4	22.9%
Grey 600 dpi	17.8	43.7	59.3%
Full Colour 200 dpi	18.9	43.0	56.0%
Full Colour 300 dpi	26.7	49.3	45.8%
Full Colour 600 dpi	49.8	107.1	53.5%

The single-page A1 document was scanned with document size set to A1 (Landscape) and colour mode and resolution option changes as reflected in the table above. Applications were set to save jobs as PDFs on the test PC with auto-naming enabled. Each test was conducted twice and an average reading reported. Timing was taken from initiation to when the page exited the scanner.

A1 Single Page Scan to Desktop Productivity (in Seconds)

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP	Canon % Faster/Slower (-) than HP
Black 200 dpi	10.1	35.9	71.9%
Black 300 dpi	11.6	42.3	72.6%
Black 600 dpi	18.8	100.9	81.4%
Grey 200 dpi	7.7	31.3	75.4%
Grey 300 dpi	11.0	33.9	67.6%
Grey 600 dpi	18.8	67.9	72.3%
Full Colour 200 dpi	18.5	24.9	25.7%
Full Colour 300 dpi	25.9	25.7	-0.8%
Full Colour 600 dpi	50.2	66.9	25.0%

The single-page A1 document was scanned with document size set to A1 (Landscape) and colour mode and resolution option changes as reflected in the table above. Applications were set to save jobs as PDFs on the test PC with auto-naming enabled. Each test was conducted twice and an average reading reported. Timing taken from initiation to the page being accessible at the desktop.

A0 Single-Page Scanning Productivity (in Seconds)

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP	Canon % Faster/Slower (-) than HP
Black 200 dpi	13.6	16.3	16.6%
Black 300 dpi	18.6	21.2	12.3%
Black 600 dpi	34.2	73.0	53.2%
Grey 200 dpi	13.5	16.5	18.2%
Grey 300 dpi	18.6	21.5	13.5%
Grey 600 dpi	34.2	72.9	53.1%
Full Colour 200 dpi	34.2	41.0	16.6%
Full Colour 300 dpi	50.1	41.0	-22.2%
Full Colour 600 dpi	96.3	114.3	15.7%

The single-page A0 document was scanned with document size set to A0 and colour mode and resolution option changes as reflected in the table above. Applications were set to save jobs as PDFs on the test PC with auto-naming enabled. Each test was conducted twice and an average reading reported. Timing was taken from initiation to the page exiting the scanner.

A0 Single Page Scan to Desktop Productivity (in Seconds)

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP	Canon % Faster/Slower (-) than HP
Black 200 dpi	12.6	66.1	80.9%
Black 300 dpi	18.9	76.3	75.2%
Black 600 dpi	33.7	193.3	82.6%
Grey 200 dpi	12.9	54.8	76.5%
Grey 300 dpi	17.9	63.8	71.9%
Grey 600 dpi	33.7	151.9	77.8%
Full Colour 200 dpi	34.8	79.7	56.3%
Full Colour 300 dpi	49.8	85.1	41.5%
Full Colour 600 dpi	96.8	194.9	50.3%

The single-page A0 document was scanned with document size set to A0 and colour mode and resolution option changes as reflected in the table above. Applications were set to save jobs as PDFs on the test PC with auto-naming enabled. Each test was conducted twice and an average reading reported. Timing was taken from initiation to the page being accessible at the desktop.

Colour Print Quality

Colour Optical Density Evaluation

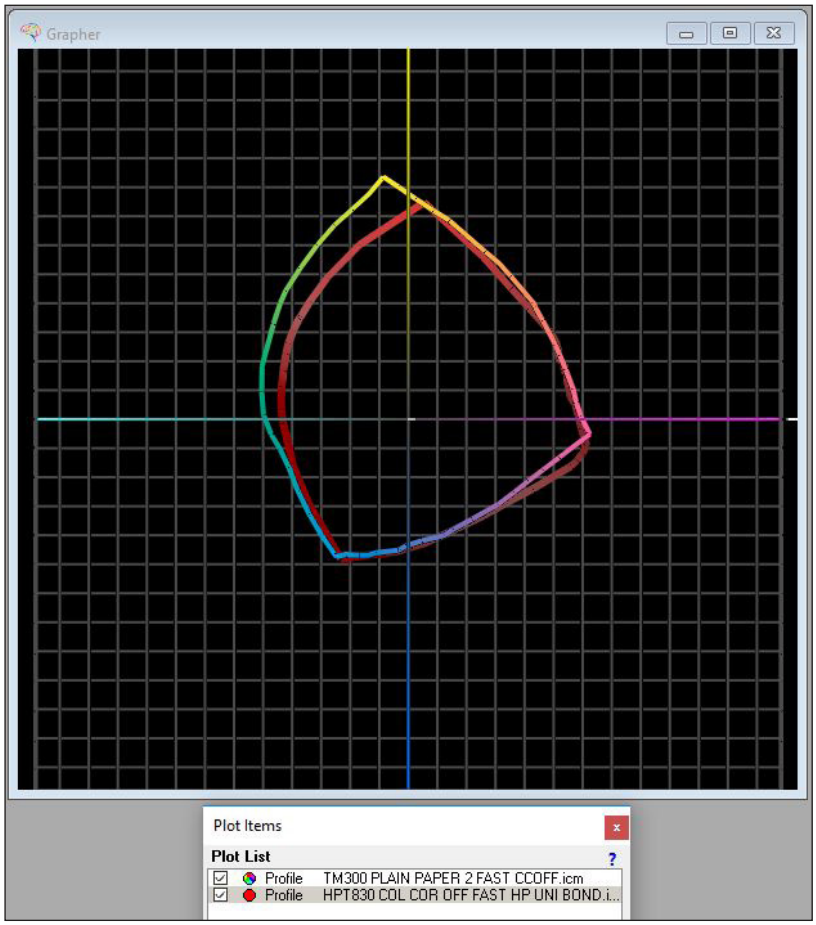
Canon imagePROGRAF TM-300 MFP L36ei						
	Fast		Standard		High	
	50%	100%	50%	100%	50%	100%
Cyan	0.43	1.00	0.50	1.26	0.53	1.33
Magenta	0.35	0.84	0.42	1.16	0.43	1.22
Yellow	0.37	0.81	0.42	1.02	0.43	1.05
Black	0.44	1.50	0.51	1.46	0.55	1.46

HP DesignJet T830 MFP						
	Fast		Normal		Best	
	50%	100%	50%	100%	50%	100%
Cyan	0.69	0.96	0.73	1.06	0.79	1.13
Magenta	0.67	0.96	0.72	1.07	0.79	1.16
Yellow	0.54	0.76	0.57	0.85	0.65	0.93
Black	0.64	1.43	0.69	1.45	0.66	1.39

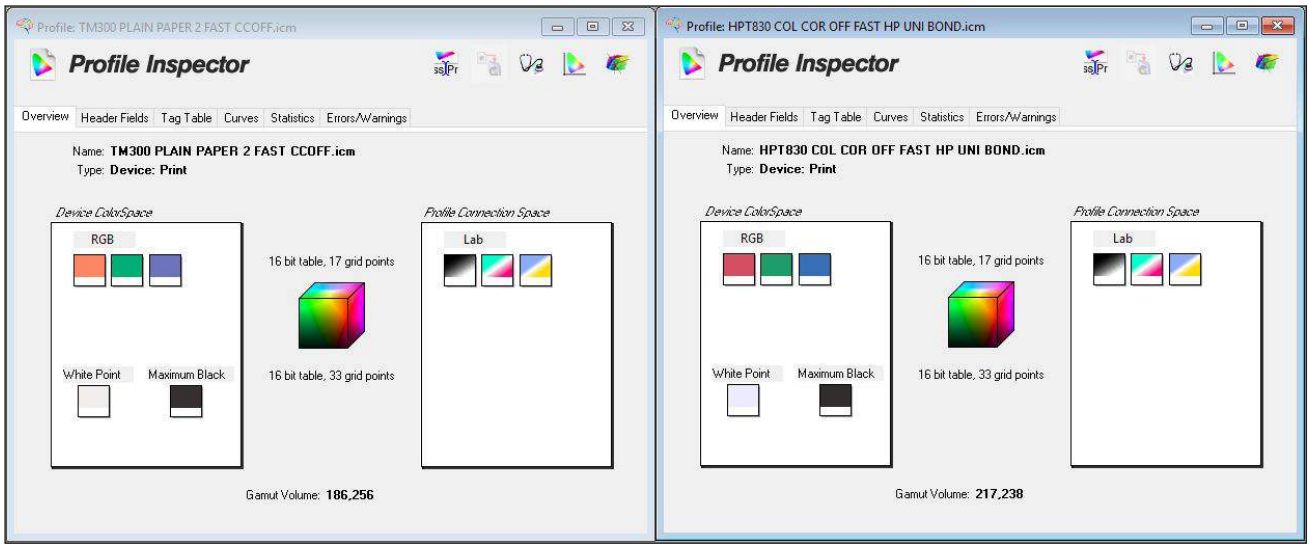
Note: Colour density readings were assessed by printing a Buyers Lab proprietary PDF test target file on Canon Standard Plain Paper 2 and HP Universal Bond in default colour settings at all quality settings available, and measuring the density of 100% dot fill and 50% dot fill using an XRite exact^{Xp} densitometer.

Colour Gamut Comparisons

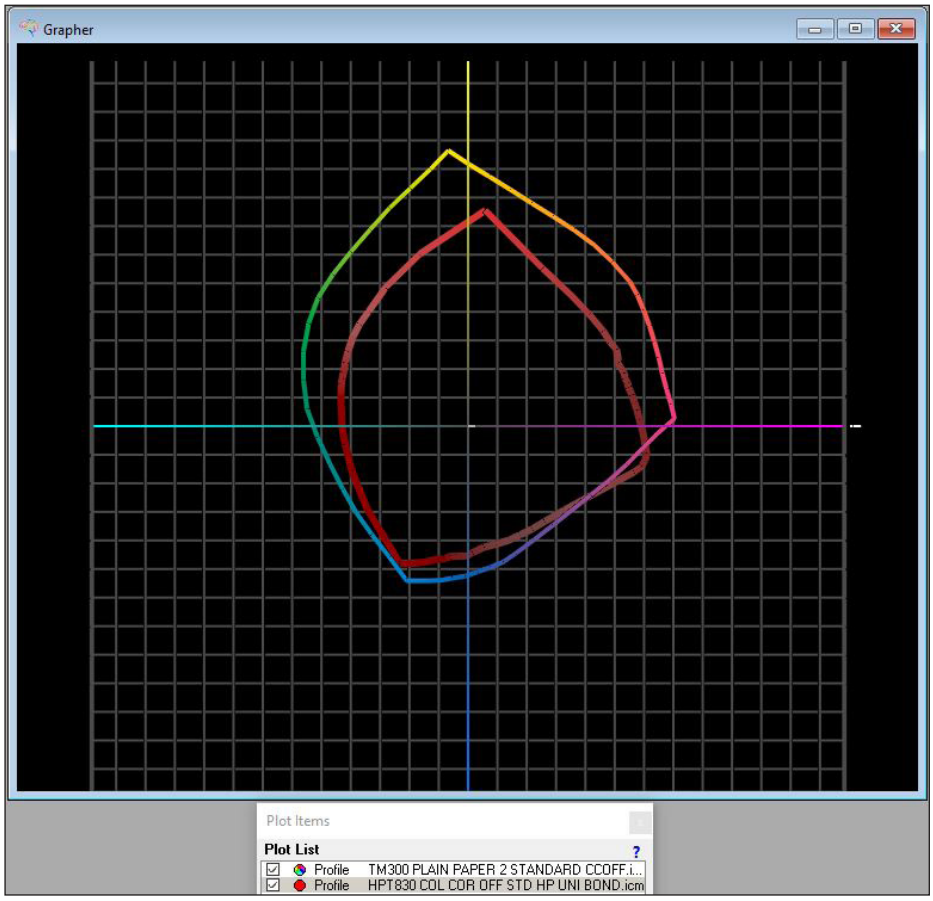
Media Type/Settings	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP	Canon % larger/smaller +/- than HP
Plain Paper Fast	186,256	217,238	-14.3
Plain Paper Standard/Normal	320,925	218,403	46.9
Plain Paper High/Best	326,414	231,922	40.7
Photo Paper High/Best	649,451	444,682	46.0



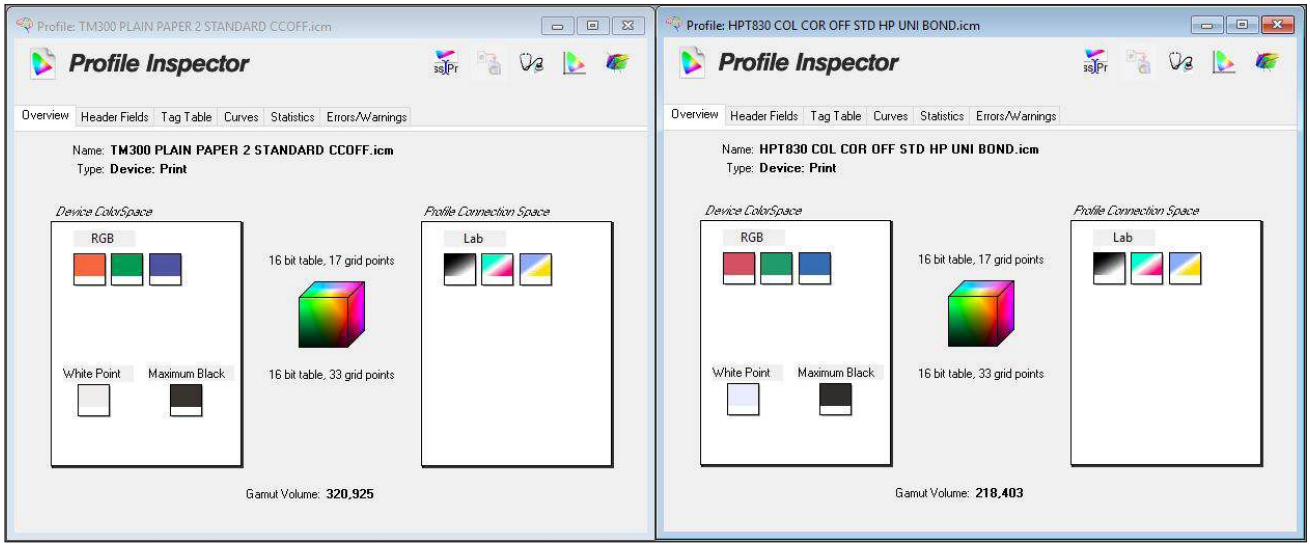
Canon imagePROGRAF TM-300 MFP L36ei colour gamut on plain paper in Fast mode (shown chromatically) versus HP DesignJet T830 MFP colour gamut (shown in red) on plain paper in Fast mode.



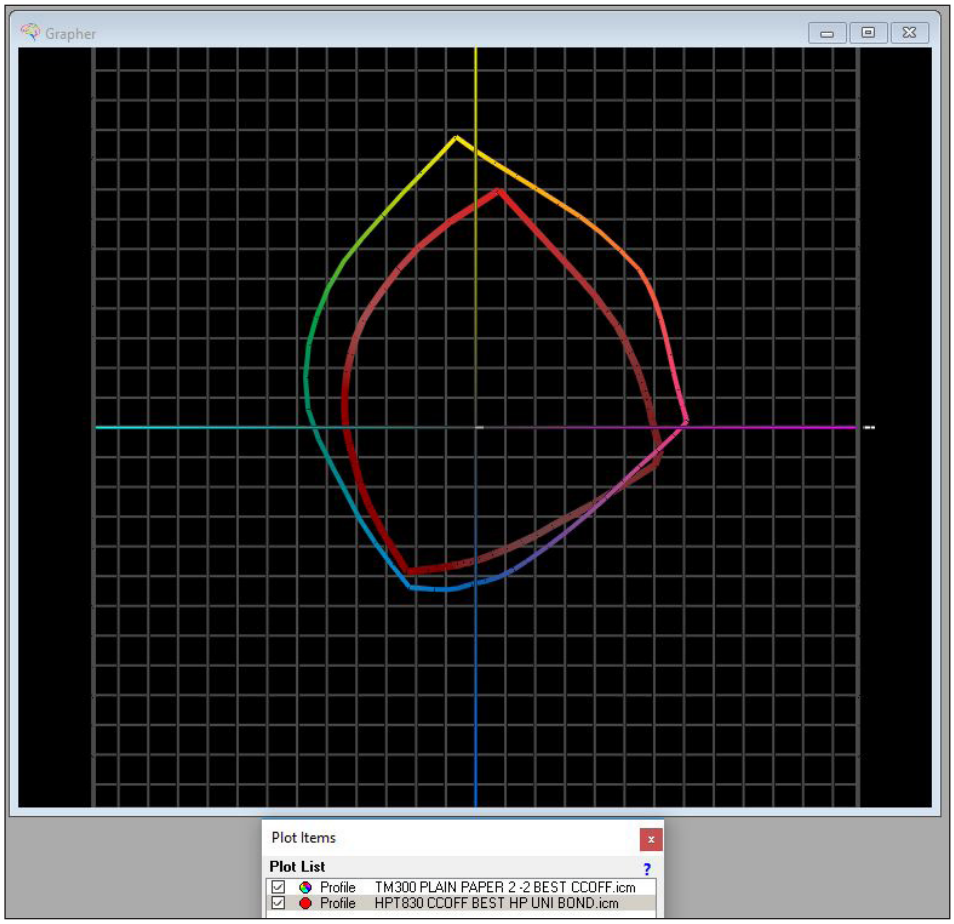
Colour gamut profile for Canon imagePROGRAF TM-300 MFP L36ei (left) and HP DesignJet T830 MFP (right) on plain paper in Fast mode.



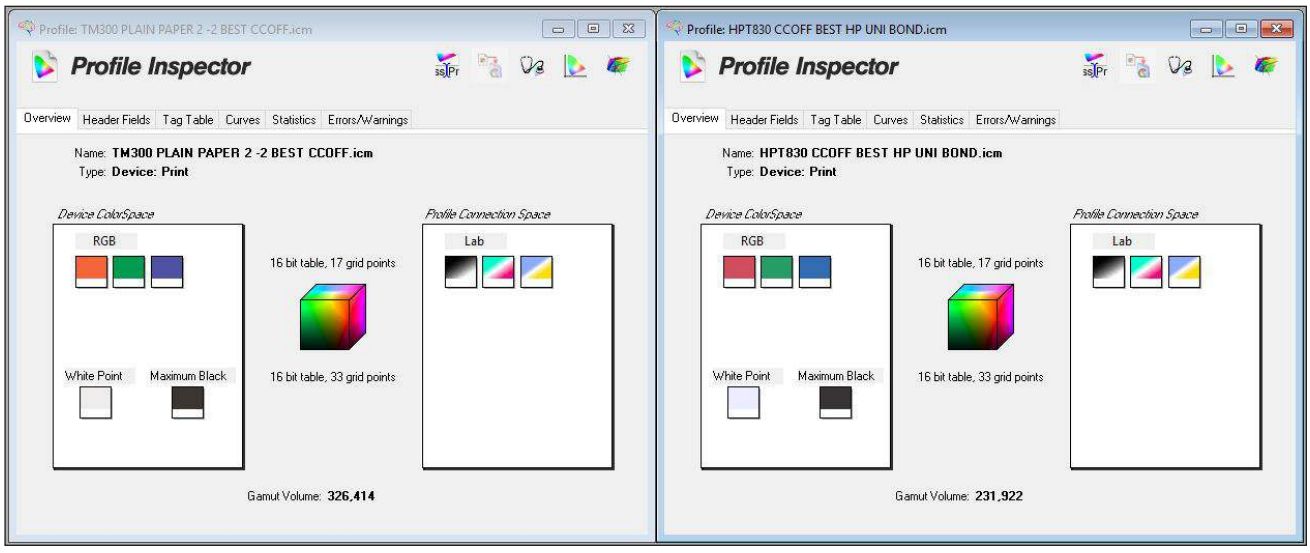
Canon imagePROGRAF TM-300 MFP L36ei colour gamut on plain paper in Standard mode (shown chromatically) versus HP DesignJet T830 MFP colour gamut (shown in red) on plain paper in Normal mode.



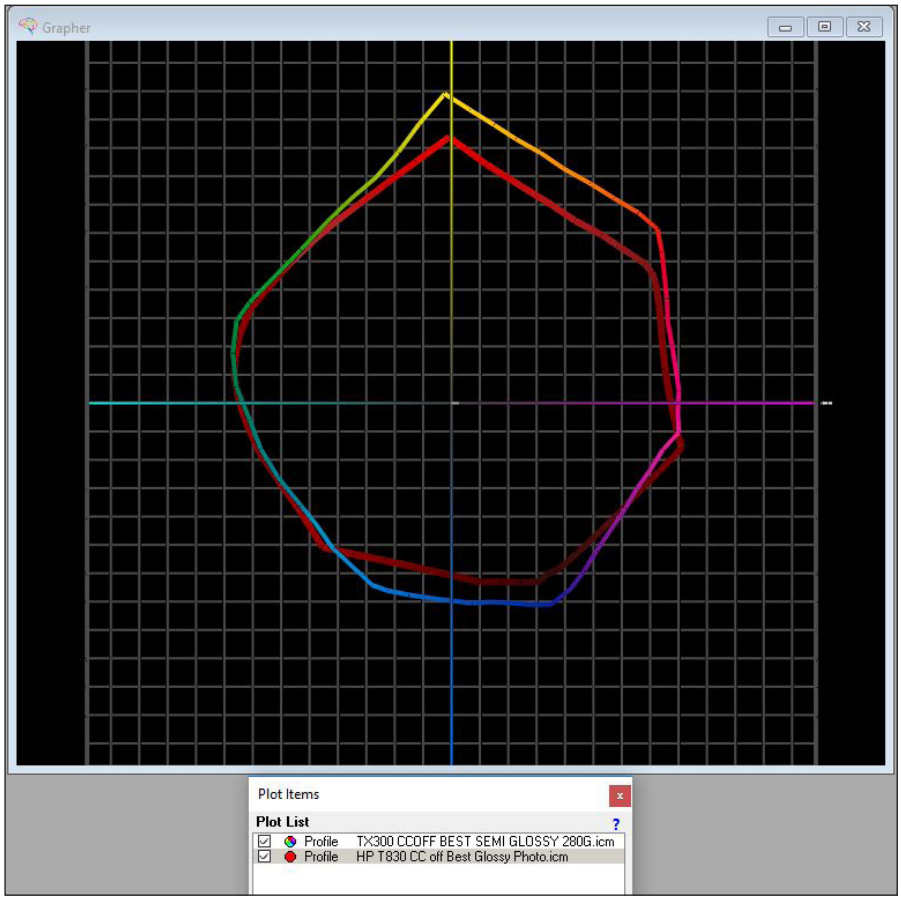
Colour gamut profile for Canon imagePROGRAF TM-300 MFP L36ei (left) and HP DesignJet T830 MFP (right) on plain paper in Standard/Normal mode.



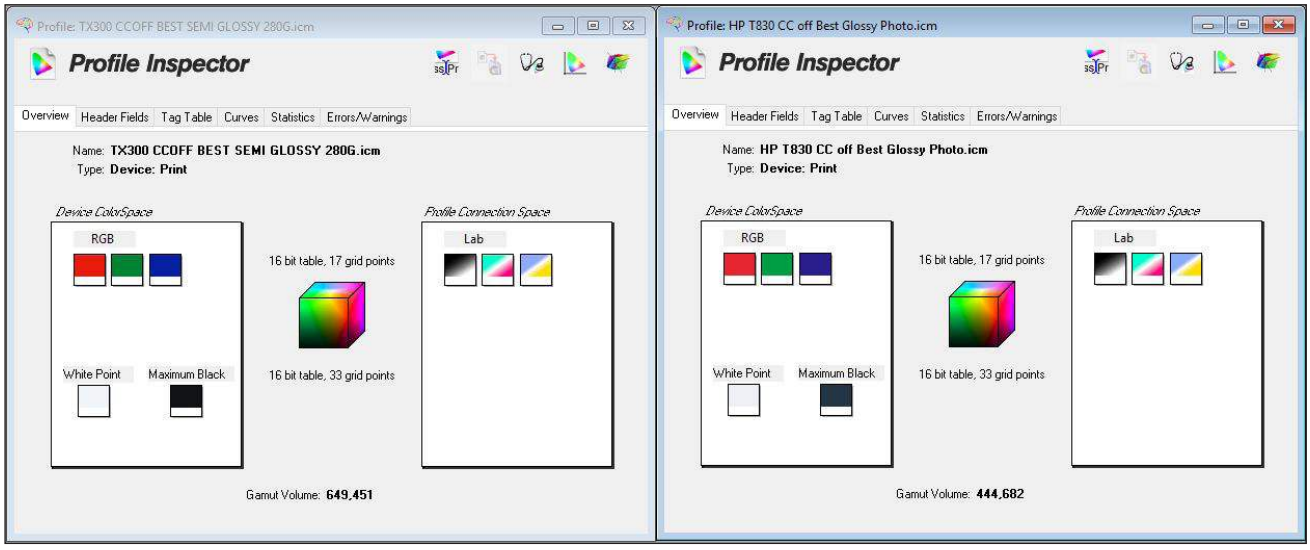
Canon imagePROGRAF TM-300 MFP L36ei colour gamut on plain paper in High quality mode (shown chromatically) versus HP DesignJet T830 MFP colour gamut (shown in red) on plain paper in Best quality mode.



Colour gamut profile for Canon imagePROGRAF TM-300 MFP L36ei (left) and HP DesignJet T830 MFP (right) on plain paper in High/Best quality mode.



Canon imagePROGRAF TM-300 MFP L36ei colour gamut on photo quality paper in High quality mode (shown chromatically) versus HP DesignJet T830 MFP colour gamut (shown in red) on photo quality paper in Best quality mode.



Colour gamut profile for Canon imagePROGRAF TM-300 MFP L36ei (left) and HP DesignJet T830 MFP (right) on photo quality paper in High/Best quality mode.

Black Print Quality

Black Optical Density Evaluation

	Canon imagePROGRAF TM-300 MFP L36ei			HP DesignJet T830 MFP		
	Density Block					
	Fast	Standard	High	Fast	Normal	Best
1	1.52	1.49	1.44	1.50	1.53	1.42
2	1.52	1.48	1.41	1.49	1.51	1.42
3	1.52	1.48	1.45	1.50	1.52	1.43
4	1.51	1.51	1.42	1.48	1.51	1.47

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 exact^{Xp} densitometer.

Copy Quality

Solid Density

	Original Target	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Cyan	1.57	0.74	1.02
Magenta	1.54	1.02	1.20
Yellow	1.12	0.94	0.92
Black	1.84	1.26	1.38

Note: Solid density measurements in normal/colour copy mode based on copying a Katun test original containing blocks of all solid colours (based on an average of two readings for each colour) printed on plain paper. Density was measured using an XRite exact^{Xp} densitometer.

Colour Fidelity

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
McDonalds	2.2	4.5
Coca Cola Red	11.4	9.5
FedEx Blue	12.2	8.1
FedEx Green	8.0	5.6
Microsoft	4.2	3.2
Sun Microsystems	5.8	6.0
IKEA Blue	11.5	12.8
IKEA Yellow	4.4	4.1
Time Fortune 500	11.7	8.7
Quark	5.5	4.2
Versonic	10.2	12.4
T-Mobile Red	7.7	4.9
AVERAGE	**7.9**	**7.0**

Buyers Lab's PANTONE test chart was used for copy image quality testing, conducted in High/Best quality settings using 24-bit colour in the case of both models. Delta E measurements recorded the accuracy with which 12 PANTONE colours were reproduced.

Dimensional Accuracy

	Canon imagePROGRAF TM-300 MFP L36ei	HP DesignJet T830 MFP
Variation in line length in mm (scanned in landscape)	0.0	0.0
Variation in line length in mm (scanned in portrait)	0.0	0.1

Dimensional Accuracy was determined using the Applied Images QA-1 Test Chart (150 mm line length) and the Adobe Photoshop Measuring Tool. Charts were scanned in both Portrait and Landscape mode using the highest resolution available (600 dpi) with both devices set to B&W mode, and saved as PDF files.

Device Feature Set

	Canon imagePROGRAF TM-300 MFP L36ei	Advantage		HP DesignJet T830 MFP
User Interface	3" Touchscreen		✔	4.3" Touchscreen (extended front panel via a tablet)
SCANNER FEATURES				
Maximum optical resolution (dpi)	600			600
Scanning resolution (dpi)	200, 300, 600			200, 300, 600
Rated Colour Scanning Speed	1"/sec (200 dpi Draft); 0.5"/sec (300 dpi Standard); 0.33"/sec (600 dpi Best)		✔	Up to 3.81 cm (1.5")/sec
Rated Black Scanning Speed	3"/sec (200 dpi Draft); 1.5"/sec (300 dpi Standard); 1"/sec (600 dpi Best)		✔	Up to 11.43 cm (4.5")/sec
Scanning Mode	24-bit RGB Colour, 8-bit Grey-scale, 1-bit Black & White			24-bit RGB Colour, 8-bit Grey-scale, 1-bit Black & White
Max. Document Size	914 mm x 2,768 mm			914 mm x 2,770 mm
Max. Scanning Width	914 mm (36")			914 mm (3")
Max. Thickness of Paper (mm)	0.5		✔	0.8
Paper Path	Front entry, rear exit			Front entry, rear exit
File Save Formats	TIFF, JPEG, PDF, PDF/A, and M-PDF	✔		TIFF, JPEG, and PDF
File Saving Area	Network folder, USB, Cloud (via Canon Direct Print & Share)	✔		Network folder, USB memory, Email
Preset Document Types	None		✔	Line, Mixed, Image
Ability to Save Custom Presets	No		✔	Yes (users can save current settings as a default)
Background Removal	No		✔	Yes
Preview Scaling	No			No
Deskew	No		✔	Yes (Auto)
Preview Editing	No			No
Scan Speed Adjustment	No			No
Batch Scanning	Yes	✔		No
Scan to Email	No		✔	Yes
Scan to Cloud	Yes (via imagePROGRAF Direct Print & Share			Yes (only via HP Smart app)
Auto Paper Size Detection	Yes			Yes
Rename and Save	No		✔	Yes
PRINTER FEATURES				
Max. print resolution	2400 x 1200 dpi			2400 x 1200 dpi
Number of inks	5	✔		4
	Canon imagePROGRAF TM-300 MFP L36ei	Advantage		HP DesignJet T830 MFP

Ink tanks replaceable during operation	Yes	✔		No
Ink-drop size	5 picoliter	✔		6 picoliter (all colours)
Starter ink cartridge capacity	490 ml total (130 ml MBk; 90 ml CMYK)	✔		189 ml
Ink cartridge capacity	130 ml and 300 ml (all colours)			MBK: 300/69 ml; CMY: 300/130/40 ml
Number of nozzles	MBk: 5,120 nozzles; other colours: 2,560 nozzles each; 15,360 nozzles in total	✔		9,632 nozzles 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)			Yes (via Oversize option)
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
Maximum media thickness	0.8 mm	✔		0.3 mm
Maximum media width	914 mm (36 inches)			914 mm (36 inches)
Media loading	Top			Top
Optional media handling	Roll holder set (supports 2” and 3” media cores)	✔		36-in Spindle
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			1000Base-T, Wi-Fi, USB 2.0
PDL	SG Raster (Swift Graphic Raster), HPGL/2, HP RTL, JPEG (Ver. JFIF 1.02)			HP-GL/2, HP RTL, HP PCL 3, GUI, JPEG, TIFF, CAL G4, URF
Net weight (unpacked)	59 kg	✔		62.5 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) or less; Standby: 16 dB (A) or less
Acoustic power	Operation: 6.0 Bels			Operation: 6.5 Bels

Print Driver Feature Set

	Canon imagePROGRAF TM-300 MFP L36ei	Advantage		HP DesignJet T830 MFP
Speed settings	5 (Fast 300, Fast 600, Standard 600, High 600 and 1200)	✔		3 (Fast, Normal, Best)
Economy mode	Yes (in Fast mode)			Yes
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
Media profiles	50 + 10 user customizable special options	✔		26
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
Page stamping	Yes (Date, Time, Name, Page Number)	✔		No
Image rotation	Yes, 90 degrees and 180 degrees			Yes, auto and 90 degrees
Option to preview before print	Yes			Yes
CMY balance adjustment	Yes			Yes
Brightness adjustment	Yes	✔		No
Contrast adjustment	No			No
Saturation adjustment	Yes	✔		No
Advanced colour management options	Yes			Yes
Enlargement Copy Mode	Yes	✔		No
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	Yes	✔		No
Integration with MFP	Yes			Yes

The Canon imagePROGRAF TM-300 MFP L36ei comes bundled with PosterArtist Lite.

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 an XRite exact^{Xp} densitometer.

About Keypoint Intelligence - Buyers Lab

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

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

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