

Telairity Dives Deep into 4K Technology – Part 1

The world of resolutions is multifaceted, and confusing, to say the least! Just when we thought that so-called “Full HD” resolution (or “2K”) was the absolute cutting edge, “Ultra-High Definition” (UHD or “4K”) made an appearance and changed the equation. Actually UHD/4K technology has been in the news since 2010, but 2015 saw a steep drop in the prices of devices supporting UHD and, judging by the latest adoption figures, the market has warmed considerably to the new resolution standard.

What is 4K Technology?

In the old analog world of CRT display screens, screens were measured by the number of scan lines they supported. A standard SD screen had either 480 or 540 visible scan lines (depending on which standard, NTSC or PAL, was used in your region). The shift to HD, with its much higher resolutions, precipitated a shift in the underlying technology, from analog to digital.

In the new digital world of TV technology, display screens are no longer measured by the number of scan lines they support, but rather by the number of pixels they display. Digitally speaking, the highest resolution SD screens are now pixel arrays 720 wide x 480 or 540 high. Full HD screens are pixel arrays 1920 wide x 1080 high. Rounded off, HD resolution is about 2000 x 1000, which gets shortened to “2K” in digital-speak. UHD or 4K simply doubles each of these HD (2K) dimensions, to about 4000 x 2000 (or, more precisely, to exactly 3840 x 2160). In round numbers, then, HD is about 2 million pixels/screen, while UHD is about 8 million pixels/screen, or 4X the resolution of HD.

Pixels Not the Only Issue

It is easy to get confused here, because pixel number is only one aspect of the technology used to manufacture displays. Another critical aspect is the technology used to render pixels (whatever their number). This is where you encounter terms like LCD (Liquid Crystal Display), LED (Light Emitting Diode), OLED (Organic Light Emitting Diode), etc. Rendering technology controls the maximum darkness and lightness of a screen (its contrast ratio), as well as how bright and vivid colors appear. Yet another issue has to do with screen shape (curved or flat), and the effect this has on the viewing experience.

Obviously, if you change multiple aspects of a display at once, the impact of a new display can be far greater than the impact that would be produced by any one change in isolation. No doubt, shifting from a flat LCD HD display to a curved OLED UHD display will dramatically transform one’s viewing experience. But what part of this transformation is specifically contributed by the change in pixel count, i.e., the shift from HD to UHD? And what by the other new technologies for displays now coming into commercial use? We will continue this discussion in the next part of this series.

Telairity has made a name for itself as one of the industry’s leading providers of video encoding solutions. Please write in to us at sales@telairity.com to learn more about our products and to collaborate with our team.