Designation: F 807 – 83 (Reapproved 2003)

Standard Practice for Determining Resolution Capability of Office Copiers[1]

This standard is issued under the fixed designation F 807; 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 practice covers the description and method of use for a resolution test target for office copier evaluation.

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 *ASTM Standards:* [2]

F 335 Terminology Relating to Electrostatic Copying

F 360 Practice for Image Evaluation of Electrostatic Business Copies

2.2 *American National Standard:*

PH2.33 Method for Determining the Resolving Power of Photographic Materials[3]

3. Summary of Practice

3.1 The standard test target is described for evaluation of resolution. Resolution is stated in line pairs per millimetre. The method of evaluation using this target is given.

4. Significance and Use

4.1 The resolution of a copying process is affected by many factors including the copier, supplies, and environmental conditions. The resolution is particularly significant relative to sharpness, edge definition, and the ability to visually distinguish the separation of fine lines.

4.2 The standard test target for image resolution may be used in evaluation of the factors mentioned in 4.1.

5. Apparatus

5.1 *Magnifier*, 10×.

6. Materials

6.1 A test target[4] for the evaluation of image resolution.

7. Precautions

7.1 This test target can be used to measure image resolution for different copier conditions (machine adjustments, machine configurations, supplies, environment, etc.). Careful notation should be made so that comparison tests can be made.

7.2 The copy contrast may affect the resolution measurements. If exposure control is available, it should be optimized. Guidelines are given in ANSI PH2.33.

7.3 The surface quality of the copy paper may affect the resolution measurements.

7.4 Resolution may differ with direction of line pair set.

8. Procedure

8.1 Use the test target in accordance with Section 5 of Practice F 360.

9. Interpretation of Results

9.1 *Measurement of Image Resolution*:

9.1.1 Using the magnifier, determine the smallest line pair target in each target set that can be resolved. Record these values noting the target set positions. The line pair target is considered resolved when the lines (and spaces) are visibly separate.

9.1.2 Interpretation of results should be made by one observer.

9.1.3 Overall copy resolution can be determined by mathematical averaging the line pairs per millimetre values obtained in accordance with 9.1.1 on the five targets of a single copy. The range of values should be noted as this gives an indication of consistency within one copy.

9.1.4 Away from the center of the field, the resolution of the bars directed toward the center is often not equal to the resolution perpendicular to that direction because of lens aberrations or other machine configurations. If the patterns perpendicular to one another are not equally resolved at the center of the field, one should suspect vibration or other image motion with respect to the photoconductor.

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

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from the American National Standards Institute, 11 W. 42nd St., 13th Flr., New York, NY 10036.

[4] Available from Applied Image Co., 1653 E. Main St., Rochester, NY 14609. Request test target referenced in Practice F 807.

10. Precision and Bias

10.1 The results are reproducible for one observer and one set of test conditions (machine, supplies, temperature, humidity, etc.). The results may not be comparable between observers. A reproducible ranking order can be established. This statement is based on experience with the resolution target in many laboratories.

11. Keywords

11.1 copier; resolution; sharpness; supplies