

LDX Advanced Shader session 2017/18

 FUTURE-READY

Your Host for today
Jan Paul Campman



grass valley

A **BELDEN** BRAND

LDX Advanced *New Features(2)*

❖ Part 2:

- ❑ New Features (LDX)
- ❑ LDX 86 4K and XDR
- ❑ OCP hints / tips
- ❑ IP world (see *IP session*)



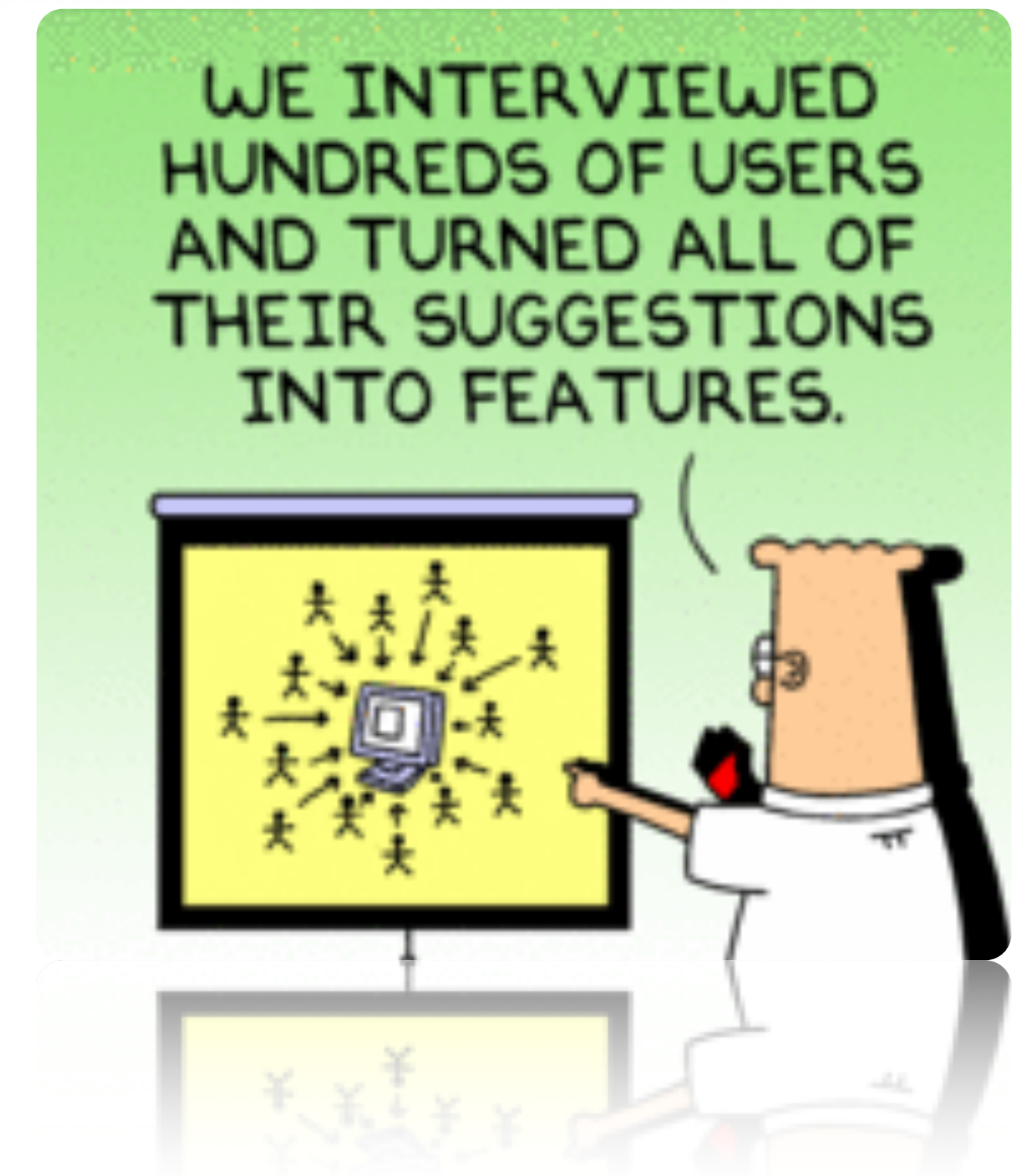
This part gives you some more details about the LDX Features

- ❑ **LDX “New” Features**
- ❑ LDX 86 4K and XDR
- ❑ Under development
- ❑ OCP MCP hints / tips



LDX Features “New”

- ☑ Sensitivity modes
- ☑ Correlated Color Temperature
- ☑ Power curves: Knee, Gamma, Contrast control, Knee Saturation
- ☑ Matrix: Saturation, Color Protect
- ☑ Detail: Skin detail, Detail equalizer,
- ☑ Pixel corrector, Noise Reducer
- ☑ Lens Dependencies: CLASS, Depth of Field DoF indicator
- ☑ Color Gamut
- ☑ 4K native
- ☑ XDR (HDR)

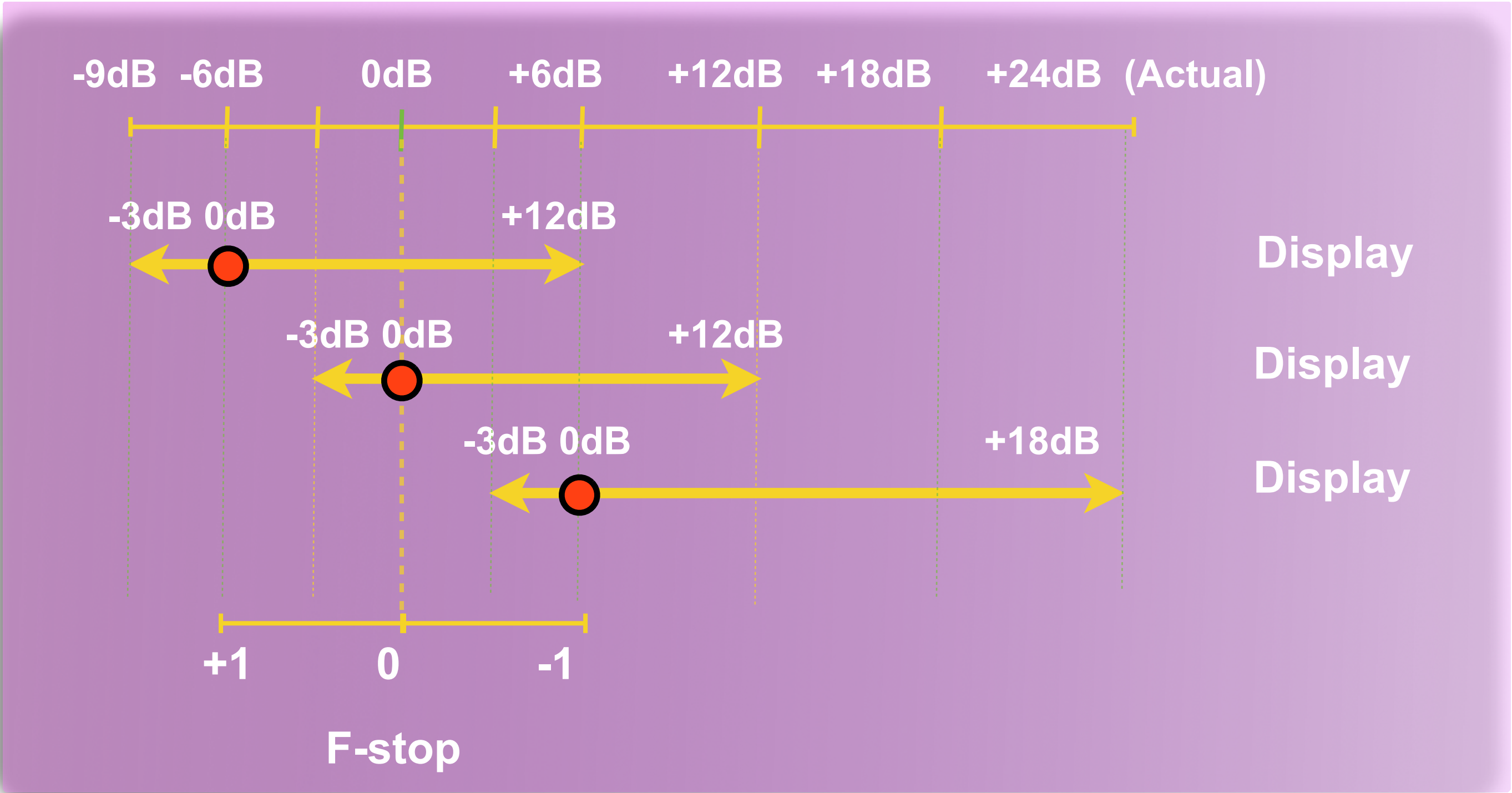


What's New LDX series

part 2 Web Training

Sensitivity Settings

mode	Noise(0dB)	Sensitivity	Stop
HiQ	low (good)	2000 lux	F8
Nom	standard	2000 lux	F12
HighSens	acceptable	2000 lux	F17



Optimized for there own odB position

Example: HiQ only until 300-400% dynamical range but very good S/N values

Sensitivity Settings

The following settings and ranges are in use with the different sensitivity modes :

	High Quality mode ¹⁾	Nominal mode	High Sensitivity mode ^{1) 2)}
Basic sensitivity ³⁾	typ. F8 @ 2000 lux	typ. F12 @ 2000 lux	max. F17 @ 2000 lux
Video gain range	-3 .. +12 dB	-3 .. +12 dB	-3 .. +18 dB
Signal-to-noise ratio	64 dB	60 dB	54 dB
Texture representation	Excellent	Very good	Fair
PowerCurves exposure input range (available only in Elite and WorldCam versions)	up to 300%	up to 800%	up to 800%
Exposure time range	down to 1/1000 s	down to 1/1000 s	100 Hz/120 Hz to Nom.

¹⁾ Not available in the LDX Flex version.
²⁾ Not available in the LDX Première version.
³⁾ Actual basic sensitivity depends on selected video mode/frame rate.

What's New LDX series

part 2 Web Training

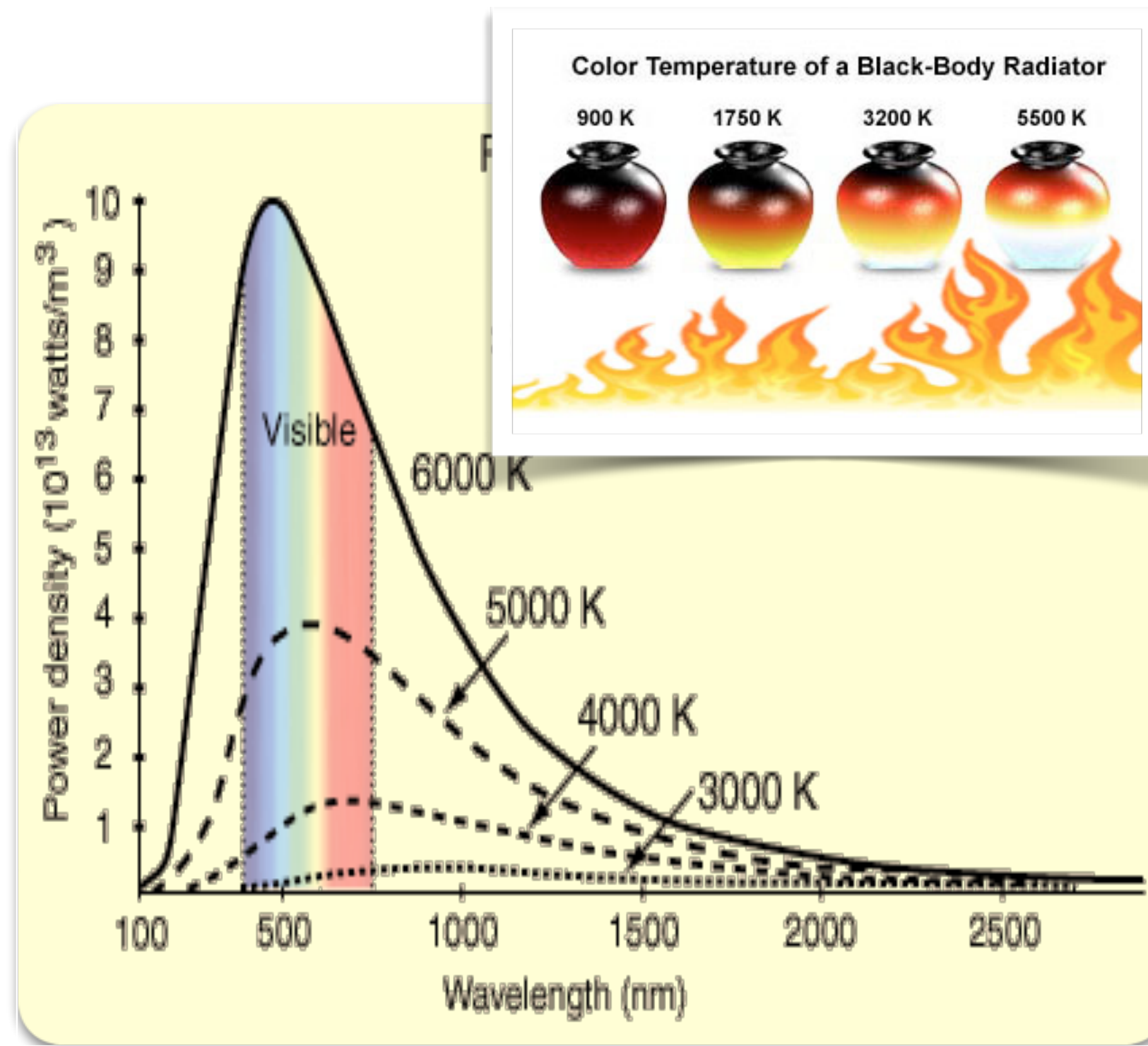
Correlated Color Temperature

Light and Color Temperature

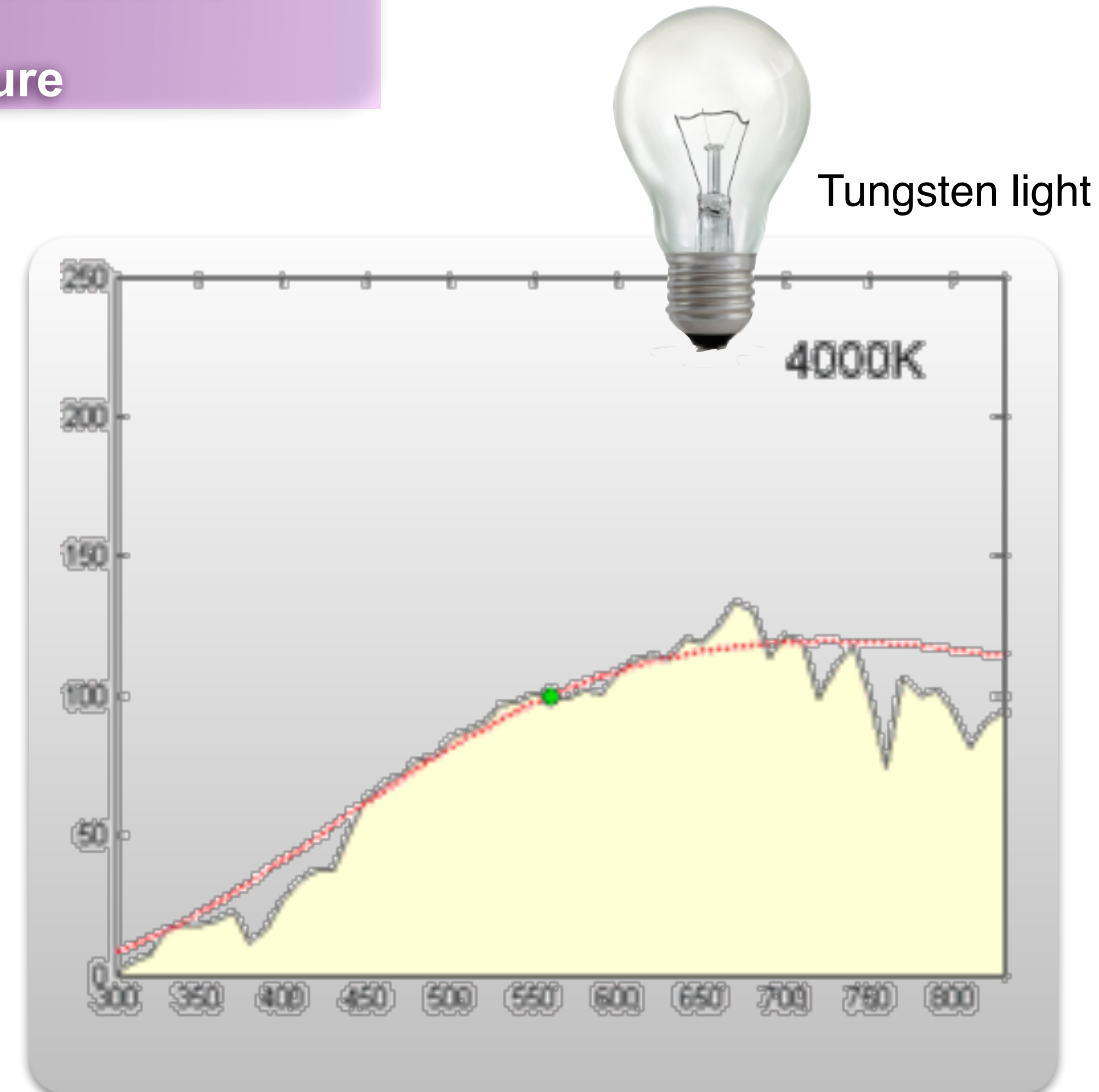
A perfect
blackbody

is one that absorbs
all incoming light and
does not reflect any

The color
temperature of a light
source is the
temperature of an
ideal black-body
radiator that radiates
light of comparable
hue to that of the
light source.



Black body radiator



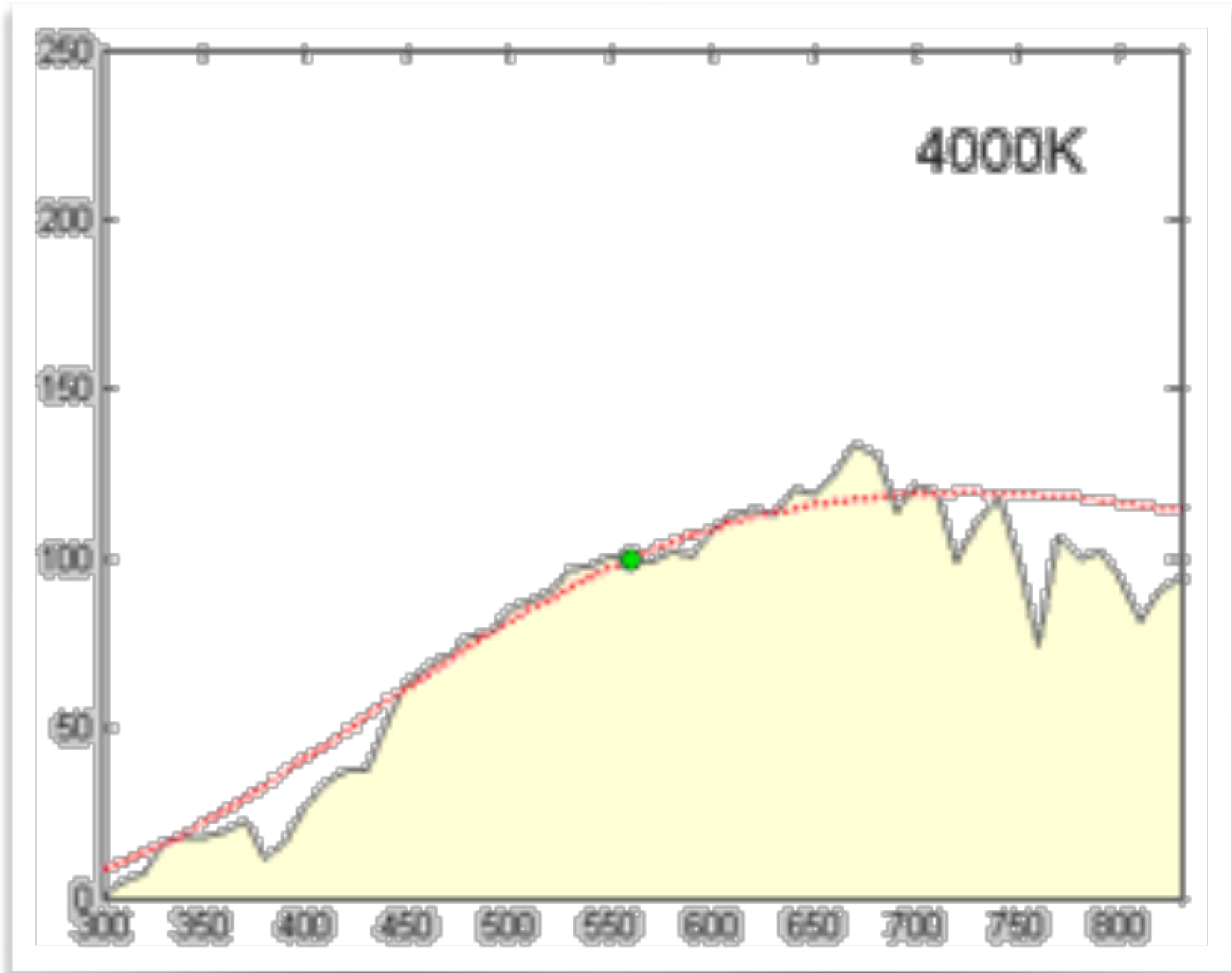
Visible light

What's New LDX series

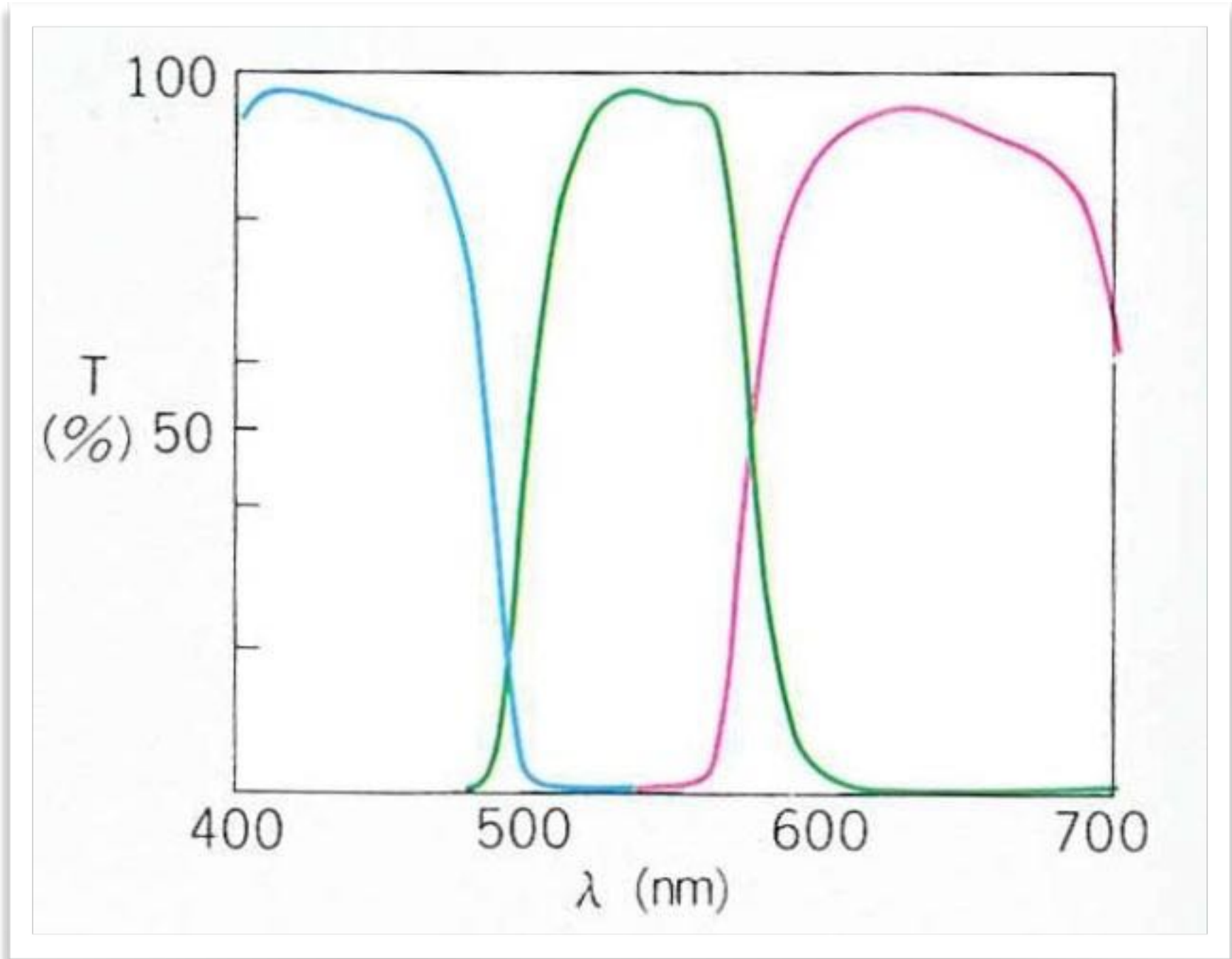
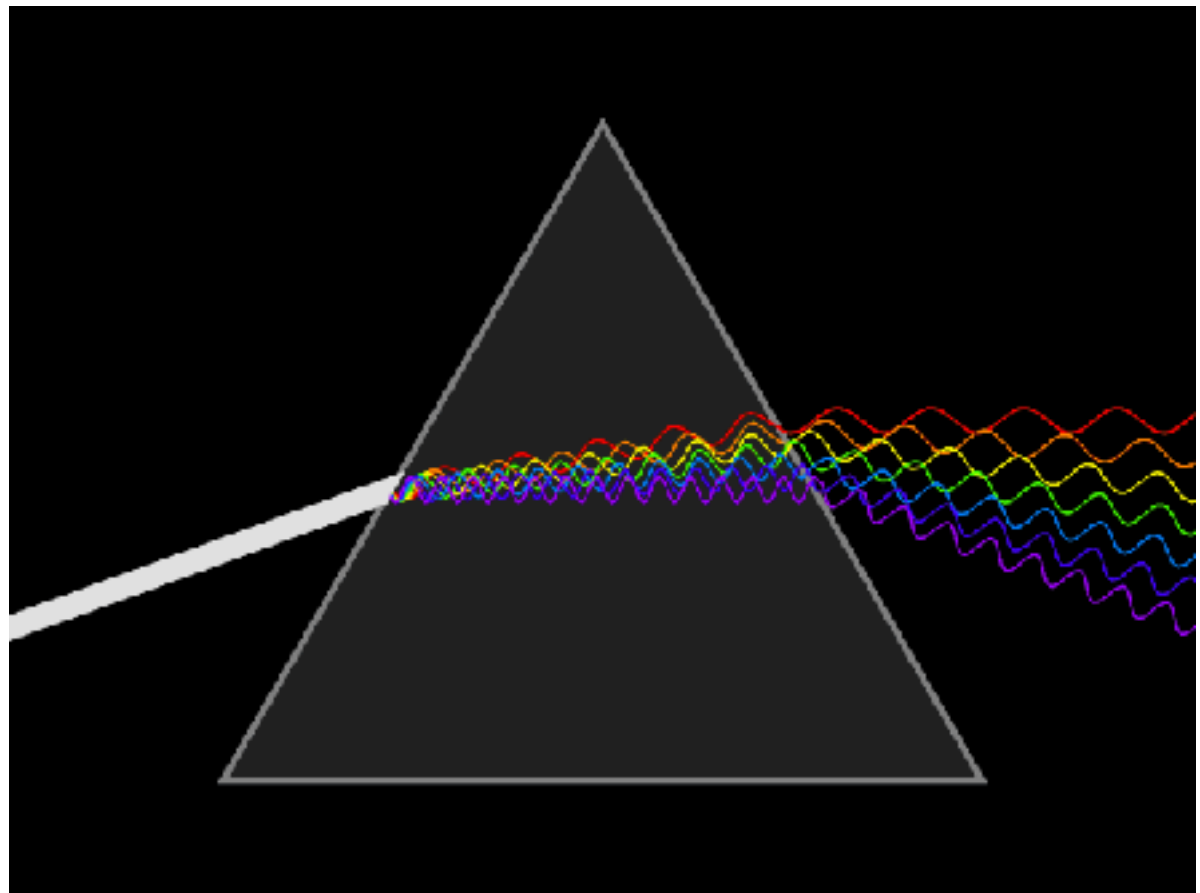
part 2 Web Training

Correlated Color Temperature

Light and Color Temperature



Visible Light



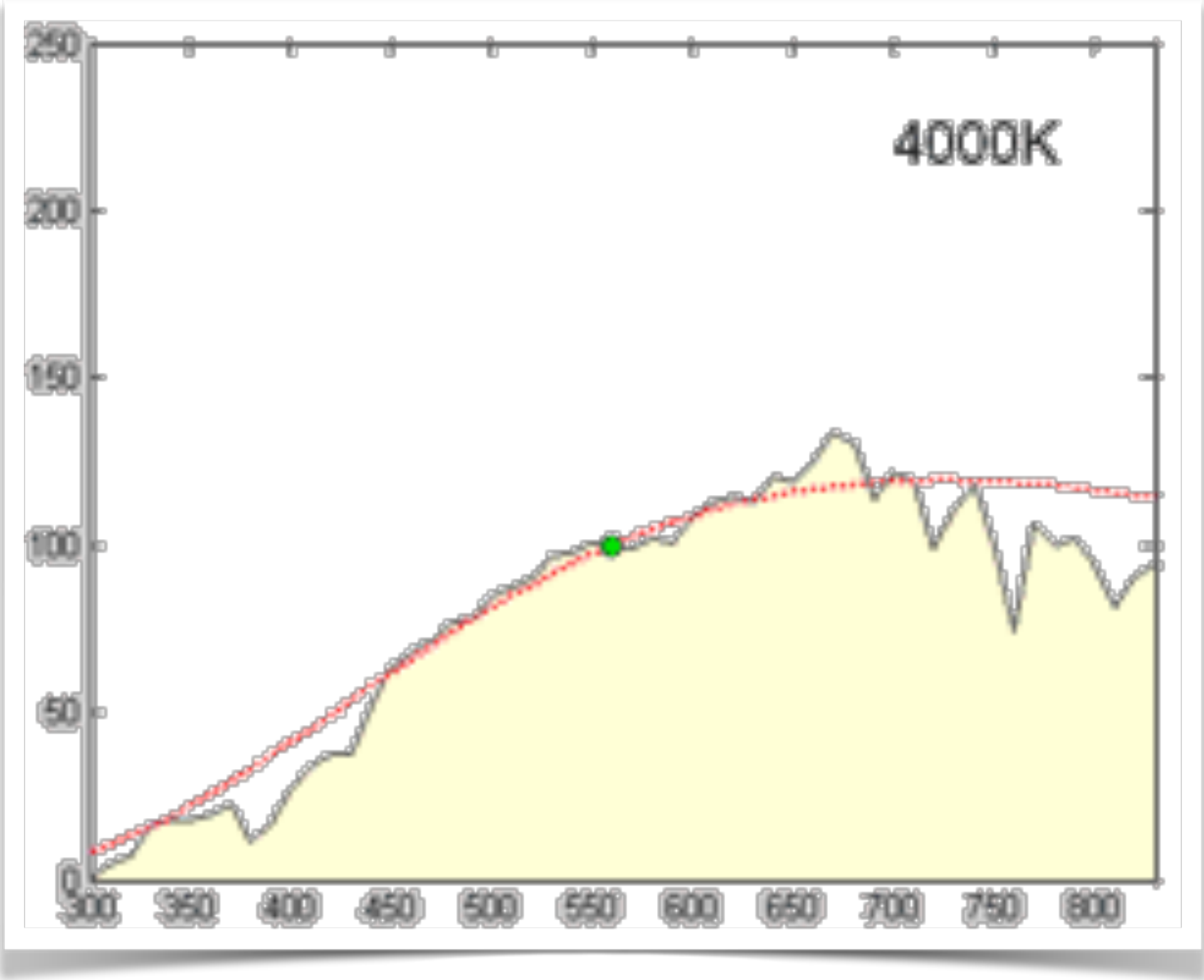
Camera RGB response

What's New LDX series

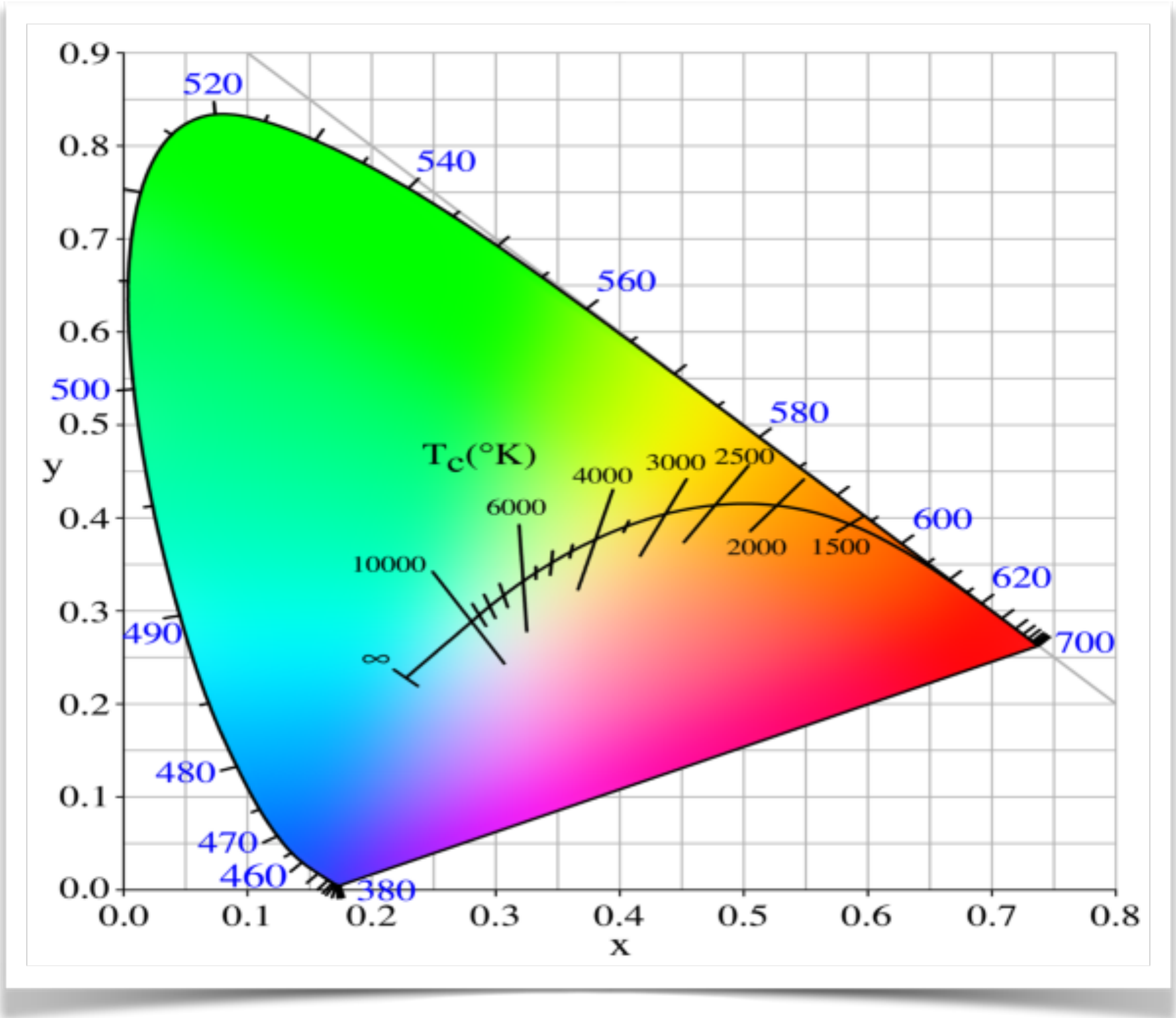
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Correlated Color Temperature

Light and Color Temperature



Visible Light



Mapped in the x y color triangle

What's New LDX series

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Correlated Color Temperature

Light and Color Temperature

Two parameters are necessary to adjust color

There are different ways of adjusting color :

Red Blue Gain. With Green fixed. (common in cameras)

x and y or u and v (physics, colorimetric)

Correlated Color Temperature and Tint (lighting, perceptive)

We use CCT and Tint in LDX

Better communication about camera settings

Matches more with our perception of colors than just camera gains.

CCT and Tint:

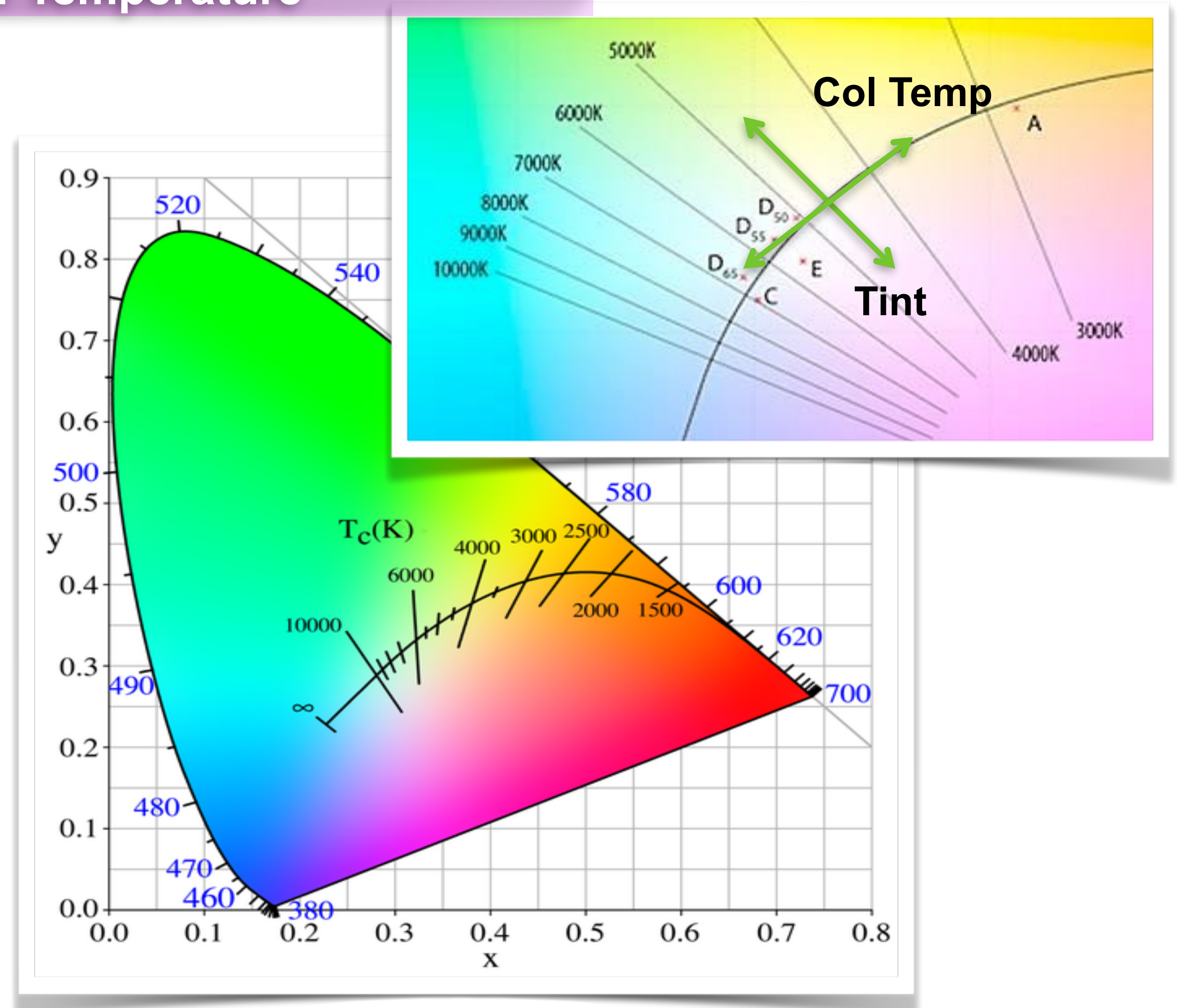
White balance the camera

Determine from camera gains the xy colorpoint

Calculate from x y the CCT and Tint of this whitepoint

Display CCT and Tint

Display In addition x y to the user

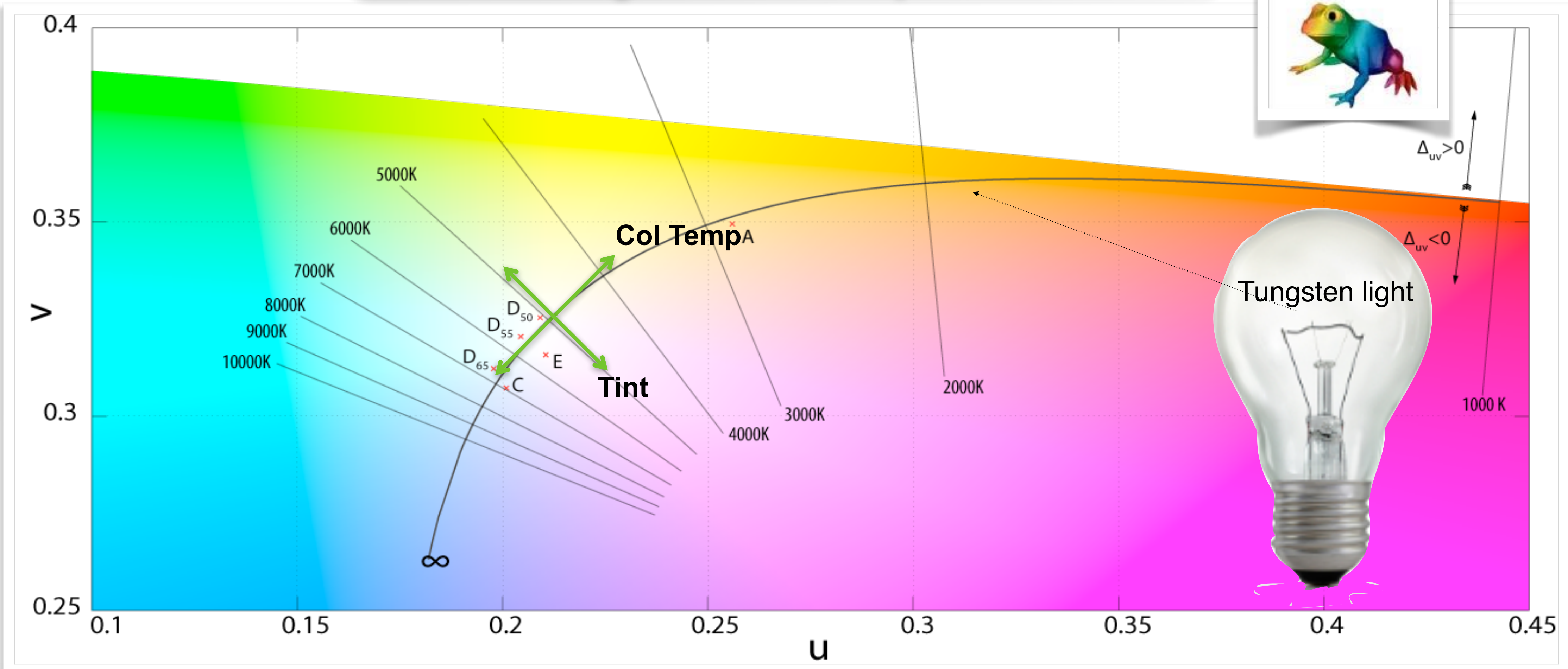


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Correlated Color Temperature

Light and Color Temperature



What's New LDX series

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Correlated Color Temperature

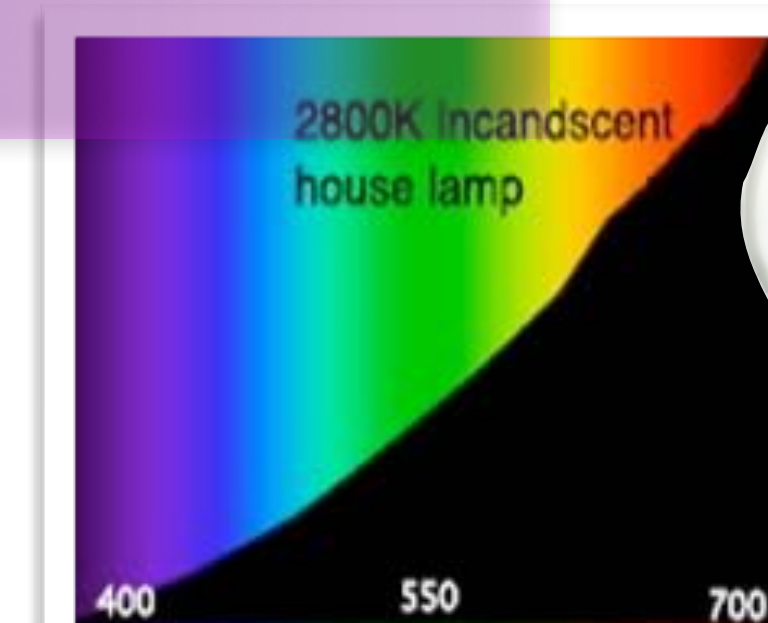
Light and Color Temperature

Limitations of Correlated Color Temperature and Tint:

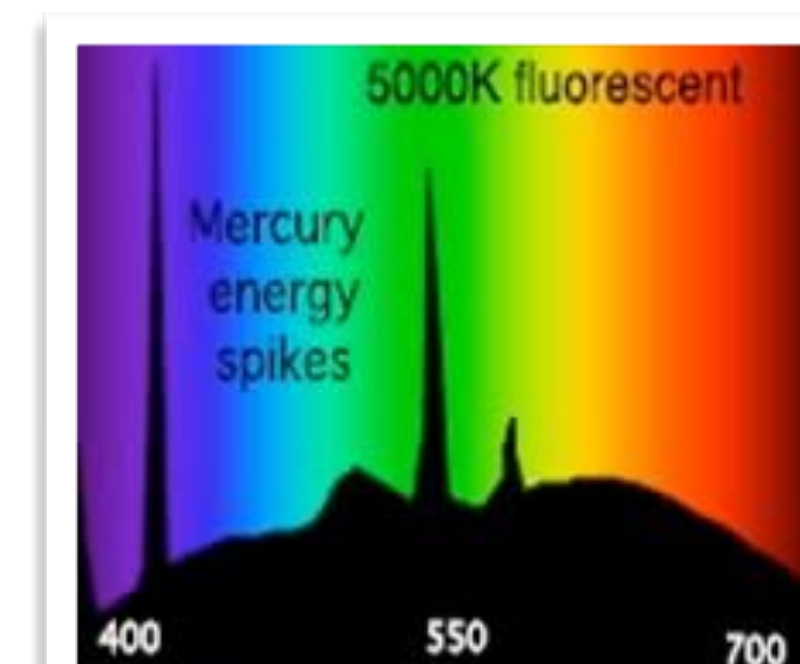
CCT works with predictable light sources (Tungsten, daylight), but can give strange color temperatures for e.g. LED or fluorescent light.

The optical block spectral response is specified accurately, but tolerances can cause some differences between cameras.

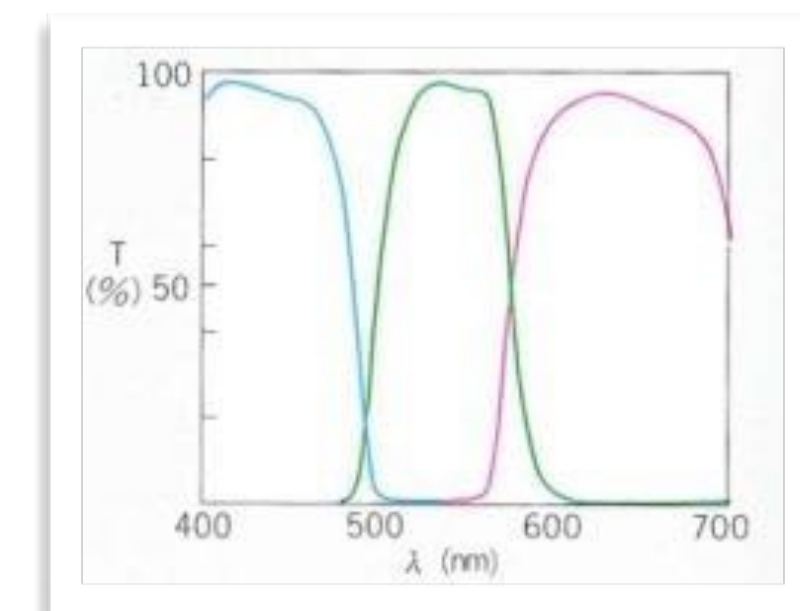
A camera is **not** a color temperature meter because of differences in light sources and tolerance in spectral response.



Tungsten



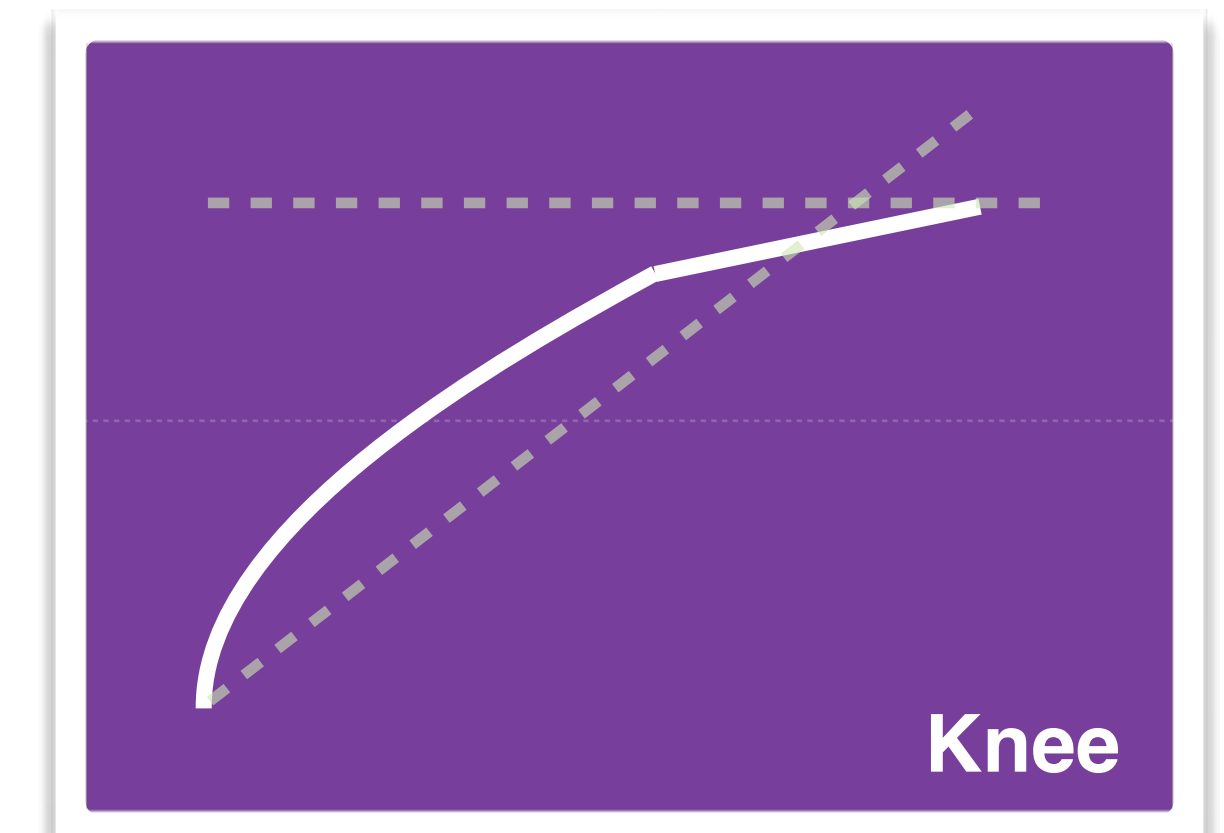
LED



Power Curves

Gamma, Contrast, Knee

- ✓ Gamma: According TV organizations standard
- ✓ Gamma variable: Fine tune gamma Master and RGB
- ✓ Contrast curves: Adjust Shadows, Midtones and Highlights
- ✓ Dynamic range control: Flexible contrast and highlight compression curves
- ✓ Knee saturation: Reduce excessive colors in knee
- ✓ Knee detail: Maintain sharpness in knee
- ✓ Color protect: Preserve luminance from excessive monochromatic colors

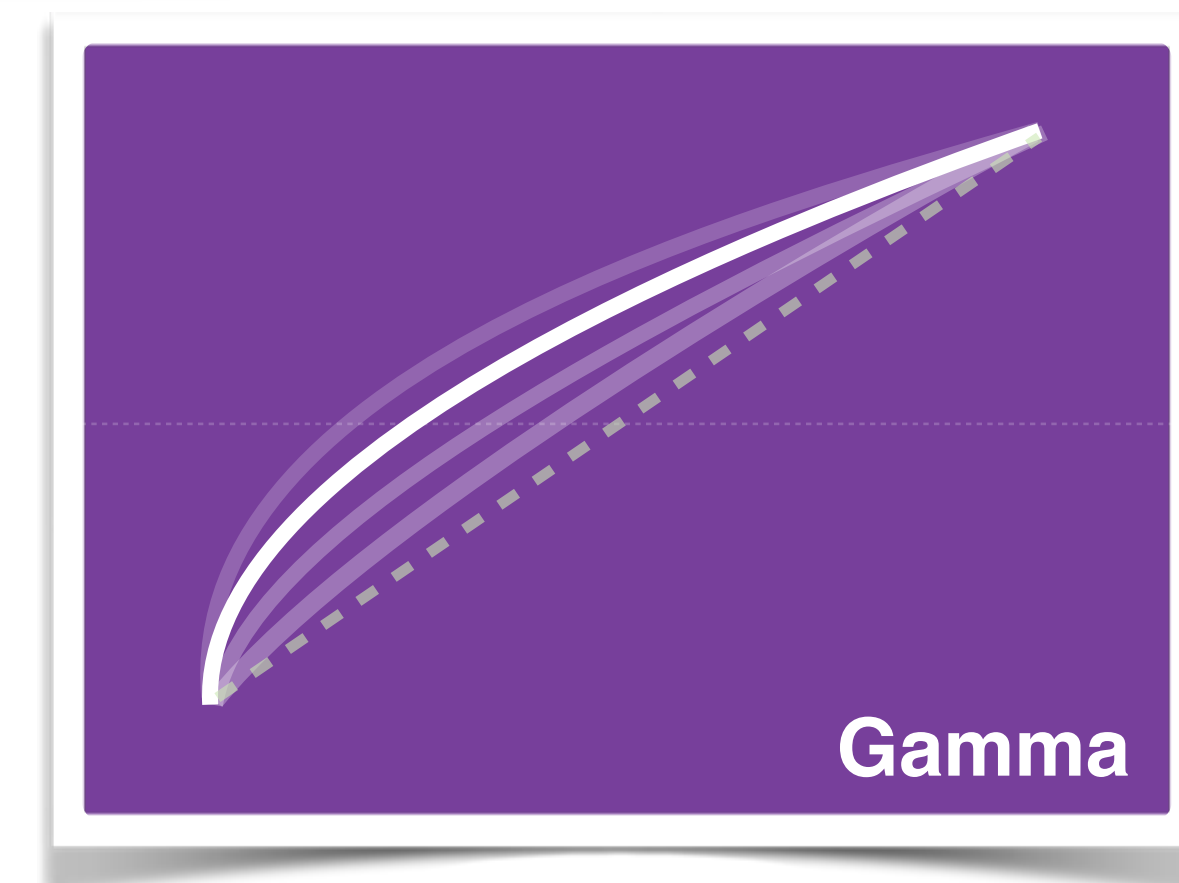


Power Curves

Gamma, *Contrast*, *Knee*

Gamma: Standard ITU709 HDTV curve

- Other basic curves can be selected
BBC04, BBC05, BBC06, ARD, Linear
- Variable Master gamma controls
- Variable RGB gamma controls.
- Linear for test and special applications

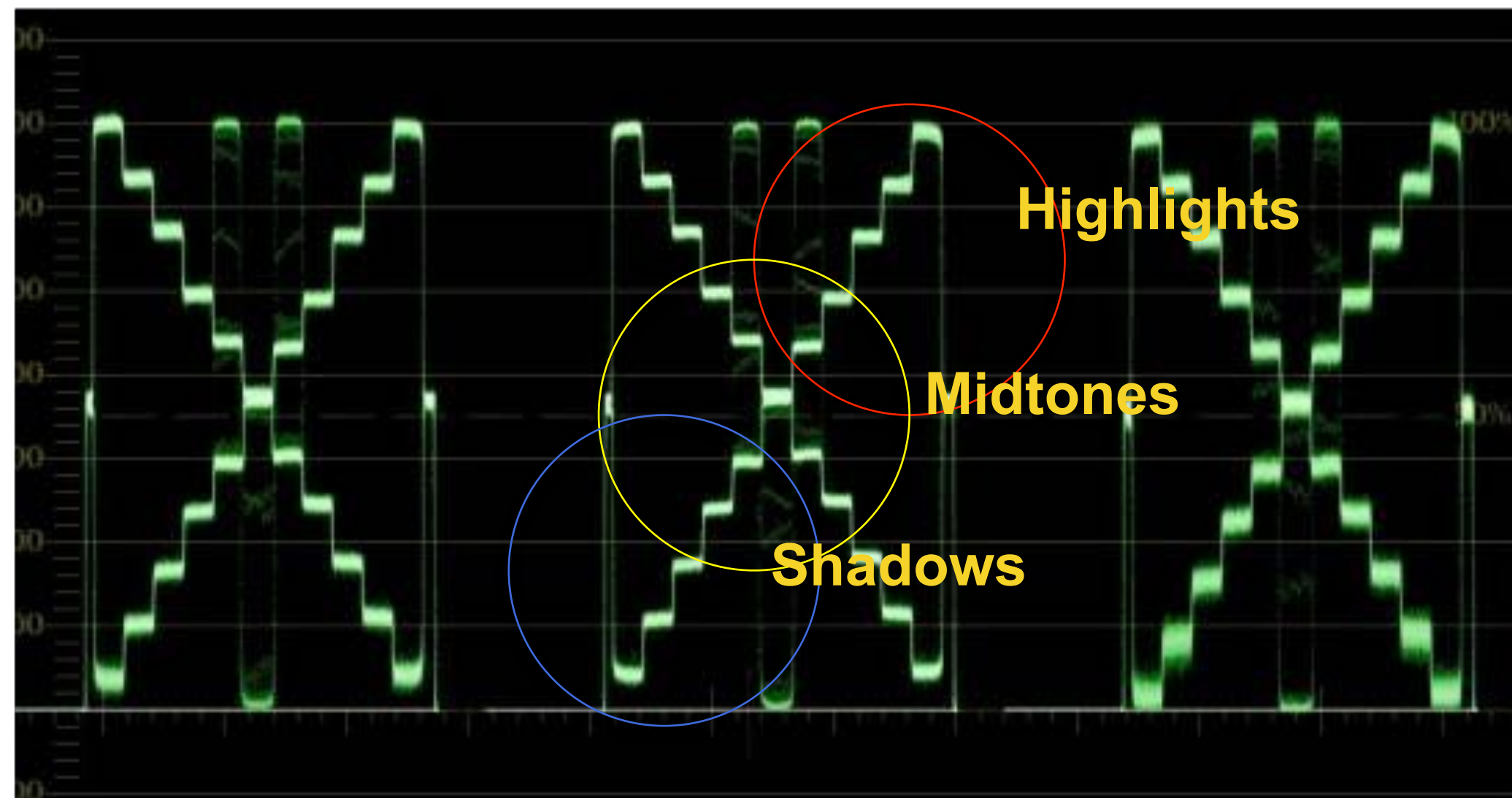


What's New LDX series

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Power Curves

Gamma, Contrast, *Knee*



Emphasize or suppress selected levels of the picture

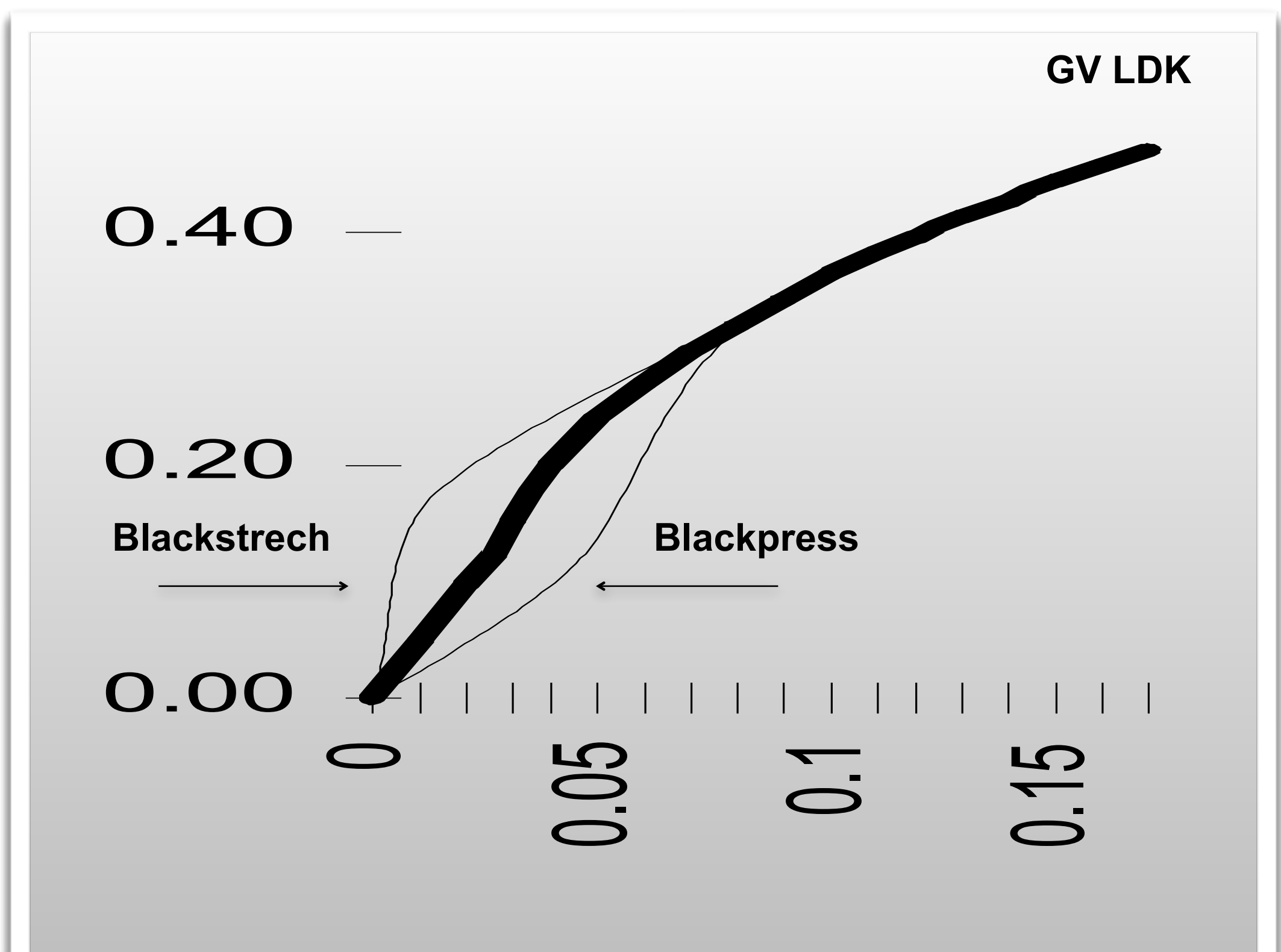
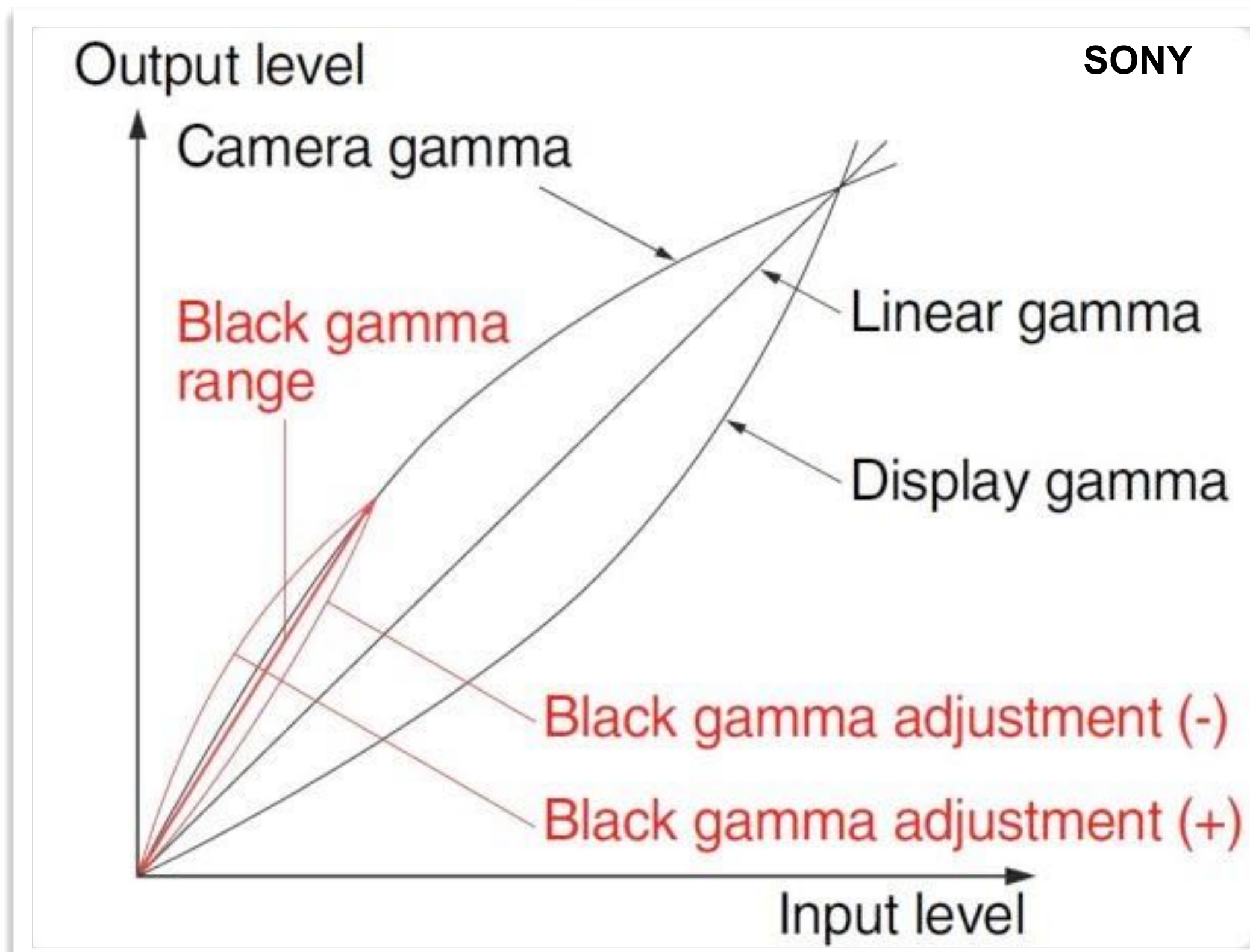
Three Regions of interest: Shadows, Midtones, Highlights

Added to the gamma curve

Can be switched On and Off

Power Curves

Gamma, Contrast, Knee

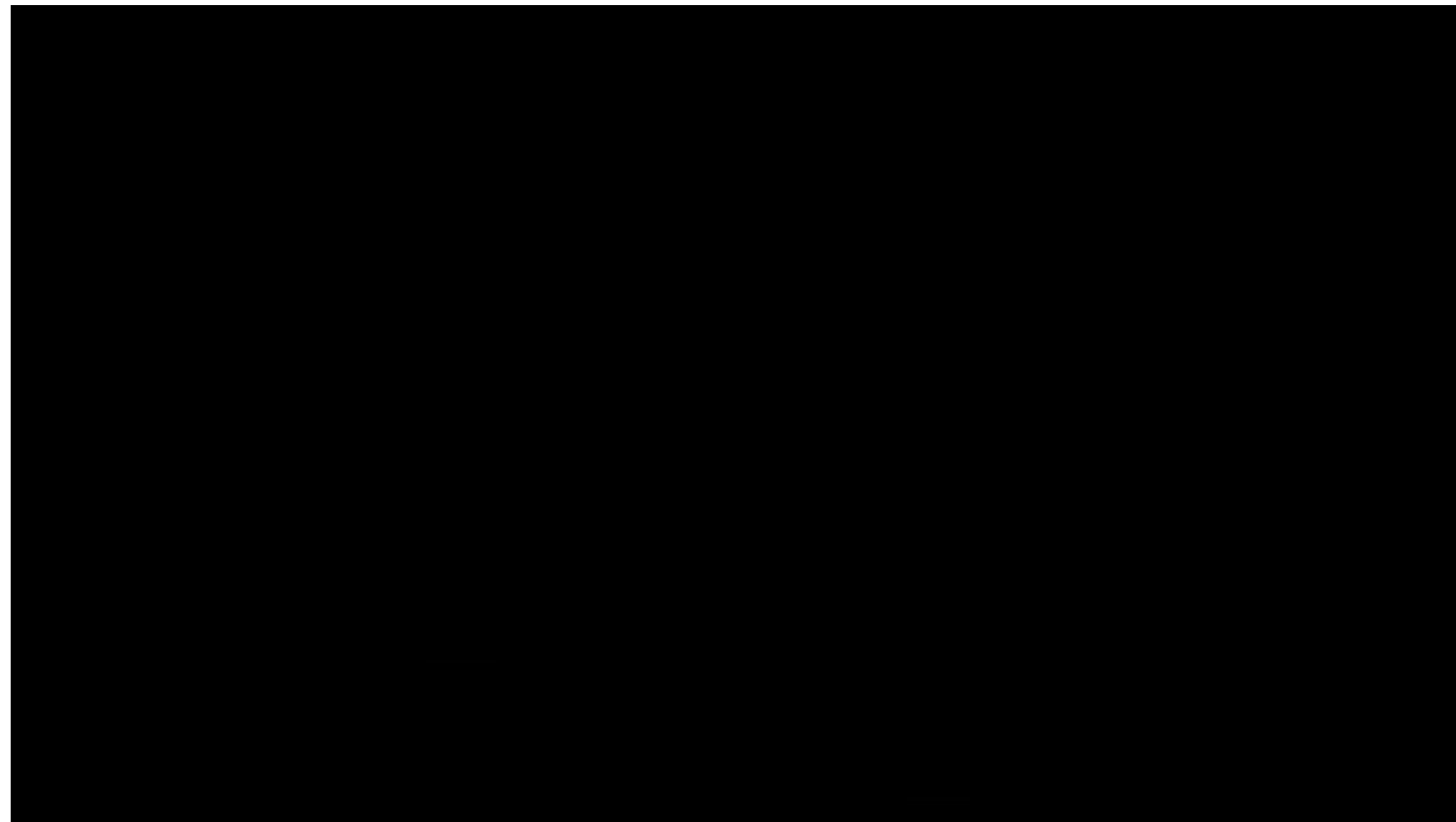


Use Powercurves as replacement Black gamma or Blackstreich

Adjust with Shadows in the Contrastcurve

Power Curves

Gamma, **Contrast**, *Knee*

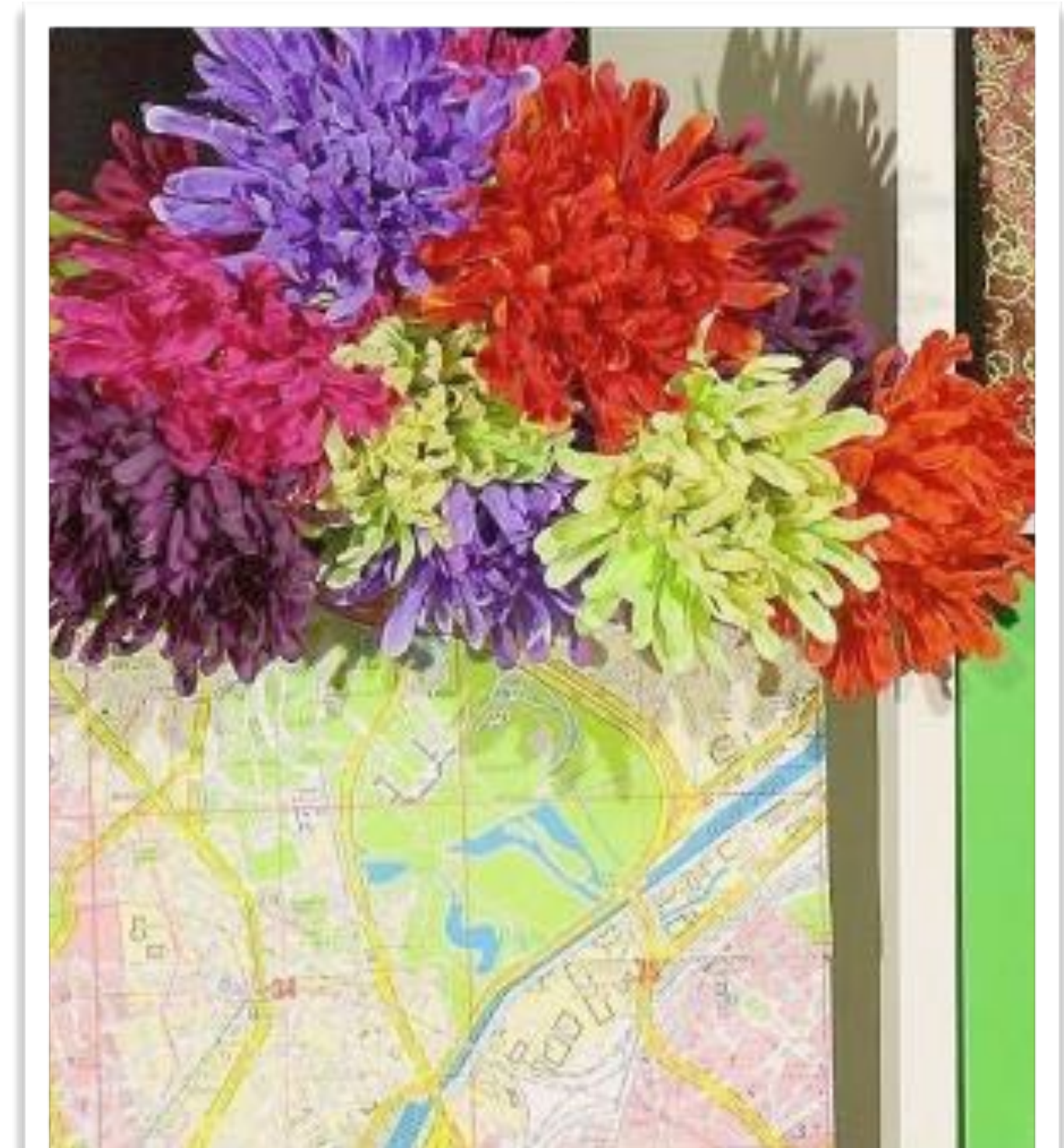


Power Curves

Gamma, Contrast, Knee

Dynamic Range Control, Knee:

- Map up to 800% exposure in to 100% output range
- Map the input range of RGB video into 100% video in and artistically convincing way.
- Take care that colors are properly mapped.
- Smooth transition curve is replacing the sharp knee point
- Highlights are mapped with transfer curves,
- Color corrections with knee saturation
- Maintain sharpness with knee detail

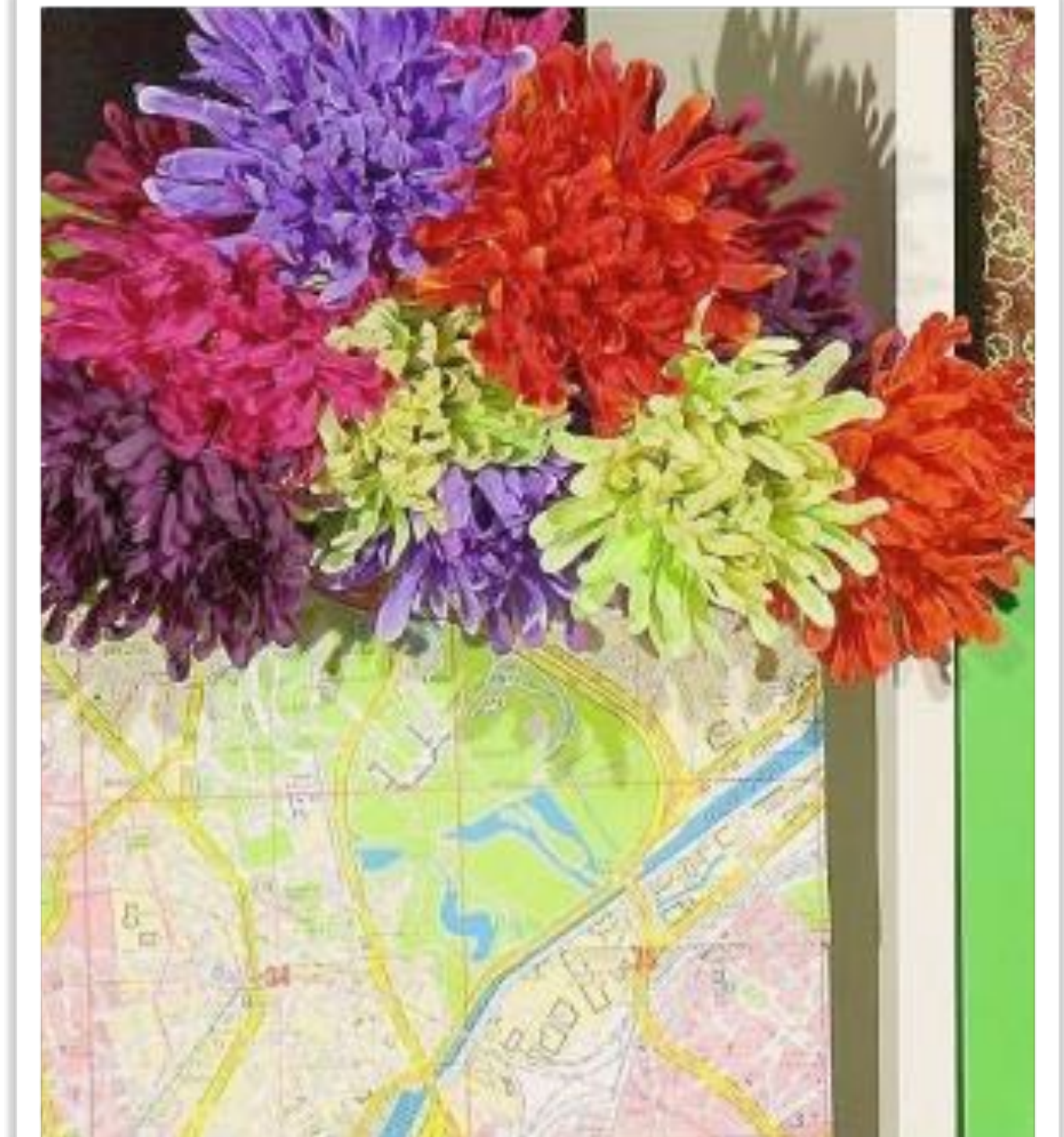


Power Curves

Gamma, Contrast, **Knee**

Dynamic Range Control, Knee:

- Low starting point: Similar to Hypergamma
- High starting point: Similar to Knee
- Auto knee will compress from linear down to the set curve
- Control on maximum allowed overexposure and curve
- The Knee has a very smooth character
- Compatibility mode for traditional knee



What's New LDX series

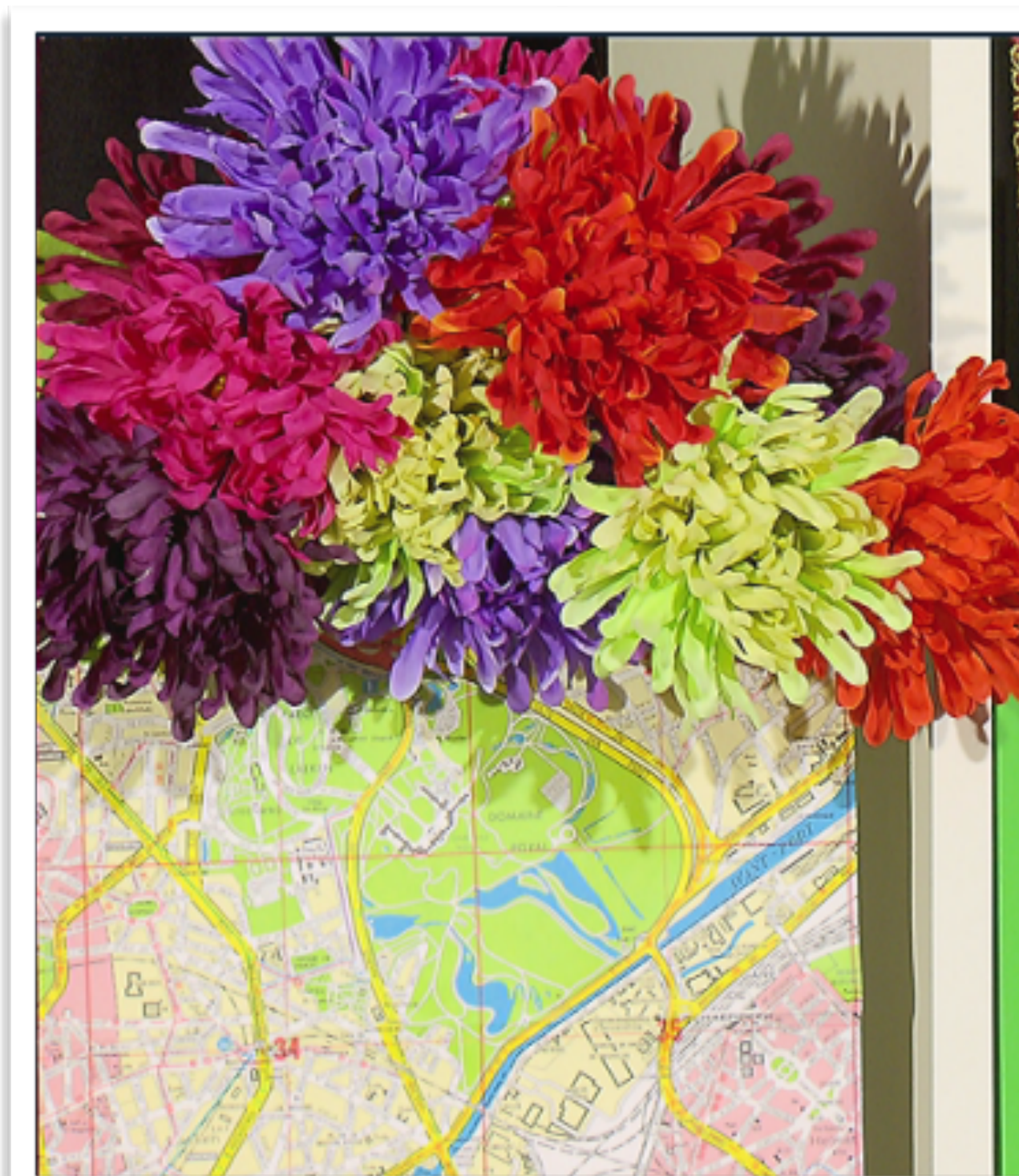
part 2 Web Training

Power Curves

Gamma, Contrast, Knee

Knee functions

- Knee - Off, Auto, Variable
- Knee Max in -100%...600%
- Knee Out – 100%...118%
- Knee point – 0%...90%
- Knee Fade – 00...99
- Knee Out limit -100%...118%
- Knee Source - NAM, Y
- Knee Saturation – 00...85
- White Clip – 85%...109%
- Knee detail – Off,1,2,3,4



LDX Knee



LDK Knee

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Power Curves

Gamma, Contrast, **Knee**



Dynamic
LDX Knee



Traditional (LDK)
LDK Knee

What's New LDX series

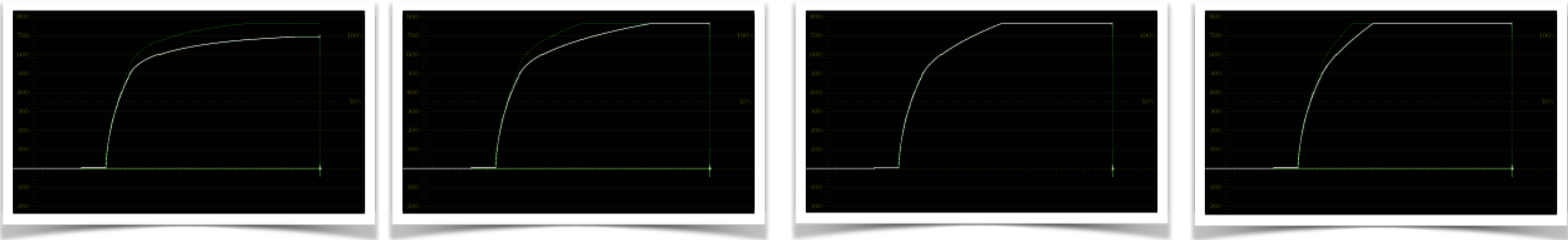
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Power Curves

Gamma, Contrast, Knee

Dynamic Knee

Fade between Dynamic Knee and Traditional Knee



Fade Knee



Dynamic

Traditional

What's New LDX series

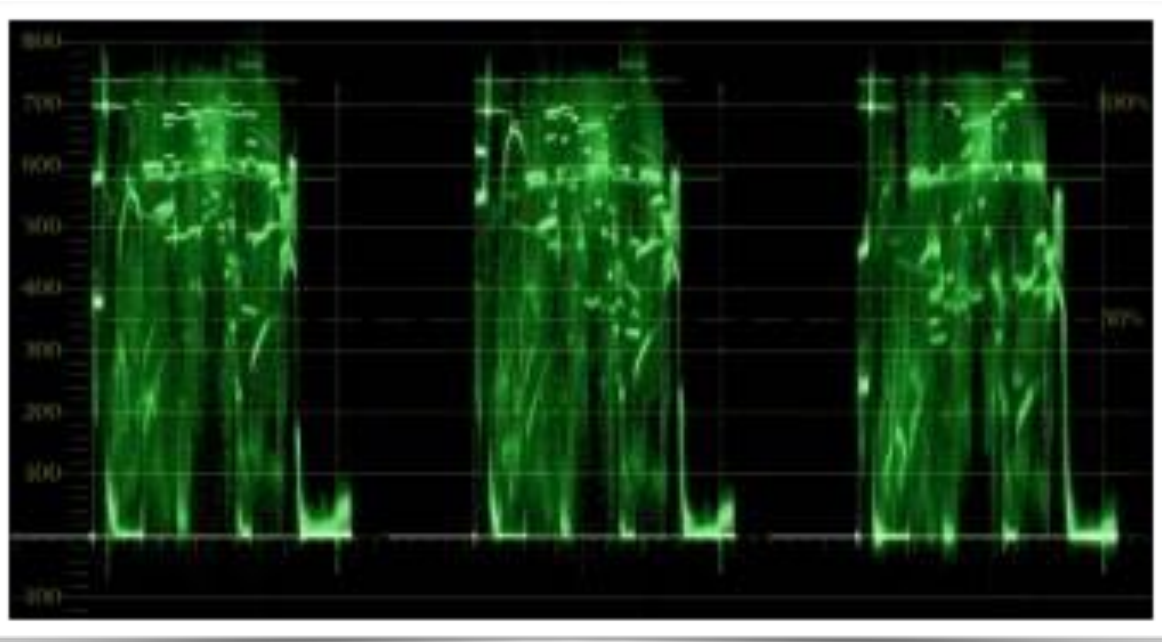
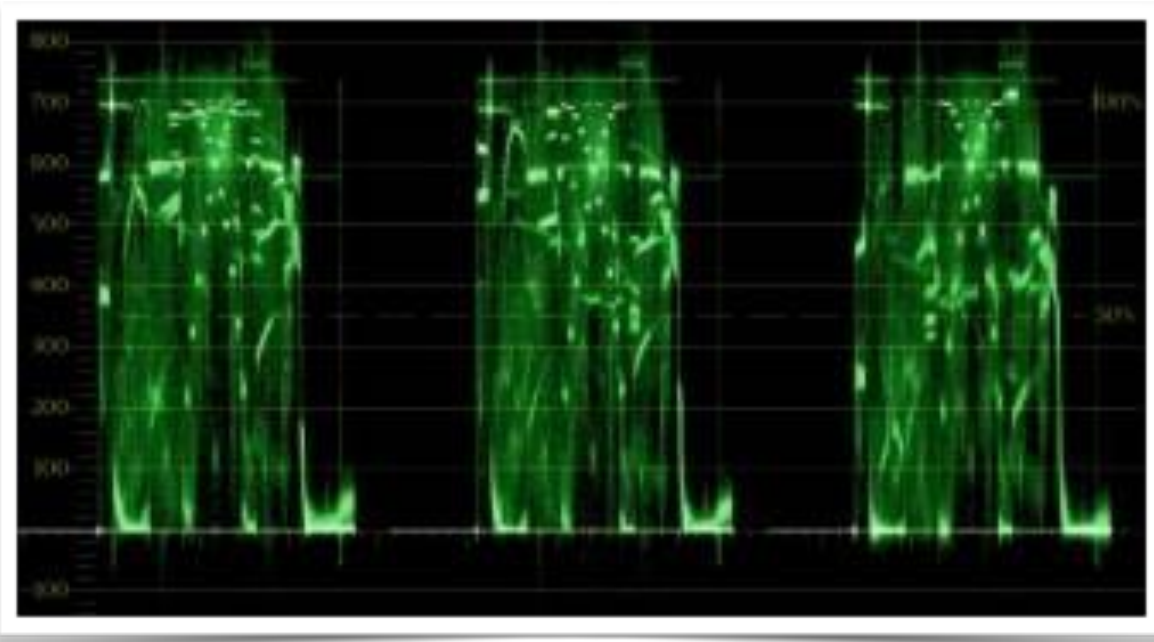
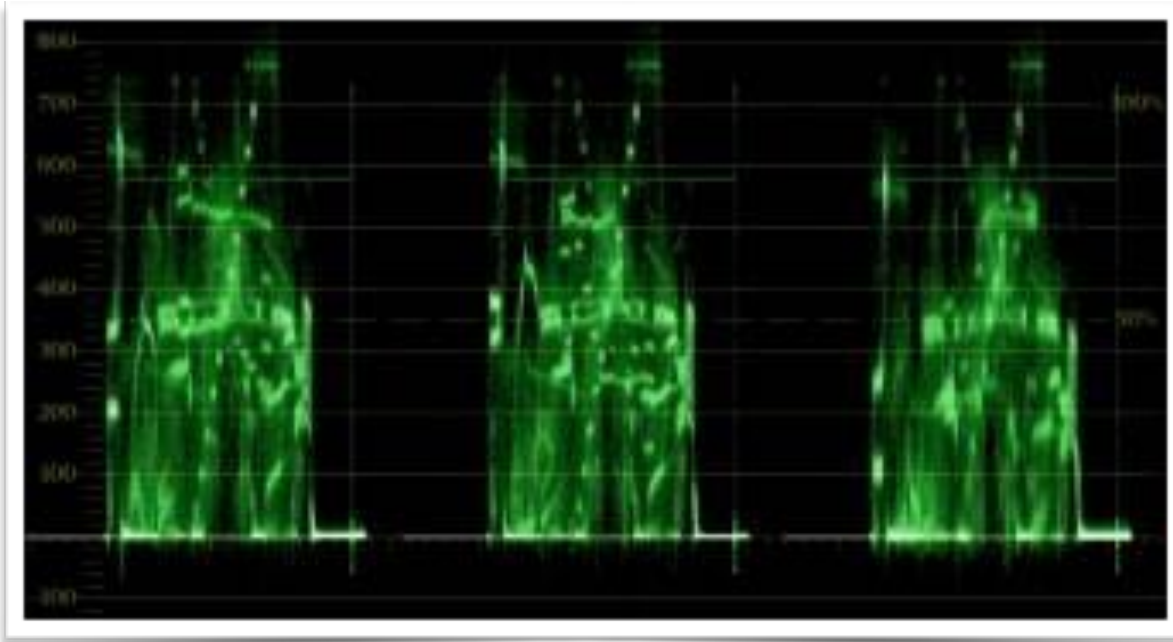
part 2 Web Training

Power Curves

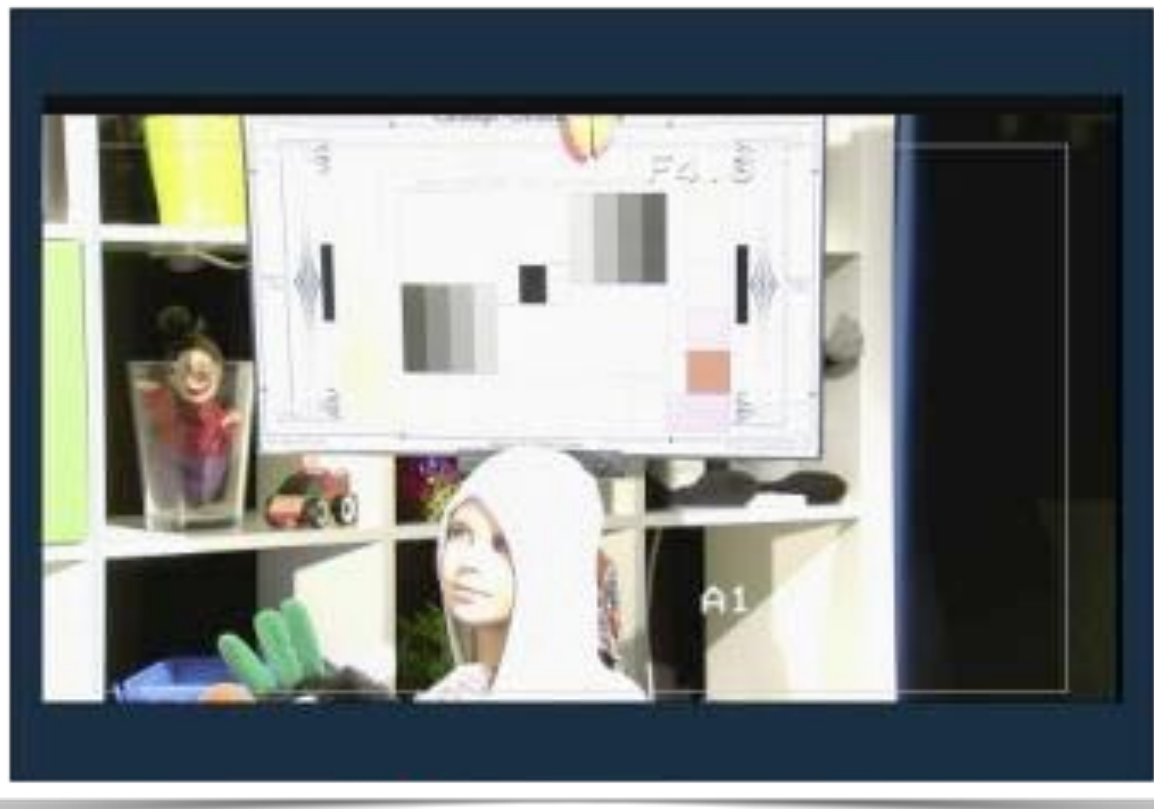
Gamma, Contrast, **Knee**

Dynamic Knee

Pushing the knee to the limits



Knee off, F10
100% exposure



Knee off, F4
800% over exposed



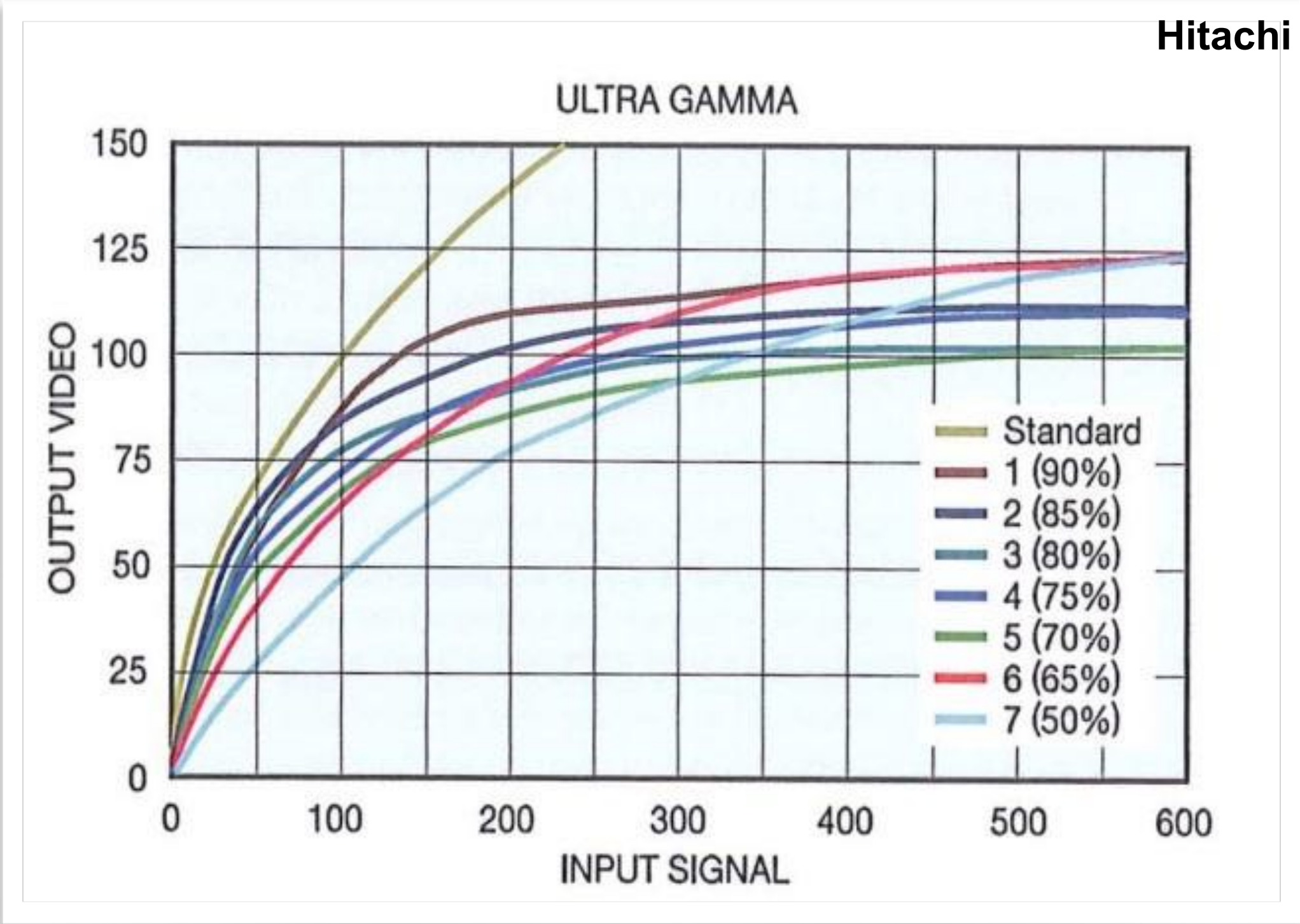
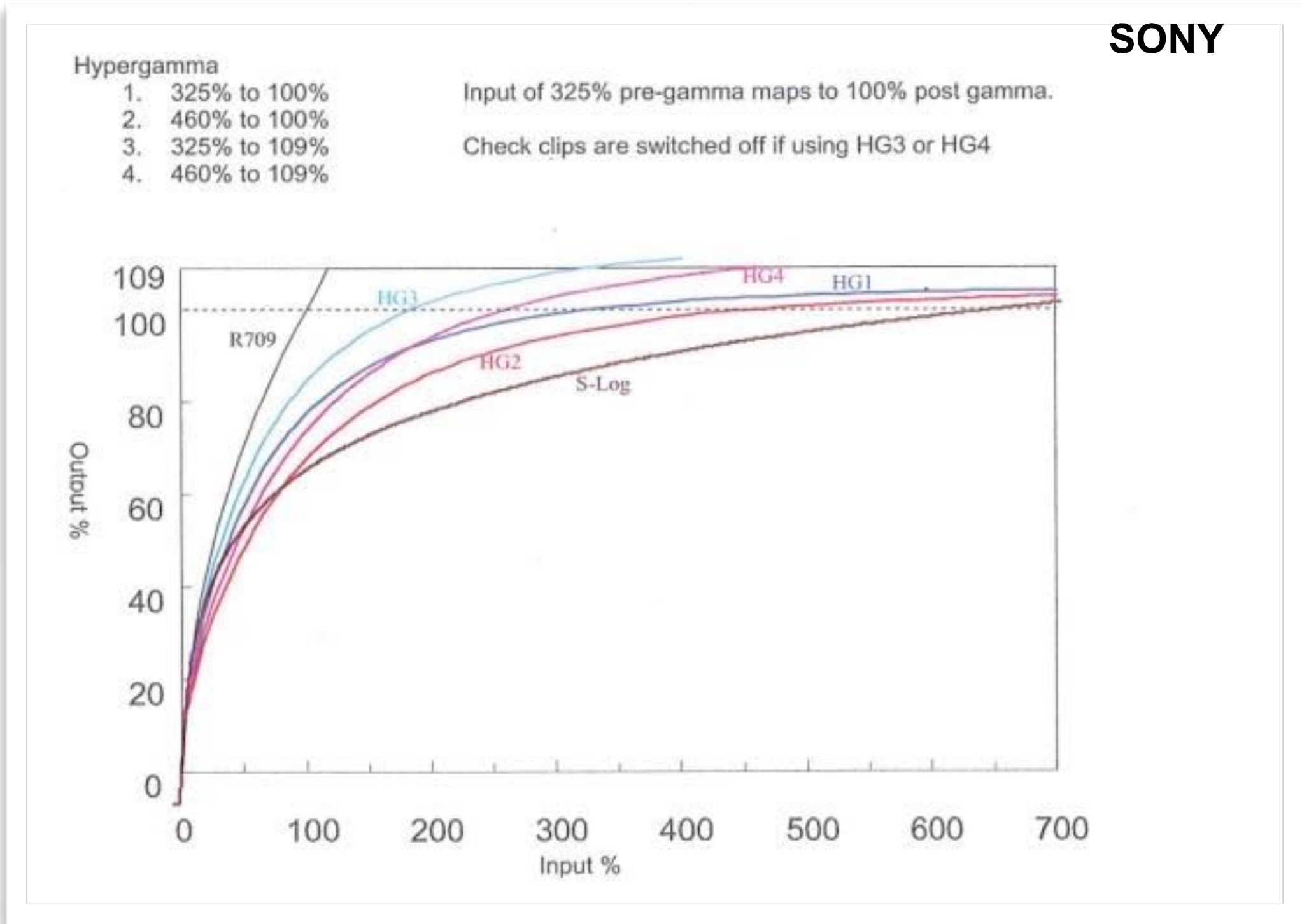
Knee on, F4
800% over exposure

What's New LDX series

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Power Curves

Gamma, Contrast, Knee



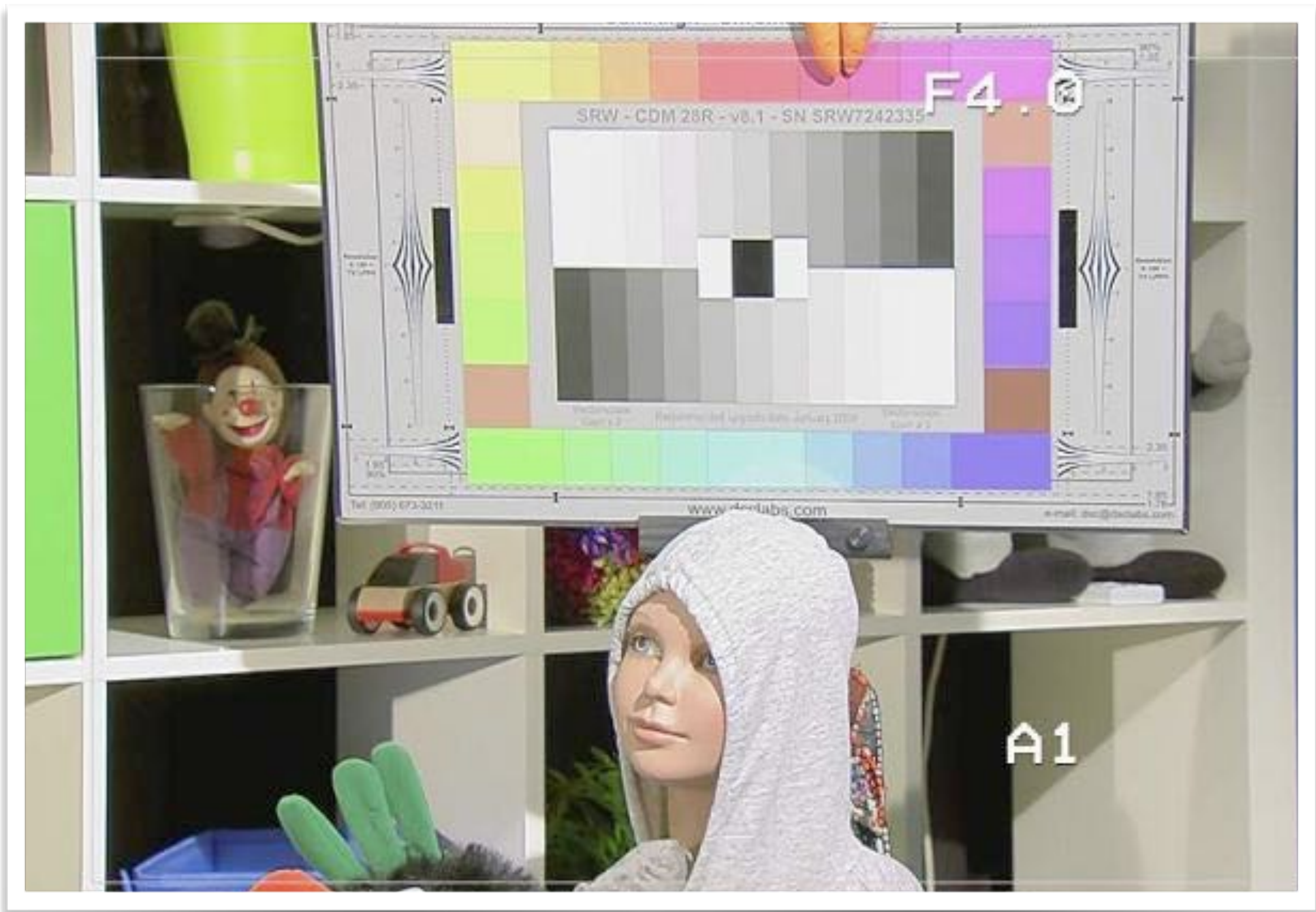
Use Powercurves as replacement for Hypergamma or Ultra gamma
Adjust with Dynamic range control

What's New LDX series

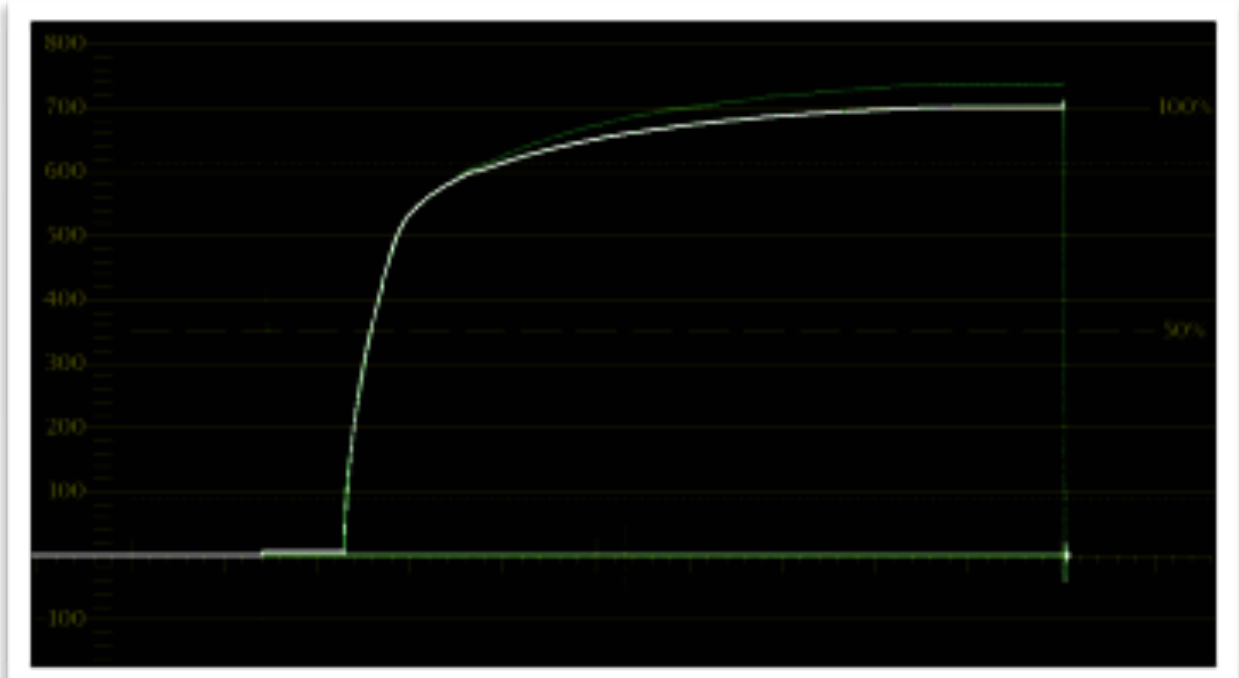
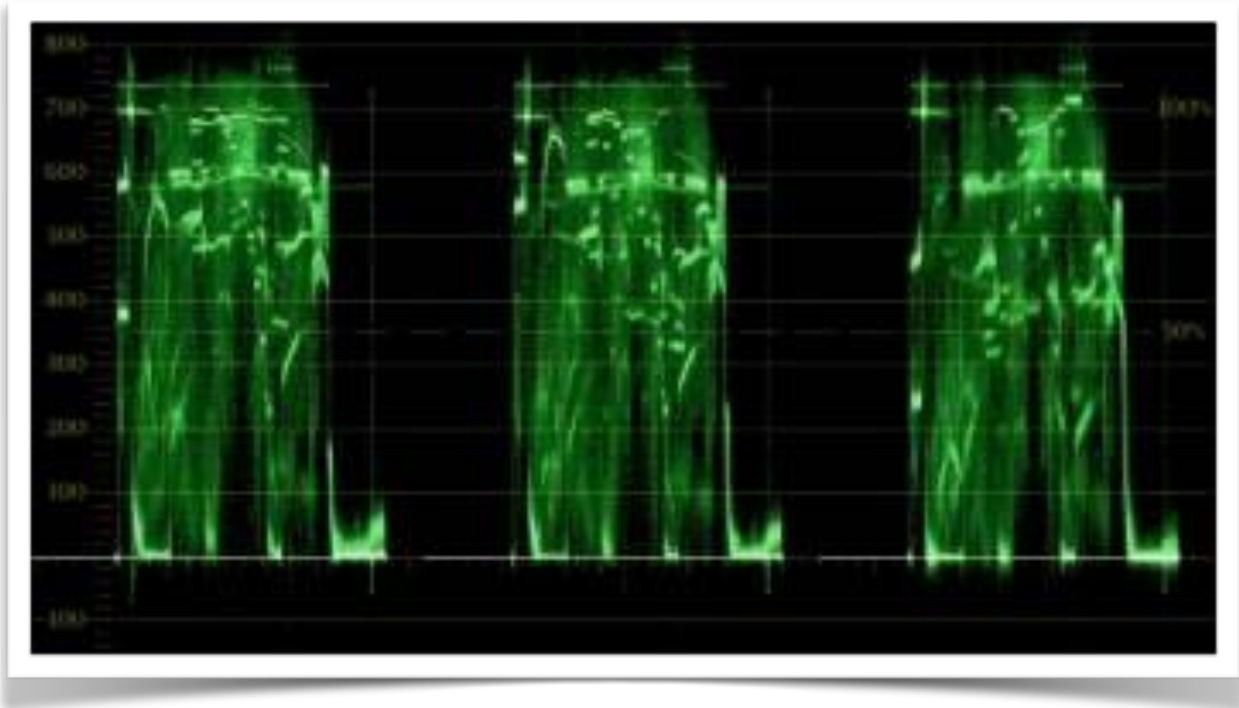
part 2 Web Training

Power Curves

Gamma, Contrast, Knee



800% over exposure

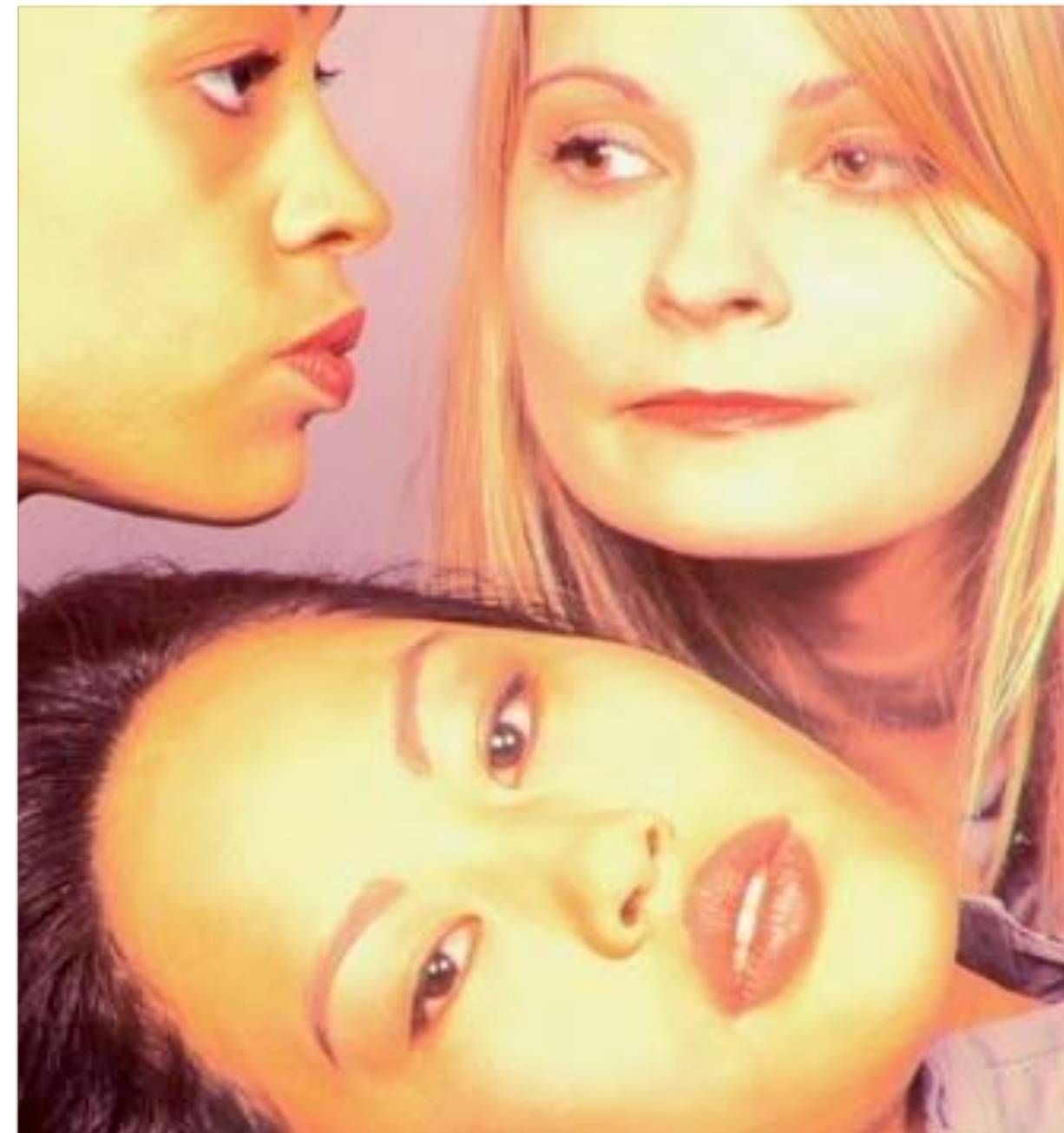


Power Curves

Gamma, Contrast, Knee

Knee Saturation:

Reduce excessive colors
when dynamic range control
is active.

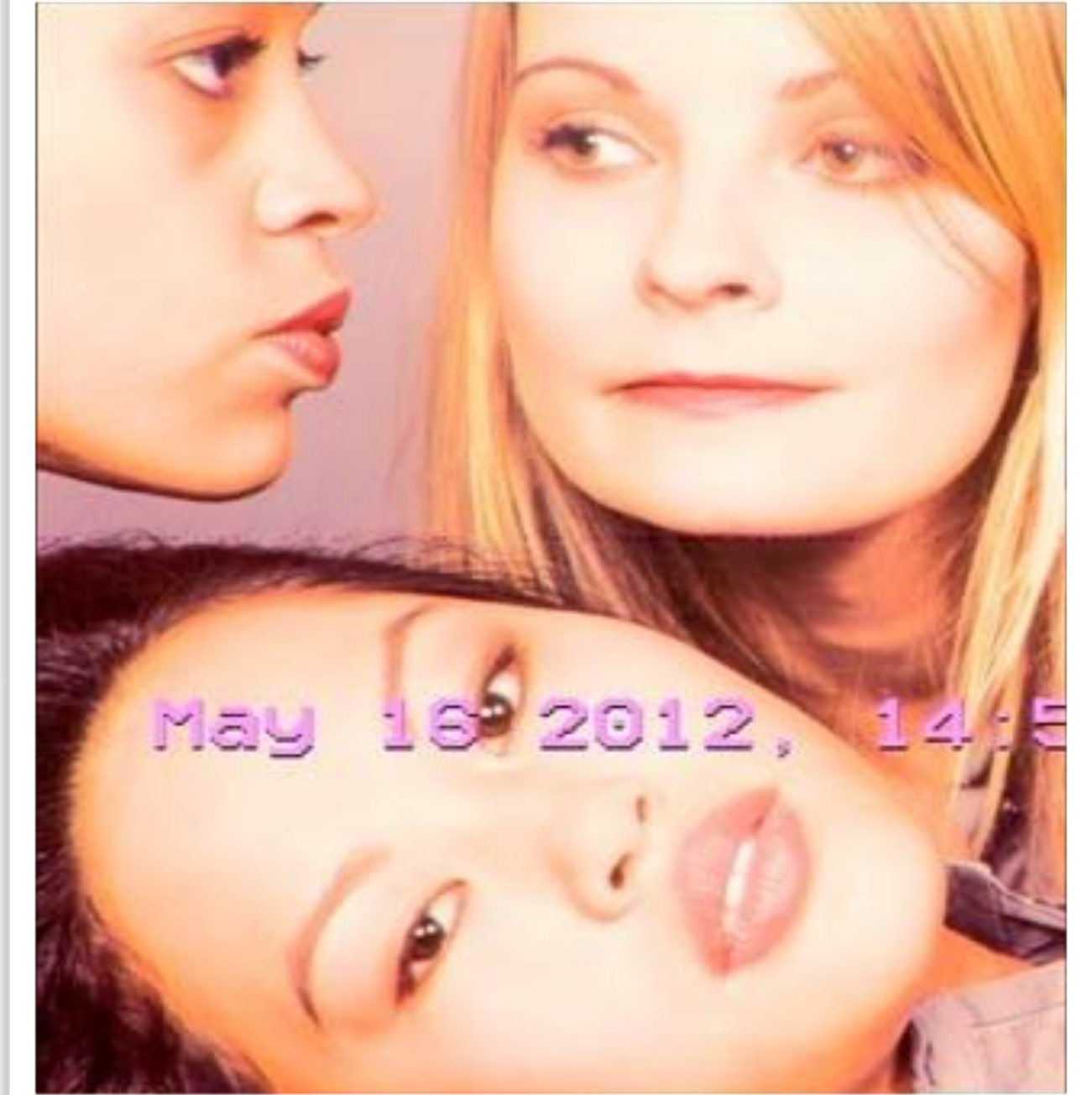


LDK

2 stops overexposed

Knee only

Skin colors go yellow



LDX

2 stops overexposed

Dynamic range control

Desaturation

Matrix

Basics Video / Image processing

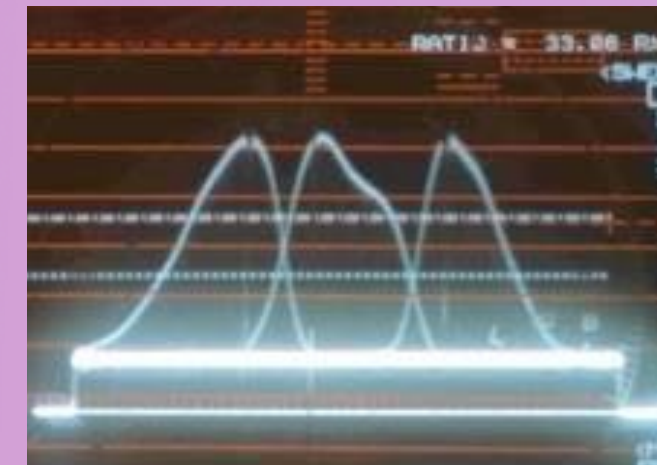
Matrix:

Adding and subtracting R,G or B into each others channels,in such way that the sum of the mixing coefficients remains 1

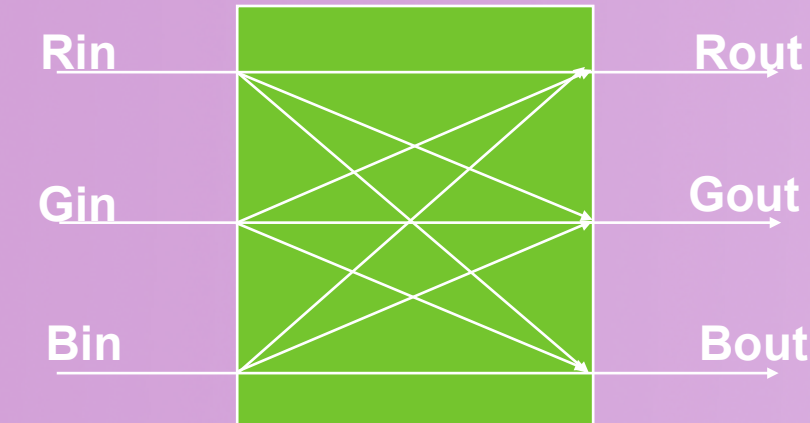
Black, grays and white are not effected,
Only colors have changed after the matrix

Purpose:

Correct the optical color splitter (prism)
Obtain specific color reproduction
(standardization, artistic)



Correct the optical color splitter (prism)
Obtain specific color reproduction
(standardization, artistic)



Matrix

Basics Video / Image processing

Matrix:

Default XGL = Vivid colors

Other presets:

Skin = Optimized for LDK camera look

EBU = Optimized for EBU reference
colors

BBC = Optimized according BBC

CoolFL = Optimized for Fluorescent and
Incandescent light mix

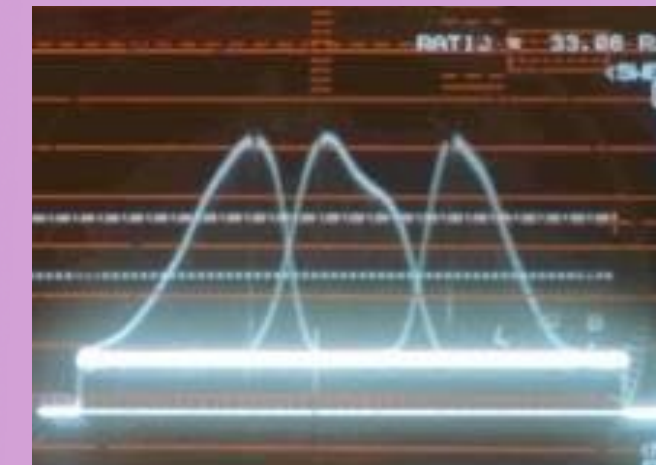
1:1 = Matrix off

B&W = Black and white

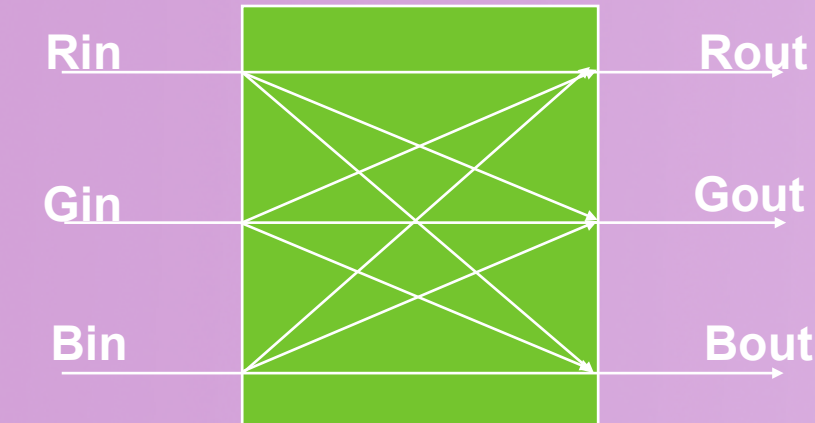
Variable: VAR1, VAR2 (six direction +/- vector
adjustment)

Matrix position:

- M/G = Pre Gamma (default)
- G/M = Post Gamma



Correct the optical color splitter (prism)
Obtain specific color reproduction
(standardization, artistic)



Functional LDX series

part 2 Web Training

Matrix

• Basics Video / Image processing

Matrix:

.LDK 8000

- Skin

- G/M

M/G is Sequence Matrix / Gamma

LDX

- XGL

- M/G

Gamma:

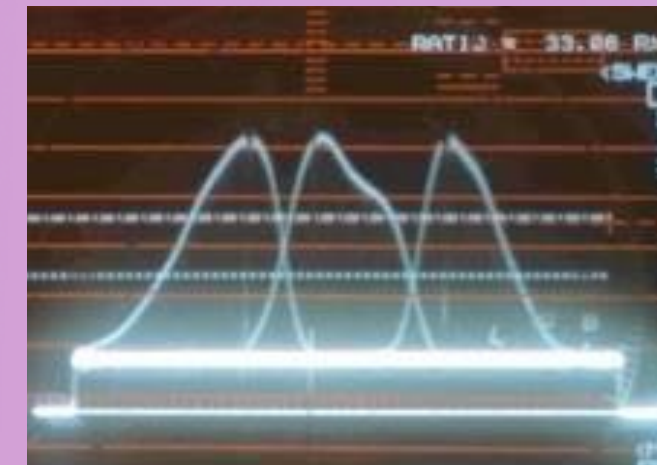
LDK 8000

- ARD

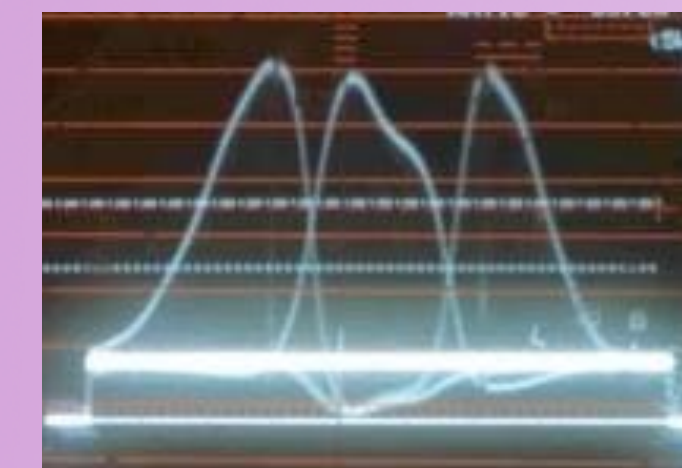
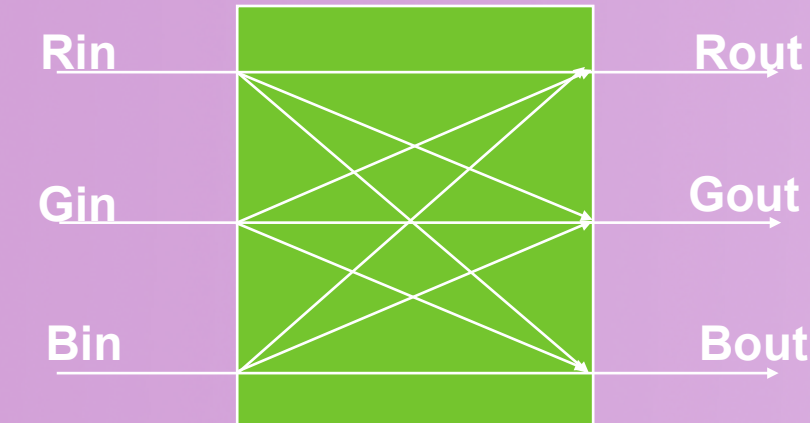
LDX

- ITU 709

- (CCIR from LDK8000)



Correct the optical color splitter (prism)
Obtain specific color reproduction
(standardization, artistic)



Saturation

Saturation:

- Adjustment of the color content in the picture
- Normal setting 100%
- Saturation range from 0% (B&W) to 200% (Very bright colors)
- Saturation is part of the Matrix circuit



0 %



100 %



200 %

What's New LDX series

part 2 Web Training

Color Protect

Monochromatic LED and Theatre lights are used in studios and show programs
This typically appears in blue and magenta
Monochromatic lights like Blue LED become dominant when their intensity is high
Blue only presents 7% of Luminance according ITU709
The dominance destroys all the luminance content
Resulting in blue over saturated areas with no detail.

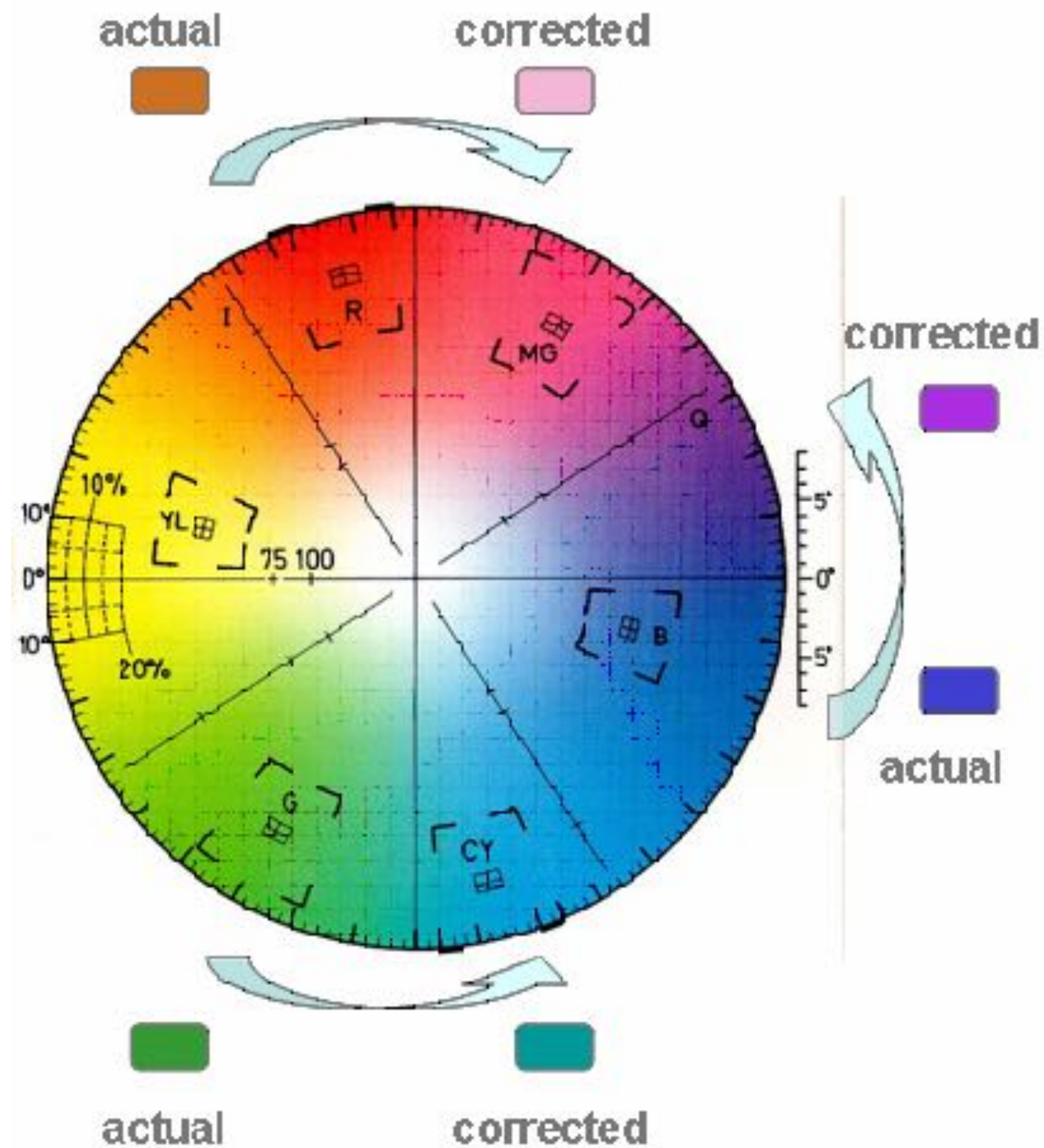
Color protect restores Luminance without being effected from Blue



What's New LDX series

part 2 Web Training

Color Corrector



16 vector color corrector

Change colors into other colors

Adjust Hue, Saturation and Luminance

Six different color changes allowed

Independent view via basestation monitoring (fiber)

Adjustable smooth transitions



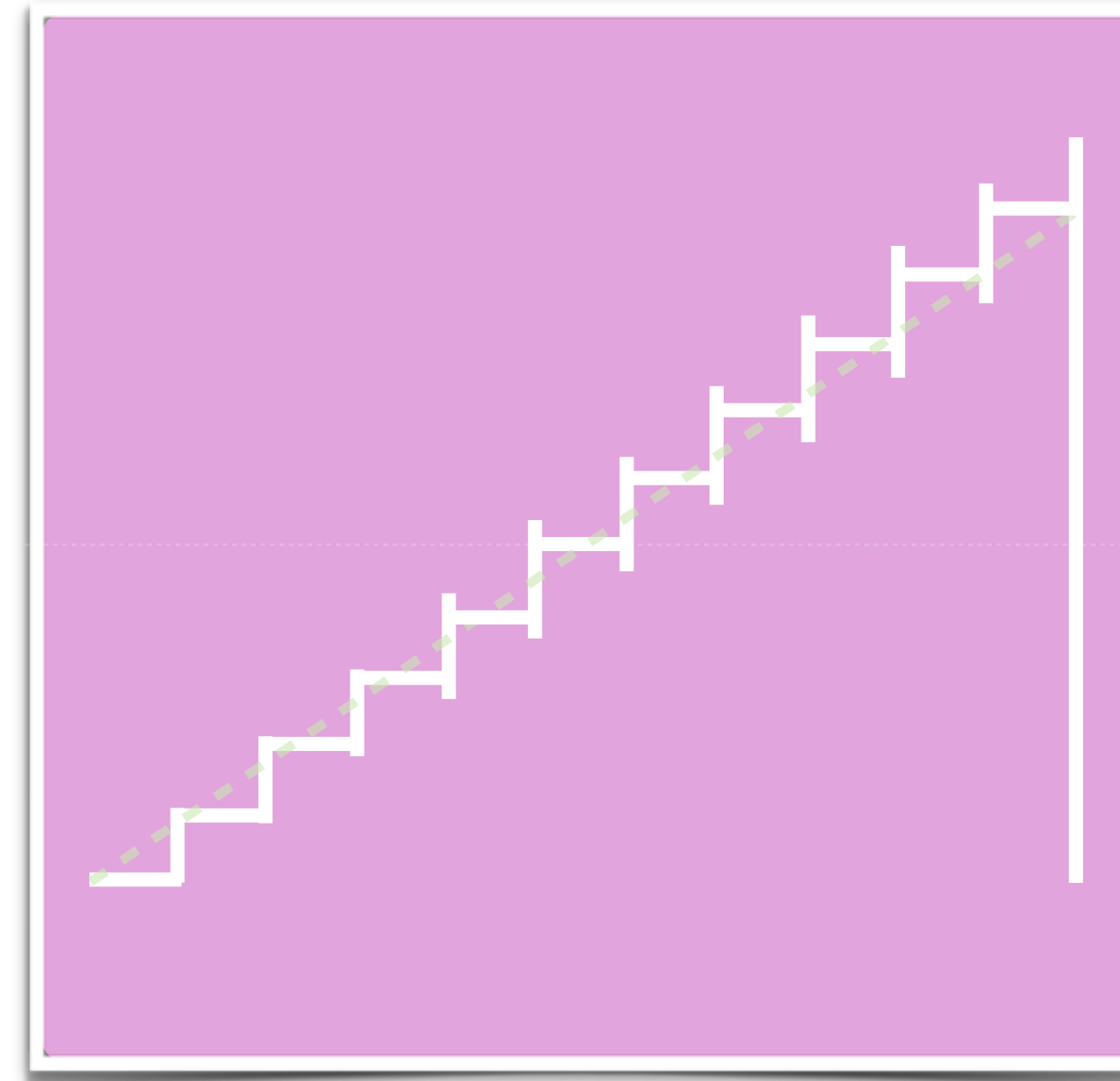
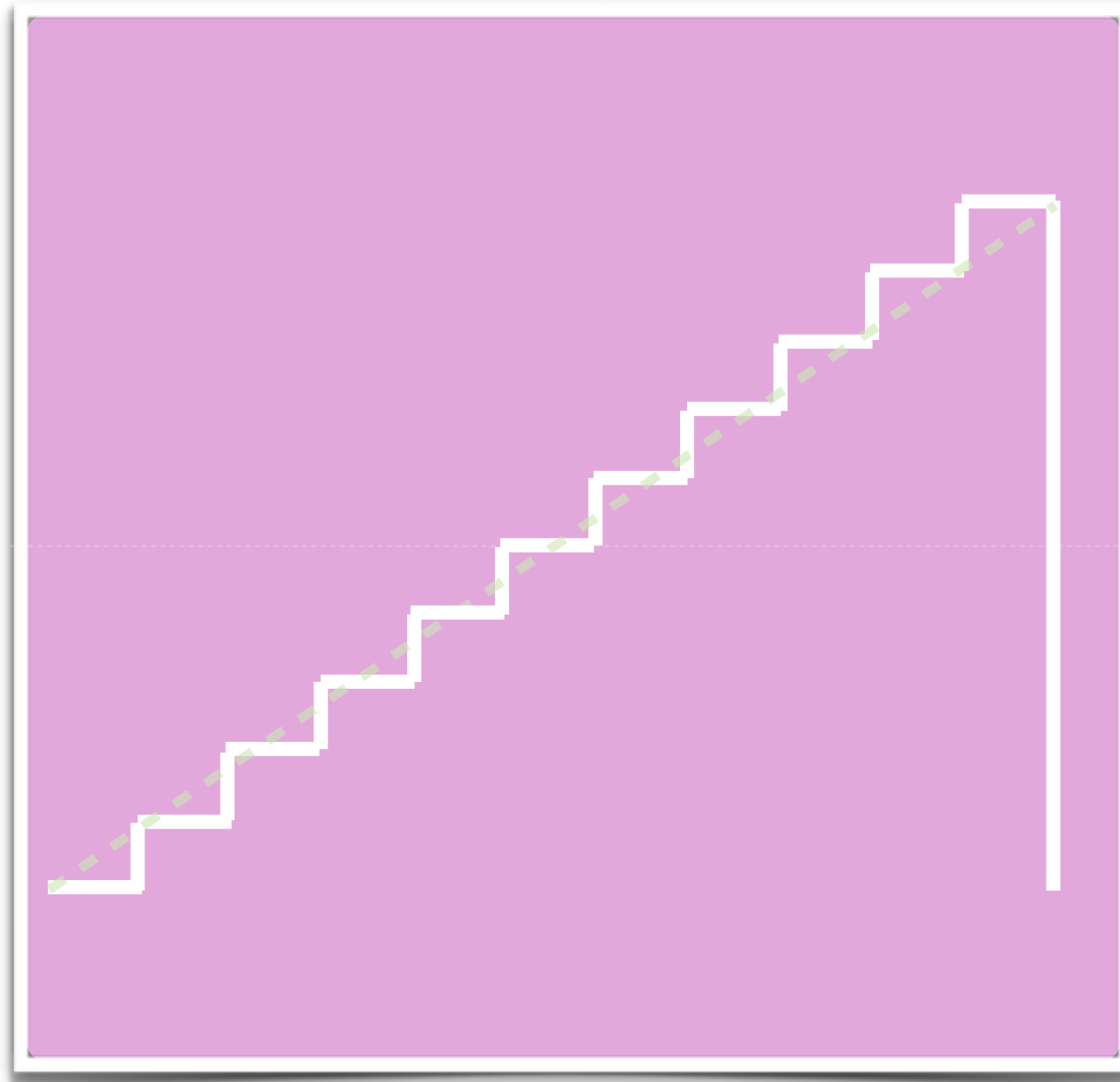
Details



Why detail correction

- Correct for limitation of pixel aperture and lens aperture
- User sharpness perception

Details



Detail correction:

Main control is Level will be renamed in future

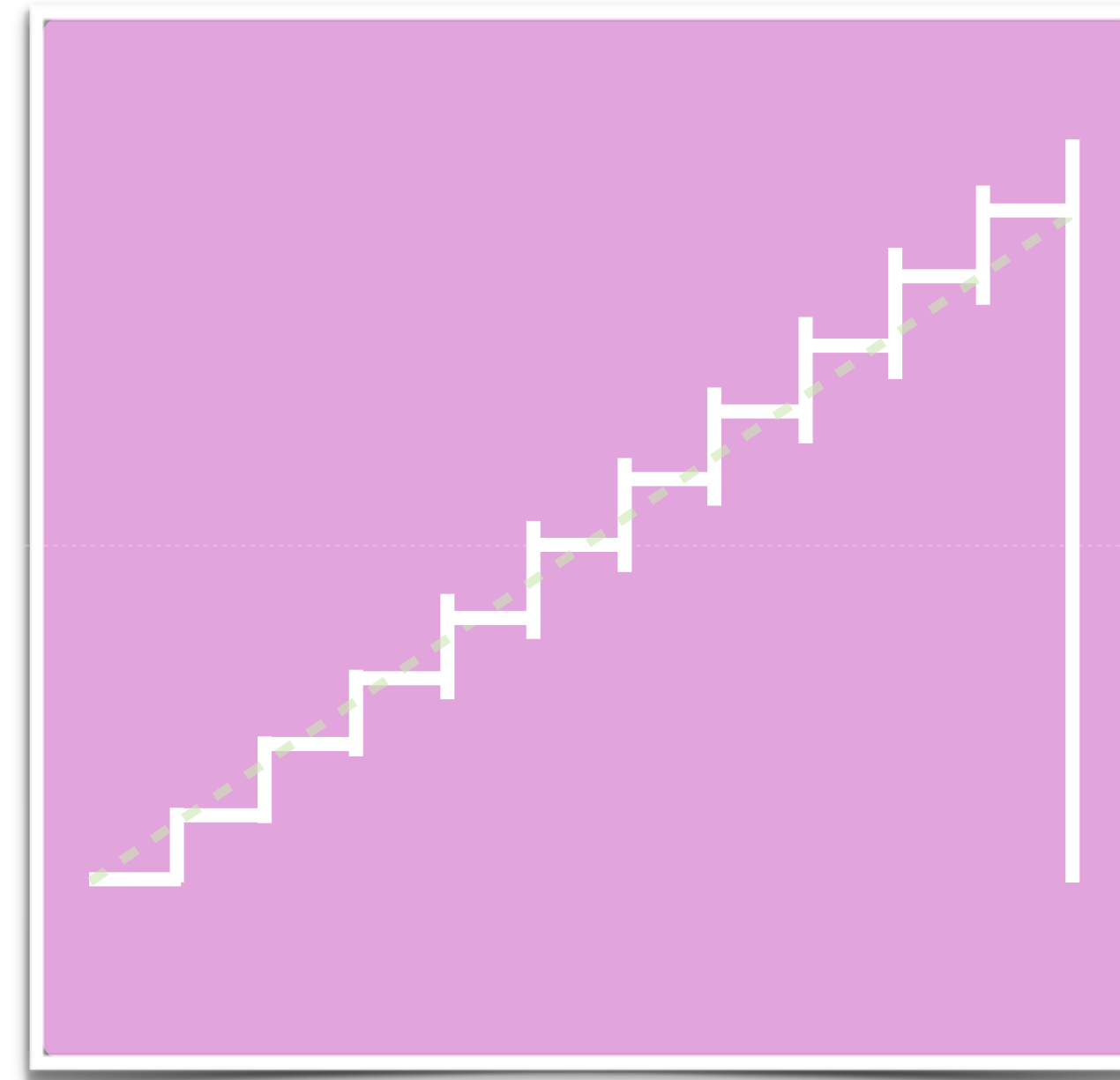
- Level (Texture)
- Soft detail (Edge)

Details

Detail correction:

Other detail controls:

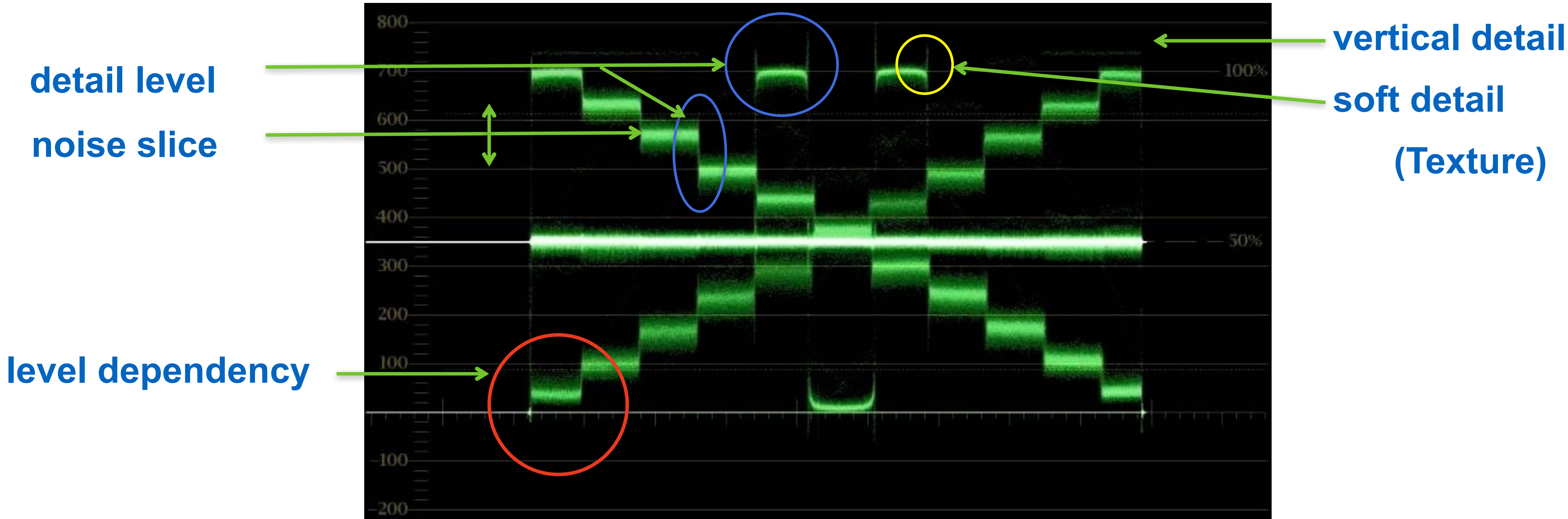
- Level dependency
- Noise slice
- Course / Fine detail
- Vertical detail
- Knee detail
- Soft detail (Texture)



What's New LDX series

part 2 Web Training

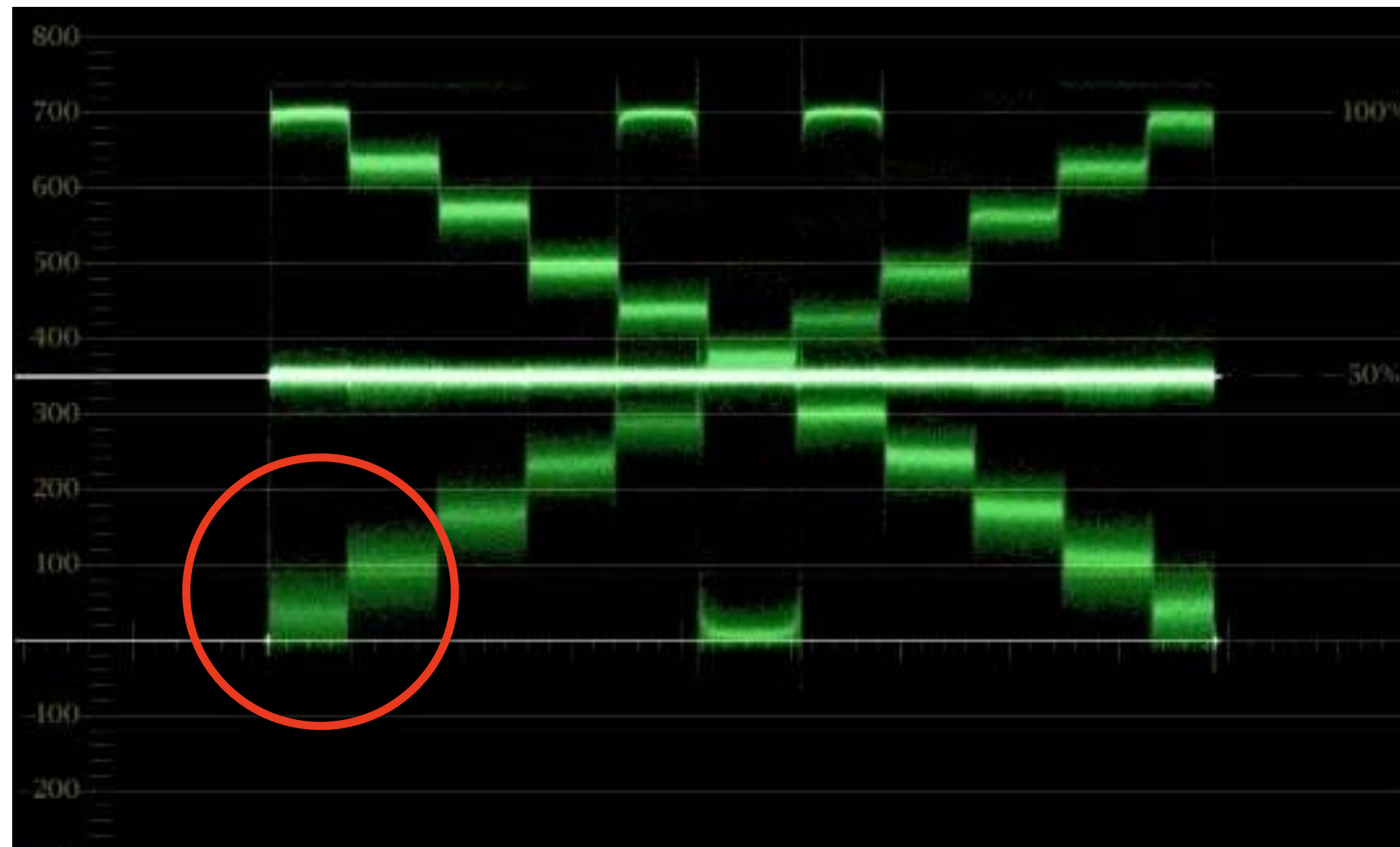
Details



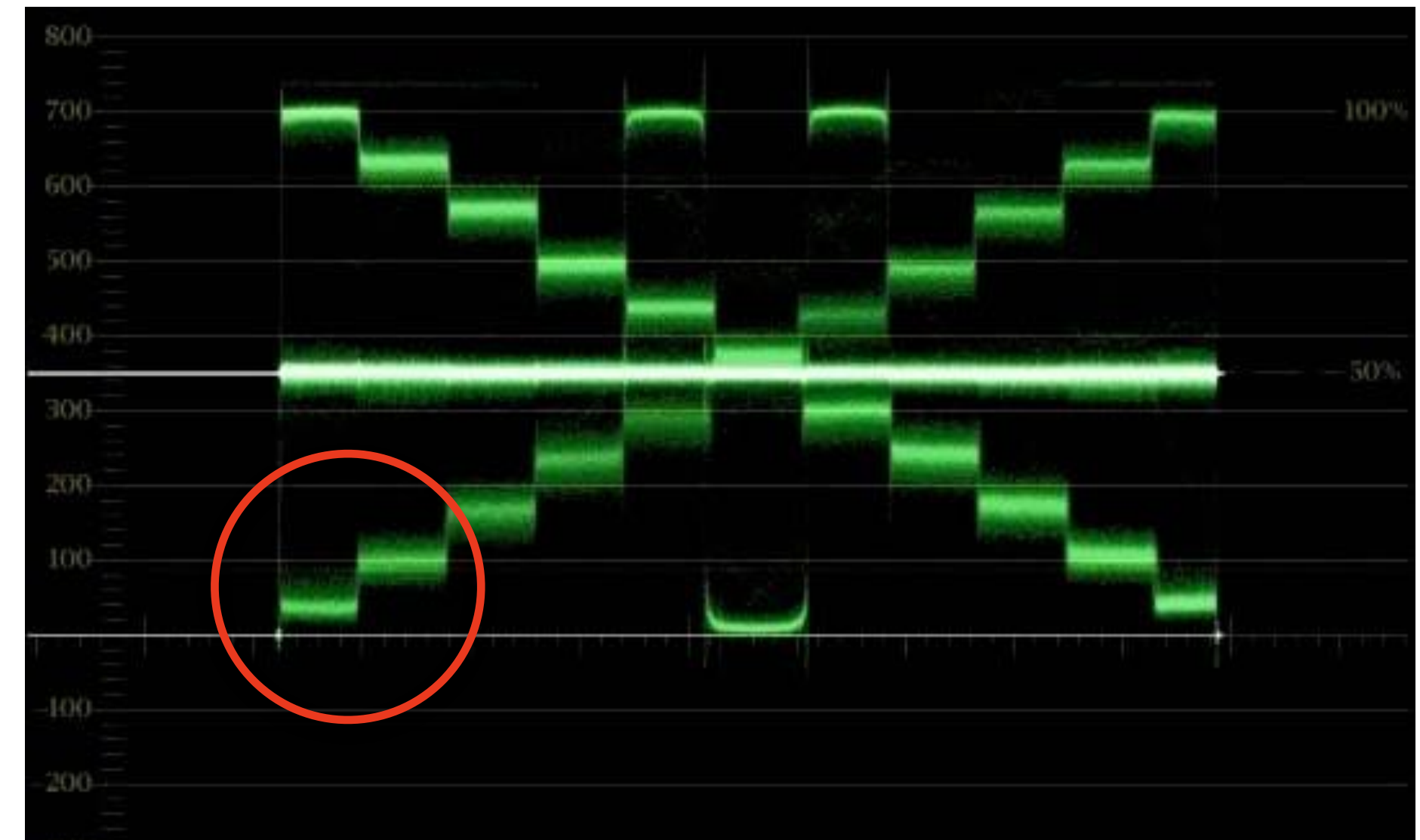
What's New LDX series

part 2 Web Training

Details



Level dependency
Off



Level dependency
On

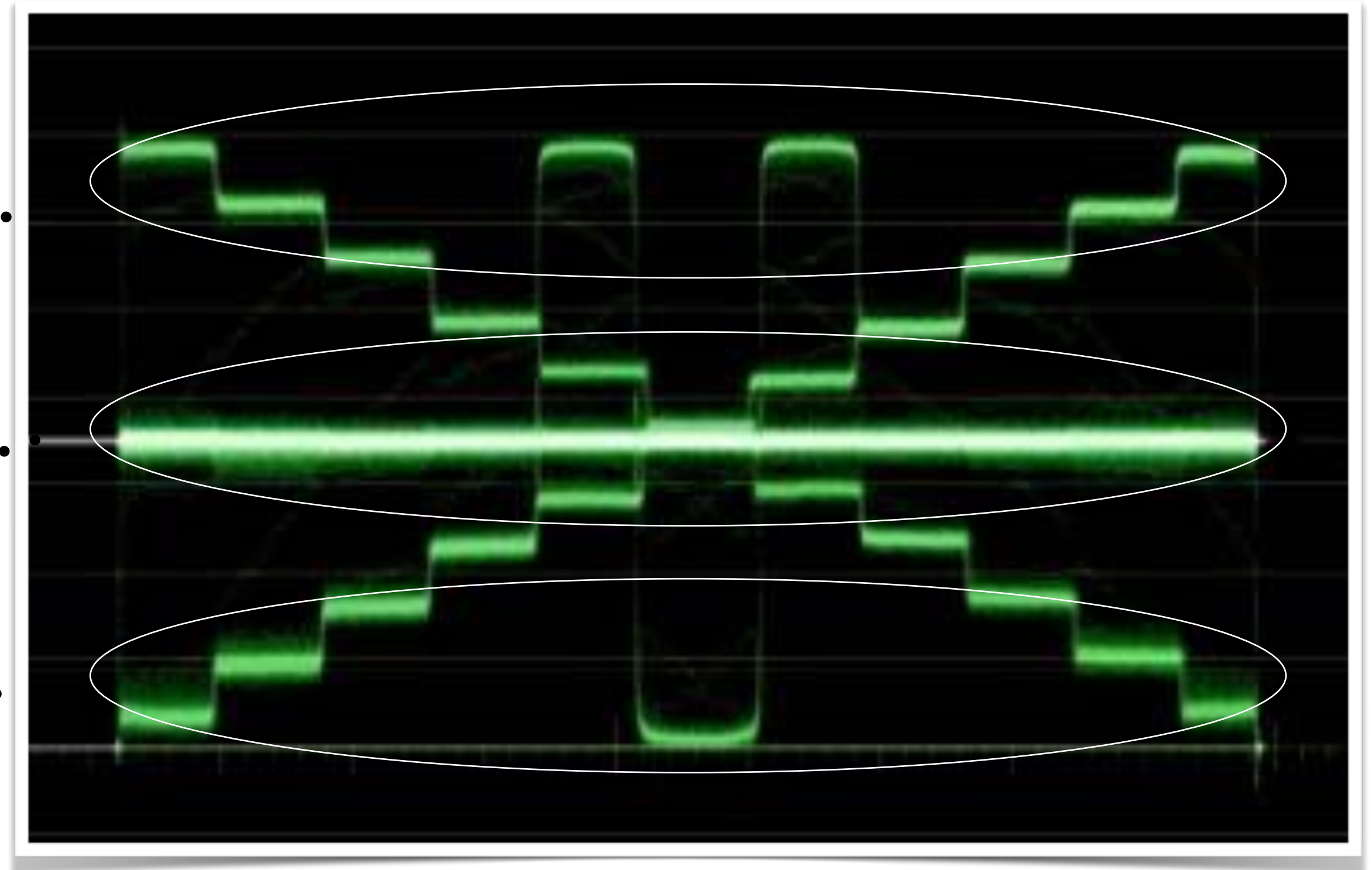
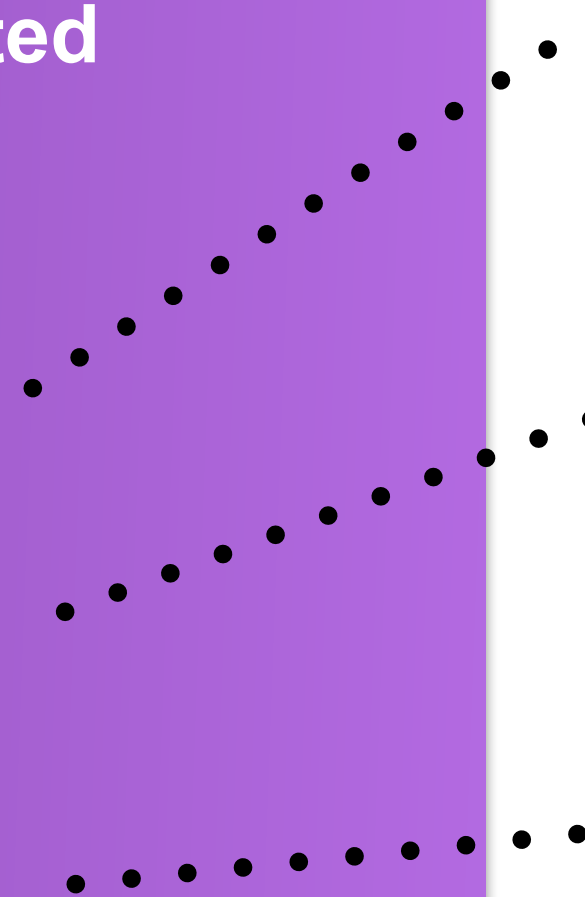
Details

Detail equalizer:

The amount of detail can be adjusted depending on the video level

Three regions of interest:

- Highlights
- Midtones
- Shadows



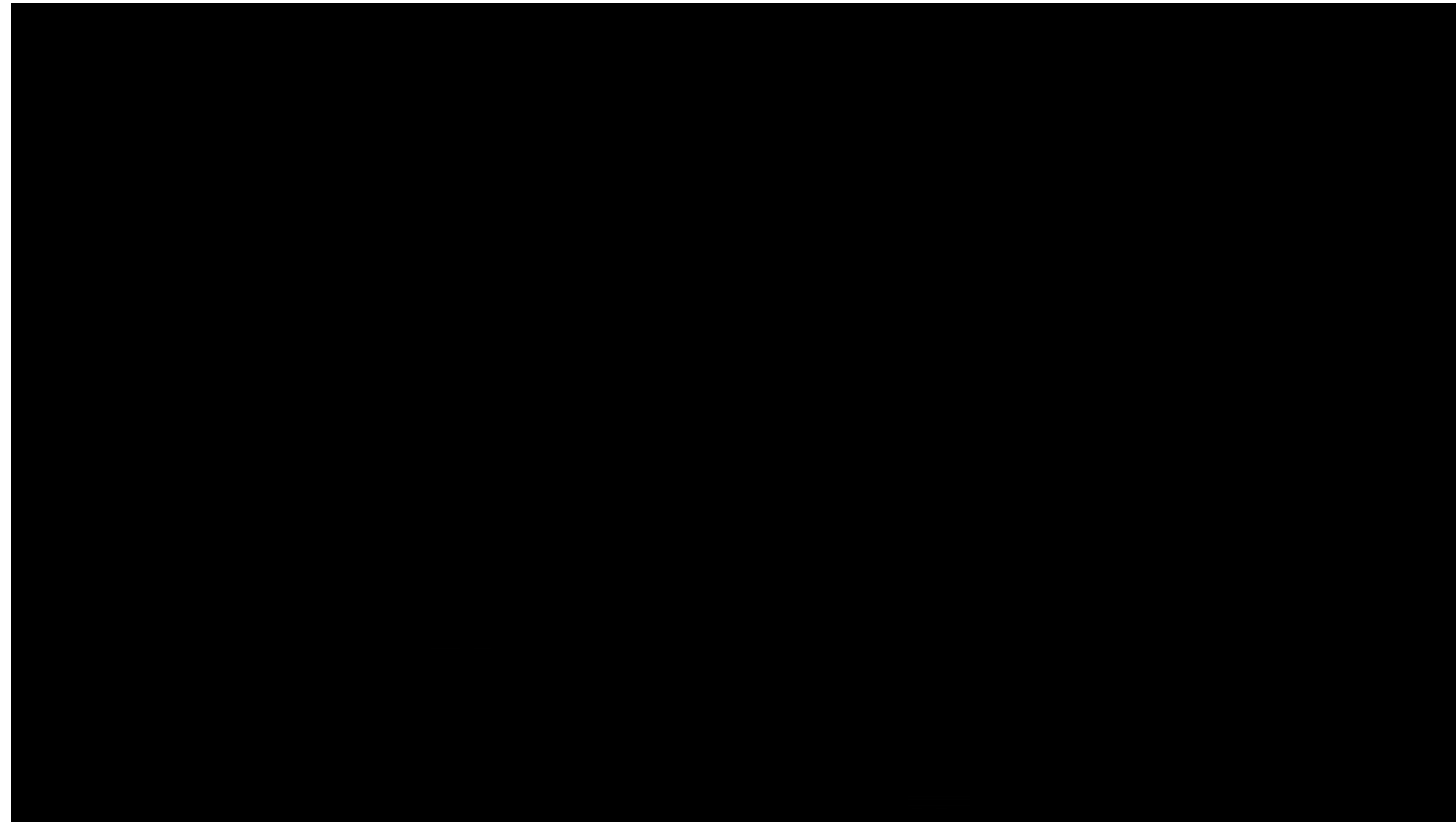
What's New LDX series

part 3 Web Training

Details

Low, Mid, High

New
LDX Feature



Details

Skin detail:

Operators tool to soften or
sharpen selected color areas

- 360° Color range
- Adjust detail on selected colors
- Three independent Skin memories
- Detection remains unchanged over
- No need for re-adjustments after
- lightning changes

Independent view via basestation (fiber)



Normal detail



Color Selection



**Reduced detail
on selected color**

Details

Skin (Color) detail



Viewfinder detail

VF processing functions

Indicators = Inserts in the VF channel

- VF monitoring =

YCrCb (color), Y,R, G, -G

- VF Detail

- Focus and Sharpness tools

- Zebra level tool,



What's New LDX series

part 3 Web Training

Viewfinder detail

New
LDX Feature

- The viewfinder channel has fully independent detail adjustment

- Viewfinder detail settings:

- Detail - on, off
- Super source (boost)
- Detail level
- Slicer
- Vert detail level
- Course / Fine
- Soft detail – on, off
- Soft detail level



Freeze

Picture is captured in a frame store at the input of the video processing

Camera setup can be done on the frozen picture
(accept lens iris, zoom, focus)



Reverse Scan

Reverse Scan

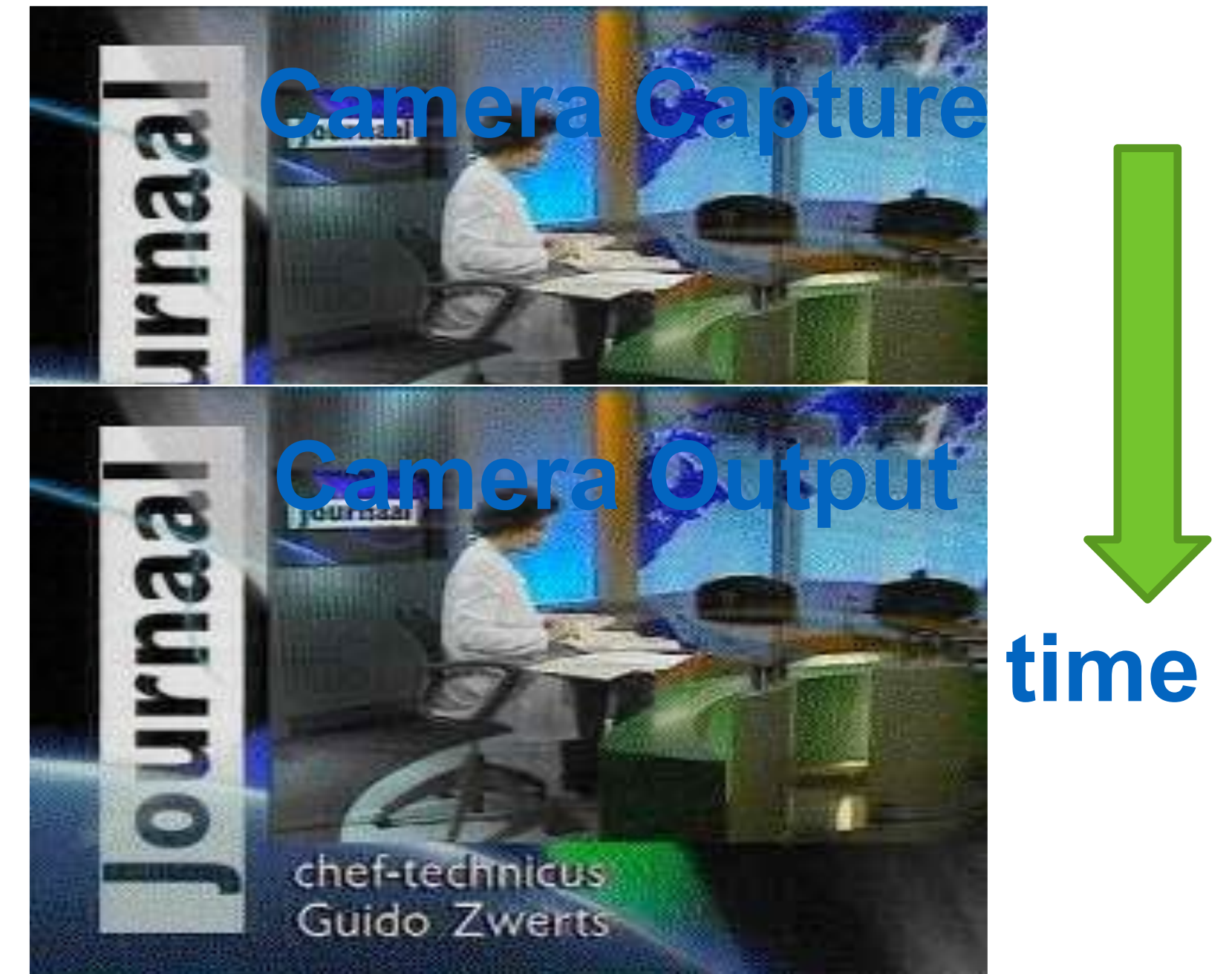
- Horizontal
- Vertical
- Both



V-Shift

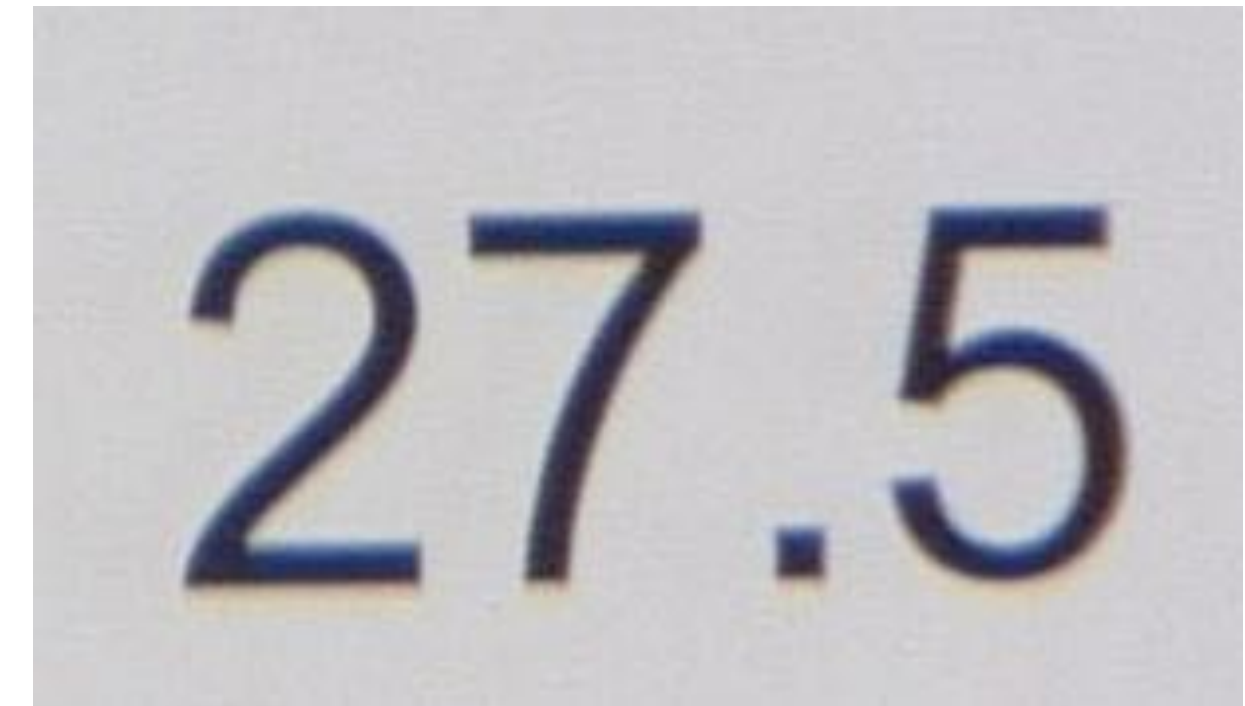
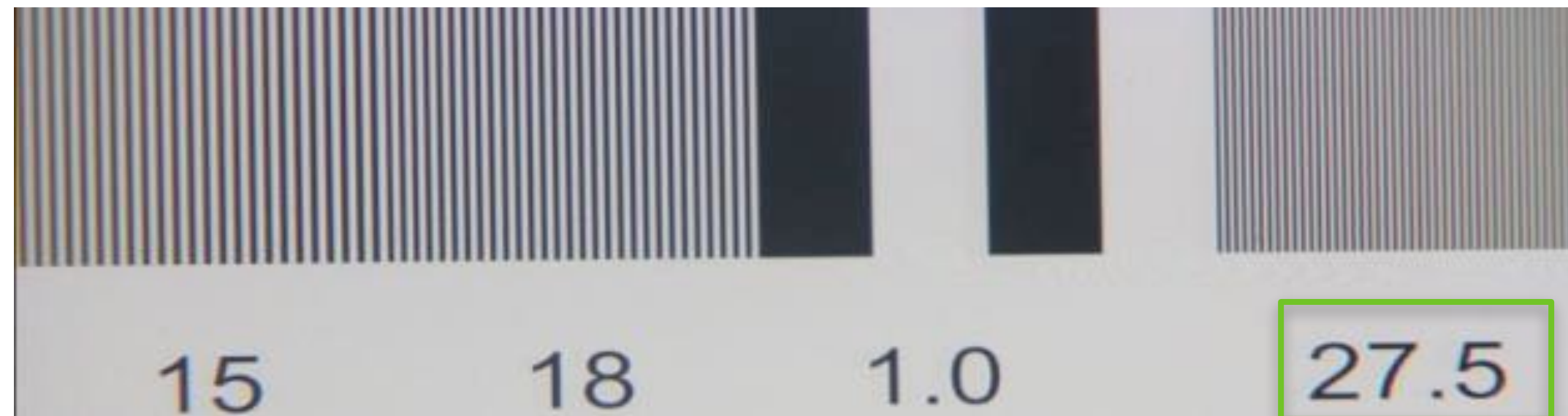
Adjustable time shift between picture - - - capture and processing.

- Continuous variable shift up to 1 frame
- Compensate for screenshot effects on large screens like DLP
- Compensate delay with other cameras
- 3D applications



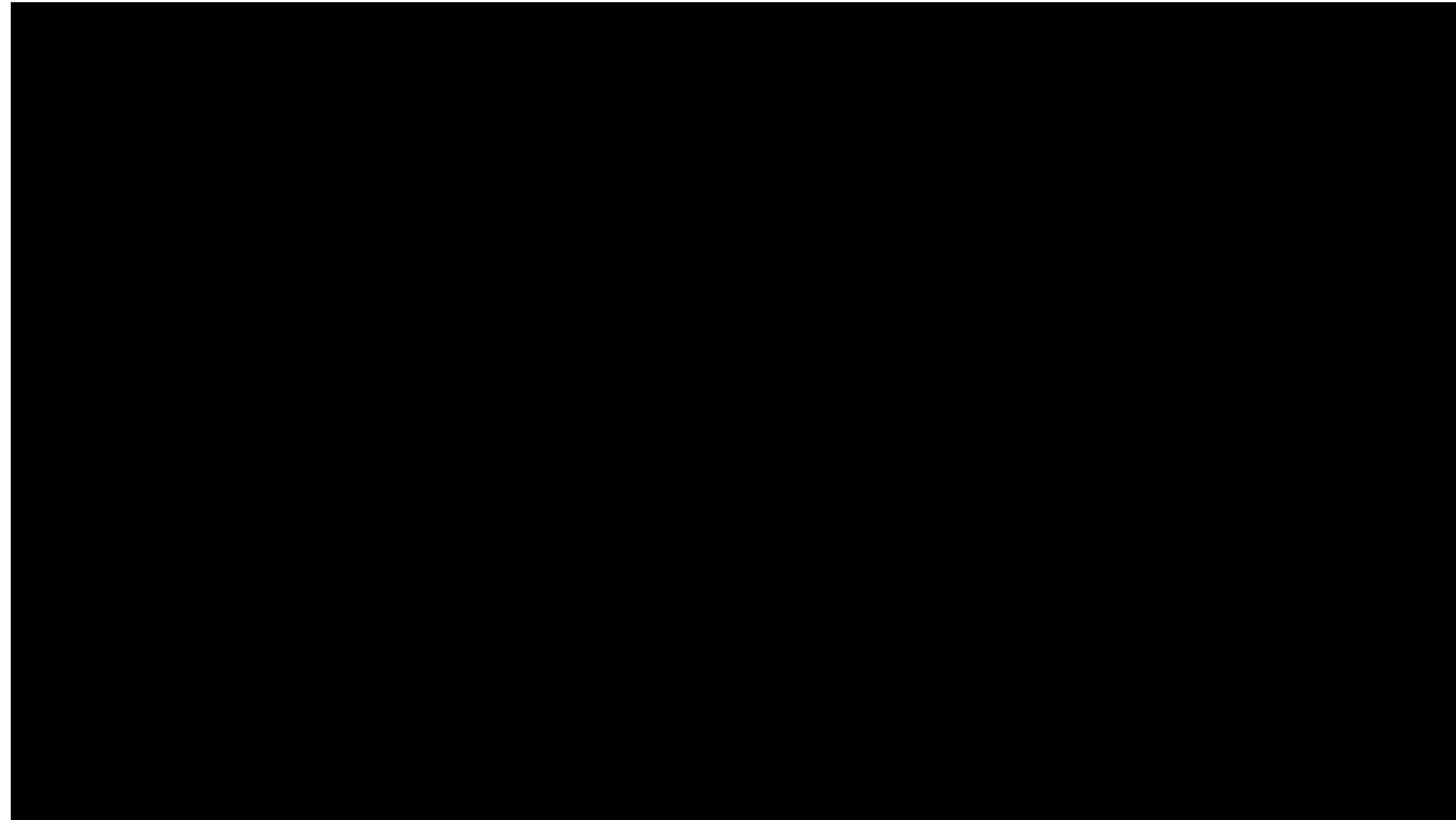
Class (H+V)

Chromatic Lens Aberration Sharpness Solution
Automatic Electronic Correction of lens errors
Correcting for H and V lens registration errors



The lens error information data is initially send from the lens to the camera.
Depending on zoom and focus position the camera electronically corrects for lens errors.

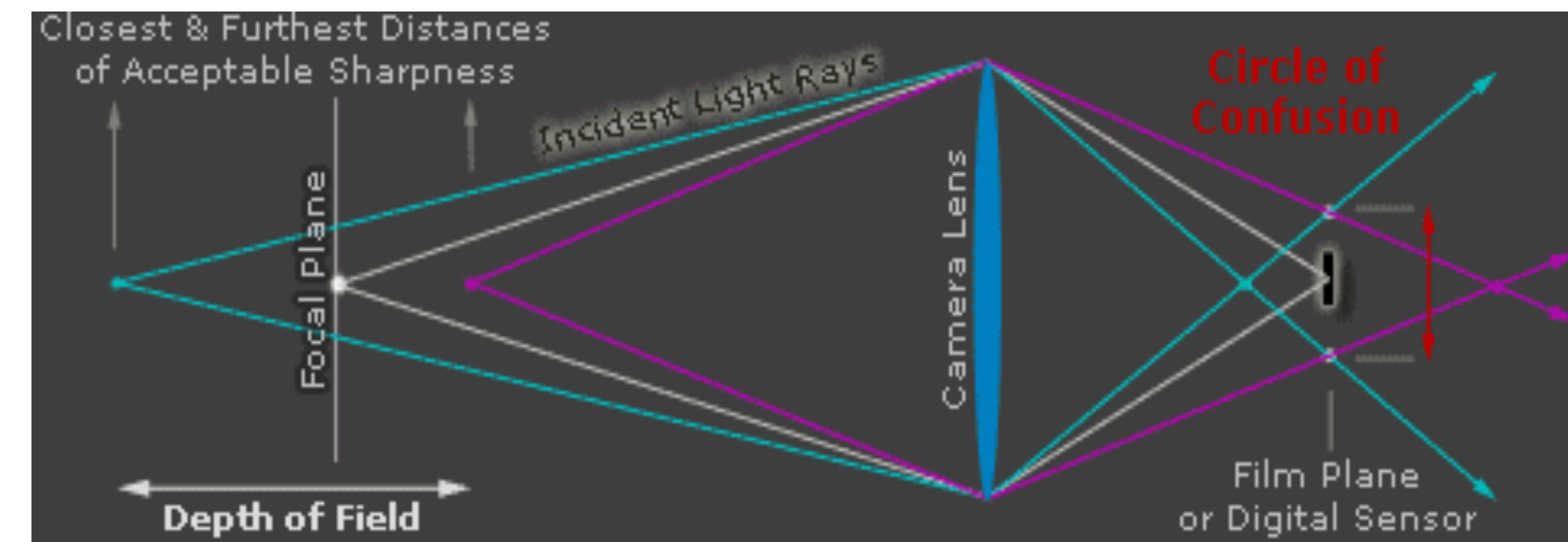
Class (H+V)



Depth of Field indicator

Depth-of-Field: the distance of the camera in which the picture is sharp
Depends on what we call sharp, determined the circle of confusion.
For 5um pixels we can set the CoC for instance on 10um, covering 2 pixels

We will calculate & display for the user the min distance, nominal distance and max distance



```
18 Close
Focus Indicator Off
Filter Indicator Off
>DOF Indicator On
Center Cross Off
Safe Area >>
Indicators
F: Inf.
N: 0.31m
DOWN UP SELECT
```



Far
Near

Lens dependent controls

Aperture correction (dependent on iris)

Skin detail (dependent on zoom, focus)

Detail follow zoom/focus

CLASS (zoom, focus, iris) (partly implemented)

General approach: dependency is described by LUT s and interpolation

F(1.4 2 2.8 4 5.6 8 11 16 and beyond)

Aperture Correction

Aperture correction corrects the loss of MTF due to lens aperture (and sensor aperture of course)

Lens aperture is diffraction limited with smaller iris opening (increasing f-numbers)

Roughly spoken: lens MTF at 27 MHz 1080i is 100%-5*f-stop

If the f-stop is known we can increase the aperture correction dynamically following that f-stop

We will partly compensate the loss of MTF (not fully because of noise amplification)

What's New LDX series

☒ LDX “New” Features

- ☐ LDX 86 4K and XDR
- ☐ Under development
- ☐ OCP MCP hints / tips



What's New LDX series

- ☒ New Features (LDX)
- ☐ **LDX 86 4K and XDR**
- ☐ Under development
- ☐ OCP MCP hints / tips



What's New LDX series

2K to 4K & XDR
basics

LDX 86 and 86N



What's New LDX series

HD format (HD ready)

1280 x 720 (1,5Gb)

HD format (Full)

1920 x 1080i (1,5Gb)

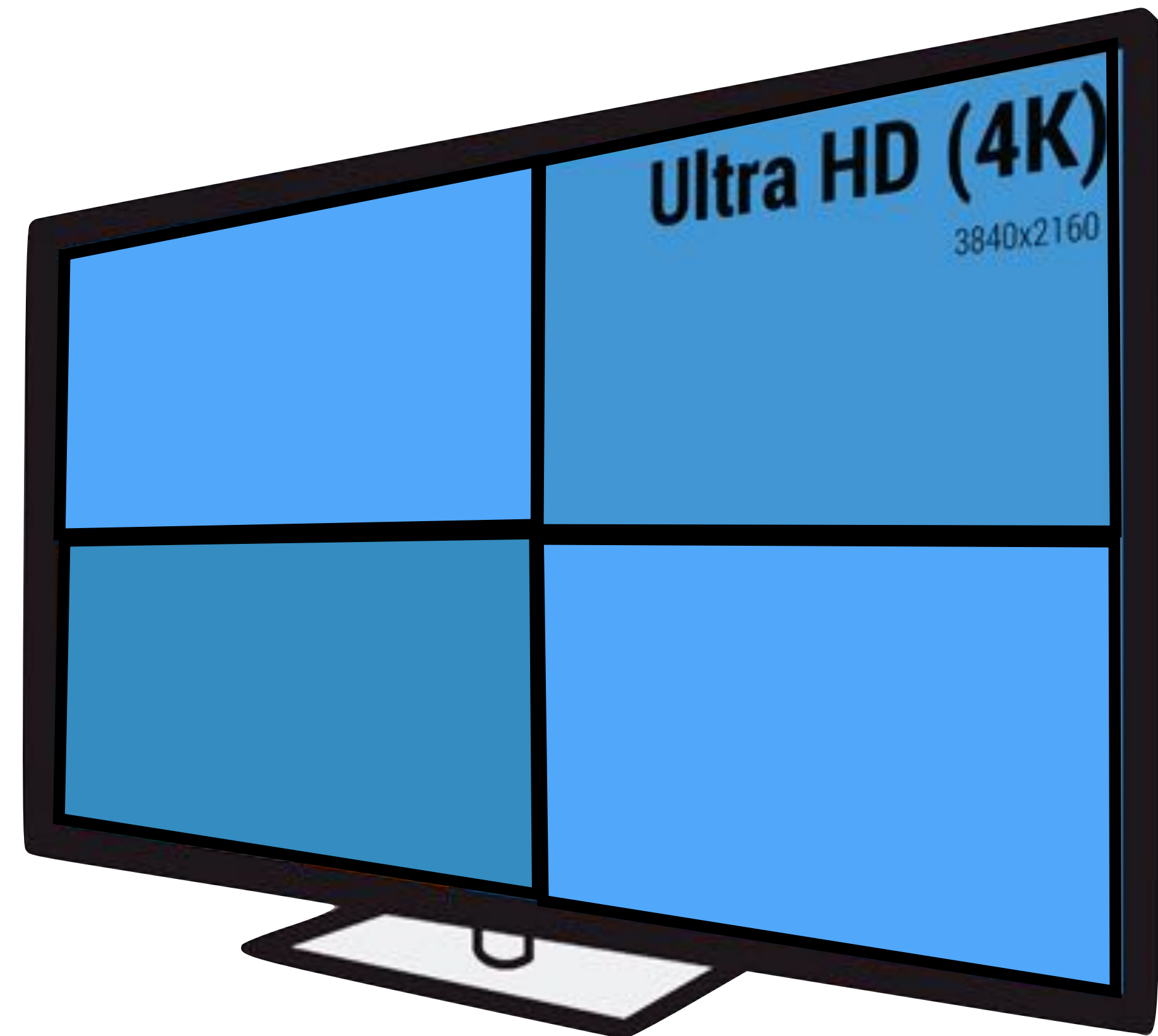
1920 x 1080p (3 Gb)

UHD format

4096 x 2160 or 3840 x 2160?

=> 4K as used in a switcher is 3840 x 2160

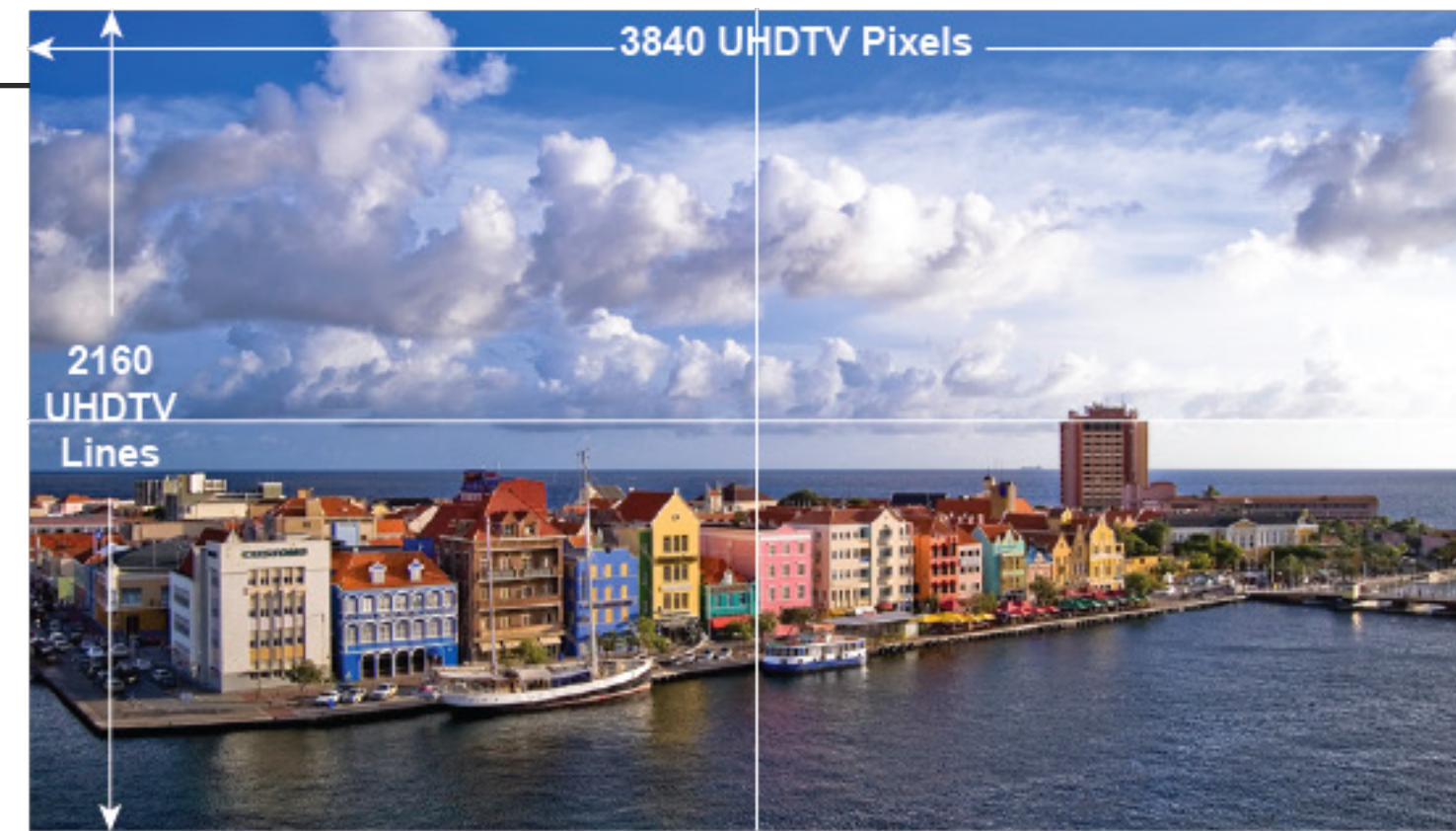
4 x 1920 x 1080p (4 x 3 Gb)



4K explained

Square Division Quad Split

- Each link contains one quarter of the original image



Link 1 1920 x 1080



Link 2 1920 x 1080



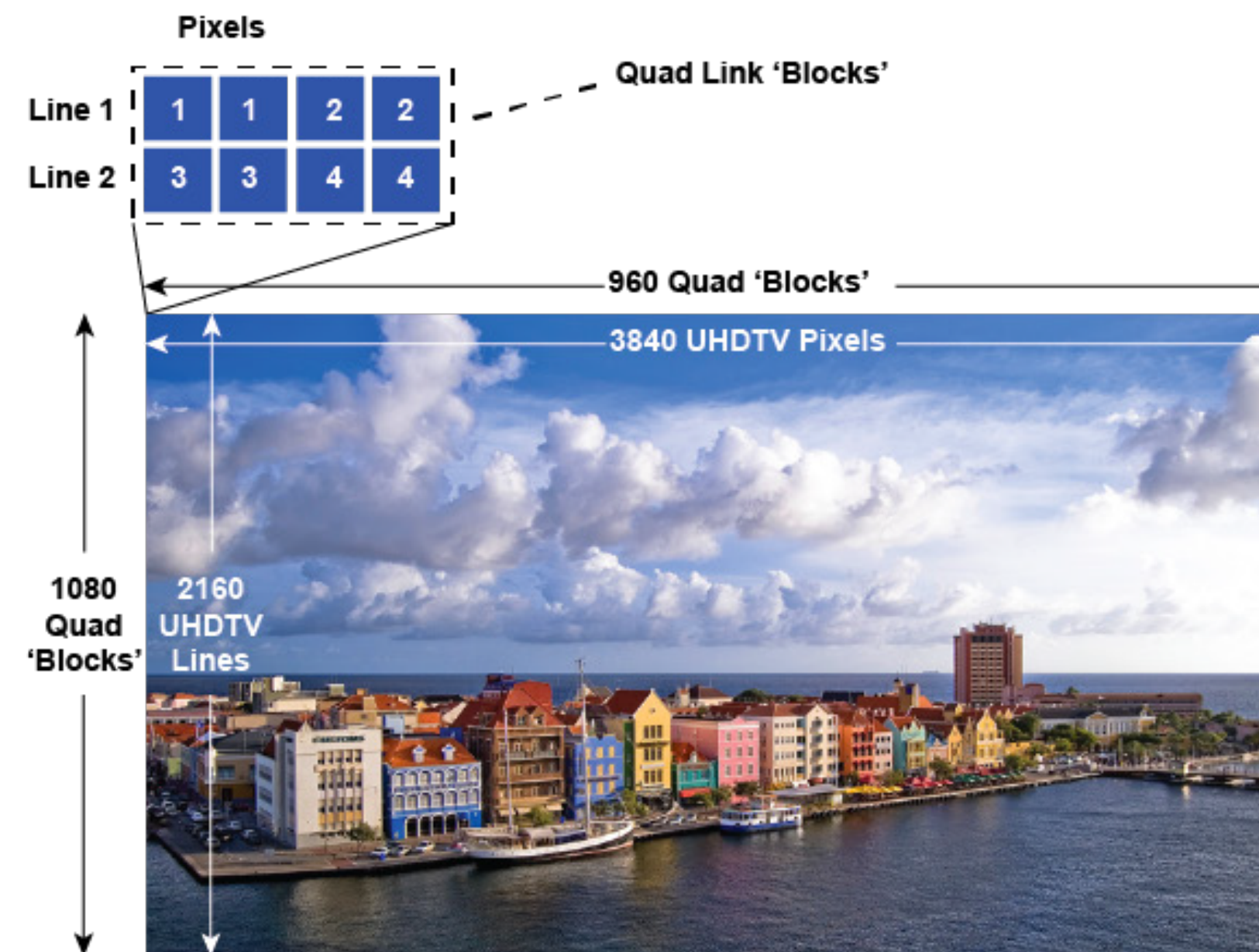
Link 3 1920 x 1080



Link 4 1920 x 1080

Quad Link 2 Sample Interleave (2SI)

- Each link contains a full image at 1/4 resolution.



Link 1 1920 x 1080



Link 2 1920 x 1080



Link 3 1920 x 1080

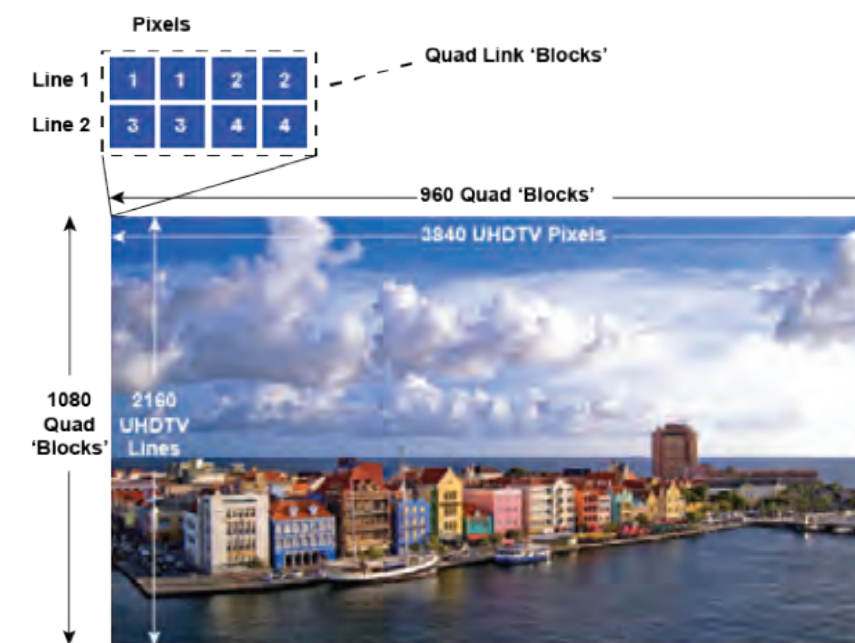
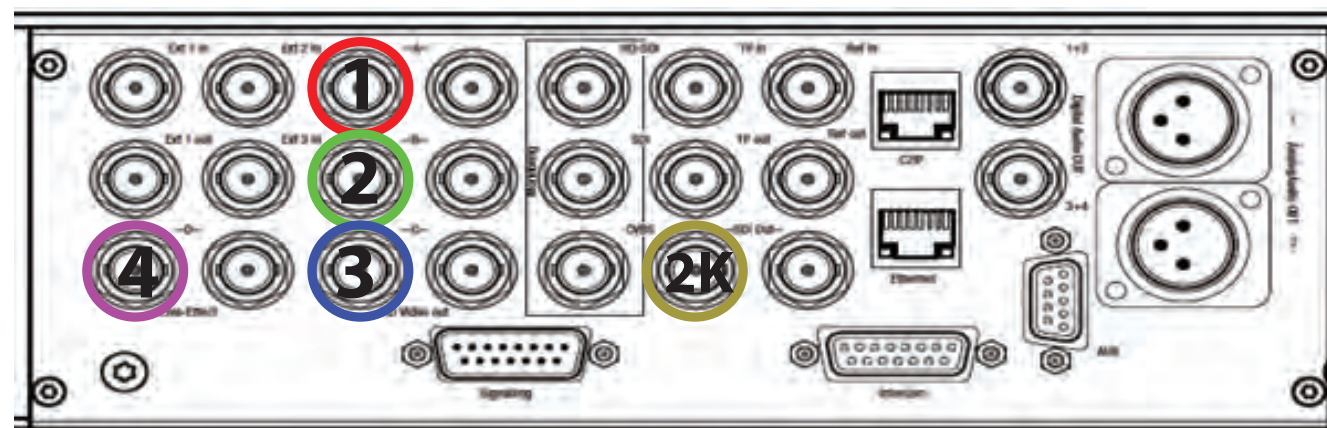


Link 4 1920 x 1080

Quad mode **Square Division Quad Split**
- Each link contains
one quarter of the original image

**Setting in
Install menu
XCU**

2 SI mode **Quad Link 2 Sample Interleave (2SI)**
- Each link contains a full image
at 1/4 resolution.



4K mode

or



Set to 4K mode

Many broadcasters think a 4x higher pixel count won't deliver the “wow factor” needed from a new broadcast format



HDR opens up the potential for more engaging, more beautiful content, as well as future proofing

XDR

is new feature in GV Cameras (Ready for 2K and 4K)

Why HDR - For most natural images

❖ High scene contrasts can be found in many typical pictures

A unit of measurement of luminance, or the intensity of visible light, where one nit is equal to one candela per square meter.

Nits are used to describe the brightness of displays, such as LCD and CRT monitors.

(1 nit = 1 cd/m²).

200 - 300 nits for Standard monitor

800 - 4000 nits for HDR monitor more in the future

100 Watts bulb emits 18000 nits
sunny day up to 50000 nits

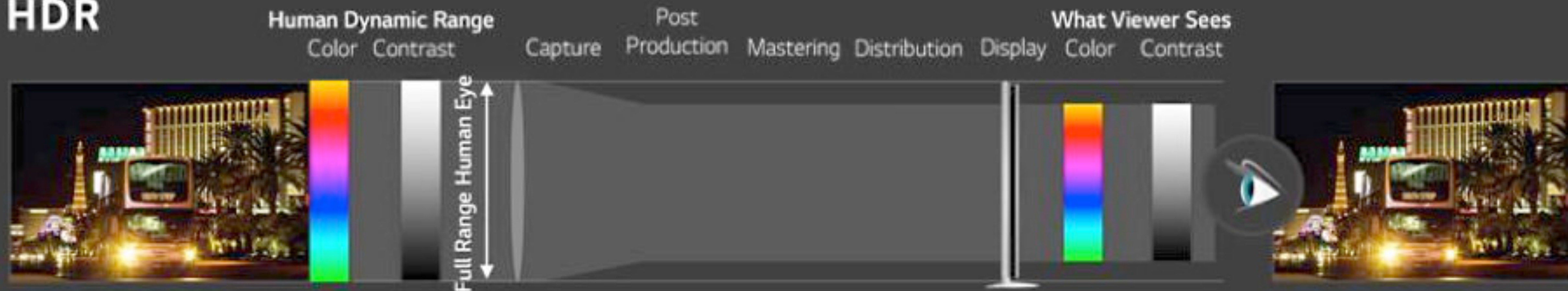


Dynamic Range in Television

SDR



HDR



Why HDR - For challenging lighting conditions

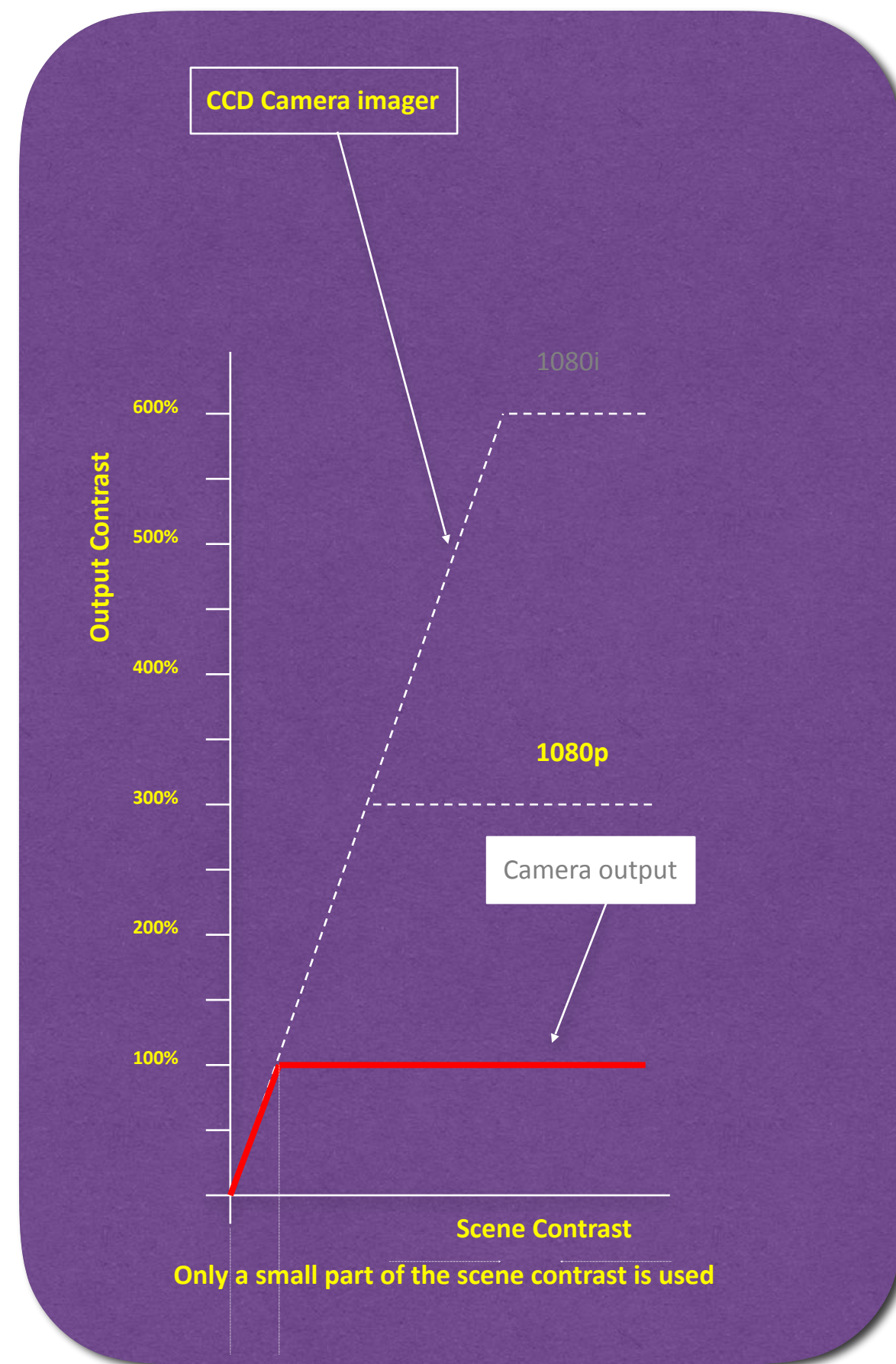
❖ High scene contrasts are most challenging in live broadcast applications

- Lighting conditions are typically not under control
- Pictures must be perfect at any time, and can't be fixed in post



Why HDR - For challenging lighting conditions

- ❖ HDR can be used to avoid washed out highlights



How HDR is generated – What is required?

❖ An imaging technology delivering highest dynamic range

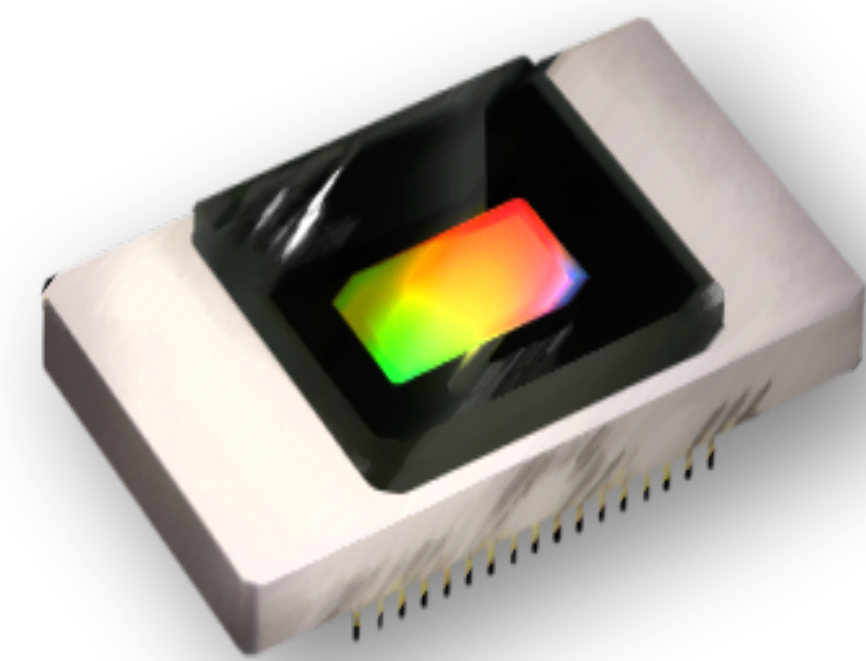
- ☑ CMOS delivers highest dynamic range in all formats, including progressive

❖ Highest performance pixels

- ☑ “Large” pixel for 15 F-stops of live dynamic range without calculations
- ☑ 5T pixel for global shutter operation

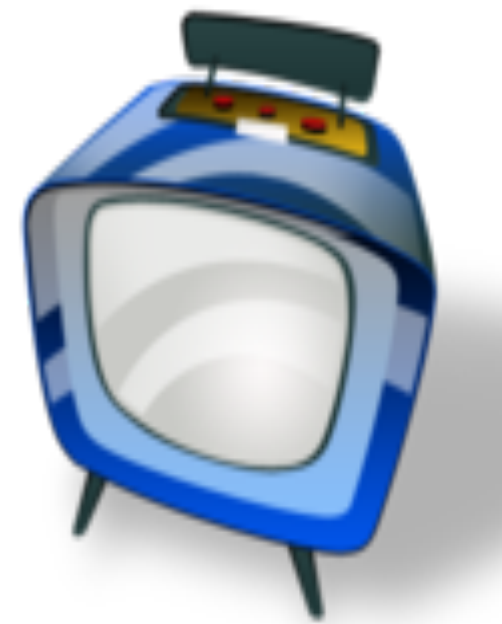
❖ A camera solution able to deliver HDR signals

- ☑ Supporting the requested “HDR mappings”
- ☑ True parallel processing of HDR and SDR signals
- ☑ Easy control of both signals at the same time
- ☑ Supporting 1080i/p, 720p, 4K (both 50 or 59Hz)



How HDR is generated – What is required?

- ❖ Display with a higher contrast range (higher peak white)



SDR Display
300 nits



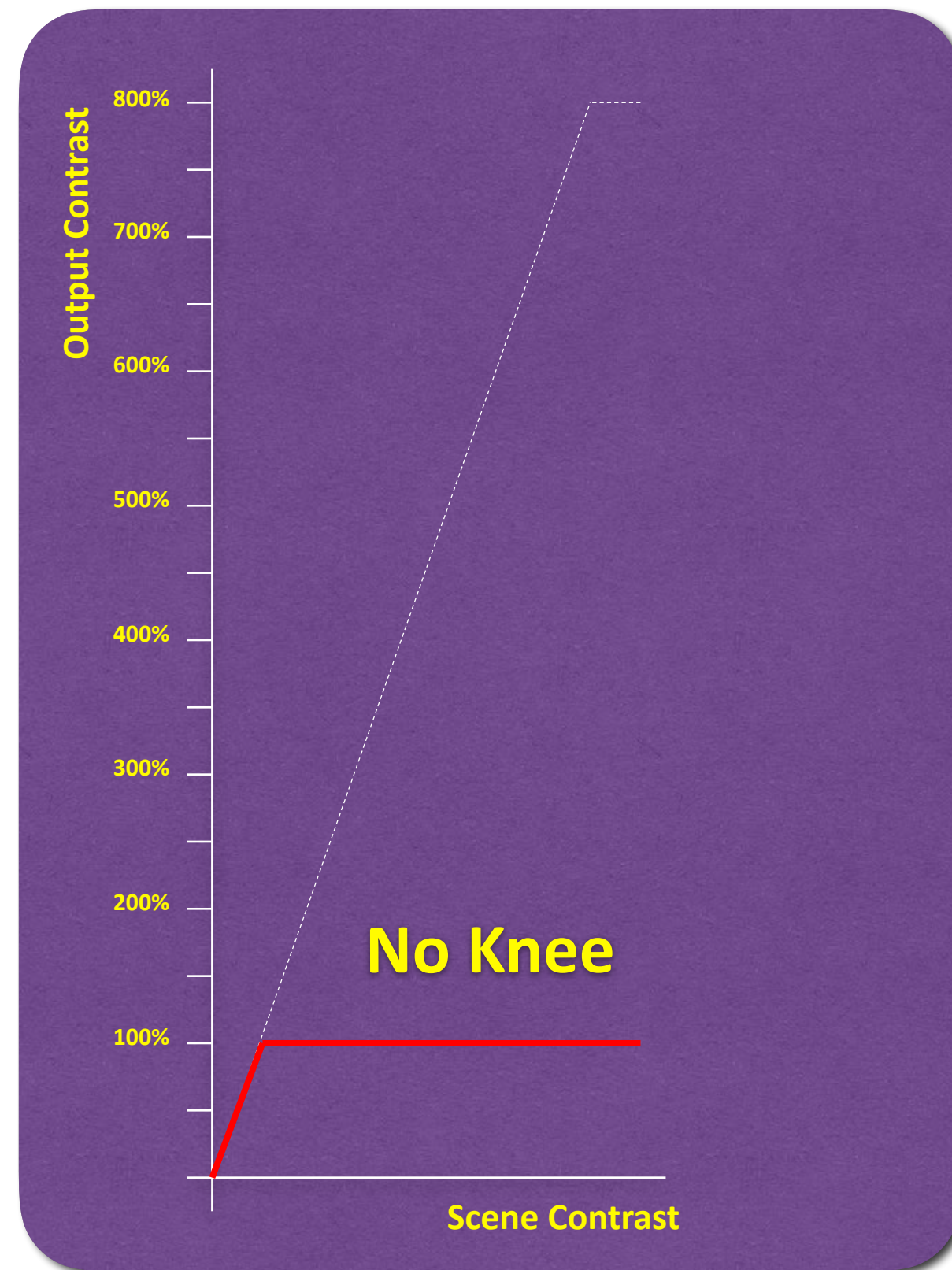
HDR Display
1.000 – 10.000 nits



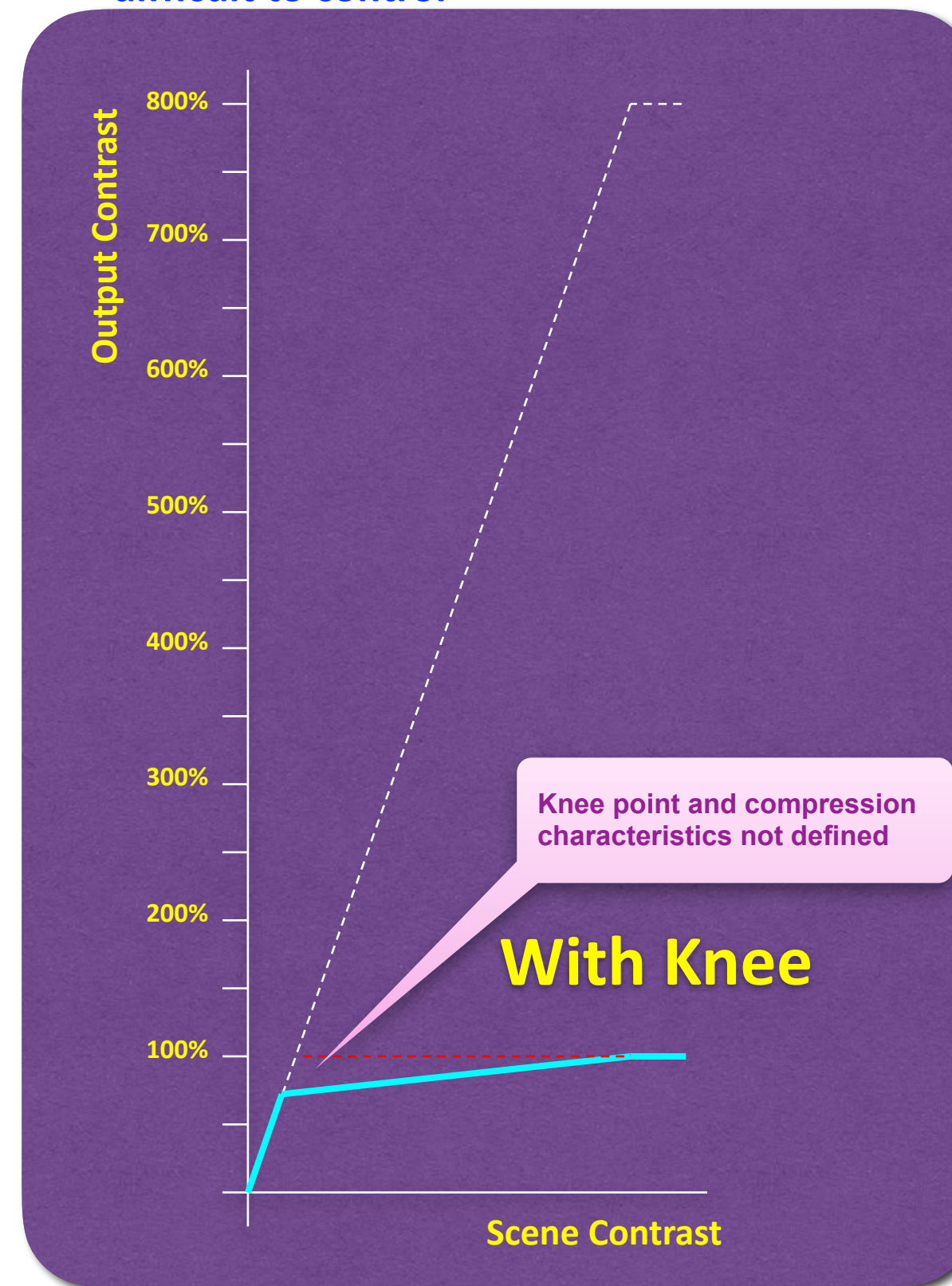
How HDR is generated – Signal mapping

❖ HDR needs a different signal mapping compared to SDR

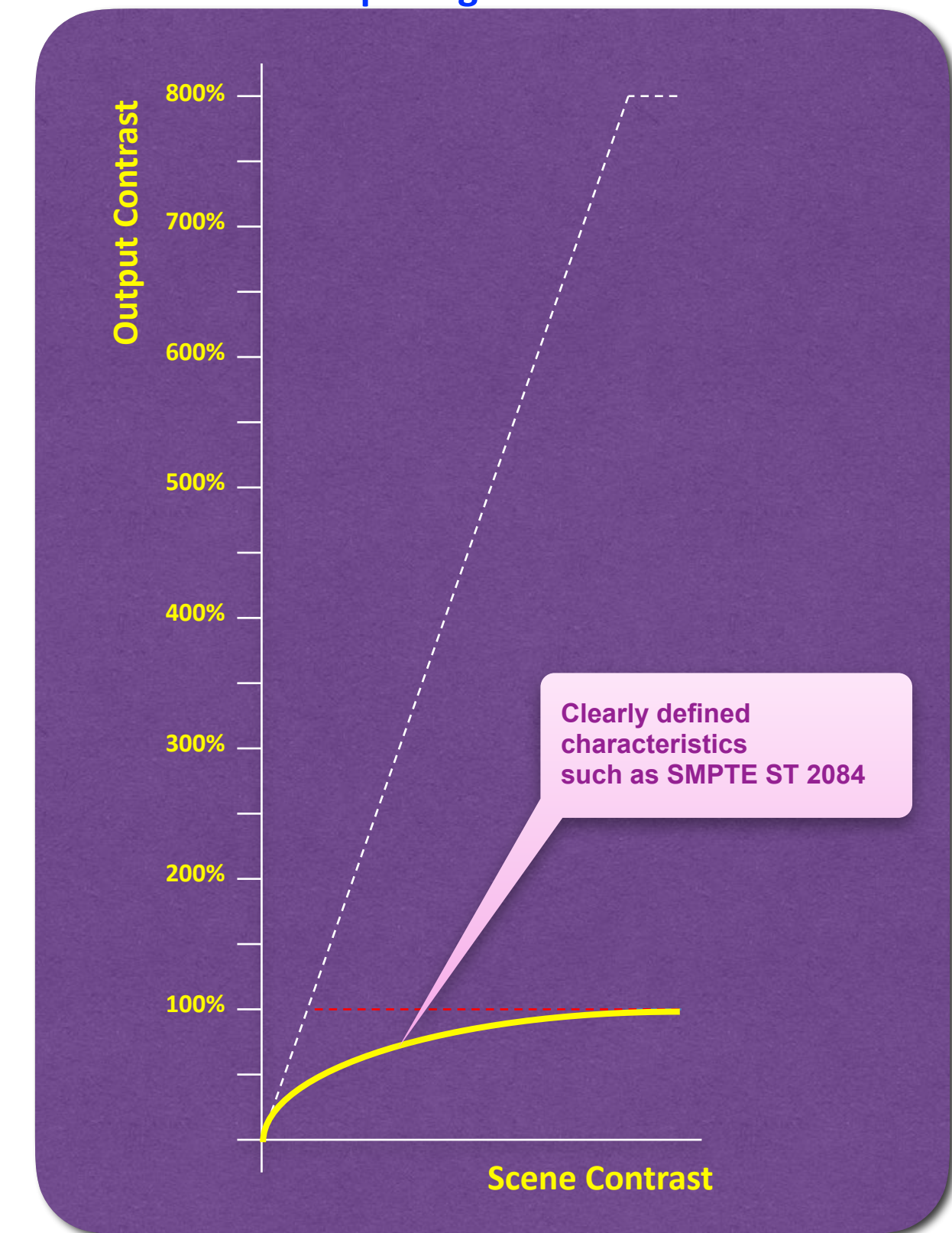
Signal processing with linear output
Only useable if scene contrast is
controllable and low



Signal processing with knee compression
Highlights are heavily compressed,
difficult to control



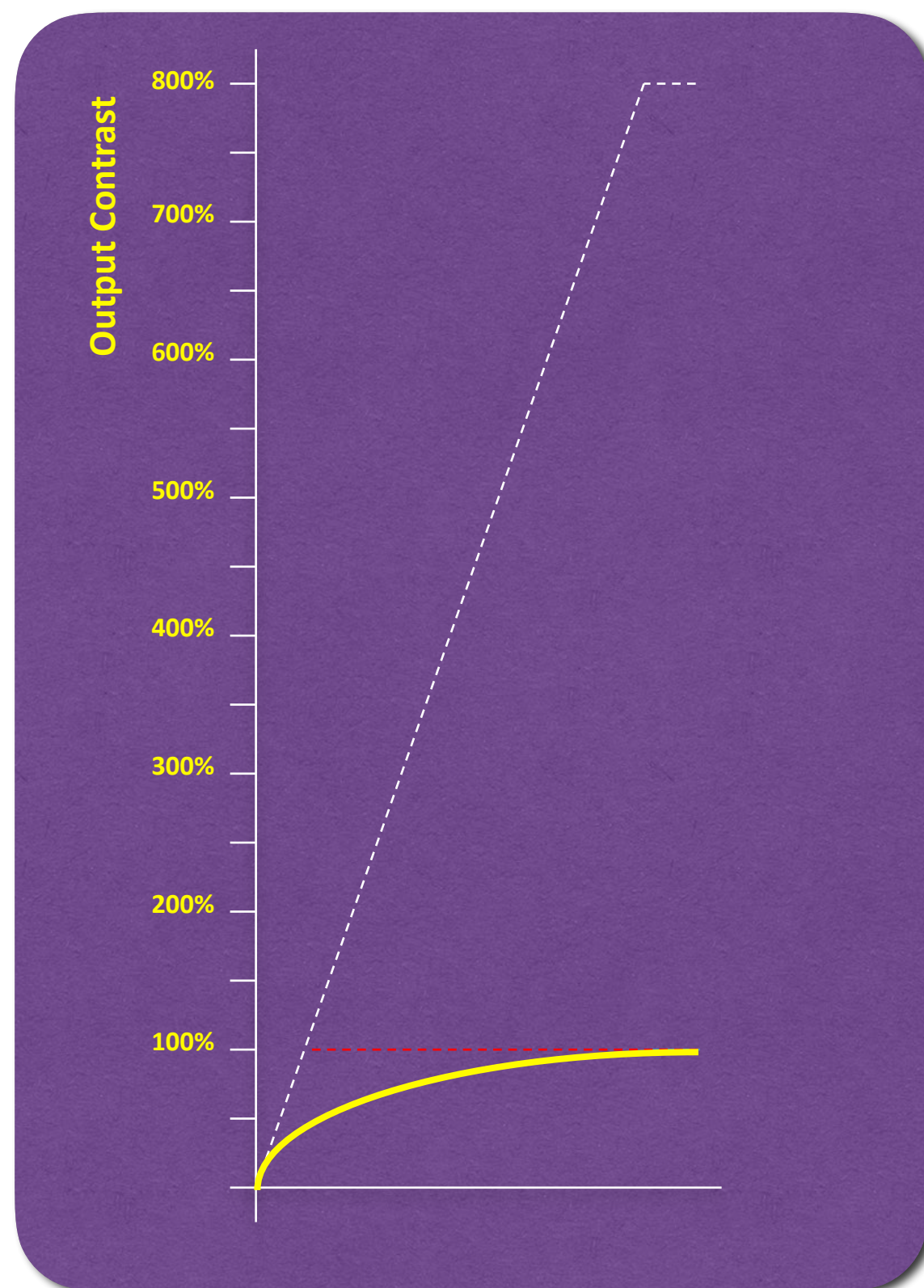
Signal processing for HDR operation
Scene contrast more even distributed
over the output signal



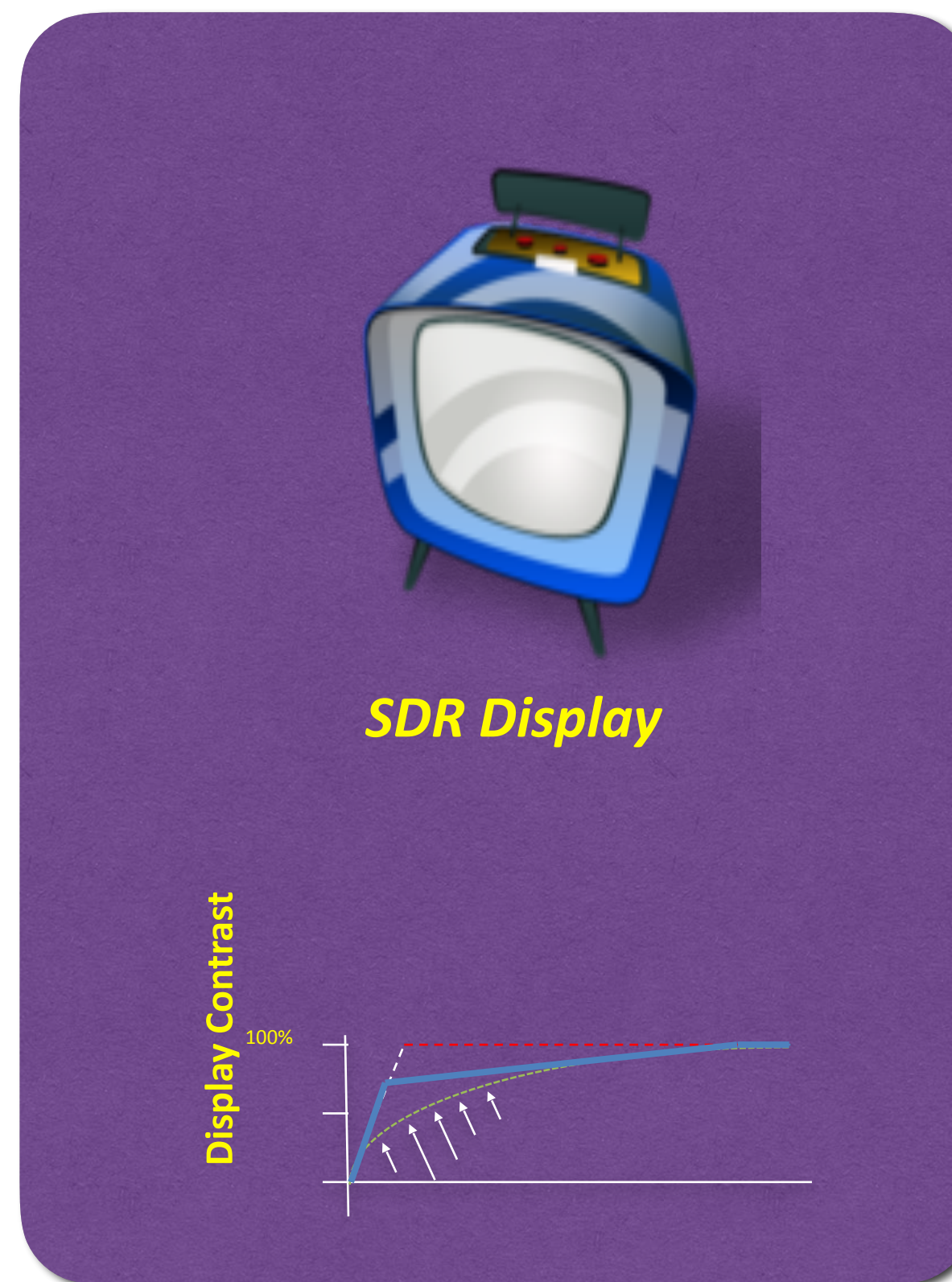
How HDR is generated – Signal mapping

- ❖ HDR signals can be re-mapped for simultaneous SDR operation

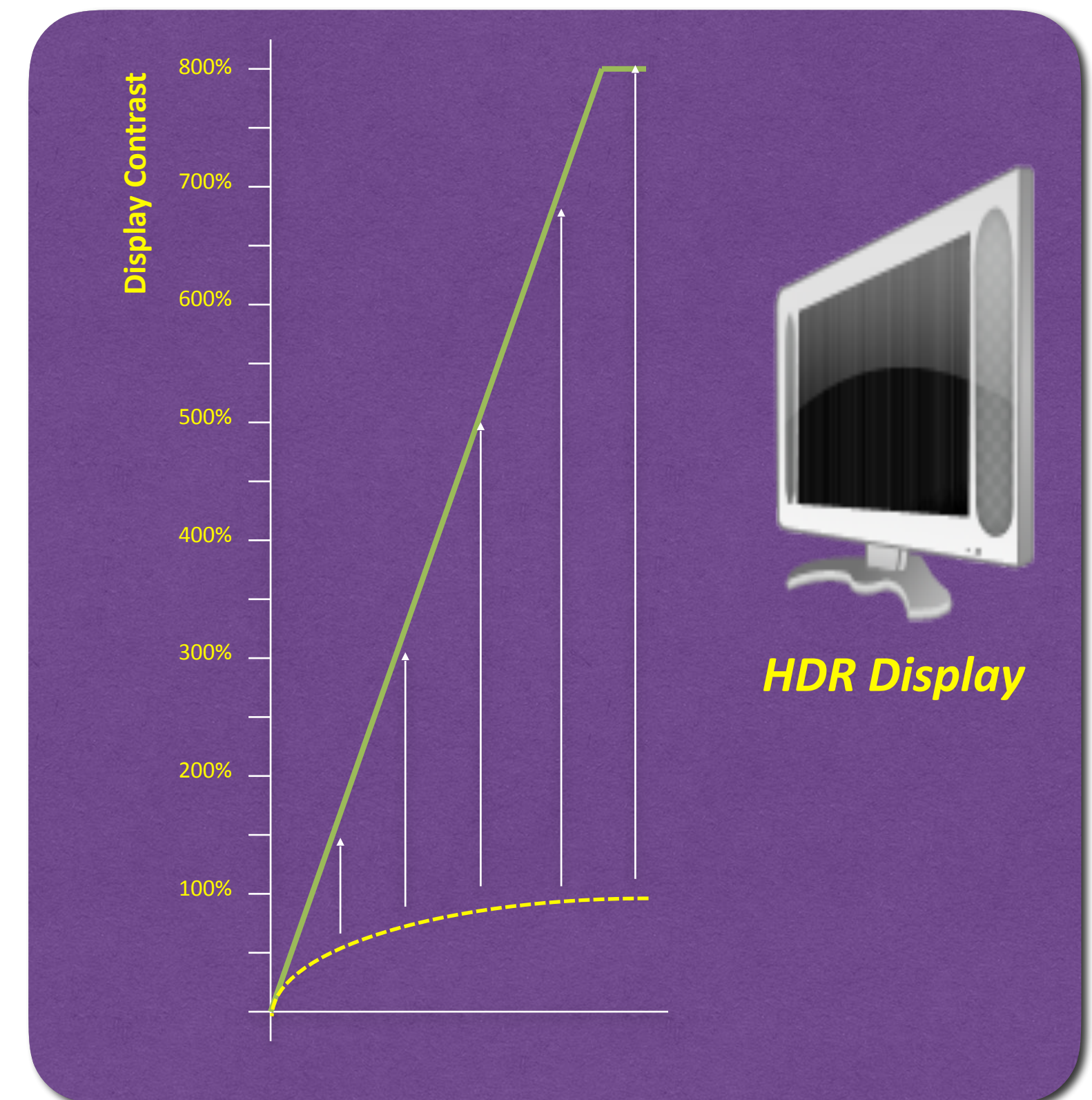
Signal processing for HDR operation
Scene contrast is more even
distributed over the output signal



Re-mapping of the HDR signal for SDR use



Re-mapping of the HDR signal for HDR use



HDR Explained

❖ HDR offer a very clear improvement of the viewing experience

- ☑ Not resolution dependent

- ☑ Visible from all distances and on all screen sizes

❖ There several competing system proposals

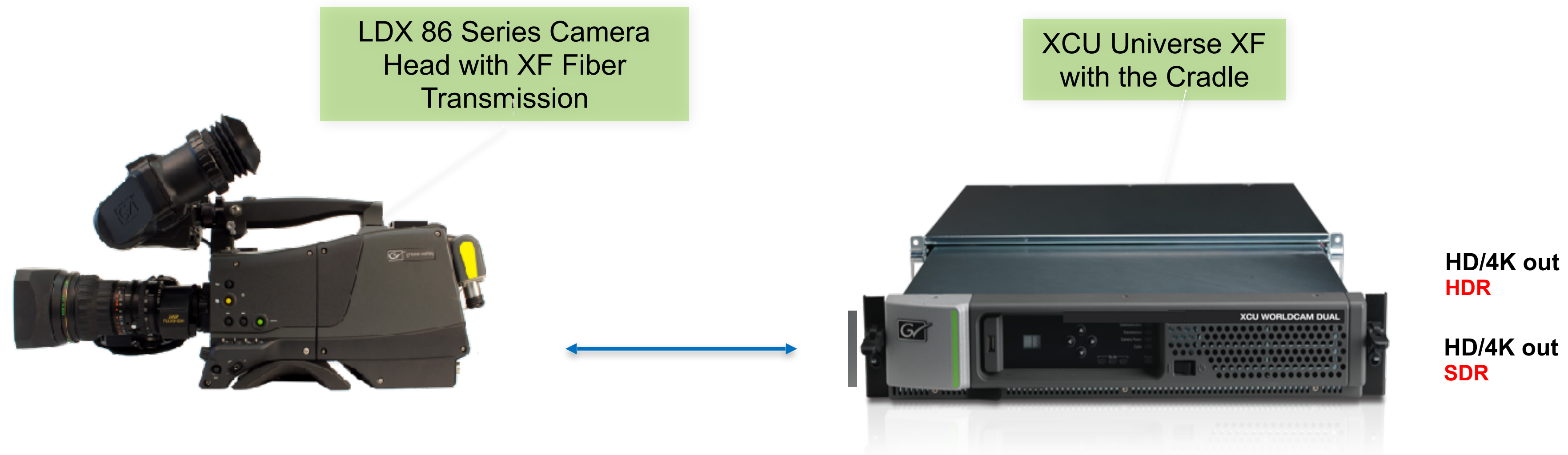
- ☑ From Dolby, BBC, Technicolor, Philips, NHK

❖ They are not compatible to each other

- ❓ Will there be one system for all markets, countries, etc.?

- ❓ If not will one system be convertible into another?

- ❖ Delivering the full dynamic range of 15 F-stops
- ☑ Enough for all HDR displays in the foreseeable future
- ❖ Parallel HDR and SDR outputs for highest flexibility
- ☑ Dual control mode of the camera control panels for best results in both outputs



Why called XDR - Extended Dynamic Range?

Many products claim HDR performance with limited 13-14 F-stops^{*1} of dynamic range

**1 Equal to 200 - 400% of a regular camera*

Grass Valley goes beyond this ***full 15 F-stops***^{*2}

**2 Equal to >800% of a regular camera*

- **XensiumFT** imagers with 15 F-stops of dynamic range
 - In regular operation with a linear exposure and readout of the imager
- **CMOS** imaging offers solutions for an even greater dynamic range
 - By using a multiple readout of the pixels during one exposure cycle
 - Because of the non-destructive readout



15 F-stops of dynamic range from
Xensium FT imagers

XDR Solutions from LDX Series

Better not to show
in the shader session



Shader HDR

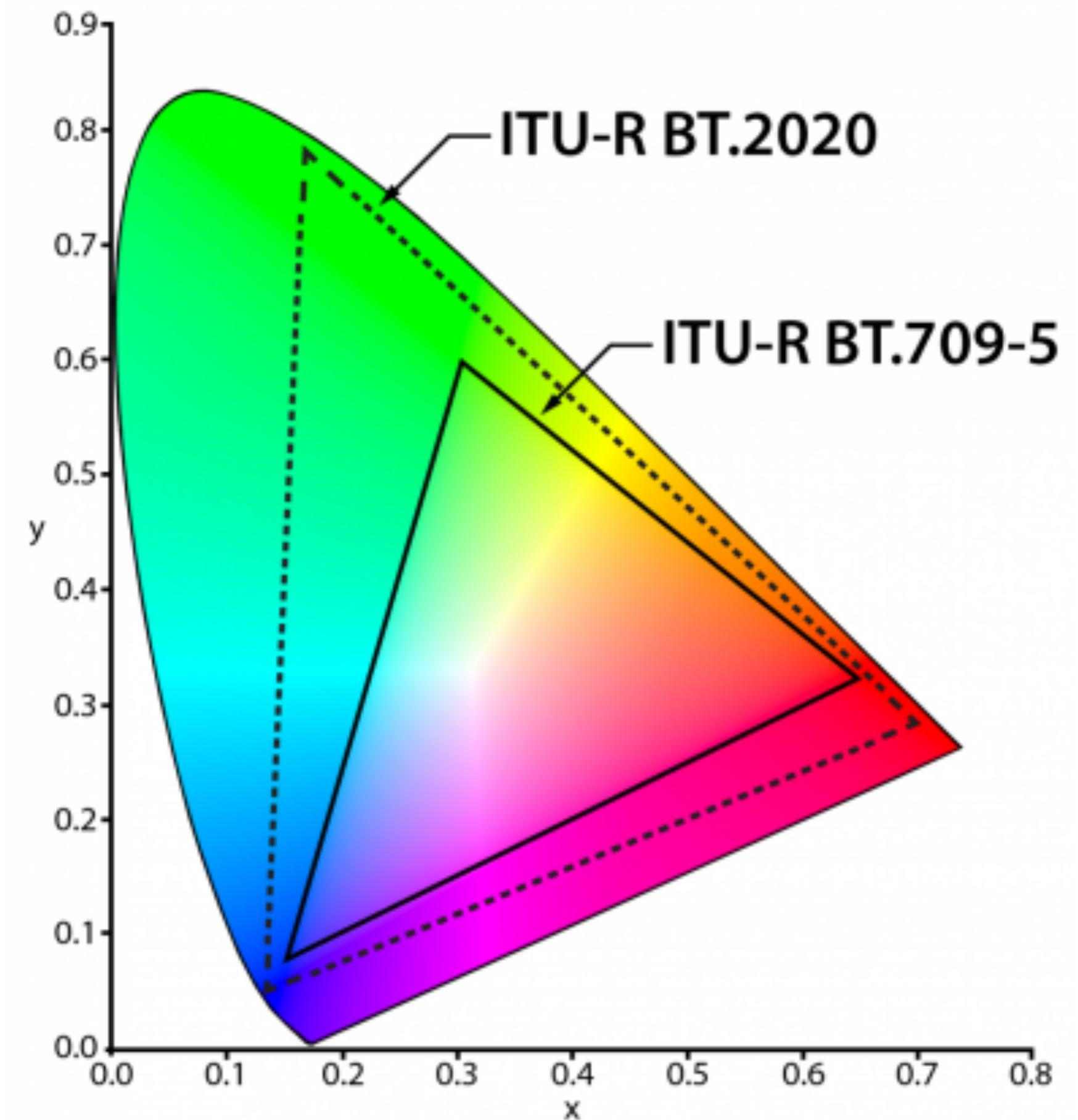
Shader SDR

LDX86 HD Extended Color Gamut

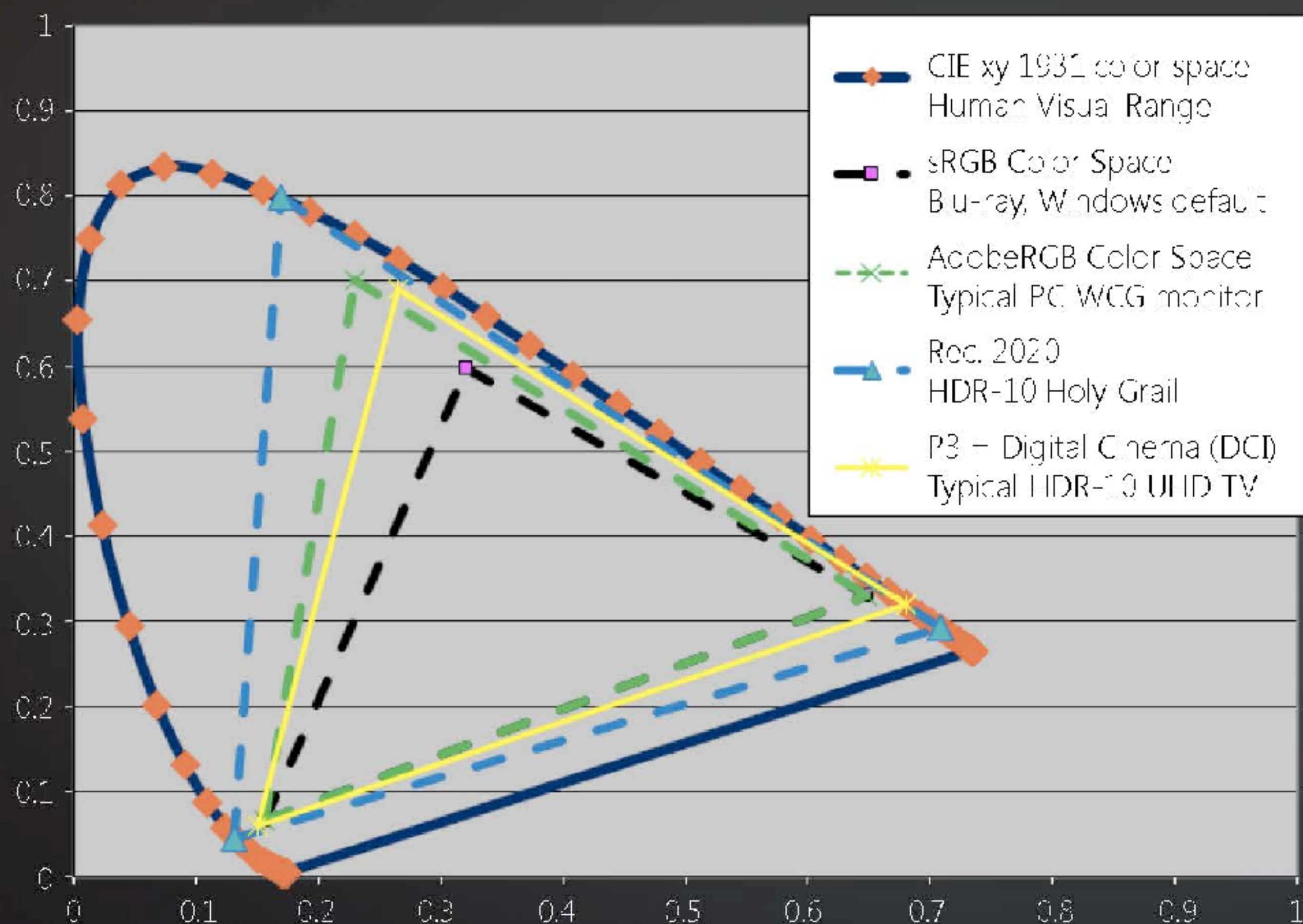
Many 4K cameras still use the color gamut from HD as specified in the
ITU-R BT.709

At the LDX 86 Series a wide color gamut can be selected as specified in the
ITU-R BT.2020

**Available in the next
free of charge
software package update**



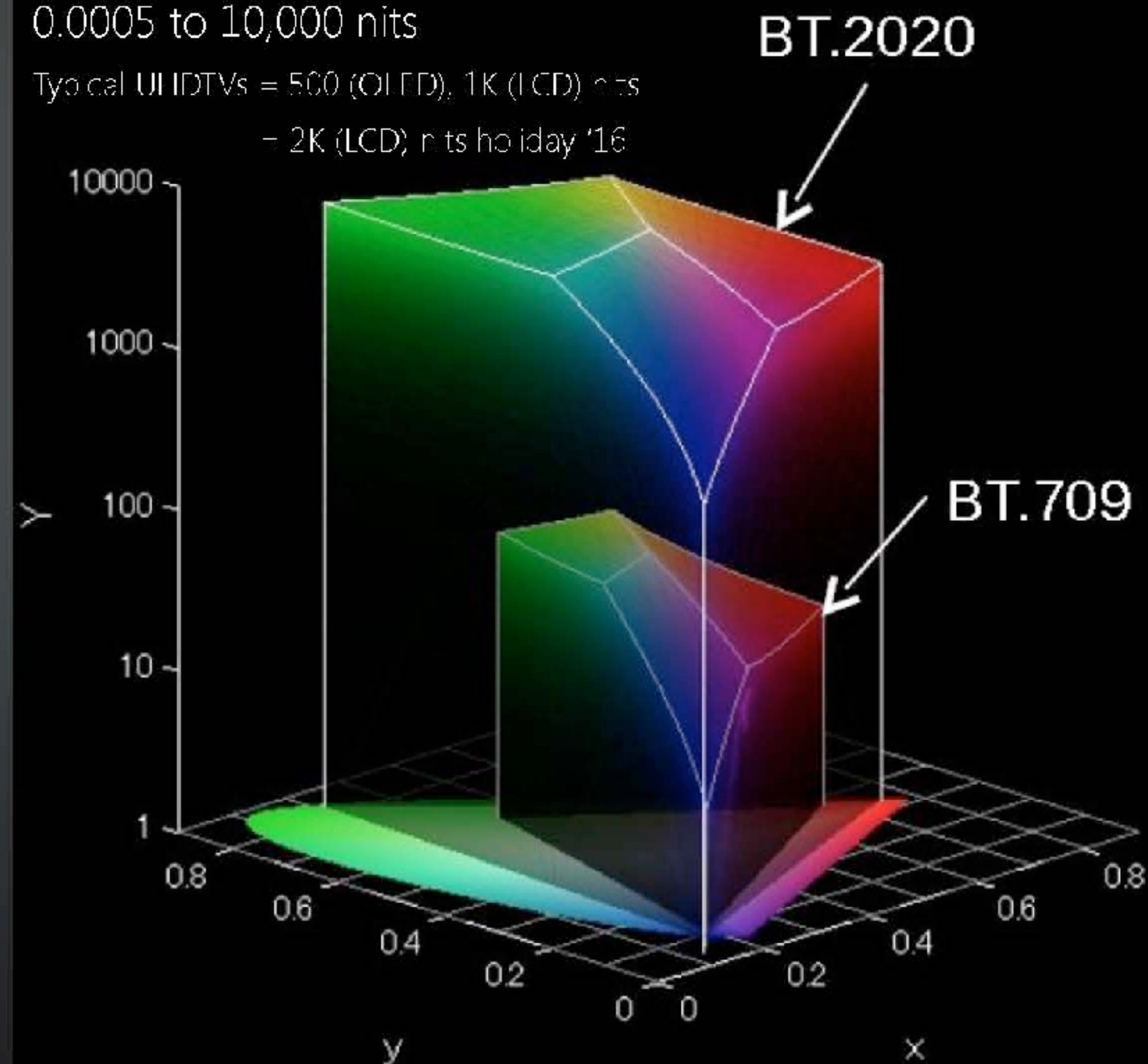
We Need More Color



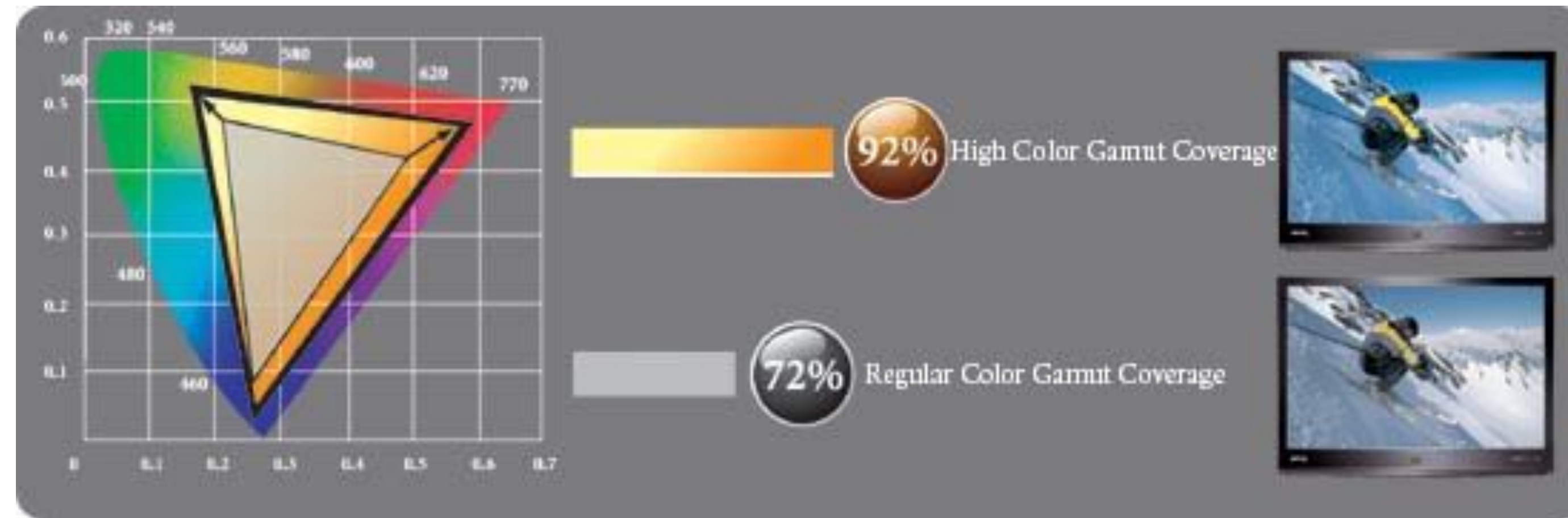
- ▶ BT.709, sRGB, SMPTE 1886 (Gamma 2.4) = today's digital content
- ▶ BT.2020, SMPTE 2084 (PQ) = HDR Content's color container

HDR-10 = BT.2020 primaries +
SMPTE 2084 (PQ) =
0.0005 to 10,000 nits

Typical UHD TVs = 500 (OLED), 1K (LCD) nits
= 2K (LCD) nits holiday '16



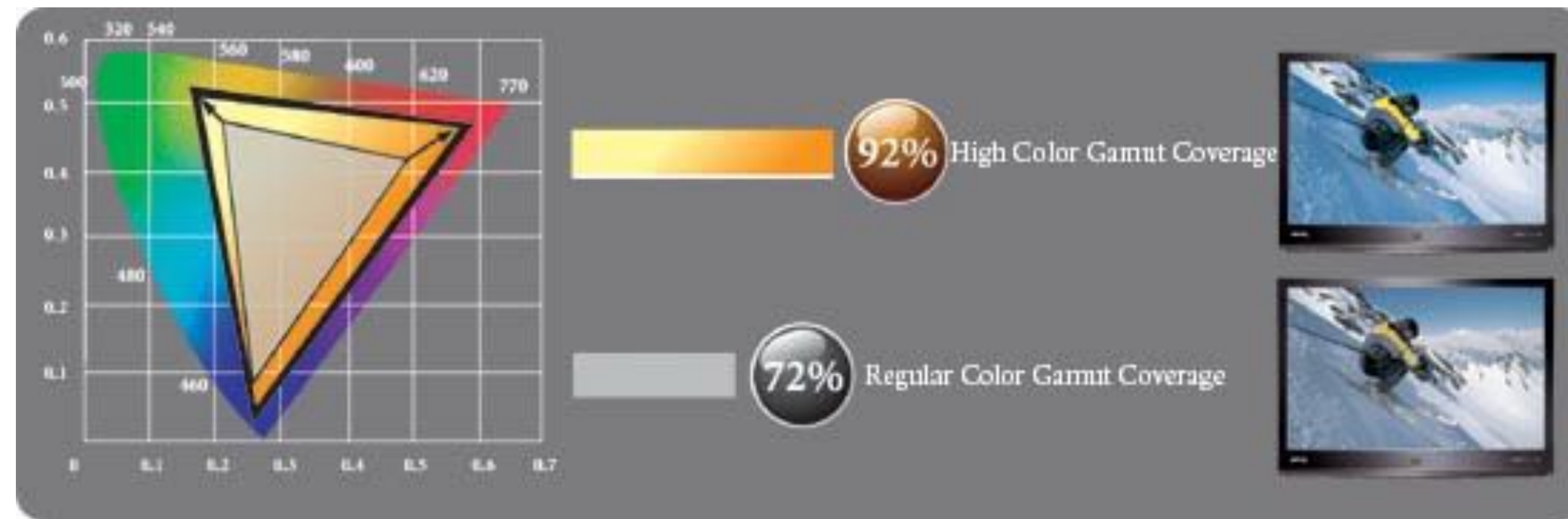
LDX86 HD Extended color Gamut



Wide Colour Gamut for true-to-life colours



LDX86 HD Extended color Gamut



When using Extended color Gamut
It is important also to set the display in this mode



Set both devices in
Extended color gamut



What's New LDX series

Tips & Tricks

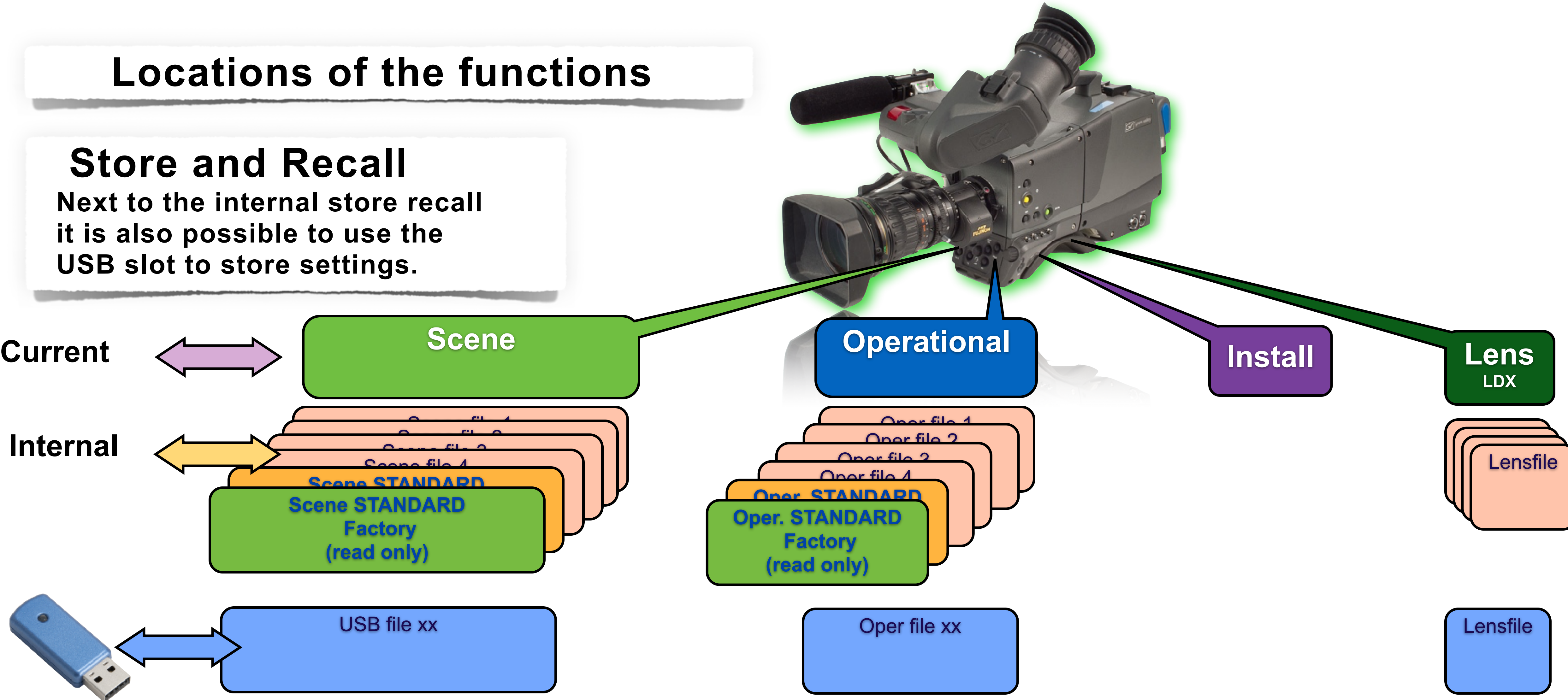
OCP and *MCP*



File handling

Locations of the functions

Store and Recall
Next to the internal store recall it is also possible to use the USB slot to store settings.



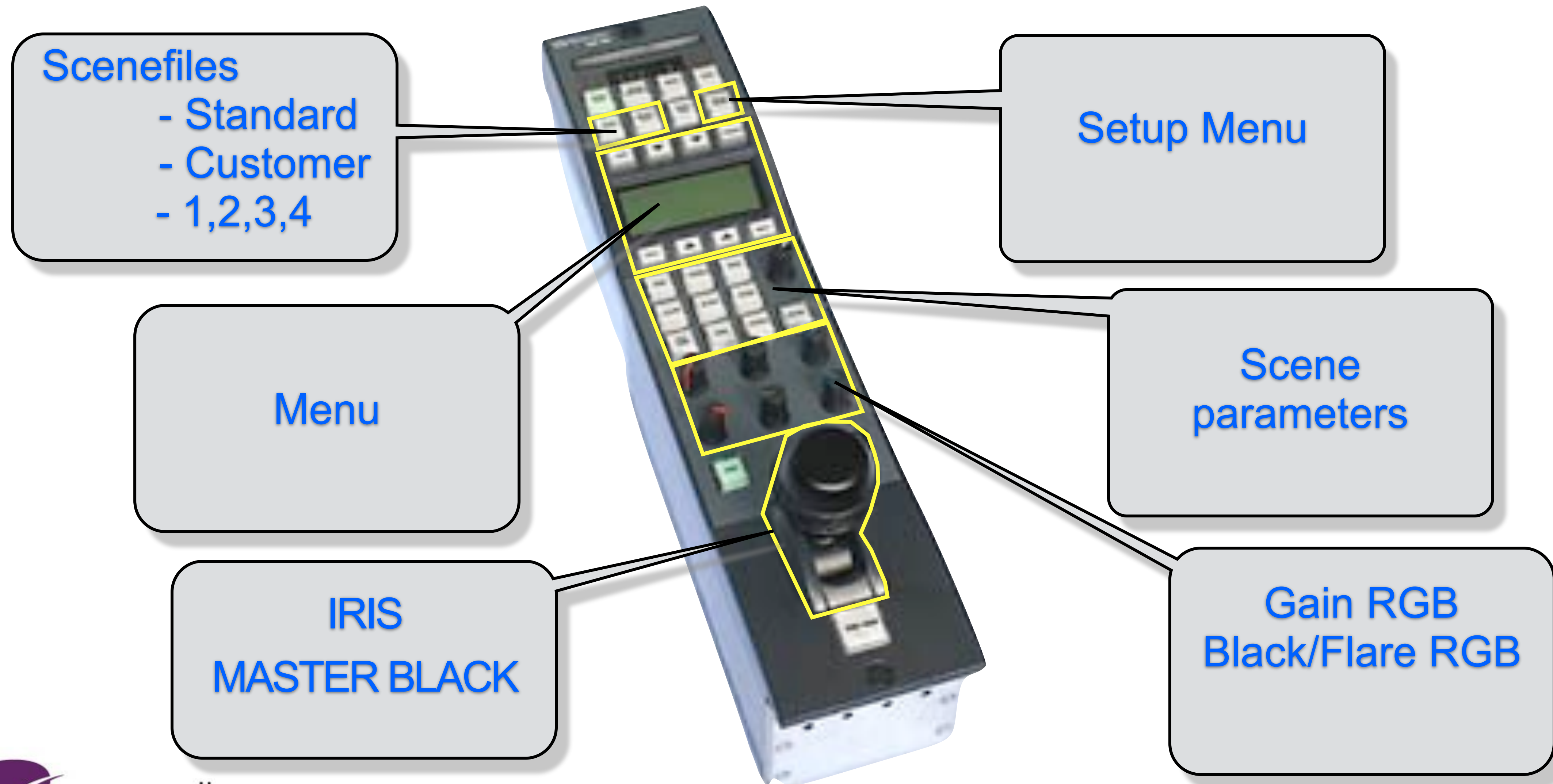
Grass Valley Cameras File handling

		STORE / RECALL		
		USB	Smart CARD	USB
		CAM	OCP	MCP450
Scene Video parameters	Gains			
	Gamma			
	Knee			
	Details			
	Black/Flare			
	Colors/Matrix			
Operational	VF settings			
	Intercom			
	Audio			
	Diagnostics			
Install	Video modes			
	Timing			
Lens	White Shading			

Available

Not accessible

Generic Operational Controls



OCP tips

Partial Recall



Last recalled/stored
Standard: Scene 1
(= Part. Recall Ref)

In this example:

Press both on **FILES** and **FILTERS**

Now only the FILTERS are returning to the Scene 1 position

OCP tips

Iris mode



DIAG OCP
BS CAM

PRESS

NEXT NEXT

IP CONFIG NAME SRVR

BLACK BlackPot IRIS

PRESS

Iris Mode Range

Normal 75

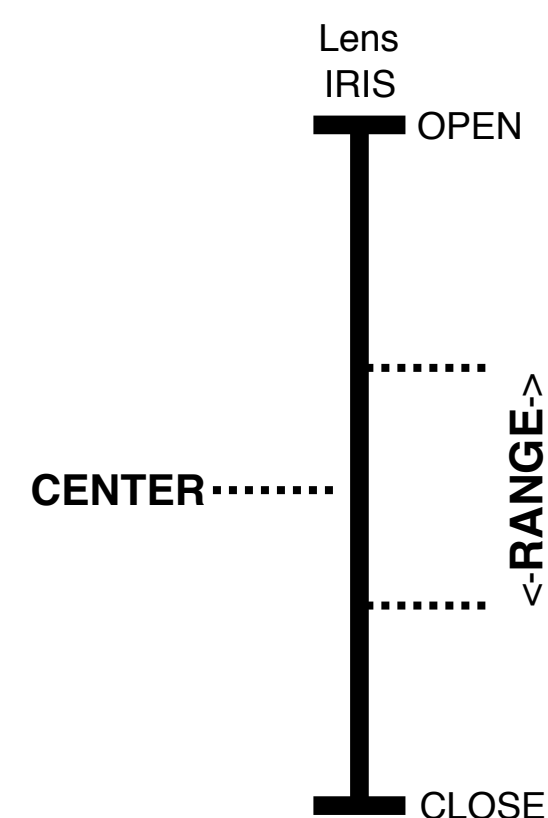
75 Center IRIS CAL

PRESS

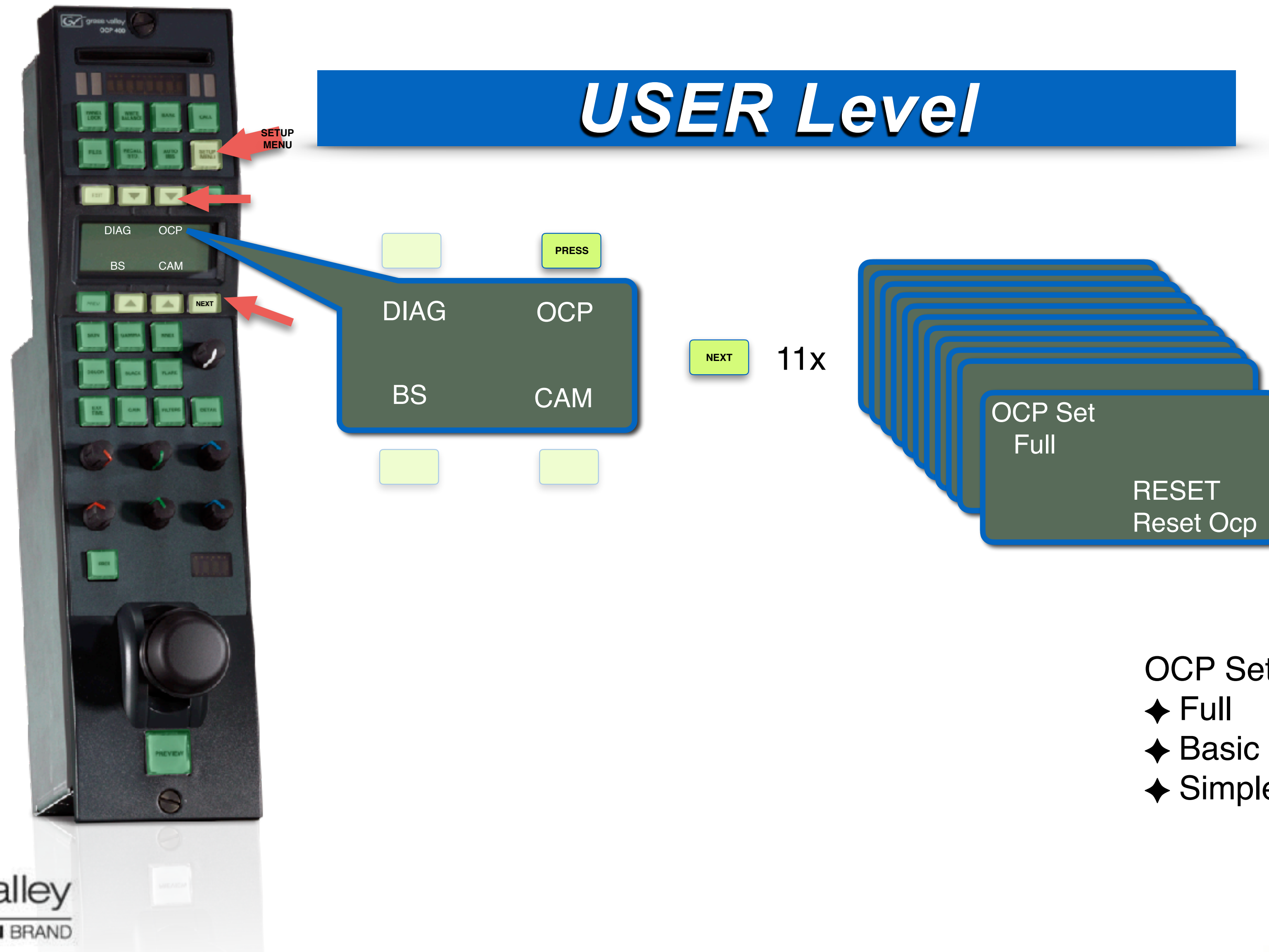
JOYSTICK CALIBR

Move to most upper and lower position

OK CANCEL



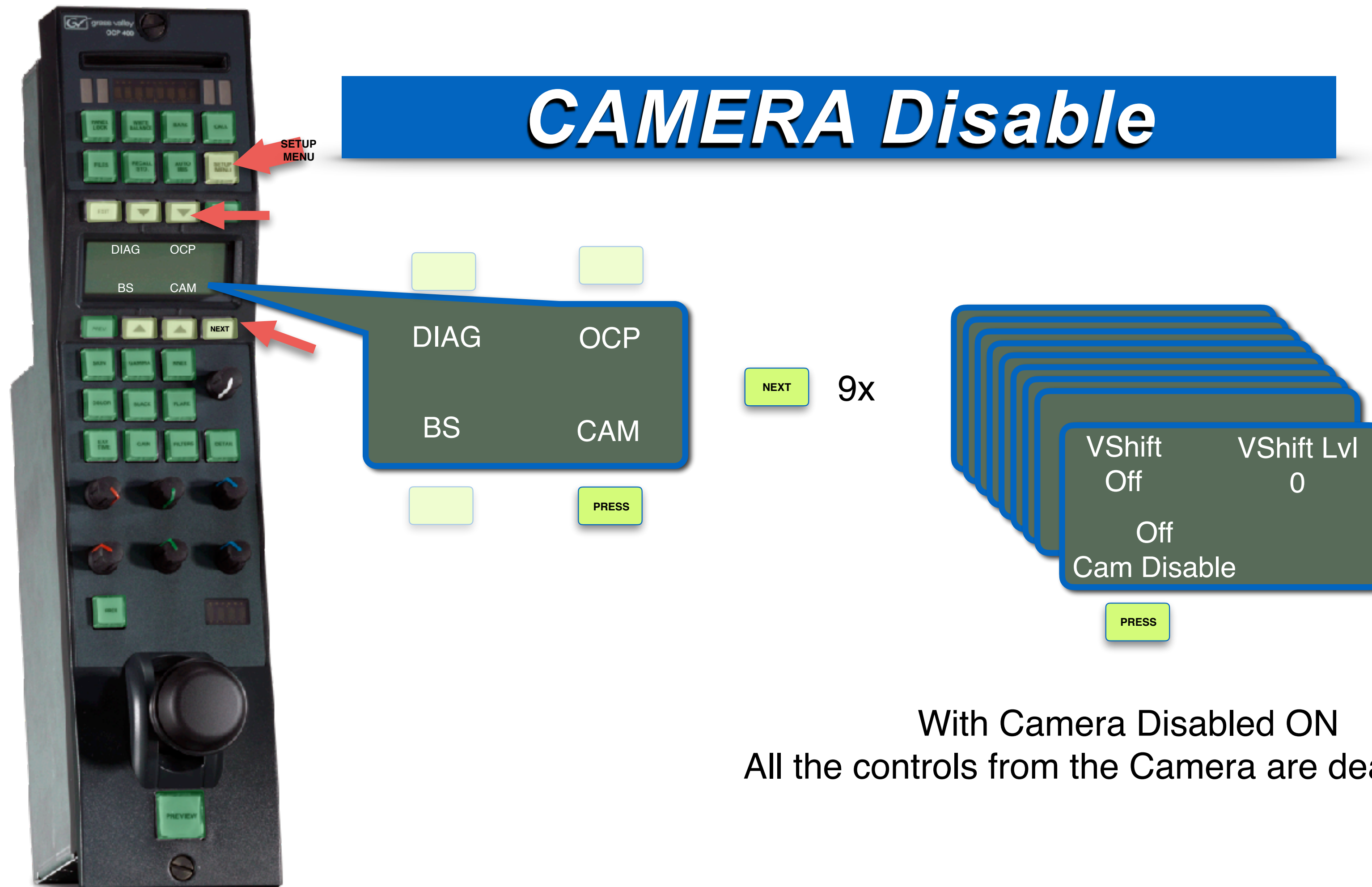
OCP tips



OCP Set:	Available Functions
◆ Full	All
◆ Basic	Limited
◆ Simple	Some

OCP tips

CAMERA Disable



With Camera Disabled ON
All the controls from the Camera are deactivated

OCP tips



Knee parameters

Knee	Kn Point
Off	50%
0	400%
Kn Fade	Kn Max In

Next

Kn Sat	Sat Lvl
Off	50
Y	100%
Kn Source	Kn Out Lim

Next

WhiteClip	WClip Lvl
On	105%
PwrCurves	
Knee Mode	

Auto Knee

In Auto Knee, the Knee Point is fixed to 50% and Max In is set to 400%. The Limit Out can still be adjusted between 100% and 118%. The circuitry automatically fades between the fixed Knee curve and the linear curve.

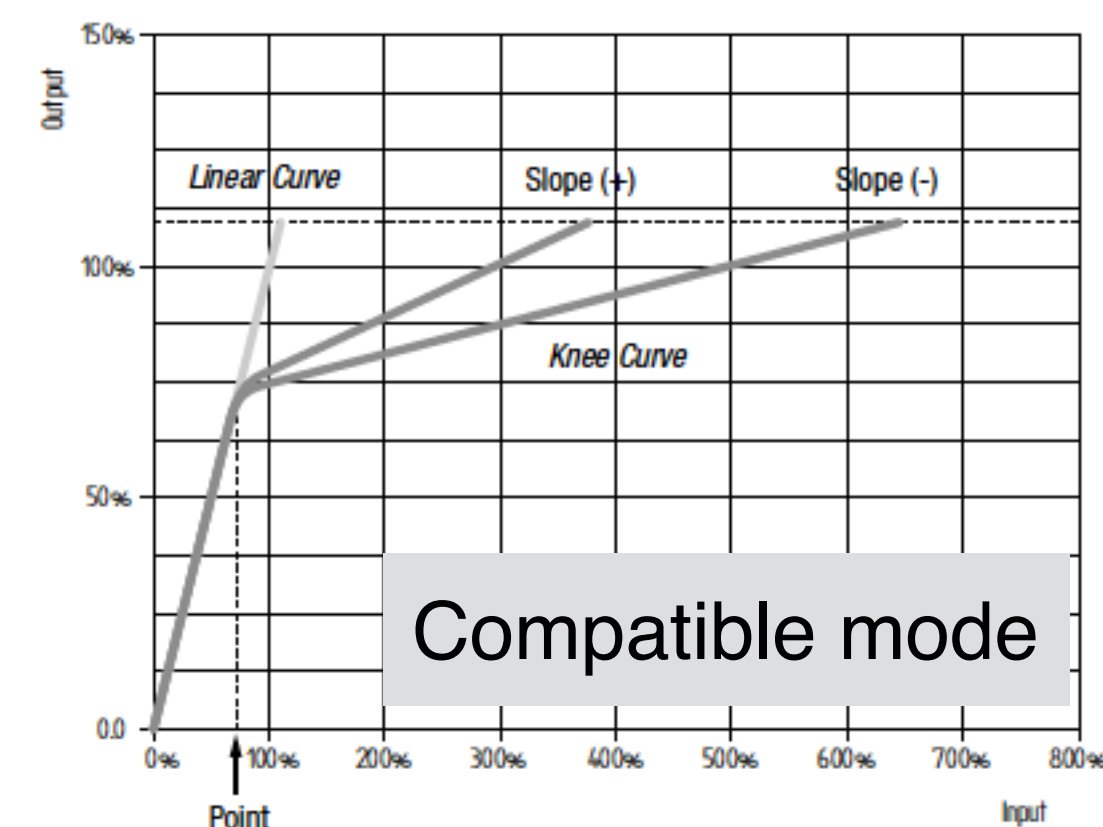
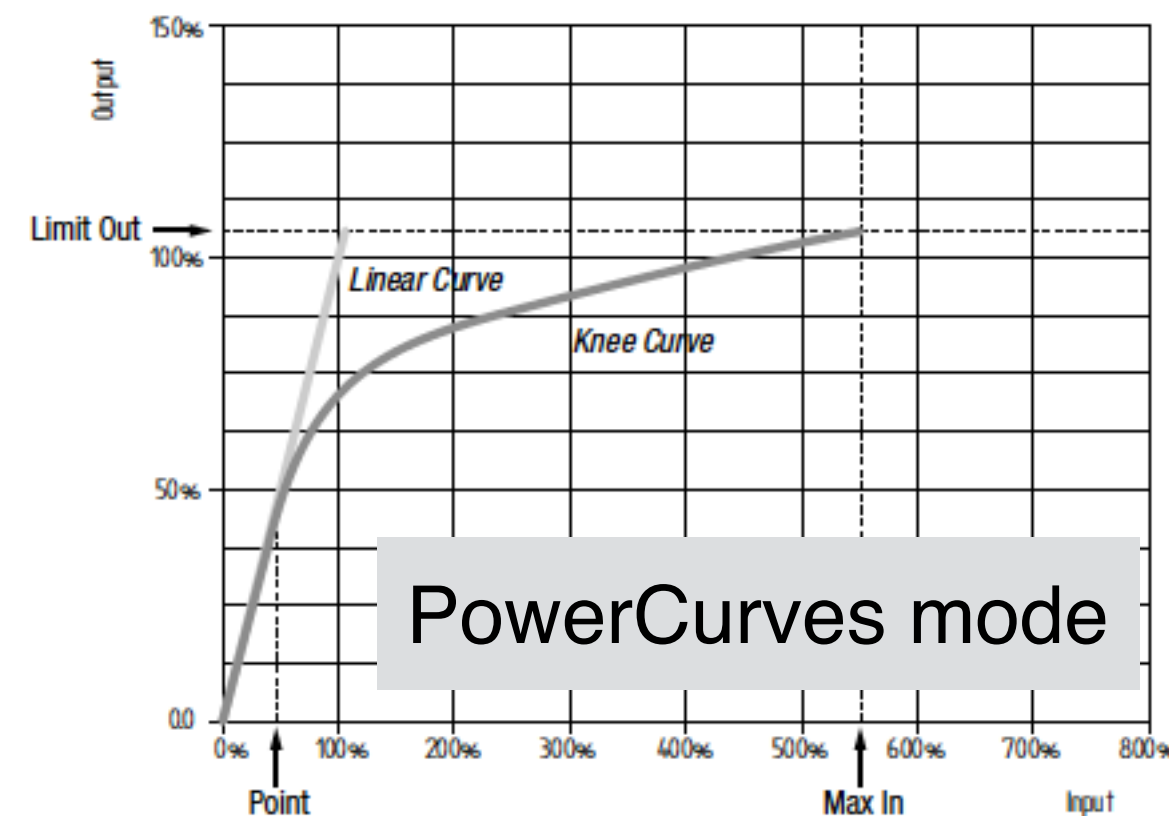
Variable Knee

The following parameters in the Knee menu can be used to set up variable Knee in PowerCurves mode:

- Kn Point/Point (0% to 90%): this is the video input level from which Knee starts compressing.
- Kn OutLim/Limit Out (100% to 118%): the highest video level that is produced at the video output.
- Kn Max In/Max In (100% to 800%): the maximum allowed video input level.

Knee Mode

Compatible. Knee can be set up as an automatic or variable function. It can also be switched off, which is the default setting. Knee Circuit compatible to older cameras types
PwrCurves LDX extended knee functionality (not in Flex camera)



OCP tips

Detail parameters HD/SD



Dtl Level 50
Texture 50
30
Level Dep 10
Noise SI

Next

V-Dtl 25
C/Fine 90
2
Knee Dtl
DETAIL EQ

Next

Y
Dtl Source

Next

Flw Gain Off
Flw Zoom Off
Enable Texture On
Dtl Func

Next

Detail Eq Off
Shadow 50
30 10
Midtone Highlight

Continued

SD Lvl 25
SD Dtl On
30
SD LvlDep 10
SD NoiseS

Next

SD V-Dtl 50
SD C/Fine 90

Next

SD SoftLv 50
On Y
SD SoftDt SD Sourc

LDX Advanced *New Features(2)*

Part 2:

- ☑ New Features (LDX)
- ☑ LDX 86 4K and XDR
- ☑ Under development
- ☑ OCP *MCP* hints / tips

