Lab Test Report

A Comprehensive BLI Laboratory Evaluation | JULY 2010

EUROPEAN EDITION

Samsung CLP-670ND

24 PPM Colour Laser Printer

Reliability	Excellent
Administrative Utilities	Very Good
Feedback to Workstations	Very Good
Ease of Network Setup	Very Good
Print Drivers	Very Good
Applications Compatibility	Excellent
Colour/Black Print Quality	Very Good
Colour/Black Print Productivity	Good
Ease of Use	Very Good
Feature Set	Good
Security Features	Not Rated
Environmental Features	Not Rated
Toner Yield	Good

BLI RECOMMENDATION

During its lab evaluation at BLI, the Samsung CLP-670ND proved to be strong in a number of categories. To begin with, the A4 colour laser printer logged 40,000 impressions with no misfeeds or service of any kind required. The CLP-670ND, which is simple to set up and use, provided very good overall output in colour and black modes. While users can benefit from above average feedback to workstations, administrators will be able to more easily manage the unit and a mixed fleet—Samsung and compatible devices—of hardware via SyncThru Web Service and SyncThru Web Admin service, respectively. Other highlights include a high standard memory capacity; standard automatic duplexing, which contributes to less paper waste; and toner-save mode in the drivers helps extend the life of the print cartridges. BLI highly recommends the CLP-670ND for small to mid-size workgroups with monthly volumes of up to 1,500 impressions.

Test duration: Two months, including a 40,000-impression durability test.

Maximum monthly duty cycle: 80,000 impressions.

Manufacturer's recommended monthly volume: Up to 1,100 impressions.

BLI's recommended monthly volume for optimum performance: Up to 1,500 impressions.

More information on the Samsung CLP-670ND is available through bliQ (www.buyerslab.com/bliQ).

Strengths

- Highly reliable—flawless durability performance
- Natural-looking flesh tones in photographic images; most colours in the gamut remained consistent throughout testing; fully formed and dark characters, consistent production of line art, above average halftones and dark solids
- Above average colour job stream productivity using the PCL driver; faster than average first-print times for four of the five test files; among the fastest first-print time from overnight sleep
- Above average and slightly above average standard and maximum memory capacities, respectively; standard automatic duplexing contributes to less paper waste
- Average tested toner yields for all colours exceeded the declared specifications; toner-save mode in the drivers helps extend the life of the print cartridges
- Simple processes for adjusting drawers, loading media and removing misfeeds; clean procedure for replacing cartridges
- SyncThru Web Service and SyncThru Web Admin service allow administrators to manage the unit and an entire fleet of Samsung and compatible devices, respectively
- Pop-up messages and icon and e-mail alerts keep users well-informed of device and print job status
- Highly automated driver installation routine has users up and running in minutes

Weaknesses

- Below average productivity when printing multiple sets in both duplex modes
- Below average standard paper capacity; below average paper-handling ability through the drawers
- Low impressions-per-gram yields for all colours

TEST RESULTS AND OBSERVATIONS

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

△ RELIABILITY — EXCELLENT

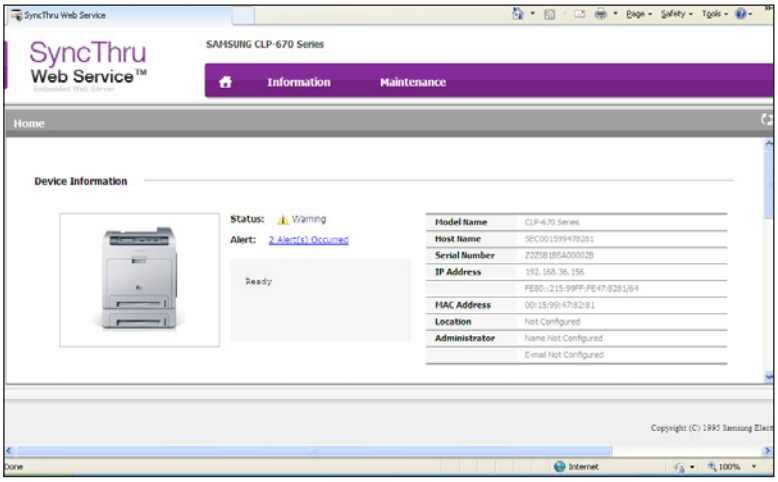
+ The CLP-670ND is certified highly reliable by BLI, completing a 40,000-impression durability test without a single misfeed and requiring no service of any kind.

PMs/Malfunctions	Service Required	Meter Count (Impressions)	Impressions Between Service
Meter Count (Beginning of Test)		0	
End of Test Period		40,000	
Total Misfeeds/Misfeed Rate	0/Not applicable		
Total Service Calls	0		

ADMINISTRATIVE UTILITIES

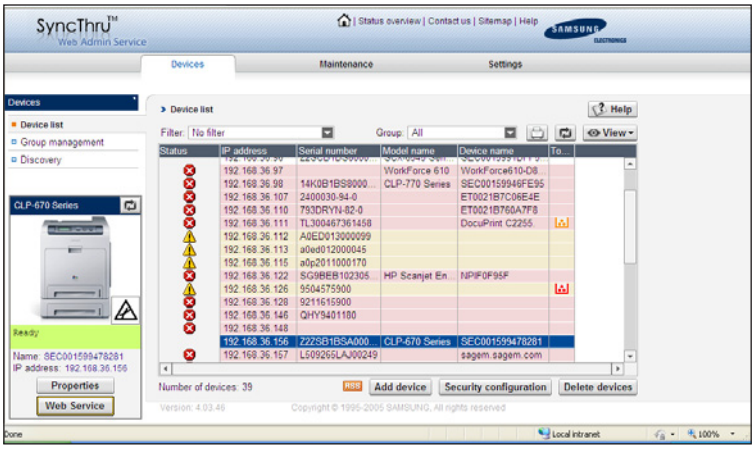
VERY GOOD

+ SyncThru Web Service, the embedded Web page, allows administrators and users to view configuration, the control panel and any existing errors and warnings. Administrators have the added abilities to change settings, including duplexing, paper type and the language on the display, and establish e-mail alerts for designated personnel. All users can access SyncThru Web Service to check the approximate percentage of remaining toner, as well as the size of paper in the trays.

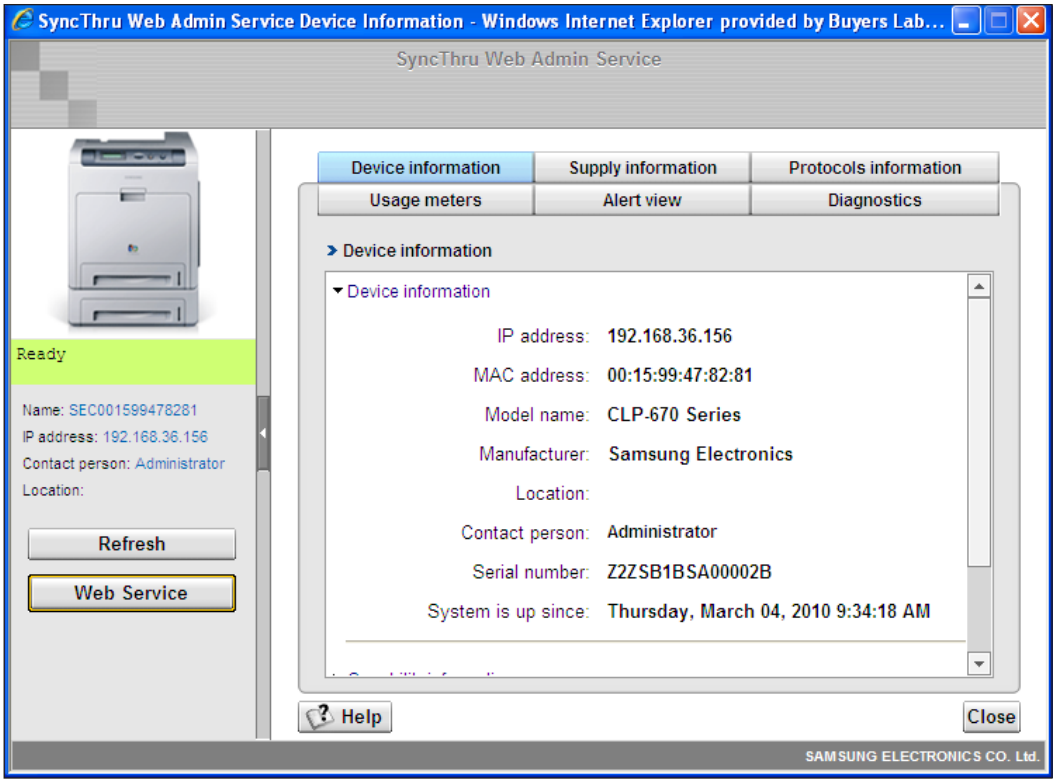


SyncThru Web Service—Main Screen (U.S. model pictured)

+ SyncThru Web Admin Service, which is available as a free download on the company's Web site, enables administrators to manage and monitor Samsung and compatible devices on the network. Information about non-Samsung devices is almost as detailed as for the company's. Otherwise, the utility provides much the same functionality for administrators and users as the embedded Web page, including the ability to check toner status.



SyncThru Web Admin Service discovers Samsung and compatible devices on the network, providing administrators with an interface to manage a fleet and access each device's embedded Web page. (U.S. model pictured)



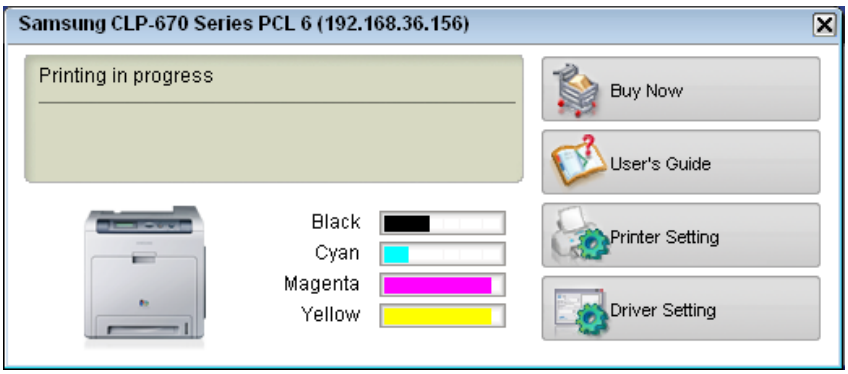
When administrators double-click a device in the list on SyncThru Web Admin Service, they're presented with detailed information such as supplies status, alerts and diagnostics. (U.S. model pictured)

○ Additional tools that work independently of or in conjunction with SyncThru Web Admin Service include Driver Management, Local Device Discovery, Report Generator, Device Cloning, File Storage and Job Accounting.

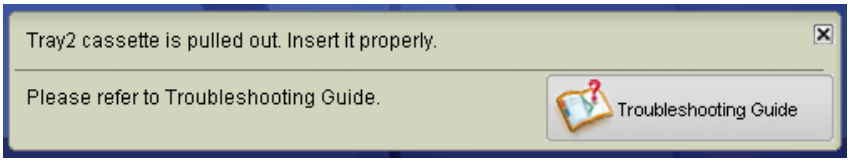
△ FEEDBACK TO WORKSTATIONS

VERY GOOD

\+ The chief provider of feedback is Smart Panel, which is automatically installed with the drivers. The utility offers pop-up messages for print job completion and when an error occurs; colour changes to the icon on the taskbar also let users know of other warning conditions. Administrators can configure e-mail alerts when consumables need to be replenished or there's an error, while all users can proactively access Smart Panel to check status and toner levels, change settings and view the manual. When an error message pops up, users can access the troubleshooting guide to rectify the issue.



Smart Panel allows users to see device status and toner levels, and access the manual. (U.S. model pictured)



When an error message pops up, users can access the trouble-shooting guide to rectify the issue. (U.S. model pictured)

+ Via the embedded Web page, administrators can configure e-mail alerts that can be sent to three users—SysAdmin, Key User and Service—for consumables shortage warnings and when the unit is unable to print due to a misfeed, the cover being open or service being required.

EASE OF NETWORK SETUP

VERY GOOD

○ Physical setup of the CLP-670ND is straightforward. Samsung recommends two people lift the main body of the unit, which stacks on top of the optional drawer, out of the box and bring it to the desired location due to size and weight concerns. Users remove the packaging material and can then open the bags that contain the print cartridges, which have yields of 2,500 and 2,000 impressions for black and each colour, respectively.

+ The CD auto-launches upon insertion in the drive, and the automated installation routine will have users up and running in a matter of minutes. It takes five clicks to install the PCL and PostScript drivers, as well as the user's guide; by extension, Smart Panel is loaded with the drivers, which automatically detect configured accessories. The port is automatically created.

+ Configuration of network settings can be easily performed from the control panel or remotely via SyncThru Web Service.

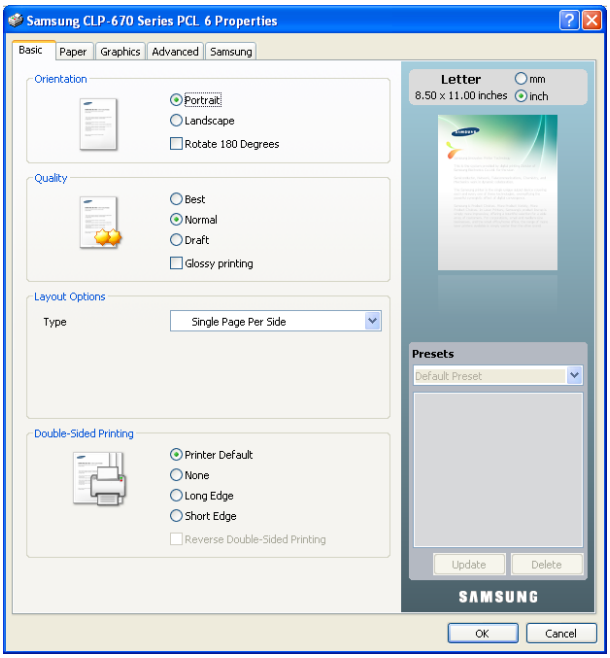
+ Though Samsung doesn't provide a utility on the CD that enables cloning of settings or remote installation of drivers onto workstations, administrators can accomplish these tasks with SyncThru Web Admin Service.

PRINT DRIVERS

VERY GOOD

+ The unit ships with Microsoft-certified PCL 6 and PostScript 3 drivers for various Windows and Mac operating systems, as well as several others such as Linux and UNIX.

○ The graphical drivers have duplex and orientation on the Basic tab, while users must go to the Paper tab to select quantity and paper size and source.



The PostScript 3 driver shares a similar layout with the PCL 6 driver (pictured above), helping simplify programming jobs in environments where users frequently switch between them. (U.S. model pictured)

○ The drivers offer a good overall feature set compared with A4 colour laser/LED printers in this speed range and class, including booklet and N-up—2 to 16—printing; proof and secure print; poster mode up to 4 x 4; quantity selection up to 999; reduction/enlargement from 25 to 400 percent; and the abilities to save settings for frequently used jobs and add watermarks. The PCL driver also includes overlay.

+ Toner-save mode in the drivers helps extend the life of the cartridges.

+ File size remains the same when collate is selected from the print screen within the application.

○ The Samsung tab in the drivers allows organizations to visit the company's Web site and order supplies.

○ Though not tested by BLI, a Universal Print Driver (UPD) is available for download from Samsung's Web site. Supporting the company's devices plus many from other manufacturers, it allows users to access available network and local devices without installing additional drivers. The UPD is compatible with network devices that use PCL 6, PostScript 3 or SPL languages, and provides the current status and properties of devices when users click the Search Now button. Samsung says the UPD enables users to create lists of frequently used devices and check their status at a glance so they know which ones are free before sending a job.

Samsung CLP-670ND Print Driver Features

	PCL 6	PostScript 3
Auto Feature/Device Detection	Yes	Yes
Booklet Printing	Yes	Yes
Collate	No*	No*
Max Paper Sources per Job	2	2
Mirror Image	No	No
Negative Image	No	No
N-up Printing	2 to 16	2 to 16
Overlay	Yes	No
Paper Gauge	No	No
Print and Hold	No	No
Proof Print	Yes	Yes
Quantity Selection	999	999
Reduction/Enlargement	Auto; 25 to 400%	Auto; 25 to 400%
Resolution Modes	Best (9600 x 600 dpi); Normal (600 dpi); Draft	Best (9600 x 600 dpi); Normal (600 dpi); Draft
Save Settings	Yes	Yes
Secure Print	Yes	Yes
Watermarks/Custom Watermarks	Yes/Yes	Yes/Yes
Cover Mode	No	No
Poster Mode	Yes (up to 4 x 4)	Yes (up to 4 x 4)
Blank-Page Removal	No	No
Toner Gauge	No	No
Toner Save	Yes	Yes
Print All Text as Black	Yes	Yes
Print Blank Pages	No	No

* Collate must be selected from the Windows print screen within the application.

APPLICATIONS COMPATIBILITY

EXCELLENT

+ No problems were experienced with any of the test files used in the applications compatibility tests. Units are tested for compatibility on Windows 2000 platforms with Microsoft Word 2000, PowerPoint 2000 and Excel 2000, as well as Adobe PageMaker 7.0, Photoshop 6.0 and Acrobat 8.0, using 25 application test files that contain text, graphics, halftone images, tables, etc., enabling BLI technicians to evaluate memory usage, file processing, font rendering and greyscale capability.

COLOUR/BLACK PRINT QUALITY

VERY GOOD

+ Business graphics were rated good, as consistency of solids, sharpness of fine details and production of pastel shades were competitive; while background reproduction was above average, saturation wasn't bright enough. Photographic images were very good overall, as sharpness of details and halftone range were above average; though output appeared somewhat grainy, flesh tones were natural-looking.

+ The gamut experienced a moderate increase in volume in the green through red regions at all points after the start of testing. All other colours remained consistent over the course of the evaluation.

+ Easy Colour Manager enables users to enhance image quality via balance, brightness, contrast and saturation controls.

+ Text was rated very good, as characters were fully formed and displayed above average darkness and competitive sharpness, with no toner overspray, while smoothness of curves/serifs was above average. Line art was very good overall, as closely spaced fine lines remained distinct, consistency of line thickness was above average and circles were fully formed, while diagonal lines exhibited some evidence of stairstepping. Halftone pattern and range were rated excellent and very good, respectively; greyscale was visible from the 1 to 95 percent dot-fill levels with distinct transitions between most levels, while coverage within levels displayed no graininess and minimal banding. Solids were excellent overall due to above average darkness and competitive consistency of coverage.

Text	Very Good
Line Art	Very Good
Halftone Pattern	Excellent
Halftone Range	Very Good
Solids	Excellent
Colour Business Graphics	Good
Colour Photographic Images	Very Good
Colour Shift	Excellent

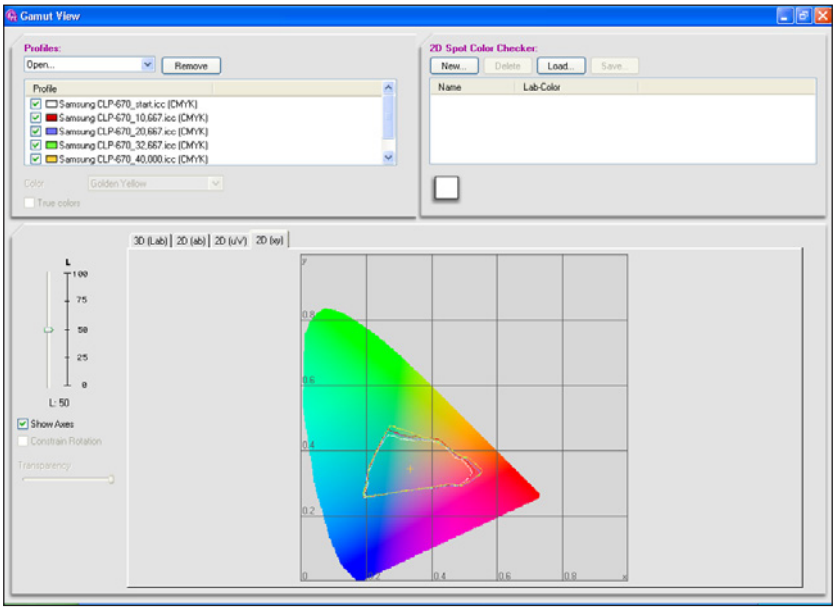
Comments:

Colour print quality is tested using a colour test target with print samples taken at five evenly spaced intervals throughout the test period. Test targets are read using an X-Rite Eye-One/iO Colour Spectrophotometer, and samples are analysed using the CIE XY Chromaticity Diagram. The unit employs an internal automatic calibration process.

Colour Shift

Test Point	Delta E	BLI Rating
10,667	2.26	Very Good
20,667	3.02	Very Good
30,667	5.74	Good
40,000	5.55	Good

Delta E is a colorimetric measurement assessing the distance between colours. The readings above reflect the average shift of the colour gamut from the previous measured point.



Samsung CLP-670ND Colour Gamut (U.S. model pictured)

Colour Print Density Readings

Cyan	1.12
Magenta	1.07
Yellow	0.81

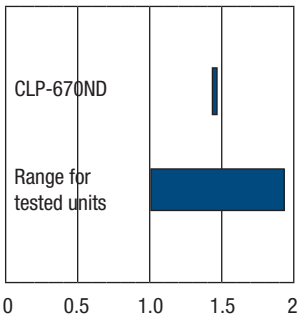
Density of a printed image with blocks of all solid colours (based on the average of two readings for each colour).

Print Density

Samsung CLP-670ND	1.41 to 1.49
Density for devices in this class tested to date	1.00 to 1.94

Measurements are based on four readings corresponding to four different solid black locations on the output. The higher the density reading, the darker the image.

Print Density



Visible Halftone Range

Samsung CLP-670ND	1% to 95%
Typical range for competitive devices	4% to 96%

The halftone test target contains blocks of increasing halftone dot-fill levels (1% to 100% in 1% increments).

△

COLOUR/BLACK PRINT PRODUCTIVITY

GOOD

○ Productivity using the PostScript driver to print BLI's job stream, which replicates typical office usage in a multi-user environment, in colour and black mode is competitive compared with A4 colour laser/LED printers in this speed range and class tested to date.

\+ Productivity using the PCL driver to print the job stream in colour and black mode is above average for the group.

○ Productivity when printing multiple sets in colour and black simplex modes is competitive for the group.

– Productivity when printing multiple sets in both duplex modes is below average for the group.

\+ Colour first-print times for the Word, PowerPoint, TIFF and JPEG files are faster than average for the group, while those for the PDF file are competitive.

\+ First-print time from overnight sleep is among the fastest in the group.

First-Print Time from Overnight Sleep Mode in Seconds

Samsung CLP-670ND	19.76
Average for devices in this class tested to date	38.22

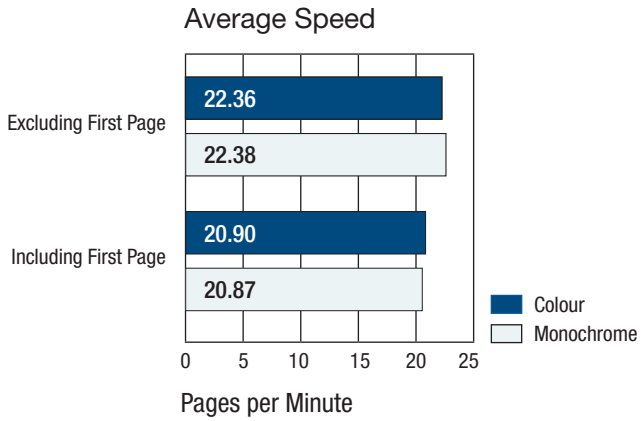
Device sits idle overnight; a single-page black Word document is then sent. First-print time indicates the time it took to RIP, image and deliver the first page of the test document to the output tray.

First-Print Times in Seconds

Windows XP	Word	PowerPoint	Photoshop	Acrobat	Photoshop
File Type	Black Text	Colour Graphic/Text	Colour Graphic	Black Graphic/Text	Colour Graphic
File Extension	DOC	PPT	TIF	PDF	JPG
Pre-Raster File Size	114 KB	99 KB	20 MB	426 KB	245 KB
Post-Raster File Size	9.74 KB	77.7 KB	15.6 MB	534 KB	851 KB
First-Page Time	11.97	13.44	17.78	16.62	12.06
Tested Competitive Average	14.48	19.67	26.79	18.04	14.52

First-print time indicates the time it took to RIP, image and deliver the first page of the test document set to the output tray. Speeds were tested using the PCL driver.

BLI's Tested Print Speeds



Print speed is tested using BLI's Monochrome Test Original with 6% page coverage and BLI's Colour Test Original with 10% coverage for each colour (cyan, magenta, yellow and black). The test page is printed in a quantity equal to double the vendor's rated print speed for the device in each mode tested (e.g., if the vendor's rated print speed is 20 ppm, 40 pages are printed). The unit's print speeds were tested using the PCL driver.

Average Print Productivity

	SPEED IN PPM		PERCENT OF RATED SPEED	
	Samsung CLP-670ND	COMPETITIVE AVERAGE	Samsung CLP-670ND	COMPETITIVE AVERAGE
FULL COLOUR				
1:1	20.1	18.9	83.9	78.2
1:2	9.8	13.2	40.7	55.5
BLACK				
1:1	19.9	20.0	83.0	79.0
1:2	9.8	14.6	40.9	57.8

Efficiency is tested using a 10-page full-colour document and a 10-page black document. BLI obtains the overall efficiency for each mode by averaging the efficiency ratings (derived by dividing the tested speed of the device by the rated speed and then multiplying by 100) for each run length (1, 5 and 10 sets). The unit's efficiency was tested using the PCL driver.

Job Stream

POSTSCRIPT	Samsung CLP-670ND	COMPETITIVE AVERAGE
FULL Colour		
PPM	10.3	10.1
Percent of Rated Speed	41.3	42.2
BLACK		
PPM	16.8	13.1
Percent of Rated Speed	67.3	50.7
PCL	**Samsung CLP-670ND**	**COMPETITIVE AVERAGE**
FULL COLOUR		
PPM	18.8	12.5
Percent of Rated Speed	78.2	48.7
BLACK		
PPM	20.2	16.2
Percent of Rated Speed	84.1	60.9

BLI's job stream includes Word documents, Outlook e-mail messages, Excel spreadsheets, PowerPoint, HTML and Acrobat PDF files, totalling 19 pages. This test simulates the type of traffic a typical device might experience in a real-world, multi-user environment. All of the files are sent to the device as a group, at which time the stopwatch begins; timing ends when the last page of the last file exits the device. Job stream efficiency is determined by the percentage of the rated speed at which the device operates when producing real-world jobs. The closer the rate is to 100%, or if it exceeds 100%, the more efficient the device.

EASE OF USE

VERY GOOD

+ Samsung's Blue Compass Navigation control panel consists of a two-line, 32-character LCD, seven hard keys and one colour-changing LED for Status (green for ready or printing, red for errors or warnings). Functions are simply named, and the menu system is easy to navigate. Gauges on the LCD provide at-a-glance toner status.

Samsung CLP-670ND Control Panel (U.S. model pictured)

+ Adjusting the drawers is straightforward. Users pull one open and squeeze the blue tab of the length guide to move it; for A4 paper, users push down the back of the drawers. The width guides move in sync once users hold down the lever on the right side. Loading media is equally as easy: Users need only push down the spring-loaded ramp to lock it into place before adding paper. Paper size must be set via the control panel, which is common.

+ Though no instructions are provided about how to clear misfeeds, BLI technicians noted that the process is simple. There are five access points, and consumables don't have to be removed, though drums are exposed.

+ Replacing the print cartridges, which include toner and drums, is a clean procedure. Users open the front door and pull out a cartridge using two handles. Users can refer to illustrative instructions on the inside of the door to guide them.

+ The unit is also easy to use from the desktop via the well-designed drivers.

FEATURE SET

GOOD

+ Standard and maximum memory capacities are above average and slightly above average, respectively, compared with A4 colour laser/LED printers in this speed range and class.

○ The majority of devices in this class don't offer even an optional hard drive, including the CLP-670ND.

○ While standard paper capacity of 350 sheets is below average for the group, maximum capacity of 850 sheets is competitive; both figures include the bypass.

○ The unit's bypass capacity of 100 sheets is competitive for the group.

— The drawers can accommodate up to 105 gsm, which is below average paper-handling ability for the group.

○ The bypass can accommodate up to 220 gsm, which is competitive paper-handling ability for the group.

○ Output capacity of 250 sheets is competitive for the group.

+ Automatic duplexing is standard.

SECURITY FEATURES

NOT RATED

Administrator password length (characters)	18 alphanumeric
Authentication	
Network user authentication	No
Windows	No
Novell NetWare NDPS	No
LDAP authentication	No
802.1x wireless authentication	No
Kerberos protocol support	No
Authentication via department or user ID codes that are registered on the machine	No
Number of codes	NA
Restrict usage of colour	No

Restrict usage of other features	No
Authenticated printing	No
Common Criteria Certification	No
Control panel lock/disablement	No
Digital user signature	No
Encrypted PDF mode/encrypted scanning	NA
Encrypted secure print	No
Hard drive encryption	NA
Hard drive lock	NA
Hard drive overwrite	NA
Max number of overwrites after every job	NA
Overwrite method	NA
IP address filtering	Yes
IPsec	Yes
Job logs (e.g., activity monitoring, compliance auditing)	No
MAC address filtering	No
Password-protected mailboxes	No
Password-protected Web page	Yes
Port disablement	No
Removable hard drive	NA
Secure print	No
Secure Sockets Layer (SSL)	Yes
SNMPv3 support	Yes
Third-party security features	None
Transport layer security	Yes
Unauthorised copy prevention (secure watermark)	No
USB block	NA
Additional security features	None

NA: Not applicable

ENVIRONMENTAL FEATURES

NOT RATED

Specified capable of running 30% post-consumer recycled paper	Yes
Specified capable of running 50% post-consumer recycled paper	Yes
Specified capable of running 100% post-consumer recycled paper	Yes
Instant/Quick Fusing	Yes
Duplexing	Yes
Toner-save mode	Yes
Energy-save mode/modes	No
RoHS compliant	Yes
In-house environmental policy for this unit?	Yes
Percent of product made from previous devices	16.7

Percent of product made from post-consumer materials	16.7
Percent of product made from pre-consumer materials	16.7
Percent of product made from bio-based materials	16.7
Product designed for recycling (easily disassembled, no binding agents)	Yes
Please list types of items that can be recycled	Metals, plastics, paper, Styrofoam
Hardware remanufacturing program for this product	No
Toner cartridge recycling program for this product	Yes (S.T.A.R. Program)
Pre-paid label for return of toner cartridges/bottles for this unit	No
Toner recycling system	Yes
Ability to program features such as duplexing and auto shut-off over entire fleet	Yes
What tool can be used to do this?	Control panel, drivers
Green packaging materials for the product	No
Green packaging materials for its consumables	No
Packaging materials used	EPS, SUK225 (cardboard, Styrofoam cushion)
Typically, who is responsible for getting rid of packaging materials after products are shipped to the customer location (e.g., customers, dealers, shippers)?	Customers
Eco-Label Certifications	
ENERGY STAR	Yes
Other	The Eco Declaration, Germany Blue Angel, Korea Eco Label
Tested energy consumption levels of the device (watts):	
Ready/Idle	20.5
Energy-save	NA
Sleep mode	7.5
During Printing	569
How fast can this product be programmed to go into the following modes (minutes):	
Ready/Idle	0
Energy-Save	NA
Sleep mode	20
Can the above settings be programmed by a walkup user?	Yes (sleep mode only)
First-print time out of sleep mode (seconds)	42
Emissions output from this device for the following substances (mg/h):	
Carbon Monoxide	NA
Nitrogen Dioxide	NA
Ozone	0.42 (colour); 0.36 (black)
Styrene	0.482 (colour); 0.221 (black)
Benzene	0.07 (colour); 0.013 (black)
TVOC	11.36 (colour); 8.15 (black)
Dust	3.1 (colour); 1.9 (black)
Other	None

NA: Not applicable

TONER YIELD

GOOD

○ Based on an average of two cartridges per colour, tested toner yields for all colours are competitive compared with A4 colour laser/LED printers in this speed range and class tested to date.

\+ The average tested toner yields of all colours exceeded the declared specifications.

— While impressions-per-gram yields for black and cyan are below average for the group, those for magenta and yellow are well below average.

Tested Toner Yield

	Black	Cyan	Magenta	Yellow
Manufacturer's Rated Toner Yield (Impressions)	5,000	4,000	4,000	4,000
COMPETITIVE AVERAGE	6,429	5,700	5,700	5,700
BLI's Tested Yield (Impressions)[1]	5,959	5,940	5,957	5,957
COMPETITIVE AVERAGE	6,597	5,829	5,703	5,831
Net Weight (Grams)	102.0	88.2	92.1	100.4
Impressions per Gram	58.45	67.35	64.68	59.36
COMPETITIVE AVERAGE	67.64	75.60	81.14	75.05
Manufacturer's Rated Drum Yield (Impressions)[2]	5,000	4,000	4,000	4,000
COMPETITIVE AVERAGE	11,571	11,129	11,129	11,129

[1] Based on BLI's testing of two cartridges per colour using the ISO 24712 toner yield test original.

[2] Some devices in the competitive group employ an all-in-one cartridge that includes the toner and drum in a single component. In those cases, rated toner yield is used as the rated drum yield in calculating the average.

Supplies Cost per Page by Country

Country	France	Germany	Italy	UK
Cost per Page	0,0941 €	0,0711 €	0,0800 €	7.263 p

[1] Supplies cost per page is based on Manufacturer's pricing and BLI's tested toner yields (based on an average of two extra-high-yield print cartridges) using the ISO 19752 toner yield test original, as well as the manufacturer's rated yield for the fuser maintenance kit.

SUPPORTING TEST DATA

Test Environment

This product was tested in BLI's 929-square-metre U.S. test lab, in an environment monitored by an Extech RH S20 Digital RH/Temperature Recorder and Honeywell Model 61 Seven-Day Temperature/Relative Humidity Chart Recorder. All products lab tested by BLI are powered by dedicated circuits that are protected by ESP (Electronic Systems Protection, Inc.) surge protectors to prevent transient power and communication disturbances from impacting equipment under test.

Test Equipment

BLI's dedicated test network, consisting of Windows 2003 servers, Windows XP workstations, 10/100BaseTX network switches and CAT5 cabling.

Test Duration

Products are tested for two months, a portion of which consists of a durability test during which the product is run at half of its manufacturer-rated maximum monthly volume, with varying daily test volumes designed to replicate real-world use over an eight-hour workday. This variable schedule includes a mix of various-size documents, simplex and duplex modes, and a mix of short, moderate and long run lengths, and on/off cycles, throughout the day.

Tested Configuration

Samsung CLP-670ND base unit, plus optional 512-MB memory upgrade and 500-sheet drawer.

Test Procedures

The test methods and procedures employed by BLI in its lab testing include BLI's proprietary procedures and industry-standard test procedures, which include a BLI-developed variation of ASTM's 1318-90 Test Method for Determination of Productivity using Electrostatic Copy Machines. In addition to a number of proprietary test documents, BLI uses an industry-standard KATUN test original for evaluating black image quality and test suites from Quality Logic to evaluate applications compatibility. In addition to a visual observation under a Graphiclite D5000 Standard Viewer, colour print quality is tested using a colour test target, which is read using the X-Rite Eye-One/iO Colour Spectrophotometer, and samples are analysed using the CIE XY Chromaticity Diagram. In addition, density of black and colour output is measured using an X-Rite 500 Series Densitometer. Georgia-Pacific Spectrum Multi-Use Paper is used in the tests, 10 percent of which is recycled paper containing 30 percent post-consumer content. Image quality is tested using Georgia-Pacific Printing Paper.

Certificate of Reliability

Awarded to

SAMSUNG ELECTRONICS

for the performance of the

Samsung CLP-670ND

in BLI's in-house durability test.

Anthony F. Polifrone
Managing Director

July 2010
Date

This is to certify that when subjected to an approximately 40,000-impression Buyers Lab durability test in a networked environment, the Samsung CLP-670ND proved to be a highly reliable product.

BUYERS LABORATORY INC.

THE LEADING INDEPENDENT OFFICE PRODUCTS TEST LAB AND BUSINESS CONSUMER ADVOCATE

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