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Tony's OLED and MiniLED review

Note - this is going to be relatively unscientific, rather relying on my eyeball and pixel-peeping. If you want colorimeter results, this ain't it chief,

So I recently purchased this QD-OLED monitor as I've been wanting to give another go at OLED displays.

My primary point of this article is compare what I consider two competing technologies today: MiniLED backlit IPS displays, and OLED displays.

We're at an inflection point similar to the Plasma→LCD era transition, where miniled is the last “hurrah” for LCD before the industry fully switches over to OLED.

The Contenders

For this, my two contenders are:

Representing the MiniLED group: The Cooler Master GP27U

- 4k
- 27“
- IPS
- 576 zone backlight
- 1000+ nits brightness
- 99% AdobeRGB

Representing the OLEDs, we have: The Agon Pro AG326UD

- 4k
- 32”
- QD-OLED
- per-pixel dimming
- 9x% AdobeRGB

Background

So, this is not an apples to apples comparison. By design and financial limitations lol. Also, watch my hour long video on display technologies before coming here for some more context.

Today, there are still more LCD panel manufacturers vs OLED. Since LCDs have been around for a while and are very common for displays, the economies of scale exist, as does sourcing panels from AUO, BOE,

Innolux, LG and Samsung. Which often results in panel lotteries but more importantly cheap prices.

For OLEDs, there are really only two manufacturers for desktop monitors. Samsung, with QD-OLED technology, and LG with W-OLED. As such, they can kinda still charge whatever they want. And for a product which is guaranteed to have return customers as the burn in takes out the panel in 3-5 years depending on usage.

What I like about MiniLED

There is something to be said for being able to have SDR → HDR pipelines running at fixed 1000 nits for desktop monitors. It is incredible to use, especially if you're the type to have lights on. This brightness is unmatched by OLED, or any other display panel really. And not only that, but it can sustain that brightness across the entire display for hours.

Additionally, you can leave whatever static images on screen with much lower risk of burn-in. Is it possible to burn in an LCD? Yes. But versus an oled where just looking at it wrong can cook it, it's fairly minor.

The other bit I like is that I have a soft-spot for very much liking the extra-vibrant colors that can be produced by most IPS panels. Since first switching to IPS, every year, I will use TN and VA for a few weeks to re-calibrate myself, and every time, I hate it.

My pet peeve with VA panels and TV manufacturers

There seems to be this push coming from the TV realm to use VA panels instead of IPS. Unfortunately, rtings has also fallen victim to this ideaology.

The reason some prefer VA panels, is that they do not suffer from “IPS glow” which is the one weakness of IPS, it's the dark gray weird hue you see in dark scenes. Thus, VA is able to reach higher contrast ratios.

For me though, especially in daylight, you're much less likely to notice IPS glow, and viewing directly, having local dimming via miniled does mostly aleviate this problem, at the expense of more glow when you are off-angle.

VA though not only has colors which don't follow normal gamma curves, (particularly when off axis where reds turn pink quite easily, and greys get their gamma shifted), VA panels also suffer from excess motion blur.

This is particularly noticable with light gray text on a dark gray background, if you ever scroll. On IPS and OLED, the text will remain crystal clear. On VA, it will smear and not be legible as you scroll.

Unfortunately for me, there are few IPS TVs left, and most were pre-local dimming which further highlights IPS glow. Worse, this VA craze is taking over desktop monitors. With most curved monitors including ones at our office being VA, and new miniLED ones also being VA - seems it's winning the panel

war.

To be clear, this is also because professional users, who use color accurate non trash displays in bright environments, historically ones who would use IPS are all moving to QD-OLED, which is what leaves this gap.

On contrast

Now, the OLED does of course have higher contrast, but, there are a few things I noticed.

I expected wide aspect ratio to be a clear win on OLED, and it is, but the miniLED isn't far behind, as it also did a good job at dimming the black bars.

I also expected the color gamut of QD-OLED to blow away the IPS panel, but that was not the case. I found the reds to be deeper on qd-oled, but the greens were deeper (proper adobeRGB green vs lime green) on the IPS.

Now I always compare that green and use AdobeRGB as a metric - since DCI-P3 green is very much a yellow-lime like green in comparison to the deep teal-green of adobe RGB. If you ever see it side by side, the difference is obvious.

Yes, HDR color spaces also measure luminance, but for chrominance specifically, adobergb is wider than p3 is, and I with more manufacturers would use that vs “95% dci-p3”. If they want an HDR colorspace, just use BT2020.

HDR kinda sucks on the AGON

Now, on the miniled, to make it truly shine (haha), you need to enable HDR. On Linux, in KDE with AMD drivers, this has been possible since the plasma 6 beta I installed back in December 2023.

Today, it's pretty seemless, and you can just set 3 env vars launching games through Bottles and HDR just works.

Normally.

Except on the AGON.

For some darn reason, while HDR does work on the AGON, there is some fxxed up color conversion happening somewhere in the display chain that results in colors getting washed out.

That's right! for some reason, colors are MORE vivid in SDR, than they are in HDR. I have tried with DisplayPort on my desktop, and HDMI on my laptop, ato no avail.

I don't know why this is, it's almost like the standard SDR in HDR issue which can be bypassed in KDE with the SDR color volume slider, but happening at another layer.

Regardless of that slider, red is not red, green is not green, so on.

I have sourced multiple HDR test files, and eventually resorted to making my own. On the MiniLED Cooler Master, those are eye-searing colors, and you can confirm with a macro lens that they are pure colors.

On the AGON, I can not get the display to create pure colors on Linux, and it is bugging me. If I do not have a fix for this - expect this display on facebook marketplace within the month.

Where OLED excels and brightness

The magic combination for OLED appears to be to have a dark scene on the screen, while sitting in a dark room. If your room is bright, not only it this Agon very dim, coming in at only 250 nits in SDR, it's much like a projector, with black levels suffering in bright rooms, reducing contrast. I was not expecting that.

Also of note, in bright environments, I like a bright monitor to punch through glare, but on OLED, the non-matte surface is great in the dark, and not so great when any lights are on.

Notes specifically to the AGON

Besides HDR being broken, this is among the worst stands I have seen for VESA mounting.

At least they give the adaptor for it - but instead of putting 100×100 mm holes on the display, you gotta use this adapter, which bumps your display out by another 5 cm. WHY?

And why not make the base symmetrical? This is just chaotic!

Conclusion

In a light controlled room, OLED looks fine, assuming HDR can be fixed, even though agon does not give a shxt about this display and will likely never release a firmware update to fix.

If you sit in bright rooms though, I don't see a point in upgrading today, and I wish I had a 32“ miniled with the 1150 zone backlight.

On a TV, OLED is a lot more promising thanks to wider viewing angles (versus the crap va panels they keep using), so makes sense there, but on desktop displays, for a 3 year subscription before it burns in, I'm not sure it's worth.

Pricing: I got the GP27 at under $250 USD with tax on woot last year. I got the OLED at just about $500 usd with tax this week.