

Adjusting Monitors

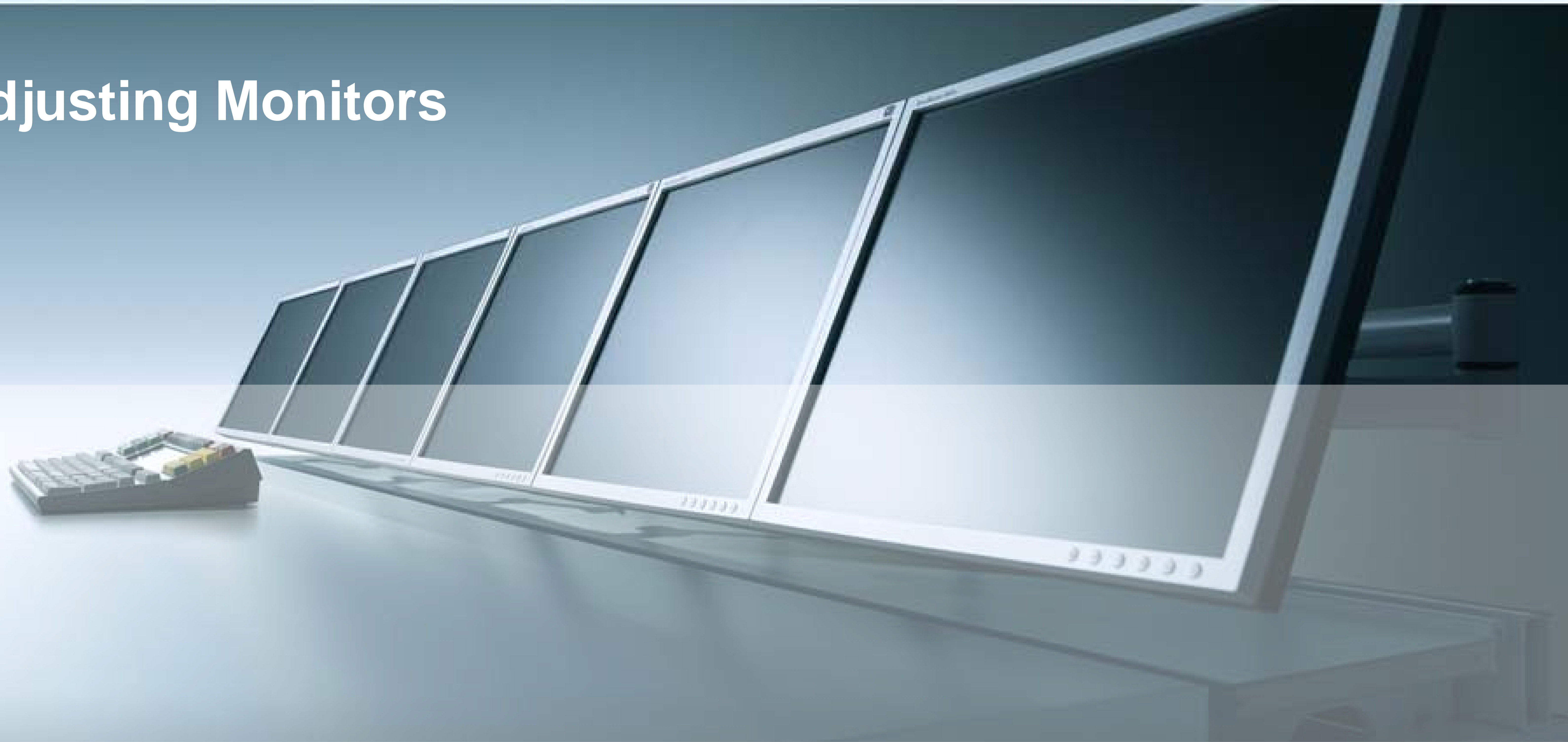


Oleg Ayrarov – 2009



The Key to Your World

Adjusting Monitors



Field Engineer's Elegy



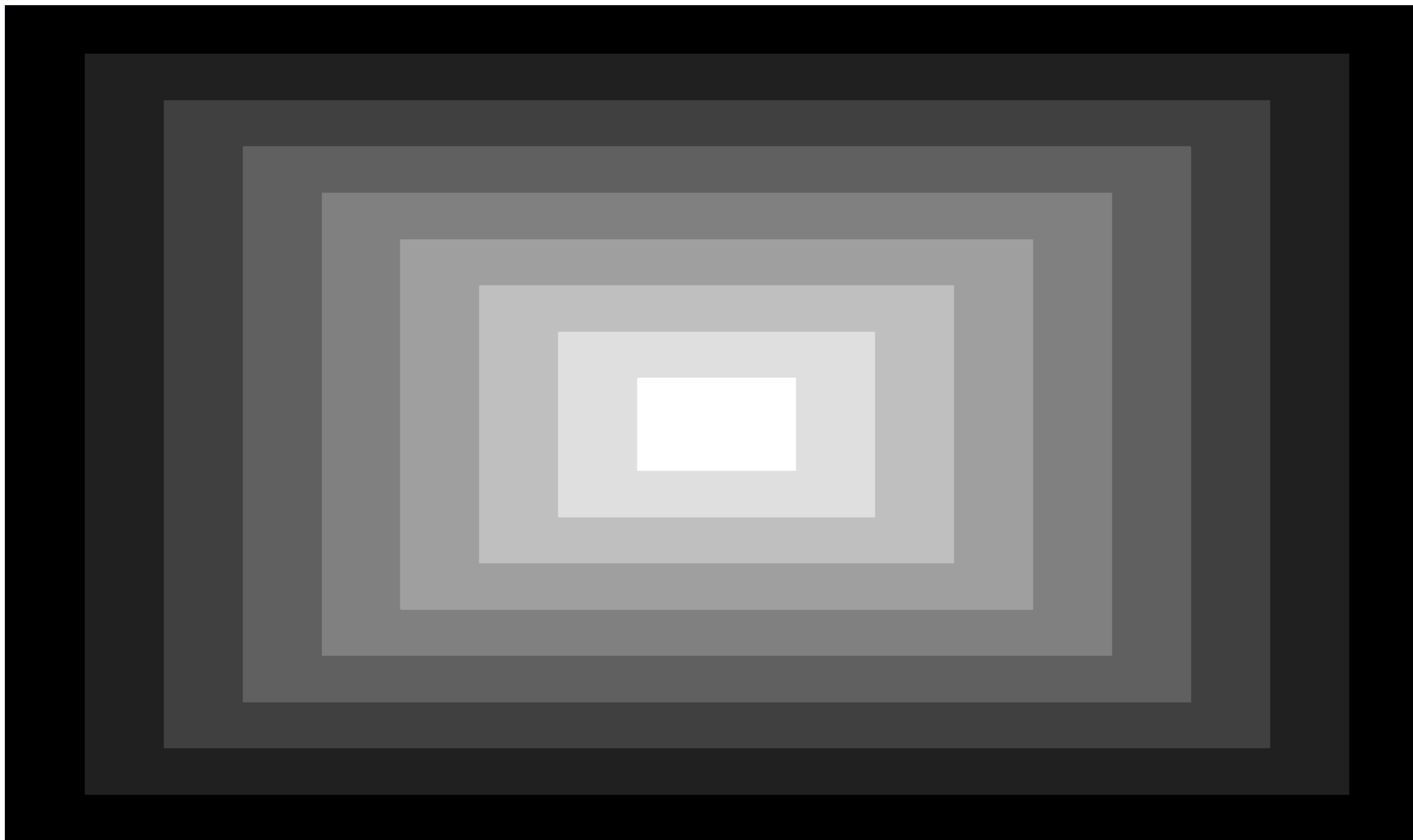
Background

- Adjusting the monitor of a single screen desktop is easy.
- Adjusting the monitors of multiple screen desktops is more difficult.
- Follow this step-by-step methodology to adjust several monitors on a desktop.

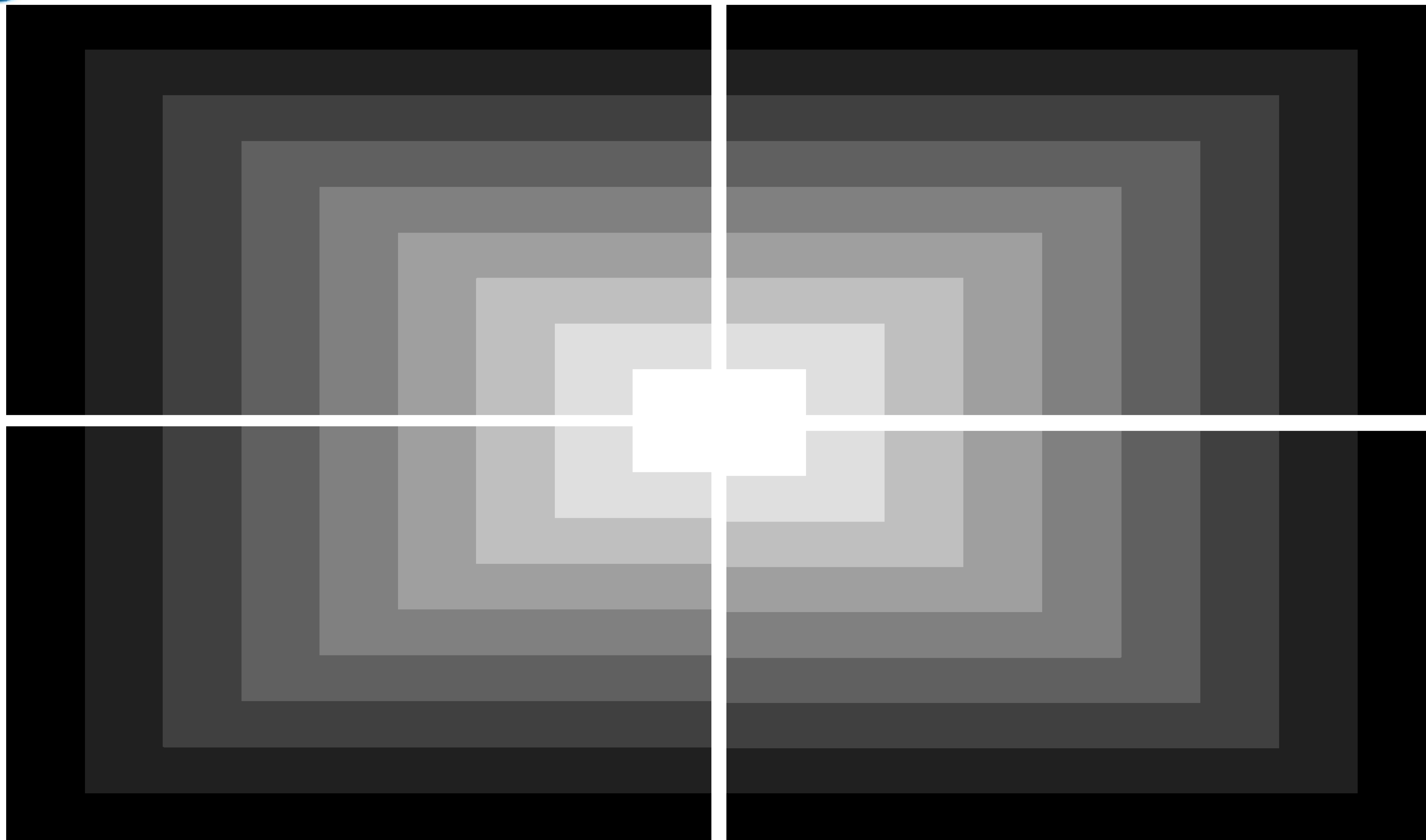


Background

- When the AUTO button on a monitor is pressed, not all parameters are reset to default values. Only the format recognition, image position and pixel clock phase are refreshed.
- Brightness, contrast and colour balance remain as they were. One must manually adjust these parameters after the AUTO procedure.



Test picture consisting of 9 different grey patterns, including black and white



Test picture distributed over a four screen desktop



Balancing the Colours

- Set the primary colour channels Red, Green and Blue to NORMAL or 60%. Alternatively set the colour temperature to a value between 6500°K and 7500°K.
- Set the brightness, contrast and saturation to 50%. Alternatively, set to 0 if the range is -100 to +100.
- Set the gamma correction to OFF, or to value 2.2.



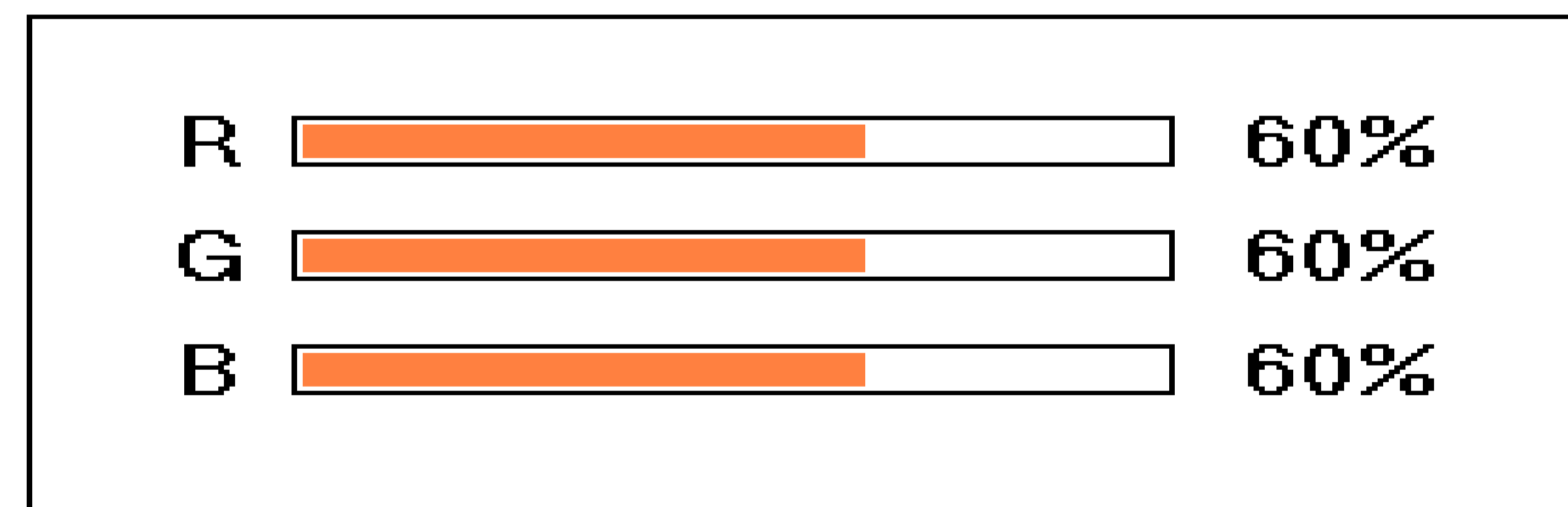
Balancing the Colours

- As the test picture is grey, the monitor displaying the “greyest” image has to be selected as the reference.
- Colour settings for the other monitors must be adjusted according to this reference.



Balancing the Colours

- Choose the custom colour setting mode of the monitor.
- In this mode, most monitor OSDs look like this:



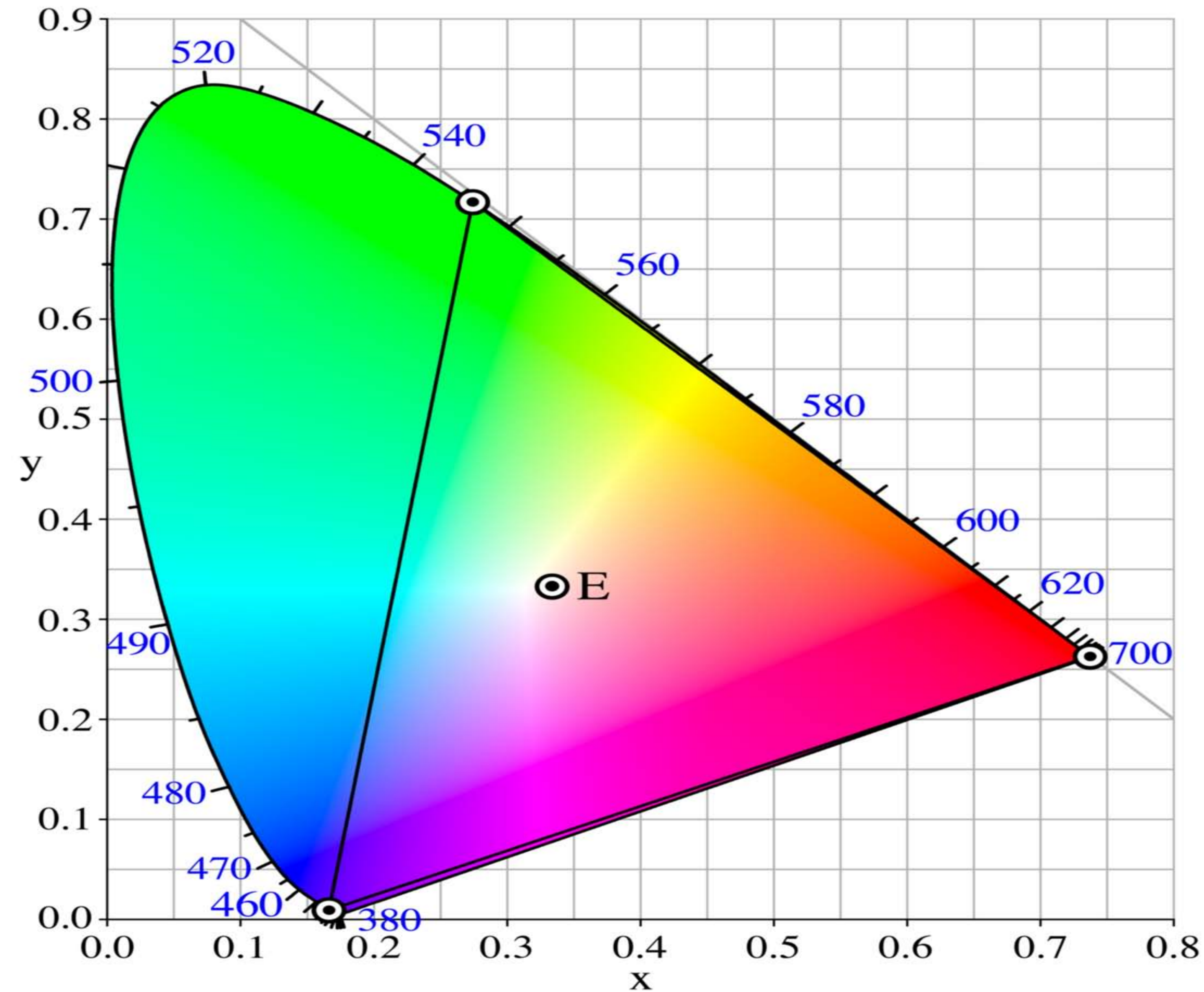


Balancing the Colours

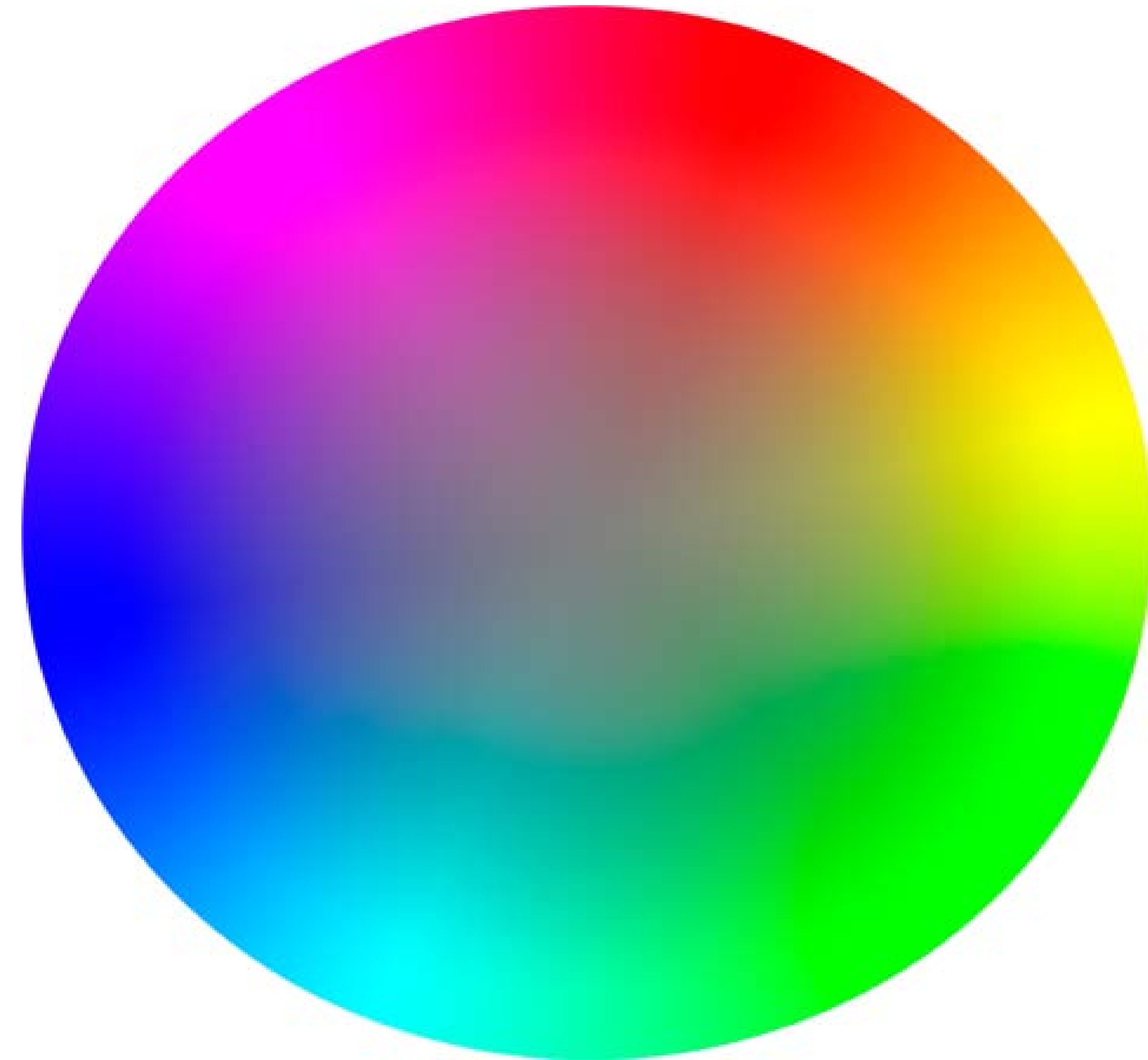
- Red, green and blue (RGB) are the primary colours. So when correcting a picture which seems to be too reddish, greenish or bluish - reduce the red, green or blue channels respectively.
- If the hues are other than the primary colours, adjust the channels according to the colour space diagram.



Balancing the Colours



Colour space diagram



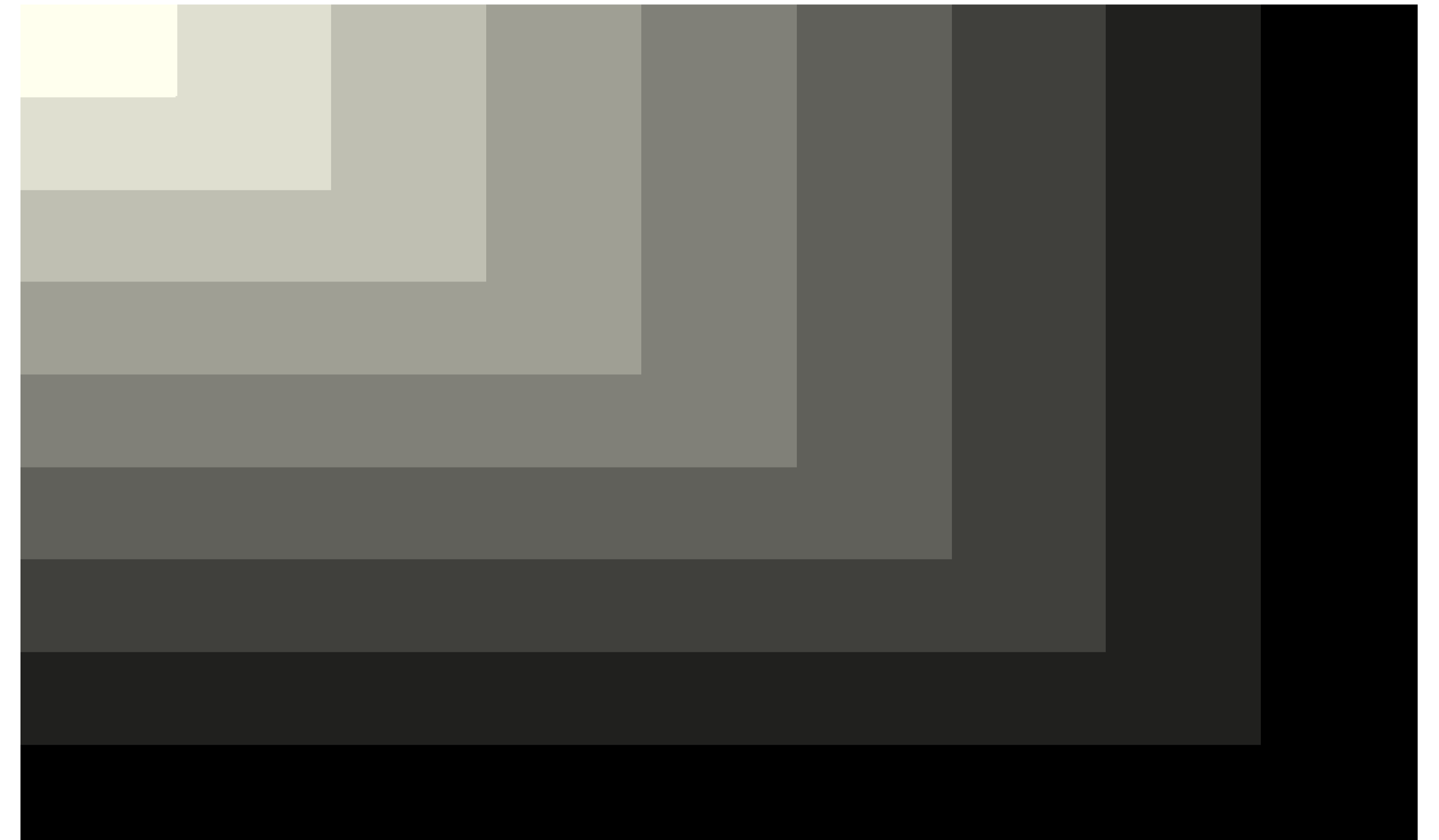
Colour wheel



Balancing the Colours



Balanced colours



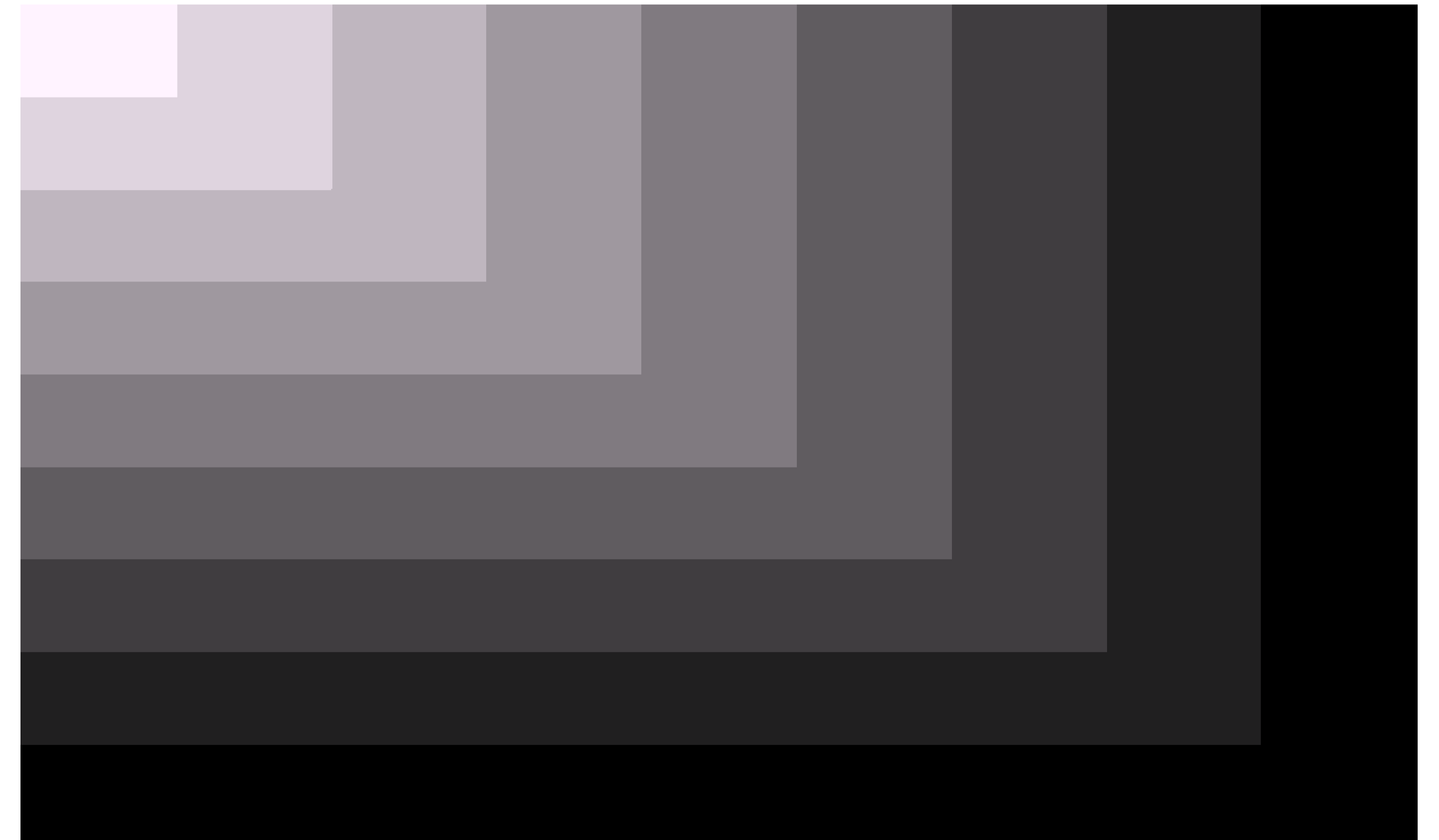
Yellowish hue



Balancing the Colours



Balanced colours



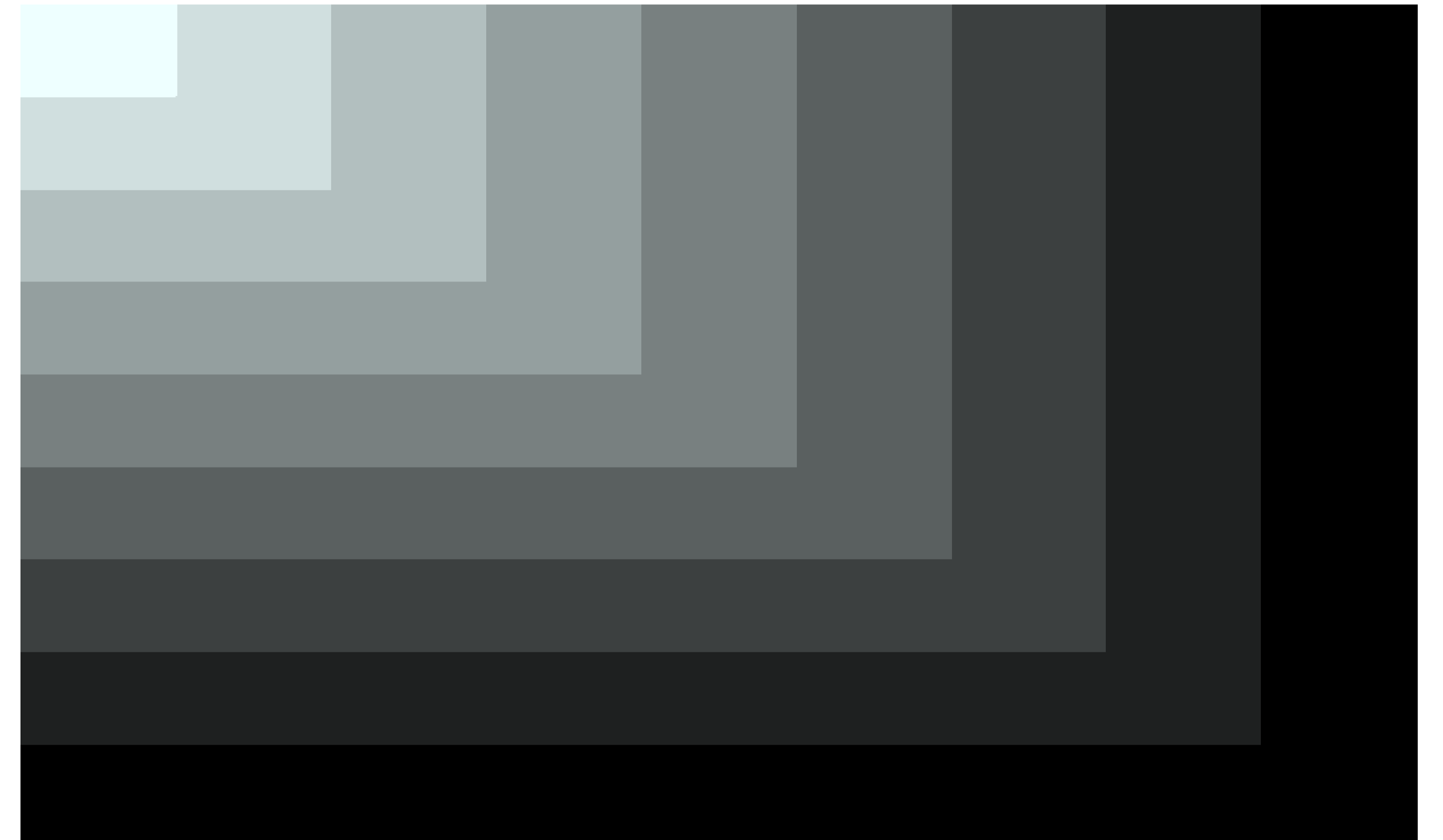
Purple hue



Balancing the Colours



Balanced colours



Turquoise (cyan) hue



Balancing the Colours

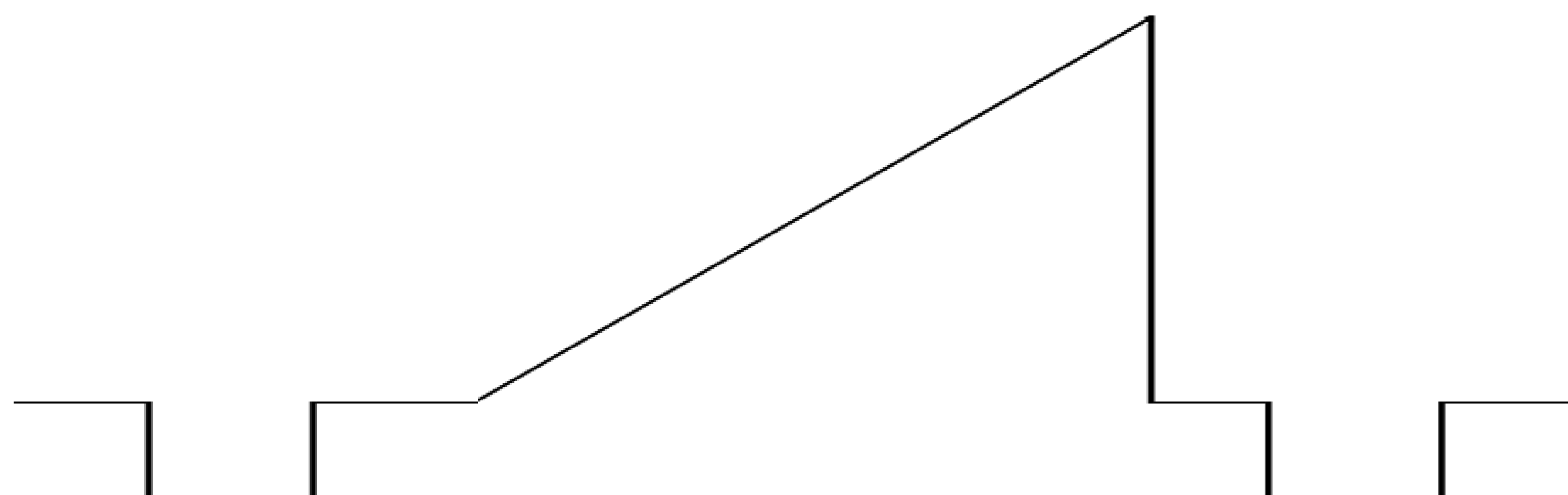
- It is more convenient to adjust the luminance parameters after the colours have been balanced.
- Brightness and contrast should be set in an iterative way using the same test image.



Luminance Parameters

700mV

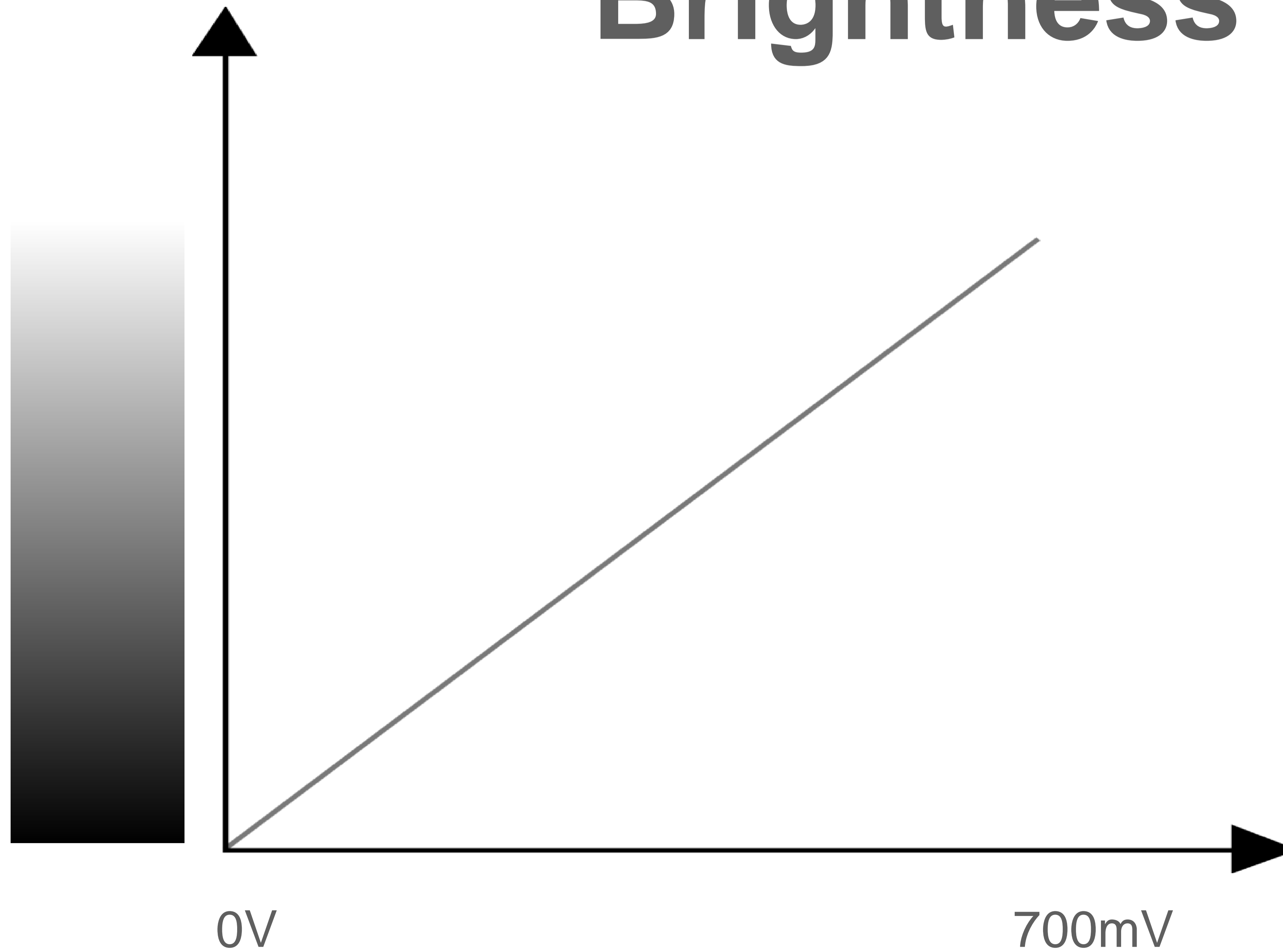
0V



Video Signal and related greyscale

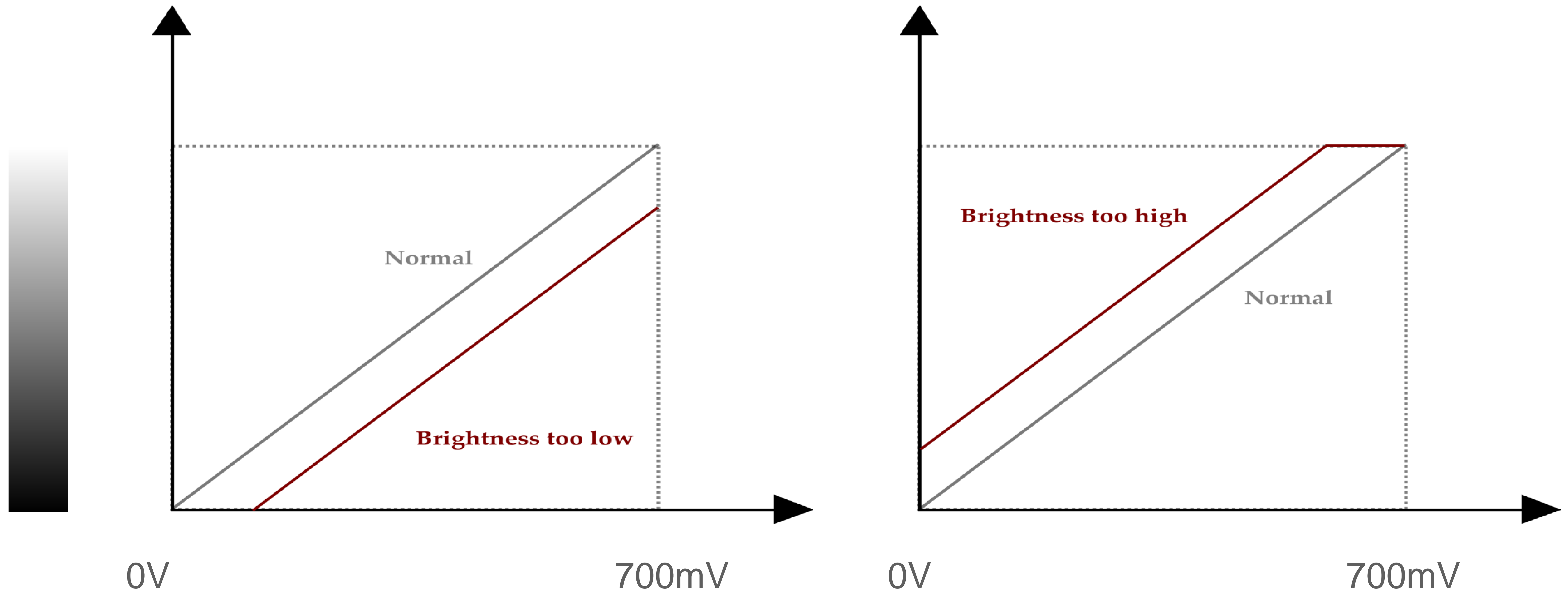


Luminance Parameters - Brightness



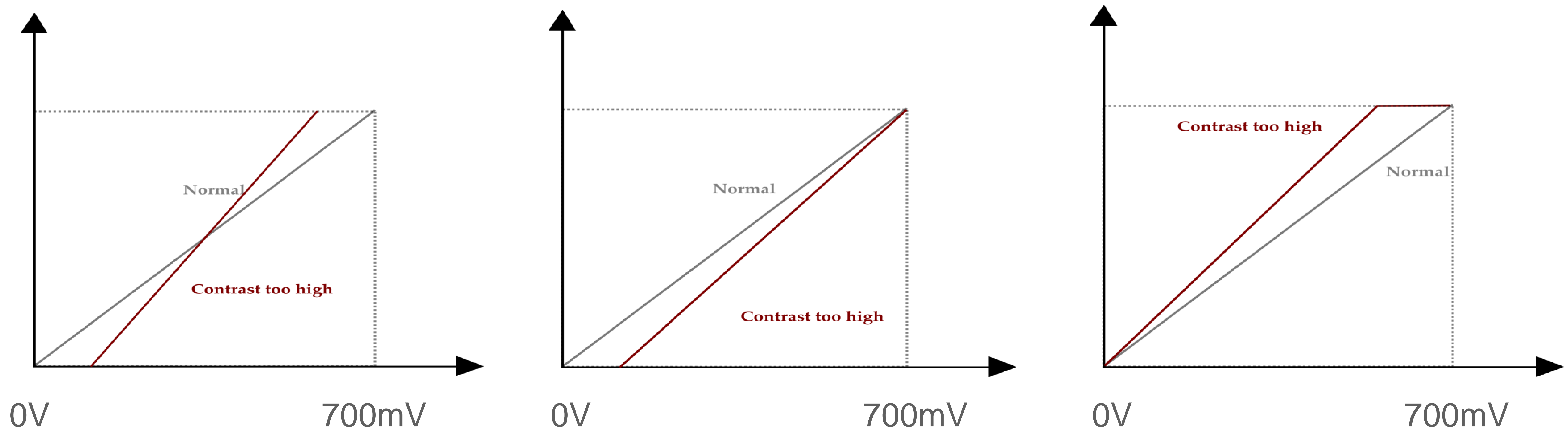


Luminance Parameters - Brightness





Luminance Parameters - Contrast





Luminance Parameters - Contrast



Reference Image

Contrast too high. There is almost no difference between dark grey and black.



Luminance Parameters - Contrast



Reference Image

Contrast too low. The white is not white enough.



Luminance Parameters - Brightness

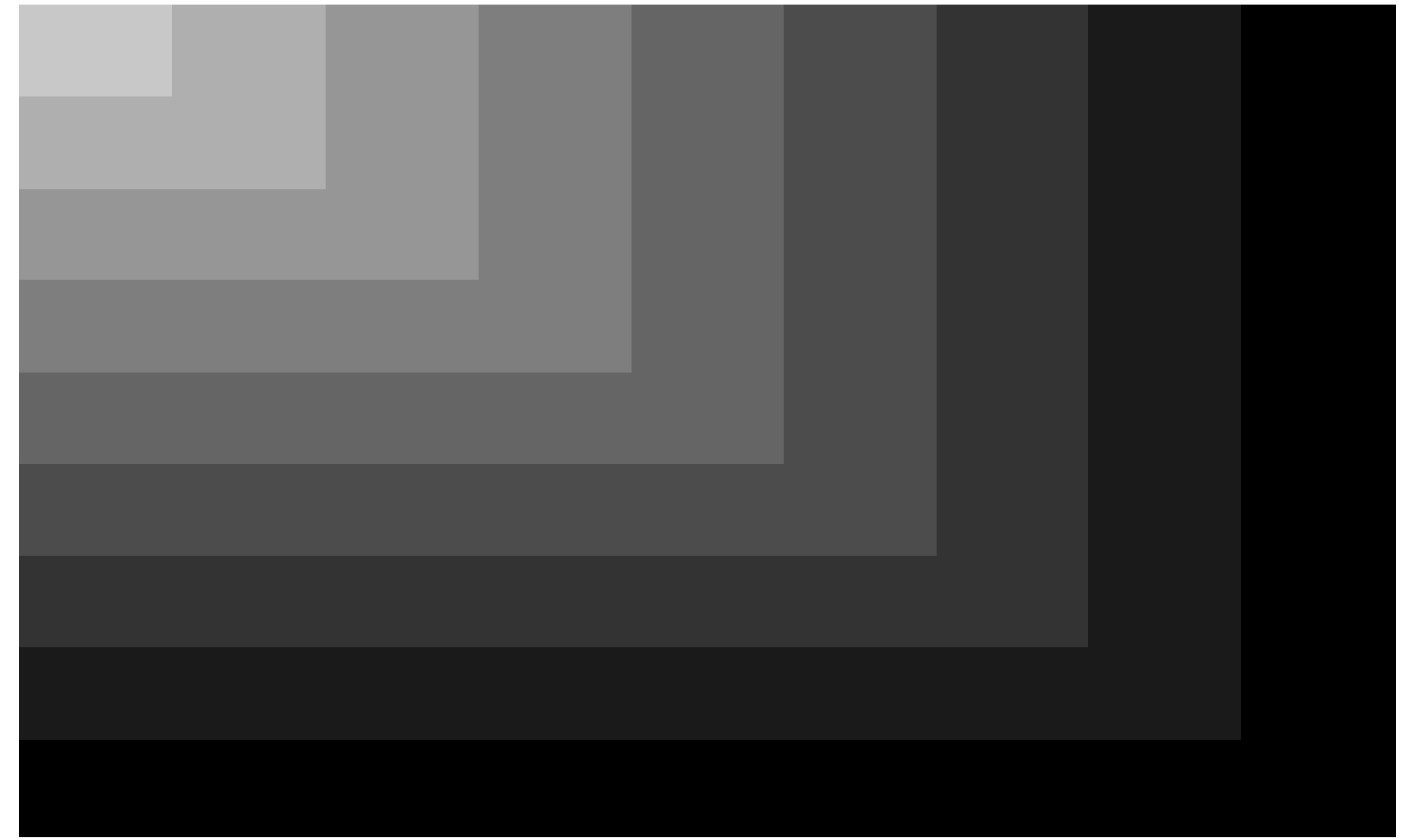


Reference Image

Brightness too high. Too much difference between the darkest grey and black.



Luminance Parameters - Brightness



Reference Image

Brightness too low. The white is not really white, all the grey fields are too dark.



However:
The most important reference points
for how a screen image should look
are still user taste and preference!