wifihifi

Celebratin[illegible]iness of Digital

www.wifihifi.ca | June/July 2019

GET IN SHAPE!

Fitness Tech That Coaches, Motivates

PM42710013

JVC's DLA-NX7 True 4K Home Theatre Projector *paired with the* Panasonic UHD DP-UB9000 Blu-ray Disc Player

BY DAVID SUSILO

I'VE BEEN USING JVC projectors for the past three years, upgrading mine annually. The incremental improvements year to year, especially in the HDR department, make the replacements worth the investment for a cinephile like myself.

Last year, at CEDIA, JVC announced that for this years' models, the company will be using a new true 4K chip (no more eShift). I was eager to put my order in for the DLA-NX7 immediately.

This is the company's mid-tier model, which seems to offer a sweet spot in terms of performance and asking price of $9,999, with a compelling combination of class-leading brightness, contrast, and native 4K resolution. Prior to this, no projector offered the best of all three of these traits. You could only have two, at most.

The NX7 (also sold as the DLA-RS2000, depending on the market) uses JVC's new third-generation native 4K D-ILA panels with a full 17:9 aspect ratio (unlike HD or UHD with a 16:9 ratio). The company claims advancements in planarization that help reduce light scatter and diffraction to increase contrast performance over the previous generation 4K panels found in the flagship RS4500 laser projector. Additionally, JVC is using a new light engine design with higher performing wire-grid polarizers and tighter quality control over the lens. The end result is a more efficient projector producing a sharper image with more contrast and light output.

Two focus points JVC has for this years' models are true 4K projection and improving HDR10 performance. This is a sore topic for projector owners, since even with a claimed 1900 lumens, the NX7 (or any home projector, for that matter) falls behind most flat panel TVs when it comes to image brightness. Even on a modestly sized 100" projection screen, most users won't see more than 200 nits of peak brightness. This is a far cry from flat panels reaching over 1,000 nits. In the case of my Sony 55X900F, for example, the peak brightness on my panel can max out at 1,600 nits!

The fix is JVC's new auto tone mapping software and Panasonic's HDR Optimizer. Together, the new software can automatically adjust the dynamic range of HDR10 content to better suit the brightness capabilities of the image on screen. (Note: The HDR optimization function on the projector and in the player can work independently and will work with any source and display, respectively.)

The JVC DLA-NX7 4K Home Theatre Projector

The NX7 is a relatively large projector, measuring 19.8 inches by 19.5 inches by 9.3 inches, with a weight of 44 pounds. This makes it over 30% larger in volume and about 9 pounds heavier than JVC's previous generation lamp-based models. The larger chassis yields better airflow and less audible fan noise to be subjectively 80% lower in volume level. The NX7 employs the same fully motorized lens from previous years, offering 2x zoom, a 1.4 to 2.8 throw ratio, and a generous ±80% vertical and ±34 percent horizontal lens shift. JVC claims 1900 lumens of light output, >100 per cent P3 colour gamut support, an 80,000:1 native contrast ratio, and an 800,000:1 dynamic contrast ratio. The 265-watt UHP lamp is rated for 4,500 hours.

On the back of the projector, you'll find the usual two 18 Gbps HDMI 2.0b ports, a 3D emitter sync port (the same emitter I've been using for the past three JVC projectors I've owned), a USB port for firmware updates (finally!), a 12-volt trigger port, an RS-232 port for legacy system control, and a LAN port for IP system control.

I found the redesigned, backlit remote to be intuitive in button layout and comfortable to hold. But gone are the direct access buttons for lens memory (I usually use all three of them for 21:9, 16:9, and 18:9) and HDMI inputs. It may not be a big deal for most people, but I prefer function over form.

Panasonic UB9000 UHD Player

Within the same time frame that JVC announced the NX7, Panasonic announced its UB9000 UHD player. Totally unlike its predecessor, the new player employs full metal construction with build quality that makes it not only built like a tank, but with its weight exceeding 18 lbs., it *is* a tank!

Being a reference player, the unit employs a reference quality standalone analog stage unlike any other player in its MSRP $1,300 price range. Also, unlike any player within its range, it uses a specially designed, centrally mounted optical transport (competitors use a computer drive to cut costs, but they tend to be more prone to jitter). A separate power supply system between the audio and video circuitries are used, and they sit on a dual, thick gauge, metal chassis. To top it off, the player includes Panasonic's HDR Optimizer, which allows you to customize the HDR output for content (including Netflix and Prime Video) to match your display.

The player comes fully equipped with the usual USB input to play audio files from MP3 to FLAC, and video files upwards to H.265 in 4K resolution, although DTS-HD MA and Dolby TrueHD are not supported when playing back from a USB device.

Ethernet connection is of the gigabit variety with analog outputs that include stereo XLR out. Dual HDMI outputs are also available with full compatibility upwards to 4K/60 4:4:4 12-bit or any video output combinations including European's 25p and 50p frame-rate variants.

Setting Them Up in My Home Theatre

The centrally mounted, fully motorized lens on the JVC projector makes setup a breeze. It took less than five minutes for me to achieve a proper image size and focus on my screen, exactly down to one pixel accuracy.

While JVC has been a class leader when it comes to pixel delineation and focus uniformity across the image, I found a slight softness on the right side of the screen when looking at a 1:1 pixel grid thrown by my Murideo video pattern generator. It wasn't to the point of being too

noticeable. And bear in mind that I can easily detect visual aberrations in >$20K lenses. But it's present nevertheless.

Convergence, once the projector was warmed up, was excellent. Not perfect, but much better than any sub $20K projector out there. The built-in correction software can fix the convergence in no time. It took me less than five minutes to perfect the convergence, something that usually takes me 30 minutes to do.

The menu system is well laid out, with options unambiguously named to avoid confusion about what each one does. Such options include basic Brightness, Contrast, Color, and Tint control, and myriad other picture controls are available for more advanced calibration. Preset colour temperature options range from 5500K to 9300k, preset gamma options range from 2.2 to 2.6 with additional HDR gamma presets ranging from 1.8 to 2.6 in the user settings, and you have several preset colour gamut options to choose from, including REC709, DCI-P3, and REC2020. JVC includes different preset picture modes that are tailored towards different types of content. Natural mode is best for REC709 SDR content, while HDR10 mode is best suited for HDR10 content. There are also six User modes that allow you to set a custom combination of settings to memory. On top of all this, there are custom modes for gamma, colour temperature, and colour gamut that can be altered through calibration. Simply put, the NX7 allows unprecedented control over almost every aspect of its image should you feel the need to venture past the preset factory picture modes.

As for the Panasonic player, set-up is also very easy. Once you go into the system settings, you can choose the type of display you're using from projectors to LCDs to OLED. This way, the player customizes its output to a given display and optimizes the HDR output accordingly. I find it interesting and refreshing that as part of the easy setup, the player checked for new firmware updates as well.

The only part that you need to take notice of is that although you can select which type of display you are using in the system settings, you will still need to activate HDR Optimizer by going to "option" and then activating that function while playing a disc with HDR for the first time. Once you do that, however, you won't have to do it again for subsequent discs/movies.

Once you have the HDR Optimizer turned on, there are more options to tweak brightness of the image using the remote. It defaults to "standard," but you can scroll through several options depending on the lighting situation of the room. I find "standard" to be the one that gives the best balance across the brightness spectrum.

Other Settings and Shared Features

New this year is something JVC refers to as Installation Modes. These are memory slots that allow you to customize up to 10 items in the menu system that aren't image settings. Some of these items include digital mask, lens memories, anamorphic stretch modes,12-volt trigger modes, and even convergence – which is highly important if you use an anamorphic lens. It's like Yamaha's Scene Mode feature but for a projector.

HDMI sync times, the time it takes for the projector to lock onto a signal and display an image, have been dramatically improved. It now takes less than five seconds for an image to be displayed on screen after locking on to a signal. Those who switch among sources or channels with different frame rates and resolutions often will be happy with this improvement. JVC has also completely redesigned the proprietary C.M.D. (Clear Motion Drive) motion smoothing software. I can attest to the fact that their claim of fewer artifacts and subjectively better motion are true. Plus, it now supports resolutions up to 4K (4:4:4 chroma) at 60p.

As mentioned earlier, this year we see the inclusion of auto tone mapping. This software developed in collaboration with Panasonic, automatically adjusts the HDR picture settings to best match the image characteristics of the HDR10 video. This is done on a video-by-video basis by looking at the static HDR metadata sent from certain source components.

Through this metadata, the NX7 and UB9000 know the maximum and average light level of the video and adjust the picture settings automatically to best suit the content on your screen. HDR10, in general, is an extremely complicated and technical standard, and through

JVC DLA-NX7 4K HOME THEATRE PROJECTOR

PROS

- Deepest black level compared to others in its class
- Native 4K resolution
- Amazing greyscale
- Amazing HDR automatic tone mapping

CONS

- Heavy
- Big

this new software, JVC is trying to take as much guesswork out of the equation as possible and automate things so their projector owners need to do as little as possible to get the best image.

In order to realize good HDR performance, JVC collaborated with Panasonic to create two new HDR projector custom metadata modes with a tone map target luminance of 500 nits and 358 nits. JVC projectors work on the premise that the input peak luminance signal is within 500 nits, or 358 nits to optimize picture quality. JVC HDR projectors automatically process video information that exceeds the peak luminance capability of the projector using Panasonic's processing technology with 12-bit data and 4:4:4 colour.

Let's Watch! Observations

With the Panasonic player, the ejection and insertion of the drawer is quiet, as is disc spinning. The backlit remote helps a lot in a darkened room, especially when playing audio CDs where you want to switch tracks often.

Video upscaling is subjectively better than with players like my Oppo 103D, which I've been holding on to since I had found it to be the best upscaling player to 4K resolution. Furthermore, the chroma upsampling from any media and streaming sources of the Panasonic player bested my Oppo 205 UHD player. Bear in mind that all consumer optical media and streaming uses 4:2:0 chroma which then upscales back to 4:4:4 by either the player or the display. The four units I used to use in my home theatre – the Oppo 103D, Oppo 205, Pioneer BDP-09 and Panasonic UB900 – have now been combined into a single unit, the Panasonic UB9000.

As for the projector, out of the box, the NX7 offers several picture modes that require little to no adjustment to get a near reference image. With SDR content, Natural is the closest to the REC709 colourspace, which includes D65 colour temperature and 2.2 gamma. The Delta-E value is under 5 and with a super quick calibration, the impressive dE<5 can be further tamed down to dE<3 which, within the industry (I'm talking the video production industry, not only home) is considered to be imperceptible colour error to the human eye. These measurements are based on the use of Stewart Filmscreen's StudioTek 130 G3, which is the "de facto" standard in the film industry. The use of outside professional industry standards will, of course, vary.

The movie *Lucy* has a lot of dark scenes, but when watching it on the JVC DLA-NX7 4K home theatre projector and using Panasonic's DP-UB9000 UHD Blu-ray player's upscaling, contrast performance shined, with both inky blacks and brilliant highlights yielding impressive dynamic range.

Bringing the blue hue down during calibration brings the NX7 light output to 1600 lumens. This number can change depending on setup factors, including lamp mode, manual iris position, and the amount of zoom you're using on the lens. For my tests of ANSI lumens, I always use high lamp power, iris completely open, and zoom around the middle zone. In my light-controlled home theatre, on my 96" 21:9 1.3 gain screen, I ended up with the -8 iris setting, which sets the iris halfway closed. You can choose to enable one of two auto-iris modes that will dynamically adjust the iris below your manual iris setting to further enhance contrast when video content gets dark. While Auto 2 mode is less aggressive overall and will work well in most cases, my cursed eyes can still see the pumping effect of the dynamic iris, so I left mine in Manual.

Pulling up some test patterns revealed that the NX7 does most things correctly with the default out-of-the-box settings. It does proper 1:1 pixel mapping with no overscan issues. For SDR content, leaving the brightness and contrast settings at their default positions, the NX7 clips and crushes video appropriately.

To test SDR performance, I chose the film *Lucy* (2018) on Blu-ray. I first let my Panasonic DP-UB9000 UHD Blu-ray player upscale the video from 1080p to UHD.

Compared to what I was used to from the Oppo BDP-205, I could immediately see that the resolution and the chroma upsampling capability of the Panasonic UB9000 were the best I've encountered from any disc player on the market to date. I witnessed no aliasing artifacts and, overall, the image looked almost as defined and resolved as the 4K disc counterpart. Everything looked great, with no apparent artifacts.

I turned off the Panasonic's upscaling and let the NX7 upscale the video. Upscaling quality seemed middle of the road, with some noticeable aliasing. I found these same aliasing artifacts with most content the NX7 upscaled. Other than my Rogers Cable, most of my sources were upscaled by the UB9000, including Blu-ray discs as well as some movies streaming from Prime Video and Netflix, with the exception of iTunes movie rentals (which are usually in 4K anyway) through my 4K Apple TV.

Once I re-engaged the Panasonic's upscaling, however, I was floored with what I saw. *Lucy* is a movie with many scenes that take place at night and in dark rooms. This is where the NX7's class-leading contrast performance shines. I was treated to inky blacks, thanks in part to the dynamic iris adding a boost of contrast in these scenes, but also brilliant highlights that gave me the impression of a lot of dynamic range. Colours looked well-saturated and natural due in part to the NX7's accuracy in greyscale and colour. The image was also tack sharp thanks to the NX7's excellent lens.

HDR is a complicated format that requires your display to deliver certain levels of image brightness and gradations to be able to faithfully reproduce the content. Some displays meet these brightness requirements (most don't actually). But for those that don't, it means the image needs to be attenuated, aka "tone mapped," so the content can look subjectively correct. The NX7, like all home projectors, falls into the latter category. Just like Panasonic's UB9000, the JVC NX7's auto tone mapping feature reads metadata from HDR10 content and sets a global tone map to adjust the image to better suit the real-world dynamic range of the projector. Prior to this, any projector owner had to manually adjust settings in the menu to get a relatively good image with HDR10 content.

In general, using the UB9000, this automated feature worked well. However, not all UHD Blu-rays have the correct metadata, or any at all, included on the disc, so caution should be taken. In the cases where metadata is incorrect or missing, both the UB9000 and the NX7 allow for manual control to adjust the tone map. It comes as no surprise that I would suggest owners read through the user manual on how to set this feature up properly or get a professional calibrator to do it.

The NX7 includes an optical light filter that can be placed in the light path to broaden the colour gamut capabilities of the projector to better match UHD Blu-ray content. Without this filter, NX7 reaches 90% of the DCI-P3 colour gamut within the REC2020 gamut - 89% after calibration. Enabling this filter, I found that the coverage is up to 99% after calibration. This wider coverage yields perceivably more saturated colours should they be present in the video. And many movies mastered starting in 2005 have this extra colour information.

However, there is some light loss when using the filter. This is not surprising because, of course, science. In high lamp mode, I measured a 10% decrease when the filter was introduced versus no filter, which is a fair trade off to gain the extra colour saturation, in my opinion.

The film *Lucy* on UHD Blu-ray disc really shows off the benefits of native 4K and HDR10, revealing subtle details not found on the 1080p version. Simply put, the image had a true 'looking through a window' quality I've never seen before from a projector. The extra resolution gave the image a sense of solidity that I've never seen from a 4K projector. I also found the NX7's auto tone mapping feature worked well on this disc. Compared to the default HDR10 settings, the metadata augmented settings resulted in a much brighter appearing image overall, with natural looking colour and excellent dynamic range. Shadow detail, in particular, was far better than the default HDR settings. Last but not least, the gloomy image that is usually part of HDR presentations was no longer there.

Bottom Line

With the NX7, I now have a high-performance home video projector that delivers native 4K resolution, high contrast, and high brightness for just under $10,000. It's not perfect (black level can be better – although it is still the best black-level projector I've seen below $20,000), nor the best fit for everyone (literally, since it's relatively large.) But for the most part, the NX7 lives up to the hype, and I didn't regret buying it. It shines best with HD or UHD movies, or TV show content. It also only requires minor adjustments to get a reference image. For those looking for one of the best performing projectors in the under $20,000 market, you owe it to yourself to check out the NX7.

As for the Panasonic UB9000, when it comes to video performance, there isn't a single UHD player out there that bests this unit. While the $1,300 price tag is not cheap, it beats the Oppo 205 in video performance by a long shot, and that player was sold at an even higher price when it first launched.

As a combo? These two units go together like peanut butter and jelly, producing gorgeous video that will be a welcome addition to any home theatre. wh

PANASONIC DP-UB9000 BLU-RAY DISC PLAYER

PROS

- Amazing HDR automatic tone mapping, chroma upsampling, and resolution upscaling
- Analog CD Audio playback quality is top-notch

CONS

- Does not play SACD and DVD-A
- Does not play lossless audio track for unauthorized video files