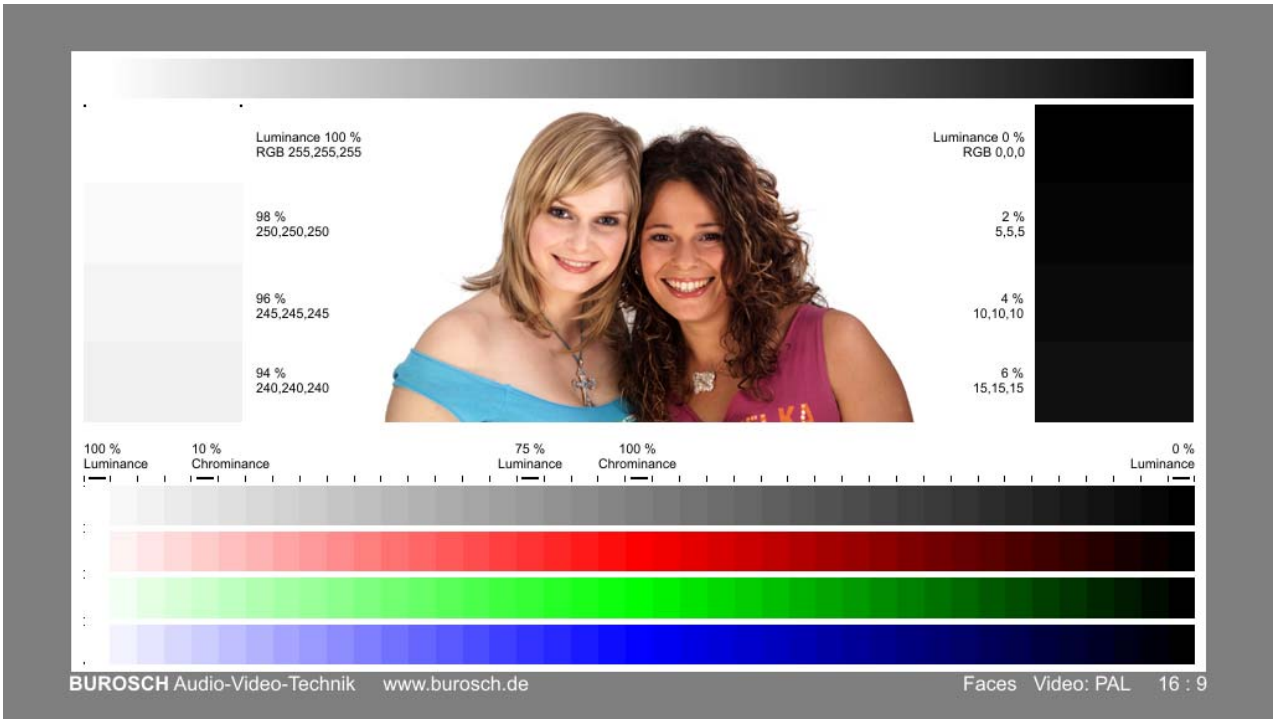
Faces

Reference Test Pattern



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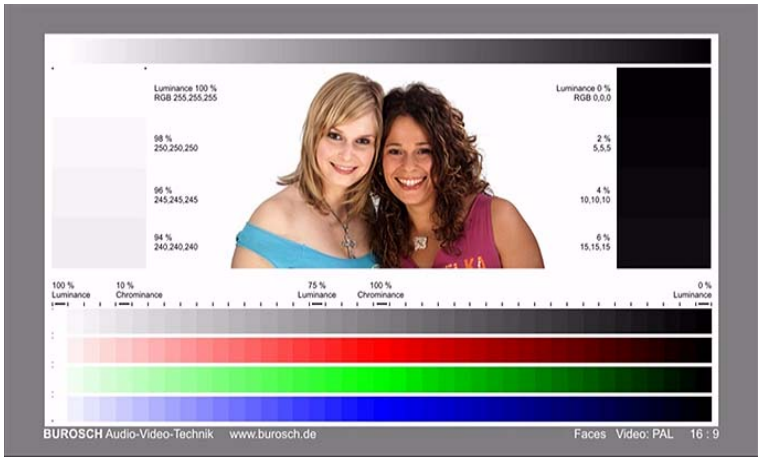
Test Pattern: Faces



The Faces test pattern gives a lot of possibilities for image calibration and quality evaluation without measurement devices. Especially for all what has to do with correct brightness reproduction. The test pattern elements are optimized for accurate reading precision and simple interpretability.

The following aspects of the playback quality you can perceive in the Faces test pattern or modify it by its help:

Please check before using the test patterns the signal path and the light conditions so that all conditions come up to the following application.

If you modify some parameters never forget to save the options. Please note the options of your image sender (e.g. DVD Player). Also try to get by with as few as possible of so-called image-improving features which distort the original image more than improve it.

Test Pattern: Faces

Subsequent you find the description of the individual image elements and parallel the effect of possible image failures on a real image „Jasmin and Sabrina“.

In addition to many abstract technical test images this real image shows the typical problems and its effect on real, complex images. To clarifiy these problems there are heightened cut-outs of this image. On this page you see the image in correct exposition.

All images are evaluated based on the screen evaluation standard ITU-R BT500-11 and shown as stars. This should give you an intuition for the heaviness of the shown difference to the original image:

Excellent	Good	Fair	Poor	Bad
★★★★★	★★★★	★★★	★★	★
image is equivalent to original	No visible differences to original	Visible, uncritical differences to original	Highly visible differences to original	Image is not equal to original, indicate a loss of information

A very good playback string with applicable connections like HDMI or YUV component video should reach a quality of five stars, at worst four stars. Good digital sources over middle connections like scart-RGB or S-video shouldn't reach less than 3 stars on a good display, doesn't matter which technology – CRT, LCD, Plasma, DLP or projection. Correct wired, labeled devices should never fall to two or one star niveau at right adjustement. This is typically an unmistakable sign that there is a problem in the signal-string. It could be the configuration, calibration or other wrong adjustment or simply a defect. This needs to be checked once more.

Test Pattern: Faces

Element-description

Real test pattern

The real test pattern shows two women. One fair on the left and one with dark teint on the right. At correct image display the difference is clearly visible. The correct exposed photo doesn't show bright or dark parts without detail drawings. The image acts well balanced, differentiated, contour- and detail focussed.

IMPORTANT: Please note that the background of the Real test pattern must be displayed neutrally white without any colorings or fade-outs. Only when the whole surface of the background is neutral white, a perfect exposition is possible.

Correct exposition:

- The two women are clearly distinguishable from each other because of the skin types „fair“ and „dark“.
- Lights and shadows are detailed
- The portrait is exposed well-balanced
- The portrait is contour- and detail focussed
- The white background of the test pattern doesn't show any coloring

Typical faults:

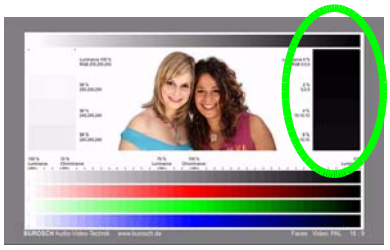
- The brightest parts, lights (forehead & shoulder on the left and teeth on the right) sets a white surface – white value (contrast) adjusted too high.
- The darkest parts, shadows (hairs on the right) are undifferentiated black – black value (brightness) adjusted too low
- The darkest parts of the shadows are dark gray – black value (brightness) adjusted too high

Test Pattern: Faces

- Fine details (hairs, lashes, teeth) are soft contoured instead of sharp – focus control adjusted too low or lacking band width
- Fine details (skin pores) and contoures seems over-focussed – focus control adjusted too high or ringing in the signal path.

Test Pattern: Faces

Element-description



Gray scales – fine adjustment black value

The assigned area shows 4 dark gray fields with only 2% brightness nuances in relation to white. It begins with 0% white (black) and goes to 6% white (dark gray).
The RGB values comply with the scale of a computer exposition. At a correct exposition the fields are shown from complete black until dark gray in same nuances.
So you can say it is necessary for fine adjustment of the black value (brightness control).

Correct exposition:

- The top field is perfect black
- all 4 fields are clearly separated to each other and graded the same
- The caption of the fields is sharp and clearly readable

Typical faults:

- The darkest fields are dark gray - black value (brightness) adjusted too high (fig.1)
- The darkest fields are not clearly distinguishable from each other – black value (brightness) adjusted too low (fig.2)
- The darkest fields are gray but for all that not distinguishable – gamma curv too flat or understeering in the signal path.

Test Pattern: Faces

Gray scales – fine adjustment black value

Typical faults:

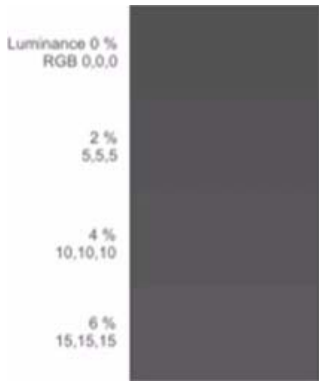


fig.1: Brightness adjusted too high

The quality of this image is „poor“ ★★

In case of too high adjusted brightness control (black-value) the darkest parts in the image brighten up. So the image becomes less depth and contrast.

Test Pattern: Faces

Gray scales – fine adjustment black value

Typical faults:

fig.2: Brightness adjusted too low

The quality of this image is „bad“ ★

IIn case of too low adjusted brightness control the dark image details disappear. So, this details are only shown as black area.

Test Pattern: Faces

Element-description

Gray scales – fine adjustment white value

The assigned area shows 4 light gray fields with only 2% brightness nuances in relation to white. It begins with 100% white and goes to 94% white (light gray).
The RGB values comply with the scale of a computer exposition. At a correct exposition the fields are shown from complete black until dark gray in same nuances.
So you can say it is necessary for fine adjustment of the white value (contrast control).

Correct exposition:

- The top field is maximum neutral white like the test pattern background (two points are marking the top field outline)
- all 4 fields are clearly separated to each other and same graded
- The caption of the fields is sharp and clearly readable.

Typical faults:

- The brightest fields are light gray and not distinguishable from each other – gamma curv too flat or overriding in the signal path (fig.1)
- The brightest fields are not distinguishable – white value (contrast) too high (fig.2)
- The brightest fields are all white – white value (contrast) adjusted too high (fig.2)

Test Pattern: Faces

Gray scales – fine adjustment black value

Typical faults:

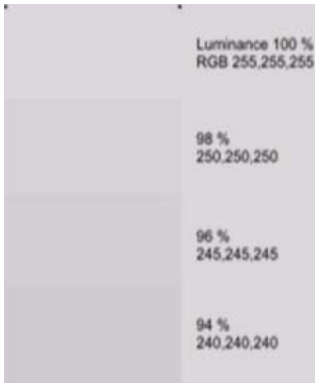


fig.1: contrast adjusted too low

The quality of this image is „poor“ ★★

In case of too low adjusted contrast control the maximum brightness and brilliance of the image will lose.

Test Pattern: Faces

Gray scales – fine adjustment black value

Typical faults:

fig.1: contrast adjusted too high

The quality of this image is „bad“ ★

In case of too high adjusted contrast control (white-value) the brightly parts of the image will stand out. In the extremest case the brightly parts become blurred to a white area. Light details get lose.

Test Pattern: Faces

Element-description

Gray devolution (top) **and gray scales** (bottom)

In the test pattern are 2 stripes which show the brightness allocation from bright to dark. The gray devolution (top) is for testing the quantification and conformity. The lower area shows 41 same-sized fields with same graded luminance values from 100% brightness (luminance) until 0%.At a correct exposition you see clearly separated gradings from maximum white until complete black.
Mainly it's for the subjectiv evaluation of the useable contrast amount and the gamma, so the right brightness-differerence. At a correct color balance (color temperature) without brightness dependent drift are all fields same neutral gray.

Correct exposition:

- left field perfect white
- right field maximum black
- All steps are clearly separated to each other
- brightness differences are equal, the gray devolution is completely constant
- All steps and the whole devolution are same neutral gray

Typical faults:

- Right field still gray – black value (brightness) too high
- The right fields not distinguishable from each other – black value (brightness) too low
- The left fields not distinguishable from each other – white value (contrast) too high.
- The gray devolution shows waves or gradings – lacking in quantification and also in the resolution of fine brightness- and color gradings
- The right steps are stronger graded than the left ones – gamma too low (fig. 1)
- The right steps are less graded than the left ones – gamma too high (fig. 2)
- The outer steps are less graded, the middle steps are bigger graded – gamma „S“-deformed (fig. 3)
- unequal color of the fields – incorrect or drifting color balance (fig. 4)

Test Pattern: Faces

gray scales

Typical faults:

fig. 1: gamma too low

The quality of this image is „poor“ ★★

In case of too low adjusted gamma the middle brightness parts will raise unnaturally. The image seems flat and a little plastically. Is the gamma too low the compressions artifacts become more visible as you want to (eg. on DVB-T).

Test Pattern: Faces

gray scales

Typical faults:

fig. 2: gamma too high

The quality of this image is „poor“ ★★

Too high adjusted gamma makes the middle brightness parts in the image unnaturally darker. The motive seems to be unnaturally and underexposed

Test Pattern: Faces

gray scales

Typical faults:

fig. 7: gamma "S"-deformed

The quality of this image is „bad“ ★

S-deformed gamma adds contrast. The disadvantage is that the S-deformed gamma barely disallows brightness differences. The image is made up of only dark and bright areas. There is a lack of shading.

Test Pattern: Faces

gray scales

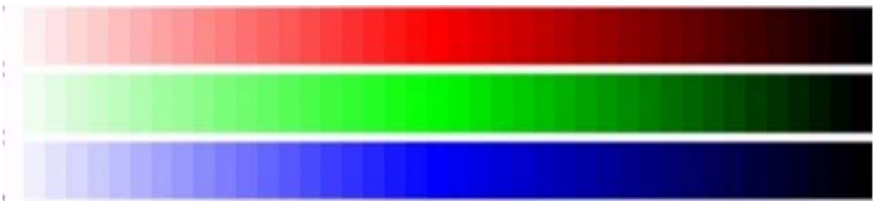
Typical faults:

fig. 4: Drift in color balance, in this case overage of red in the dark
The quality of this image is „poor“ ★★

In this example drifts the color temperature to the dark. In this case you have a overage of red.

Test Pattern: Faces

Element-Beschreibung



RGB-steps

The RGB-steps (red, green, blue) show a 41 stepped change-over from 100% luminance (left) over 100% color saturation (middle) to 0% luminance (black, right) for the 3 main colors red, green and blue. The steps are same sized and for all colors the same.
This steps are useful to detect lacking color difference and incorrect color balance (color temperature) in relation to each other.

Correct exposition:

- 41 stepped change-over from white over 100% color saturation until black for red, green and blue
- constant brightness and constant saturation of the three colors

Typical faults:

- contrast too high – there is no more difference in the brightest shadings
- brightness too low – there is no more difference in the darkest shadings
- Uneven steps or lacking differences of the steps – lacking quantification depth and disharmonic processing (figure 1)
- generating of patterns in specified brightnesses – flushy processing (eg. dithering) (figure 2)
- non color-neutral exposition, in the whole image or in some brightness areas – bad calibrated color balance (color temperature) or lacking chroma processing

Test Pattern: Faces

RGB-steps

Typical faults

fig. 1: lacking quantification, stepped figure

The quality of this image is „poor“ ★★

Test Pattern: Faces

lacking quantification causes less difference of the fine shadings and so too stepped exposition of fine nuances. Lacking quantification also causes false colors and solarization effects.

Test Pattern: Faces

RGB-steps

Typical faults:

fig. 2: pattern generating because of dithering.

The quality of this image is „fair“ ★★★

because of lacking quantification or as matter of principle dithering mixes non-educible color nuances because of „interweave“ of the nearby areas. Dithering uses the idleness and the blurring of the human eye to mix up the non-educible nuances of the image.

Test Pattern: Faces

RGB-steps

Typical faults:

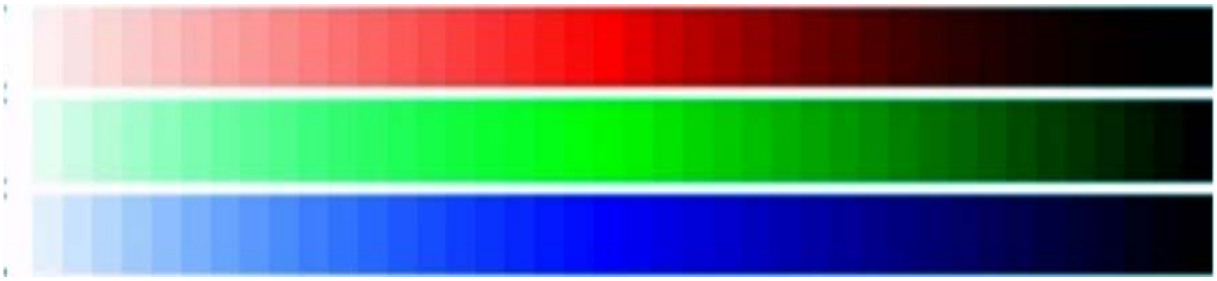


fig. 3: uneven color processing, in this examle red gamma too high

The quality of this image is „poor“ ★★

fatal for the color balance is a abnormal gamma curve of only one color because in this case the color scheme moves in relation to the brightness. In this case the gamma of red is too high.

Test Pattern: Faces

Standards are helpful and important

For a correct playback of a film or a video or even of an image there have to be a neutral transfer. You often hear the argumentation that these isn't necessary because the vision of every human is different and so a objective playback isn't possible. As a matter of principle is this argumentation right. Admittedly there will be ignored that it's only possible if the signal transfer acts neutral and straight. Only when the expressed image is similar to the recorded image by the camera, the human is able to perceive what he would saw at location by his individual sensation.
The transfer itself have to behave neutrally. Big worldwide institues look after the standards so that the neutrality is warranted.
In german speaking countries is the institute for broadcast engineering of the public broadcasting corporation of ARD, ZDF, DLR, ORF and SRG/SSR mainly responsiblefor the standards:

www.irt.de

For the whole european area the European Broadcast Union, EBU in Switzerland handles superordinate to the local development institutes:

www.ebu.ch

On international floor established in 1865 in Paris the International Telecommunication Union, ITU is included:

www.itu.int

For best image evaluation and calibration you use the test pictures from this document. It works also with real, filmed motives but with reservations. The big advantage of test patterns from Burosch Audio-Video-Technik is the knowledge how the test patterns have to look and the knowledge how to reproduce them. Only this way the neutrality of the transmission and the playback can be measured extactly and if necessary to correct it:

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Test Pattern: Faces

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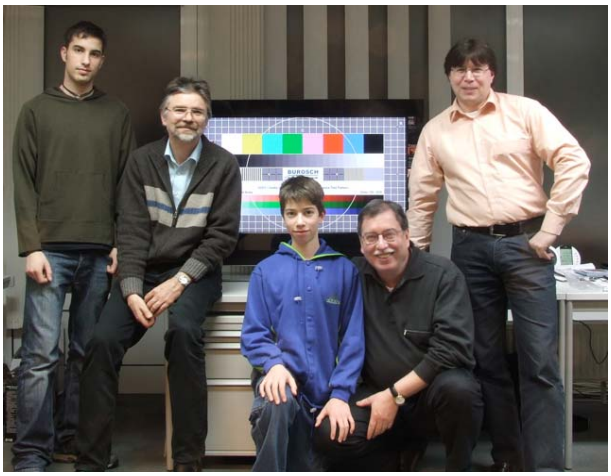

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We thank Mr. Prof. Dr.-Ing. M Planthold / application area: television systems University Wiesbaden for his help at the reasearching of the reference-testsignals for evaluation of the image quality from LCD and Plasma displays.