



# s709 Monitor Look

## White Paper

Ver 1.0

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## Special notice:

This White Paper has been designed to be read as a paper document or as an electronic document, on a computer screen, tablet or mobile phone.

There is a large difference in the contrast and color capabilities of these different reading methods, with most of them not able to show the true colors and contrasts mentioned here.

All the images shown here show the relative difference between the different looks mentioned in the White Paper, and should not be taken as an absolute representation of each look.

# 1. s709 Overview

Since 2000, Sony have been developing digital motion picture cameras and supporting products for the digital cinematography community under the "CineAlta" brand.

Sony have designed and produced a number of products over the years specifically for digital movie making, that have warranted the CineAlta brand, building a strong heritage of classic products. Products like the HDW-F900, HDC-F950, F23, F35, PMW-F3, F65, and PMW-F55/F5.

These models have been contributing to high-end content creation such as feature films, high-end television drama, and top-flight commercials.

During this time Sony has designed and published its original "S-Log" curve, integrating this into the camera designs to allow them to capture scenes with exceptionally wide latitude. As digital cinematography standards have evolved and technologies improved, so new models have been introduced with improved S-Log curves, S-Log2 and now S-Log3, greatly enhancing the latitude and dynamic range capabilities of these later products.

Over the years Sony has also introduced new color spaces, significantly wider than those agreed by the digital cinematography community. S-Gamut3.Cine is one such color space, wider than the DCI P3 color space used extensively for digital movie making.

Both S-Log3 and S-Gamut3.Cine provide huge dynamic range and color space capabilities within the camera that can be used to capture material that provides post-production with the widest creative freedom and control.

However these technologies present a problem for those working on-set, in dailies and in post-production. How to review material shot in S-Log3/S-Gamut3.Cine on a standard monitor designed to operate in a conventional Rec.709 dynamic range and color space?

F65



PMW-F5 &amp; PMW-F55



VENICE

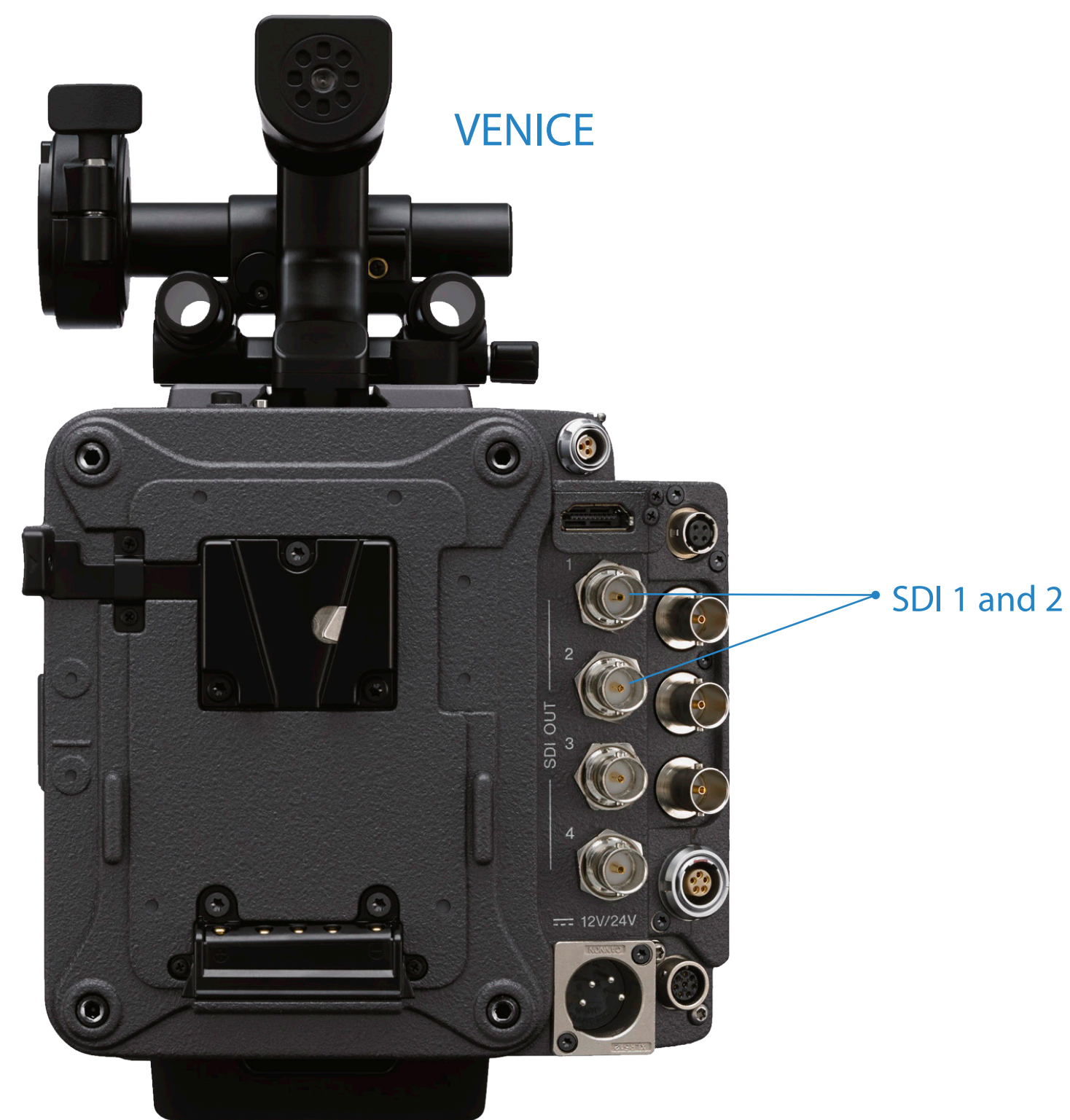


Thus Sony has introduced a series of Look Profiles and LUTs (Look Up Tables) for on-set monitoring while shooting, and for clip review afterwards.

The conventional monitor look 709(800) integrated into the F65 and PMW-F55 cameras has a high contrast tone curve and renders high saturated, vivid colors. With the introduction of VENICE, 709(800) has been renamed “R709”.

Sony has also developed a new monitor look called “s709”. This renders imagery in subtle colors, with smooth color gradation and a softer low contrast tone curve suitable for cinema and drama productions.

s709 is close to the film color characteristics, and allows directors, DOPs and cinematographers, to have the final film look characteristics on location while shooting.



s709



R709



S-Log3/S-Gamut3.cine



The s709 output is available on the VENICE SDI outputs 1 and 2 switchable via the camera’s menu, and can be used as a standard on-set monitoring look for shooting.

This document describes details of how to use s709. Sony provides the s709 cube file that delivers the same look as the built-in s709 SDI output of the VENICE. The cube is suitable for creating dailies, to reproducing the same on-set look in post-production. It also provides a starting point for grading by incorporating the cube into the grading pipeline.

## 2. s709 Characteristics

### 2.1 Position

#### s709:

s709 positions in the “Low contrast” and “Cinematic color” region in the right contrast-color chart. This look provides subtle and well-rendered facial tints, with a tone curve close to film characteristics, and low contrast

#### 709(800):

This look provides high contrast with broadcast colors. With the introduction of VENICE this look has been renamed “R709”.

#### LC-709, LC-709TypeA:

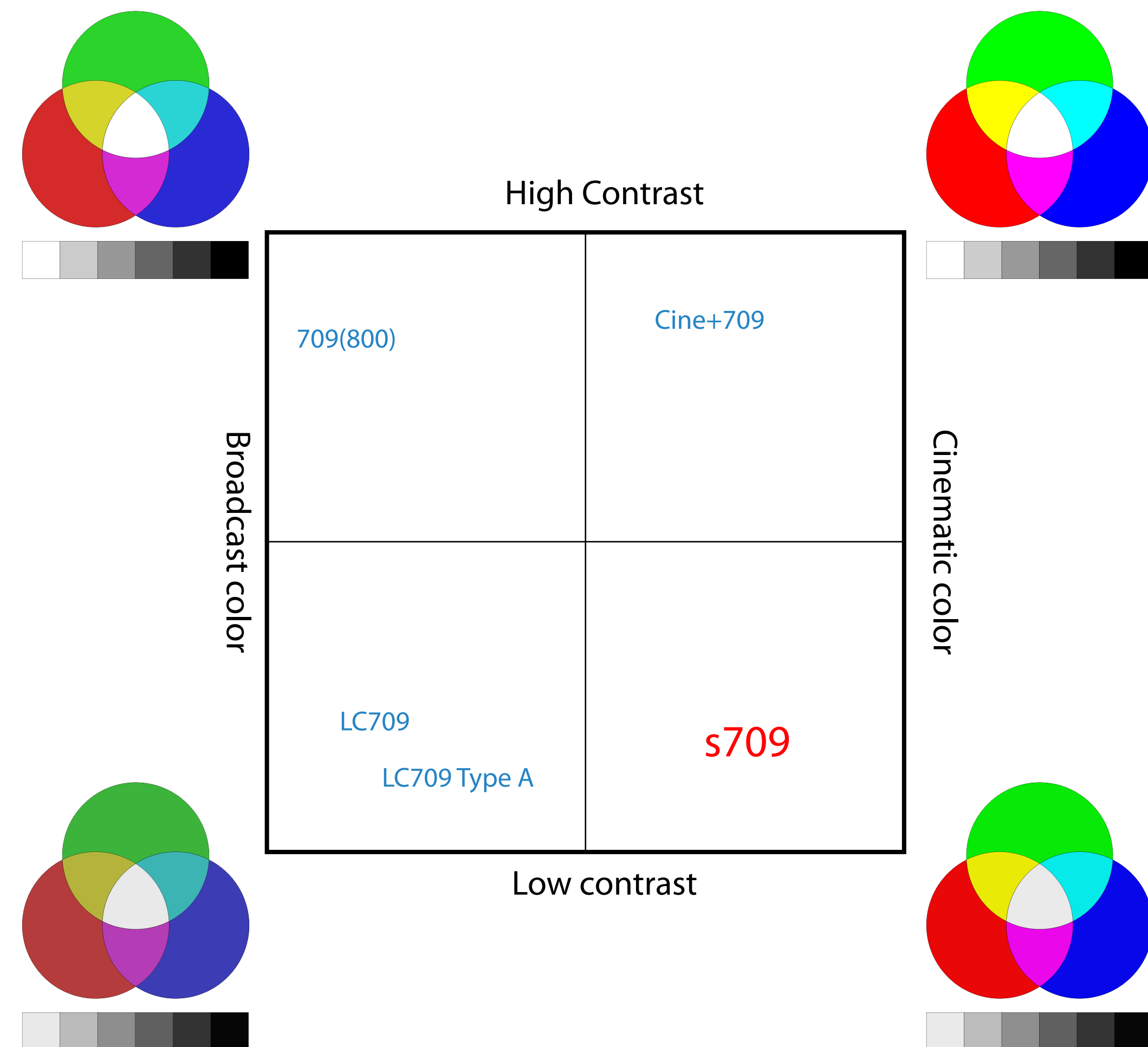
These look profiles provide low contrast with broadcast color.

#### Cine+709 as Look Profile

Subtle colors, with high contrast and a tone curve close to film characteristics

Look Profiles are intended to provide an easier starting point for color grading in television production workflows. It utilizes and maximizes Sony F65 and PMW-F55 capabilities of wide latitude and wide color reproduction.

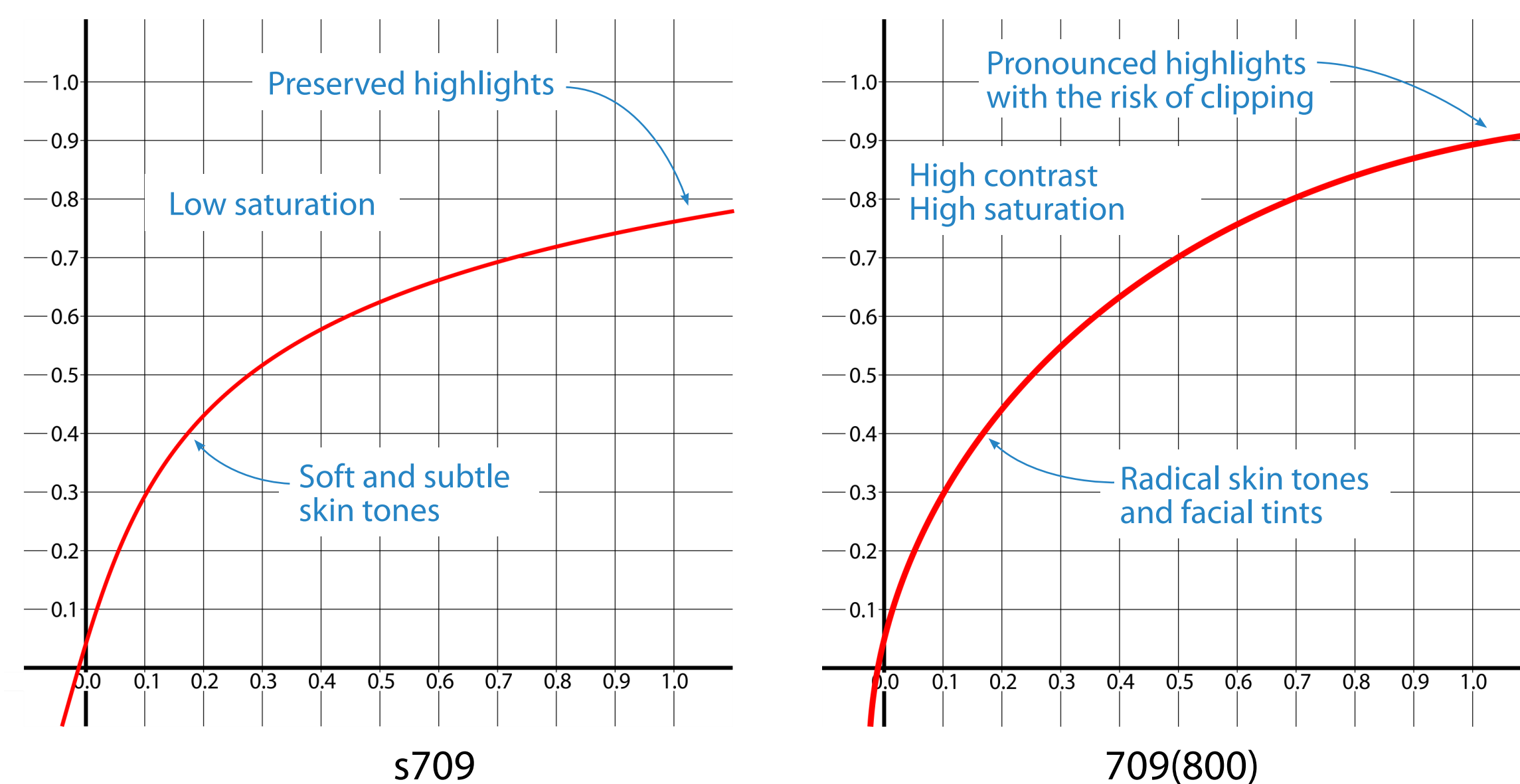
It is recommended that s709 is used for cinema and television drama production, while R709 is used for monitoring images that are closer to the actual look with high contrast compared to those of the s709, and has been designed to work with F65/F55 workflow.



### 2.2 Tone Curve

s709 has a low contrast tone curve to deliver soft tonal look in the image. The shadows and midtones have relatively natural responses, while the highlights are compressed to preserve wide latitude in the camera, and specular highlights in the scene.

The diagrams on the right compare the s709 and 709(800) tone curves. The s709 has a lower contrast curve than 709(800), and preserves highlights.



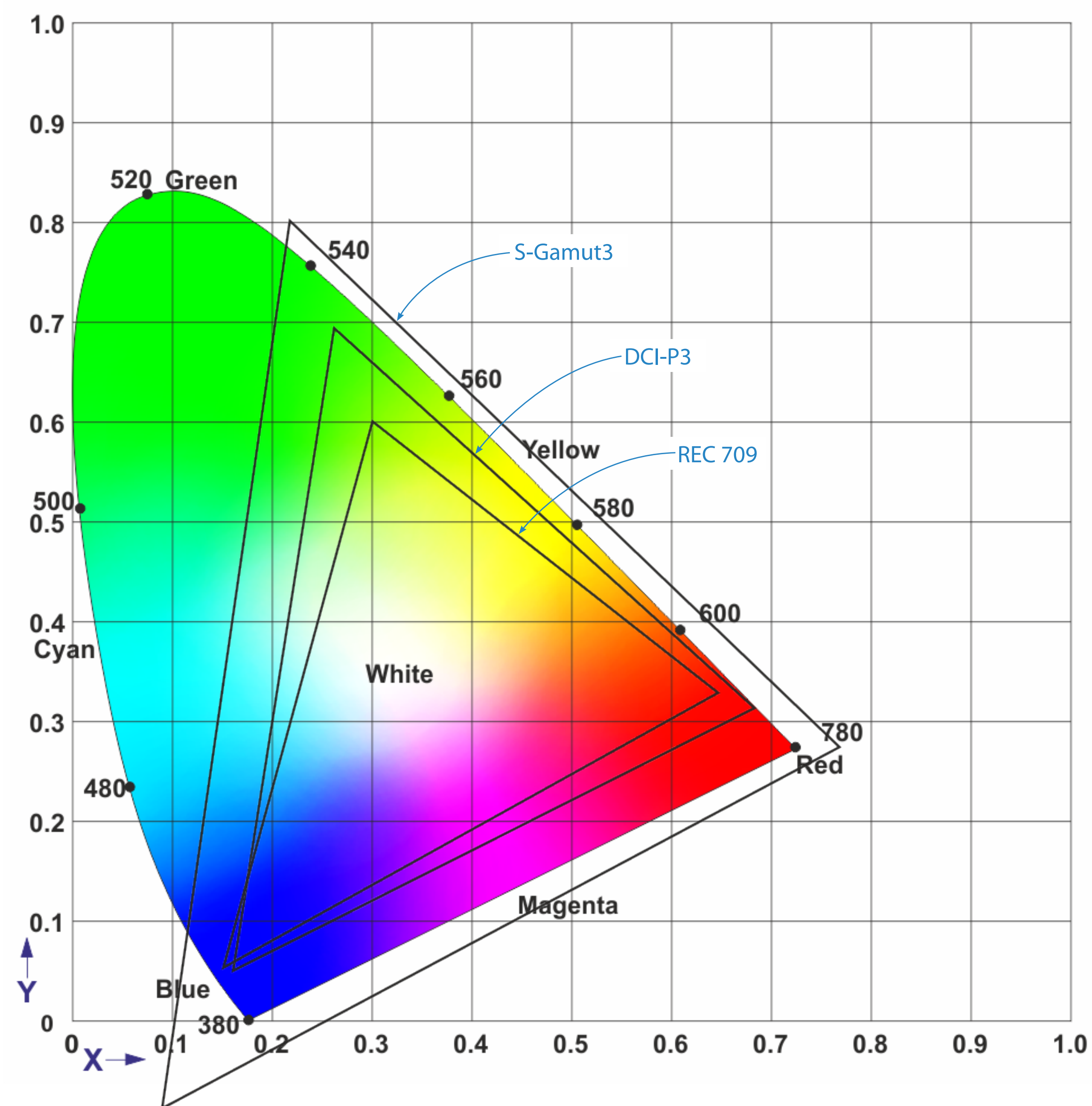
## 2.3 Color Characteristics

s709 has a softer low saturated image, and renders colors closer to those of film characters. It delivers soft and subtle skin tones with smooth gradation.

### The s709 cube

The s709.cube is optimized for a Rec.709 monitor. If you use the look with a P3 monitoring device (e.g. projector) at a post-production house, please use one of the following P3 cubes that is appropriate for the white point of your projector.

.cube file name	Input	Output
S-Log3-S-Gamut3.cine_To_s709.cube	S-Log3 / S-Gamut3.Cine	Gamma2.4 / Rec.709
S-Log3-S-Gamut3.cine_To_sP3DCI.cube	S-Log3 / S-Gamut3.Cine	Gamma2.6 / P3DCI
S-Log3-S-Gamut3.cine_To_sP3D65.cube	S-Log3 / S-Gamut3.Cine	Gamma2.6 / P3D65



# 3. s709 Workflow

## Principles and capabilities

This diagram below shows the basic principles and capabilities behind creating production workflows using the camera's integrated s709 functionality available from SDI output, and 3D LUTs like the s709.cube and sP3Dxx.cube files. Many different combinations of this basic example can be used for different shooting and production scenarios.

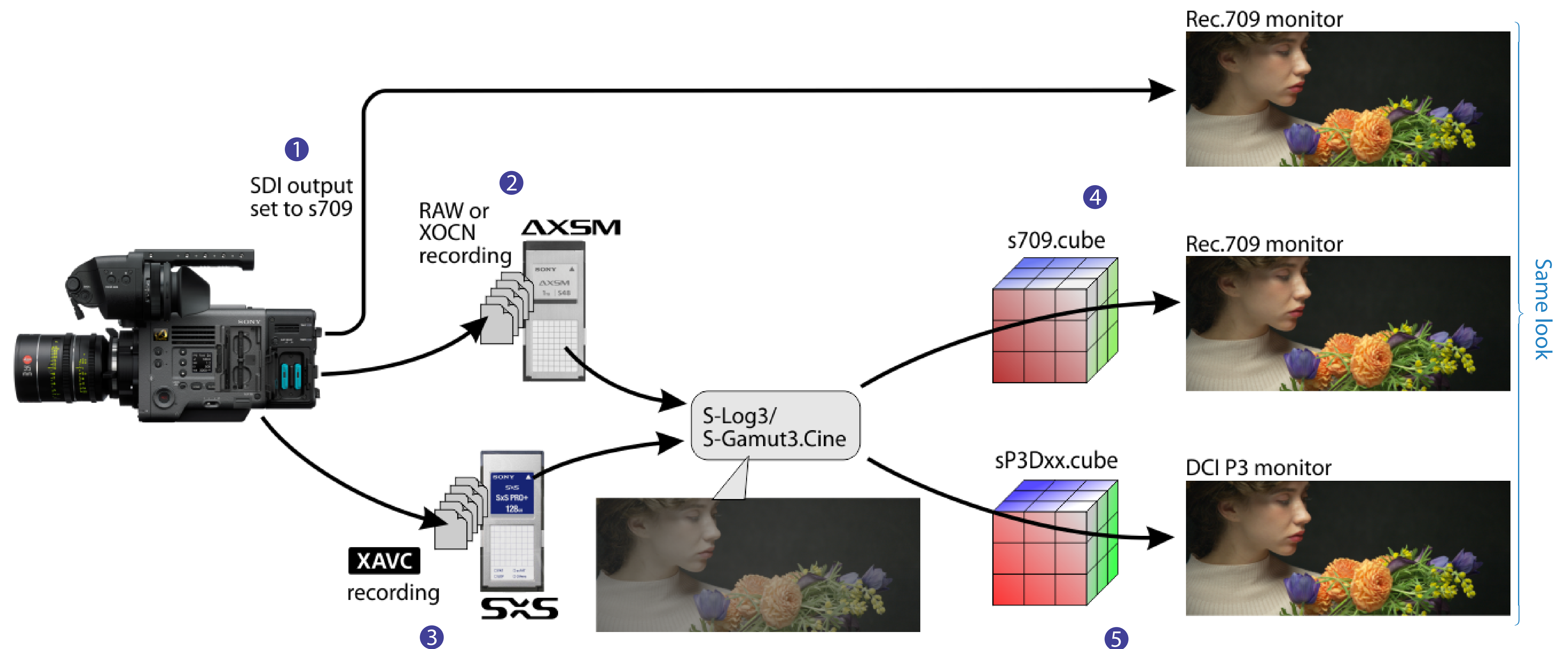
① Camera s709 SDI output can be used for direct on-set monitoring using a standard Rec.709 monitor.

② RAW and X-OCN recordings are made on AXSM media in the AXS-R7 dockable recorder. If the camera is recording RAW or X-OCN as its main recordings, then the camera can also record XAVC clips as proxies on SxS media.

③ Both RAW, X-OCN and XAVC recordings can be run through post-production with S-Log3 dynamic range and S-Gamut3.Cine color space, maintaining high quality material through grading and editing.

④ The S-Log3/S-Gamut3.Cine material can be converted through an s709 LUT for reviewing on a standard Rec.709 monitor

⑤ The material can also be sent through an sP3Dxx LUT for reviewing on a DCI P3 monitor.



## s709 Sample Workflow

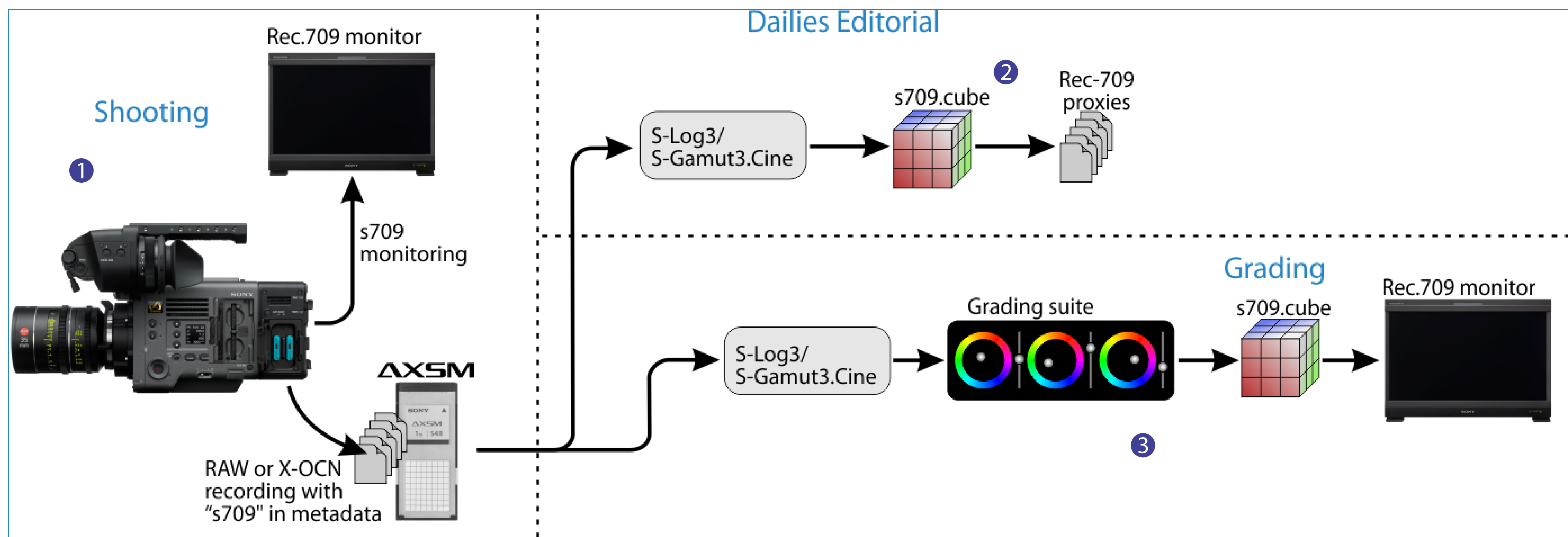
The diagram below shows an example of a workflow through the dailies/editorial phase and the grading phase of a typical production.

It shows how s709 can be used for direct viewing on-set by using the direct output from VENICE, as described before.

S-Log3 provides excellent dynamic range for post-production as is used as a standard within the post-production tools. S-Gamut3.Cine provides a wide color space post-production. Working with S-Log3/S-Gamut3.Cine material offers huge creative possibilities in post-production.

Dailies/editorial can use s709 to create Rec.709 proxy clips for fast review and editing.

Later in the production workflow, in grading, s709 can also be used to provide a view of the S-Log3/S-Gamut3.Cine material on a standard Rec.709 monitor.



Selecting whether the s709.cube is used as an input LUT or output LUT will depend on the grading style. If the grade is in log space, then the s709.cube should be applied as an output LUT. If the grade is in Rec.709 space, then the s709.cube should be applied as an input LUT.

### Applying s709.cube as an output LUT (Log grading)



### 1 Shoot scenes and record in RAW, or X-OCN, monitoring in s709 on site

Select s709 for the SDI output, and record in RAW, or X-OCN.

### 2 Create s709 dailies for editorial/offline edit

Create proxies from the original materials using the s709.cube. If the materials are recorded in RAW/X-OCN, render them into S-Log3/S-gamut3.Cine, then apply the s709.cube and export as proxies.

### 3 Grade materials using s709 as the starting point for grading

Grade materials based on the s709 look. If the materials are recorded in RAW/X-OCN, render them into S-Log3/S-Gamut3.Cine, and apply the s709.cube as an input LUT, or an output LUT of the grading pipeline to make it the starting point of your grading work.

### Applying s709.cube as an input LUT (Rec.709 grading)



If your grading target is P3, apply one of the .cube file for P3DCI or P3D65 depending on the target white, instead of the s709.cube.

When using F65RAW and F55RAW simultaneously in your project, it is possible to match the color management of VENICE by developing the material through S-Log3/S-Gamut3.Cine.



# 4. Application

## 4.1 Viewing s709 from VENICE

The VENICE Operation Manual shows details of how to apply an s709 look to one of the camera's SDI outputs.



This can be achieved through the VENICE Sub Display, in the HOME menu Item key 5. This key provides look control for SDI output 3 and 4.

## 4.2 Using s709 in Sony's RAW Viewer application

The Sony RAW Viewer is available from the following web site

<https://www.sonycreativesoftware.com/rawviewer>

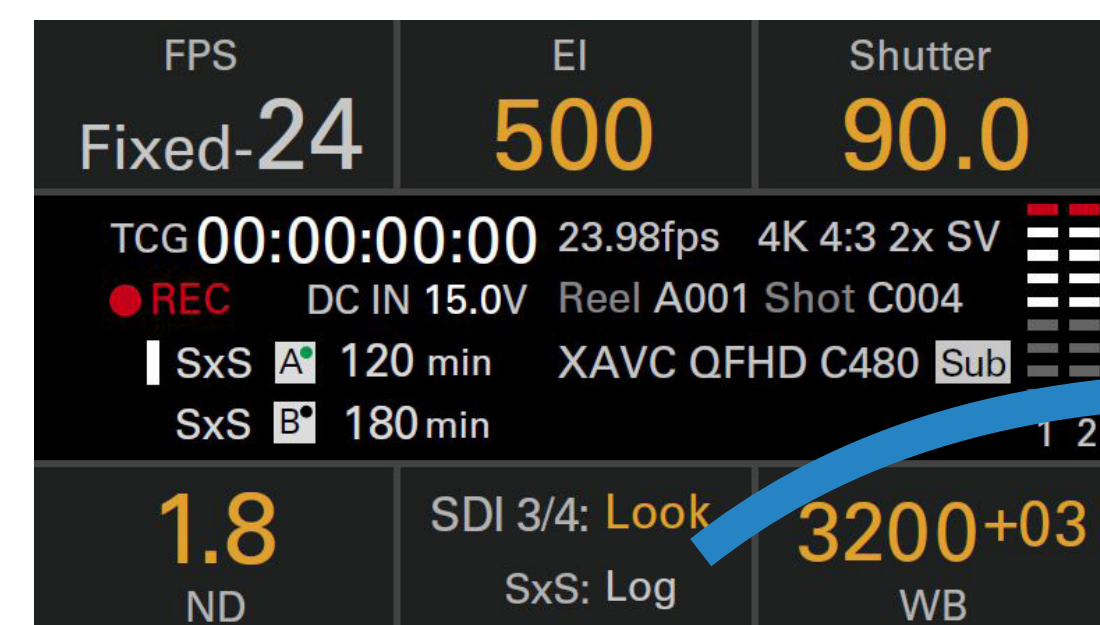
Open the footage and select [S-Gamut3.Cine/S-Log3] for [Grading Color Space] in the Parameter Setting window.

### Input LUTs

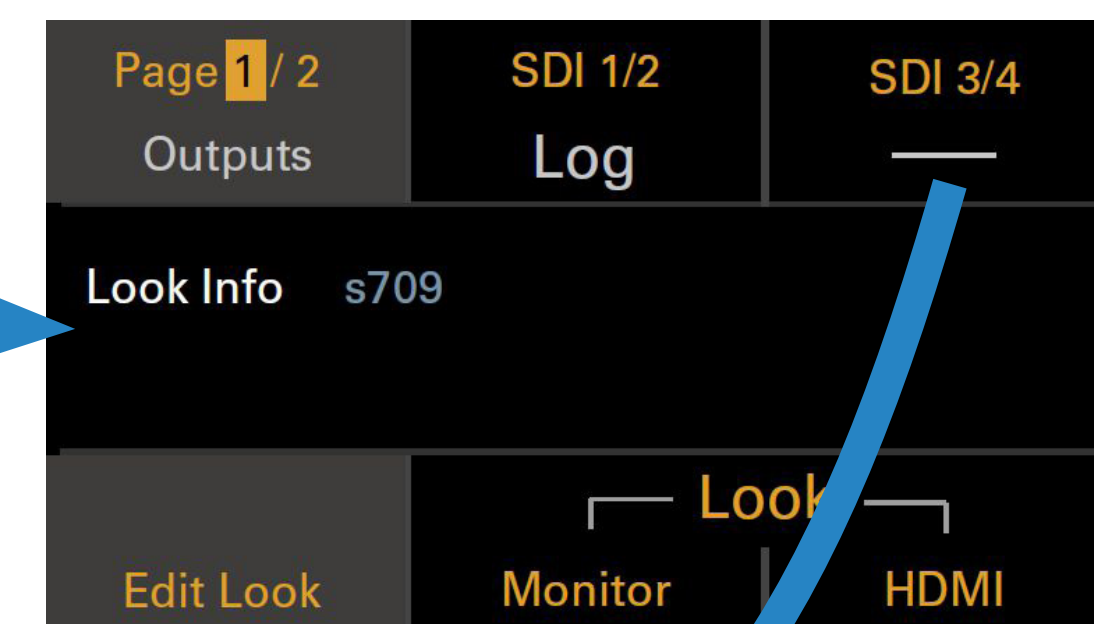
To apply s709 as an input LUT, select [s709] in the [Look Profile] menu.

### Output LUTs

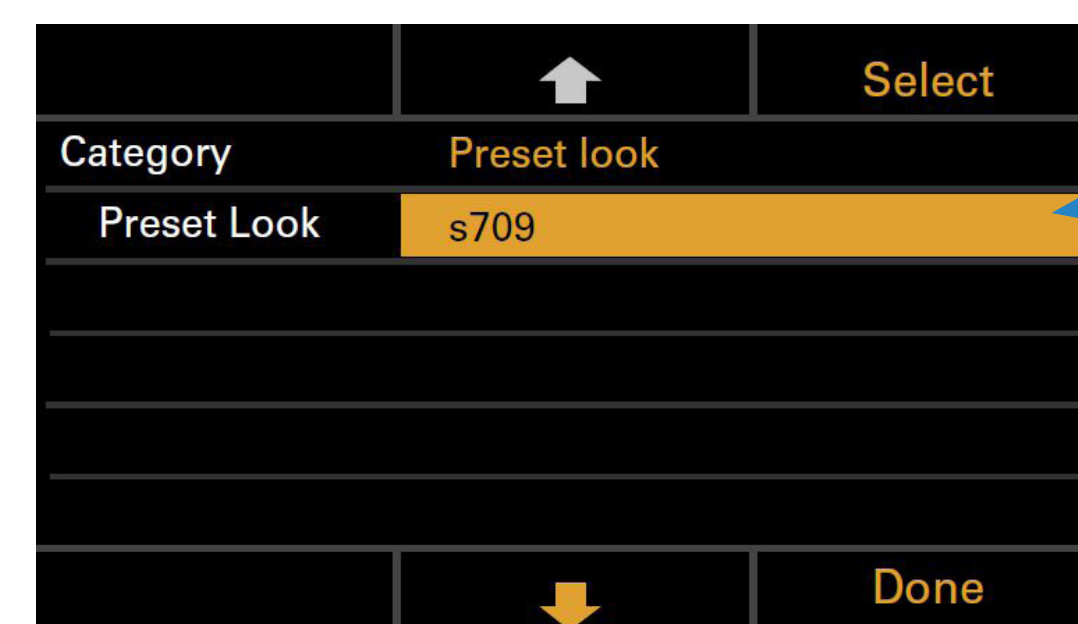
To apply s709 as an output LUT, select [s709] in the [Monitor LUT] menu.



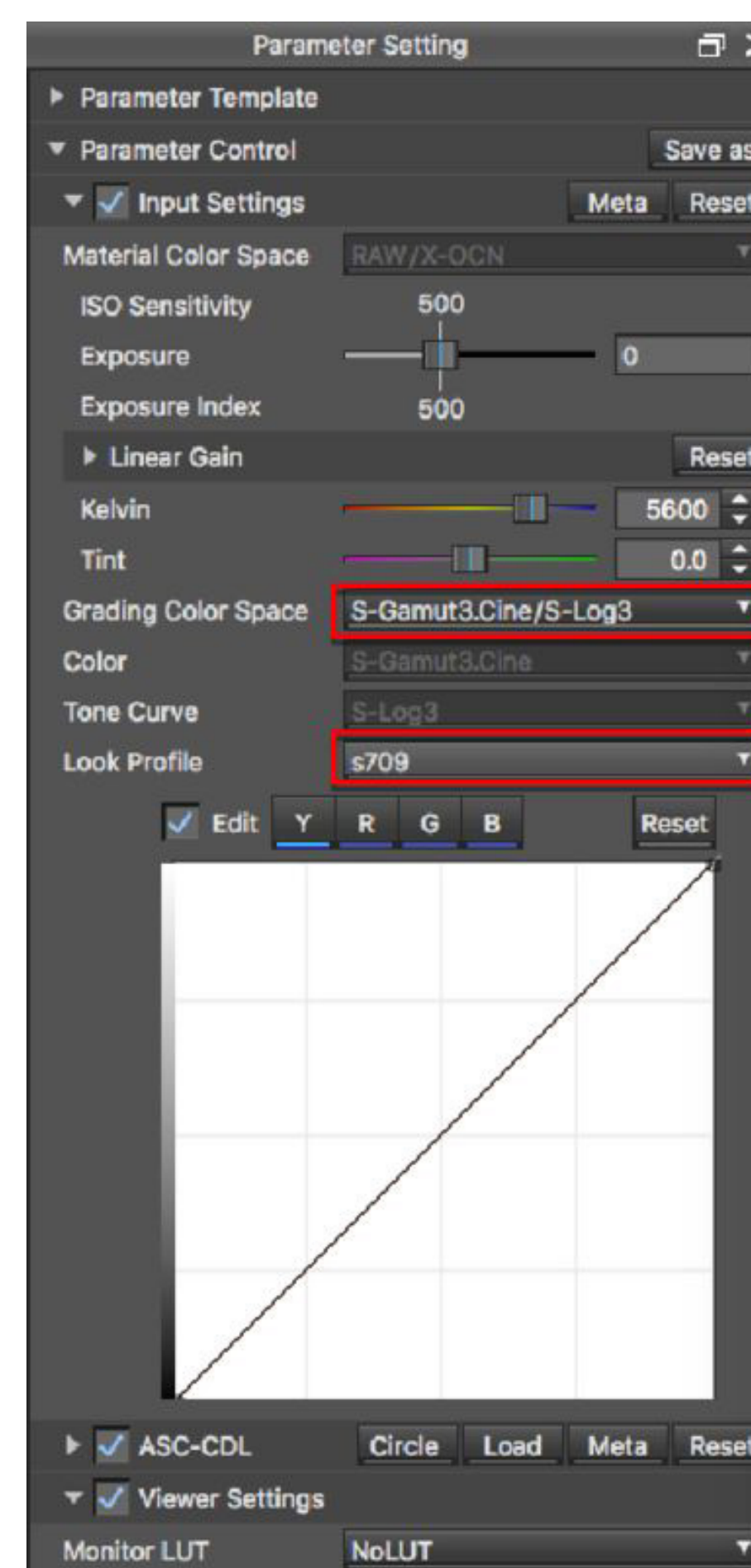
VENICE Sub Display HOME screen



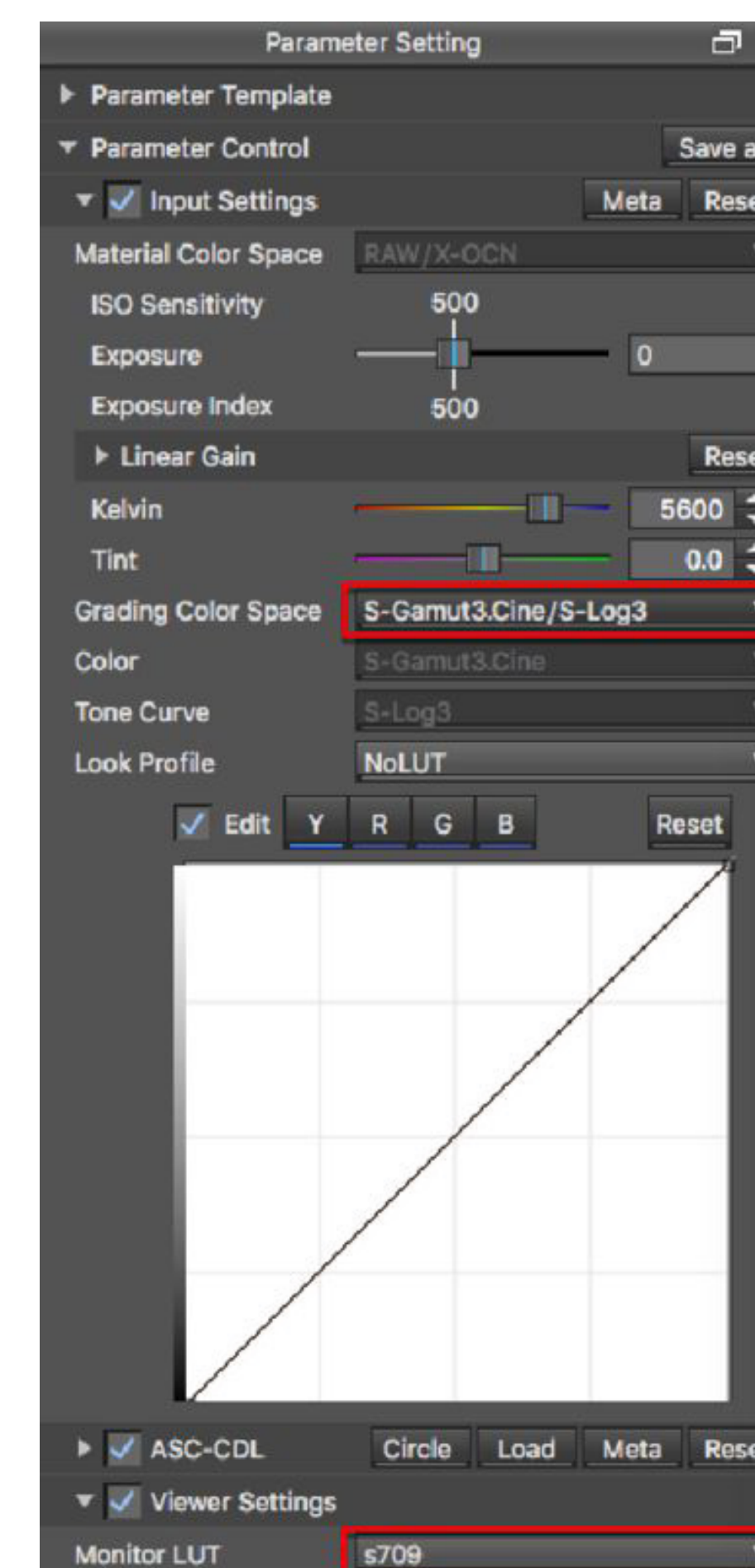
LUT selection screen



Preset look screen



Applying s709 as an input LUT



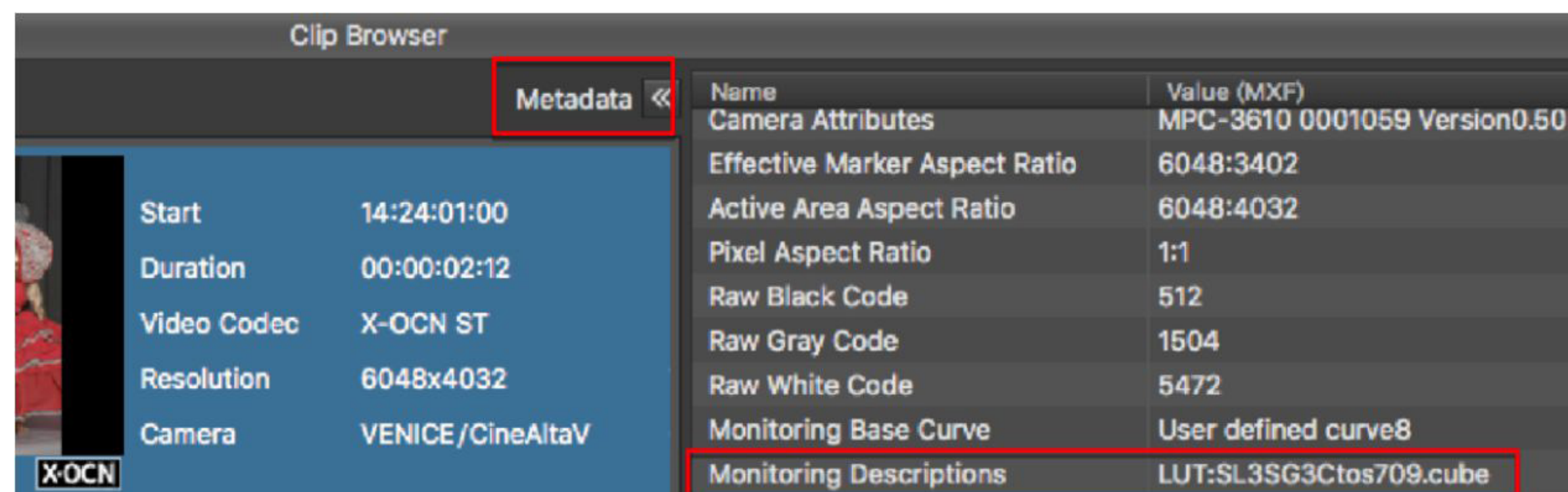
Applying s709 as an output LUT

## 5. s709 metadata

If s709 is used for on-set monitoring while shooting, "s709" is recorded in the metadata and displays the status in the RAW Viewer.

The monitoring Metadata is shown as Monitoring Description in the Metadata list in the Clip Browser

When s709 is used for on-set monitoring while shooting, "s709" is recorded in the Metadata and RAW Viewer automatically applies the look by pressing [Meta] button.



The screenshot shows the 'Clip Browser' interface. On the left, there is a list of clip details: Start (14:24:01:00), Duration (00:00:02:12), Video Codec (X-OCN ST), Resolution (6048x4032), and Camera (VENICE /CineAltaV). The 'X-OCN' logo is visible at the bottom left. On the right, the 'Metadata' tab is active, showing a table of metadata entries. The 'Monitoring Descriptions' entry is highlighted with a red box.

Name	Value (MXF)
Camera Attributes	MPC-3610 0001059 Version0.50
Effective Marker Aspect Ratio	6048:3402
Active Area Aspect Ratio	6048:4032
Pixel Aspect Ratio	1:1
Raw Black Code	512
Raw Gray Code	1504
Raw White Code	5472
Monitoring Base Curve	User defined curve8
Monitoring Descriptions	LUT:SL3SG3Ctos709.cube

**SONY**