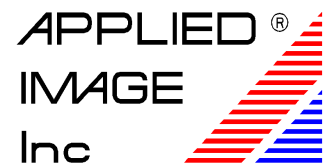


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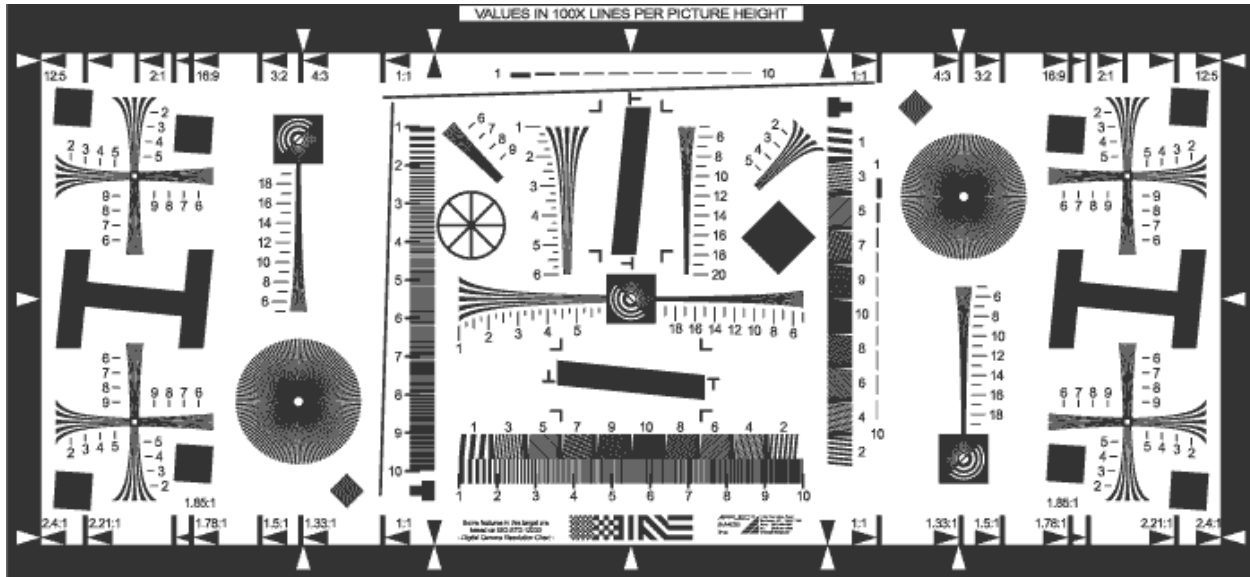
QA-76  
Digital CINE Test Chart  
(ISO-12233 based) Product  
Specifications



Catalog Part No: **QA-76-P-RM**

Product Name: **Digital CINE Test Chart**

Drawing / Photo of part:




The above image is only an approximate representation of the actual product.  
Specifications are subject to change without notice.

General Description: This test pattern is an image evaluation tool for determination of resolving power, limiting resolution and spatial frequency response (SFR) in digital CINE imaging.

Image Description: Adapted from the ISO-12223 test chart for use with imaging systems having higher aspect ratios, this target includes all features specified in the ISO-12233 standard with the following additions or modifications. (For reference, please refer to the ISO-12233 standard document.)

- Star sector targets added in two places cover a range of 150 to 2000 line widths per picture height. ( $\frac{1}{4}$  to  $3\frac{1}{3}$  cy/mm)
- Dual-frequency zone plates on a black square background with hyperbolic wedges in a vertical orientation allow evaluation at 500 to 2000 lw/ph vertical resolution.

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- Checkerboard patterns rotated to 45 degrees and made up of squares having 1.5 mm edge length (200 lw/ph) aid in focus and evaluation of aliasing.
- Additional framing arrows are included to define aspect ratios out to 2.4:1.
- This target's overall size is equivalent to exactly three times that of the ISO-12233 standard 1X target.

Target Size: 600 x 1440 mm total target area

Target Substrate: 705 x 1524 mm semi-matte resin coated photographic paper

Image Forming Material: Photographic emulsion


Polarity: Positive image features

Image Contrast: 40:1 typical

Terms: *Line widths per picture height (lw/ph)*; resolution features on this chart are labeled in line widths x 100 per picture height. Note that each line transition is counted.

Guidelines for Usage: This document is not intended to replace the International Standard Document ISO-12233. However, the following guidelines will aid the first use of this chart.

- The chart should be illuminated uniformly ( $\pm 10\%$  of center luminance) against a surround of low reflectance and with a minimum of flare light. The illuminant should be effectively neutral with respect to either daylight or tungsten illuminants (ISO-7589). Camera white balance should be adjusted to provide equal red, green and blue signal levels.
- The camera should be positioned to provide centered, full-frame-height rendering of the chart's active area. Use the chart's framing arrows and horizontal edges to aid positioning. The camera to test chart distance should be noted.
- Achieve good focus using the chart's zone plate feature(s).
- Set camera lens aperture and exposure time to provide maximum signal from white areas while avoiding any signal clipping.

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- Where possible, image compression features should be disabled.
- Camera output signal should be linearized using the standard reflection camera OECF (Opto-Electronic Conversion Function) test chart, Applied Image part number ST-52-RM.
- Line width features can be viewed with any file viewer for an indication of the visual resolution limits of the device. International Standard Document ISO-12233 contains instruction regarding a quantitative determination of resolution limits. Visual and limiting resolution values should be reported in values of lw/ph.
- Slant-edge features can be analyzed using SFR software freely available through [www.i3a.org](http://www.i3a.org). This topic is also described in greater detail in the International Standard Document ISO-12233.
- Aliasing level is determined using the slanted burst patterns. It is quantified for each frequency by the ratio of the maximum minus minimum responses divided by the difference of average maximum minus average minimum within each frequency burst.

Related Information: International Standard Document ISO-7589, *Illuminants for sensitometry – Specifications for daylight and incandescent tungsten*

- International Standard Document ISO-12233, *Electronic still-picture cameras – Resolution measurements*
- International Standard Document ISO-14524, *Electronic still-picture cameras – Methods for measuring opto-electronic conversion functions (OECFs)*
- Slant Edge Analysis Tool can be found at, [www.i3a.org/downloads\\_iso\\_tools.html](http://www.i3a.org/downloads_iso_tools.html)

Related Applied Image Products:

- M-13-60; Sinusoidal Array. Sinusoidal test images evaluated for MTF (Modulation Transfer Function) are the classic means of imaging quality evaluation. (MTF is comparable to SFR evaluation.)
- QA-61; Reflective Scanner Test Chart (ISO-16067-1). Designed for scanners, this chart contains a slanted edge feature for SFR evaluation. Additional features are included for resolution, aliasing ratio and OECF testing.

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- QA-62; Slant Edge Target. Designed for scanners, this chart contains a slanted edge feature for SFR evaluation along with an OECF grayscale in a single target.
- QA-72; Electronic Still Picture Camera Resolution Test Chart. This target follows the specifications of the ISO-12233 standard.
- QA-77; Enhanced Digital Camera Resolution Chart. This target is based on the ISO-12233 chart but allows determination of resolution limits as high as 4000 lw/ph. Lower contrast slant edge features provide more accurate SFR analysis.