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Information technology — Office equipment — Method for measuring scanning productivity of digital scanning devices

Technologie de l'information — Équipement d'office — Méthode de mesure de la productivité du scanner des appareils de numérisation

Contents

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see https://patents.iec.c).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 28, *Office equipment*.

This second edition cancels and replaces the first edition (ISO/IEC 17991:2015), which has been technically revised.

The main changes compared to the previous edition are as follows:

— changed the document structure to be consistent with other productivity standards;

— added single function scanners to the Scope;

— updated reporting to include examples of minimum declarations;

— added "first page eject" test result to the "1 set" test from ready.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The actual productivity measurement methods of copying and printing were published as ISO/IEC 24735 and ISO/IEC 24734. However, ISO/IEC 25735 contains no measurement method for the scanning productivity of multifunctional devices to be used for comparison and procurement of these machines.

This document provides a general method for measuring "scanning productivity" of the scanning devices. This document also includes a test chart for scanning productivity measurement. It allows the manufacturers and the buyers of scanning devices to describe the productivity with respect to representative usage.

Information technology — Office equipment — Method for measuring scanning productivity of digital scanning devices

1 Scope

This document specifies a method for determining scanning productivity by measuring "scanning speed", "scan to network folder speed" and "scan to PC speed". It includes test files, test setup procedure, test procedure and the reporting requirements for the scanning productivity measurements. This document is applicable to scanning devices including but not limited to multi-function devices, networked scanners and single-function scanners of any underlying scanning technology.

This document is applicable to devices which are able to scan a media size of A4/8,5" × 11" and which have an automatic document feeder (ADF). It is also applicable to devices which have the ability to scan to network folder, or folder on PC and do not require, but can use, other application programs on a computer or another device to perform a scanning job.

This document does not apply to testing and measurement of scan to USB, scan to local hard drive or other storage medium that is part of or plugged into the scanner.

This document is not intended to be used for image quality measurement, document or record management of any scanned images.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 536, *Paper and board — Determination of grammage*

ISO 2470-1, *Paper, board and pulps — Measurement of diffuse blue reflectance factor — Part 1: Indoor daylight conditions (ISO brightness)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
ADF speed
rate at which a device scans documents using an automatic document feeder (ADF) to demonstrate the productivity of the ADF and is represented with suffix A

EXAMPLE $scEFTP_{1setA}$ is the scanner *effective throughput* (3.3) of the ADF on the 1set test.

3.2
duplex
duplex scanning
use of a scanning device with the scanning being done for both sides of a sheet

Note 1 to entry: An equivalent term is "double sided scanning".

3.3
scEFTP
effective throughput
rate at which a device scans pages measured from the initiation of the job through the full ejection of the last page of the scanning sets or through the complete creation of the file on the shared network folder or PC after the transfer of the last page of the last *test set* (3.16)

EXAMPLE $scEFTP_{1setA}$ means scanning effective throughput of "1 set test" for "ADF productivity measurement".

Note 1 to entry: "sc" denotes that the measurement is taken on the scanner.

Note 2 to entry: There are suffixes such as "$_{1setA}$", "$_{30secF}$" or "$_{30secP}$". Each suffix is used to classify tests such as "1 set test" or "1 set + 30 second test" of the objects of tests for "ADF productivity measurement" (using suffix A), "scan to network folder productivity measurement"(using suffix F) or "scan to pc file productivity measurement" (using suffix P) test respectively.

Note 3 to entry: *scEFTP* is expressed in images per minute (ipm); it can be affected by scan time, digital processing time, maintenance and the run time of the test.

Note 4 to entry: A different term ("EFTP; effective throughput" for digital copying machines) is defined in ISO/IEC 24735.

Note 5 to entry: As for $scEFTP_{30secF}$, measurement parameters involving the measurement of file transmission to a network folder are dependent on other factors like the computer and network configuration and represent relative values and not absolute values.

Note 6 to entry: As for $scEFTP_{30secP}$, measurement parameters involving the measurement of file transmission to a file are dependent on other factors like the computer, IO connection, IO speed and represent relative values and not absolute values.

3.4
scESAT
estimated saturated throughput
rate at which a device scans pages measured from full ejection of the last page of the first *test set* (3.16) from ADF through the full ejection of the last page of the last test set (using suffix A)

Note 1 to entry: "sc" denotes that the measurement is taken on the scanner.

Note 2 to entry: There are suffixes such as "$_{1setA}$", "$_{30secF}$" or "$_{30secP}$". Each suffix is used to classify tests such as "1 set test" or "1 set + 30 second test" of the objects of tests for "ADF productivity measurement" (using suffix A), "scan to network folder productivity measurement"(using suffix F) or "scan to pc file productivity measurement" (using suffix P) test respectively. There is no measurement for "scan to network folder productivity measurement" or "scan to pc file productivity measurement" of *scESAT*, $scESAT_{30secF}$ and $scESAT_{30secP}$ defined, therefore $scESAT_{1setA}$, $scESAT_{1setF}$, and $scESAT_{1setP}$ are not used as classifications.

Note 3 to entry: *scESAT* is expressed in images per minute (ipm).

3.5
scFPE
first page eject
number of seconds between the initiation of the job to full ejection of the first page of the first *test set* (3.16) from the ADF

3.6
scFSOT
first set out time
number of seconds between the initiation of the job to full ejection of the last page of the first *test set* (3.16) from the ADF

Note 1 to entry: There are suffixes such as "$_{1setA}$", "$_{30secF}$" or "$_{30secP}$". Each suffix is used to classify tests such as "1 set test" or "1 set + 30 second test" of the objects of tests for "ADF productivity measurement" (using suffix A), "scan to network folder productivity measurement"(using suffix F) or "scan to pc file productivity measurement" (using suffix P) test respectively .

3.7
full detailed report
presentation of information including machine setup, summary and full measured test results

Note 1 to entry: An example of the full detailed report is shown in Annex B.

3.8
full report
presentation of results including the *scFSOT* (3.6), *scESAT* (3.4), and *scEFTP* (3.3) values in the *performance test* (3.10) as well as the calculated averages for each value

3.9
network folder speed
rate at which a device scans and stores the scanned image file in the network folder to demonstrate the overall productivity of the device when scanning documents

EXAMPLE   A suffix such as "$_{30secF}$" means a test of "1 set + 30 second" test for "scan to network folder productivity".

Note 1 to entry: Suffix "$_F$" means "scan to network folder productivity measurement".

3.10
performance test
test used to evaluate productivity by providing *scFSOT* (3.6), *scESAT* (3.4), and *scEFTP* (3.3) without using any special feature or mode, and includes both the *simplex scanning* (3.12) mode and the *duplex scanning* (3.2) mode if available

3.11
scLSOT
scLSOT$_{Nsets}$
scanning last set out time
number of seconds between the initiation of the job to full ejection of the last page of the last *test set* (3.16) from ADF

Note 1 to entry: There are suffixes such as "$_{1setA}$", "$_{30secF}$" or "$_{30secP}$". Each suffix is used to classify tests such as "1 set test" or "1 set + 30 second test" of the objects of tests for "ADF productivity measurement" (using suffix A), "scan to network folder productivity measurement"(using suffix F) or "scan to pc file productivity measurement" (using suffix P) test respectively.

3.12
simplex
simplex scanning
use of a scanning device when only a single side of a sheet is scanned

Note 1 to entry: An equivalent term is "single sided scanning".

3.13
summary report
presentation of results including the average overall *scEFTP* (3.3) in the *performance test* (3.10) for the scanning device default base line performance

3.14
test file
digital file used for creating *test targets* (3.17)

3.15
test run
operation of scanning all pages of targets from a *test file* (3.14), in a particular system configuration, with a particular set and page count

Note 1 to entry: Scan times are recorded for each test run.

3.16
test set
all of the pages of targets from a *test file* (3.14)

3.17
test target
hardcopy document used for testing per the test method, and created from *test file* (3.14)

Note 1 to entry: An equivalent term is "test chart".

3.18
time measurement
number of seconds measured by a timing device (stopwatch or other device) or by reading time display on the PC clock

EXAMPLE   "t_{sw1A}" is the time measured via stopwatch or other device for completion of the first set out and "t_{pc1F}" is the time measured via PC clock for completion of the first set file written to the network folder or PC file.

Note 1 to entry: Suffixes such as "$_{SW}$" and "$_{PC}$" are used to show which time measurement is done; by timing device (stopwatch or other device) or by reading time display on the PC clock.

4   Test parameters and conditions

4.1   Scanning device setup

Place the scanning device on a horizontal surface and set up the scanning device according to the manufacturer's recommendations.

The scanning device shall be fully enclosed in its normal exterior cover. The machine shall be acclimated in the test environment prior to conducting the test(s) at least 8 h. All images and scanning modes should be at their factory preset configuration for the scanning device. It is assumed that the settings listed in Table 1 are common to all scanning devices. These listed settings shall be set to the manufacturer's default or preset condition for the device. If a device has settings not listed in Table 1, they too shall be set to default settings. All settings shall be explicitly stated in either case of default or non-default settings. For scanning devices that have additional scan quality and digital image processing features, those features shall be set to match their normal default condition and included in the result reporting. Disabling manufacturer default installed features, routines or applications, is not allowed. As listed in Table 1 the preset values in the test shall be noted in the full detailed report (see Annex B).

If the scanning device is setup with internal or external options such as memory as default, then these options shall be noted on the full detailed report format in the configuration options as shown in Annex B.

EXAMPLE   Examples of configurations options to be captured:

—   160GB HDD installed.

Additional tests may be conducted using other non-default settings for the scanning device. The results of such additional tests shall be documented as having parameters that differ from the factory defaults and shown in comparison to the default system parameter results.

Optional paper sizes may be used for the scanning device tests such as A3 and/or 11"×17" size as appropriate for the test mode. When sheets of paper size other than A4/8,5" ×11" are used, the sizes shall be indicated in the places of A4/8,5"×11" in the measurement results tables.

When a comparison must be made between the productivity of one machine with that of other machines the measurement shall be done with the same paper sizes.

Table 1 — Pre-set settings

	Pre-set item	Preset value
Mode	Scanning resolution	default (200 dpi)
	Colour or gray scale/B&W	default (colour)
	Duplex/simplex	default (simplex)
	Original page size	default (A4)
	Paper feed orientation (long/short edge)	default (long edge)
	Scan destination	default (shared network)
	Storing file type	default (pdf-multi)
	Auto scan quality adjustment	default (factory preset default setting)

4.2 Scanning device connection

There are three types of possible connections to the scanning device:

— network connection (such as Ethernet);

— wireless connection (such as Wi-Fi);

— direct connection (such as USB).

Connection to the test platform should be determined by the manufacturer's recommended connection. The connection type, version, and all settings that differ from the system or scanning device defaults shall be recorded and reported.

4.3 Scanning device condition

If available, the number of pages scanned on the device prior to the start of the test shall be recorded and reported. The machine shall be acclimated in the test environment prior to conducting the test(s) at least 8 h. Performance may be impacted by the amount of life used as represented by page count. Acclimation may affect the calibration of the device which in turn could impact performance.

4.4 Sample size

Each target shall be tested and measured at least twice for repeatability. All required tests shall be run using one device.

4.5 Maintenance

Scanning device maintenance shall be performed throughout testing per the manufacturer's recommendations.

4.6 Preparation of test targets (test charts)

Follow the outline of the scanning test file in Annex C.

This test file is from ISO/IEC 24735. The test file consists of four single sided pages. When using the test file for the scanning productivity test, the test targets shall be created by printing the most recent

electronic test file on the device to be tested if it has print capability. If the test device to be tested does not have a printer function or if the device is a colour capable scanner but does not have a printing function of colour test targets (for the colour scanning test), then record the name of printer which is used to print out the actual test targets.

For preparation method for double sided targets, follow the outline in Annex C.

The quality of test targets may affect the productivity measurement. Test targets should be created according to the following instructions.

a) The test targets shall be printed by the equipment to be tested itself in its default-printing mode. If the equipment to be tested does not have a print function or if the equipment to be tested does not have a colour print function and colour test targets are required, then record the name of the printer used to print out the actual test targets.

b) The paper used for creating the test targets shall have a brightness of at least 80 % to eliminate the influence of background.

c) The paper used for creating the test targets shall be 64 g/m^2 or above and sufficiently opaque to prevent scanning of images on the backside.

d) The paper used for creating the test targets shall be free of wrinkles or other surface defects.

e) Confirm that there are no defects such as unexpected dots or contamination.

f) Page scaling shall not be used in performance test. Typically, this is done by setting page scaling to "none". Options such as "Fit to printable area" shall not be used in performance testing, either.

g) Paper shall conform to the scanning device manufacturer's paper specifications.

The brightness shall be measured according to ISO 2470-1. The paper grammage shall be measured according to ISO 536.

4.7 Environment

The test environment, including temperature and humidity, shall be within the ranges recommended by the manufacturer for operating the device. If no recommendation is available, the following ranges shall apply:

— temperature: 18 °C to 25 °C;

— relative humidity: 30 % to 70 %.

The temperature and humidity ranges of the test environment shall be recorded in the full detailed report.

4.8 Voltage

The scanning device shall be connected to a voltage supply within the manufacturer specified operating voltage range for the scanning device under test. The voltage should be measured under no-load condition prior to each test suite and recorded in the full detailed report.

NOTE   It is possible that devices that utilize a heater have a longer *scFSOT* time when the line voltage is at the lower value of the recommended operating range.

5 Test method

5.1 Overview

The productivity of a digital scanning device like "scan to network folder speed" depends on factors other than the scanning device itself. These include, but are not limited to, computer performance and

network configuration or the general environment in which the test is being held. Because of this, in order to make useful and accurate direct comparisons of scanning productivity with this document, the same computer system hardware and software, and network configuration shall be used for measuring the scanning devices for the purpose of being directly compared one to another. For every scanning productivity measurement, the basic specifications of the computer and the network shall be included with the results of the scanning productivity measurement.

This clause defines the procedure on how to measure "ADF productivity measurement", "scan to network folder productivity measurement" and how to measure "scan to PC file productivity measurement".

The intent of "ADF productivity measurement" test is to demonstrate the productivity of the ADF that may be achieved with the specific settings. ADF speed is a component of scanning productivity.

The intent of "scan to network folder productivity measurement" test is to demonstrate the overall productivity of the device in scanning documents. This test is a representative of a variety of scanning tasks (e.g. scan to file server, scan to fax server, scan to email, scan to workflow, etc.).

A single set of each test target is scanned and measured to determine $scEFTP_{1set}$. Multiple N sets of test target are scanned and measured for the 1 set + 30 seconds test run to calculate $scESAT_{30sec}$ and $scEFTP_{30sec}$, where N is the number of sets needed to meet $scLSOT_{Nsets} - scFSOT_{1set}$ more than 30 s. (To estimate N, number of sets for test target, refer to 5.3.3.)

This method is used to provide varying tests for products across varying segments. This simple approach allows faster products to be tested with more sets and slower products to be tested with fewer sets without defining and categorizing products by segment.

"Scan to PC file productivity measurement" utilizes PC scanning software and is measured separately from the "scan to network folder productivity measurement". Both can be paired with "ADF productivity measurement" to complete measurement in the same test run.

5.2 Test measurement procedure

5.2.1 Test setup

Before testing, the following setup activities shall be completed.

a) Install the scanning device following the manufacturer's recommendations.

b) Clean the surface of the image scanning device if needed.

c) Set the system parameters (such as paper size and feed orientation, image quality mode) for the test. Record the scanning device model, configuration (options), default condition and any other variations if selected.

d) Estimate the number of sets (= N sets) which is required to meet $scLSOT_{Nsets} - scFSOT_{1set} \geq 30$ s. (1 set consists of 4 originals.) (To estimate N, number of sets for test targets, refer to 5.3.3.)

e) Prepare N sets of test targets that will be used in the test, identified as described in 4.6.

f) Refer to 5.4 and 5.5 to decide what tests are to be run.

g) Connect the device and PC via an appropriate network connection or direct connection and create the destination folder. The network and PC setup shall be documented, including any settings of the configuration parameters that are different from the normal default.

h) Show a date/time tool on the PC.

i) The scan button used to start a scanning job may be a button on the device, a virtual button in an embedded webserver, a virtual button in PC scanning software or similar user interface if the virtual button initiates a scan in a similar way as the button on the device would.

Refer to Annex B for an example of settings to record. Refer to 5.4 and 5.5 for information on required tests. Refer to Clause 6 for information on the calculation and treatment of data. Refer to Clause 7 for information on data reporting.

The created file in the network folder or PC folder shall be a single file of multiple pages.

5.2.2 "1 set" test from ready

a) Put 1 set of test targets on ADF. (For the second and third tests, use 1 set.)

b) [Start test run] Initiate the scan and simultaneously start the timing device (stopwatch or otherwise) and record the time "t_{PC0}" to the minutes and seconds displayed on the PC clock of the system where the target network folder or PC file folder exists. Record if scanning is initiated from the device control panel or a software button.

c) Optionally record the time "t_{FPE1A}" for completion of the first page ejected. This is the time from pressing the scan button until the first page of the first test set is fully ejected from the ADF.

d) Record the time "t_{SW1A}" for completion of the first set out. This is the time from pressing the scan button until the fourth page of the first test set is fully ejected from the ADF.

e) After the time the file is completely written to the network folder or PC file folder, check the time stamp of the file and record the time "t_{PC1F}" to the minutes and seconds.

f) Calculate $scFPE_{1setA}$, $scEFTP_{1setA}$ and $scEFTP_{1setF}$ for each test run according to Clause 6.

g) Record $scEFTP_{1setA}$ and $scEFTP_{1setF}$ and optionally record $scFPE_{1setA}$.

h) [End test run]

i) Run this test steps a) – h) twice.

j) Determine if the results $scEFTP_{1setA}$, $scEFTP_{1setF}$, and $scFPE_{1setA}$ are consistent within ±5 % and refer to 5.3.2.

k) If needed, conduct a third test run. (If the first two test runs are not consistent within ±5 %, then a third test run is required. The data from the test is average of the individual runs. Three iterations are the max and the results from all iterations are averaged to get the required data.)

NOTE 1   Synchronization to an external clock or stopwatch with the PC clock is optional to record t_{SW1A}.

NOTE 2   "t_{PC0}" is a starting time displayed on the PC clock and not necessarily 0(zero). On the other hand, a hand timing device starts from 0(zero).

5.2.3 "1 set + 30 seconds" test from ready

a) Put N sets of test target on ADF. N is required to for $scLSOT_{Nsets} - scFSOT_{1set} \geq 30$ s. (For the second and third tests, use the same number of sets as used in the first test.)

b) [Start test run] Initiate the scan and simultaneously start the timing device (stopwatch or otherwise) and record the time "t_{PC0}" to the minutes and seconds displayed on the PC of the system where the target network folder or PC file folder exists. Record if scanning is initiated from the device control panel or a software button.

c) Record the time "t_{SW1A}" for completion of the first set out. This is the time from pressing scan button until the 4th page of the 1st test set is fully ejected from the ADF.

d) Record the time "t_{SWNA}" for completion of the $LSOT_{Nsets}$. This is the time from pressing scan button until the last page of the N test set is fully ejected from the ADF.

   If the original output tray capacity is less than the number of pages to be scanned, remove the output originals during the test.

e) Once determined that the file is completely written to the network folder or PC file folder, check the time stamp of the file and record the time "t_{PCNF}" to the minutes and seconds.

f) Calculate $scESAT_{30secA}$, $scEFTP_{30secA}$ and $scEFTP_{30secF}$ for each test run according to Clause 6.

g) Record $scESAT_{30secA}$, $scEFTP_{30secA}$ and $scEFTP_{30secF}$.

h) [End test run]

i) Run this test steps a) – h) twice.

j) Determine if the results are consistent within ±5 % and refer to 5.3.2.

k) If needed, conduct a third test run. If the first two test runs are not consistent within ±5 %, then a third test run is required. The data from the test is average of the individual runs. Three iterations are the maximum and the results from all iterations are averaged to get the required data.

NOTE 1   Synchronization to an external clock or stopwatch with the PC clock is optional to record t_{SWNA} and t_{SW1A}.

NOTE 2   "t_{PC0}" is a starting time displayed on the PC clock and not necessarily 0 (zero). On the other hand, a hand timing device starts from 0 (zero).

5.3   Test method process

5.3.1   Suggested flow chart
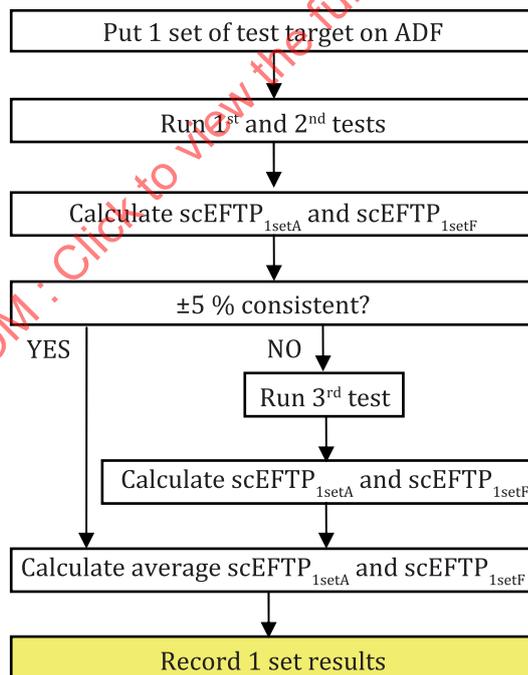
a) Top part of the 1 set test flow chart
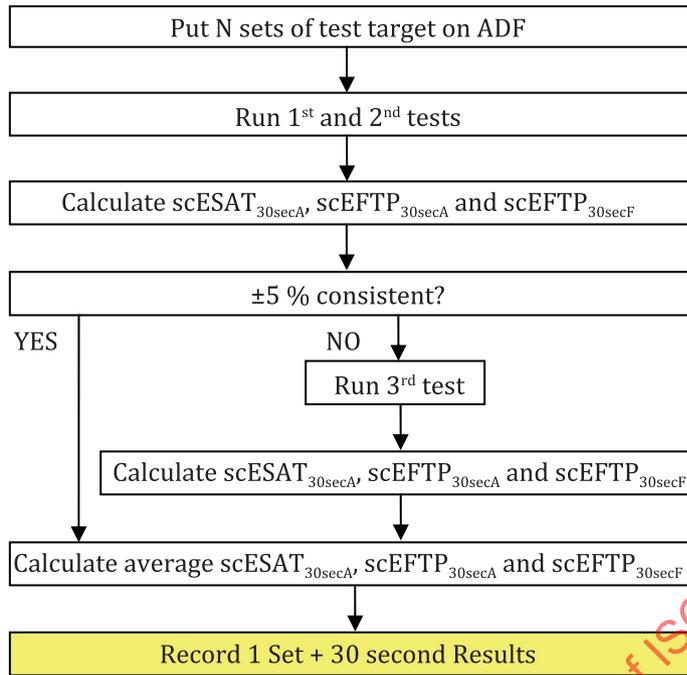
b) Bottom part of the 1 set test flow chart

Figure 1 — 1 set test flow chart

5.3.2 ±5 % consistency criteria

If the first two test runs are not consistent within ±5 %, then a third test run is required. Formulae for *scESAT* and *scEFTP* can be found in [Clause 6](#).

$$c = \frac{2 \times s_{\mathrm{FSOT},1}}{s_{\mathrm{FSOT},1} + s_{\mathrm{FSOT},2}} - 1$$

$$c = \frac{2 \times s_{\mathrm{ESAT},1}}{s_{\mathrm{ESAT},1} + s_{\mathrm{ESAT},2}} - 1$$

$$c = \frac{2 \times s_{\mathrm{EFTP},1}}{s_{\mathrm{EFTP},1} + s_{\mathrm{EFTP},2}} - 1$$

where

c is the consistency;

$s_{\mathrm{FSOT},1}$ is the scanner FSOT from the 1st test ($scFSOT_1$);

$s_{\mathrm{FSOT},2}$ is the scanner FSOT from the 2nd test ($scFSOT_2$);

$s_{\mathrm{ESAT},1}$ is the scanner ESAT from the 1st test ($scESAT_1$);

$s_{\mathrm{ESAT},2}$ is the scanner ESAT from the 2nd test ($scESAT_2$);

$s_{\mathrm{EFTP},1}$ is the scanner EFTP from the 1st test ($scEFTP_1$);

$s_{\mathrm{EFTP},2}$ is the scanner EFTP from the 2nd test ($scEFTP_2$).

5.3.3 Estimating the set count

5.3.3.1 Overview

This estimation shall be done when multiple test sets for 1 set + 30 seconds are scanned.

5.3.3.2 '1 set + 30 seconds test'

The test may begin with an initial set count N_{sets} = 2 or by estimating the number of sets needed, provided that the tester has sufficient information for estimation beforehand. If the N_{sets} = 2 test result did not meet the $scLSOT_{Nsets} - scFSOT_{1set} \geq 30$ s requirement, then calculate necessary set count $N_{est,30sec}$ as follows and test using the new $N_{est,30sec}$ as the set count. The following formula can be used to estimate the number of sets needed:

$$N_{est,30sec} = \text{RoundUp}\left[\frac{30 \times (N_{sets} - 1)}{s_{LSOT,Nsets} - s_{FSOT,1set}} + 1 \right]$$

where

$N_{est,30sec}$ estimated number of total sets to scan;

N_{sets} is the estimated number of sets needed to scan for 30 s after the 1st test;

$s_{LSOT,Nsets}$ is the scanner LSOT from the last set ($scLSOT_{Nsets}$);

$s_{FSOT,1set}$ is the scanner FSOT from the 1st set ($scFSOT_{1set}$).

The number of sets tested should result in $scLSOT_{Nsets} - scFSOT_{1set} \geq 30$ s as close as possible. If the results of a test run gives $scLSOT_{Nsets} - scFSOT_{1set} < 30$ s the number of sets shall be increased and all runs re-tested.

If the 1 set + 30 seconds test estimated scan count is greater than the maximum scan count or ADF allowable capacity, this test shall not be run and shall be reported as NA in the test report.

5.4 ADF productivity measurement

The tests require using the 1 set test and 1 set + 30 seconds test procedures in 5.2.

There is one key parameter, $scESAT$, reported in the summary report and in the full report. The "full report" provides detailed information including $scEFTP$.

If the machine is a colour scanning device, testing in single sided colour mode using default scanning settings is required, double sided colour mode scanning is optional; testing in monochrome single sided and double scanning mode is optional. If the machine is a B&W only scanning device, testing in monochrome single sided scanning is required and monochrome double sided is optional.

Prepare the test targets (described in 4.6) for this measurement. 1 set consists of 4 images, which are 4 simplex pages for simplex and two duplex pages for duplex.

The time measurement is started when the "scan start button" is pressed and is concluded when the last page is fully ejected from the ADF. The measured intervals of time should be recorded.

5.5 "Scan to network folder productivity measurement" and "scan to PC file productivity measurement"

5.5.1 Overview

"Scan to network folder productivity measurement" is required if "scan to network folder" is a supported feature. The tests require using the 1 set test and 1 set + 30 seconds test procedures in 5.2.

If "scan to network folder" is not a supported feature, then "scan to PC file productivity" is required.

If both "scan to network folder" and "scan to PC file productivity" are supported, then "scan to network folder productivity measurement" is required and "scan to PC file productivity" is optional.

If "scan to PC file productivity" is conducted, the 1 set test and the 1 set + 30 seconds test defined in 5.2 are required.

There is one key parameter, *scEFTP*, reported in the summary report and in the full report. the "full report" provides detailed information including $scEFTP_{1setF}$.

5.5.2 Measurement of *scEFTP*

If the machine is a colour scanning device, testing in single sided colour mode using default scanning settings is required, double sided colour mode scanning is optional; testing in monochrome single sided and double scanning mode is optional. If the machine is a B&W only scanning device, testing in monochrome single sided scanning is required and monochrome double sided is optional.

Prepare the test targets (described in 4.6) for this measurement. 1 set consists of 4 images, which are 4 simplex pages for simplex and two duplex pages for duplex.

The time measurement is started when the "scan start button" is pressed, and is concluded when the last page is fully ejected from the ADF and scanned file is saved in network folder or PC file folder. The measured intervals of time should be recorded. Measurement shall be done for 4 images.

5.6 Feature performance test

5.6.1 Overview

An optional feature performance test is provided as a convenient means to evaluate productivity differences with various scanning features enabled.

EXAMPLE   Examples of features that can be tested with the feature performance test, but are not limited to the following:

— alternate file formats;

— different compression level or method;

— optical character recognition (OCR);

— alternate destinations.

The results when scanning with a feature enabled shall be reported as a comparison to the performance when scanning in the default mode and the feature disabled.

5.6.2 Features setting conditions

The feature setting conditions and test preset conditions shall be identified (default and all non-default and optional test mode settings) and reported as shown in the full detailed report in Annex B.

5.6.3 Measurement of *FSOT* and *ESAT*

The feature performance tests require using the 1 set and 1 set + 30 seconds test procedures in 5.2.

First, complete a simplex test run using the manufacturer's default scanning settings, (the base scanning mode test). The base scanning mode test is run consisting of 4 pages as 1 set without the feature and needs only be executed once for each base mode (consisting of two or three runs as needed to satisfy the 5 % consistency criteria). Next, complete the tests for each feature scanning condition selected (the feature mode test). The minimum required presentation of results shall include data showing the ratio of *FSOT* and *ESAT* for base scanning mode to *FSOT* and *ESAT* for feature scanning mode test results.

If a feature must use more than 4 pages in a set, *FSOT* for base scanning mode shall be measured using the same number of pages in the set as the feature scanning mode.

ESAT data from the ADF productivity test can be used for the base scanning mode.

The set count is determined using 4 pages simplex as 1 set for the base scanning mode test run as in 5.2. The *ESAT* data for the base scanning mode test are the same as in the ADF performance test in 5.4.

The set count may be modified from that required for the 1 set + 30 seconds run as needed to provide an appropriate test for the feature being evaluated. The modified set count is used only for the feature mode test run.

6 Calculations and treatment of data

6.1 Overview

The time intervals for each test run are recorded during the test operation. A spreadsheet format that records the time for the tests run is useful for this purpose but is not required.

Rounding data and calculations to a faster time (seconds) or throughput (ipm) is not allowed. Recorded and reported numbers shall never be better than actual measurement (higher for *scESAT* and *scEFTP* or lower for *scFSOT*).

Averages are calculated by averaging the results (*scFSOT*, *scESAT*, *scEFTP*), not by averaging the times, and then calculating a result.

EXAMPLE 1   Calculate *scESAT* of test run one and *scESAT* from test run two (and of test run three if required), and then average $scESAT_1$ and $scESAT_2$ (and $scESAT_3$) to yield $scESAT_{ave}$.

The number of *scESAT* and *scEFTP* is expressed in ipm in the following way.

a)   Less than 10 ipm: round down at two decimal places and express as two significant figures (X,X).

b)   10 ipm to 99 ipm: express with either of the methods below:

   1)   Round down at one decimal place and express as two significant figures (XX).

   2)   Round down at two decimal places and express as three significant figures (XX,X).

c)   100 ipm or more: round down at one decimal place and express as three significant figures (XXX).

EXAMPLE 2   If 34,99 is the measured and calculated average of *scESAT*, then a report could record 34,9 or 34 ipm, but NOT 35 ipm.

6.2 "1 set" test from ready

$scFSOT_{1set}$, and $scEFTP_{1set}$ shall be calculated using data from a single set test run. Optionally $scFPE_{1setA}$ shall be calculated using data from the same single test run as $scFSOT_{1set}$, and $scEFTP_{1set}$.

For test runs using 4 pages of targets and 1 set count test run, each time recorded is shown in Figure 2.

0
t_{PC0} t_{SW1A} t_{PC1F}

Figure 2 — 1 set test

$$s_{FPE,1setA} = t_{FPE1A}$$

$$s_{\text{FSOT,1setA}} = t_{\text{SW1A}}$$

$$s_{\text{FSOT,1setF}} = t_{\text{PC1F}} - t_{\text{PC0}}$$

$$s_{\text{EFTP,1setA}} = \frac{240}{s_{\text{FSOT,1setA}}}$$

$$s_{\text{EFTP,1setF}} = \frac{240}{s_{\text{FSOT,1setF}}}$$

where

$s_{\text{FPE,1setA}}$	is the scanner FPE for the 1$^{\text{st}}$ set from the ADF ($scFPE_{\text{1setA}}$);
t_{FPE1A}	is the time the first page ejects from the ADF;
$s_{\text{FSOT,1setA}}$	is the scanner FSOT for the 1$^{\text{st}}$ set from the ADF ($scFSOT_{\text{1setA}}$);
$s_{\text{FSOT,1setF}}$	is the scan to folder FSOT for the 1$^{\text{st}}$ set ($scFSOT_{\text{1setF}}$);
t_{PC1F}	is the time the 1$^{\text{st}}$ set is fully transferred to the folder;
t_{PC0}	is the time the test is started;
$s_{\text{EFTP,1setA}}$	is the scanner EFTP for the 1$^{\text{st}}$ set from the ADF ($scEFTP_{\text{1setA}}$);
$s_{\text{EFTP,1setF}}$	is the scan to folder EFTP for the 1$^{\text{st}}$ set ($scEFTP_{\text{1setF}}$).

6.3 "1 set + 30 seconds" test ready

$scESAT_{\text{30sec}}$ and $scEFTP_{\text{30sec}}$ shall be calculated using the data of 1 set + 30 seconds test.

For test runs using 4 pages of targets and N sets count test run, each time recorded is shown in Figure 3.

Figure 3 — 1 set + 30 seconds test

For "ADF productivity measurement" $scESAT_{\text{30secA}}$ and $scEFTP_{\text{30secA}}$ shall be calculated from the 1 set + 30 seconds test data from the following formulae:

$$s_{\text{FSOT,30secA}} = t_{\text{SW1A}}$$

$$s_{\text{LSOT,30secA}} = t_{\text{SWNA}}$$

$$s_{\text{ESAT,30secA}} = \frac{240 \times (N_{\text{30sec}} - 1)}{s_{\text{LSOT,30secA}} - s_{\text{FSOT,30secA}}}$$

$$s_{\text{EFTP,30secA}} = \frac{240 \times N_{\text{30sec}}}{s_{\text{LSOT,30secA}}}$$

where

$s_{\text{FSOT,30secA}}$ is the scanner FSOT for the 1st set from the ADF ($scFSOT_{30secA}$);

t_{SW1A} is the time the last page of 1st set ejects from the ADF;

$s_{\text{LSOT,30secA}}$ is the scanner LSOT for the last set from the ADF ($scLSOT_{30secA}$);

t_{SWNA} is the time the last page of last set ejects from the ADF;

$s_{\text{ESAT,30secA}}$ is the scanner ESAT from the ADF ($scESAT_{30secA}$);

$s_{\text{LSOT,30secA}}$ is the scanner LSOT from the ADF ($scLSOT_{30secA}$);

240   is 4 pages × 60 s;

N_{30sec} is the set count.

For "scan to network folder productivity measurement" and "scan to PC folder productivity measurement" $scEFTP_{30secF}$ shall be calculated from the 1 set + 30 seconds test data from the following formulae:

$$s_{\text{LSOT,30secF}} = t_{\text{PCNF}} - t_{\text{PC0}}$$

$$s_{\text{EFTP,30secF}} = \frac{240 \times N_{\text{30sec}}}{s_{\text{LSOT,30secF}}}$$

where

$s_{\text{LSOT,30secF}}$ is the scan to folder LSOT for the last set transferred to the folder ($scLSOT_{30secF}$);

t_{PCNF} is the time the last set is transferred to the folder;

t_{PC0} is the time the test starts;

$s_{\text{EFTP,30secF}}$ is the scan to folder EFTP for the last set transferred to the folder ($scEFTP_{30secF}$);

240   is 4 pages × 60 s;

N_{30sec} is the set count.

NOTE   "Scan to network folder productivity measurement" value $scLSOT_{30secF}$ and $scEFTP_{30secF}$ will be replaced with $scLSOT_{30secP}$ and $scEFTP_{30secP}$ for "scan to PC folder productivity measurement".

7 Presentation of results

7.1 Sharing testing and reports

Products that are of the same distinct scan system can share testing and reports. Two or more products or bundles may be part of a distinct scan system when they use the same scan mechanism and operating points, and there are no differences that might be expected to affect performance. Devices with differences that could affect performance are not part of the same distinct scan system, and are different scan systems, even if they use the same scan mechanism, and shall not share testing and reports.

Individual manufacturer may choose whether or not to display a summary report or the full report on the brochure or specification sheet. The summary report should be the "declaration" used in marketing materials or packaging. Declaration of the whole summary report is recommended. Abbreviated test reporting is allowed, including the reporting of the results from individual application testing as long as

the report includes the corresponding averages of *scESAT* or *scEFTP*, a pointer to the full detailed report or contact information, and a statement that the productivity has been determined in accordance with ISO/IEC 17991 (this document). If the report is shown, the table formats described in 7.3, 7.4, 7.5 are recommended to be used. A pointer to the full detailed report (an example shown in Annex B) shall be included in their brochure or specification sheet.

7.2 Minimum declaration

The minimum requirement of "declaration" shall include the following five items.

a) Description that the productivity has been determined in accordance with ISO/IEC 17991 (this document).

b) The average of $scESAT_{30secA}$ in an ADF productivity measurement test for the default resolution, simplex scan.

c) If the device supports "scan to network folder productivity measurement" then the average of $scEFTP_{30secF}$ in a scan to network folder productivity measurement test for the default resolution, simplex scan will be required, and a "scan to PC folder productivity measurement" will be optional. Otherwise the average of $scEFTP_{30secP}$ in a scan to PC folder productivity measurement test for the default resolution, simplex scan will be required as in 7.3.2

d) Confirmation that the results were tested by the "scan to network folder" or the "scan to PC folder".

e) Pointer to the full detailed report or contact information.

NOTE   As for $scEFTP_{30secF}$ and $scEFTP_{30secP}$, measurement parameters involving the measurement of file transmission to a folder are dependent on other factors like the computer, network configuration and IO speed and represent relative values and not absolute values.

7.3 ADF productivity measurement

7.3.1 Overview

Two reporting formats are described:

a) the "full report" and "full detailed report" should be the "report" format to be presented if requested,

b) the "summary report" should be the "declaration" to be used in marketing materials or packaging.

"Declaration" of the whole "summary report" is recommended.

All reporting including minimal declaration, summary and full report tables shall include a pointer to the full detailed report or contact information to obtain the report. An example of a summary report is shown in 7.3.2 and a full report is shown in 7.3.3. Optionally reported data are shown as "O", required as "R", and "R*" for testing which are required if an optional test mode is selected. An example of the summary report and the full report is included in Annex A. An example of the full detailed report is included in Annex B.

An individual manufacturer can choose whether or not to display a summary report or the full report on the brochure or specification sheet. If the report is shown, the table formats in Table 2 or Table 3 are recommended to be used. A pointer to the full detailed report (an example shown in Annex B) or contact information shall be included in the brochure or specification sheet.

7.3.2 Summary report

The minimum required presentation of results shall include a summary report form as displayed in Table 2. A summary report includes the averages of scESAT in a given test. The system setting for the scanning modes and test preset conditions shall be identified (default and all non-default and optional

test mode settings) and reported as shown in full detailed report (see Annex B). An example of a summary report table is shown in Annex A. When appropriate, rows may be deleted from the summary report. Specifically, if a device does not have the ability to scan both sides, the double sided table rows may be deleted. Similarly, a monochrome-only scanning device does not need to report data for a colour scanning mode.

The summary and full reports report averages for the test results. Averages are calculated by adding the totals (of FSOT or ESAT) and dividing by the number of tests. Reported numbers may include as many decimal places as desired. Dropping fractions is allowed, but rounding to a faster time or rate is not allowed. Recorded and reported numbers shall never be better than actual measurement (higher for ESAT and EFTP or lower for FSOT).

EXAMPLE   If 34,99 is the measured and calculated average ESAT, then a report could record 34,9 OR 34 ipm, but NOT 35 ipm.

Table 2 — Results of summary report

ADF productivity measurement				
Scanning mode				**Measurement result**
Colour mode[a]	**File format version**	**Resolution**	**Scanning side**	$scESAT_{30secA}$ (ipm)
Colour or B&W (Colour for colour device, B&W for monochrome device)	PDF version[b]	Default dpi[c]	Single sided	R
			Double sided	O[d]
B&W (optional for colour device)	PDF version[b]	Default dpi[c]	Single sided	R*
			Double sided	O[d]
Reporting on tests is defined by: — "R" is required to report when available on the scanning device; — "R*" is required to report if optional B&W is tested; — "O" is optional to test and report. The following shall be recorded in the first table row after the data: a) device settings; b) scanning device settings used for B&W output mode on colour device[a]; c) location to find full detailed report or contact information; d) paper size and paper feed orientation; e) "Productivity has been determined in accordance with ISO/IEC 17991". [a] Generally, 24 bit depth is used for colour and 8 bit depth is used for B&W for "default setting bit depth". These bit depths change and depend on the scanned image. Use factory preset default setting as it is. [b] The information of PDF version can be found by clicking scanned file's properties in case of Microsoft® Windows® OS. [c] Default dpi is the resolution that the device is set by factory setting. Record the default dpi in the report. [d] Double sided test is optional and tested for only devices that have an ADF equipped to duplex scan.				

7.3.3   Full report

The presentation of results is recommended to include a full report form as displayed in Table 3. A full report reports averages for the test results. Averages are calculated by adding the totals (of *scESAT* and *scEFTP*) and dividing by the number of tests. The system setting for the scanning modes and test preset conditions shall be identified (default and all non-default and optional test mode settings) and reported as shown in full detailed report (see Annex B). An example of a full report table is shown in Annex A. When appropriate, rows may be deleted from the full report. Specifically, if a device does not have the ability to scan both sides, the double sided rows may be deleted. Similarly, a monochrome only scanning device does not need to report data for a colour scanning mode.

Table 3 — Results of full report

ADF productivity measurement								
Scanning mode				Measurement result				
Colour mode[a]	File format version	Resolution	Scanning side	$scFPE_{1setA}$	$scFSOT_{1setA}$ (s)	$scEFTP_{1setA}$ (ipm)	$scEFTP_{30secA}$ (ipm)	$scESAT_{30secA}$ (ipm)
Colour or B&W (Colour for colour device, B&W for mono-chrome device)	PDF version[b]	Default dpi[c]	Single sided	O	R	R	R	R
			Double sided	O	O[d]	O[d]	O[d]	O[d]
B&W (optional for colour device)	PDF version[b]	Default dpi[c]	Single sided	O	R*	R*	R*	R*
			Double sided	O	O[d]	O[d]	O[d]	O[d]

Reporting on tests is defined by:

— "R" is required to report;

— "R*" is required to report if optional B&W is tested;

— "O" is optional to test and report.

The following shall be recorded in the first table row after the data:

a) device settings;

b) scanning device settings used for B&W output mode on colour device[a];

c) location to find full detailed report or contact information;

d) paper size and paper feed orientation;

e) "Productivity has been determined in accordance with ISO/IEC 17991".

[a]   Generally, 24 bit depth is used for colour and 8 bit depth is used for B&W is used for "default setting bit depth". These bit depths change and depend on the scanned image. Use factory preset default setting as it is.

[b]   The information of PDF version can be found by clicking scanned file's properties in case of Microsoft® Windows® OS.

[c]   Default dpi is the resolution that the device is set by factory setting. Record the default dpi in the report.

[d]   Double sided test is optional and tested for only devices that have an ADF equipped to duplex scan.

7.4   "Scan to network folder productivity measurement" and "Scan to PC file productivity measurement"

7.4.1   Overview

Two reporting formats are described.

a)   The "full report" and "full detailed report" should be the "report" format to be presented if requested.

b)   The "summary report" should be the "declaration" to be used in marketing materials or packaging.

"Declaration" of the whole "summary report" is recommended.

All reporting including minimal declaration, summary and full report tables shall include a pointer to the full detailed report or contact information to obtain the report. An example of a summary report is shown in 7.4.2 and full report is shown in 7.4.3. Optionally reported data are shown as "O", required as "R", and "R*" for testing which are required if an optional test mode is selected. An example of the summary report and the full report is included in Annex A. An example of the full detailed report is included in Annex B.

An individual manufacturer can choose whether or not to display a summary report or the full report on the brochure or specification sheet. If the report is shown on them, the table formats of Tables 2 and

3 are recommended to be used. A pointer to the full detailed report (an example shown in Annex B) or contact information shall be included in the brochure or spec sheet.

The reporting format is shared between "scan to network folder productivity measurement" and "scan to pc file productivity measurement"

7.4.2 Summary report

The minimum required presentation of results shall include a summary report form as displayed in Table 4. A summary report includes the averages of scEFTP in a given test. The system setting for the scanning modes and test preset conditions shall be identified (default and all non-default and optional test mode settings) and reported as shown in a full detailed report (see Annex B). An example of a summary report table is shown in Annex A. When appropriate, rows may be deleted from the summary report. Specifically, if a device does not have the ability to scan both sides, the double sided rows may be deleted. Similarly, a monochrome only scanning device does not need to report data for a colour scanning mode.

Table 4 — Results of summary report

Scan to network folder productivity measurement OR scan to PC file productivity measurement						
Scanning mode				**Measurement result**		
Colour mode[a]	**File format version**	**Resolution**	**Scanning side**	**scEFTP$_{30secF}$ (ipm)**	**File size$_{30secF}$[e] (Mbyte)**	**Number of Sets$_{(30secF)}$**
Colour or B&W (Colour for colour device, B&W for monochrome device)	PDF version[b]	Default dpi[c]	Single sided	R	R	R
			Double sided	O[d]	O[d]	O[d]
B&W (optional for colour device)	PDF version[b]	Default dpi[c]	Single sided	R*	R*	R*
			Double sided	O[d]	O[d]	O[d]
Reporting on tests is defined by: — "R" is required to report when available on the scanning device; — "R*" is required to report if optional B&W is tested; — "O" is optional to test and report. The following shall be recorded in the first table row after the data: a) record the device settings; b) record 7.3; c) record the scanning device settings used for B&W output mode on colour device[a]; d) record the location to find full detailed report or contact information; e) record the paper size and paper feed orientation; f) "Productivity has been determined in accordance with ISO/IEC 17991". [a] Generally, 24 bit depth is used for colour and 8 bit depth is used for B&W is used for "default setting bit depth". These bit depths change and depend on the scanned image. Use factory preset default setting as it is. [b] The information of PDF version can be found by clicking scanned file's properties in case of Microsoft® Windows® OS. [c] Default dpi is the resolution that the device is set by factory setting. Record the default dpi in the report. [d] Double sided test is optional and tested for only devices that have an ADF equipped to duplex scan. [e] "File size$_{30secF}$" is the size of the file on the shared network folder after file creation completion for "1 set+30 sec test". NOTE If a device does not have the ability to scan both sides, the double sided rows can be deleted or "NA" is put in a corresponding column. Similarly, for a colour scanning device, B&W measurement is optional, so B&W rows can be omitted.						

7.4.3 Full report

The presentation of results is recommended to include a full report form as displayed in Table 5. A Full report includes the average of scEFTP in a given test. The system setting for the scanning modes and test preset conditions shall be identified (default and all non-default and optional test mode settings) and reported as shown in full detailed report (see Annex B). An example of a full report table is shown in Annex A. When appropriate, rows may be deleted from the full report. Specifically, if a device does not have the ability to scan both sides, the double sided rows may be deleted. Similarly, a monochrome only scanning device does not need to report data for a colour scanning mode.

Table 5 — Results of full report (colour scanning device)

Scan to network folder productivity measurement OR scan to PC file productivity measurement							
Scanning mode				**Measurement result**			
Colour mode[a]	**File format version**	**Resolution**	**Scanning side**	$scEFTP_{1setF}$ (ipm)	$scEFTP_{30secF}$ (ipm)	File size$_{30secF}$[e] (Mbyte)	Number of Sets$_{(30secF)}$
Colour or B&W (Colour for colour device, B&W for monochrome device)	PDF version[b]	Default dpi[c]	Single sided	O[f]	R	R	R
			Double sided	O[f]	O[d]	O[d]	O[d]
B&W (optional for colour device)	PDF version[b]	Default dpi[c]	Single sided	O[f]	R*	R*	R*
			Double sided	O[f]	O[d]	O[d]	O[d]

Reporting on tests is defined by:

— "R" is required to report when available on the scanning device;

— "R*" is required to report if optional B&W is tested;

— "O" is optional to test and report.

The following shall be recorded in the first table row after the data.

a) Record the device settings;

b) Record 7.3;

c) Record the scanning device settings used for B&W output mode on colour device[a];

d) Record the location to find full detailed report or contact information;

e) Record the paper size and paper feed orientation;

f) "Productivity has been determined in accordance with ISO/IEC 17991".

[a] Generally 24 bit depth is used for colour and 8 bit depth is used for B&W is used for "default setting bit depth". These bit depths change and depend on the scanned image. Use factory preset default setting as it is.

[b] The information of PDF version can be found by clicking scanned file's properties in case of Microsoft® Windows® OS.

[c] Default dpi is the resolution that the device is set by factory setting. Record the default dpi in the report.

[d] Double sided test is optional and tested for only devices that have an ADF equipped to duplex scan.

[e] "File size$_{30secF}$" is the size of the file on the shared network folder after file creation completion for "1 set + 30 second test".

[f] Considering the measurement method used in this document (time for the creation of file can be judged from the file's properties), the measurement has an intrinsic one second error. Therefore, this measurement should be optional even in full report and not necessary to report in case of devices with scanning speed faster than 10 ipm. (If another measurement method that can measure the time for the creation of file after the decimal point is used, this measurement may be done.)

NOTE   A pointer to the full report is included with reported single values from the required performance test such as *scESAT* or *scEFTP*.

7.5   Feature performance test

7.5.1   Overview

Two reporting formats are described:

a)   the "full report" and "full detailed report" should be the "report" format to be presented if requested,

b)   the "summary report" should be the "declaration" to be used in marketing materials or packaging.

"Declaration" of the whole "summary report" is recommended.

All reporting including summary and full report tables shall include a pointer to the full detailed report or contact information to obtain the report. An example of a summary report is shown in 7.5.2 and a full report is shown in 7.5.3. Optionally reported data are shown as "O", required as "R", and "R*" for testing which are required if an optional test mode is selected. An example of the summary report and the full report is included in Annex A. An example of the full detailed report is included in Annex B.

7.5.2   Summary report

The minimum required presentation of results shall include data showing the ratio of the results of feature scanning mode to the results of the base scanning mode test, as displayed in the summary report, Table 6.

The system setting for the scanning modes shall be identified (default and all non-default and optional test mode settings identified) (Annex B).

Averages are calculated by adding the totals (of FSOT and ESAT) and dividing by the number of tests. Reported numbers may include as many decimal places as desired.

Table 6 — Feature performance test summary report
(form shows OCR as example, feature modes may vary)

Scanning modes	Feature performance ratio	
	Feature name	
	$\dfrac{FSOT_{\text{base}}}{FSOT_{\text{feature}}}$ (%)	$\dfrac{ESAT_{\text{feature}}}{ESAT_{\text{base}}}$ (%)
Feature setting	R*	R*
Reporting on tests is defined by: — "R*" is required to report when optional feature performance is run.		

7.5.3   Full report

In a full report, the *FSOT* and *ESAT* numbers as well as the ratio for each of the individual test ratio shall be reported as displayed in Table 7. The system setting for the scanning modes shall be identified. The test preset conditions shall be reported as shown in full detailed report (see Annex B).

Table 7 — Feature performance test full report

Scanning modes	Base scanning mode		Feature performance ratio			
			Feature name			
	$FSOT_{1set}$ (s)	$ESAT_{30sec}$ (ipm)	$FSOT_{1set}$ (s)	$ESAT_{30sec}$ (ipm)	$\dfrac{FSOT_{base}}{FSOT_{feature}}$ (%)	$\dfrac{ESAT_{feature}}{ESAT_{base}}$ (%)
Feature Setting	R*	R*	R*	R*	R*	R*
Reporting on tests is defined by:						
— "R*" is required to report when optional feature performance is run.						

Annex A
(informative)

Report presentation

A.1 General

This annex shows how to present the results of measurement according to Clause 7.

NOTE The following data are not real data from scanning device; they are just an example showing how to present the results.

A.2 General scanner test

A.2.1 Minimum declaration

EXAMPLE 1

ADF: 72 ipm ; scan to network folder: 60 ipm[1)]

Footnotes:

[1] Tested in accordance with ISO/IEC 17991, for full report: URL: xxxx.xxxx

EXAMPLE 2

ADF: 72 ipm ; scan to PC folder: 60 ipm[1)]

Footnotes:

[1)] Tested in accordance with ISO/IEC 17991, for full report: URL: xxxx.xxxx

EXAMPLE 3

Scan to network folder: 60 ipm[1)]

Footnotes:

[1)] Tested in accordance with ISO/IEC 17991, for full report: URL: xxxx.xxxx

EXAMPLE 4

Scan to PC folder: 60 ipm[1)]

Footnotes:

[1)] Tested in accordance with ISO/IEC 17991, for full report: URL: xxxx.xxxx

A.2.2   Summary report

EXAMPLE 1   35 cpm colour scanning device equipped with ADF and duplex scanning unit.

ADF summary report				Measurement result
Scanning mode				**Measurement result**
Colour mode	**File format version**	**Resolution**	**Scanning side**	$scESAT_{30secA}$ (ipm)
Colour (default setting)	PDF 1.7	200 dpi	Single sided	72,8
			Double sided	38,4
B&W (binary)	PDF 1.7	200 dpi	Single sided	72,9
			Double sided	38,4

EXAMPLE 2   35 cpm colour scanning device equipped with ADF and duplex scanning unit.

Scan to network folder summary report						
Scanning mode				**Measurement result**		
Colour mode	**File format version**	**Resolution**	**Scanning side**	$scEFTP_{30secF}$ (ipm)	$File\ size_{30secF}$ (Mbyte)	Number of Sets$_{(30secF)}$
Colour (default setting)	PDF 1.7	200 dpi	Single sided	60,0	11,6	11
			Double sided	32,7	6,4	6
B&W (binary)	PDF 1.7	200 dpi	Single sided	62,8	1,7	11
			Double sided	34,2	0,9	6

EXAMPLE 3   35 cpm colour scanning device equipped with ADF and duplex scanning unit.

Scan to PC folder summary report						
Scanning mode				**Measurement result**		
Colour mode	**File format version**	**Resolution**	**Scanning side**	$scEFTP_{30secP}$ (ipm)	$File\ size_{30secP}$ (Mbyte)	Number of Sets$_{(30secP)}$
Colour (default setting)	PDF 1.7	200 dpi	Single sided	60,0	11,6	11
			Double sided	32,7	6,4	6
B&W (binary)	PDF 1.7	200 dpi	Single sided	62,8	1,7	11
			Double sided	34,2	0,9	6

A.2.3 Full report

EXAMPLE 1   35 cpm colour scanning device equipped with ADF and duplex scanning unit.

ADF full report								
Scanning mode				Measurement result				
Colour mode	File format version	Resolution	Scanning side	$scFPE_{1setA}$ (s)	$scFSOT_{1setA}$ (s)	$scEFTP_{1setA}$ (ipm)	$scEFTP_{30secA}$ (ipm)	$scESAT_{30secA}$ (ipm)
Colour (default setting)	PDF 1.7	200 dpi	Single sided	21	24,4	53,5	70,4	72,8
Colour (default setting)	PDF 1.7	200 dpi	Double sided	21,5	28,2	32,1	37,2	38,4
B&W (binary)	PDF 1.7	200 dpi	Single sided	22,3	26,4	54,0	70,6	72,9
B&W (binary)	PDF 1.7	200 dpi	Double sided	19,9	24,8	31,9	37,2	38,4

EXAMPLE 2   35 cpm colour scanning device equipped with ADF and duplex scanning unit.

Scan to network folder full report							
Scanning mode				Measurement result			
Colour mode	File format version	Resolution	Scanning side	$scEFTP_{1setF}$ (ipm)	$scEFTP_{30secF}$ (ipm)	$File\ size_{30secF}$ (Mbyte)	Number of $sets_{(30secF)}$
Colour (default setting)	PDF 1.7	200 dpi	Single sided	—	60,0	11,6	11
Colour (default setting)	PDF 1.7	200 dpi	Double sided	—	32,7	6,4	6
B&W (binary)	PDF 1.7	200 dpi	Single sided	—	62,8	1,7	11
B&W (binary)	PDF 1.7	200 dpi	Double sided	—	34,2	0,9	6

NOTE   As for $scEFTP_{30secF}$, measurement parameters involving the measurement of file transmission to a network folder are dependent on other factors like the computer and network configuration and represent relative values and not absolute values.

EXAMPLE 3   35 cpm colour scanning device equipped with ADF and duplex scanning unit.

Scan to PC folder full report							
Scanning mode				Measurement result			
Colour mode	File format version	Resolution	Scanning side	$scEFTP_{1setP}$ (ipm)	$scEFTP_{30secP}$ (ipm)	$File\ size_{30secP}$ (Mbyte)	Number of $sets_{(30secP)}$
Colour (default setting)	PDF 1.7	200 dpi	Single sided	—	60,0	11,6	11
Colour (default setting)	PDF 1.7	200 dpi	Double sided	—	32,7	6,4	6
B&W (binary)	PDF 1.7	200 dpi	Single sided	—	62,8	1,7	11
B&W (binary)	PDF 1.7	200 dpi	Double sided	—	34,2	0,9	6

NOTE   As for $scEFTP_{30secP}$, measurement parameters involving the measurement of file transmission to a network folder are dependent on other factors like the computer and network configuration and represent relative values and not absolute values.

A.3 Feature performance test results

A.3.1 Summary report

EXAMPLE

Summary report

Scanning modes	Feature performance ratio	
	OCR	
	$\dfrac{FSOT_{base}}{FSOT_{feature}}$ (%)	$\dfrac{ESAT_{feature}}{ESAT_{base}}$ (%)
OCR	71,3	76,1

A.3.2 Full report

EXAMPLE

Full report

Scanning modes	Base scanning mode		Feature performance ratio			
			OCR mode			
	$FSOT_{1set}$ (s)	$ESAT_{30sec}$ (ipm)	$FSOT_{1set}$ (s)	$ESAT_{30sec}$ (ipm)	$\dfrac{FSOT_{base}}{FSOT_{feature}}$ (%)	$\dfrac{ESAT_{feature}}{ESAT_{base}}$ (%)
OCR	19,5	26,6	27,2	20,2	71,3	76,1