



Content branding logo

HDR style sheet

Introduction

The high dynamic range and its benefits

In recent years, increasingly high resolutions have been the key focus of technical change in television production. High dynamic ranges (HDR) now offer an additional means of making images appear more realistic and natural.

For the first time ever, HDR technology is enabling important image information to be kept in very light/dark image sections, making the image look much more detailed and dynamic. The grading and mastering of HDR content will thus play a progressively larger role in video production.

The CB logo in HDR environments

There are several major differences between SDR workflow and mastering CI elements in HDR environments. In addition to creating a colour impression that is perceived the same by everyone, elements such as the content branding logo must also each be appropriately adapted to the content in terms of their luminance.

This is therefore a relative approach that always involves considering and weighing up the content used. The style sheet is based on standards that have so far only been provisional, and its content will thus continue to further develop and evolve.

01

Delivery specifications

Delivery specifications

The following technical specifications apply when delivering HD and UHD material with HDR dynamic range.

Container: MXF OP1a

Codec: XAVC Class 100 for HD, XAVC Class 480 for UHD

Resolution: 1920x1080 (HD) bzw. 3840x2160 (UHD)

Frame rate: 50p

Chroma subsampling: 4:2:2

Bit depth: 10bit

HDR system: HLG as per ITU-R BT.2100 / ITU-R BT.2390

EOTF: HLG Variable System Gamma 1.2 as per ITU-R BT.2100

Peak luminance: 1000 nits

Colour space: ITU-R BT.2020

02

Content branding logo

Content branding logo

The CB logo master animation in UHD resolution and SDR, which contain the mandatory colour values of the ZDF logo, serves as the basis for the individual luminance adjustment.

Depending on the software and hardware environment, as well as the specific viewing and mastering workflow, the animation is initially converted to the BT.2020 colour space, and then checked to ensure it is perceived evenly and consistently by the human eye.

Viewed on a black background, and displayed with a maximum luminance of 100 nits, the logo should only differ minimally from the SDR version displayed in Rec. 709.



CB logo SDR: Rec. 709 / SDR monitor, displayed with 100 nits



CB logo HDR: Rec.2020/HDR monitor, displayed with 100 nits

03

Application

Adjustment

When applying the new HDR standards, the colour and luminance impression of the ZDF logo should, where possible, not differ from the previous versions seen on screens, in print or in physical form.

This requires adjusting the logo to the respective image sequence by varying the luminance settings during grading and mastering. The logo must not be overexposed in a dark image, and must not look pale or dark in a light environment.

Under no circumstances can the colour impression of the ZDF orange be changed. The only adjustment must be to increase or reduce luminance. The SDR version of the logo in Rec. 709 is always used as the basis for assessing effect.



Example of extremely dark content



Example of moderately bright content



Example of extremely bright content

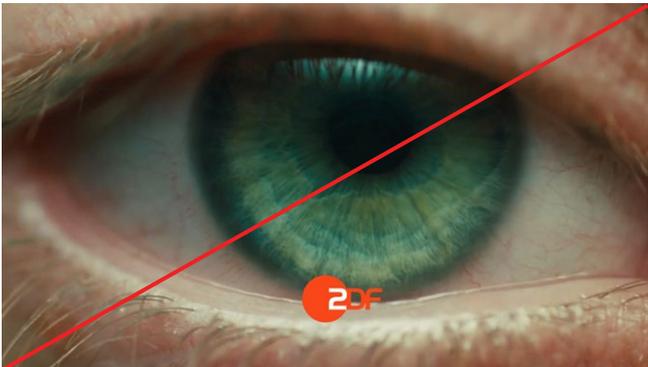
Method & possible errors

In step one, the SDR CB logo master animation is imported into the mastering environment. It is important to make sure here that the selected viewing options allow the colour to be interpreted correctly, and that the impression rendered through perceptions remains unchanged.

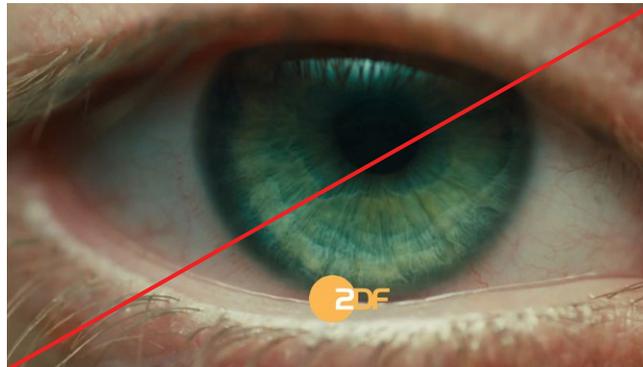
The next step sees the master animation converted to the BT.2020 colour space. Here, too, no perceptibly changes should be made to colour or luminance.

The master animation can now be applied to the relevant HDR project in order to assess luminance/brightness in the context of the underlying image.

In the final step, only luminance is adjusted so that the master animation is clearly separated from the background, without being overexposed or looking too dark.



Example: Incorrect colour impression compared with the SDR version of the Rec.709 logo.



Example: Incorrect luminance impression in the context of the background



Example: Incorrect luminance values – white looks grey

Example: Extremely dark content

SDR CB logo, average luminance 23 nits
(max. 100 nits)



HDR CB logo, average luminance 248 nits
(max. 1000 nits)



Example: Moderately bright content

SDR CB logo, average SDR luminance 56 nits
(max. 100 nits)



HDR CB logo, average HDR luminance 584 nits
(max. 1000 nits)



Example: Extremely bright content

SDR CB logo, average SDR luminance 82 nits (max. 100 nits)



HDR CB logo, average HDR luminance 796 nits (max. 1000 nits)





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