Anamorphic Formats in Post-Production

ALEXA 35

WORKFLOW GUIDELINE

Date: 06th July 2026

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 with 2.00x Ana. Lenses
2024-11-04	Simon Duschl	Added sample for 3.3K 6:5
2026-05-22	Simon Duschl	Added sample for 4.6K 3:2 Open Gate with 1.65x Ana. Lenses
2026-05-28	Simon Duschl	Added concept for “Active Image Pixel Resolution” (AIPR)
2026-07-06	Simon Duschl	Refined AIPR concept to the captured pixel count budget; added rating (red, yellow) per example

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	3.8K 2.39:1 Ana 2x (3840x1708) **	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

2.1 Understanding the “Active Image Pixel Resolution” (AIPR) concept

Before going through the individual examples, it is useful to establish a guiding principle that applies to every anamorphic workflow described in this chapter: the concept of the Active Image Pixel Resolution (AIPR).

Every anamorphic capture has two related image dimensions. The first is the Active Image Pixel Resolution (AIPR) - the number of real sensor photosites covered by the active image area (e.g. the area defined by Frame Line A in our examples), expressed as a total pixel count. This is the actual, optically sampled information budget the camera has recorded. The second is the desqueezed geometric footprint - the same active area after a correct optical desqueeze, with the anamorphic horizontal compression undone. Because the desqueeze only stretches the image horizontally, the additional horizontal pixels it creates are interpolated and do not represent newly captured detail. The relationship between the two is straightforward:

$$\textit{AIPR (pixel budget)} = \textit{Captured active width} \times \textit{Captured active height}$$

$$\textit{Desqueezed footprint} = (\textit{Captured active width} \times \textit{Lens Squeeze Factor}) \times \textit{Captured active height}$$

The AIPR represents the real information budget of the shot: the total number of photosites actually sampled by the sensor within the active image. It is therefore the highest deliverable pixel count at which the captured material can still be considered a faithful restoration of the scene as recorded. Beyond the AIPR, post-production software must interpolate pixels that do not correspond to any real sensor sample - whether this is expressed as an explicit "blow-up" or hidden inside a single combined resize operation. Please note that any anamorphic-to-spherical conversion is anisotropic: the vertical axis is typically downscaled while the horizontal axis is upscaled. Keeping the deliverable within the AIPR pixel budget ensures that the total number of delivered pixels does not exceed the information actually captured, even though the per-axis scaling differs.

Two practical guidelines follow from this:

1. The target deliverable resolution should not exceed the AIPR (the captured active pixel count) of the chosen capture format. A 2.39:1 master whose total pixel count stays within the AIPR is produced by a proportional downscale of real captured information. A master above the AIPR requires the software to invent pixels in order to fill the additional canvas.
2. The post-production timeline resolution should be set as close to the AIPR as practically possible. Every resize operation in the pipeline introduces a filter pass; a timeline that already sits near the AIPR allows the captured information to flow through the pipeline with the minimum number of resampling stages and lands the final deliverable scale in a single clean step. It is common and good practice for the working (timeline) resolution to be slightly larger than the final deliverable - for example finishing at 5156 × 2160 for a 4096 × 1716 delivery - as long as the working resolution itself stays within the AIPR budget; the single final downscale then introduces no degradation.

The AIPR (captured active pixel count) and the desqueezed geometric footprint therefore define both the upper limit and the practical working envelope of every anamorphic workflow in the chapters below. To make this easy to assess at a glance, each example section rates the chosen deliverable against the AIPR of its capture format using a simple traffic-light system:

- **Green - within the AIPR budget:** the deliverable’s total pixel count is less than or equal to the captured active pixel count. The master is a clean proportional downscale of real captured information. This is the recommended range.
- **Red - beyond the AIPR budget:** the deliverable’s total pixel count exceeds the captured active pixel count; pixels are invented that were never optically captured. Not recommended.

In addition, each example expresses the chosen deliverable as a percentage of the AIPR budget, so the remaining headroom is immediately visible.

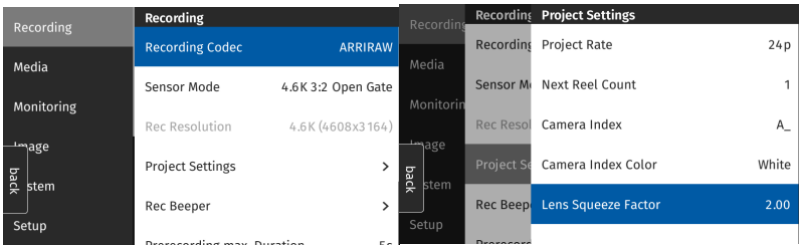
In the following sections we will go through possible anamorphic sensor modes, recording resolutions, lens squeezes and the correct processing in the post-production. We also include considerations for a protection area e.g. a safe area for repositioning and stabilization for VFX pulls/plates.

2.2 2.39:1 with 2.0x Anamorphic Lens in 4.6K 3:2 Open Gate – 4.6K (4608x3164)

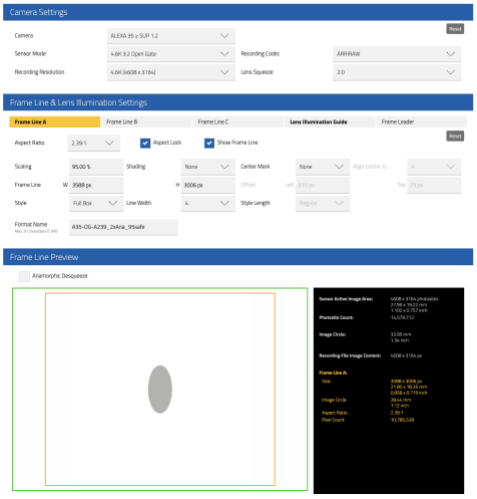
In this example we are aming a final aspect ratio of 2.39:1 e.g. for a 4K Digital Cinema Package (DCP) in scope with a final resolution of 4096x1716 (= 4K DCI scope). As source format we choose ALEXA 35 with 4.6K 3:2 Open Gate – 4.6K (4608x2164). The used lens is a 2.0x anamorphic lens. With the VFX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

2.2.1 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%

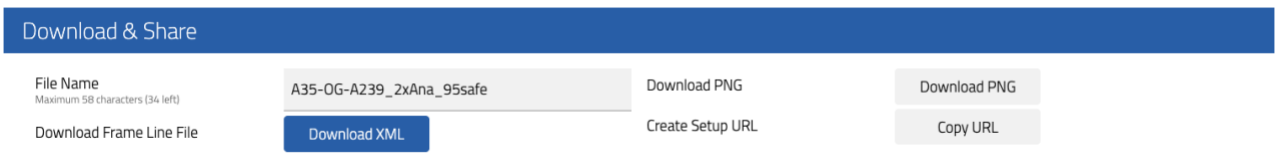
This results in a framing resolution for Frame Line A of 3588x3006. This will be our active image from a camera, sensor and lens perspective.

3588 / 3006 = 1.19361277

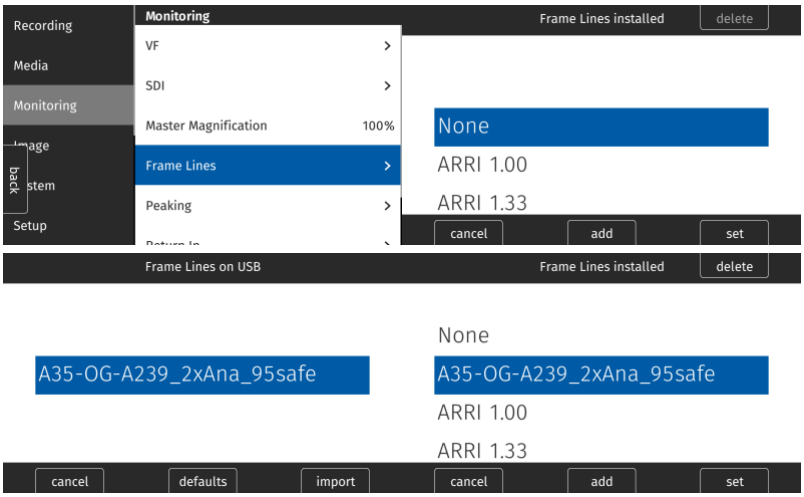
1.19361277 * 2.0 = 2.38722555 ≈ 2.39

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.

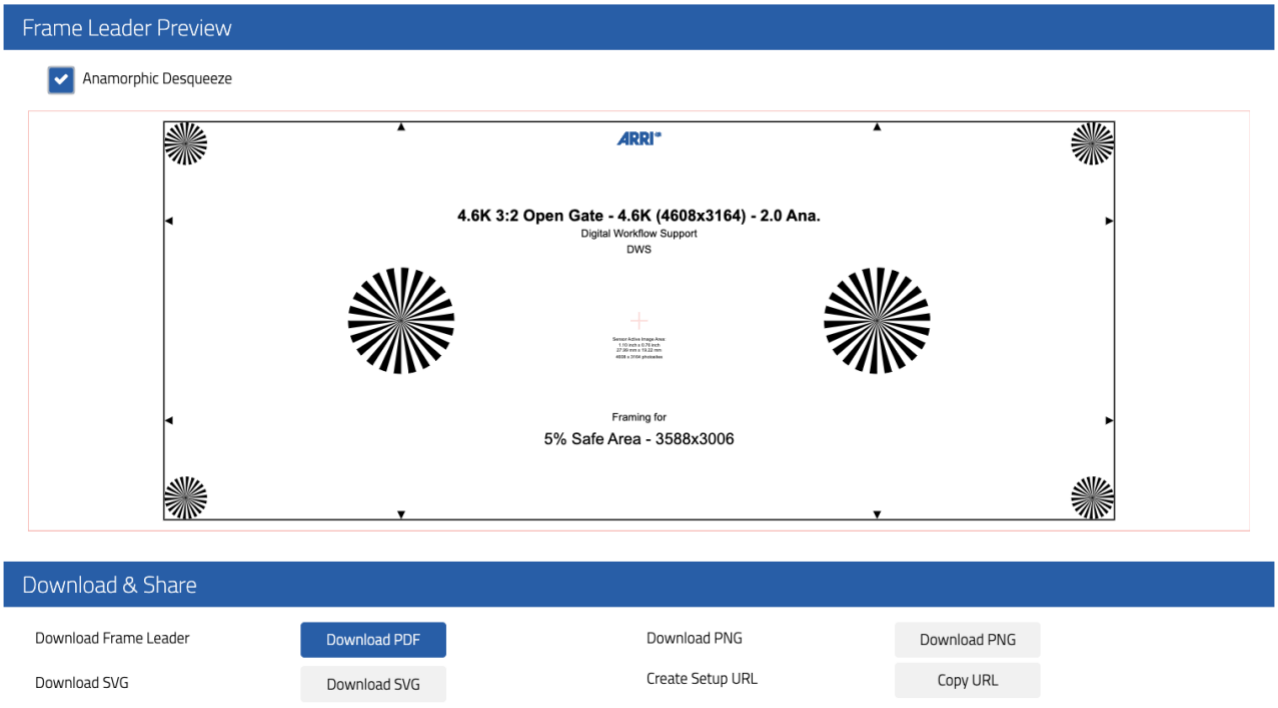


Connect the stick to the camera and load the frame line file to the camera via Menu > Monitoring > Frame Lines > Frame Line > Add and select your *.xml frame line file > import. In a next step select your frame line and press > set.

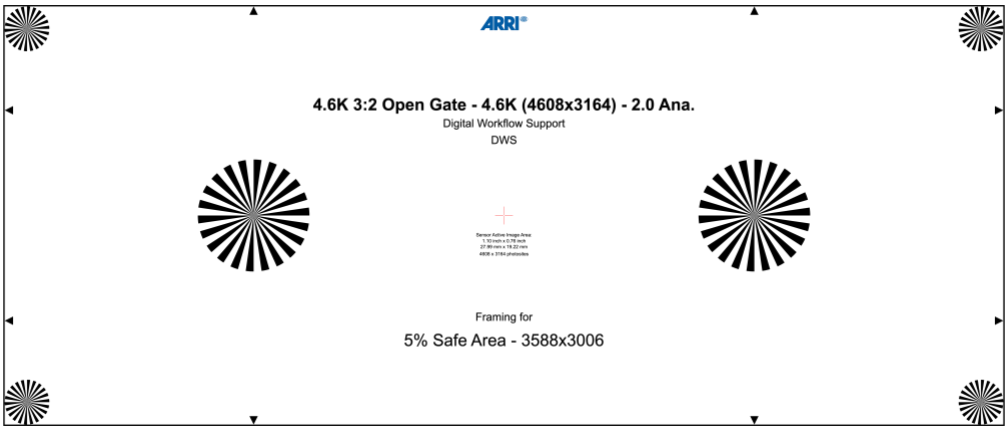


In a next step, we suggest downloading the PNG and the Frame Leader and shoot a frame leader you're your ALEXA 35 camera and the corresponding settings from above.

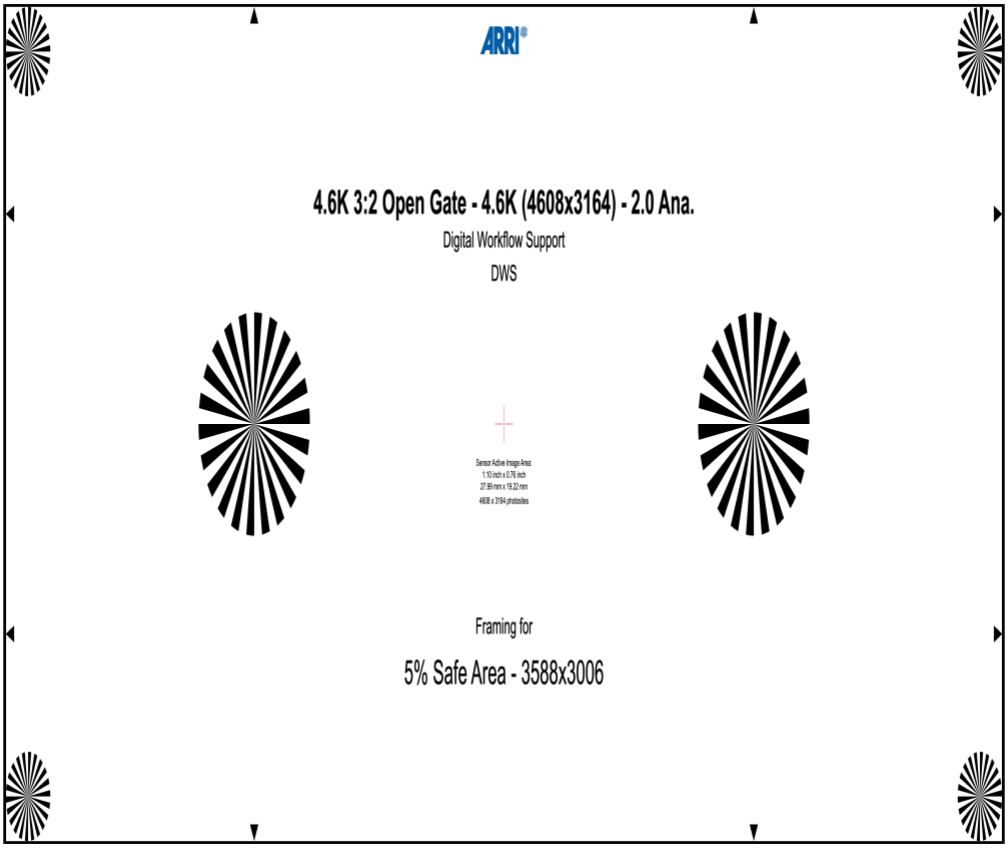
The frame leader clip should be forwarded to every person involved to your post-production. It ensures a correct framing in every step of your production, from rushes/dailies processing, editing, color grading and mastering.



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



2.2.2 Color Grading and Finishing

Calculations following the “AIPR” concept:

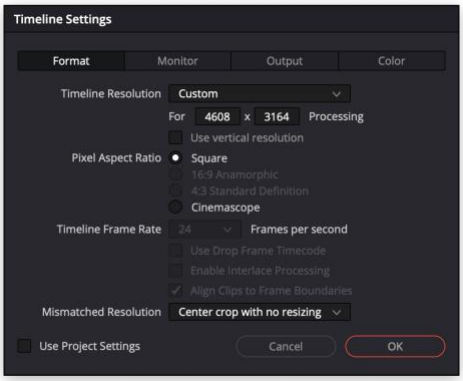
- Captured Pixel Count (AIPR budget): 3588 × 3006 ≈ 10.79 MP captured photosites
- Desqueezed footprint (geometric): 3588 × 2.0 = 7176 → 7176 × 3006 (contains interpolated horizontal pixels – should not be used as a working or delivery resolution)
- Target Resolution: 4K DCI Scope 4096 × 1716 ≈ 7.03 MP, which is ~65 % of the AIPR budget (green – clean downscale)
- Green ceiling (2.39:1): max. 5074 × 2126 ≈ 10.79 MP without exceeding the captured pixel budget

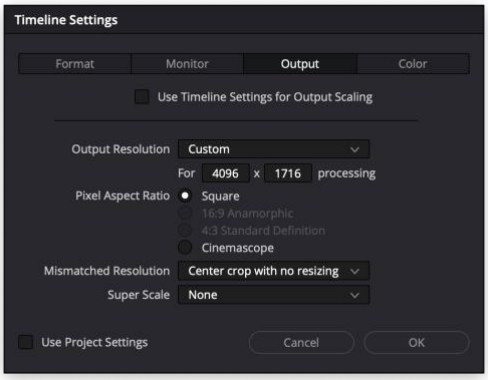
The active image area of 3588 × 3006 photosites gives an Active Image Pixel Resolution (AIPR) of approximately 10.79 MP. Any 2.39:1 deliverable whose total pixel count stays within this budget - up to about 5074 × 2126 - is a clean proportional downscale of optically captured information. The 4K DCI scope target used in this example (4096 × 1716 ≈ 7.03 MP) sits comfortably within that envelope at roughly 65 % of the AIPR budget and can be produced in a single resize step. The desqueezed footprint of 7176 × 3006 is the geometric canvas after the horizontal stretch, but note that the horizontal pixels beyond 3588 samples are interpolated and do not add captured detail.

Zone	Deliverable resolution range (2.39:1)	Total pixels
● **Green**	up to 5074 × 2126	≤ 10.79 MP
● **Red**	above 5074 × 2126	> 10.79 MP

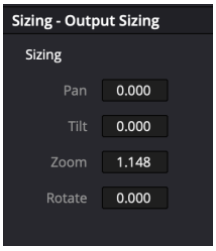
In post-production, it is essential to verify whether the lens squeeze factor is automatically recognized through the clip metadata in the software being used. If the software detects it correctly, there is no need to manually adjust the lens squeeze factor or pixel aspect ratio. However, if automatic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

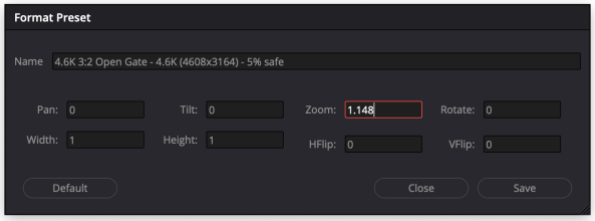
We will set the target format to 4K Scope (4096x1716) and resize the image, taking our frame leader into consideration.



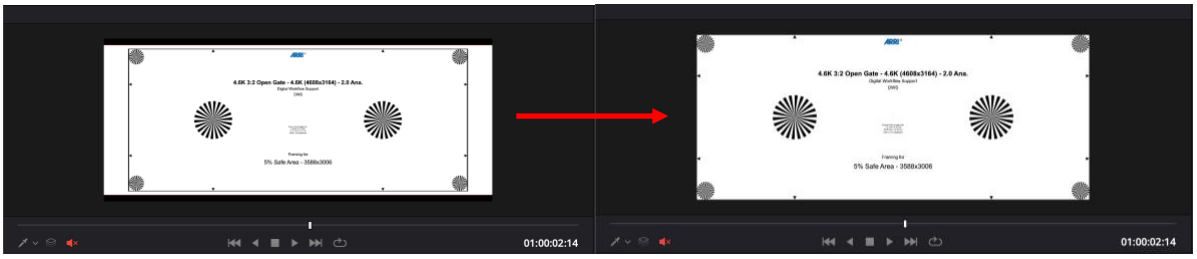


Please refer to the manual of your post-production software for detailed instructions, as there are several methods to accomplish this. In this example, we will use Blackmagic DaVinci Resolve Studio, adjusting the image through ‘Output Sizing’ and creating a preset.



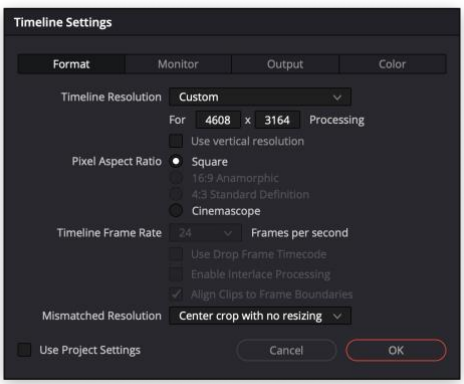


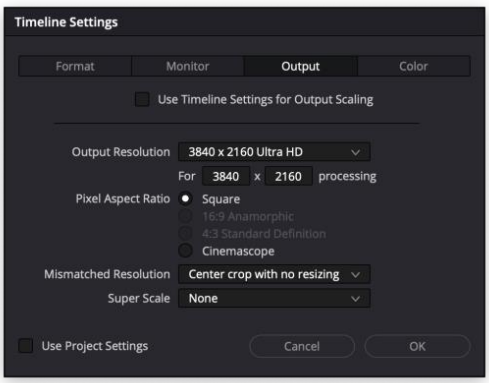
This will result in correctly framed image inside our target resolution and aspect ratio, which is 4K scope with 4096x1716 pixels. Since there is a 5% safe zone it is still possible to slightly adjust the image with a pan, tilt or zoom.

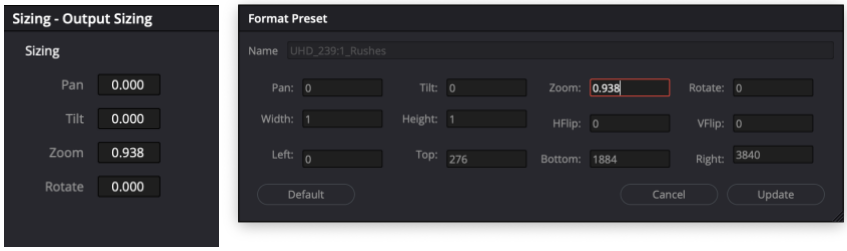


2.2.3 Rushes and Dailies

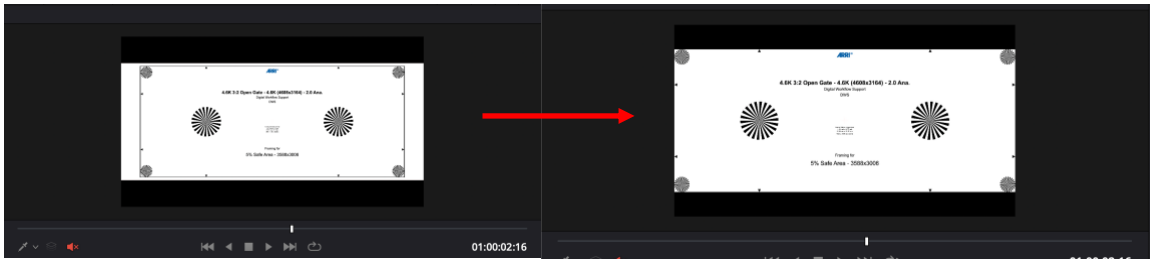
The rushes and dailies could also have included the 5% safe area, this depends on your pipeline. In our example we are only using the active image area with 3588x3006 pixels for the rushes. We assume the editor requests UHD dailies in 3840x2160 (16:9 / 1.78:1) for editing e.g. DNxHR SQ files.







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.



2.2.4 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.

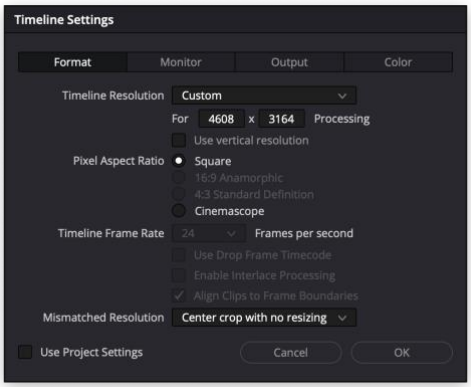
Please note: Before rendering VFX pulls/plates, please get in touch with your VFX vendor, clarify their needs and set up a VFX and finishing pipeline. The process we are showing here is just an example and there are different pipelines possible. Therefore, please clarify with your production in advance.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

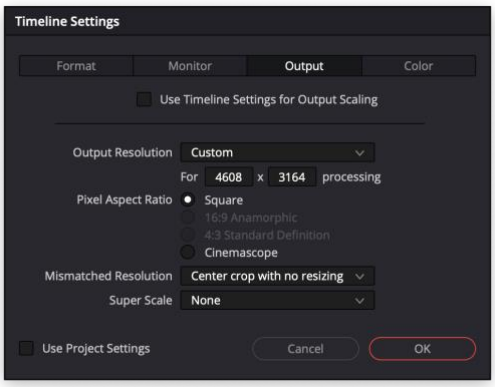
- Scaling and filters
- Squeezed or de-squeezed formats
- Active image area / safe area

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.

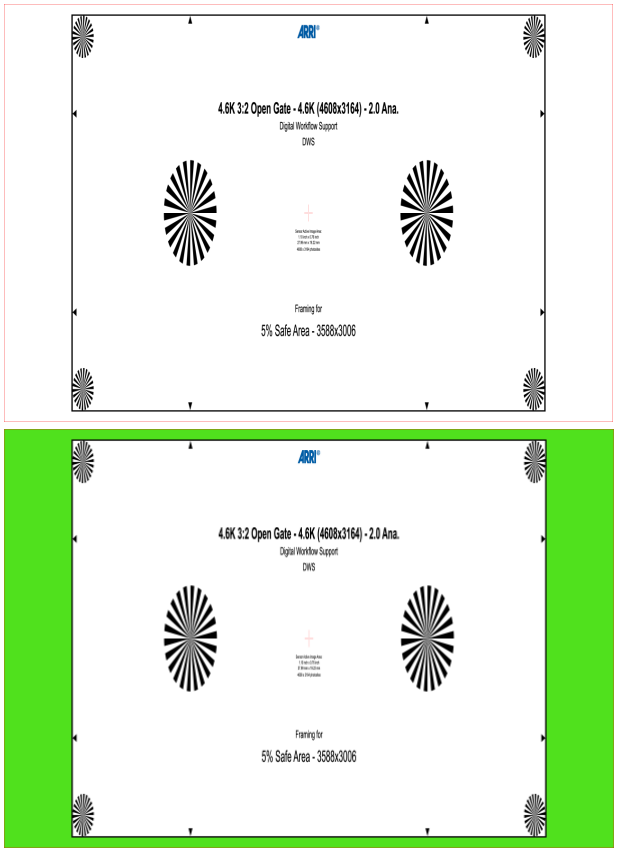
3588 / 3006 = 1.19361277

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.

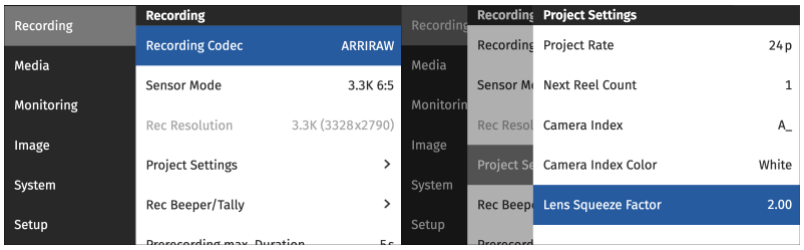


2.3 2.39:1 with 2.0x Anamorphic Lens in 3.3K 6:5 – 3.3K (3328x2790)

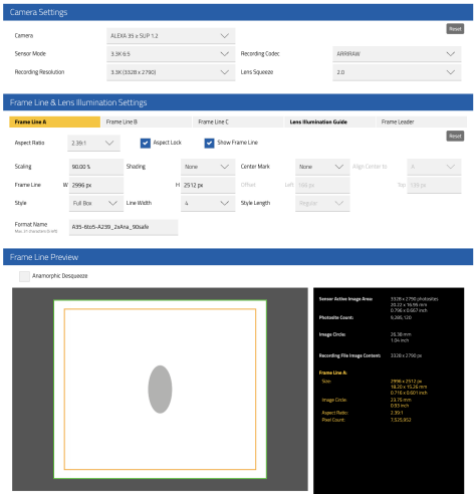
In this example we are aming a final aspect ratio of 2.39:1 e.g. for a 4K Digital Cinema Package (DCP) in scope with a final resolution of 4096x1716 (= 4K DCI scope). As source format we choose ALEXA 35 with 3.3K 6:5 – 3.3K (3328x2790). The used lens is a 2.0x anamorphic lens. With the VFX facillity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

2.3.1 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%

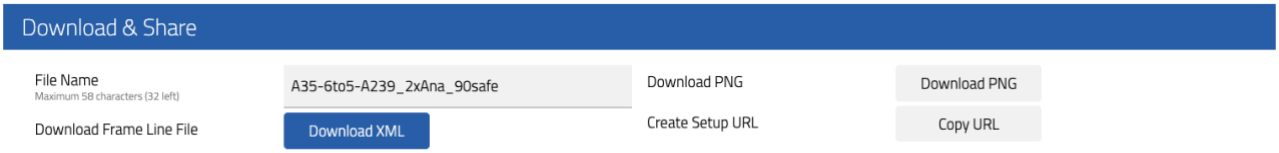
This results in a framing resolution for Frame Line A of 2996x2512. This will be our active image from a camera, sensor and lens perspective.

2996 / 2512 = 1.19267516

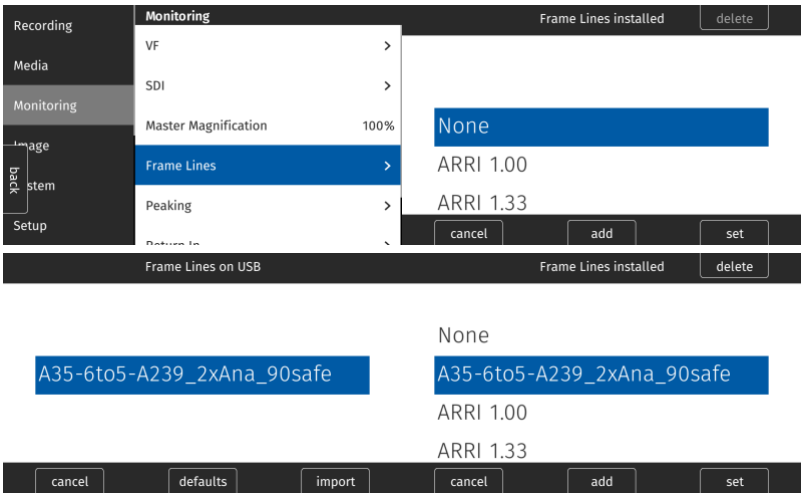
1.19267516 * 2.0 = 2.38535032 ≈ 2.39

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.

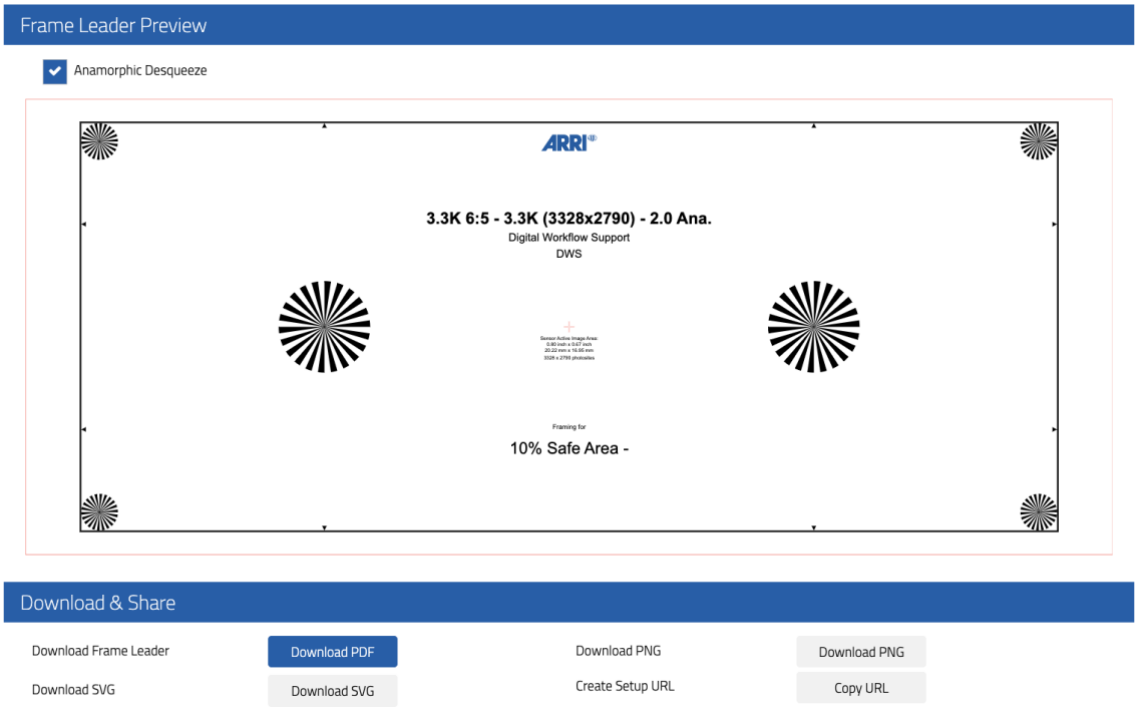


Connect the stick to the camera and load the frame line file to the camera via Menu > Monitoring > Frame Lines > Frame Line > Add and select your *.xml frame line file > import. In a next step select your frame line and press > set.

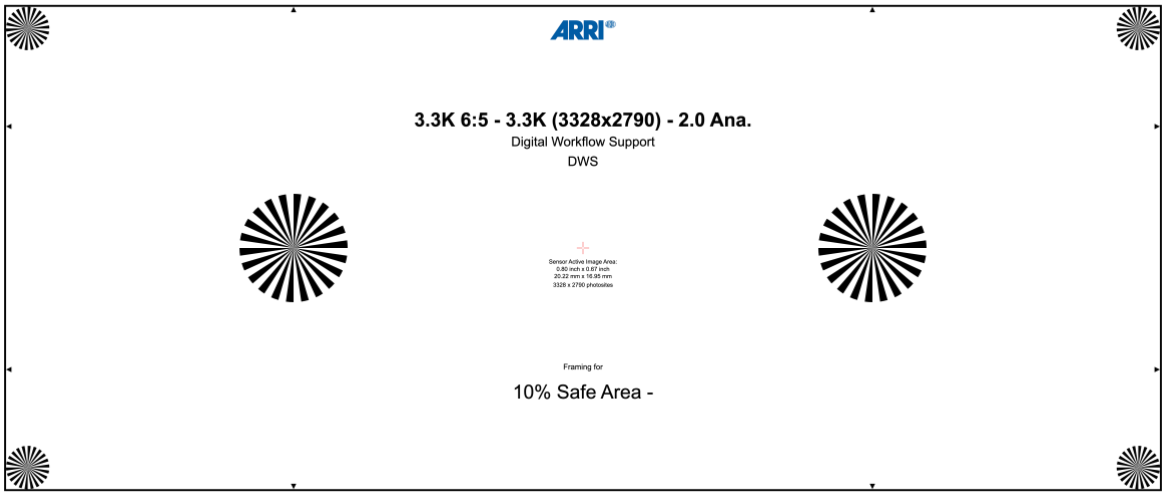


In a next step, we suggest downloading the PNG and the Frame Leader and shoot a frame leader you're your ALEXA 35 camera and the corresponding settings from above.

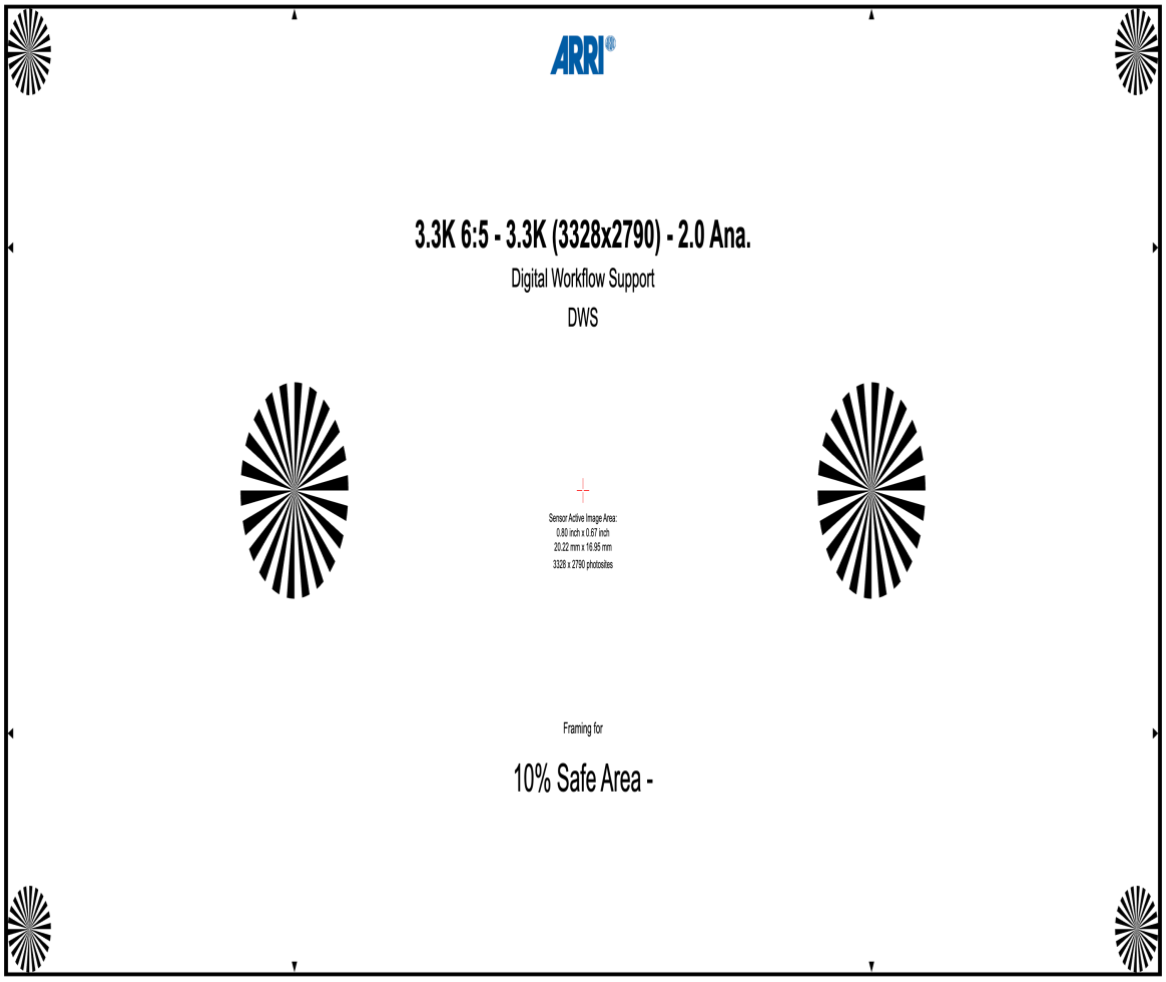
The frame leader clip should be forwarded to every person involved to your post-production. It ensures a correct framing in every step of your production, from rushes/dailies processing, editing, color grading and mastering.



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



2.3.2 Color Grading and Finishing

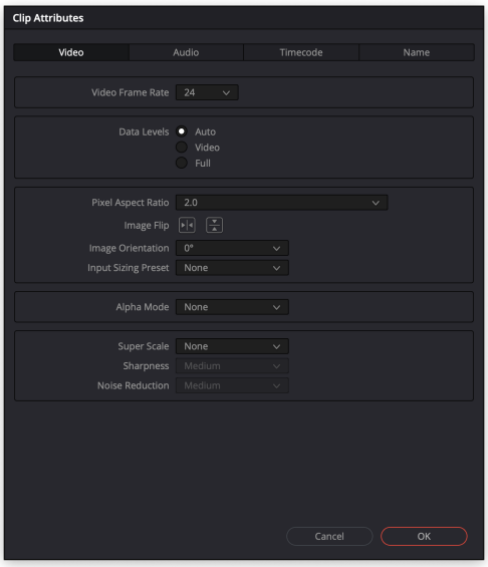
Calculations following the “AIPR” concept:

- Captured Pixel Count (AIPR budget): 2996 × 2512 ≈ 7.53 MP captured photosites
- Desqueezed footprint (geometric): 2996 × 2.0 = 5992 → 5992 × 2512 (contains interpolated horizontal pixels – should not be used as a working or delivery resolution)
- Target Resolution: 4K DCI Scope 4096 × 1716 ≈ 7.03 MP, which is ~93 % of the AIPR budget (green, but near the limit)
- Green ceiling (2.39:1): max. 4238 × 1776 ≈ 7.53 MP without exceeding the captured pixel budget

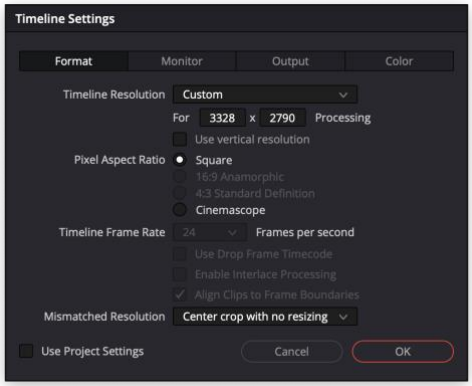
The active image area of 2996 × 2512 photosites gives an Active Image Pixel Resolution (AIPR) of approximately 7.53 MP. The 4K DCI scope target used in this example (4096 × 1716 ≈ 7.03 MP) sits within this budget, but at roughly 93 % it is already close to the limit. This capture format has the lowest AIPR of the three examples in this guideline; for deliverables substantially above 4K it would exceed the AIPR and should instead be produced from a capture format with a higher AIPR (see chapter 2.4). The desqueezed footprint of 5992 × 2512 is the geometric canvas after the horizontal stretch, but the horizontal pixels beyond 2996 samples are interpolated and do not add captured detail.

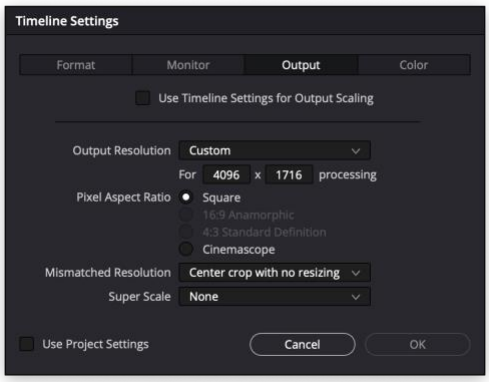
Zone	Deliverable resolution range (2.39:1)	Total pixels
● **Green**	up to 4238 × 1776	≤ 7.53 MP
● **Red**	above 4238 × 1776	> 7.53 MP

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.

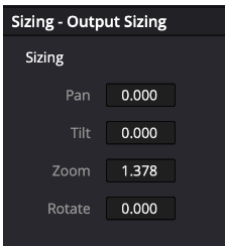


We will set the target format to 4K Scope (4096x1716) and resize the image, taking our frame leader into consideration.

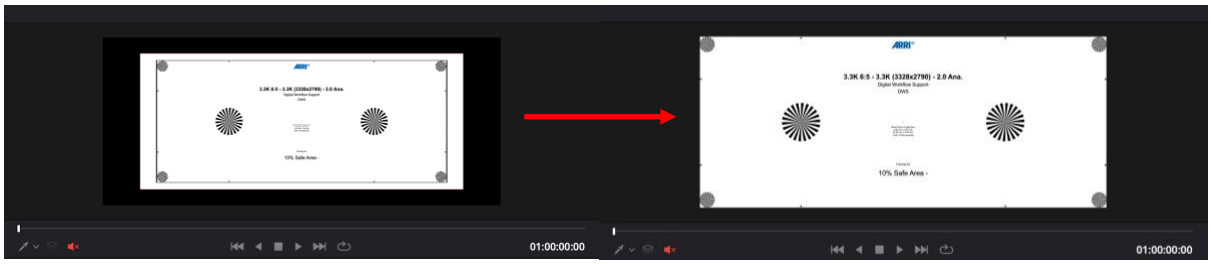




Please refer to the manual of your post-production software for detailed instructions, as there are several methods to accomplish this. In this example, we will use Blackmagic DaVinci Resolve Studio, adjusting the image through ‘Output Sizing’ and creating a preset.

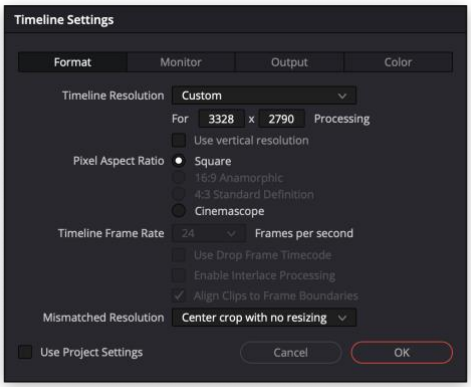


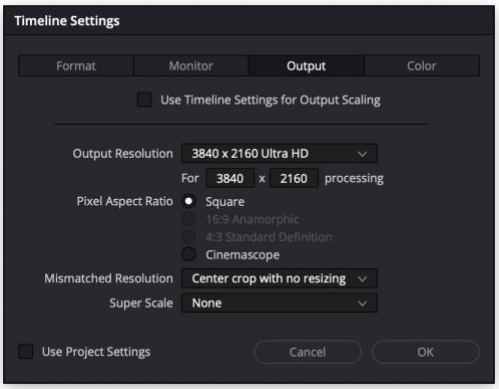
This will result in correctly framed image inside our target resolution and aspect ratio, which is 4K scope with 4096x1716 pixels. Since there is a 10% safe zone it is still possible to slightly adjust the image with a pan, tilt or zoom.

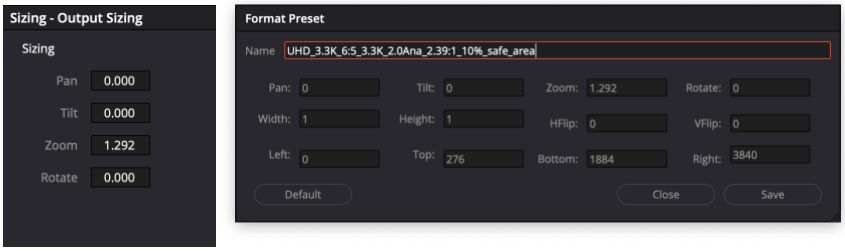


2.3.3 Rushes and Dailies

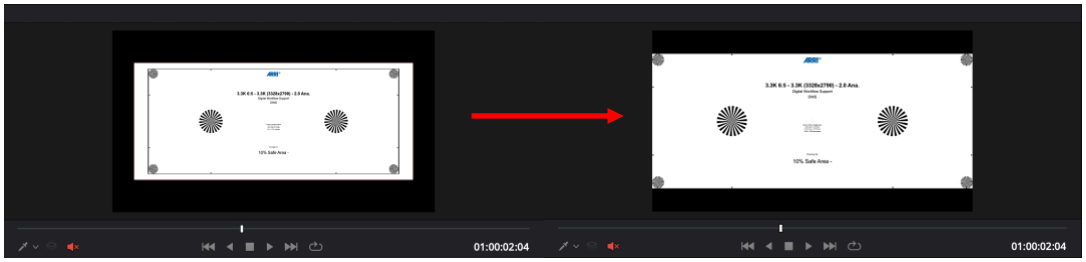
The rushes and dailies could also have included the 10% safe area, this depends on your pipeline. In our example we are only using the active image area with 2996x2512 pixels for the rushes. We assume the editor requests UHD dailies in 3840x2160 (16:9 / 1.78:1) for editing e.g. DNxHR SQ files.







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.



2.3.4 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.

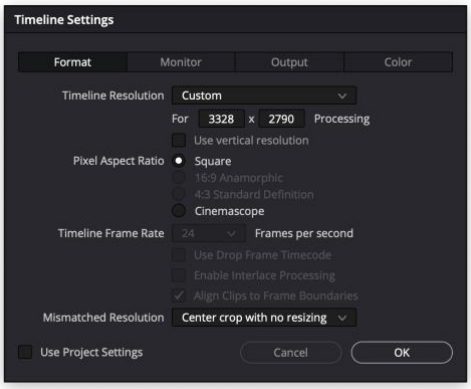
Please note: Before rendering VFX pulls/plates, please get in touch with your VFX vendor, clarify their needs and set up a VFX and finishing pipeline. The process we are showing here is just an example and there are different pipelines possible. Therefore, please clarify with your production in advance.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

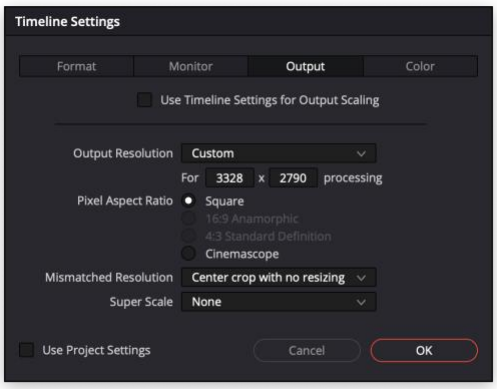
- Scaling and filters
- Squeezed or de-squeezed formats
- Active image area / safe area

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.

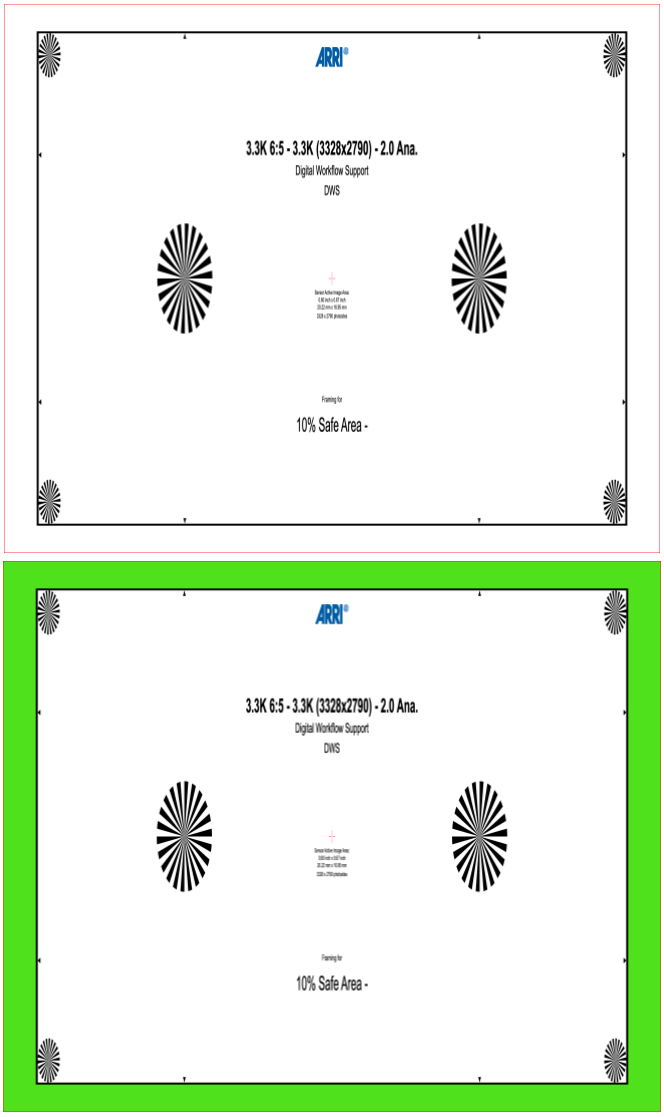
2996x2512= 1.19267516

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.

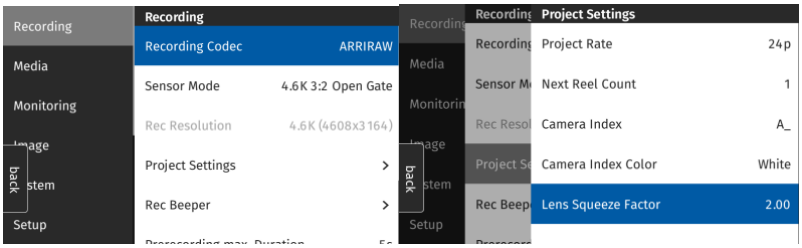


2.4 2.39:1 with 1.65x Anamorphic Lens in 4.6K 3:2 Open Gate – 4.6K (4608x3164)

In this example we are aiming a final aspect ratio of 2.39:1 for a high-resolution spherical master (e.g. 5156x2160) suitable for archive deliveries beyond a standard 4K DCI scope master (4096x1716). As source format we choose ALEXA 35 with 4.6K 3:2 Open Gate – 4.6K (4608x3164). The used lens is a 1.65x anamorphic lens. This combination maximizes the photosite area captured for a 2.39:1 framing on the ALEXA 35 sensor and supports a proportional desqueeze and resize to a deliverable wider than 4096 pixels. With the VFX facility we decided shooting the VFX plates with a 5% safe area.

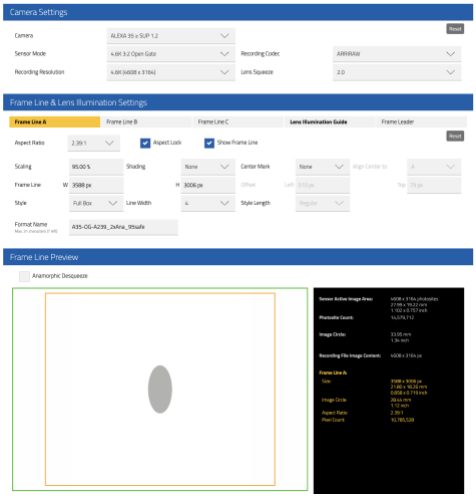
2.4.1 Preparation, Framing and Recording

The ALEXA 35 camera is set to 4.6K 3:2 Open Gate sensor mode and 4.6K (4608x3164) recording resolution.



Since we are using a 1.65x anamorphic lens, we set the lens squeeze factor to 1.65. 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 1.65x. This can easily be achieved by using the Frame Line & Lens Illumination Tool on our website.

17. Set Camera Model = ALEXA 35
18. Set Sensor Mode = 4.6K 3:2 Open Gate
19. Set Recording Resolution = 4.6K (4608x3164)
20. Set Codec: = ARRIRAW
21. Set Lens Squeeze = 1.65
22. Set Frame Line A
23. Set Aspect Ratio = 2.39:1
24. Set Scaling = 95%



This results in a framing resolution for Frame Line A of 4348x3006. This will be our active image from a camera, sensor and lens perspective.

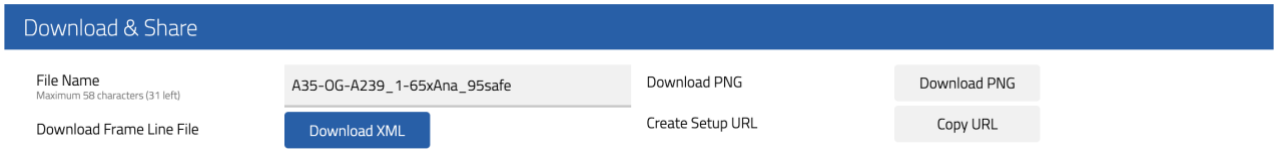
4348 / 3006 = 1.44644

1.44644 * 1.65 = 2.3866 ≈ 2.39

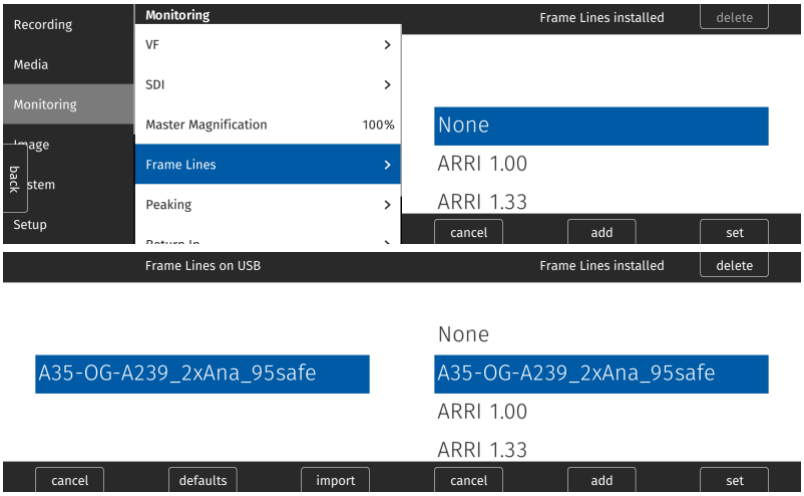
Please note: Before deploying a 1.65x anamorphic lens on the ALEXA 35 in 4.6K 3:2 Open Gate sensor mode, please verify the lens illumination in a camera test. Some 1.65x anamorphic lenses may not fully illuminate the entire 4.6K Open Gate sensor area. The Frame Line & Lens Illumination Tool on our website can help to estimate the expected lens coverage in advance for some lenses.

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.



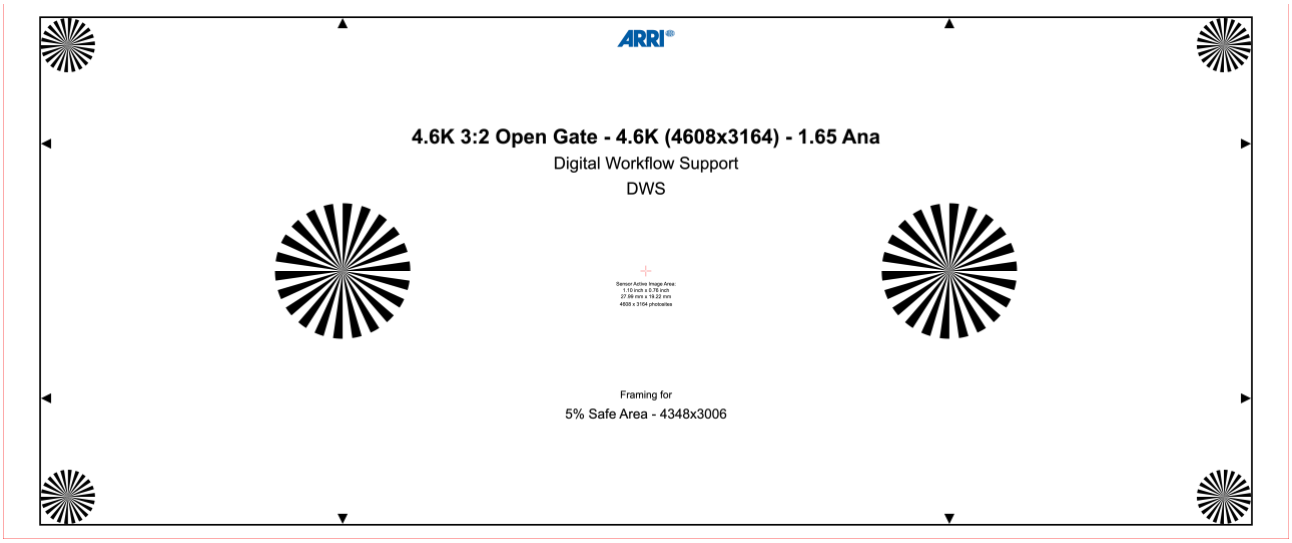
Connect the stick to the camera and load the frame line file to the camera via Menu > Monitoring > Frame Lines > Frame Line > Add and select your *.xml frame line file > import. In a next step select your frame line and press > set.



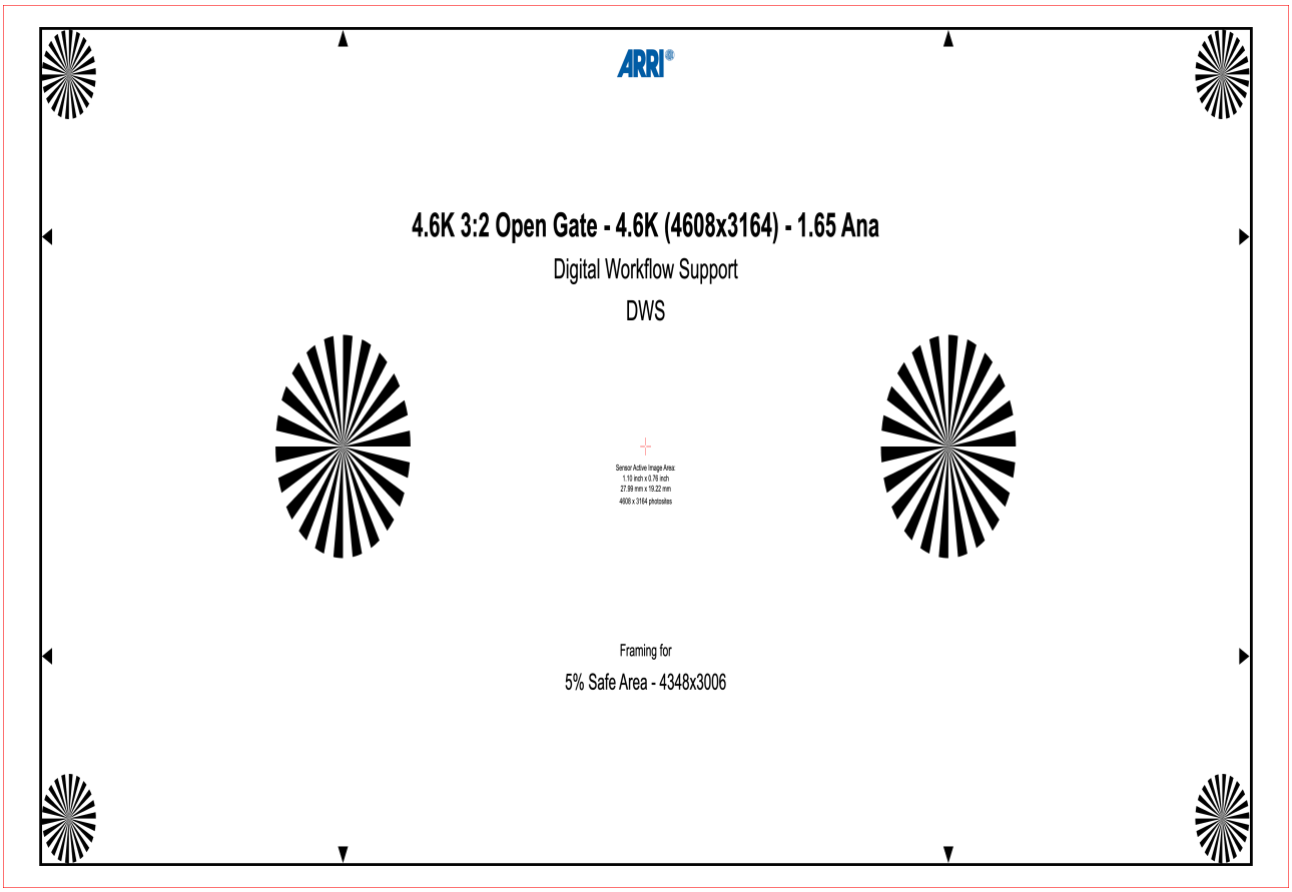
In a next step, we suggest downloading the PNG and the Frame Leader and shoot a frame leader you're your ALEXA 35 camera and the corresponding settings from above.

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



1.65x Anamorphic Frame Leader with 2.39:1 framing and 5% safe area



2.4.2 Color Grading and Finishing

Calculations following the “AIPR” concept:

- Captured Pixel Count (AIPR budget): 4348 × 3006 ≈ 13.07 MP captured photosites
- Desqueezed footprint (geometric): 4348 × 1.65 = 7174 → 7174 × 3006 (contains interpolated horizontal pixels – should not be used as a working or delivery resolution)
- Target Resolution 1: 4K DCI Scope 4096 × 1716 ≈ 7.03 MP, which is ~54 % of the AIPR budget (green)
- Target Resolution 2: Archive master 5156 × 2160 ≈ 11.14 MP, which is ~85 % of the AIPR budget (green)
- Green ceiling (2.39:1): max. 5585 × 2340 ≈ 13.07 MP without exceeding the captured pixel budget

The active image area of 4348 × 3006 photosites gives an Active Image Pixel Resolution (AIPR) of approximately 13.07 MP - the highest of the three examples in this guideline. Both target masters stay within this budget: the 4K DCI scope master (4096 × 1716 ≈ 7.03 MP, ~54 %) and the 5156 × 2160 archive master (≈ 11.14 MP, ~85 %) are therefore both produced as clean proportional downscales of real captured information. The green ceiling for a 2.39:1 deliverable is 5585 × 2340 (≈ 13.07 MP); above this the deliverable would exceed the captured pixel budget. This is exactly why the 1.65x Open Gate path is the recommended basis for high-resolution archive masters above 4K: it fills the same 2.39:1 frame with more real photosites than a 2.0x workflow, so a higher-resolution master can still stay within the green range.

Zone	Deliverable resolution range (2.39:1)	Total pixels
● **Green**	up to 5585 × 2340	≤ 13.07 MP
● **Red**	above 5585 × 2340	> 13.07 MP

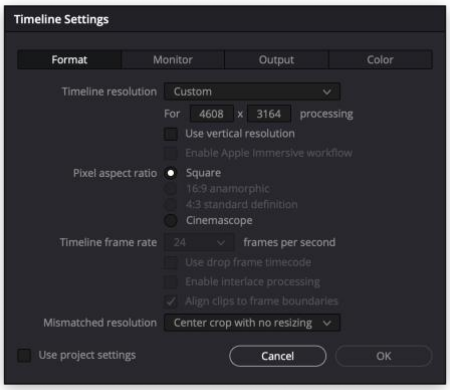
In post-production, it is essential to verify whether the lens squeeze factor is automatically recognized through the clip metadata in the software being used. If the software detects it correctly, there is no need to manually adjust the lens squeeze factor or pixel aspect ratio. However, if automatic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

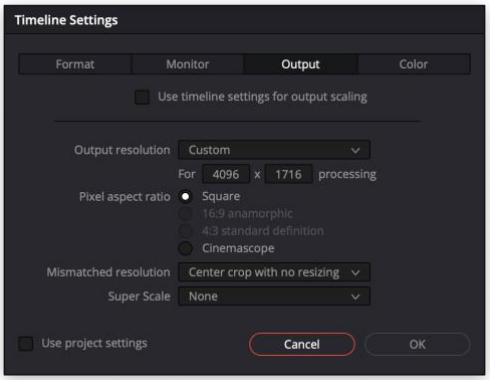
The main advantage of the 1.65x anamorphic Open Gate workflow is the ability to deliver high-resolution 2.39:1 masters beyond a standard 4096 pixel width. Because the 1.65x lens anamorphically compresses a wide horizontal field-of-view onto the full active height of the Open Gate sensor, the captured active image area (4348x3006 with 5% safe area, or up to 4578x3164 without safe area) contains more photosites than either a 2.0x anamorphic 3.3K 6:5 workflow or a spherical 2.39:1 crop on the same camera. A proportional desqueeze followed by a downscale to the deliverable resolution is therefore a faithful restoration of the optically captured information, not an artificial upscale.

Depending on the deliverable, the target format can be set to a standard 4K Scope DCI master (4096x1716) or to a higher-resolution archive master (e.g. 5156x2160). We resize the desqueezed image as a single combined horizontal-and-vertical operation in the timeline, taking our frame leader into consideration.

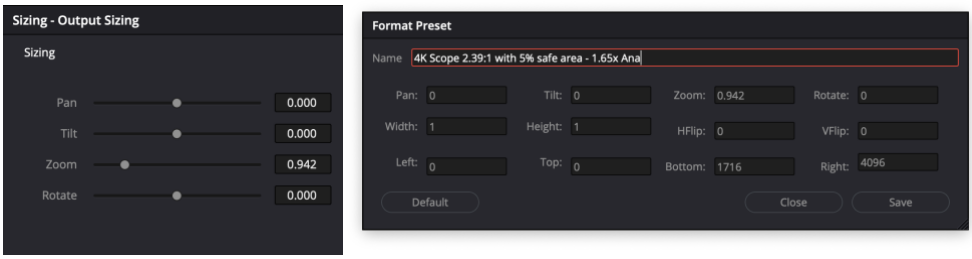
Desqueezed footprint (geometric): 4348 × 1.65 = 7174 → 7174 × 3006. This is the geometric canvas after the horizontal stretch; the horizontal pixels beyond the 4348 captured samples are interpolated. The real information budget (AIPR) remains 4348 × 3006 ≈ 13.07 MP.

Proportional resize to deliverable, e.g. 5156 × 2160 (2.39:1 archive master, ≈ 11.14 MP, ~85 % of the AIPR budget) or 4096 × 1716 (4K DCI Scope, ≈ 7.03 MP, ~54 %). Both stay within the AIPR budget of 13.07 MP (green).

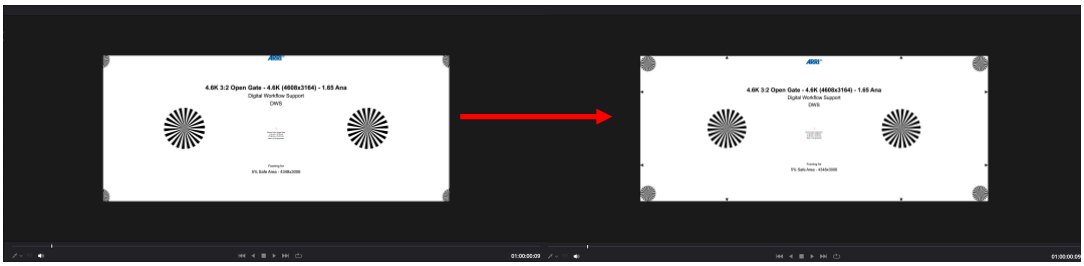




Please refer to the manual of your post-production software for detailed instructions, as there are several methods to accomplish this. In this example, we will use Blackmagic DaVinci Resolve Studio, adjusting the image through ‘Output Sizing’ and creating a preset.

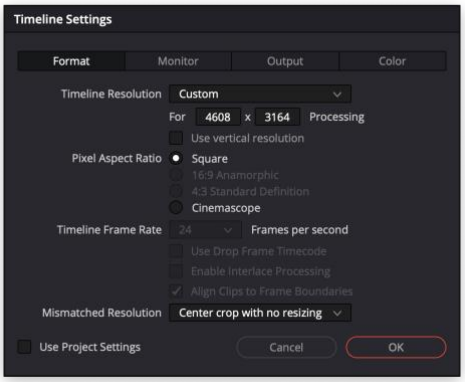


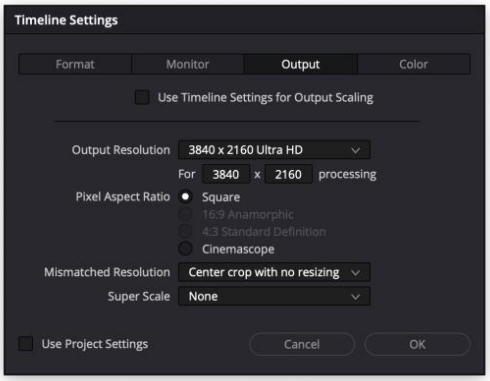
This will result in a correctly framed image inside our target resolution and aspect ratio. Since there is a 5% safe zone it is still possible to slightly adjust the image with a pan, tilt or zoom.

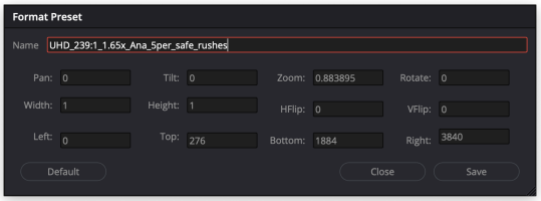


2.4.3 Rushes and Dailies

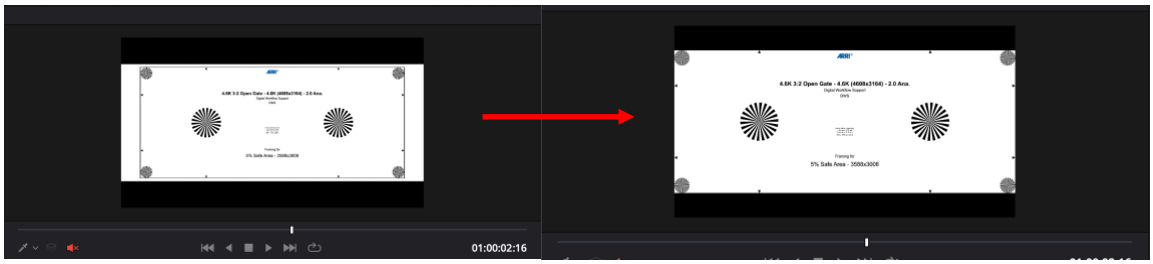
The rushes and dailies could also have included the 5% safe area, this depends on your pipeline. In our example we are only using the active image area with 4348x3006 pixels for the rushes. We assume the editor requests UHD dailies in 3840x2160 (16:9 / 1.78:1) for editing e.g. DNxHR SQ files.







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.



2.4.4 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.

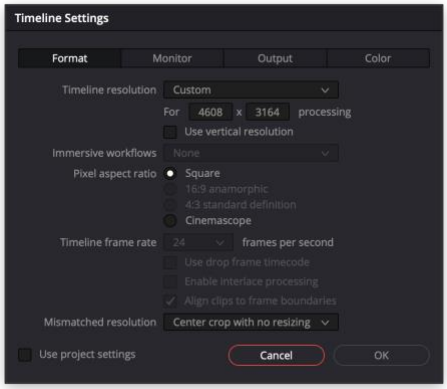
Please note: Before rendering VFX pulls/plates, please get in touch with your VFX vendor, clarify their needs and set up a VFX and finishing pipeline. The process we are showing here is just an example and there are different pipelines possible. Therefore, please clarify with your production in advance.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

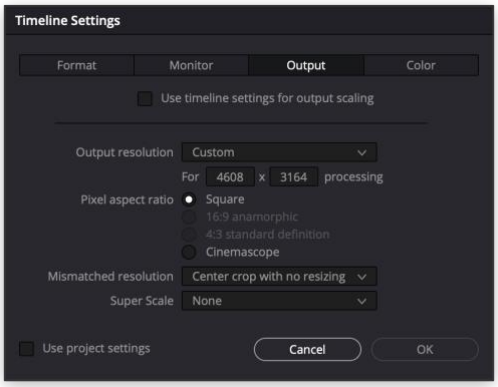
- Scaling and filters
- Squeezed or de-squeezed formats
- Active image area / safe area

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 4348x3006 inside that 4608x3164 area.

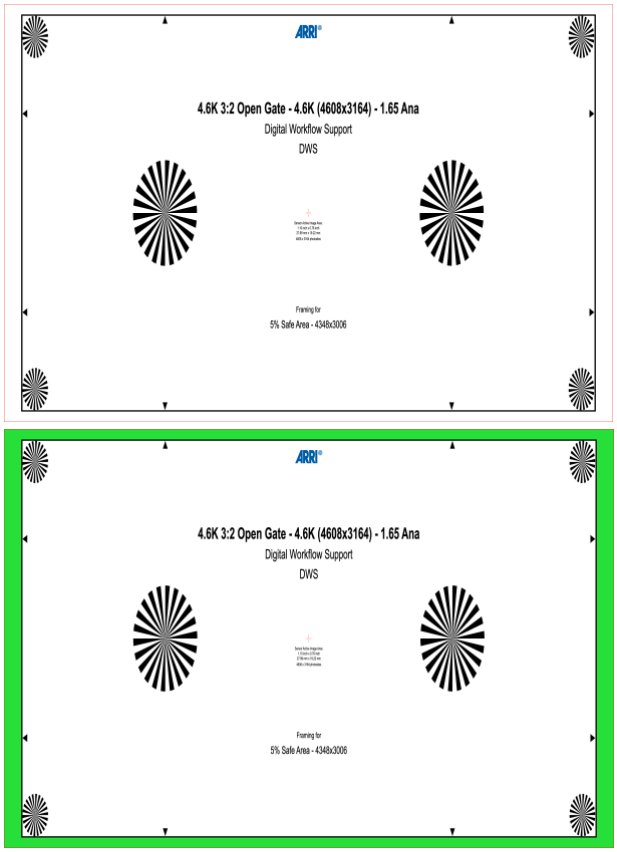
4348 / 3006 = 1.44678

1.44678 * 1.65 = 2.38719 ≈ 2.39





The VFX vendor will get files with 4608x3164 pixel resolution. The green area outside of the active 4348x3006 pixels can be used for repositioning and stabilization in VFX.



3 Downloads and Links

3.1 Sample DaVinci Resolve Project Archive

https://f.io/rxnAMI5p

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