



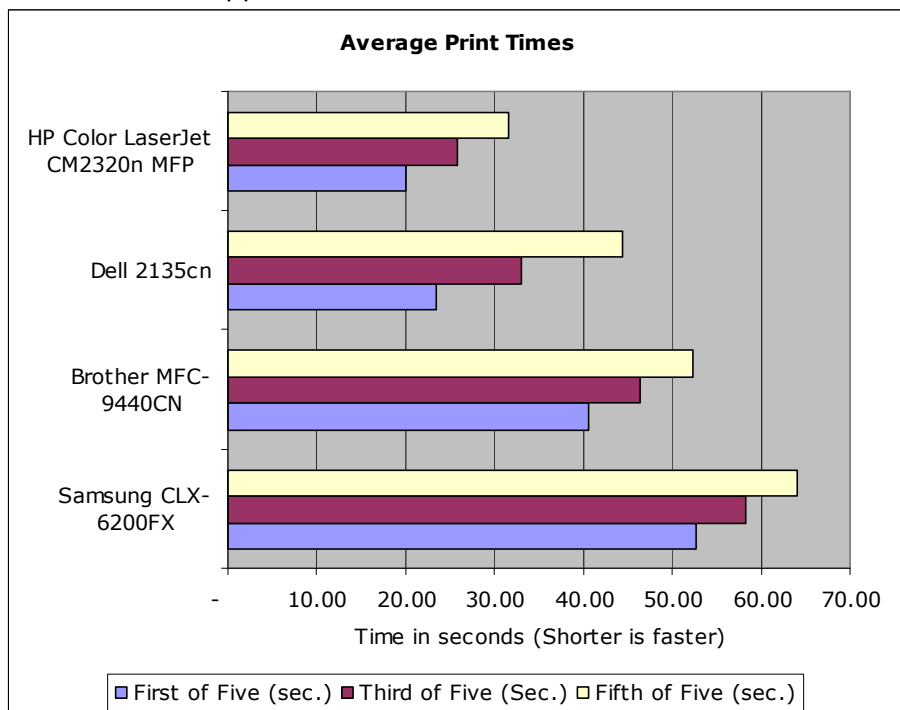
QualityLogic Performance Report

- HP Color LaserJet CM2320n MFP Printer vs. MFP Laser Competitors -

QualityLogic Inc., an independent test firm, recently performed tests to compare the print throughput performance of the HP Color LaserJet CM2320n MFP (with Instant-on Technology) with a selection of competitive products from various manufacturers. The testing demonstrated that the HP Color LaserJet CM2320n MFP printed documents typical of a small/medium business environment faster from power save. Enabled by Instant-on Technology, the HP Color LaserJet CM2320n MFP delivered all of the pages in the print jobs sooner than the other MFP's tested, resulting in faster throughput for the entire job.

MFP specifications may provide PPM rated throughput without indication of the warm-up time required prior to printing. This test included the warm-up time when printing a typical job from the printer power-save mode that a small/medium business user will experience. Test documents of five pages each were printed 30 minutes after having ensured that each printer entered its power-save mode.

Under these test conditions, the HP Color LaserJet CM2320n MFP outperformed the competitors. The graph below shows the average print time of the first, third, and final page of various five-page test documents. The HP Color LaserJet CM2320n MFP printed the five-page test documents faster than the competitors (a shorter bar is faster). This data represents the average print time of all five-page documents printed from five test applications.



The following table shows the devices tested, their manufacturer-specified print speed for letter size paper and first page out times, if available, compared to the actual performance achieved during testing by QualityLogic.

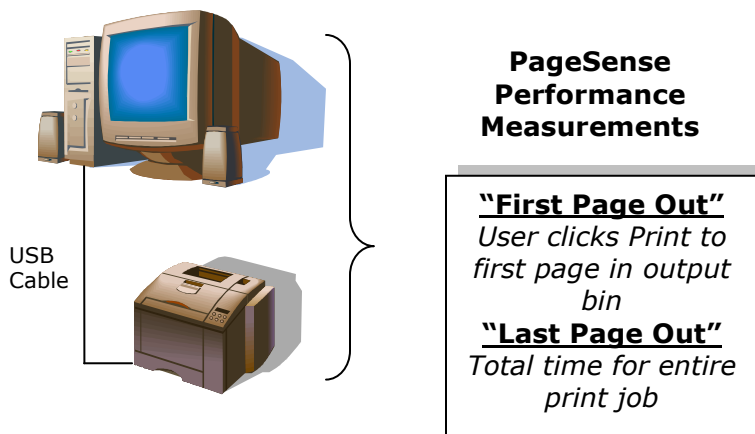
| Printer | Published Specifications | | Actual Performance | | |
|-------------------------------|--------------------------|--------------------------|----------------------------------|----------------------------------|----------------------------------|
| | Speed (PPM) | First page out (seconds) | First of five page out (seconds) | Third of five page out (seconds) | Fifth of five page out (seconds) |
| HP Color LaserJet CM2320n MFP | 21 | 17.9 | 20.1 | 25.8 | 31.5 |
| Dell 2135cn | 16 mono/ 12 color | N.A. | 23.5 | 33.0 | 44.5 |
| Brother MFC-9440CN | 21 | N.A. | 40.7 | 46.3 | 52.4 |
| Samsung CLX-6200FX | 20 | 25 | 52.6 | 58.3 | 64.1 |

Notes:

Where monochrome and color specifications differ they are noted.

Test Platform

Testing was performed using the QualityLogic PageSense 4.2 automated performance test tool, connected to a desktop personal computer with an Intel P4 3.2GHz processor with 2GB of memory, using the Microsoft Windows XP Professional Edition operating system with Service Pack 2. All printers were connected to the test computer using a USB connection.



Test Approach

All print drivers were installed using the Plug-n-Play method and tested using the default settings. Printing was done on letter size paper. All products were selected by HP and purchased by QualityLogic from various vendors.

Each MFP was tested using the default settings as delivered from the manufacturer. No modifications were made to the printer or driver settings.

Based on HP's belief that typical print jobs for the small/medium business environment are between one and five pages, documents of five pages in length were chosen for this test.

For all devices, each test file was printed 30 minutes after having ensured that the MFP entered the power-save state. PageSense was used to automate the testing and provide consistent timing between tests. All files were printed twice. Any files logging a five percent deviation between test runs were retested.

QualityLogic selected test files that it considered typical of a small/medium business environment from PageSense's suite of performance test files. The test included files from Microsoft Internet Explorer 6.0, Microsoft Office 2000 Suite, and Adobe Acrobat Reader 6.0. Standard PageSense test files were modified to fit the five-page document length requirements of this test.

PageSense uses application test files and an automated process for printing and recording time measurements using a smart paper sensing unit. Performance data is logged into a database automatically. Many leading printer manufacturers and industry publications, such as *PC Magazine*, use PageSense to automate testing and provide comparable results between printers. PageSense is a standard, automated approach to performance testing.

This study was commissioned by HP.

About QualityLogic

QualityLogic is a leading Software Quality Services Company offering a variety of testing services and related tools focused on the conformance, performance, and interoperability testing needs, from low level firmware testing, to high level multi-tier application testing. QualityLogic has over 22 years' experience, both in developing specialized test tools and providing comprehensive testing services for top industry manufacturers.

Test results provided by QualityLogic. Tests were performed under laboratory conditions and your results may vary.