BLI Comparative Lab Test Report

APRIL 2016

Canon imagePROGRAF iPF785 MFP vs. HP DesignJet T2530 MFP

Canon imagePROGRAF iPF785 MFP

HP DesignJet T2530 MFP

Advantage ✔	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP
Colour Print Quality	✔	
Colour Copy Quality	✔	
Scan Capture Quality	✔	
Colour Print Productivity	✔	
Colour Copy Productivity	✔	
Colour Scan Productivity	✔	
Black Print Productivity	✔	
Black Copy Productivity	✔	
Black Scan Productivity	✔	
Direct Print Submission Functionality	=	=
Banner Printing / Copying	=	=
Walk-up Ease of Use	✔	
Device Feature Set	✔	
Print Driver Feature Set	✔	

TEST OBJECTIVE

Buyers Laboratory LLC (BLI) was commissioned by Canon Europe to conduct confidential document imaging device performance testing on the Canon imagePROGRAF iPF785 MFP and the HP DesignJet T2530 MFP, and produce a report comparing the relative strengths and weaknesses of the two products in terms of image quality, productivity, direct print submission functionality, banner printing, walk-up ease of use, device feature set and printer driver feature set. All testing was performed in BLI's test facility in Wokingham, UK using the latest version of firmware at the time of test.

Executive Summary

The Canon imagePROGRAF iPF785 MFP gave an excellent overall performance in BLI's testing, outperforming the HP DesignJet T2530 MFP in nearly all categories tested. Specifically, the Canon model delivered far greater productivity than the HP DesignJet T2530 MFP in most print, copy and scan modes. Remarkably, although speeds were comparable in Fast mode, the performance advantage for the Canon model over the HP model increased along with the quality settings, with print and scan speeds that were often twice as fast, and copy speeds that were significantly faster in High/Best quality mode. The Canon model also offers a stronger device feature set and more feature-rich driver functionality. Thanks in part to its large 22" touchscreen display, the Canon model also proved to be easier to use and maintain, with a sub-ink tank replacement system that ensures uninterrupted printing.

As would be expected of models aimed at the GIS/CAD/AEC graphics market, both models delivered excellent AEC graphics. The Canon model delivered better depth of field in GIS graphics on plain paper in all quality modes, with a far more realistic three-dimensional rendering of topographical features. While the HP unit produced copy output with higher optical density for all colours and more accurate colour fidelity when copying BLI's Pantone corporate logo test chart, the Canon model produced superior colour image quality overall in both copy and print modes. The HP untit delivered superior, neutral greyscales in colour mode due to its true grey ink, whereas depending on the driver setting, the Canon greyscales exhibited a slight cyan or magenta hue. However, the Canon model's overall advantage was very clear; it delivered a larger colour gamut than the HP model when printing on glossy photo-quality paper, as well as in all quality modes on plain paper, and had more natural-looking skin tones, which were yellowish in output produced by the HP unit when printing on plain paper. The Canon model also enjoys another important image quality advantage, in that its driver's optional unidirectional printing feature helps the Canon IPF785 to avoid banding, even in Fast mode, whereas banding was evident across the full width of the image when using the HP device's bidirectional printhead in every mode except Best.

In terms of operational ease of use, the Canon unit has some significant advantages over the HP device, whose lack of batch scanning capability and inability to support scanning to PDF file formats (only available with its more expensive PostScript version) are limitations. The Canon SmartWorks MFP interface entails a simplified, time-saving Scan/Adjust/Print workflow. In contrast, the HP model entails a workflow of Scan/Print/Check Print/Change Settings and Re-scan/Reprint/Repeat as necessary, which is clearly more time-consuming in real-world workflows.

Advantages for the HP model include its flexible dual-roll design, superior 50-sheet stacker, its ability to print from smartphones and tablet devices, a more compact footprint and slightly lower noise emissions. It has lower energy consumption during operation, but the Canon model has lower power consumption in standby mode, the mode these devices are likely to be in more of the time. Both models allow files to be retrieved from cloud storage for printing.

Colour Image Quality

Advantage ✔	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP
Text	=	
Fine Lines	✔	
Halftone Range	=	=
Halftone Fill		✔
Solid Density	=	=
AEC Graphics	=	=
GIS Graphics	✔	
Business Graphics	✔	
Photographic Images	✔	
Colour Gamut (plain paper, default settings)	✔	
Colour Gamut (matte coated paper, High/Best quality settings)	✔	

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

\+ In the highest quality mode, the Canon model delivered higher optical cyan, magenta, yellow and composite black densities on plain paper than did the HP unit.

\+ The Canon model delivered a very good halftone range in colour mode, with distinct transitions between all levels even in Fast mode, whereas the HP unit delivers cyan halftones that are distinctly greenish, even in Normal and Best modes.

— Greyscales were better on the HP device, with neutral greys aided by the HP's grey ink. In contrast, greyscales on the Canon unit have a slight cyan or magenta hue due to their composite make-up.

○ When evaluating text in Fast and Standard/Normal modes there were only slight differences in the output of the two models, with fonts that were legible down to the 4-pt. level with no breakup, but some shadowing in output produced by the Canon model and some indistinctness in the output produced by the HP unit.

○ In High/Best mode, fonts were legible down to the 3-pt. level with both models, with crisp characters.

\+ Fine lines remained distinct down to the 0.1-pt. level in all modes on both devices, with no evidence of stair-stepping in diagonal lines. Even in Fast mode, the Canon unit delivered highly distinct vertical lines, whereas the HP in Fast mode produced vertical lines that displayed some fuzziness.

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

○ Both devices were rated very good in all modes for halftone fills.

○ When evaluating Architectural, Engineering and Construction (AEC) graphics in Normal/Standard and High/Best modes, both models delivered detailed and distinct fine lines and a pin sharp level of accuracy.

+ When outputting Geographic Information Systems (GIS) graphics in High/Best mode on plain paper, the Canon unit delivered a finer level of detail and much greater depth of field than the HP model, giving a more realistic three-dimensional appearance to topographical features.

+ The colour business graphics produced by the Canon unit exhibited more vibrant colours and finer details than the HP device.

+ The Canon model delivered superior detailing in dark contrast areas of photographic images printed on plain paper using default settings, with smoother transitions from light to darker areas and more natural-looking skin tones. In contrast, skin tones produced by the HP device were distinctly yellowish.

+ When printing on plain paper, the Canon iPF785 MFP delivered a larger colour gamut in all four quality modes, with a CIE volume of 118,881 in Fast Economy mode compared with a mere 16,081 for the HP unit (639.3% higher than HP); in fast mode, the Canon device produced a CIE volume that measured 23.6% higher (203,359 vs. 164,572); in Standard mode, the Canon produced a CIE volume that measured 64.5% higher (273,359 vs. 166,203); and in High Quality mode, once again the Canon device produced a 47.1% higher CIE volume than did the HP model (272,598 vs. 185,277).

+ Printing on each vendor's own brand of glossy photo quality paper, the Canon model again delivered a larger colour gamut, with a CIE volume of 488,074, which is 11.5% higher than HP's CIE volume of 437,597.

+ An important factor influencing overall image quality is the Canon model's unidirectional printing option, even in Fast mode. The HP model only offers bidirectional printing, so that the printhead travels in both directions over the image, which created a noticeable pattern of banding across the whole width of output in all modes except Best quality during the evaluation. The Canon model is free from any banding, even in Fast mode, when unidirectional printing is selected.

+ BLI's overall assessment of colour and black image quality is that the Canon model was clearly superior, with a larger colour gamut in all modes and on all media types, a finer level of detail in photographs and colour business graphics, and none of the fuzziness in text and line art which were observed under magnification on output from the HP device. While both models delivered detailed and distinct fine lines in AEC drawings, the Canon device delivered superior GIS graphics in all modes. While the HP device delivered comparable density in High/Best mode, the Canon device had the advantage in density for cyan, magenta, yellow and black in all other modes.

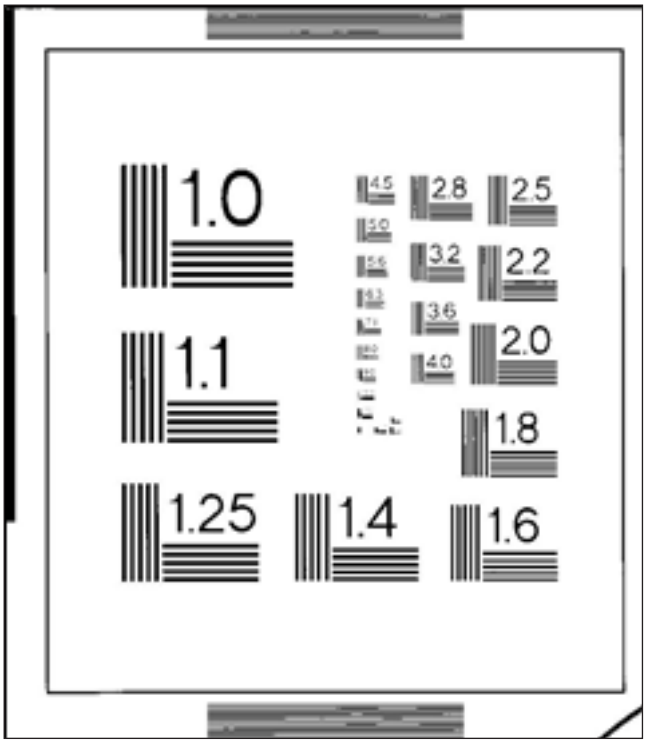
Copy Quality

Advantage ✔	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP
Text	✔	
Fine Lines	✔	
Solid density		✔
Halftone reproduction	✔	
Colour Fidelity		✔

+ When evaluating text copy quality using the QA-1 test chart, the Canon model produced fonts that were legible down to the 6-pt. size (the smallest level on this chart) in all modes, with crisp characters, no breakup and no sign of haloing. In copied output produced by the HP device, fonts were also legible only down to the 6-pt. level

in Fast mode, but with weaker characters and some distortion. In Normal and High modes the HP unit produced fonts that were legible at the 6-pt. level, but were less well defined than those that were produced by the Canon unit, which were rated as excellent.

+ 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 HP model in Fast mode remained distinct only up to 2.2 cpm (cycles per millimeter) level, compared with up to 2.5 cpm with the Canon unit. In Normal/Standard mode, they were distinct up to the 2.5 level in the output of the HP model and 2.8 in the output of the Canon device. In Best/High quality mode, both devices produced lines that were distinct up to the 3.2 level.



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

— The HP T2530 MFP produced higher solid densities for all colours in copy mode than did the Canon iPF785 MFP.

+ In copy mode at all driver quality settings, halftones produced by the Canon unit were well graduated and neutral in appearance, whereas greyscale output from the HP device was contaminated by some cyan and magenta, even in High quality mode.

○ Colour halftones were rated very good for both models, with clear transitions between all levels.

+ However, the solids on the QA-1 test chart reproduced with the Canon unit were dark and consistent in all quality modes, whereas the solids produced by the HP T2530 MFP had a 'mottled' appearance in Fast and Normal modes, and only matched the Canon output in Best mode.

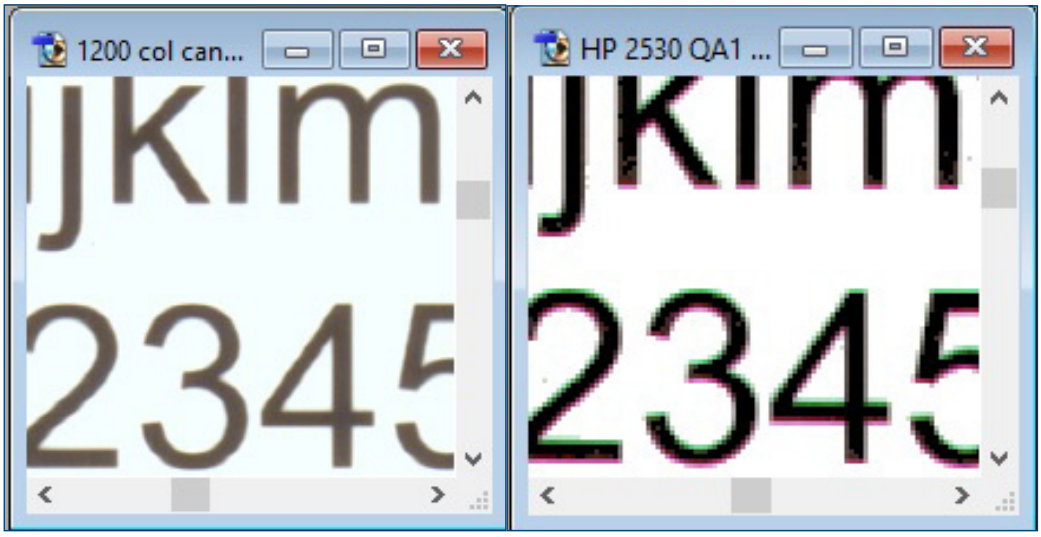
— In BLI's colour fidelity testing with 12 Pantone shades for corporate logos in High/Best mode, the HP device had a lower average Delta E shift of 12.2 compared with 16.8 for the Canon unit.

Scan Capture Quality

Advantage ✔	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP
Resolution and Sharpness at Optical Resolution	✔	
Text	✔	
Fine Lines	✔	
Geometric Accuracy	=	=
Halftone Capture Quality	✔	

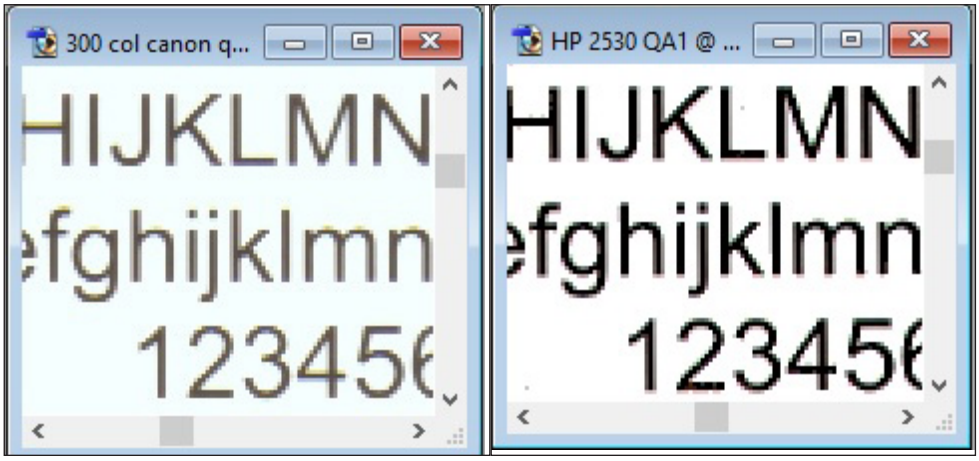
+ When scanning text and fine lines using the QA-1 test chart, the Canon iPF785 MFP clearly benefitted from using its maximum 1200 dpi resolution, whereas the HP DesignJet T2530 MFP has a maximum resolution of only 600 dpi. As PDF file formats are only supported by HP's more expensive PostScript model, the file was saved as a TIFF file.

+ As illustrated below (under magnification) the Canon model delivered crisper and more distinct fonts than those produced by the HP unit, with none of the ghosting that was apparent in fonts with the HP model.



Canon (left) and HP (right) fonts at maximum resolution. Although the HP fonts are darker they are less well defined. All images were scanned using the Colour Line setting on both models.

○ Text produced by both models (using Line preset) at 300 dpi was legible down to the 6-pt. level, with very little difference between them.



Canon (left) and HP (right) fonts at 300-dpi resolution. Again, fonts are much darker with the HP model but stair-stepping is evident in diagonal lines in characters like K, M and N with both models.

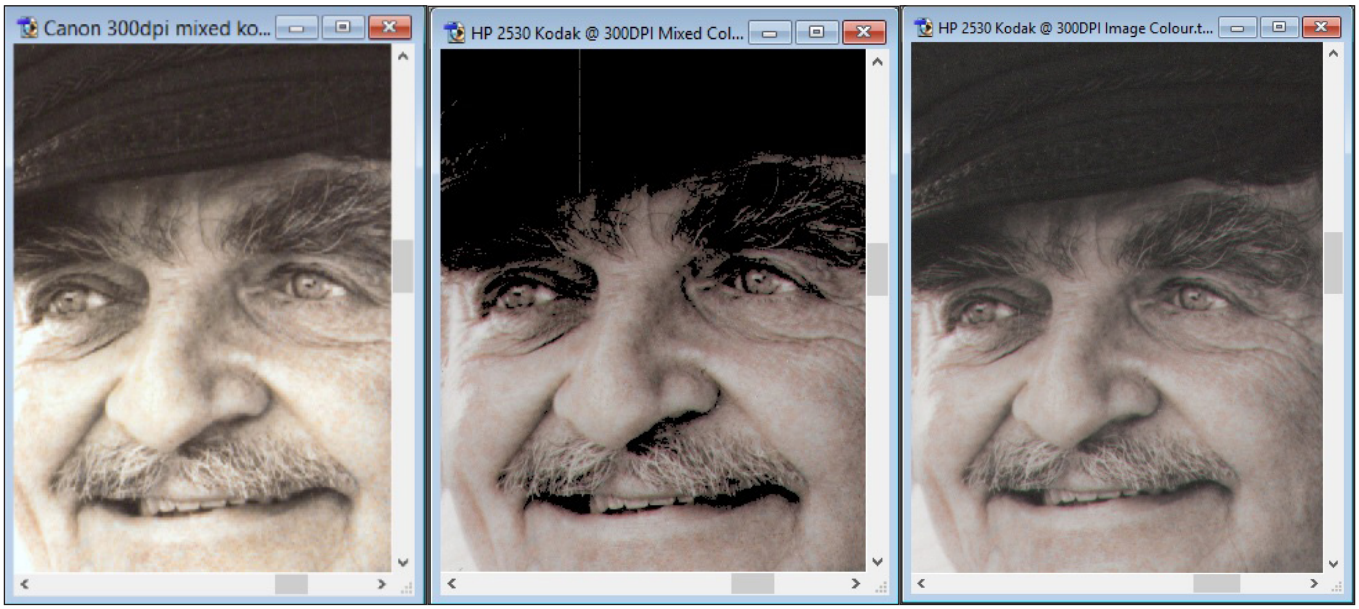
+ In the MTF Line Pairs Test, where the emphasis is on evaluating whether there is a clear distinction between lines, rather than the rendering of each line, fine lines at 300 dpi were distinct up to the 4.5 level in output produced by the Canon unit, but only up to the 3.2 level in output produced by the HP model.

Canon (left) and HP (right) fine line pairs at maximum resolution. The Canon lines are much more distinct.

Canon (left) and HP (right) fine line pairs at 300-dpi resolution.

○ Using the Adobe Photoshop Measuring Tool to evaluate geometric accuracy (defined as the variation between the actual document measurement and the length of the scanned image), both the Canon and HP models delivered highly impressive accuracy, with a variation of just 0.1 mm in landscape and 0.1 mm in portrait for Canon, compared with the HP model's 0.1 mm in landscape and 0.0 mm in portrait (see Supporting Test Data).

+ When scanning the mixed text/image BLI test chart in full colour at 300 dpi, BLI analysts found that the Canon MFP when left in default Mixed mode delivered far more subtle gradations of halftone shades, especially in dark contrast areas, whereas areas of the darker halftones lost a lot of integrity when scanned by the HP DesignJet T2530 MFP. The quality of HP's halftone capture improved markedly when the Image mode was selected.



Halftone capture in full colour at 300 dpi with the Canon (left) and HP models (centre and right, in Mixed and Image modes respectively).

+ The Canon model includes an Index Colour Function, allowing operators to capture documents with some colour content (e.g., highlights or red handwritten notes) without having to use the slower, more bandwidth-hungry full colour mode. This allows faster scanning speeds compared with full-colour workflow.

Print Productivity

Advantage ✔	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP
First Page Out	✔	
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 iPF785 MFP delivered a 29.4% faster first-page-out time of 89.22 seconds after a weekend of non-use, compared with 126.41 seconds for the HP device. Warm-up time before printing commenced was 49.19 seconds for the Canon model, 51.6% faster than the 101.56 seconds for the HP unit.

+ The Canon iPF785 delivered a 33.2% faster first-page-out time of just 59.87 seconds from its ready state, compared with 89.69 seconds for the HP device.

— However, warm-up time from ready state before printing commenced was 19.47 seconds for the Canon model, compared with 18.47 seconds for the HP unit (5.4% slower).

+ When printing BLI's job stream, designed to simulate a typical mixed workflow for a large-format unit, the Canon model was just 0.2% slower than the HP model in Fast mode, but 20.4% faster in Standard/Normal mode, and 51.5% faster in High/Best mode.

+ When printing BLI's 12-page DWF test file in colour, the Canon unit was 9.3% faster in Fast mode, 45.4% faster in Standard/Normal mode, and 56.9% faster in High quality/Best mode when compared with the HP unit.

+ When printing BLI's 12-page DWF test file in monochrome, the Canon unit was 4.1% faster in Fast mode, 45.4% faster than the HP model in Standard/Normal mode and 56.9% faster in High quality/Best mode.

+ In BLI's single-page A0-size House 3D PDF test, the iPF785 MFP delivered a first-page-out time that was 26.4% faster than the HP T2530 unit. Similarly, the time to print five A0-size pages was 29.5% faster for the Canon unit than the HP device.

Copy Productivity

Advantage ✔	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP
A1 (Landscape) First Page Out (Fast and Standard/Normal modes)		✔
A1 (Landscape) First Page Out (Best Mode)	✔	
A0 First Page Out (Fast and Standard/Normal modes)		✔
A0 First Page Out (Best Mode)	✔	

— In BLI's A1 (Landscape) testing in Fast mode the Canon model's first-copy-out times were 3.6% slower than the HP model. In Standard/Normal mode, the Canon iPF785 MFP's first-copy out time was 9.4% slower in monochrome, 33.3% slower in greyscale and 30.1% slower in colour than the HP DesignJet T2530 MFP.

+ However, in both models' Best quality mode the Canon model was 52.8% faster in monochrome, 52.3% faster in greyscale and 38.3% faster in colour than the HP unit.

— In BLI's A0 testing in Fast mode, the HP DesignJet T2530 MFP's first-copy out time was 6.5% slower than Canon's in monochrome; however, it was 6.3% faster in greyscale and 31.5% faster in colour than the Canon model. In Standard/Normal mode, the HP DesignJet T2530 MFP's A0 first-copy out time was 2.3% slower than Canon's in monochrome, but 31.7% faster in greyscale and 28.5% faster in colour than the Canon model.

+ However, in both models' Best quality mode the Canon model was 55.7% faster in monochrome, 55.9% faster in greyscale and 31.0% faster in colour than the HP unit when copying the A0 document.

Scan Productivity

Advantage ✔	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP
A1 (Landscape) First Page Out (Fast and Standard/ Normal modes)	✔	
A1 (Landscape) First Page Out (Best Mode)	✔	

+ Batch scanning is not supported by the HP DesignJet T2530 MFP, so no times could be recorded by BLI. In some environments this could have a highly adverse effect on productivity.

+ In BLI's scan-to-desktop A1 (Landscape) testing, measuring the time taken from initiation to the scan appearing at the desktop, the Canon iPF785 MFP was 77.7% faster than the HP model in monochrome at 200 dpi, and 82.7% faster at 300 dpi; in greyscale the Canon model was 75.8% faster at 200 dpi and 81.3% faster at 300 dpi; in colour mode the Canon model was 62.6% faster at 200 dpi and 70.9% faster at 300 dpi.

+ In BLI's scan-to-desktop A0 testing, the Canon iPF785 MFP was 80.7% faster than the HP model in monochrome at 200 dpi, and 84.0% faster at 300 dpi; in greyscale mode, the Canon model was 78.2% faster at 200 dpi and 82.8% faster at 300 dpi; in colour mode, the Canon model was 62.5% faster at 200 dpi and 71.9% faster at 300 dpi.

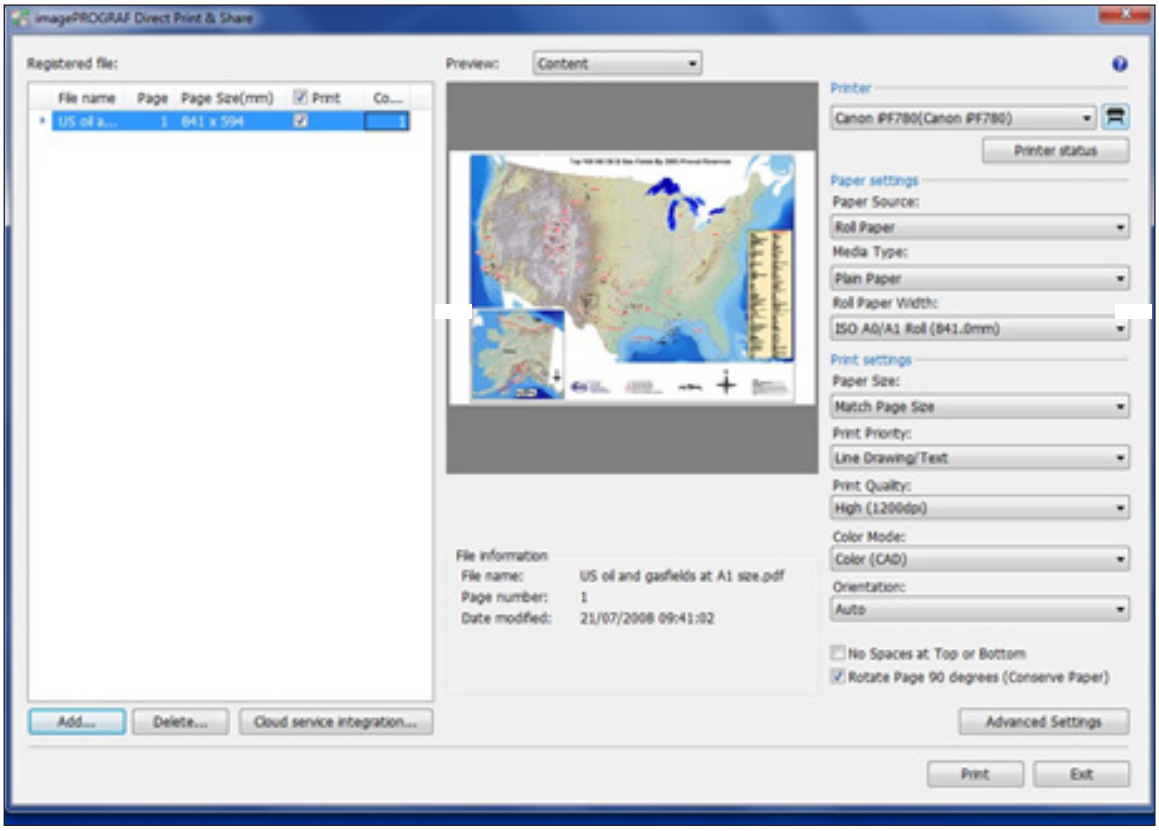
+ In BLI's A1 (Landscape) scan throughput testing, timing from initiation to the scan exiting the scanner, the Canon iPF785 MFP was 37.0% faster than the HP model in monochrome at 200 dpi, and 29.6% faster at 300 dpi; in greyscale mode, the Canon model was 26.4% faster at 200 dpi and 36.5% faster at 300 dpi; in colour mode the Canon model was 2.4% faster at 200 dpi, but 4.6% slower at 300 dpi.

+ In BLI's A0 scan throughput testing, the Canon iPF785 MFP was 36.6% faster than the HP model in monochrome at 200 dpi, and 41.2% faster at 300 dpi; in greyscale mode, the Canon model was 32.1% faster at 200 dpi and 35.8% faster at 300 dpi; in colour mode, however, the Canon model was 1.4% slower at 200 dpi and 9.3% slower at 300 dpi. Despite this performance in colour the Canon model displayed a convincing superiority overall.

Direct Print Submission Functionality

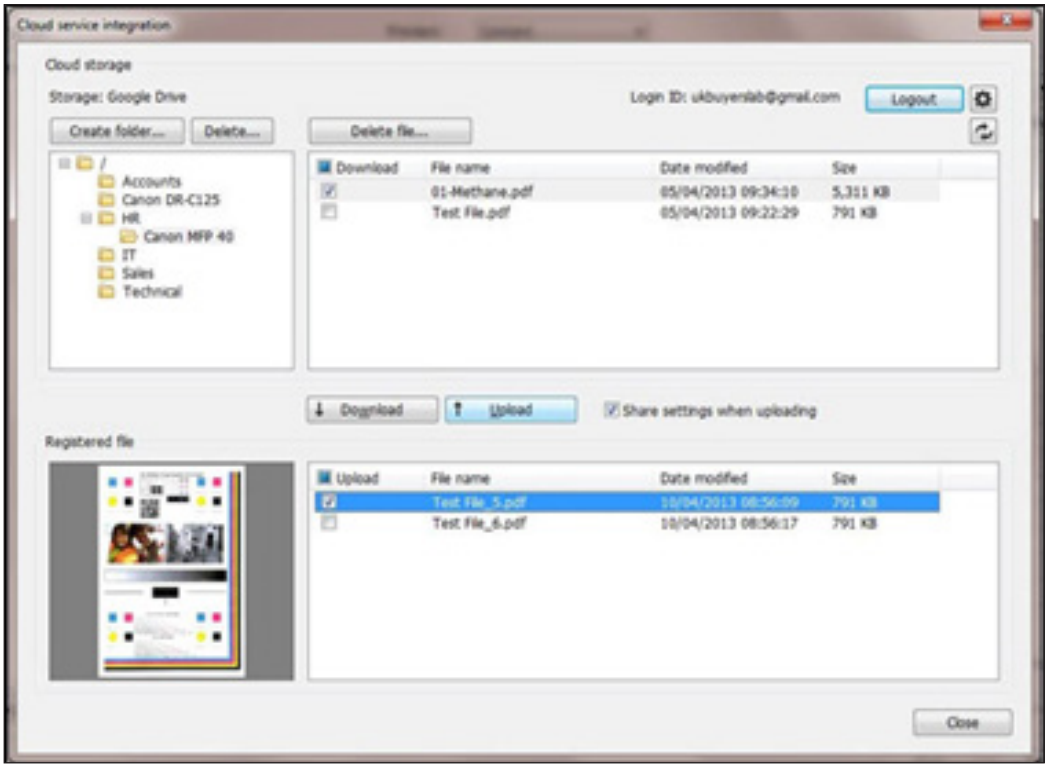
Advantage ✔	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP
Ease of Use	=	=
Functionality	=	=

- Available as a free download from Canon's website, the iPF 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. The utility allows the user to preview print layouts and choose print settings without opening up the driver properties. It also lets the user print multiple files simultaneously.



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

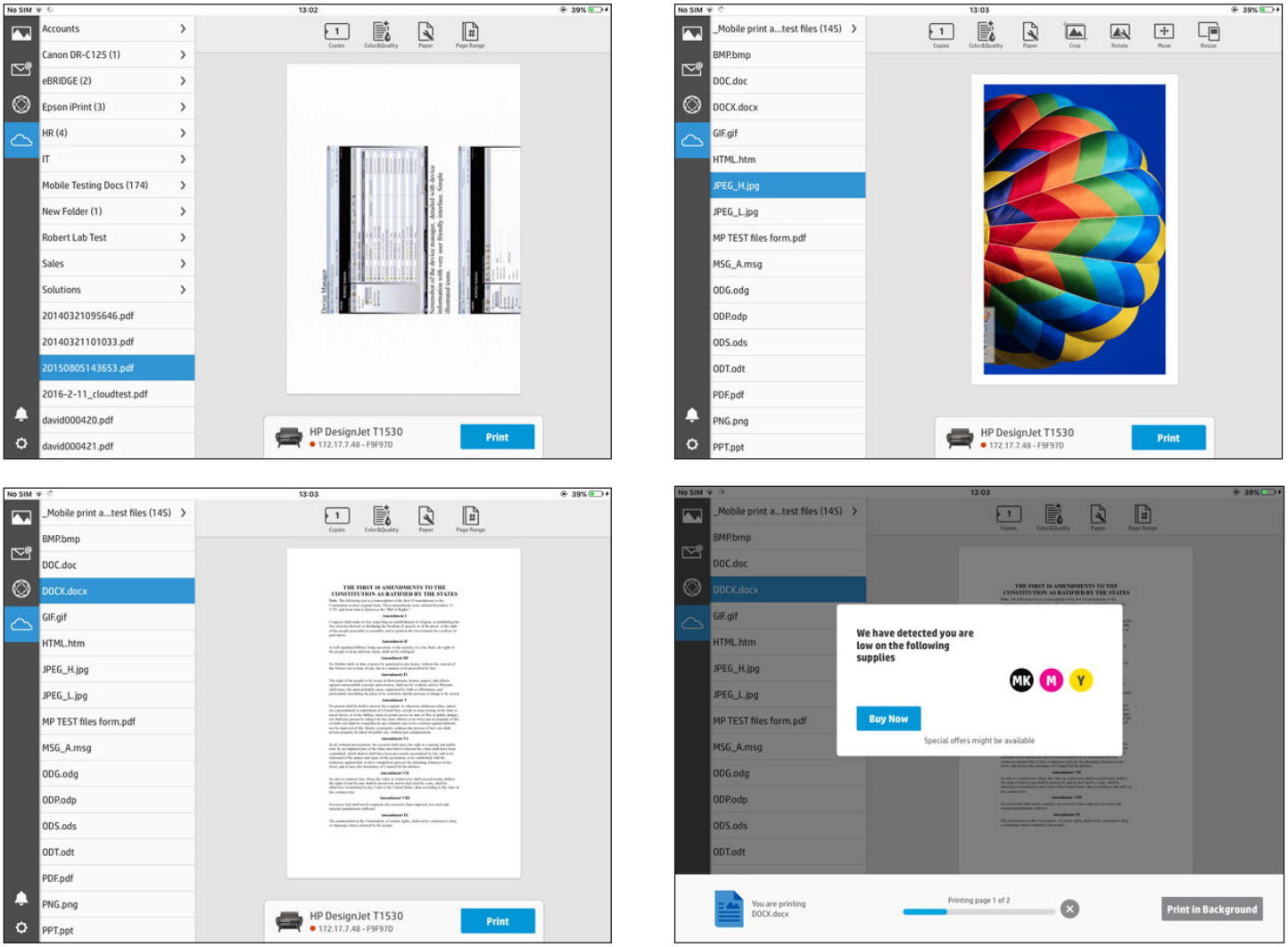
- Canon's iPF Direct Print & Share supports "Shortcut Print" functionality, which enables users to define several print settings that might be commonly used in combination and represent them with a desktop icon. Akin to a hotfolder workflow, files are automatically printed with the predefined settings when users drag-and-drop them to the icon. Multiple desktop icons can be created for different print settings or combinations of print settings.



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

- Users can retrieve files from Google and AutoCAD 360 cloud storage services for printing via iPF Direct Print & Share; the utility lets users upload files to cloud storage while also offering the option of sharing files with other users at the same time (Google Drive only).

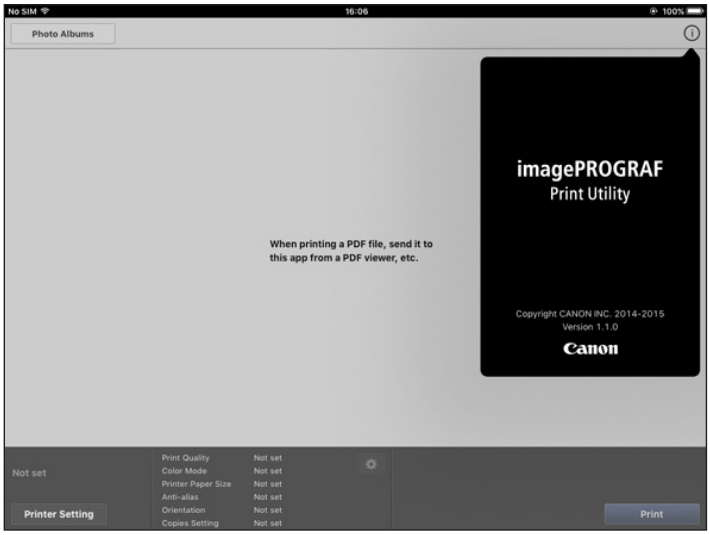
- The HP Mobile Printing service allows users to print directly from an iOS or Android smart device to a compatible HP large-format device. Unlike the previous version (ePrint & Share), users do not need to create an account in order to access direct print functionality, instead, the mobile device quickly pairs with the printer via a wireless network connection or by Wi-FI Direct for direct job submission. Android users have the extra 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; when they wish to print a file either stored locally on their device, an email attachment, or a document stored in a cloud service account, the user just needs to open the file and then selects the Share or option, which then allows them to select and send their job to their preferred HP printer.

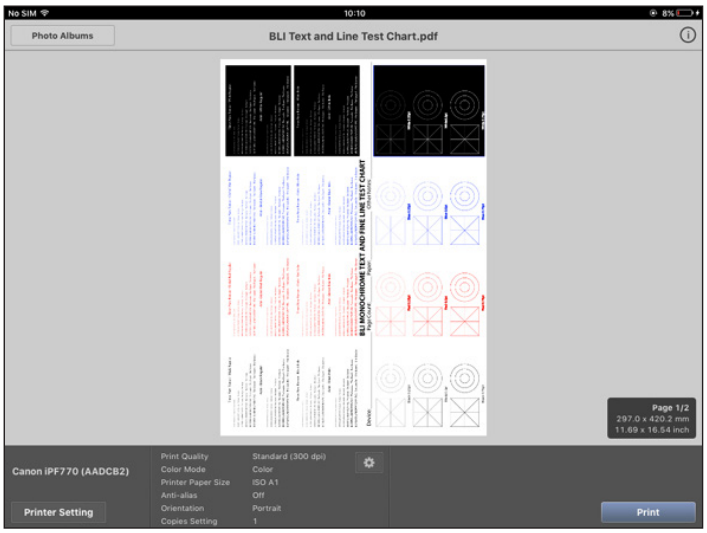


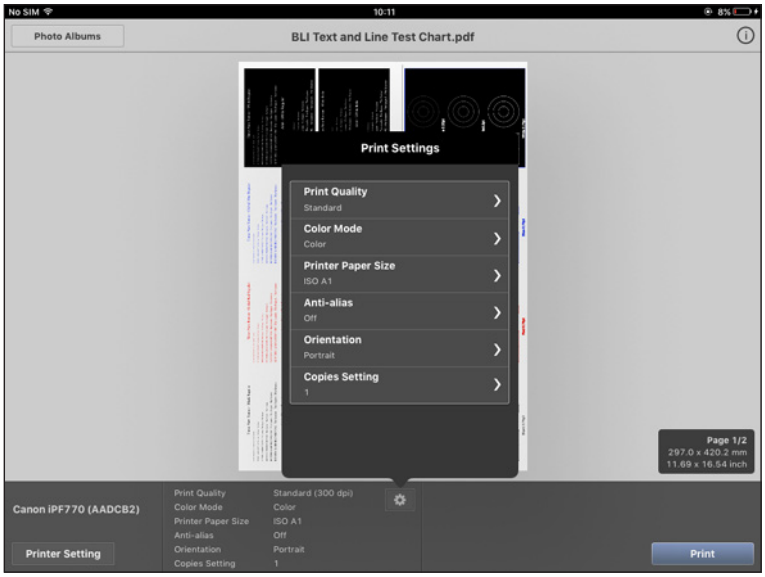
The HP Mobile Printing service enables Android and iOS mobile devices to pair with the T2530 and other compatible HP devices easily. Users can retrieve files from cloud storage, preview images and perform image adjustments.

- In addition, the T2530 MFP supports HP ePrint functionality, whereby users are able to send print jobs remotely by email either from their workstation PC or from their mobile device to the device; PDF, TIFF and JPEG files (up to 10 MB) are supported.

- The Canon model also supports a free mobile print app, the Canon imagePROGRAF Print Utility, which enables PDF printing from Apple iPads to facilitate workflows for mobile workers.







Canon imagePROGRAF Print Utility app is available for iPad users; it offers an image preview and users have the ability to select printer options, such as orientation and colour mode.

Banner Printing

Advantage ✔	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP
Banner printing capability	✔	
Print Productivity	=	=

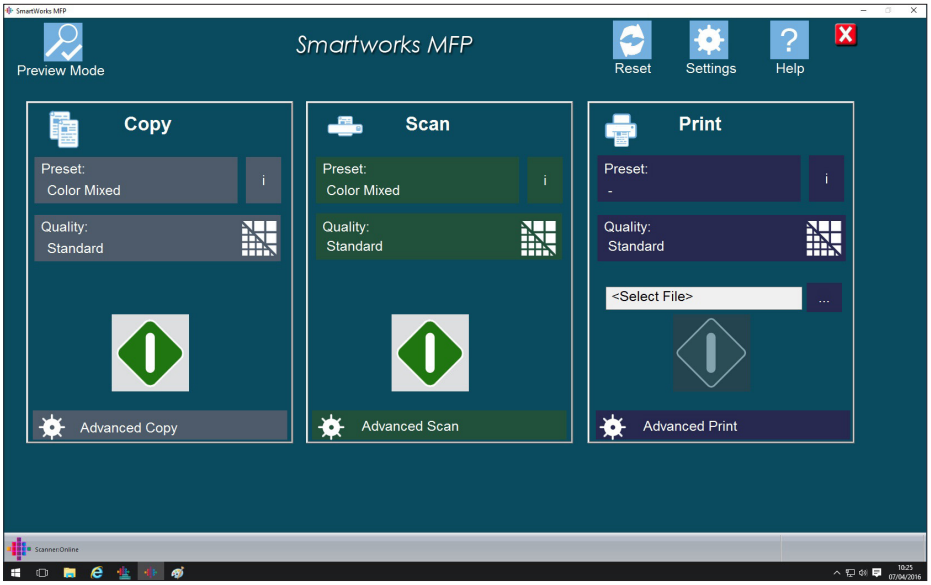
+ The Canon iPF785 MFP successfully printed BLI's 40" x 117" banner (a 4,955-KB PDF file) in Fast 300 dpi mode, taking 4 minutes and 48.3 seconds from preview to final paper cut. Some banding was apparent. In unidirectional mode, which eliminated the banding, a further 59.1 seconds was added to the time.

+ The HP T2530 required 4 minutes, 14.9 seconds to print the same banner in Fast mode, but there was a great deal of banding across the full width. In Normal mode, it took 7 minutes, 9.1 seconds, but banding was eliminated.

BLI's Banner Test File

Walk-up Ease of Use

Advantage ✔	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP
Touchscreen 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 flash drive and cloud)	=	=

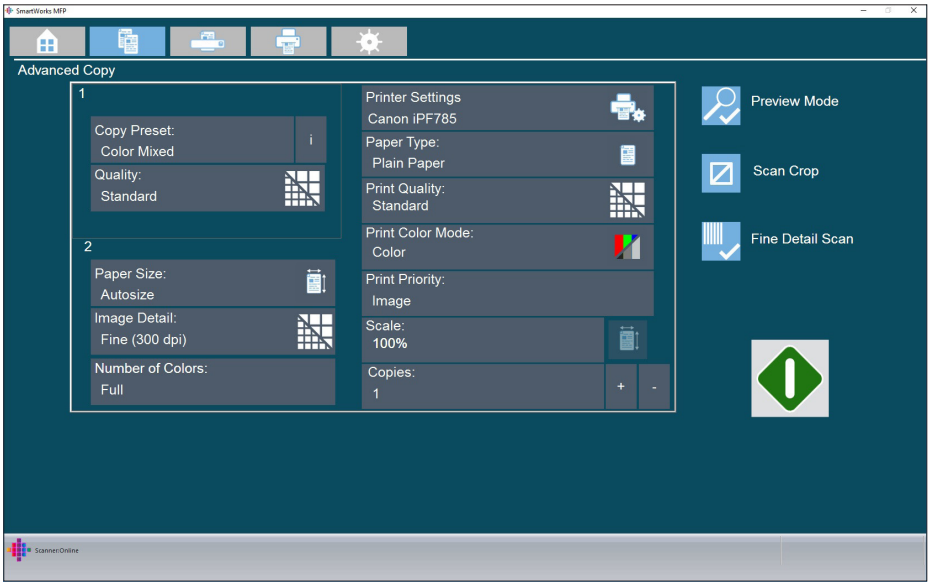


SmartWorks MFP Home Screen

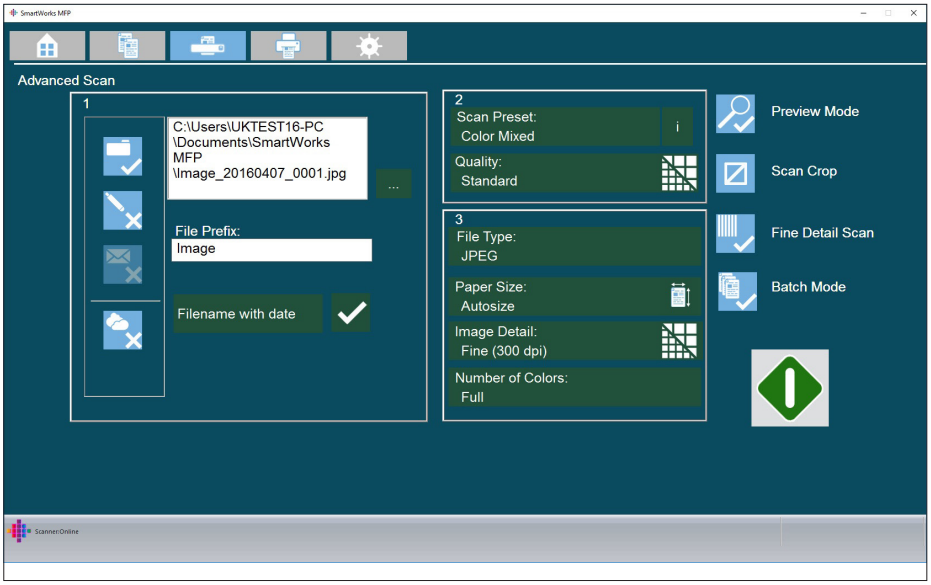
+ BLI analysts were very impressed by the clear and intuitive layout of the Canon model's 22" touchscreen interface, with selections for all the main functions—Copy, Scan and Print—and full control over all settings available from the home page. Users are able to 'pinch and zoom' to enlarge specific areas of the touch-screen. A 'Virtual Keyboard' can be displayed to make it easy to enter email addresses and a numerical keypad can also be displayed for quantity selections.

— However, although the angle of the 22" touchscreen can be adjusted, it's positioned at a height that makes it impossible to reach for users in wheelchairs. The size of the monitor attachment adds considerably to the already large footprint of the device.

○ Not all device control for the Canon is provided by the 22" touchscreen with media control, ink and print-head maintenance and other tasks being handled by the Canon printer's control panel, which is an LCD screen with hard button navigation controls.



SmartWorks MFP Advanced Copy Screen



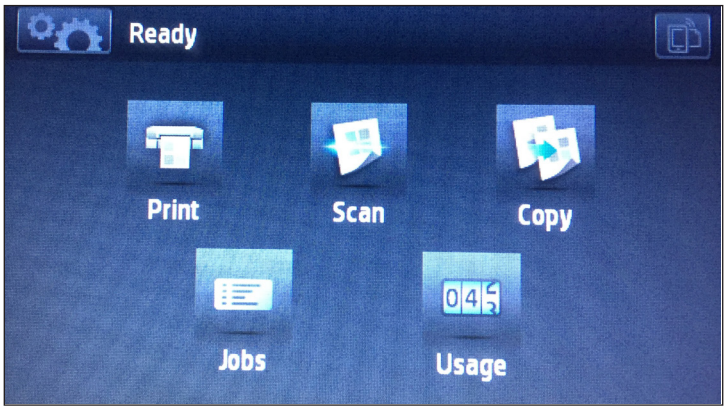
A Batch Scan selection, not available with the HP model, is on the SmartWorks MFP Advanced Scan Screen.

Preview screen showing the wide range of image adjustment settings on the right. These would be more legible as white text as on the other screens.

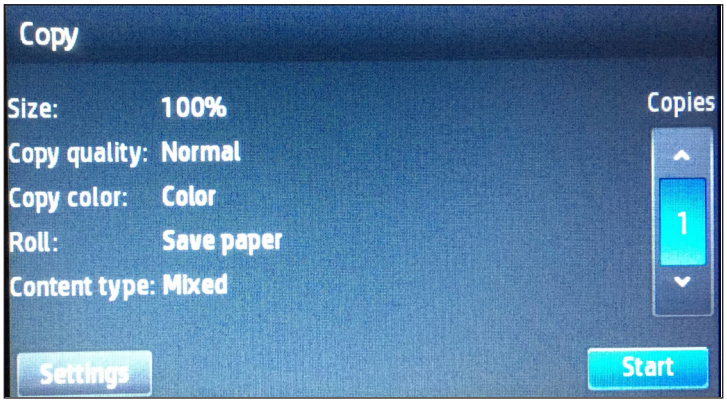
+ The Canon model's Copy, Scan and Print functions each offer a Preview screen with the document displayed in the centre and a variety of image adjustment options on the right, giving full control over image quality before jobs are released. The Preview allows users to zoom in to any level of magnification on a linear scale (whereas the HP unit's preview screen permits only one level of magnification). The Canon SmartWorks MFP interface offers a simplified, time-saving Scan/Adjust/Print workflow. In contrast, the HP model provides a

workflow of Scan/Print/Check Print/Change Settings and Re-scan/Reprint/Repeat as necessary, which is clearly more time-consuming in real-world workflows.

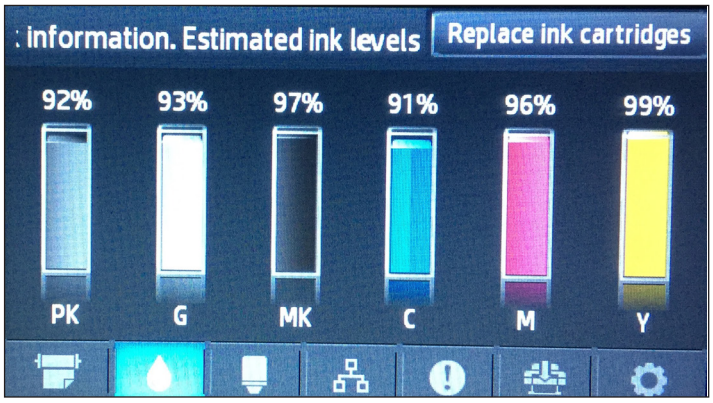
+ In contrast, BLI analysts found the HP model's much smaller touchscreen more difficult to use, as the screen had to be tapped quite hard to elicit any response, and the buttons on the keyboard display are so small that entering email addresses was more error-prone than with the Canon model.



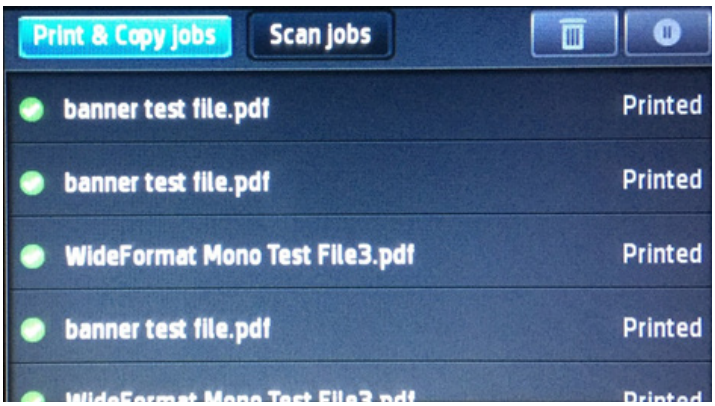
HP DesignJet T2530 MFP Home Screen



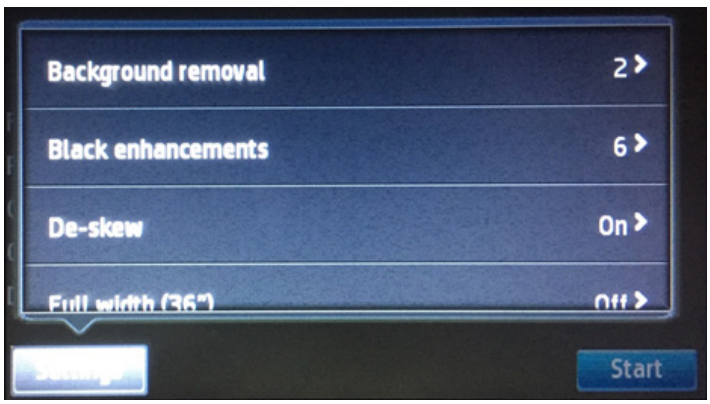
HP T2530 MFP Copy Screen



Percentage of ink remaining is displayed in 1% increments.

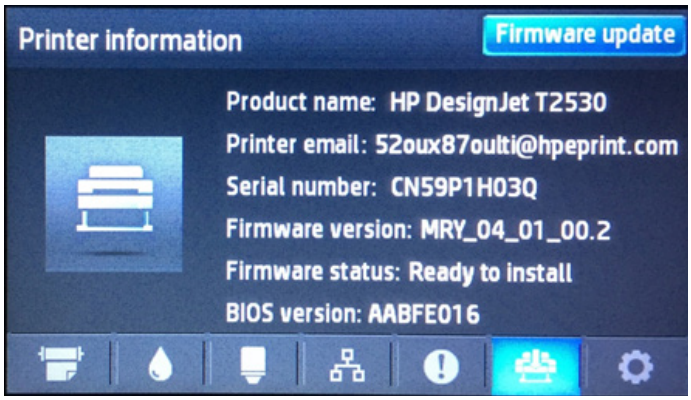


Print & Copy Jobs Log on the HP T2530 MFP

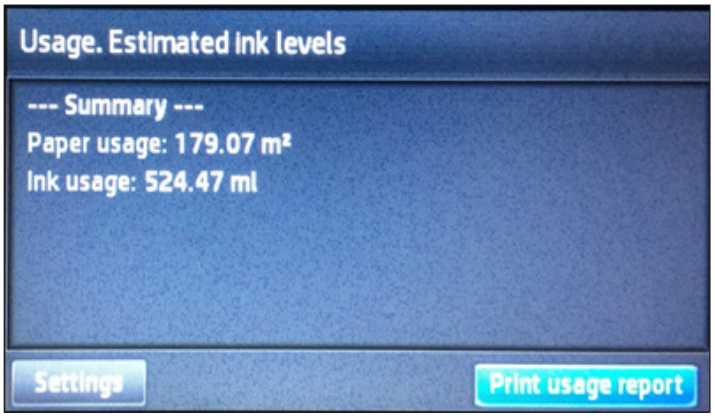


Scan Image Adjustment Opening Screen

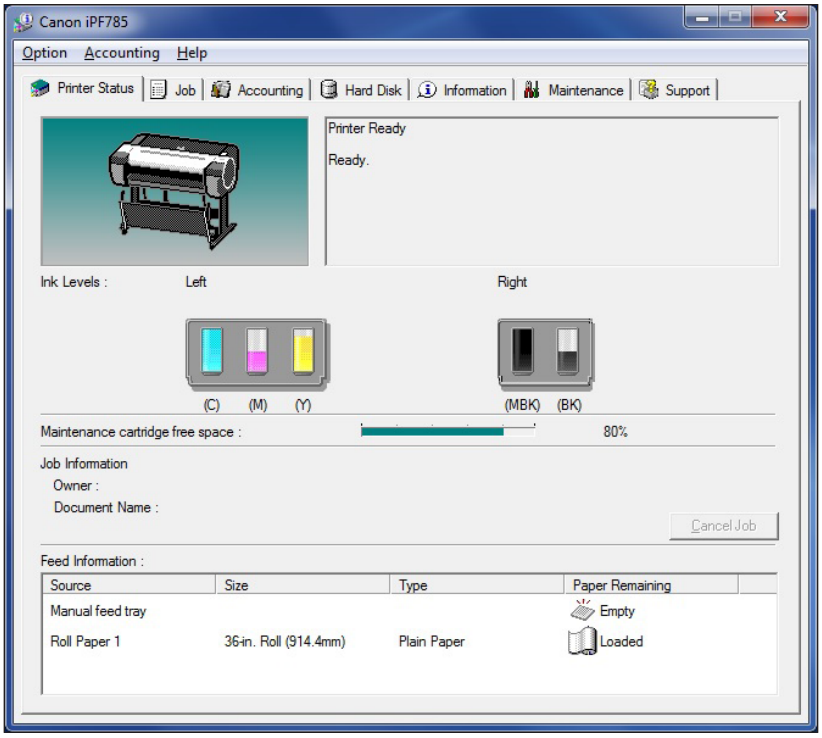
Scan Destination Screen



Printer Information Page on the HP DesignJet T2530 MFP



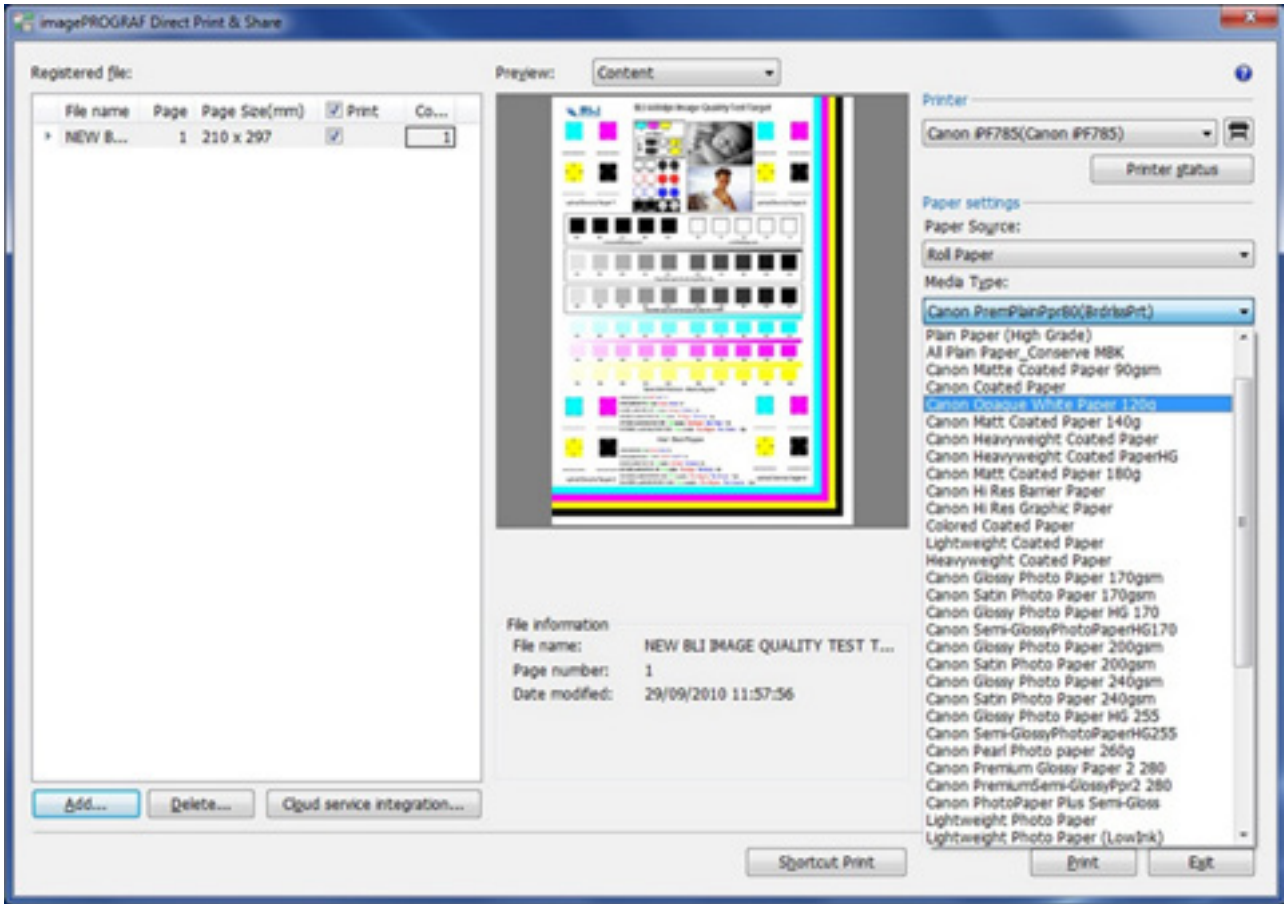
The HP DesignJet Utility monitors jobs and consumable levels.



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

Media Handling

+ Both MFPs are compatible with a wide range of media types. The Canon unit supports 44 media types, plus five user-defined media, while the HP unit supports 34, including Coated, Heavyweight, High Resolution, Matte Photo, Premium Gloss and Semi-gloss media for photographs. 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.



iPF Direct Print & Share displays a wide range of media types.

— Whereas the Canon unit only supports a single roll, the HP device supports two media rolls, making it quicker and easier to switch between media sizes or types. The HP T2530 MFP also employs automatic roll switching, so that jobs are automatically routed to a second roll after the first is depleted. If this happens while a page is printing, the page will be printed in its entirety once a new roll is loaded without further user intervention. Both models are loaded from the front.

+ With the HP DesignJet T2530 MFP, BLI analysts found loading cut-sheet media much more challenging than loading roll media, and they were rarely able to load sheet media correctly on the first attempt. The operator manually inserts the sheet on the right hand side, aligning the edge with a slightly raised line at the far right of the unit's cover. Several times during the loading process the control panel reported that the sheet was skewed. The media lever had to be released and the sheet repositioned before returning the lever to its locked position. This process had to be repeated several times. The Canon model, in contrast (like most competitors) has an adjustable insertion guide that makes inserting cut-sheet media a much more straightforward process.

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

The HP model jammed when scanning newsprint in landscape mode.

+ The Canon iPF785 MFP was able to scan and copy lightweight documents such as a newspaper in both portrait and landscape, whereas the HP model's scanner could only accept lightweight documents in portrait mode.

— BLI analysts were very impressed with the design and build quality of the HP T2530 MFP's rear-mounted stacker assembly which can hold up to 50 printed sheets of multiple media sizes in good alignment.

— The HP device includes a deskew function within the scanner firmware, allowing skew to be compensated prior to delivery to the desktop; the Canon MFP does not offer this capability.

○ The Canon SmartWorks software does, however, provide a means of manually adjusting skewed documents prior to saving.

User Maintenance/Consumable Replacement

○ Ink replacement is a very simple process with both devices. The HP MFP has three ink cartridges at each end, including separate cartridges for Photo Black, Matte Black and Grey. Each cartridge is slotted differently to prevent incorrect replacement.

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

○ Replacing printheads is also a straightforward process on both models.

○ The Canon device includes a maintenance cartridge that contains waste ink and will occasionally need to be changed. This process cannot be conducted during printing. Note: BLI did not need to replace any maintenance cartridge during its extensive tests.

Copy Programming

+ The Canon touchscreen in Copy mode offers a choice of 10 preset profiles for colour graphics, photographic images, etc., and new custom preset profiles can be added at any time. When a document type is selected, the optimum settings including resolution are automatically displayed and any adjustments can be saved as new presets. The MFP will advise users if the wrong media type is loaded for programming a specific job. When SmartWorks is used to enter Copy mode, whereby documents are scanned and sent to the printer via the driver, a direct link to the device print driver is available if any more advanced settings are required. In contrast, the HP offers three image type presets (Images, Lines and Mixed originals) and allows users to specify the original paper type (white paper, photo paper, blueprints, recycled and translucent), but does not offer the advanced printer driver level job control as offered on the Canon device.

Scan to Desktop/Network Folder Programming

+ The same 'Preview & Edit' functionality is available in Canon's Scan mode, with a similar list of preset scan profiles and a full listing of setting selections for each with the ability to save new presets. The 'Advanced' button offers selections for scanning to email, USB flash drives, network folders or the cloud, with the option of scanning concurrently both to the cloud and one other destination, with a date stamp automatically added to the file name if desired. A button to the right selects Batch Mode so that documents can be combined together in a single folder without the need for additional third-party software. The HP model lacks this capability

Scan to email/USB/Cloud Programming

+ As noted above, scanning to the cloud and one other destination with the Canon MFP is a quick and easy process, with files being uploaded or downloaded quickly, with no apparent delays.

+ When a USB drive is inserted on the HP T2530 MFP, it presents the user with a small USB logo in the top right hand corner. If this is pressed users are presented with the amount of free space on the USB drive and must select the print option then USB, but there is no way to change selections such as resolution. When scanning to USB, hoever, users can opt to save the file in JPEG or TIFF format, and make other selections like resolution and colour mode, and, usefully, they can input a file name. 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 has been automatically created on the USB flash drive.

+ Although printing from a USB flash drive is a straightforward process for both models, with full control over document settings, the HP T2530's lack of support for printing PDF files (only available with the more expensive PostScript version of the MFP) is clearly a major limitation.

Stored Job Reprinting (including via USB key and cloud)

○ Jobs that need reprinting on the Canon iPF785 can quickly and easily be retrieved either from the device hard drive or cloud storage using the Direct Print & Share utility, with the same Preview & Edit functionality giving full control over output quality and settings. A direct link to the driver is also available so that advanced settings, including those for Account Manager, can be reviewed and selected.

○ The HP Mobile Printing service allows users to print directly from an iOS or Android smart device to a compatible HP large-format device. Users can print a wide selection of file formats such as Microsoft Office documents, as well as PDF, JPEG and TIFF files; when they wish to print a file either stored locally on their mobile device, an email attachment, or a document stored in a cloud service account, the user just needs to open the file and then selects the Share Or Send option, which then allows them to select and send their job to their preferred HP printer.

(See the section on Direct Print Submission above for BLI's analysis of the differences between the two utilities in terms of functionality and ease of use).

Device Feature Set

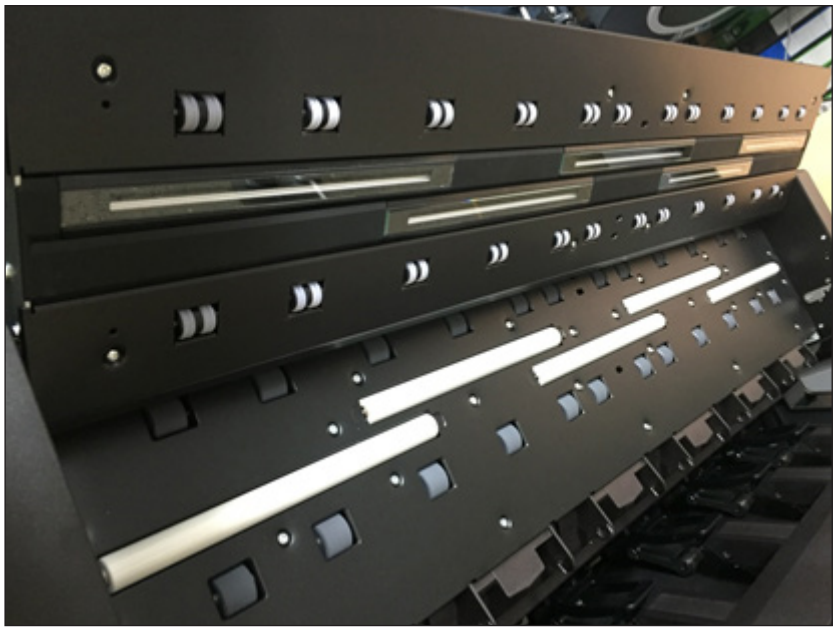
\+ The Canon iPF785 MFP offers a 22" touchscreen LCD display for copy and scan functionality, whereas the HP T2530 MFP has a 4.3" touchscreen LCD display. As noted above, although the HP touchscreen interface allows users to scroll through menus quickly, in practice it proved to be less responsive and to require more 'trial and error' when compared with the Canon touchscreen interface.

— As the HP unit is an integrated MFP it only requires a single plug, whereas the Canon model has separate printer, scanner, copier and PC modules and requires four separate outlets for power connection.

\+ If the HP T2530 MFP model has an issue which requires a service call, it's likely that the entire device will be out of commission, whereas the Canon MFP's modular design means that the printer can operate independently of the scanner, but not vice versa.

— The HP device's web server offers some functionality not matched by the Canon device including: front panel lock, temporary file deletion from the hard drive, email alerts, automatic firmware updates, job submission and job reprinting.

Canon's SingleSensor array extends across the full width of the scanner.



HP T2530 scanner, showing its staggered array of RGB LEDs.

+ The Canon MFP's scanner offers a wider range of six scanning resolutions from 100 to 1200 dpi, whereas the HP unit's scanner only offers three, from 200 to 600 dpi.
+ The Canon scanner offers superior media-handling capabilities, handling documents up to 42" by 15 m in size compared with 36" by 15 m with the HP scanner. When the rear exit paper path is used, the Canon scanner can accommodate media up to 2.0 mm thick, compared with just 0.8 mm with the HP scanner.
+ Scanned images can be saved as TIFF, JPEG or PDF files with the Canon unit, while the HP device offers PDF file scan creation only with the more expensive PostScript version of its MFP.
+ Batch scanning is not supported by the HP T2530 MFP, which would have an adverse impact on productivity in many environments.

+ The Canon scanner offers a much wider range of preset document types, including some with background removal, in contrast to just three (Line, Mixed and Image) for the HP scanner. In addition, custom presets with a wide range of image processing options (skew, crop, brightness, sharpen, black point, white point and invert) can be saved on the Canon MFP, a feature not offered by the HP scanner.

○ Both models have 300ml ink tanks for all colours.

+ 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 140 mm with the HP device).

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

+ Canon supports up to 0.8 mm as the maximum media thickness for the printer as opposed to the HP device, which supports a maximum of 0.5 mm.

— The HP T2530 MFP's rear-mounted stacker assembly can hold up to 50 printed sheets of different sizes in near-perfect alignment. BLI analysts were impressed with its design and build quality when compared with the less robust construction of the Canon catch basket.

— The HP device offers a higher hard drive capacity of 500 GB, compared with 320 GB for the Canon iPF785.

— The HP T2530 MFP is a slightly more compact device than the Canon model, with a weight of 112 kg versus 117 kg for the Canon unit.

— The HP T2530's rated power consumption (120 W) is lower than that of the Canon model's (140 W) while printing.

+ However, the Canon model has lower power consumption in standby mode (in which they will likely spend most of their time).

○ Rated noise emissions are slightly higher for the Canon device (48 dB versus 47 dB with the HP model) but lower for the Canon device in standby mode (35 dB versus 39 dB with the HP model).

Driver Feature Set

+ The Canon iPF785 MFP has five print driver quality settings (Fast 300, Fast 600, Standard 600, High 600 and High 1200), as opposed to three with the HP device (Fast, Normal and Best). Note: not all speed settings are available with all media types.

+ The Canon GARO 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, and a 2 by 2 poster mode, neither of which is available in the HP driver.

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

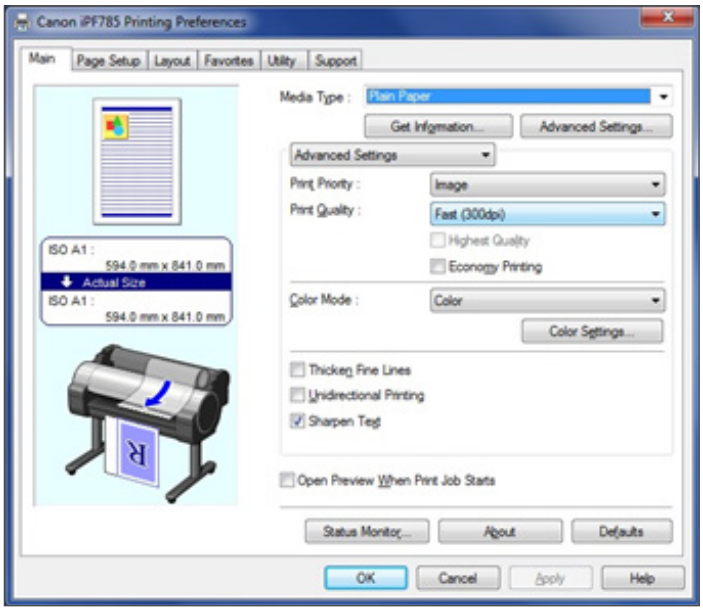
+ The Canon GARO driver offers a wider range of built-in adjustments for CMY balance, brightness, contrast and saturation than does the HP-GL/2 driver. ICC profile settings are also available in the GARO driver's matching tab under Advanced Settings. Operators can select four matching modes (driver, ICC, driver ICM and host ICM matching) and choose one of four rendering methods (auto, perceptual, colorimetric or saturation). Note that 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 (as of March 2016), plus the ability to preview images before printing—features which were not included in the Startup driver disk supplied to BLI with the device.

+ The Canon driver offers unidirectional printing, even in Fast mode. This means that the printhead travels in only one direction to create the desired image, helping it to avoid the banding that was observed across the full width on output produced by the HP device (which doesn't have a unidirectional setting), in every mode except Best.

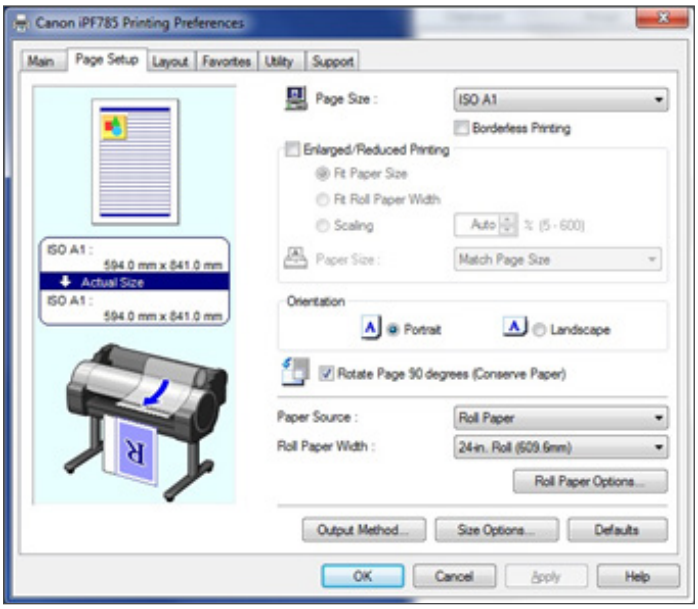
+ The Canon driver includes the Colour imageRUNNER Enlargement Copy Mode utility, which enables users to integrate a Canon small-format MFP device on the network with the iPF785. Documents scanned by the Canon MFP are automatically routed to a hot folder that is monitored by the driver of the iPF785. The image is then resized and printed, offering a fast, easy-to-use poster creation tool for office users. There is no such feature offered to HP users.

+ The Canon driver also includes a Free Layout nesting tool that enables files—even files 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 their desired locations and printed together on a single page. The HP unit offers a similar nesting feature (to reduce white space), which can be activated directly on the control panel or from the print driver utility. 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 job order sent or in 'optimized' layout order.

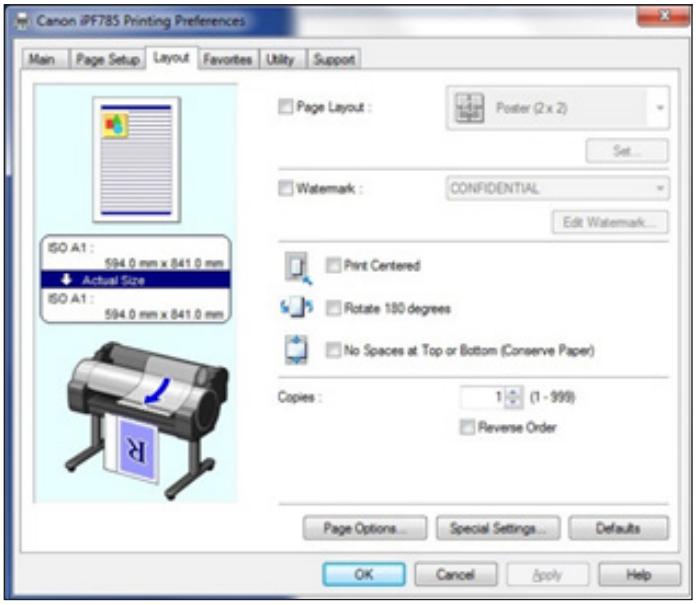
+ Canon also offers a plug-in for printing from Microsoft Office applications, which HP does not, that includes useful tools for automatic media resizing, nesting and borderless printing on the Canon iPF785 MFP.



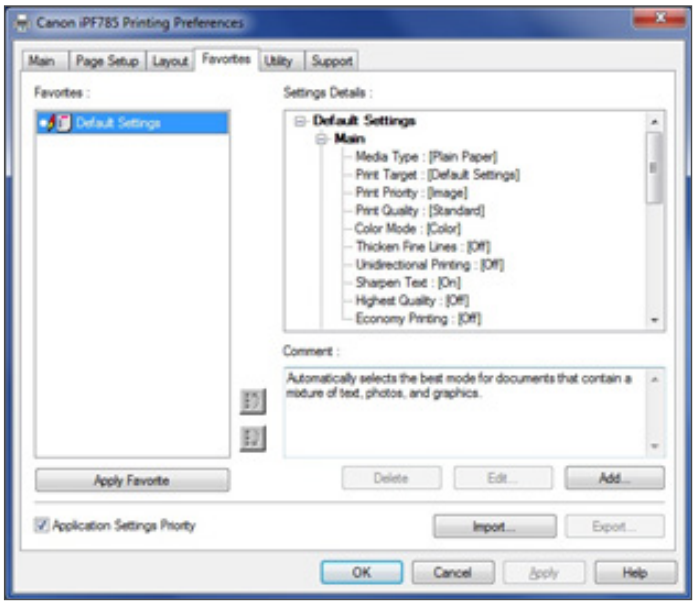
Canon Print Driver Main Tab



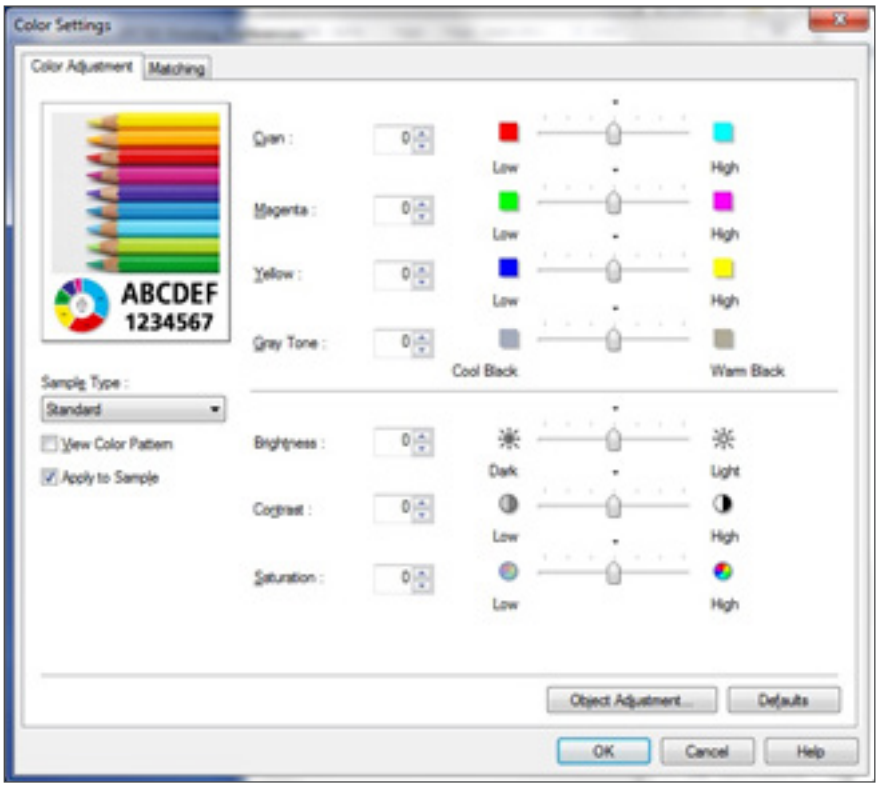
Canon Driver Page Setup Tab



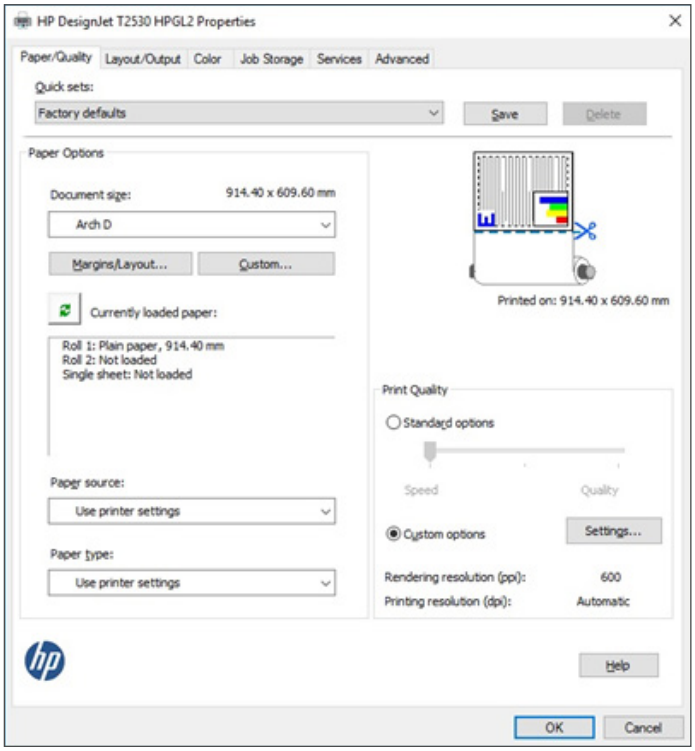
Canon Driver Layout Tab



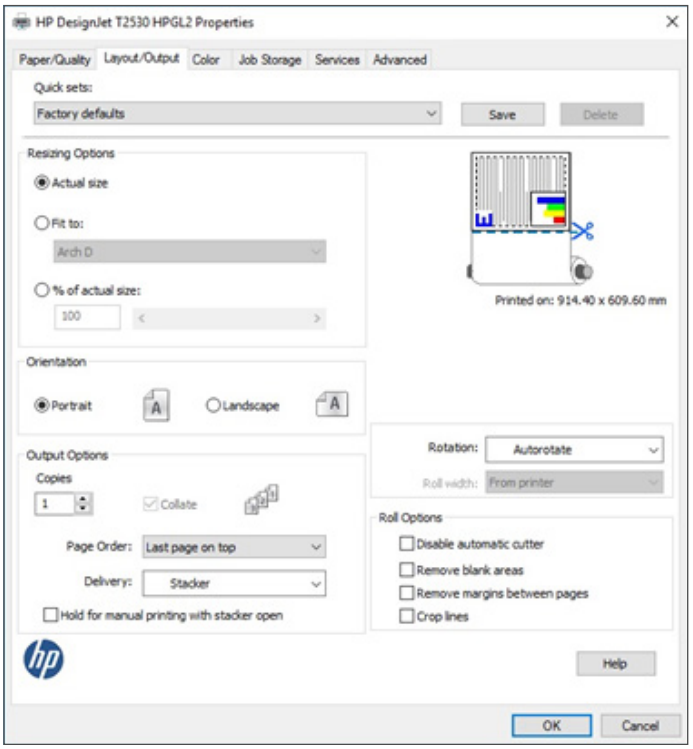
Canon Print Driver Favourites Tab



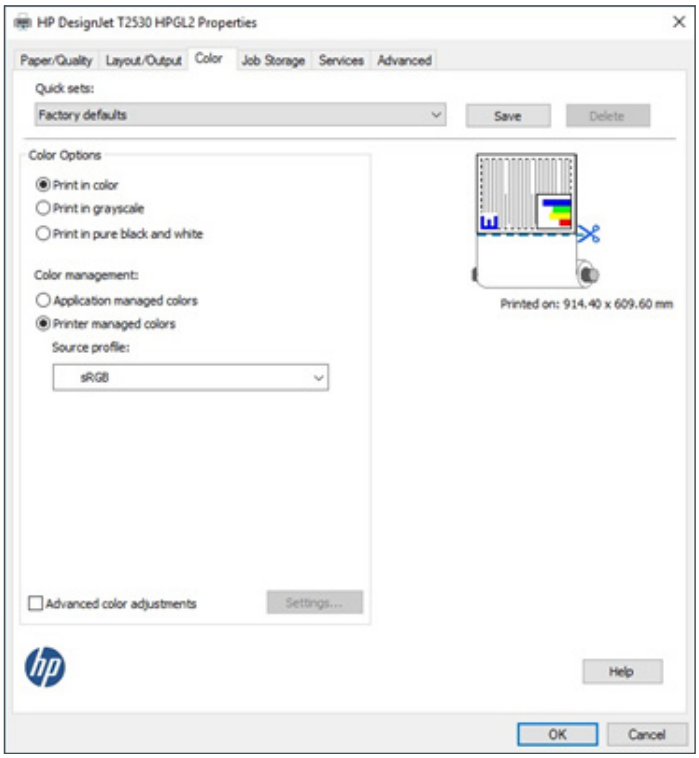
Canon Colour Adjustment Settings



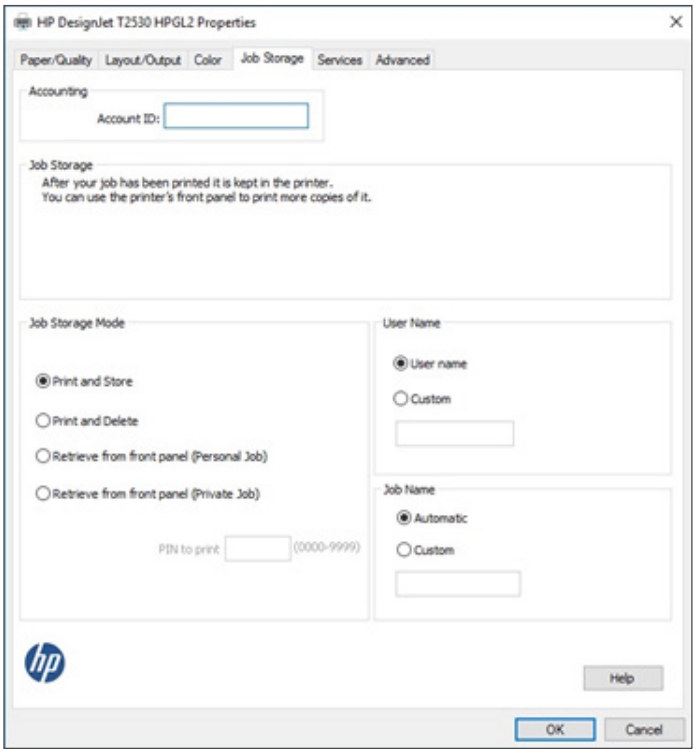
HP T2530 HPGL/2 Paper/Quality Tab



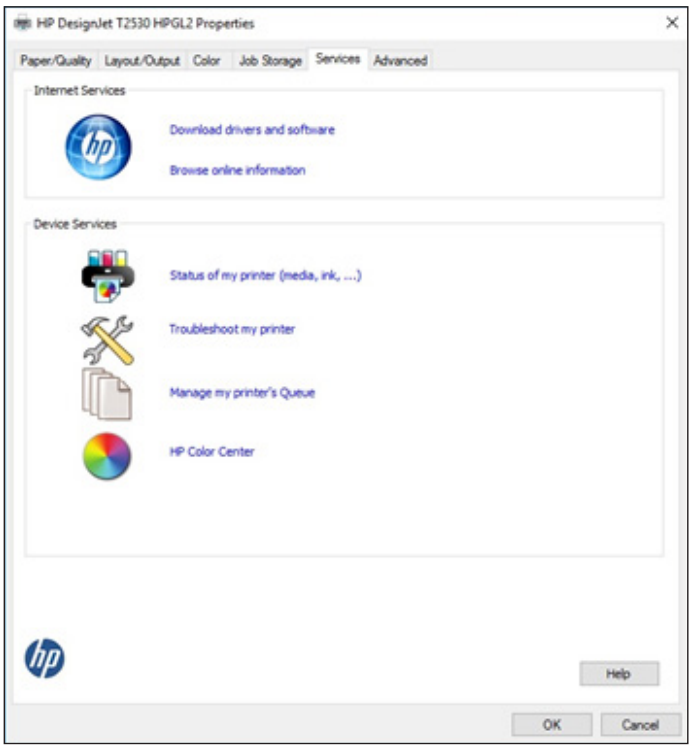
HP T2530 HPGL/2 Layout/Output Tab



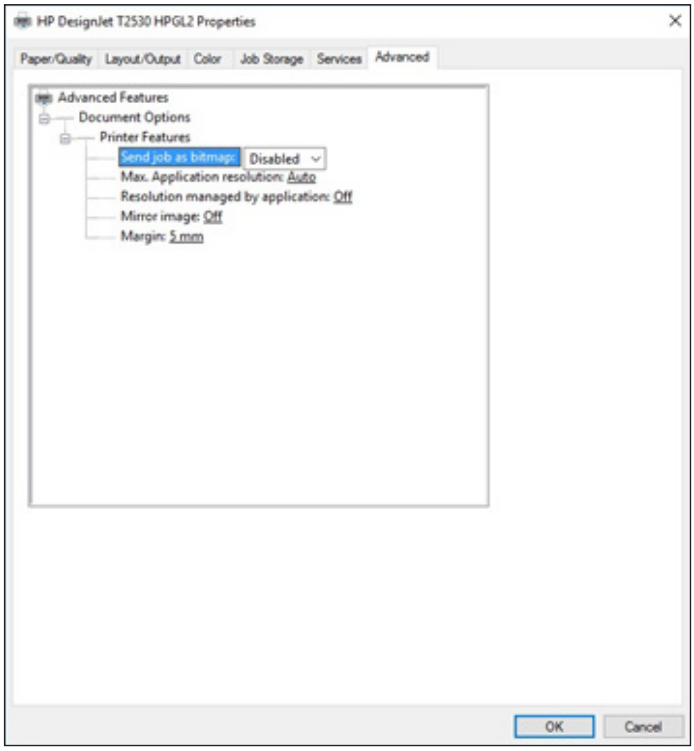
HP T2530 HPGL/2 Colour Tab



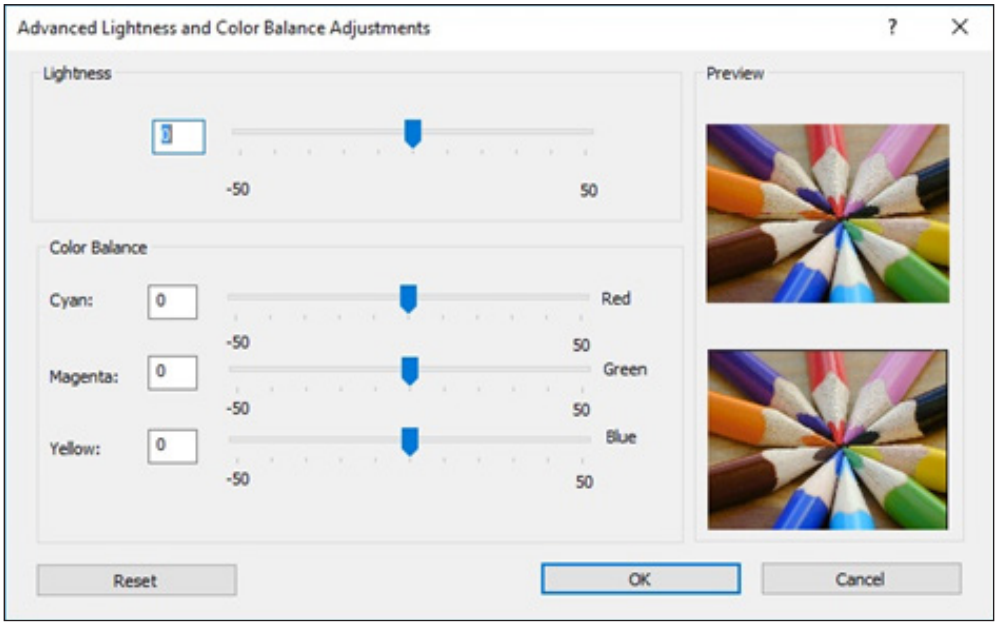
HP T2530 HPGL/2 Job Storage Tab



HP T2530 HPGL/2 Services Tab



HP T2530 HPGL/2 Advanced Tab



Advanced Lightness and Colour Balance Adjustments

SUPPORTING TEST DATA

Print Productivity

Job Stream Productivity

Mixed File Types, Same Size

Canon imagePROGRAF iPF785 MFP (time in seconds)		HP DesignJet T2530 MFP (time in seconds)		Canon % Faster/Slower (-) than HP
Draft	707.24	Fast	705.94	-0.2%
Standard	1,281.75	Normal	1,609.37	20.4%
High	1,957.26	Best	4,039.12	51.5%

BLI's job stream consists of 10 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 Multi-Page Productivity

Canon imagePROGRAF iPF785 MFP (time in seconds)		HP DesignJet T2530 MFP (time in seconds)		Canon % Faster/Slower (-) than HP
Draft	367.61	Fast	405.44	9.3%
Standard	593.29	Normal	1,087.57	45.4%
High	1,144.18	Best	2,651.99	56.9%

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 with each file set to auto-rotate to save media. 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

Canon imagePROGRAF iPF785 MFP (time in seconds)		HP DesignJet T2530 MFP (time in seconds)		Canon % Faster/Slower (-) than HP
Draft	390.28	Fast	407.03	4.1%
Standard	607.30	Normal	1,028.13	41.0%
High	1,154.16	Best	2,641.95	56.3%

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, greyscale, black ink only. Both devices were loaded with 914 mm rolls, with each file set to auto-rotate to save media. 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

	Canon imagePROGRAF iPF785 MFP (time in seconds)	HP DesignJet T2530 MFP (time in seconds)	Canon % Faster/Slower (-) than HP
Time Before Printing Commences	49.19	101.56	51.6%
First Page Out	89.22	126.41	29.4%

First-Page-Out Productivity From Ready State

	Canon imagePROGRAF iPF785 MFP (time in seconds)	HP DesignJet T2530 MFP (time in seconds)	Canon % Faster/Slower (-) than HP
Time Before Printing Commences	19.47	18.47	-5.4%
First Page Out	59.87	89.69	33.2%

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, with each file set to auto-rotate to save media.

A0 First-Page-Out and Throughput Productivity

	Canon imagePROGRAF iPF785 MFP (time in seconds)	HP DesignJet T2530 MFP (time in seconds)	Canon % Faster/Slower (-) than HP
First Page Out	107.81	146.44	26.4%
Five Pages Out	501.34	710.98	29.5%
Speed per page without processing	98.38	141.14	30.3%

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, with each file set to auto-rotate to save media.

Copy Productivity

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

	Canon imagePROGRAF iPF785 MFP (time in seconds)	HP DesignJet T2530 MFP (time in seconds)
Mono	44.6	43.0
Greyscale	47.6	42.3
Colour	67.7	50.5

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

	Canon imagePROGRAF iPF785 MFP (time in seconds)	HP DesignJet T2530 MFP (time in seconds)
Mono	59.1	54.0
Greyscale	79.6	59.7
Colour	92.5	71.1

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 Standard/Normal. Times were recorded from scan initiation to page exiting.

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

	Canon imagePROGRAF iPF785 MFP (time in seconds)	HP DesignJet T2530 MFP (time in seconds)
Mono	105.4	223.2
Greyscale	104.0	218.1
Colour	160.4	260.1

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 Best mode. Times were recorded from scan initiation to page exiting.

A0 First-Copy-Out Productivity: Fast mode

	Canon imagePROGRAF iPF785 MFP (time in seconds)	HP DesignJet T2530 MFP (time in seconds)
Mono	72.0	77.0
Greyscale	76.2	71.7
Colour	131.3	90.0

The single-page A0 document was set to copy at 300dpi 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

	Canon imagePROGRAF iPF785 MFP (time in seconds)	HP DesignJet T2530 MFP (time in seconds)
Mono	101.7	104.5
Greyscale	143.1	97.8
Colour	179.2	128.1

The single-page A0 document was set to copy at 300dpi 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 for scan initiation to page exiting.

A0 First-Copy-Out Productivity: High/Best mode

	Canon imagePROGRAF iPF785 MFP (time in seconds)	HP DesignJet T2530 MFP (time in seconds)
Mono	187.7	423.5
Greyscale	198.0	448.9
Colour	308.7	447.1

The single-page A0 document was set to copy at 300dpi 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 Best mode. Times were recorded for scan initiation to page exiting.

Scan Productivity

Batch Scanning Productivity

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

	Canon imagePROGRAF iPF785 MFP (time in seconds)		HP DesignJet T2530 MFP (time in seconds)	
	Scan Time (seconds)	(Calculated) A1 (L) Pages/Hour	Scan Time (seconds)	(Calculated) A1 (L) Pages/Hour
Black 200 dpi	155.9	230.9	NA*	NA*
Black 300 dpi	159.1	226.3	NA*	NA*
Grey 200 dpi	144.9	248.4	NA*	NA*
Grey 300 dpi	149.2	241.3	NA*	NA*
Full Colour 200 dpi	206.6	174.2	NA*	NA*
Full Colour 300 dpi	248.6	144.8	NA*	NA*

* Batch Scanning is not supported by the HP device.

The 10-page A1 (L) document was scanned in batch mode with devices 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

	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP	Canon % Faster/Slower (-) than HP
	Scan Time (seconds)	Scan Time (seconds)	
Black 200 dpi	3.4	5.4	37.0%
Black 300 dpi	5.0	7.1	29.6%
Grey 200 dpi	3.9	5.3	26.4%
Grey 300 dpi	4.7	7.4	36.5%
Full Colour 200 dpi	12.1	12.4	2.4%
Full Colour 300 dpi	18.2	17.4	-4.6%

The single-page A1 document was scanned with devices left in default mode, 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

	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP	Canon % Faster/Slower (-) than HP
	Scan Time (seconds)	Scan Time (seconds)	
Black 200 dpi	4.8	21.5	77.7%
Black 300 dpi	6.3	36.5	82.7%
Grey 200 dpi	4.7	19.4	75.8%
Grey 300 dpi	6.3	33.6	81.3%
Full Colour 200 dpi	13.6	36.4	62.6%
Full Colour 300 dpi	19.9	68.4	70.9%

The single-page A1 document was scanned with devices left in default mode, 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

	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP	Canon % Faster/Slower (-) than HP
	Scan Time (seconds)	Scan Time (seconds)	
Black 200 dpi	5.2	8.2	36.6%
Black 300 dpi	7.1	12.1	41.3%
Grey 200 dpi	5.5	8.1	32.1%
Grey 300 dpi	7.7	12.0	35.8%
Full Colour 200 dpi	22.0	21.7	-1.4%
Full Colour 300 dpi	34.1	31.2	-9.3%

The single-page A0 document was scanned with devices left in default mode, 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

	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP	Canon % Faster/Slower (-) than HP
	Scan Time (seconds)	Scan Time (seconds)	
Black 200 dpi	6.3	32.7	80.7%
Black 300 dpi	9.7	60.7	84.0%
Grey 200 dpi	6.4	29.3	78.2%
Grey 300 dpi	10.0	58.1	82.8%
Full Colour 200 dpi	23.3	62.1	62.5%
Full Colour 300dpi	36.3	129.0	71.9%

The single-page A0 document was scanned with devices left in default mode, 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

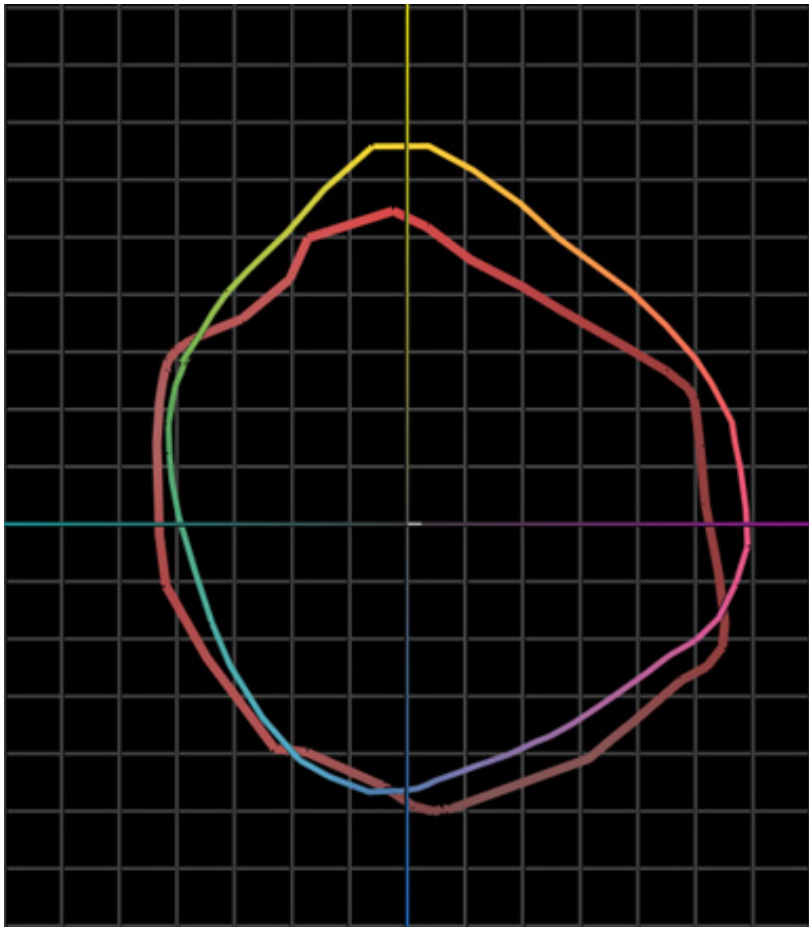
Colour Optical Density Evaluation

Canon imagePROGRAF iPF785 MFP						
Plain Paper						
	Fast		Standard		High	
	50%	100%	50%	100%	50%	100%
Cyan	0.60	1.04	0.65	1.15	0.61	1.15
Magenta	0.55	0.99	0.63	1.11	0.61	1.13
Yellow	0.45	0.77	0.52	0.88	0.51	0.89
Black	0.58	1.42	0.70	1.50	0.68	1.48

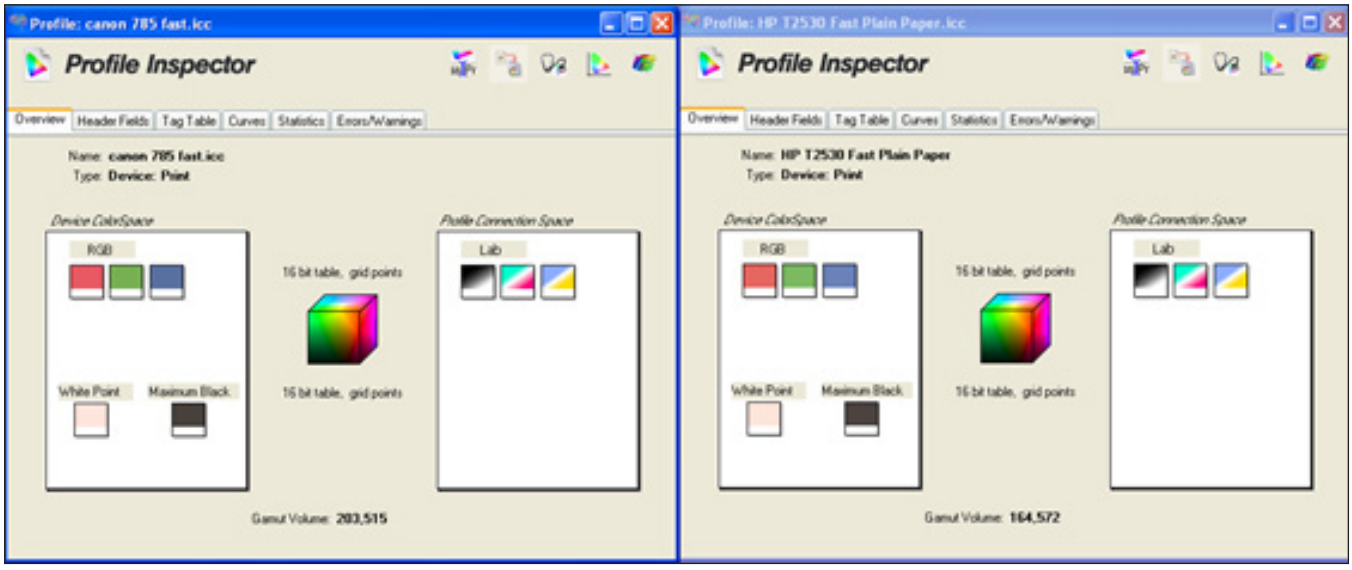
HP DesignJet T2530 MFP						
Plain Paper						
	Fast		Normal		Best	
	50%	100%	50%	100%	50%	100%
Cyan	0.49	0.61	0.43	0.69	0.43	0.70
Magenta	0.62	0.72	0.52	0.93	0.52	0.98
Yellow	0.50	0.62	0.52	0.86	0.52	0.86
Black	0.44	1.28	0.56	1.51	0.57	1.42

Colour Gamut Comparisons

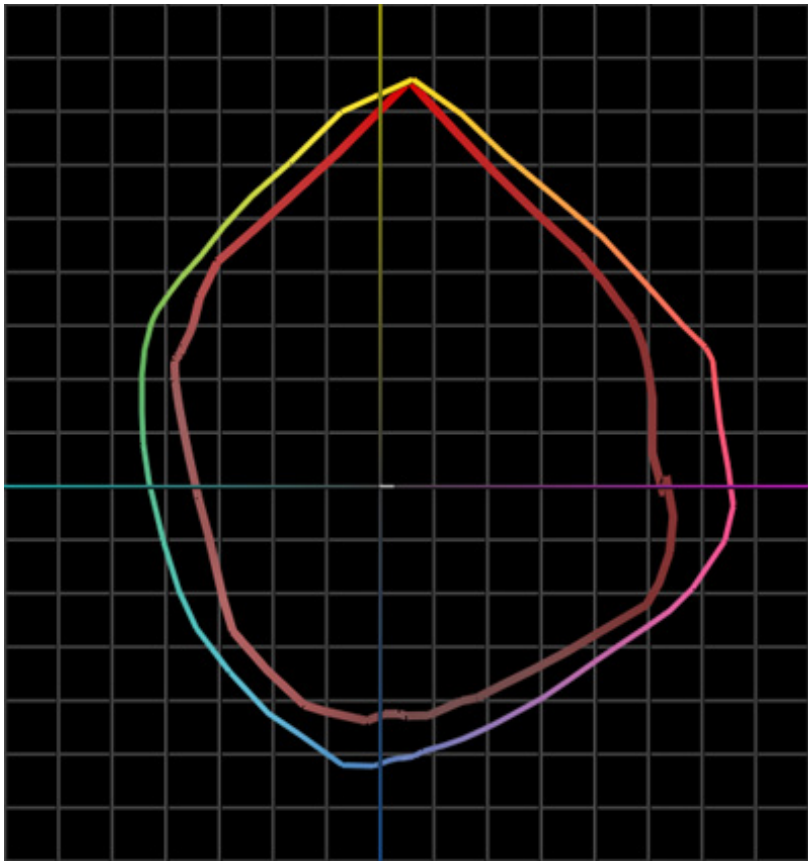
Media Type/Settings	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP	Canon % larger than HP
Plain Paper Fast Economy	118,881	16,081	639.3%
Plain Paper Fast	203,359	164,572	23.6%
Plain Paper Standard	273,359	166,203	64.5%
Plain Paper High	272,598	185,277	47.1%
Coated Best	488,074	437,597	11.5%



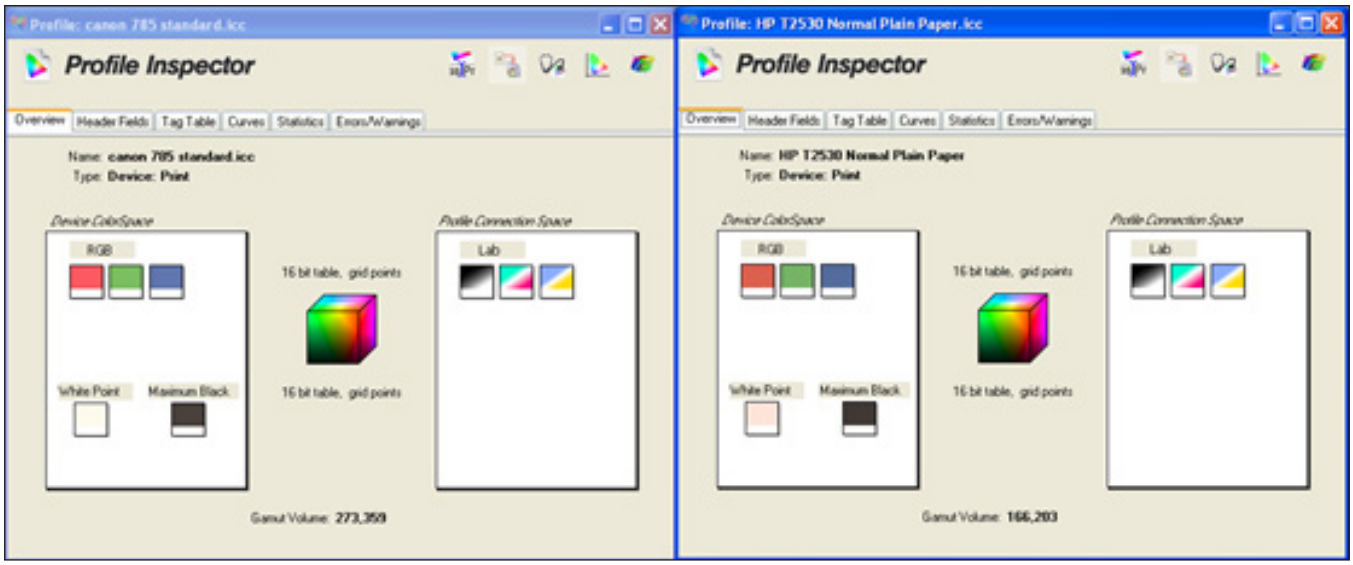
HP DesignJet T2530 MFP colour gamut on plain paper in Fast mode (red) versus Canon imagePROGRAF iPF785 MFP colour gamut (shown chromatically) on plain paper in Fast mode.



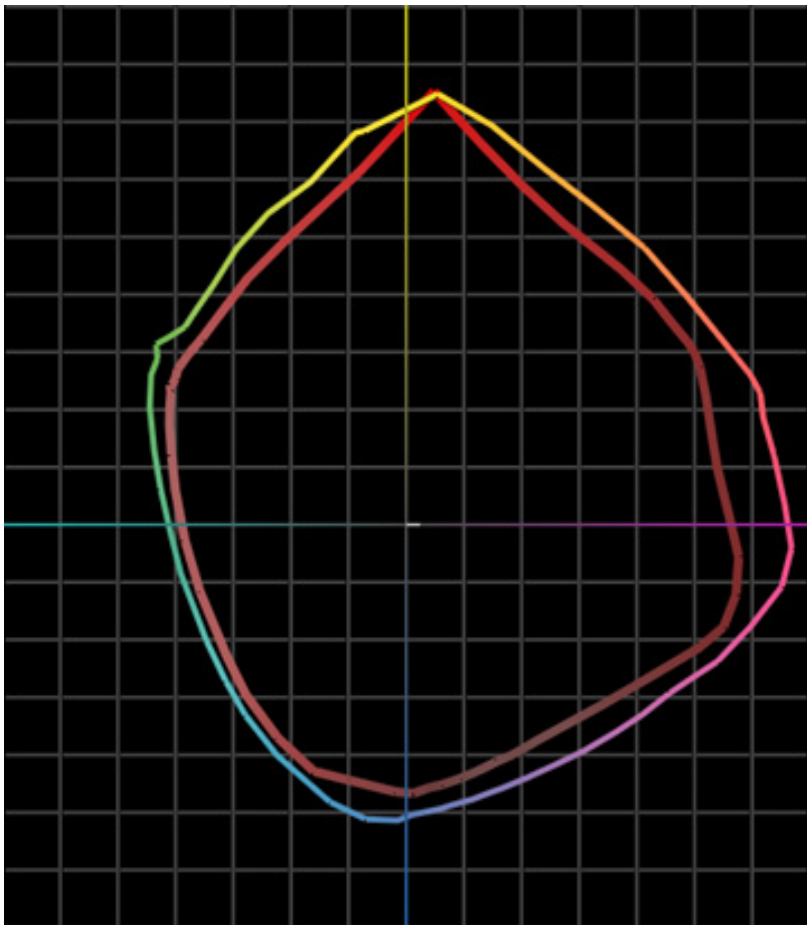
Colour gamut profiles for the Canon imagePROGRAF iPF785 MFP (left) and HP DesignJet T2530 MFP (right) on plain paper in Fast mode.



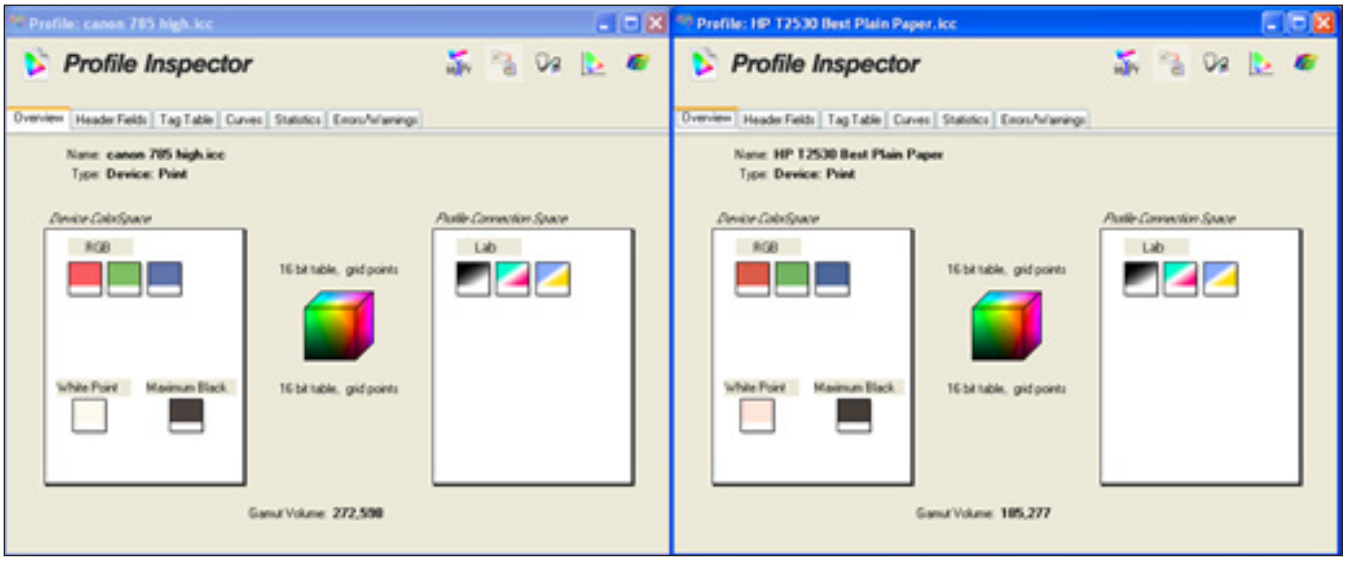
HP DesignJet T2530 MFP colour gamut on plain paper in Normal mode (red) versus Canon imagePROGRAF iPF785 MFP colour gamut (shown chromatically) on plain paper in Standard mode.



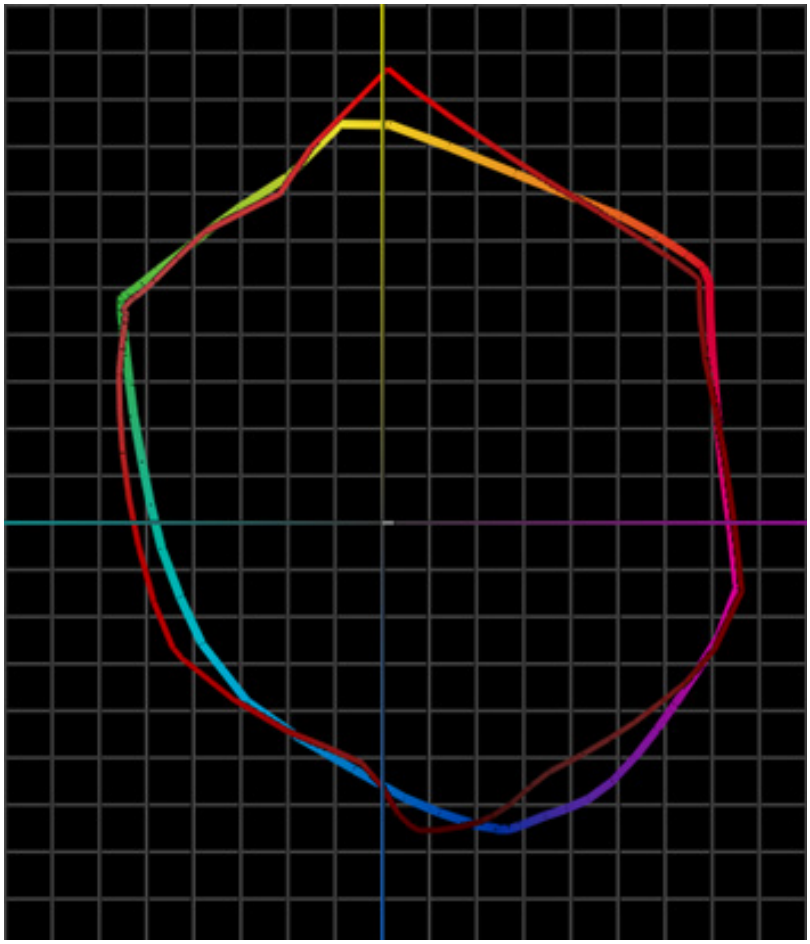
Colour gamut profiles for the Canon imagePROGRAF iPF785 MFP (left) and HP DesignJet T2530 MFP (right) on plain paper in Standard/Normal modes.



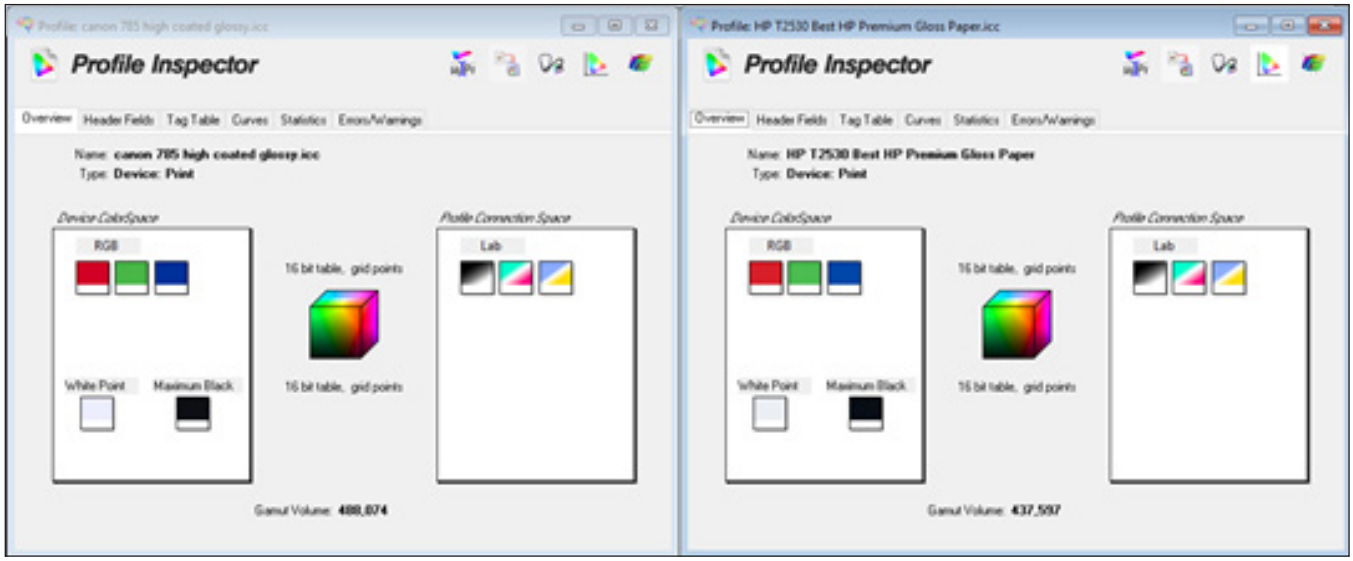
HP DesignJet T2530 MFP colour gamut on plain paper in Best quality settings (red) versus Canon imagePROGRAF iPF785 MFP colour gamut (shown chromatically) on plain paper in High quality settings.



Colour gamut profiles for the Canon imagePROGRAF iPF785 MFP (left) and HP DesignJet T2530 MFP (right) on plain paper in High/ Best quality modes.



HP DesignJet T2530 MFP colour gamut on glossy photo quality paper in Best quality settings (red) versus Canon imagePROGRAF iPF785 MFP colour gamut (shown chromatically) on glossy photo quality paper in High quality settings.



Colour gamut profiles for the Canon imagePROGRAF iPF785 MFP (left) and HP DesignJet T2530 MFP (right) on plain paper in Standard/Normal modes.

Black Image Quality

Solid Density

	Canon imagePROGRAF iPF770			HP DesignJet T2530 MFP		
Density Block	Fast	Standard	High	Fast	Normal	Best
1	1.39	1.46	1.42	1.45	1.35	1.41
2	1.41	1.44	1.40	1.43	1.38	1.44
3	1.39	1.46	1.43	1.44	1.36	1.42
4	1.41	1.46	1.44	1.44	1.36	1.43
Average	1.40	1.46	1.42	1.44	1.36	1.43

Note: Solid black density measurements are based on four readings taken from a BLI 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, greyscale, black ink only. Density was measured using an XRite 508 densitometer.

Copy Quality

Solid Density

	Original Target	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP
Cyan	1.30	0.77	1.00
Magenta	1.36	0.94	1.08
Yellow	0.89	0.63	0.76
Black	1.78	1.16	1.22

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 508 densitometer.

Colour Fidelity

	Canon imagePROGRAF iPF785 MFP	HP DesignJet T2530 MFP
McDonalds	12.4	10.1
Coca Cola Red	26.1	22.2
FedEx Blue	17.5	15.6
Fed Ex Green	15.7	5.8
Microsoft	7.1	4.4
Sun Microsystems	11.5	6.6
Ikea Blue	15.3	11.6
Ikea Yellow	24.5	19.3
Time Fortune 500	23.1	16.7
Quark	14.7	5.8
Versonic	19.6	16.8
T-Mobile Red	14.3	12.0
AVERAGE	**16.8**	**12.2**

BLI's Pantone test chart was used for Image Quality testing, with 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 iPF785 MFP	HP DesignJet T2530 MFP
Variation in line length in mm (scanned in landscape)	0.1	0.1
Variation in line length in mm (scanned in landscape)	0.1	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 (1200 and 600 dpi) with both devices set to Line, B & W mode, and saved as TIFF files.

Device Feature Set

	Canon imagePROGRAF iPF785 MFP	Advantage		HP DesignJet T2530 MFP
User Interface	22" Touchscreen LCD	✔		4.3" Touchscreen LCD
SCANNER FEATURES				
Optical resolution (dpi)	1200	✔		600
Scanning resolution (dpi)	100, 200, 300, 400, 600, 1200	✔		200, 300, 600
Colour Scanning Speed	7.62 cm (3")/sec. (200 dpi/24-bit)	✔		6.35 cm (2.5")/sec. (200 dpi)
Black Scanning Speed	33.0 cm (13")/sec. (200 dpi/24-bit)	✔		19.05 cm (7.5")/sec. (200 dpi) greyscale
Scanning Mode	24-bit RGB Colour, 8-bit Greyscale, 1-bit Black & White			24-bit RGB Colour, 8-bit Greyscale, 1-bit Black & White
Max. Document Size	1,067 mm x 15,000mm	✔		914 mm x 15,000 mm (TIFF)
Max. Scanning Width	1,016 mm (40")	✔		914 mm (36")
Max. Thickness of Paper (mm)	2.0 (with rear exit paper path)	✔		0.8
Paper Path	Front (U-turn or switch-back), rear (straight)			Rear exit
File Save Formats	TIFF, JPEG, PDF	✔		TIFF, JPEG (PDF only with PostScript model)
File Saving Area	Network folder, USB memory, HDD (controller PC)	✔		Network folder, USB memory
Preset Document Types	Colour Mixed, Colour Photo, Colour Graphics, Colour Lines, Grey Photo, Grey Lines, B & W, B & W Back-ground Removal 1-3	✔		Line, Mixed, Image
Ability to Save Custom Presets	Yes	✔		No
Background Removal	Yes (in preview edits)			Yes
Preview Scaling	Yes (Linear)	✔		No preview
Deskew	Yes (Manual)			Yes (Auto)
Preview Editing	Yes (Skew, Crop, Brightness, Sharpen, Black Point, White Point, Mirror, Invert)	✔		No
Scan Speed Adjustment	Yes	✔		No
Batch Scanning	Yes	✔		No
Scan to Email	Yes	✔		No
Auto Paper Size Detection	Yes			Yes
Rename and Save	Yes			Yes
PRINTER FEATURES				
Max. print quality	2400 x 1200 dpi			2400 x 1200 dpi
Number of inks	5		✔	6
Ink tanks replaceable during operation	Yes	✔		No
Ink-drop size	4 picoliter	✔		6 picoliter (C, M, Y, PK, G), 9 picoliter (MBK)
Ink cartridge capacity	MBK, BK,CMY 300/130 ml	✔		Mk: 300/69 ml, CMY, PK, G: 130/40 ml
Starter Ink (total)	490 ml	✔		269 ml
Number of nozzles	MBK: 5,120 nozzles; Other colours: 2,560 nozzles each; 15,360 in total	✔		9,632 nozzles in total

	Canon imagePROGRAF iPF785 MFP	Advantage		HP DesignJet T2530 MFP
Number of printheads	1(User-replaceable)			1 (User-replaceable)
Max. Paper Width	914 mm (36")			914 mm (36")
Line accuracy	+/-0.1% or less			+/-0.1%
Minimum line width	0.02 mm			0.02 mm
Minimum print margins	3 mm			3 mm
Borderless (0 mm) printing	Yes			Yes
Number of paper rolls	1		✔	2
Maximum outside diameter of roll paper	150 mm	✔		140 mm
Maximum cut-sheet media length	1.6 m		✔	1.676 m
Maximum media thickness	0.8mm	✔		0.5mm
Media loading	Front			Front
Optional media handling	Roll holder set			Core adaptor
Standard RAM	32 GB		✔	128GB
Maximum RAM	32 GB		✔	128GB
Hard drive	320 GB		✔	500 GB
Interface	10/100/1000Base-TX, USB 2.0	✔		10/100/1000Base-T
PDL	GARO, HP-GL/2, HP RTL			HP-GL/2, HP RTL,
Net weight (unpacked)	117 kg			112 kg
Power consumption when in standby	0.5 W	✔		< 1.3 W
Power consumption when ac-tive	140 W		✔	< 120 W
Acoustic pressure, active	48 dB(A)		✔	47 dB(A)
Acoustic pressure, standby	35 dB(A)	✔		39 dB(A)
Acoustic power, active	6.5 B(A)			6.5 B(A)
Acoustic power, standby	INA			5.8 B(A)

Driver Feature Set

	Canon imagePROGRAF iPF785 MFP	Advantage		HP DesignJet T2530 MFP
Speed settings	5 (Fast 300, Fast 600, Standard 600, High 600 and High 1200)	✔		3 (Fast, Normal, Best)
Economy mode	Yes			Yes
Predefined profiles	7 default (Poster, CAD colour and mono, GIS Perspective, Photo, Office Doc, Faithful Colour Reproduction	✔		5 (Default, CAD, GIS, Photo, B/W Photo)
Overview of profile settings provided	Yes	✔		No
Media profiles	44 + 5 user-definable	✔		34
IQ optimized for options	Yes			Yes
Watermark	Yes	✔		No

	Canon imagePROGRAF iPF785 MFP	Advantage		HP DesignJet T2530 MFP
Sharpen text	Yes			Yes (Max detail setting)
Thicken fine lines	Yes			Yes (Max detail setting)
Mirror image	Yes			Yes
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 – auto 90 or 180 degrees			Yes – auto 90 degrees
Option to preview before print	Yes	✔		No
Link to device Web server from driver	No (there is a link to Status Monitor)		✔	Yes (via Status Monitor)
CMY balance adjustment	Yes			Yes
Brightness adjustment	Yes			Yes
Contrast adjustment	Yes			Yes
Saturation adjustment	Yes			Yes
Advanced colour management options	Yes			Yes
Enlargement Copy Mode	Yes (5 to 600)			Yes (25 to 400)
Free Layout Capability	Yes	✔		No
MS Office Plug-in	Yes	✔		No
Accounting Capability	Yes			Yes
Disable automatic cutter	Yes			Yes
Unidirectional printing	Yes	✔		No
Integration with MFP	Yes			Yes

iPF785 MFP also offers PosterArtist Lite as bundled software

Test Environment

Testing was conducted in BLI's European test lab, in an atmospherically controlled environment monitored by a 24/7 ExTech RH520 Temperature/RH chart recorder, ensuring that typical office conditions were maintained. All paper used in testing was allowed to acclimatize inside the facility for a minimum of 12 hours before being used.

Test Equipment

Test equipment: BLI's dedicated test network in Europe, consisting of Windows 2008 servers, Windows 10 workstations, 10/100/1000BaseTX network switches and CAT5e/6 cabling.

Test Procedures

The test methods and procedures employed by BLI in its lab testing include BLI's proprietary procedures and industry-standard test procedures. In addition to a number of proprietary test documents, BLI uses industry standard files including an IT8 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 a profile software tool from Colour Confidence that was read using an EFI ES-1000 colour spectrophotometer and analysed using Chromix ColorThink Pro 3.0 software. Density of black and colour output was measured using an X-Rite 508 densitometer.

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