**Ant Reality displays upgraded Crossfire 120° 3K AR Optics at AWE 2023**



AWE Demo video: <https://youtu.be/d6XvG1NmJhw>

At AWE 2023 in Santa Clara on June 1-2, Ant Reality displays two upgraded AR+VR hybrid solutions: the Crossfire Reference Design and Crossfire Max 120° 3K module.





As a glasses-like end product reference for AR+VR hybrid use case, the Crossfire Reference Design weighs 140 grams (without cable) and the thickness of the lenses is only 10mm, which is comparable to regular sunglasses.

It presents a big enough FoV (100°) for either AR or VR scenarios, with a unique approach for AR/VR switching: Mechanical Dynamic Dimming. Since the display technology behind Crossfire is based on polarization optics, Ant Reality designed an integration with a binocular synchronized polarized mechanism to enable a dynamic dimming range of 0.002% to 33% pass-through. Notably, other AR glasses with dimming can only present around a 0.3-22% range (magic leap 2).

0.002% pass-through is significant; it means you can barely see even a strong light source from the real world (like the sun or a spotlight). So it’s pure VR, not just dark-tinted AR. And the experience with the maximum 33% is in fact much better than the ostensible number would suggest, given that regular sunglasses are around 8-15%. With 33% pass-through, you can even read a book in a lights-off room in the daytime. So it’s bright enough as a sophisticated AR device.

Before Crossfire, there was no such a solution that could combine AR and VR together into a glasses set so well. Other existing glasses-type AR solutions cannot reach such a wide FoV (100°+), like Freeform solution, which is below 50°, and Birdbath below 60°, and conventional Waveguide (Geometric or Diffractive) at a maximum 70°; which is insufficient to cover the immersive demand of VR.

There’s Meta Quest Pro (also Quest 3), which uses Video-See-Through (VST) to impose AR features onto a VR Pancake optics system by utilizing its wide FoV and compact size. And hopefully soon people will witness the first XR device from Apple; according to a [Bloomberg](https://www.bloomberg.com/news/articles/2023-01-23/apple-reality-pro-details-eye-hand-tracking-app-store-3d-ios-like-interface) report, it might also be based on a VST solution for AR/VR hybrid. But VST is not perfect AR – not even close. The brightness, contrast, and resolution of the real world will be greatly limited by the performance of the display system; not to mention that it will cause VAC (Vergence Accommodation Conflict) sickness if you stare at a single-focus image long enough. So VST is for early adaptors, offering only a small taste of AR with a mostly VR device. Now, however, there is Crossfire, Ant Reality’s real Optical-See-Through (OST) solution for AR+VR. It could be a game changer.



Crossfire Max 3K is the other mind-blowing device at the expo. It’s the first time that AR has gone up to such high-level pixel density. Currently, mainstream AR headsets remain below the 2K level, such as Hololens 2 at 1440x936, Magic Leap 2 at 1440x1760, XREAL Air at 1920x1080, and Meta Quest Pro at 1920x1800. The 3K (2880x2560) Micro-Oled pixels per eye with Crossfire Max’s optical module bring crystal clear and stray-free images, along with vivid color and a high contrast ratio.

Zheng Qin, the founder of Ant Reality, took the stage to share a bevy of details on his new invention, the Mixed Waveguide (MWG) Optics. There are three types of MWG: Type-A (85° FoV with 9mm thickness lens), Type-B (56° FoV with 6mm lens), and Type-C (aka - Crossfire, 100° to 120° FoV with 10mm to 13mm lens).



Zheng revealed that Ant Reality has already partnered with five more clients for cooperation with MWG optics, and is now working with the well-known manufacturer Goertek for the mass production of MWG lenses. The end cost of the lens will be below $30 per piece, which is very attractive and competitive compared to competitors Birdbath (AR) and Pancake (VR) solutions.

For more information: [www.ant-reality.com](http://www.ant-reality.com)

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