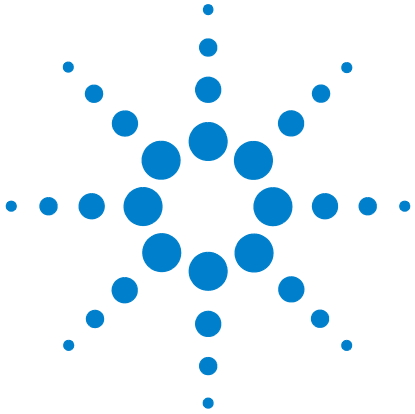

Agilent U8101A
Video Test Patterns

Reference Guide

Agilent Technologies

Notices

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Contents

Video Test Patterns

Introduction

This reference guide describes the video test patterns that are available in the Agilent U8101 display tester and the applications of the test patterns. The video test patterns in this reference guide are organized into two main chapters, TV display test patterns and PC display test patterns. In each chapter, the video test patterns having similar test characteristic are grouped together.

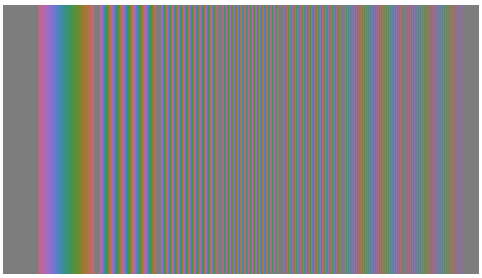
Test Pattern	TV	PC
Burst	multiburst_pbpr multiburst_y sinewave_500khz	mulresolution_bar
Colorbar	colorbar100_rp219_ideal75 colorbar100_rp219_ideal100 colorbar100_rp219_ideali colorbar100_rp219_even75 colorbar100_rp219_even100 colorbar100_rp219_eveni colorbar100_rp219_modified75 colorbar100_rp219_modified100 colorbar100_rp219_modifiedi colorbar100 colorbar100_horizontal colorbar75 colorbar10075	colorbar100 colorbar100_horizontal
Cross	cross_black cross_white crosshatch_black crosshatch_white	cross_black cross_white crosshatch_black crosshatch_white
Pattern	circles9	circles9 halfclock
Pulse	2tpulse_bar	

Test Pattern	TV	PC
Ramp	ramp_red_horizontal ramp_green_horizontal ramp_blue_horizontal ramp_horizontal ramp_horizontal_reverse ramp_modulated_horizontal ramp_vertical ramp_vertical_reverse ramp_wrgb_horizontal ramp_wrgb_vertical	ramp_blue_horizontal ramp_green_horizontal ramp_red_horizontal ramp_horizontal ramp_horizontal_reverse ramp_vertical ramp_vertical_reverse ramp_wrgb_horizontal ramp_wrgb_vertical
Raster	black100 white100 white50 red100 green100 blue100 cyan100 magenta100 yellow100	black100 white100 white50 red100 green100 blue100 cyan100 magenta100 yellow100
Step	grayscale8 step_apl0-100 step5_horizontal step10_horizontal step5_modulated_horizontal step5_vertical step10_vertical	grayscale16 grayscale8 step5_horizontal step5_vertical
Stripe	stripe1_horizontal stripe1_vertical stripe3_vertical	stripe1_horizontal stripe1_vertical stripe3_vertical
Window	checker_line checker5x5 wide_window_white10-100 window_black_white window_line	checker_line checker5x5 wide_window_white10-100 window_black_white window_line

TV Display Test Patterns

Burst

multiburst_pbpr



Description The *multiburst_pbpr* test pattern consists of seven bursts of discrete frequencies from 250/500 kHz up to the respective receiver system bandwidth. The frequency bursts having a peak-to-peak value of 50% are superimposed on a 50% luminance level.

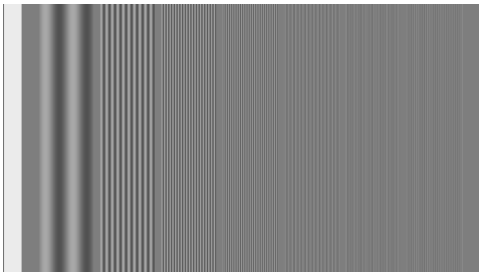
Frequency of each burst for different supported formats are stated in Table 1.

Table 1 Frequency of different burst and supported formats

	Frequency burst (MHz)						
Format	1	2	3	4	5	6	7
NTSC	0.25	0.5	1	1.5	2	2.5	3
PAL	0.25	0.5	1	1.5	2	2.5	3
EDTV	0.5	1	2	3	4	5	6
HDTV	0.5	2.5	5	7.5	10	12.5	15

Application This test pattern is used to measure the amplitude-frequency response of the chrominance channels.

multiburst_y



Description The *multiburst_y* test pattern consists of seven bursts of discrete frequencies from 500 kHz/1 MHz up to the respective receiver system bandwidth. The frequency bursts having a peak-to-peak value of 50% are superimposed on a 50% luminance level. The color bursts are not present.

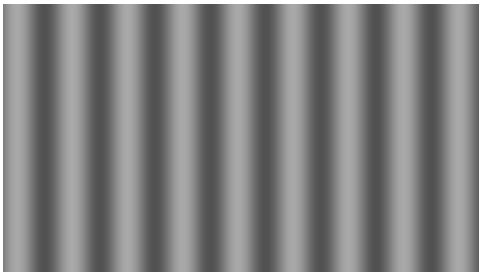
Frequency of each burst for different supported formats are stated in Table 2.

Table 2 Frequency of different burst and supported formats

	Frequency burst (MHz)						
Format	1	2	3	4	5	6	7
NTSC	0.5	1	2	3	4	5	6
PAL	0.5	1	2	3	4	5	6
EDTV	1	2	4	6	8	10	12
HDTV	1	5	10	15	20	25	30

Application This test pattern is used to measure amplitude-frequency response of luminance channel.

sinewave_500khz



Description The *sinewave_500khz* test pattern is a 500 kHz sine wave across the whole active line.

Application This test pattern is used to measure amplitude-frequency response of luminance channel.

Colorbar

colorbar100_rp219_ideal75

Description The *colorbar100_rp219_ideal75* test pattern is an updated version of SMPTE color bars developed by the Japanese Association of Radio Industry and Businesses as ARIB STD-B28 and has been standardized as SMPTE RP 219-2002.

The respective strip width corresponding to the pattern and pattern name is shown in Table 3.

Table 3 Strip width corresponding to pattern and pattern name

<table>
<tr><td>40%</td><td>75%</td><td>Yellow</td><td>Cyan</td><td>Green</td><td>Magenta</td><td>Red</td><td>Blue</td><td>40%</td></tr>
<tr><td rowspan="2">100%
Cyan</td><td colspan="7">Pattern[1]</td><td rowspan="2">100%
Blue</td></tr>
<tr><td colspan="7"></td></tr>
<tr><td>100%
Yellow</td><td colspan="7"></td><td>100%
Red</td></tr>
<tr><td>15%
Gray</td><td colspan="2">0% Black</td><td colspan="2">100% White</td><td>0% Black</td><td>−2%</td><td>0%</td><td>+2%</td><td>0%</td><td>+4%</td><td>0% Black</td><td>15%
Gray</td></tr>
</table>

[1] Refer to the pattern property in Table 4

Application This test pattern is originally designed for HDTV testing with aspect ratio of 16:9; however it can be used for SDTV testing when it is down converted to SDTV format with either 4:3 or 16:9 aspect ratios. The primary function for this test pattern is to facilitate video level control and monitor color adjustment.

Table 4 lists the specification and differences between the test patterns from page 10 to page 13.

Table 4 Specifications and differences between the test patterns

Stripe Width	Pattern	Patern name
Ideal Width	75% White	colorbar100_rp219_ideal75
	100% White	colorbar100_rp219_ideal100
	+ I	colorbar100_rp219_ideali
Even-number width	75% White	colorbar100_rp219_even75
	100% White	colorbar100_rp219_even100
	+ I	colorbar100_rp219_eveni
Modified width	75% White	colorbar100_rp219_modified75
	100% White	colorbar100_rp219_modified100
	+ I	colorbar100_rp219_modifiedi

colorbar100_rp219_ideal100

Description Refer to section colorbar100_rp219_ideal75.

Application Refer to section colorbar100_rp219_ideal75.

colorbar100_rp219_ideali

Description Refer to section colorbar100_rp219_ideal75.

Application Refer to section colorbar100_rp219_ideal75.

colorbar100_rp219_even75

Description Refer to section colorbar100_rp219_ideal75.

Application Refer to section colorbar100_rp219_ideal75.

colorbar100_rp219_even100

Description Refer to section colorbar100_rp219_ideal75.

Application Refer to section colorbar100_rp219_ideal75.

colorbar100_rp219_eveni

Description Refer to section colorbar100_rp219_ideal75.

Application Refer to section colorbar100_rp219_ideal75.

colorbar100_rp219_modified75

Description Refer to section colorbar100_rp219_ideal75.

Application Refer to section colorbar100_rp219_ideal75.

colorbar100_rp219_modified100

Description Refer to section colorbar100_rp219_ideal75.

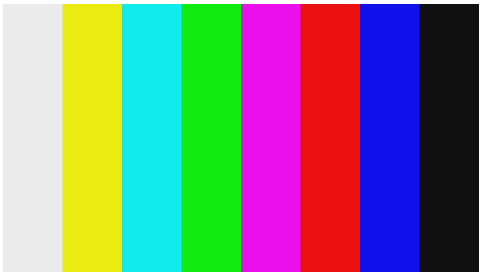
Application Refer to section colorbar100_rp219_ideal75.

colorbar100_rp219_modifiedi

Description Refer to section colorbar100_rp219_ideal75.

Application Refer to section colorbar100_rp219_ideal75.

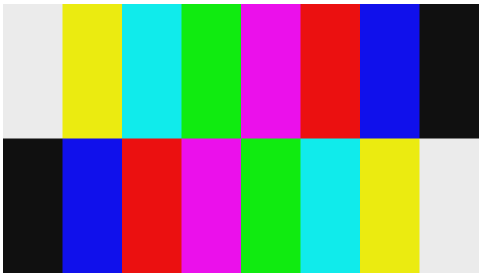
colorbar100



Description The *colorbar100* test pattern consists of full-amplitude (100%) color bars signal with eight vertical color bars arranged in the following order – white, yellow, cyan, green, magenta, red, blue, and black (from left to right). It is a fully saturated color bar signal with maximum signal level of 100% and minimum signal levels of 0%. It is referred as 100/0/100/0.

Application This test pattern is used for amplitude measurement and color adjustment.

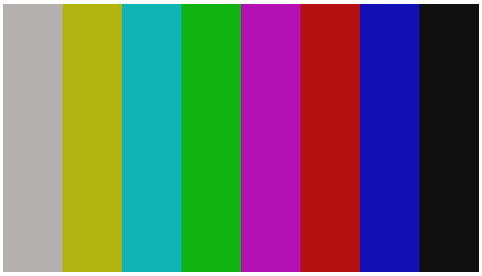
colorbar100_horizontal



Description The *colorbar100_horizonta*l test pattern consists of two rows of eight color bars. The sequence of the color bar is reversed between the top and bottom row. The colors presented in the test pattern are created based on the combinations of the primary colors – white (red, green, and blue), yellow (red and green), cyan (green and blue), green, magenta (red and blue), red, blue, and black (none).

Application This test pattern is used to for amplitude measurement and color adjustment.

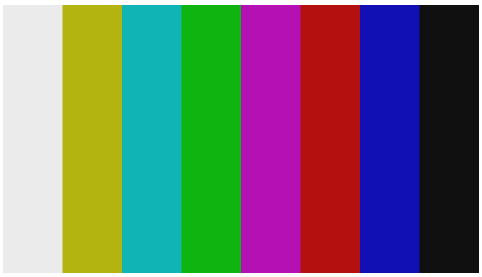
colorbar75



Description The *colorbar75* test pattern is a standard reduced-amplitude (75%) color bars signal with eight vertical color bars arranged in the following order – white, yellow, cyan, green, magenta, red, blue, and black (from left to right). It is a fully saturated color bar signal with maximum signal level of 75% and minimum signal levels of 0%. It is also referred as 75/0/75/0 color bars.

Application This test pattern is used to for amplitude measurement and color adjustment.

colorbar10075



Description The *colorbar10075* test pattern is a variance of the standard reduced-amplitude (75%) test pattern *colorbar75*. This signal is identical to the regular 75% color bar signals except the luminance bar has amplitude of 100%. It is also referred as 100/0/75/0 color bars.

Application This test pattern is used to for amplitude measurement and color adjustment.

Cross

cross_black

Description The *cross_black* test pattern consists of a black cross sign located at the center of the white background.

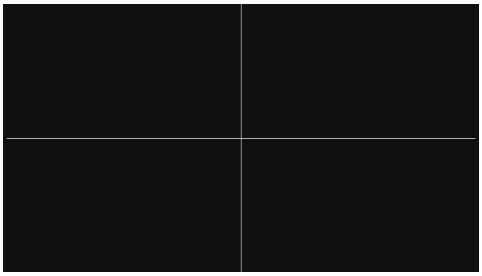
The width of the cross line at the center of the test pattern for various TV formats is listed in the table below.

Table 5 Width of the cross line at the center of the test pattern for various formats

Format	Half-amplitude duration, HAD (ns)
NTSC	250
PAL	200
EDTV	87
HDTV (Interlace)	44
HDTV (Progressive)	22

Application The test pattern is used for raster alignment to check the screen center and also the convergence capability of the display.

cross_white

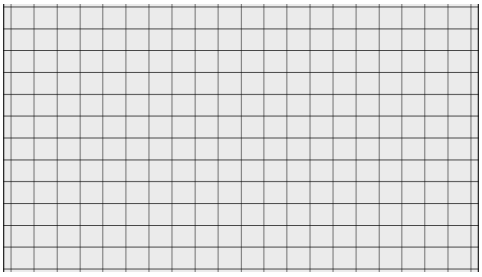


Description The *cross_white* test pattern consists of a white cross sign located at the center of the black background.

The width of the cross line at the center of the test pattern for various TV formats is listed in the Table 5.

Application The test pattern is used for raster alignment to check the screen center and also the convergence capability of the display.

crosshatch_black



Description The *crosshatch_black* test pattern consists of a black cross-hatch on a white background. The cross-hatch pattern consists of equidistant horizontal and vertical lines forming rectangular windows throughout the whole display. The test pattern has 17 horizontal x 13 vertical lines for standard format (aspect ratio of 4:3) and has – 21 horizontal x 13 vertical lines for wide format (aspect ratio of 16:9).

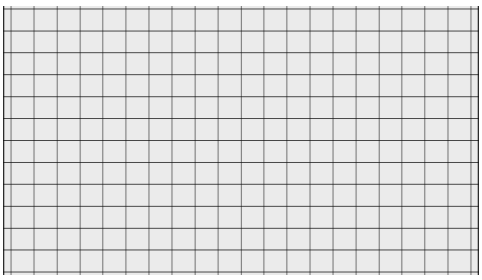
The width of the lines at the half amplitude for various formats is listed in the Table 6 on the next page.

Table 6 Width of the lines at the half amplitude for varous formats

Format	Half-amplitude duration, HAD (ns)
NTSC	250
PAL	200
EDTV	87
HDTV (Interlace)	44
HDTV (Progressive)	22

Application This test pattern is used to check the convergence error and geometrical distortion of TV receiver and monitor. When there is a convergence error, the lines displayed are no longer white but will display a variance of colors made up of the three primary (red, green, blue) color. In case of geometrical distortion, the squares do not have the same size over the whole screen and are not quadratic.

crosshatch_white

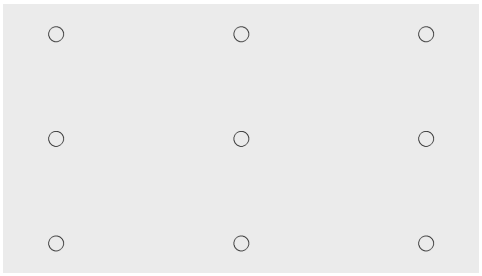


Description The *crosshatch_white* test pattern consists of a white-hatch on a black background.The cross-hatch pattern consists of equidistant horizontal and vertical lines forming rectangular windows throughout the whole display. The test pattern has 17 horizontal x 13 vertical lines for standard format (aspect ratio of 4:3) and has — 21 horizontal x 13 vertical lines for wide format (aspect ratio of 16:9).
The width of the lines at the half amplitude for various formats is listed in the Table 6.

Application This test pattern is used to check the convergence error and geometrical distortion of TV receiver and monitor. When there is a convergence error, the lines displayed are no longer white but will display a variance of colors made up of the three primary (red, green, blue) color. In case of geometrical distortion, the squares do not have the same size over the whole screen and are not quadratic.

Pattern

circles9



Description The *circle9* test pattern consists of nine small circles distributed equally across the whole frame.

Application This test pattern is used to measure the luminance difference between the central to the edge of the screen.

Pulse

2tpulse_bar

Description The *2tpulse_bar* test pattern consists of a pulse and a white bar signal. The pulse width duration at the half amplitude for various formats is shown in the Table 7.

Table 7 Pulse width duration at the half amplitude for various formats

Format	Half-amplitude duration, HAD (ns)
NTSC	250
PAL	200
EDTV	87
HDTV (Interlace)	44
HDTV (Progressive)	22

Application This test pattern is used to measure linear waveform response of the luminance channel.

Ramp

ramp_red_horizontal

Description The *ramp_red_horizontal* test pattern ramps the red chrominance content from zero on the left to full scale on the right in linear order.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. The pattern should project a smooth increase in color saturation without any coloration.

ramp_green_horizontal

Description The *ramp_green_horizontal* test pattern ramps the green chrominance content from zero on the left to full scale on the right in linear order.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. The pattern should project a smooth increase in color saturation without any coloration.

ramp_blue_horizontal

Description The *ramp_blue_horizontal* test pattern ramps the blue chrominance content from zero on the left to full scale on the right in linear order.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. The pattern should project a smooth increase in color saturation without any coloration.

ramp_horizontal

Description The *ramp_horizontal* test pattern ramps the luminance content from 0% level on the left to 100% level on the right of the frame in linear order.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. It can be used to measure signal to noise (S/N) ratio over the whole level range or to measure quantization noise in A/D and D/A converter systems.

ramp_horizontal_reverse

Description The *ramp_horizontal_reverse* test pattern ramps the luminance content from 100% level on the left to 0% on the right of the frame in linear order.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. It can be used to measure signal to noise (S/N) ratio over the whole level range or to measure quantization noise in A/D and D/A converter systems.

ramp_modulated_horizontal

Description The *ramp_modulated_horizontal* test pattern is a voltage ramp from 0% level to 100% level of the peak white value, upon which a subcarrier is superimposed on it.

Application This test pattern is generally used in measuring differential gain (saturation) and differential phase (hue) errors. Such errors arise when a device under test processed output depends on the luminance (brightness) level. When differential gain is present, colors will change in saturation as the picture brightness changes (the error in the amplitude of the color signal due to a change in luminance level). When differential phase is present, colors will change in hue as the picture brightness change (the error in the phase amplitude of the color signal due to a change in luminance level). In short, it is used to measure the nonlinear distortions (differential gain and differential phase).

ramp_vertical

Description The *ramp_vertical* test pattern ramps the luminance content from 0% level on the top to 100% level on bottom of the frame in linear order.

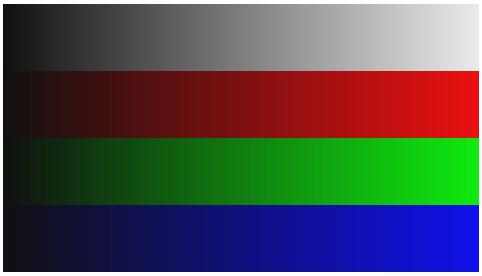
Application This test pattern is used to check line time nonlinearity (differential gain) of the display. It can be used to measure signal to noise ratio (S/N) over the whole level range or to measure quantization noise in A/D and D/A converter systems.

ramp_vertical_reverse

Description The *ramp_vertical_reverse* test pattern ramps the luminance content from 100% level on the top to 0% level on bottom of the frame.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. It can be used to measure signal to noise (S/N) ratio over the whole level range or to measure quantization noise in A/D and D/A converter systems.

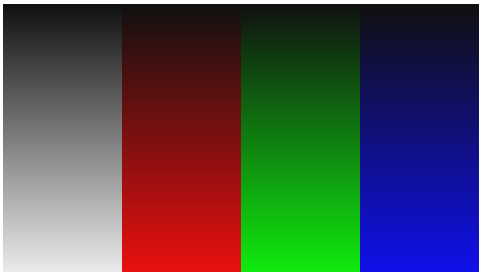
ramp_wrgb_horizontal



Description The *ramp_wrgb_horizontal* test pattern consists of four rows of luminance and chrominance ramps (white, red, green and blue). The ramps start from 0% level on the left to 100% level on the right of the frame in linear scale.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. It can be used to measure signal to noise (S/N) ratio over the whole level range or to measure quantization noise in A/D and D/A converter systems.

ramp_wrgb_vertical



Description The *ramp_wrgb_vertical* test pattern consists of four rows of luminance and chrominance ramps (white, red, green and blue). The ramps start from 0% level on the top to 100% level on the bottom of the frame in linear scale.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. It can be used to measure signal to noise (S/N) ratio over the whole level range or to measure quantization noise in A/D and D/A converter systems.

Raster

black100

Description The *black100* test pattern (also known as black field or full field raster) is a pattern without chrominance content (50% and 100% field).

Application This test pattern without any chrominance content (50% and 100% field) is used to assess the ability of a device under test to pass different video levels. This test pattern can be used in conjunction with digital oscilloscope to help identify distortions which occurs over longer time periods.

white100

Description The *white100* test pattern (also known as white field or full field raster) is a signal without chrominance content (50% and 100% field).

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

white50

Description The *white50* test pattern (also known as gray field or full field raster) is a signal without chrominance content (50% and 100% Field).

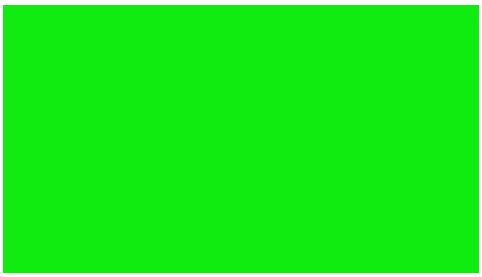
Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

red100

Description The *red100* test pattern (also known as red purity) is generated from 100% level of red component.

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display. Besides, this test pattern is often used to help visually detect the presence of noise introduced by a monitor as our eye is extremely sensitive to the presence of such noise on a red field.

green100



Description The *green100* test pattern (also known as green purity) is generated from 100% level of green component.

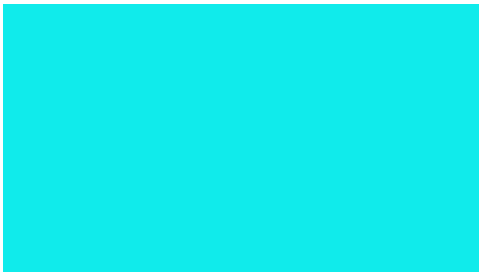
Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

blue100

Description The *blue100* test pattern (also known as blue purity) is generated from 100% level of blue component.

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

cyan100



Description The *cyan100* test pattern (also known as cyan purity) is generated from 100% level of blue and green components.

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

magenta100

Description The *magenta100* test pattern (also known as magenta purity) is generated from 100% level of red and green components.

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

yellow100

Description The *yellow100* test pattern (also known as yellow purity) is generated from 100% level of red and green components.

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

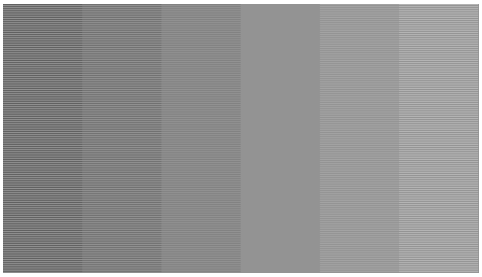
Step

grayscale8

Description The *grayscale8* test pattern consists of two row of grayscale. The luminance level for the first grayscale (top) is 0%, 5%, 10%, and 15% and second row (bottom) is 85%, 90%, 95%, and 100%. The background of the pattern is set at a 50% grey level.

Application This test pattern is used for adjustment of display output signal level.

step_apl0-100



Description The *step_apl0- 100* test pattern (total 11 patterns) consists of the five staircase signals of one line and flat level signal of four lines. The average picture level of the total signal can be adjusted in a range of 10% to 90% by varying the amplitude of the flat level signal from 0% to 100%.

Application This test pattern is used to measure line-time non-linearity of the luminance channel.

step5_horizontal

Description The *step5_horizontal* test pattern is a staircase test pattern consists of six grey-bars. It starts at 0% on the left and increasing to the right in equal steps (20% per step) to reach 100% of the peak white value on the right.

Application This five steps test pattern is used to help detect if a device under test can process luminance consistently across the entire range of amplitude. Typical luminance nonlinear distortion will result in a loss of grey-scale distinctions, which means that details are lost. In short, it is used for nonlinear distortion (luminance nonlinearity error) testing.

step10_horizontal

Description The *step10_horizontal* test pattern is a staircase test signal consists of 11 grey-bars. It starts at 0% on the left and increasing to the right in equal steps (10% per step) to reach 100% of the peak white value on the right.

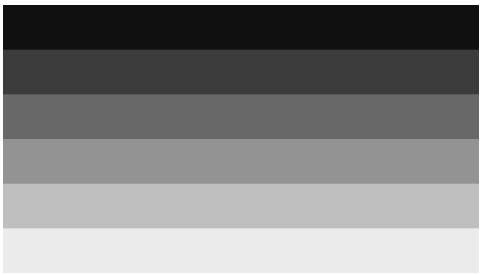
Application This 11 steps test pattern is used to help detect if a device under test can process luminance consistently across the entire range of amplitude. Typical luminance nonlinear distortion will result in a loss of grey-scale distinctions, which means that details are lost. In short, it is used for nonlinear distortion (luminance nonlinearity error) testing.

step5_modulated_horizontal

Description The *step5_modulated_horizontal* test pattern is identical to the five steps staircase. The modulated staircase tests pattern consists of burst plus subcarrier modulated onto each step of the staircase luminance signal.

Application This test pattern is generally used in measurement of differential gain (saturation) and differential phase (hue) errors. Such errors arise when a device under test processed output depends on the luminance (brightness) level. When differential gain is present, colors will change in saturation as the picture brightness changes (the error in the amplitude of the color signal due to a change in luminance level). When differential phase is present, colors will change in hue as the picture brightness change (the error in the phase amplitude of the color signal due to a change in luminance level). In short, it is used to measure the nonlinear distortions (differential gain and differential phase).

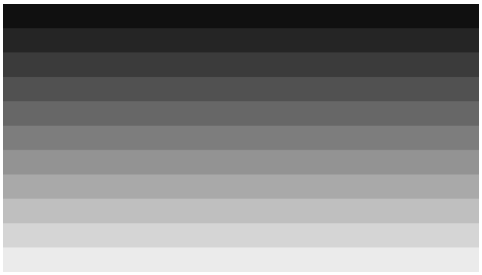
step5_vertical



Description The *step5_vertical* test pattern above is similar to *step5_horizontal* staircase but in vertical direction.

Application This test pattern is used to help detect if a device under test can process luminance consistently across the entire range of amplitude. Typical luminance nonlinear distortion will result in a loss of grey-scale distinctions, which means that details are lost. In short, it is used for nonlinear distortion (luminance nonlinearity error) testing.

step10_vertical

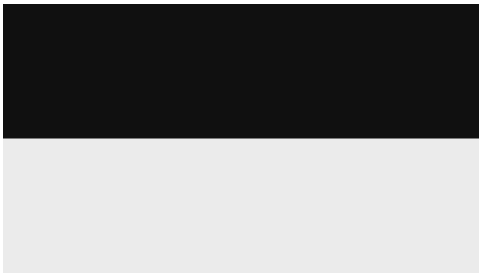


Description The *step10_vertica*l test pattern is similar to *step10_horizontal* staircase but in vertical direction.

Application This test pattern is used to help detect if a device under test can process luminance consistently across the entire range of amplitude. Typical luminance nonlinear distortion will result in a loss of grey-scale distinctions, which means that details are lost. In short, it is used for nonlinear distortion (luminance nonlinearity error) testing.

Stripe

stripe1_horizontal



Description The *stripe1_horizontal* test pattern has half of the region covered with white and another half covered with black in horizontal direction.

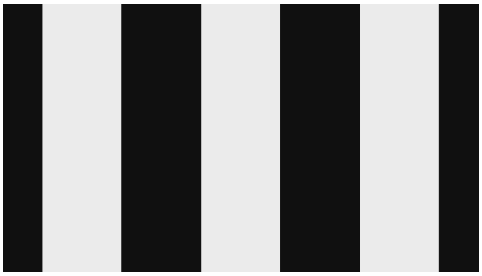
Application This test pattern is suitable for setting the output signal level and the luminance level of white.

stripe1_vertical

Description The *strip1_vertical* test pattern has half of the region covered with white and another half region covered with black in vertical direction.

Application This test pattern is suitable for setting the output signal level and the luminance level of white.

stripe3_vertical



Description The *stripe3_vertical* test pattern produces three equidistant vertical white bars on a black background. The width of each bar is 1/6 times the nominal horizontal width of the picture.

Application This test pattern is suitable for setting the output signal level and the luminance level of white.

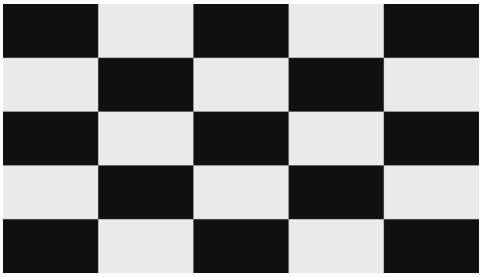
Window

checker_line

Description The *checker_line* test pattern consists of checker pattern on the left and right sides and a vertical line in the middle. The background of the pattern is set at a 25% grey level. The checker consists of black and white square blacks with a width of 1/9 the picture height.

Application This test pattern is used to check the phase error of the device under test. This is due to the fact that the performance of phase and line synchronization of some display devices may be influenced by the picture content depending on the signals at the very end of a line.

checker5x5



Description The *checker5x5* test pattern active video area is equally divided into a 5x5 checkerboard of black and white boxes.

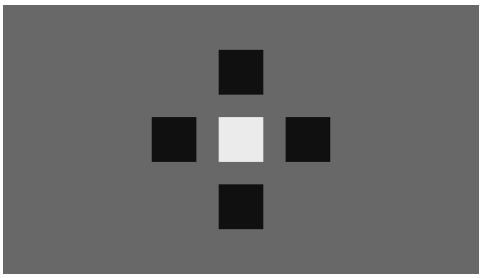
Application This test pattern is used to measure the contrast ratio of TV and monitor as well as geometrical distortion.

wide_window_white10-100

Description The *wide_window_white10- 100* test pattern (total 10 patterns) produces a white rectangular window on the black background. The white window can have luminance level range from 10% to 100%.

Application This test pattern is used to measure contrast of displays.

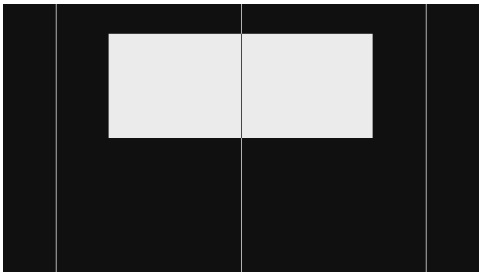
window_black_white



Description The *window_black_white* test pattern consists of a 100% white rectangular window and four 0% black rectangular windows on the 40% grey background. The size of the windows is the same for both white and black windows.

Application This test pattern is used to measure contrast ratio of displays.

window_line



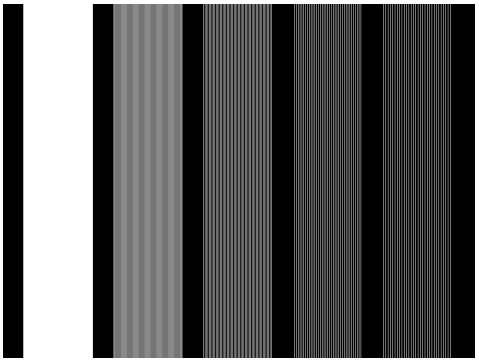
Description The *window_line* test pattern consists of three vertical white lines placed at the center and both sides of the picture and a window placed at the upper central part. The background is set at black level.

Application This test pattern is used to measure the influence of the high voltage to the picture width and phase in the horizontal direction due to variation of the CRT beam current.

PC Display Test Patterns

Burst

mulresolution_bar

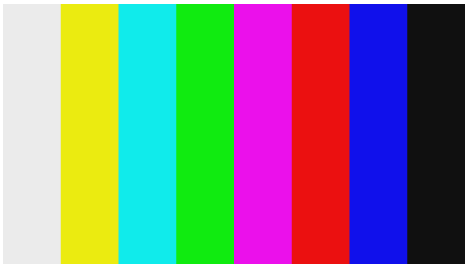


Description The *mulresolution_bar* test pattern consists of one white bar plus four resolution bars. The resolution of the bar starts with one pixel white and one pixel black, then the second bar is two pixels black with one pixel white, the third bar is three pixels black with one pixel white, and the last one is four pixels black with one pixel white.

Application The signal is used visually for resolution response where each of the line must be clearly displayed on the display.

Colorbar

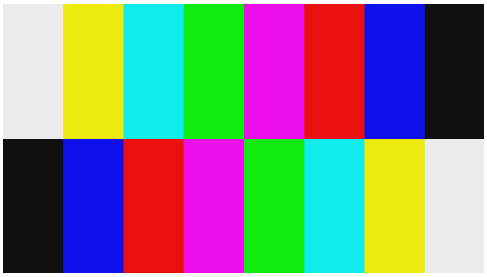
colorbar100



Description The *colorbar100* test pattern consists of full-amplitude (100%) color bars signal with eight vertical color bars arranged in the following order – white, yellow, cyan, green, magenta, red, blue, and black (from left to right). It is a fully saturated color bar signal with maximum signal level of 100% and minimum signal levels of 0%. It is called 100/0/100/0.

Application This test pattern is used for amplitude measurement and color adjustment.

colorbar100_horizontal



Description The *colorbar100_horizontal* test pattern consists of two rows of eight color bars. The sequence of the color bar is reversed between the top and bottom row. The colors presented in the test pattern are created based on the combinations of the primary colors: white (red, green, and blue), yellow (red and green), cyan (green and blue), green, magenta (red and blue), red, blue, and black (none).

Application This test pattern is used to for amplitude measurement and color adjustment.

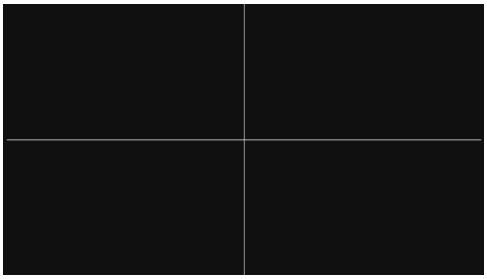
Cross

cross_black

Description The *cross_black* test pattern consists of a white cross sign located at the center of the pattern.

Application The test pattern is used for raster alignment to check the screen center and convergence.

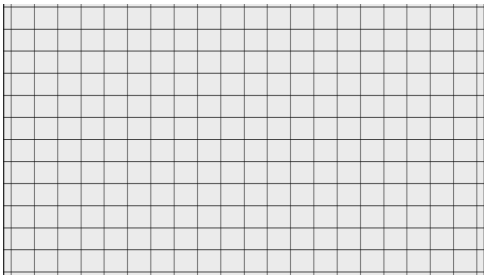
cross_white



Description The *cross_white* test pattern consists of a white cross sign located at the center of black background.

Application The test pattern is used for raster alignment to check the screen center and convergence.

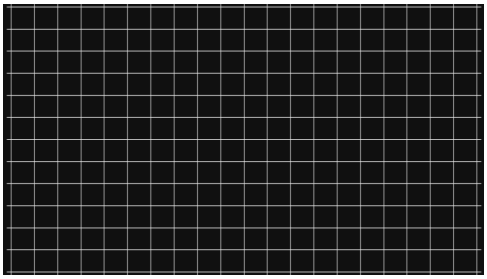
crosshatch_black



Description The *crosshatch_black* test pattern consists of a black cross-hatch on a white background. The cross-hatch pattern consists of equidistant horizontal and vertical lines forming rectangular windows throughout the whole display. The test pattern has 19 horizontal x 13 vertical lines.

Application This test pattern is used to check the convergence error and geometrical distortion of display device. When there is a convergence error, the lines displayed are no longer white but will display a variance of colors made up of the three primary (red, green, and blue) colors. In case of geometrical distortion, the squares do not have the same size over the whole screen and are not quadratic.

crosshatch_white

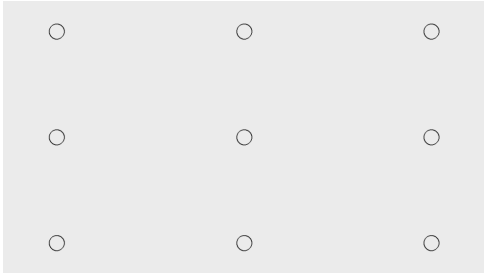


Description The *crosshatch_white* test pattern consists of a white cross-hatch on a black background. The cross-hatch pattern consists of equidistant horizontal and vertical lines forming rectangular windows throughout the whole display. The test pattern has 19 horizontal x 13 vertical lines.

Application This test pattern is used to check the convergence error and geometrical distortion of display device. When there is a convergence error, the lines displayed are no longer white but will display a variance of colors made up of the three primary (red, green, and blue) colors. In case of geometrical distortion, the squares do not have the same size over the whole screen and are not quadratic.

Pattern

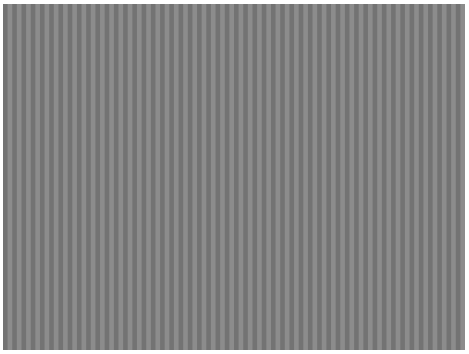
circles9



Description The *circle9* test pattern consists of nine small circles distributed equally across the whole frame.

Application This test pattern is used to measure the luminance difference between the central to the edge of the screen.

halfclock



Description This *halfclock* test pattern will produce a signal frequency at half of the pixel clock rate.

Application The test pattern is used specially for DVI interface for the rise and fall time measurement.

Ramp

ramp_blue_horizontal

Description The *ramp_blue_horizontal* test pattern ramps the blue chrominance content from zero on the left to full scale on the right in linear order.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. The pattern should project a smooth increase in color saturation without any coloration.

ramp_green_horizontal

Description The *ramp_green_horizontal* test pattern ramps the green chrominance content from zero on the left to full scale on the right in linear order.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. The pattern should project a smooth increase in color saturation without any coloration.

ramp_red_horizontal

Description The *ramp_red_horizontal* test pattern ramps the red chrominance content from zero on the left to full scale on the right in linear order.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. The pattern should project a smooth increase in color saturation without any coloration.

ramp_horizontal

Description The *ramp_horizontal* test pattern ramps the luminance content from 0% level on the left to 100% level on the right of the frame in linear order.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. It can be used to measure signal to noise (S/N) ratio over the whole level range or to measure quantization noise in A/D and D/A converter systems.

ramp_horizontal_reverse

Description The *ramp_horizontal_reverse* test pattern ramps the luminance content from 100% level on the left to 0% on the right of the frame in linear order.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. It can be used to measure S/N ratio over the whole level range or to measure quantization noise in A/D and D/A converter systems.

ramp_vertical

Description The *ramp_vertical* test pattern ramps the luminance content from 0% level on the top to 100% level on bottom of the frame in linear order.

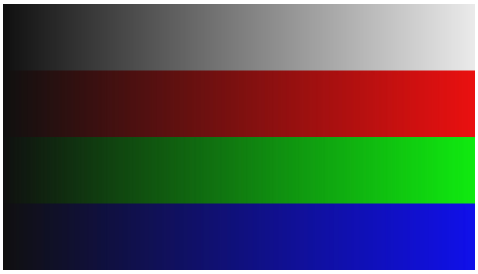
Application This test pattern is used to check line time nonlinearity (differential gain) of the display. It can be used to measure signal to noise ratio (S/N) over the whole level range or to measure quantization noise in A/D and D/A converter systems.

ramp_vertical_reverse

Description The *ramp_vertical_reverse* test pattern ramps the luminance content from 100% level on the top to 0% level on bottom of the frame.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. It can be used to measure signal to noise (S/N) ratio over the whole level range or to measure quantization noise in A/D and D/A converter systems.

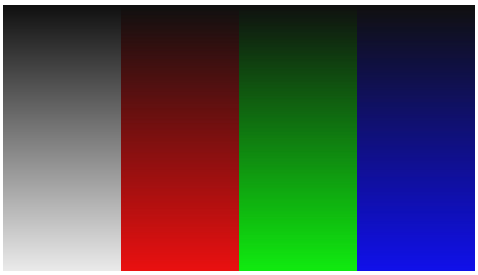
ramp_wrgb_horizontal



Description The *ramp_wrgb_horizontal* test pattern consists of four rows of luminance and chrominance ramps (white, red, green, and blue). The ramps start from 0% level on the left to 100% level on the right of the frame in linear scale.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. It can be used to measure signal to noise (S/N) ratio over the whole level range or to measure quantization noise in A/D and D/A converter systems.

ramp_wrgb_vertical



Description The *ramp_wrgb_vertical* test pattern consists of 4 rows of luminance and chrominance ramps (white, red, green, and blue). The ramps start from 0% level on the top to 100% level on the bottom of the frame in linear scale.

Application This test pattern is used to check line time nonlinearity (differential gain) of the display. It can be used to measure signal to noise (S/N) ratio over the whole level range or to measure quantization noise in A/D and D/A converter systems.

Raster

black100

Description The *black100* test pattern (also known as black field or full field raster) is a pattern without chrominance content (50% and 100% field).

Application This test pattern without any chrominance content (50% and 100% field) is used to assess the ability of a device under test to pass different video levels. This test pattern can be used in conjunction with digital oscilloscope to help identify distortions which occurs over longer time periods.

white100

Description The *white100* test pattern (also known as white field or full field raster) is a signal without chrominance content (50% and 100% field).

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

white50

Description The *white50* test pattern (also known as gray field or full field raster) is a signal without chrominance content (50% and 100% field).

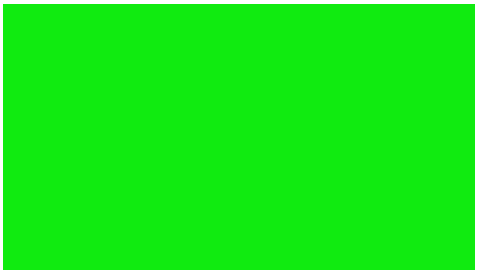
Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

red100

Description The *red100* test pattern (also known as red purity) is generated from 100% level of red component.

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display. Besides, this test pattern is often used to help visually detect the presence of noise introduced by a monitor as our eye is extremely sensitive to the presence of such noise on a red field.

green100



Description The *green100* test pattern (also known as green purity) is generated from 100% level of green component.

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

blue100

Description The *blue100* test pattern (also known as blue purity) is generated from 100% level of blue component.

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

cyan100

Description The *cyan100* test pattern (also known as cyan purity) is generated from 100% level of blue and green components.

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

magenta100

Description The *magenta100* test pattern (also known as magenta purity) is generated from 100% level of red and green components.

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

yellow100

Description The *yellow100* test pattern (also known as yellow purity) is generated from 100% level of red and green components.

Application This test pattern is used to assess the ability of a device under test in handling the individual primary color video signal components. Typically test pattern is displayed on a monitor while adjustment is made to the yoke magnet of the monitor tube to ensure proper display.

Step

grayscale16

Description The *grayscale16* test pattern consists of two rows of 16 steps staircase test signal and a row of 0% level black. The upper row starts from 0% grey scale and increasing to 100% white on the right in equal increment step. The lower row is in reverse order comparing to upper row.

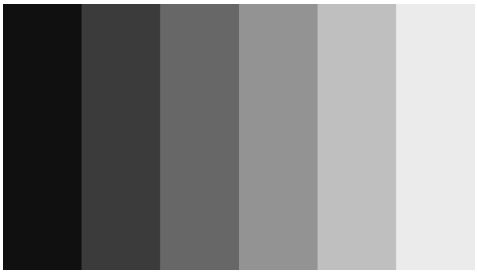
Application This test pattern is used to detect if a device under test can process luminance consistently across the entire range of amplitude. Typical luminance nonlinear distortion will result in a loss of grey-scale distinctions, which meant that details are lost. In short, it is used for nonlinear distortion (luminance nonlinearity error).

grayscale8

Description The *grayscale8* test pattern consists of two rows of grayscale. The luminance level for the first grayscale (top) is 0%, 5%, 10% and 15% and second row (bottom) is 85%, 90%, 95% and 100%. The background of the pattern is set at a 50% grey level.

Application This test pattern is used for adjustment of display output signal level.

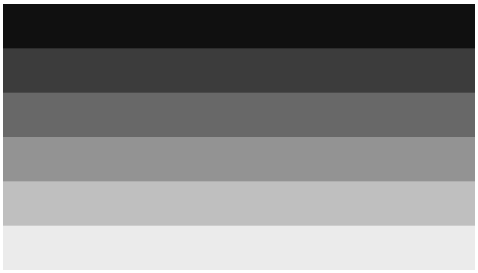
step5_horizontal



Description The *step5_horizontal* test pattern is a staircase test pattern consists of six grey-bars. It starts at 0% on the left and increasing to the right in equal steps (20% per step) to reach 100% of the peak white value on the right.

Application This five steps test pattern is used to help detect if a device under test can process luminance consistently across the entire range of amplitude. Typical luminance nonlinear distortion will result in a loss of grey-scale distinctions, which means that details are lost. n short, it is used for nonlinear distortion (luminance nonlinearity error) testing.

step5_vertical

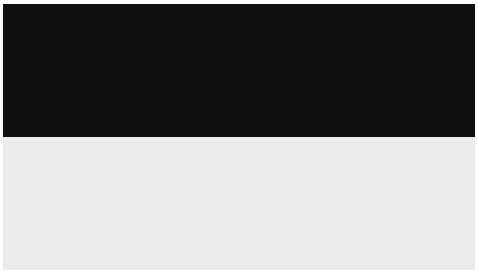


Description *The step5_vertical* test pattern is similar to *step5_horizontal* staircase but in vertical direction.

Application This test pattern is used to help detect if a device under test can process luminance consistently across the entire range of amplitude. Typical luminance nonlinear distortion will result in a loss of grey-scale distinctions, which means that details are lost. In short, it is used for nonlinear distortion (luminance nonlinearity error) testing.

Stripe

stripe1_horizontal



Description The *stripe1_horizontal* test pattern has half of the region covered with white and another half region covered with black in horizontal direction.

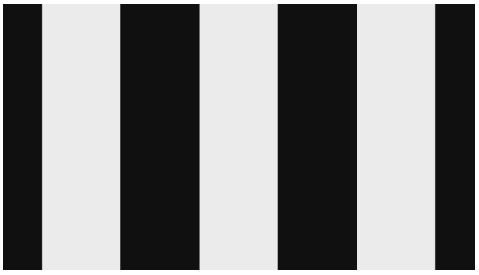
Application This test pattern is suitable for setting the output signal level and the luminance level of white.

stripe1_vertical

Description The *strip1_vertical* test pattern has half of the region covered with white and another half region covered with black in vertical direction.

Application This test pattern is suitable for setting the output signal level and the luminance level of white.

stripe3_vertical



Description The *stripe3_vertical* test pattern produces three equidistant vertical white bars on a black background. The width of each bar is 1/6 times the nominal horizontal width of the picture.

Application This test pattern is suitable for setting the output signal level and the luminance level of white.

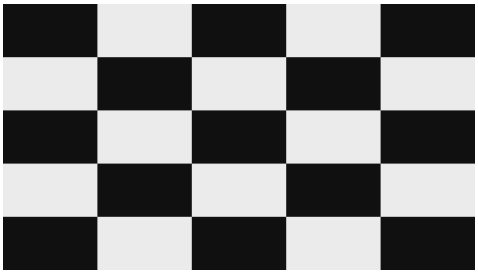
Window

checker_line

Description The *checker_line* test pattern consists of checker pattern on the left and right sides and a vertical line in the middle. The background of the pattern is set at a 25% grey level. The checker consists of black and white square blacks with a width of 1/9 the picture height.

Application This test pattern is used to check the phase error of the device under test. This is due to the fact that the performance of phase and line synchronization of some display devices may be influenced by the picture content depending on the signals at the very end of a line.

checker5x5



Description The *checker5x5* test pattern active video area is equally divided into a 5x5 checkerboard of black and white boxes.

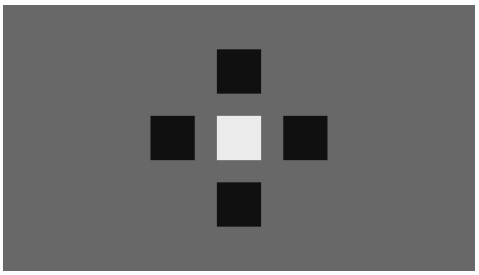
Application This test pattern is used to measure the contrast ratio of TV and monitor as well as geometrical distortion.

wide_window_white10-100

Description The *wide_window_white10- 100* test pattern (total 10 patterns) produces a white rectangular window on the black background. The white window can have luminance level range from 10% to 100%.

Application This test pattern is used to measure contrast of displays.

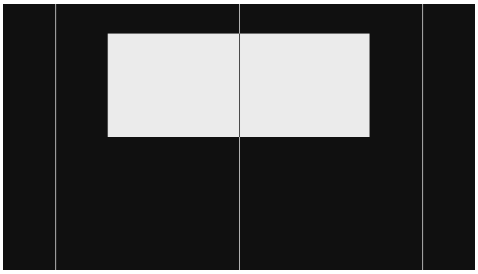
window_black_white



Description The *window_black_white* test pattern consists of a 100% white rectangular window and four 0% black rectangular windows on the 40% grey background. The size of the windows is the same for both white and black windows.

Application This test pattern is used to measure contrast ratio of displays.

window_line



Description The *window_line* test pattern consists of three vertical white lines placed at the center and both sides of the picture and a window placed at the upper central part. The background is set at black level.

Application This test pattern is used to measure the influence of the high voltage to the picture width and phase in the horizontal direction due to variation of the CRT beam current.

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