Designation: F2494 – 05 (Reapproved 2011)

Standard Test Method for Determining Energy Consumption of Copiers and Similar Office Imaging Equipment[1]

This standard is issued under the fixed designation F2494; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This procedure provides a test method by which electrophotographic copiers and similar office imaging equipment may be rated for energy consumption.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *International Standards:*

ISO/IEC 11159 Minimum Information to be Included in Specification Sheets—Copying Machines[2]

ISO 554 Standard Atmospheres for Conditioning and/or Testing Specifications[2]

2.2 *Federal Energy Management Program (FEMP) website:*

http://www.eere.energy.gov/femp/technologies/eep_standby_power.cfm#sleep

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *optional devices*—any device added to improve the functionality of the base unit. They include an automatic document feeder (ADF), sorter, finisher and expansion memory.

3.1.2 *copier speed, first copy (X)*—one of the convenient levels for which the machine's speed is measured. This is calculated based on the amount of time, a_1 (sec), counted in a normal operating mode from the beginning of pressing the print button of the machine to the end of ejecting the first copy, $X = 60/a_1$ (cpm). For copiers with ADF, the amount of time, a_1 shall be used, counted from pressing the print button after placing an original or originals on the ADF to the end of ejecting the first copy.

3.1.3 *copier speed, multi copy (Y)*—one of the convenient levels for which the machine's speed is measured. This is calculated based on the amount of time, a_2 (sec), counted in a normal operating mode from the end of ejecting the first copy after pressing the print button of the machine to the end of ejecting the remaining copies (b), $Y = (b) \times 60/a_2$ (cpm). Normally, the value declared in the machine's specifications shall be used.

3.1.4 *ready mode*—the condition that exists when the machine is ready for copying, but has not yet started copying, and has not entered an energy-saver mode, either.

3.1.5 *copying cycle*—the condition that exists from the beginning to the end of a nominal job cycle (1 h) to produce a copy or copies. According to the machine's multi copy speed (Y) declared in the specifications, the following are listed in Job Tables: nominal monthly volumes assumed, nominal volumes per day and combinations of the number of jobs as ⅛ day (1 h) nominal jobs, the number of originals per job and the number of copies per original.

3.1.6 *copying energy*—the amount of energy needed in excess of ready mode energy during a copying cycle.

3.1.7 *copying time*—the amount of time that the nominal jobs are run when testing copying energy during a copying cycle.

3.1.8 *warm-up energy*—the amount of energy needed in excess of ready mode energy when the machine is in a warm-up mode after the machine is turned on in an auto-off mode on a standard work day.

3.1.9 *energy-saver mode*—the condition that exists when the machine is not making copies and is consuming less power than when the machine is in a ready mode. The machine goes into this mode after it completes a copying job and no job is scheduled in a specified time period. Since the International Energy Star Program has been used widely in the world, this has caused copiers to have this mode. This standard particularly designates this condition as an energy-saver mode in operating hours (9 h) of a standard work day.

3.1.9.1 *Discussion*—The International Energy Star Program stipulates that the machine shall be set to enter an energy-saver

[1] This test method is under the jurisdiction of ASTM Committee F05 on Business Imaging Products and is the direct responsibility of Subcommittee F05.04 on Electrostatic Imaging Products.

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[2] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

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