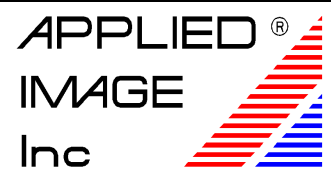


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**QA-70D**  
 200 To 8000 Lines per  
 Picture Height Test Chart  
 Tech Specs

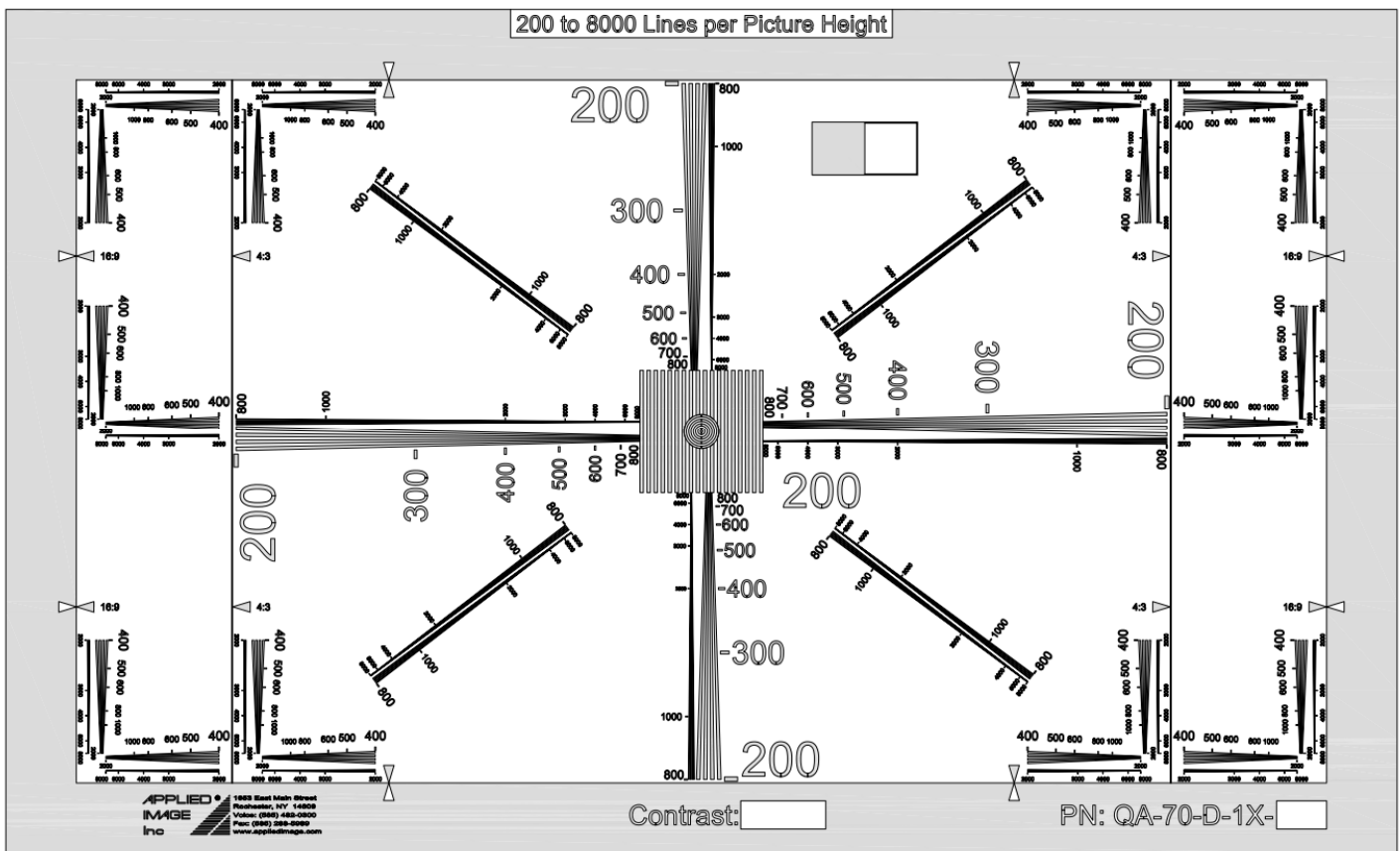


Catalog Part No:

Catalog Part Number;	Description
QA-70D-1X-A-P-RM	80:1 contrast
QA-70D-1X-B-P-RM	20:1 contrast
QA-70D-1X-C-P-RM	6.3:1 contrast
QA-70D-1X-D-P-RM	1.6:1 contrast
QA-70D-1X-E-P-RM	1.15:1 contrast

Product Name: 200 To 8000 Lines per Picture Height Test Chart

Drawing / Photo of part:



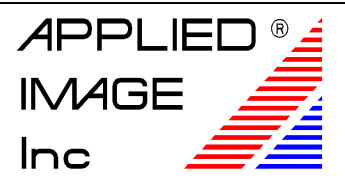
The above image is an approximate representation of the actual product.  
 Specifications are subject to change without notice.

Description: Wedges of 4 dark lines converge to allow measurement of digital camera resolution up to 8000 TVL. (TVL is also known as “lines per picture height”, simply as lines, lines of resolution, or TV Lines). Measurements to 8000 lines can be performed in the center and all 4

Please contact Applied Image customer service at the address noted above, for custom images, shapes and materials.

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corners (of both 4:3 and 16:9 ratios), as well as a few additional spots. The chart is arrayed for both 16:9 and 4:3 ratios.

Image Polarity: Dark lines on a white field with a dark border.

Substrate Size: 240mm x 395mm

Active Image Size: 200mm x355mm

Overall Thickness: nominally 0.25mm

Reading Direction: Right Read Image Up

Image forming Material: Monochrome photo emulsion on paper

Image surface: Semi-matte

Image Contrast or Density: various contrasts are available;

Contrast Specifier	A	B	C	D	E
Contrast Ratio	80:1	20:1	6.3:1	1.6:1	1.15:1
Max %R	79.4%	79.4%	79.4%	79.4%	79.4%
Min % R	1.0%	4.0%	12.6%	50.1%	69.2%
%R Difference	78.4%	75.4%	66.8%	29.3%	10.2%
Max. Density	2.0 D	1.4 D	0.9 D	0.3 D	0.16 D
Min. Density	0.1 D	0.1 D	0.1 D	0.1 D	0.1 D
Density Difference	1.9 D	1.3 D	0.8 D	0.2 D	0.06 D

### History or Typical Use

Resolution units are tied to the overall size of a picture (lines per picture height, also known simply as lines, [TV lines](#), or TVL.

Line pairs are often used instead of lines; a line pair comprises a dark line and an adjacent light line. A line is either a dark line or a light line.

The linear wedge patterns range from 200 to 8000 Television Lines (TVL). The limiting resolution can be found when the field of view is filled with this chart's full image height. A resolution limit is then found by visual inspection of the linear wedge patterns. Distortion or aliasing can be detected by comparison of resolution features at the target's center and corners.

## Terminology:

- *Aliasing* – An effect that causes the image of a feature to be less recognizable. Features that are originally different become indistinguishable (or aliases of one another). This effect is most apparent by image artifacts due to limited or diminished resolution and tends to be seen in multiples of the basic resolution.
- *Resolution* – The measure of an imaging component or system to convey detail.
- *TV-Lines (TVL)* – The maximum number of light or dark lines resolved horizontally (or vertically, for digital systems) determines the resolving power of a video system. Each line transition is counted and expressed in TV lines rather than in cycles or line pairs as often done in other imaging systems. TVL are coupled directly to picture height and sometimes reported as Television Lines per Picture Height (TVL/PH). For this reason, the numbers shown on this chart are Lines per Picture Height and the entire vertical chart image as indicated by the arrow marks must fill the field of view, including any over-scan region.

These units can be easily understood by example: 400 TVL means that 400 light to dark transitions have occurred in a length equal to the height (or width) of the picture. 200 distinct dark bars and 200 light bars can be counted. For a 1.0 inch picture height, 400 TVL will have a pitch of 0.005 inch (0.0025 inch bar and 0.0025 inch space). Bar size can be calculated (in bar or space width) by dividing the picture height by the desired TVL.

## Related Applied Image Products:

- *QA-70-2; Video Resolution Pattern 1/10x (EIA-1956)* – This target is the same image as QA-70-1 but at 1/10<sup>th</sup> size and as a chrome on 2 x 2 inch glass (QA-70-2-CG) or on 2 x 2 inch white opal glass (QA-70-2-OP). The QA-70-2-CG having a 2 x 2 inch overall size allows its use in a standard slide projector. QA-70-2-OP is intended for viewing in reflection mode.
- *QA-71; IEEE Video Resolution Chart* – This target is another standard useful for evaluation of resolution in a video component or system.

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- *QA-76; Digital Cine Resolution Chart* – This target is another standard useful for evaluation of resolution in a video component or system. Adapted from ISO-12233.
- *QA-72; Digital Still camera Resolution chart*– This target is another standard useful for evaluation of resolution in a video component or system. It is specified in the original ISO-12233 standard.
- *QA-76; Digital Cine Resolution Chart* – This target is another standard useful for evaluation of resolution in a video component or system. Adapted from ISO-12233.
- QA-70-1 EIA 1956 resolution chart
- 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.
- 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-72A ISO 12233 CIPA Resolution chart.
- QA-72C ISO 12233 Low Contrast Edge SFR Chart with 80:1 OECF Patches