NEC EA305WMi 30-inch 16:10 IPS Monitor Review

By Christian Eberle , JUNE 5, 2016 6:00 AM

1. Introduction

It's a fact that if one buys a computer monitor today, it will almost surely come in a 16:9 aspect ratio. But one doesn't have to set their time machine too far in the past to find an era when this wasn't the case. Like televisions of yore, desktop displays also conformed to a 4:3 ratio. This was ideal for just about any computing task and even today would work well for web browsing, document creation or even gaming.

As consumer TVs started adopting the 16:9 format, monitor manufacturers offered the 16:10 ratio. This also presented an ideal use of desktop real estate both physical and virtual. One could get a good amount of screen area in a package that wasn't super wide. And it lends itself well to applications that favor either vertical or horizontal space.

Now that flat panels are more a commodity, and the lines between televisions and computer monitors have been blurred, it seems that 16:9 is the only choice currently available. But there have been a few holdouts. We've seen from reader comments that there is a desire for such screens and many users hold onto their old 16:10 displays until the bitter end rather than giving up that extra height.

In our monitor database, we've only been able to secure a tiny handful of 16:10 screens for review and they are all in the 30-inch jumbo size. Back in 2013 we evaluated the DoubleSight DS-309W and it's still available for sale today. More recently we checked out Monoprice's 30-inch IPS panel. Today we're testing a brand-new display from NEC – the EA305WMi.

Products	 **NEC EA305WMi**
Pricing	
Panel Type & Backlight	AH-IPS / GB-r-LED, edge array
Screen Size & Aspect Ratio	30in / 16:10
Max Resolution & Refresh	2560x1600 @ 60Hz
Native Color Depth & Gamut	10-bit (8-10-bit / Adobe RGB+FRC) / sRGB
Response Time (GTG)	6ms
Brightness	350cd/m2
Speakers	2

Video Inputs	1 x DisplayPort in, 1 x DisplayPort out 1 x HDMI, 1 x DVI
Audio	3.5mm stereo input, 3.5mm headphone output
USB	v3.0 - 1 x up, 3 x down
Power Consumption	86w typical
Panel Dimensions WxHxD w/base	27 x 18.6-23.7 x 9.1in, 687 x 473-603 x 230mm
Panel Thickness	3in / 76mm
Bezel Width	.9in / 22mm
Weight	24lbs / 10.9kg
Warranty	3 Years

In a teleconference with NEC reps I asked what the reasoning behind this product was. After all, it's in such an extreme minority that its introduction came as a surprise. The answer was simply "consumer demand." Obviously the folks at NEC have been reading the comments on Tom's monitor reviews because plenty of you have lamented the lack of choices in this aspect ratio.

The panel part is supplied by LG and uses all-modern components. Where the DoubleSight has an old-school CCFL backlight, the EA305WMi employs a high-end GB-r-LED. That enables a wide color gamut and in this monitor's case, one that slightly exceeds Adobe RGB. To say this panel displays vivid color is almost an understatement. Reds are especially vibrant.

Color depth is a native 10-bits achieved without the use of FRC or dithering. There is no OSD option for the smaller sRGB gamut. Even though the monitor can be calibrated with NEC's SpectraView software, you can't change the color points there either. If that is a requirement for you, choose the PA302W from the professional line. That display has everything you need for color-critical applications albeit at a higher price.

NEC has always impressed us with its thoughtful design, engineering and unmatched build quality. Does the EA305WMi fill a market niche while still maintaining that reputation? Let's take a look.

MORE: Best Computer Monitors
MORE: Display Calibration 101
MORE: The Science Behind Tuning Your Monitor
MORE: All Monitor Content

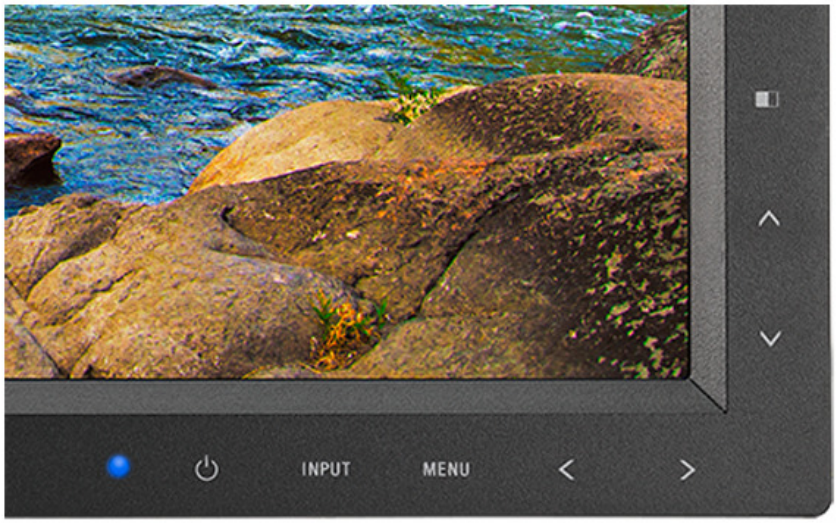
Product 360

2. Packaging, Physical Layout And Accessories

Like most NEC monitors, the EA305WMi ships fully assembled in a large heavy-duty carton. Once you remove the top foam blocks, simply lift the whole thing out of the box. The power supply is internal so an IEC power cord is provided. Connectivity is supported by USB 3.0, DVI and DisplayPort cables. You also get a ControlSync wire to connect multiple NEC monitors together. In this configuration they can share settings making enterprise installations a snap. A printed setup guide is included but if you want a full users' manual, it must be downloaded from NEC's website.

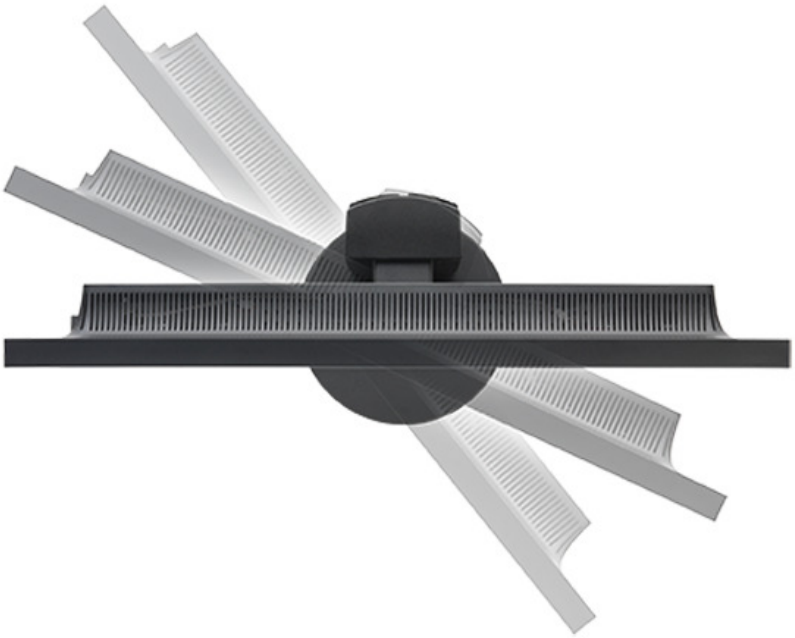
The EA305WMi requires a bit more desktop space but it's not because of the base which at first glance seems too small to support such a large panel. But in typical NEC fashion, the whole package seems as if it's carved from billet. The workmanship and build quality is second-to-none and there is absolutely no play or imprecision in any of the upright's movements.

The anti-glare layer is like that of most monitors we test; aggressive but free of artifacts or texture. Even with dark images on-screen, ambient light reflections are kept to an absolute minimum.



While we've become fans of OSD joystick controllers like those found on LG and some BenQ monitors, NEC touch-sensitive keys are our second favorite. Lots of companies do touch buttons but NEC has found the perfect level of responsiveness. You don't quite need a firm press but the keys won't react to a whim either. And you can tap them as fast as you want; they'll fire every time. The screened-on labels are a bit small for middle-aged eyes like mine but icons pop up on the screen next to them that are much easier to see.

The rock-solid stand supports full tilt (25 degrees back, 5 forward), swivel (over 300 degrees), height (5.1 inches) and portrait adjustments. The physical feeling of quality and heft is something you won't find in any other monitor. NEC displays may not be in everyone's budget but in terms of build, they are priced properly.



If having a slim and sleek monitor on your desk is a goal, NEC may not be for you. The EA305WMi's tank-like build quality means the panel and its internals are heavily shielded and thoroughly ventilated. This is a monitor that will likely last through many system upgrades. The styling is functional-industrial which means nothing is done without a purpose. The top grill also hides the two built-in speakers which are capable of decent volume though tinny in character. If you want to use your own bracket or mount, the stand comes off by removing four bolts. The lugs are 100mm VESA compatible.

NEC includes plenty of video interface choices on the down-facing jack panel. From the left we have a DVI-I (analog or digital) port, HDMI and two DisplayPorts, one in and one out for multi-stream configurations. The two small connectors are for ControlSync. That interface allows daisy-chaining of multiple NEC screens to make installation easier. Next is an analog audio input and on the right are the USB 3.0 upstream and downstream ports. A third USB connection is found on the left side along with a headphone output.

3. OSD Setup And Calibration

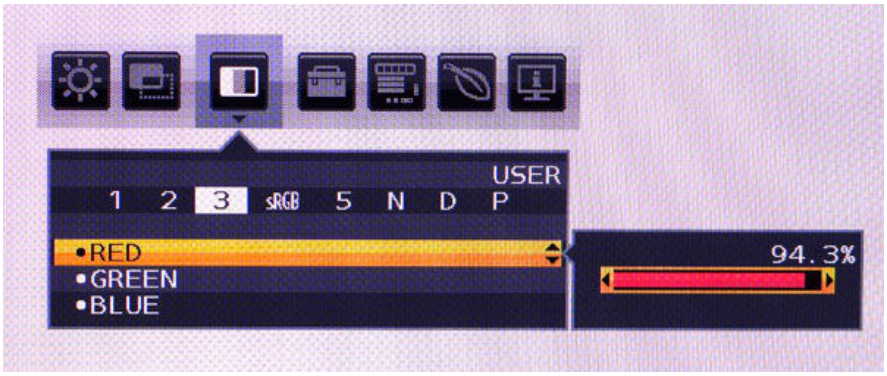
We wouldn't classify the EA305WMi's menus as concise but they are clear and intuitive. There are a tremendous number of options, most of which can be left at their factory settings.

OSD Tour

NEC offers many ways to help save energy and most of them involve the light and proximity sensors embedded in the front of the bezel. In addition to Eco modes that limit the backlight level, one can set the EA305WMi to change its brightness in concert with the room's ambient lighting. The sensors can also detect the presence of the user and power the screen down when no one is sitting in front of it.

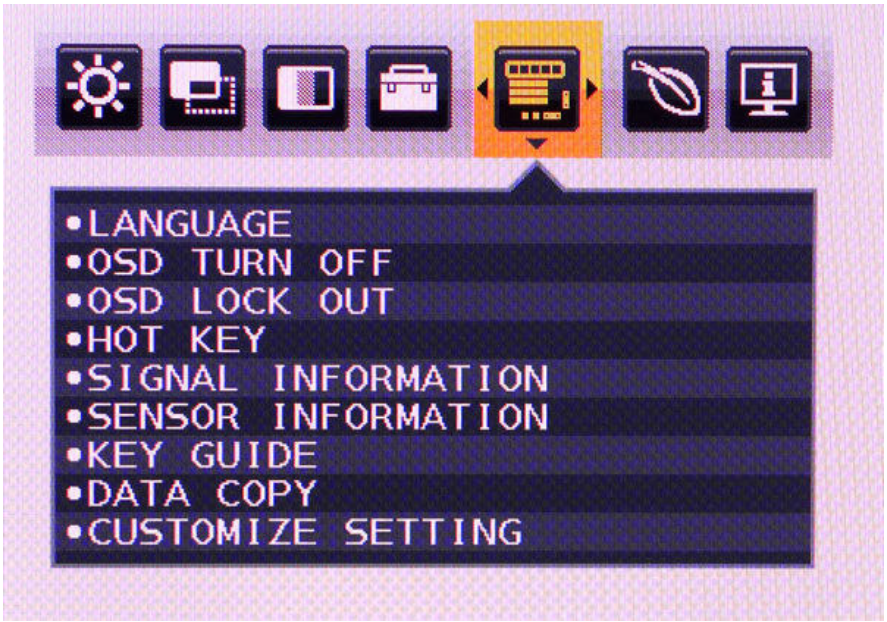
There are six DV modes. Each employs different color temps and brightness settings to tailor the image for specific tasks. Standard is the best out-of-box preset and also makes a good starting point for calibration.

Since the monitor's DVI-I port supports analog signals as well as digital ones, the EA305WMi includes image positioning controls as well as a level threshold setting. At the bottom is a uniformity compensation feature which can either be on or off. Only PA-series screens offer a multi-level option. We'll show you the effects of this in our tests on pages four and seven.

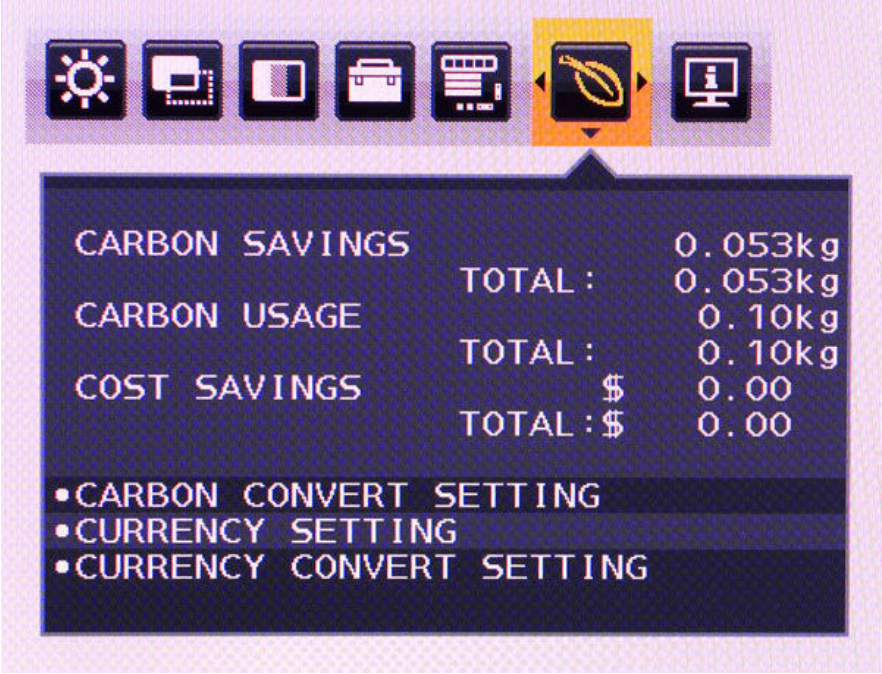


The only calibration options are here in the Color sub-menu. You can choose from eight presets of which sRGB is the default. Numbers 1, 2, 3 and 5 are adjustable and based on different color temps. We used 3 as our starting point.

There are many options here including sound source, input signal detection, overdrive and others. Sound Input can be either from HDMI/DisplayPort or analog. Turning on DP MultiStream allows the connection of multiple monitors to a single video card. MultiPicture is a PBP arrangement that supports the viewing of two sources at once. Response Improve is an overdrive feature that works well at reducing motion blur and doesn't cause visible ghosting. You can also set the brightness of the power LED, configure power-off timers, leave the USB ports powered when the monitor is off and return all settings to their factory defaults.



The OSD is available in nine languages, can be turned off entirely or locked out to prevent unwanted changes. The next group of options refer to various on-screen messages which can be toggled on or off. Data Copy and Customize Setting work with ControlSync software to enable one to configure multiple NEC monitors with a single list of settings.



If you'd like to track the size of your carbon footprint, NEC gives you the tools for that right here. By entering your own specific parameters, you can track your energy usage and cost savings right from the desktop.

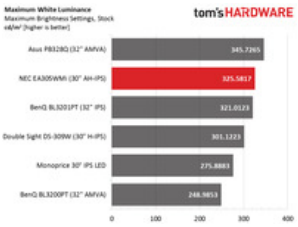
Finally, the Info screen contains input resolution and refresh rate values plus the monitor's serial number.

Calibration

The EA305WMi ships in its non-adjustable sRGB color mode which proved a little too red. Switching to number 3 resulted in a green tint but with a few tweaks of the RGB sliders, excellent grayscale tracking was achieved. This monitor is a wide gamut panel and we found it exceeded the target saturation levels for Adobe RGB in red, magenta and blue. There is no option for an sRGB colorspace nor can you choose one in NEC's SpectraView calibration software. Gamma proved to be perfect with or without calibration. If you want a standard other than 2.2 however, there are no additional presets provided. Below are our calibration settings.

NEC EA305WMi Calibration Settings	
Brightness 200cd/m2	69
Brightness 120cd/m2	38

Brightness 100cd/m2	30
Brightness 80cd/m2	23
Brightness 50cd/m2	12
Color Temp 3	Red 94.3, Green 93.2, Blue 94.8



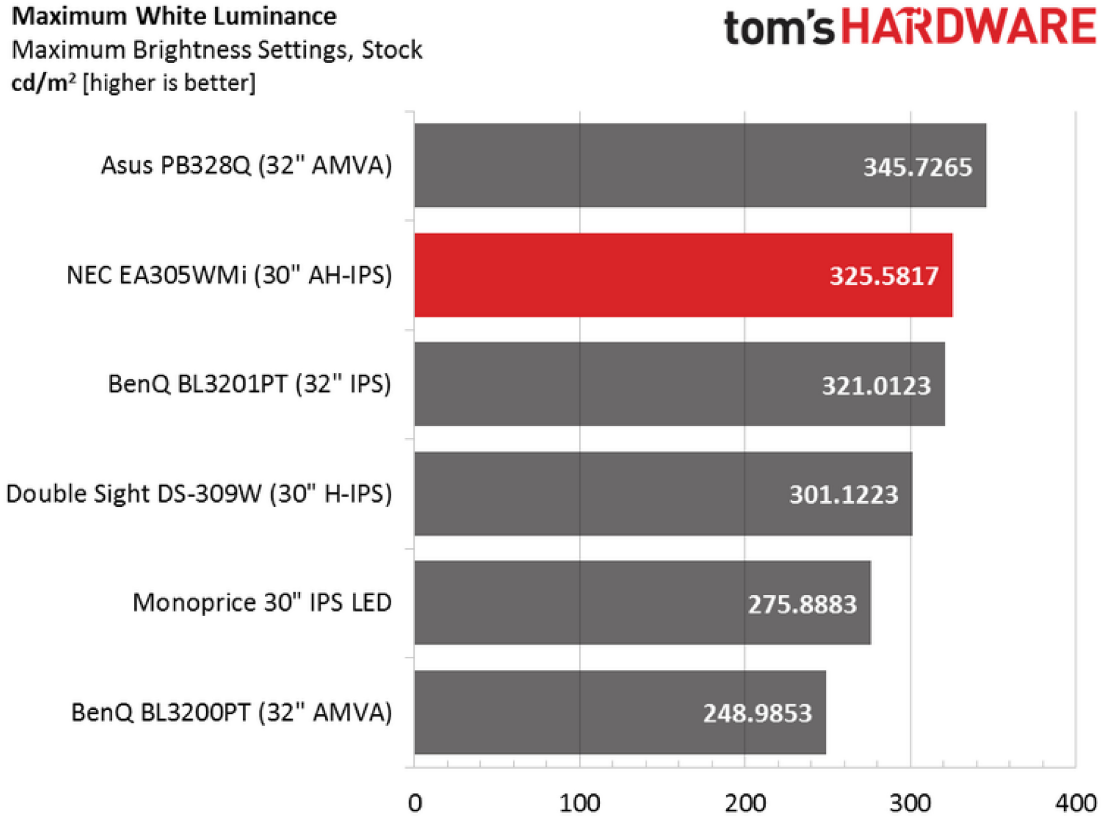
4. Brightness And Contrast

To read about our monitor tests in-depth, please check out Display Testing Explained: How We Test Monitors and TVs. Brightness and Contrast testing is covered on page two.

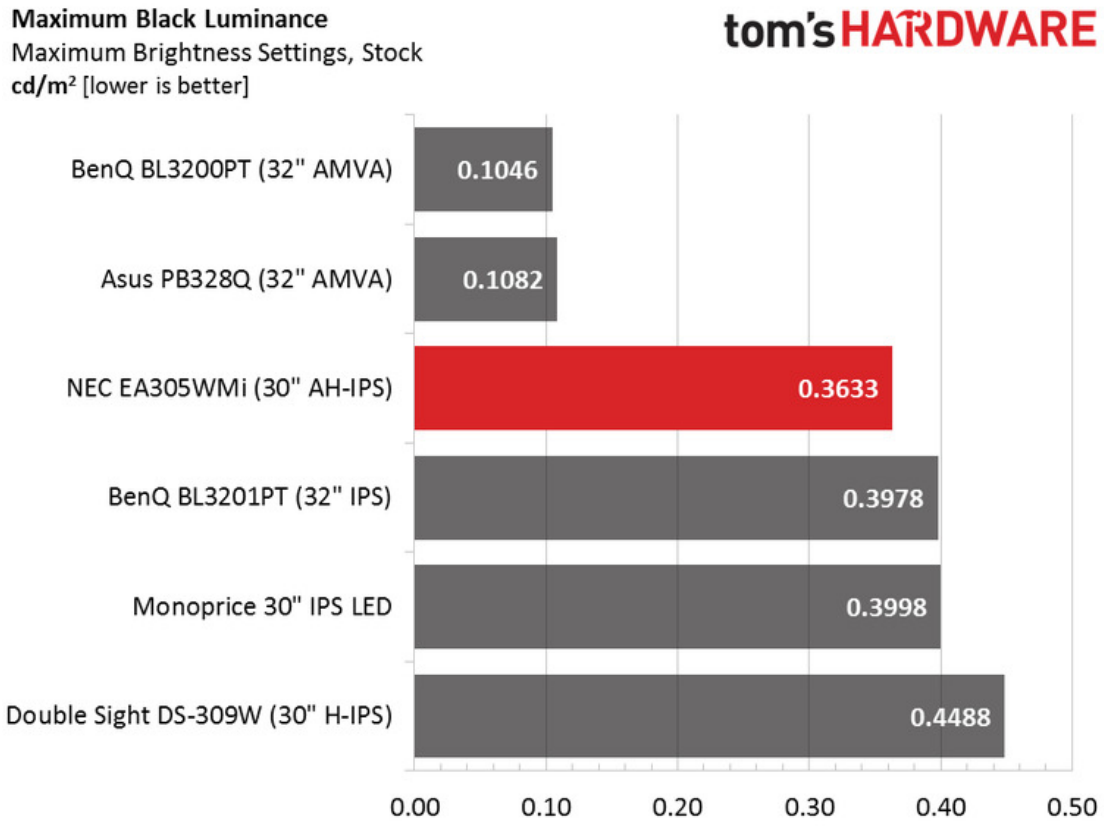
				
Asus PB328Q	**BenQ BL3200PT**	**BenQ BL3201PT**	**DoubleSight-DS-309W**	**Monoprice 30-inch...**
Read the Review	Read the Review	Read the Review	Read the Review	Read the Review

Uncalibrated – Maximum Backlight Level

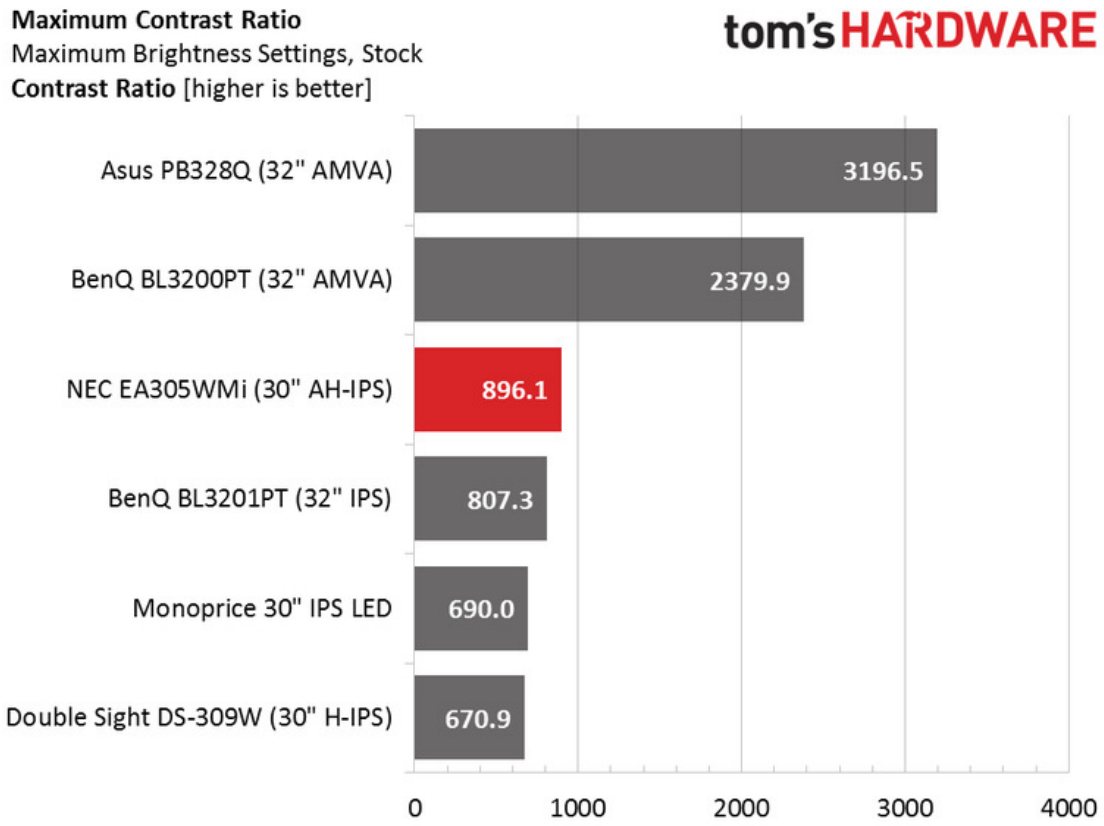
Amazingly, the DoubleSight DS-309W is still being manufactured even though we reviewed it in 2013. That and the MonoPrice 30" IPS are the only 16:10 panels in our database. To round out the group, we've added three other jumbo panels: the Asus PB328Q, plus BenQ's BL3200PT and BL3201PT which is the only Ultra HD screen in the roundup. The rest are QHD.



NEC specs the EA305WMi at 350cd/m^2 but our sample measured a little under that. When a panel is this large, 325.5817cd/m^2 is a lot of output and you'll never need to turn the brightness all the way up unless you're working outdoors.

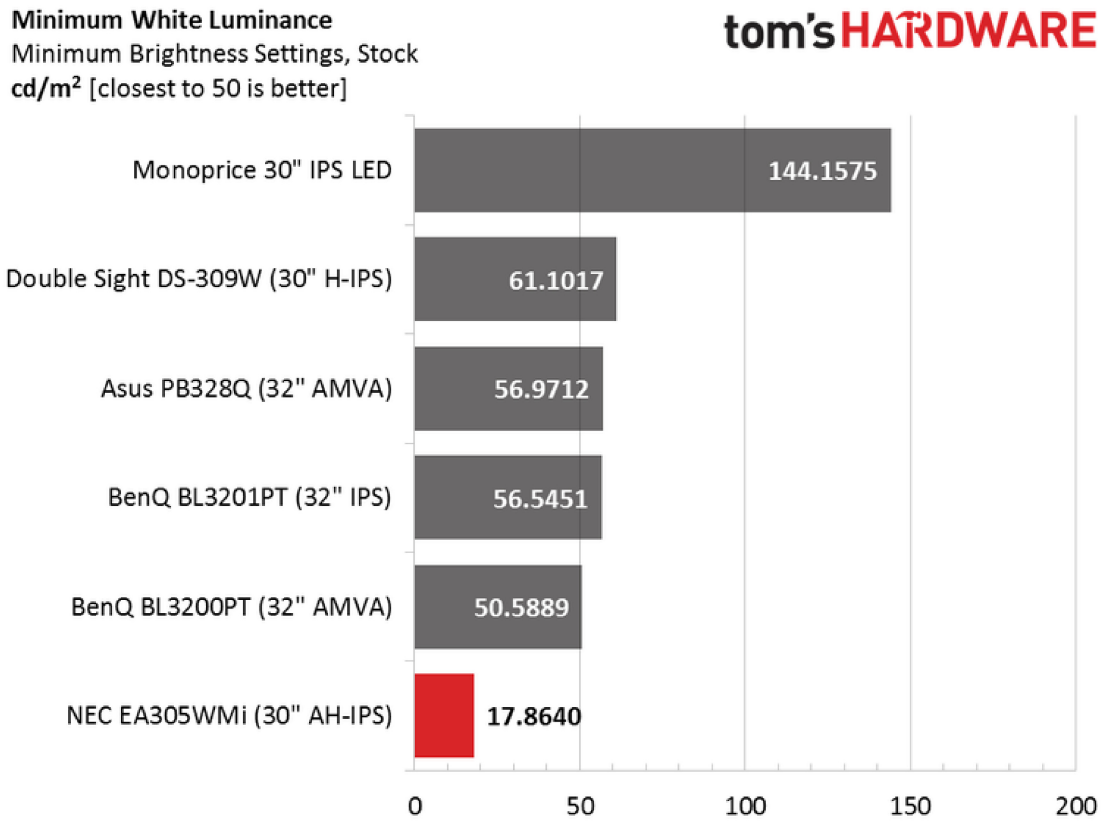


The results are a little skewed thanks to the inclusion of two VA panels in the mix. Of the rest, NEC delivers the lowest black level.

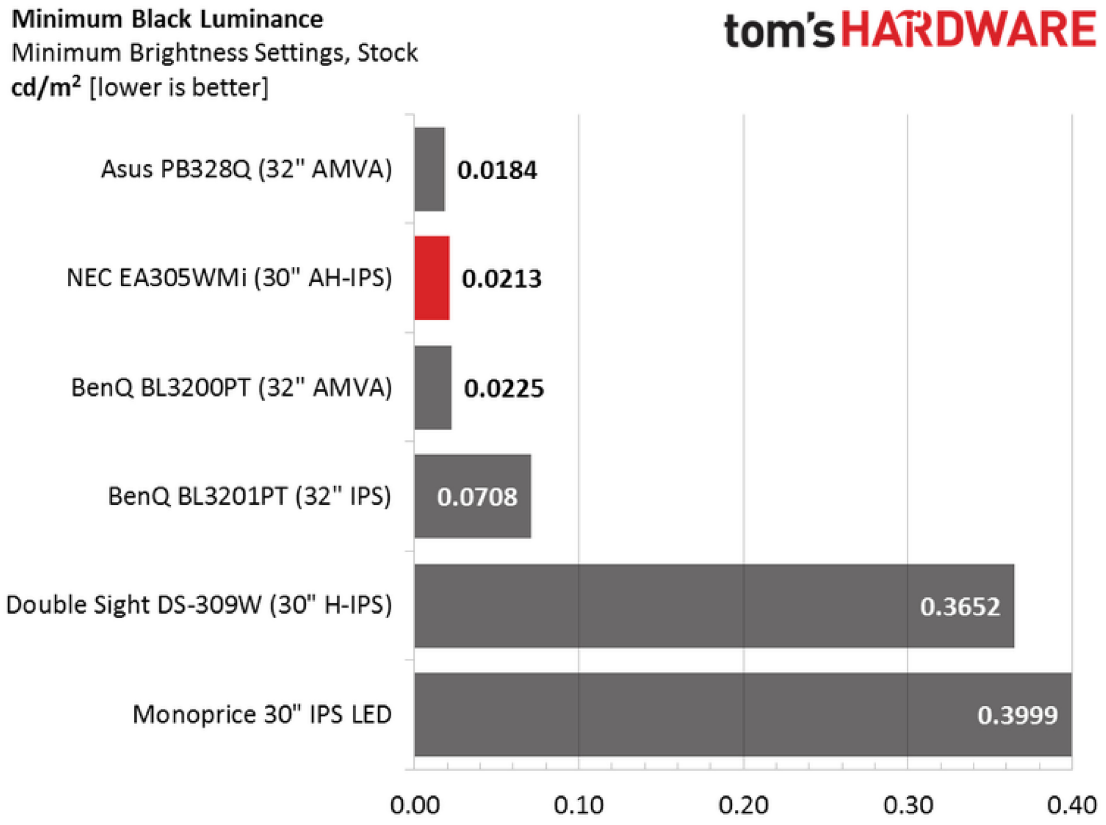


896.1:1 contrast is not stellar but the EA305WMi is the best-performing IPS panel of the group. In looking over our results for previous large panels (30 and 32 inches) we see only a couple that have higher contrast. So it seems that smaller monitors have a slight advantage in this metric. Of course VA will always score higher regardless of screen size.

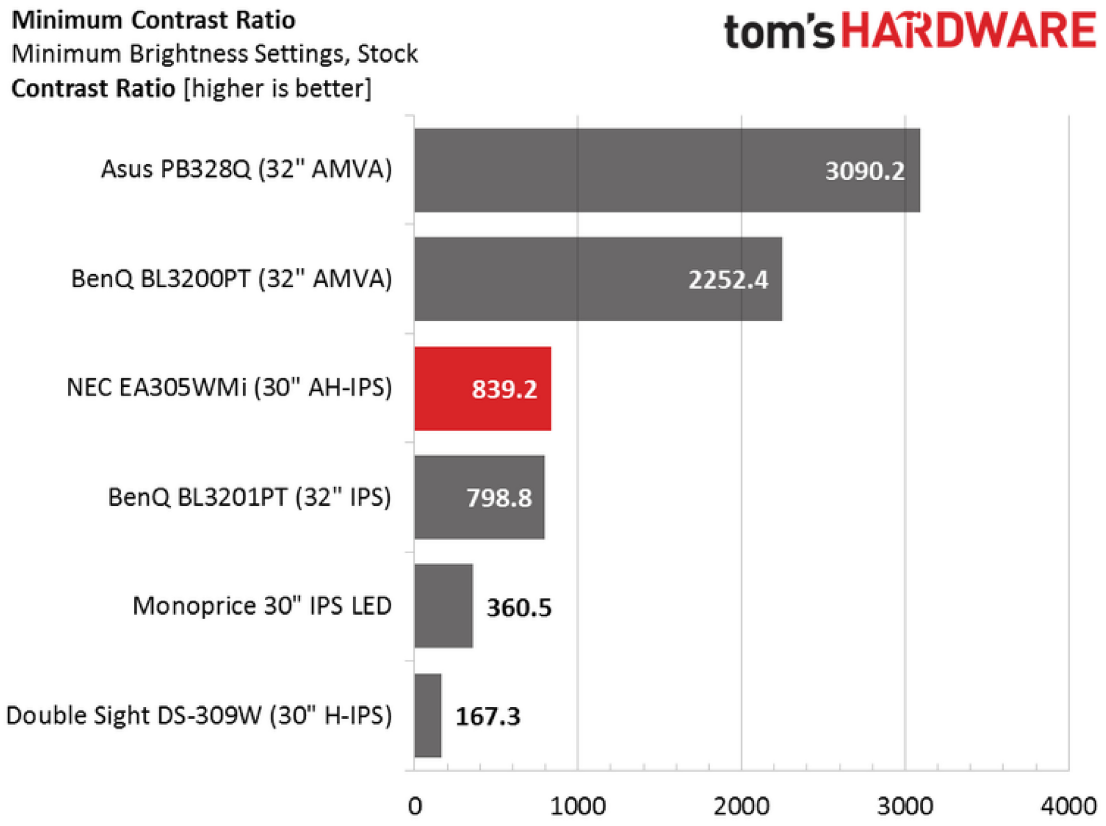
Uncalibrated – Minimum Backlight Level



NEC monitors always have extremely low minimum backlight settings. Many of them drop into the single digits in fact. We're not sure when you'd need so little output but if you do, the EA305WMi can fulfill that requirement. Setting the backlight on 12 will get you 50cd/m^2.

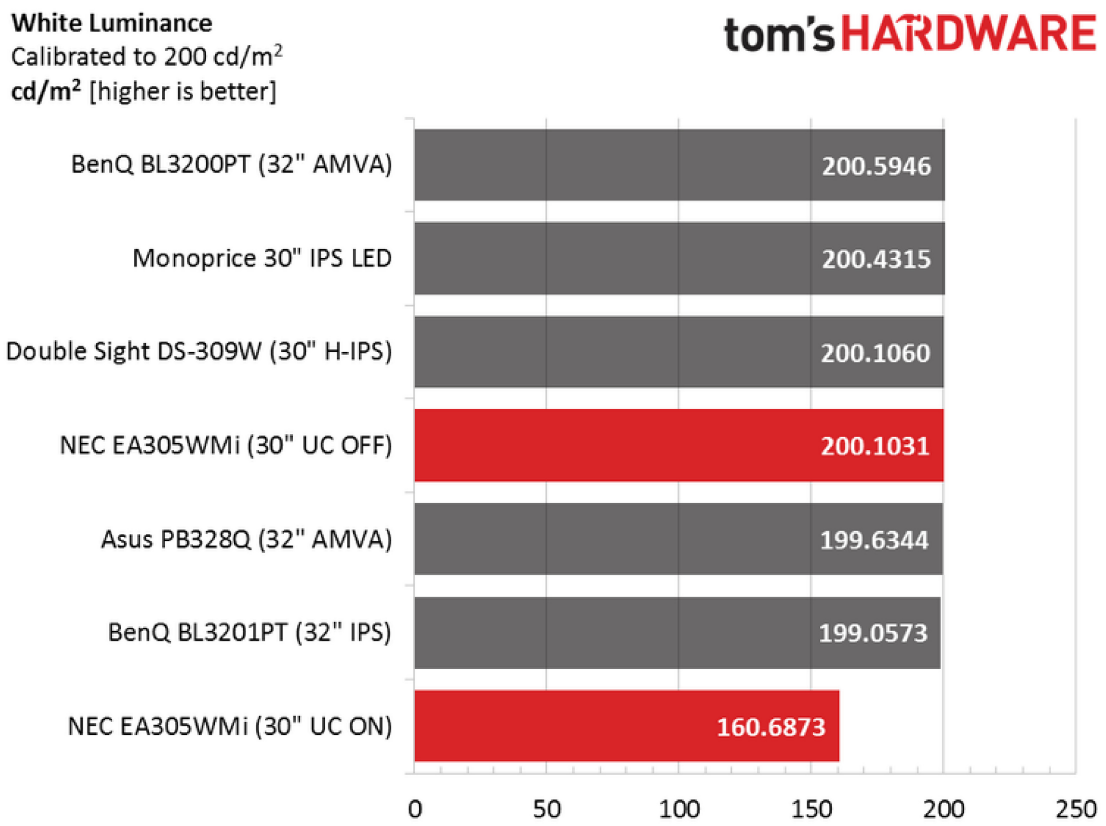


The super-low backlight setting results in a correspondingly-low minimum black level; even beating one of the VA panels in the group.

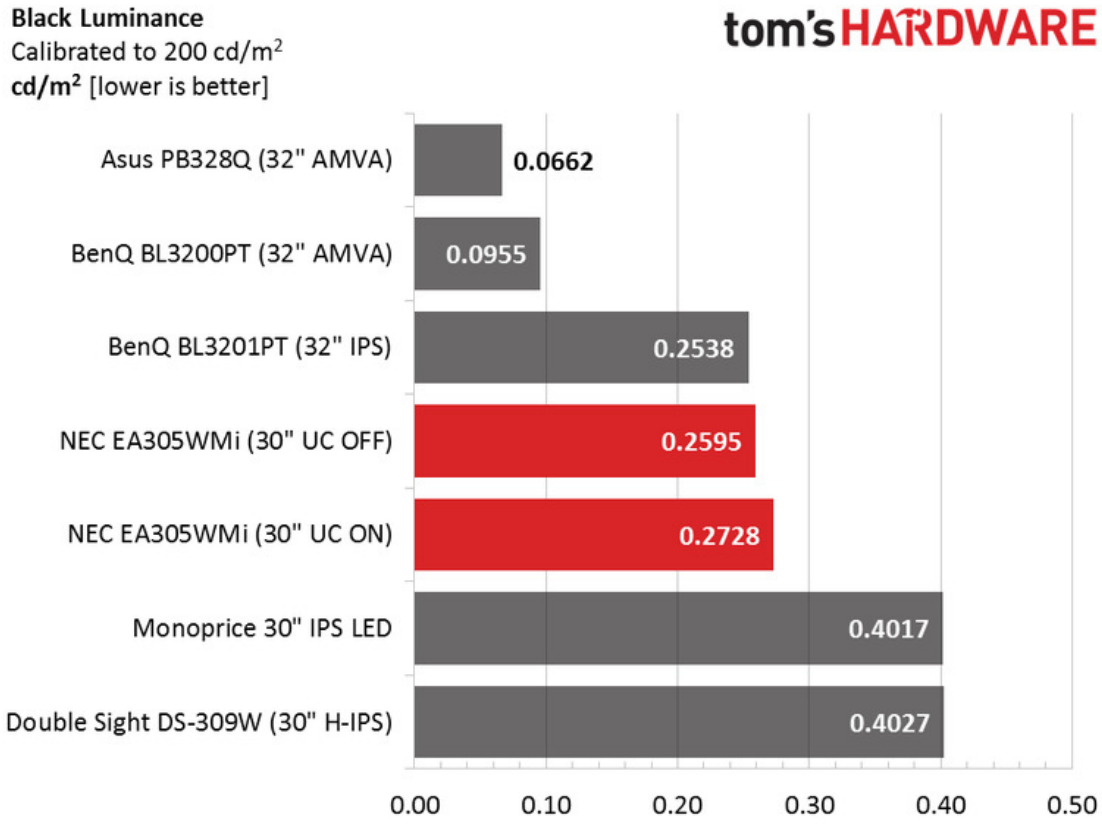


If the minimum white level were closer to 50cd/m^2 we'd be concerned by a seven-percent swing in contrast. But when we increase the brightness control to 12, the contrast ratio is a more-expected 882.3:1. There is no difference in image depth or quality when the backlight is set between 12 and 100. Below 12 you'll see just a tad less punch.

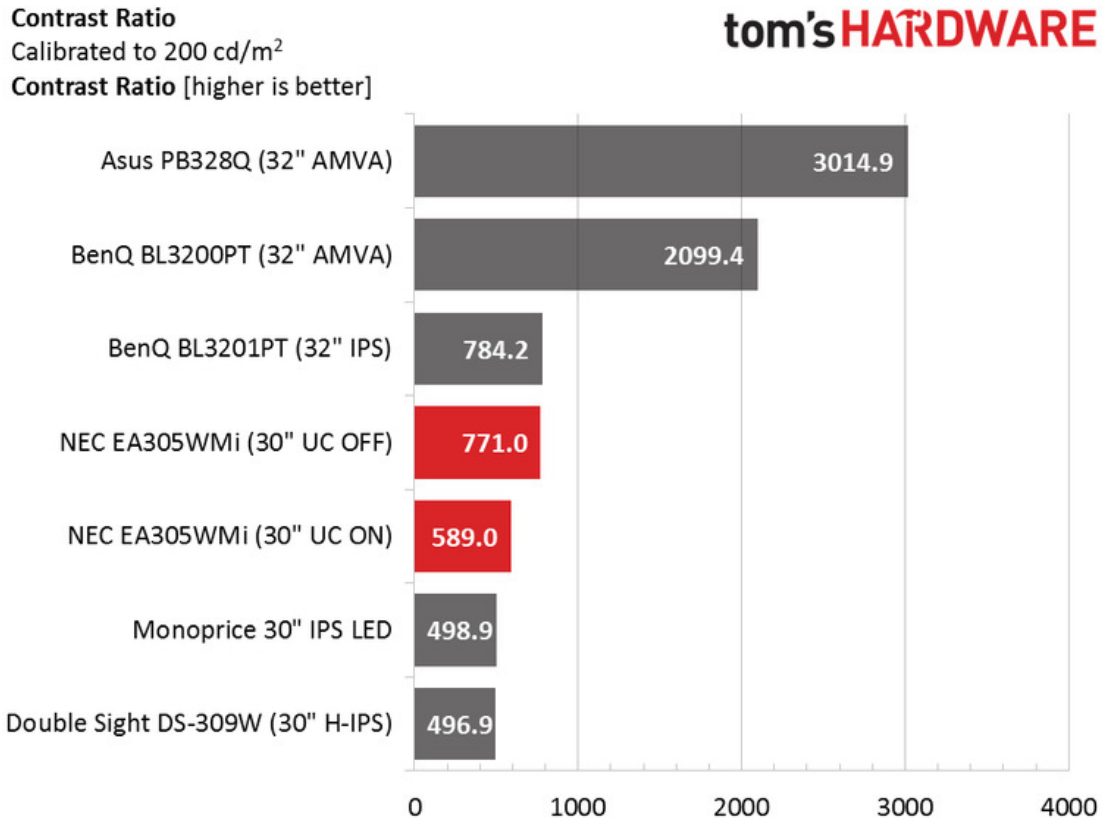
After Calibration to 200cd/m^2



The EA305WMi's uniformity compensation is fairly sparing in its application. It mainly affects the upper end of the brightness scale reducing output by 20-percent. As you'll see in our uniformity tests, it isn't really needed on our sample but it is there if you want to use it.

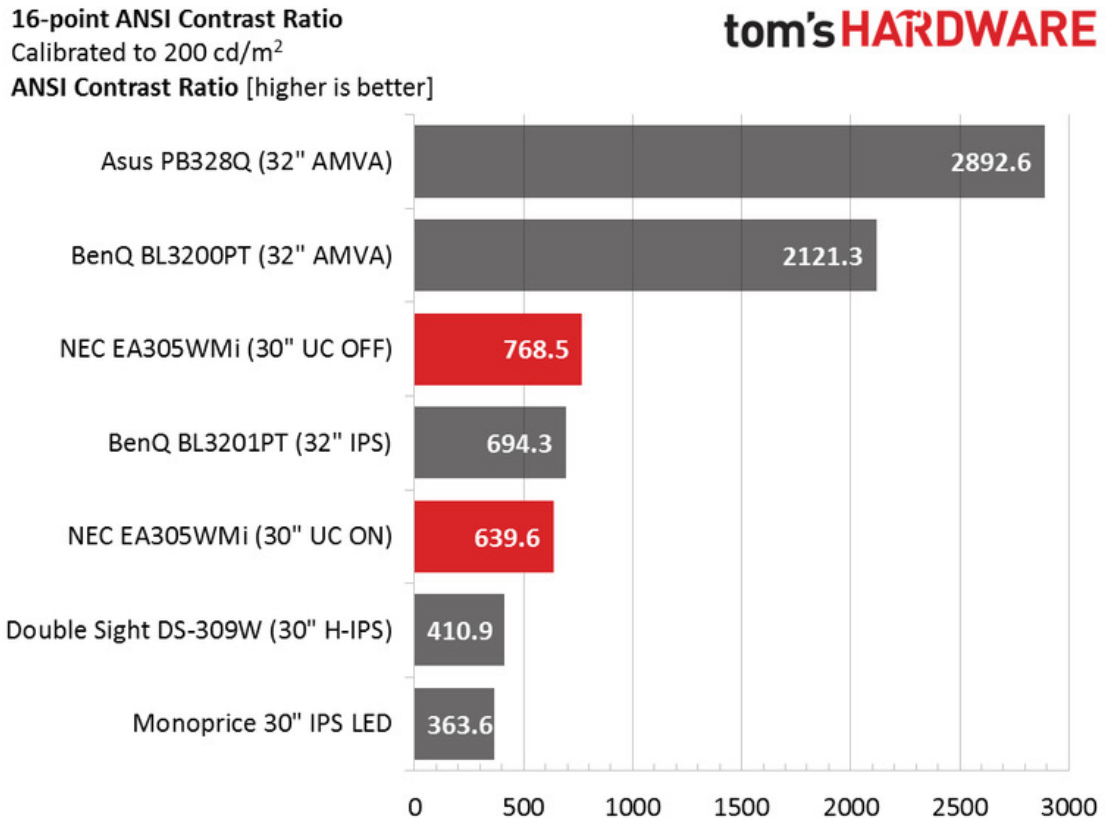


UniComp raises the black level just a bit which will further reduce the panel's sequential contrast.

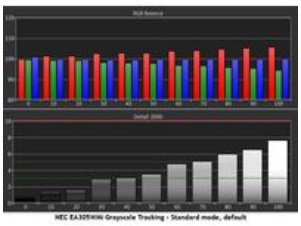


The end result of uniformity compensation is a 23-percent reduction in contrast. Considering the modest gains we saw in our tests on page seven, we don't think its benefits outweigh the negatives. Even without it, calibration reduces contrast by 14 percent. This is mainly because the RGB controls start at or near their maximums. If they started center-range, more contrast could be preserved.

ANSI Contrast Ratio



Despite less-than-inspiring contrast numbers, our ANSI test shows a top-shelf grid-polarizer is being used. And interestingly, the uniformity compensation has less effect here. That result is eight-percent **higher** than the sequential one which is something we rarely see. So even though UC makes only a small impact on uniformity, it doesn't harm intra-image contrast as much as other monitors we've tested with the feature.



5. Grayscale Tracking And Gamma Response

Our grayscale and gamma tests are described in detail here.

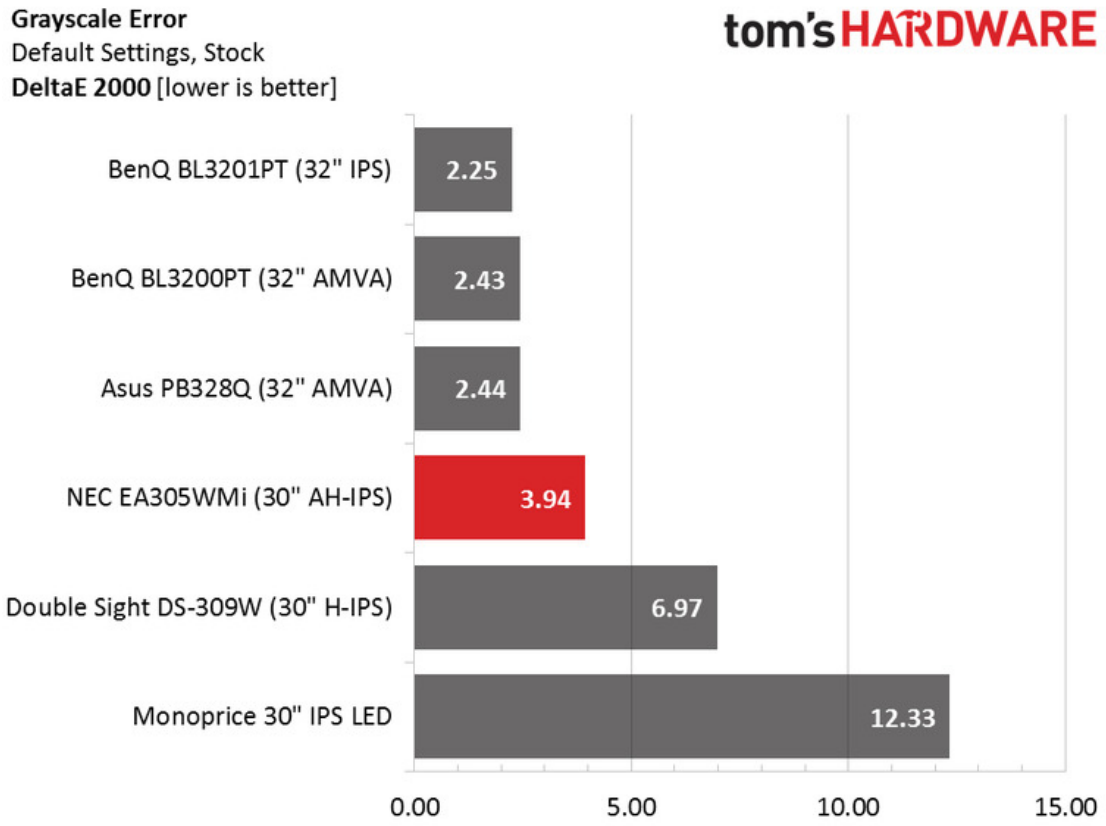
NEC EA305WMi Grayscale Tracking - Standard mode, default

We would call this a middling out-of-box result. We've tested quite a few monitors of late that track better at their factory settings. In our opinion, the sRGB mode, which is non-adjustable, is just a little too warm at higher brightness levels. The background of a spreadsheet or browser window will look red if you're accustomed to a calibrated screen. Fortunately the fix is an easy one.

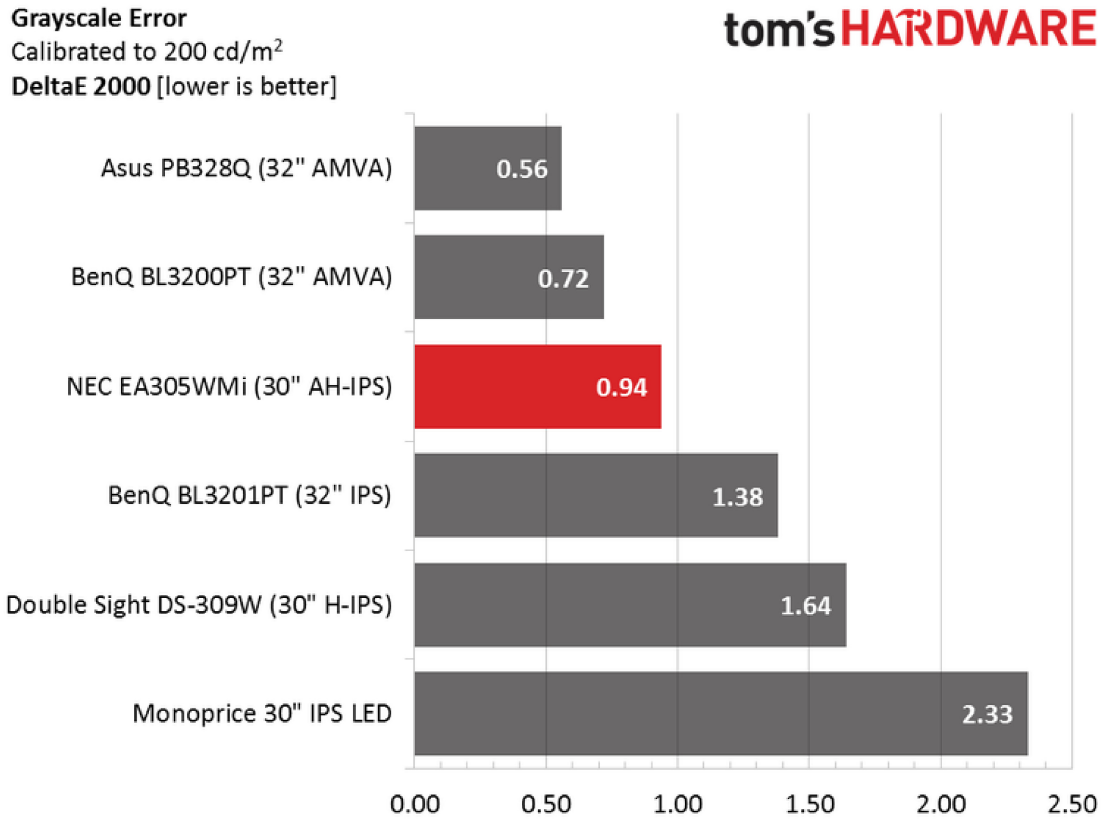
NEC EA305WMi Grayscale Tracking - Standard mode, calibrated

We switched to the next coolest preset, number 3, and adjusted the RGB sliders to achieve an excellent result. You can also dial in grayscale using NEC's SpectraView software and an appropriate colorimeter.

Here is our comparison group.

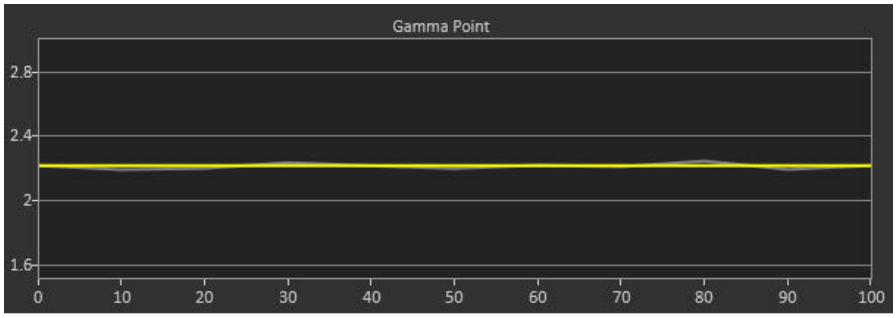


We've seen a recent trend towards better out-of-box color accuracy in every computer monitor market segment. The EA305WMi is OK but it could be better given the competition and its premium price-tag.



Like every other NEC monitor we've reviewed, it's easy to calibrate the EA305WMi to a high standard. While all of these screens perform well when properly adjusted, the NEC, along with the top two screens, excel by falling below the 1dE threshold.

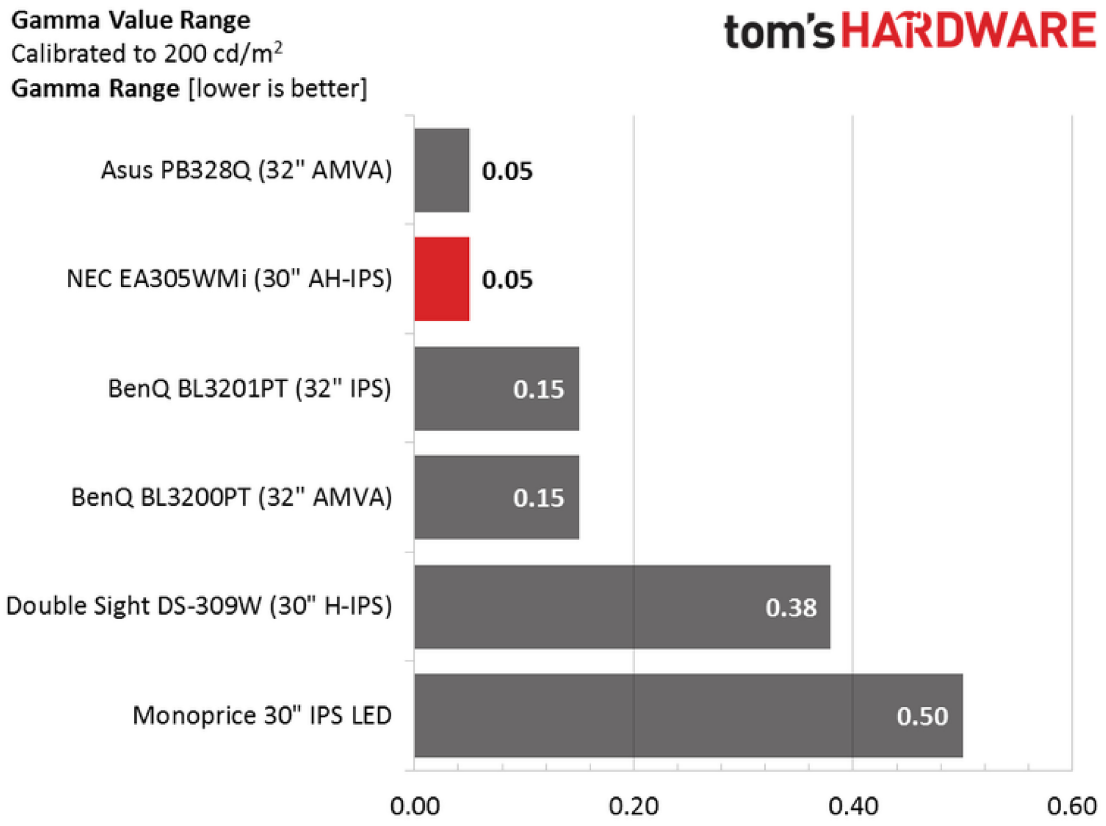
Gamma Response



NEC EA305WMi Gamma Tracking

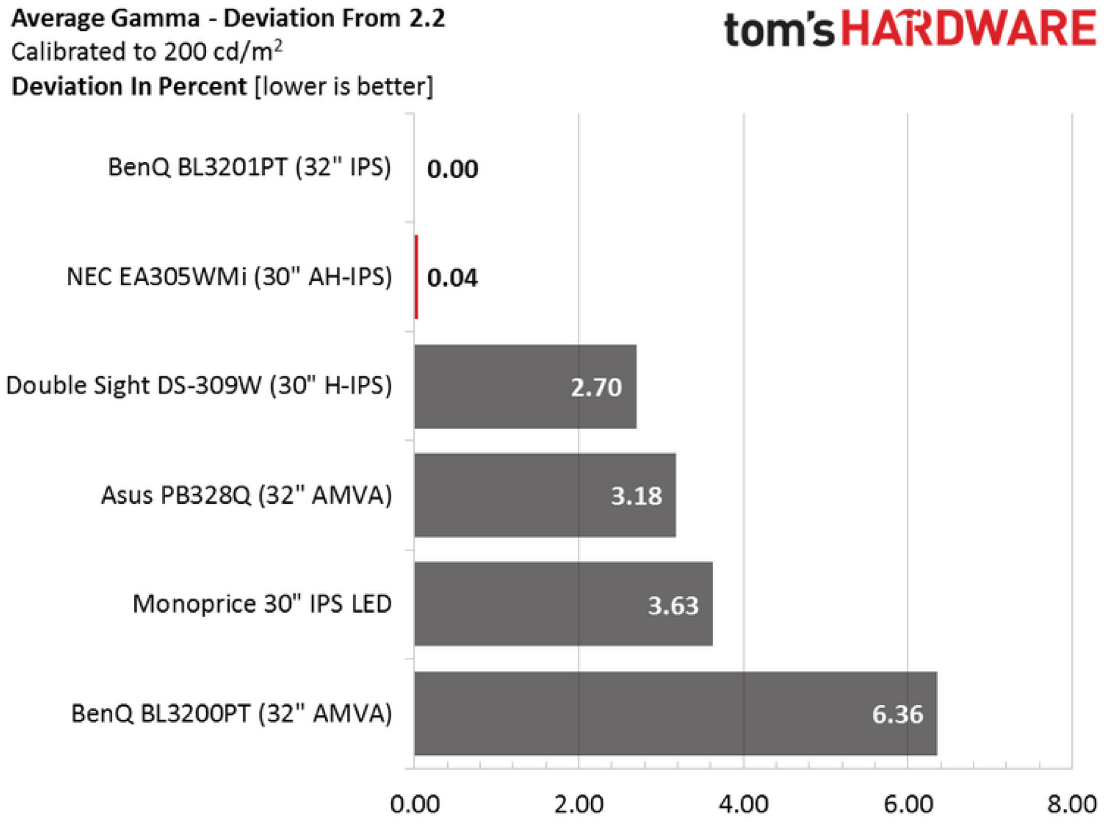
The one area where the EA305WMi is beyond reproach is gamma tracking. The above chart is about as close to perfect as is possible. This helps make up for its lower contrast numbers. With perfect output levels at every signal point, you'll see maximum image depth and full detail regardless of brightness.

Here is our comparison group again.

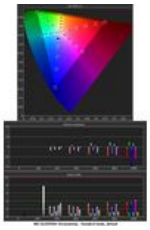


.05 percent is the tightest tracking we've measured from any display though that record is shared by the PB328Q. The values are so close they almost match the tolerance of our luminance meter.

We calculate gamma deviation by simply expressing the difference from 2.2 as a percentage.

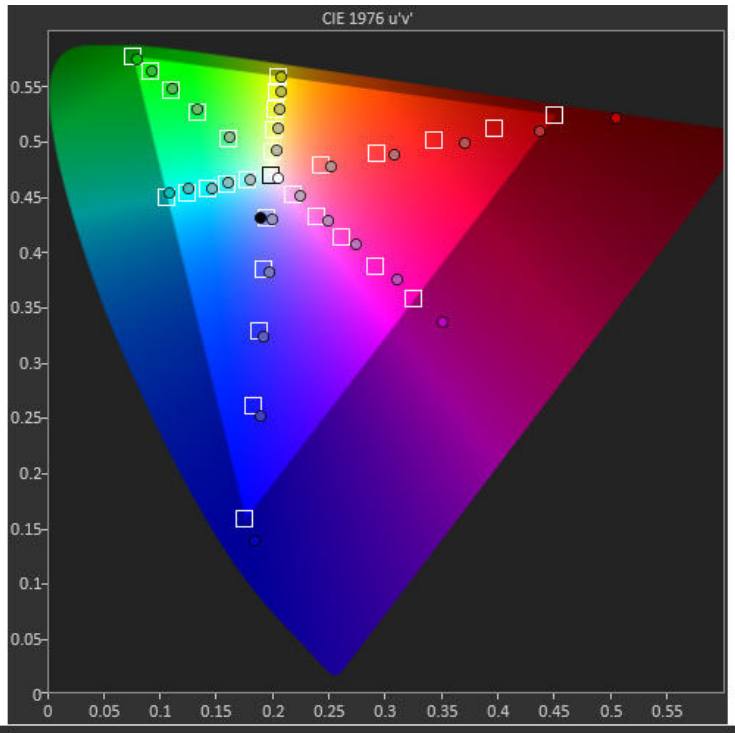


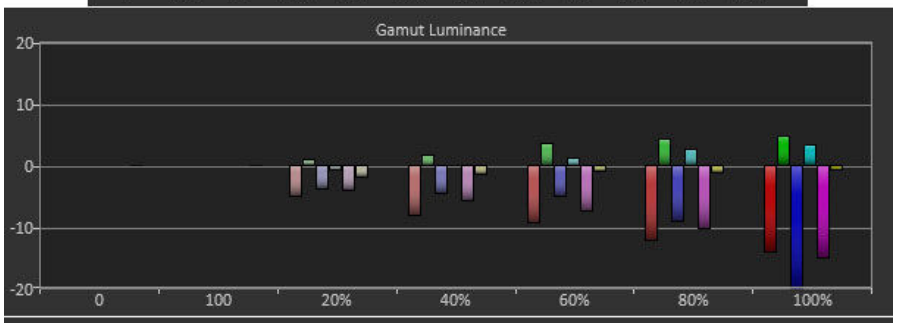
Gamma can track well but still be off the 2.2 standard as we've found on some screens. This is not the case for the EA305WMi. It rides the line so closely you can barely see the actual trace through the reference line.

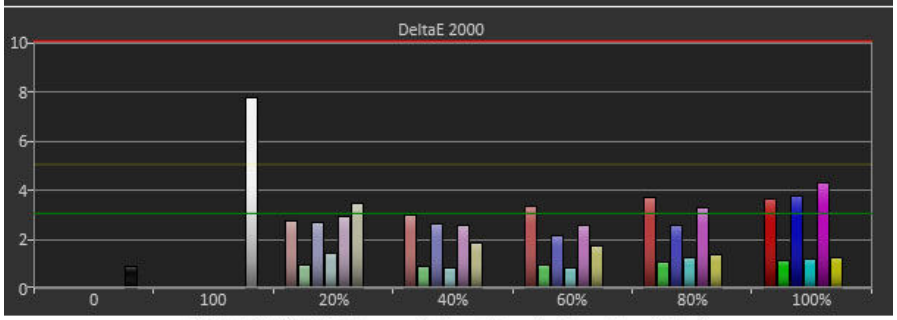


6. Color Gamut And Performance

For details on our color gamut testing and volume calculations, please click here.

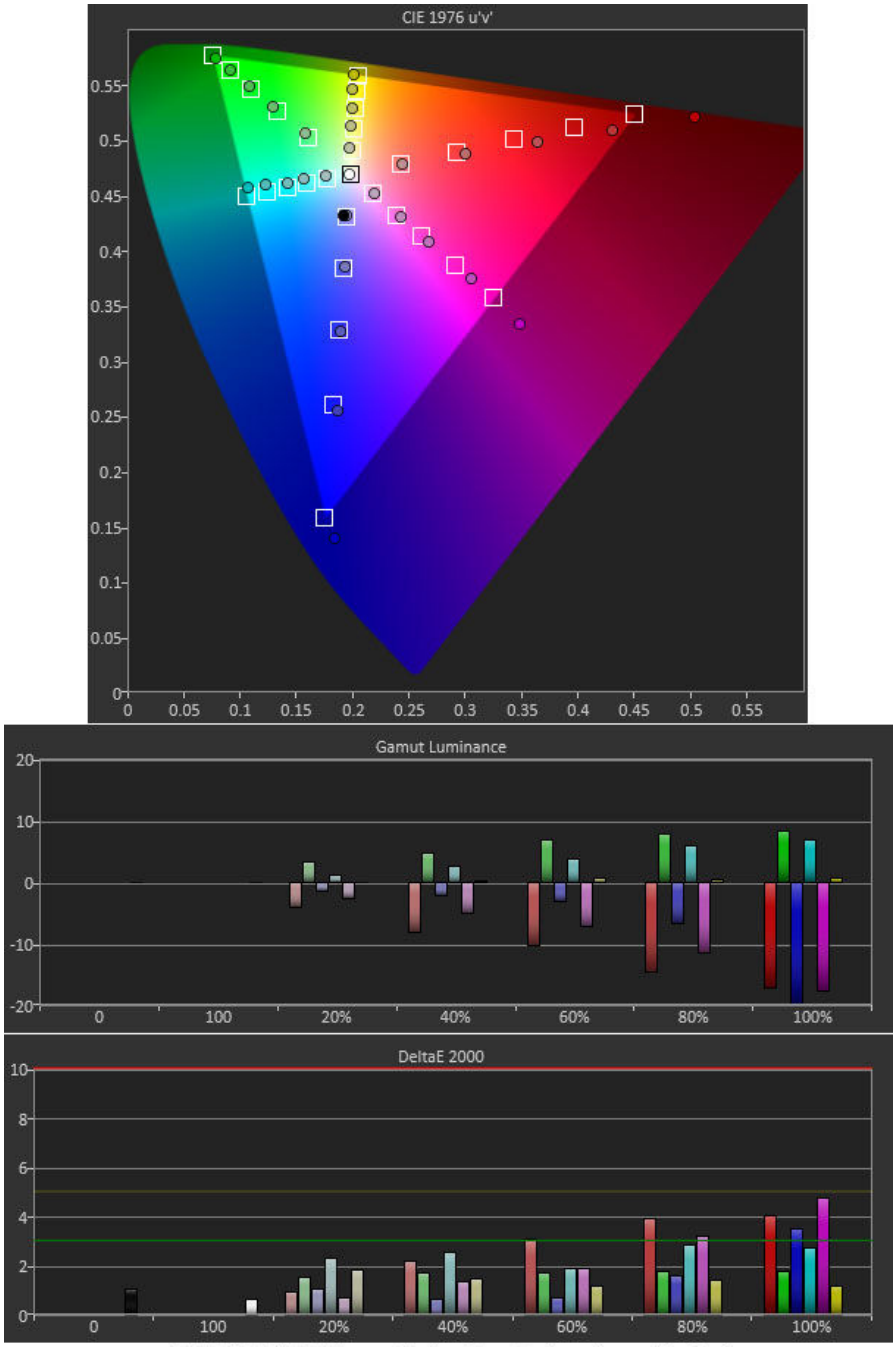






NEC EA305WMi Chromaticity - Standard mode, default

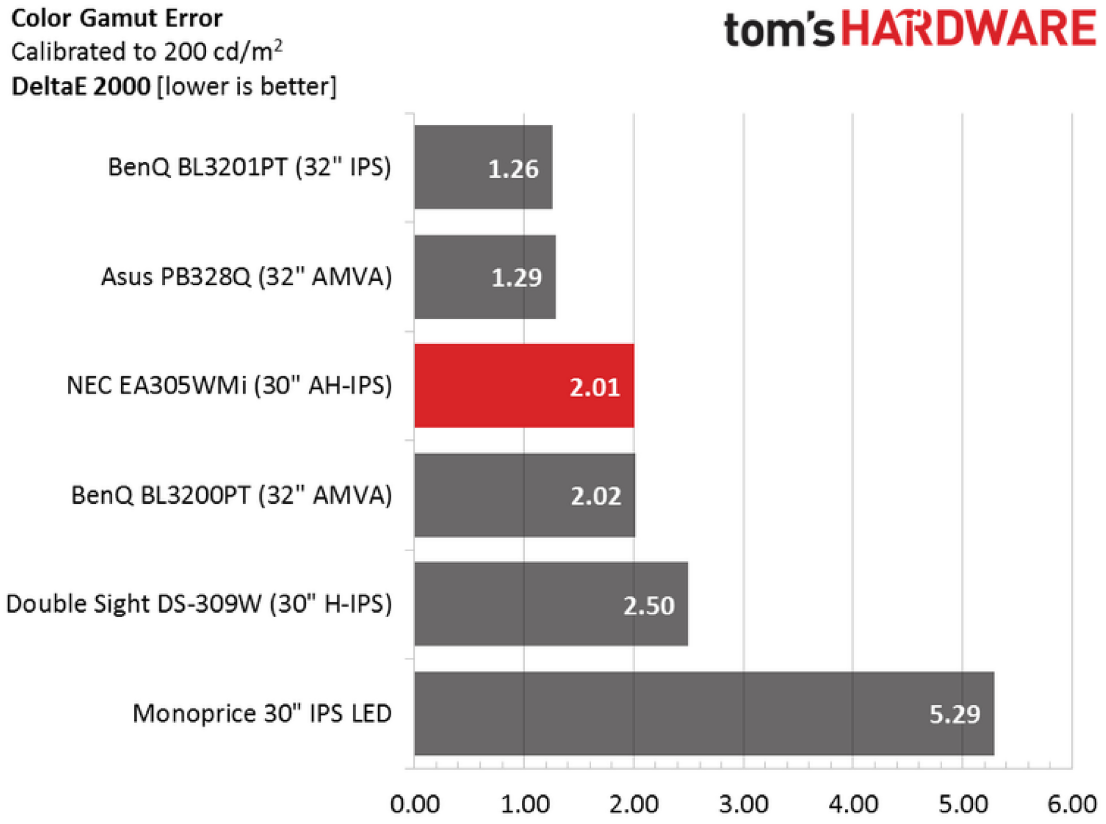
We measured the EA305WMi against the Adobe RGB gamut. There is no sRGB option in the OSD. On the cyan/green/yellow side, saturation targets are spot-on. On the red/magenta/blue side however, there is over-saturation especially in red. The monitor is not intended for color-critical work and reds will look a little more vivid in normal content. NEC has engineered lower luminance levels for those colors to compensate so overall errors are low.



NEC EA305WMi Chromaticity - Standard mode, calibrated

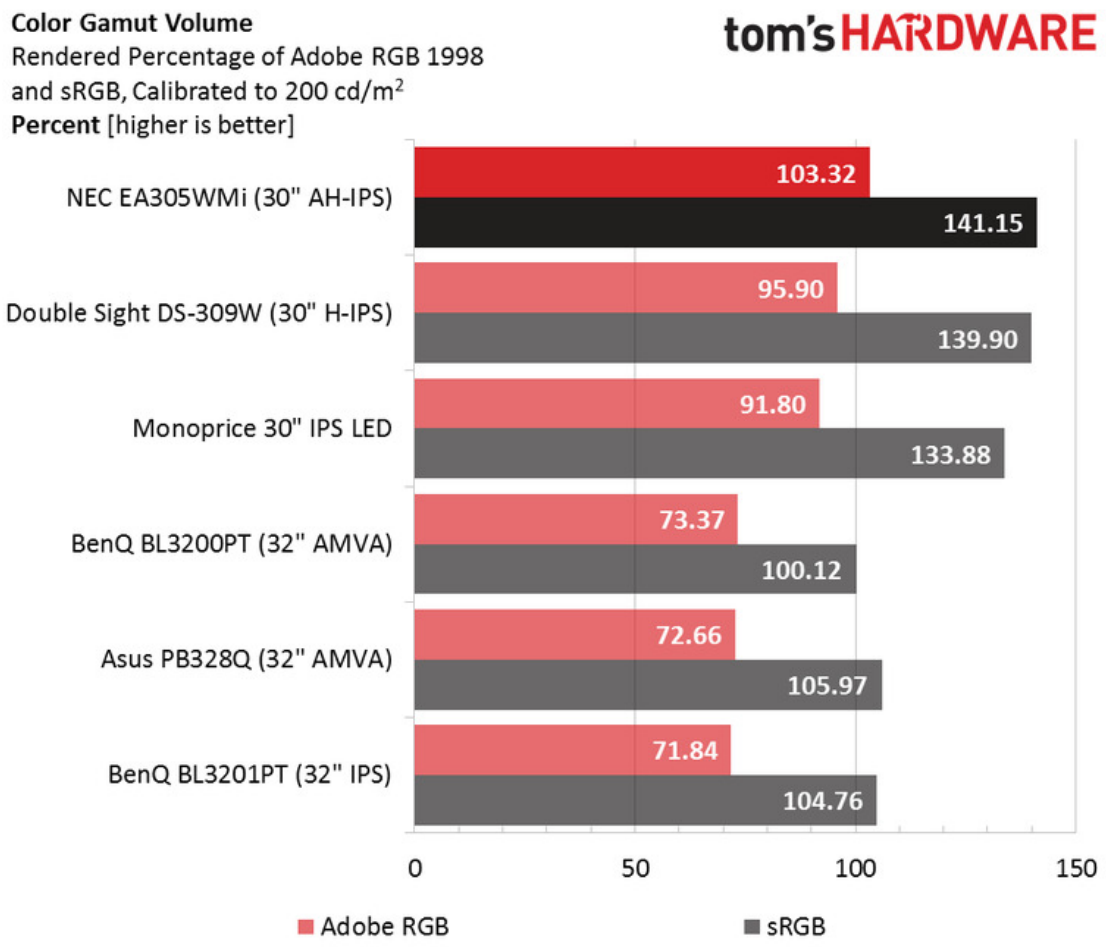
The principal gain from grayscale calibration is that magenta is now right in line with its hue targets. It's still over-saturated but phasing from blue to red is as it should be. Luminance levels are unaffected and the average error has been reduced by 15-percent.

Now we return to the comparison group.

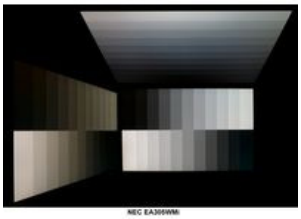


2.01dE is a respectable mid-pack result in this group of jumbo screens. EA-series monitors are aimed at the enterprise rather than the color-critical professional so this is a perfectly acceptable level of performance.

Gamut Volume: Adobe RGB 1998 And sRGB

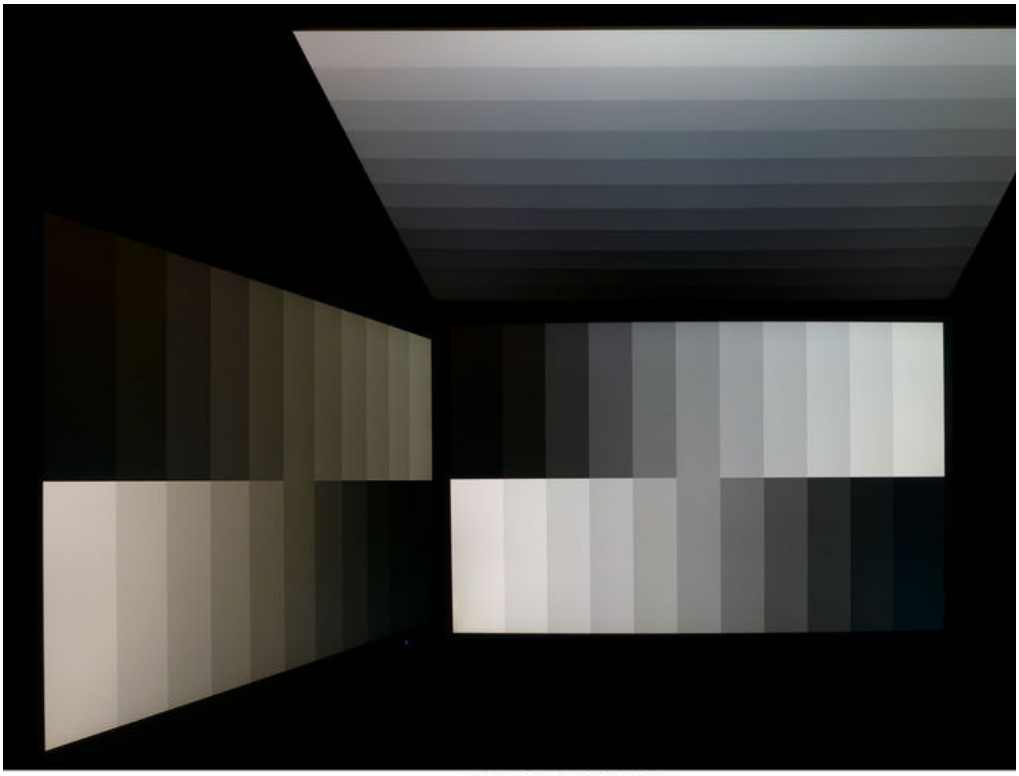


The benefit of a large gamut is bright and vivid color no matter what the content. Even though the sRGB and Adobe RGB standards are exceeded, picture quality is high. If you want to take advantage of this, a software color profile can help match up your other devices like cameras and printers. And it is better to have too much color than too little. You can always reduce a gamut but you can't expand it.



7. Viewing Angles, Uniformity, Response And Lag

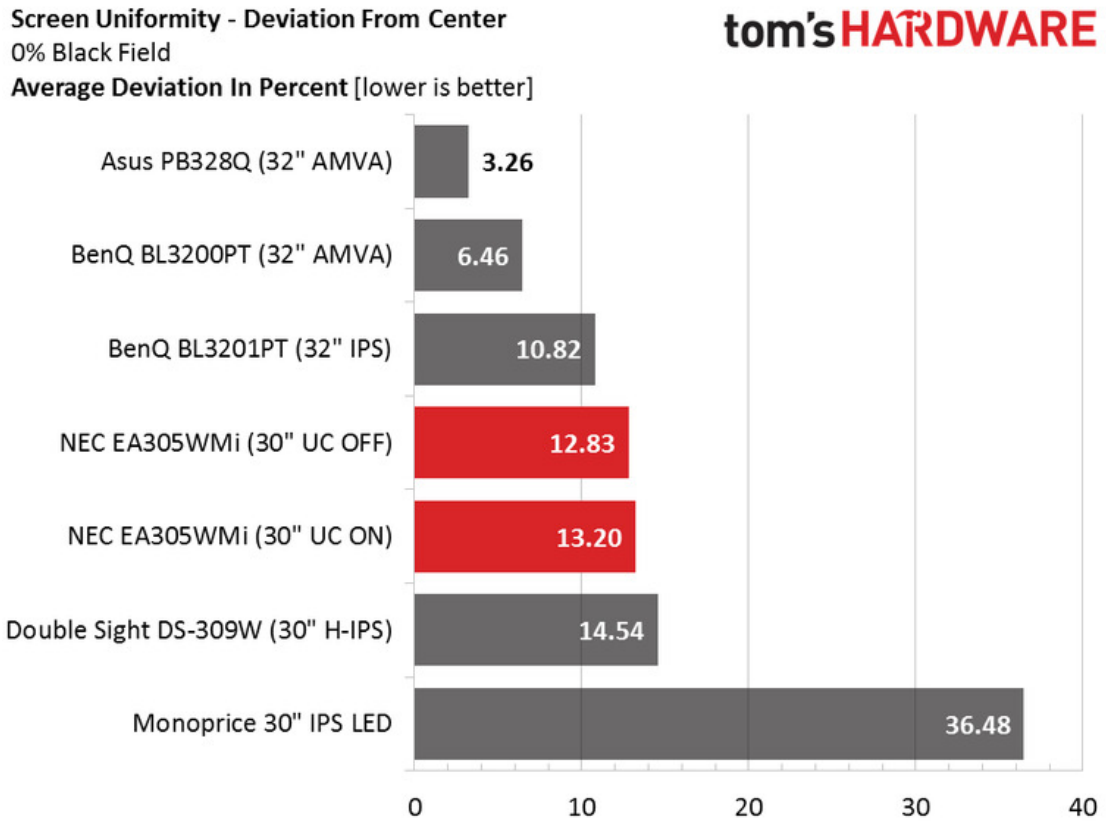
To learn how we measure screen uniformity, please click here.



NEC EA305WMi

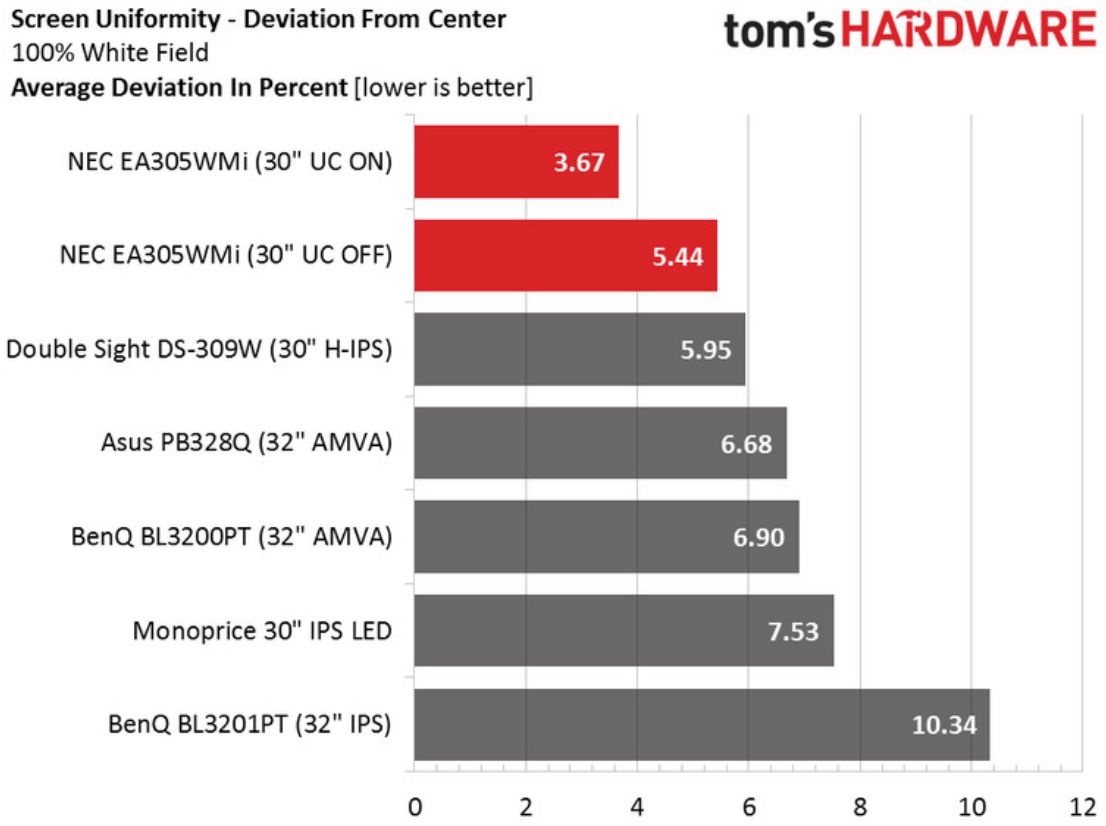
Off-axis quality is typical for an IPS panel. To the sides we see a shift towards green along with about a 50-percent light reduction. From the top there's a similar drop in output and no appreciable change in color. The only panel tech that has made significant strides in this area has been AHVA which is a variation of IPS found in a few of the gaming monitors we've tested.

Screen Uniformity: Luminance



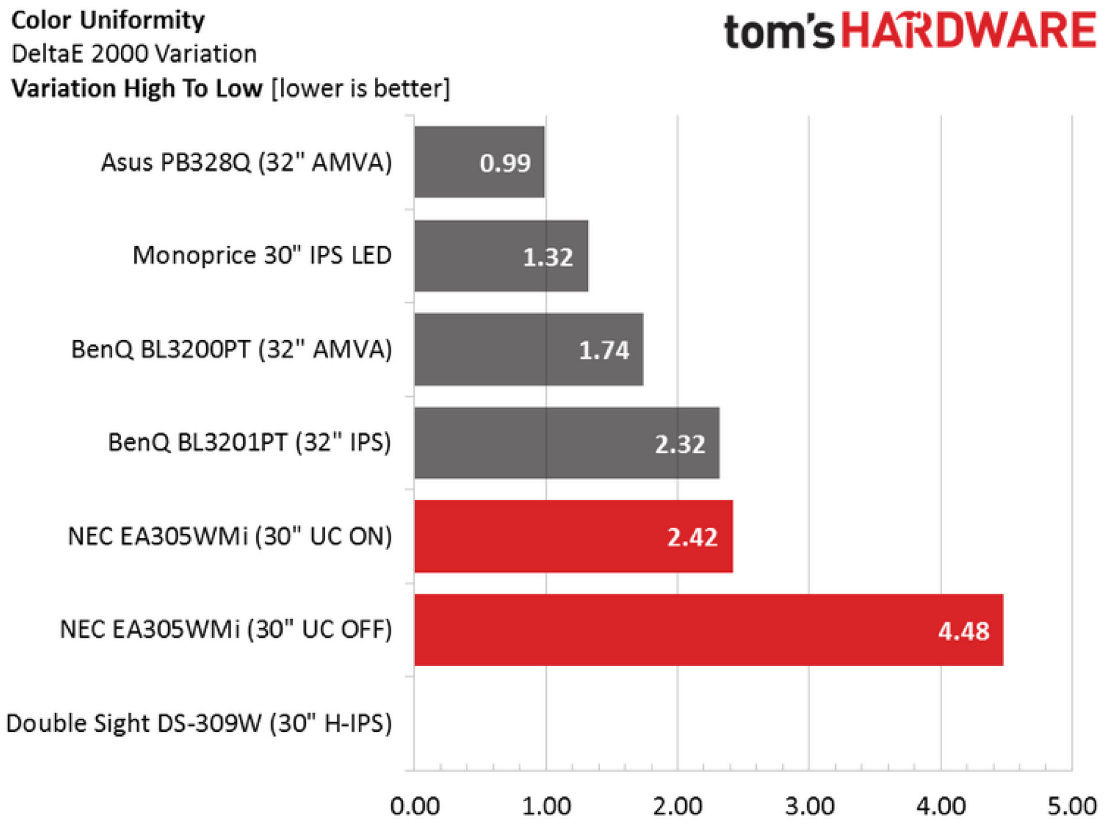
Our EA305WMi sample shows decent uniformity except for a bright spot in the lower right zone. This one measurement was the spoiler because without it, the final number would have been much lower. You can see the compensation doesn't do much here. Making a significant change in this particular monitor would require an unacceptable increase in black level.

Here's the white field measurement.



The compensation does improve white field uniformity by 33-percent but the result without is still ahead of the majority of displays in our database. As we stated earlier, it's a conservative feature. It makes a small improvement in uniformity and causes a small drop in contrast.

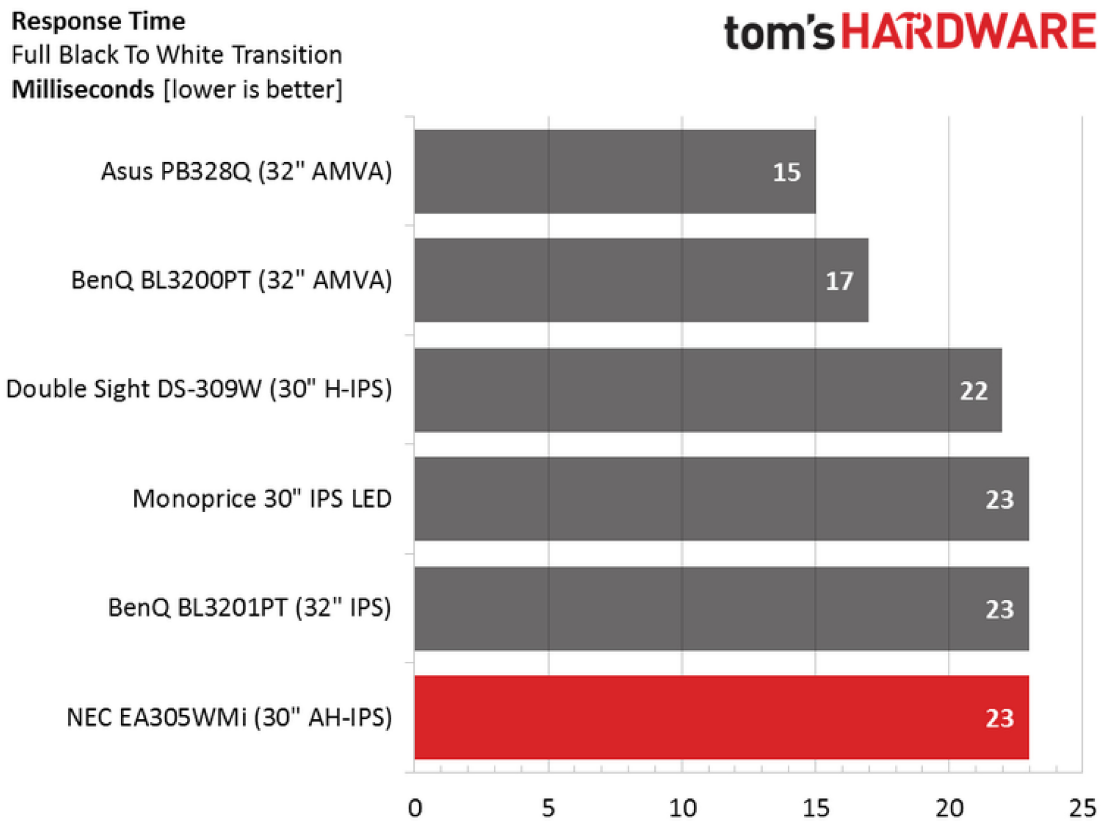
Screen Uniformity: Color



When we reviewed the DS-309W we weren't recording color uniformity measurements so we don't have a result for that screen. Our EA305WMi sample is affected by an area of green tint in the upper right. Turning on the compensation eliminates that issue so you might want to use it if your content has a lot of large white areas. We believe the image still looks best when UC is turned off and the anomalies we measured didn't affect the content we viewed.

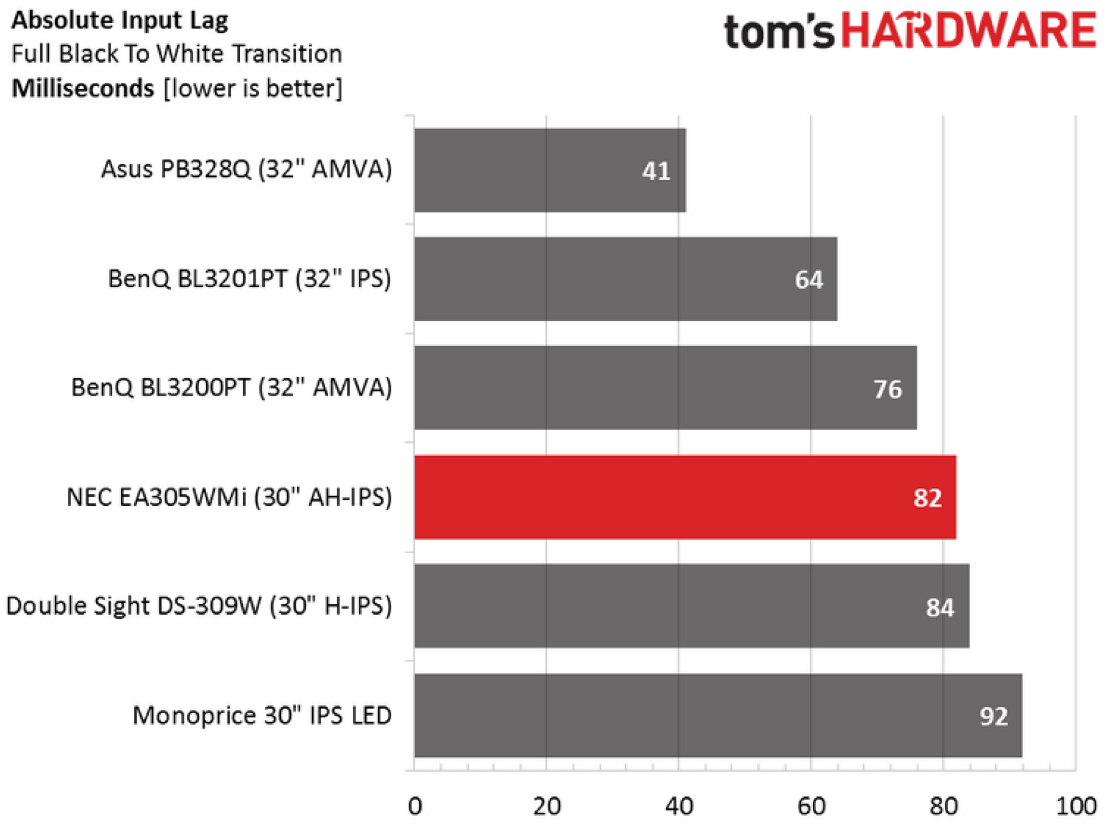
Pixel Response And Input Lag

Please click here to read up on our pixel response and input lag testing procedures.



23ms is an expected response result for a 60Hz IPS monitor. The overdrive feature works extremely well at reducing motion blur with no trace of ghosting both in either test patterns or fast-paced moving content.

Here are the lag results.



Gamers with hyperactive trigger fingers will probably be seeking a fast-refresh gaming monitor rather than an enterprise workhorse like the EA305WMi. But its input lag isn't excessive and casual players blowing off steam after work won't have a problem fragging if their opponents aren't of significantly higher skill.

8. Conclusion

Despite its near-disappearance in the marketplace, we're still fans of the 16:10 aspect ratio. The bonus vertical space is a benefit for both general computing and entertainment. Even if one watches a lot of movies on their computer monitor, the black bars are only a small distraction. And since games typically scale themselves to any resolution or format, it doesn't really matter what shape the screen is.

Unfortunately we're only left with a couple of size options, 24 (1920x1200) and 30 inches (2560x1600). And very few of those offer advanced features like factory calibration, wide gamut or high refresh rates. The panel manufacturing industry has moved overwhelmingly to the 16:9 format.

NEC has listened to user feedback and not only kept 16:10 alive, it has updated the industry's slim choices with modern technology, precise function and the same attention to detail found in other flagship products. The EA305WMi represents NEC well.

We always comment on NEC's fantastic build quality in every review we write. Regardless of model line or price point, you can bank on the fact that a monitor from this company will be a seriously solid piece of kit. And that quality extends to the internal components too.

Panel parts for this particular monitor size and resolution have been in existence for a while but NEC was not going to simply resurrect old tech to increase its display offerings. The LG piece used in the EA305WMi sports a bright and accurate GB-r-LED backlight and an IPS pixel structure for image quality that matches the best products in its own lines and those of its competitors.

Our tests showed reasonable, if not stellar out-of-box accuracy, which was easily corrected by calibration. Gamma proved to be as close to perfection as any professional display we're aware of. The only omission here is an sRGB gamut option. That is a function of this display's inclusion in the EA line. Aimed more at the enterprise, and therefore more general use, it's designed to deliver vibrant color and a clear image at the expense of conformation to multiple color standards. We will however be revisiting this particular issue when we review the PA302W professional display which is due to arrive in the lab any day.

The decision to purchase an NEC monitor is not one solely based on price. Many users shop that way and the pursuit of value is certainly important. But this company has never sought to compete on that front. It is more concerned with delivering the best possible quality, flexibility and a comprehensive feature list that makes its displays tools of the trade rather than a component destined for replacement at the earliest signs of upgrade-itis.

Despite a few minor flaws which do not affect its ability to perform to its design goal, we like the EA305WMi and would gladly use it for day-to-day tasks. It has tremendously usable screen real estate, ideal pixel density and the durability to remain reliable through years of use. For its solid performance and build quality we're giving it our Tom's Editor Approved Award.

PROS: Image quality • Post-calibration accuracy • Build quality • Large and flexible feature set

CONS: Average out-of-box accuracy

VERDICT : If you're hanging onto an old 16:10 display that needs replacement and a large screen is on your wishlist, the NEC EA305WMi is quite possibly the last monitor you'll need to buy for a long time. It's built to last and will not become obsolete any time soon thanks to an advanced backlight and a bright IPS panel. We don't see gamers adding this product to their short lists but for those just looking to get their work done with a professional-grade tool, it merits serious consideration.

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