Anamorphic Formats in Post-Production

ALEXA 35

WORKFLOW GUIDELINE

Date: 6th November 2024

Version History

Version	Author	Change Note
2024-10-24	Simon Duschl	First Version
2024-10-31	Simon Duschl	Added sample for 4.6K 3:2 Open Gate
2024-11-04	Simon Duschl	Added sample for 3.3K 6:5
-	-	-

Table of Contents

Introduction

This workflow guideline shows some examples of anamorphic sensor modes and recording resolutions for the ALEXA 35 camera in relation to post-production. The guideline is organized into various chapters, each dedicated to a specific sensor mode and its corresponding recording resolutions and framing. Each chapter includes sections on:

- Preparation, Framing and Recording
- Color Grading and Finishing
- Rushes and Dailies
- VFX

1 ALEXA 35 and Anamorphic Formats

This table provides a brief summary of the available anamorphic options for the ALEXA 35 camera. For a comprehensive overview of all possible sensor modes and recording resolutions, we recommend referring to our ARRI Formats and Resolution Overview of ARRI digital motion picture cameras.

Sensor Mode Recording Codec	Recording Resolution	Lens Squeeze Options
4.6K 3:2 Open Gate		
ProRes	4.6K (4608x3164)	1.0 / 1.25 / 1.30 / 1.33 / 1.50 / 1.66 / 1.80 / 1.85 / 2.0
ARRIRAW	4.6K (4608x2592)	1.0 / 1.25 / 1.30 / 1.33 / 1.50 / 1.66 / 1.80 / 1.85 / 2.0
4.6K 16:9		
ProRes	4K (4096x2304) *	1.0 / 1.25 / 1.30 / 1.33 / 1.50 / 1.66 / 1.80 / 1.85 / 2.0
ARRIRAW	4.6K (4608x2592)	1.0 / 1.25 / 1.30 / 1.33 / 1.50 / 1.66 / 1.80 / 1.85 / 2.0
4K 16:9		
ProRes	4K (4096x2304)	1.0
ARRIRAW	4K (4096x2304)	1.0
ProRes	UHD (3840x2160)	1.0
ProRes	2K (2048x1152)	1.0
ProRes	HD (1920x1080)	1.0
4K 2:1		
ProRes	4K 2:1 (4096x2048)	1.0
ARRIRAW	4K 2:1 (4096x2048)	1.0
3.8K 16:9		
ARRIRAW	UHD (3840x2160)	1.0
3.3K 6:5		
ProRes	3.3K (3328x2790)	1.0 / 1.25 / 1.30 / 1.33 / 1.50 / 1.66 / 1.80 / 1.85 / 2.0
ProRes	4K 2.39:1 Ana 2x (4096x1716) **	2.0
ARRIRAW	3.3K (3328x2790)	1.0 / 1.25 / 1.30 / 1.33 / 1.50 / 1.66 / 1.80 / 1.85 / 2.0
3K 1:1		
ProRes	3.8K 2:1 Ana 2x (3840x1920) **	
ProRes	3K 1:1 - 3K (3072x3072)	1.0 / 1.25 / 1.30 / 1.33 / 1.50 / 1.66 / 1.80 / 1.85 / 2.0
ARRIRAW	3K 1:1 - 3K (3072x3072)	1.0 / 1.25 / 1.30 / 1.33 / 1.50 / 1.66 / 1.80 / 1.85 / 2.0
2.7K 8:9		
ProRes	UHD 16:9 Ana 2x (3840x2160) **	2.0
2K 16:9 S16		
ProRes	2K (2048x1152)	1.0

* Apple ProRes (downscale)
** Apple ProRes (desqueezed & scaled)

2 Examples for anamorphic workflows

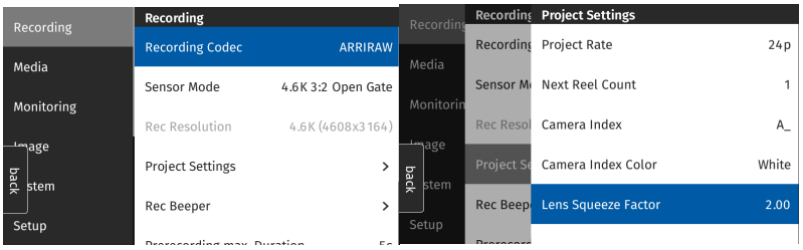
In this section we will go through possible anamorphic sensor modes, recording resolutions, lens squeezes and the correct processing in the post-production. We also include considerations for a protection area e.g. a safe area for repositioning and stabilization for VFX pulls/plates.

2.1 2.39:1 with 2.0x Anamorphic Lens in 4.6K 3:2 Open Gate – 4.6K (4608x3164)

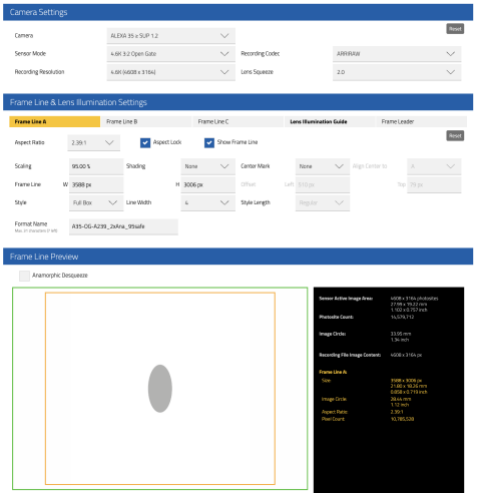
In this example we are aming a final aspect ratio of 2.39:1 e.g. for a 4K Digital Cinema Package (DCP) in scope with a final resolution of 4096x1716 (= 4K DCI scope). As source format we choose ALEXA 35 with 4.6K 3:2 Open Gate – 4.6K (4608x2164). The used lens is a 2.0x anamorphic lens. With the VFX facillity we decided shooting the VFX plates with a 5% safe area.

2.1.1 Preparation, Framing and Recording

The ALEXA 35 camera is set to 4.6K 3:2 Open Gate sensor mode and 4.6K (4608x2164) recording resolution.



Since we are using a 2.0x anamorphic lens, we set the lens squeeze factor to 2.00. We decided to use a 5% safe area for stabilization and reposition, therefore we must generate a custom 2.39:1 frame line with 95% scaling (100% - 5% = 95%) for a lens squeeze of 2.0x. This can easily be achieved by using the Frame Line & Lens Illumination Tool on our website.



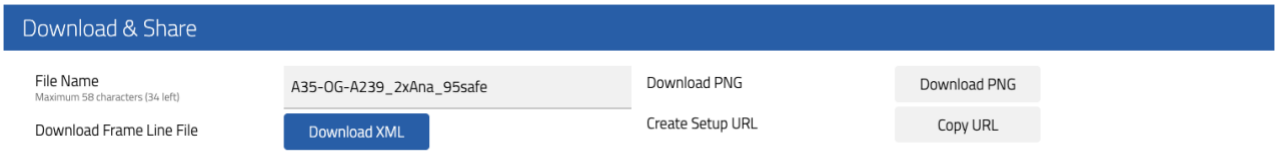
1. Set Camera Model = ALEXA 35
2. Set Sensor Mode = 4.6K 3:2 Open Gate
3. Set Recording Resolution = 4.6K (4608x3164)
4. Set Codec: = ARRIRAW
5. Set Lens Squeeze = 2.0
6. Set Frame Line A
7. Set Aspect Ratio = 2.39:1
8. Set Scaling = 95%

This results in a framing resolution for Frame Line A of 3588x3006. This will be our active image from a camera, sensor and lens perspective.

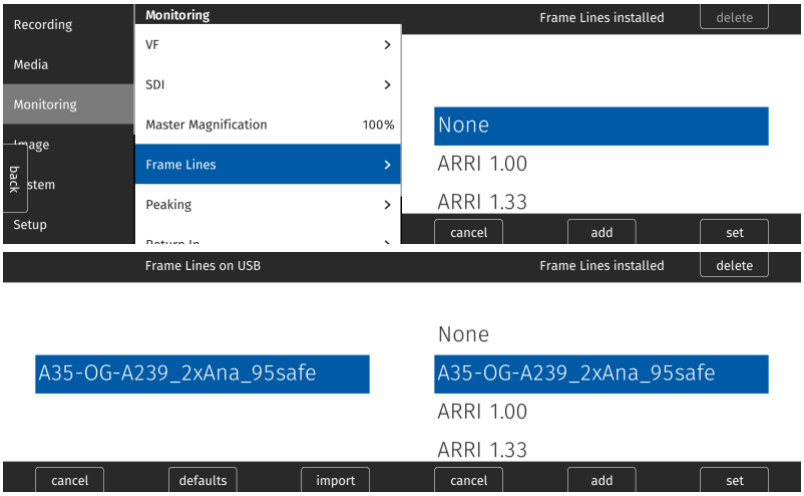
3588 / 3006 = 1.19361277
1.19361277 * 2.0 = 2.38722555 ≈ 2.39

Click here to get the current framing setup for frame line A.

Next, download the frame line *.xml file and put it on the USB stick under ARRI -> ALEXA35 > FRAMELINES.

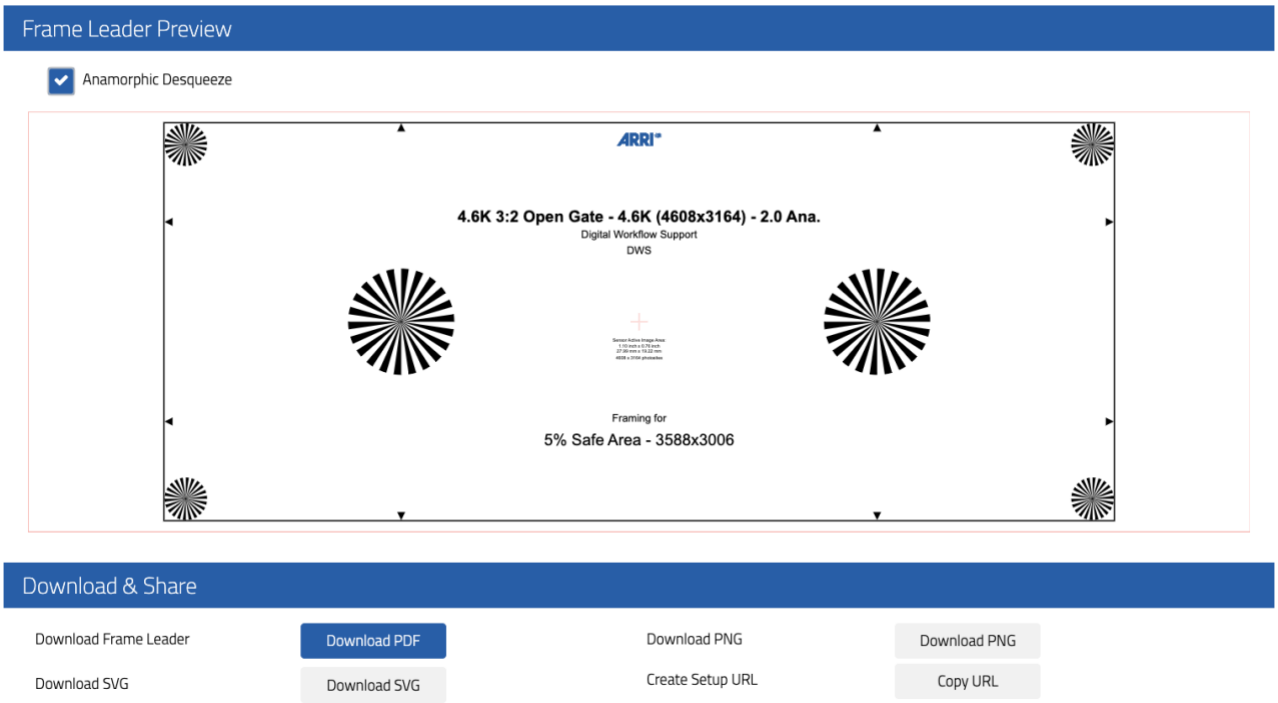


Connect the stick to the camera and load the frame line file to the camera via Menu > Monitoring > Frame Lines > Frame Line > Add and select your *.xml frame line file > import. In a next step select your frame line and press > set.

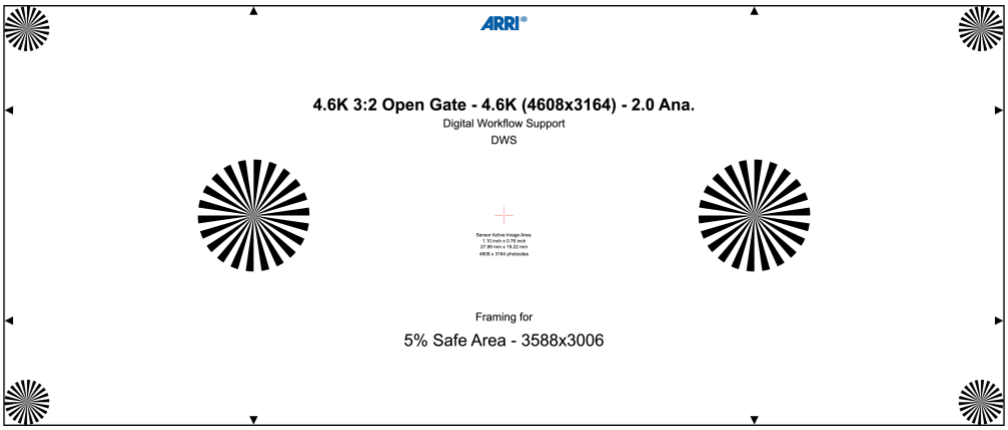


In a next step, we suggest downloading the PNG and the Frame Leader and shoot a frame leader you're your ALEXA 35 camera and the corresponding settings from above.

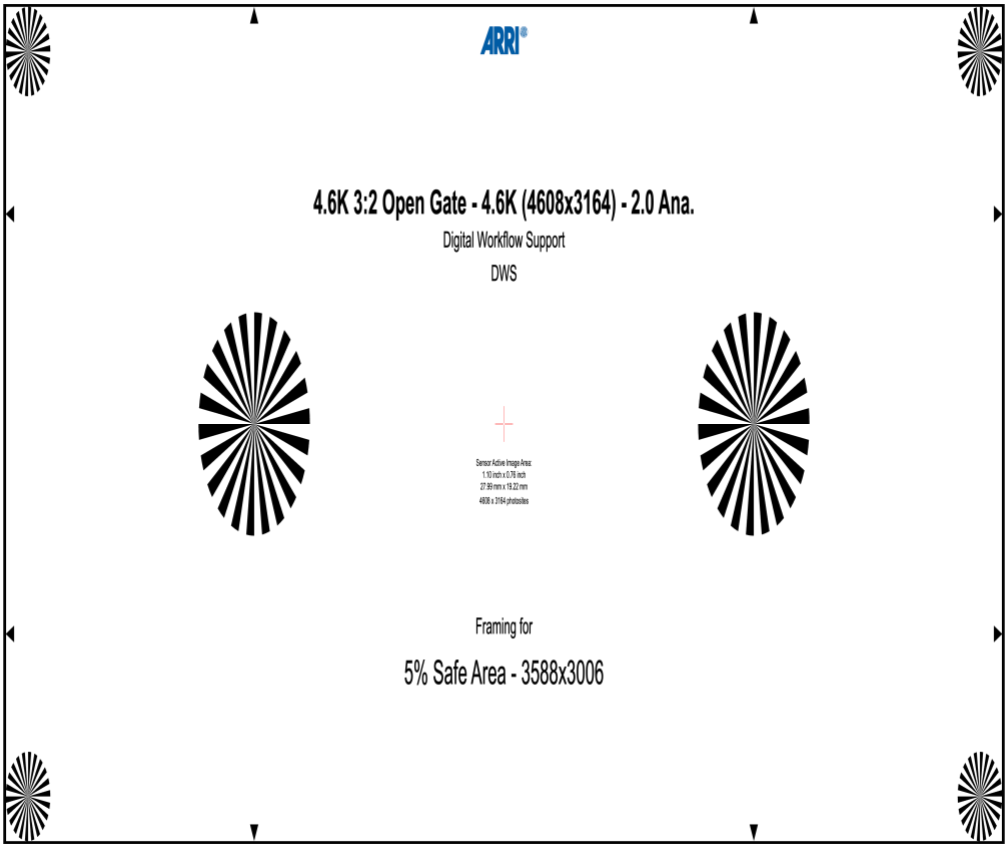
The frame leader clip should be forwarded to every person involved to your post-production. It ensures a correct framing in every step of your production, from rushes/dailies processing, editing, color grading and mastering.



Spherical Frame Leader with 2.39:1 framing and 5% safe area

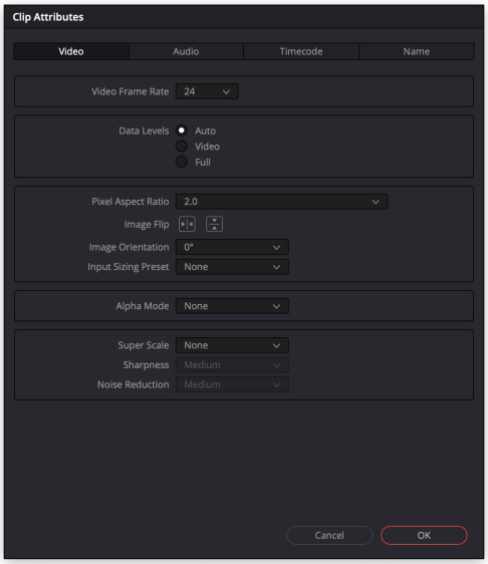


2.0x Anamorphic Frame Leader with 2.39:1 framing and 5% safe area

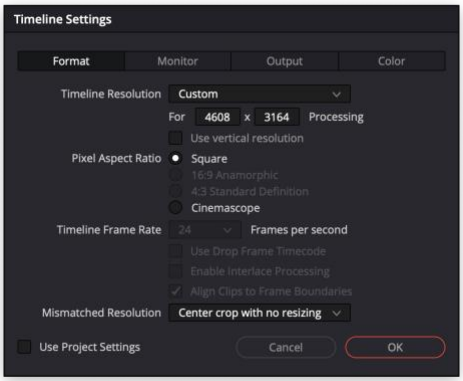


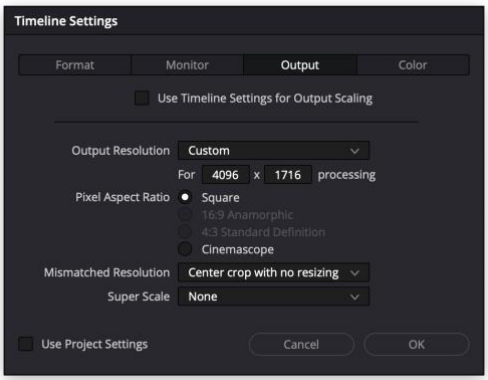
2.1.2 Color Grading and Finishing

In post-production, it is essential to verify whether the lens squeeze factor is automatically recognized through the clip metadata in the software being used. If the software detects it correctly, there is no need to manually adjust the lens squeeze factor or pixel aspect ratio. However, if automatic detection does not occur, please ensure you select the appropriate de-squeeze option in your chosen software.

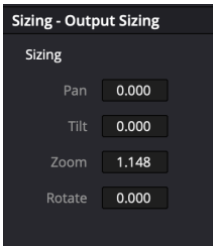


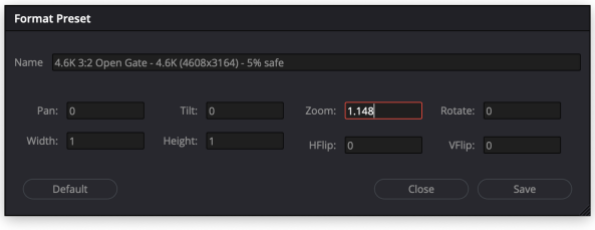
We will set the target format to 4K Scope (4096x1716) and resize the image, taking our frame leader into consideration.



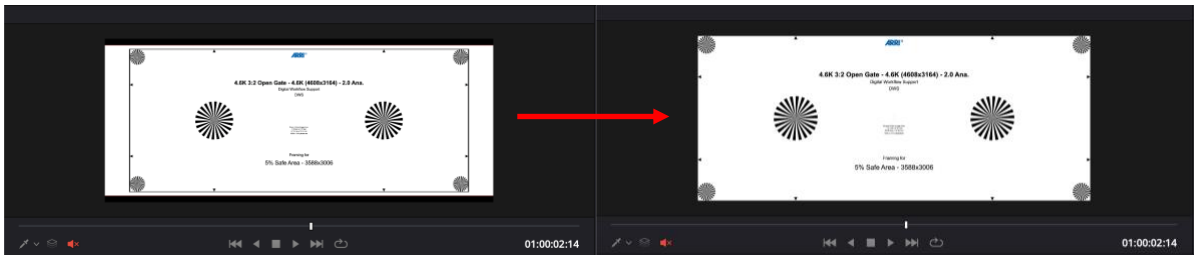


Please refer to the manual of your post-production software for detailed instructions, as there are several methods to accomplish this. In this example, we will use Blackmagic DaVinci Resolve Studio, adjusting the image through ‘Output Sizing’ and creating a preset.



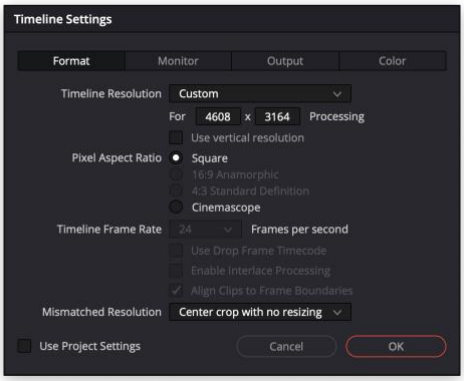


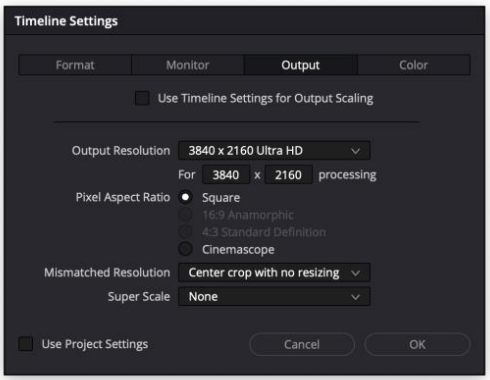
This will result in correctly framed image inside our target resolution and aspect ratio, which is 4K scope with 4096x1716 pixels. Since there is a 5% safe zone it is still possible to slightly adjust the image with a pan, tilt or zoom.

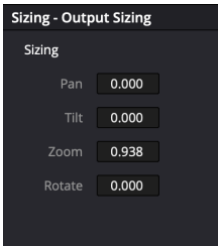


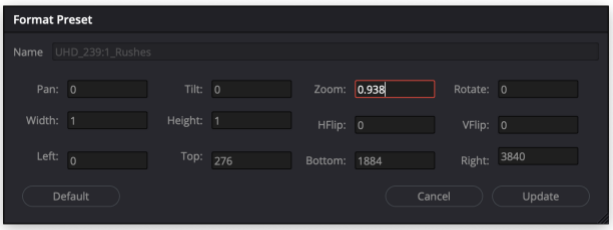
2.1.3 Rushes and Dailies

The rushes and dailies could also have included the 5% safe area, this depends on your pipeline. In our example we are only using the active image area with 3588x3006 pixels for the rushes. We assume the editor requests UHD dailies in 3840x2160 (16:9 / 1.78:1) for editing e.g. DNxHR SQ files.

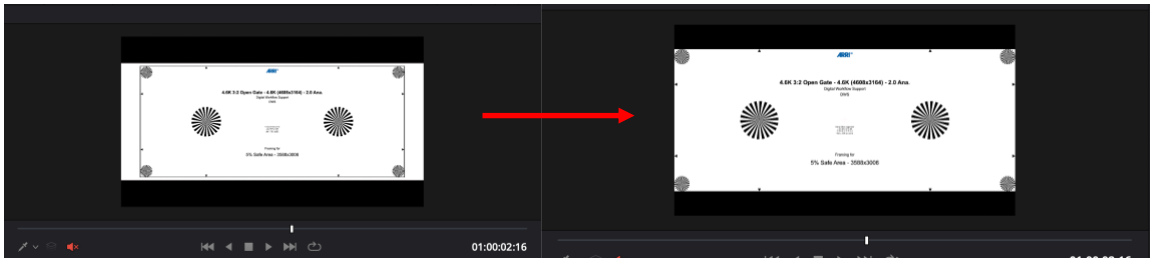








Since our target aspect ratio is 2.39:1 this will result in an active image of 2.39:1 with letterbox inside the UHD container, which is 1.78:1. For a correct 2.39:1 letterbox we must set a crop for 2.39:1 here, which results in Top = 276 and Bottom = 1884 pixels/lines.



2.1.4 VFX

For generating VFX pulls/plates it's necessary to include the 5% safe area to the rendered files. Most VFX facilities nowadays are working with OpenEXR/Scene Linear files (single file sequences). These files should also have included the 5% safe area, which can be used for repositioning or stabilization.

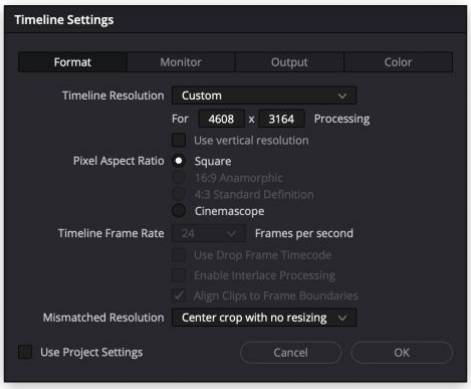
Please note: Before rendering VFX pulls/plates, please get in touch with your VFX vendor, clarify their needs and set up a VFX and finishing pipeline. The process we are showing here is just an example and there are different pipelines possible. Therefore, please clarify with your production in advance. Typical questions are related to:

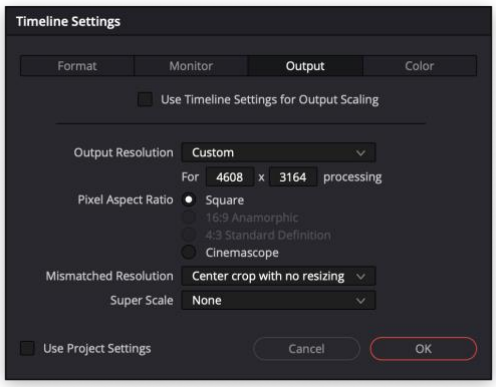
- Scaling and filters
- Squeezed or de-squeezed formats
- Active image area / safe area

In this example we assume that we must generate anamorphic VFX pulls/plates incl. the 5% safe area. Therefore, this results in an anamorphic image with 4608x3164 resolution. The active image area will be 3588x3006 inside that 4608x3164 area.

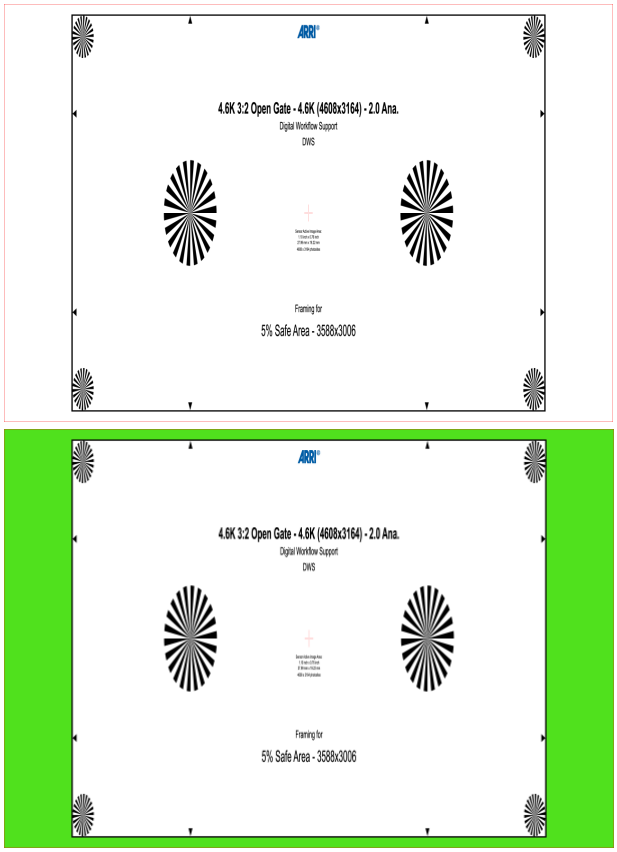
3588 / 3006 = 1.19361277

1.19361277 * 2.0 = 2.38722555 ≈ 2.39





The VFX vendor will get files with 4608x3164 pixel resolution. The green area outside of the active 3588x3006 pixels can be used for repositioning and stabilization in VFX.

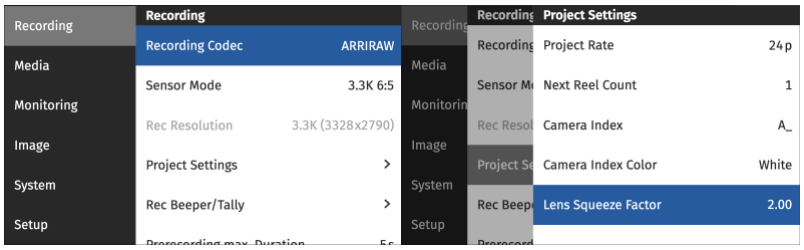


2.2 2.39:1 with 2.0x Anamorphic Lens in 3.3K 6:5 – 3.3K (3328x2790)

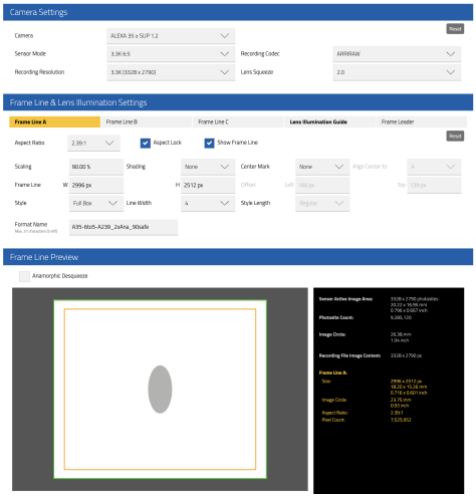
In this example we are aming a final aspect ratio of 2.39:1 e.g. for a 4K Digital Cinema Package (DCP) in scope with a final resolution of 4096x1716 (= 4K DCI scope). As source format we choose ALEXA 35 with 3.3K 6:5 – 3.3K (3328x2790). The used lens is a 2.0x anamorphic lens. With the VFX facillity we decided shooting the VFX plates with a 10% safe area.

2.2.1 Preparation, Framing and Recording

The ALEXA 35 camera is set to 3.3K 6:5 sensor mode and 3.3K (3328x2790) recording resolution. This mode was introduced explicitly for 2.0x anamorphic lenses.



Since we are using a 2.0x anamorphic lens, we set the lens squeeze factor to 2.00. We decided to use a 10% safe area for stabilization and reposition, therefore we must generate a custom 2.39:1 frame line with 90% scaling (100% - 10% = 90%) for a lens squeeze of 2.0x. This can easily be achieved by using the Frame Line & Lens Illumination Tool on our website.



9. Set Camera Model = ALEXA 35
10. Set Sensor Mode = 3.3K 6:5
11. Set Recording Resolution = 3.3K (3328x2790)
12. Set Codec: = ARRIRAW
13. Set Lens Squeeze = 2.0
14. Set Frame Line A
15. Set Aspect Ratio = 2.39:1
16. Set Scaling = 90%

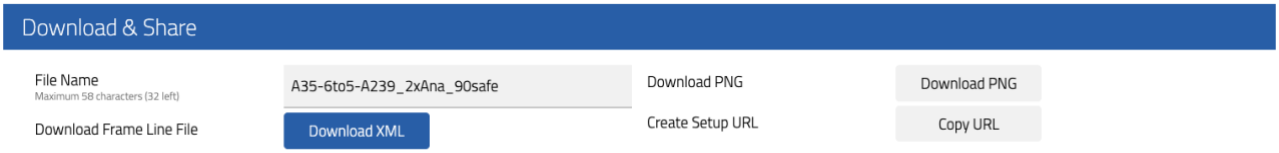
This results in a framing resolution for Frame Line A of 2996x2512. This will be our active image from a camera, sensor and lens perspective.

2996 / 2512 = 1.19267516

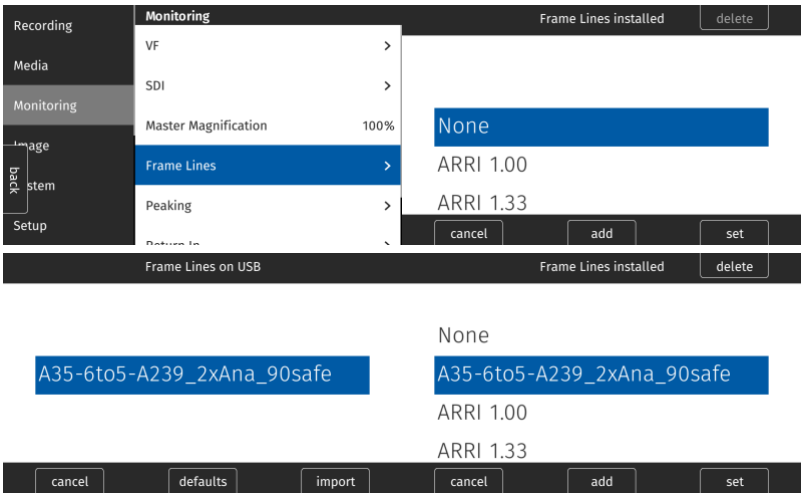
1.19267516 * 2.0 = 2.38535032 ≈ 2.39

Click here to get the current framing setup for frame line A.

Next, download the frame line *.xml file and put it on the USB stick under ARRI -> ALEXA35 > FRAMELINES.

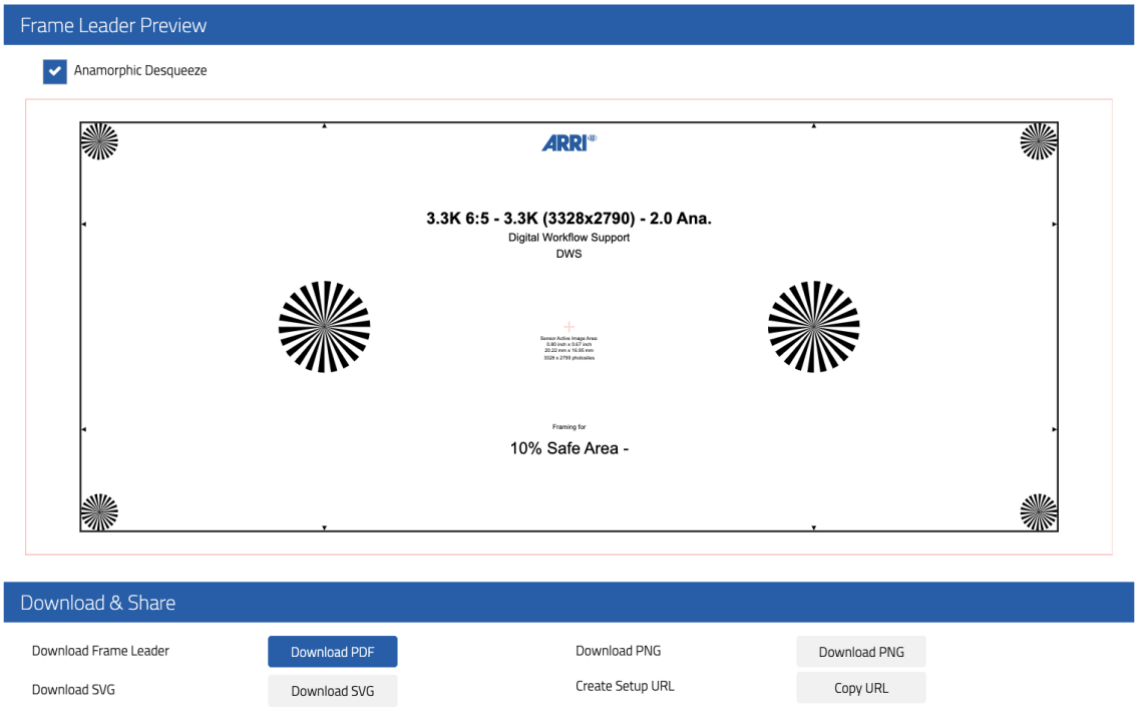


Connect the stick to the camera and load the frame line file to the camera via Menu > Monitoring > Frame Lines > Frame Line > Add and select your *.xml frame line file > import. In a next step select your frame line and press > set.

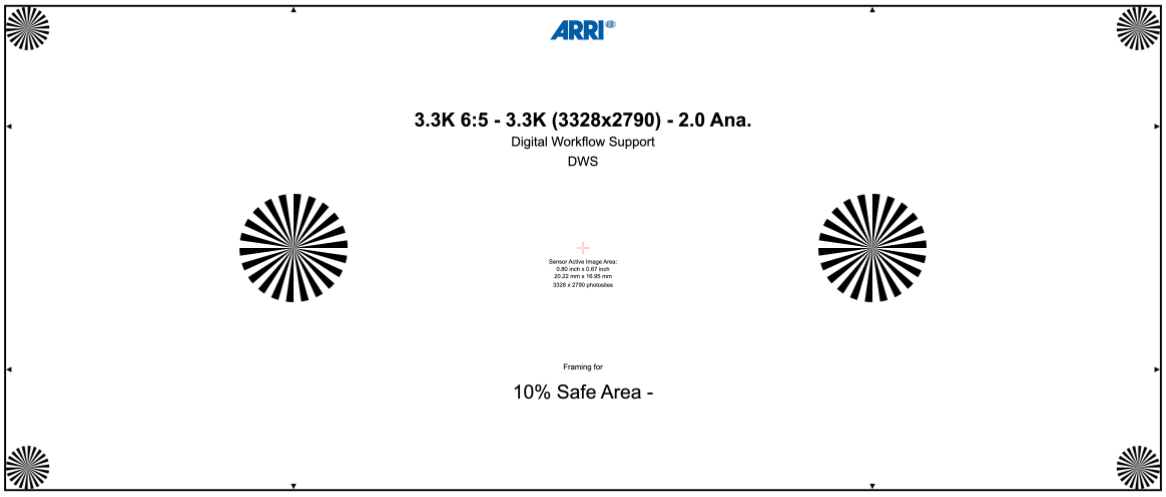


In a next step, we suggest downloading the PNG and the Frame Leader and shoot a frame leader you're your ALEXA 35 camera and the corresponding settings from above.

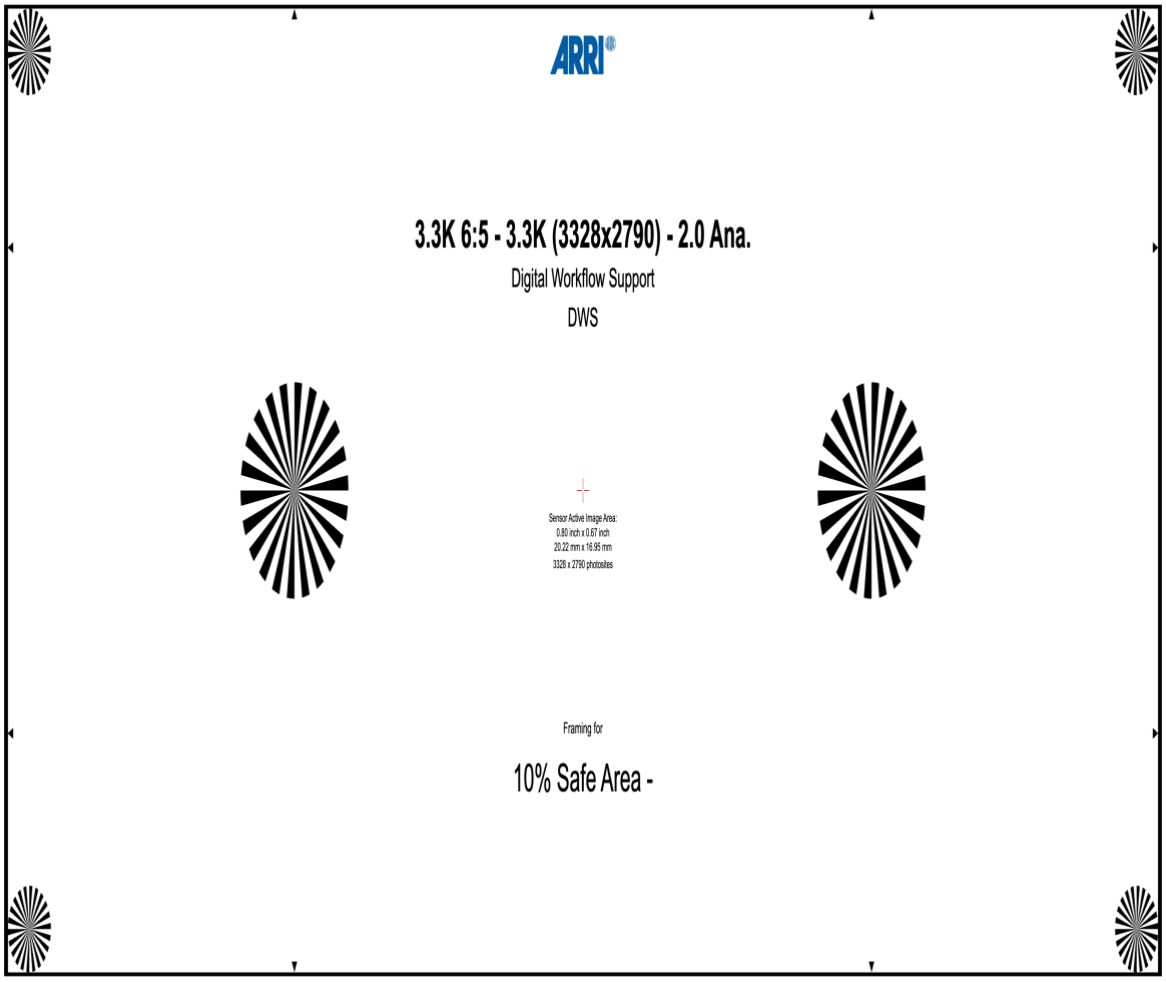
The frame leader clip should be forwarded to every person involved to your post-production. It ensures a correct framing in every step of your production, from rushes/dailies processing, editing, color grading and mastering.



Spherical Frame Leader with 2.39:1 framing and 10% safe area

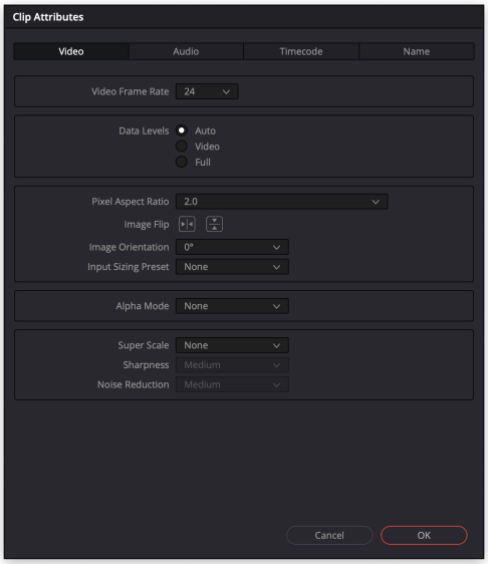


2.0x Anamorphic Frame Leader with 2.39:1 framing and 10% safe area

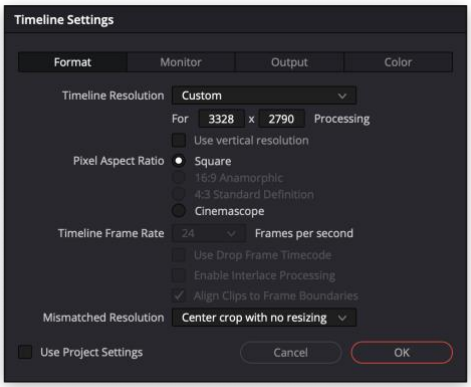


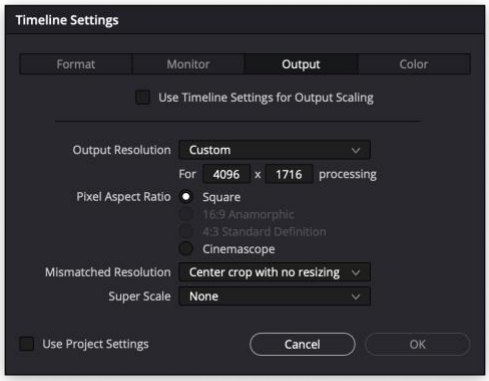
2.2.2 Color Grading and Finishing

In post-production, it is essential to verify whether the lens squeeze factor is automatically recognized through the clip metadata in the software being used. If the software detects it correctly, there is no need to manually adjust the lens squeeze factor or pixel aspect ratio. However, if automatic detection does not occur, please ensure you select the appropriate de-squeeze option in your chosen software.

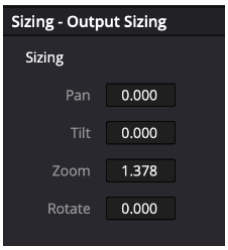


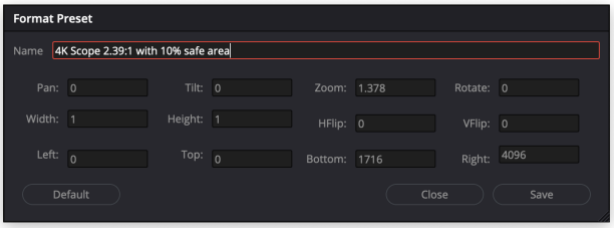
We will set the target format to 4K Scope (4096x1716) and resize the image, taking our frame leader into consideration.



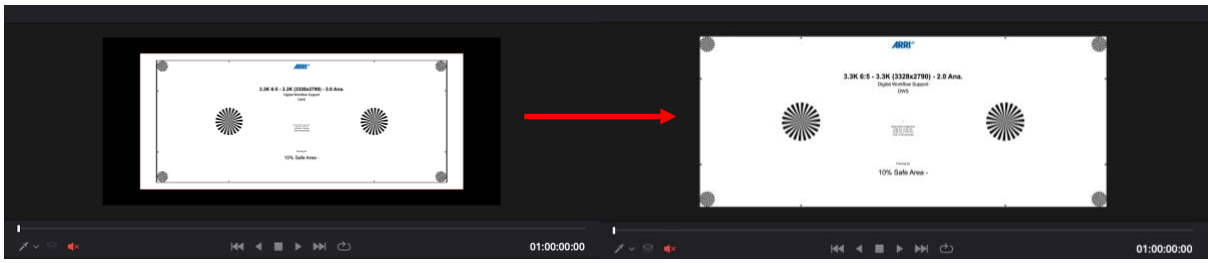


Please refer to the manual of your post-production software for detailed instructions, as there are several methods to accomplish this. In this example, we will use Blackmagic DaVinci Resolve Studio, adjusting the image through ‘Output Sizing’ and creating a preset.



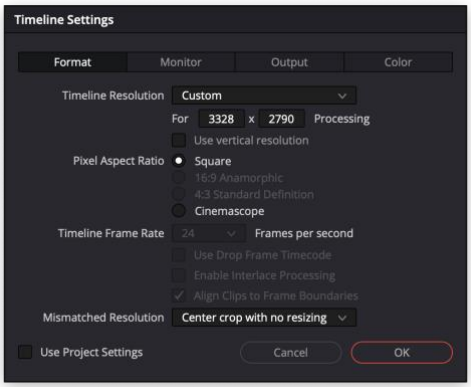


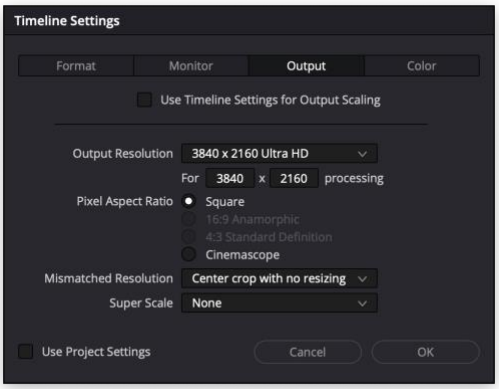
This will result in correctly framed image inside our target resolution and aspect ratio, which is 4K scope with 4096x1716 pixels. Since there is a 10% safe zone it is still possible to slightly adjust the image with a pan, tilt or zoom.

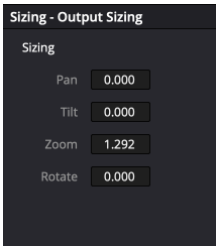


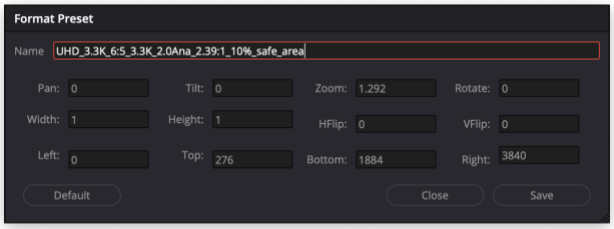
2.2.3 Rushes and Dailies

The rushes and dailies could also have included the 10% safe area, this depends on your pipeline. In our example we are only using the active image area with 2996x2512 pixels for the rushes. We assume the editor requests UHD dailies in 3840x2160 (16:9 / 1.78:1) for editing e.g. DNxHR SQ files.

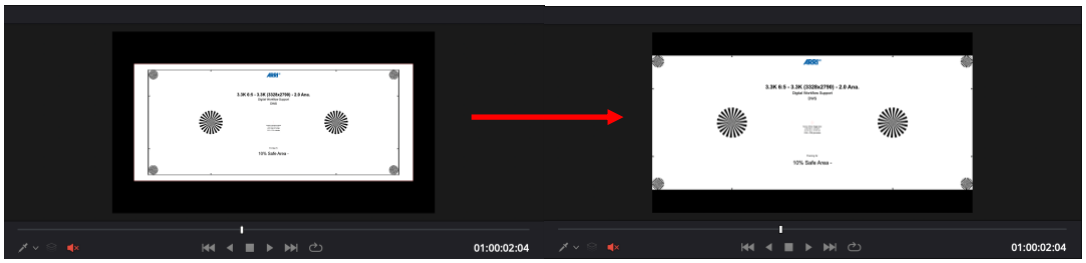








Since our target aspect ratio is 2.39:1 this will result in an active image of 2.39:1 with letterbox inside the UHD container, which is 1.78:1. In this case we don't have to add an additional crop, since the image is already



2.2.4 VFX

For generating VFX pulls/plates it's necessary to include the 10% safe area to the rendered files. Most VFX facilities nowadays are working with OpenEXR/Scene Linear files (single file sequences). These files should also have included the 10% safe area, which can be used for repositioning or stabilization.

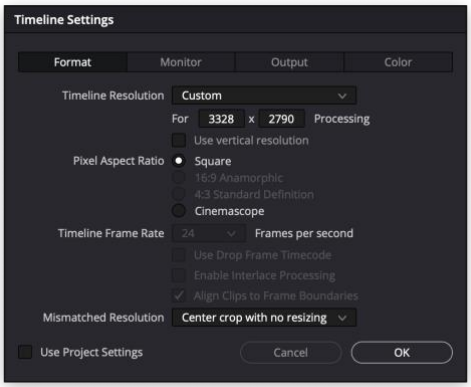
Please note: Before rendering VFX pulls/plates, please get in touch with your VFX vendor, clarify their needs and set up a VFX and finishing pipeline. The process we are showing here is just an example and there are different pipelines possible. Therefore, please clarify with your production in advance. Typical questions are related to:

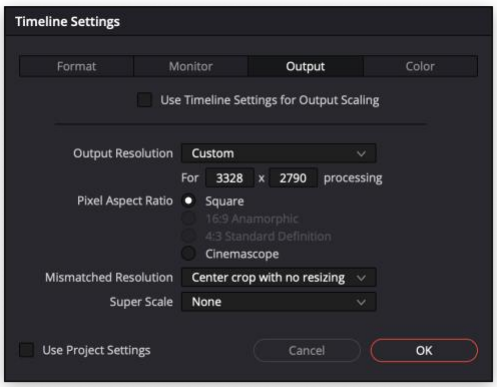
- Scaling and filters
- Squeezed or de-squeezed formats
- Active image area / safe area

In this example we assume that we must generate anamorphic VFX pulls/plates incl. the 10% safe area. Therefore, this results in an anamorphic image with 3328x2790 resolution. The active image area will be 2996x2512 inside that 3328x2790 area.

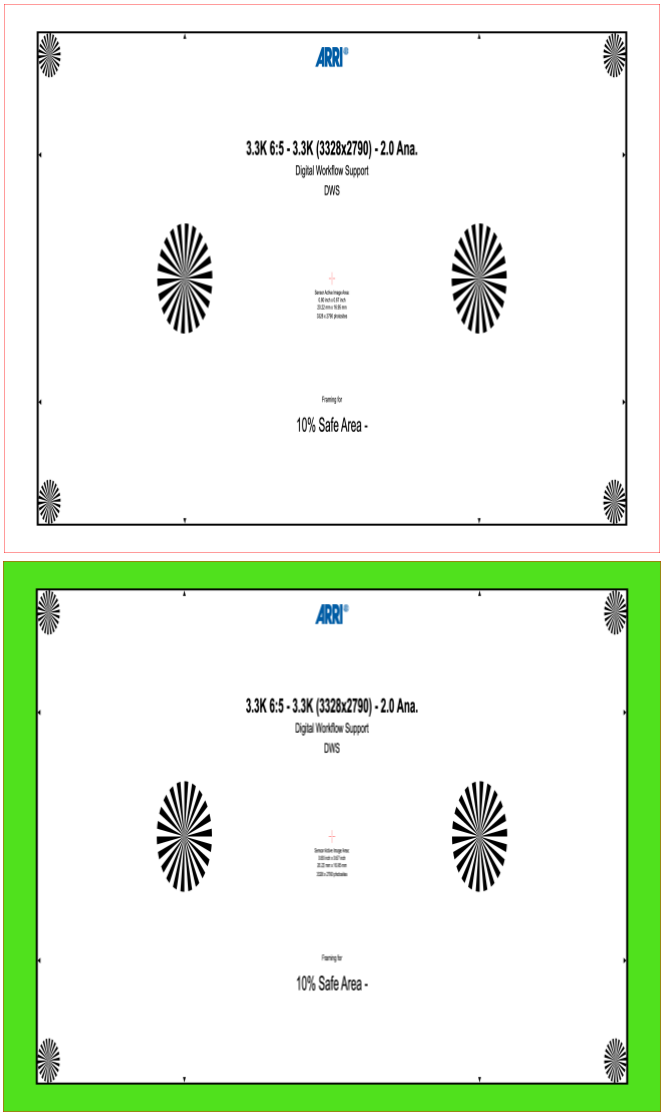
2996x2512= 1.19267516

1.19267516 * 2.0 = 2.38535032 ≈ 2.39





The VFX vendor will get files with 3328x2790 pixel resolution. The green area outside of the active 2996x2512 pixels can be used for repositioning and stabilization in VFX.



3 Downloads and Links

3.1 Sample DaVinci Resolve Project Archive

https://f.io/wQEP9LQX

3.2 Used Sample Frame Leaders

https://f.io/db5eAF4N

3.3 ARRI Frame Line and Lens Illumination Tool

https://arri.com/flt

3.4 Netflix Framing and Working Resolution Calculators

https://arri.com/netflixcalculators

3.5 ARRI Sample Footage

https://www.arri.com/en/learn-help/learn-help-camera-system/camera-sample-footage-reference-image

4 Contact

In case you have questions or recommendations, please contact the Digital Workflow Support (DWS) team within ARRI via email: digitalworkflow@arri.de