

Toshiba e-STUDIO353*

35 PPM Copier • Printer • Scanner • Fax



Reliability.....	Excellent
Multitasking.....	Very Good
Administrative Utilities.....	Good
Feedback to Workstations.....	Fair
Ease of Network Setup.....	Very Good
Print Drivers.....	Excellent
Applications Compatibility.....	Excellent
Scan Functions.....	Good
Print/Copy Quality.....	Very Good
Print/Copy Productivity.....	Good/Very Good
Ease of Use.....	Good
Feature Set.....	Very Good
Security Features.....	Excellent
Toner Yield.....	Good
Cost per Page.....	Set by dealers
Value.....	Very Good

BLI RECOMMENDATION

The Toshiba e-STUDIO353 proved to be an admirable performer throughout its lab assessment at BLI. With a rated speed of 35 ppm, the unit offers standard copy functionality, and optional network print and scan, as well as fax. Based on a highly reliable engine, the e-STUDIO353 misfed only twice and required just one service call over the course of its 150,000-impression durability test. The e-STUDIO353 earned a rating of Very Good for output quality in both print and copy mode. Furthermore, the unit's PCL 6 and PostScript 3 drivers—standard when optional network printing is enabled—are well-designed, simple to set up and boost ease of use from the desktop. Based on these findings, the e-STUDIO353 is recommended by BLI for departments and workgroups that have monthly volumes of up to 17,000 impressions.

Test duration: Two months, including a 150,000-impression durability test.

Maximum monthly duty cycle¹: 120,000 impressions.

BLI's recommended monthly duty cycle for peak usage: Up to 17,000 impressions².

* Reliability, image quality, toner yield and scan results are based on the performance of the Toshiba e-STUDIO453, which uses the same engine.

¹ The manufacturer's maximum monthly duty cycle is the maximum volume, as specified by the vendor, that the unit is capable of producing in a month; however, it isn't recommended that the unit be run at this volume on a regular basis.

² Based on a survey conducted by BLI. When comparing models, note that this lower optimum volume was instituted in May 2007.

Please note that the following document is based on tests conducted on a Toshiba eSTUDIO353 sold in the United States. BLI has updated this report to reflect the specifications and features available on the European version of this model. Although there may be slight differences in features and pricing, both models are manufactured by the same parent company, share many of the same components, and are based upon a common engine. Tests were conducted using U.S. letter-size paper and A4 results may vary.

Strengths

- Highly reliable
- Fully formed characters, above average halftone range and dense solids in print and copy modes; consistent line thickness, with no breakup of circles, in both modes
- First-copy times among the fastest of competitive models from both the platen and document feeder
- Above average RADF (optional) capacity
- Tested toner yield exceeded rated yield
- All of the selections required for a typical print job are available on the main tab of the drivers; XPS format support for printing in Windows Vista
- Optional e-BRIDGE Re-Rite and eCopy ScanStation solutions boost scan functionality
- Highly automated setup routine for optional network printing
- 1,000 department and 10,000 user codes

Weaknesses

- Below average tested toner yield
- Adjusting the drawers for different size paper isn't as easy as with some competitive devices; clearing misfeeds can be confusing
- No pop-up messages or icon alerts for end users
- Limited ability to move copy and print jobs in queue; one-set copy jobs can only be output to the inner tray unless service changes the setting
- The unit doesn't support simultaneous RIP and print, meaning that sent jobs must finish RIPping before they're printed
- Setup of scan functionality is more difficult than on many competitive devices

PERFORMANCE OVERVIEW

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



RELIABILITY

EXCELLENT

- + The e-STUDIO353 is based on an engine that proved to be highly reliable in BLI's testing, having completed its 150,000-impression durability test with only two misfeeds, for a rate of one misfeed per 75,000 impressions. Although one service call was required, it was a minor issue—squeaking from the lower door.
- + The unit's photoconductor and developer yields, as well as its preventive maintenance interval, all at 120,000 impressions, are competitive with other devices in this speed range and are replaced at the same interval.



MULTITASKING

VERY GOOD

- The e-STUDIO353 allows nine copy jobs to be reserved while a copy job is in progress and up to 10 copy jobs while a print job is in progress. Some competitive devices offer copy reserves limited only by memory capacity.
- Programming of the next copy or scan job can begin once all the sheets of the previous job have completed scanning. Unlike with a few other competitive devices, access to the control panel is blocked while the pages of the current job are being scanned.
- + An unlimited number of print jobs can be sent to the device (limited only by memory capacity).
- It took approximately 30 seconds for the unit to download all 15 print jobs used in testing.
- + Users can send a print job and program a copy or scan job while a copy or print job is running.
- Although there's no page-to-page status for scan-to-e-mail jobs, a scan status "Process" message is listed in the queue.
- To pause a job in progress in order to perform an immediate copy job, the user selects the Interrupt hard key on the control panel and is able to access most features required for a typical copy job, including the RADF, multiple sets, duplexing and finishing.
- The user must wait until the e-STUDIO353 pauses before programming the interrupt job.

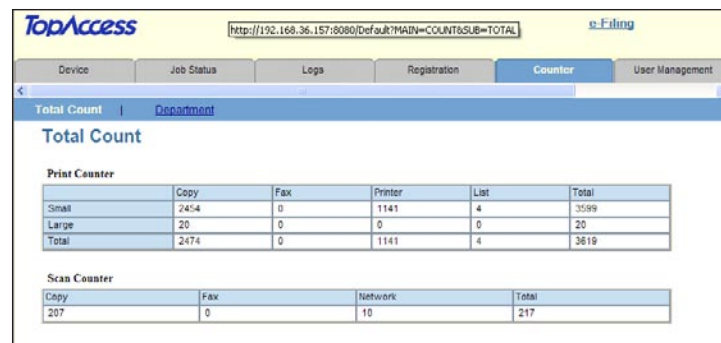
- + During testing, the unit automatically returned to non-interrupted copy and print mode after approximately 40 seconds without user intervention. This would be beneficial in a networked environment where many jobs would likely be waiting in queue. Some devices don't automatically return to non-interrupted mode until the Start key is pressed.
- A priority mode for copy or print jobs can't be set.



ADMINISTRATIVE UTILITIES

GOOD

- + TopAccess is a Web-based utility that allows administrators to configure device settings and update the address book and public template groups. Additionally, administrators can display the job logs for print, scan and fax jobs; register and modify templates; display the counter logs; and download client software.
- + TopAccess can be used to view and merge copy, print, scan and Internet fax jobs stored on the unit with the e-FILING feature. Furthermore, users can pull the merged jobs back to their desktops as single- or multi-page PDFs or TIFFs.
- + Up to three key operators can receive e-mail alerts via the Web utility.
- + The drivers can be downloaded on users' PCs via TopAccess.
- Although the Web utility can restart the unit, it can't be used to take it offline.
- + The e-STUDIO353 offers 1,000 department and 10,000 user codes.



The screenshot shows the TopAccess web interface. At the top, there's a navigation bar with tabs: Device, Job Status, Logs, Registration, Counter (selected), and User Management. Below the navigation bar, there's a breadcrumb trail: Total Count | Department. The main content area is titled 'Total Count' and contains two tables: 'Print Counter' and 'Scan Counter'.

Print Counter					
	Copy	Fax	Printer	List	Total
Small	2454	0	1141	4	3599
Large	20	0	0	0	20
Total	2474	0	1141	4	3619

Scan Counter			
Copy	Fax	Network	Total
207	0	10	217

**TopAccess – Total Count (under Counter Tab)
(U.S. model pictured)**



FEEDBACK TO WORKSTATIONS

FAIR

- Whereas many manufacturers offer multiple methods of feedback, users of the e-STUDIO353 must proactively go to the Web utility to view status information such as paper sizes and quantities. The status of print, scan and fax jobs, as well as when the finishing tray is full, is also provided, but there's no consumables monitoring.
- No audible, e-mail or icon alerts, or pop-up messages, are available to notify users of job completion or error conditions.
- The drivers don't offer any paper or consumables status.



EASE OF NETWORK SETUP

VERY GOOD

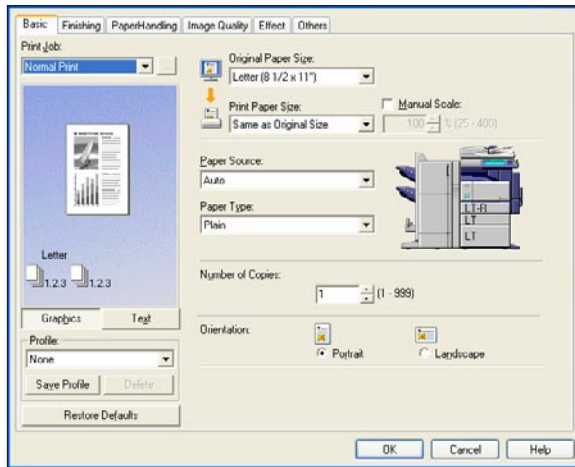
- + Setup for network printing is highly automated; the drivers are on one CD, which auto-launches upon insertion into the drive, and can be installed in a single session. Furthermore, the port is automatically created. It takes 16 clicks to install the drivers.
- Although the drivers auto-detect configured accessories, an administrator must manually initiate this capability via the Configuration tab.
- There are three additional CDs, the first of which contains user documentation.
- Administrators must navigate through several tabs in TopAccess to set up network scanning.



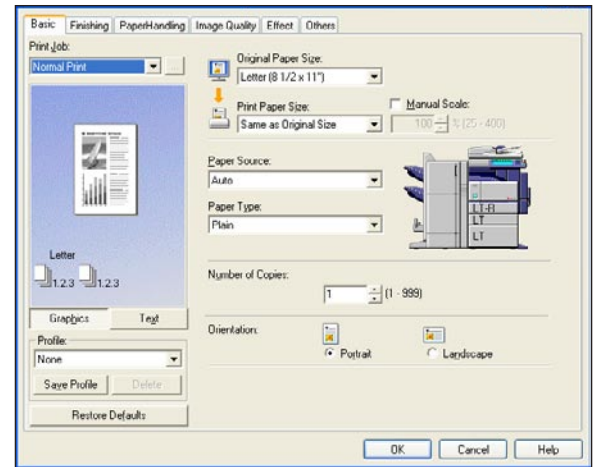
PRINT DRIVERS

EXCELLENT

- Printing is optional with Toshiba's proprietary e-BRIDGE controller. Memory and the standard, non-upgradeable 40-GB hard drive are shared between the copier and printer.
- + PCL 6 and PostScript 3 drivers are standard once optional network printing is enabled, as is XPS format support for printing in Windows Vista.
- + The drivers are identical in appearance, making use easier for those who frequently switch between them.
- + All of the selections required for a typical print job are available on the Layout tab of the drivers, including quantity, paper source and type, collate, orientation, duplex, finishing and reduction/enlargement, many of which aren't commonly found on the main screen.



**PCL 6 Print Driver—Basic Tab
(U.S. model pictured)**



**PostScript 3 Print Driver—Basic Tab
(U.S. model pictured)**

- The drivers lack a point-and-click interface for selecting output destination.
- + The drivers have a graphical display of job settings, including sort/group and orientation, both of which are located under the preview window on the left-hand side of each tab. Users can also choose to display job and device settings in text form.
- Although they don't provide any consumables feedback, the drivers offer an otherwise good feature set, including booklet, private, proof, scheduled and N-up—from 2 to 16—printing; reduction/enlargement from 25 to 400 percent; and quantity selection up to 999. The drivers also provide support for pre-imposed booklets, and when the unit is fully configured, users are able to select up to four sources for a single job so that different paper can be used for front and back covers, inserts and the main body of text. Furthermore, the e-FILING feature allows users to store jobs in electronic mailboxes.
- + It requires seven clicks to program a typical print job (multiple duplexed sets with single-position stapling).
- + BLI technicians found the procedure for programming a booklet print job to be easy, requiring 11 clicks.
- The unit doesn't support simultaneous RIP and print, meaning that sent jobs must finish RIPping before they're printed.
- + File size remains the same regardless of whether collate is selected from the properties screen of the driver or the print screen within an application.



APPLICATIONS COMPATIBILITY

EXCELLENT

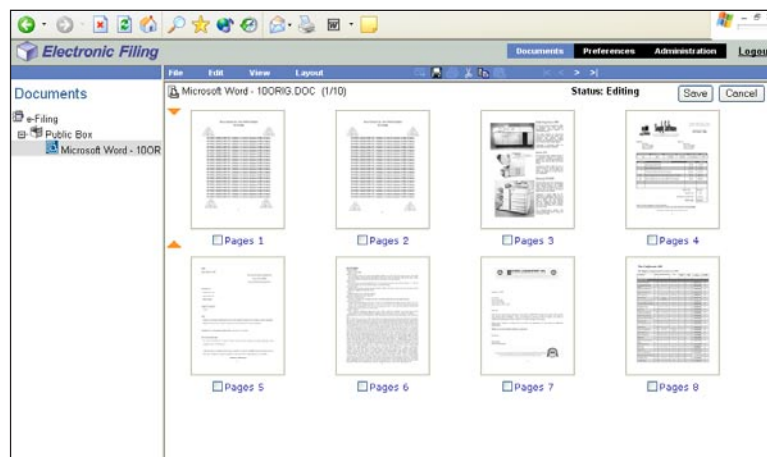
+ No problems were experienced with any of the test files used in the applications compatibility tests. Units are tested for compatibility on Windows XP platforms with Microsoft Word 2000, PowerPoint 2000 and Excel 2000, as well as Adobe Page-Maker 7.0, Photoshop 6.0 and Adobe Acrobat 6.0, using 25 application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



SCAN FUNCTIONS

GOOD

- Network scanning is optional and can be enabled with the print/scan or scan kits. Users can scan in monochrome only to e-mail, network folders via FTP and SMB, desktop, Internet fax and WS SCAN ([Web Services Scan for Windows Vista] through a network connection, but it requires the optional memory upgrade), while the unit supports TWAIN scanning too. File formats include TIFF and multi-page TIFF, PDF and encrypted, multi-page and secure PDF, and XPS.
- + The e-STUDIO353 also offers scan to e-FILING, a feature that allows copy, print, scan and Internet fax jobs, as well as received e-mails, to be stored on the hard drive. All users have read-and-write access to the public box and there are also 200 private boxes, which can be managed by each user. Documents can be stored directly in either type of box and also in folders—up to 100, but no subfolders—within both types of boxes. Finally, up to 400 documents can be stored in each box and folder, while each document can contain up to 1,000 pages.



e-FILING allows copy, print, scan and Internet fax jobs to be stored on the hard drive. (U.S. model pictured)

- There's no scan preview on the control panel.
- + The unit supports five LDAP servers, which users can search by first or last name, e-mail address, fax number, corporation or department.
- Addresses located via LDAP can't be automatically stored locally on the unit.
- Destinations can be manually programmed both at the control panel and via TopAccess to be stored in the address book at the control panel in administrator mode.
- + Users can add destinations to the address book from the Web utility.
- + The QWERTY keypad for scan to e-mail is large and easy to use as the keys are very responsive.
- It takes 15 keystrokes to perform a scan-to-e-mail job using LDAP support with a 200-dpi PDF file type when sending to one destination. Scanning to two destinations requires 16 keystrokes.
- File size for scanned e-mails can be limited (adjustable from 2 to 30 MB).
- + Toshiba offers its e-BRIDGE Re-Rite solution as an option, allowing users to convert documents into a wide range of editable formats and then distribute those files to an e-mail address, network folder or both. Users can scan in DOC, RTF and TXT formats.
- + The eCopy ScanStation solution, which offers several core scanning functions and add-ons that provide integration with a range of document management and other types of applications, is optional. BLI has evaluated eCopy's ScanStation and found it to be an excellent solution, earning a rating of Five Stars in BLI's testing.



PRINT/COPY QUALITY

VERY GOOD

- + Text was rated Very Good in print mode, as characters were fully formed with above average darkness, sharpness and smoothness of curves/serifs. Text was also rated Very Good in copy mode as tested in Text/Auto mode.
- Note that the default image quality setting in copy mode is Text/Photo/Auto, which resulted in fair overall output; therefore, BLI recommends the default be changed to Text/Auto.
- + Line art was rated Very Good in both modes, as fine lines remained distinct, lines were of consistent thickness and circles were fully formed. While diagonal lines displayed no evidence of stair-stepping in print mode, they did in copy mode.
- + Halftone range and pattern in print mode were rated Very Good and Good, respectively; grayscale was visible from the 1 percent to 100 percent dot-fill levels, with dis-

tinct transitions between most levels, while coverage within levels displayed average graininess but no banding.

- + In copy mode halftone range and pattern were very good and good overall, respectively; grayscale was visible from the 15 percent—the minimum coverage area on the original—to 100 percent dot-fill levels, with distinct transitions between most levels, while coverage within levels displayed average graininess but no banding.
- + Solids in both modes were rated Very Good due to above average darkness and consistency of coverage.



PRINT/COPY PRODUCTIVITY

GOOD/VERY GOOD

- The e-STUDIO353's efficiency is competitive compared to tested devices in this speed range using the both PCL and PostScript 3 print drivers when producing BLI's job stream, which simulates typical traffic in a multi-user environment.
- The e-STUDIO353's efficiency when printing multiple sets using the PCL print driver is competitive with the group in both simplex mode and duplex mode.
- The e-STUDIO353's copy efficiency is competitive for the group in all three modes tested.
- + The e-STUDIO353's first-copy times are among the fastest for the group from both the platen and the document feeder.



EASE OF USE

GOOD

- + The well-designed control panel, which can be tilted to many angles, features a monochrome touch-screen LCD with tab browsing. Brightness on the display can be adjusted via a contrast dial on the left side of the control panel.



Toshiba e-STUDIO353 Control Panel (U.S. model pictured)

- + All hard keys are clearly labeled, and those for Copy, Scan, e-FILING and Fax are illuminated when a function is in use. Although text on the display can't be enlarged, the buttons are a good size and very responsive.
- + The Help key provides basic assistance for the copy, scan, e-FILING and template functions. To access help in the copy function, users make a selection such as duplex and then press the Help key, after which text will appear to aid the user.
- Of the features required for a typical copy job, only paper source and exposure can be set on the Basic tab. Although the other features are on the main screen, users must move through submenus to select items such as duplex and finishing.
- + It takes only seven keystrokes to program a typical copy job (two sets, with single-position stapling and 78 percent reduction). The setting to reduce B4 paper to A4 is a pre-set on the display.
- + It takes just four keystrokes to program a booklet copy job with multiple sets.
- One-set copy jobs can only be output to the inner tray unless service changes the setting.
- Also contributing to ease of use is the Settings tab, which allows users to review the settings of the current copy job but not if another job is being programmed.
- + The Proof Copy button enables users to output a sample set of a copy job.
- Separate queues can be viewed for current and reserved copy/print, scan, and fax/Internet fax jobs.
- Copy and print jobs can be moved in queue, but the process is more limited than with other competitive devices. Jobs that reside in slots one through eight can't be moved at all (those with the process message "Ready" in queue), while the remaining jobs can be moved (those with the message "Waiting.")
- + The electronic meter can be viewed at both the control panel and in TopAccess, and it can be printed from the control panel with the serial number included. The meter allows users to track the number of copies, prints, scans and faxes, as well as a total. The meter count cannot be automatically e-mailed to a dealer.
- Adjusting paper drawers isn't as easy as with some other competitive devices. The drawers contain removable length guides and user-adjustable width guides. Before adjusting the width guides the user must release the lock, which is part of the guide and is hard to see as it's toward the back of the drawer. The length guide doesn't slide; instead the user must remove it from its slot and relocate it to the appropriate one. Thus in some cases, the user might remove the guide without realizing it has to be reinserted, possibly resulting in misfeeds. Also, the drawers aren't equipped with sensors to automatically detect changes in paper size; therefore, after changing to a new paper size in a drawer, the user must manually change the setting via the control panel to prevent misfeeds or copying or printing onto the wrong size paper. BLI technicians noted that whenever a user opens a drawer, a message appears on

the display that asks if the paper size was changed. If the user answers “Yes” to a new paper size, then the user will be prompted to select the new size. The bypass detects when paper is placed in the bypass tray and sets the bypass as the default tray. Although the unit doesn’t detect the paper size in the bypass, it automatically displays the selection screen so the user can select the applicable size.

- Procedures for removing misfeeds are more confusing than with some competitive devices. Misfeeds are accessed from the right side of the unit and above the engine area, as well as through the door on the top of the finisher. Furthermore, although consumables don’t have to be removed, the drum is exposed, making it susceptible to damage. Users are provided with step-by-step instructions via graphics, but they have to press a key to see the next step as the system isn’t dynamic. A text message on the touch screen such as “Misfeed in Finisher” is also not dynamic and continues to alert users that a misfeed is still present in the finisher even if it’s been removed; this message finally clears when all misfeeds in the unit have been removed.
- + Replacing toner is simple and clean, as users simply pull the holder out and remove the cartridge.



FEATURE SET

VERY GOOD

- The e-STUDIO353 offers standard copy functionality, along with optional network print and scan, and fax—Internet, network, PC and walkup—capabilities.
- The unit’s standard memory capacity of 256 MB and maximum memory capacity of 512 MB are both competitive with other models in this speed range. Furthermore, its standard, non-upgradeable 40-GB hard drive is also competitive. Memory and the hard drive are shared between the copier and printer.
- The e-STUDIO353 offers standard and maximum paper capacities of 1,200 and 3,700 sheets, respectively; both are competitive for the group.
- The unit’s 100-sheet bypass, which supports envelope feeding, is competitive for the group.
- The e-STUDIO353 can handle up to 105 gsm through the drawers and up to 209 gsm through the bypass, both of which are competitive compared with devices in this speed range.
- + The unit’s optional RADF has a capacity of 100 sheets, which is above average compared to devices in this speed range.
- + A number of finishing options are available for the e-STUDIO353. The single-position stapling finisher offers a stack capacity of 200 letter sheets for the first tray and 700 letter sheets for the second tray, as well as a single-position stapling capacity of 30 sheets. The multi-position stapling finisher offers a stacking capacity of 2,000 letter sheets for the first tray and 250 sheets for the second tray, as well as a multi-position

stapling capacity of up to 50 sheets. The saddle-stitch finisher offers a 2,000-sheet stacking capacity, a multi-position stapling capacity of up to 50 sheets and the ability to saddle-stitch up to 15 sheets to create 60-page booklets. Two- or four-hole punching is also available for the multi-position stapling finisher or the saddle-stitch finisher. An offset catch tray is also available. A wireless LAN adapter and Bluetooth module are offered. A job separator can separate copy, print and fax jobs.

- + The Job Build feature allows users to build a job that may have different settings (e.g., simplex, duplex) for different parts within the document.
- + Users can add a blank or copied front cover, a blank front and back cover, or a copied front cover and blank back cover.
- + The e-STUDIO353 has 12,060 templates that allow for the programming of commonly used job settings—finishing included—from the control panel and drivers.



SECURITY FEATURES

EXCELLENT

Administrator password length (characters)	10 alphanumeric
AUTHENTICATION	
Network user authentication	Yes
Windows	Yes
Novell NetWare NDPS	Yes
LDAP authentication	Yes
802.1x wireless authentication	Yes
Kerberos protocol support	Yes
Authentication via department or user ID codes that are registered on the machine	Yes
Number of codes	1,000
Restrict usage of colour	N/A
Restrict usage of other features	Yes
Authenticated printing	Yes
Common Criteria Certification	Pending
Control panel lock/disablement	Yes
Digital user signature	Standard with S/MIME support
Encrypted PDF mode/encrypted scanning	Standard
Encrypted secure print	Standard
Hard drive encryption	Optional
Hard drive lock	Yes
Hard drive overwrite	Optional
Max number of overwrites after every job	N/A
Overwrite method	Eight different types
IP address filtering	Yes
IPsec	Yes
Job logs (e.g., activity monitoring, compliance auditing)	Yes

MAC address filtering	No
Password-protected mailboxes	Yes
Password-protected Web page	Yes
Port disablement	Yes
Removable hard drive	No
SECURE FAX	
Encrypted TX/RX	No
Fax forwarding	Yes
Fax line access prevention	Yes
Fax memory lock	Yes
Confidential mailbox	Yes
Secure print	Yes
Secure Sockets Layer (SSL)	Yes
SNMPv3 support	No
Third-party security features	Equitrac
Transport layer security	Yes
Unauthorised copy prevention (secure watermark)	Standard
USB block	Standard
Additional security features	e-BRIDGE SMART Card reader; data overwrite enabler; scrambler board



ACCESSIBILITY FEATURES

NOT RATED

Accessibility handle	Yes
Braille label kit	No
Enlarged display mode	No
Remote operator software	Yes
Tilting control panel	Yes
Voice guidance (audible instructions)	No
Voice operation (responds to voice commands)	No



ENVIRONMENTAL FEATURES

NOT RATED

- + The e-STUDIO353 comes with standard automatic duplexing, as well as toner- and energy-save modes.
- + The unit is ENERGY STAR qualified and complies with the WEEE Directive and RoHS.
- + The e-STUDIO353 employs recycled materials and is designed for recycling (i.e., easily assembled, no binding agents). Furthermore, Toshiba offers a toner recycling program, including a pre-paid label for mailing in the empty cartridges. The unit also has a toner recycling system.



TONER YIELD

GOOD

- Although the e-STUDIO353's tested toner yield is below average compared to mono-chrome devices with a rated speed of 35 ppm tested to date, its yield still exceeded the manufacturer-rated yield by more than 2,000 impressions.



VALUE

VERY GOOD

- The e-STUDIO353 is competitively priced with comparably equipped models in this speed range and offers a very good overall feature set.
- Supplies cost per page couldn't be calculated as pricing is set by dealers and wasn't provided by Toshiba.

SUPPORTING TEST DATA

Test Environment

This product was tested in BLI's 10,000-square-foot test lab, in an environment monitored by 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 are tested for two months, five weeks of which consists of a durability test during which the product is run at its manufacturer-rated maximum monthly duty cycle, with 25 percent of the test volume comprised of copy jobs and 75 percent comprised of print jobs. BLI's daily test usage is designed to replicate real-world use over an eight-hour workday, and as such 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. The durability evaluation also includes testing of the document feeder/scanner for an additional 10 percent of the monthly maximum volume, evenly divided over the course of the test.

Tested Configuration

Base model, plus optional e-BRIDGE print/scan kit, RADF, 2,500-sheet LCT and saddle-stitch finisher.

Test Procedures

The test methods and procedures employed by BLI in its lab testing include BLI's proprietary procedures and industry-standard test procedures, including 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, colour print quality is tested using the ANSI standard IT8 Colour Test Target, which is read using the Minolta CM503I Spectrophotometer, and samples are analyzed using the CIE XY Chromaticity Diagram. In addition, density of black and colour output is measured using an X-Rite 428 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. Tests are conducted using U.S. letter/ledger paper and A4/A3 results may vary slightly.

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RELIABILITY

Reliability

PMs/Malfunctions	Service Required	Meter Count (Impressions)	Impressions Between Service
Meter Count (Beginning of Test)		0	
Squeaking sound coming from lower jam door	Greased bushings and shafts on door	37,550	
End of Test Period		150,000	
Total Misfeeds/Misfeed Rate	2 / 1 per 75,000 impressions		
Service Calls	1		
PMs	0		
Total Service Calls (incl. PMs)	1		
M.I.B.F.	Not applicable		
M.I.B.S.	Not applicable		

- 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.)

MULTITASKING

Primary Function	Secondary Function	PRINT	SCAN	COPY
PRINT		Yes	Yes	Yes
SCAN		Yes	Yes	Yes
COPY		Yes	Yes	Yes

NOTE: (X) indicates number of occurrences. A "Yes" indicates that the user can initiate the secondary function while the primary function is taking place and that no further user intervention will be required for the secondary function to take place. In addition to a single-user multitasking test, which evaluates a unit's ability to initiate or perform one function while another function is already in progress (see chart above), BLI also tests a multifunctional product's ability to handle multiple jobs that would be likely to stack up in a multi-user networked environment.

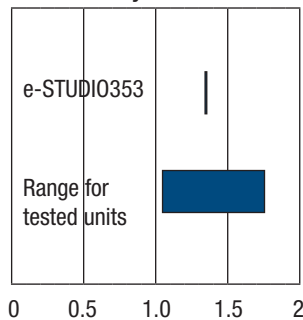


PRINT/COPY QUALITY

Print Quality	
Text	Very Good
Line Art	Very Good
Halftone Pattern	Good
Halftone Range	Very Good
Solids	Very Good

Note: BLI recommends changing the default setting of Text/Photo/Auto to Text/Auto.

Print Density



Print density:
1.44 to 1.46

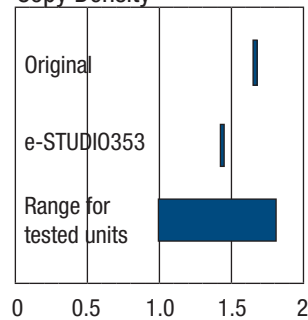
Density for units in this class tested to date:
1.04 to 1.76

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.

Halftone range:
Grayscale was visible from the 1% to 100% dot-fill levels with distinct transitions between most levels.

Copy Quality	
Text	Very Good
Line Art	Very Good
Halftone Pattern	Good
Halftone Range	Very Good
Solids	Very Good

Copy Density



Density of original:
1.65 to 1.69

Density of copy:
1.42 to 1.45

Range for tested units:
0.99 to 1.81

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

Halftone range:

Grayscale was visible from the 15%—the minimum coverage level on the original—to 100% dot-fill levels with distinct transitions between most levels.



PRINT/COPY PRODUCTIVITY

Job Stream

The unit completed the job stream in 42.35 seconds using the PCL driver, running at 26.9 ppm, which translates to an efficiency rate of 76.9%.

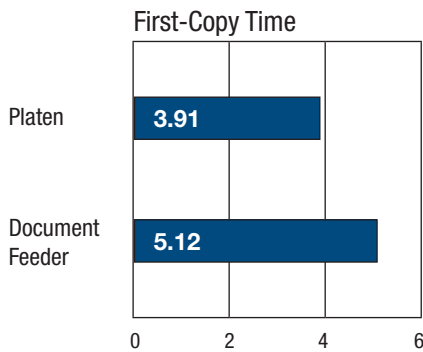
The unit completed the job stream in 48.79 seconds using the PostScript driver, running at 23.4 ppm, which translates to an efficiency rate of 66.8%. BLI technicians noted that the device paused for several seconds prior to printing out the Acrobat PDF file of the job stream test when using the PostScript print driver.

BLI's job stream includes Word documents, Outlook e-mail messages, Excel spreadsheets, PowerPoint, HTML and Acrobat PDF files, totaling 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 unit as a group, at which time the stopwatch begins; timing ends when the last page of the last file exits the unit. Job stream efficiency is determined by the percentage of the rated speed at which the unit operates when producing real-world jobs. The closer the rate is to 100%, or if it exceeds 100%, the more efficient the unit.

First-copy time:

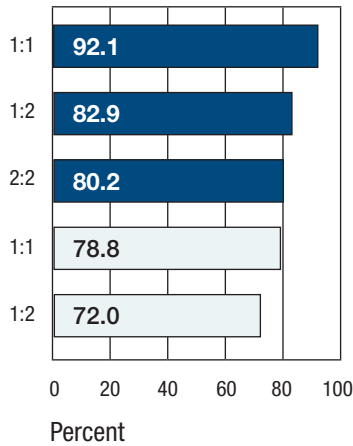
3.91 seconds from the platen.

5.12 seconds from the document feeder.



Tests were conducted using U.S. letter-size paper and A4 results may vary slightly.

Overall Efficiency



BLI obtains the overall efficiency for each copy/print 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, 10 and 20 sets in copy mode and 1 and 5 sets in print mode).

■ Copy
□ Print

Black Copy/Print Efficiency for Multiple Sets

Sets	Time	PPM	Efficiency	Overall Efficiency
COPY 1:1				
1	0:20.22	29.7	84.8%	84.8%
5	1:35.50	31.4	89.8%	87.3%
10	2:59.91	33.4	95.3%	90.0%
20	5:48.56	34.4	98.4%	92.1%
COPY 1:2				
1	0:26.56	22.6	64.5%	64.5%
5	1:42.60	29.2	83.5%	74.0%
10	3:10.32	31.5	90.1%	79.4%
20	6:6.47	32.7	93.6%	82.9%
COPY 2:2				
1	1:0.32	19.9	56.8%	56.8%
5	3:28.79	28.7	82.1%	69.5%
10	6:25.66	31.1	88.9%	75.9%
20	12:17.97	32.5	92.9%	80.2%
PRINT 1:1 PCL 6				
1	0:24.82	24.2	69.1%	69.1%
5	1:36.97	30.9	88.4%	78.8%
PRINT 1:2 PCL 6				
1	0:28.19	21.3	60.8%	60.8%
5	1:43.03	29.1	83.2%	72.0%

Efficiency is tested using a 10-page document in black mode. In print mode, the document is printed using the PCL 6 driver at 600 dpi

Tests were conducted using U.S. letter/ledger paper and A4/A3 results may vary slightly.



PRINT DRIVERS

Toshiba e-STUDIO353 Print Driver Features

Windows XP	PCL 6	PostScript 3
Auto Feature/Device Detection	Yes	Yes
Booklet Printing	Yes	Yes
Collate Sets	Yes	Yes
Max Paper Sources per Job	4	4
N-up Printing	2 to 16	2 to 16
Overlay	Yes	Yes
Paper Gauge/Toner Gauge	No/No	No/No
Print and Hold	No	No
Proof Print	Yes	Yes
Quantity Selection	Up to 999	Up to 999
Reduction/Enlargement	25% to 400%	25% to 400%
Resolution Modes (dpi)	600	600
Save Settings	Yes	Yes
Secure Printing	Yes	Yes
Watermarks/Custom Watermarks	Yes/Yes	Yes/Yes



TONER YIELD

Tested Toner Yield and Supplies Cost Per Page (6% Page Coverage)

Toner Cartridge Net Weight (Grams)	Toner Yield (Impressions)	Impressions per Gram	Toner Cost per Page ¹	Supplies Cost per Page ²
670.4	23,331	34.80	*	*

* Toner and supplies cost per page couldn't be calculated as pricing is set by dealers and wasn't provided by Toshiba.

¹ Testing was conducted using BLI's toner yield test original with 6% page coverage.

² Supplies cost per page is based on BLI's tested toner yield and Toshiba's suggested retail price for toner, developer and drums.

CERTIFICATE OF RELIABILITY

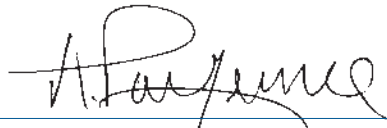
Awarded to

TOSHIBA TEC CORPORATION

for the performance of the

Toshiba e-STUDIO353*

in BLI's in-house durability test



ANTHONY F. POLIERONE
MANAGING DIRECTOR

* Reliability results are based on the performance of the Toshiba e-STUDIO453, which uses the same engine.



JULY 2008

DATE

This is to certify that when subjected to a 150,000-impression Buyers Lab durability test in a networked environment, the Toshiba e-STUDIO353 proved to be a highly reliable product.

BUYERS LABORATORY INC.

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