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# Photography — Electronic scanners for photographic images — Spatial resolution measurements —

## Part 2: Film scanners

*Photographie — Scanners électroniques pour images  
photographiques — Mesurages de la résolution spatiale —*

*Partie 2: Scanners pour films*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16067-2 was prepared by Technical Committee ISO/TC 42, *Photography*.

ISO 16067 consists of the following parts, under the general title *Photography — Electronic scanners for photographic images — Spatial resolution measurements*:

- *Part 1: Scanners for reflective media*
- *Part 2: Film scanners*

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## Introduction

One of the most important characteristics of an electronic film scanner is the ability to capture the fine detail found in the original film. This ability to resolve detail is determined by a number of factors, including the performance of the scanner lens, the number of addressable photoelements in the image sensor(s) used in the scanner, and the electrical circuits in the scanner. Different measurement methods can yield different metrics that quantify the ability of the scanner to capture fine details.

This International Standard specifies methods for measuring the limiting visual resolution, and spatial frequency response calculated from a slanted edge (Edge SFR) imaged by a film scanner. The scanner measurements described in this International Standard are performed in the digital domain, using digital analysis techniques. A test chart of appropriate size and characteristics is scanned and the resulting data is analysed. The test chart described in this International Standard is designed specifically to evaluate continuous tone film scanners. It is not designed for evaluating electronic still-picture cameras, video cameras, or bi-tonal document scanners.

The edge SFR measurement method described in this International Standard uses a computer algorithm to analyse digital image data from the film scanner. Pixel values near slanted vertical and horizontal edges are used to compute the SFR values. The use of a slanted edge allows the edge gradient to be measured at many phases relative to the image sensor photoelements, so that the SFR can be determined at spatial frequencies higher than the half sampling frequency, sometimes called the Nyquist limit. This technique is mathematically equivalent to a moving knife-edge measurement.

Part 1 of this International Standard deals with reflective media.