

HP Officejet Pro 8500 & HP Officejet 6500 vs. Samsung CLX-3175FN and Dell 2135cn

FEBRUARY 2009



HP Officejet Pro 8500



Samsung CLX-3175FN



Dell 2135cn



HP Officejet 6500

Specifications	HP Officejet Pro 8500	HP Officejet 6500	Samsung CLX-3175FN	Dell 2135cn
Price (US \$)	\$299	\$149	\$399	\$549
Technology	Inkjet all-in-one printer (4 individual ink tanks)	Inkjet all-in-one printer (4 individual ink tanks)	Four-pass color laser multifunction printer	Single-pass color laser multifunction printer
Color Speed	11 ppm	7 ppm	4 ppm	12 ppm
Black Speed	15 ppm	7 ppm	17 ppm	16 ppm
Input Capacity	250 sheets	250 sheets	150 sheets	250 sheets
Duty Cycle	15,000 pages per month	7,000 pages per month	20,000 pages per month	35,000 pages per month

Executive Summary

In BLI's testing of the four entry-level color models—the inkjet HP Officejet Pro 8500 and Officejet 6500 and the Samsung CLX-3175FN and Dell 2135cn laser models—the HP models had a definite advantage in the electricity consumption evaluation, with both devices consuming about 70 percent less electricity than the Samsung model and 60 percent less electricity than the Dell model. The Dell 2135cn had the advantage in color speed and first-page testing; however, both HP models fared better than the CLX-3175FN in the color speed and first-page testing.

TEC Energy Consumption

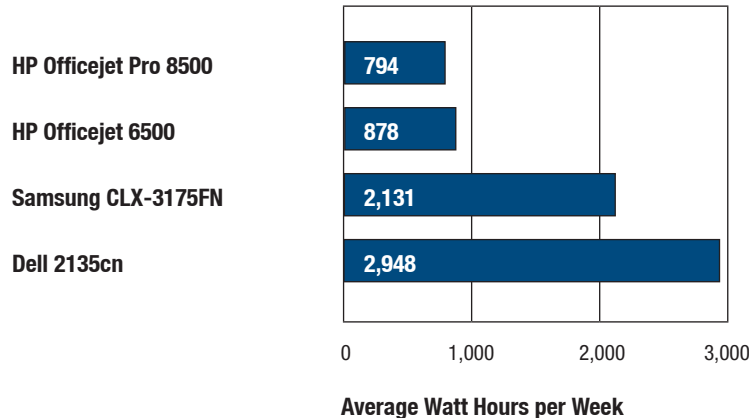
BLI conducted a comparative energy-consumption evaluation using the Energy Star Typical Electricity Consumption (TEC) method, with energy consumed recorded as watt-hours (Wh). The test is designed to replicate real world usage and measures energy consumed over a specified period, during which each device is in sleep mode, warm-up mode, ready mode and printing multiple single-sided sets of a 12-page black document. In this procedure, measurements are taken using a Yokogawa WT210 watt meter. For this competitive group, typical usage is assumed as being 288 pages per day, and the numbers reported are based on an average of two tests.

- In BLI’s electricity consumption testing, the HP Officejet Pro 8500 proved to be the most energy efficient device, followed by the HP Officejet 6500 and then the Samsung CLX-3175FN; the Dell 2135cn used the most electricity in BLI’s testing.
- Based on this testing, BLI projects that the HP Officejet Pro 8500 would consume an average of 794 Wh during a week of typical usage, while the HP Officejet 6500 would consume an average of 878 Wh. It is also estimated that the Samsung CLX-3175FN would consume an average of 2,131 Wh, while the Dell 2135cn would consume an average of 2,948 Wh in a week of typical usage.

TYPICAL WEEKLY ELECTRICITY CONSUMPTION

MODEL	TOTAL TEC
HP Officejet Pro 8500	794 Wh
HP Officejet 6500	878 Wh
Samsung CLX-3175FN	2,131 Wh
Dell 2135cn	2,948 Wh

TYPICAL ELECTRICITY CONSUMPTION



Typical Electricity Consumption is calculated based on each device printing 288 pages per day, with the device spending the remainder of the time in sleep mode after printing is completed. A watt meter is used to determine power used during printing and in sleep mode for each device.

Speed Testing (Color Mode)

BLI subjected each device to comparative print speed testing, using the ISO 24734 test suite with the devices in default mode, using the PCL driver. Each four-page file (PDF, Word and Excel) is printed three times and the time to completion indicates the time it takes to print the second and third sets (for a total of eight pages). Times for each of the three tests were added together to get a total time to print 24 pages, which is reported in the chart below.

- When combining the time to print all three color documents, the Dell 2135cn was the fastest, followed by the Officejet Pro 8500. The Officejet 6500 was third fastest, while the Samsung CLX-3175FN was slowest taking more than two times as long to print the files compared to the Dell 2135cn.
- When printing two sets of a three-page PDF document in color mode, the Officejet Pro 8500 was the fastest, at 54.31 seconds, while the Dell 2135cn was the second fastest, completing the test in 57.33 seconds. The Officejet 6500 was third, completing the test in 75.47 seconds. The Samsung CLX-3175FN took the longest to complete the test, at just over two minutes.
- When printing two sets of a three-page Word document in color mode, the Officejet Pro 8500 was the fastest, at 30.58 seconds, while the Dell 2135cn was the second fastest, completing the test in 37.69 seconds. The Officejet 6500 was third, completing the test in 44.52 seconds. Clearly the slowest model in testing, the Samsung CLX-3175FN took more than two minutes to complete the test.
- When printing two sets of a three-page Excel document in color mode, the Dell 2135cn was the fastest, at 37.72 seconds, while the Officejet Pro 8500 was the second fastest, completing the test in 50.15 seconds. The Officejet 6500 was third, completing the test in 75.85 seconds. The Samsung CLX-3175FN was by far the slowest, taking just over two minutes to complete the test.

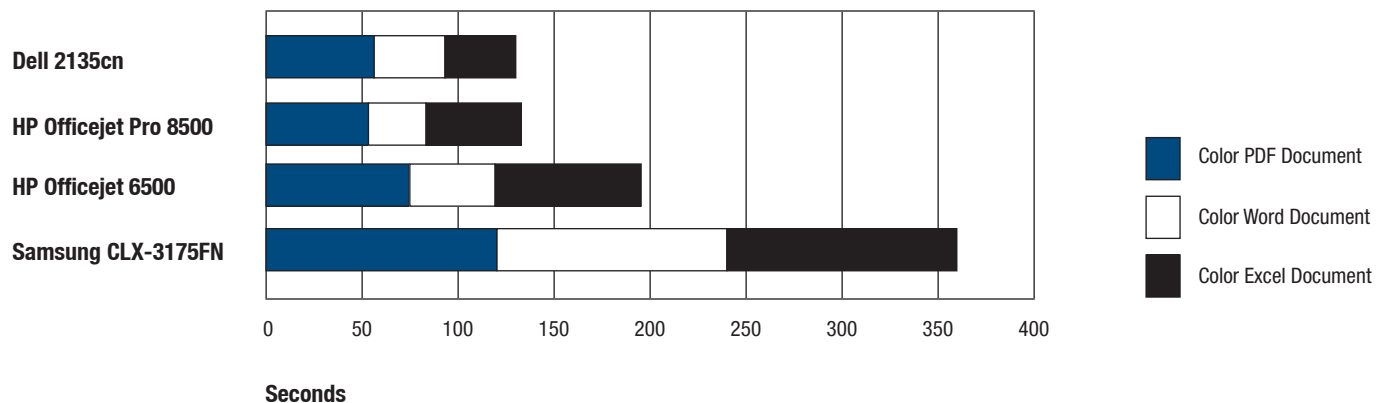
TIME TO PRINT ISO 24734 TEST SUITE (IN SECONDS)

	Color PDF Document (8 Pages)	Color Word Document (8 Pages)	Color Excel Document (8 Pages)	Total Time to Print All Three Files (24 Pages)
Dell 2135cn	57.33	37.69	37.72	132.74
HP Officejet Pro 8500	54.31	30.58	50.15	135.04
HP Officejet 6500	75.47	44.52	75.85	195.84
Samsung CLX-3175FN	120.04	120.21	120.05	360.29

In this test, three sets of each four-page document are printed. Timing begins when the last page of the first set exits the device and ends when the last page of the third document set completely exits the device. This method eliminates the time required for job processing and for the device to get up to speed, effectively demonstrating the time to print eight pages (two sets of the document).

Note: Numbers in red indicate the fastest results.

TOTAL TIME TO PRINT 24 PAGES



Results above indicate time to print two sets of three four-page documents, for a total of 24 pages. Three sets of each four-page document are printed and the time to print the first set of each document is eliminated. Timing begins when the last page of the first set exits the device and ends when the last page of the third document set completely exits the device.

First-Page-Out Times (Color Mode)

BLI subjected each device to comparative raster testing to determine which device had the fastest first-page-out times in color, using the ISO 24734 test suite with the devices in default mode, using the PCL driver.

- Based on an average of three documents tested, the Dell 2135cn provided the fastest first-page time in color mode, followed by the HP Officejet Pro 8500 and then the HP Officejet 6500. The Samsung CLX-3175FN had the slowest first-page time in color.
- When printing the ISO 24734 PDF document in color mode, the Dell 2135cn had the fastest first-page-out time, at 17.55 seconds, while the Officejet Pro 8500 was the second fastest, printing the first page in 22.43 seconds. The Officejet 6500 was third, outputting the first page in 28.28 seconds. The Samsung CLX-3175FN was the slowest, taking 28.93 seconds to print the first page.
- When printing the ISO 24734 Word document in color mode, the Officejet Pro 8500 had the fastest first-page-out time, at 14.38 seconds, while the Officejet 6500 was the second fastest, printing the first page in 17.52 seconds. The Dell 2135cn was third, outputting the first page in 17.75 seconds. The Samsung CLX-3175FN was the slowest, taking 27.61 seconds to print the first page.
- When printing the ISO 24734 Excel document in color mode, the Officejet Pro 8500 had the fastest first-page-out time, at 15.76 seconds, while the Dell 2135cn was the second fastest, printing the first page in 16.71 seconds. The Officejet 6500 was third, outputting the first page in 17.25 seconds. The Samsung CLX-3175FN was the slowest, taking 27.82 seconds to print the first page.

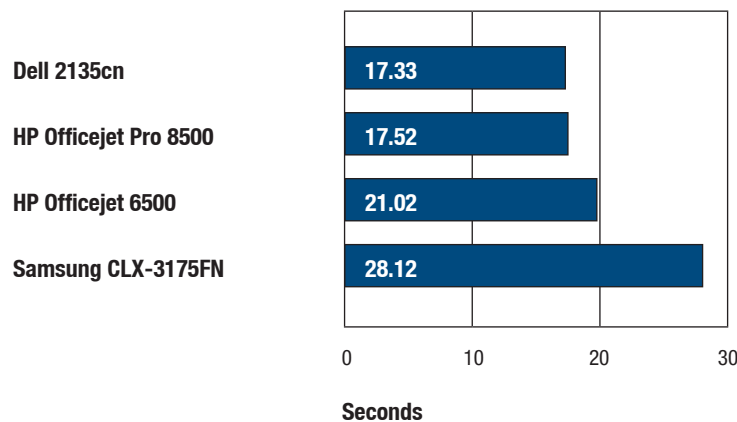
FIRST-PAGE TIMES (COLOR MODE; IN SECONDS)

	PDF	Word	Excel	Average First-Page Time
Dell 2135cn	17.55	17.75	16.71	17.33
HP Officejet Pro 8500	22.43	14.38	15.76	17.52
HP Officejet 6500	28.28	17.52	17.25	21.02
Samsung CLX-3175FN	28.93	27.61	27.82	28.12

First-page time indicates the time it took to process the file and deliver the first page of the test document set to the output tray.

Note: Fastest times are indicated in red.

AVERAGE FIRST-PAGE TIMES



Average first-page time is based on an average of three file types tested (PDF, Word and Excel). Each file is printed twice to get an average first-page time for each file type; the average first-page time is determined by averaging the results for each of the three file types.

SUPPORTING TEST DATA

Test Objective

Buyers Laboratory Inc. (BLI) was commissioned by Hewlett-Packard to conduct an independent comparative performance evaluation of the HP Officejet 6500 and HP Officejet Pro 8500 versus the Dell 2135cn and Samsung CLX-3175FN. Tests performed include color speed testing, color first-page-out testing and TEC energy consumption testing.

Test Environment

This test was conducted in BLI's 10,000-square-foot U.S. test lab, in an environment monitored by an Extech RH S20 RH/Temp recorder and a Honeywell Temp/RH chart recorder, which replicates typical office conditions.

Test Equipment

BLI's dedicated test network, consisting of Windows NT 4.0, 2000 and Microsoft Exchange servers, Windows 2000 and XP workstations, 10BaseT/100BaseTX network switches and CAT5 cabling.

Test Duration

Products were tested for 2,500 impressions.

Tested Models

Eight devices, two of each model (HP Officejet 6500, HP Officejet Pro 8500, Dell 2135cn and Samsung CLX-3175FN).

Test Procedures

The test methods and procedures employed by BLI in its lab testing include a range of BLI and industry-standard test targets. For speed testing, the ISO 24734 test suite was used. For electricity consumption testing, the Energy Star Typical Electricity Consumption (TEC) for laser printers was used to determine typical weekly electricity consumption.

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