



Test Report

MONOCHROME LASER PRINTERS

Kyocera Mita FS-3800N

25 PPM



Test period duration:

Three months, including
a 150,000-impression durability test



Manufacturer:

Kyocera Mita America, Inc.
Fairfield, NJ
Made in Japan

Manufacturer's suggested retail price: \$1,599;
\$1,898 as tested with the optional duplex unit
(\$299).

Serial number: APZOX00452

Type: Desktop, laser printing, cut-sheet bond paper,
dry toner, monocomponent developing system, heat
and pressure fusing device.

Controller: Kyocera print controller based on a 200-
MHz, 32-bit PowerPC 740 processor.

Manufacturer's rated engine life: 900,000 pages.

**Manufacturer's maximum recommended monthly
volume:** 100,000 pages.

**BLI's recommended monthly volume for optimum
performance:** Up to 50,000 pages.

GENERAL APPRAISAL

The Kyocera Mita FS-3800N gave an admirable overall performance in BLI's three-month evaluation. During the 150,000-impression test, the FS-3800N required one service call and misfed only three times, for an impressive misfeed rate of one per 50,000 impressions. In addition, the test unit's overall efficiency ratings were above average in both simplex and duplex modes.

Other positive BLI test results and observations of the Kyocera Mita FS-3800N include the following: (1) Print quality that earned BLI's highest rating for all types of print jobs (text, line art, halftones and solids). (2) A print management utility, KM-Net Viewer (also referred to as PrintMonitor), that provides feedback to workstations regarding

continued

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General Appraisal *continued*

device and/or job status through pop-up messages and/or icon alerts, including information on paper size and paper supply. (3) Good ease of use, thorough documentation and easy procedures for removing misfeeds, loading paper and replacing consumables. (4) A standard memory of 32 MB (expandable to 272 MB).

Additional benefits of the Kyocera Mita FS-3800N, which was connected to BLI's test network via a 10/100BaseTX Ethernet interface, include the following: (1) Enhanced resolutions of 1800 x 600 dpi (fine mode) and 1200 x 600 dpi (fast mode). (2) N-up printing (up to 16 images per page). (3) Booklet printing. (4) An energy-save mode, which reduces power consumption to 16 watts after a specified period of time. (5) A toner-save mode, referred to by Kyocera Mita as Ecoprint. (6) Seven languages that are available from the driver. (7) An optional secure print mode (enabled if an optional hard disk is installed). (8) Reduction/enlargement from 20% to 500%. (9) Options that include a 2,000-sheet paper feeder, a five-bin sorter/mailbox, a 2,000-sheet stacker and a duplex unit, the latter of which was configured with the test unit.

It should be noted that unlike with most other monochrome workgroup printers in this speed range (20 to 30 ppm), the Kyocera Mita FS-3800N employs a universal driver, which includes emulations of PostScript Level 2 (KPDLL), PCL XL (default) and PCL 5e. Because there is not a separate driver for each emulation, the user must change emulations by accessing printer properties and cannot change emulations from the driver itself.

Pricing Analysis And Summary

At a suggested retail price of \$1,599 for the base networked version (the duplex unit is an additional \$299), the Kyocera Mita FS-3800N is priced competitively with other monochrome laser devices in its speed range (16 to 26 ppm) that offer similar features, including duplexing and network connectivity. Moreover, the FS-3800N's supplies cost per page, at .592¢, is more than three times lower than the average supplies cost per page (2.12¢) for monochrome laser printers tested by BLI to date. This low supplies cost per page may be due in large part to Kyocera Mita's ECOSYS design, wherein only the toner and waste toner receptacle are replaced by the user. In contrast, with most other printers, users must periodically replace the drum (whether an individual cartridge or contained in an all-in-one imaging cartridge), as well as other consumable components. Therefore, when considering this low cost per page for supplies, buyers should also consider the service-related costs that are associated with this design. For example, if the end user experiences a problem with a component (such as BLI technicians experienced when the developing unit needed to be replaced at 147,732 pages) or a component is due to be changed at the end of its rated life, a service call must be placed. It should be noted that the FS-3800N is covered by a one-year (or 300,000-page) warranty that covers parts and labor.

As a result of its solid reliability performance, impressive management utilities and low per-page supplies cost, BLI recommends the Kyocera Mita FS-3800N for print volumes of up to 50,000 pages per month.

continued

General Appraisal *continued***Black Print Quality:****Text:** Good**Line art:** Good**Halftones:** Good**Solids:** Good**Ease of use:** Good**Ease of maintenance:** Good**Estimated waste:** Low**Estimated downtime:** Low**Misfeeds:** 3**Misfeed rate:** One per 50,000 impressions**Total service calls:** 1**Mean Impressions Between Failures (MIBF):** Not applicable**Mean Impressions Between Service (MIBS):** Not applicable**FEATURES**

Automatic features: Auto tray selection (when the optional trays are installed).

Client operating system support: Microsoft Windows 95, 98, NT 4.0, 2000, Me and XP; Macintosh OS 7.0 or later; IBM OS/2 Version 2.0 or later.

Control codes/tracking: None.

Duplex: Optional. See "Performance Of Tested Special Features."

Energy-save mode: Reduces power consumption from 972 watts while printing to 16 watts in sleep mode after 15 minutes of non-use (user-selectable from five minutes to 240 minutes in five-minute increments).

Fonts: 80 PCL/PostScript compatible fonts and one bitmapped font.

Interface(s): Standard 10/100BaseTX Ethernet interface, Centronics IEEE-1284 bidirectional parallel port and serial port interfaces.

Languages: The following languages are available from the driver: English, German, French, Spanish, Italian, Japanese and Portuguese.

Memory: Standard 32 MB of RAM (expandable to 272 MB). BLI's test unit was configured with 96 MB of RAM.

Network operating system support: Microsoft Windows NT

4.0 and 2000 (via LPR, IPP or NetBEUI); Novell NetWare versions 3.x, 4.x and 5.x; Mac OS 7.6 or later; Unix (Solaris 2.6, Solaris 2.3x – 2.5x, HP-UX 9.x and 10.x, IBM AIX 4.x.x and BSD Unix); and FTP printing.

Printer languages: PCL XL emulation (using PeerlessPrintXL), PostScript level 2 emulation (using Kyocera KPDLE) and PreScribe 2e (Kyocera Mita's native command language for the FS-3800N).

Resolution: 1800 x 600 dpi (fine mode), 1200 x 600 dpi (fast mode), 600 x 600 dpi and 300 x 300 dpi.

Secure print: Optional (available only if the optional hard disk is installed).

User programs: Kprint Port Utility, Remote Operation Panel and KM-Net Viewer (regular version and Web edition), which is also referred to as PrintMonitor.

Other features: Toner-save mode (called Ecoprint); N-up printing (two, four, six, nine, 12 or 16 images per page); reduction/enlargement from 20% to 500%; different paper source for first page.

Control Panel

Type: Eight hard keys ("Go," "Cancel," "Menu," "Enter," "◀," "◁," "▶" and "►"), which are used to view and/or change the network configuration and/or printer settings of the FS-3800N.

FEATURES *continued*

Indicators/prompts: The “Ready” LED lights up to indicate when the printer is on-line and flashes to indicate an error has occurred. The “Data” LED blinks when data is arriving and remains constant when data is being processed. The “Attention” LED lights up when an error

has occurred and flashes when the FS-3800N needs maintenance. A 32-character LCD (two lines of 16 characters each) allows the user to access the operation panel menus.

Kyocera Mita FS-3800N Accessories

500-Sheet Paper Drawer: Suggested retail price, \$299.

Duplex Unit: Suggested retail price, \$299.

2,000-Sheet Paper Feeder: Suggested retail price, \$749.

5-Bin Sorter/Mailbox: Suggested retail price, \$499.

2,000-Sheet Stacker: Suggested retail price, \$739.

250-Sheet Face-Up Tray: Suggested retail price, \$39.

70-Envelope Feeder: Suggested retail price, \$219.

Additional Memory, Microdrive, CompactFlash Card: Although Kyocera Mita does not sell these items directly, it recommends that customers contact their Kyocera Mita dealers to purchase upgrades. The FS-3800N “User’s Guide” provides information on how to upgrade the memory, install the Microdrive and install the CompactFlash Card, but does not list any of their specifications, making it necessary to contact a Kyocera Mita dealer.

TEST RESULTS AND OBSERVATIONS

Test equipment: BLI's dedicated test network, consisting of Windows NT 4.0 servers and Windows 98, 2000 and NT 4.0 workstations, 10/100BaseTX network switches and CAT5 cabling.

Reliability

PMS/Malfunions	Service Required	Meter Count (Impressions)	Impressions Between Service
Meter count (beginning of test)		0	
End of test period		150,000	
Total misfeeds/misfeed rate	3 / 50,000		
Service calls	1 (see "Comments" below)		
PMS	*		
Total service calls (including PMS)	1		
M.I.B.F. ¹	150,000		
M.I.B.S. ²	150,000		
* Kyocera Mita does not schedule PMS.			
¹ Mean Impressions Between Failures (To obtain this number, BLI divides the total number of impressions produced during the test period by the number of service calls required. In actuality, it reflects the average number of impressions produced without a malfunction.)			
² Mean Impressions Between Service (To obtain this number, BLI divides the total number of impressions produced during the test period by the number of service calls, including preventive maintenance calls, required. In actuality, it reflects the average number of impressions produced without a service call.)			

Comments: Near the end of testing (at 147,732 impressions), the FS-3800N began displaying a textured background on all printed output, which required a service call. Upon inspecting the test unit, the Kyocera Mita technician determined that the developing unit had to be replaced. (It should be noted that if a new fuser, drum, transfer belt or developing unit is required, or a problem occurs with any of these components, the end user must contact a Kyocera Mita dealer for service, as these parts are not user-replaceable. It should also be noted that the developing unit should yield approximately 300,000 pages, according to Kyocera Mita.)

Maintenance

Kyocera Mita does not schedule PMS; instead, the user performs preventive maintenance when replacing a toner cartridge. The toner cartridge kit includes a cleaning block

for cleaning the corona wire, a waste disposal bottle and a cloth to clean the device's interior. Instructions are provided in the toner kit to explain where and how to clean the printer properly. A maintenance kit, which includes the drum, fuser, transfer and developing unit, yields 300,000 pages, according to Kyocera Mita.

User-Replaceable Consumables

Toner cartridge: Suggested retail price, \$99. Manufacturer's rated yield, 20,000 pages at 5% coverage.

Maintenance kit: Suggested retail price, \$599. Includes drum, fuser, transfer and developing unit. Manufacturer's rated yield, 300,000 pages.

Ease of replacing toner cartridge: Good. When output appears faded or the "Toner Low" message appears at the

TEST RESULTS AND OBSERVATIONS *continued*

control panel, the user should replace the toner cartridge. To remove the empty toner cartridge, the user opens the top cover and slides the small green lever to the right, then pulls the cartridge out. The user then inserts the new toner cartridge and closes the top cover. The user is then expected to open the side door, remove the waste disposal bottle and replace it with a new one provided in the toner kit. The user is also expected to insert a small cleaning block into the side of the printer and pull the corona wire assembly back and forth across the cleaning block (the cleaning block is provided in the toner kit). After cleaning the corona wire, the user removes the cleaning block and closes the side door before re-

moving the cleaning cloth from the toner kit. The user then pulls out the top paper drawer and pulls the green handle on the right side of the device to access the paper conveyance unit in order to clean the paper dust from the feed rollers and belts. After cleaning the conveyance unit, the user slides it back into place and closes the top paper drawer. The process can be confusing at first, but should be learned quickly.

Ease of replacing waste toner container: Good. The user opens the side door, removes the full waste toner bottle and replaces it with a new waste toner bottle that is included in the toner kit.

TONER YIELD (BASED ON 5% PAGE COVERAGE)

Toner Cartridge Weight			Toner Yield (Impressions)	Impressions Per Gram
Full	Empty	Net Weight		
1,052.9 grams	240.6 grams	812.3 grams	25,222	31.1

Guarantee/Warranty: The Kyocera Mita FS-3800N is backed by a one-year parts and labor warranty.

Ease of Operation

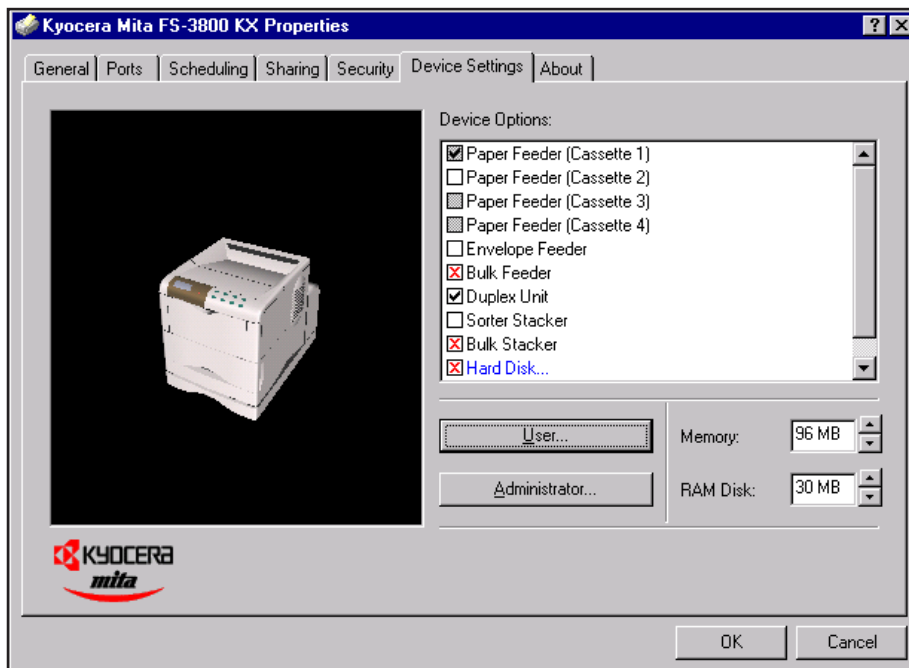
Documentation: Good. The Kyocera FS-3800N is bundled with the “IB-2x Quick Configuration Guide for Network Connectivity,” the “Kyocera FS-3800N Installation Manual” and two CD-ROMs. The first CD-ROM contains the Kyocera Mita Digital Library, which has the Operator’s Manual in PDF format (this manual can be printed) and the “PreScribe 2e Programming Manual,” which allows advanced users to send commands to the FS-3800N in the device’s native command language (this is also in PDF format and can be printed). This CD-ROM also contains the auto-install program for the FS-3800N drivers. The second CD-ROM contains the Kyocera Mita Network Library, which contains the IB-2x configuration utility for creating a port on the user’s workstation, in addition to a “Configuration Guide” in HTML format, which does not print very well (some text and/or graphics may be garbled). The “Configuration Guide” contains comprehensive information on configuring the FS-3800N printer in Windows, Novell and Macintosh environments. It also covers Unix printing for Solaris

2.3x – 2.5x, Solaris 2.6, HP-UX 9.x and 10.x, IBM AIX 4.x.x, BSD UNIX and FTP printing, as well as information on Kyocera Mita KM-Net Viewer (both the standard workstation version and the Web version), also referred to as PrintMonitor. The ICLink Windows utility (used with the CompactFlash Card option), Printer Disk Manager (used with the Microdrive option) and the Remote Operation Panel (allows a user to connect to the FS-3800N over the network to view and/or change status settings) are also included.

Ease of use: Good. One universal driver supports PCL XL (default), PCL 5e and PostScript. The user can change the driver by accessing the printer properties, selecting the “Device Settings” tab, clicking on the “User” button and selecting the desired emulation from the drop-down list. This feature is not discussed or shown in any of the operator manuals or the “Printer Driver Guide” for the FS-3800N.

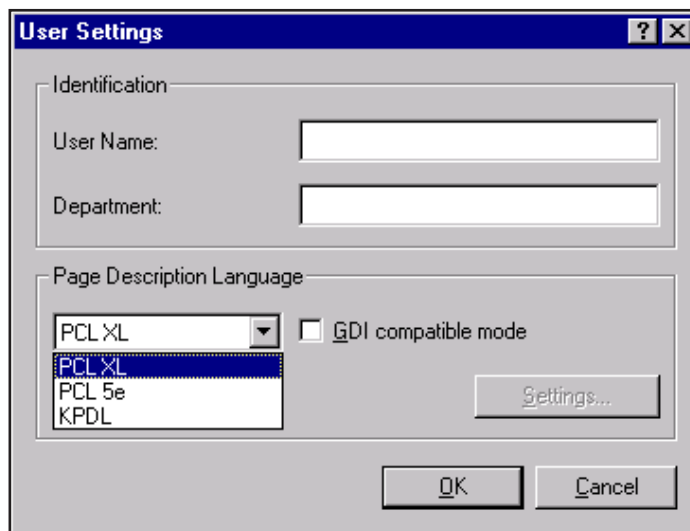
TEST RESULTS AND OBSERVATIONS *continued*

If the user wants the more traditional PCL and/or PostScript drivers, they are available on the Kyocera Web site. The universal driver loads on Windows 95, 98, NT 4.0, 2000, Me and XP, and looks and acts the same across all platforms. For Macintosh environments, the user is required to use the LaserWriter driver (available from Apple's Web site) and the PPD for the appropriate Kyocera printer model. The only disadvantage that BLI technicians found when using the universal driver was that the user must access the printer properties to change the PDL/emulation, unlike with most printers that offer drivers for each page description language (PDL) and/or emulation.



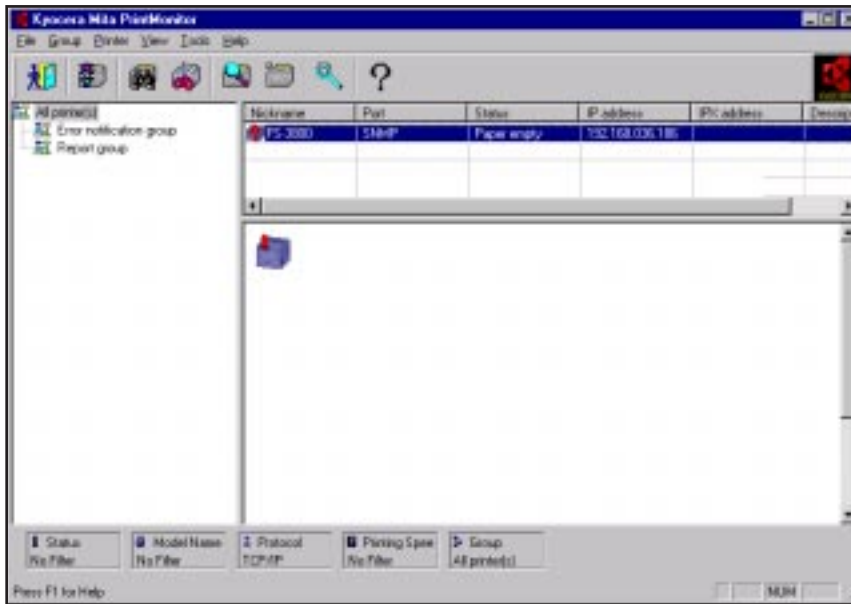
Universal Driver "Device Settings" Tab

Feedback to PC workstations: Information on device and/or job status is available at the workstation when the KM-Net Viewer utility (also referred to as PrintMonitor) or the Remote Operation Panel utility is running. KM-Net Viewer is designed more as a network administrator's tool, displaying the status and configuration of all Kyocera devices installed on the network. KM-Net Viewer is password-protected and the utility will not even launch until the correct password is entered. KM-Net Viewer allows the administrator to monitor the status and configuration of all Kyocera devices detected on the network. The KM-Net Viewer utility can be configured to load as an icon on the task bar tray, and will change color when an error occurs, or the user may choose to generate pop-up error messages. KM-Net Viewer comes in two versions, one that loads on the local workstation and a second Web-enabled version that allows the user to view and/or change status information via a Web browser.



User Settings Selection

TEST RESULTS AND OBSERVATIONS *continued*



Kyocera KM-Net Viewer Utility

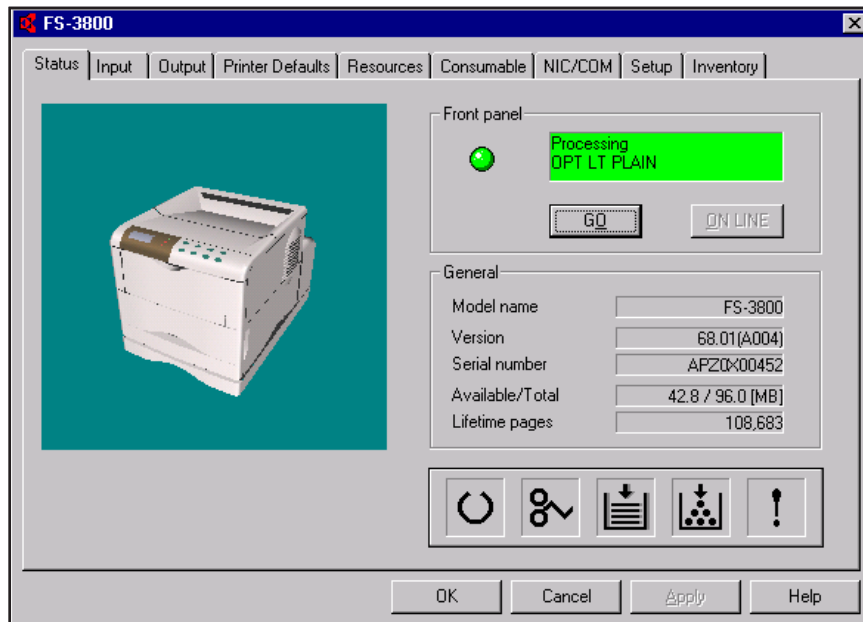


Kyocera KM-Net Viewer (Web Edition)

The standard version of KM-Net Viewer is much more robust than the Web edition, which limits the user by only allowing him/her to view the status of the device, unlike the standard version, which offers more in-depth status information for all Kyocera Mita devices on the network (see “Networking and Connectivity”). The KM-Net Viewer utility also allows the administrator to place Kyocera devices into different groups in order to monitor them together or independently.

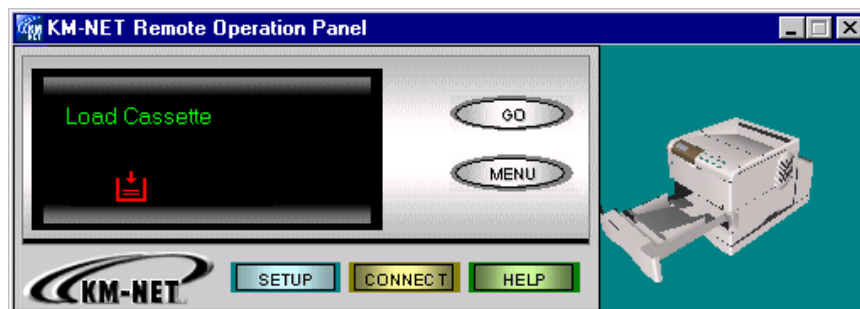
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TEST RESULTS AND OBSERVATIONS *continued*



KM-Net Viewer "Status" Window

The same information provided through the KM-Net Viewer utility is also available when using the Remote Operation Panel utility. This utility is primarily for the user and is not designed for an administrator. The Remote Operation Panel can report on the status of only one printer at a time and is not password-protected, allowing access to anyone who has loaded the program on his or her workstation. The user can view and/or change the configuration and settings of the device. The Remote Operation Panel utility can be configured to appear on the taskbar tray, generate pop-up messages or appear always on top (i.e., never behind other windows) when an error occurs.



Remote Operation Panel

The Remote Operation Panel gives the user the impression that he or she is looking at the operator panel of the Kyocera printer. The user simply clicks on the "Menu" button and details for the printer appear in a Windows Explorer layout.

TEST RESULTS AND OBSERVATIONS *continued*

Device status: Information on device status is available when using either the KM-Net Viewer or the Remote Operation Panel utility. (See “Feedback to PC workstations.”)

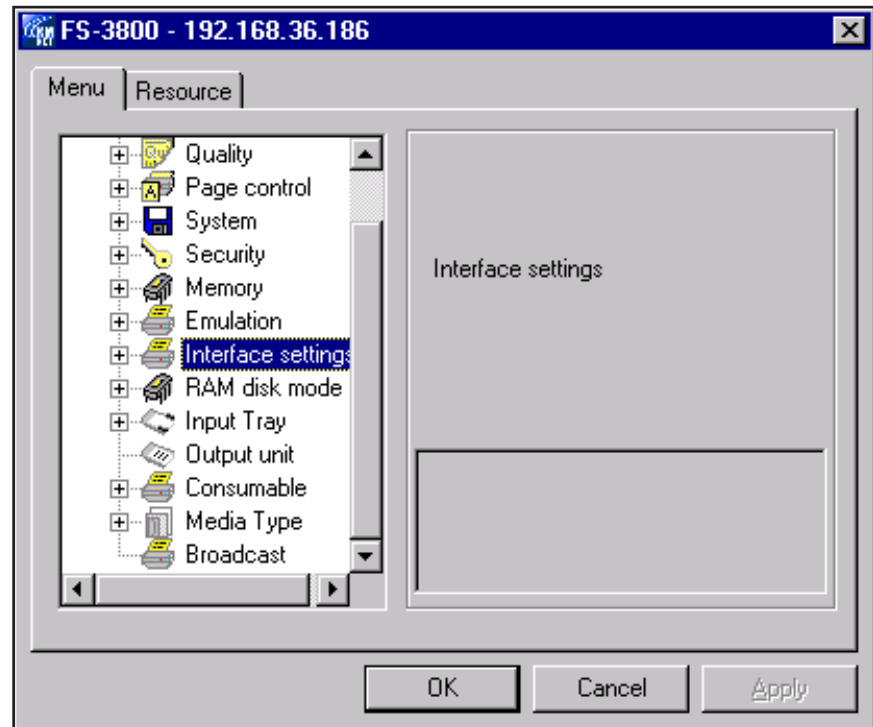
Control panel status messages/job access: A job menu is not available at the printer to allow the viewing and/or management of print jobs; however, anyone may cancel the current job simply by pressing the “Cancel” key.

Paper size/supply gauge: Yes/Yes. Although information on paper size and/or paper remaining in the drawer is not available from either the print driver or the control panel, both the KM-Net Viewer and Remote Operation Panel utilities provide this information directly from the application or through pop-up messages. In addition, there is a visual indicator on the paper tray that rises as the paper supply decreases.

Status of jobs in queue: There is no access to print jobs from the control panel or through either of the utilities supplied with the printer.

Error messages: Error messages are displayed at the workstation if the user is running the KM-Net Viewer or the Remote Operation Panel utility, both of which can be set up to generate pop-up alert messages (see “Feedback to PC workstations”). The KM-Net Viewer utility also offers the ability to create a log file that records all errors at the device. Error messages are also displayed at the FS-3800N’s control panel.

Ease of removing misfeeds: Good. Non-clamshell design with five access points for removing misfeeds. The error message that appears at the control panel gives the user an idea of which location to access; if the user presses the “?” key at the control panel, a text message will walk him/her through removing the paper misfeed. Access to all possible misfeed areas is simple and easy.



Remote Operation Panel “Menu” Selections

Ease of loading paper: Good. Loading paper into the drawer was easy. The drawer has a spring-loaded ramp that conveniently locks down. The user may simply drop a full ream of paper into the drawer. Although there are corner separators, they do not hinder access when adding paper.

Ease of adjusting paper drawers: Good. The paper drawer is pulled out and has two separate slide guides—one for length and one for width—ranging from 5-13/16" x 8-1/4" to 8-1/2" x 11". The paper size selected from the print driver will be shown at the FS-3800N’s control panel when the job is sent to the printer. If the paper does not reside in the drawer, the FS-3800N will inform the user to insert the requested paper size into the multi-purpose tray (bypass).

Operator error: If the user attempts to add paper while the FS-3800N is printing, a jam may result. (Kyocera Mita recommends that paper be added only when the paper drawer is empty.)

TEST RESULTS AND OBSERVATIONS *continued****Throughput Capabilities/Materials***

Standard paper supply: One 500-sheet paper drawer and a 100-sheet multipurpose tray (bypass). The 500-sheet paper tray is user-adjustable for sheets ranging in size from 5-13/16" x 8-1/4" to 8-1/2" x 11" and in weight from 16 to 28 lbs. The manual input tray is user-adjustable for sheets ranging in size from 3-5/8" x 6-1/2" to 8-1/2" x 14" and in weight from 16 to 53 lbs.

Maximum number of available on-line paper sources with options: Five.

Maximum on-line paper capacity with options: 2,600 sheets.

Paper output: The standard output tray holds up to 250 sheets. Print jobs are output face-down in the correct order.

Ability to process self-adhesive address labels: Avery 5351 labels performed satisfactorily in testing.

Ability to process transparencies: 3M PP2500 transparencies performed satisfactorily in testing.

Productivity

Warm-up: About 35.08 seconds from a cold start.

BLI'S TESTED PRINT SPEEDS**Microsoft Word Text File**

First-page time	3.89 ppm (15.43 seconds)
Speed including first-page time	22.70 ppm
Speed excluding first-page time	25.09 ppm

BLI's 6% test original (115 KB), a black-and-white text file, printed using Microsoft Word 2000.

PageMaker 6.5 Graphics File

First-page time	4.92 ppm (12.19 seconds)
Speed including first-page time	23.17 ppm
Speed excluding first-page time	25.07 ppm

ASTM F 1423 test original (116 KB), a black-and-white graphics file, printed using Adobe PageMaker version 6.5.

Photoshop 6.0 TIFF Graphics

First-page time	0.22 ppm (1.04.28 minutes)
Speed including first-page time	7.77 ppm
Speed excluding first-page time	24.93 ppm

ISO N3.TIFF test original (20 MB), a color graphics file, printed using Adobe Photoshop version 6.0.

PageMaker 6.5 TIFF Graphics

First-page time	0.51 ppm (1.57.65 seconds)
Speed including first-page time	16.56 ppm
Speed excluding first-page time	24.99 ppm

ISO N2.TIFF and N3.TIFF test originals (combined in one PageMaker document, 40.6 MB total), a color graphics file, printed using Adobe PageMaker 6.5.

TEST RESULTS AND OBSERVATIONS *continued*

Adobe Acrobat 4.0 PDF Graphics	
First-page time	0.39 ppm (2.33.51 minutes)
Speed including first-page time	11.04 ppm
Speed excluding first-page time	24.87 ppm
Motorcyc.PDF test original in 8-1/2" x 11" format (5.04 MB), a color graphics file, printed using Adobe Acrobat 4.0.	
Photoshop 6.0 JPEG Graphics	
First-page time	0.69 ppm (1.01.26 minutes)
Speed including first-page time	14.65 ppm
Speed excluding first page time	24.88 ppm
Rockies.JPG test original (246 KB), a color graphics file, printed using Photoshop 6.0.	

Manufacturer's rated speed: 25 ppm.

All files are printed in a quantity equal to twice the manufacturer's rated speed for the device. The Kyocera Mita FS-3800N print speeds were tested at 1200 x 1200 dpi using KPD (Kyocera's Postscript emulation).

First-page time indicates the time it took to RIP, image and deliver the first page of the test document to the output tray.

Speed excluding first-page time indicates the time for printing the entire set of test originals, excluding first-page RIP and print times.

Speed including first-page time indicates the time for printing the entire set of test originals, including first-page RIP and print times.

Note: The graphic file ISO N3.TIFF would not print using the KPD (Postscript Level 2) emulation. The emulation had to be changed to PCL XL to print this document.

**KYOCERA MITA FS-3800N
COPY AND PRINT QUALITY INDEX**

BUYERS LABORATORY INC.

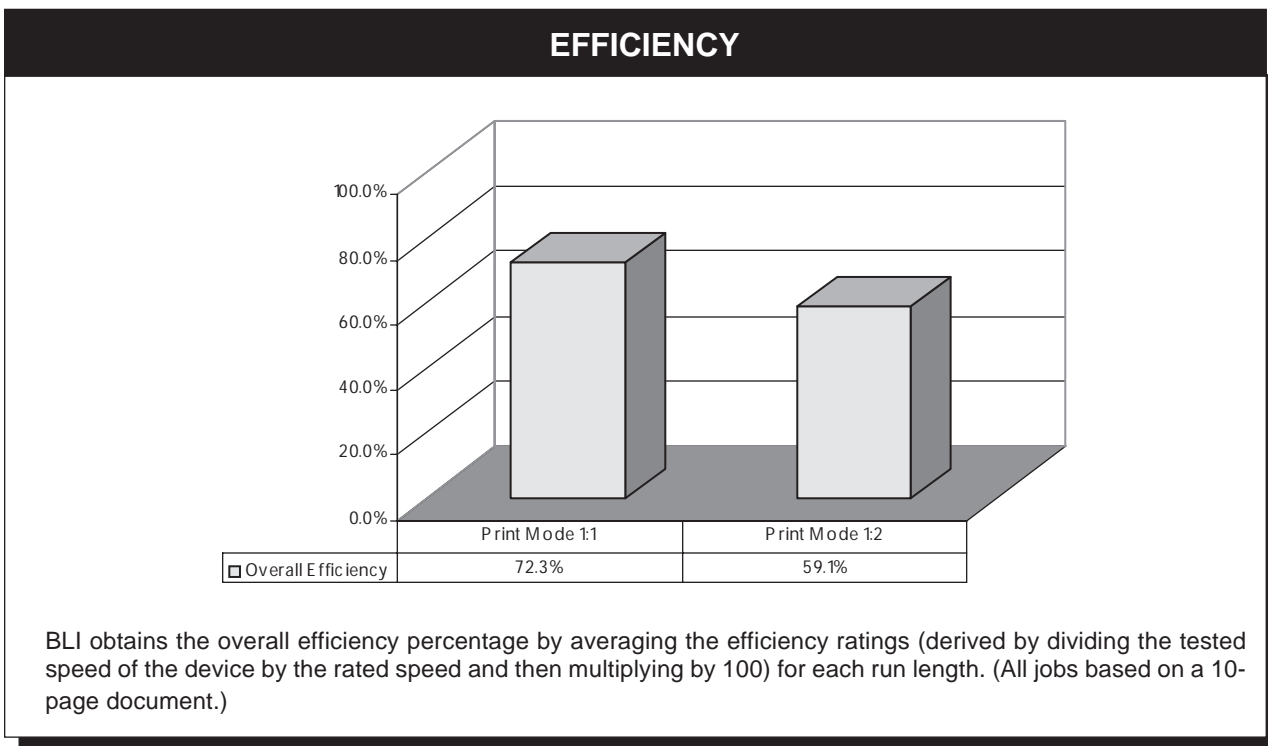
Magnified view of black text.
Print mode (600 dpi).
Printed on plain-paper stock.

BUYERS LABORATORY INC.

Magnified view of black text.
Print mode (1,200-dpi).
Printed on plain-paper stock.

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TEST RESULTS AND OBSERVATIONS *continued*



Print Quality

Text: Good

Line art: Good

Halftones: Good

Solids: Good

Comments: Output produced by the Kyocera Mita FS-3800N's PostScript driver at 1200 x 1200 dpi was good overall. Characters were crisp and clear, and vertical and horizontal lines were well-defined. Line art did not display any stair-stepping and circular images had smooth edges. The grayscale output in the lesser dot-fill areas of the chart was clear and transitions were well-defined; however, the grayscale output in the heavier dot-fill areas tended to blend together, with not much transition evident between levels and with loss of detail in darker areas.

Density of solid black printed image (based on four readings corresponding to four different locations on the original): Range, 1.30 to 1.38 (on a scale of 0 to 2.5,

with 2.5 being as dark as would be possible under most circumstances).

Density range for laser printers tested to date: 1.00 to 1.48.

Networking and Connectivity

The FS-3800N connects to networks via a standard 10/100BaseTX Ethernet interface. The universal print driver was easy to install and offers choices such as paper size, paper source and N-up printing. The Kyocera KM-Net Viewer network management utility (PrintMonitor) that comes bundled with the FS-3800N can be installed to allow the administrator to monitor the status of and/or manage all Kyocera devices on the network. (If the end user requires the ability to monitor the status of and/or manage a device, then the Remote Operation Panel utility would be more appropriate. See "Feedback to PC workstations.") After the KM-Net Viewer utility is launched, it will ask the administrator for a password; if the correct password is entered, the utility will open and display all

TEST RESULTS AND OBSERVATIONS *continued*

Kyocera devices on the network. The administrator can add printers or arrange printers into groups. KM-Net Viewer can show all device groups when first opened or display only a select group of devices. The administrator can obtain a quick overview of the status of all devices displayed. If more detail on a given device is required, the administrator can double-click on the device icon and a detailed status window will open.

Using the selected device's status window, the administrator has the ability to view and/or change settings using nine different tabs: "Status," "Input," "Output," "Printer Defaults," "Resources," "Consumable," "NIC/COM," "Setup" and "Inventory." The "Status" tab offers an overview of paper status, toner status, serial number, model and lifetime pages printed. The "Input" tab allows the status of all input trays to be viewed. The "Output" tab shows the output destination, face (up or down) and modes available for use. The "Print Defaults" tab allows the administrator to set print defaults for print quality, page control, system, security and emulation. The "Resources" tab shows memory, storage and data information. The "Consumable" tab shows the current toner level of the printer. The "NIC/COM" tab shows information on the general network configuration and statistics for the protocols running on the printer. The "Setup" tab allows the administrator to set up a community name, assign a port number and/or set a priority for the printer connection. The "Inventory" tab takes inventory of all Kyocera devices on the network and stores the information in a CVS file.

Compatibility (units are tested for compatibility with Microsoft Word 2000, Microsoft PowerPoint 2000, Adobe PageMaker 6.5, Adobe Photoshop 6.0 and Adobe Acrobat 4.0 using 50 application test files, which contain graphics, halftone images, tables, etc., enabling BLI technicians to evaluate memory usage, file processing, font-rendering and grayscale capabilities): Good. The Kyocera Mita FS-3800N was found to be fully compatible with all five Windows programs used in testing, with no problems encountered. (It should be noted that although no problems were encountered when printing BLI's compatibility files,

the PostScript Level 2 driver could not print one of the TIFF graphics files from Photoshop 6.0 in BLI's speed tests. See "BLI's Tested Print Speeds.")

Print drivers: The Kyocera FS-3800N is provided with a universal driver that supports emulations of PCL XL (default), PCL 5e and PostScript Level 2 (KPD L) for Windows 95, 98, NT 4.0, 2000, XP and Me operating systems. The device supports the Windows, Novell and Macintosh environments, as well as various flavors of Unix (Solaris 2.6, Solaris 2.3x – 2.5x, HP-UX 9.x and 10.x, IBM AIX 4.x.x, BSD Unix and FTP printing); If users explore files on the CD-ROM, they will find that the FS-3800N supports RedHat 6.0, SUSE 6.3 and Caldera OpenLinux 2.4; this is not documented in any of the user manuals. For the Macintosh environment, the user would use the LaserWriter driver (available from Apple's Web site) and the PPD supplied on the CD-ROM. The Windows drivers tested were well laid out and easy to use, and featured the same layout and appearance regardless of the platform. However, BLI technicians found it was inconvenient to have to access the printer properties to change the emulation. The auto-install feature made the setup and installation of the Windows drivers easy.

The universal driver supports all three emulations (PCL XL, PCL 5e and PostScript Level 2). The FS-3800N's default emulation is PCL XL, although PCL 5e or PostScript Level 2 (KPD L) can be selected by accessing the printer properties. Neither the PCL XL nor the PostScript Level 2 driver (KPD L) offers a resolution selection; the device will print at the default resolution set at the control panel. When the user selects collate in the driver or the application, the document is sent only once to the printer, keeping file sizes to a minimum instead of multiplying the file size by the number of sets selected and using valuable memory resources. Selecting PostScript (KPD L) as the driver emulation only changes the driver slightly by offering a couple of extra selections, such as mirror image and negative image.

TEST RESULTS AND OBSERVATIONS *continued***KYOCERA MITA FS-3800N PRINT DRIVER FEATURES CHART**

Features	Windows 95/98 PCL XL	Windows 95/98 PostScript Level 2 (KPD L)	Windows NT 4.0 PCL XL	Windows NT 4.0 PostScript Level 2 (KPD L)
Auto Feature/Device Detection	No	No	No	No
Booklet Printing	Yes	No	Yes	No
Collate Sets	Yes	Yes	Yes	Yes
Correct Page Order Output	Automatic	Automatic	Automatic	Automatic
Cover Mode (Different Paper Source for First/Other Page)	Yes (First Page)	Yes (First Page)	Yes (First Page)	Yes (First Page)
Duplex	No	Yes	No	Yes
Mirror Image	No	Yes	No	Yes
Negative Image	No	Yes	No	Yes
N-up Printing	2 to 16	2 to 16	2 to 16	2 to 16
Output Tray Selection	Yes	Yes	Yes	Yes
Overlays	No	No	No	No
Paper Gauge	No	No	No	No
Quantity Selection	Up to 999	Up to 999	Up to 999	Up to 999
Reduction/Enlargement	20% to 500%	20% to 500%	20% to 500%	20% to 500%
Resolution Modes	No	No	No	No
Secure Print	No	No	No	No
Stapling	No	No	No	No
Transparency Interleaving	Yes	Yes	Yes	Yes
Watermarks/Custom Watermarks	No/No	No/No	No/No	No/No

RIP while print: No.

Job log/accounting: None.

PERFORMANCE OF TESTED SPECIAL FEATURES***Multipurpose Tray***

Satisfactory. The 100-sheet multipurpose tray has adjustable side guides that move in sync to accommodate sheets ranging in size from 3-5/8" x 6-1/2" to 8-1/2" x 14" and in weight from 16 to 53 lbs. The user must select the multipurpose tray as the paper source from the print driver, then wait for the print job to be spooled and RIPped; a message will appear in the display panel "Set Paper, Press Go." The user should then place paper in the multipurpose tray and press the "Go" key. If paper is already loaded

in the multipurpose tray, the FS-3800N will print automatically.

Duplex Unit

Satisfactory. The duplex option for the printer worked fine, with no problems occurring. The user needs to select "Print on Both Sides (Duplex)" on the "Layout" tab of the driver and then either "Flip on Long Edge" or "Flip on Short Edge."

COST ANALYSIS

Rental: None.

Service pricing: Set by the dealer.

COST PER PAGE (PURCHASE)					
Monthly Volume	Depreciated Purchase Price ¹	Paper ²	Supplies and Consumables ³	Total Per Page*	Life-Cycle Cost ^{4*}
25,000	0.127¢	0.619¢	0.592¢	1.338¢	\$20,066
50,000	0.063	0.619	0.592	1.274	38,233
75,000	0.042	0.619	0.592	1.253	56,401
100,000	0.032	0.619	0.592	1.243	74,569
125,000	0.025	0.619	0.592	1.236	92,737
150,000	0.021	0.619	0.592	1.232	110,904

¹ The suggested retail price of the unit as tested, \$1,898, was depreciated over a five-year period using a straight-line method.

² The cost of paper was based on an estimated price for 5,000-sheet cartons of 8-1/2" x 11" 20-lb. bond: 1-4 cartons, \$36.15 each; 5-9 cartons, \$34.80 each; 10-19 cartons, \$33.05 each; 20-49 cartons, \$31.35 each; and 50 or more cartons, \$30.95 each.

³ The cost of supplies and consumables was based on BLI's tested toner yield when using an original with 5% coverage and Kyocera's estimated street price of \$99 per imaging cartridge, as well as Kyocera Mita's rated yield of 300,000 pages for the maintenance kit at \$599 per kit (includes drum, fuser, transfer and developer unit). It should be noted that other costs associated with supplies and consumables may be contained in Kyocera Mita's service pricing, which is set by dealers.

⁴ Life-cycle cost for each monthly volume is calculated by multiplying the total cost per page by the monthly volume by 60 months (five years).

* Includes depreciated purchase price, supplies and paper. BLI does not include service cost in the cost analysis as of February 2001 because of variations in pricing from provider to provider, coverage provided by various contracts and policies of various manufacturers/vendors regarding whether or not they publish suggested pricing for their contracts. Buyers who intend to purchase a service contract should factor that cost in based on the actual pricing offered by their vendor. Please keep this in mind when comparing this model's cost-per-page information with that of other models tested.

ENVIRONMENTAL SPECIFICATIONS

Electrical system: 120 V, 60 Hz, 7.2 amps. The unit tested had a three-wire cord (grounded), 8' and 2" in length, and carried UL approval for the United States and Canada.

Energy Star compliance: Kyocera Mita states that the FS-3800N meets Energy Star requirements.

Noise: Scale A, 69 db (single-point reading; running noise). Range for printers tested to date, 57 db to 69 db.

Paper fault: None. (Georgia-Pacific Spectrum Xerographic Bond and Georgia-Pacific GeoCycle recycled paper containing 20% post-consumer fiber were used in this test unit.)

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PHYSICAL SPECIFICATIONS

DIMENSIONS AND WEIGHTS				
Printer	Height	Width	Depth	Weight
Kyocera Mita FS-3800N	11.8"	13.6"	15.4"	28.7 lbs.
DU-60 Duplex Unit	12.4"	13.6"	6.7"	11.7 lbs.

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