



Capture Requirements

CAPTURE REQUIREMENTS

In order to meet image capture standards required by GEM, the following capture attributes must be adhered to.

Resolution

Minimum of 3840 photosite capture width (Spherical)

Codec

Lightly Compressed or Uncompressed RAW

or

Intraframe Based Codec with 4:2:2 Chroma-subsampling or Greater

Bit Depth

10-Bit or Greater

Data Rate

Minimum 240Mbps at 24FPS

Color Space

Scene-referred Color Space

(S.Gamut3, ALEXA Wide Gamut, REDWideGamut etc.)

Transfer Function

Scene-referred Transfer Function

(Slog3, Log C, Log3G10, VLog etc.)

Timecode

System is capable of jamming to an external source.

Timecode should be written as metadata.

Note: Not all cameras that meet these capture requirements are approved. These requirements are the minimum specifications necessary for a camera system to be

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considered for approval. Other attributes must be taken into account such as dynamic range, form factor, stability, workflow compatibility, and more.

IMAGE CAPTURE BEST PRACTICES

While not required for GEM productions, the following best practices will help productions avoid common pitfalls and workflow errors that can lead to added costs, lost time, or creative compromises.

Black Balancing / Black Shading

Black balancing, sometimes referred to as black shading, of a camera's sensor should be performed regularly in accordance with manufacturer provided guidance. For optimal results, please allow the camera to reach its normal operating temperature prior to performing the sensor calibration. The black balancing/shading procedure defines an imaging system's proper black level given its current operating state and may reduce the visibility of misbehaving pixels while operating under fluctuating temperature ranges. To ensure this process is performed correctly, please refer to the instructions in your camera's operating manual.

Framing Charts

To ensure on-set framing meets the creative and technical needs of your production, a framing chart should be shot before principal photography begins and processed through the dailies, editorial, and VFX pipelines.

For Best Practices involving Framing Charts and Dailies Workflows see:

- Framing Charts Best Practices
- Dailies: Best Practices
- Choosing an Aspect Ratio

Choosing an aspect ratio for the active image area of your production is a creative decision; however, aspect ratio can affect your workflow. "Aspect Ratio - An Overview" from our foundational video series demonstrates how aspect ratios may be used for story purposes and outlines technical considerations.

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We've also designed a Framing & Working Resolution Calculator which can determine if your capture and framing method is GEM approved.

Aspect ratio choices should be discussed with GEM for approval.

Anamorphic Lenses

When using anamorphic lenses, extra resolution may be required for capture. Camera selection should take this additional need into account. Cameras that meet this resolution requirement and are approved for anamorphic capture are designated in the list above. If you are unsure if your desired camera system has the necessary resolution or have questions about anamorphic capture, GEM is here to help. Please contact your GEM project lead to discuss implications or concerns.

Color Management

In order to ensure compatibility with your project's color pipeline, productions should test each camera format's color space transformation into the working color space. "The Benefits of Color Management" from our foundational video series explains why color management is important to GEM and provides an introduction to the Academy Color Encoding System (ACES).

To explore color management further see: "What is Color Management?"

Spanned Clips

Recording single takes across multiple camera cards, also known as "spanning clips," should be avoided unless absolutely necessary. Spanning clips across camera cards increases the likelihood of downstream workflow issues.

Film Capture

For productions seeking to shoot any photochemical film, please contact your relevant GEM project lead.

External Recorders

In some instances, productions may require the use of approved cameras with external recorders. The recording format should be in line with minimum requirements outlined at the head of this document, and should be discussed with your GEM point of contact.