HP Smart Tank 660-700 and 6000-7000 Series: The Smartest Ink Tank Printers

Objective

In August 2021, Keypoint Intelligence was contracted by HP Inc. to determine if the HP Smart Tank 660-700 and 6000-7000 series, as represented by the HP Smart Tank 7602 and 670, could be considered "the smartest ink tank printers, in class."

Background

Smart devices that go beyond the capabilities of traditional products, driven by Internet connectivity and other advanced features, is a quickly growing area of consumer and business technology. Customers appreciate the ability to control these devices with mobile apps, monitor device status and settings online, and receive alerts when an issue occurs, among other benefits. Smart technology has extended into the print sphere, enabling A4 MFPs, printers, and all-in-ones to offer a broader range of functionality, often focused on adding convenience and improving ease of use.

Methodology and Findings

Using a combination of desk research and product testing[1], Keypoint Intelligence compared two HP printers (HP Smart Tank 7602 and HP Smart Tank 670) to five in-class models (Canon PIXMA G6020, Brother MFC-T920DW, Epson EcoTank ET-2760, Epson EcoTank ET-4760, and Epson EcoTank ET-5170) across eight different areas of smart print technology)[2]:

- Dual-band Wi-Fi with self-healing
- Device setup
- Mobile app support
- Interface and smart-guided lighting
- Low-on-ink sensors
- Low-on-paper sensors
- Ink refill experience

Keypoint Intelligence's research and testing revealed that the HP Smart Tank 7602 and HP Smart Tank 670, which are at the high and the low end of the HP 660-700 and 6000-7000 series of HP Smart Tanks, meet the criteria to be considered "the smartest ink tank printers," based largely on their integration with mobile-friendly, notification, and self-healing features.

Overall Specs and Performance Ratings

	HP Smart Tank 7602	HP Smart Tank 670	Brother MFC-T920DW	Canon PIXMA G6020	Epson EcoTank ET-2760	Epson EcoTank ET-4760	Epson EcoTank ET-5170
Dual-Band Wi-Fi with Self-Healing	√	√					
Device Setup	√	√	√	√	√	√	√
Mobile App Support	√	√	√	√	√	√	√
Interface and Smart-Guided Lighting	√						
Low-on-Ink Sensors	√	√	√	√	√	√	√
Low-on-Paper Sensors	√						
Ink Refill Experience	√	√	√	√	√	√	√

A checkmark indicates that the device has that feature. Orange checkmarks in each criterion indicate an advantage over the competitive devices.

Dual-Band Wi-Fi with Self-Healing

Of the devices evaluated in this study, the HP Smart Tank 7602 and HP Smart Tank 670 are the only two with dual-band Wi-Fi with self-healing listed as a product feature. A printer with this technology can automatically overcome local network print failures to maintain a Wi-Fi connection with a wireless router, which enables a fast and reliable connection. This is largely achieved through support for routers operating in both the 2.4 GHz and 5.0 GHz frequency bands, which use up to 12 non-overlapping channels versus only three for 2.4 GHz only.

The competitive non-HP products being assessed only list support for 2.4 GHz Wi-Fi in their product specifications. In addition, a review of manufacturer brochures and webpages for these products reveals they contain no terms implying a resilient print path to overcome local network print failures (for example, "self-healing," "failover," and/or "fail safe"), suggesting that self-healing Wi-Fi technology is not built into these devices.

Device Setup

The HP devices were the easiest to set up among all the printers evaluated in this study. While the experiences of un-boxing the various devices, powering them on, and having them initialize were very similar across all tested models, the process of adding these devices to the Wi-Fi network was significantly easier for the HPs. Indeed, this was driven by the HP Smart app, which is available for Android and Apple mobile devices as well as Windows 10 and macOS computers. Once the printer is automatically detected through Bluetooth and then selected, Wi-Fi and Wi-Fi Direct are installed seamlessly for immediate printing.

Key Steps of HP Smart App Setup Process

Add a Printer	Select a Printer	Completing Mobile Setup	Testing out Printing
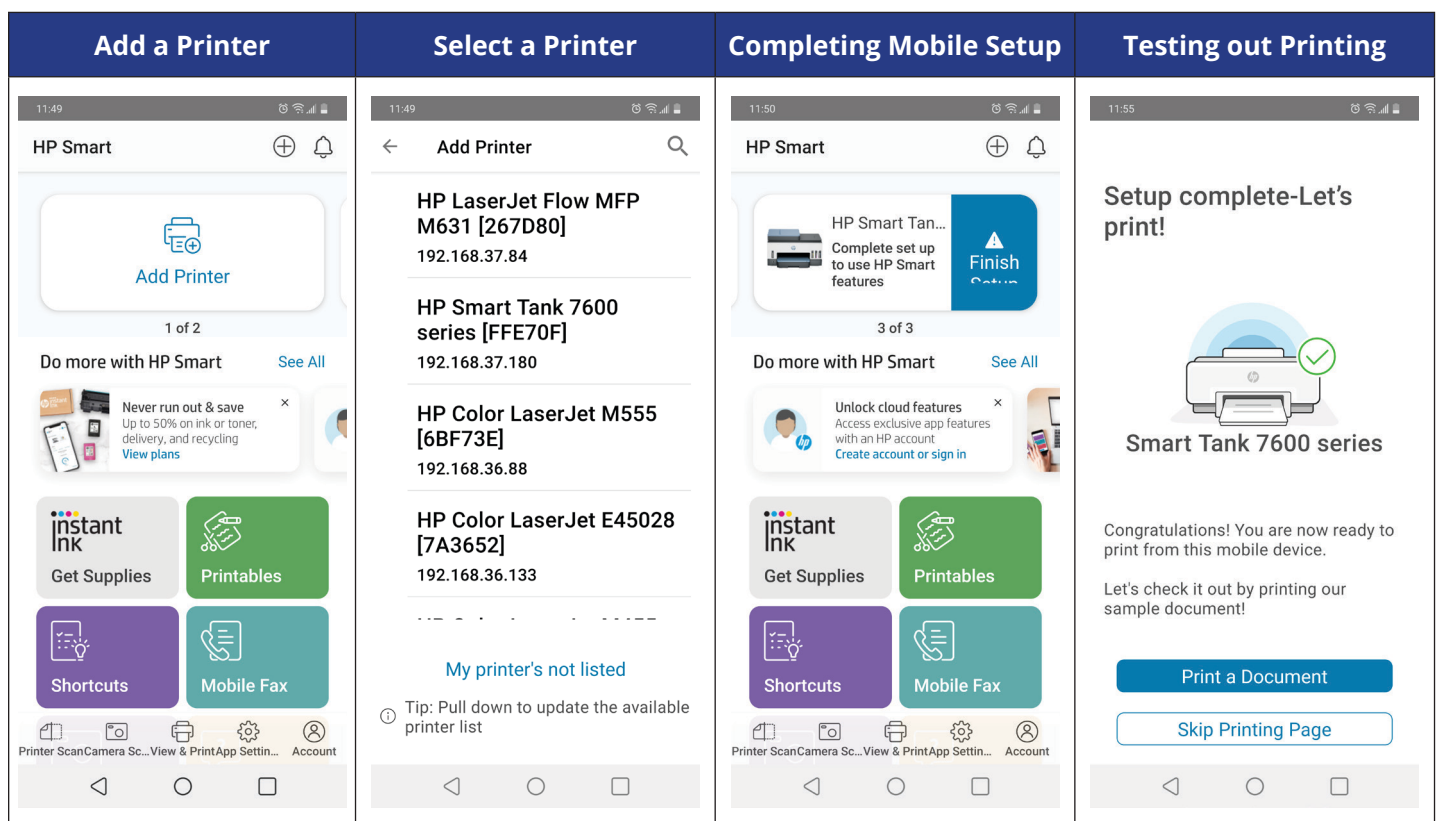
The HP Smart app also guides users step by step in loading paper, installing ink, and performing other tasks through the use of detailed animations and translated instructions—an improvement over printed instructions that are static in nature.

The Canon and Epson models feature apps that require more steps for setup, and while the Brother setup process was straightforward, it did require the rather old-fashioned step of pressing a dedicated Wi-Fi button. When it comes to setting up Wi-Fi from a computer, the HP Smart app experience for Windows 10 and macOS users is notably more automated and seamless compared to the experience of installing a CD or downloading drivers required by the competitors.

The HP Smart app can also be used to register the printer, which provides access to other printer features, through creating an HP account or signing into an already existing one. In addition, instructions are provided for how to use the printer from other mobile devices or computers. This involves installing the HP Smart app on other mobile devices and HP Smart software from www.hpsmart.com for computers (and links to these locations can be sent from the app).

HP Smart App a Best-in-Class Print App[3]

HP Smart app[4], which was evaluated extensively by Keypoint Intelligence earlier this year (www.keypointintelligence.com/HPSmartApp), provides the greatest flexibility and ease of use over the print and scan apps offered by the competitors. For example, users can customize the app by selecting and rearranging many functions on the screen—giving them quick access to those they use most. In contrast, the other apps have static menus, which means users must navigate to these locations to change settings and view device and consumables status.

HP Smart App's Customizable Menu vs. Competitors' Static App Menus

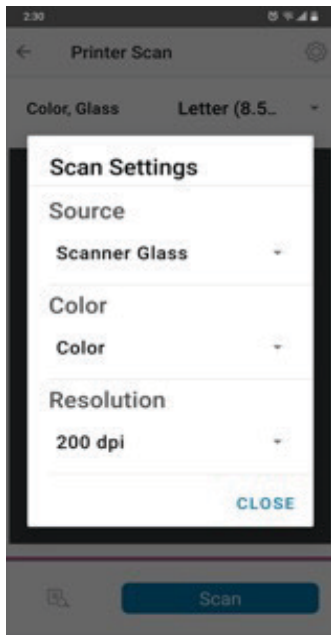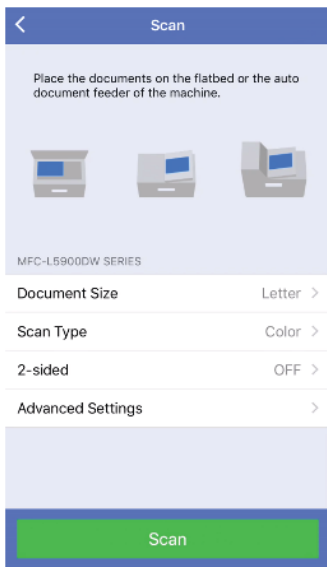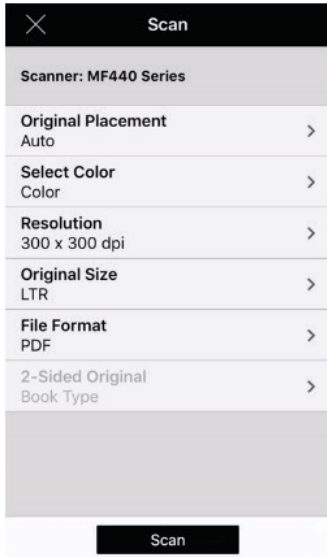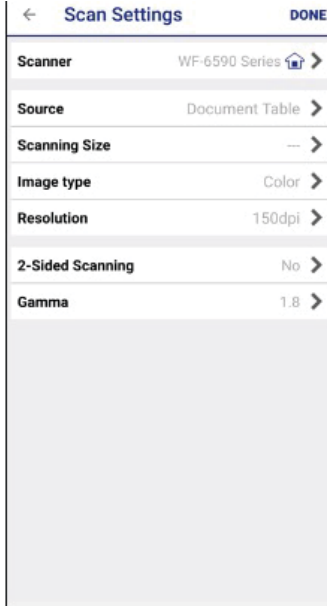| HP Smart	Brother iPrint&Scan	Canon PRINT Inkjet/ SELPHY	Epson iPrint
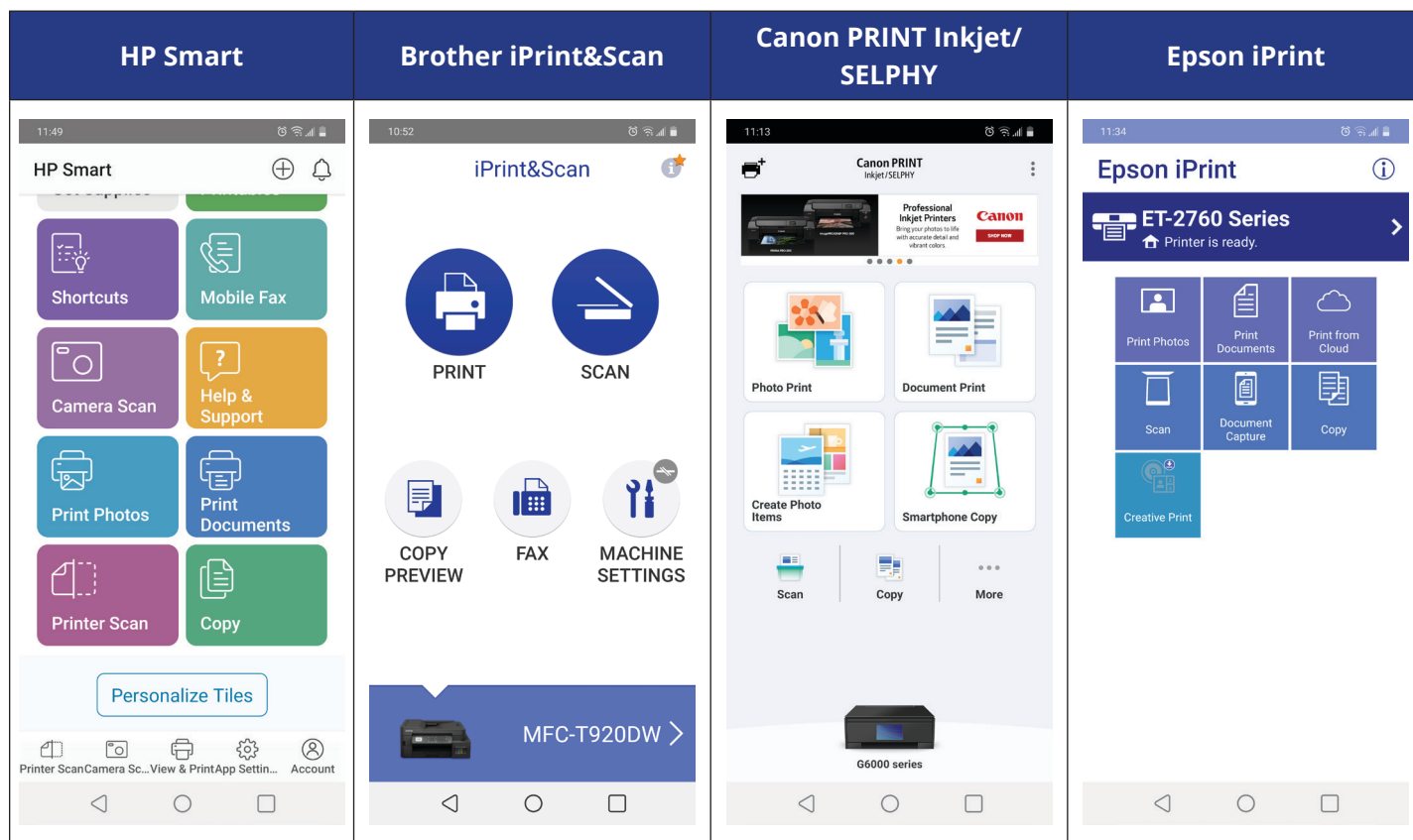
Part of what makes HP Smart the best-in-class print app is the addition of HP Shortcuts, which can be part of the customizable menu. This function lets users save unique workflows as one-touch buttons, so they can automate tasks like scanning an expense report, printing a copy for their records, and emailing a copy to finance. None of the competing mobile apps evaluated offered this capability, though the desktop version of Brother iPrint&Scan enables the creation of shortcuts via the Create Workflows button (and HP offers this as a desktop feature as well).
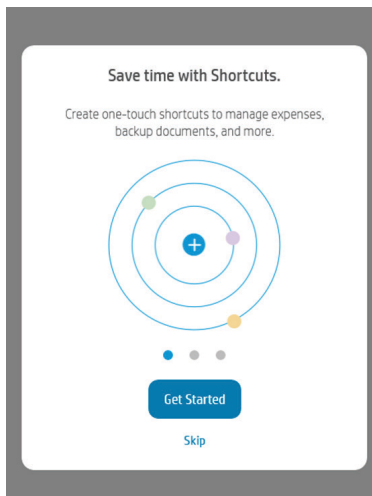
HP Smart app also has scan features that are far more robust than the competitors, providing selections before and after the scan takes place (for example, the ability to add text to scanned documents) as well as intuitive routing options.

Scan Portion of Mobile Apps

HP Smart	Brother iPrint&Scan	Canon PRINT Inkjet/ SELPHY	Epson iPrint

In addition, the app offers the most remote feedback to the user—including details on consumable status levels on the home screen, as well as quick and accurate information on paper levels, offline status, and open doors. Other advantages of the HP Smart app include:
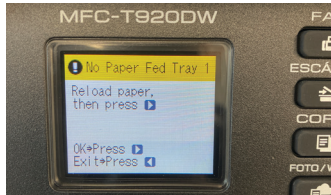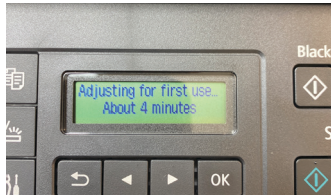
- A simple automated process for setup that involves fewer steps compared to competing apps (for example, the Canon PRINT Inkjet/Selphy app required the printer to be connected to Wi-Fi before it could establish a connection with the app)

- Ability to submit jobs to the HP cloud before releasing them at the printer (using Bluetooth), without the need for additional software

- A wide range of photo editing features, including filters, crop, and brightness adjustment

- A virtual agent to guide users through solving common problems and issues

- A consistent performance and interface with its Windows and macOS desktop editions

User Interface Including Magic Touch Panel, Smart-Guided Lighting, and Buttons
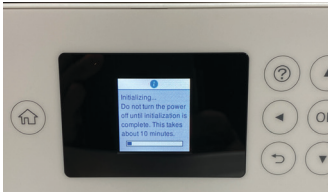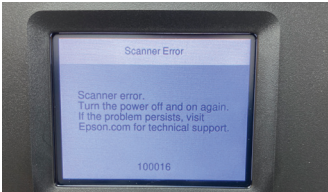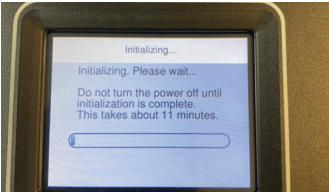
Of all the printers evaluated, the HP Smart Tank 7602 provides the most enjoyable walk-up experience thanks to features like the touchscreen, called the Magic Touch Panel, and smart-guided lighting. The 3" x 1" LED touchscreen may not be the largest touchscreen tested (the Epson EcoTank ET-4760 and Epson EcoTank ET-5170 models have larger ones), but the white text against the black background is easier to read.

Navigation of the HP Smart Tank 7602 touchscreen is also simple, with users able to interact with and access various settings and information—including consumables levels—and perform printer functions through the standard or shortcut selections. This contrasts with the Brother MFC-T920DW, for example, which is not as easy unless one is familiar with Brother products. In addition, the HP Smart Tank 7602 is the only device tested with a screen angled upward, making it easier for people (those with limited abilities inclusive) to interact with a device that is lower than them.

Interface Comparisons

HP Smart Tank 7602	HP Smart Tank 670	Brother MFC-T920DW	Canon PIXMA G6020
3" x 1" LED Magic Touch Panel	0.5" x 2" LCD	1.8" x 1.25" full-color LCD	0.5" x 2" non-backlit LCD

Epson EcoTank ET-2760	Epson EcoTank ET-4760	Epson ET-5170
1.4" x 1" LCD	2.4" x 1.5" LCD touchscreen	2.4" x 1.5" LCD touchscreen

Another advantage of the HP Smart Tank 7602's walk-up experience is the smart lighting that complements onscreen alerts. With this feature, depending on the printer's status, lighting may appear in a particular color above the paper output tray. For example, amber signals the printer needs attention/an error might have occurred while green indicates the printer is busy, doing an update, or turning on or off.

Different Colored Smart Lighting Above HP Smart Tank 7602 Paper Output Tray

Color of Light	Color Name	Alert Description
	Amber	The printer needs attention, an error might have occurred.
	Blue	Shows the Wi-Fi network connection status.
	Light Blue	The printer is idle or in sleep mode while connected to a Wi-Fi network.
	Green	The printer is busy, doing an update, or turning on or off.
	Purple	The printer is in Wi-Fi setup mode.
	White	The printer is idle, sleeping, or processing a job.

In addition, certain colors can be shown in different ways and in different combinations to provide more information. For example, if an amber light is quickly blinking, that means a critical error has occurred and the printer must be turned off and back on. If a flashing amber light is preceded by a pulsing solid blue light, that means the printer is unable to connect to a Wi-Fi network. If a flashing amber light is preceded by a rapidly blinking solid purple light, this indicates a Wi-Fi Protected Setup (WPS) error.

None of the other models evaluated support this kind of feature. Another form of lighting only found on the HP Smart Tank 7602 is ink tanks that illuminate when ink levels are low or empty. While there are multiple ways users can be alerted to low ink levels, this is perhaps the most straightforward way this can be communicated to users.

HP Smart Tank 7602 Ink Tank Illuminations

Black cartridge level is fine.	Yellow cartridge lit up due to low ink level.	Blue cartridge lit up due to no ink remaining.

Despite not having this kind of lighting, the other devices do have windows enabling users to view ink levels. That said, Brother's ink windows are behind a cover and somewhat hard to see.

Brother MFC-T920DW Ink Levels

Another strength of the HP Smart Tank 7602 are printer status messages on the touchscreen as well as the ability to cancel a job by pushing a red X. The HP Smart Tank 670 has a similar feature—smart guided buttons—that help users easily manage tasks. For example, if someone lifts the top of the printer to scan a document, only the scanning buttons will light up.
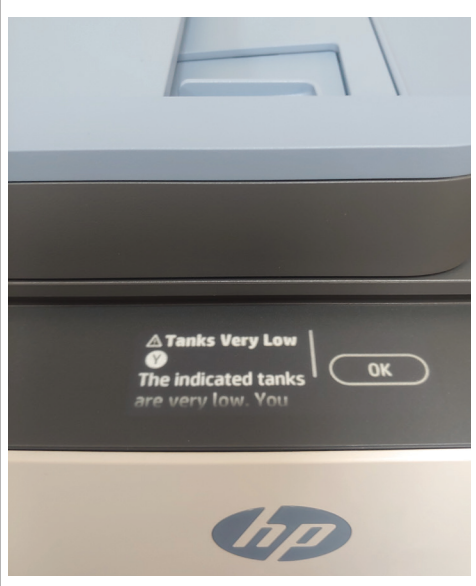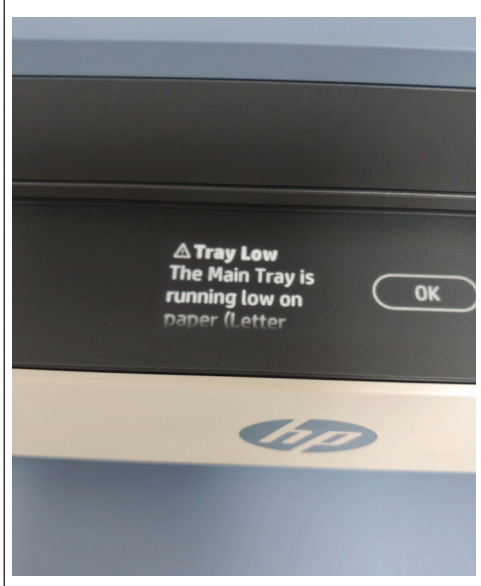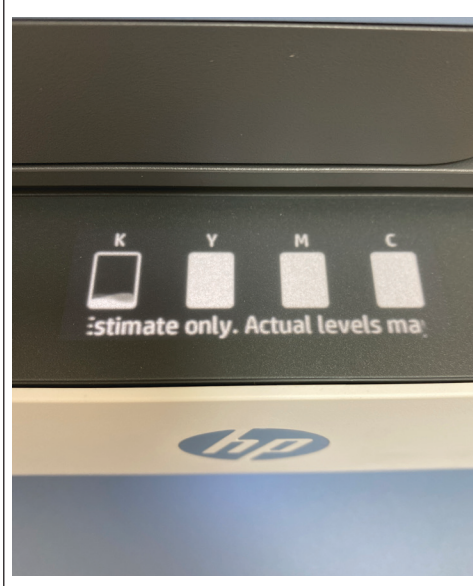
HP Smart Tank 7602 Status Messages

HP Smart Tank 670 Smart-Guided Buttons
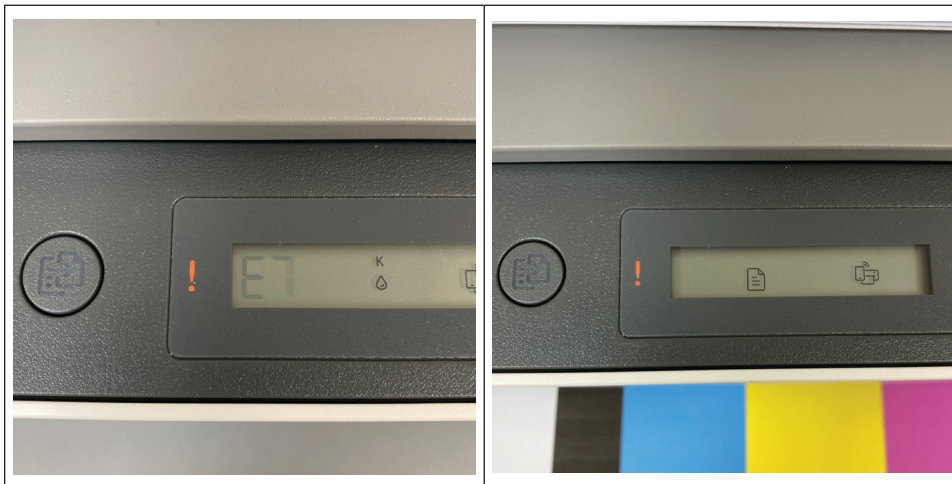
Low-on-Ink and Paper Sensors

The HP Smart Tank 7602 features the most comprehensive system for detecting and alerting users to low or completely exhausted ink or paper. With ink, as mentioned above, users can not only see the tanks and their contents easily, but these tanks light up when ink is running low—signaling they should add ink (and this is required for continued operation). In addition to this unique feature, low ink and paper alerts are displayed on the touchscreen thanks to sensors for both of these consumable types. On the other hand, while the Brother's, Canon's, and Epson's low-ink warnings display via the applications (desktop/mobile), the only indication on the respective control panels is for out of ink. Additionally, the competitors only indicate that there is no paper in the cassette, not when it's just low.

Ink and Paper Alerts on HP Smart Tank 7602's Magic Touch Panel

Tank low on ink message.	Tray low on paper message.	Ink tank levels accessible via touchscreen menu.

HP Smart app and PC software also notify users that ink or paper are low in the HP Smart Tank 7602, which is an advantage over the mobile and desktop notifications for the other products evaluated, as these only highlight low ink. Furthermore, the Brother MFC-T920DW and Canon PIXMA G6020 will continue printing when ink levels are low, potentially causing damage to the print head in the process.

Ink Refill Experience

The process of refilling the HP Smart Tank 7602 and HP Smart Tank 670 ink tanks was clean and spill-free, with less potential for a mess to occur compared to the experience of refilling the competing products' ink tanks. Indeed, no spills or mess occurred when opening the HP ink bottles and filling up the tanks, thanks in large part to a seal at the top of the bottles that prevents leakage.

For the competitors, though, this process wasn't so foolproof. The small bottles for the Brother MFC-T920DW had to be positioned at a 45° angle during the refill process, otherwise ink could easily spill. Similarly, if the bottles for the Canon PIXMA G6020 weren't turned upside down quickly enough, little droplets of ink could start to spill. And while the Epson bottles offer the benefit of a specific key that prevents users from pouring the wrong color ink into a tank, the tanks weren't large enough to hold their contents. Additionally, about 10% of the ink remained at the tip of the Epson bottles, which could easily drip out, increasing the chance of a messy refill experience.

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Images of Refilling HP Ink Tanks vs. Those of Other Models

HP Smart Tank 7602/ Smart Tank 670	Brother MFC-T920DW	Canon PIXMA G6020	Epson EcoTank ET-2760/ ET-4760/ET-5170

Ink Spills Resulting from Filling Brother and Epson Tanks

Brother MFC-T920DW	Epson EcoTank ET-4760
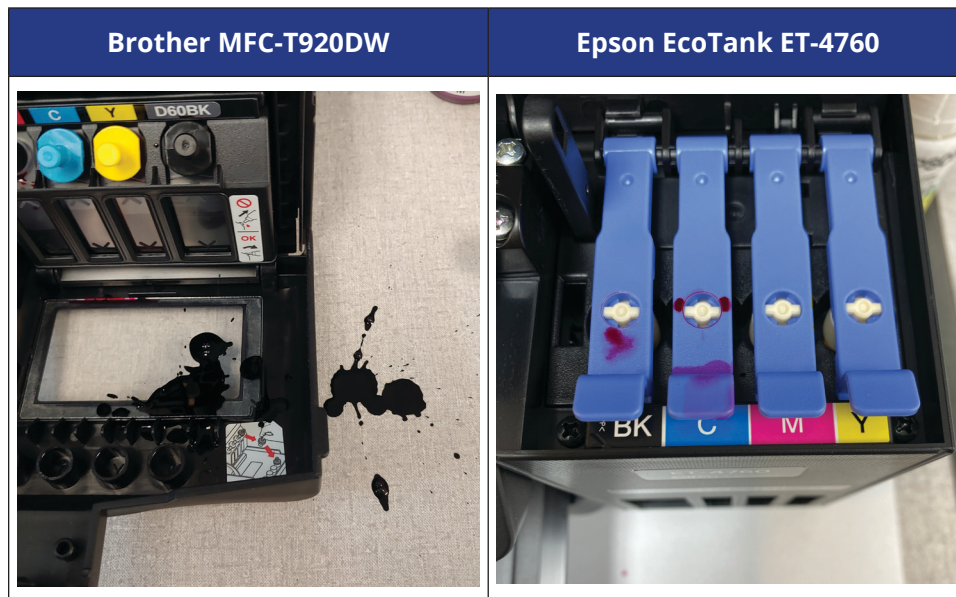
End Notes

[1]Testing was conducted in Keypoint Intelligence's US lab under ambient conditions of 72°F (+/-5°F) and 45% RH (+/-10%), monitored daily by an Extech digital temperature/humidity recorder. Test materials/equipment included US-sourced supplies and Keypoint Intelligence's dedicated test network consisting of Windows 2012, 2016, and 2019 servers and Windows 10 Professional workstations, 10/100/1000BaseTx network switches, and CAT5e/6 cabling.

[2]Compared to the majority of in-class, 3:1 and 4:1 duplex, wireless A4 ink tank printers under $552 USD. Printers selected by market share as reported by IDC Quarterly Hardcopy peripherals Tracker-Final Historical CYQ1 2021. Claim based on publicly available information as of October 2021 and Keypoint Intelligence hands-on testing and study in October 2021 commissioned by HP. Details: www.keypointintelligence.com/HPSmartestInkTank

[3]Requires the HP Smart app download. For details on local printing requirements, see http://www.hp.com/go/mobileprinting. Certain features/software are available in English language only and differ between desktop and mobile applications. Subscription may be required. Subscription may not be available in all countries. See details at HPSmart.com. Internet access required and must be purchased separately. HP account required for full functionality. List of supported operating systems available in app stores.

[4]Compared to OEM printing apps for the majority of top-selling, network-capable inkjet/laser printers and all-in-ones for the home and office, priced ≤450 USD. Market share as reported by IDC Quarterly Hardcopy Peripherals Tracker – Final Historical CYQ4 2020. Claim based on research of printer manufacturer's print apps and Keypoint Intelligence hands-on testing and study in April 2021 commissioned by HP. For details, please see: keypointintelligence.com/HPSmartApp

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