4K... WITH A SHIFT

JVC's projector can't accept a native 4K input, but uses a clever technology to upscale full-HD to create a thrilling 4K screen image.

JVC DLA-X55 AV projector

Price: $6599

JVC has already reached its second generation of 4K projectors, marked by the X5 model numbers. This one, the DLA-X55, is the company's entry-level model for 4K projection.

EQUIPMENT

Of course, you might argue that this isn't a fully 4K projector for the simple reason that it will not accept 4K input signals. What it does is generate 4K resolution internally from whatever signals you feed to it. And it pulls off this trick not using 4K panels, but with standard 1920 × 1080 pixel panels.

There are three of these, of course, using JVC's D-ILA technology, its version of Liquid Crystal on Silicon in which, rather than passing through and being blocked by liquid crystals, the light reflects from its surface. Before the light reaches the lens it passes through something called an e-Shift device. This rapidly moves the image diagonally by half a pixel, thereby allowing four times the number of pixels (see panel opposite).

All this is built into a substantial enclosure that certainly looks the part for a premium projector, and which is a weighty 15kg.

The projector has a wide zoom range of a touch over 2:1. To fill a 100-inch (2.54 metre) 16:9 screen the projector needs to be at a range of between 3.01 and 6.13 metres. Zoom, along with focus and the vertical and horizontal lens shift controls are all powered, all adjusted via the remote control. This was well set up so that you can finely adjust the settings with little taps on the remote's arrows. When you're done you can lock the settings in place so they aren't accidentally changed. Indeed, the projector can memorise several lots of these settings (each memory holds focus, zoom and lens shift status) so you can change easily from one to another. There's also a 'centre lens' control to bring the image back to dead centre in case you want to start again.

The 3D peripherals are optional extras (but as always, see if you can do a deal with your retailer). We were supplied with the RF transmitter and glasses option. The transmitter costs $149 and the glasses $198 each. You can also go IR instead (the pricing is the same), but it's hard to see why you would. The RF transmitter plugs into a sync port at the back so it's quite neat. The glasses themselves are rechargeable and quite comfortable thanks to their fairly light weight, showing just 37 grams on our scales.

PERFORMANCE

We frequently find ourselves chastising TV and display makers for providing their units with a default picture 'Sharpness' setting so high that it introduces a nasty picture distortion. We're happy to report that this projector does no such thing. Indeed, it has no 'Sharpness' control for the picture at all!

Instead, the main way that the projector addresses how tightly signal pixels are mapped to the display is via 'MPC Level'. The primary function of this is to control the 4K image generation, with the option to switch it off, making the display into a standard true high-definition one. Using our test patterns we found that one of the '4K Profile' settings — 'Film' — introduced some inappropriate green shift in some grey scale content, so we stuck mostly with the 'High Resolution' setting.

Look closely at high-contrast diagonal lines with a full high-definition projection screen, and you'll see jaggies. Small ones, to be sure, but they are there. This projector eliminated them, the e-Shift pixels smoothing the edges. Indeed, it was quite instructive to switch between 'Off' and 'High Resolution' and watch these appear and then disappear. There were no visible ill effects on the image as a result of the 4K mode. It was clear, though, that JVC has resisted the temptation to use its picture processing from 2K to 4K to somehow artificially sharpen the picture. It smoothes, not sharpens, the image.

But there was one other change: perhaps it was just the review unit, but the eShift device was actually audible when it was in operation, though at a very low level, barely detectable above the even lower level of the fan.

Motion handling and progressive scan conversion proved a bit so-so. For the latter you're given a choice between 'Auto' and 'Off'. 'Auto' attempts to detect whether the content is video-sourced or film-sourced. If the latter then it weaves the content but otherwise applies motion-adaptive deinterlacing. It was fine most of the time with picking between the two, but was below average in this capability. In particular with 1080i/50 content from 'Miss Potter' it was tricked briefly on all four of the scenes we use to test this. So we'd recommend the use of a Blu-ray player with quality progressive-scan conversion as your source.

The DLA-X55 also has a motion interpolation system under the name of 'Clear Motion Drive'. The 'Low' and 'High' modes both attempt to smooth motion by interpolating frames, and both were successful with such things as scrolling credits, pretty much all DVD content and much Blu-ray content. But both completely failed on the tallest building in the Chicago flyover scene 50 minutes into 'The Fugitive', presumably because the jump from frame to frame was too big. 'High' introduced a truly shocking level of heat-haze distortion on DVDs, while 'Low' made the fine branches in the trees near the start of Chapter 10 of 'Miss Potter' skitter about in a very distracting way. This process was best left off.

But feed the projector with quality progressive-scan material and the results were almost always stunning. Again, there was no hint at all of jaggies because of the fine job the projector did at smoothing edges. But also fine were the black levels and colour. You can tweak and fiddle with the colour all you like, but the projector's 'Standard' mode delivered extremely accurate colours and a well nigh perfectly calibrated grey scale.

All that was laid over black levels I am tempted to call first class, except that JVC's more expensive models apparently offer even deeper blacks! But the native 50,000:1 contrast ratio delivered extremely deep blacks, smoothly. Detail in dark scenes was great thanks to the ability of projector to resolve blacks and near-blacks cleanly.

The 3D performance was excellent too. You must take care to select the '3D' picture mode (rather than 'Natural' or 'Dynamic'), which sets colour, brightness and so forth. This offsets the filtering effect of the 3D glasses themselves, which necessarily filter colours and brightness, and this picture mode offsets all that. This picture mode boosts the lamp output from Low to High, ensuring plenty of brightness, though this also increased fan noise quite significantly.

There was some cross-talk (leakage from left-eye signals into the right and vice versa)on our gold standard test scenes from 'Monsters vs Aliens 3D'. But it was at such a wonderfully low level that we could only detect its presence by peering very carefully wherever the film-makers weren't directing our attention, and even then it was only intermittent. It made little difference whether the picture had red objects over blue backgrounds, or white over black, or black over white — whenever there was any cross-talk it was at such a low level as to be virtually unnoticeable unless looked for. All that made 3D viewing via the JVC a very positive experience.

On the Werner Bloos test panel, the cross-talk levels for both black leaking through white and vice versa was around 10-20%, which is a very impressive result; we've seen acceptable 3D with some forms of cross-talk at up to 40%.

We also ran some 50Hz 3D content (side-by-side format free-to-air rugby broadcast) and movement was smooth. With virtually no ghosting, the picture just plain thrilled us.

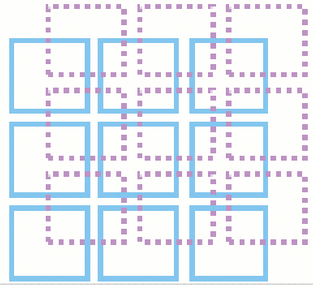
JVC says that cross-talk is natively lower because it uses a frame-fill rather than line-fill method of displaying the data (i.e. an entire frame is flashed up as one, rather than progressively drawn), allowing firmer boundaries between left and right eye views.

But it also uses cross-talk cancellation technology, a clever idea. This works by inserting material into, say, the left-eye image which will cancel out known leakage from the right eye content (and vice versa). Of course for this to work effectively, the added material must be based on models of known actual leakage. That's a reason why you should use the 3D picture mode since this cancellation was clearly optimised for the colours and brightness in that mode. When I tried 3D content in the 'Standard' picture mode, the ghosting was clearly visible and distracting, despite cross-talk cancellation being in operation.

CONCLUSION

So the JVC DLA-X55R can display images at 4K resolution using its e-Shift technology, but do remember that it cannot accept a native 4K input. Come the day (which may not be that long) when someone delivers a real 4K source, this JVC will not be able to play it. There again, the price here is so far below that of any true 4K projector that it would, perhaps, be surprising if it did. What you do get from the upscaling is greater smoothness, along with the projector's superb blacks and excellent all-round 2D performance, plus very convenient set-up and a quality build. And now the 3D performance challenges that of the best DLP 3D projectors. Truly, this is an excellent unit. Just make sure you choose your Blu-ray player for best progressive-scan conversion.

Stephen Dawson



Shifting for 4K

The X55R projector uses e-Shift 2 to display an image which is, effectively, upscaled to 4K. But this is not a simple doubling-up on each axis (from the original 1920 x 1080 to 3840 x 2160). Each original frame is examined using a correlation detection algorithm to eliminate aliasing and jaggies, while increasing contrast in areas of detail and enhancing edge transitions. The new 4K image is not projected as is, however — instead it is broken down into a pair of new 1920 x 1080 images which are alternately projected at double frame rate, with the second image shifted half a pixel diagonally from the first. This creates four overlap zones within each pixel, so that JVC can claim an effective resolution of 4K.

VERDICT

JVC DLA-X55 AV projector

Price: $6599

- Silky smooth picture
- Excellent colour and black levels
- Very good 3D

- No native 4K, upscaling only
- Average progressive-scan conversion
- Motion smoothing not the best

RESOLUTION: 1920 by 1080 pixels, e-Shift 2 upscaling to 4K
PROJECTION SYSTEM: 3 x 17.78mm D-ILA (LCoS) panels
ASPECT RATIO: 16:9
LAMP: 230W Ultra High Pressure Mercury
CONTRAST RATIO: 50,000:1 native
LIGHT OUTPUT: 1300 Lumens
RATED LAMP LIFE: 4000 hours in Low lamp mode
INPUTS: 2 x HDMI, 1 x component
OTHER: 1 x RS-232C, 1 x remote control, 1 x trigger, 1 x 3D Sync
NOISE: 23dB in Low lamp mode
DIMENSIONS (whd): 455 x 179 x 472mm
WEIGHT: 15.1kg
WARRANTY: Two years (1 year on lamp)

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