GLP KNV Cube

By: Mike Wood

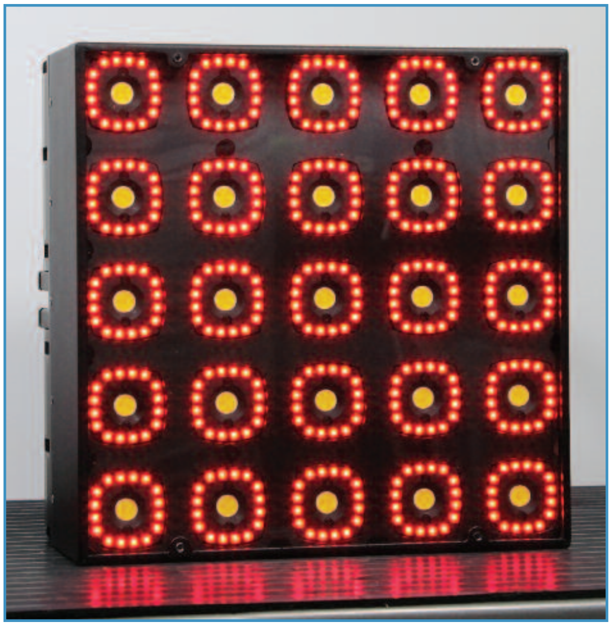

Figure 1: Fixture as tested.

A short review this month: The product we are looking at, the GLP KNV Cube, is not a moving light, nor is it strictly a wash light. Instead it's a combination wash/backlight/strobe/blinder/pixel-mapped LED luminaire that's a little hard to categorize. GLP calls it a multifunctional fixture.

LEDs have replaced strobes and regular light sources in nearly all applications in entertainment lighting. We have also seen many fixtures that offer pixel mapping using LED clusters as video pixels. The KNV attempts to combine all these uses in one luminaire. A typical use, I imagine, would be an array of Cubes as backlight on a stage, pointing straight out into the audience. This is a fixture to use as direct view, not to illuminate the stage. Figure 1 shows the unit I tested. GLP makes two variants of the KNV, the Cube and the Arc. Both have 25 pixels arranged in a 5x5 grid; however the Arc, as the name suggests, curves the pixel columns over a 45° angle to provide a corner unit. Adjacent units of both types can be mechanically connected to provide a seamless bank of units in any configuration. The KNV Cube uses the water-resistant versions of Neutrik connectors and the unit is rated IP54, which means it should be fine for outdoor uses, such as in festival situations.

For the tests, then KNV Cube was operated from a nominal 115V 60Hz supply; however, the unit is fitted with an autosensing universal power supply input that is rated from 100V to 240V AC, 50/60Hz.

Light source and optics

As already mentioned, the KNV Cube has 25 LED pixels, each of which comprises a central 30W phosphor-converted white LED surrounded by a curved square of 16 smaller RGB LEDs. Figure 2 shows one of the pixels in close up.

As you can see from the figure, there are no external optics or lenses; each LED acts as a Lambertian emitter, flooding light over a wide area. The RGB LEDs are each homogenized into a single-color emitter; the 16 in each pixel are controlled together.

The construction is compact. The case of the unit is in two halves: The front half is extruded and fabricated aluminum and forms both the structure and heat sink. The back half is encased in a plastic enclosure and contains electronics data and two large cooling fans. These blow air over the heat sink on the front module, which exits primarily to the top and bottom through the fins on the heat sink. Figure 3 shows the case split in half, with the heat sink on the left and the electronics module on the right. Connecting the two are cable conduits. Figure 4 shows the rear panel, with the two cooling fans in the center.

I only had a single unit to review and wasn't able to test the

Figure 2: LED pixel.

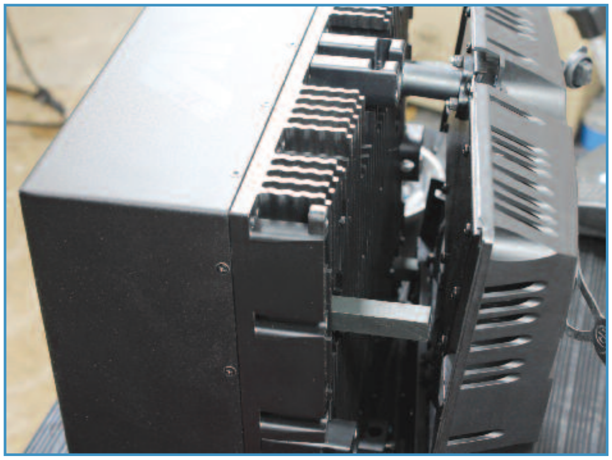

Figure 3: Case.

cooling when multiple units are ganged together. I'm not sure how the air exits when units are butted up to each other. With all the LEDs running, there's a lot of heat to get rid of!

Talking about connecting units together, the Cube (and Arc) have mechanical connection points on all four sides, allowing them to be mated up directly with more units. That way, you can build rows, columns, arrays, or any other shape.

Output

To get an accurate picture of how much light the KNV Cube produces, I measured just a single pixel—the central one—and turned the others off. Figure 5 shows the output from that one pixel: just over 2,400 lumens at a field angle of 117°. Multiplying all 25 pixels, that means the whole unit is producing in excess of 60,000 field lumens. (It's possible this is a slight exaggeration, as there may be some losses when all pixels are running; however, I think saying it's over 50,0000 is a reasonable estimate. It's hard to measure very wide-angle floods accurately. The light drops off so gradually that there can be a huge difference between beam lumens, field lumens, and the total lumens you would read in an integrating sphere. My data, as always, represents field lumens.)

As you would expect, the 30W white LED provides the vast majority of the lumen output. Over 95% is from the white, with red, green, and blue contributing 1.0%, 3.5%, and 0.5%, respectively. You can't really see the RGB if the white is on at full, but that's not what they are for. Just don't get confused: This unit produces the full 50,000 lumens in white light only.

Figure 6 shows the spectra for the RGB LEDs (left) and white LED (right). The white is a 5,000K emitter with a TM30 Rf of 85 and Rg of 97. Thermal droop was low; I measured a drop from 100% output to 96% in five minutes, 91% in 10 minutes, and 84% in 15 minutes when run at full power on

Figure 4: Cooling fans.

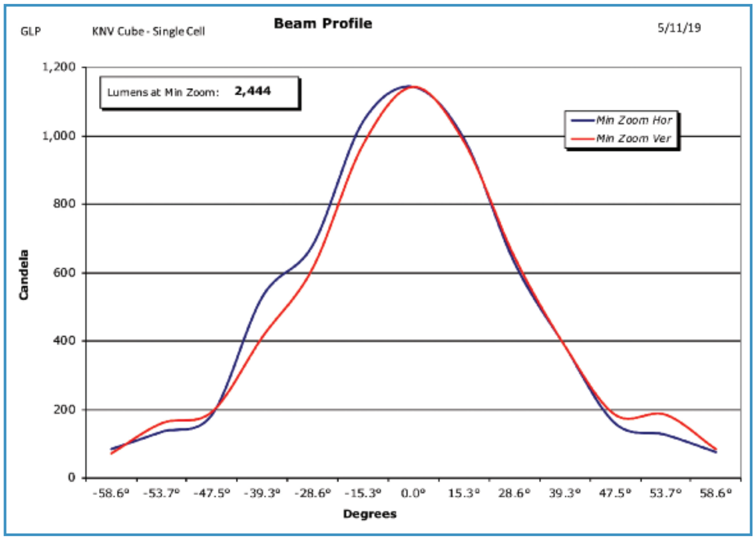

Figure 5: Beam profile.

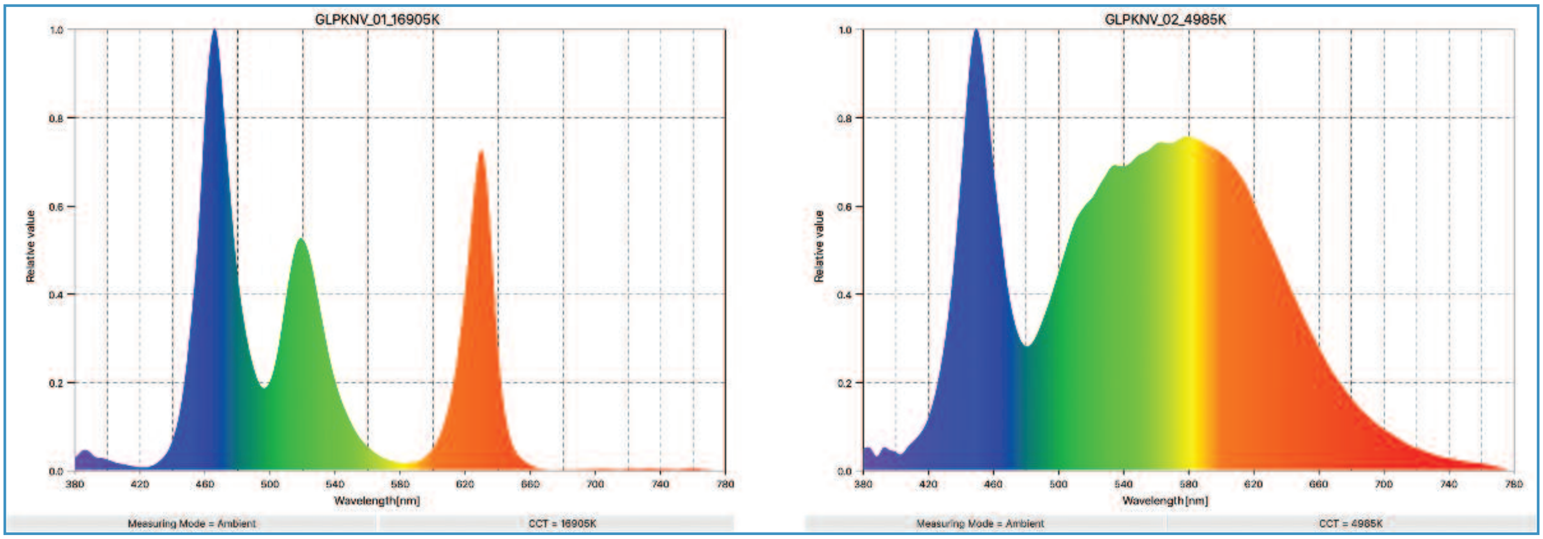

Figure 6: Spectra.

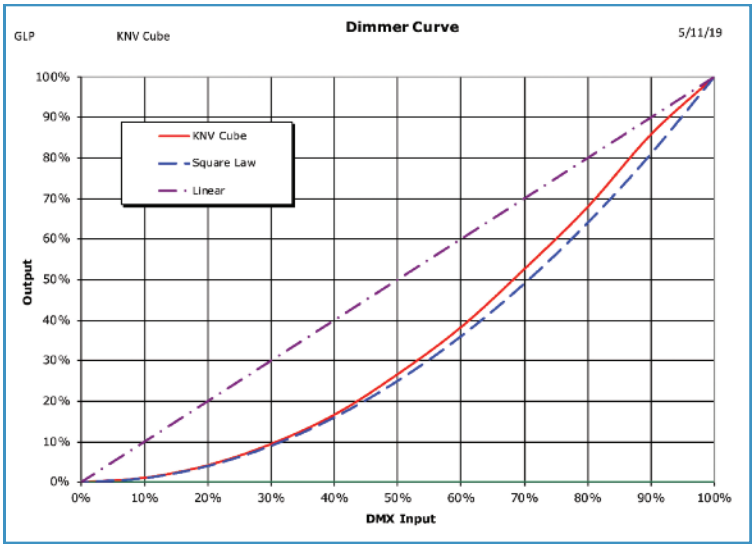

Figure 7: Dimmer curve.

all pixels. Full output for a long time is not something you are likely to do with a strobe or blinder.

Dimming and strobe

Dimming of the KNV Cube was excellent. Fades were smooth all the way down to black. Figure 7 shows the dimming curve when set to square law (GLP calls it the “soft” option). The PWM frequency of the unit, as supplied, was 4,800Hz.

media server technology in that you can define up to three layers of effects: a background color layer and two layers of moving effects on top of them, all controlled through DMX macro channels. It’s a complex and comprehensive implementation that is impossible to get across in photographs here. As a simple example, Figure 8 shows just three of the many possible patterns that can be animated on the KNV. One thing is clear: You will need some time set aside to program this unit if you want to get its full potential.

Noise

The KNV cube can get a little noisy if you let it. With the fan in auto mode, the quiescent fan noise is low at around 40dBA at 1m. However, if you run everything up to full power, things start to ramp up. After about five minutes the fans sped up and were producing about 67dBA at 1m. Yoy have options to limit this, throttling the output while keeping fan noise low.

Electrical parameters

POWER CONSUMPTION AS TESTED AT 115V

	Current, Power	Power Factor
Quiescent Load	0.31A, 31.7W	0.85
All LEDs illuminated	6.65A, 795W	0.99

Initialization time, from power up to output, was around five seconds.

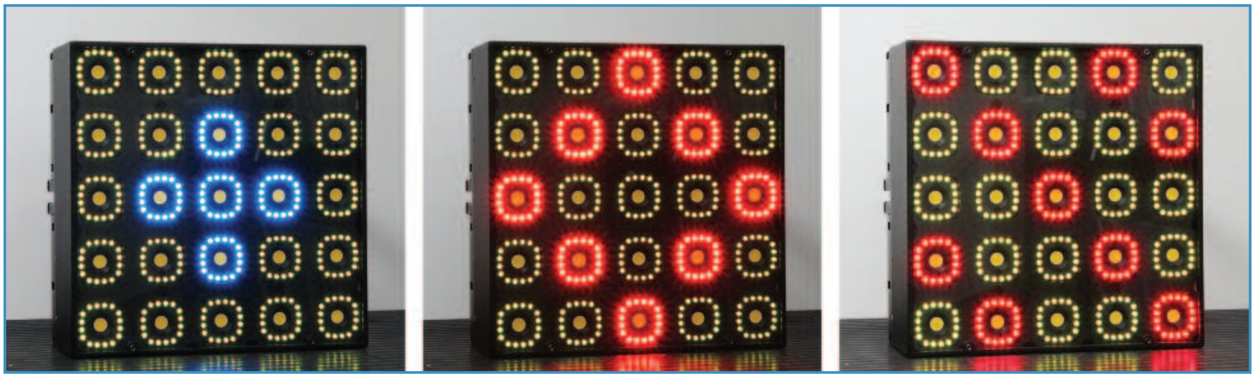

Figure 8: Pattern macros.

Effects

Of course, the whole point of a unit like the KNV Cube is the effects, and it has many, many of them. There is a plethora of different DMX modes, ranging all the way up to a mode with 16-bit individual control of every pixel that consumes 202 DMX channels. That’s what you would use if you were pixel-mapping the unit to a media server. There’s a wide choice of modes designed for lighting desks, as well. These make heavy use of macro channels to specify colors and moving effects across the panel. These modes borrow from

Electronics and control

Power in and out is through Neutrik True1 connectors. Control is slightly unusual in that the connectors are Neutrik weather-resistant Ethercon RJ45 connectors, but they are used for either Ethernet (E1.31 sACN and Art-Net) or standard DMX512 through an adaptor cable. Figure 9 shows the two data connectors on either side of the monochrome LCD display and menu system. There’s no mention of RDM in the manual, so I assume it’s not supported. As I mentioned earlier, there are many control options in the KNV and this menu is where you select your mode, along with other

Figure 9: Display and data.

options such as the usual fan speed and dimmer curve, but also some less-usual options such as fixture orientation and output power limitation.

Conclusions

There you have it for the GLP KNV Cube. It's a strobe, it's a wash light, it's a 50,000-lumen audience blinder, it's a pixel-mapped display. It may be all of these, but is it the right choice for you? I hope I've provided enough data to help you make that decision—but, as always, it's up to you to make the final call.

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