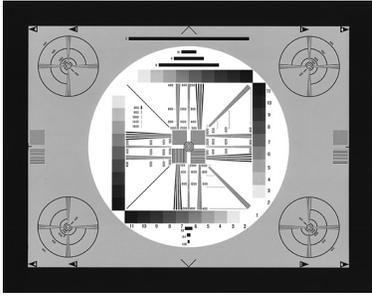


### ITE Test Chart(4:3type)

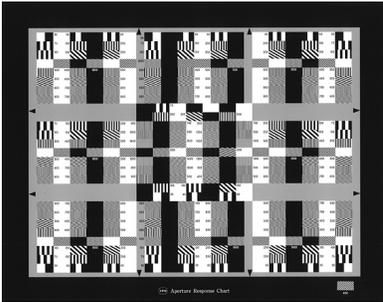
#### ITE High Resolution Chart for High-definition TV Systems I



1. Specification of this Test Chart is the same as of EIAJ Test Chart(4:3type). Also, the usage is the same. The Test Chart is designed to evaluate 200-2000TV of wedges for image assessment.
2. You can evaluate ...
  - (1)Resolution (2)Streaking (3)Linking (4)Interlace scan (5)Shading (6)Linearity of scan (7)Aspect ratio of scan (8)Alignment (9)Graduation sequence
3. Transmission or Reflectance of main areas is stated as follows;
  - (1)Transmission or Reflectance of inside white area of the big circle is 83.0% or more.
  - (2)Transmission or Reflectance of outside background of the big circle is 26.0%.
  - (3)Please refer to the list of Transmission or Reflectance of Grayscale Chart.

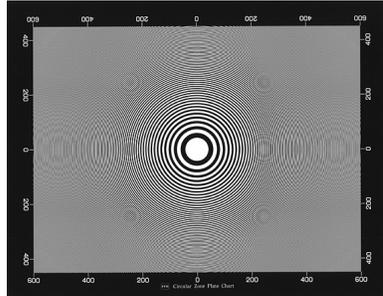
Step Number	1	2	3	4	5	6
Transmission / Reflectance	83.0%	71.0%	57.0%	46.0%	37.0%	27.4%
Step Number	7	8	9	10	11	
Transmission / Reflectance	19.5%	13.4%	8.3%	4.75%	2.0%	

#### ITE Aperture Response Chart



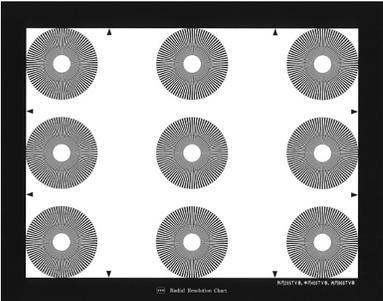
1. Modulation Transfer Function(MTF) is applied to image assessment for an imaging device. The MTF resolution is given by the product of the MTF of each separate module (i.e. contrast, lens, imaging device and amplifier).
2. Resolution of imaging device on using a square-wave chart is generally expressed with Amplitude Response(AR).
3. Aperture Response Chart is a Chart for evaluation of astigmatic effect of AR and Resolution Aperture.

#### ITE Circular Zone Plate Chart



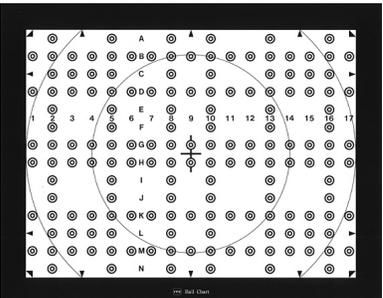
1. When Circular Zone Plate Chart(CZP) is taken from a widely extended field-angle, liner-sweep will be 600TV of horizontal resolution and 450TV of vertical resolution.
  - You can evaluate
    - (1)Resolution(AR)
    - (2)Sampling characteristics

#### ITE Radial Resolution Chart



1. Sometimes slope of stripes causes a difference in resolving power of imaging device, especially pick up tube though the same number of TVs in a taken image. This is a phenomenon caused by an elliptical imaging aperture.
2. In Radial Resolution Chart, wedge-shaped fringes are circularly arranged alternately with white and black. The circles drawn by the line width 1/1500h are located in 200TV, 400TV and 800TV.(h is a height of a Chart)

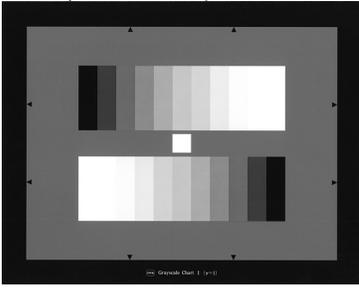
#### ITE Ball Chart



1. This Chart is used for strain measurement of a TV camera's geometric image.
2. There are 158 double rings which are arranged in 14 rows and 17 columns. The vertical spacing is 1/14h and the horizontal spacing is 2/25h.
3. The sizes of the double rings are stated as follows:
  - (1)Outer rings
    - Outer circle of the ring Radius : 2/100h(2%)
    - Inner circle of the ring Radius : 1.5/100h(1.5%)
  - (2)Inner rings
    - Outer circle of the ring Radius : 1/100h(1%)
    - Inner circle of the ring Radius : 0.5/100h(0.5%)



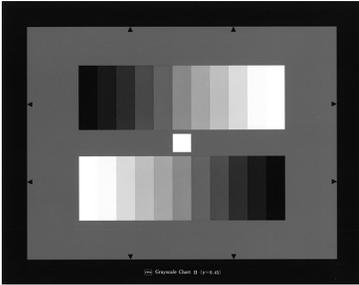
ITE Grayscale Chart I ( $\gamma=1.0$ )



1. Please refer to Reflection ratio and density of Grayscale in following table.

Step	1	2	3	4	5	6	7	8	9	10	11	Back
Number	(White)										(Black)	ground
Reflection ratio(%)	83.0	74.9	66.8	58.7	50.6	42.5	34.4	26.3	18.2	10.1	2.0	18.0
density	0.08	0.13	0.18	0.23	0.30	0.37	0.46	0.58	0.74	1.00	1.70	0.74

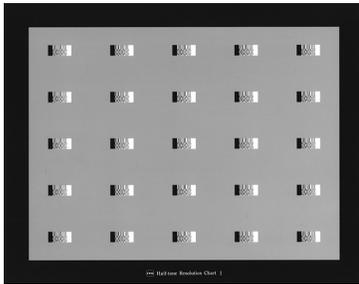
ITE Grayscale Chart II ( $\gamma=0.45$ )



1. Please refer to Reflection ratio and Density of Grayscale in following table.

Step	1	2	3	4	5	6	7	8	9	10	11	Back
Number	(White)										(Black)	ground
Reflection ratio(%)	83.0	71.0	57.0	46.0	37.0	27.4	19.5	13.4	8.3	4.75	2.0	18.0
density	0.08	0.15	0.24	0.34	0.43	0.56	0.71	0.87	1.08	1.32	1.70	0.74

ITE Half-tone Resolution I



1. Resolution property of imaging device is measured by taking the bright and dark fringes as an object. Amplitude modulation factor depends on the direction of slope of fringe and luminous energy. Also  $\gamma$  characteristic of imaging device affects it a lot. This Chart is well designed for measuring, evaluating and adjusting a signal processing circuit and an imaging device, with understanding the phenomenon stated above.

2. (1)Black and white patterns in the vertical direction

There are 350TV because chrominance carrier of a normal single-lumen color camera is 3.5 to 4.5MHz.

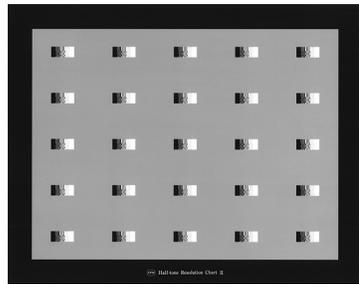
(2)Black and white patterns slope to the left and right.

Inclined angle to left and right is  $\pm 20^\circ$  and there are 350TV.

(3)Density of black and white

	Left	Center	Right
Black	3%	25%	37.5%
White	83%	75%	62.5%

ITE Half-tone Resolution II



1. Resolution property of imaging device is measured by taking the bright and dark fringes as an object. Amplitude modulation factor depends on the direction of slope of fringe and luminous energy. Also  $\gamma$  characteristic of imaging device affects it a lot. This Chart is well designed for measuring, evaluating and adjusting a signal processing circuit and an imaging device, with understanding the phenomenon stated above.

2. (1)Black and white patterns in the vertical direction

There are 350TV because chrominance carrier of a normal single-lumen color camera is 3.5 to 4.5MHz.

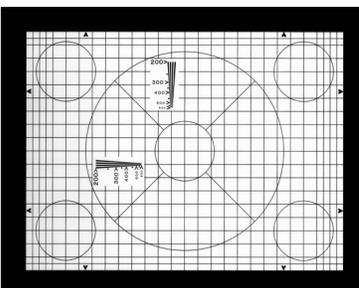
(2)Black and white patterns slope to the left and right.

Inclined angle to left and right is  $\pm 20^\circ$  and there are 350TV.

(3)Density of black and white

	Left	Center	Right
Black	3%	25%	50.0%
White	50%	75%	83.0%

ITE Registration Chart



- Horizontal and Vertical Spaces :  $1/18h$  Outer Space: $1/36h$
- Diameter of large circle :  $5/6h$  Center of the circle is the center the chart
- Diameter of small circle :  $1/4h$  Center of the circle is  $3/18 h$  from the corner of the chart
- Thickness of the line :  $1/576h$



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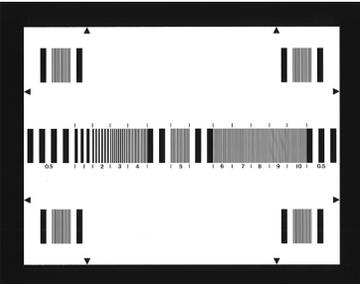
三重 重新路5段609巷16號5樓之7 Email : dickysai@radiotek.com.tw

ITE Color Matching Chart(a girl with carnation)



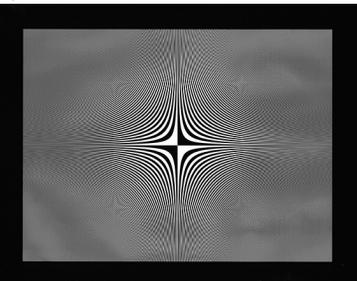
1. This Chart is used to evaluate the reproducibility for skin color which is the most important color when the reproducibility of a color TV camera is set.
2. Check correct white balance with Grayscale Chart before image evaluation with the Color Matching Chart.
3. This chart is only available for Transparent type. (Note: Opaque type requires special specification.)

Test Chart L High-class Inmega Cycle Chart



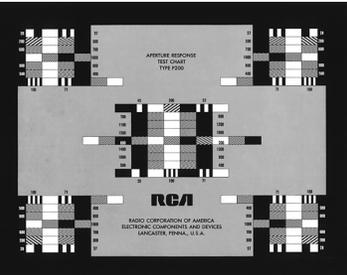
1. This is a Test Chart to evaluate the Horizontal Resolution of Imaging Device.  
In the Chart image, white and black fringes from 0.5MHz to 10MHz(800TV) in image frequency arranged vertically.  
Also you can measure resolution of each corner where 5MHz(400TV) of wedges are formed.
2. The background is white over 80%.

Hyperbolic Zone Plate Chart



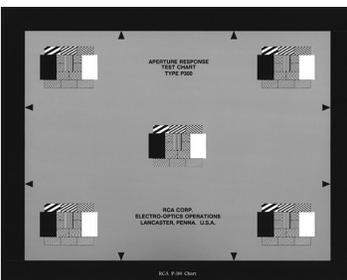
1. The Hyperbolic Zone Plate Chart(HZP) consists of equilateral hyperbolas. Although the relationship between X and Y of HZP is opposite from that of CZP, HZP remains 2D linear-sweep.  
You can evaluate  
(1)Resolution(AR)  
(2)Sampling characteristics  
(3)Dynamic Resolution

RCA P-200 Chart



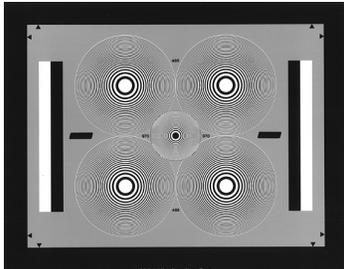
1. Radio Corporation of America(RCA) proposed to define resolution by three parameters, effective amplitude response, asymmetry postulate and MTF index, with measuring the shape of resolution aperture of pick up tube.
2. This Chart consists of sloped fringes to find MTF index 'K' and sloped fringes to find resolution aperture. The sloped fringes to find MTF index 'K' are equivalent to fringes of 28 to 1500TV MTF.

RCA P-300 Chart



1. Radio Corporation of America(RCA) proposed to define resolution by three parameters, effective amplitude response, asymmetry postulate and MTF index, with measuring the shape of resolution aperture of pick up tube.
2. This Chart consists of sloped fringes to find MTF index 'K' and sloped fringes to find resolution aperture. The sloped fringes to find MTF index 'K' are equivalent to fringes of 28 to 1500TV MTF. Also, the sloped fringes to find resolution aperture are equivalent to fringes of 28 to 1500TV inclined at  $\pm 22.5$  degrees,  $\pm 45$ degrees,  $\pm 67.5$ degrees and 90degrees with respect to scan line direction.

BBC Zone Plate Chart



1. The Zone Plate Chart developed by the BBC(UK) is adopted 525TV form and consists of five circular patterns so as to measure the various areas of the screen. The usage to evaluate is the same as that of Circular Zone Plate Chart.



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