

Methods of

Measuring quality of output of graphic COM recorders

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Information and Documentation Standards Policy Committee (DOT/-) to Technical Committee DOT/16, upon which the following bodies were represented:

- British Coal Corporation
- British Computer Society
- British Office Technology Manufacturers' Alliance
- British Photographic Association
- Drawing Office Material Manufacturers' and Dealers' Association
- EEA (the Electronics and Business Equipment Association)
- Her Majesty's Stationery Office
- London Borough of Bromley
- Ministry of Defence
- National Association of Microfilm Bureaux
- National Centre for Information Media and Technology (Cimtech)
- Society of British Aerospace Companies
- Standing Conference of National and University Libraries
- United Kingdom Association for Information and Image Management

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Ordnance Survey
- Public Record Office

This British Standard, having been prepared under the direction of the Information and Documentation Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 28 February 1991

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Foreword

This British Standard has been prepared under the direction of the Information and Documentation Standards Policy Committee.

Increasing numbers of technical drawings are now produced on computer output microfilm (COM), and, although their quality is usually reasonable, they are not always compatible with microfilm copies of hard-copy drawings. This can cause difficulty when both kinds of drawing are put into aperture cards and sent through systems designed to deal with microfilm copies of hard-copy drawings.

This British Standard has therefore been prepared to help users to establish procedures that should ensure that the quality of COM-generated drawings is both acceptable in itself and compatible with technical drawings on conventional microfilm that comply with BS 4210-1, BS 4210-2 and BS 4210-3.

The test frames specified may be used for rough checks if users wish to monitor the quality of COM-generated drawings without going to the expense of carrying out the tests described in this standard.

Figures are provided by the Association of Information and Image Management, ref. MS39-1987.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard describes methods for measuring the image quality of COM-generated drawings. It is not concerned with the kind of film used, but assumes that a film is used that is capable of producing images of the required quality.

Appendix A gives guidance on the line density of first-generation film.

Appendix B gives a rough check for character display and rotation.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definition

For the purposes of this British Standard the following definition applies.

resolution

ability of a photographic system (equipment, optics, sensitized material and processing) to record fine detail

3 Evaluation of graphic COM images

3.1 General

The evaluation of the quality of a graphic COM image is a complex task. Various conditions can occur in a graphic COM recorder that are not found in source-document systems or alphanumeric COM recorders, which can be evaluated with the use of a form slide. Many graphic COM recorders have no provision for a form slide and, if they are to be evaluated, all measurements need to be taken from the microform image produced by the dynamic image generator.

NOTE 1 It is customary for graphic COM recorders to produce negative-appearing film images. For clarity of presentation, the examples in Figure 1 to Figure 5 have been reproduced as positive-appearing images.

NOTE 2 For general information about technical drawings on microfilm, see BS 4210-1, BS 4210-2 and BS 4210-3, and for the processing and storage of archival film, see BS 1153.

3.2 Apparatus

3.2.1 Travelling microscope, with a magnification within the range $\times 50$ to $\times 150$.

3.2.2 Densitometer

4 Test methods

4.1 Test runs

The test frames described in 4.2.2, 4.3.2, 4.4.2 and 4.5.2 shall be run on the COM recorder as part of the acceptance testing and the film made shall be retained as a reference copy for comparison test runs. Before the tests are run, the operator shall ensure that the film processor is in proper working order. The images generated during a test shall be examined and, if any shows signs of deterioration in quality, the entire set of images shall be re-run and examined. Runs of test frames shall be kept for long enough to show whether problems are intermittent or increasing.

4.2 Test for frame size, linearity and positioning

4.2.1 Principle

A travelling microscope is used to take various measurements of the image of the test frame to check whether they comply with the manufacturer's specification.

4.2.2 Test frame

The test frame (see Figure 1) contains a rectangular grid equal in size to the largest image. The frame is divided by lines drawn in both axes at intervals of one-eighth of the length of the long axis, from the centre of the frame. Diagonal lines connect the opposite corners of the frame and the midpoints of the sides of the frame.

4.2.3 Procedure

4.2.3.1 General

The frame is recorded at the beginning and end of each test run (see 4.1).

NOTE The specified limits referred to in all the methods of test are those specified by the manufacturer.

4.2.3.2 Frame size

To determine the frame size, measure the length of the centrelines EG and HF.

4.2.3.3 Line straightness

Align the film so that the endpoints of the centreline HF coincide with the X axis of the microscope. Traverse the line and measure the maximum deviation of the centre of the line from the X axis along the Y axis. Repeat the test for the outside lines AB and CD.

Align the film so that the endpoints of the centreline EG coincide with the Y axis of the microscope. Traverse the line and measure the maximum deviation of the centre of the line from the Y axis along the X axis. Repeat the test for the outside lines AD and BC.