



## **EVA1** QUESTIONS ANSWERED

At Cine Gear Expo 2017 in Hollywood, Panasonic previewed the AU-EVA1 cinema camera. Equipped with a newly designed 5.7K Super 35 sensor and positioned between the Panasonic Lumix GH5 4K mirrorless camera and the VariCam LT 4K cinema camera, the EVA1 generated tremendous buzz since being teased at NAB 2017. Compact and lightweight, the AU-EVA1 is tailor-made for handheld shooting, but also well suited for documentaries, commercials, and music videos.

We asked Panasonic Cinema Product Manager, Mitch Gross, some general questions on the EVA1's target audience, shooting applications, Dual Native ISO, the 5.7K sensor, and more.

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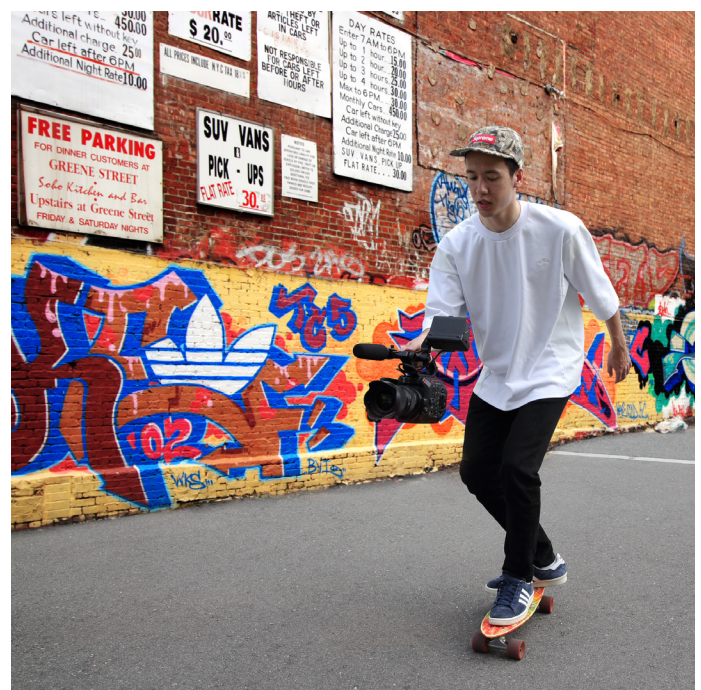


### For whom is the EVA1 designed?

**MITCH GROSS:** Depending on the type of work you do, EVA1 answers a lot of different needs. It is designed to be a versatile machine that you can plug into a lot of different situations. There are people who have been shooting on smaller cameras such as DSLRs or all-in-one camcorders, and they have felt limitations. At the same time, you have other people who have been shooting on large production cameras and they sometimes have need for a camera that is slimmed down and more portable. What we wanted to do was build a camera that could sit in-between those spaces where you could essentially rise up from the small cameras where you want more versatility and you don't have to fight the machine sometimes. Or you could slim down from a bigger camera for projects where a larger system may be too difficult to deal with or simply too expensive for the production. On the little cameras, you can get amazing work out of these tiny machines but because they're so small, dealing with the controls can become a barrier and you often must devise workarounds. Shooters put up with the workarounds because these small cameras are so convenient to shoot with. We've risen the scale of the camera so now you have these high-end features and easier access to controls in a camera that is a more functional size for most shooters. For users of higher level production machines, we've tried to be judicious in keeping as much professional functionality as possible into a compact form factor.

### What will be the main shooting applications for EVA1?

**MITCH GROSS:** I think you're going to see a lot of people shooting documentary style work with the EVA1 – talking head interviews and B-roll shots in the field. It's very convenient for that style of shooting. You're also going to have people who do news shooting, as well as live event type work such as weddings and sports videography. In addition, there will be people who will want to rig the camera for specific types of remote work, meaning mounting the camera out on a crane, or jib arm. You want it fully featured yet small and lightweight because the bigger your camera is, the bigger crane you would have to use, just like on a Steadicam. Gimbal devices like a [Freefly Systems] MōVI or a [DJI] Ronin want a fully featured camera but in a small and lightweight package. With EVA1, you get the dual advantage of having great capabilities while being lightweight and small. Same goes for underwater housings, car rigs, or anytime you need to place a camera somewhere where you want a slimmed down unit that won't get in the way. You still want to have a capable camera, especially with a Super 35 sensor, and the EVA1 provides just that.



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What are some of the specific features EVA1 gives you that a compact DSLR or mirrorless camera won't?

**MITCH GROSS:** The first thing is that people who are shooting with a [Panasonic Lumix] GH5, is that they are shooting with a Micro Four Thirds sensor and EVA1 contains a Super 35 sensor, which gives you a different look and feel. The larger body size of the camera, the design of the interface, and where the LCD is located all give you better access to the controls to make adjustments while rolling. With small DSLR cameras, you can't comfortably change things as you're rolling in a run-and-gun style and that's a problem – you need to be able to adjust on the fly.

In addition, we have proper connectors – real XLR audio inputs, full-size HDMI and locking SDI connectors for video outputs. We have a full-fledged camera that's designed for video production. It has a removable side hand grip with integrated controls. The EVA1 is designed to be held up to your shoulder as opposed to way out in front of you, or at your waist. Another example of control you have while shooting video are the integrated ND filters. You have a filter wheel that is built into the camera so you can adjust exposure as you roll – you don't have to stop and screw on a filter in front of the lens. The overall design of the EVA1 is to make it more comfortable for video production, as opposed to a stills camera that is doing double duty as a video camera.

For a cinematographer that has never shot with a VariCam before, can you explain the Dual Native ISO feature?

**MITCH GROSS:** Panasonic developed a process to read the sensor's photosites in a fundamentally different way than it's traditionally done. More information can be extracted without degrading the image. That effectively gives the imager greater sensitivity and separates the signal from the background noise. It's essentially a different way of reading the camera sensor and it gives it two different native ISOs or sensitivities. In others cameras, you just dial the gain up to get more sensitivity but you get a lot of noise in the image. You can also do that on the EVA1, but if you just switch between the two native ISOs, they'll look the same as far as the amount of noise. There are two ways that one might likely want to use this. First, you can shoot with zoom lenses when normally you would have to shoot with primes because zoom lenses generally aren't as fast. Instead of having to switch prime lenses, you have more versatility while still getting the right exposure. Another way of using Dual Native ISO is the ability to lower your light levels. In shooting with lower light levels, you will save money, time, and you can shoot with more practical lights in your surroundings. That can be for a high-end production or a more modest production where it can be used for savings, or a stylistic choice. The Dual Native ISO ratings on the EVA1 are 800 ISO and 2500 ISO, and the sensor captures a Dynamic Range of 14 stops so you can really see far into shadows and highlights..



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The EVA1's sensor is a 5.7K sensor. What does 5.7K resolution do for you?

**MITCH GROSS:** There are three things. The EVA1 sensor has 17.25 million active photosites in Super-35. That's almost twice the resolution of a 4K image. When you start with one resolution and you go to a lower resolution, it always improves the resolving power of the final image. When you start with more and get to less, more information comes through. The result is a more finely detailed image. That can be true when you go from a 5.7K sensor to 4K, UHD, 2K, HD, or 720p – all of which are going to be available on EVA1. Second, there's more color information. At 5.7K resolution, you have more individual examples of red, green, and blue – all of which enrich the resulting image in whatever resolution you choose to record. Third, in a future firmware update, there will be an option for a RAW data output from the camera to a separate recorder and that will be available with the full 5.7K resolution. All that data will be made available, which can be used in post in various ways, whether it's reframing or gathering extra information to manipulate the image. More is more and it gives you greater choices in what you might do with it in the future.

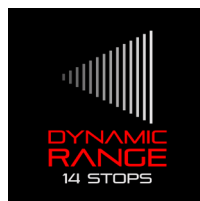
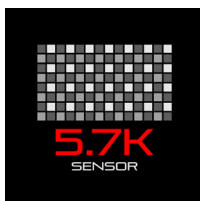
What kind of media will the EVA1 use?

**MITCH GROSS:** Part of the design ethos of the camera was to not only make the camera itself affordable but it had to be affordable to use. The EVA1 uses SD cards to record footage and it can record in various codecs, including 4K 10-bit 422 to fast SDXC cards. The cards are readily available everywhere in the world so if you're a documentary shooter in a remote location, you can purchase more cards and stick them in the sides of most laptop computers, or pick up an adaptor at any electronics store. The usability of the camera is high and the expense is kept at a minimum. Depending on the selected format we require cards that can do certain read and write speeds. For the highest resolution and frame rates with the mildest compression, V90 type SDXC cards are required, but for other formats one can use cards of lesser capabilities. Panasonic will publish a detailed breakdown of that information when the camera ships. The EVA1 has two SD card slots and you can choose to either Span recording – capturing continuously from one card to another for extended record times – or Clone recording – recording simultaneously to both cards for an instant backup. There's also a single frame record mode for shooting time lapse and animation.

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### What are the frame rate capabilities of the EVA1?

**MITCH GROSS:** The EVA1 can shoot in 4K up to 60fps and in 2K up to 240fps. That's a lot of information to process so fast, so at some frame rate and resolution combinations the EVA1 does some clever tricks. When shooting 2K and HD, the EVA1 can sample the full sensor's resolution in half, averaging the information while still seeing 2.8K. Then it oversamples that 2.8K down to 2K or HD, yielding a high resolution image while saving processing power. By doing this EVA1 can shoot at 2K or HD and retain the full Super-35mm field of view of the sensor up to 120 fps. To get up to 240 fps, the frame is slightly cropped to 4.5K, sampled in half to 2.2K and then that 2.2K is oversampled to 2K or HD. It might sound complicated, but it's actually quite clever math that allows EVA1 to shoot 2K and HD at high frame rates and still capture a high quality image. And instead of cropping in the image to a tiny rectangle in the center of the sensor, the crop to get to the highest framerates is still about 80% that of the full Super-35 sensor.



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